CHAPTER

27

FLIGHT CONTROLS

CHAPTER 27
FLIGHT CONTROLS

Subject/Page	Date	COC
27-EFFECTIVE PAGES		
1 thru 34	Sep 15/2023	
27-CONTENTS		
1	May 15/2023	
2	May 15/2023	
3	Sep 15/2021	
O 4	Sep 15/2023	
5	May 15/2023	
O 6	Sep 15/2023	
7	Sep 15/2021	
8	May 15/2023	
9	Sep 15/2021	
O 10	Sep 15/2023	
O 11	Sep 15/2023	
12	Jan 15/2022	
13	Sep 15/2021	
14	Jan 15/2023	
15	May 15/2023	
O 16	Sep 15/2023	
O 17	Sep 15/2023	
O 18	Sep 15/2023	
O 19	Sep 15/2023	
O 20	Sep 15/2023	
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R 22	Sep 15/2023	
O 23	Sep 15/2023	
24	Jan 15/2022	
25	Jan 15/2023	
26	Sep 15/2021	
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28	Sep 15/2021	
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O 30	Sep 15/2023	
31	Sep 15/2021	
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33	Sep 15/2021	
34	Sep 15/2021	
27-CONTENTS (cont)		
35	May 15/2023	
36	Sep 15/2021	
37	May 15/2023	
38	Sep 15/2021	
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O 59	Sep 15/2023	
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27-00-00 (cont)		
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210	Sep 15/2021	

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Subject/Page	Date	COC
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407	Jan 15/2022	
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R 409	Sep 15/2023	
R 410	Sep 15/2023	
A 411	Sep 15/2023	
A 412	Sep 15/2023	
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27-09-71		
R 501	Sep 15/2023	
R 502	Sep 15/2023	
R 503	Sep 15/2023	

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D 552	Sep 15/2023	
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O 508	Sep 15/2023	
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512	Jan 15/2023	
513	Jan 15/2023	

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O 566	Sep 15/2023	
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R 428	Sep 15/2023	
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403	Sep 15/2021	
404	Sep 15/2021	
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R 402	Sep 15/2023	
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R 404	Sep 15/2023	
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R 407	Sep 15/2023	
R 408	Sep 15/2023	
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27-11-34		
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O 408	Sep 15/2023	
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O 410	Sep 15/2023	
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27-11-61		
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406	Sep 15/2021	

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R 407	Sep 15/2023	
O 408	Sep 15/2023	

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418	Jan 15/2022	
27-21-41		
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27-21-51		
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412	Sep 15/2021	

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Subject/Page	Date	COC
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27-21-51		
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27-21-61		
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27-21-71		
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27-21-82		
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27-21-82		
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27-21-87		
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27-21-87 (cont)		
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27-21-91		
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27-21-94		
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213	Jan 15/2022	

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Subject/Page	Date	COC
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27-31-00 (cont)		
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523	May 15/2022	
27-31-00 (cont)		
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O 553	Sep 15/2023	
R 554	Sep 15/2023	
O 555	Sep 15/2023	
R 556	Sep 15/2023	
O 557	Sep 15/2023	
O 558	Sep 15/2023	
O 559	Sep 15/2023	

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Subject/Page	Date	COC
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O 563	Sep 15/2023	
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R 570	Sep 15/2023	
O 571	Sep 15/2023	
O 572	Sep 15/2023	
O 573	Sep 15/2023	
O 574	Sep 15/2023	
R 575	Sep 15/2023	
R 576	Sep 15/2023	
R 577	Sep 15/2023	
R 578	Sep 15/2023	
O 579	Sep 15/2023	
O 580	Sep 15/2023	
O 581	Sep 15/2023	
O 582	Sep 15/2023	
O 583	Sep 15/2023	
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O 587	Sep 15/2023	
O 588	Sep 15/2023	
O 589	Sep 15/2023	
R 590	Sep 15/2023	
O 591	Sep 15/2023	
O 592	Sep 15/2023	
O 593	Sep 15/2023	
O 594	Sep 15/2023	
O 595	Sep 15/2023	
O 596	Sep 15/2023	
R 597	Sep 15/2023	
O 598	Sep 15/2023	
O 598.1	Sep 15/2023	
O 598.2	Sep 15/2023	
O 598.3	Sep 15/2023	
O 598.4	Sep 15/2023	
O 598.5	Sep 15/2023	
O 598.6	Sep 15/2023	
O 598.7	Sep 15/2023	
O 598.8	Sep 15/2023	
O 598.9	Sep 15/2023	
O 598.10	Sep 15/2023	
O 598.11	Sep 15/2023	
O 598.12	Sep 15/2023	
O 598.13	Sep 15/2023	
O 598.14	Sep 15/2023	
O 598.15	Sep 15/2023	
O 598.16	Sep 15/2023	
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O 598.26	Sep 15/2023	
O 598.27	Sep 15/2023	
R 598.28	Sep 15/2023	
R 598.29	Sep 15/2023	
R 598.30	Sep 15/2023	
O 598.31	Sep 15/2023	
598.32	Sep 15/2022	
R 598.33	Sep 15/2023	
R 598.34	Sep 15/2023	
27-31-11		
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434	May 15/2023	

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Subject/Page	Date	COC
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27-31-14		
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412	May 15/2023	
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27-31-14		
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27-31-17		
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R 202	Sep 15/2023	
O 203	Sep 15/2023	
R 204	Sep 15/2023	
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O 214	Sep 15/2023	
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27-31-20		
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27-31-20		
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27-31-31		
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R 412	Sep 15/2023	
R 413	Sep 15/2023	
O 414	Sep 15/2023	
O 415	Sep 15/2023	
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27-31-32		
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618	Sep 15/2021	
27-31-34		
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Subject/Page	Date	COC
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27-31-37		
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27-31-37		
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O 413	Sep 15/2023	
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O 415	Sep 15/2023	
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27-31-37		
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27-31-41		
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R 408	Sep 15/2023	
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R 412	Sep 15/2023	
27-31-41		
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27-31-51		
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407	Sep 15/2021	

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Subject/Page	Date	COC
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27-31-54		
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27-31-61		
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Subject/Page	Date	COC
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27-31-64		
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27-31-64		
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27-31-67		
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402	May 15/2022	
403	Sep 15/2021	
404	Sep 15/2021	
R 405	Sep 15/2023	
406	Jan 15/2023	
407	Jan 15/2023	
408	Jan 15/2023	

Subject/Page	Date	COC
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410	Jan 15/2023	
27-31-67		
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A 502	Sep 15/2023	
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A 504	Sep 15/2023	
A 505	Sep 15/2023	
A 506	Sep 15/2023	
A 507	Sep 15/2023	
A 508	Sep 15/2023	
27-31-71		
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27-31-74		
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CHAPTER 27
FLIGHT CONTROLS

Subject/Page	Date	COC
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27-31-91		
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414	Sep 15/2021	
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27-31-94		
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27-31-94 (cont)		
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27-32-00		
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R 503	Sep 15/2023	
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R 508	Sep 15/2023	
R 509	Sep 15/2023	
O 510	Sep 15/2023	
R 511	Sep 15/2023	
R 512	Sep 15/2023	
R 513	Sep 15/2023	
O 514	Sep 15/2023	
O 515	Sep 15/2023	
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O 521	Sep 15/2023	
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O 527	Sep 15/2023	
O 528	Sep 15/2023	
O 529	Sep 15/2023	
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27-32-21		
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27-32-31		
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27-32-42		
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R 405	Sep 15/2023	
R 406	Sep 15/2023	
D 407	Sep 15/2023	
D 408	BLANK	
27-41-00		
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27-41-00		
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R 502	Sep 15/2023	
O 503	Sep 15/2023	
R 504	Sep 15/2023	
O 505	Sep 15/2023	
O 506	Sep 15/2023	
O 507	Sep 15/2023	

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Subject/Page	Date	COC
27-41-00 (cont)		
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516	May 15/2023	
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R 549	Sep 15/2023	
R 550	Sep 15/2023	
R 551	Sep 15/2023	
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D 554	Sep 15/2023	
D 555	Sep 15/2023	
D 556	Sep 15/2023	
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D 558	Sep 15/2023	
27-41-11		
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27-41-21		
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27-41-31		
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423	May 15/2023	
424	May 15/2023	
425	May 15/2023	

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27-41-41		
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27-41-51		
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27-41-61		
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403	Sep 15/2021	
404	Sep 15/2021	

Subject/Page	Date	COC
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27-41-71		
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27-41-81		
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404	Sep 15/2022	
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423	May 15/2022	
424	May 15/2022	
425	May 15/2022	

Subject/Page	Date	COC
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R 602	Sep 15/2023	
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618	Sep 15/2022	
27-41-82		
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414	Sep 15/2021	
R 415	Sep 15/2023	
O 416	Sep 15/2023	

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Subject/Page	Date	COC
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O 418	Sep 15/2023	
O 419	Sep 15/2023	
O 420	Sep 15/2023	
O 421	Sep 15/2023	
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27-41-91		
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27-41-91		
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R 503	Sep 15/2023	
R 504	Sep 15/2023	
27-41-94		
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27-41-94		
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511	Sep 15/2021	

Subject/Page	Date	COC
27-41-94 (cont)		
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27-41-97		
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27-41-97		
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223	May 15/2023	
224	Sep 15/2021	
225	Sep 15/2021	

Subject/Page	Date	COC
27-51-00 (cont)		
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27-51-00		
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O 511	Sep 15/2023	
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526	Sep 15/2021	

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Subject/Page	Date	COC
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O 556	Sep 15/2023	
O 557	Sep 15/2023	
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R 560	Sep 15/2023	
R 561	Sep 15/2023	
O 562	Sep 15/2023	
27-51-00 (cont)		
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O 566	Sep 15/2023	
O 567	Sep 15/2023	
O 568	Sep 15/2023	
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O 572	Sep 15/2023	
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R 603	Sep 15/2023	
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A 621	Sep 15/2023	
27-51-00 (cont)		
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A 623	Sep 15/2023	
A 624	Sep 15/2023	
27-51-01		
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27-51-02		
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27-51-02		
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27-51-04		
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406	Sep 15/2021	

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27-51-08		
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27-51-08 (cont)		
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27-51-11		
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R 502	Sep 15/2023	
R 503	Sep 15/2023	
R 504	Sep 15/2023	
27-51-11 (cont)		
R 505	Sep 15/2023	
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27-51-12		
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Subject/Page	Date	COC
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27-51-13		
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Subject/Page	Date	COC
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27-51-14		
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27-51-15		
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409	Sep 15/2022	

Subject/Page	Date	COC
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27-51-15		
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27-51-16		
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27-51-18		
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403	Sep 15/2021	

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27-51-21 (cont)		
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27-51-21		
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O 502	Sep 15/2023	
O 503	Sep 15/2023	
R 504	Sep 15/2023	
R 505	Sep 15/2023	
O 506	Sep 15/2023	
O 507	Sep 15/2023	
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27-51-22		
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420	May 15/2023	
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422	May 15/2023	
27-51-22		
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27-51-23		
401	Sep 15/2021	
R 402	Sep 15/2023	
R 403	Sep 15/2023	
404	Sep 15/2021	
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407	Sep 15/2021	
R 408	Sep 15/2023	

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Subject/Page	Date	COC
27-51-23 (cont)		
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R 410	Sep 15/2023	
R 411	Sep 15/2023	
R 412	Sep 15/2023	
R 413	Sep 15/2023	
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R 418	Sep 15/2023	
R 419	Sep 15/2023	
R 420	Sep 15/2023	
R 421	Sep 15/2023	
422	BLANK	
27-51-23		
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27-51-24		
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410	Sep 15/2021	
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412	Sep 15/2021	
27-51-25		
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402	Sep 15/2021	
403	Sep 15/2021	
404	Sep 15/2021	
405	Sep 15/2021	
406	Sep 15/2021	
407	Sep 15/2021	
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415	Sep 15/2021	
416	Sep 15/2021	
417	May 15/2023	
418	May 15/2023	
419	May 15/2023	
420	BLANK	
27-51-25		
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27-51-26		
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412	Sep 15/2022	
413	Sep 15/2022	
414	Sep 15/2022	
415	Sep 15/2022	
416	Sep 15/2022	
27-51-28		
401	Sep 15/2021	
402	Sep 15/2021	
403	Sep 15/2021	
404	Sep 15/2021	
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415	Sep 15/2021	
416	Sep 15/2021	
417	Sep 15/2021	

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Subject/Page	Date	COC
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27-51-28		
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27-51-31		
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404	Sep 15/2021	

Subject/Page	Date	COC
27-51-31 (cont)		
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415	Sep 15/2021	
416	Sep 15/2021	
417	Sep 15/2021	
418	Sep 15/2021	
27-51-32		
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413	Sep 15/2021	
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415	Sep 15/2021	
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27-51-32		
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605	Sep 15/2021	

Subject/Page	Date	COC
27-51-32 (cont)		
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629	Sep 15/2021	
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27-51-41		
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403	Jan 15/2023	
404	Jan 15/2023	
405	Jan 15/2023	
406	Jan 15/2023	
407	Jan 15/2023	
408	Jan 15/2023	
409	Jan 15/2023	
410	Jan 15/2023	

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Subject/Page	Date	COC
27-51-41 (cont)		
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413	Jan 15/2023	
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422	Jan 15/2023	
423	Jan 15/2023	
424	Jan 15/2023	
425	Jan 15/2023	
426	Jan 15/2023	
27-51-42		
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402	Sep 15/2021	
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404	Sep 15/2021	
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418	Sep 15/2021	
27-51-42		
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27-51-42 (cont)		
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R 616	Sep 15/2023	
617	Sep 15/2021	
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27-51-51		
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402	Sep 15/2021	
R 403	Sep 15/2023	
404	Sep 15/2021	
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406	Sep 15/2021	
407	Sep 15/2021	
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412	Jan 15/2023	
413	May 15/2023	
414	Sep 15/2021	
415	May 15/2022	
416	May 15/2022	
27-51-51 (cont)		
417	May 15/2022	
418	Sep 15/2021	
419	Sep 15/2021	
420	Sep 15/2021	
421	Sep 15/2021	
422	Jan 15/2022	
423	Jan 15/2022	
424	Jan 15/2022	
27-51-51		
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27-51-52		
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402	Sep 15/2021	
403	Sep 15/2021	
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405	May 15/2023	
406	Sep 15/2021	
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27-51-53		
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404	Sep 15/2021	
405	May 15/2023	
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27-51-56		
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406	Sep 15/2021	
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27-51-57		
401	Sep 15/2021	
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27-51-58		
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407	Sep 15/2021	
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410	Sep 15/2021	
411	Sep 15/2021	
412	Sep 15/2021	

Subject/Page	Date	COC
27-51-58 (cont)		
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415	Sep 15/2021	
416	Sep 15/2021	
417	Sep 15/2021	
418	Sep 15/2021	
419	Sep 15/2021	
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421	Sep 15/2021	
422	Sep 15/2021	
423	Sep 15/2021	
424	BLANK	
27-51-58		
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602	Sep 15/2021	
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606	BLANK	
27-51-59		
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402	Sep 15/2021	
403	Sep 15/2021	
404	Sep 15/2021	
405	Sep 15/2021	
406	Sep 15/2021	
27-51-61		
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404	Sep 15/2021	
405	Sep 15/2021	
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409	Sep 15/2021	
410	Sep 15/2021	

Subject/Page	Date	COC
27-51-61 (cont)		
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413	May 15/2023	
414	May 15/2023	
415	May 15/2023	
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418	Jan 15/2022	
419	Jan 15/2022	
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27-51-62		
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402	Sep 15/2021	
403	Sep 15/2021	
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405	Sep 15/2021	
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407	Sep 15/2021	
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27-51-63		
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402	Sep 15/2021	
403	Sep 15/2021	
404	Sep 15/2021	
405	Sep 15/2021	
406	Sep 15/2021	
407	May 15/2023	
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27-51-63		
501	May 15/2022	
502	May 15/2022	

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Subject/Page	Date	COC
27-51-63 (cont)		
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R 518	Sep 15/2023	
519	Sep 15/2021	
R 520	Sep 15/2023	
R 521	Sep 15/2023	
O 522	Sep 15/2023	
27-51-65		
R 401	Sep 15/2023	
R 402	Sep 15/2023	
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R 404	Sep 15/2023	
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R 406	Sep 15/2023	
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R 408	Sep 15/2023	
R 409	Sep 15/2023	
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412	Sep 15/2021	
27-51-65		
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503	Sep 15/2021	
27-51-65 (cont)		
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27-51-67		
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27-58-00		
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27-58-01		
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R 402	Sep 15/2023	
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411	May 15/2023	
R 412	Sep 15/2023	
27-58-01		
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27-59-00		
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502	Sep 15/2021	
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513	Sep 15/2021	
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516	Sep 15/2021	
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27-59-01		
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207	Sep 15/2021	
208	Sep 15/2021	
209	Sep 15/2021	

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Subject/Page	Date	COC
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221	Sep 15/2021	
222	Sep 15/2021	
223	May 15/2023	
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27-59-02		
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205	May 15/2023	
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212	May 15/2023	
213	Sep 15/2021	
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216	Sep 15/2021	
217	Sep 15/2021	
218	Sep 15/2021	

Subject/Page	Date	COC
27-59-02 (cont)		
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226	May 15/2023	
227	Sep 15/2021	
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27-61-00		
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206	Sep 15/2021	
207	Sep 15/2021	
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R 209	Sep 15/2023	
O 210	Sep 15/2023	
O 211	Sep 15/2023	
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220	Sep 15/2021	
27-61-00		
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502	Jan 15/2023	
R 503	Sep 15/2023	

Subject/Page	Date	COC
27-61-00 (cont)		
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R 505	Sep 15/2023	
R 506	Sep 15/2023	
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27-61-11		
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O 403	Sep 15/2023	
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27-61-12		
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404	Sep 15/2021	

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Subject/Page	Date	COC
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407	Sep 15/2021	
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27-61-12		
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R 523	Sep 15/2023	

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27-62-32		
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O 425	Sep 15/2023	

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CHAPTER 27
FLIGHT CONTROLS

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
FLIGHT CONTROLS - DDG MAINTENANCE PROCEDURES	27-00-00		901	SIA ALL
DDG 27-21-01 Rudder Trim Indicator Inoperative - Preparation TASK 27-00-00-040-812			901	SIA ALL
DDG 27-21-01 Rudder Trim Indicator Inoperative - Restoration TASK 27-00-00-440-812			902	SIA ALL
DDG 27-21-02 STBY RUD ON Light Inoperative - Preparation TASK 27-00-00-040-813			902	SIA ALL
DDG 27-21-02 STBY RUD ON Light Inoperative - Restoration TASK 27-00-00-440-813			904	SIA ALL
DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Preparation TASK 27-00-00-040-814			905	SIA ALL
DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Restoration TASK 27-00-00-440-814			920	SIA ALL
DDG 27-61-01 Flight Spoiler Systems Inoperative - Preparation TASK 27-00-00-040-811			920	SIA ALL
DDG 27-61-01 Flight Spoiler Systems Inoperative - Restoration TASK 27-00-00-440-811			923	SIA ALL
DDG 27-62-01 Auto Speed Brake System Inoperative - Preparation TASK 27-00-00-040-815			925	SIA ALL
DDG 27-62-01 Auto Speed Brake System Inoperative - Restoration TASK 27-00-00-440-815			926	SIA ALL
DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Preparation TASK 27-00-00-040-816			926	SIA ALL
DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Restoration TASK 27-00-00-440-816			928	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Preparation TASK 27-00-00-040-817			929	SIA ALL
DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Restoration TASK 27-00-00-440-817			929	SIA ALL
DDG 27-88-01 Leading Edge Flap/Slat Position Light System Inoperative - Preparation TASK 27-00-00-040-818			930	SIA ALL
DDG 27-88-01 Leading Edge Flap/Slat Position Light System Inoperative - Restoration TASK 27-00-00-440-818			934	SIA ALL
FLIGHT CONTROLS CABLES - MAINTENANCE PRACTICES	27-09-14		201	SIA ALL
Control Cables Identification and Assembly Specifications TASK 27-09-14-860-801			201	SIA ALL
Control Cables - Rigging TASK 27-09-14-820-801			232	SIA ALL
Cable Control - Tension Measurement TASK 27-09-14-860-802			233	SIA ALL
FLIGHT CONTROL CABLES AIR PRESSURE SEALS - MAINTENANCE PRACTICES	27-09-17		201	SIA ALL
Location of the Flight Control Cables Air Pressure Seals TASK 27-09-17-860-801			201	SIA ALL
FLIGHT CONTROL CABLE GUARD - REMOVAL/INSTALLATION	27-09-18		401	SIA ALL
Control Cable Guard Removal TASK 27-09-18-000-801			401	SIA ALL
Control Cable Guard Installation TASK 27-09-18-400-801			407	SIA ALL
FLIGHT CONTROLS HYDRAULIC MODULE - REMOVAL/INSTALLATION	27-09-21		401	SIA ALL
Flight Controls Hydraulic Module Removal TASK 27-09-21-000-801			401	SIA ALL

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Flight Controls Hydraulic Module Installation TASK 27-09-21-400-801			407	SIA ALL
FLIGHT CONTROLS HYDRAULIC MODULE - ADJUSTMENT/TEST	27-09-21		501	SIA ALL
Flight Controls Hydraulic Module Test TASK 27-09-21-700-801			501	SIA ALL
FLIGHT CONTROLS SHUTOFF VALVE AND VALVE MOTOR - REMOVAL/INSTALLATION	27-09-31		401	SIA ALL
Flight Controls Shutoff Valve Removal TASK 27-09-31-000-801			401	SIA ALL
Flight Controls Shutoff Valve Installation TASK 27-09-31-400-801			407	SIA ALL
Flight Controls Shutoff Valve Motor Removal TASK 27-09-31-000-802			409	SIA ALL
Flight Controls Shutoff Valve Motor Installation TASK 27-09-31-400-802			410	SIA ALL
FLIGHT CONTROLS SHUTOFF VALVE - ADJUSTMENT/TEST	27-09-31		501	SIA ALL
Flight Controls Shutoff Valve Test TASK 27-09-31-710-801			501	SIA ALL
FLIGHT CONTROLS PANEL (P5-3) - REMOVAL/INSTALLATION	27-09-45		401	SIA ALL
Flight Controls Panel Removal TASK 27-09-45-000-801			401	SIA ALL
Flight Controls Panel Installation TASK 27-09-45-400-801			404	SIA ALL
LOW PRESSURE WARNING SWITCH - REMOVAL/INSTALLATION	27-09-61		401	SIA ALL
Low Pressure Warning Switch Removal TASK 27-09-61-000-801			401	SIA ALL
Low Pressure Warning Switch Installation TASK 27-09-61-400-801			406	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
LOW PRESSURE WARNING SWITCH - ADJUSTMENT/TEST	27-09-61		501	SIA ALL
Low Pressure Warning Switch Test TASK 27-09-61-700-801			501	SIA ALL
FLIGHT CONTROLS TRIM CORRECTION - ADJUSTMENT/TEST	27-09-71		501	SIA ALL
Trailing Edge Flap Adjustment for Lateral Trim and Test TASK 27-09-71-820-801			501	SIA ALL
Aileron Balance Tab Adjustment to Equalize Lateral Manual Reversion Forces TASK 27-09-71-820-802			527	SIA ALL
Rudder Trim Adjustment for Power On Discrepancy Correction TASK 27-09-71-860-801			533	SIA ALL
Rudder Trim Adjustment for Power Off Discrepancy Correction TASK 27-09-71-860-802			534	SIA ALL
Flight Controls Adjustment Record TASK 27-09-71-970-801			534	SIA ALL
FLIGHT CONTROLS SURFACES - INSPECTION/CHECK	27-09-91		601	SIA ALL
Aileron - Inspection TASK 27-09-91-200-801			601	SIA ALL
Aileron Balance Tab Freeplay - Inspection TASK 27-09-91-200-802			604	SIA ALL
Rudder Inspection TASK 27-09-91-200-803			608	SIA ALL
Horizontal Stabilizer - Inspection TASK 27-09-91-200-804			611	SIA ALL
Spoiler Inspection TASK 27-09-91-200-805			629	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AILERON AND AILERON TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES	27-11-00		201	SIA ALL
Pressure from the Aileron Hydraulic Systems A and B - Deactivation TASK 27-11-00-860-801			201	SIA ALL
Pressure to the Aileron Hydraulic Systems A and B - Activation TASK 27-11-00-860-802			208	SIA ALL
AILERON - ADJUSTMENT/TEST	27-11-00		501	SIA ALL
Aileron Cables Adjustment TASK 27-11-00-820-801			501	SIA ALL
Pogo and Power Control Unit (PCU) Adjustment TASK 27-11-00-820-802			514	SIA ALL
Aileron Balance Tab Adjustment (Recommended Method) TASK 27-11-00-820-803			522	SIA ALL
Aileron Feel and Centering Unit Adjustment TASK 27-11-00-820-805			527	SIA ALL
Do A Check of the Aileron System Adjustment TASK 27-11-00-820-806			532	SIA ALL
Aileron Surface Friction and Motion Test TASK 27-11-00-700-801			537	SIA ALL
Manual Reversion Control Friction Test TASK 27-11-00-700-803			540	SIA ALL
Aileron Response (Operational) Test TASK 27-11-00-710-801			542	SIA ALL
Control Wheel Centering Check TASK 27-11-00-700-804			543	SIA ALL
Aileron Control Wheel Force Test TASK 27-11-00-700-805			544	SIA ALL
Aileron Trim Response Test TASK 27-11-00-730-801			546	SIA ALL
Transfer Mechanism Operational Test TASK 27-11-00-710-802			550	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Transfer Mechanism Functional Test TASK 27-11-00-700-806			552	SIA ALL
Control Wheel Travel Stop Test TASK 27-11-00-700-807			555	SIA ALL
Control Wheel Travel Interference Test TASK 27-11-00-700-808			556	SIA ALL
Aileron Balance Tab Position Test TASK 27-11-00-700-809			557	SIA ALL
Aileron Travel Test TASK 27-11-00-700-810			558	SIA ALL
Aileron Power Control Unit (PCU) Pogos - Functional Test TASK 27-11-00-720-801			560	SIA ALL
Flight Test to Find and Correct Asymmetrical Flight Control Forces TASK 27-11-00-750-801			564	SIA ALL
AILERON AND AILERON TRIM CONTROL SYSTEM - INSPECTION/CHECK	27-11-00		601	SIA ALL
Aileron Mechanical Components Inspection - Forward components TASK 27-11-00-210-801			601	SIA ALL
Aileron Mechanical Components Inspection - From the Aileron PCUs to the Aileron TASK 27-11-00-210-802			606	SIA ALL
AILERON - REMOVAL/INSTALLATION	27-11-11		401	SIA ALL
Aileron Removal TASK 27-11-11-000-801			401	SIA ALL
Aileron Installation TASK 27-11-11-400-801			420	SIA ALL
AILERON - INSPECTION/CHECK	27-11-11		601	SIA ALL
Aileron Inspection TASK 27-11-11-200-801			601	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AILERON POWER CONTROL UNIT LINKAGE - REMOVAL/INSTALLATION	27-11-14		401	SIA ALL
Aileron Power Control Unit Linkage Removal TASK 27-11-14-000-801			401	SIA ALL
Aileron Power Control Unit Linkage Installation TASK 27-11-14-400-801			407	SIA ALL
AILERON BALANCE TAB - REMOVAL/INSTALLATION	27-11-21		401	SIA ALL
Aileron Balance Tab Removal TASK 27-11-21-000-801			401	SIA ALL
Aileron Balance Tab Installation TASK 27-11-21-400-801			406	SIA ALL
AILERON BALANCE TAB - INSPECTION/CHECK	27-11-21		601	SIA ALL
Aileron Balance Tab Inspection TASK 27-11-21-200-801			601	SIA ALL
AILERON WING QUADRANT - REMOVAL/INSTALLATION	27-11-24		401	SIA ALL
Aileron Wing Quadrant Removal TASK 27-11-24-000-801			401	SIA ALL
Aileron Wing Quadrant Installation TASK 27-11-24-400-801			408	SIA ALL
AILERON BALANCE PANELS - REMOVAL/INSTALLATION	27-11-31		401	SIA ALL
Aileron Balance Panels Removal TASK 27-11-31-000-801			401	SIA ALL
Aileron Balance Panels Installation TASK 27-11-31-400-801			406	SIA ALL
AILERON BALANCE PANEL - INSPECTION/CHECK	27-11-31		601	SIA ALL
Aileron Balance Panel - Inspection TASK 27-11-31-220-801			601	SIA ALL
Aileron Balance Panel Seals Detailed - Inspection TASK 27-11-31-210-801			605	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AILERON TAB CONTROL RODS - REMOVAL/INSTALLATION	27-11-34		401	SIA ALL
Aileron Tab Control Rods Removal TASK 27-11-34-000-801			401	SIA ALL
Aileron Tab Control Rods Installation TASK 27-11-34-400-801			405	SIA ALL
AILERON TAB CONTROL RODS - INSPECTION/CHECK	27-11-34		601	SIA ALL
Aileron Tab Control Rods Inspection TASK 27-11-34-200-801			601	SIA ALL
AILERON CONTROL WHEEL - REMOVAL/INSTALLATION	27-11-41		401	SIA ALL
Aileron Control Wheel Removal TASK 27-11-41-000-801			401	SIA ALL
Aileron Control Wheel Installation TASK 27-11-41-400-801			407	SIA ALL
AILERON CONTROL WHEEL DRUM - REMOVAL/INSTALLATION	27-11-51		401	SIA ALL
Aileron Control Wheel Drum Removal TASK 27-11-51-000-801			401	SIA ALL
Aileron Control Wheel Drum Installation TASK 27-11-51-400-801			409	SIA ALL
AILERON TRIM ACTUATOR - REMOVAL/INSTALLATION	27-11-54		401	SIA ALL
Aileron Trim Actuator Removal TASK 27-11-54-000-801			401	SIA ALL
Aileron Trim Actuator Installation TASK 27-11-54-400-801			405	SIA ALL
AILERON TRANSFER MECHANISM - REMOVAL/INSTALLATION	27-11-61		401	SIA ALL
Aileron Transfer Mechanism Removal TASK 27-11-61-000-801			401	SIA ALL
Aileron Transfer Mechanism Installation TASK 27-11-61-400-801			408	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
AILERON TRANSFER MECHANISM - INSPECTION/CHECK	27-11-61		601	SIA ALL
Aileron Transfer Mechanism Inspection TASK 27-11-61-210-801			601	SIA ALL
AILERON POWER CONTROL UNIT - REMOVAL/INSTALLATION	27-11-71		401	SIA ALL
Aileron Power Control Unit Removal TASK 27-11-71-000-801			401	SIA ALL
Aileron Power Control Unit Installation TASK 27-11-71-400-801			407	SIA ALL
AILERON FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION	27-11-81		401	SIA ALL
Aileron Feel and Centering Unit - Removal TASK 27-11-81-000-801			401	SIA ALL
Aileron Feel and Centering Unit Installation TASK 27-11-81-400-801			410	SIA ALL
Cam Follower Bearing Removal TASK 27-11-81-000-802			413	SIA ALL
Cam Follower Bearing Installation TASK 27-11-81-400-802			417	SIA ALL
AILERON FEEL AND CENTERING UNIT - INSPECTION/CHECK	27-11-81		601	SIA ALL
Aileron Feel and Centering Unit Springs Detailed Inspection TASK 27-11-81-210-801			601	SIA ALL
AILERON/RUDDER TRIM CONTROL MODULE - REMOVAL/INSTALLATION	27-11-94		401	SIA ALL
Aileron and Rudder Trim Control Module Removal TASK 27-11-94-000-801			401	SIA ALL
Aileron and Rudder Trim Control Module Installation TASK 27-11-94-400-801			404	SIA ALL
Trim Control Switches Removal TASK 27-11-94-000-802			404	SIA ALL
Trim Control Switches Installation TASK 27-11-94-400-802			405	SIA ALL

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Rudder Trim Indicator Removal TASK 27-11-94-000-803			407	SIA ALL
Rudder Trim Indicator Installation TASK 27-11-94-400-803			407	SIA ALL
RUDDER AND RUDDER TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES	27-21-00		201	SIA ALL
Rudder Hydraulic System A, B, or Standby Pressurization TASK 27-21-00-800-801			201	SIA ALL
Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization TASK 27-21-00-840-801			205	SIA ALL
Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation TASK 27-21-00-800-802			205	SIA ALL
Pressure to the Rudder Systems A, B, and Standby - Activation TASK 27-21-00-840-802			213	SIA ALL
RUDDER AND RUDDER TRIM CONTROL SYSTEM - ADJUSTMENT/TEST	27-21-00		501	SIA ALL
Rudder Forward Quadrant Adjustment TASK 27-21-00-820-801			501	SIA ALL
Rudder Pedals Adjustment TASK 27-21-00-820-802			510	SIA ALL
Rudder Control Cables RA and RB Adjustment TASK 27-21-00-820-803			512	SIA ALL
Control Rod for Main Rudder Power Control Unit Adjustment TASK 27-21-00-820-804			517	SIA ALL
Control Rod for Standby Rudder Power Control Unit Adjustment TASK 27-21-00-820-805			531	SIA ALL
Rudder Pedal Adjustment and Limit Travel Test TASK 27-21-00-700-801			535	SIA ALL
Rudder Hinge Bearing and PCU Bearing Freeplay TASK 27-21-00-700-802			542	SIA ALL

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Rudder Centering Test TASK 27-21-00-700-803			546	SIA ALL
Rudder Pedal Forces Test TASK 27-21-00-700-804			548	SIA ALL
Rudder Travel Test TASK 27-21-00-700-805			554	SIA ALL
Standby Rudder Power Control Unit Deadband Test TASK 27-21-00-700-806			558	SIA ALL
Rudder Trim System Test TASK 27-21-00-700-807			559	SIA ALL
Wheel to Rudder Interconnect System Test TASK 27-21-00-700-808			563	SIA ALL
Rudder Hinge Friction Test TASK 27-21-00-700-809			565	SIA ALL
Main Rudder PCU Internal Hydraulic Leakage Test TASK 27-21-00-700-810			567	SIA ALL
Rudder Override Operational Test TASK 27-21-00-700-811			576	SIA ALL
Rudder Main PCU Force Fight Monitor Test TASK 27-21-00-700-812			579	SIA ALL
RUDDER - REMOVAL/INSTALLATION	27-21-11		401	SIA ALL
Rudder Removal TASK 27-21-11-000-801			401	SIA ALL
Rudder Installation TASK 27-21-11-400-801			415	SIA ALL
RUDDER INDEX PLATE - REMOVAL/INSTALLATION	27-21-17		401	SIA ALL
Rudder Index Plate Removal TASK 27-21-17-000-801			401	SIA ALL
Rudder Index Plate Installation TASK 27-21-17-400-801			403	SIA ALL

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STANDBY RUDDER POWER CONTROL UNIT - REMOVAL/INSTALLATION	27-21-24		401	SIA ALL
Standby Rudder Power Control Unit Removal TASK 27-21-24-000-801			401	SIA ALL
Standby Rudder Power Control Unit Installation TASK 27-21-24-400-801			405	SIA ALL
STANDBY RUDDER POWER CONTROL UNIT - INSPECTION/CHECK	27-21-24		601	SIA ALL
Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection TASK 27-21-24-210-801			601	SIA ALL
Standby Rudder Power Control Unit Detail Visual Inspection TASK 27-21-24-210-802			602	SIA ALL
RUDDER PEDALS - REMOVAL/INSTALLATION	27-21-31		401	SIA ALL
Rudder Pedals Removal TASK 27-21-31-000-801			401	SIA ALL
Rudder Pedals Installation TASK 27-21-31-400-801			414	SIA ALL
RUDDER PEDAL ADJUSTMENT CRANK - REMOVAL/INSTALLATION	27-21-41		401	SIA ALL
Rudder Pedal Adjustment Crank Removal TASK 27-21-41-000-801			401	SIA ALL
Rudder Pedal Adjustment Crank Installation TASK 27-21-41-400-801			407	SIA ALL
RUDDER FORWARD QUADRANT - REMOVAL/INSTALLATION	27-21-51		401	SIA ALL
Rudder Forward Quadrant Removal TASK 27-21-51-000-801			401	SIA ALL
Rudder Forward Quadrant Installation TASK 27-21-51-400-801			416	SIA ALL
RUDDER FORWARD QUADRANT - INSPECTION/CHECK	27-21-51		601	SIA ALL
Rudder Mechanical Control Path Inspection TASK 27-21-51-210-801			601	SIA ALL

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RUDDER AFT QUADRANT - REMOVAL/INSTALLATION	27-21-61		401	SIA ALL
Rudder Aft Quadrant Removal TASK 27-21-61-000-801			401	SIA ALL
Rudder Aft Quadrant Installation TASK 27-21-61-400-801			409	SIA ALL
RUDDER AFT QUADRANT - INSPECTION/CHECK	27-21-61		601	SIA ALL
Rudder Aft Quadrant Detail Visual Inspection TASK 27-21-61-210-801			601	SIA ALL
Rudder Aft Quadrant General Visual Inspection TASK 27-21-61-210-802			606	SIA ALL
RUDDER CONTROL TORQUE TUBE - REMOVAL/INSTALLATION	27-21-71		401	SIA ALL
Rudder Control Torque Tube Removal TASK 27-21-71-000-801			401	SIA ALL
Rudder Control Torque Tube Installation TASK 27-21-71-400-801			406	SIA ALL
RUDDER FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION	27-21-82		401	SIA ALL
Rudder Feel and Centering Unit Removal TASK 27-21-82-000-801			401	SIA ALL
Rudder Feel and Centering Unit Installation TASK 27-21-82-400-801			409	SIA ALL
Rudder Feel and Centering Unit Spring Assembly Removal TASK 27-21-82-000-802			412	SIA ALL
Rudder Feel and Centering Unit Spring Assembly Installation TASK 27-21-82-400-802			416	SIA ALL
RUDDER FEEL AND CENTERING UNIT SPRING ASSEMBLY - INSPECTION/CHECK	27-21-82		601	SIA ALL
Rudder Feel and Centering Unit Inner Spring - Inspection TASK 27-21-82-211-801			601	SIA ALL

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RUDDER TRIM ACTUATOR - REMOVAL/INSTALLATION	27-21-87		401	SIA ALL
Rudder Trim Actuator Removal TASK 27-21-87-000-801			401	SIA ALL
Rudder Trim Actuator Installation TASK 27-21-87-400-801			405	SIA ALL
MAIN RUDDER POWER CONTROL UNIT - REMOVAL/INSTALLATION	27-21-91		401	SIA ALL
Main Rudder Power Control Unit Removal TASK 27-21-91-000-801			401	SIA ALL
Main Rudder Power Control Unit Installation TASK 27-21-91-400-801			410	SIA ALL
Main Rudder PCU Load Limiter Solenoid Valve Removal TASK 27-21-91-000-802			415	SIA ALL
Main Rudder PCU Load Limiter Solenoid Valve Installation TASK 27-21-91-400-802			419	SIA ALL
STANDBY RUDDER POWER CONTROL UNIT SHUTOFF VALVE - MAINTENANCE PRACTICES	27-21-94		201	SIA ALL
Rudder Valve Motor Removal TASK 27-21-94-000-801			201	SIA ALL
Rudder Valve Motor Installation TASK 27-21-94-400-801			207	SIA ALL
Standby Rudder PCU Shutoff Valve Removal TASK 27-21-94-000-802			208	SIA ALL
Standby Rudder PCU Shutoff Valve Installation TASK 27-21-94-400-802			210	SIA ALL
Standby Rudder PCU Shutoff Valve Installation Test TASK 27-21-94-710-801			211	SIA ALL
RUDDER HYDRAULIC FUSE - REMOVAL/INSTALLATION	27-21-95		401	SIA ALL
Rudder Hydraulic Fuse Removal TASK 27-21-95-000-801			401	SIA ALL

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Rudder Hydraulic Fuse Installation TASK 27-21-95-400-801			404	SIA ALL
ELEVATOR AND TAB CONTROL SYSTEM - MAINTENANCE PRACTICES	27-31-00		201	SIA ALL
Elevator Hydraulic System A and B - Pressurization TASK 27-31-00-800-801			201	SIA ALL
Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization TASK 27-31-00-840-801			205	SIA ALL
Pressure from the Elevator Hydraulic Systems A and B Removal TASK 27-31-00-800-802			205	SIA ALL
Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal TASK 27-31-00-840-802			210	SIA ALL
Null Procedure - Mach Trim Actuator TASK 27-31-00-700-801			211	SIA ALL
Elevator Control Pushrod - Detailed Visual Inspection TASK 27-31-00-200-801			214	SIA ALL
Elevator Feel and Centering Unit Detailed Inspection TASK 27-31-00-200-802			215	SIA ALL
Elevator Feel and Centering Unit Output Rod - Detailed Visual Inspection TASK 27-31-00-211-801			218	SIA ALL
Elevator Tab and Tab Mechanism - Detailed Visual Inspection TASK 27-31-00-220-801			221	SIA ALL
Elevator and Tab Control System - Deactivation TASK 27-31-00-000-801			234	SIA ALL
Elevator and Tab Control System - Activation TASK 27-31-00-400-801			239	SIA ALL

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ELEVATOR AND ELEVATOR TRIM CONTROL SYSTEM - ADJUSTMENT/TEST	27-31-00		501	SIA ALL
Elevator and Elevator Trim Control System - Operational Test TASK 27-31-00-710-801			502	SIA ALL
Elevator Tab Control System - Operational Test TASK 27-31-00-700-802			503	SIA ALL
Elevator Control Column Override - Operational Test TASK 27-31-00-710-802			505	SIA ALL
Elevator Control Column Override - Functional Test TASK 27-31-00-720-801			506	SIA ALL
Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment TASK 27-31-00-820-801			511	SIA ALL
Pitch Force Transducer Operational Test TASK 27-31-00-710-805			520	SIA ALL
Elevator Control Pushrods - Adjustment TASK 27-31-00-820-802			523	SIA ALL
Input Rods of the Elevator Power Control Unit - Adjustment TASK 27-31-00-820-803			531	SIA ALL
Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment TASK 27-31-00-820-804			536	SIA ALL
Elevator Tab Pushrods - Adjustment TASK 27-31-00-820-805			543	SIA ALL
Input Rod of the Elevator Feel Computer - Adjustment TASK 27-31-00-820-806			553	SIA ALL
Elevator Surface Friction and Balance - Test TASK 27-31-00-700-803			557	SIA ALL
Elevator Balance Panels - Test TASK 27-31-00-700-804			560	SIA ALL

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Elevator Travel Limit - Test TASK 27-31-00-700-805			561	SIA ALL
Elevator Output Torque Tube Buss Linkage Test TASK 27-31-00-700-806			564	SIA ALL
Elevator Tab Linkage - Test TASK 27-31-00-700-807			567	SIA ALL
Manual Mode - Test TASK 27-31-00-700-808			573	SIA ALL
Control Column Travel and Centering - Test TASK 27-31-00-700-809			575	SIA ALL
Control Column Power Force - Test TASK 27-31-00-700-810			581	SIA ALL
Neutral Shift - Test TASK 27-31-00-700-811			584	SIA ALL
Feel Differential Pressure Light - Test TASK 27-31-00-700-812			588	SIA ALL
Pitot System Leak - Test TASK 27-31-00-790-801			590	SIA ALL
Feel Force System - Test TASK 27-31-00-700-813			596	SIA ALL
Sensor Null - Test TASK 27-31-00-700-814			598.5	SIA ALL
Elevator Power Control Unit (PCU) Input Rod (Pogo) - Functional Test TASK 27-31-00-820-807			598.7	SIA ALL
Elevator Power-Off Flight Test TASK 27-31-00-710-803			598.12	SIA ALL
Elevator Tab Pushrod - Adjustment after the Elevator Power-Off Flight Test TASK 27-31-00-820-808			598.27	SIA ALL
Elevator Jam Landing Assist - Test TASK 27-31-00-710-804			598.33	SIA ALL
ELEVATOR - REMOVAL/INSTALLATION	27-31-11		401	SIA ALL
Elevator - Removal TASK 27-31-11-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Elevator - Installation TASK 27-31-11-400-801			424	SIA ALL
Elevator Control Pushrod - Removal TASK 27-31-11-000-802			434	SIA ALL
Elevator Control Pushrod - Installation TASK 27-31-11-400-802			442	SIA ALL
ELEVATOR POWER CONTROL UNIT - REMOVAL/INSTALLATION	27-31-14		401	SIA ALL
Elevator Power Control Unit - Removal TASK 27-31-14-000-801			401	SIA ALL
Elevator Power Control Unit Installation TASK 27-31-14-400-801			411	SIA ALL
ELEVATOR POWER CONTROL UNIT - INSPECTION/CHECK	27-31-14		601	SIA ALL
Elevator Power Control Unit Visual Inspection TASK 27-31-14-210-801			601	SIA ALL
Elevator Power Control Unit - Inspection TASK 27-31-14-200-801			605	SIA ALL
ELEVATOR PITOT-STATIC SYSTEM - MAINTENANCE PRACTICES	27-31-17		201	SIA ALL
Elevator Pitot-Static System Flushing TASK 27-31-17-170-801			201	SIA ALL
Elevator Pitot-Static System Drainage - Inspection TASK 27-31-17-200-801			208	SIA ALL
Elevator Pitot Probe - Inspection TASK 27-31-17-200-802			209	SIA ALL
Elevator Pitot System Leak - Test TASK 27-31-17-790-801			210	SIA ALL
Elevator Pitot System - Pressurization TASK 27-31-17-780-801			214	SIA ALL
ELEVATOR FEEL SHIFT MODULE - REMOVAL/INSTALLATION	27-31-20		401	SIA ALL
Elevator Feel Shift Module Removal TASK 27-31-20-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Elevator Feel Shift Module - Installation TASK 27-31-20-400-801			406	SIA ALL
ELEVATOR FEEL SHIFT MODULE - ADJUSTMENT/TEST	27-31-20		501	SIA ALL
Elevator Feel Shift Module - Test TASK 27-31-20-740-801			501	SIA ALL
ELEVATOR TAB - REMOVAL/INSTALLATION	27-31-31		401	SIA ALL
Elevator Tab Removal TASK 27-31-31-000-801			401	SIA ALL
Elevator Tab Installation TASK 27-31-31-400-801			410	SIA ALL
ELEVATOR AND ELEVATOR TAB FREEPLAY - INSPECTION/CHECK	27-31-32		601	SIA ALL
Elevator Output Torque Tube Buss Linkage Freeplay - Check TASK 27-31-32-200-801			601	SIA ALL
Elevator Tab Freeplay - Check TASK 27-31-32-200-802			607	SIA ALL
ELEVATOR TAB CONTROL MECHANISM - REMOVAL/INSTALLATION	27-31-34		401	SIA ALL
Elevator Tab Control Mechanism - Removal TASK 27-31-34-000-801			401	SIA ALL
Elevator Tab Control Mechanism - Installation TASK 27-31-34-400-801			415	SIA ALL
Elevator Tab Pushrod - Removal TASK 27-31-34-000-802			419	SIA ALL
Elevator Tab Pushrod - Installation TASK 27-31-34-400-802			423	SIA ALL
Elevator Tab Lock Actuator - Removal TASK 27-31-34-000-803			426	SIA ALL
Elevator Tab Lock Actuator - Installation TASK 27-31-34-400-803			430	SIA ALL
Elevator Tab Control Mechanism Springs - Removal TASK 27-31-34-000-804			431	SIA ALL

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Elevator Tab Control Mechanism Springs - Installation TASK 27-31-34-400-804			437	SIA ALL
ELEVATOR TAB CONTROL MECHANISM - INSPECTION/CHECK	27-31-34		601	SIA ALL
Elevator Balance Weight Installation and Elevator Tab Control Mechanism - General Visual Inspection TASK 27-31-34-210-801			601	SIA ALL
ELEVATOR TAB CONTROL VALVE - REMOVAL/INSTALLATION	27-31-35		401	SIA ALL
Elevator Tab Control Valve - Removal TASK 27-31-35-000-801			401	SIA ALL
Elevator Tab Control Valve - Installation TASK 27-31-35-400-801			405	SIA ALL
ELEVATOR FEEL COMPUTER - MAINTENANCE PRACTICES	27-31-37		201	SIA ALL
Elevator Feel Computer Solenoid Valve - Removal TASK 27-31-37-000-802			201	SIA ALL
Elevator Feel Computer Solenoid Valve - Installation TASK 27-31-37-400-802			204	SIA ALL
ELEVATOR FEEL COMPUTER - REMOVAL/INSTALLATION	27-31-37		401	SIA ALL
Elevator Feel Computer Removal TASK 27-31-37-000-801			401	SIA ALL
Elevator Feel Computer Installation TASK 27-31-37-400-801			408	SIA ALL
ELEVATOR FEEL COMPUTER - INSPECTION/CHECK	27-31-37		601	SIA ALL
Elevator Feel Computer Leakage Check TASK 27-31-37-200-801			601	SIA ALL
Elevator Feel Computer Solenoid Valve Inspection TASK 27-31-37-200-802			603	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
ELEVATOR BALANCE PANEL - REMOVAL/INSTALLATION	27-31-41		401	SIA ALL
Elevator Balance Panel - Removal TASK 27-31-41-000-801			401	SIA ALL
Elevator Balance Panel - Installation TASK 27-31-41-400-801			409	SIA ALL
ELEVATOR BALANCE PANEL - INSPECTION/CHECK	27-31-41		601	SIA ALL
Elevator Balance Panel - Inspection TASK 27-31-41-200-801			601	SIA ALL
CONTROL COLUMN - REMOVAL/INSTALLATION	27-31-51		401	SIA ALL
Control Column - Removal TASK 27-31-51-000-801			401	SIA ALL
Control Column - Installation TASK 27-31-51-400-801			411	SIA ALL
CONTROL COLUMN SUPPORT BEARING - REMOVAL/INSTALLATION	27-31-54		401	SIA ALL
Control Column Support Bearing Removal TASK 27-31-54-000-801			401	SIA ALL
Control Column Support Bearing Installation TASK 27-31-54-400-801			410	SIA ALL
ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY - REMOVAL/INSTALLATION	27-31-61		401	SIA ALL
Elevator Forward Control Quadrant Assembly Removal TASK 27-31-61-000-801			401	SIA ALL
Elevator Forward Control Quadrant Assembly Installation TASK 27-31-61-400-801			412	SIA ALL
ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY - INSPECTION/CHECK	27-31-61		601	SIA ALL
Elevator Mechanical Control Path - Inspection TASK 27-31-61-210-801			601	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
ELEVATOR FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION	27-31-64		401	SIA ALL
Elevator Feel and Centering Unit Removal TASK 27-31-64-000-801			401	SIA ALL
Elevator Feel and Centering Unit Installation TASK 27-31-64-400-801			406	SIA ALL
Elevator Feel and Centering Unit Spring Removal TASK 27-31-64-000-802			408	SIA ALL
Elevator Feel and Centering Unit Spring Installation TASK 27-31-64-400-802			414	SIA ALL
ELEVATOR FEEL AND CENTERING UNIT - INSPECTION/CHECK	27-31-64		601	SIA ALL
Elevator Feel and Centering Unit Inspection TASK 27-31-64-200-801			601	SIA ALL
ELEVATOR FEEL ACTUATOR - REMOVAL/INSTALLATION	27-31-67		401	SIA ALL
Elevator Feel Actuator Removal TASK 27-31-67-000-801			401	SIA ALL
Elevator Feel Actuator Installation TASK 27-31-67-400-801			405	SIA ALL
ELEVATOR FEEL ACTUATOR - DIFFERENTIAL PRESSURE TEST	27-31-67		501	SIA ALL
Elevator Feel Actuator - Differential Pressure Test TASK 27-31-67-700-801			501	SIA ALL
ELEVATOR INPUT TORQUE TUBE - REMOVAL/INSTALLATION	27-31-71		401	SIA ALL
Elevator Input Torque Tube Removal TASK 27-31-71-000-801			401	SIA ALL
Elevator Input Torque Tube Installation TASK 27-31-71-400-801			411	SIA ALL
ELEVATOR OUTPUT TORQUE TUBE - REMOVAL/INSTALLATION	27-31-74		401	SIA ALL
Elevator Output Torque Tube Removal TASK 27-31-74-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Elevator Output Torque Tube Installation TASK 27-31-74-400-801			407	SIA ALL
ELEVATOR INDEX PLATE - REMOVAL/INSTALLATION	27-31-81		401	SIA ALL
Elevator Index Plate Removal TASK 27-31-81-000-801			401	SIA ALL
Elevator Index Plate Installation TASK 27-31-81-400-801			407	SIA ALL
ELEVATOR NEUTRAL SHIFT MECHANISM - REMOVAL/INSTALLATION	27-31-91		401	SIA ALL
Elevator Neutral Shift Mechanism Removal TASK 27-31-91-000-801			401	SIA ALL
Elevator Neutral Shift Mechanism Installation TASK 27-31-91-400-801			411	SIA ALL
ELEVATOR NEUTRAL SHIFT MECHANISM - INSPECTION/CHECK	27-31-91		601	SIA ALL
Elevator Neutral Shift Mechanism - Inspection TASK 27-31-91-200-801			601	SIA ALL
FEEL SYSTEM PITOT PROBE - REMOVAL/INSTALLATION	27-31-94		401	SIA ALL
Feel System Pitot Probe Removal TASK 27-31-94-000-801			401	SIA ALL
Feel System Pitot Probe Installation TASK 27-31-94-400-801			407	SIA ALL
STALL WARNING SYSTEM - ADJUSTMENT/TEST	27-32-00		501	SIA ALL
Stall Warning System - Operational Test TASK 27-32-00-710-801			501	SIA ALL
Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults TASK 27-32-00-740-801			501	SIA ALL
Stall Management Yaw Damper (SMYD) BITE Test - Fault History TASK 27-32-00-740-802			506	SIA ALL
Stall Management Yaw Damper (SMYD) BITE Test TASK 27-32-00-740-803			507	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
STALL WARNING TEST MODULE - REMOVAL/INSTALLATION	27-32-21		401	SIA ALL
Stall Warning Test Module Removal TASK 27-32-21-000-801			401	SIA ALL
Stall Warning Test Module Installation TASK 27-32-21-400-801			403	SIA ALL
CONTROL COLUMN SHAKER - REMOVAL/INSTALLATION	27-32-31		401	SIA ALL
Control Column Shaker Removal TASK 27-32-31-000-801			401	SIA ALL
Control Column Shaker Installation TASK 27-32-31-400-801			404	SIA ALL
STALL MANAGEMENT YAW DAMPER (SMYD) - REMOVAL/INSTALLATION	27-32-42		401	SIA ALL
Stall Management Yaw Damper (SMYD) Removal TASK 27-32-42-000-801			401	SIA ALL
Stall Management Yaw Damper (SMYD) Installation TASK 27-32-42-400-801			405	SIA ALL
HORIZONTAL STABILIZER TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES	27-41-00		201	SIA ALL
Horizontal Stabilizer Trim Control System - Deactivation TASK 27-41-00-800-801			201	SIA ALL
Horizontal Stabilizer Trim Control System - Activation TASK 27-41-00-800-802			204	SIA ALL
HORIZONTAL STABILIZER TRIM CONTROL SYSTEM - ADJUSTMENT/TEST	27-41-00		501	SIA ALL
Stabilizer Control Cable and Chain - Adjustment TASK 27-41-00-820-801			501	SIA ALL
Stabilizer Manual Trim and Trim Indicator - Test TASK 27-41-00-700-801			517	SIA ALL
Horizontal Stabilizer Trim Control System Friction Test TASK 27-41-00-700-802			522	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Stabilizer Electric Trim System Test TASK 27-41-00-700-803			525	SIA ALL
Stabilizer Trim Wheel Free Movement Test TASK 27-41-00-700-804			529	SIA ALL
Stabilizer Trim Limit Switches Test TASK 27-41-00-700-805			531	SIA ALL
Stabilizer Clutch Friction System Test TASK 27-41-00-700-806			538	SIA ALL
Column Actuated Stabilizer Trim Cutout Switch Override Test TASK 27-41-00-700-807			539	SIA ALL
Stabilizer Trim Secondary Brake System Test TASK 27-41-00-700-808			541	SIA ALL
Stabilizer Trim Cutout Test TASK 27-41-00-700-809			546	SIA ALL
Column Cutout Switches Test TASK 27-41-00-710-801			548	SIA ALL
HORIZONTAL STABILIZER - REMOVAL/INSTALLATION	27-41-11		401	SIA ALL
Horizontal Stabilizer Removal TASK 27-41-11-000-801			401	SIA ALL
Horizontal Stabilizer Installation TASK 27-41-11-400-801			418	SIA ALL
HORIZONTAL STABILIZER LEADING EDGE - REMOVAL/INSTALLATION	27-41-21		401	SIA ALL
Horizontal Stabilizer Leading Edge Removal TASK 27-41-21-000-801			401	SIA ALL
Horizontal Stabilizer Leading Edge Installation TASK 27-41-21-400-801			403	SIA ALL
HORIZONTAL STABILIZER CENTER SECTION HINGE FITTING - REMOVAL/INSTALLATION	27-41-31		401	SIA ALL
Horizontal Stabilizer Center Section Hinge Fitting Removal TASK 27-41-31-000-801			401	SIA ALL

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Horizontal Stabilizer Center Section Hinge Fitting Installation TASK 27-41-31-400-801			419	SIA ALL
STABILIZER FORWARD CONTROL MECHANISM - REMOVAL/INSTALLATION	27-41-41		401	SIA ALL
Stabilizer Forward Control Mechanism Removal TASK 27-41-41-000-801			401	SIA ALL
Stabilizer Forward Control Mechanism - Installation TASK 27-41-41-400-801			410	SIA ALL
STABILIZER FORWARD CONTROL MECHANISM - INSPECTION/CHECK	27-41-41		601	SIA ALL
Stabilizer Control Mechanism Detail Visual Inspection TASK 27-41-41-210-801			601	SIA ALL
Upper and Lower Stabilizer Trim Forward Mechanism Retention Turnbuckles and Turnbuckle Attachment Points Detail Visual Inspection TASK 27-41-41-210-802			603	SIA ALL
Stabilizer Forward Trim Control Mechanism Inspection TASK 27-41-41-210-803			603	SIA ALL
COLUMN CUTOUT SWITCH - REMOVAL/INSTALLATION	27-41-51		401	SIA ALL
Column Cutout Switch Removal TASK 27-41-51-000-801			401	SIA ALL
Column Cutout Switch Installation TASK 27-41-51-400-801			406	SIA ALL
HORIZONTAL STABILIZER TRIM CONTROL WHEEL - REMOVAL/INSTALLATION	27-41-61		401	SIA ALL
Stabilizer Trim Control Wheel Removal TASK 27-41-61-010-801			401	SIA ALL
Stabilizer Trim Control Wheel Installation TASK 27-41-61-410-801			404	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
STABILIZER TRIM MOTOR - REMOVAL/INSTALLATION	27-41-71		401	SIA ALL
Stabilizer Trim Motor Removal TASK 27-41-71-000-801			401	SIA ALL
Stabilizer Trim Motor Installation TASK 27-41-71-400-801			405	SIA ALL
STABILIZER TRIM MOTOR - ADJUSTMENT/TEST	27-41-71		501	SIA ALL
Stabilizer Trim Motor Test TASK 27-41-71-700-801			501	SIA ALL
STABILIZER BALL NUT AND JACKSCREW GEARBOX - REMOVAL/INSTALLATION	27-41-81		401	SIA ALL
Stabilizer Ball Nut and Jackscrew Gearbox Removal TASK 27-41-81-000-801			401	SIA ALL
Stabilizer Ball Nut and Jackscrew Gearbox Installation TASK 27-41-81-400-801			418	SIA ALL
STABILIZER BALL NUT AND JACKSCREW GEARBOX - INSPECTION/CHECK	27-41-81		601	SIA ALL
Stabilizer Trim Ball Nut and Jackscrew Gearbox Detail Visual Inspection TASK 27-41-81-210-801			601	SIA ALL
Stabilizer Jackscrew Gearbox Backlash Inspection TASK 27-41-81-210-802			607	SIA ALL
Upper and Lower Gimbal Wear Limits Inspection TASK 27-41-81-200-801			611	SIA ALL
STABILIZER CONTROL CABLE - REMOVAL/INSTALLATION	27-41-82		401	SIA ALL
Stabilizer Control Cable Removal TASK 27-41-82-000-801			401	SIA ALL
Stabilizer Control Cable Installation TASK 27-41-82-400-801			415	SIA ALL

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STABILIZER TRIM CUTOUT SWITCHES - REMOVAL/INSTALLATION	27-41-91		401	SIA ALL
Stabilizer Trim Cutout Switch Removal TASK 27-41-91-000-801			401	SIA ALL
Stabilizer Trim Cutout Switch Installation TASK 27-41-91-400-801			403	SIA ALL
STABILIZER TRIM CUTOUT SWITCHES - ADJUSTMENT/TEST	27-41-91		501	SIA ALL
Primary Stabilizer Trim Cutout Switch Test TASK 27-41-91-700-801			501	SIA ALL
Back Up Stabilizer Trim Cutout Switch Test TASK 27-41-91-700-802			502	SIA ALL
STABILIZER TRIM LIMIT SWITCHES - REMOVAL/INSTALLATION	27-41-94		401	SIA ALL
Stabilizer Trim Limit Switch Removal TASK 27-41-94-000-801			401	SIA ALL
Stabilizer Trim Limit Switch Installation TASK 27-41-94-400-801			406	SIA ALL
STABILIZER TRIM LIMIT SWITCHES - ADJUSTMENT/TEST	27-41-94		501	SIA ALL
Stabilizer Trim Limit Switches Adjustment TASK 27-41-94-820-801			501	SIA ALL
Stabilizer Trim Limit Switches Test TASK 27-41-94-700-801			509	SIA ALL
STABILIZER TRIM CONTROL SWITCH - REMOVAL/INSTALLATION	27-41-97		401	SIA ALL
Stabilizer Trim Control Switch Removal TASK 27-41-97-000-801			401	SIA ALL
Stabilizer Trim Control Switch Installation TASK 27-41-97-400-801			405	SIA ALL
STABILIZER TRIM CONTROL SWITCH - ADJUSTMENT/TEST	27-41-97		501	SIA ALL
Stabilizer Trim Control Switch Test TASK 27-41-97-700-801			501	SIA ALL

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TRAILING EDGE FLAP SYSTEM - MAINTENANCE PRACTICES	27-51-00		201	SIA ALL
Trailing Edge Flap System Deactivation TASK 27-51-00-040-801			201	SIA ALL
Trailing Edge Flap System Reactivation TASK 27-51-00-440-801			208	SIA ALL
Trailing Edge Flap System Operation With Primary Control TASK 27-51-00-860-801			209	SIA ALL
Trailing Edge Flap System Operation With Alternate Control TASK 27-51-00-860-802			212	SIA ALL
Trailing Edge Flap System Manual Operation TASK 27-51-00-980-801			213	SIA ALL
Extend the Trailing Edge Flaps TASK 27-51-00-860-803			218	SIA ALL
Retract the Trailing Edge Flaps TASK 27-51-00-860-804			218	SIA ALL
Trailing Edge Flap System Operation With Leading Edge Flaps and Slats Disabled TASK 27-51-00-860-805			219	SIA ALL
Flap Control Handle Lockout Assembly Removal TASK 27-51-00-000-801			232	SIA ALL
Flap Control Handle Lockout Assembly Installation TASK 27-51-00-400-801			232	SIA ALL
TRAILING EDGE FLAP SYSTEM - ADJUSTMENT/TEST	27-51-00		501	SIA ALL
Trailing Edge Flap System Operational Test TASK 27-51-00-710-801			501	SIA ALL
Trailing Edge Flap Control System Adjustment and Test TASK 27-51-00-820-801			510	SIA ALL
Trailing Edge Flap Drive System Adjustment TASK 27-51-00-820-802			531	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Trailing Edge Flap System Test TASK 27-51-00-730-801			542	SIA ALL
FSEU Display and Existing Faults Test TASK 27-51-00-740-801			550	SIA ALL
Trailing Edge Flap Asymmetry Skew System BITE Test TASK 27-51-00-740-802			554	SIA ALL
Trailing Edge Flap Load Relief System BITE Test TASK 27-51-00-740-803			558	SIA ALL
Flap Priority Valve Test TASK 27-51-00-720-801			560	SIA ALL
Flap Control Lever Force Test TASK 27-51-00-720-802			561	SIA ALL
Flap Control Lever Feel Test TASK 27-51-00-720-805			563	SIA ALL
Alternate Flap Control System Functional Test TASK 27-51-00-720-803			564	SIA ALL
Transmission No-Back Brake Operational Test TASK 27-51-00-710-802			566	SIA ALL
Trailing Edge Flap Load Relief System Functional Test TASK 27-51-00-720-804			569	SIA ALL
TRAILING EDGE FLAP SYSTEM - INSPECTION/CHECK	27-51-00		601	SIA ALL
Trailing Edge Flap Drive System Inspection TASK 27-51-00-210-801			601	SIA ALL
Trailing Edge Flap Actuation System Inspection TASK 27-51-00-210-802			610	SIA ALL
FLAP/SLAT ELECTRONICS UNIT (FSEU) - REMOVAL/INSTALLATION	27-51-01		401	SIA ALL
Flap/Slat Electronics Unit Removal TASK 27-51-01-000-801			401	SIA ALL
Flap/Slat Electronics Unit Installation TASK 27-51-01-400-801			404	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
TRAILING EDGE FLAP BYPASS VALVE - REMOVAL/INSTALLATION	27-51-02		401	SIA ALL
Trailing Edge Flap Bypass Valve Assembly Removal TASK 27-51-02-000-801			401	SIA ALL
Trailing Edge Flap Bypass Valve Assembly Installation TASK 27-51-02-400-801			407	SIA ALL
Trailing Edge Flap Bypass Valve Motor Removal TASK 27-51-02-000-803			409	SIA ALL
Trailing Edge Flap Bypass Valve Motor Installation TASK 27-51-02-400-803			410	SIA ALL
TRAILING EDGE FLAP BYPASS VALVE - ADJUSTMENT/TEST	27-51-02		501	SIA ALL
Trailing Edge Flap Bypass Valve Functional Test TASK 27-51-02-720-801			501	SIA ALL
FLAP PRIORITY VALVE - REMOVAL/INSTALLATION	27-51-04		401	SIA ALL
Flap Priority Valve Removal TASK 27-51-04-000-801			401	SIA ALL
Flap Priority Valve Installation TASK 27-51-04-400-801			405	SIA ALL
FLAP CONTROL LEVER POSITION SENSOR - MAINTENANCE PRACTICES	27-51-06		201	SIA ALL
Flap Control Lever Position Sensor Removal TASK 27-51-06-000-801			201	SIA ALL
Flap Control Lever Position Sensor Installation TASK 27-51-06-400-801			206	SIA ALL
Flap Control Lever Position Sensor Adjustment and Test TASK 27-51-06-820-801			207	SIA ALL
Flap Control Lever Position Sensor System Test TASK 27-51-06-730-801			212	SIA ALL
Flap Control Lever Position Sensor and Mechanism Detailed Visual Inspection TASK 27-51-06-210-801			213	SIA ALL

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FLAP LEVER POSITION SWITCHES - REMOVAL/INSTALLATION	27-51-08		401	SIA ALL
Flap Lever Position Switch Removal TASK 27-51-08-000-801			401	SIA ALL
Flap Lever Position Switch Installation TASK 27-51-08-400-801			408	SIA ALL
FLAP LEVER POSITION SWITCHES - ADJUSTMENT/TEST	27-51-08		501	SIA ALL
Flap Lever Position Switch Adjustment TASK 27-51-08-820-801			501	SIA ALL
INBOARD TRAILING EDGE FLAP - REMOVAL/INSTALLATION	27-51-11		401	SIA ALL
Inboard Trailing Edge Flap Removal TASK 27-51-11-000-801			401	SIA ALL
Inboard Trailing Edge Flap Installation TASK 27-51-11-400-801			413	SIA ALL
Inboard Trailing Edge Flap Bullnose Seal Removal TASK 27-51-11-000-802			423	SIA ALL
Inboard Trailing Edge Flap Bullnose Seal Installation TASK 27-51-11-400-802			423	SIA ALL
Inboard Trailing Edge Flap Outer Seal Removal TASK 27-51-11-000-803			426	SIA ALL
Inboard Trailing Edge Flap Outer Seal Installation TASK 27-51-11-400-803			429	SIA ALL
INBOARD TRAILING EDGE FLAP - ADJUSTMENT/TEST	27-51-11		501	SIA ALL
Inboard Trailing Edge Flap Adjustment TASK 27-51-11-820-801			501	SIA ALL
INBOARD AFT FLAP - REMOVAL/INSTALLATION	27-51-12		401	SIA ALL
Inboard Aft Flap Removal TASK 27-51-12-000-801			401	SIA ALL
Inboard Aft Flap Installation TASK 27-51-12-400-801			408	SIA ALL

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INBOARD AFT FLAP - INSPECTION/CHECK	27-51-12		601	SIA ALL
Inboard Aft Flap Inspection TASK 27-51-12-200-801			601	SIA ALL
INBOARD FLAP CARRIAGES - REMOVAL/INSTALLATION	27-51-13		401	SIA ALL
Inboard Flap Carriage Removal (Selection) TASK 27-51-13-000-801			401	SIA ALL
Inboard Flap Carriage Installation (Selection) TASK 27-51-13-400-801			401	SIA ALL
Inboard Flap Outboard Carriage Removal TASK 27-51-13-000-802			402	SIA ALL
Inboard Flap Outboard Carriage Installation TASK 27-51-13-400-802			405	SIA ALL
Inboard Flap Inboard Carriage Removal TASK 27-51-13-000-803			406	SIA ALL
Inboard Flap Inboard Carriage Installation TASK 27-51-13-400-803			411	SIA ALL
INBOARD FLAP CARRIAGES - INSPECTION/CHECK	27-51-13		601	SIA ALL
Inboard Flap Carriage Inspection (Selection) TASK 27-51-13-200-801			601	SIA ALL
Inboard Flap Outboard Carriage Inspection TASK 27-51-13-200-802			601	SIA ALL
Inboard Flap Inboard Carriage Inspection TASK 27-51-13-200-803			606	SIA ALL
INBOARD AFT FLAP ACTUATING MECHANISM - REMOVAL/INSTALLATION	27-51-14		401	SIA ALL
Inboard Aft Flap Actuating Mechanism Removal TASK 27-51-14-000-801			401	SIA ALL
Inboard Aft Flap Actuating Mechanism Installation TASK 27-51-14-400-801			409	SIA ALL
INBOARD FLAP TRACKS - REMOVAL/INSTALLATION	27-51-15		401	SIA ALL
Inboard Flap Track Removal (Selection) TASK 27-51-15-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Inboard Flap Track Installation (Selection) TASK 27-51-15-400-801			401	SIA ALL
Inboard Flap Outboard Track Removal TASK 27-51-15-000-802			401	SIA ALL
Inboard Flap Outboard Track Installation TASK 27-51-15-400-802			409	SIA ALL
Inboard Flap Inboard Track Removal TASK 27-51-15-000-803			413	SIA ALL
Inboard Flap Inboard Track Installation TASK 27-51-15-400-803			421	SIA ALL
INBOARD FLAP TRACKS - INSPECTION/CHECK	27-51-15		601	SIA ALL
Inboard Flap Track Inspection (Selection) TASK 27-51-15-200-801			601	SIA ALL
Inboard Flap Outboard Track Inspection TASK 27-51-15-200-802			601	SIA ALL
Inboard Flap Inboard Track Inspection TASK 27-51-15-200-803			605	SIA ALL
INBOARD AFT FLAP TRACKS - REMOVAL/INSTALLATION	27-51-16		401	SIA ALL
Inboard Aft Flap Track Removal TASK 27-51-16-000-801			401	SIA ALL
Inboard Aft Flap Track Installation TASK 27-51-16-400-801			404	SIA ALL
INBOARD FLAP SUPPORT FAIRING - REMOVAL/INSTALLATION	27-51-18		401	SIA ALL
Inboard Flap Support Fairing Removal (Selection) TASK 27-51-18-000-803			401	SIA ALL
Inboard Flap Support Fairing Installation (Selection) TASK 27-51-18-400-803			401	SIA ALL
Inboard Flap Support Forward Fairing Removal TASK 27-51-18-000-801			401	SIA ALL
Inboard Flap Support Forward Fairing Installation TASK 27-51-18-400-801			408	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Inboard Flap Support Aft Fairing Removal TASK 27-51-18-000-802			409	SIA ALL
Inboard Flap Support Aft Fairing Installation TASK 27-51-18-400-802			411	SIA ALL
INBOARD FLAP SUPPORT FAIRING - ADJUSTMENT/TEST	27-51-18		501	SIA ALL
Inboard Flap Support Fairing Adjustment TASK 27-51-18-820-801			501	SIA ALL
OUTBOARD TRAILING EDGE FLAP - REMOVAL/INSTALLATION	27-51-21		401	SIA ALL
Outboard Trailing Edge Flap Removal TASK 27-51-21-000-801			401	SIA ALL
Outboard Trailing Edge Flap Installation TASK 27-51-21-400-801			413	SIA ALL
Outboard Trailing Edge Flap Outer Seal Removal TASK 27-51-21-000-802			423	SIA ALL
Outboard Trailing Edge Flap Outer Seal Installation TASK 27-51-21-400-802			425	SIA ALL
OUTBOARD TRAILING EDGE FLAP - ADJUSTMENT/TEST	27-51-21		501	SIA ALL
Outboard Trailing Edge Flap Adjustment TASK 27-51-21-820-801			501	SIA ALL
OUTBOARD AFT FLAP - REMOVAL/INSTALLATION	27-51-22		401	SIA ALL
Outboard Aft Flap Removal TASK 27-51-22-000-801			401	SIA ALL
Outboard Aft Flap Installation TASK 27-51-22-400-801			411	SIA ALL
OUTBOARD AFT FLAP - INSPECTION/CHECK	27-51-22		601	SIA ALL
Outboard Aft Flap Inspection TASK 27-51-22-200-801			601	SIA ALL
OUTBOARD FLAP CARRIAGES - REMOVAL/INSTALLATION	27-51-23		401	SIA ALL
Outboard Flap Carriage Removal (Selection) TASK 27-51-23-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Outboard Flap Carriage Installation (Selection) TASK 27-51-23-400-801			401	SIA ALL
Outboard Flap Outboard Carriage Removal TASK 27-51-23-000-802			401	SIA ALL
Outboard Flap Outboard Carriage Installation TASK 27-51-23-400-802			408	SIA ALL
Outboard Flap Inboard Carriage Removal TASK 27-51-23-000-803			411	SIA ALL
Outboard Flap Inboard Carriage Installation TASK 27-51-23-400-803			418	SIA ALL
OUTBOARD FLAP CARRIAGES - INSPECTION/CHECK	27-51-23		601	SIA ALL
Outboard Flap Carriage Inspection (Selection) TASK 27-51-23-200-801			601	SIA ALL
Outboard Flap Outboard Carriage Inspection TASK 27-51-23-200-802			601	SIA ALL
Outboard Flap Inboard Carriage Inspection TASK 27-51-23-200-803			609	SIA ALL
OUTBOARD AFT FLAP ACTUATING MECHANISM - REMOVAL/INSTALLATION	27-51-24		401	SIA ALL
Outboard Aft Flap Actuating Mechanism Removal TASK 27-51-24-000-801			401	SIA ALL
Outboard Aft Flap Actuating Mechanism Installation TASK 27-51-24-400-801			406	SIA ALL
OUTBOARD FLAP TRACKS - REMOVAL/INSTALLATION	27-51-25		401	SIA ALL
Outboard Flap Track Removal (Selection) TASK 27-51-25-000-801			401	SIA ALL
Outboard Flap Track Installation (Selection) TASK 27-51-25-400-801			401	SIA ALL
Outboard Flap Outboard Track Removal TASK 27-51-25-000-802			402	SIA ALL
Outboard Flap Outboard Track Installation TASK 27-51-25-400-802			408	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Outboard Flap Inboard Track Removal TASK 27-51-25-000-803			410	SIA ALL
Outboard Flap Inboard Track Installation TASK 27-51-25-400-803			417	SIA ALL
OUTBOARD FLAP TRACKS - INSPECTION/CHECK	27-51-25		601	SIA ALL
Outboard Flap Track Inspection (Selection) TASK 27-51-25-200-801			601	SIA ALL
Outboard Flap Outboard Track Inspection TASK 27-51-25-200-802			601	SIA ALL
Outboard Flap Inboard Track Inspection TASK 27-51-25-200-803			606	SIA ALL
OUTBOARD AFT FLAP TRACKS - REMOVAL/INSTALLATION	27-51-26		401	SIA ALL
Outboard Aft Flap Track Removal TASK 27-51-26-000-801			401	SIA ALL
Outboard Aft Flap Track Installation TASK 27-51-26-400-801			412	SIA ALL
OUTBOARD FLAP SUPPORT FAIRINGS - REMOVAL/INSTALLATION	27-51-28		401	SIA ALL
Outboard Flap Support Fairings Removal (Selection) TASK 27-51-28-000-801			401	SIA ALL
Outboard Flap Support Fairings Installation (Selection) TASK 27-51-28-400-801			401	SIA ALL
Outboard Flap Outboard Support Forward Fairing Removal TASK 27-51-28-000-802			402	SIA ALL
Outboard Flap Outboard Support Forward Fairing Installation TASK 27-51-28-400-802			408	SIA ALL
Outboard Flap Outboard Support Aft Fairing Removal TASK 27-51-28-000-803			409	SIA ALL

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Outboard Flap Outboard Support Aft Fairing Installation TASK 27-51-28-400-803			411	SIA ALL
Outboard Flap Inboard Support Forward Fairing Removal TASK 27-51-28-000-804			415	SIA ALL
Outboard Flap Inboard Support Forward Fairing Installation TASK 27-51-28-400-804			422	SIA ALL
Outboard Flap Inboard Support Aft Fairing Removal TASK 27-51-28-000-805			423	SIA ALL
Outboard Flap Inboard Support Aft Fairing Installation TASK 27-51-28-400-805			425	SIA ALL
OUTBOARD FLAP SUPPORT FAIRINGS - ADJUSTMENT/TEST	27-51-28		501	SIA ALL
Outboard Flap Support Fairings Adjustment (Selection) TASK 27-51-28-800-801			501	SIA ALL
Outboard Flap Outboard Support Fairing Adjustment TASK 27-51-28-820-801			501	SIA ALL
Outboard Flap Inboard Support Fairing Adjustment TASK 27-51-28-820-802			510	SIA ALL
INBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION	27-51-31		401	SIA ALL
Inboard Flap Transmission Removal (Selection) TASK 27-51-31-000-801			401	SIA ALL
Inboard Flap Transmission Installation (Selection) TASK 27-51-31-400-801			401	SIA ALL
Inboard Flap Outboard Transmission Removal TASK 27-51-31-000-802			402	SIA ALL
Inboard Flap Outboard Transmission Installation TASK 27-51-31-400-802			407	SIA ALL

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Inboard Flap Inboard Transmission Removal TASK 27-51-31-000-803			409	SIA ALL
Inboard Flap Inboard Transmission Installation TASK 27-51-31-400-803			415	SIA ALL
INBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION	27-51-32		401	SIA ALL
Inboard Flap Ballscrew and Gimbal Removal (Selection) TASK 27-51-32-000-801			401	SIA ALL
Inboard Flap Ballscrew and Gimbal Installation (Selection) TASK 27-51-32-400-801			401	SIA ALL
Inboard Flap Outboard Ballscrew and Gimbal Removal TASK 27-51-32-000-802			402	SIA ALL
Inboard Flap Outboard Ballscrew and Gimbal Installation TASK 27-51-32-400-802			406	SIA ALL
Inboard Flap Inboard Ballscrew and Gimbal Removal TASK 27-51-32-000-803			408	SIA ALL
Inboard Flap Inboard Ballscrew and Gimbal Installation TASK 27-51-32-400-803			413	SIA ALL
INBOARD FLAP BALLSCREWS AND GIMBALS - INSPECTION/CHECK	27-51-32		601	SIA ALL
Inboard Flap Outboard Ballscrew Inspection TASK 27-51-32-220-801			601	SIA ALL
Inboard Flap Inboard Ballscrew Inspection TASK 27-51-32-220-802			607	SIA ALL
Inboard Flap Outboard Carriage Bushing and Gimbal Bushing Inspection TASK 27-51-32-200-801			613	SIA ALL
Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection TASK 27-51-32-200-802			617	SIA ALL

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Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection TASK 27-51-32-200-803			621	SIA ALL
Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection TASK 27-51-32-200-804			626	SIA ALL
OUTBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION	27-51-41		401	SIA ALL
Outboard Flap Transmission Removal (Selection) TASK 27-51-41-000-801			401	SIA ALL
Outboard Flap Transmission Installation (Selection) TASK 27-51-41-400-801			401	SIA ALL
Outboard Flap Outboard Transmission Removal TASK 27-51-41-000-802			402	SIA ALL
Outboard Flap Outboard Transmission Installation TASK 27-51-41-400-802			410	SIA ALL
Outboard Flap Inboard Transmission Removal TASK 27-51-41-000-803			414	SIA ALL
Outboard Flap Inboard Transmission Installation TASK 27-51-41-400-803			422	SIA ALL
OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION	27-51-42		401	SIA ALL
Outboard Flap Ballscrew and Gimbal Removal (Selection) TASK 27-51-42-000-801			401	SIA ALL
Outboard Flap Ballscrew and Gimbal Installation (Selection) TASK 27-51-42-400-801			401	SIA ALL
Outboard Flap Outboard Ballscrew and Gimbal Removal TASK 27-51-42-000-802			402	SIA ALL
Outboard Flap Outboard Ballscrew and Gimbal Installation TASK 27-51-42-400-802			408	SIA ALL

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Outboard Flap Inboard Ballscrew and Gimbal Removal TASK 27-51-42-000-803			410	SIA ALL
Outboard Flap Inboard Ballscrew and Gimbal Installation TASK 27-51-42-400-803			416	SIA ALL
OUTBOARD FLAP BALLSCREWS AND GIMBALS - INSPECTION/CHECK	27-51-42		601	SIA ALL
Outboard Flap Outboard Ballscrew Inspection TASK 27-51-42-220-801			601	SIA ALL
Outboard Flap Inboard Ballscrew Inspection TASK 27-51-42-220-802			607	SIA ALL
Outboard Flap Inboard Ballscrew Detailed Lubrication Inspection TASK 27-51-42-200-801			610	SIA ALL
Outboard Flap Outboard Ballscrew Detailed Lubrication Inspection TASK 27-51-42-200-802			615	SIA ALL
FLAP POWER DRIVE UNIT (PDU) - REMOVAL/INSTALLATION	27-51-51		401	SIA ALL
Flap Power Drive Unit (PDU) Removal TASK 27-51-51-000-801			401	SIA ALL
Flap Power Drive Unit (PDU) Installation TASK 27-51-51-400-801			409	SIA ALL
Flap Power Drive Unit Manual Drive Shearout Replacement TASK 27-51-51-960-801			413	SIA ALL
Flap Power Drive Unit (PDU) Seal Removal TASK 27-51-51-000-802			415	SIA ALL
Flap Power Drive Unit (PDU) Seal Installation TASK 27-51-51-400-802			421	SIA ALL
FLAP POWER DRIVE UNIT - ADJUSTMENT/TEST	27-51-51		501	SIA ALL
Flap Power Drive Unit Functional Test TASK 27-51-51-720-801			501	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
FLAP HYDRAULIC MOTOR - REMOVAL/INSTALLATION	27-51-52		401	SIA ALL
Flap Hydraulic Motor Removal TASK 27-51-52-000-801			401	SIA ALL
Flap Hydraulic Motor Installation TASK 27-51-52-400-801			405	SIA ALL
FLAP ELECTRIC MOTOR - REMOVAL/INSTALLATION	27-51-53		401	SIA ALL
Flap Electric Motor Removal TASK 27-51-53-000-801			401	SIA ALL
Flap Electric Motor Installation TASK 27-51-53-400-801			405	SIA ALL
TEE ANGLE GEARBOX - REMOVAL/INSTALLATION	27-51-55		401	SIA ALL
Tee Angle Gearbox Removal TASK 27-51-55-000-801			401	SIA ALL
Tee Angle Gearbox Installation TASK 27-51-55-400-801			405	SIA ALL
MLG BEAM ANGLE GEARBOX - REMOVAL/INSTALLATION	27-51-56		401	SIA ALL
Main Landing Gear Beam Angle Gearbox Removal TASK 27-51-56-000-801			401	SIA ALL
Main Landing Gear Beam Angle Gearbox Installation TASK 27-51-56-400-801			405	SIA ALL
SEAL RIB ANGLE GEARBOX - REMOVAL/INSTALLATION	27-51-57		401	SIA ALL
Seal Rib Angle Gearbox Removal TASK 27-51-57-000-801			401	SIA ALL
Seal Rib Angle Gearbox Installation TASK 27-51-57-400-801			404	SIA ALL
FLAP TORQUE TUBES - REMOVAL/INSTALLATION	27-51-58		401	SIA ALL
Flap Torque Tube Removal (Selection) TASK 27-51-58-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Flap Torque Tube Installation (Selection) TASK 27-51-58-400-801			402	SIA ALL
Outboard Wing Flap Torque Tube Removal TASK 27-51-58-000-802			402	SIA ALL
Outboard Wing Flap Torque Tube Installation TASK 27-51-58-400-802			408	SIA ALL
Inboard Wing Flap Torque Tube Removal TASK 27-51-58-000-803			409	SIA ALL
Inboard Wing Flap Torque Tube Installation TASK 27-51-58-400-803			415	SIA ALL
Wheel Well Flap Torque Tube Removal TASK 27-51-58-000-804			416	SIA ALL
Wheel Well Flap Torque Tube Installation TASK 27-51-58-400-804			422	SIA ALL
FLAP TORQUE TUBES - INSPECTION/CHECK	27-51-58		601	SIA ALL
Flap Torque Tube - Inspection TASK 27-51-58-200-801			601	SIA ALL
FLAP TORQUE TUBE SUPPORT - REMOVAL/INSTALLATION	27-51-59		401	SIA ALL
Flap Torque Tube Support Removal TASK 27-51-59-000-801			401	SIA ALL
Flap Torque Tube Support Installation TASK 27-51-59-400-801			405	SIA ALL
FLAP CONTROL UNIT - REMOVAL/INSTALLATION	27-51-61		401	SIA ALL
Flap Control Unit Removal TASK 27-51-61-000-801			401	SIA ALL
Flap Control Unit Installation TASK 27-51-61-400-801			413	SIA ALL
FLAP CONTROL QUADRANT - REMOVAL/INSTALLATION	27-51-62		401	SIA ALL
Flap Control Quadrant Removal TASK 27-51-62-000-801			401	SIA ALL
Flap Control Quadrant Installation TASK 27-51-62-400-801			409	SIA ALL

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FLAP LIMIT SWITCHES - REMOVAL/INSTALLATION	27-51-63		401	SIA ALL
Flap Limit Switch Removal TASK 27-51-63-000-801			401	SIA ALL
Flap Limit Switch Installation TASK 27-51-63-400-801			407	SIA ALL
FLAP LIMIT SWITCHES - ADJUSTMENT/TEST	27-51-63		501	SIA ALL
Flaps Limit Switch Adjustment TASK 27-51-63-820-801			501	SIA ALL
Flaps UP Limit Switch, S245 Functional Test TASK 27-51-63-720-801			511	SIA ALL
Flaps DOWN Limit Switch, S246 Functional Test TASK 27-51-63-720-802			517	SIA ALL
Flaps UP Limit Switch, S1051 Operational Test TASK 27-51-63-710-801			518	SIA ALL
TRAILING EDGE FLAP CONTROL VALVE - REMOVAL/INSTALLATION	27-51-65		401	SIA ALL
Trailing Edge Flap Control Valve Removal TASK 27-51-65-000-801			401	SIA ALL
Trailing Edge Flap Control Valve Installation TASK 27-51-65-400-801			407	SIA ALL
Flap Load Limiter Solenoid Valve Removal TASK 27-51-65-000-802			410	SIA ALL
Flap Load Limiter Solenoid Valve Installation TASK 27-51-65-400-802			411	SIA ALL
TRAILING EDGE FLAP CONTROL VALVE - ADJUSTMENT/TEST	27-51-65		501	SIA ALL
Trailing Edge Flap Control Valve Adjustment TASK 27-51-65-820-801			501	SIA ALL
TRAILING EDGE FLAP CONTROL VALVE - REPAIRS	27-51-65		801	SIA ALL
Trailing Edge Flap Control Valve Internal Leakage Repair TASK 27-51-65-360-801			801	SIA ALL

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TRAILING EDGE FLAP FLOW LIMITER - REMOVAL/INSTALLATION	27-51-67		401	SIA ALL
Trailing Edge Flap Flow Limiter Removal TASK 27-51-67-000-801			401	SIA ALL
Trailing Edge Flap Flow Limiter Installation TASK 27-51-67-400-801			404	SIA ALL
FLAP POSITION TRANSMITTERS AND INDICATORS - MAINTENANCE PRACTICES	27-58-00		201	SIA ALL
Flap Position Indicating System - Deactivation TASK 27-58-00-040-801			201	SIA ALL
Flap Position Indicating System - Activation TASK 27-58-00-440-801			202	SIA ALL
FLAP POSITION TRANSMITTER - REMOVAL/INSTALLATION	27-58-01		401	SIA ALL
Flap Position Transmitter Removal TASK 27-58-01-000-801			401	SIA ALL
Flap Position Transmitter Installation TASK 27-58-01-400-801			408	SIA ALL
FLAP POSITION TRANSMITTER - ADJUSTMENT/TEST	27-58-01		501	SIA ALL
Flap Position Transmitter Adjustment and Test TASK 27-58-01-820-801			501	SIA ALL
FLAP SKEW DETECTION SYSTEM - ADJUSTMENT/TEST	27-59-00		501	SIA ALL
Flap Skew Detection System Adjustment TASK 27-59-00-820-801			501	SIA ALL
Flap Skew Detection System Functional Test TASK 27-59-00-730-801			512	SIA ALL
FLAP SKEW SENSORS - MAINTENANCE PRACTICES	27-59-01		201	SIA ALL
Outboard Flap Outboard Skew Sensor Removal TASK 27-59-01-000-801			201	SIA ALL
Outboard Flap Outboard Skew Sensor Installation TASK 27-59-01-400-801			205	SIA ALL

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Outboard Flap Inboard Skew Sensor Removal TASK 27-59-01-000-802			207	SIA ALL
Outboard Flap Inboard Skew Sensor Installation TASK 27-59-01-400-802			211	SIA ALL
Inboard Flap Outboard Skew Sensor Removal TASK 27-59-01-000-803			213	SIA ALL
Inboard Flap Outboard Skew Sensor Installation TASK 27-59-01-400-803			217	SIA ALL
Inboard Flap Inboard Skew Sensor Removal TASK 27-59-01-000-804			219	SIA ALL
Inboard Flap Inboard Skew Sensor Installation TASK 27-59-01-400-804			223	SIA ALL
FLAP SKEW MECHANISM - MAINTENANCE PRACTICES	27-59-02		201	SIA ALL
Outboard Flap Outboard Skew Mechanism Removal TASK 27-59-02-000-801			201	SIA ALL
Outboard Flap Outboard Skew Mechanism Installation TASK 27-59-02-400-801			205	SIA ALL
Outboard Flap Inboard Skew Mechanism Removal TASK 27-59-02-000-802			208	SIA ALL
Outboard Flap Inboard Skew Mechanism Installation TASK 27-59-02-400-802			212	SIA ALL
Inboard Flap Outboard Skew Mechanism Removal TASK 27-59-02-000-803			215	SIA ALL
Inboard Flap Outboard Skew Mechanism Installation TASK 27-59-02-400-803			219	SIA ALL
Inboard Flap Inboard Skew Mechanism Removal TASK 27-59-02-000-804			222	SIA ALL
Inboard Flap Inboard Skew Mechanism Installation TASK 27-59-02-400-804			226	SIA ALL

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SPOILER CONTROL SYSTEM - MAINTENANCE PRACTICES	27-61-00		201	SIA ALL
Spoiler Control System - Deactivation TASK 27-61-00-040-801			201	SIA ALL
Spoiler Control System - Activation TASK 27-61-00-440-801			208	SIA ALL
Apply Pressure to the Spoiler Hydraulic Systems A and B TASK 27-61-00-800-801			210	SIA ALL
Shut Down the Spoiler Hydraulic Systems A and B TASK 27-61-00-840-801			213	SIA ALL
Depressurization of the Spoiler Hydraulic Systems A and B TASK 27-61-00-800-802			213	SIA ALL
Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition TASK 27-61-00-840-802			219	SIA ALL
SPOILER CONTROL SYSTEM - ADJUSTMENT/TEST	27-61-00		501	SIA ALL
Spoiler Control System Operational Test TASK 27-61-00-710-801			501	SIA ALL
Flight Spoiler Adjustment TASK 27-61-00-820-802			502	SIA ALL
Flight Spoiler System Test TASK 27-61-00-730-801			512	SIA ALL
Spoiler Manual Operation Test TASK 27-61-00-000-801			516	SIA ALL
FLIGHT SPOILER - REMOVAL/INSTALLATION	27-61-11		401	SIA ALL
Flight Spoiler Removal TASK 27-61-11-000-801			401	SIA ALL
Flight Spoiler Installation TASK 27-61-11-400-801			411	SIA ALL

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FLIGHT CONTROLS

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
SPOILER SHUTOFF VALVE - REMOVAL/INSTALLATION	27-61-12		401	SIA ALL
Spoiler Shutoff Valve Removal TASK 27-61-12-000-801			401	SIA ALL
Spoiler Shutoff Valve Installation TASK 27-61-12-400-801			407	SIA ALL
Spoiler Shutoff Valve Motor Removal TASK 27-61-12-000-802			408	SIA ALL
Spoiler Shutoff Valve Motor Installation TASK 27-61-12-400-802			409	SIA ALL
SPOILER SHUTOFF VALVE - ADJUSTMENT/TEST	27-61-12		501	SIA ALL
Spoiler Shutoff Valve Test TASK 27-61-12-400-803			501	SIA ALL
FLIGHT SPOILER HINGE LINK - REMOVAL/INSTALLATION	27-61-15		401	SIA ALL
Flight Spoiler Hinge Link Removal TASK 27-61-15-000-801			401	SIA ALL
Flight Spoiler Hinge Link Installation TASK 27-61-15-400-801			407	SIA ALL
CONTROL WHEEL POSITION TRANSDUCER - REMOVAL/INSTALLATION	27-61-44		401	SIA ALL
Control Wheel Position Transducer Removal TASK 27-61-44-000-801			401	SIA ALL
Control Wheel Position Transducer Installation TASK 27-61-44-400-801			405	SIA ALL
SPOILER CONTROL ELECTRONICS - MAINTENANCE PRACTICES	27-61-45		201	SIA ALL
SCE Software Installation with Onboard Network System TASK 27-61-45-470-801			201	SIA ALL
SCE Configuration Check TASK 27-61-45-750-801			202	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
SPOILER CONTROL ELECTRONICS - REMOVAL/INSTALLATION	27-61-45		401	SIA ALL
Spoiler Control Electronics Unit Removal TASK 27-61-45-000-801			401	SIA ALL
Spoiler Control Electronics Unit Installation TASK 27-61-45-400-801			404	SIA ALL
SPOILER CONTROL ELECTRONICS - ADJUSTMENT/TEST	27-61-45		501	SIA ALL
Spoiler Control Electronics Self Test TASK 27-61-45-730-801			501	SIA ALL
Speedbrake Lever Transducer Test TASK 27-61-45-730-802			502	SIA ALL
First Officer's Wheel Transducer Test TASK 27-61-45-730-803			504	SIA ALL
Ground Spoiler Control Module Replacement Test TASK 27-61-45-730-804			505	SIA ALL
Flight Spoiler Test TASK 27-61-45-730-805			507	SIA ALL
FLIGHT SPOILER ACTUATOR - REMOVAL/INSTALLATION	27-61-51		401	SIA ALL
Flight Spoiler Actuator - Removal TASK 27-61-51-000-801			401	SIA ALL
Flight Spoiler Actuator - Installation TASK 27-61-51-400-801			410	SIA ALL
Electrohydraulic Servo Valve (EHSV) - Removal TASK 27-61-51-000-802			414	SIA ALL
Electrohydraulic Servo Valve (EHSV) - Installation TASK 27-61-51-400-802			418	SIA ALL
FLIGHT SPOILER ACTUATOR - INSPECTION/CHECK	27-61-51		601	SIA ALL
Flight Spoiler Actuator Inspection TASK 27-61-51-200-801			601	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
SPEED BRAKE CONTROL SYSTEM - MAINTENANCE PRACTICES	27-62-00		201	SIA ALL
Apply Pressure to the Speed Brake Hydraulic Systems A and B TASK 27-62-00-800-801			201	SIA ALL
Shut Down the Speed Brake Hydraulic Systems A and B TASK 27-62-00-840-801			204	SIA ALL
Depressurization of the Speed Brake Hydraulic Systems A and B TASK 27-62-00-800-802			204	SIA ALL
Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition TASK 27-62-00-840-802			209	SIA ALL
SPEED BRAKE CONTROL SYSTEM - ADJUSTMENT/TEST	27-62-00		501	SIA ALL
Speed Brake Control System Operational Test TASK 27-62-00-710-801			501	SIA ALL
Speed Brake Control Lever Adjustment TASK 27-62-00-820-801			502	SIA ALL
Ground Spoiler Adjustment TASK 27-62-00-820-802			512	SIA ALL
Speed Brake Lever Friction Test TASK 27-62-00-800-803			521	SIA ALL
Spoiler Operation Time Test TASK 27-62-00-820-803			523	SIA ALL
Speed Brake Throttle Switch Test TASK 27-62-00-820-804			526	SIA ALL
Engine Throttle Switch (S1) - Functional Test TASK 27-62-00-720-801			532	SIA ALL
Speed Brake Antiskid Inoperative Test TASK 27-62-00-820-805			535	SIA ALL
Speed Brake RTO Test TASK 27-62-00-820-807			538	SIA ALL
Speed Brake Extended Light Test TASK 27-62-00-820-808			542	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
SPEED BRAKE CONTROL SYSTEM - INSPECTION/CHECK	27-62-00		601	SIA ALL
Speedbrake System Components - Inspection TASK 27-62-00-210-801			601	SIA ALL
Spoiler Actuator - Inspection TASK 27-62-00-210-802			605	SIA ALL
INBOARD GROUND SPOILER - REMOVAL/INSTALLATION	27-62-12		401	SIA ALL
Inboard Ground Spoiler Removal TASK 27-62-12-000-801			401	SIA ALL
Inboard Ground Spoiler Installation TASK 27-62-12-400-801			409	SIA ALL
Inboard Ground Spoiler Functional Test TASK 27-62-12-720-801			413	SIA ALL
GROUND SPOILER HINGE LINK - REMOVAL/INSTALLATION	27-62-15		401	SIA ALL
Ground Spoiler Hinge Link Removal TASK 27-62-15-000-801			401	SIA ALL
Ground Spoiler Hinge Link Installation TASK 27-62-15-400-801			407	SIA ALL
SPEEDBRAKE MECHANISM - REMOVAL/INSTALLATION	27-62-21		401	SIA ALL
Speedbrake Mechanism Removal TASK 27-62-21-000-801			401	SIA ALL
Speedbrake Mechanism Installation TASK 27-62-21-400-801			407	SIA ALL
SPEEDBRAKE LEVER - REMOVAL/INSTALLATION	27-62-22		401	SIA ALL
Speedbrake Lever - Removal TASK 27-62-22-000-801			401	SIA ALL
Speedbrake Lever - Installation TASK 27-62-22-400-801			424	SIA ALL
AUTO SPEED BRAKE ACTUATOR - REMOVAL/INSTALLATION	27-62-31		401	SIA ALL
Auto Speed Brake Actuator Removal TASK 27-62-31-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Auto Speed Brake Actuator Installation TASK 27-62-31-400-801			407	SIA ALL
SPEED BRAKE REFUSED TAKEOFF (RTO) SWITCH - REMOVAL/INSTALLATION	27-62-32		401	SIA ALL
Speed Brake Refused Takeoff (RTO) Switch Removal TASK 27-62-32-000-801			401	SIA ALL
Speed Brake Refused Takeoff (RTO) Switch Installation TASK 27-62-32-400-801			405	SIA ALL
SPEED BRAKE REFUSED TAKEOFF (RTO) SWITCH - ADJUSTMENT/TEST	27-62-32		501	SIA ALL
Speed Brake Refused Takeoff (RTO) Switch Adjustment TASK 27-62-32-820-801			501	SIA ALL
SPEEDBRAKE LEVER TRANSDUCER - REMOVAL/INSTALLATION	27-62-37		401	SIA ALL
Speedbrake Lever Transducer Removal TASK 27-62-37-000-801			401	SIA ALL
Speedbrake Lever Transducer Installation TASK 27-62-37-400-801			405	SIA ALL
Speedbrake Lever Transducer Adjustment TASK 27-62-37-200-801			406	SIA ALL
GROUND SPOILER CONTROL MODULE- REMOVAL/INSTALLATION	27-62-41		401	SIA ALL
Ground Spoiler Control Module Removal TASK 27-62-41-000-801			401	SIA ALL
Ground Spoiler Control Module Installation TASK 27-62-41-400-801			406	SIA ALL
Ground Spoiler Control Module Functional Test TASK 27-62-41-720-801			409	SIA ALL
INBOARD GROUND SPOILER ACTUATOR - REMOVAL/INSTALLATION	27-62-71		401	SIA ALL
Inboard Ground Spoiler Actuator Removal TASK 27-62-71-000-801			401	SIA ALL

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FLIGHT CONTROLS

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Inboard Ground Spoiler Actuator Installation TASK 27-62-71-400-801			405	SIA ALL
Inboard Ground Spoiler Actuator Functional Test TASK 27-62-71-700-801			407	SIA ALL
OUTBOARD GROUND SPOILER - REMOVAL/INSTALLATION	27-62-91		401	SIA ALL
Outboard Ground Spoiler Removal TASK 27-62-91-000-801			401	SIA ALL
Outboard Ground Spoiler Installation TASK 27-62-91-400-801			407	SIA ALL
Outboard Ground Spoiler Test TASK 27-62-91-000-802			411	SIA ALL
OUTBOARD GROUND SPOILER ACTUATOR - REMOVAL/INSTALLATION	27-62-94		401	SIA ALL
Outboard Ground Spoiler Actuator Removal TASK 27-62-94-000-801			401	SIA ALL
Outboard Ground Spoiler Actuator Installation TASK 27-62-94-400-801			406	SIA ALL
OUTBOARD GROUND SPOILER ACTUATOR - ADJUSTMENT/TEST	27-62-94		501	SIA ALL
Outboard Ground Spoiler Actuator Test TASK 27-62-94-720-801			501	SIA ALL
OUTBOARD GROUND SPOILER ACTUATOR - INSPECTION/CHECK	27-62-94		601	SIA ALL
Outboard Ground Spoiler Actuator Inspection TASK 27-62-94-200-801			601	SIA ALL
LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES	27-81-00		201	SIA ALL
Leading Edge Flaps and Slats - Deactivation TASK 27-81-00-040-801			201	SIA ALL
Leading Edge Flaps and Slats - Activation TASK 27-81-00-440-801			216	SIA ALL
Leading Edge Flap and Slat System Operation With Primary Control TASK 27-81-00-860-801			219	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Leading Edge Flap and Slat System Operation With Alternate Control TASK 27-81-00-860-802			220	SIA ALL
Leading Edge Flaps and Slats Extension TASK 27-81-00-860-803			221	SIA ALL
Leading Edge Flaps and Slats Retraction TASK 27-81-00-860-804			222	SIA ALL
Leading Edge Flap and Slat Locks Installation TASK 27-81-00-480-801			223	SIA ALL
Leading Edge Flap and Slat Locks Removal TASK 27-81-00-080-801			225	SIA ALL
LEADING EDGE FLAP AND SLAT - ADJUSTMENT/TEST	27-81-00		501	SIA ALL
Leading Edge Flaps Adjustment TASK 27-81-00-820-801			501	SIA ALL
Leading Edge Slat Actuator Adjustment TASK 27-81-00-820-802			511	SIA ALL
Leading Edge Slats Adjustment TASK 27-81-00-820-803			519	SIA ALL
Leading Edge Flap and Slat Operational Test in Primary Mode TASK 27-81-00-700-801			548	SIA ALL
Leading Edge Flap and Slat Timing Test in Primary Mode TASK 27-81-00-700-802			559	SIA ALL
Leading Edge Flap and Slat System Standby Actuation Operational Test TASK 27-81-00-710-801			561	SIA ALL
Leading Edge Flap and Slat Timing Test in the Standby Mode TASK 27-81-00-700-803			563	SIA ALL
Leading Edge Cruise Depressurization Test TASK 27-81-00-730-801			566	SIA ALL
Leading Edge Uncommanded Motion Protection Test TASK 27-81-00-700-804			568	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Standby Hydraulic System Leading Edge Uncommanded Motion Test TASK 27-81-00-710-802			570	SIA ALL
LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - INSPECTION/CHECK	27-81-00		601	SIA ALL
Leading Edge Flap and Slat Actuators and Actuation Mechanism - Inspection TASK 27-81-00-210-801			601	SIA ALL
Leading Edge Flap and Slat System Internal Hydraulic Leakage Check TASK 27-81-00-790-801			608	SIA ALL
LEADING EDGE FLAPS - REMOVAL/INSTALLATION	27-81-11		401	SIA ALL
Leading Edge Flap Removal TASK 27-81-11-000-801			401	SIA ALL
Leading Edge Flap Installation TASK 27-81-11-400-801			413	SIA ALL
LEADING EDGE FLAP - INSPECTION/CHECK	27-81-11		601	SIA ALL
Leading Edge Flap Inspection TASK 27-81-11-200-801			601	SIA ALL
LEADING EDGE SLAT - REMOVAL/INSTALLATION	27-81-21		401	SIA ALL
Leading Edge Slat Removal TASK 27-81-21-000-801			401	SIA ALL
Leading Edge Slat Installation TASK 27-81-21-400-801			416	SIA ALL
Leading Edge Slat Main Track Removal TASK 27-81-21-000-802			427	SIA ALL
Leading Edge Slat Main Track Installation TASK 27-81-21-400-802			429	SIA ALL
LEADING EDGE FLAP ACTUATOR - REMOVAL/INSTALLATION	27-81-31		401	SIA ALL
Leading Edge Flap Actuator Removal TASK 27-81-31-000-801			401	SIA ALL
Leading Edge Flap Actuator Installation TASK 27-81-31-400-801			408	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
LEADING EDGE FLAP ACTUATOR - INSPECTION/CHECK	27-81-31		601	SIA ALL
Leading Edge Flap Actuator Inspection TASK 27-81-31-200-801			601	SIA ALL
LEADING EDGE SLAT ACTUATOR - REMOVAL/INSTALLATION	27-81-41		401	SIA ALL
Leading Edge Slat Actuator Removal TASK 27-81-41-000-801			401	SIA ALL
Leading Edge Slat Actuator Installation TASK 27-81-41-400-801			413	SIA ALL
LEADING EDGE SLAT ACTUATOR - INSPECTION/CHECK	27-81-41		601	SIA ALL
Leading Edge Slat Actuator Lock Indicator Visual Check TASK 27-81-41-200-801			601	SIA ALL
LEADING EDGE UNCOMMANDED MOTION (UCM) VALVE AND LEADING EDGE CRUISE DEPRESSURIZATION VALVE - REMOVAL/INSTALLATION	27-81-52		401	SIA ALL
LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal TASK 27-81-52-000-801			401	SIA ALL
LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation TASK 27-81-52-400-801			405	SIA ALL
LEADING EDGE CRUISE DEPRESSURIZATION VALVE - INSPECTION/CHECK	27-81-52		601	SIA ALL
Leading Edge Cruise Depressurization Valve Hydraulic Internal Leakage Check TASK 27-81-52-790-801			601	SIA ALL
LEADING EDGE FLAP AND SLAT HYDRAULIC FUSE - REMOVAL/INSTALLATION	27-81-61		401	SIA ALL
Leading Edge Flap and Slat Hydraulic Fuse Removal (LE System B or Standby System Fuses) TASK 27-81-61-000-801			401	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Leading Edge Flap and Slat Hydraulic Fuse Installation (LE System B or Standby System Fuses) TASK 27-81-61-400-801			405	SIA ALL
Flap and Slat Hydraulic Fuses (System B) Reset TASK 27-81-61-860-801			406	SIA ALL
Flap and Slat Hydraulic Fuse (Standby System) Reset TASK 27-81-61-860-802			407	SIA ALL
LEADING EDGE FLAP FLOW LIMITING VALVE - REMOVAL/INSTALLATION	27-81-71		401	SIA ALL
Leading Edge Flap Flow Limiting Valve Removal TASK 27-81-71-000-801			401	SIA ALL
Leading Edge Flap Flow Limiting Valve Installation TASK 27-81-71-400-801			404	SIA ALL
LEADING EDGE FLAP AND SLAT CONTROL VALVE - REMOVAL/INSTALLATION	27-81-81		401	SIA ALL
Leading Edge Flap and Slat Control Valve Removal TASK 27-81-81-000-801			401	SIA ALL
Leading Edge Flap and Slat Control Valve Installation TASK 27-81-81-400-801			406	SIA ALL
LEADING EDGE FLAP AND SLAT CONTROL VALVE - ADJUSTMENT/TEST	27-81-81		501	SIA ALL
Leading Edge Flap and Slat Control Valve Adjustment TASK 27-81-81-820-801			501	SIA ALL
LEADING EDGE STANDBY SHUTOFF VALVE - MAINTENANCE PRACTICES	27-81-91		201	SIA ALL
Leading Edge Standby Shutoff Valve Removal TASK 27-81-91-000-801			201	SIA ALL
Leading Edge Standby Shutoff Valve Installation TASK 27-81-91-400-801			205	SIA ALL
Standby Shutoff Valve Motor Removal TASK 27-81-91-000-802			206	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Standby Shutoff Valve Motor Installation TASK 27-81-91-400-802			208	SIA ALL
Leading Edge Standby Shutoff Valve Test TASK 27-81-91-720-801			209	SIA ALL
LEADING EDGE AUTOSLAT SYSTEM - ADJUSTMENT/TEST	27-83-00		501	SIA ALL
Autoslat System Indicator Light - Functional Test TASK 27-83-00-720-801			501	SIA ALL
Leading Edge Autoslat System - Functional Test TASK 27-83-00-710-801			505	SIA ALL
AUTOSLAT CONTROL VALVE - REMOVAL/INSTALLATION	27-83-21		401	SIA ALL
Autoslat Control Valve Removal TASK 27-83-21-000-801			401	SIA ALL
Autoslat Control Valve Installation TASK 27-83-21-400-801			404	SIA ALL
AUTOSLAT CONTROL VALVE - INSPECTION/CHECK	27-83-21		601	SIA ALL
Autoslat Valve Internal Hydraulic Leakage Check TASK 27-83-21-790-801			601	SIA ALL
LEADING EDGE FLAP AND SLAT POSITION INDICATING SYSTEM - ADJUSTMENT/TEST	27-88-00		501	SIA ALL
Leading Edge Flap and Slat Position Indicating System - Operational Test TASK 27-88-00-710-801			501	SIA ALL
LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - REMOVAL/INSTALLATION	27-88-11		401	SIA ALL
Leading Edge Slat Proximity Sensor Removal TASK 27-88-11-000-801			401	SIA ALL
Leading Edge Slat Proximity Sensor Installation TASK 27-88-11-400-801			411	SIA ALL
Leading Edge Flap Proximity Sensor Removal TASK 27-88-11-000-802			423	SIA ALL
Leading Edge Flap Proximity Sensor Installation TASK 27-88-11-400-802			427	SIA ALL

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SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - ADJUSTMENT/TEST	27-88-11		501	SIA ALL
Leading Edge Flap and Slat Proximity Sensor Test TASK 27-88-11-700-801			501	SIA ALL
Leading Edge Flap and Slat Proximity Sensor Test Using a LCR Meter TASK 27-88-11-760-801			508	SIA ALL
Leading Edge Flap and Slat Proximity Sensor Test Using a Breakout Box and LCR Meter TASK 27-88-11-720-801			519	SIA ALL
P5-12 OVERHEAD LEADING EDGE DEVICE ANNUNCIATOR PANEL - REMOVAL/INSTALLATION	27-88-21		401	SIA ALL
P5-12 Overhead Leading Edge Device Annunciator Panel Removal TASK 27-88-21-000-801			401	SIA ALL
P5-12 Overhead Leading Edge Device Annunciator Panel Installation TASK 27-88-21-400-801			403	SIA ALL

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FLIGHT CONTROLS - DDG MAINTENANCE PROCEDURES

1. General

A. This procedure has maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks are used to prepare the airplane for flight with certain systems/components inoperative.

B. This procedure also has the tasks that put the airplane back to its usual condition.

C. These are the tasks for the components in the flight controls system:

(1) DDG 27-21-01 Rudder Trim Indicator Inoperative - Preparation

(2) DDG 27-21-01 Rudder Trim Indicator Inoperative - Restoration

(3) DDG 27-21-02 STBY RUD ON Light Inoperative - Preparation

(4) DDG 27-21-02 STBY RUD ON Light Inoperative - Restoration

(5) DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Preparation

(6) DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Restoration

(7) DDG 27-61-01 Flight Spoiler Systems Inoperative - Preparation

(8) DDG 27-61-01 Flight Spoiler Systems Inoperative - Restoration

(9) DDG 27-62-01 Auto Speedbrake System Inoperative - Preparation

(10) DDG 27-62-01 Auto Speedbrake System Inoperative - Restoration

(11) DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Preparation

(12) DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Restoration

(13) DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Preparation

(14) DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Restoration

(15) DDG 27-88-01 Leading Edge Flap/Slat Position Light Systems - Leading Edge Indications for Slats 1, 2, 7 and 8 Inoperative - Preparation

(16) DDG 27-88-01 Leading Edge Flap/Slat Position Light Systems - Leading Edge Indications for Slats 1, 2, 7 and 8 Inoperative - Restoration

TASK 27-00-00-040-812

2. DDG 27-21-01 Rudder Trim Indicator Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Rudder Trim Indicator inoperative.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

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D. Rudder Trim Indicator Deactivation

SUBTASK 27-00-00-860-063

(1) Do this task to pressurize the rudder hydraulic systems A and B: TASK 27-21-00-800-801.

SUBTASK 27-00-00-720-001

(2) Do these steps to make sure that the rudder trim actuator operates normally:

(a) Set the rudder trim knob to the NOSE LEFT position.

1) Make sure that the captain's left rudder pedal moves forward, and the right rudder pedal moves aft.

(b) Set the rudder trim knob to the NOSE RIGHT position.

1) Make sure that the captain's left rudder pedal moves aft, and the right rudder pedal moves forward.

SUBTASK 27-00-00-860-064

(3) Do this task to return the aircraft to its condition before rudder hydraulic system pressurization: TASK 27-21-00-840-801.

SUBTASK 27-00-00-410-004

(4) Install an INOP placard next to the deactivated Rudder Trim indicator.

——— END OF TASK ———

TASK 27-00-00-440-812

3. DDG 27-21-01 Rudder Trim Indicator Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the Rudder Trim Indicator inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Rudder Trim Indicator Restoration

SUBTASK 27-00-00-010-005

(1) Remove the INOP placard next to the Rudder Trim Indicator.

——— END OF TASK ———

TASK 27-00-00-040-813

4. DDG 27-21-02 STBY RUD ON Light Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the STBY RUD ON indicator light inoperative.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)

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C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

D. STBY RUD ON Light Deactivation

SUBTASK 27-00-00-860-001

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task to pressurize the rudder hydraulic systems A and B: TASK 27-21-00-800-801.

SUBTASK 27-00-00-810-001

(2) Do these steps to make sure that the rudder operates normally and independently on hydraulic system A and B:

(a) Set the FLT CONTROL A switch to ON and the FLT CONTROL B switch to OFF.

(b) While holding the tiller to prevent tire scrub, make sure that the rudder pedal forces are normal by pushing the captain's left rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves left.

(c) While continuing to hold the tiller, release the left rudder pedal and confirm normal rudder pedal forces by pushing the captain's right rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves right.

(d) While continuing to hold the tiller, release the captain's right rudder pedal.

1) Have a ground observer make sure that the rudder moves back to neutral.

(e) Set the FLT CONTROL B switch to ON and the FLT CONTROL A switch to OFF.

(f) While holding the tiller to prevent tire scrub, make sure that the rudder pedal forces are normal by pushing the captain's left rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves left.

(g) While continuing to hold the tiller, release the left rudder pedal and confirm normal rudder pedal forces by pushing the captain's right rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves right.

(h) While continuing to hold the tiller, release the captain's right rudder pedal.

1) Have a ground observer make sure that the rudder moves back to neutral.

SUBTASK 27-00-00-810-002

(3) Do these steps to make sure that the standby hydraulic pump is operating normally:

(a) Set the FLT CONTROL A switch to STBY RUD and the FLT CONTROL B switch to OFF.

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(b) While holding the tiller to prevent tire scrub, make sure that the rudder pedal forces are normal by pushing the captain's left rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves left.

(c) While continuing to hold the tiller, release the left rudder pedal and confirm normal rudder pedal forces by pushing the captain's right rudder pedal forward until it touches the stop and hold.

1) Have a ground observer make sure that the rudder moves right.

(d) While continuing to hold the tiller, release the captain's right rudder pedal.

1) Have a ground observer make sure that the rudder moves back to neutral.

SUBTASK 27-00-00-860-002

(4) Open this circuit breaker and install safety lock:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

(a) Make sure that the STBY RUD ON light is off.

SUBTASK 27-00-00-860-066

(5) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-00-00-930-001

(6) Attach an INDICATOR INOP placard to the STBY RUD ON indicator light on the P6-2 panel.

——— END OF TASK ———

TASK 27-00-00-440-813

5. DDG 27-21-02 STBY RUD ON Light Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the STBY RUD ON indicator light inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

C. STBY RUD ON Light Restoration

SUBTASK 27-00-00-860-003

(1) Remove the safety lock and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-00-00-930-002

(2) Remove the INDICATOR INOP placard from the STBY RUD ON indicator on the P6-2 panel.

——— END OF TASK ———

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TASK 27-00-00-040-814

6. DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Preparation

(Figure 901, Figure 902, Figure 903)

A. General

(1) This task gives the maintenance steps that prepare the airplane for flight with the FEEL DIFF PRESS light system inoperative.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197

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(Continued)

Reference	Description
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-1100	Gauge - Push/Pull, Dial, 0-50 Lb Capacity

D. Consumable Materials

Reference	Description	Specification
G00252	Film - Polyethylene Film And Sheeting	ASTM D2103 (Supersedes L-P-512)
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	
G02443	Tape - Barricade, Non-Adhesive, Orange, 3 (76 mm) Inches Wide, 4 mils (0.102 mm) Thick, "REMOVE BEFORE FLIGHT"	
G02447	Tag - Red Paper, "PITOT PROBES COVERED" - 3 inches (76.2 mm) Wide, 6 inches (152.4 mm) Long	

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
323	Vertical Fin - Front Spar To Rear Spar

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F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Elevator Feel System Test

SUBTASK 27-00-00-860-005

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task to pressurize the elevator hydraulic systems A and B: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-00-00-860-006

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

SUBTASK 27-00-00-730-004

(3) Set the Proximity Sensor Electronics Unit (PSEU) to the ground mode.

(a) Set the GND TEST switch, on the P61-4 panel, to the ENABLE position.

(b) Press SYS button on the Multi Function Display (MFD) panel.

(c) Select MAINT -> ONBD MAINT -> OTHER FUNCTIONS -> SPECIAL FUNCTIONS -> ATA System 32: PSEU -> PSEU Air/Ground Override -> CONTINUE -> OPERATE FUNCTION -> CONTINUE -> START FUNCTION.

(d) Select SET SYS 1 & 2 ON GND.

(e) SELECT CONTINUE -> STOP FUNCTION.

SUBTASK 27-00-00-860-007

(4) Use the STAB TRIM switches to set the stabilizer to 4 units of trim.

SUBTASK 27-00-00-860-008

(5) Put the FLT CONTROL A and B switches to the OFF position.

SUBTASK 27-00-00-860-009

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(6) Use the bar, SPL-1677, to make sure that the horizontal stabilizer "B" dimension is 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 903).

SUBTASK 27-00-00-860-010

(7) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

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SUBTASK 27-00-00-010-001

(8) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-00-00-950-002

(9) Apply a seal to the drain hole in each pitot probe on the vertical fin.

(a) Use vinyl adhesive Scotch Brand No.471 tape, G02219, and polyethylene film, G00252, to cover and seal the drain holes.

SUBTASK 27-00-00-930-018

CAUTION

WHENEVER AN OPENING IS COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM GROUND. ENGINES SHOULD NOT BE OPERATED WITH COVERS IN PLACE BECAUSE COVERS CAN COME OFF AND DAMAGE ENGINES.

(10) Attach a "PITOT PROBES COVERED" tag, G02447, that has "PITOT PROBES COVERED" printed on it in black letters, to the top of the left control wheel in the flight deck with wire.

WARNING

WHEN THE DRAIN HOLES ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. IN ADDITION, ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT DECK AS A REMINDER THAT THE STATIC PORTS ARE COVERED. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT CAN CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS. THIS CAN LEAD TO LOSS OF SAFE FLIGHT.

(a) Put one end of a 4 ft (1.22 m) or longer piece of the orange barricade tape, G02443, over the black polyethylene sheet covering the drain holes of the pitot probes and secure the upper edge with a 5 in. (12.70 cm) strip of the adhesive Scotch Brand No.471 tape, G02219.

1) Smooth Scotch Brand No.471 tape, G02219, on the airplane surface to make sure that the bond is satisfactory.

SUBTASK 27-00-00-010-004

(11) Remove the drain plugs from the systems A and B pitot lines.

NOTE: The systems A and B pitot lines are below the elevator feel computer.

SUBTASK 27-00-00-860-073

(12) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-00-00-480-002

(13) Install the regulator, SPL-1742, or equivalent air data model test set, COM-1914.

(a) Connect the pressure gage lines from the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to the drain holes of the pitot lines.

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CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(b) Connect the pressure lines from the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to the pitot probes on the vertical fin.

SUBTASK 27-00-00-790-002

(14) Do a check for pressure leakage in the feel pitot system.

CAUTION DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (437 KCAS) DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG, IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(a) Operate the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to pressurize the pitot system to 4.7 psig (32.4 kPa) - 4.9 psig (33.8 kPa).

(b) Set the shutoff valve in the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to the OFF position.

(c) Make sure that the pressure does not decrease more than 0.3 psig (2.1 kPa) during a 2 minute time.

(d) Operate the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to decrease the pressure to zero.

SUBTASK 27-00-00-720-002

(15) Test the control column force, use one of the two methods.

SUBTASK 27-00-00-740-007

(16) Method 1 (recommended): test the control column force, use the MFD FLIGHT CONTROL display.

(a) Set up the MAX Display System (MDS).

(b) Select MAINT -> MAINT DATA PGS -> 27 FLIGHT CONTROL DISPLAY (Figure 902).

(c) Make sure that the FLT CONTROL A and B switches are in the ON position.

(d) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

1) Attach DO NOT OPERATE tags, STD-858, on the control columns.

(e) Record right elevator position that is displayed on the screen.

NOTE: This value shows the neutral position of the right elevator.

1) Make sure that the right elevator position is in the range of 4.0 ± 0.3 degree.

(f) Calculate the trailing edge up test target position value, as follows:

1) Take away 2.0 degrees from the value of the right elevator neutral position.

NOTE: This value shows the trailing edge up test target position.

(g) Put FLT CONTROL B switch to the OFF position and leave FLT CONTROL A switch in the ON position.

(h) Remove the DO NOT OPERATE tags, from the control columns.

(i) Move the captain's control column slowly aft with a push/pull gauge (0-50 lbs), STD-1100, until the MFD display right elevator value will be equal to the trailing edge up test target position value.

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1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Record the control column force.
4) Make sure that the force to hold the control column is at 27.5 lbf (122.3 N) - 47.5 lbf (211.3 N).

(j) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(k) Calculate the trailing edge down test target position value, as follows:

1) Add 2.0 degrees to the value of the right elevator neutral position.

   NOTE: This value shows the trailing edge down test target position.

(l) Move the captain's control column slowly forward with a push/pull gauge (0-50 lbs), STD-1100, until the MFD display right elevator value will be equal to the trailing edge down test target position value.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Record the control column force.
4) Make sure that the force to hold the control column at 29 lbf (129 N) - 52 lbf (231 N).

(m) Put FLT CONTROL A switch to the OFF position and FLT CONTROL B switch to the ON position.

(n) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(o) Move the captain's control column slowly aft with a push/pull gauge (0-50 lbs), STD-1100, until the MFD display right elevator value will be equal to the trailing edge up test target position value.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Record the control column force.
4) Make sure that the force to hold the control column is at 27.5 lbf (122.3 N) - 47.5 lbf (211.3 N).

(p) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

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(q) Move the captain's control column slowly forward with a push/pull gauge (0-50 lbs), STD-1100, until the MFD display right elevator value will be equal to the trailing edge down test target position value.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.

a) If a column overshoot occurs, return the column to neutral and repeat the step.

2) Make sure that the column is not held in place when a force is read.

a) Read the column force at the moment when the column reaches the correct position.

3) Record the control column force.

4) Make sure that the force to hold the control column at 29 lbf (129 N) - 52 lbf (231 N).

SUBTASK 27-00-00-730-001

(17) Method 2 (optional): test the control column force, use masking tape on the tail cone.

(a) Make sure that the FLT CONTROL A and B switches are in the ON position.

CAUTION DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (437 KCAS) DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG, IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(b) Operate the regulator, SPL-1742, or equivalent air data model test set, COM-1914, to pressurize the pitot systems to 2.47 ±0.05 psi (17.03 ±0.34 kPa).

(c) Install a piece of the Scotch Flatback Masking Tape 250, G00270, on the tail cone along the direction of the right elevator trailing edge travel.

NOTE: Elevator travel measuring tool can be used instead of tape method.

(d) Attach the adapter, SPL-1674, to the captain's control column.

(e) Move the captain's control column lightly to put the elevator system in the neutral position.

1) Attach DO NOT OPERATE tags, STD-858, on the control columns.

(f) Make a mark of the neutral position of the elevator trailing edge on Scotch Flatback Masking Tape 250, G00270 (Figure 901).

1) Use this mark of the neutral position as a reference.

(g) Remove the DO NOT OPERATE tags, from the control columns.

(h) Measure and mark 1.20 in. (30.48 mm) above the neutral mark.

NOTE: This mark will be the trailing edge up test target position.

(i) Measure and mark 1.20 in. (30.48 mm) below the neutral mark.

NOTE: This mark will be used as the trailing edge down test target position.

(j) Put FLT CONTROL B switch to the OFF position and leave FLT CONTROL A switch in the ON position.

(k) Move the captain's control column aft with a push/pull gauge (0-50 lbs), STD-1100, to set the elevator trailing edge to 1.20 ±0.05 in. (30.48 ±1.27 mm) up from the neutral position.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recored.

a) If a column overshoot occurs, return the column to neutral and repeat the step.

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2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Make sure that the force to hold the control column at this position is 27.5 lbf (122.3 N) - 47.5 lbf (211.3 N).

(l) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(m) Move the captain's control column forward with a push/pull gauge (0-50 lbs), STD-1100, to set the elevator trailing edge to 1.20 ±0.05 in. (30.48 ±1.27 mm) down from the neutral position.
1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Make sure that the force to hold the control column at this position is 29 lbf (129 N) - 52 lbf (231 N).

(n) Put FLT CONTROL A switch to the OFF position and FLT CONTROL B switch to the ON position.

(o) Move the captain's control column aft with a push/pull gauge (0-50 lbs), STD-1100, to set the elevator trailing edge to 1.20 ±0.05 in. (30.48 ±1.27 mm) up from the neutral position.
1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Make sure that the force to hold the control column at this position is 27.5 lbf (122.3 N) - 47.5 lbf (211.3 N).

(p) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(q) Move the captain's control column forward with a push/pull gauge (0-50 lbs), STD-1100, to set the elevator trailing edge to 1.20 ±0.05 in. (30.48 ±1.27 mm) down from the neutral position.
1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.
   a) If a column overshoot occurs, return the column to neutral and repeat the step.
2) Make sure that the column is not held in place when a force is read.
   a) Read the column force at the moment when the column reaches the correct position.
3) Make sure that the force to hold the control column at this position is 29 lbf (129 N) - 52 lbf (231 N).

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SUBTASK 27-00-00-730-003

(18) Methods 1 and 2: do the feel limit functionality test, as follows:

(a) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(b) Make sure that the pitot pressure is in range 2.42 psig (16.69 kPa) - 2.52 psig (17.37 kPa).

(c) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

1) Wait at least 15 seconds.

(d) Move the captain’s control column slowly aft to the trailing edge up test target position.

NOTE: The value of the trailing edge up test target position depends on the method you use to test control column force.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.

a) If a column overshoot occurs, return the column to neutral and repeat the step.

2) Make sure that the column is not held in place when a force is read.

a) Read the column force at the moment when the column reaches the correct position.

3) Record the control column force.

(e) Move the captain's control column lightly forward and aft to put the elevator system in the neutral position.

(f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

1) Wait at least 20 seconds.

2) Ignore the FEEL DIFF PRESS light, on the P5-3 panel.

(g) Move the captain’s control column slowly aft to the trailing edge up test target position.

NOTE: The value of the trailing edge up test target position depends on the method you used to test control column force.

1) Do not allow the column to move beyond the target elevator positions and back in the direction of neutral before the force is recorded.

a) If a column overshoot occurs, return the column to neutral and repeat the step.

2) Make sure that the column is not held in place when a force is read.

a) Read the column force at the moment when the column reaches the correct position.

3) Record the control column force.

(h) Calculate the difference of forces when the circuit breaker is opened and closed.

1) Make sure that the difference in forces at least 20 lbf (89 N).

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-00-00-840-002

(1) Move the captain's control column back to neutral position.

SUBTASK 27-00-00-840-001

(2) Decrease the pitot pressure to pitot tubes to 0 psig (0 kPa).

SUBTASK 27-00-00-080-001

(3) Remove the adapter, SPL-1674, protractor, SPL-1680, and any other tools from the captain's control column.

SUBTASK 27-00-00-080-002

(4) Remove any Scotch Flatback Masking Tape 250, G00270, from the aircraft.

SUBTASK 27-00-00-080-003

(5) Remove vinyl adhesive Scotch Brand No.471 tape, G02219, and black polyethylene sheet polyethylene film, G00252, used to cover and seal the drain holes, and the 4 ft (1.22 m) or longer piece of the orange barricade tape, G02443, from the drain hole in each vertical fin pitot probe.

SUBTASK 27-00-00-080-004

(6) Remove the regulator, SPL-1742, or equivalent air data model test set, COM-1914.

(a) Disconnect the air pressure lines of the regulator, SPL-1742, or equivalent air data model test set, COM-1914, from both vertical fin pitot probes.

(b) Disconnect the pressure gage lines of the regulator, SPL-1742, or equivalent air data model test set, COM-1914, from systems A and B drain lines.

SUBTASK 27-00-00-860-074

(7) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-00-00-420-001

(8) Install the drain plugs to the systems A and B drain lines.

SUBTASK 27-00-00-860-011

(9) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

SUBTASK 27-00-00-410-001

(10) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-00-00-860-012

(11) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-00-00-730-005

(12) Set the Proximity Switch Electronic Unit (PSEU) to the normal mode (TASK 32-09-00-860-802).

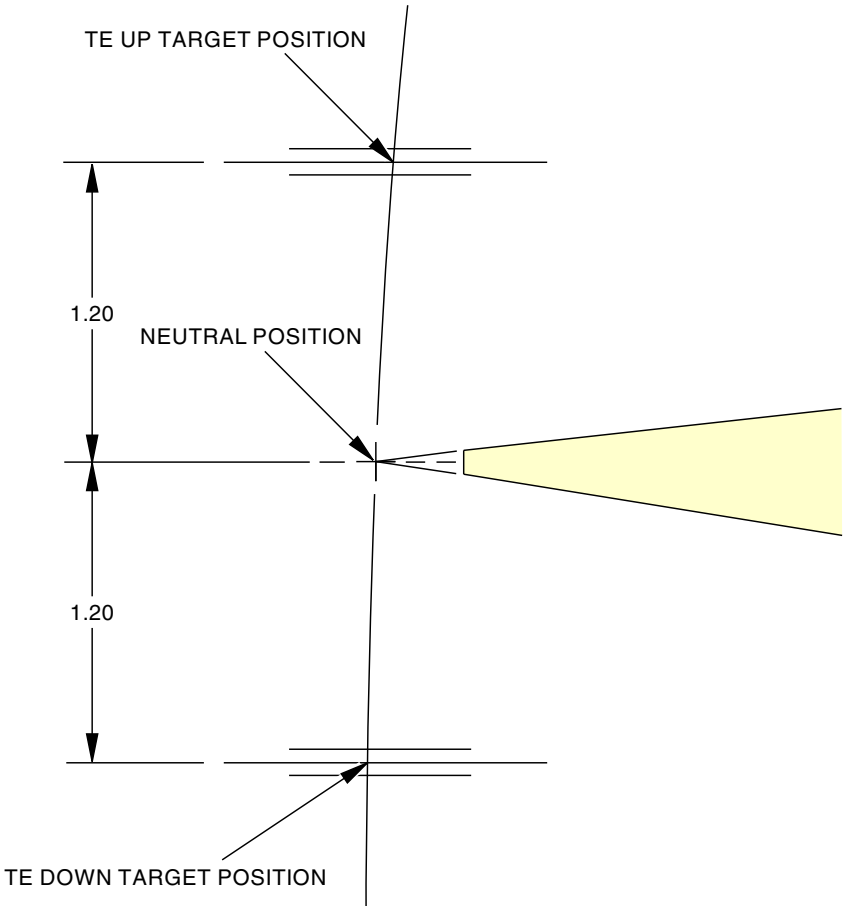
I. FEEL DIFF PRESS Light Deactivation

SUBTASK 27-00-00-930-003

(1) Install a LIGHT INOP placard to the FEEL DIFF PRESS light.

——— END OF TASK ———

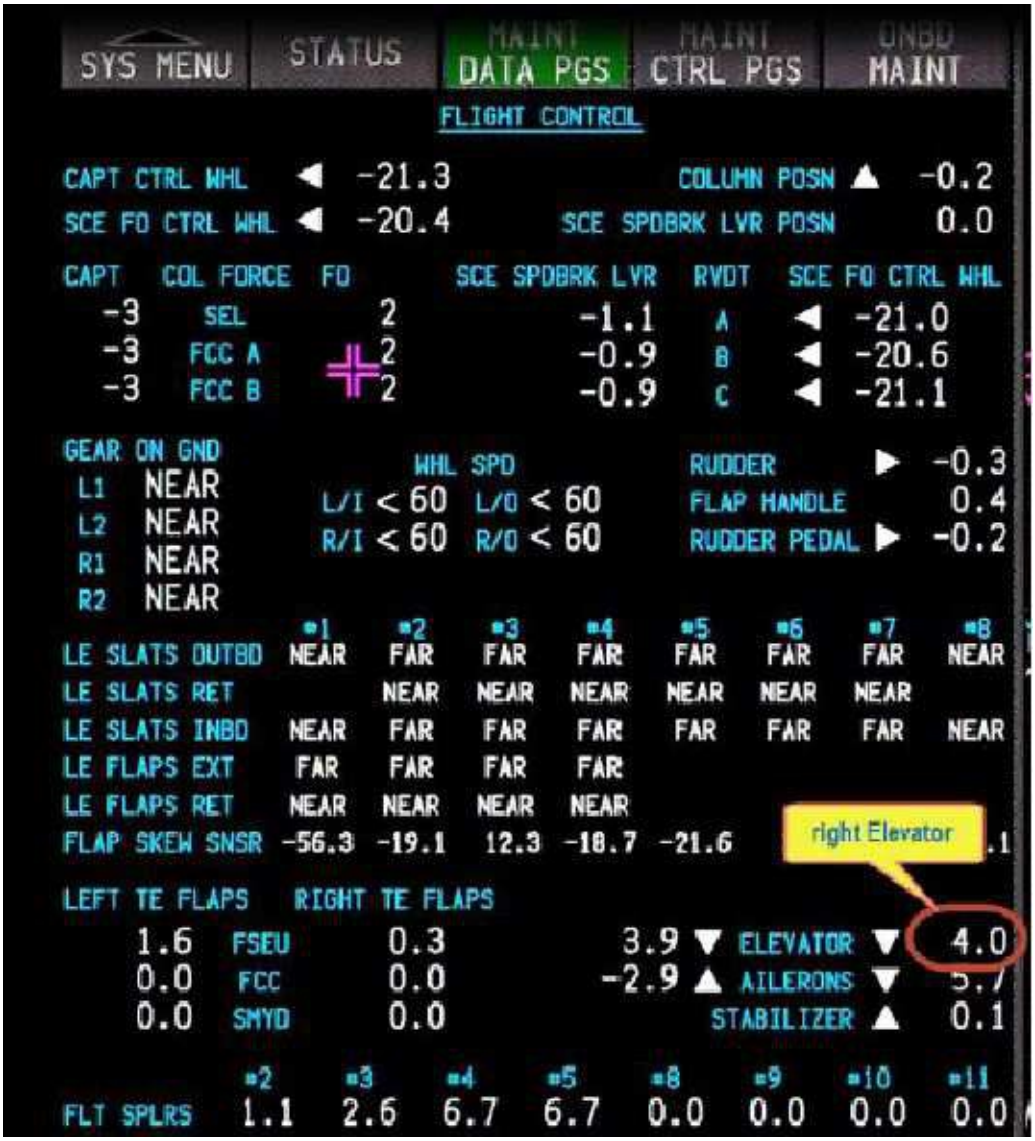
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2949741 S0000726386_V1

Control Column Force Test (Tape method)
Figure 901/27-00-00-990-803

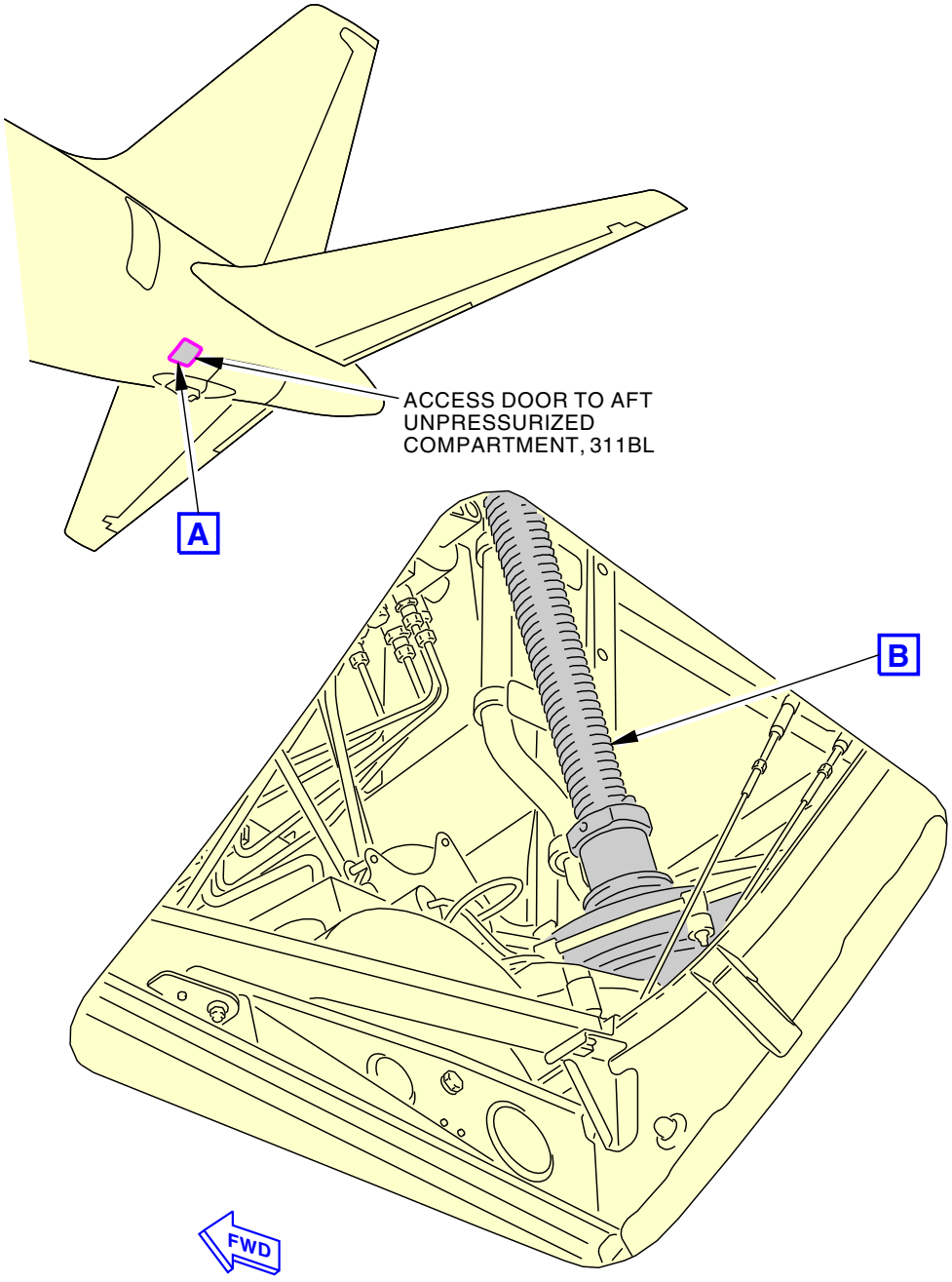
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2949746 S0000726387_V1

Control Column Force Test (MFD method)
Figure 902/27-00-00-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details



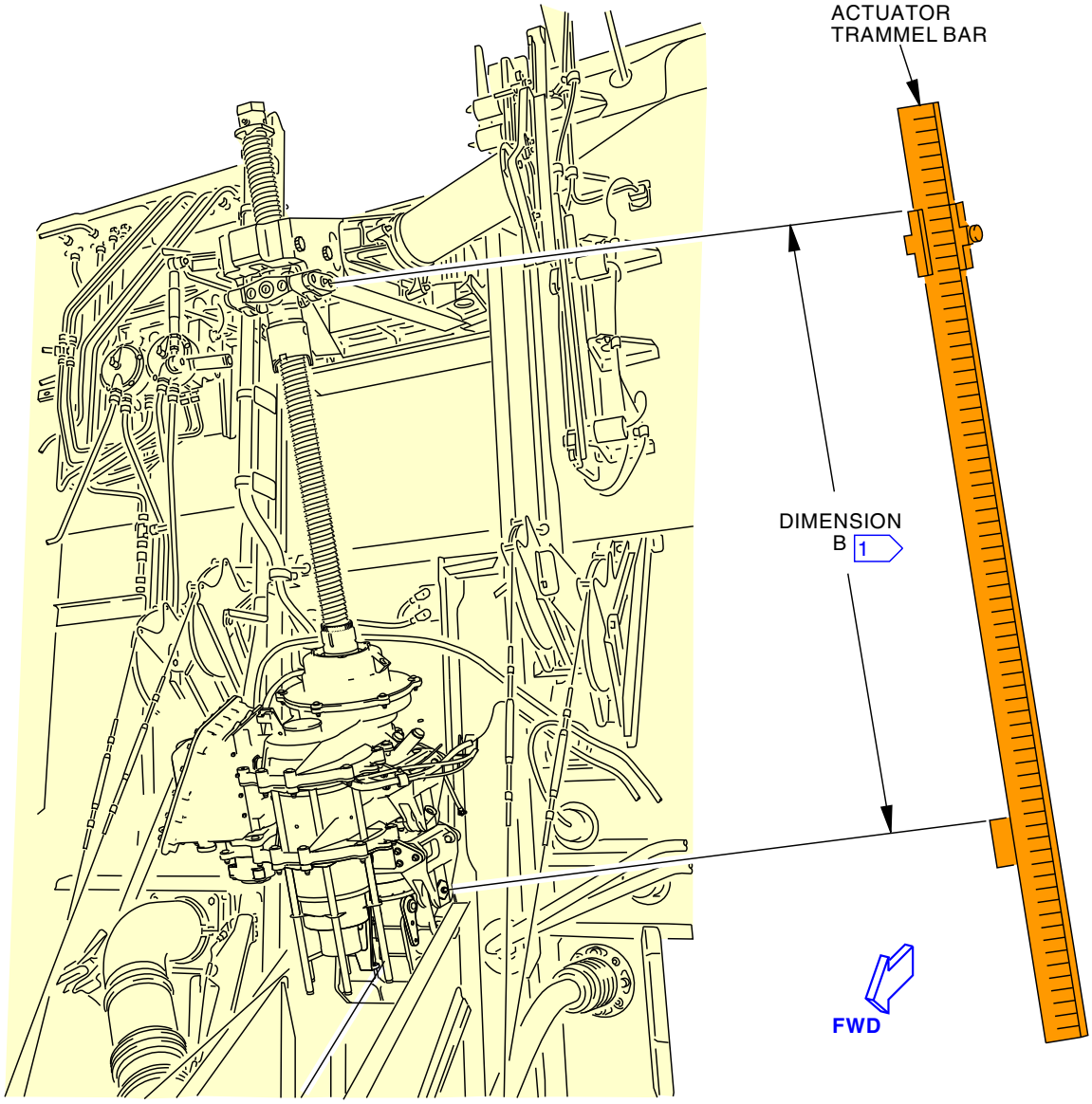
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412457 S00061530716_V1

**Stabilizer Trim Jackscrew Setting
Figure 903/27-00-00-990-805 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412458 S00061530717_V2

Stabilizer Trim Jackscrew Setting
Figure 903/27-00-00-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-00-00-440-814

7. DDG 27-31-01 FEEL DIFF PRESS Light System Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the FEEL DIFF PRESS light system inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. FEEL DIFF PRESS Light Restoration

SUBTASK 27-00-00-930-004

(1) Remove the LIGHT INOP placard from the FEEL DIFF PRESS light.

——— END OF TASK ———

TASK 27-00-00-040-811

8. DDG 27-61-01 Flight Spoiler Systems Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with a single flight spoiler pair inoperative.

NOTE: The flight spoilers include spoiler pairs 2/11, 3/10, 4/9 and 5/8. Flight spoiler pair 5/8 must stay serviceable.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-45-730-805	Flight Spoiler Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the procedure

SUBTASK 27-00-00-860-051

(1) Extend trailing edge flaps to the full extend position to gain access to the PCUs (TASK 27-51-00-860-803).

SUBTASK 27-00-00-860-052

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-00-00-860-053

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-00-00-860-067

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

E. Procedure

SUBTASK 27-00-00-820-004

(1) Operate the manual release cam on the bottom of the PCU and manually move the spoiler panel up as needed to gain access to the PCU connector.

SUBTASK 27-00-00-020-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. SUDDEN MOVEMENT CAN OCCUR WHEN YOU DISCONNECT THE OPPOSITE SPOILERS PCU-ELECTRICAL-CONNECTOR. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Disconnect, cap and stow the electrical connector from the PCU.

SUBTASK 27-00-00-820-003

(3) Manually move the spoiler panel to the stowed position.

SUBTASK 27-00-00-020-003

(4) Do the steps again for the opposite spoiler.

NOTE: Spoilers pairs are 2/11, 3/10 and 4/9.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-00-00-860-054

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-00-00-860-068

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-00-00-860-055

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-00-00-860-056

(4) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

G. Spoiler Operational Check

SUBTASK 27-00-00-710-007

(1) Make sure the deactivated spoiler panels remain in the stowed position.

(a) Turn the control wheel full counterclockwise. Make sure that the serviceable left wing flight spoilers extend.

(b) Make sure that the inoperative left wing spoiler panel stays down.

(c) Center the control wheel. Make sure that the serviceable left wing flight spoilers retract.

(d) Turn the control wheel full clockwise. Make sure that the serviceable right wing flight spoilers extend.

(e) Make sure that the inoperative right wing spoiler panel stays down.

(f) Center the control wheel. Make sure that the serviceable right wing spoilers retract.

SUBTASK 27-00-00-700-004

(2) Use the Onboard Maintenance Function (OMF) to perform the ground test for the flight spoilers. Do this task: Flight Spoiler Test, TASK 27-61-45-730-805.

NOTE: This will extinguish the SPOILERS light on the P5-3 panel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-00-00-810-010

(3) If necessary, extinguish the MAINT light on the P5-1 panel. Do this task: Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

——— END OF TASK ———

TASK 27-00-00-440-811

9. DDG 27-61-01 Flight Spoiler Systems Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with a single flight spoiler pair inoperative.

NOTE: The flight spoilers include spoiler pairs 2/11, 3/10, 4/9 and 5/8.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-45-730-805	Flight Spoiler Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

D. Prepare for the procedure

SUBTASK 27-00-00-860-057

(1) Extend trailing edge flaps to the full extend position to gain access to the PCUs (TASK 27-51-00-860-803).

SUBTASK 27-00-00-860-058

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-00-00-860-059

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-00-00-860-069

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

E. Procedure

SUBTASK 27-00-00-820-005

(1) Operate the manual release cam on the bottom of the PCU and manually move the spoiler panel up as needed to gain access to the PCU connector.

SUBTASK 27-00-00-910-001

(2) Before connecting the electrical connector, do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

SUBTASK 27-00-00-020-004

(3) Connect the electrical connector for the PCU.

SUBTASK 27-00-00-820-006

(4) Manually move the spoiler panel to the stowed position.

SUBTASK 27-00-00-020-005

(5) Do the steps again for the opposite spoiler.

NOTE: Spoilers pairs are 2/11, 3/10 and 4/9.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-00-00-860-060

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-00-00-860-070

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-00-00-860-061

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-00-00-860-062

(4) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

G. Spoiler Operational Check

SUBTASK 27-00-00-700-003

(1) Use the Onboard Maintenance Function (OMF) to perform the ground test for the flight spoilers. Do this task: Flight Spoiler Test, TASK 27-61-45-730-805.

NOTE: The deactivated spoiler pair will be restored after this test is performed.

H. MAINT Light Status Message

SUBTASK 27-00-00-750-001

(1) Uncheck the applicable MAINT light Status Message(s) on the MAINT LIGHT menu (TASK 31-65-00-750-801).

END OF TASK

TASK 27-00-00-040-815

10. DDG 27-62-01 Auto Speed Brake System Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Auto Speed Brake System inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Auto Speed Brake System Deactivation

SUBTASK 27-00-00-710-005

(1) Make sure that the manual speed brake operates correctly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-00-00-010-002

(2) Open this circuit breaker and install safety lock:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 27-00-00-930-009

(3) Attach an AUTO SPOILER INOP placard to the speed brake control lever.

——— END OF TASK ———

TASK 27-00-00-440-815

11. DDG 27-62-01 Auto Speed Brake System Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the Auto Speed Brake System inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Auto Speed Brake System Restoration

SUBTASK 27-00-00-860-021

(1) Remove the safety lock and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 27-00-00-930-011

(2) Remove the AUTO SPOILER INOP placard from the speed brake control lever.

——— END OF TASK ———

TASK 27-00-00-040-816

12. DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the SPEEDBRAKES EXTENDED indicator light inoperative.

B. References

Reference	Title
10-11-05 P/B 201	CHOCK INSTALLATION
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. SPEEDBRAKES EXTENDED Indicator Light Deactivation

SUBTASK 27-00-00-860-022

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task to pressurize the speed brake hydraulic systems A and B: TASK 27-62-00-800-801.

SUBTASK 27-00-00-040-002

(2) Do these steps to test the speedbrake actuator:

(a) Make sure that the wheel chocks are installed (CHOCK INSTALLATION, PAGEBLOCK 10-11-05/201).

(b) Put the speedbrake lever in the DOWN position.

NOTE: The spoilers will move down during this step.

(c) Make sure that the flight and ground spoilers are all down.

(d) Put the speedbrake lever in the FLIGHT DETENT.

NOTE: The spoilers will move up during this step.

(e) Make sure that the flight and ground spoilers deploy.

(f) Put the speedbrake lever in the DOWN position.

NOTE: The spoilers will move down during this step.

(g) Make sure that the flight and ground spoilers are all down.

(h) Make sure that the stabilizer trim is in the green band.

(i) Put the flap lever to a takeoff position.

(j) Release the parking brake.

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(k) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

(l) With engines not running, move both thrust levers beyond 60 degrees.

(m) Make sure that the Takeoff Configuration Warning Horn does not sound.

(n) Move the thrust levers to idle.

(o) Set the parking brake.

(p) Put the flaps to the retract position.

(q) If the SPEEDBRAKES EXTENDED light remains illuminated while on the ground, remove the light bulb.

(r) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-00-00-930-012

(3) Attach an INDICATOR INOP placard to the SPEEDBRAKES EXTENDED indicator light.

SUBTASK 27-00-00-860-023

(4) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

——— END OF TASK ———

TASK 27-00-00-440-816

13. DDG 27-62-02 SPEEDBRAKES EXTENDED Light Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the SPEEDBRAKES EXTENDED indicator light.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

C. SPEEDBRAKES EXTENDED Indicator Light Restoration

SUBTASK 27-00-00-410-003

(1) If necessary, install the SPEEDBRAKES EXTENDED indicator light bulb.

SUBTASK 27-00-00-930-013

(2) Remove the INDICATOR INOP placard from the SPEEDBRAKES EXTENDED indicator.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-00-00-040-817

14. DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with an AUTO SLAT FAIL light on the forward annunciator panel inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. AUTO SLAT FAIL Light Deactivation

SUBTASK 27-00-00-010-003

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-00-00-740-002

(2) Do the EXISTING FAULTS test on the SMYD BITE:

(a) Push the ON/OFF switch.

NOTE: The display will show “EXISTING FAULTS?”.

(b) Push the YES switch.

1) Make sure that the display shows NO FAULTS.

(c) Push the MENU switch to return to the “EXISTING FAULTS?” display.

(d) Push the ON/OFF switch to turn the SMYD display off.

SUBTASK 27-00-00-410-002

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-00-00-930-014

(4) Attach a LIGHT INOP placard to the AUTO SLAT FAIL light.

——— END OF TASK ———

TASK 27-00-00-440-817

15. DDG 27-83-02 AUTO SLAT FAIL Light System Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with an AUTO SLAT FAIL light on the forward annunciator panel inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
212	Flight Compartment - Right

C. AUTO SLAT FAIL Light Restoration

SUBTASK 27-00-00-930-015

(1) Remove the LIGHT INOP placard from the AUTO SLAT FAIL light.

——— END OF TASK ———

TASK 27-00-00-040-818

16. DDG 27-88-01 Leading Edge Flap/Slat Position Light System Inoperative - Preparation

(Figure 904)

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Leading Edge (LE) slat indications inoperative.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Leading Edge Flap/Slat Position Light System Deactivation

SUBTASK 27-00-00-860-018

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize the hydraulic system B to 3000 ±100 psi (211 ±7 kg/cm^2) (TASK 29-11-00-860-801).

SUBTASK 27-00-00-710-002

(2) Cycle the flaps.

SUBTASK 27-00-00-210-001

(3) Make sure that the remaining LE devices annunciator panel, P5-12 lights operate normally during flap extension and retraction.

SUBTASK 27-00-00-740-001

(4) Check to see which Trailing Edge (TE) flap lever positions result in an inoperative LE indication.

SUBTASK 27-00-00-710-003

(5) Set the flap lever to the position which makes the faulty indication.

SUBTASK 27-00-00-930-008

(6) Make sure that the LE and TE devices are in the correct position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-00-00-710-004

(7) Do these steps to make sure that both stall warning systems operate normally:

(a) Make sure that hydraulic system B pressure is between 3000 ±100 psi (211 ±7 kg/cm^2).

(b) Push and hold the STALL WARNING TEST NO. 1 and NO. 2 switches on the stall warning test panel, P5 Overhead Panel.

(c) Make sure that the control column stick shakers operate for more than five seconds.

(d) If both stick shakers do not operate normally, do these steps:

1) Open this circuit breaker and install safety lock:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

2) Push and hold the STALL WARNING TEST NO. 1 and NO. 2 switches on the stall warning test panel, P5 Overhead Panel.

3) Make sure that the control column stick shakers operate normally.

(8) If the inoperative slat indication occurs at more than one flap position, repeat the above procedure to make sure both Stall Warning Systems at Flaps 0, Flaps1, and Flaps 10 operate normally.

SUBTASK 27-00-00-860-065

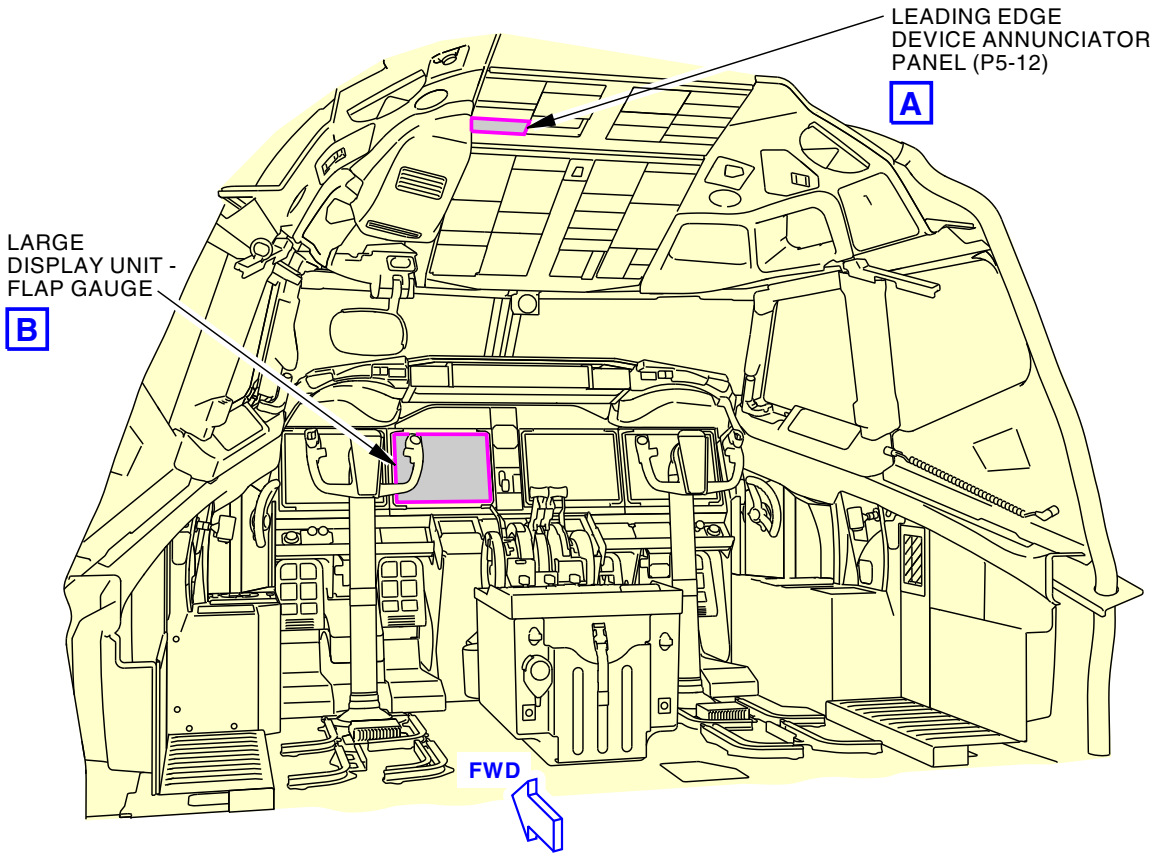
(9) Remove power from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-00-00-410-005

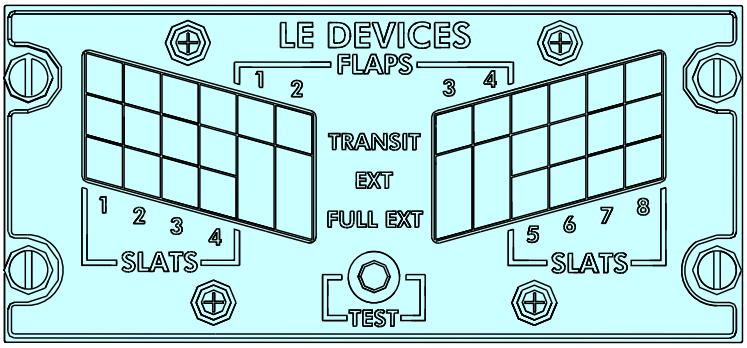
(10) Install a LIGHT INOP placard next to the applicable deactivated LE slat indications.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



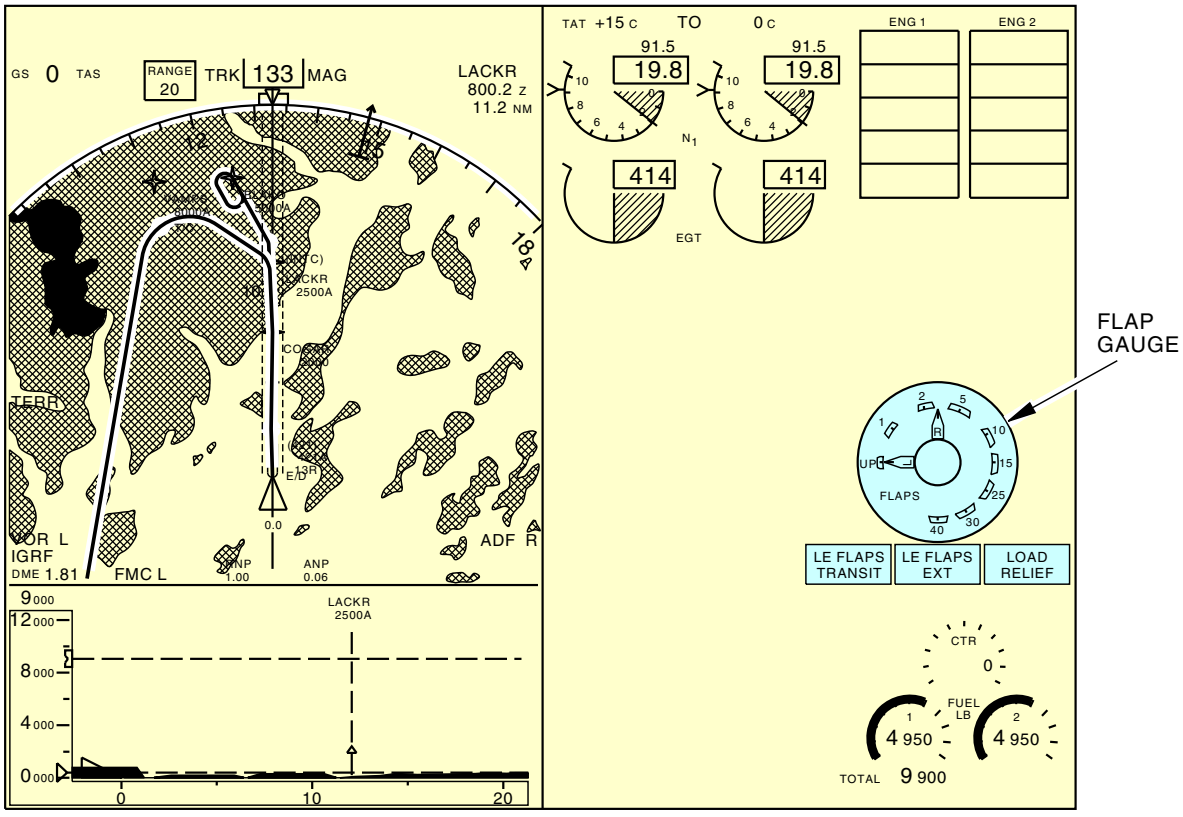
**LEADING EDGE DEVICE
ANNUNCIATOR PANEL (P5-12)**

A

2412194 S00061530172_V1

**Leading Edge Flap and Slat Position Light Location
Figure 904/27-00-00-990-802 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LARGE DISPLAY UNIT - FLAP GAUGE

B

2503148 S0000587533_V1

Leading Edge Flap and Slat Position Light Location
Figure 904/27-00-00-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-00-00-440-818

17. DDG 27-88-01 Leading Edge Flap/Slat Position Light System Inoperative - Restoration

(Figure 904)

A. General

(1) This task puts the airplane back to its usual condition after operation with the Leading Edge (LE) slat indications inoperative.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Leading Edge Flap/Slat Position Light System Restoration

SUBTASK 27-00-00-930-010

(1) Remove the LIGHT INOP placard from the applicable LE slat indications.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 27-00-00-860-019

(1) If the circuit breaker was opened during preparation, then do this step:

(a) Remove the safety lock and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS CABLES - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) The identification and assembly specifications of the control cables.

(2) The rigging of the control cables

(3) The tension measurement of the control cables.

TASK 27-09-14-860-801

2. Control Cables Identification and Assembly Specifications

A. References

Reference	Title
20-10-91-000-801	Control Cables Removal (P/B 401)
20-10-91-400-801	Control Cables Installation (P/B 401)
27-11-00-700-804	Control Wheel Centering Check (P/B 501)
27-11-00-700-805	Aileron Control Wheel Force Test (P/B 501)
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-730-801	Aileron Trim Response Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-21-00-700-803	Rudder Centering Test (P/B 501)
27-21-00-700-804	Rudder Pedal Forces Test (P/B 501)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-820-803	Rudder Control Cables RA and RB Adjustment (P/B 501)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-809	Control Column Travel and Centering - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-710-801	Elevator and Elevator Trim Control System - Operational Test (P/B 501)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator - Test (P/B 501)
27-41-00-700-802	Horizontal Stabilizer Trim Control System Friction Test (P/B 501)
27-41-00-700-803	Stabilizer Electric Trim System Test (P/B 501)
27-41-00-700-804	Stabilizer Trim Wheel Free Movement Test (P/B 501)
27-41-00-700-806	Stabilizer Clutch Friction System Test (P/B 501)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-720-803	Alternate Flap Control System Functional Test (P/B 501)
27-51-00-730-801	Trailing Edge Flap System Test (P/B 501)
27-51-00-820-801	Trailing Edge Flap Control System Adjustment and Test (P/B 501)
27-51-14-400-801	Inboard Aft Flap Actuating Mechanism Installation (P/B 401)

B. Control Cables Identification and Assembly Specifications

SUBTASK 27-09-14-960-001

(1) If it is necessary to replace the cables, do these tasks:

- Control Cables Removal, TASK 20-10-91-000-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

- Control Cables Installation, TASK 20-10-91-400-801.

SUBTASK 27-09-14-700-001

(2) If the aileron control cables were replaced, do these tasks:

- Aileron Cables Adjustment, TASK 27-11-00-820-801
- Aileron Trim Response Test, TASK 27-11-00-730-801
- Aileron Travel Test, TASK 27-11-00-700-810
- Control Wheel Centering Check, TASK 27-11-00-700-804
- Aileron Control Wheel Force Test, TASK 27-11-00-700-805.

(3) If the rudder control cables were replaced, do these tasks:

- Rudder Control Cables RA and RB Adjustment, TASK 27-21-00-820-803
- Rudder Travel Test, TASK 27-21-00-700-805
- Rudder Centering Test, TASK 27-21-00-700-803
- Rudder Pedal Forces Test, TASK 27-21-00-700-804.

(4) If the elevator control cables were replaced, do these tasks:

- Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, TASK 27-31-00-820-801
- Elevator and Elevator Trim Control System - Operational Test, TASK 27-31-00-710-801
- Elevator Travel Limit - Test, TASK 27-31-00-700-805
- Control Column Travel and Centering - Test, TASK 27-31-00-700-809
- Control Column Power Force - Test, TASK 27-31-00-700-810.

(5) If the trailing edge flap control cables were replaced, do these tasks:

- Trailing Edge Flap Control System Adjustment and Test, TASK 27-51-00-820-801
- Trailing Edge Flap System Test, TASK 27-51-00-730-801
- Alternate Flap Control System Functional Test, TASK 27-51-00-720-803.

(6) If the inboard trailing edge flap/aft flap drive cables were replaced, do the cable adjustment steps in this task:

- Inboard Aft Flap Actuating Mechanism Installation, TASK 27-51-14-400-801.

(7) If the horizontal stabilizer control cables were replaced, do these tasks:

- Stabilizer Control Cable and Chain - Adjustment, TASK 27-41-00-820-801
- Stabilizer Manual Trim and Trim Indicator - Test, TASK 27-41-00-700-801
- Horizontal Stabilizer Trim Control System Friction Test, TASK 27-41-00-700-802
- Stabilizer Electric Trim System Test, TASK 27-41-00-700-803
- Stabilizer Trim Wheel Free Movement Test, TASK 27-41-00-700-804
- Stabilizer Clutch Friction System Test, TASK 27-41-00-700-806.

SUBTASK 27-09-14-860-001

(8) Identify and make control cable assemblies for these flight control systems, as necessary:

- Figure 201
- Figure 202
- Figure 203
- Figure 204

ECCN 9E991 BOEING PROPRIETARY - See title page for details

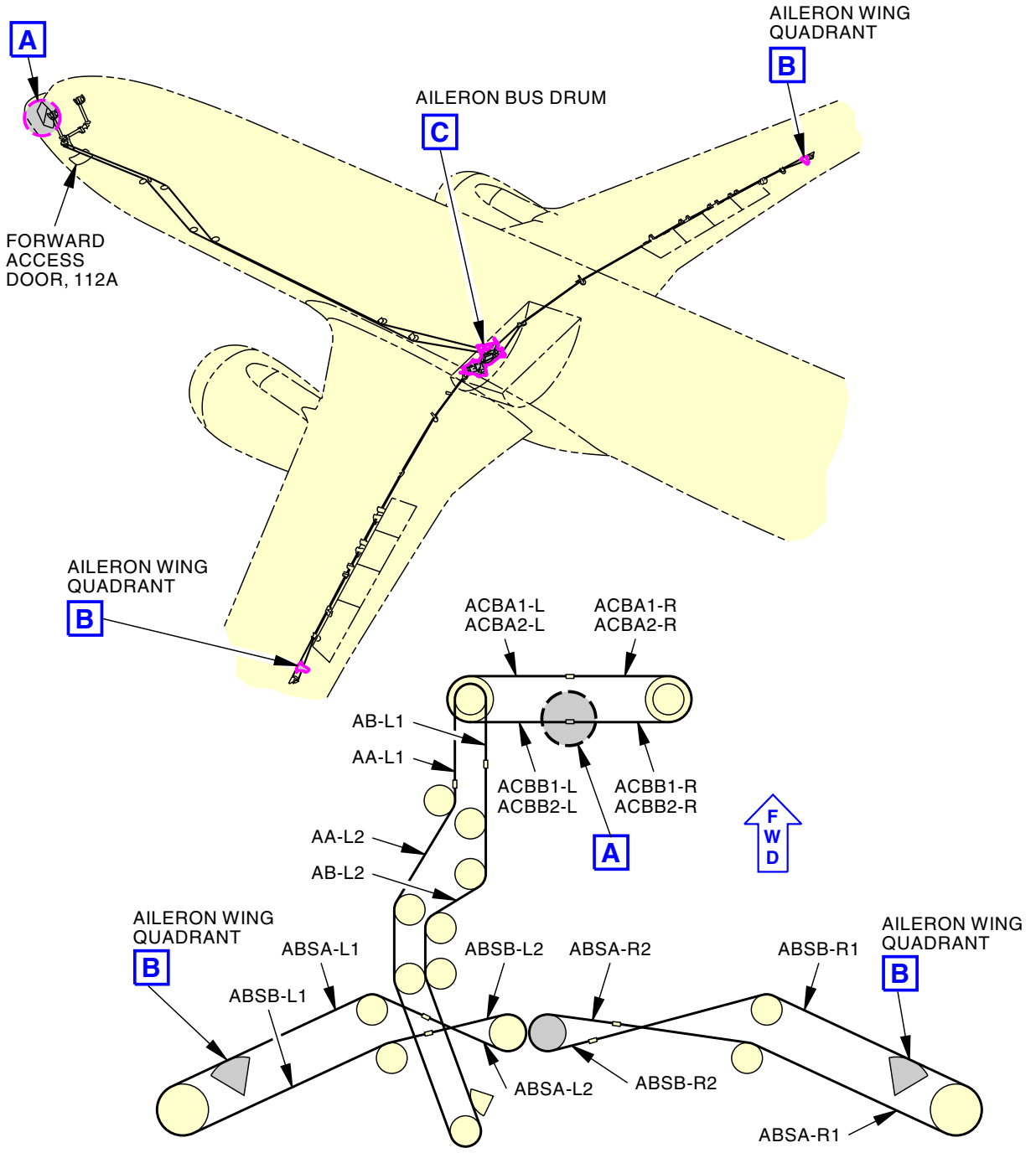
- Figure 205
- Figure 206.

SUBTASK 27-09-14-860-002

(9) Swage control cables with dies for the next larger size AN standard terminals for all BACT14A terminals.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

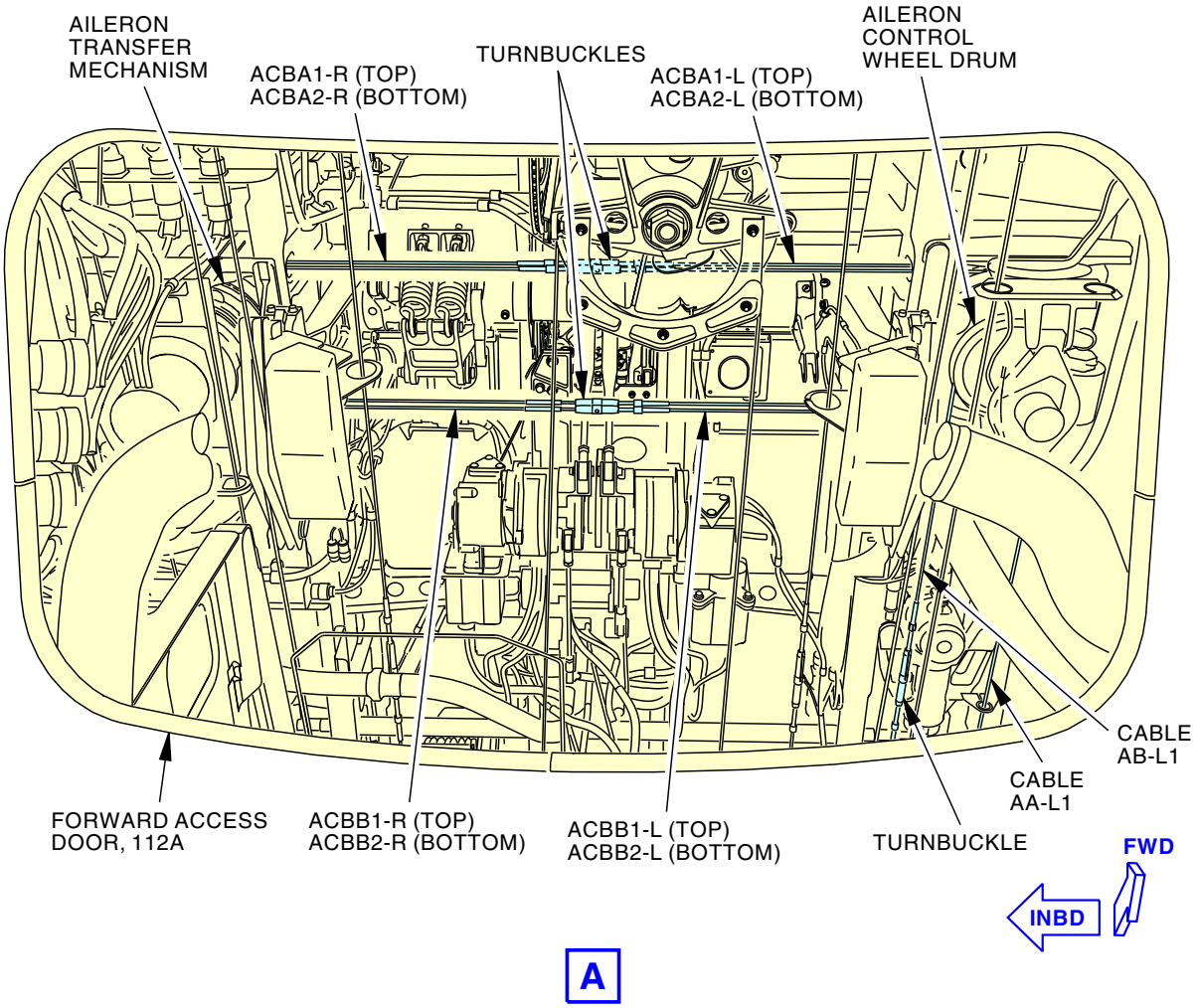


AILERON CONTROL CABLE SCHEMATIC

2410984 S00061526723_V3

Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 1 of 6)

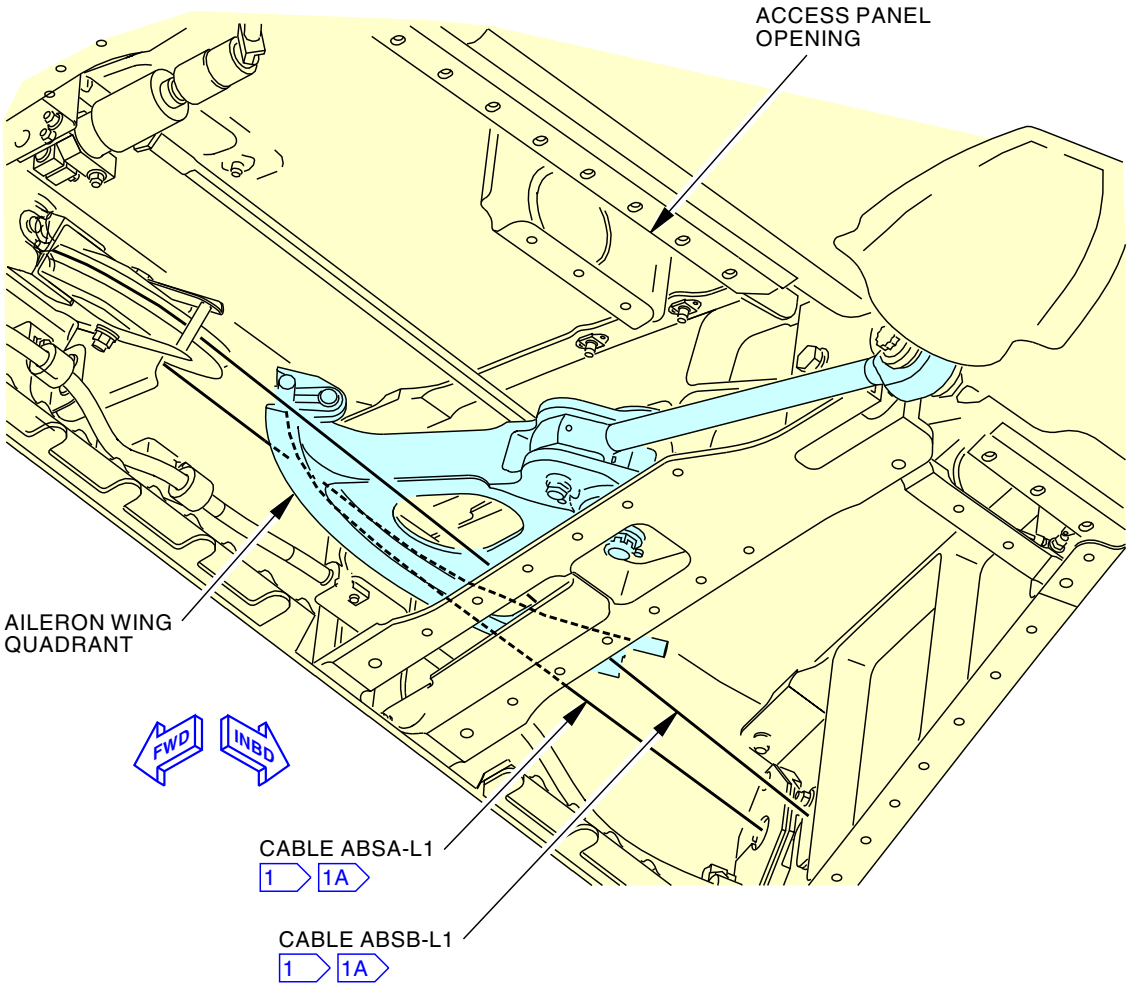
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2410985 S00061526724_V2

Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT AILERON WING QUADRANT
(RIGHT AILERON WING QUADRANT IS EQUIVALENT)

B

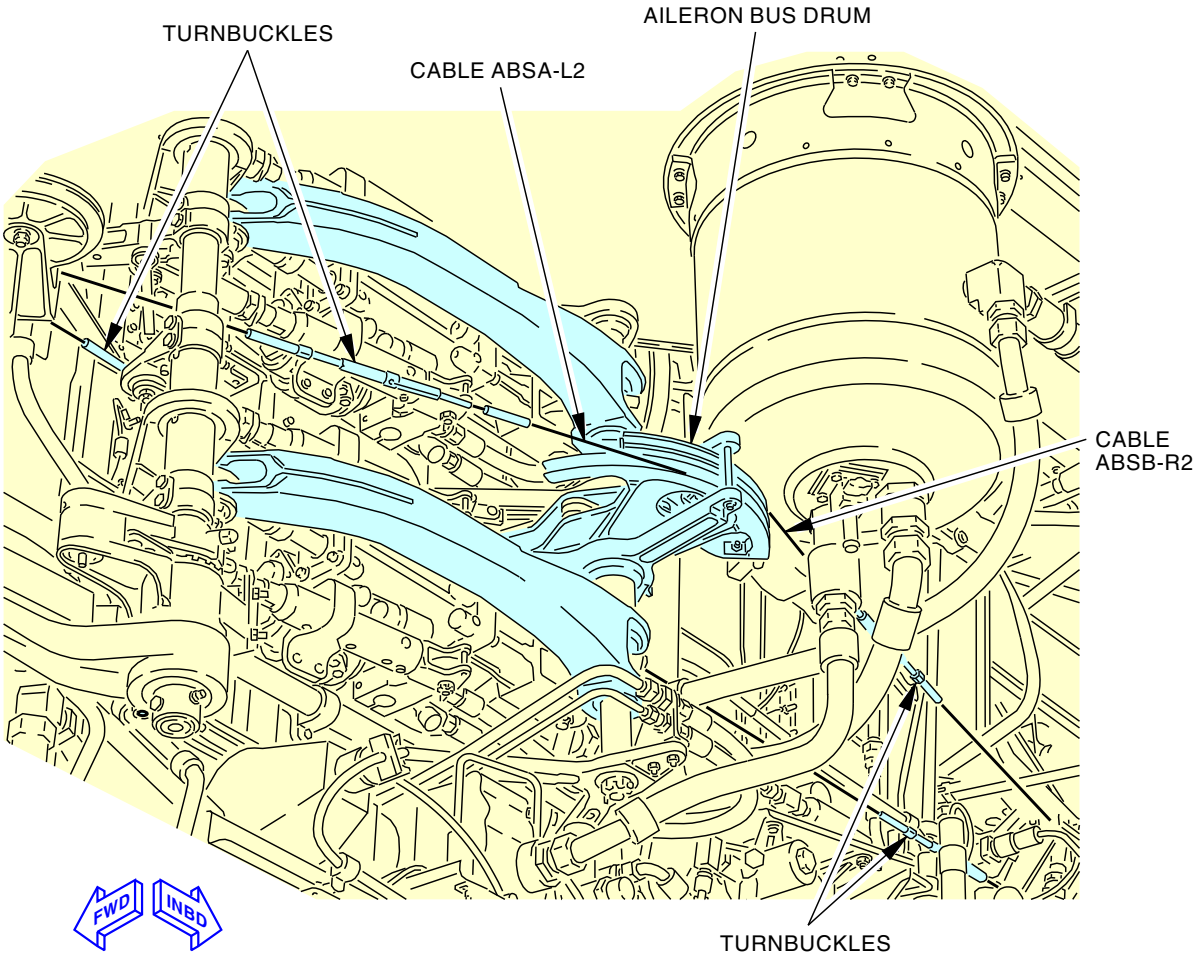
1 FOR THE RIGHT AILERON WING QUADRANT, INSTALL CABLE ABSB-R1 BELOW CABLE ABSA-R1.

1A FIT ABSA-L1 TO THE LOWER GROOVE OF THE QUADRANT
FIT ABSB-L1 TO THE UPPER GROOVE OF THE QUADRANT.

2410986 S00061526725_V2

Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



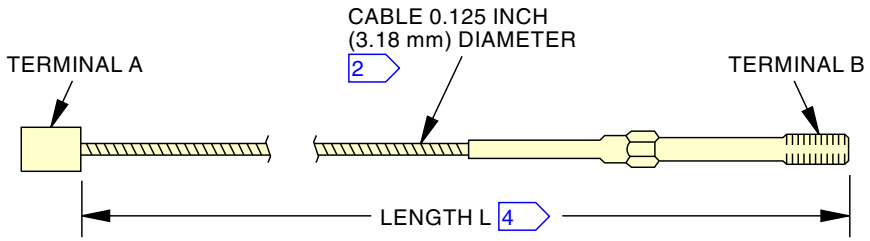
AILERON BUS DRUM
(MAIN LANDING GEAR WHEEL WELL)
(EXAMPLE)

C

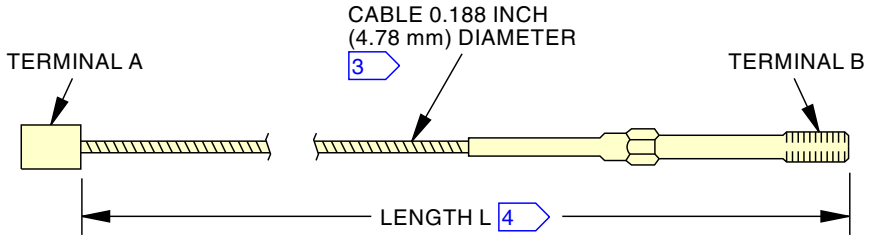
2410987 S00061526726_V4

Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 4 of 6)

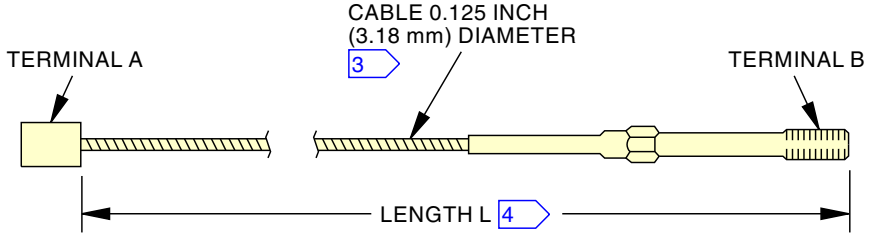
ECCN 9E991 BOEING PROPRIETARY - See title page for details



AA-L1, AA-L2, AB-L1, AB-L2



**ABSA-L1, ABSA-L2, ABSA-R1, ABSA-R2,
ABSB-L1, ABSB-L2, ABSB-R1, ABSB-R2**



**ACBA1-L, ACBA1-R, ACBA2-L, ACBA2-R,
ACBB1-L, ACBB1-R, ACBB2-L, ACBB2-R**

2 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

3 CABLE CONSTRUCTION IS CARBON STEEL: MIL-DTL-83420, TYPE 1,
COMPOSITION A (ZINC), 7 X 19.

4 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

2410988 S00061526727_V2

**Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 5 of 6)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CABLE NAME	LENGTH L [4] INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
AA-L1 AA-L2	38.5 ±0.12 (978 ±3) 671.8 ±0.25 (17,064 ±6)	BACT14A BACT14A	MS21260L4RH MS21260L4LH
AB-L1 AB-L2	26.2 ±0.12 (665 ±3) 652.3 ±0.25 (16,568 ±6)	BACT14A BACT14A	MS21260L4LH MS21260L4RH
ABSA-L1 ABSA-L2	439.8 ±0.20 (11,171 ±5) 18.4 ±0.12 (467 ±3)	BACT14A BACT14A	MS21260L6LH MS21260L6RH
ABSA-R1 ABSA-R2	462.9 ±0.20 (11,758 ±5) 35.4 ±0.12 (899 ±3)	BACT14A BACT14A	MS21260L6LH MS21260L6RH
ABSB-L1 ABSB-L2	466.9 ±0.20 (11,859 ±5) 21.7 ±0.12 (551 ±3)	BACT14A BACT14A	MS21260L6RH MS21260L6LH
ABSB-R1 ABSB-R2	449.9 ±0.20 (11,427 ±5) 17.4 ±0.12 (442 ±3)	BACT14A BACT14A	MS21260L6RH MS21260L6LH
ACBA1-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBA1-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBA2-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBA2-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB1-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB1-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH
ACBB2-L	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4RH
ACBB2-R	32.1 ±0.12 (815 ±3)	BACT14A	MS21260S4LH

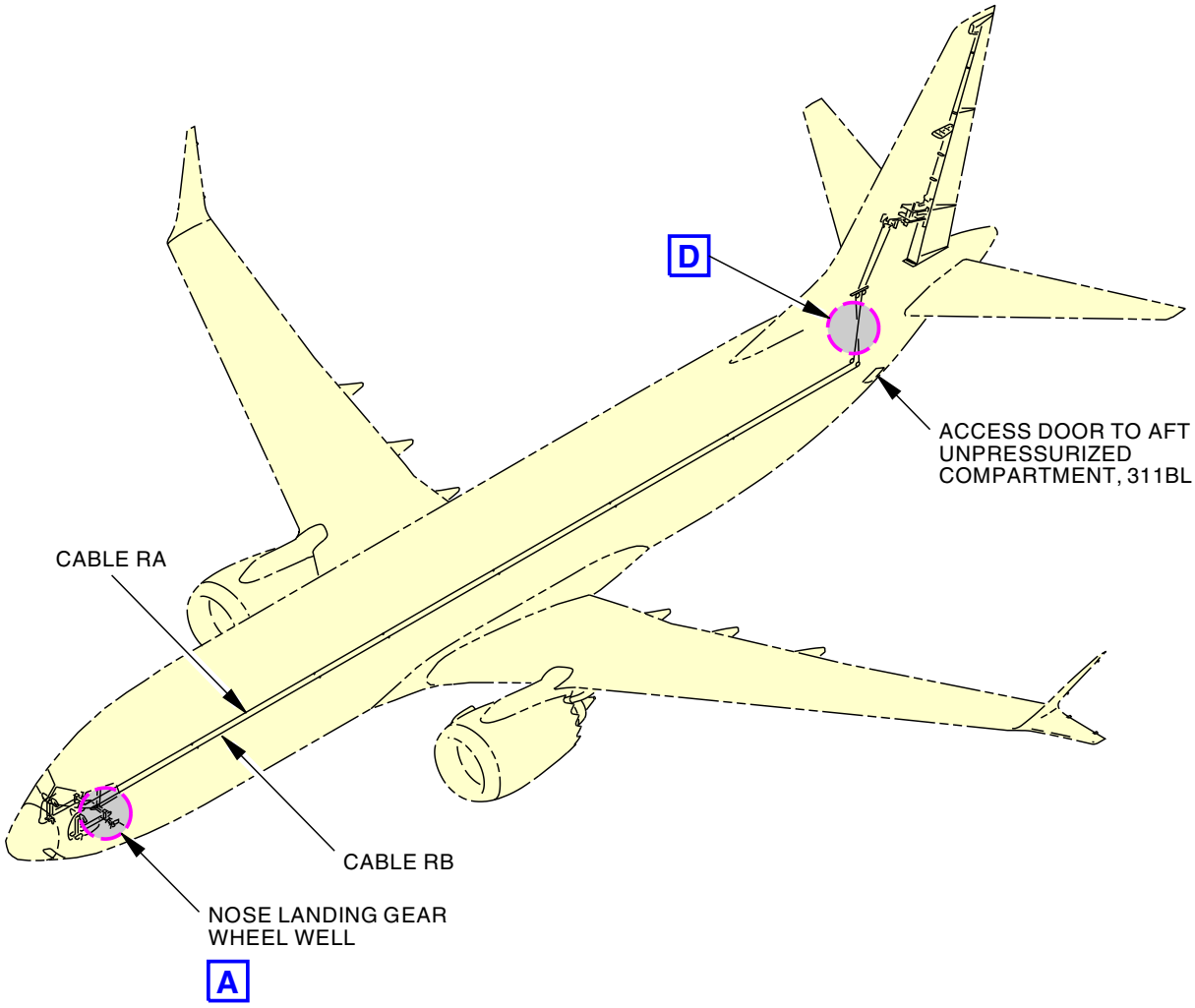
TABLE A

[4] MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

2410989 S00061526728_V1

Aileron Control Cables
Figure 201/27-09-14-990-801 (Sheet 6 of 6)

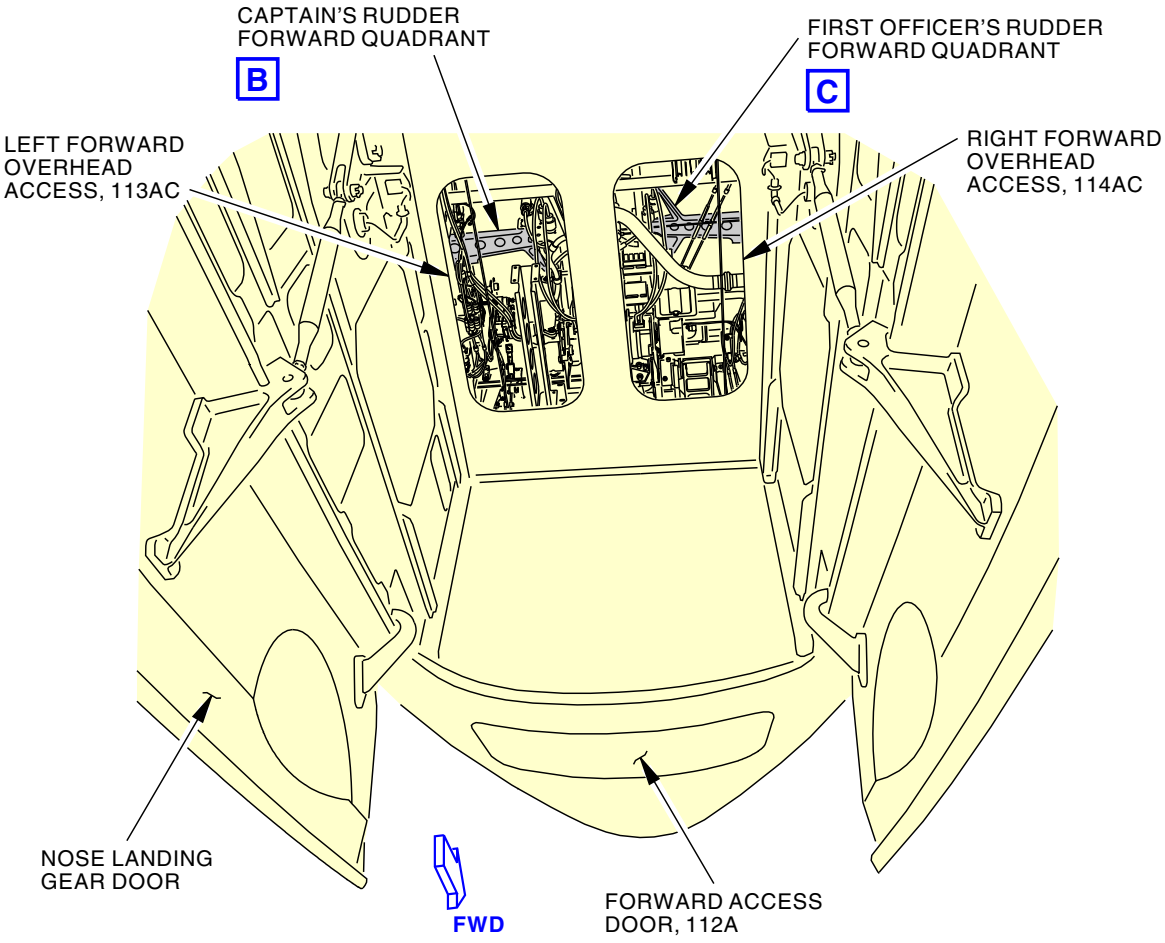
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2410990 S00061526729_V2

Rudder Control Cables
Figure 202/27-09-14-990-802 (Sheet 1 of 5)

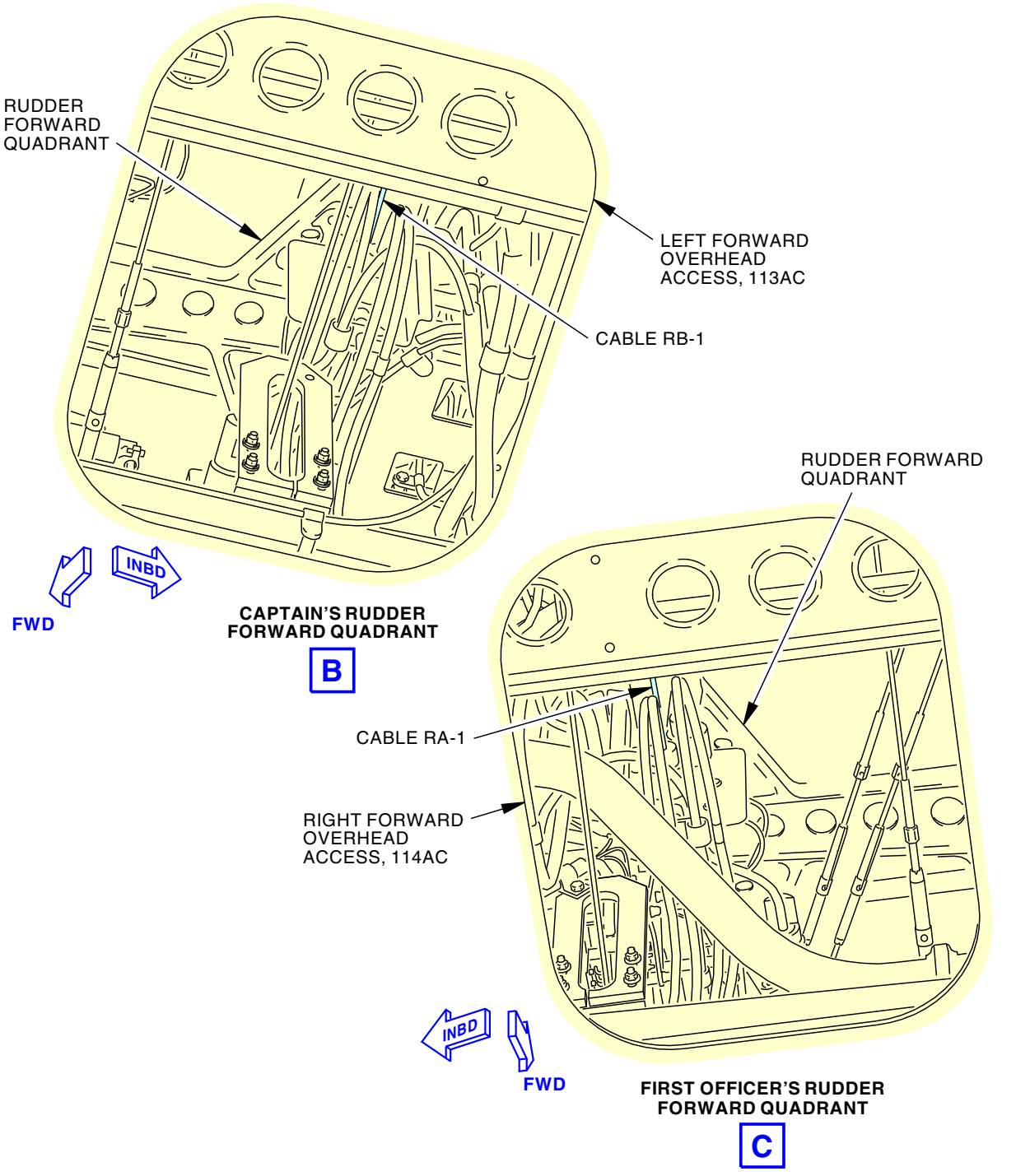
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2410991 S00061526730_V2

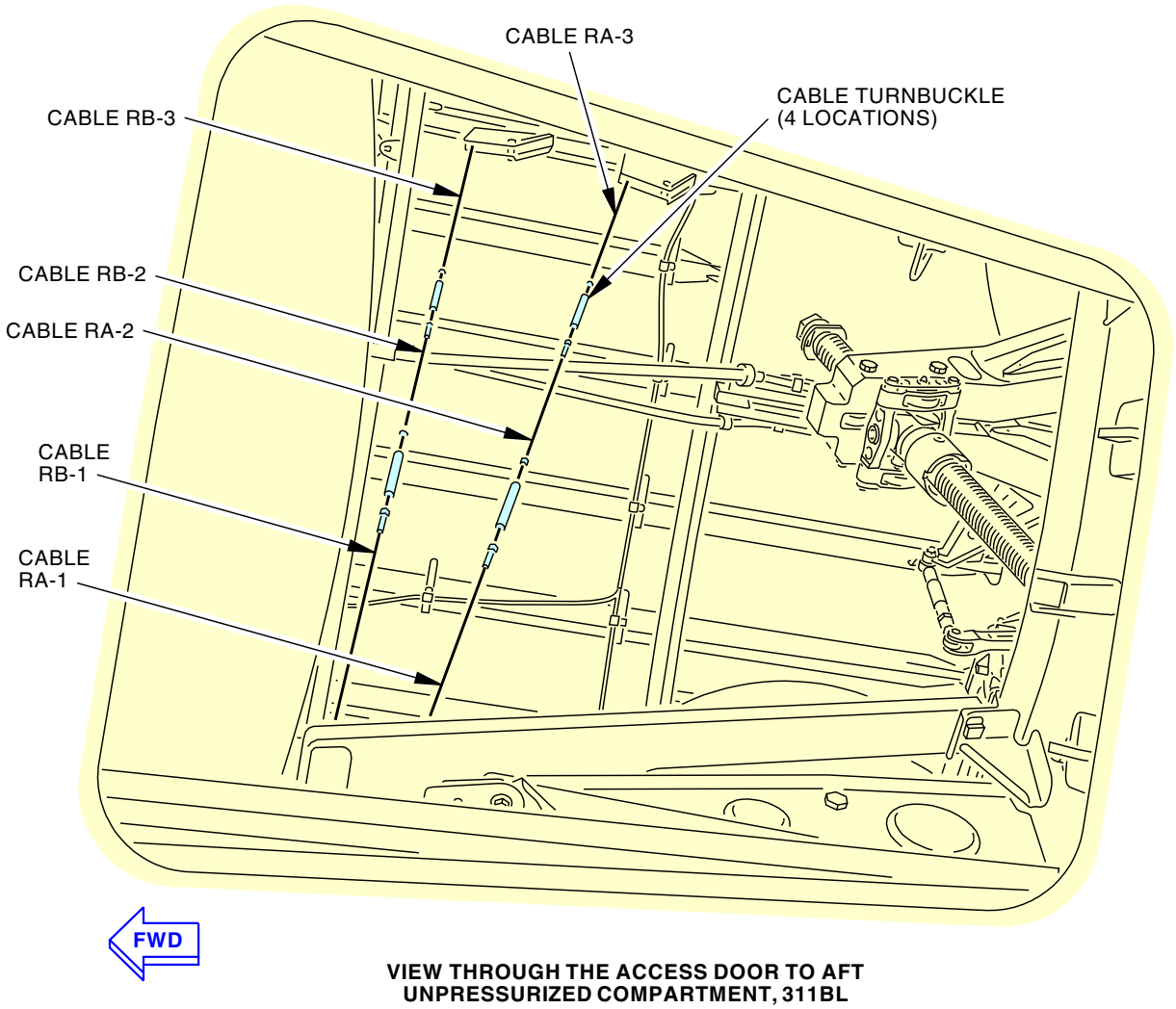
Rudder Control Cables
Figure 202/27-09-14-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Control Cables
Figure 202/27-09-14-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



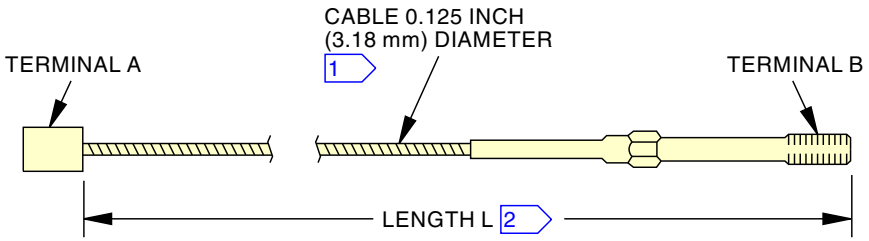
VIEW THROUGH THE ACCESS DOOR TO AFT UNPRESSURIZED COMPARTMENT, 311BL

D

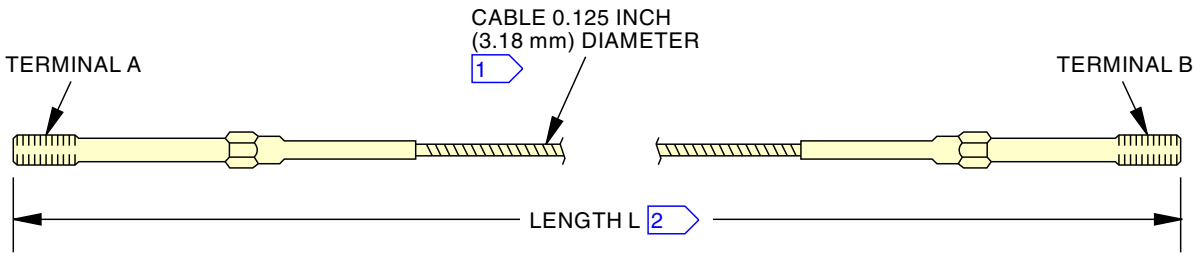
2410993 S00061526732_V1

Rudder Control Cables
Figure 202/27-09-14-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RA-1, RA-3, RB-1, RB-3



RA-2, RB-2

CABLE NAME		LENGTH L 2 INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
RIGHT SIDE	RA-1	1272.5 ±0.50 (32,321 ±13)	BACT14A	MS21260L4RH
	RA-2	18.8 ±0.12 (478 ±3)	MS21260L4RH	MS21260L4LH
	RA-3	111.0 ±0.12 (2,819 ±3)	BACT14A	MS21260L4LH
LEFT SIDE	RB-1	1265.2 ±0.50 (32,136 ±13)	BACT14A	MS21260L4LH
	RB-2	18.8 ±0.12 (478 ±3)	MS21260L4RH	MS21260L4LH
	RB-3	123.7 ±0.12 (3,142 ±3)	BACT14A	MS21260L4RH

TABLE A

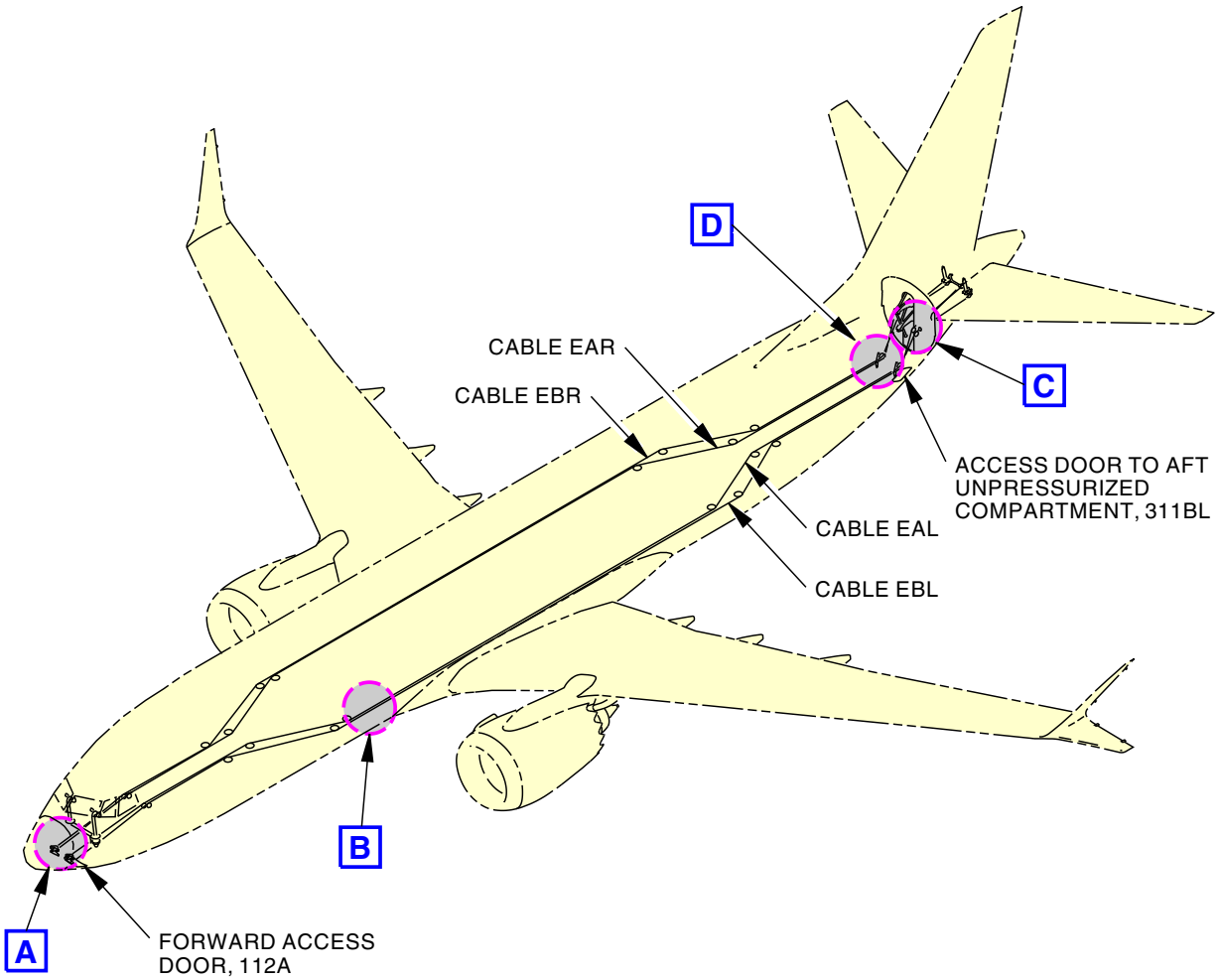
1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19

2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

2410994 S00061526733_V1

Rudder Control Cables
Figure 202/27-09-14-990-802 (Sheet 5 of 5)

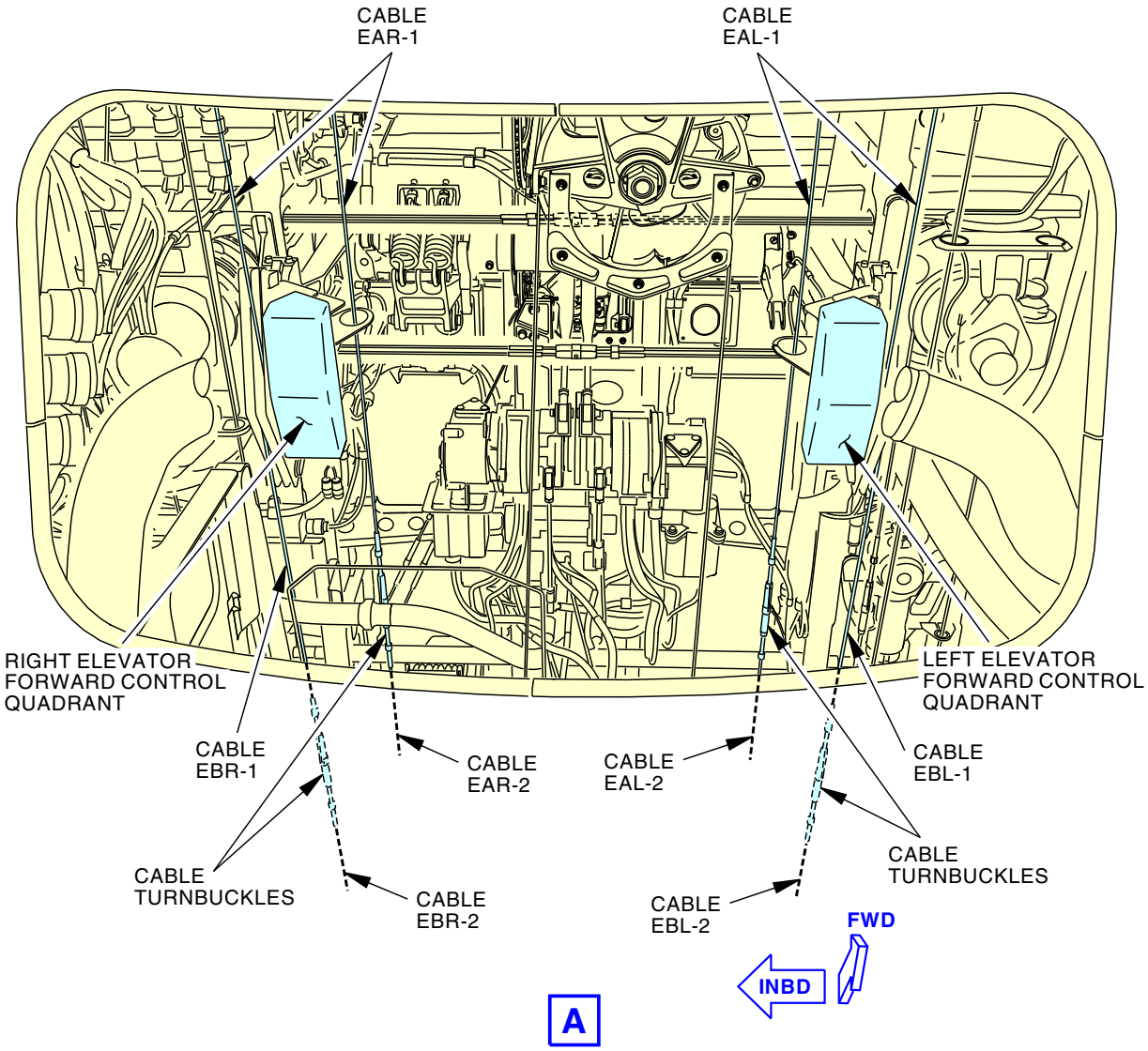
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2410995 S00061526734_V1

Elevator Control Cables
Figure 203/27-09-14-990-803 (Sheet 1 of 5)

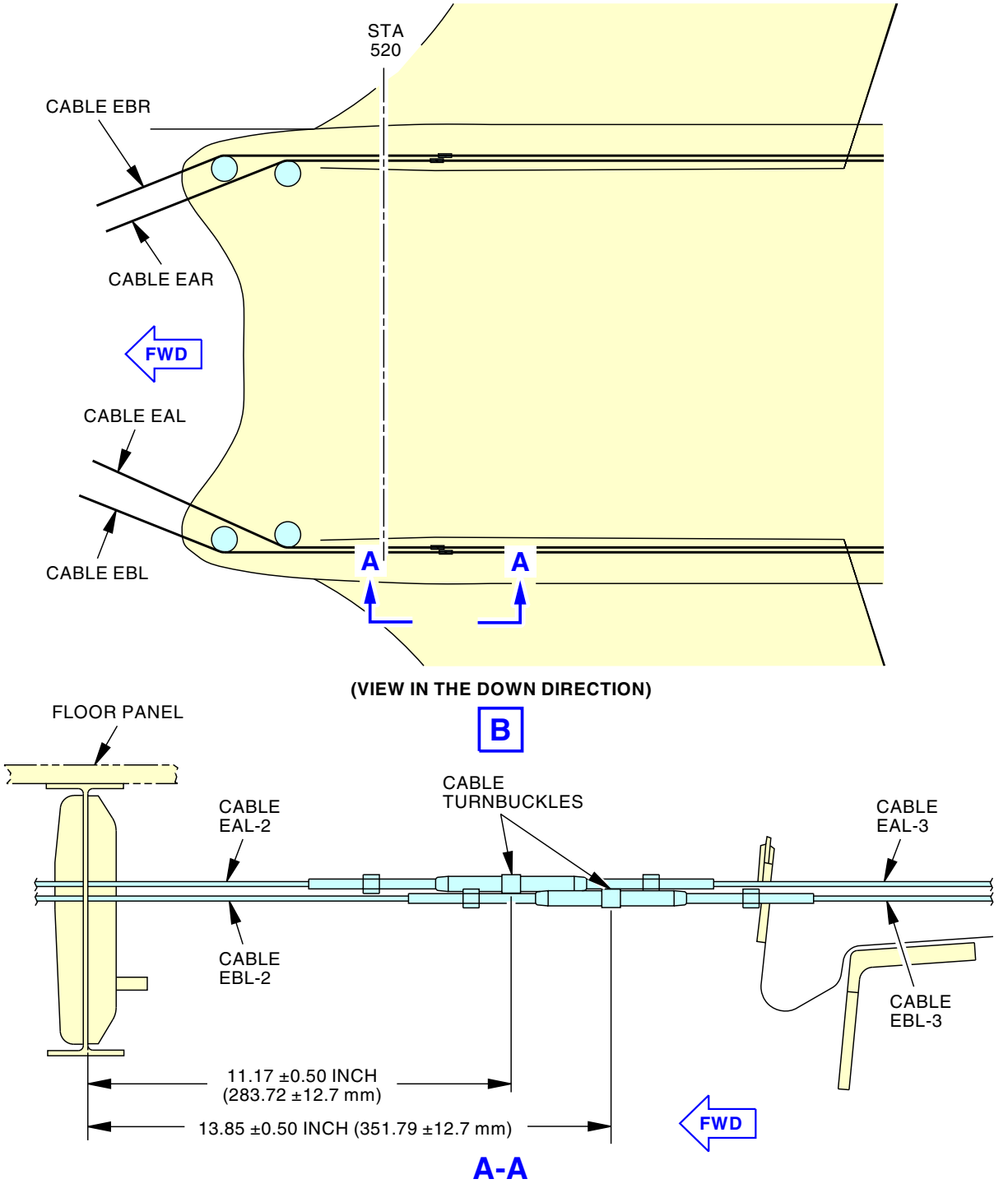
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2410996 S00061526735_V3

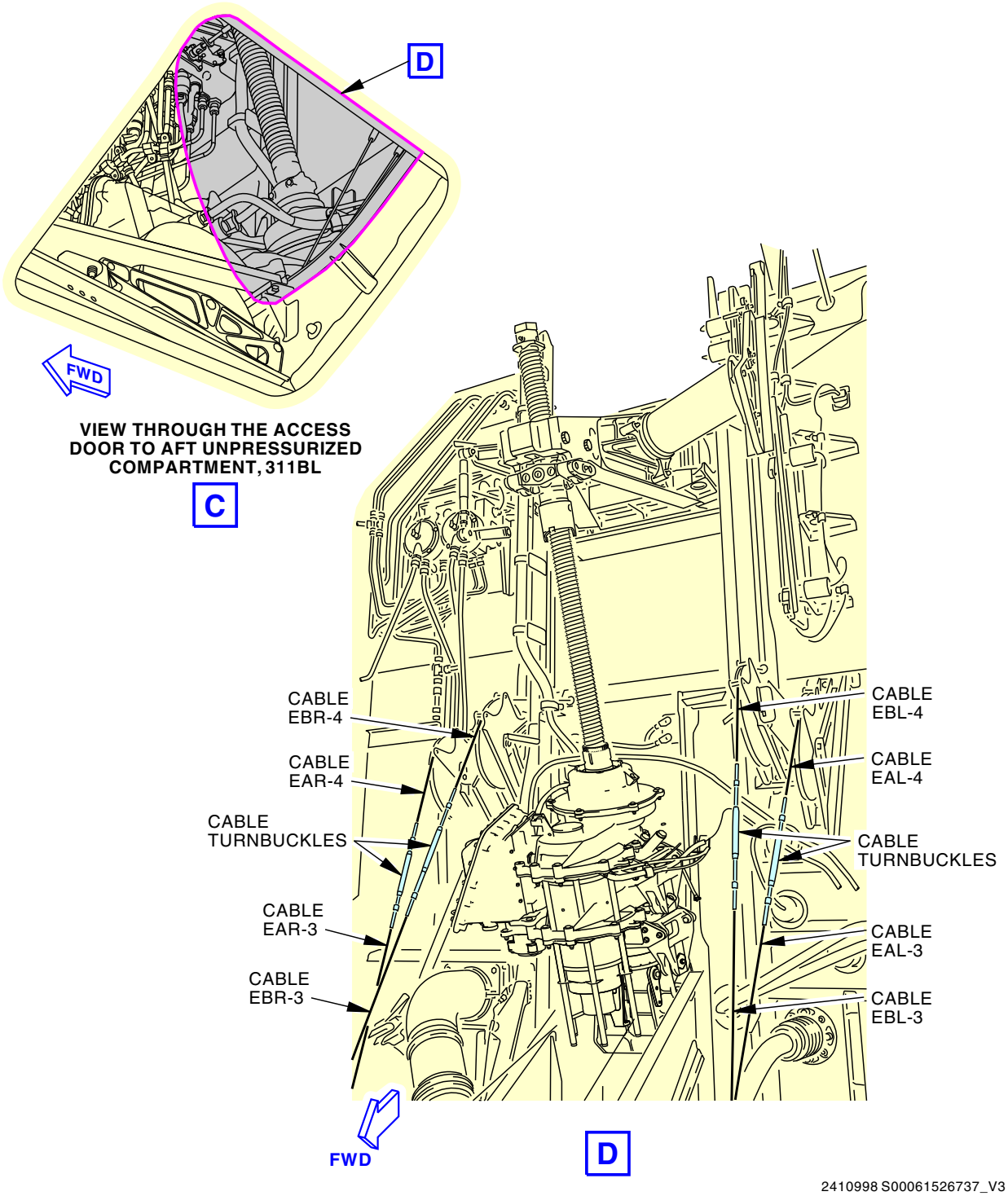
Elevator Control Cables
Figure 203/27-09-14-990-803 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



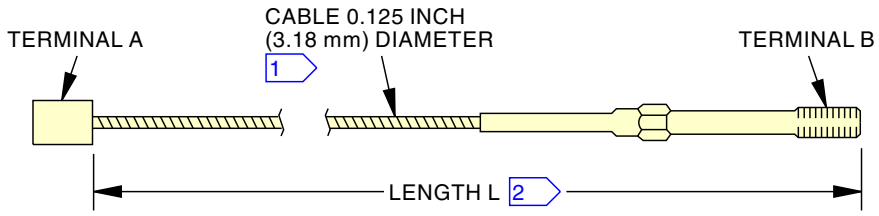
Elevator Control Cables
Figure 203/27-09-14-990-803 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

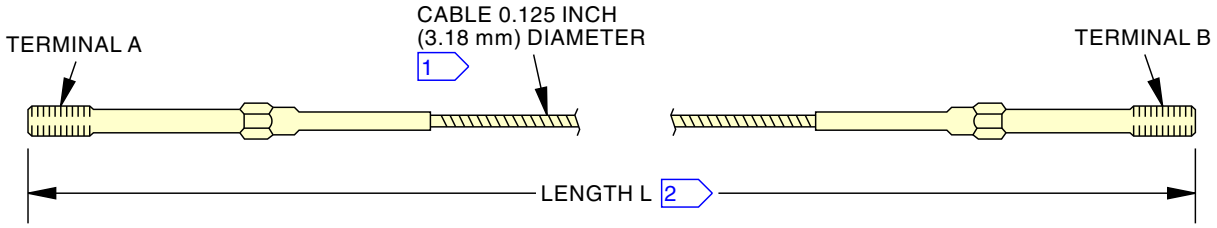


Elevator Control Cables
Figure 203/27-09-14-990-803 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EAL-1, EAL-4, EAR-1, EAR-4, EBL-1, EBL-4, EBR-1, EBR-4



EAL-2, EAL-3, EAR-2, EAR-3, EBL-2, EBL-3, EBR-2, EBR-3

CABLE NAME		LENGTH L 2 INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B
LEFT SIDE	EAL-1 EAL-2 EAL-3 EAL-4	97.6 ±0.12 (2,479 ±3) 502.2 ±0.25 (12,756 ±6) 780.0 ±0.38 (19,812 ±9) 102.8 ±0.12 (2,611 ±3)	BACT14A MS21260L4RH MS21260L4RH BACT14A	MS21260L4LH MS21260L4LH MS21260L4RH MS21260L4LH
RIGHT SIDE	EAR-1 EAR-2 EAR-3 EAR-4	97.6 ±0.12 (2,479 ±3) 502.2 ±0.25 (12,756 ±6) 782.1 ±0.38 (19,865 ±9) 102.8 ±0.12 (2,611 ±3)	BACT14A MS21260L4RH MS21260L4RH BACT14A	MS21260L4LH MS21260L4LH MS21260L4RH MS21260L4LH
LEFT SIDE	EBL-1 EBL-2 EBL-3 EBL-4	31.5 ±0.12 (800 ±3) 495.8 ±0.25 (12,593 ±6) 778.4 ±0.38 (19,771 ±9) 102.1 ±0.12 (2,593 ±3)	BACT14A MS21260L4RH MS21260L4LH BACT14A	MS21260L4RH MS21260L4LH MS21260L4LH MS21260L4RH
RIGHT SIDE	EBR-1 EBR-2 EBR-3 EBR-4	31.5 ±0.12 (800 ±3) 495.8 ±0.25 (12,593 ±6) 781.8 ±0.38 (19,858 ±9) 102.1 ±0.12 (2,593 ±3)	BACT14A MS21260L4RH MS21260L4LH BACT14A	MS21260L4RH MS21260L4LH MS21260L4LH MS21260L4RH

TABLE A

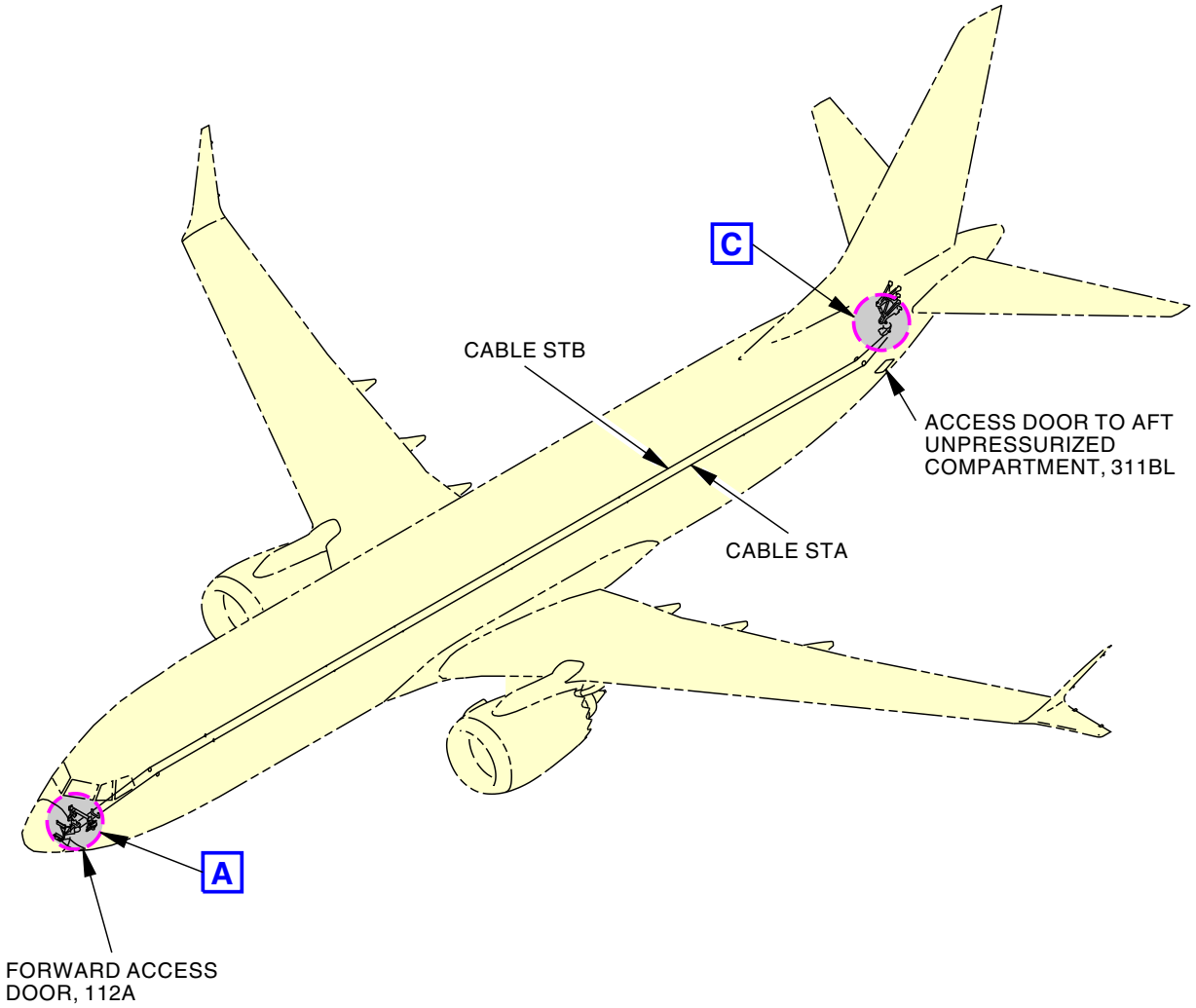
1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

2410999 S00061526738_V2

Elevator Control Cables
Figure 203/27-09-14-990-803 (Sheet 5 of 5)

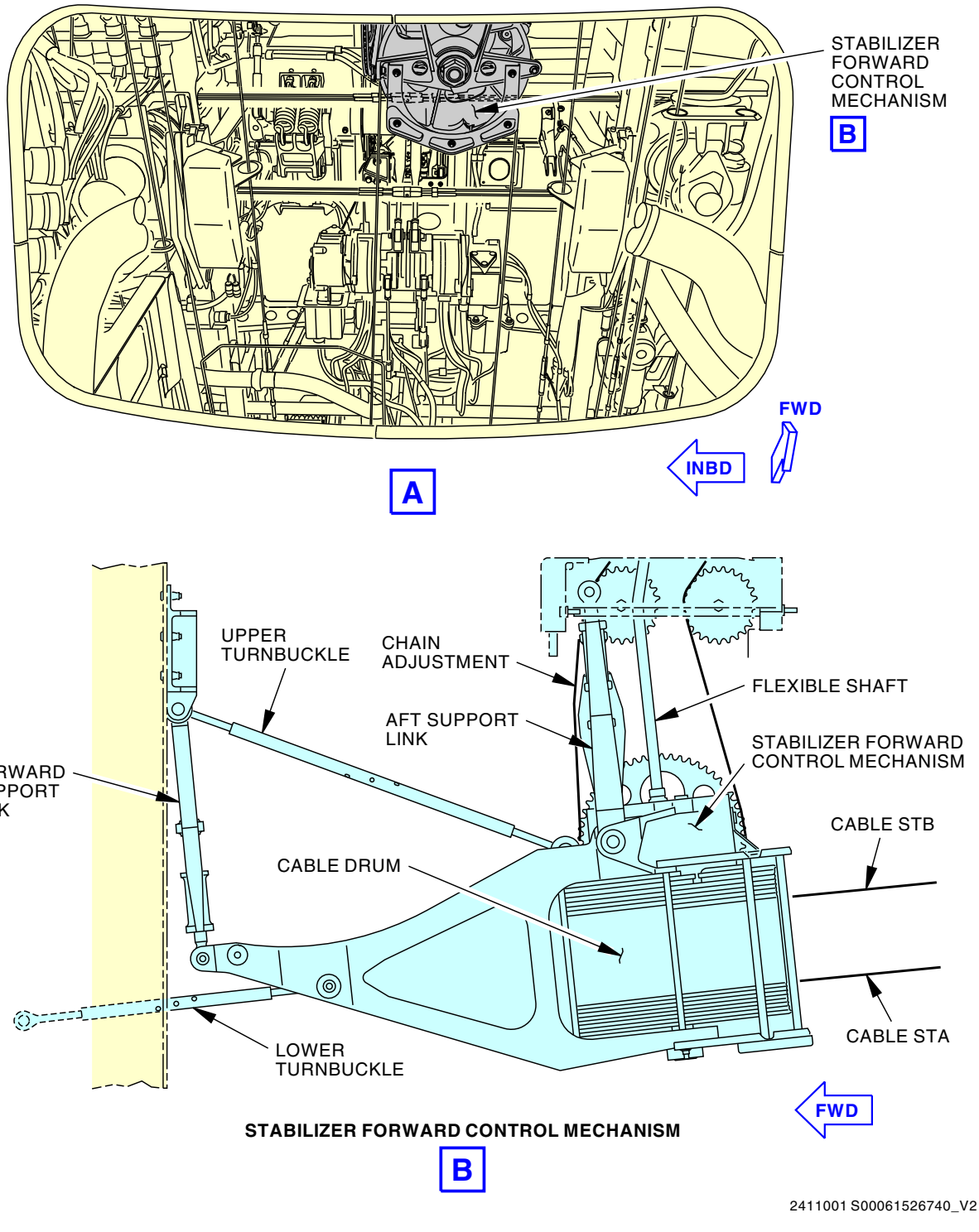
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2411000 S00061526739_V1

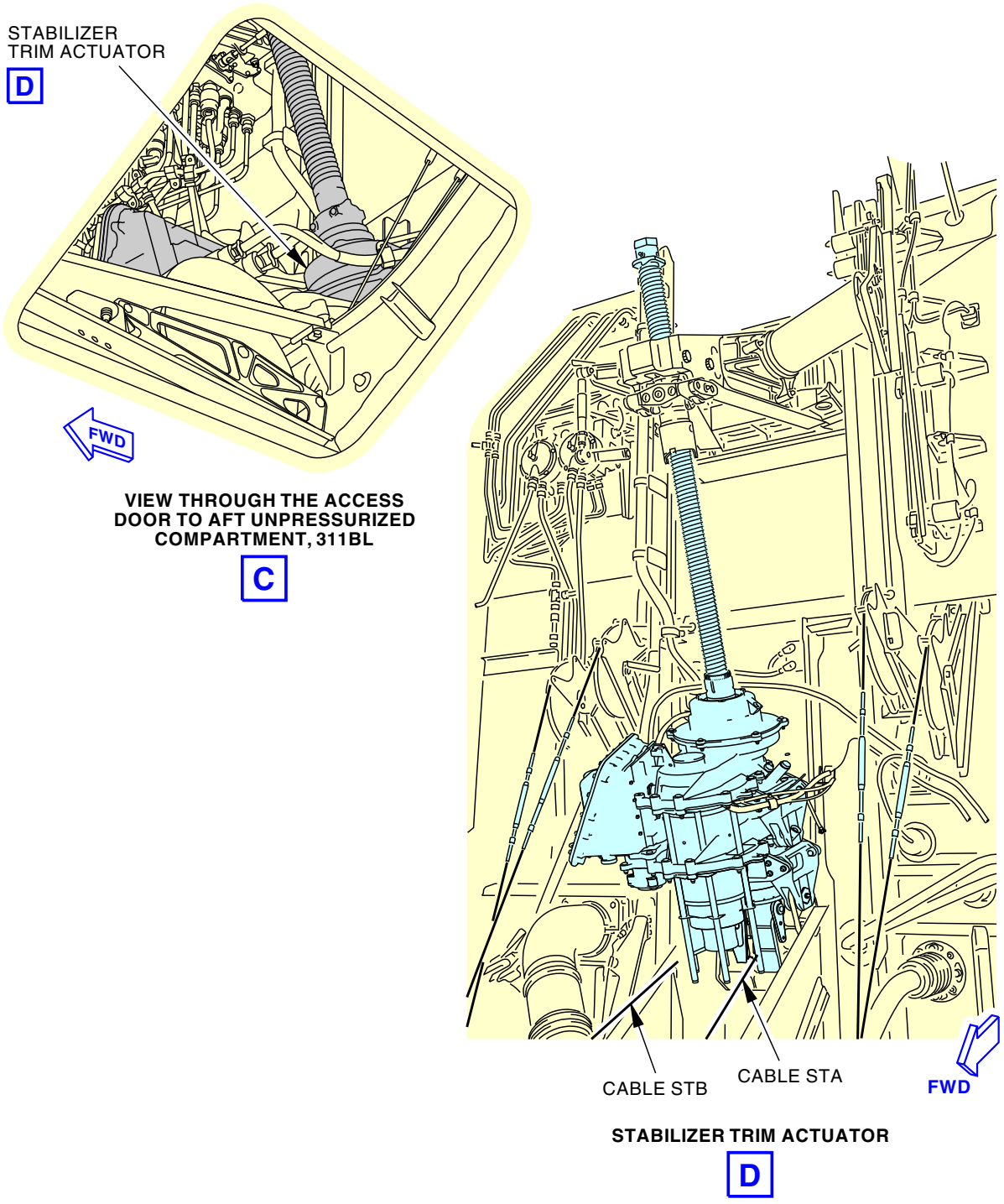
Stabilizer Control Cables
Figure 204/27-09-14-990-804 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



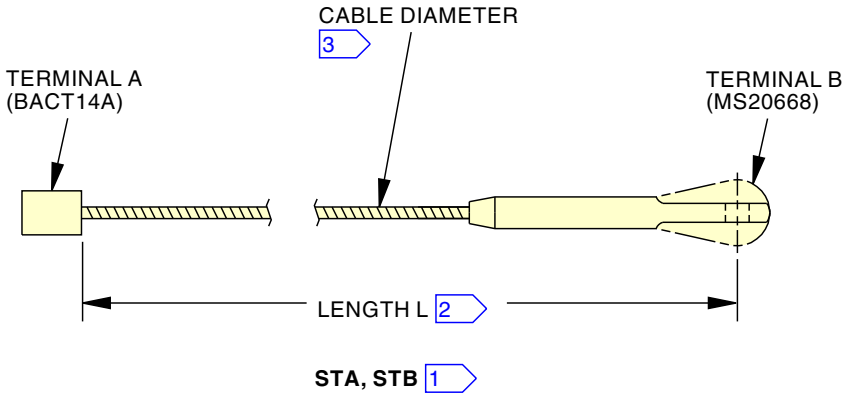
Stabilizer Control Cables
Figure 204/27-09-14-990-804 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Control Cables
Figure 204/27-09-14-990-804 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, (TIN OVER ZINC), 7 X 19.

2 MEASURE CABLE LENGTH WITH A LOAD OF 140 ±5 POUNDS (623 ±22 NEWTONS) OF FORCE. SEE TABLE A.

3 MEASURE THE NEW CABLE DIAMETER AT 3 PLACES AND AVERAGE. THIS CABLE DIAMETER MEASUREMENT SHOULD NOT BE TAKEN WHILE THE CABLE IS UNDER LOAD.

2411003 S00061526742_V1

Stabilizer Control Cables
Figure 204/27-09-14-990-804 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

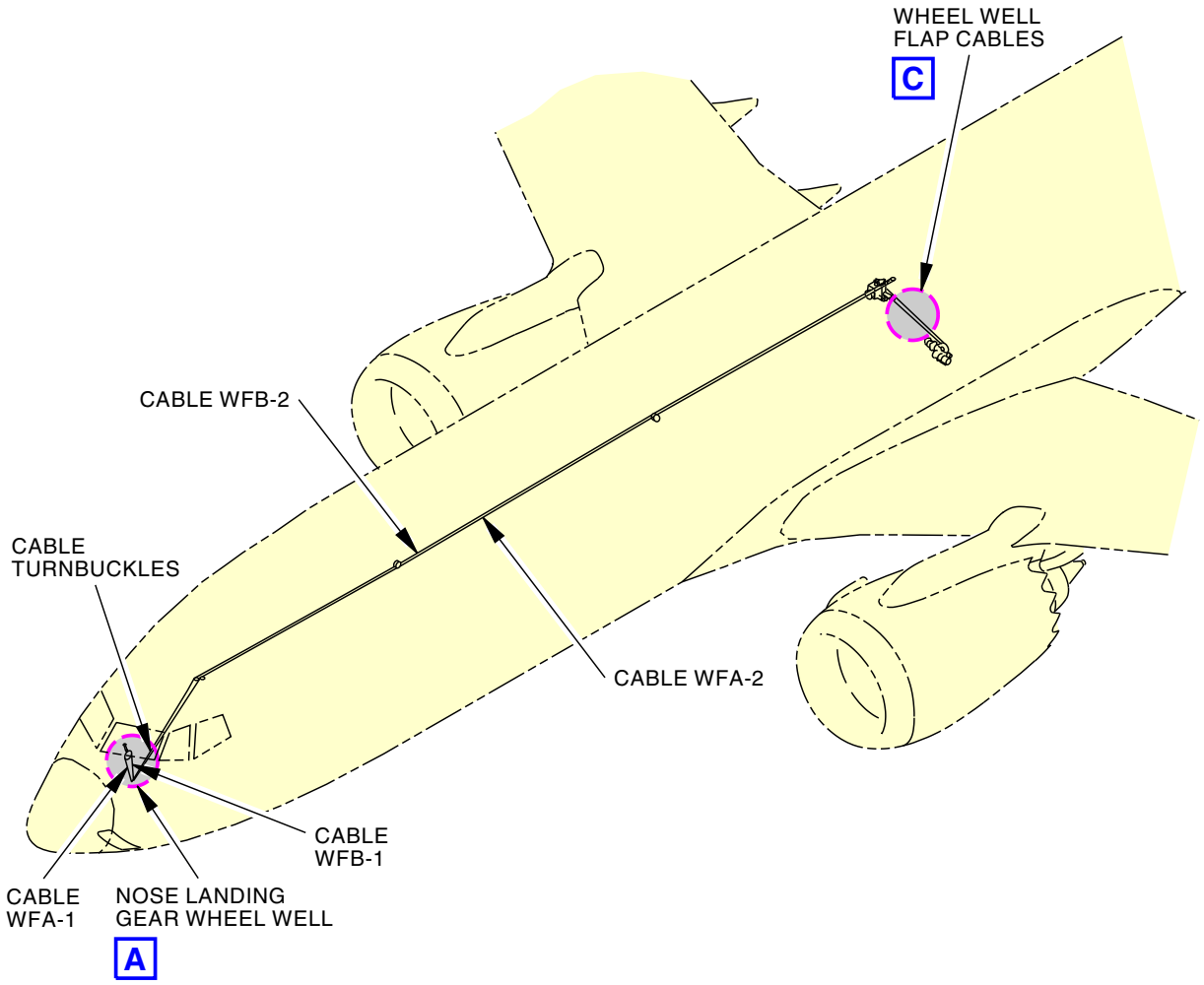
CABLE DIAMETER 3	CABLE LENGTH L INCHES (METERS) 2	
	STA (LEFT)	STB (RIGHT)
0.125	2199.55 ±0.50 (55.869 ±0.013)	2186.02 ±0.50 (55.525 ±0.013)
0.126	2199.69 ±0.50 (55.872 ±0.013)	2186.16 ±0.50 (55.528 ±0.013)
0.127	2199.83 ±0.50 (55.876 ±0.013)	2186.30 ±0.50 (55.532 ±0.013)
0.128	2199.97 ±0.50 (55.879 ±0.013)	2186.44 ±0.50 (55.536 ±0.013)
0.129	2200.11 ±0.50 (55.883 ±0.013)	2186.58 ±0.50 (55.539 ±0.013)
0.130	2200.25 ±0.50 (55.886 ±0.013)	2186.72 ±0.50 (55.543 ±0.013)
0.131	2200.39 ±0.50 (55.890 ±0.013)	2186.86 ±0.50 (55.546 ±0.013)
0.132	2200.53 ±0.50 (55.893 ±0.013)	2187.00 ±0.50 (55.550 ±0.013)
0.133	2200.67 ±0.50 (55.897 ±0.013)	2187.14 ±0.50 (55.553 ±0.013)
0.134	2200.81 ±0.50 (55.901 ±0.013)	2187.28 ±0.50 (55.557 ±0.013)
0.135	2200.95 ±0.50 (55.904 ±0.013)	2187.42 ±0.50 (55.560 ±0.013)
0.136	2201.09 ±0.50 (55.907 ±0.013)	2187.56 ±0.50 (55.564 ±0.013)
0.137	2201.23 ±0.50 (55.911 ±0.013)	2187.70 ±0.50 (55.568 ±0.013)
0.138	2201.37 ±0.50 (55.915 ±0.013)	2187.84 ±0.50 (55.571 ±0.013)
0.139	2201.51 ±0.50 (55.918 ±0.013)	2187.98 ±0.50 (55.575 ±0.013)

TABLE A

2411004 S00061526743_V1

Stabilizer Control Cables
Figure 204/27-09-14-990-804 (Sheet 5 of 5)

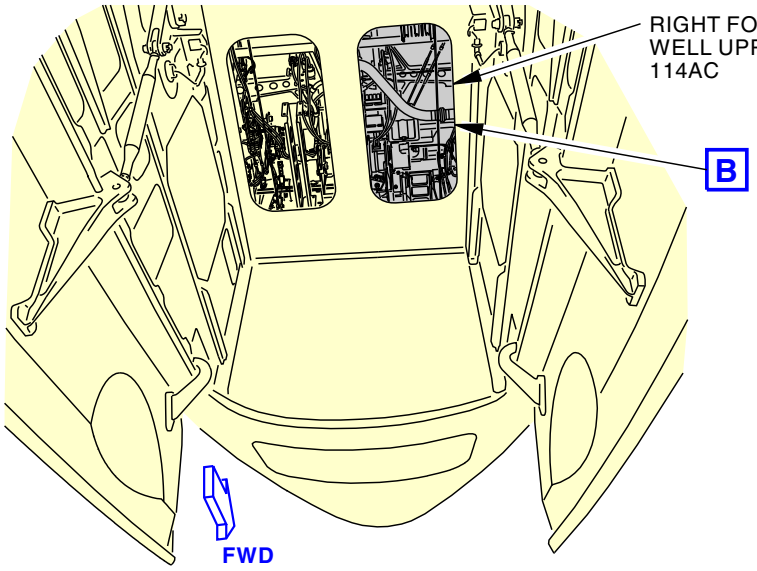
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2411005 S00061526744_V1

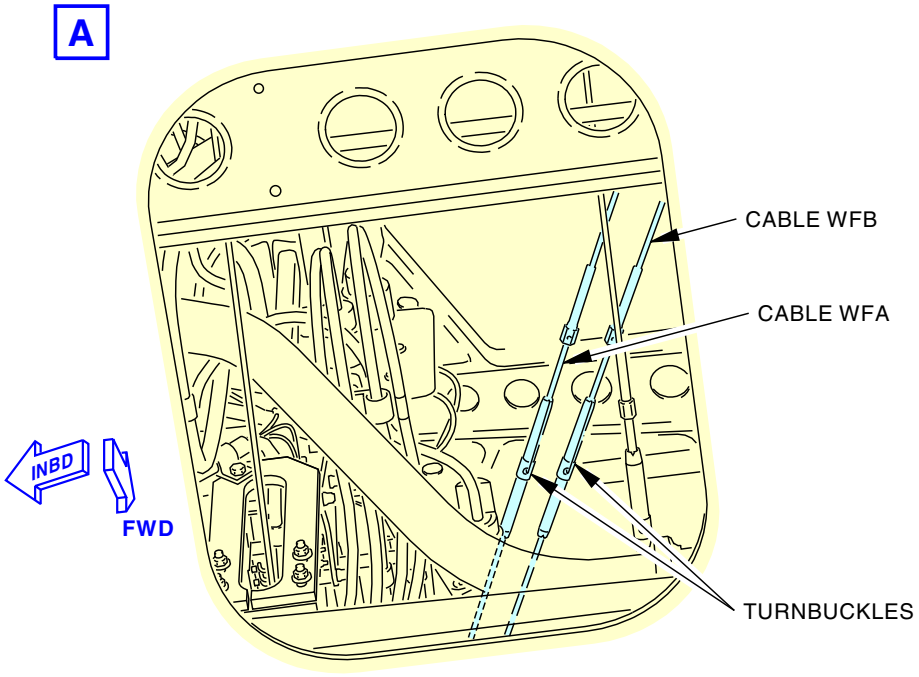
Trailing Edge Flap Control Cables
Figure 205/27-09-14-990-805 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOSE LANDING GEAR WHEEL WELL

A



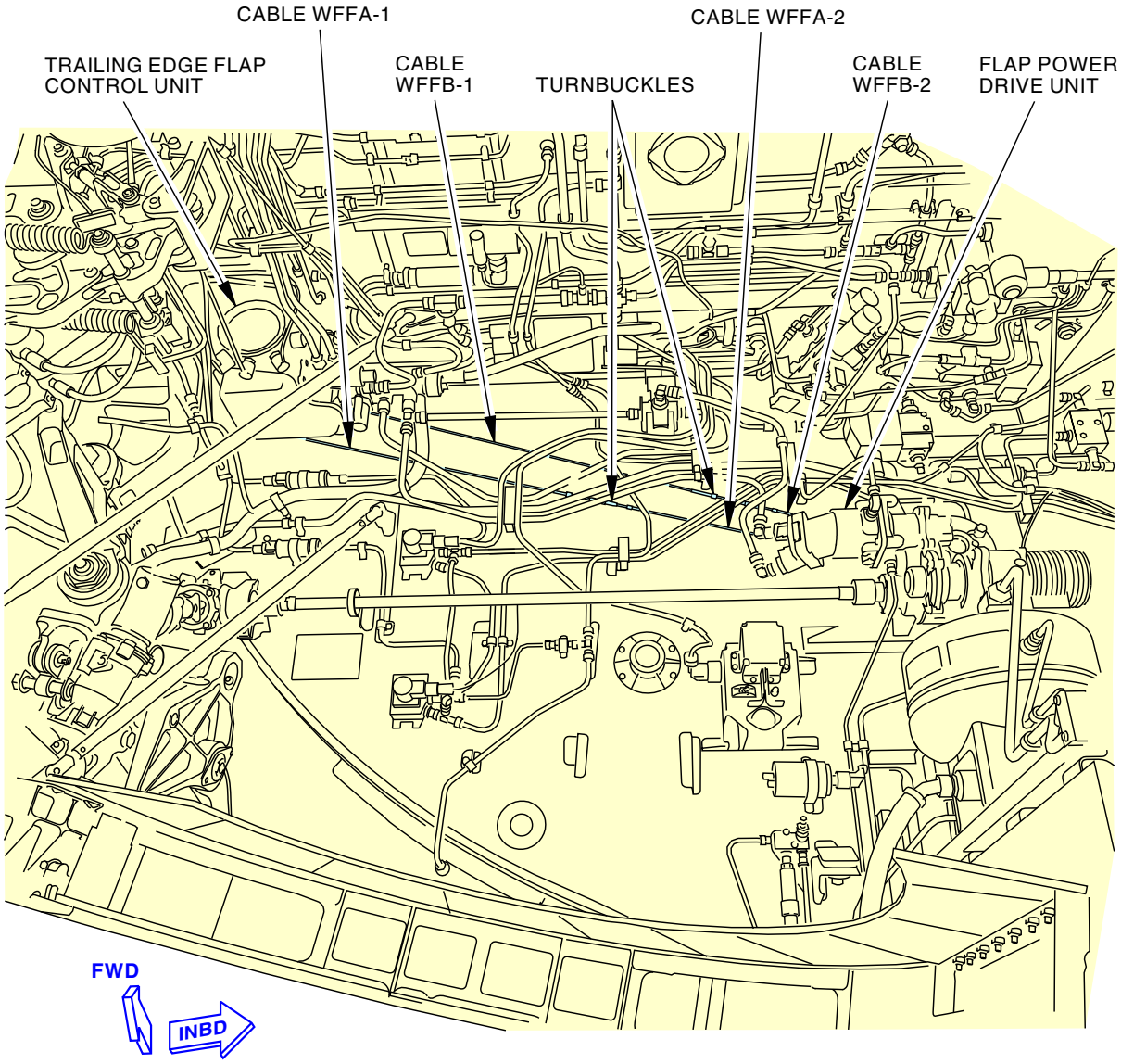
VIEW THROUGH RIGHT FORWARD NOSE WHEEL WELL UPPER ACCESS PANEL, 114AC

B

2411006 S00061526745_V2

Trailing Edge Flap Control Cables
Figure 205/27-09-14-990-805 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



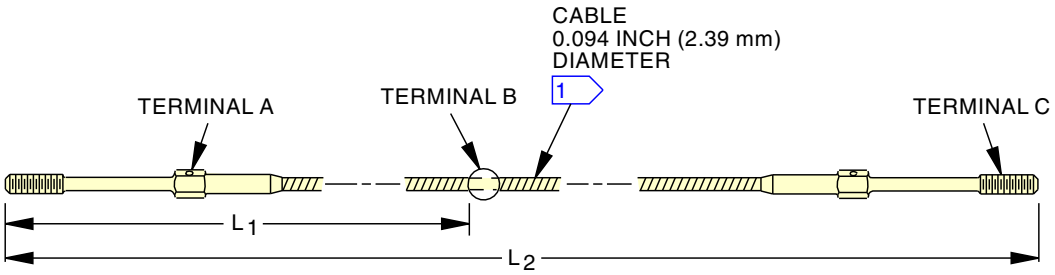
MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)
(EXAMPLE)

C

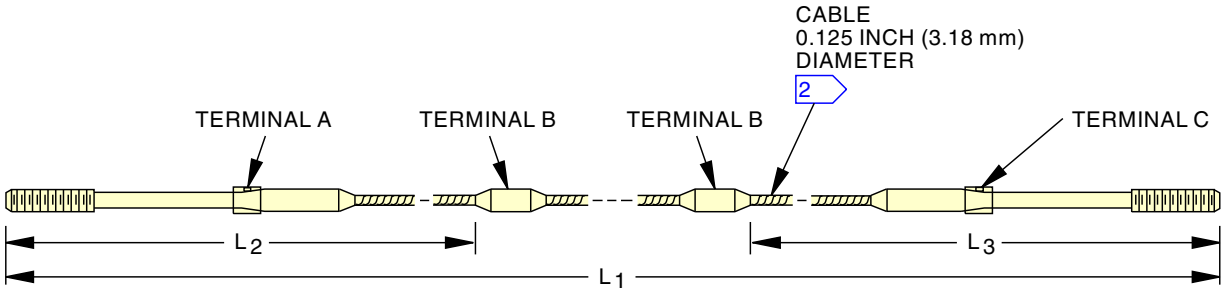
2411007 S00061526746_V2

Trailing Edge Flap Control Cables
Figure 205/27-09-14-990-805 (Sheet 3 of 5)

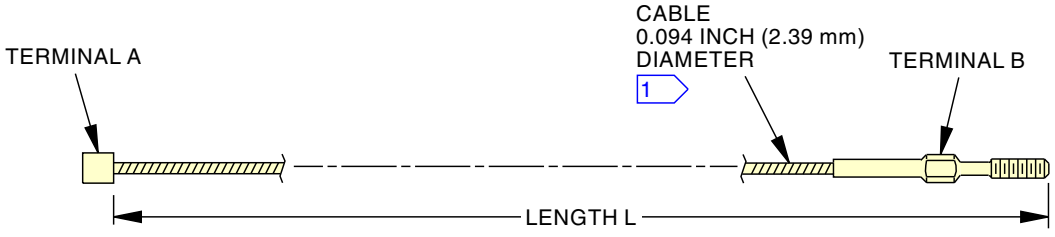
ECCN 9E991 BOEING PROPRIETARY - See title page for details



WFA-1, WFB-1



WFA-2, WFB-2



**WFFA-1, WFFA-2,
WFFB-1, WFFB-2**

1 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 7

2 CABLE CONSTRUCTION IS CARBON STEEL:
BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19

2411008 S00061526747_V2

**Trailing Edge Flap Control Cables
Figure 205/27-09-14-990-805 (Sheet 4 of 5)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CABLE NAME	LENGTH L [3] INCHES (MILLIMETERS)	TERMINAL A	TERMINAL B	TERMINAL C
WFA-1, WFB-1	L_1 - 41.5 ±0.12 (1,054 ±3) [1] L_2 - 84.8 ±0.25 (2,154 ±6) [4]	MS21260L3LH	BACT14B3	MS21260L3RH
WFA-2, WFB-2	L_1 - 1418.8 (35,758) [3] L_2 - 712.4 (18,095) [3] L_3 - 695.4 (17,663) [3]	69-38195-2	BACT14A4	69-38195-1
WFFA-1	30.4 (772) [4]	BACT14A3	MS21260S3RH	
WFFB-1	32.9 (836) [4]	BACT14A3	MS21260S3RH	
WFFA-2 WFFB-2	46.8 (1,189) [4]	BACT14A3	MS21260S3LH	

TABLE A

[1] CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 7.

[2] CABLE CONSTRUCTION IS CARBON STEEL: BMS 7-265, TYPE 1, COMPOSITION A (TIN OVER ZINC), 7 X 19.

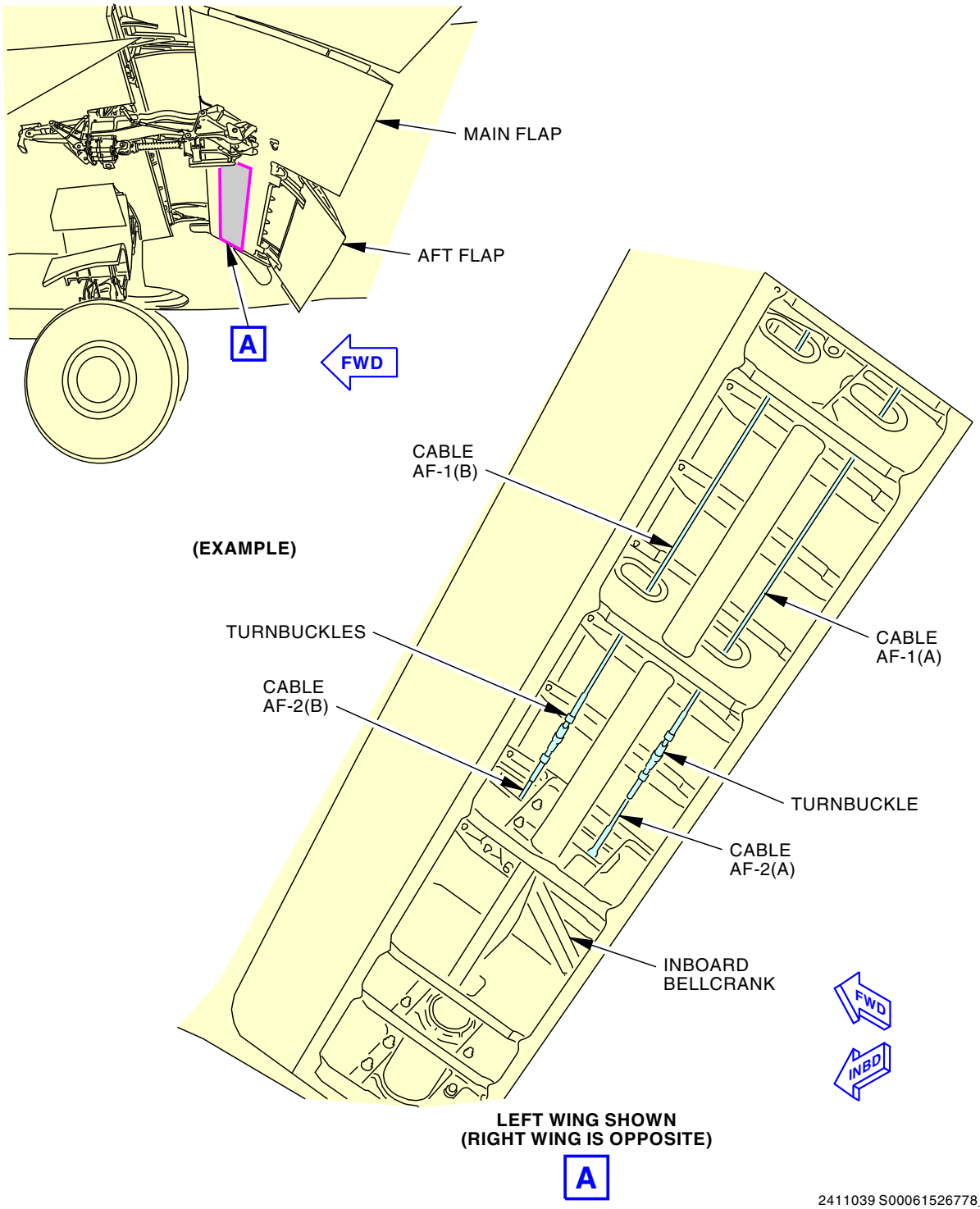
[3] MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS (178 ±13 NEWTONS).

[4] MEASURE CABLE WITH A LOAD OF 20 ±3 POUNDS (89 ±13 NEWTONS).

2411009 S00061526748_V1

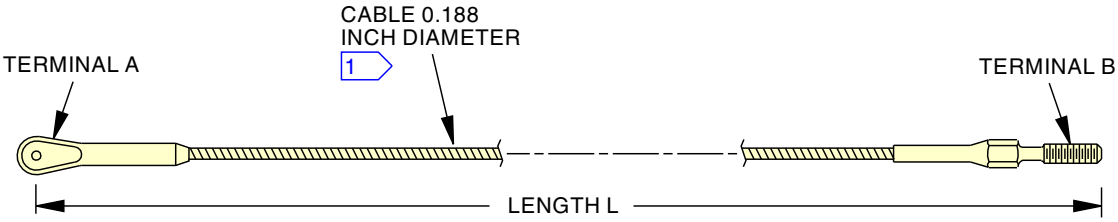
Trailing Edge Flap Control Cables
Figure 205/27-09-14-990-805 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aft Flap Drive Cables
Figure 206/27-09-14-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**AF-1(A), AF-1(B),
AF-2(A), AF-2(B)**

CABLE NAME	LENGTH L (INCHES) 1	TERMINAL A	TERMINAL B
AF-1(A) AF-1(B)	47.3384	113A2641-1	MS21260S6RH
AF-2(A) AF-2(B)	10.6360	113A2641-1	MS21260S6LH

TABLE A

1 CABLE CONSTRUCTION IS CORROSION RESISTANT STEEL: MIL-W-83420, COMPOSITION B, 7 X 19

2 MEASURE CABLE WITH A LOAD OF 40 ±3 POUNDS.

2411040 S00061526779_V1

**Aft Flap Drive Cables
Figure 206/27-09-14-990-806 (Sheet 2 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-14-820-801

3. Control Cables - Rigging

A. General

(1) Before you do cable adjustment, permit a minimum of one hour at a constant ambient temperature of ± 5 degrees F (± 2.8 degrees C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

(2) Before you do cable adjustment, allow the tensiometer to stabilize to the same ambient temperature as the airplane.

B. References

Reference	Title
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-21-00-820-803	Rudder Control Cables RA and RB Adjustment (P/B 501)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-820-801	Trailing Edge Flap Control System Adjustment and Test (P/B 501)
27-51-14-400-801	Inboard Aft Flap Actuating Mechanism Installation (P/B 401)

C. Adjust the Control Cables

SUBTASK 27-09-14-820-001

(1) To adjust the aileron cable system, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

SUBTASK 27-09-14-820-002

(2) To adjust the rudder cable system, do this task: Rudder Control Cables RA and RB Adjustment, TASK 27-21-00-820-803.

SUBTASK 27-09-14-820-003

(3) To adjust the elevator cable system, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, TASK 27-31-00-820-801.

SUBTASK 27-09-14-820-004

(4) To adjust the stabilizer cable system, do this task: Stabilizer Control Cable and Chain - Adjustment, TASK 27-41-00-820-801.

SUBTASK 27-09-14-820-005

(5) To adjust the trailing edge flaps cable system, do this task: Trailing Edge Flap Control System Adjustment and Test, TASK 27-51-00-820-801.

SUBTASK 27-09-14-820-006

(6) To adjust the trailing edge flap boom cables, do this task: Inboard Aft Flap Actuating Mechanism Installation, TASK 27-51-14-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-14-860-802

4. Cable Control - Tension Measurement

A. General

(1) This task gives the instructions to measure the tension of the control cables.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Prepare for the Measurement

SUBTASK 27-09-14-860-006

(1) Before you do cable tension measurement, permit a minimum of one hour at a constant ambient temperature of ±5°F (±2.8°C) for the airframe temperature to become stable.

(a) It is recommended to do the cable tension measurement in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

(2) Before you do cable tension measurement, allow the tensiometer to stabilize to the same ambient temperature as the airplane.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Control Cable Tension Measurement

SUBTASK 27-09-14-860-003

(1) For the aileron control cables use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (Table 201).

Table 201/27-09-14-993-801 Aileron Cable Rigging Load

Temperature	AA & AB	ABSA & ABSB	ACBA1 & ACBA2 ACBB1 & ACBB2
108°F (42.2°C)	183 +10 / -30 lb (83 +5 / -14 kg)	271 +10 / -30 lb (123 +5 / -14 kg)	76 +10 / -30 lb (34 +5 / -14 kg)
106°F (41.1°C)	181 +10 / -30 lb (82 +5 / -14 kg)	269 +10 / -30 lb (122 +5 / -14 kg)	75 +10 / -30 lb (34 +5 / -14 kg)
104°F (40.0°C)	180 +10 / -30 lb (82 +5 / -14 kg)	267 +10 / -30 lb (121 +5 / -14 kg)	74 +10 / -30 lb (34 +5 / -14 kg)
102°F (38.9°C)	178 +10 / -30 lb (81 +5 / -14 kg)	264 +10 / -30 lb (120 +5 / -14 kg)	74 +10 / -30 lb (34 +5 / -14 kg)
100°F (37.8°C)	177 +10 / -30 lb (80 +5 / -14 kg)	262 +10 / -30 lb (119 +5 / -14 kg)	73 +10 / -30 lb (33 +5 / -14 kg)
98°F (36.7°C)	175 +10 / -30 lb (79 +5 / -14 kg)	260 +10 / -30 lb (118 +5 / -14 kg)	73 +10 / -30 lb (33 +5 / -14 kg)
96°F (35.6°C)	174 +10 / -30 lb (79 +5 / -14 kg)	258 +10 / -30 lb (117 +5 / -14 kg)	72 +10 / -30 lb (33 +5 / -14 kg)
94°F (34.4°C)	172 +10 / -30 lb (78 +5 / -14 kg)	256 +10 / -30 lb (116 +5 / -14 kg)	72 +10 / -30 lb (33 +5 / -14 kg)
92°F (33.3°C)	171 +10 / -30 lb (78 +5 / -14 kg)	254 +10 / -30 lb (115 +5 / -14 kg)	71 +10 / -30 lb (32 +5 / -14 kg)
90°F (32.2°C)	169 +10 / -50 lb (77 +5 / -23 kg)	251 +10 / -50 lb (114 +5 / -23 kg)	71 +10 / -50 lb (32 +5 / -23 kg)
88°F (31.1°C)	168 +10 / -50 lb (76 +5 / -23 kg)	249 +10 / -50 lb (113 +5 / -23 kg)	70 +10 / -50 lb (32 +5 / -23 kg)
86°F (30.0°C)	166 +10 / -50 lb (75 +5 / -23 kg)	247 +10 / -50 lb (112 +5 / -23 kg)	70 +10 / -50 lb (32 +5 / -23 kg)
84°F (28.9°C)	165 +10 / -50 lb (75 +5 / -23 kg)	245 +10 / -50 lb (111 +5 / -23 kg)	69 +10 / -50 lb (31 +5 / -23 kg)
82°F (27.8°C)	163 +10 / -50 lb (74 +5 / -23 kg)	243 +10 / -50 lb (110 +5 / -23 kg)	69 +10 / -50 lb (31 +5 / -23 kg)
80°F (26.7°C)	162 +10 / -50 lb (73 +5 / -23 kg)	241 +10 / -50 lb (109 +5 / -23 kg)	68 +10 / -50 lb (31 +5 / -23 kg)
78°F (25.6°C)	160 +10 / -50 lb (73 +5 / -23 kg)	238 +10 / -50 lb (108 +5 / -23 kg)	68 +10 / -50 lb (31 +5 / -23 kg)
76°F (24.4°C)	159 +10 / -50 lb (72 +5 / -23 kg)	236 +10 / -50 lb (107 +5 / -23 kg)	67 +10 / -50 lb (30 +5 / -23 kg)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 201/27-09-14-993-801 Aileron Cable Rigging Load (Continued)

Temperature	AA & AB	ABSA & ABSB	ACBA1 & ACBA2 ACBB1 & ACBB2
74°F (23.3°C)	157 +10 / -50 lb (71 +5 / -23 kg)	234 +10 / -50 lb (106 +5 / -23 kg)	67 +10 / -50 lb (30 +5 / -23 kg)
72°F (22.2°C)	156 +10 / -50 lb (71 +5 / -23 kg)	232 +10 / -50 lb (105 +5 / -23 kg)	66 +10 / -50 lb (30 +5 / -23 kg)
70°F (21.1°C)	155 +10 / -50 lb (70 +5 / -23 kg)	230 +10 / -50 lb (104 +5 / -23 kg)	66 +10 / -50 lb (30 +5 / -23 kg)
68°F (20.0°C)	153 +10 / -50 lb (69 +5 / -23 kg)	228 +10 / -50 lb (103 +5 / -23 kg)	65 +10 / -50 lb (29 +5 / -23 kg)
66°F (18.9°C)	152 +10 / -50 lb (69 +5 / -23 kg)	225 +10 / -50 lb (102 +5 / -23 kg)	65 +10 / -50 lb (29 +5 / -23 kg)
64°F (17.8°C)	150 +10 / -50 lb (68 +5 / -23 kg)	223 +10 / -50 lb (101 +5 / -23 kg)	64 +10 / -50 lb (29 +5 / -23 kg)
62°F (16.7°C)	149 +10 / -50 lb (68 +5 / -23 kg)	221 +10 / -50 lb (100 +5 / -23 kg)	64 +10 / -50 lb (29 +5 / -23 kg)
60°F (15.6°C)	148 +10 / -50 lb (67 +5 / -23 kg)	219 +10 / -50 lb (99 +5 / -23 kg)	63 +10 / -50 lb (29 +5 / -23 kg)
58°F (14.4°C)	146 +10 / -50 lb (66 +5 / -23 kg)	217 +10 / -50 lb (98 +5 / -23 kg)	63 +10 / -50 lb (29 +5 / -23 kg)
56°F (13.3°C)	145 +10 / -50 lb (66 +5 / -23 kg)	215 +10 / -50 lb (98 +5 / -23 kg)	62 +10 / -50 lb (28 +5 / -23 kg)
54°F (12.2°C)	144 +10 / -50 lb (65 +5 / -23 kg)	213 +10 / -50 lb (97 +5 / -23 kg)	62 +10 / -50 lb (28 +5 / -23 kg)
52°F (11.1°C)	142 +10 / -50 lb (64 +5 / -23 kg)	210 +10 / -50 lb (95 +5 / -23 kg)	61 +10 / -50 lb (28 +5 / -23 kg)
50°F (10.0°C)	141 +10 / -50 lb (64 +5 / -23 kg)	208 +10 / -50 lb (94 +5 / -23 kg)	61 +10 / -50 lb (28 +5 / -23 kg)
48°F (8.9°C)	140 +10 / -50 lb (64 +5 / -23 kg)	206 +10 / -50 lb (93 +5 / -23 kg)	60 +10 / -50 lb (27 +5 / -23 kg)
46°F (7.8°C)	138 +10 / -50 lb (63 +5 / -23 kg)	204 +10 / -50 lb (93 +5 / -23 kg)	60 +10 / -50 lb (27 +5 / -23 kg)
44°F (6.7°C)	137 +10 / -50 lb (62 +5 / -23 kg)	202 +10 / -50 lb (92 +5 / -23 kg)	59 +10 / -50 lb (27 +5 / -23 kg)
42°F (5.6°C)	136 +10 / -50 lb (62 +5 / -23 kg)	200 +10 / -50 lb (91 +5 / -23 kg)	59 +10 / -50 lb (27 +5 / -23 kg)
40°F (4.4°C)	134 +10 / -50 lb (61 +5 / -23 kg)	197 +10 / -50 lb (89 +5 / -23 kg)	58 +10 / -50 lb (26 +5 / -23 kg)
38°F (3.3°C)	133 +10 / -30 lb (60 +5 / -14 kg)	195 +10 / -30 lb (88 +5 / -14 kg)	58 +10 / -30 lb (26 +5 / -14 kg)
36°F (2.2°C)	132 +10 / -30 lb (60 +5 / -14 kg)	193 +10 / -30 lb (88 +5 / -14 kg)	57 +10 / -30 lb (26 +5 / -14 kg)
34°F (1.1°C)	131 +10 / -30 lb (59 +5 / -14 kg)	191 +10 / -30 lb (87 +5 / -14 kg)	57 +10 / -30 lb (26 +5 / -14 kg)
32°F (0.0°C)	129 +10 / -30 lb (59 +5 / -14 kg)	189 +10 / -30 lb (86 +5 / -14 kg)	56 +10 / -30 lb (25 +5 / -14 kg)
30°F (-1.1°C)	128 +10 / -30 lb (58 +5 / -14 kg)	187 +10 / -30 lb (85 +5 / -14 kg)	56 +10 / -30 lb (25 +5 / -14 kg)
28°F (-2.2°C)	127 +10 / -30 lb (58 +5 / -14 kg)	184 +10 / -30 lb (83 +5 / -14 kg)	55 +10 / -30 lb (25 +5 / -14 kg)
26°F (-3.3°C)	126 +10 / -30 lb (57 +5 / -14 kg)	182 +10 / -30 lb (83 +5 / -14 kg)	55 +10 / -30 lb (25 +5 / -14 kg)
24°F (-4.4°C)	125 +10 / -30 lb (57 +5 / -14 kg)	180 +10 / -30 lb (82 +5 / -14 kg)	54 +10 / -30 lb (24 +5 / -14 kg)
22°F (-5.6°C)	123 +10 / -30 lb (56 +5 / -14 kg)	178 +10 / -30 lb (81 +5 / -14 kg)	53 +10 / -30 lb (24 +5 / -14 kg)
20°F (-6.7°C)	122 +10 / -30 lb (55 +5 / -14 kg)	176 +10 / -30 lb (80 +5 / -14 kg)	53 +10 / -30 lb (24 +5 / -14 kg)
18°F (-7.8°C)	121 +10 / -30 oz (3 +0 / -1 kg)	174 +10 / -30 lb (79 +5 / -14 kg)	52 +10 / -30 lb (24 +5 / -14 kg)

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Table 201/27-09-14-993-801 Aileron Cable Rigging Load (Continued)

Temperature	AA & AB	ABSA & ABSB	ACBA1 & ACBA2 ACBB1 & ACBB2
16°F (-8.9°C)	120 +10 / -30 lb (54 +5 / -14 kg)	171 +10 / -30 lb (78 +5 / -14 kg)	52 +10 / -30 lb (24 +5 / -14 kg)
14°F (-10.0°C)	119 +10 / -30 lb (54 +5 / -14 kg)	169 +10 / -30 lb (77 +5 / -14 kg)	51 +10 / -30 lb (23 +5 / -14 kg)
12°F (-11.1°C)	118 +10 / -30 lb (54 +5 / -14 kg)	167 +10 / -30 lb (76 +5 / -14 kg)	51 +10 / -30 lb (23 +5 / -14 kg)
10°F (-12.2°C)	117 +10 / -30 lb (53 +5 / -14 kg)	165 +10 / -30 lb (75 +5 / -14 kg)	50 +10 / -30 lb (23 +5 / -14 kg)
8°F (-13.3°C)	115 +10 / -30 lb (52 +5 / -14 kg)	163 +10 / -30 lb (74 +5 / -14 kg)	50 +10 / -30 lb (23 +5 / -14 kg)
6°F (-14.4°C)	114 +10 / -30 lb (52 +5 / -14 kg)	161 +10 / -30 lb (73 +5 / -14 kg)	49 +10 / -30 lb (22 +5 / -14 kg)
4°F (-15.6°C)	113 +10 / -30 lb (51 +5 / -14 kg)	159 +10 / -30 lb (72 +5 / -14 kg)	49 +10 / -30 lb (22 +5 / -14 kg)
2°F (-16.7°C)	112 +10 / -30 lb (51 +5 / -14 kg)	156 +10 / -30 lb (71 +5 / -14 kg)	48 +10 / -30 lb (22 +5 / -14 kg)
0°F (-17.8°C)	111 +10 / -30 lb (50 +5 / -14 kg)	154 +10 / -30 lb (70 +5 / -14 kg)	48 +10 / -30 lb (22 +5 / -14 kg)
-2°F (-18.9°C)	110 +10 / -30 lb (50 +5 / -14 kg)	152 +10 / -30 lb (69 +5 / -14 kg)	47 +10 / -30 lb (21 +5 / -14 kg)
-4°F (-20.0°C)	109 +10 / -30 lb (49 +5 / -14 kg)	150 +10 / -30 lb (68 +5 / -14 kg)	47 +10 / -30 lb (21 +5 / -14 kg)
-6°F (-21.1°C)	108 +10 / -30 lb (49 +5 / -14 kg)	148 +10 / -30 lb (67 +5 / -14 kg)	46 +10 / -30 lb (21 +5 / -14 kg)
-8°F (-22.2°C)	107 +10 / -30 lb (49 +5 / -14 kg)	146 +10 / -30 lb (66 +5 / -14 kg)	46 +10 / -30 lb (21 +5 / -14 kg)
-10°F (-23.3°C)	106 +10 / -30 lb (48 +5 / -14 kg)	143 +10 / -30 lb (65 +5 / -14 kg)	46 +10 / -30 lb (21 +5 / -14 kg)
-12°F (-24.4°C)	105 +10 / -30 lb (48 +5 / -14 kg)	141 +10 / -30 lb (64 +5 / -14 kg)	45 +10 / -30 lb (20 +5 / -14 kg)
-14°F (-25.6°C)	104 +10 / -30 lb (47 +5 / -14 kg)	139 +10 / -30 lb (63 +5 / -14 kg)	45 +10 / -30 lb (20 +5 / -14 kg)
-16°F (-26.7°C)	103 +10 / -30 lb (47 +5 / -14 kg)	137 +10 / -30 lb (62 +5 / -14 kg)	44 +10 / -30 lb (20 +5 / -14 kg)
-18°F (-27.8°C)	102 +10 / -30 lb (46 +5 / -14 kg)	135 +10 / -30 lb (61 +5 / -14 kg)	44 +10 / -30 lb (20 +5 / -14 kg)
-20°F (-28.9°C)	101 +10 / -30 lb (46 +5 / -14 kg)	133 +10 / -30 lb (60 +5 / -14 kg)	43 +10 / -30 lb (20 +5 / -14 kg)
-22°F (-30.0°C)	100 +10 / -30 lb (45 +5 / -14 kg)	130 +10 / -30 lb (59 +5 / -14 kg)	43 +10 / -30 lb (20 +5 / -14 kg)
-24°F (-31.1°C)	99 +10 / -30 lb (45 +5 / -14 kg)	128 +10 / -30 lb (58 +5 / -14 kg)	42 +10 / -30 lb (19 +5 / -14 kg)
-26°F (-32.2°C)	98 +10 / -30 lb (44 +5 / -14 kg)	126 +10 / -30 lb (57 +5 / -14 kg)	42 +10 / -30 lb (19 +5 / -14 kg)
-28°F (-33.3°C)	97 +10 / -30 lb (44 +5 / -14 kg)	124 +10 / -30 lb (56 +5 / -14 kg)	42 +10 / -30 lb (19 +5 / -14 kg)
-30°F (-34.4°C)	96 +10 / -30 lb (44 +5 / -14 kg)	122 +10 / -30 lb (55 +5 / -14 kg)	41 +10 / -30 lb (19 +5 / -14 kg)
-32°F (-35.6°C)	95 +10 / -30 lb (43 +5 / -14 kg)	120 +10 / -30 lb (54 +5 / -14 kg)	41 +10 / -30 lb (19 +5 / -14 kg)
-34°F (-36.7°C)	94 +10 / -30 lb (43 +5 / -14 kg)	117 +10 / -30 lb (53 +5 / -14 kg)	40 +10 / -30 lb (18 +5 / -14 kg)
-36°F (-37.8°C)	93 +10 / -30 lb (42 +5 / -14 kg)	115 +10 / -30 lb (52 +5 / -14 kg)	40 +10 / -30 lb (18 +5 / -14 kg)
-38°F (-38.9°C)	92 +10 / -30 lb (42 +5 / -14 kg)	113 +10 / -30 lb (51 +5 / -14 kg)	39 +10 / -30 lb (18 +5 / -14 kg)
-40°F (-40.0°C)	91 +10 / -30 lb (41 +5 / -14 kg)	111 +10 / -30 lb (50 +5 / -14 kg)	39 +10 / -30 lb (18 +5 / -14 kg)

SUBTASK 27-09-14-860-004

(2) For the elevator control cables use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (Table 202).

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Table 202/27-09-14-993-806 Elevator Control Cable Rigging Tension

Temperature Deg F (C)	Maximum Lbs (Kg)	Minimum Lbs (Kg)
-40°F (-40°C)	85 lb (39 kg)	50 lb (23 kg)
-38°F (-39°C)	85 lb (39 kg)	50 lb (23 kg)
-36°F (-38°C)	86 lb (39 kg)	51 lb (23 kg)
-34°F (-37°C)	87 lb (39 kg)	52 lb (24 kg)
-32°F (-36°C)	88 lb (40 kg)	53 lb (24 kg)
-30°F (-34°C)	90 lb (41 kg)	55 lb (25 kg)
-28°F (-33°C)	91 lb (41 kg)	56 lb (25 kg)
-26°F (-32°C)	92 lb (42 kg)	57 lb (26 kg)
-24°F (-31°C)	93 lb (42 kg)	58 lb (26 kg)
-22°F (-30°C)	94 lb (43 kg)	59 lb (27 kg)
-20°F (-29°C)	95 lb (43 kg)	60 lb (27 kg)
-18°F (-28°C)	96 lb (44 kg)	61 lb (28 kg)
-16°F (-27°C)	97 lb (44 kg)	62 lb (28 kg)
-14°F (-26°C)	98 lb (44 kg)	63 lb (29 kg)
-12°F (-24°C)	99 lb (45 kg)	64 lb (29 kg)
-10°F (-23°C)	100 lb (45 kg)	65 lb (29 kg)
-8°F (-22°C)	101 lb (46 kg)	66 lb (30 kg)
-6°F (-21°C)	103 lb (47 kg)	68 lb (31 kg)
-4°F (-20°C)	104 lb (47 kg)	69 lb (31 kg)
-2°F (-19°C)	105 lb (48 kg)	70 lb (32 kg)
0°F (-18°C)	106 lb (48 kg)	71 lb (32 kg)
2°F (-17°C)	107 lb (49 kg)	72 lb (33 kg)
4°F (-16°C)	108 lb (49 kg)	73 lb (33 kg)
6°F (-14°C)	110 lb (50 kg)	75 lb (34 kg)
8°F (-13°C)	111 lb (50 kg)	76 lb (34 kg)
10°F (-12°C)	112 lb (51 kg)	77 lb (35 kg)
12°F (-11°C)	113 lb (51 kg)	78 lb (35 kg)
14°F (-10°C)	115 lb (52 kg)	80 lb (36 kg)
16°F (-9°C)	116 lb (53 kg)	81 lb (37 kg)
18°F (-8°C)	117 lb (53 kg)	82 lb (37 kg)
20°F (-7°C)	118 lb (54 kg)	83 lb (38 kg)
22°F (-6°C)	120 lb (54 kg)	85 lb (39 kg)
24°F (-4°C)	121 lb (55 kg)	86 lb (39 kg)
26°F (-3°C)	122 lb (55 kg)	87 lb (39 kg)

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Table 202/27-09-14-993-806 Elevator Control Cable Rigging Tension (Continued)

Temperature Deg F (C)	Maximum Lbs (Kg)	Minimum Lbs (Kg)
28°F (-2°C)	124 lb (56 kg)	89 lb (40 kg)
30°F (-1°C)	125 lb (57 kg)	90 lb (41 kg)
32°F (0°C)	126 lb (57 kg)	91 lb (41 kg)
34°F (1°C)	128 lb (58 kg)	93 lb (42 kg)
36°F (2°C)	129 lb (59 kg)	94 lb (43 kg)
38°F (3°C)	130 lb (59 kg)	95 lb (43 kg)
40°F (4°C)	132 lb (60 kg)	82 lb (37 kg)
42°F (6°C)	133 lb (60 kg)	83 lb (38 kg)
44°F (7°C)	134 lb (61 kg)	84 lb (38 kg)
46°F (8°C)	136 lb (62 kg)	86 lb (39 kg)
48°F (9°C)	137 lb (62 kg)	87 lb (39 kg)
50°F (10°C)	139 lb (63 kg)	89 lb (40 kg)
52°F (11°C)	140 lb (64 kg)	90 lb (41 kg)
54°F (12°C)	142 lb (64 kg)	92 lb (42 kg)
56°F (13°C)	143 lb (65 kg)	93 lb (42 kg)
58°F (14°C)	145 lb (66 kg)	95 lb (43 kg)
60°F (16°C)	146 lb (66 kg)	96 lb (44 kg)
62°F (17°C)	148 lb (67 kg)	98 lb (44 kg)
64°F (18°C)	149 lb (68 kg)	99 lb (45 kg)
66°F (19°C)	151 lb (68 kg)	101 lb (46 kg)
68°F (20°C)	152 lb (69 kg)	102 lb (46 kg)
70°F (21°C)	154 lb (70 kg)	104 lb (47 kg)
72°F (22°C)	155 lb (70 kg)	105 lb (48 kg)
74°F (23°C)	157 lb (71 kg)	107 lb (49 kg)
76°F (24°C)	158 lb (72 kg)	108 lb (49 kg)
78°F (26°C)	160 lb (73 kg)	110 lb (50 kg)
80°F (27°C)	162 lb (73 kg)	112 lb (51 kg)
82°F (28°C)	163 lb (74 kg)	113 lb (51 kg)
84°F (29°C)	165 lb (75 kg)	115 lb (52 kg)
86°F (30°C)	166 lb (75 kg)	116 lb (53 kg)
88°F (31°C)	168 lb (76 kg)	118 lb (54 kg)
90°F (32°C)	170 lb (77 kg)	120 lb (54 kg)
92°F (33°C)	171 lb (78 kg)	136 lb (62 kg)
94°F (34°C)	173 lb (78 kg)	138 lb (63 kg)

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Table 202/27-09-14-993-806 Elevator Control Cable Rigging Tension (Continued)

Temperature Deg F (C)	Maximum Lbs (Kg)	Minimum Lbs (Kg)
96°F (36°C)	175 lb (79 kg)	140 lb (64 kg)
98°F (37°C)	176 lb (80 kg)	141 lb (64 kg)
100°F (38°C)	178 lb (81 kg)	143 lb (65 kg)
102°F (39°C)	180 lb (82 kg)	145 lb (66 kg)
104°F (40°C)	181 lb (82 kg)	146 lb (66 kg)
106°F (41°C)	183 lb (83 kg)	148 lb (67 kg)
108°F (42°C)	185 lb (84 kg)	150 lb (68 kg)
110°F (43°C)	187 lb (85 kg)	152 lb (69 kg)

SUBTASK 27-09-14-860-005

(3) For the rudder control cables use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (Table 203).

Table 203/27-09-14-993-807 Rudder Cable Rigging Load

Temp Deg F (C)	Nominal Lbs (Kg) *[1]*[2]	Minimum Lbs (Kg)	Maximum Lbs (Kg)
110°F (43.3°C)	229 lb (103.9 kg)	199 lb (90.3 kg)	234 lb (106.1 kg)
108°F (42.2°C)	228 lb (103.4 kg)	198 lb (89.8 kg)	233 lb (105.7 kg)
106°F (41.1°C)	227 lb (103.0 kg)	197 lb (89.4 kg)	232 lb (105.2 kg)
104°F (40.0°C)	226 lb (102.5 kg)	196 lb (88.9 kg)	231 lb (104.8 kg)
102°F (38.9°C)	224 lb (101.6 kg)	194 lb (88.0 kg)	229 lb (103.9 kg)
100°F (37.8°C)	223 lb (101.2 kg)	193 lb (87.5 kg)	228 lb (103.4 kg)
98°F (36.7°C)	222 lb (100.7 kg)	192 lb (87.1 kg)	227 lb (103.0 kg)
96°F (35.6°C)	220 lb (99.8 kg)	190 lb (86.2 kg)	225 lb (102.1 kg)
94°F (34.4°C)	219 lb (99.3 kg)	189 lb (85.7 kg)	224 lb (101.6 kg)
92°F (33.3°C)	218 lb (98.9 kg)	188 lb (85.3 kg)	223 lb (101.2 kg)
90°F (32.2°C)	217 lb (98.4 kg)	137 lb (62.1 kg)	222 lb (100.7 kg)
88°F (31.1°C)	215 lb (97.5 kg)	135 lb (61.2 kg)	220 lb (99.8 kg)
86°F (30.0°C)	214 lb (97.1 kg)	134 lb (60.8 kg)	219 lb (99.3 kg)
84°F (28.9°C)	213 lb (96.6 kg)	133 lb (60.3 kg)	218 lb (98.9 kg)
82°F (27.8°C)	211 lb (95.7 kg)	131 lb (59.4 kg)	216 lb (98.0 kg)
80°F (26.7°C)	210 lb (95.3 kg)	130 lb (59.0 kg)	215 lb (97.5 kg)
78°F (25.6°C)	209 lb (94.8 kg)	129 lb (58.5 kg)	214 lb (97.1 kg)
76°F (24.4°C)	208 lb (94.3 kg)	128 lb (58.1 kg)	213 lb (96.6 kg)
74°F (23.3°C)	206 lb (93.4 kg)	126 lb (57.2 kg)	211 lb (95.7 kg)
72°F (22.2°C)	205 lb (93.0 kg)	125 lb (56.7 kg)	210 lb (95.3 kg)
70°F (21.1°C)	204 lb (92.5 kg)	124 lb (56.2 kg)	209 lb (94.8 kg)
68°F (20.0°C)	203 lb (92.1 kg)	123 lb (55.8 kg)	208 lb (94.3 kg)

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Table 203/27-09-14-993-807 Rudder Cable Rigging Load (Continued)

Temp Deg F (C)	Nominal Lbs (Kg) *[1]*[2]	Minimum Lbs (Kg)	Maximum Lbs (Kg)
66°F (18.9°C)	201 lb (91.2 kg)	121 lb (54.9 kg)	206 lb (93.4 kg)
64°F (17.8°C)	200 lb (90.7 kg)	120 lb (54.4 kg)	205 lb (93.0 kg)
62°F (16.7°C)	199 lb (90.3 kg)	119 lb (54.0 kg)	204 lb (92.5 kg)
60°F (15.6°C)	197 lb (89.4 kg)	117 lb (53.1 kg)	202 lb (91.6 kg)
58°F (14.4°C)	196 lb (88.9 kg)	116 lb (52.6 kg)	201 lb (91.2 kg)
56°F (13.3°C)	195 lb (88.5 kg)	115 lb (52.2 kg)	200 lb (90.7 kg)
54°F (12.2°C)	194 lb (88.0 kg)	114 lb (51.7 kg)	199 lb (90.3 kg)
52°F (11.1°C)	192 lb (87.1 kg)	112 lb (50.8 kg)	197 lb (89.4 kg)
50°F (10.0°C)	191 lb (86.6 kg)	111 lb (50.3 kg)	196 lb (88.9 kg)
48°F (8.9°C)	190 lb (86.2 kg)	110 lb (49.9 kg)	195 lb (88.5 kg)
46°F (7.8°C)	188 lb (85.3 kg)	108 lb (49.0 kg)	193 lb (87.5 kg)
44°F (6.7°C)	187 lb (84.8 kg)	107 lb (48.5 kg)	192 lb (87.1 kg)
42°F (5.6°C)	186 lb (84.4 kg)	106 lb (48.1 kg)	191 lb (86.6 kg)
40°F (4.4°C)	185 lb (83.9 kg)	105 lb (47.6 kg)	190 lb (86.2 kg)
38°F (3.3°C)	183 lb (83.0 kg)	153 lb (69.4 kg)	188 lb (85.3 kg)
36°F (2.2°C)	182 lb (82.6 kg)	152 lb (68.9 kg)	187 lb (84.8 kg)
34°F (1.1°C)	181 lb (82.1 kg)	151 lb (68.5 kg)	186 lb (84.4 kg)
32°F (0.0°C)	179 lb (81.2 kg)	149 lb (67.6 kg)	184 lb (83.5 kg)
30°F (-1.1°C)	178 lb (80.7 kg)	148 lb (67.1 kg)	183 lb (83.0 kg)
28°F (-2.2°C)	177 lb (80.3 kg)	147 lb (66.7 kg)	182 lb (82.6 kg)
26°F (-3.3°C)	176 lb (79.8 kg)	146 lb (66.2 kg)	181 lb (82.1 kg)
24°F (-4.4°C)	174 lb (78.9 kg)	144 lb (65.3 kg)	179 lb (81.2 kg)
22°F (-5.6°C)	173 lb (78.5 kg)	143 lb (64.9 kg)	178 lb (80.7 kg)
20°F (-6.7°C)	172 lb (78.0 kg)	142 lb (64.4 kg)	177 lb (80.3 kg)
18°F (-7.8°C)	171 lb (77.6 kg)	141 lb (64.0 kg)	176 lb (79.8 kg)
16°F (-8.9°C)	169 lb (76.7 kg)	139 lb (63.0 kg)	174 lb (78.9 kg)
14°F (-10.0°C)	168 lb (76.2 kg)	138 lb (62.6 kg)	173 lb (78.5 kg)
12°F (-11.1°C)	167 lb (75.7 kg)	137 lb (62.1 kg)	172 lb (78.0 kg)
10°F (-12.2°C)	165 lb (74.8 kg)	135 lb (61.2 kg)	170 lb (77.1 kg)
8°F (-13.3°C)	164 lb (74.4 kg)	134 lb (60.8 kg)	169 lb (76.7 kg)
6°F (-14.4°C)	163 lb (73.9 kg)	133 lb (60.3 kg)	168 lb (76.2 kg)
4°F (-15.6°C)	162 lb (73.5 kg)	132 lb (59.9 kg)	167 lb (75.7 kg)
2°F (-16.7°C)	160 lb (72.6 kg)	130 lb (59.0 kg)	165 lb (74.8 kg)
0°F (-17.8°C)	159 lb (72.1 kg)	129 lb (58.5 kg)	164 lb (74.4 kg)

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Table 203/27-09-14-993-807 Rudder Cable Rigging Load (Continued)

Temp Deg F (C)	Nominal Lbs (Kg) *[1]*[2]	Minimum Lbs (Kg)	Maximum Lbs (Kg)
-2°F (-18.9°C)	158 lb (71.7 kg)	128 lb (58.1 kg)	163 lb (73.9 kg)
-4°F (-20.0°C)	156 lb (70.8 kg)	126 lb (57.2 kg)	161 lb (73.0 kg)
-6°F (-21.1°C)	155 lb (70.3 kg)	125 lb (56.7 kg)	160 lb (72.6 kg)
-8°F (-22.2°C)	154 lb (69.9 kg)	124 lb (56.2 kg)	159 lb (72.1 kg)
-10°F (-23.3°C)	153 lb (69.4 kg)	123 lb (55.8 kg)	158 lb (71.7 kg)
-12°F (-24.4°C)	151 lb (68.5 kg)	121 lb (54.9 kg)	156 lb (70.8 kg)
-14°F (-25.6°C)	150 lb (68.0 kg)	120 lb (54.4 kg)	155 lb (70.3 kg)
-16°F (-26.7°C)	149 lb (67.6 kg)	119 lb (54.0 kg)	154 lb (69.9 kg)
-18°F (-27.8°C)	147 lb (66.7 kg)	117 lb (53.1 kg)	152 lb (68.9 kg)
-20°F (-28.9°C)	146 lb (66.2 kg)	116 lb (52.6 kg)	151 lb (68.5 kg)
-22°F (-30.0°C)	145 lb (65.8 kg)	115 lb (52.2 kg)	150 lb (68.0 kg)
-24°F (-31.1°C)	144 lb (65.3 kg)	114 lb (51.7 kg)	149 lb (67.6 kg)
-26°F (-32.2°C)	142 lb (64.4 kg)	112 lb (50.8 kg)	147 lb (66.7 kg)
-28°F (-33.3°C)	141 lb (64.0 kg)	111 lb (50.3 kg)	146 lb (66.2 kg)
-30°F (-34.4°C)	140 lb (63.5 kg)	110 lb (49.9 kg)	145 lb (65.8 kg)
-32°F (-35.6°C)	139 lb (63.0 kg)	109 lb (49.4 kg)	144 lb (65.3 kg)
-34°F (-36.7°C)	137 lb (62.1 kg)	107 lb (48.5 kg)	142 lb (64.4 kg)
-36°F (-37.8°C)	136 lb (61.7 kg)	106 lb (48.1 kg)	141 lb (64.0 kg)
-38°F (-38.9°C)	135 lb (61.2 kg)	105 lb (47.6 kg)	140 lb (63.5 kg)
-40°F (-40.0°C)	133 lb (60.3 kg)	103 lb (46.7 kg)	138 lb (62.6 kg)

*[1] If cable tension checks are required after system rig and prior/during functional test, the nominal tension tolerance is +5 lb (2 kg)/-30 lb (-14 kg).

*[2] If cable tension checks are required after system functional test completion and during maintenance, the nominal tension tolerance is +5 lb (2 kg)/-80 lb (-36 kg) when measured in a temperature range of 40°F (4°C) to 90°F (32°C). If the tension checks are made outside of this temperature range, then the nominal tension tolerance is +5 lb (2 kg)/-30 lb (-14 kg).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROL CABLES AIR PRESSURE SEALS - MAINTENANCE PRACTICES

1. General

A. This procedure gives the location of the air pressure seals for the control cables of the flight control systems.

TASK 27-09-17-860-801

2. Location of the Flight Control Cables Air Pressure Seals

(Figure 201)

A. References

Reference	Title
20-10-04-000-802	Control Cable Half Ball Pressure Seal Removal (P/B 401)
20-10-04-400-802	Control Cable Half Ball Pressure Seal Installation (P/B 401)

B. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

C. Location of the FLight Control Cables Air Pressure Seals

SUBTASK 27-09-17-860-001

(1) Find the air pressure seals (Table 201).

Table 201/27-09-17-993-801 Air Pressure Seals

Cable System	Number of Seals	Location	Access Panel Number
Left Elevator Cables	2	Aft Pressure Bulkhead	311BL
Right Elevator Cables	2	Aft Pressure Bulkhead	311BL
Rudder Cables	2	Aft Pressure Bulkhead	311BL
Stabilizer Trim Cables	2	Aft Pressure Bulkhead	311BL

SUBTASK 27-09-17-960-001

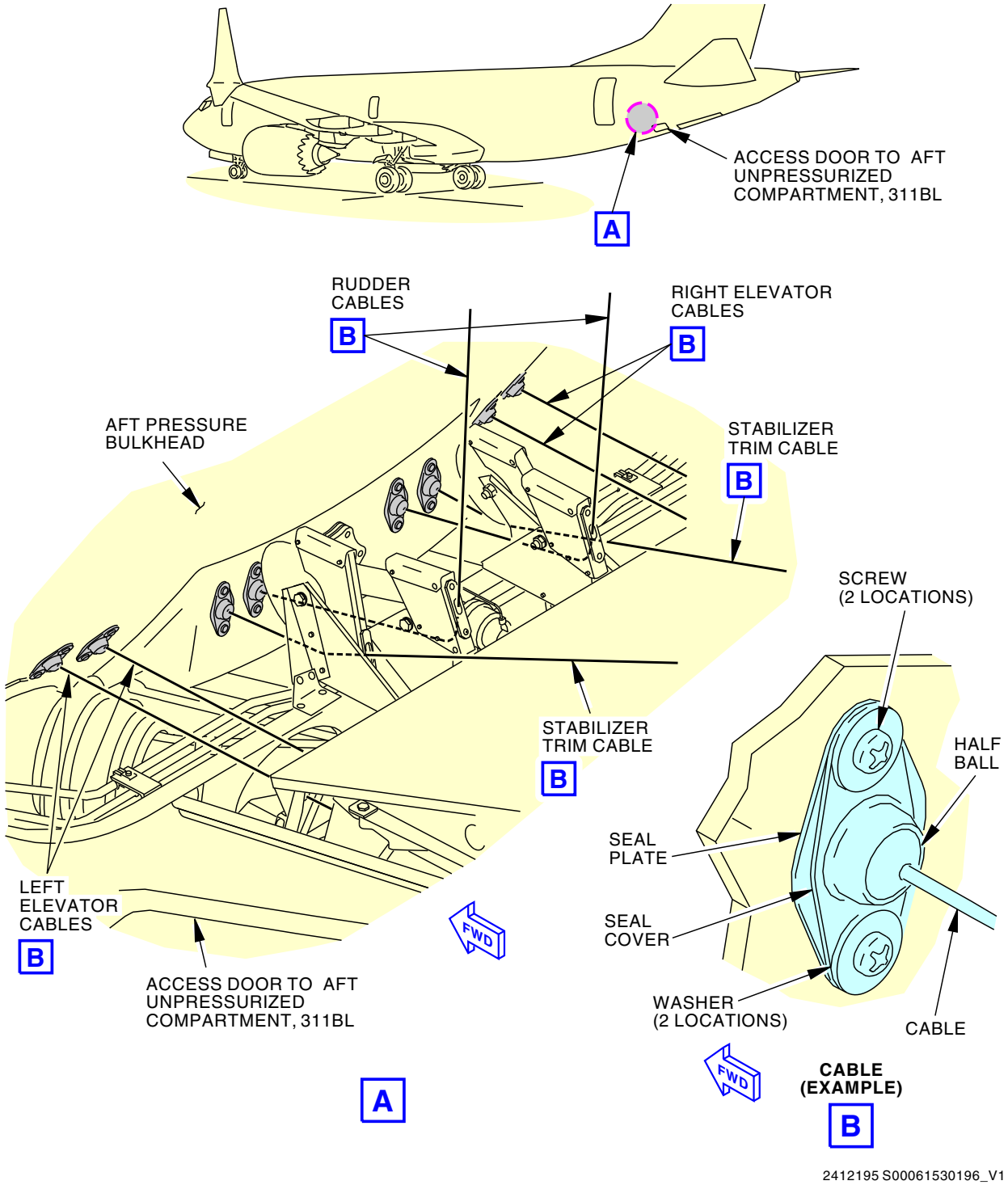
(2) If it is necessary to remove the seals, do this task: Control Cable Half Ball Pressure Seal Removal, TASK 20-10-04-000-802.

SUBTASK 27-09-17-960-002

(3) If it is necessary to install the seals, do this task: Control Cable Half Ball Pressure Seal Installation, TASK 20-10-04-400-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Control Cable Air Pressure Seals
Figure 201/27-09-17-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROL CABLE GUARD - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of a cable guard.

(2) The installation of a cable guard.

TASK 27-09-18-000-801

2. Control Cable Guard Removal

(Figure 401)

A. References

Reference	Title
25-22-00-000-801	Passenger Seat Removal (P/B 401)
25-27-15-000-801	Carpet Removal (P/B 401)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
38-42-00-800-801	Potable Water System - Deactivation (P/B 201)
50-10-03-000-801	Cargo Compartment Ceiling Liner Removal (P/B 401)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

B. Location Zones

Zone	Area
141	Aft Cargo Compartment - Left
142	Aft Cargo Compartment - Right

C. Access Panels

Number	Name/Location
822	Aft Cargo Door
822AR	Access Panel on Aft Cargo Door - External
822BR	Access Panel on Aft Cargo Door

D. Procedure

SUBTASK 27-09-18-010-001

(1) Open these access panels:

Number	Name/Location
822	Aft Cargo Door
822AR	Access Panel on Aft Cargo Door - External
822BR	Access Panel on Aft Cargo Door

SUBTASK 27-09-18-860-001

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-09-18-860-002

(3) Do this task: Potable Water System - Deactivation, TASK 38-42-00-800-801.

SUBTASK 27-09-18-940-001

(4) Attach DO-NOT-OPERATE tags to the control columns.

SUBTASK 27-09-18-010-002

(5) Get access to the aft cable guards.

(a) Remove the aft bulkhead lining in the aft cargo area.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-18-020-001

(6) Remove the aft cable guards (Figure 401).

(a) Loosen the clamps and remove the cable guards.

SUBTASK 27-09-18-010-003

CAUTION

DO NOT REMOVE THE TAPE FROM THE SCREWS ON THE CEILING LINING. IF YOU REMOVE THE TAPE, YOU CAN CAUSE DAMAGE TO THE CEILING LINING.

(7) Get access to the cable guards, hydraulic tubes and the water tubes in the cargo ceiling.

NOTE: Go through the tape with a screwdriver to loosen the screws.

(a) If it is necessary, remove the ceiling lining in the aft cargo area (TASK 50-10-03-000-801).

SUBTASK 27-09-18-010-004

(8) Get access to the hydraulic tube.

SIA 001-014

(a) If it is necessary, remove the seats on the left side of the passenger area (TASK 25-22-00-000-801).

SIA ALL

(b) If it is necessary, remove the carpets on the left side of the passenger area (TASK 25-27-15-000-801).

(c) If it is necessary, remove the floor panels on the left side of the passenger area (TASK 53-21-00-000-801).

SUBTASK 27-09-18-020-002

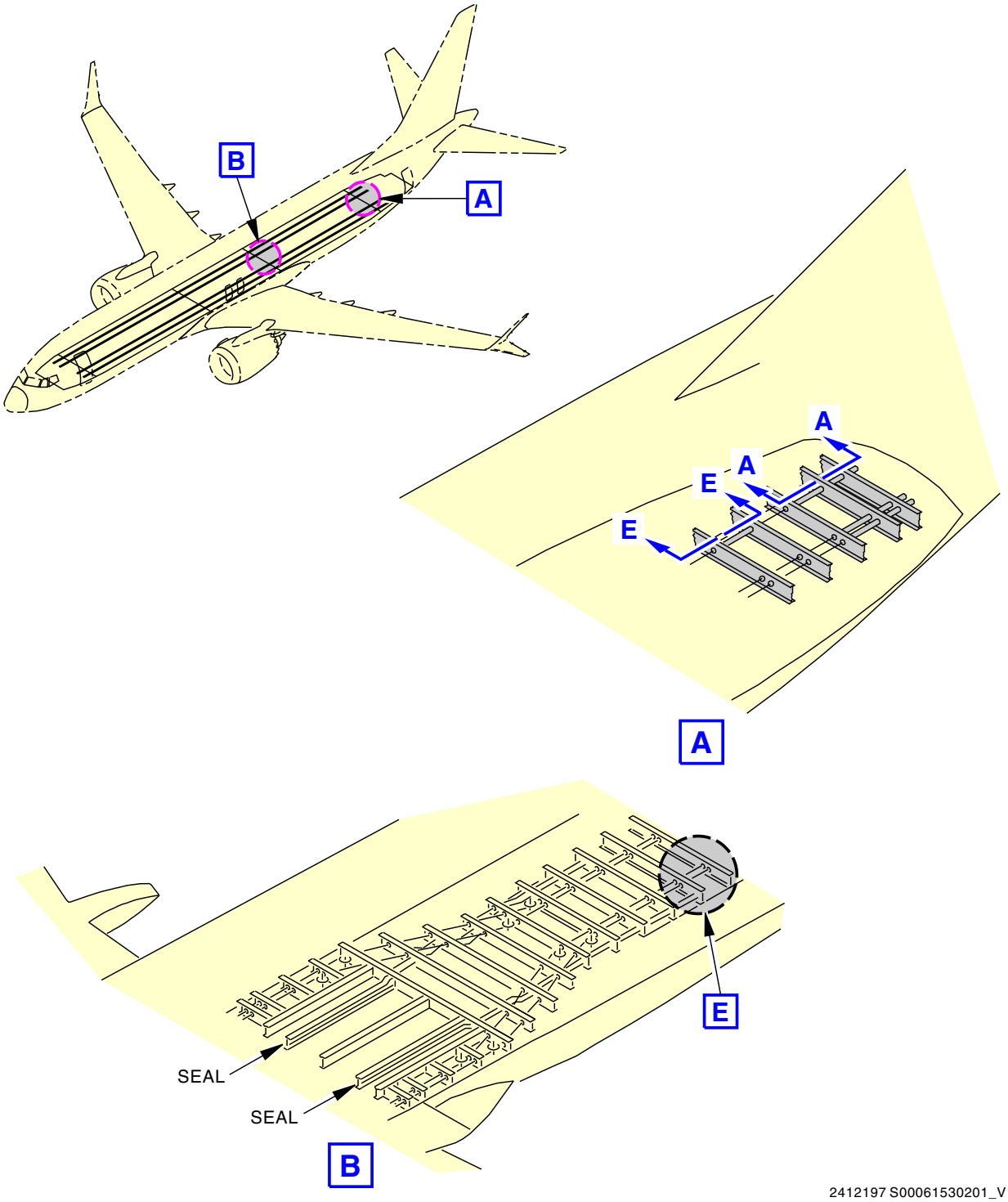
(9) Remove the water pressure tube in the aft cargo area (Figure 401).

SUBTASK 27-09-18-020-003

(10) Remove the hydraulic tube and the cable guards in the aft cargo area (Figure 401).

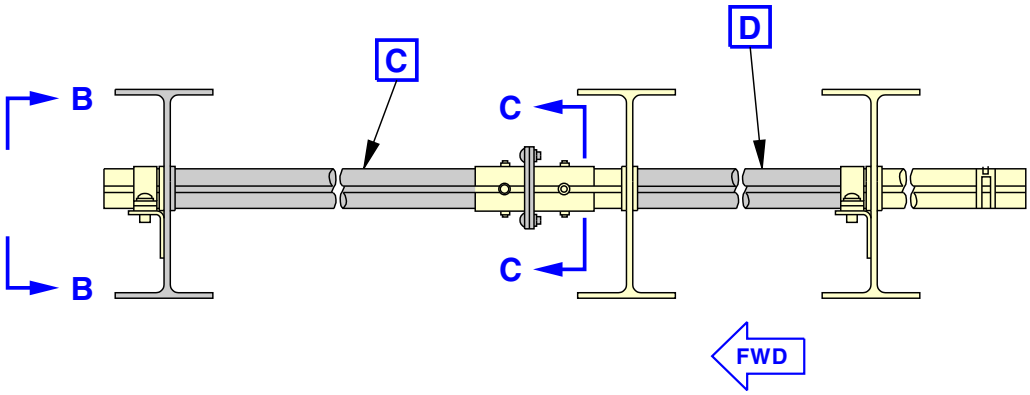
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

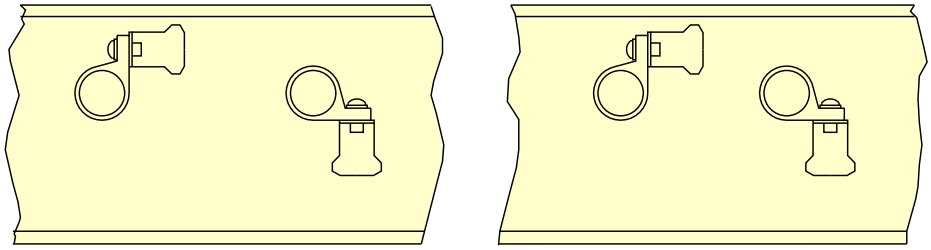


Control Cable Guard Installation
Figure 401/27-09-18-990-801 (Sheet 1 of 4)

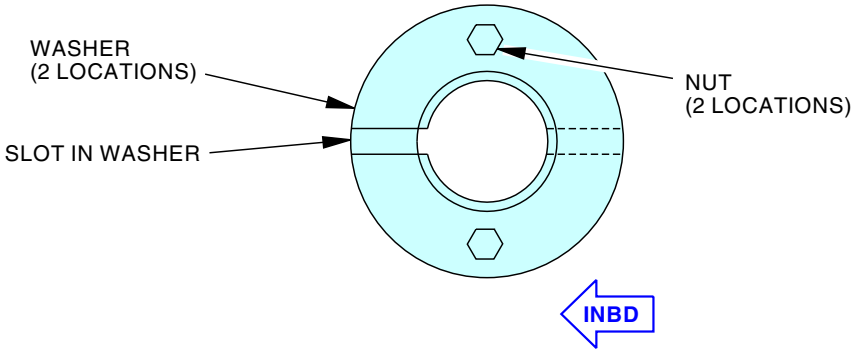
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



B-B

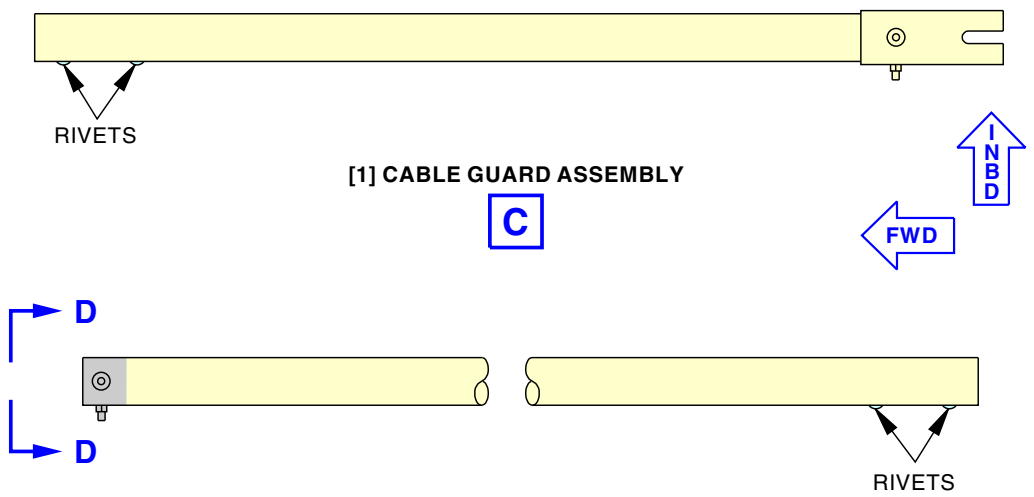


C-C

2412198 S00061530202_V2

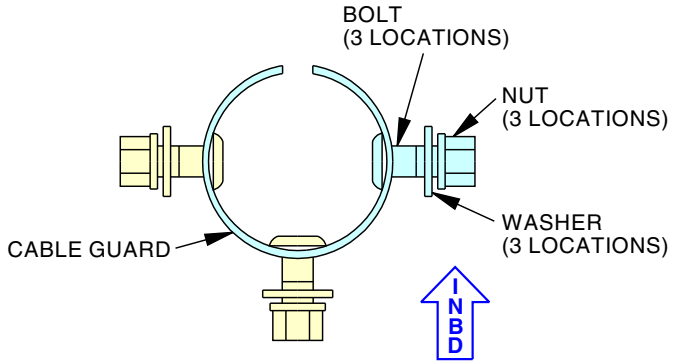
Control Cable Guard Installation
Figure 401/27-09-18-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

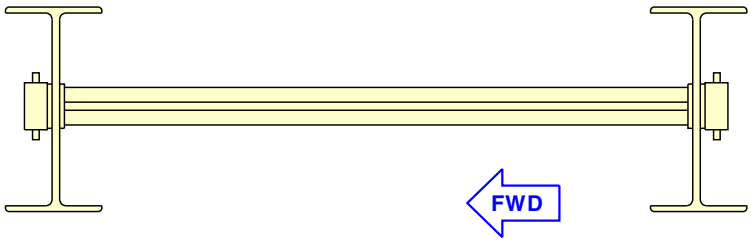


[1] CABLE GUARD ASSEMBLY

[2] CABLE GUARD ASSEMBLY



D-D



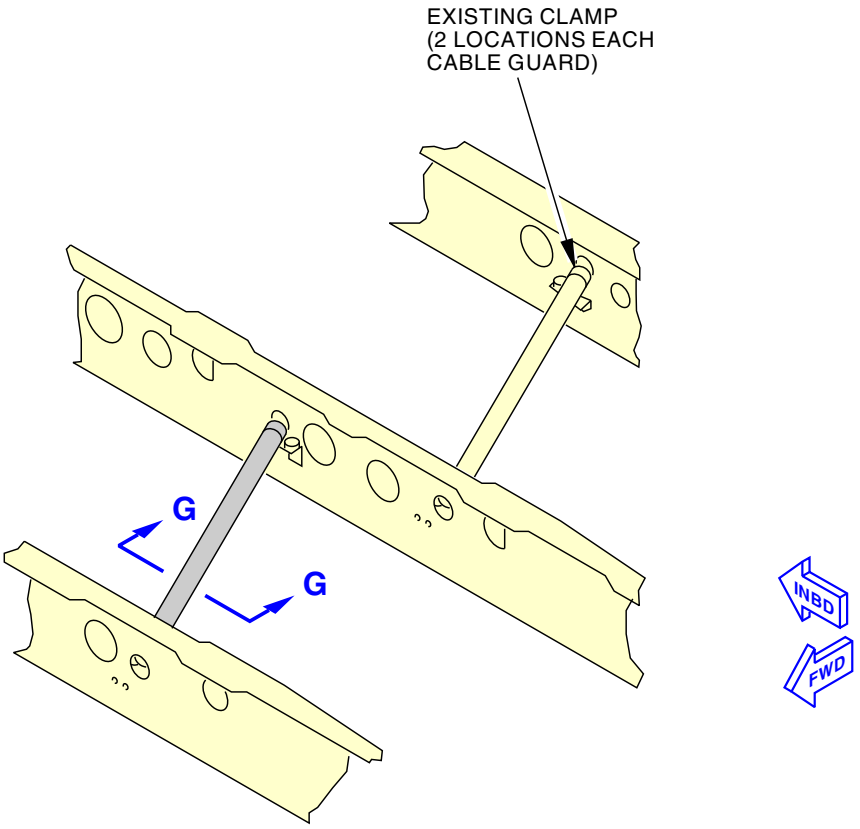
[3] OUTBOARD VIEW OF CABLE GUARD ASSEMBLY

E-E

2412199 S00061530203_V2

Control Cable Guard Installation
Figure 401/27-09-18-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)
(WITHOUT HYDRAULIC TUBES)

E

2412200 S00061530204_V1

Control Cable Guard Installation
Figure 401/27-09-18-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-18-400-801

3. Control Cable Guard Installation

A. References

Reference	Title
12-26-00-600-801	Control Cable Lubrication (P/B 301)
25-22-00-400-801	Passenger Seat Installation (P/B 401)
25-27-15-400-801	Carpet - Installation (P/B 401)
27-31-00 P/B 501	ELEVATOR AND ELEVATOR TRIM CONTROL SYSTEM - ADJUSTMENT/TEST
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
38-42-00-800-802	Potable Water System - Activation (P/B 201)
50-10-03-400-801	Cargo Compartment Ceiling Liner Installation (P/B 401)
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
G50344	Tape - Nitto P-212HD WHT (Formerly Permacel) Glass Cloth	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cable guard assembly	27-09-18-02-045	SIA ALL
		27-09-18-02-070	SIA ALL
		27-09-18-08-015	SIA ALL
2	Cable guard assembly	27-09-18-02-010	SIA ALL
		27-09-18-02-015	SIA ALL
		27-09-18-08-020	SIA ALL
3	Cable guard assembly	27-09-18-01-025	SIA ALL

D. Location Zones

Zone	Area
141	Aft Cargo Compartment - Left
142	Aft Cargo Compartment - Right

E. Access Panels

Number	Name/Location
822	Aft Cargo Door
822AR	Access Panel on Aft Cargo Door - External
822BR	Access Panel on Aft Cargo Door

F. Procedure

SUBTASK 27-09-18-640-001

(1) Lubricate the cables in the cable guard area. Do this task: Control Cable Lubrication, TASK 12-26-00-600-801.

SUBTASK 27-09-18-420-001

(2) Install the hydraulic tubes (Figure 401).

SUBTASK 27-09-18-420-002

(3) Install the aft cable guards (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Put the cable guard assembly [1] in its position.

(b) Install the washers on the sleeve of the cable guard assembly [1].

1) Connect each set of washers with a screw and a nut.

(c) Put the cable guard assembly [2] into the sleeve of the cable guard assembly [1].

1) Install the three bolts on the cable guard assembly [2] into the slots on the sleeve of the cable guard assembly [1].

2) Tighten the nut until the bolt does not turn easily.

(d) Put the clamp on the end of the cable guard assembly [2] between the two rivets.

1) Tighten the clamp.

(e) Install the cable guard assembly [3] with the slot on the assembly inboard.

1) Tighten the clamps to hold the guard assemblies.

2) Make sure a minimum clearance of 0.10 in. (2.5 mm) (adjust tubing as necessary) is kept between the cable guard and the hydraulic or the water tubings.

SUBTASK 27-09-18-940-002

(4) Remove the DO-NOT-OPERATE tags from the control columns.

SUBTASK 27-09-18-700-001

(5) Do a test of the cables to make sure there is free movement (PAGEBLOCK 27-31-00/501).

SUBTASK 27-09-18-860-003

(6) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-09-18-790-001

(7) Examine the hydraulic tubes for leaks.

SUBTASK 27-09-18-860-004

(8) Do this task: Potable Water System - Activation, TASK 38-42-00-800-802.

SUBTASK 27-09-18-860-005

(9) Examine the water pressure tube for leaks.

SUBTASK 27-09-18-410-004

(10) Install all floor panels that were removed (TASK 53-21-00-400-801).

SUBTASK 27-09-18-410-001

(11) Install all carpets that were removed (TASK 25-27-15-400-801).

SIA 001-014

SUBTASK 27-09-18-410-002

(12) Install all seats that were removed (TASK 25-22-00-400-801).

SIA ALL

SUBTASK 27-09-18-860-006

(13) Install all cargo compartment lining that was removed (TASK 50-10-03-400-801).

SUBTASK 27-09-18-860-007

(14) Apply new Nitto P-212HD WHT tape, G50344 tape on the screws.

SUBTASK 27-09-18-410-003

(15) Close these access panels:

Number	Name/Location
822	Aft Cargo Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
822AR	Access Panel on Aft Cargo Door - External
822BR	Access Panel on Aft Cargo Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS HYDRAULIC MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight controls hydraulic module.

(2) An installation of the flight controls hydraulic module.

B. The flight controls hydraulic module is referred to as the "hydraulic module" in this procedure.

C. There are two hydraulic modules installed on the airplane. The hydraulic module for the hydraulic system A is found in the left main wheel well. The hydraulic module for the hydraulic system B is found in the right main wheel well.

D. Each hydraulic module contains these components:

(1) A check valve

(2) A low pressure warning switch

(3) A compensator cartridge

(4) A spoiler shutoff valve

(5) A flight controls shutoff valve.

TASK 27-09-21-000-801

2. Flight Controls Hydraulic Module Removal

(Figure 401)

A. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

Reference	Description
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-09-21-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-21-860-001

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-09-21-860-002

(3) Do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-09-21-860-003

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

E. Flight Controls Hydraulic Module Removal

SUBTASK 27-09-21-020-001

(1) Remove the hydraulic module [1]:

(a) Disconnect the electrical connector [13] from the low pressure warning switch [15].

(b) Disconnect the electrical connector [14] from the flight controls shutoff valve [17].

(c) Disconnect the electrical connector [18] from the spoiler shutoff valve [16].

(d) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(e) If there was corrosion, refer to SWPM 20-60-03.

(f) Disconnect the hydraulic tubing from the hydraulic module [1].

1) Use a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110 to catch hydraulic fluid that drains from the hydraulic module [1].

(g) Remove the bolts [6] and washers [7] to disconnect the hydraulic module [1] from the top mounting bracket.

(h) Remove the bolts [8] and washers [9] to disconnect the hydraulic module [1] from the bottom mounting bracket.

(i) Remove the hydraulic module [1] from the airplane.

SUBTASK 27-09-21-420-001

(2) Install protective caps on the ends of the hydraulic tubing.

SUBTASK 27-09-21-020-002

(3) If you will install a new hydraulic module [1], do these steps:

(a) Remove the unions [3] and packings [2] in ports 1, 2 and 5 from the hydraulic module [1].

1) Discard the packing [2].

(b) Remove the unions [5] and packings [4] in ports 4 and 7 from the hydraulic module [1].

1) Discard the packings [4].

(c) Remove the check valve [10] and packing [4] in port 3 from the hydraulic module [1].

1) Discard the packing [4].

(d) Remove the reducer [11] and packing [12] in port 6 from the hydraulic module [1].

1) Discard the packing [12].

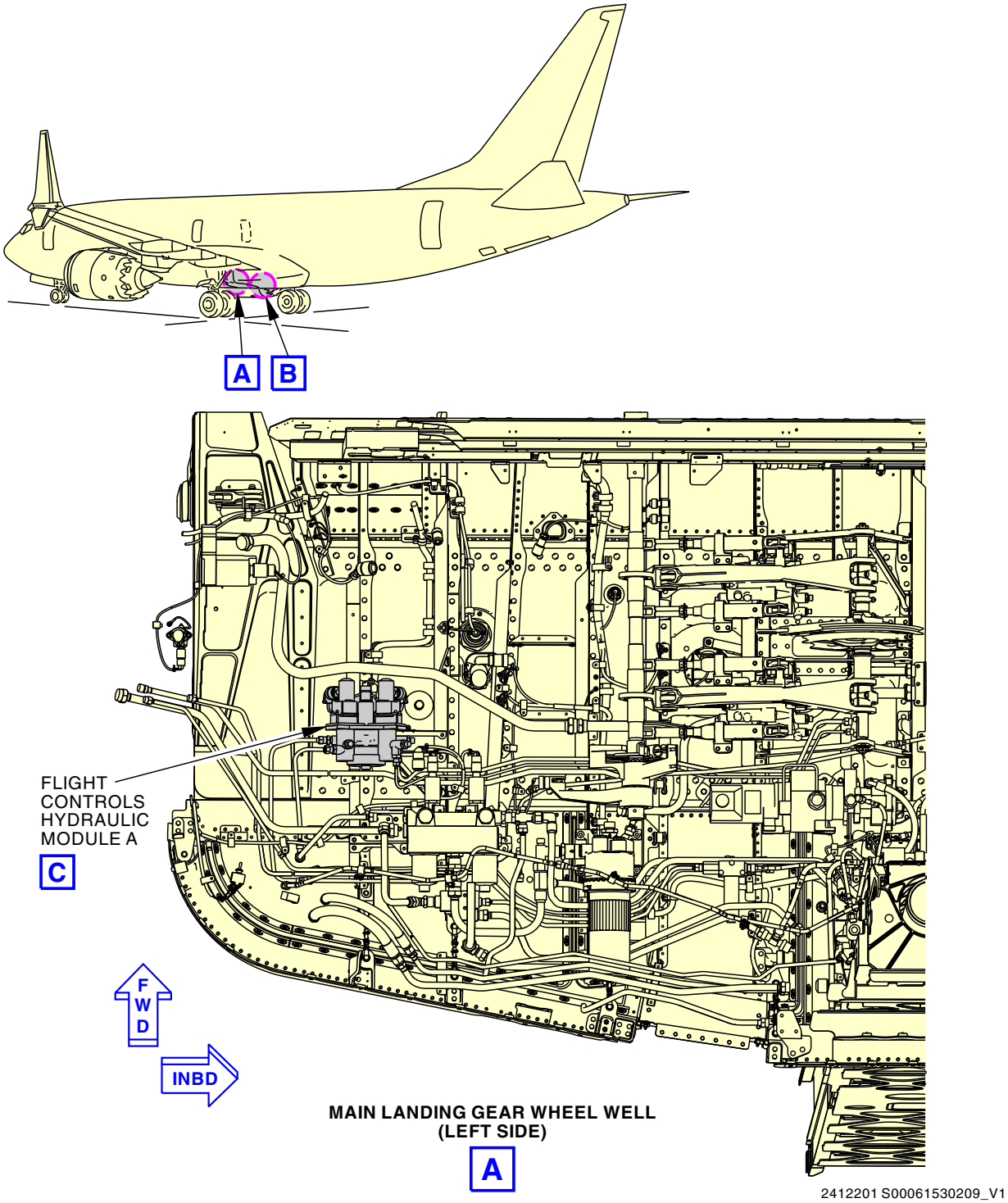
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-21-420-002

(4) Install protective caps in the open ports of the hydraulic module [1].

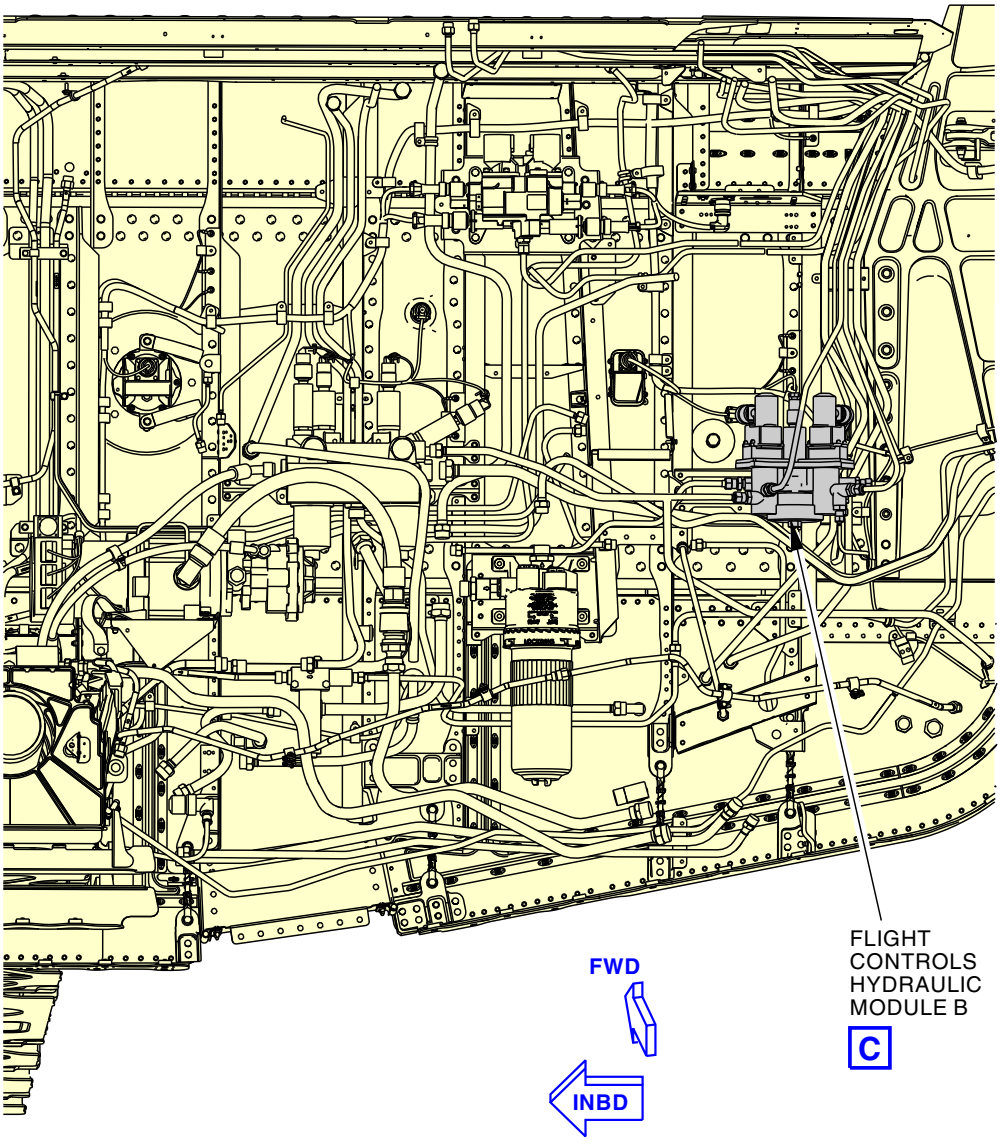
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



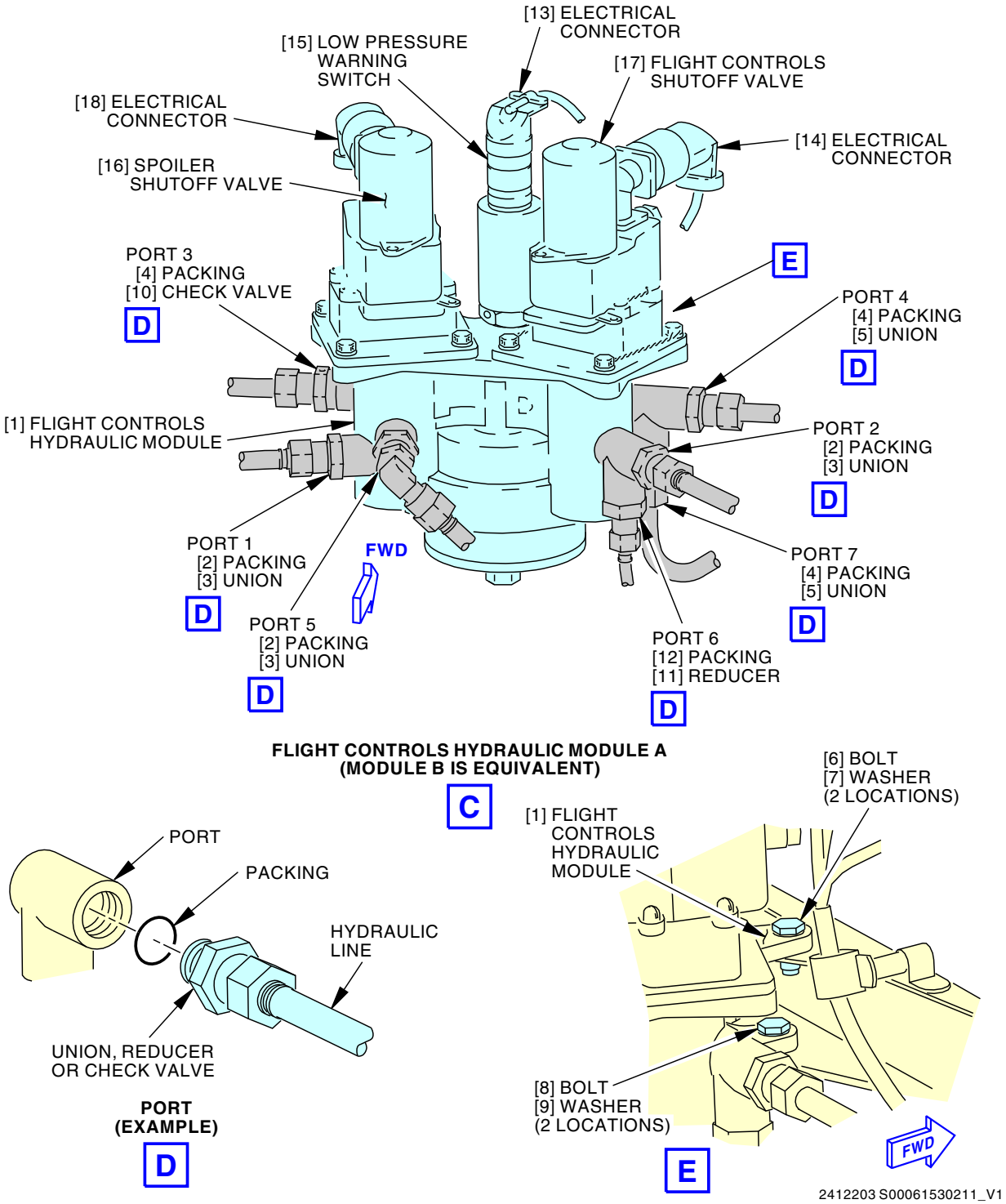
Flight Controls Hydraulic Module Installation
Figure 401/27-09-21-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Installation
Figure 401/27-09-21-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Installation
Figure 401/27-09-21-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-21-400-801

3. Flight Controls Hydraulic Module Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-09-21-700-801	Flight Controls Hydraulic Module Test (P/B 501)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Hydraulic module	27-09-21-01-020	SIA 001-007
		27-09-21-01-022	SIA 008-999
		27-09-21-02-005	SIA ALL
2	Packing	27-09-21-01-045	SIA ALL
4	Packing	27-09-21-01-045	SIA ALL
12	Packing	27-09-21-01-045	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Flight Controls Hydraulic Module Installation

SUBTASK 27-09-21-020-003

(1) Remove protective caps from the open ports of the hydraulic module [1].

SUBTASK 27-09-21-420-003

(2) If they are not installed, install the unions [3], unions [5], check valve [10], reducer [11], packings [2], packings [4], and packing [12] on the hydraulic module [1]:

(a) Apply MCS 352B fluid, D00054 (recommended) or hydraulic fluid, D00153 (alternative) to the unions [3], unions [5], reducer [11] and new packings [2], new packings [4] and new packing [12].

(b) Install the new packings [2] and unions [3] in ports 1, 2 and 5 on the hydraulic module [1].

(c) Install the new packings [4] and unions [5] in ports 4 and 7 on the hydraulic module [1].

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(d) Install the new packing [4] and check valve [10] in port 3 on the hydraulic module [1].

1) Install the check valve [10] with the free flow arrow pointed away from the hydraulic module [1].

(e) Install the new packing [12] and reducer [11] in port 6 on the hydraulic module [1].

SUBTASK 27-09-21-020-004

(3) Remove the protective caps from the hydraulic tubing.

SUBTASK 27-09-21-420-004

(4) Install the hydraulic module [1]:

(a) Put the hydraulic module [1] on its mounting bracket.

(b) Connect the hydraulic module [1] to the top mounting bracket with the bolts [6] and washers [7].

(c) Connect the hydraulic module [1] to the bottom mounting bracket with the bolts [8] and washers [9].

(d) Connect the hydraulic tubing to the hydraulic module [1].

1) Tighten the B-nuts on the hydraulic lines for ports 3 and 4 to 170 ±9 in-lb (19 ±1 N·m).

2) Tighten the B-nuts on the hydraulic lines for ports 1, 5, 2, and 7 to 270 ±14 in-lb (31 ±2 N·m).

3) Tighten the B-nut on the hydraulic line for port 6 to 140 ±7 in-lb (16 ±1 N·m).

(e) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, refer to SWPM 20-60-03, to correct the problem.

(f) Apply the D5026NS or ZC-026 compound, G50171 to the connectors (SWPM 20-60-03).

(g) Connect the electrical connector [18] to the spoiler shutoff valve [16].

(h) Connect the electrical connector [14] to the flight controls shutoff valve [17].

(i) Connect the electrical connector [13] to the low pressure warning switch [15].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-21-860-004

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-21-860-009

(2) Do this task: Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

SUBTASK 27-09-21-860-010

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-21-610-001

(4) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-09-21-730-001

(5) Do this task: Flight Controls Hydraulic Module Test, TASK 27-09-21-700-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS HYDRAULIC MODULE - ADJUSTMENT/TEST

1. General

A. There is one task in this procedure which is the test of the flight controls hydraulic module.

B. The flight controls hydraulic module is referred to as the "hydraulic module" in this procedure.

C. The hydraulic module for hydraulic system A is found in the left main wheel well. The hydraulic module for hydraulic system B is found in the right main wheel well.

TASK 27-09-21-700-801

2. Flight Controls Hydraulic Module Test

(Figure 501, Figure 502)

A. General

(1) In this procedure, the two hydraulic modules [3] are tested at the same time.

B. References

Reference	Title
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-09-21-860-006

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

SUBTASK 27-09-21-860-007

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic systems A and B (PAGEBLOCK 29-11-00/201).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Flight Controls Hydraulic Module Test

SUBTASK 27-09-21-720-001

(1) Do the test of the hydraulic module [3]:

(a) Make sure the two FLT CONTROL switches, on the P5-3 flight controls panel, are in the ON position.

(b) Make sure the two SPOILER switches, on the P5-3 flight controls panel, are in the ON position.

(c) Make sure the manual override levers [4] of the spoiler shutoff valve [1] and flight controls shutoff valve [2] on the two hydraulic modules [3] are in position 1.

(d) Operate the aileron control wheel, control column, and rudder pedal sets to bleed the hydraulic system.

(e) Make sure there is no leakage of hydraulic fluid at the hydraulic modules [3].

(f) Set the two SPOILER switches to the OFF position.

(g) Make sure the manual override lever [4] of the spoiler shutoff valve [1] on both hydraulic modules [3] is in position 2.

(h) Turn the aileron control wheel.

(i) Make sure the spoilers do not operate.

(j) Set the two FLIGHT CONTROL switches to the OFF position.

(k) Make sure the manual override lever [4] of the flight controls shutoff valve [2] on both hydraulic modules [3] is in position 2.

(l) Make sure the two LOW PRESSURE warning lights, on the P5-3 flight controls panel, come on.

(m) Set the two FLIGHT CONTROL switches to the ON position.

(n) Make sure the two LOW PRESSURE warning lights go off.

(o) Set the two SPOILER switches to the ON position.

SUBTASK 27-09-21-860-008

(2) Remove pressure from hydraulic systems A and B (PAGEBLOCK 29-11-00/201).

SUBTASK 27-09-21-210-001

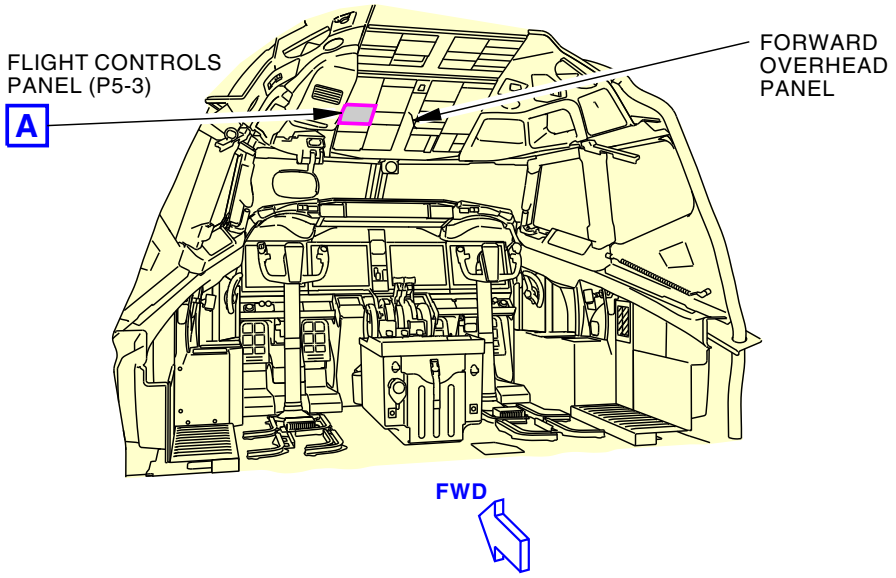
(3) Make sure the LOW PRESSURE lights come on.

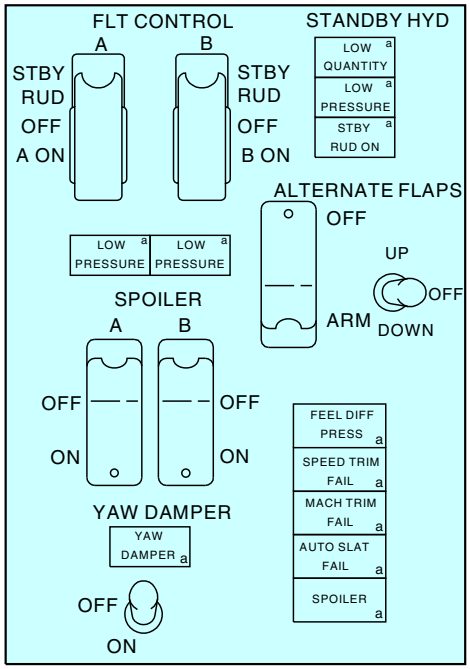
SUBTASK 27-09-21-210-002

(4) Make sure the master warning and caution lights and the flight controls warning light come on.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





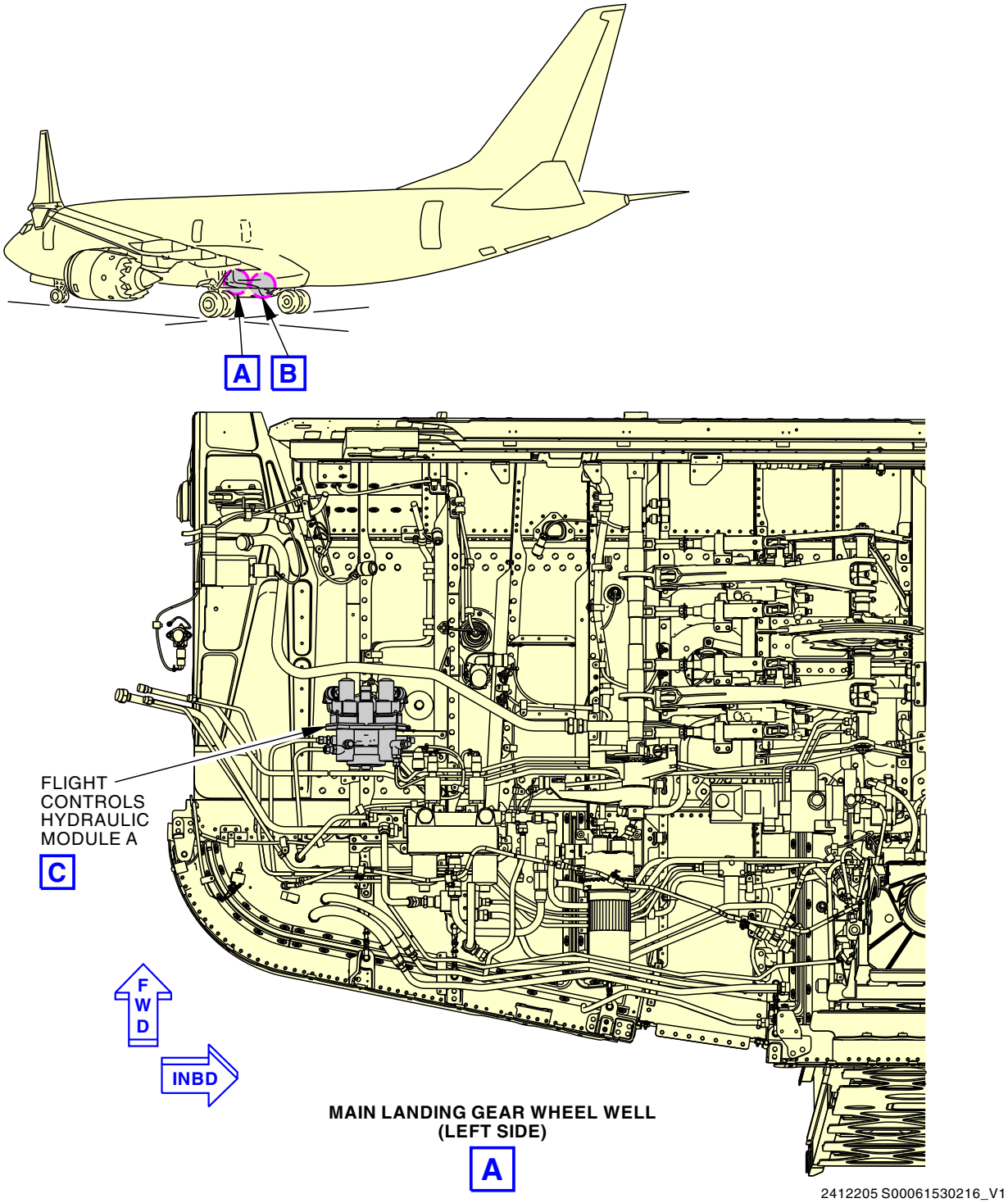
FLIGHT CONTROLS PANEL (P5-3)

A

2412204 S00061530215_V1

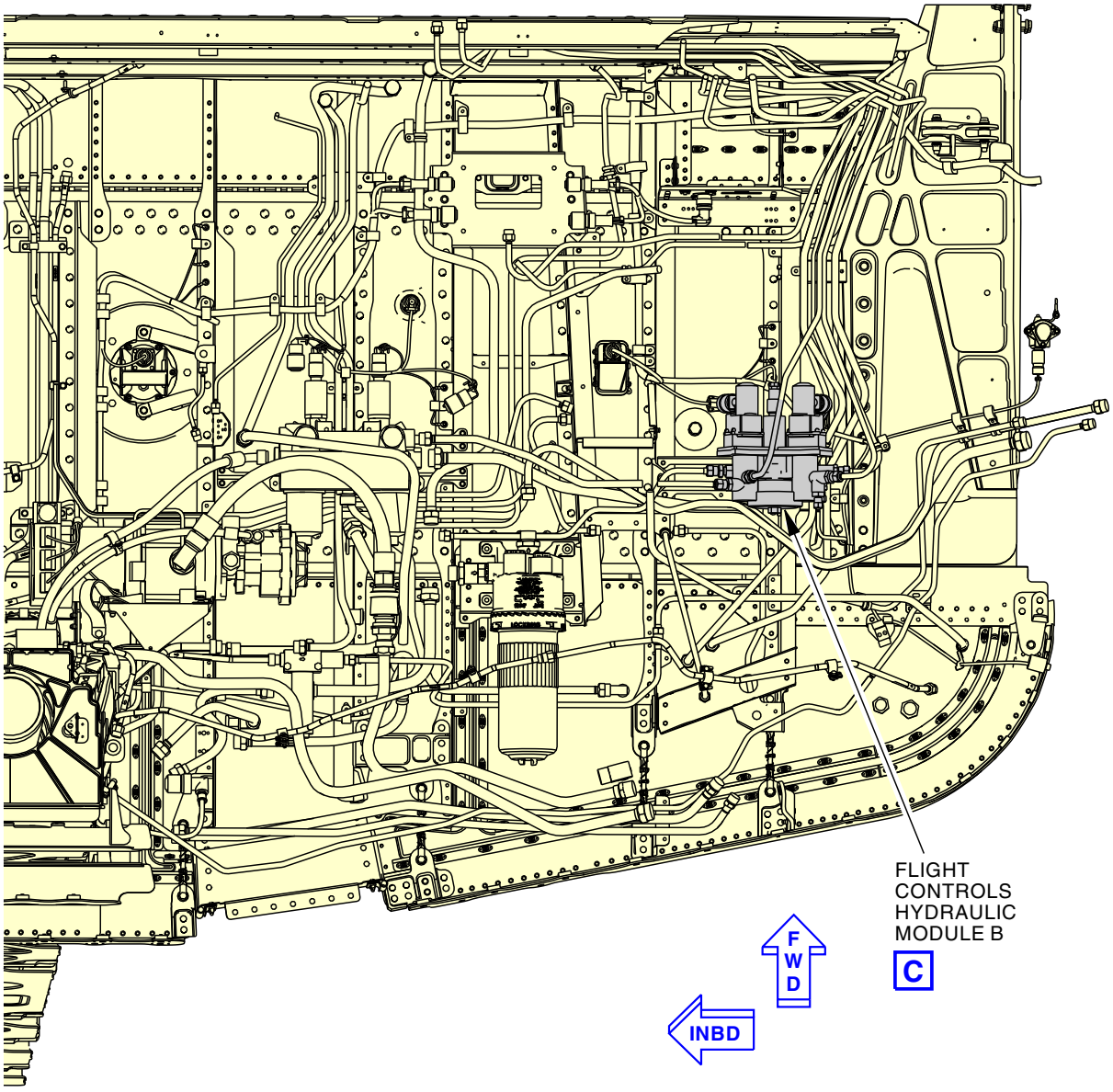
Flight Controls Panel
Figure 501/27-09-21-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



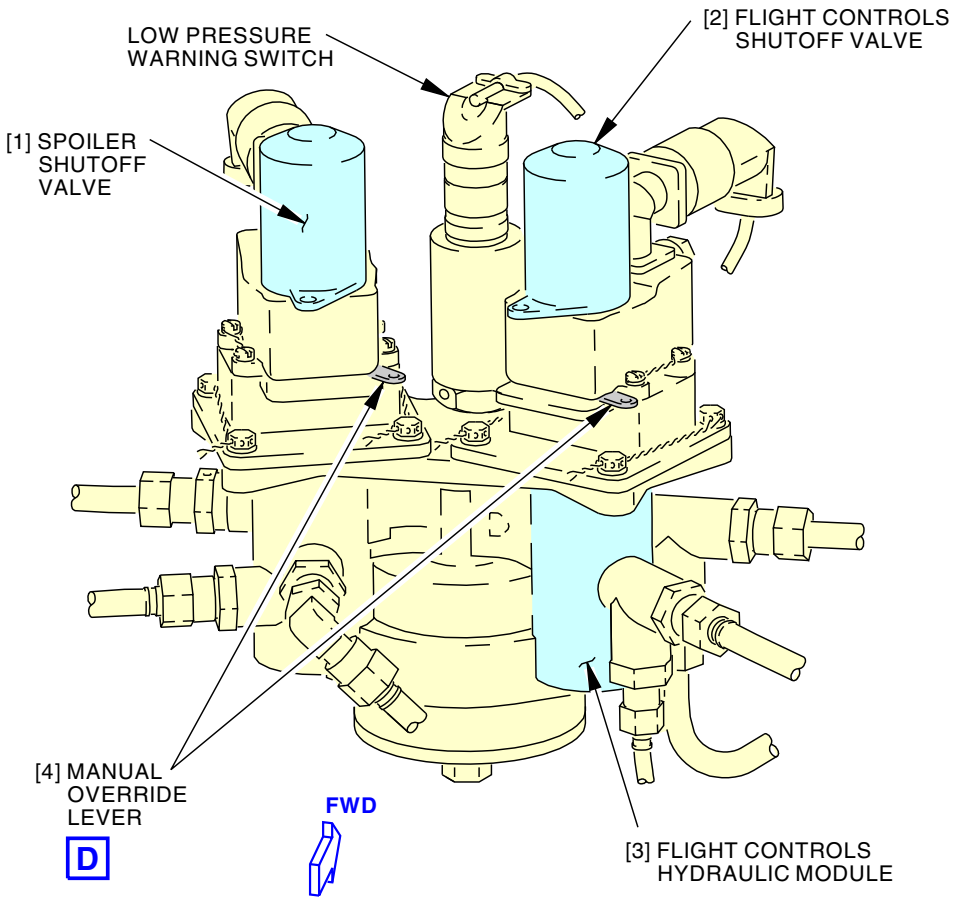
Flight Controls Shutoff Valve Test
Figure 502/27-09-21-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Shutoff Valve Test
Figure 502/27-09-21-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



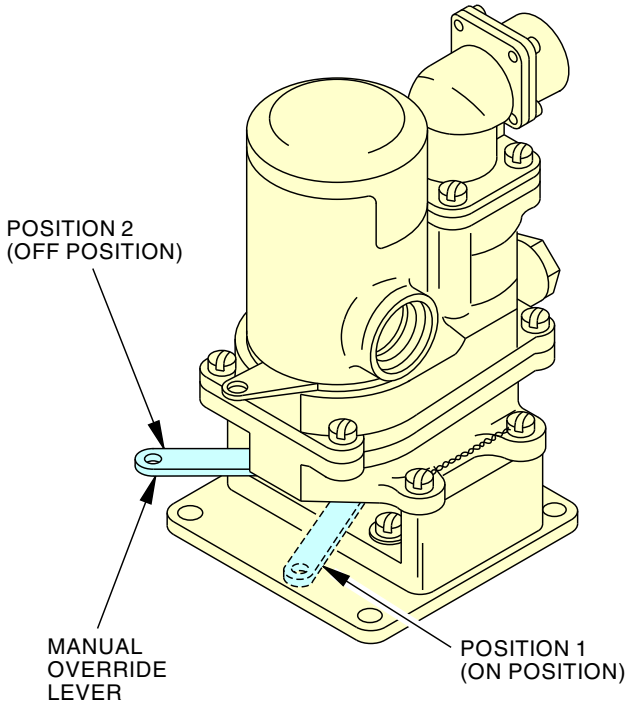
FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412207 S00061530218_V2

Flight Controls Shutoff Valve Test
Figure 502/27-09-21-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

D

2844536 S0000662328_V3

**Flight Controls Shutoff Valve Test
Figure 502/27-09-21-990-803 (Sheet 4 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS SHUTOFF VALVE AND VALVE MOTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the flight controls shutoff valve assembly (the shutoff valve and the shutoff valve motor).

(2) An installation of the flight controls shutoff valve assembly (the shutoff valve and the shutoff valve motor).

(3) A removal of the flight controls shutoff valve motor.

(4) An installation of the flight controls shutoff valve motor.

B. The flight controls shutoff valve is part of the flight controls hydraulic module. The hydraulic module for the hydraulic system A is found in the left main wheel well. The hydraulic module for the hydraulic system B is found in the right main wheel well.

C. The flight controls shutoff valve is referred to as the shutoff valve and the flight controls shutoff valve motor is referred to as the shutoff valve motor in this procedure.

D. You can replace the shutoff valve motor with the shutoff valve installed in the flight controls hydraulic module.

TASK 27-09-31-000-801

2. Flight Controls Shutoff Valve Removal

(Figure 401)

A. General

(1) This task is the removal of the flight controls shutoff valve assembly, that contains the shutoff valve motor and shutoff valve.

B. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

Reference	Description
STD-1154	Container - 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-09-31-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-09-31-860-001

(2) If there is power on hydraulic system A or B, remove hydraulic power for applicable hydraulic system (TASK 29-11-00-860-805).

NOTE: Remove power from hydraulic system A for the left shutoff valve. Remove power from hydraulic system B for the right shutoff valve.

SUBTASK 27-09-31-860-002

(3) Do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-09-31-860-003

(4) If you remove the left shutoff valve, do this step:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-860-004

(5) If you remove the right shutoff valve, do this step:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

F. Flight Controls Shutoff Valve Removal

SUBTASK 27-09-31-020-001

(1) Remove the shutoff valve [8].

(a) Disconnect the electrical connector [1] from the shutoff valve motor [6].

(b) After you disconnect the electrical connector [1], examine the electrical connector [1] for corrosion.

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

(c) If there was corrosion, refer to SWPM 20-60-03, to correct the problem.

(d) Remove the four bolts [2] and washers [3] that attach the shutoff valve [8] to the hydraulic module housing [5].

(e) Put a 5 gallon (19 liter) container, STD-1154, below the shutoff valve [8] to catch hydraulic fluid.

(f) Carefully lift the shutoff valve [8] straight up to remove it from the hydraulic module housing [5].

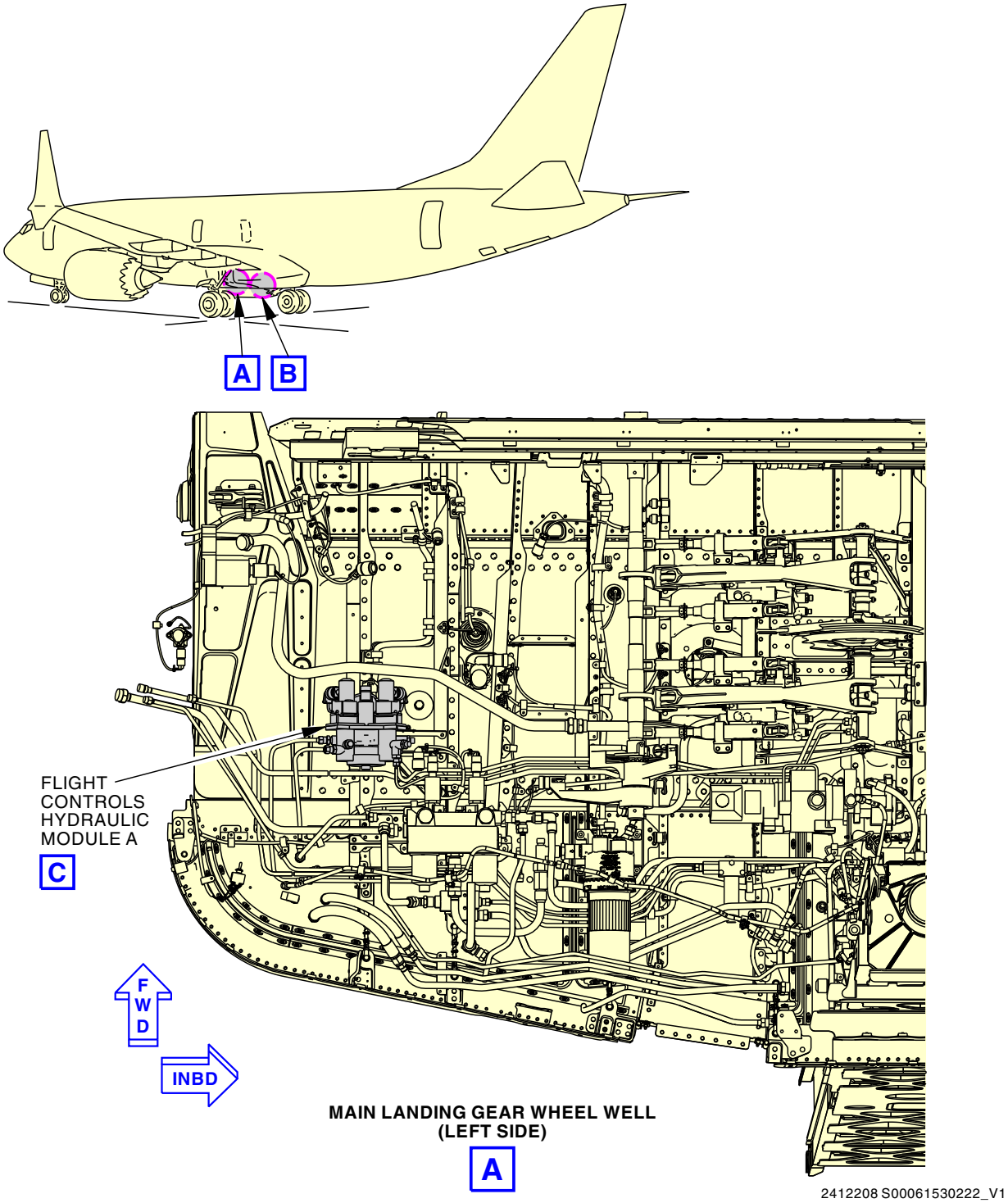
ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Discard the packings [10] and packing [12].

(g) Put a cover on the hydraulic module housing [5] to keep contamination out of the open valve hole.

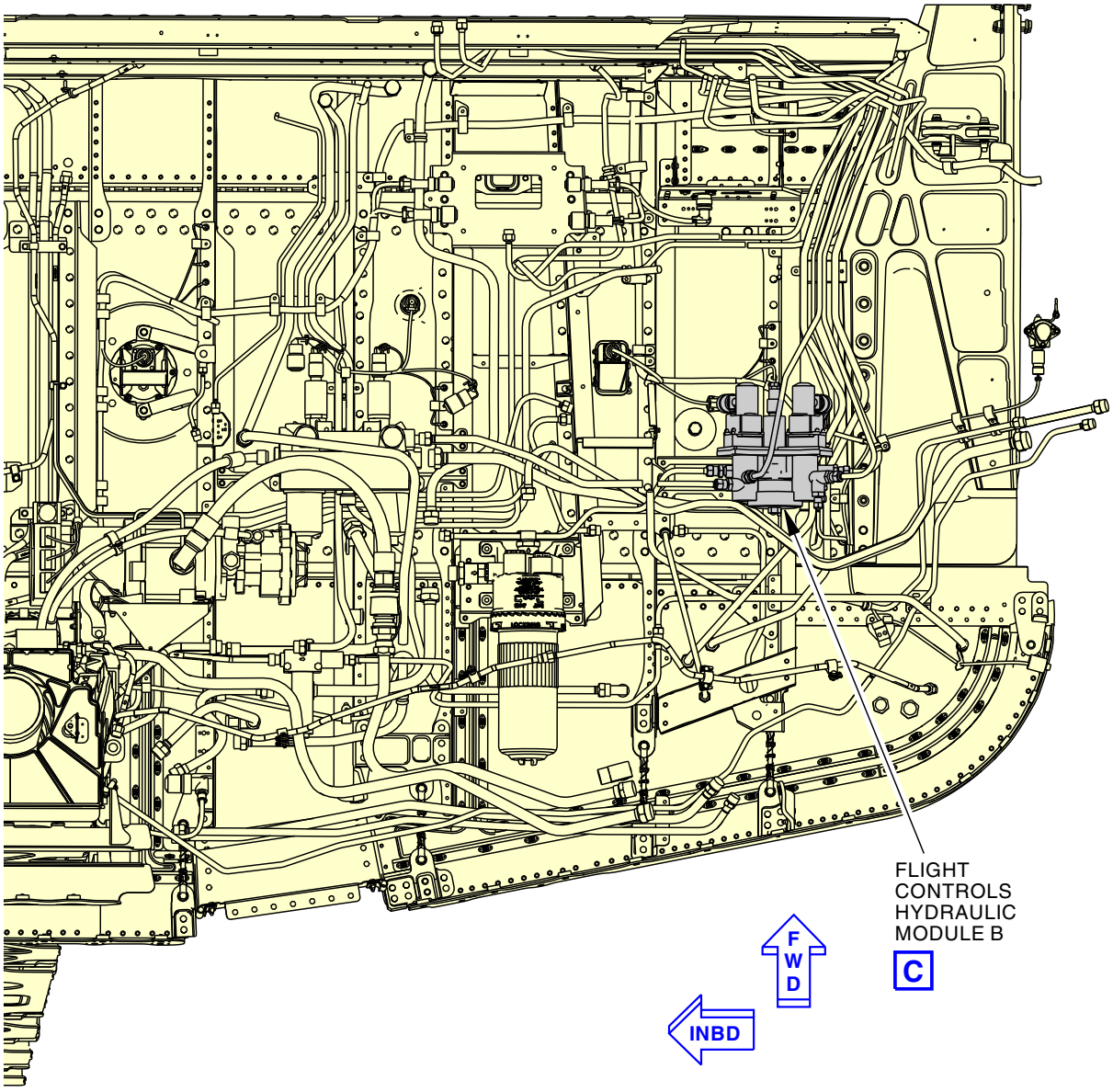
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



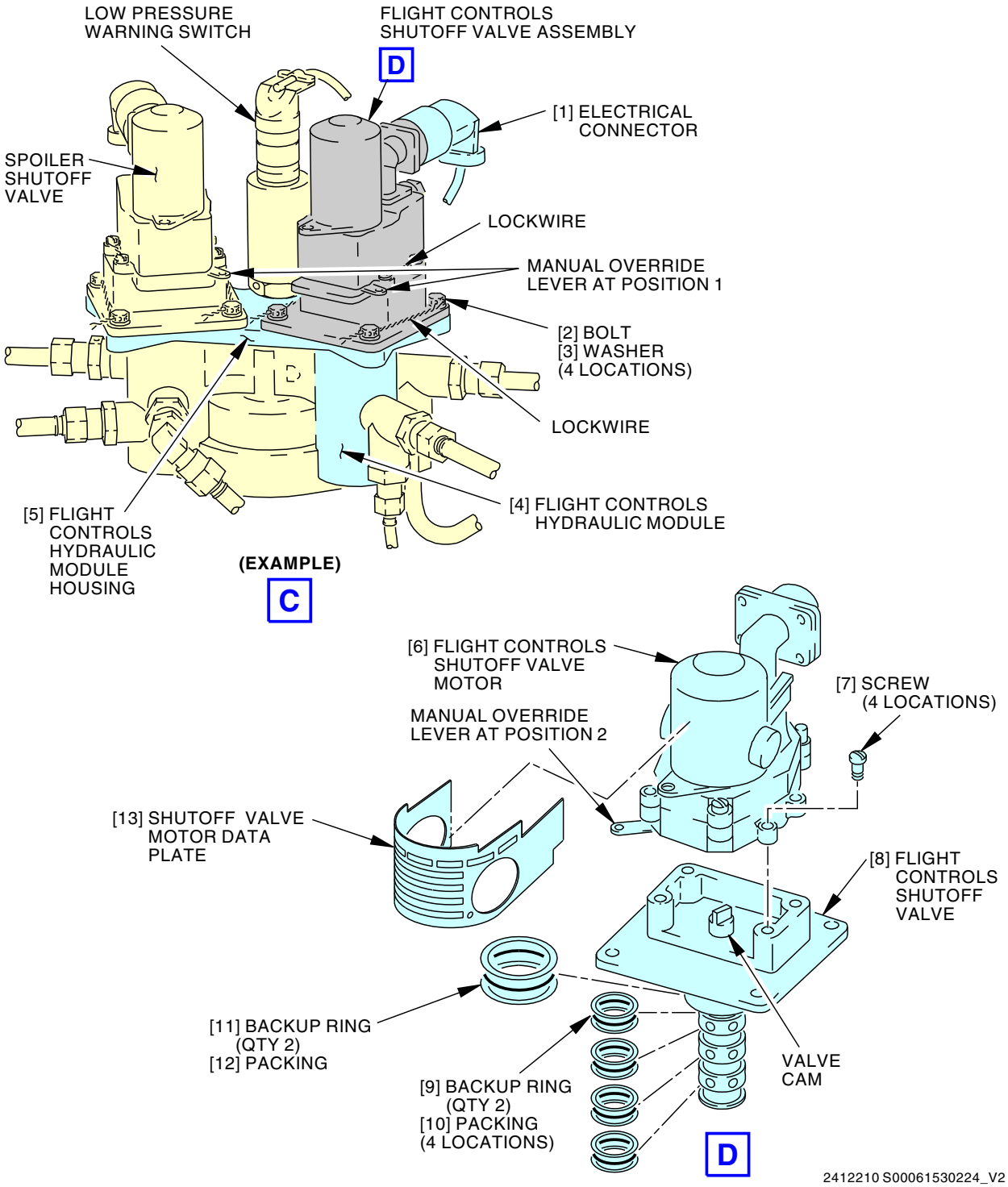
Flight Controls Shutoff Valve Installation
Figure 401/27-09-31-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Shutoff Valve Installation
Figure 401/27-09-31-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Shutoff Valve Installation
Figure 401/27-09-31-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-31-400-801

3. Flight Controls Shutoff Valve Installation

(Figure 401)

A. General

(1) This task is the installation of the flight controls shutoff valve assembly, that contains the shutoff valve motor and shutoff valve.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-09-31-710-801	Flight Controls Shutoff Valve Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Shutoff valve	27-09-31-01-065	SIA ALL
9	Backup ring	27-09-31-01-045	SIA ALL
10	Packing	27-09-31-01-060	SIA ALL
11	Backup ring	27-09-31-01-050	SIA ALL
12	Packing	27-09-31-01-055	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Flight Controls Shutoff Valve Installation

SUBTASK 27-09-31-420-001

(1) If they are not installed, install the packings [12], backup rings [11], packings [10], and backup rings [9].

(a) Apply MCS 352B fluid, D00054 (recommended), or hydraulic fluid, D00153 (alternative), to the packings [12], backup rings [11], packings [10], and backup rings [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Install the packings [12], backup rings [11], packings [10], and backup rings [9] on the shutoff valve [8].

SUBTASK 27-09-31-420-002

(2) Install the shutoff valve [8].

(a) Carefully install the shutoff valve [8] in the hydraulic module housing [5].

(b) Install the bolts [2] and washers [3] to attach the shutoff valve [8] to the hydraulic module housing [5].

(c) Tighten the bolts [2] to 35 ±5 in-lb (4.0 ±0.6 N·m).

(d) Install the MS20995NC32 lockwire, G01912, on the four bolts [2] (TASK 20-10-44-400-801).

(e) If you did not examine the electrical connector [1] at the removal step, do these steps:

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

1) Before you connect the electrical connector [1], examine the electrical connector [1] for corrosion.

2) If there was corrosion, refer to SWPM 20-60-03, to correct the problem.

(f) Apply the D5026NS or ZC-026 compound, G50171, to the electrical connector [1] (SWPM 20-60-03).

(g) Connect the electrical connector [1] to the shutoff valve motor [6].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-31-860-005

(1) If you removed the left shutoff valve, do this step:

(a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-860-006

(2) If you removed the right shutoff valve, do this step:

(a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-610-001

(3) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-09-31-860-016

(4) For the applicable hydraulic system, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-09-31-730-001

(5) Do this task: Flight Controls Shutoff Valve Test, TASK 27-09-31-710-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-31-000-802

4. Flight Controls Shutoff Valve Motor Removal

(Figure 401)

A. General

(1) The shutoff valve motor can be removed with the shutoff valve installed in the flight controls hydraulic module.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-09-31-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-09-31-860-007

(2) If the left motor will be removed, do this step:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-860-008

(3) If the right motor will be removed, do this step:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

E. Flight Controls Shutoff Valve Motor Removal

SUBTASK 27-09-31-020-002

(1) Remove the shutoff valve motor [6].

(a) Disconnect the electrical connector [1] from the shutoff valve motor [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) After the electrical connector [1] is disconnected, examine the electrical connector [1] for corrosion.

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

(c) If there was corrosion, correct the problem (SWPM 20-60-03).

(d) Set the manual override lever on the shutoff valve motor [6] to the position 2.

(e) Remove the screws [7] that attach the shutoff valve motor [6] to the shutoff valve [8].

(f) Remove the shutoff valve motor [6] from the shutoff valve [8].

SUBTASK 27-09-31-020-003

(2) If the shutoff valve motor [6] will be replaced, remove the shutoff valve motor data plate [13] (Figure 401).

(a) Keep the shutoff valve motor data plate [13] for the subsequent installation.

NOTE: The data plate is for the flight controls shutoff valve assembly accountability/traceability and will be installed on the new motor.

——— END OF TASK ———

TASK 27-09-31-400-802

5. Flight Controls Shutoff Valve Motor Installation

(Figure 401)

A. General

(1) The shutoff valve motor can be installed with the shutoff valve installed in the flight controls hydraulic module.

B. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-09-31-710-801	Flight Controls Shutoff Valve Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Shutoff valve motor	27-09-31-01-070	SIA ALL
8	Shutoff valve	27-09-31-01-065	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Flight Controls Shutoff Valve Motor Installation

SUBTASK 27-09-31-420-003

(1) If the shutoff valve motor data plate [13] was removed, install the shutoff valve motor data plate [13] on the new shutoff valve motor [6] (Figure 401).

SUBTASK 27-09-31-420-005

(2) Install the shutoff valve motor [6].

(a) Make sure that the manual override lever on the shutoff valve motor [6] is set to the position 2.

(b) Set the shutoff valve motor [6] on the shutoff valve [8].

(c) Engage the shutoff valve motor [6] with the valve cam.

(d) Install the screws [7].

(e) Install MS20995NC32 lockwire, G01912, on the screws [7] (TASK 20-10-44-400-801).

(f) If the electrical connector [1] was not examined at the removal step, do these steps:

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

1) Before the electrical connector [1] is connected, examine the electrical connector [1] for corrosion.

2) If there was corrosion, correct the problem (SWPM 20-60-03).

(g) Apply D5026NS or ZC-026 compound, G50171, to the electrical connector [1] (SWPM 20-60-03).

(h) Connect the electrical connector [1] to the shutoff valve motor [6].

G. Flight Controls Shutoff Valve Motor Installation Test

SUBTASK 27-09-31-860-009

(1) Set the manual override lever on the shutoff valve motor [6] to the position 1.

SUBTASK 27-09-31-860-010

(2) If the left motor was removed, do this step:

(a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-860-011

(3) If the right motor was removed, do this step:

(a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-730-002

(4) Do this task: Flight Controls Shutoff Valve Test, TASK 27-09-31-710-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS SHUTOFF VALVE - ADJUSTMENT/TEST

1. General

A. This procedure has the task to do a test of the flight controls shutoff valve.

TASK 27-09-31-710-801

2. Flight Controls Shutoff Valve Test

A. General

(1) The flight controls shutoff valve is part of the flight controls hydraulic module. The hydraulic module for the hydraulic system A is found in the left main wheel well. The hydraulic module for the hydraulic system B is found in the right main wheel well.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-09-31-860-013

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-09-31-860-014

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Flight Controls Shutoff Valve Test

SUBTASK 27-09-31-710-001

(1) Do a test of flight controls shutoff valve.

(a) Make sure that the FLT CONTROL switches, on the P5 flight controls panel, are in the ON position.

(b) Make sure that the manual override lever on the flight controls shutoff valve motor is in position 1 for hydraulic systems A and B.

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(c) Operate the aileron control wheel to bleed air from the hydraulic system lines and components.

1) Make sure that there is no leakage of hydraulic fluid at the flight control hydraulic modules.

(d) Operate the aileron control wheel, control column, and rudder pedals.

1) Make sure that the ailerons, elevators, and rudder operate satisfactory.

(e) Set the FLT CONTROL switches to the OFF position.

1) Make sure that the manual override lever on the flight controls shutoff valve motor is in position 2 for hydraulic systems A and B.

(f) Operate the rudder pedals.

NOTE: The rudder must not operate hydraulically, but the rudder pedals will operate manually. Some rudder surface movement can occur if the pedal input is large enough to mechanically displace the PCU actuating piston. Full rudder authority may be available.

1) Make sure that the force to operate the rudder pedals is higher now than when you set the FLT CONTROLS switches to the ON position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-31-860-015

(1) Set the FLT CONTROL switches to the ON position.

(a) Make sure that the manual override lever on the flight controls shutoff valve motor is in position 1 for hydraulic systems A and B.

SUBTASK 27-09-31-040-001

(2) Remove pressure from hydraulic systems A and B, do this task Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS PANEL (P5-3) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight controls panel, referred to as the flight controls panel

(2) An installation of the flight controls panel.

B. The flight controls panel (P5-3) is on the captain's overhead panel. The flight controls panel has the lights and switches used by the primary and auxiliary flight control system hydraulic supply valves.

TASK 27-09-45-000-801

2. Flight Controls Panel Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-09-45-860-002

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC
D	6	C01354	YAW DAMPER 2 DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
B	3	C01046	AFCS SYS B FCC DC
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	12	C00132	MASTER CAUTION ANNUNCIATOR BUS 1
B	13	C00131	MASTER CAUTION ANNUNCIATOR BAT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	14	C00316	INDICATOR MASTER DIM SECT 4

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	10	C01283	GENERATOR CONT UNIT 1

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(Continued)

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	11	C01284	GENERATOR CONT UNIT 2

C. Flight Controls Panel Removal

SUBTASK 27-09-45-020-001

(1) Remove the flight controls module assembly [1]:

(a) Loosen the quarter-turn fasteners [2] that hold the flight controls module assembly [1].

(b) Lower the flight controls module assembly [1].

(c) Disconnect the electrical connectors [3] from the flight controls module assembly [1].

(d) Remove the flight controls module assembly [1].

——— END OF TASK ———

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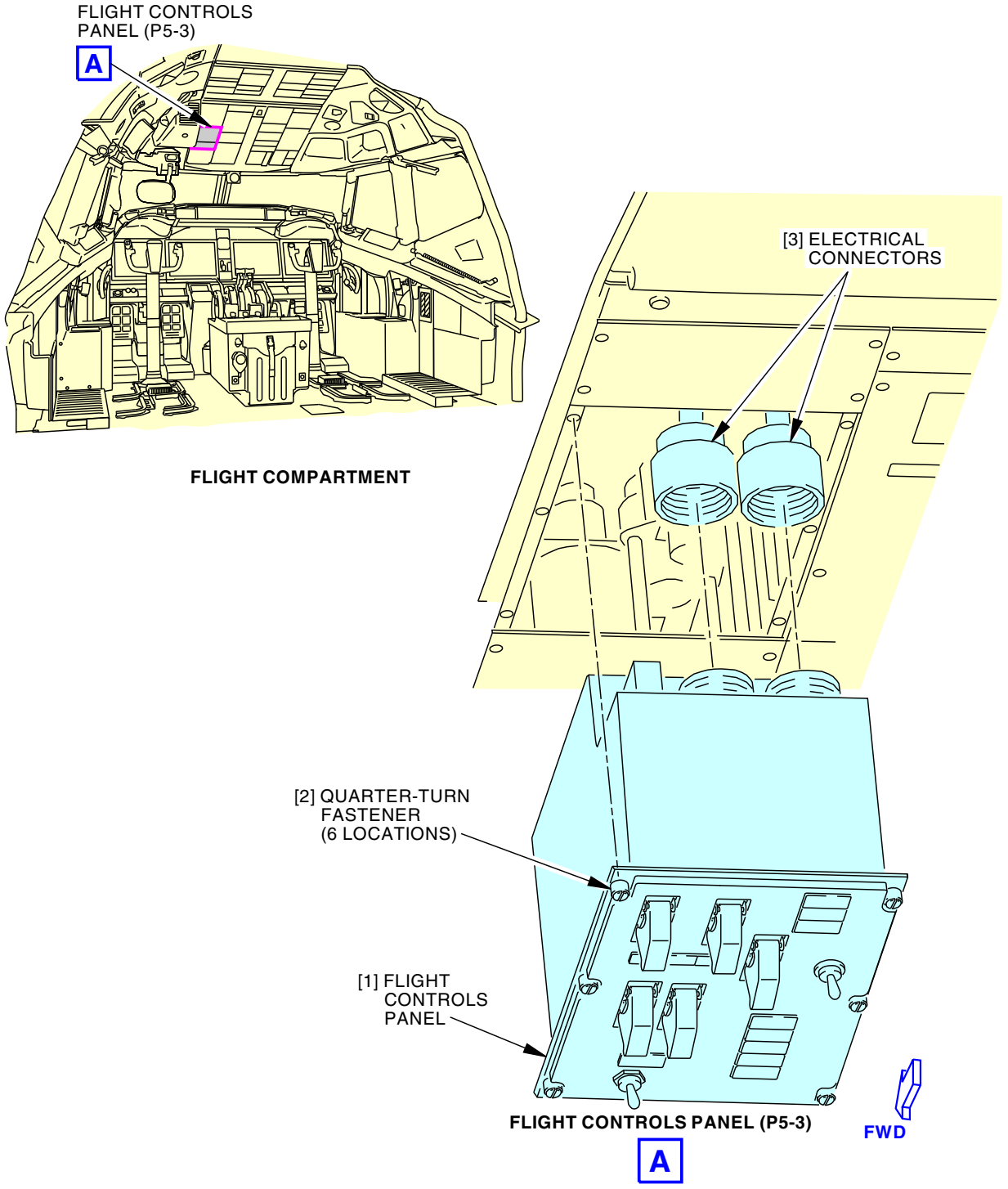

Flight Controls Panel (P5-3) Installation
Figure 401/27-09-45-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-45-400-801

3. Flight Controls Panel Installation

(Figure 401)

A. References

Reference	Title
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flight controls module assembly	27-09-45-01-050	SIA ALL

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Flight Controls Panel Installation

SUBTASK 27-09-45-420-001

(1) Install the flight controls module assembly [1]:

(a) Connect the electrical connectors [3] to the flight controls module assembly [1].

NOTE: Make sure that the electrical connectors [3] match the mates on the flight controls module assembly [1].

(b) Push the flight controls module assembly [1] into the captain's overhead panel.

(c) Tighten the quarter-turn fastener [2] that hold the flight controls module assembly [1].

SUBTASK 27-09-45-860-003

(2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC
D	6	C01354	YAW DAMPER 2 DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

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(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	12	C00132	MASTER CAUTION ANNUNCIATOR BUS 1
B	13	C00131	MASTER CAUTION ANNUNCIATOR BAT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	14	C00316	INDICATOR MASTER DIM SECT 4

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
F	10	C01283	GENERATOR CONT UNIT 1
F	11	C01284	GENERATOR CONT UNIT 2

SUBTASK 27-09-45-710-001

(3) Do this test of the hydraulic system valve control:

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	15	C01401	LANDING GEAR AIR/GND RELAY

(b) To get access to the P92 panel, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(c) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

NOTE: With these circuit breakers open the standby pump and the alternate flap drive motor will not operate.

(d) Make sure that these switches on the flight controls module assembly [1] are in the OFF position:

1) FLT CONTROL A, and FLT CONTROL B
2) SPOILER A, and SPOILER B
3) ALTERNATE FLAPS arm switch
4) ALTERNATE FLAPS control switch.

(e) Do this test of the control of the system A and system B flight control hydraulic valves from the flight controls module assembly [1]:

NOTE: The flight control hydraulic valves are installed on the left and right sides of the forward bulkhead of the landing gear wheel well.

1) Move the FLT CONTROL A switch to the ON position.
   a) Make sure that the system A flight control valve moves to position 1.
   b) Make sure that the system B flight control valve does not move (stays in position 2).
2) Move the FLT CONTROL B switch to the ON position.
   a) Make sure that the system B flight control valve moves to position 1.
3) Move the FLT CONTROL A switch to the OFF position.
   a) Make sure that the system A flight control valve moves to position 2.
   b) Make sure that the system B flight control valve does not move (stays in position 1).
4) Move the FLT CONTROL B switch to the OFF position.
   a) Make sure that the system B flight control valve moves to position 2.

(f) Do this test of the control of the system A and system B spoiler hydraulic valves from the flight controls module assembly [1]:

NOTE: The spoiler hydraulic valves are installed on the left and right sides of the forward bulkhead of the landing gear wheel well.

1) Move the SPOILER A switch to the ON position.
   a) Make sure that the system A spoiler valve moves to position 1.

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b) Make sure that the system B spoiler valve does not move (stays in position 2).

2) Move the SPOILER B switch to the ON position.

a) Make sure that the system B spoiler valve moves to position 1.

3) Move the SPOILER A switch to the OFF position.

a) Make sure that the system A spoiler valve moves to position 2.

b) Make sure that the system B spoiler valve does not move (stays in position 1).

4) Move the SPOILER B switch to the OFF position.

a) Make sure that the system B spoiler valve moves to position 2.

(g) Set the SPOILER A and B switches to the ON position.

WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(h) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

NOTE: If you will perform the "Test of the hydraulic system indications and lights" next, do not close the STANDBY HYDRAULIC PUMP circuit breaker on the P92 panel.

(i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	15	C01401	LANDING GEAR AIR/GND RELAY

SUBTASK 27-09-45-710-002

(4) Do this test of the hydraulic system indications and lights:

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WARNING WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

WARNING DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(a) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

(b) Move the FLT CONTROL A and B switches to the ON position.

1) Make sure that the FLT CONTROL - LOW PRESSURE A and B lights are ON.

(c) Move the ALTERNATE FLAPS arm switch to the ARM position.

1) Make sure that the STANDBY HYD - LOW PRESSURE light is ON.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Supply hydraulic power to systems A and B (PAGEBLOCK 29-11-00/201).

1) Make sure that the FLT CONTROL - LOW PRESSURE A and B lights are OFF.

WARNING WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

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(WARNING PRECEDES)

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(e) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

1) Make sure that the STANDBY HYD - LOW PRESSURE light is OFF.

(f) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(g) Remove the power from hydraulic systems A and B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

(h) Move the ALTERNATE FLAPS arm switch to the OFF position.

(i) Do this test of the STANDBY HYD - LOW QUANTITY light:

1) Open this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

2) Disconnect the electrical connector D678 from the standby system reservoir switch S49.

NOTE: The standby system reservoir is on the keel beam in the main wheel well.

3) Connect a jumper wire between pins 1 and 2 on electrical connector D678.

4) Close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

5) Make sure that the STANDBY HYD - LOW QUANTITY light is ON.

6) Open this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

7) Remove the jumper wire from electrical connector D678.

8) Connect the electrical connector D678 on the standby system reservoir switch S49.

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9) Close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

10) Make sure that the STANDBY HYD - LOW QUANTITY light is OFF.

SUBTASK 27-09-45-710-003

(5) Do a test of the lights on the flight controls module assembly [1]:

NOTE: Some lights might be ON.

(a) Move and hold the LIGHTS switch on the P1 Captain's Panel to the TEST position.

1) Make sure that these lights are ON:

a) STANDBY HYD - LOW QUANTITY
b) STANDBY HYD - LOW PRESSURE
c) STANDBY HYD - STBY RUD ON
d) FLT CONTROL - LOW PRESSURE A
e) FLT CONTROL - LOW PRESSURE B
f) FEEL DIFFERENTIAL PRESS
g) SPEED TRIM FAIL
h) MACH TRIM FAIL
i) AUTO SLAT FAIL
j) SPOILERS
k) YAW DAMPER.

(b) Move the LIGHTS switch back to BRT.

SUBTASK 27-09-45-710-004

(6) Do a test of the YAW DAMPER light for the yaw damper system:

(a) Align the ADIRS. Do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

(b) Make sure that the FLT CONTROL B switch is ON.

(c) Turn the YAW DAMPER switch to ON.

1) Make sure that the light for the YAW DAMPER goes off.

(d) Turn the YAW DAMPER switch to OFF.

1) Make sure that the light for the YAW DAMPER comes on.

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SUBTASK 27-09-45-710-005

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(7) Do this test of the alternate control system for the leading edge flaps and slats and the trailing edge flaps:

(a) Make sure that the flap control lever is in the FLAP UP detent.

NOTE: If the flap control lever is not in the FLAP UP detent, the flaps and slats might extend when hydraulic pressure is applied.

(b) Set the FLT CONTROL B switch to STBY RUD.

1) Make sure that the STANDBY HYD - LOW PRESSURE light comes on momentarily, and then goes off.

2) Make sure that the STBY RUD ON light on the P5-3 panel is illuminated.

(c) Set the ALTERNATE FLAPS arm switch to ARM.

1) Make sure that the leading edge flaps and slats and the trailing edge flaps do not extend.

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

DO NOT OPERATE THE TRAILING EDGE FLAPS WITH ELECTRICAL POWER MORE THAN ONE FULL EXTEND/RETRACT CYCLE IN 25 MINUTES. YOU CAN CAUSE DAMAGE TO THE FLAP ELECTRIC MOTORS IF YOU OPERATE THEM TOO FREQUENTLY.

(d) Move the ALTERNATE FLAPS control switch to the DOWN position.

1) Make sure that the leading edge flaps and slats and the trailing edge flaps extend.

NOTE: It is not necessary to fully extend the trailing edge flaps.

(e) Move the ALTERNATE FLAPS control switch to the UP position.

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1) Make sure that the trailing edge flaps retract.

NOTE: It is not necessary to fully retract the trailing edge flaps with alternate control.

(f) Move the ALTERNATE FLAPS ARM switch to the OFF position.

(g) Supply hydraulic power to system B (PAGEBLOCK 29-11-00/201).

1) Make sure that the trailing edge flaps fully retract.

2) Make sure that the leading edge flaps and slats fully retract.

(h) Move the FLT CONTROL B switch to the OFF position.

(i) Move the ALTERNATE FLAPS ARM switch to the ARM position.

1) Make sure that the STANDBY HYD - LOW PRESSURE light is off.

(j) Move the ALTERNATE FLAPS ARM switch to the OFF position.

(k) Move the FLT CONTROL B switch to the ON position.

(l) Move the ALTERNATE FLAPS control switch to the OFF position.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOW PRESSURE WARNING SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the low pressure warning switch.

(2) An installation of the low pressure warning switch.

B. The low pressure warning switch is referred to as the "pressure switch" in this procedure.

C. The pressure switch is part of the flight controls hydraulic module. One flight controls hydraulic module each is installed in the hydraulic systems A and B. The hydraulic module for hydraulic system A is found in the left main wheel well. The hydraulic module for hydraulic system B is found in the right main wheel well.

TASK 27-09-61-000-801

2. Low Pressure Warning Switch Removal

(Figure 401)

A. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

B. Tools/Equipment

Reference	Description
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Low Pressure Warning Switch Removal

SUBTASK 27-09-61-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-09-61-860-001

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-09-61-860-002

(3) Do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

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SUBTASK 27-09-61-860-003

(4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

SUBTASK 27-09-61-020-001

(5) Disconnect the electrical connector [4] from the low pressure warning switch [3].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to SWPM 20-60-03, to correct the problem.

SUBTASK 27-09-61-020-002

(6) Remove the low pressure warning switch [3]:

(a) Use a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, to catch hydraulic fluid that drains from the low pressure warning switch [3].

(b) Remove the lockwire from the low pressure warning switch [3].

(c) Remove the low pressure warning switch [3] from the flight controls hydraulic module [5].

(d) Remove and discard the packing [2].

(e) Put a cover on the hydraulic module housing to keep unwanted material out of the open port.

——— END OF TASK ———

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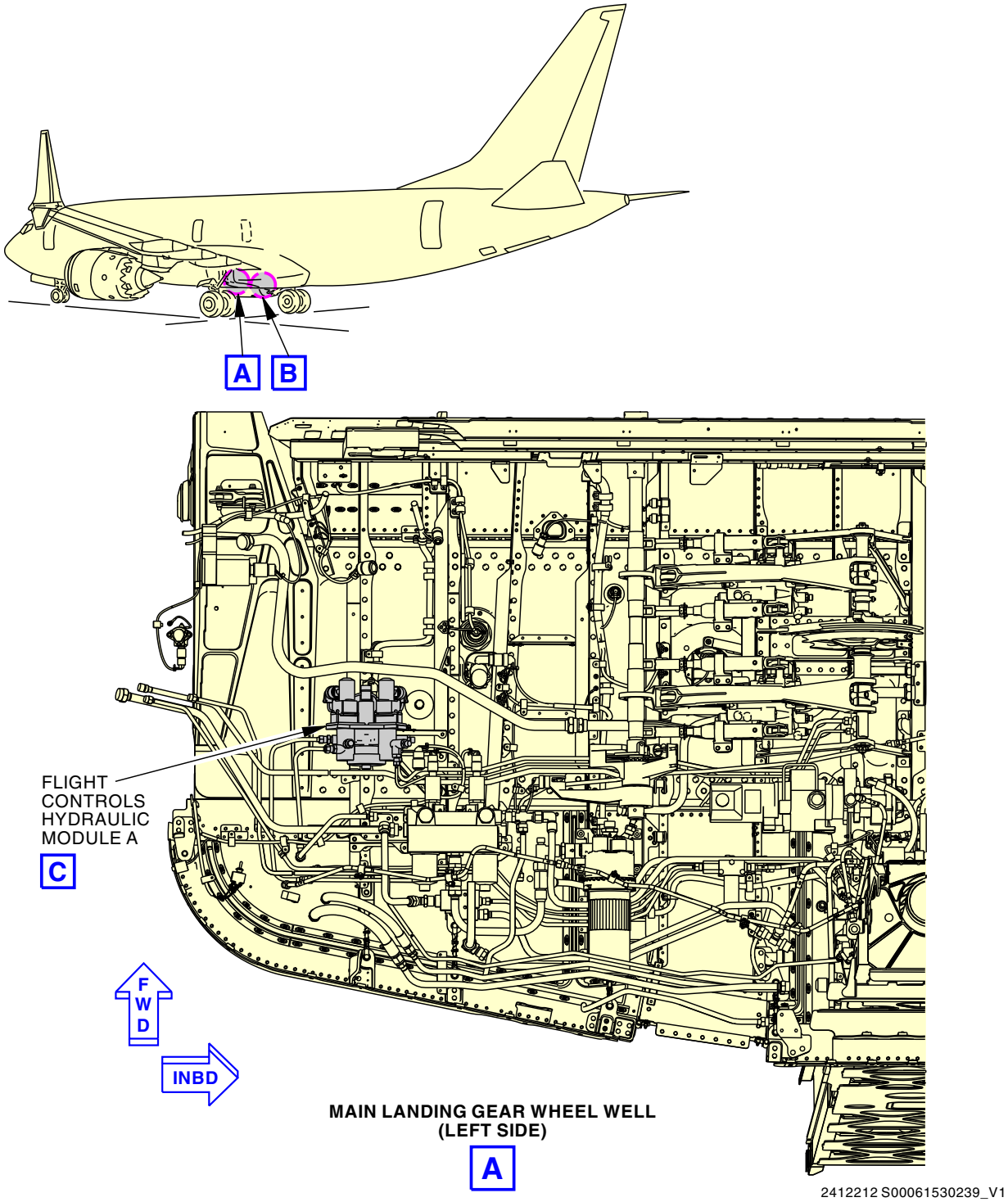
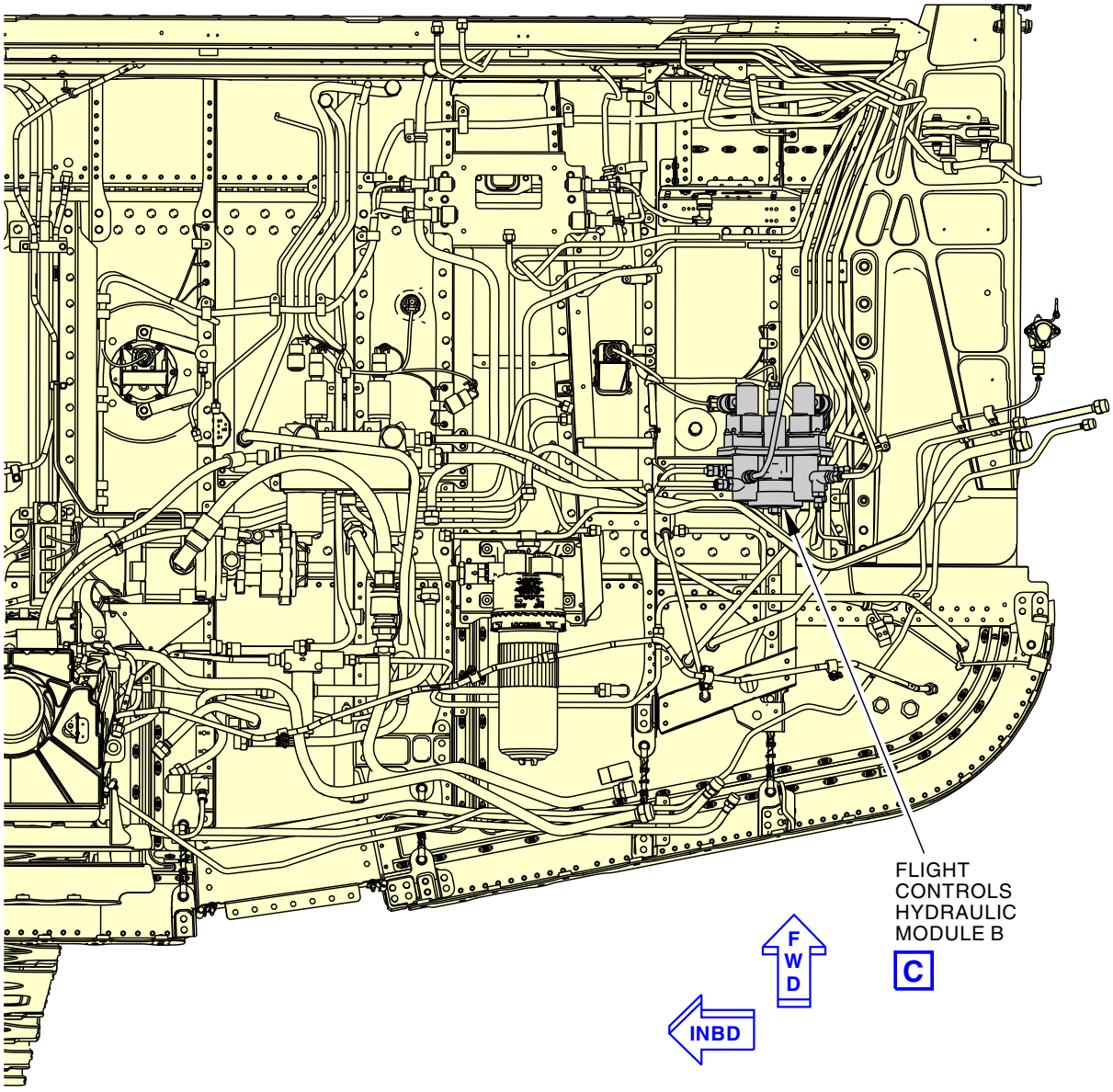


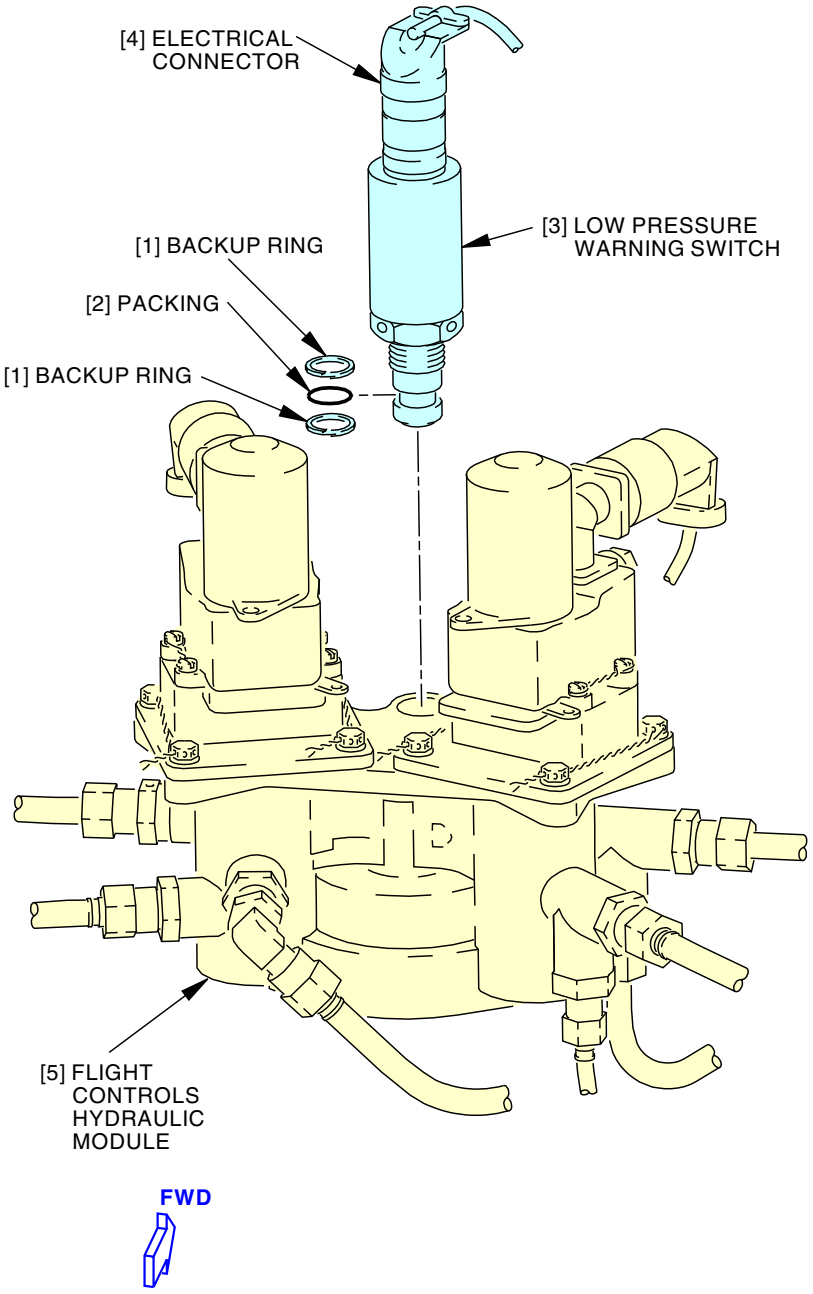
Low Pressure Warning Switch Installation
Figure 401/27-09-61-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Low Pressure Warning Switch Installation
Figure 401/27-09-61-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412214 S00061530241_V1

Low Pressure Warning Switch Installation
Figure 401/27-09-61-990-801 (Sheet 3 of 3)

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TASK 27-09-61-400-801

3. Low Pressure Warning Switch Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-09-61-700-801	Low Pressure Warning Switch Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Backup ring	27-09-61-01-025	SIA ALL
2	Packing	27-09-61-01-030	SIA ALL
3	Low pressure warning switch	27-09-61-01-020	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Low Pressure Warning Switch Installation

SUBTASK 27-09-61-420-001

(1) If they are not installed, install the backup rings [1] and packing [2] on the low pressure warning switch [3].

(a) Apply MCS 352B fluid, D00054 (recommended), or hydraulic fluid, D00153 (alternative), to the backup ring [1] and new packing [2].

(b) Put the backup rings [1] and packing [2] in their position on the low pressure warning switch [3].

SUBTASK 27-09-61-420-002

(2) Install the low pressure warning switch [3].

(a) Install the low pressure warning switch [3] on the flight controls hydraulic module [5].

(b) Tighten the low pressure warning switch [3] to 362.5 ±12.5 in-lb (41.0 ±1.4 N·m).

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(c) Install a MS20995NC32 lockwire, G01912, on the low pressure warning switch [3] and nearest bolt (TASK 20-10-44-400-801).

SUBTASK 27-09-61-420-003

(3) Connect the electrical connector [4].

(a) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, correct the problem (SWPM 20-60-03).

(b) Apply D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

(c) Connect the electrical connector [4] to the low pressure warning switch [3].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-61-860-004

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

SUBTASK 27-09-61-610-001

(2) If servicing is necessary for hydraulic system A and B reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-09-61-710-001

(3) Do this task: Low Pressure Warning Switch Test, TASK 27-09-61-700-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LOW PRESSURE WARNING SWITCH - ADJUSTMENT/TEST

1. General

A. This procedure contains the test of the low pressure warning switch.

B. The low pressure warning switch is part of the flight controls hydraulic module. The flight controls hydraulic module for hydraulic system A is found in the left main wheel well. The flight controls hydraulic module for hydraulic system B is found in the right main wheel well.

TASK 27-09-61-700-801

2. Low Pressure Warning Switch Test

A. References

Reference	Title
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-09-61-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

D. Do a Test of the Low Pressure Warning Switch

SUBTASK 27-09-61-710-002

(1) Do a test of the low pressure warning switch:

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Supply hydraulic power to systems A and B (PAGEBLOCK 29-11-00/201).

(b) Operate the aileron control wheel, the control column, and the rudder pedals to bleed the hydraulic system.

(c) Make sure that there is no leakage of hydraulic fluid at the flight controls hydraulic module.

(d) Make sure the LOW PRESSURE light on the P5 forward overhead panel is not on.

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(e) Remove hydraulic power from systems A and B (PAGEBLOCK 29-11-00/201).

(f) Make sure the LOW PRESSURE light comes on.

(g) Make sure the MASTER CAUTION and the FLT CONT lights on the P7 lightshield panel are on.

——— END OF TASK ———

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FLIGHT CONTROLS TRIM CORRECTION - ADJUSTMENT/TEST

1. General

A. This procedure contains these tasks:

(1) The adjustment of the trailing edge flaps for lateral trim

(2) The adjustment of the aileron balance tab to equalize lateral manual reversion forces

(3) The rudder trim adjustment for power on discrepancy correction

(4) The rudder trim adjustment for power off discrepancy correction

(5) The flight controls adjustment record

B. Make sure the control system components are correctly adjusted when you measure the trim necessary for level flight.

C. To measure the lateral trim error you must do a test flight with the flight profile detailed in the task.

D. It is not necessary to adjust the lateral trim if the aileron and rudder trim necessary to keep level flight are within the limits shown in the table found in the task below:

TASK 27-09-71-820-801

2. Trailing Edge Flap Adjustment for Lateral Trim and Test

(Figure 501, Figure 502, Figure 503, Figure 504, Figure 505, Figure 506, Figure 507)

A. General

(1) This task supplies the data necessary to adjust the trailing edge flaps to decrease the aileron trim necessary for straight and level flight during cruise, and with the trailing edge flaps extended.

(2) It is necessary to adjust the lateral trim if the aileron and rudder trim necessary to keep level flight are not in the limits shown in (Table 501).

NOTE: There are no specific limits or requirements for lateral trim outside of the flight test profile below. It is acceptable at other flight conditions to observe different trim settings from those specified.

Table 501/27-09-71-993-801 Lateral Trim Limits

Flight Condition	Aileron Trim	Rudder Trim	Airspeed	Altitude (feet)
Cruise (Flaps UP/Gear Up)	0.75 unit	0.5 unit left / 1.0 unit right	.78 mach	37,000 or higher
Low Speed (Flaps UP/Gear Up)	0.75 unit	0.75 unit	250 kias	10,000 to 17,000
Flaps Extended to 1 unit (Gear Up)	1.0 unit *[1]	1.0 unit	Flaps 1 Maneuver Speed	10,000 to 17,000
Flaps Extended to 15 units, Landing Gear Extended	1.0 unit *[1] *[2]	1.0 unit	Flaps 15 Maneuver Speed	10,000 to 17,000
Flaps Extended to 40 units, Landing Gear Extended	1.3 unit *[2]	1.0 unit	Vref+5	10,000 to 17,000

*[1] The aileron trim change between flap positions 1 and 15 must be less than 1.0 unit.

*[2] The aileron trim change between flap positions 15 and 40 must be less than 1.4 units. An aileron trim requirement shift from side to side is acceptable, provided it is within the limit of 1.4 units.

(3) There are three methods available to adjust the lateral trim.

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(a) You can change the shims at the aft end of the carriages on the outboard flap to correct lateral trim during cruise.

NOTE: This method will have an effect on the lateral trim with the flaps extended.

(b) You can change length of the bellcranks on the aft flap drive for the outboard flap to correct lateral trim with the flaps extended.

NOTE: This method has the most effect with the flaps extended to the 40 unit position. There is no effect on the lateral trim with the flaps retracted, and a small effect with the flaps extended to 1 and 15 unit positions.

(c) You can change the compression of the bullnose seal on the inboard main flap. If the bullnose seals are not symmetric between the left and right wings, the airflow past the seals can cause lateral trim errors with the flaps extended to 40-units. This airflow can cause the aft flap bellcrank adjustment to be not effective.

NOTE: This method will have an effect on the lateral trim with the flaps fully extended and with the change in the lateral trim between the 15-unit and 40-unit positions.

(4) You can do more than one of the adjustments to correct for lateral trim problems. The charts shown in this task are for single adjustments. The results shown in the charts can be added together if you do multiple adjustments.

B. References

Reference	Title
27-11-00-820-806	Do A Check of the Aileron System Adjustment (P/B 501)
27-21-00-700-803	Rudder Centering Test (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-11-820-801	Inboard Trailing Edge Flap Adjustment (P/B 501)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)
27-51-22-400-801	Outboard Aft Flap Installation (P/B 401)
27-51-28-820-801	Outboard Flap Outboard Support Fairing Adjustment (P/B 501)
27-51-28-820-802	Outboard Flap Inboard Support Fairing Adjustment (P/B 501)
27-61-00-820-802	Flight Spoiler Adjustment (P/B 501)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap

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(Continued)

Zone	Area
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

E. Find the Necessary Flap Adjustment

SUBTASK 27-09-71-820-001

(1) Do a check of these other systems to make sure that they are not the cause of the lateral trim error.

(a) Make sure that the ailerons are adjusted correctly.

1) To check the ailerons, do this task: Do A Check of the Aileron System Adjustment, TASK 27-11-00-820-806.

2) Make sure that the aileron downrig is symmetric between the left and right aileron in the limit of 0.10 in. (2.54 mm).

(b) Make sure that the rudder is adjusted correctly.

1) To check the rudder, do this task: Rudder Centering Test, TASK 27-21-00-700-803.

(c) Make sure that the outboard trailing edge flaps and aft flaps are adjusted correctly.

1) For the outboard trailing edge flaps, do this task: Outboard Trailing Edge Flap Adjustment, TASK 27-51-21-820-801.

2) For the outboard aft flap, do this task: Outboard Aft Flap Installation, TASK 27-51-22-400-801.

a) Make sure that the main flap to aft flap mismatch trailing edge dimensions are in the limits.

(d) Make sure that the inboard trailing edge flaps are adjusted correctly, do this task: Inboard Trailing Edge Flap Adjustment, TASK 27-51-11-820-801.

1) Make sure that the torque tube door is sealed correctly.

NOTE: If the torque tube door is not sealed near the flap leading edge when the flaps are extended to flaps 40 units, lateral trim problems can occur.

(e) Make sure that the spoilers are adjusted correctly.

1) To check the spoilers, do this task: Flight Spoiler Adjustment, TASK 27-61-00-820-802.

2) Make sure that the spoilers on the left and right wings are adjusted symmetrically.

SUBTASK 27-09-71-750-001

(2) Do a test flight to find the lateral trim necessary for straight and level flight for all flight conditions.

NOTE: One unit of aileron trim is equal to six degrees of control wheel rotation.

NOTE: There are no specific limits or requirements for lateral trim outside of this flight test profile. It is acceptable at other flight conditions to observe different trim settings from those specified.

(a) To find the aileron trim necessary during cruise, fly with these conditions.

1) Flight speed: Approximately 0.78 mach.

2) Altitude: 37,000 feet or higher.

3) Fuel load: Balanced in the limit of 150 lb (68 kg).

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4) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.

5) Autopilot engaged with in HDG SEL, with the wings level.

(b) Apply rudder trim to get zero heading change.

(c) Disengage the autopilot.

(d) Apply aileron trim to keep the wings level and maintain zero heading change.

(e) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the Cruise condition.

(f) To find the aileron trim necessary for low speed cruise, and with the flaps extended, fly with these conditions.

1) Altitude: Between 10,000 to 17,000 feet.

2) Fuel load: Balanced in the limit of 150 lb (68 kg).

3) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.

4) Autopilot OFF.

(g) Fly at 250 kias, with the flaps retracted.

(h) Apply rudder trim to get zero heading change.

(i) Apply aileron trim to keep the wings level and maintain zero heading change.

(j) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

I NOTE: This is the trim for the Low Speed Flaps UP.

(k) Change the airspeed to flaps 1 maneuvering speed, and extend the flaps to the 1-unit position.

(l) Apply rudder trim to get zero heading change.

(m) Apply aileron trim to keep the wings level and maintain zero heading change.

(n) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 1 unit.

(o) Change the airspeed to flaps 15 maneuvering speed, and extend the flaps to the 15-unit position, and extend the landing gear.

(p) Apply rudder trim to get zero heading change.

(q) Apply aileron trim to keep the wings level and maintain zero heading change.

(r) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 15 units.

(s) Change the airspeed to Vref +5 knots, and extend the flaps to the 40-unit position.

(t) Apply rudder trim to get zero heading change.

(u) Apply aileron trim to keep the wings level and maintain zero heading change.

(v) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 40 units.

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SUBTASK 27-09-71-800-001

(3) If the aileron trim necessary to maintain level flight is not in the limits shown in (Table 501) primarily for the cruise condition, then do the steps in Lateral Trim Correction for the Cruise Condition below.

SUBTASK 27-09-71-800-002

(4) If the aileron trim necessary to maintain level flight is not in the limits shown in (Table 501) primarily for the flaps extended to 40-units condition, then do the steps in Lateral Trim Correction for the Flaps Extended Condition below.

SUBTASK 27-09-71-800-003

(5) If the aileron trim necessary to maintain level flight is more than 1.0 units for most of the flight conditions shown in (Table 501), and the trim values are either left or right, then do the steps in Lateral Trim Correction for the Multiple Flight Conditions below.

SUBTASK 27-09-71-800-004

(6) If the aileron trim necessary to maintain level flight is not in the limits shown in (Table 501) for the flaps extended to 40-units condition, or the change in the trim between the 15-unit and 40-unit conditions is not in the limit, then make sure that the inboard main flap bullnose seals are in the correct position.

(a) Do the steps in the Inboard Flap Bullnose Seal Position Adjustment below.

SUBTASK 27-09-71-800-007

(7) You can combine the adjustments to adjust the lateral trim for low speed, flaps 1 unit, and flaps 15 unit conditions.

F. Lateral Trim Correction for the Cruise Condition

NOTE: It is necessary to use these steps if the aileron trim necessary to keep level flight is not in the limits for the cruise condition. This change will also have some effect on the other flight conditions. This procedure changes the thickness of the shims on the carriages for the outboard flap.

SUBTASK 27-09-71-970-001

(1) Use the graphs to find the total shim thickness change necessary to correct the lateral trim error (Figure 501).

SUBTASK 27-09-71-970-002

(2) Find the thickness and the location of the shims that you will change:

NOTE: The thickness of the shims added on one wing added to the thickness of the shims removed from the other wing must be equal to the total shim thickness change. If it is possible, the total shim thickness change should be divided equally between the left and right wings. If the total shim change is 0.064 in. (1.626 mm) or less, you can change the shims in only one wing. The maximum permitted thickness of the shims on a carriage is 0.50 in. (12.70 mm). The minimum permitted thickness of the shims on a carriage is 0.00 inch.

(a) Flight test condition; Right Trim.

NOTE: Right aileron trim indicates a left wing heavy condition.

1) Add approximately 1/2 of the total shim thickness change to the carriages on the right outboard flap.

2) Remove approximately 1/2 of the total shim thickness change from the carriages on the left outboard flap.

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(b) Flight test condition; Left Trim.

NOTE: Left aileron trim indicates a right wing heavy condition.

1) Add approximately 1/2 of the total shim thickness change to the carriages on the left outboard flap.

2) Remove approximately 1/2 of the total shim thickness change from the carriages on the right outboard flap.

SUBTASK 27-09-71-040-001

(3) Prepare to change the thickness of the shims on the carriages for the outboard flaps.

(a) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(b) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-09-71-820-002

(4) Change the thickness of the shims [5] at the aft link fitting on the inboard and outboard carriages (Figure 502).

NOTE: The change in the thickness of the shims must be the same for the inboard carriage and the outboard carriage on a flap.

(a) At the outboard carriage [6], change the thickness of the shims [5].

1) Remove the nuts [4], washers [3], and bolts [2] that attach the aft link fitting [1] to the outboard carriage [6].

2) Add or remove shims [5] between the aft link fitting [1] and outboard carriage [6] to get the correct shim thickness.

3) Apply sealant, A00247, to the mating surfaces of the shims [5].

4) Put the shims [5] in their location between the aft link fitting [1] and outboard carriage [6].

NOTE: The maximum total thickness of the shims is 0.50 in. (12.70 mm). The minimum total thickness of the shims is 0.00 inch.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [2].

a) Make sure that the bolts [2] are the correct length for installation with the new shim thickness.

6) Install the bolts [2], washers [3], and nuts [4] that attach the aft link fitting [1] to the outboard carriage [6].

(b) At the inboard carriage [11], change the thickness of the shims [5].

1) Remove the nuts [10], washers [9], and bolts [8] that attach the aft link fitting [7] to the inboard carriage [11].

2) Add or remove shims [5] between the aft link fitting [7] and inboard carriage [11] to get the correct shim thickness.

3) Apply sealant, A00247, to the mating surfaces of the shims [5].

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4) Put the shims [5] in their location between the aft link fitting [7] and inboard carriage [11].

NOTE: The maximum thickness of the shims is 0.50 in. (12.70 mm). The minimum thickness of the shims is 0.00 inch.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [8].

6) Install the bolts [8], washers [9] and nuts [10] that attach the aft link fitting [7] to the inboard carriage [11].

SUBTASK 27-09-71-940-001

(5) Put the airplane back to its usual condition.

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(c) Do a check of the fair and alignment of the aft flap [51] with the main flap, do this task: Outboard Aft Flap Installation, TASK 27-51-22-400-801.

NOTE: It is necessary to use a tolerance for the mismatch between the main flap and the aft flap of 0.000 ±0.030 in. (0.000 ±0.762 mm). This tolerance is smaller than the normal adjustment tolerance. This increases the effect of the lateral trim adjustment.

(d) Do a check of the clearances between the aft fairings and flap.

1) To check the outboard fairing on the outboard flap, do this task: Outboard Flap Outboard Support Fairing Adjustment, TASK 27-51-28-820-801.

2) To check the inboard fairing on the outboard flap, do this task: Outboard Flap Inboard Support Fairing Adjustment, TASK 27-51-28-820-802.

(e) Do a check of the clearances between the spoilers and the flap, do this task: Flight Spoiler Adjustment, TASK 27-61-00-820-802.

G. Lateral Trim Correction for the Flaps Extended Conditions

NOTE: It is necessary to use these steps if the aileron trim necessary to keep level flight is not in the limits with the flaps extended. This change will primarily effect the trim at the flaps 40 position, with less effect at the other flap positions. This change will not have an affect on the lateral trim with the flaps retracted. This procedure uses the adjustment fitting to change the length of the bellcranks on the carriages for the outboard flap.

SUBTASK 27-09-71-970-003

(1) Use the graphs to find the total length change of the bellcrank [34] necessary to correct the lateral trim error with the flaps extended (Figure 503).

NOTE: It is necessary to use the nuts on the adjustment fitting at the end of the bellcrank to change the length of the bellcrank.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-71-970-004

(2) Find the dimension and direction to adjust the nuts [32] for the adjustment fittings [31] on the bellcranks [34] (Figure 504).

NOTE: The number of turns of the nuts for the adjustment fitting on one wing should be the same, but in the opposite direction of the nuts on the other wing.

(a) Flight test condition; Right Trim.

NOTE: Right aileron trim indicates a left wing heavy condition.

1) Decrease the length of the bellcranks [34] on the right wing by the 1/2 the dimension shown in the graph.

2) Increase the length of the bellcranks [34] on the left wing by the 1/2 the dimension shown in the graph.

(b) Flight test condition; Left Trim.

NOTE: Left aileron trim indicates a right wing heavy condition.

1) Decrease the length of the bellcranks [34] on the left wing by the 1/2 the dimension shown in the graph.

2) Increase the length of the bellcranks [34] on the right wing by the 1/2 the dimension shown in the graph.

SUBTASK 27-09-71-860-001

(3) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-09-71-040-002

(4) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-09-71-820-003

(5) Change the length of the bellcranks [34] on the inboard and outboard carriages (Figure 504).

NOTE: The change in the length of the bellcranks must be the same for the inboard carriage and the outboard carriage on a flap in the limit of 0.05 in. (1.27 mm). It is important to adjust the aft pushrods after you adjust the length of the bellcranks.

(a) Turn the applicable nut [32] on the bellcrank [34] to change the position of the adjustment fitting [31].

NOTE: To increase the length of the bellcrank, loosen the lower nut the distance shown in the graph. To decrease the length of the bellcrank, loosen the upper nut the distance shown. One full turn of a nut will change the length of the bellcrank by 0.05 in. (1.27 mm). You can use the distance from the top of the bellcrank to the bottom flange of the adjustment fitting as a reference dimension.

(b) Move the adjustment fitting [31] in the bellcrank [34].

(c) Engage the locking washer [33] with the bellcrank [34].

(d) Tighten the other nut [32] to hold the adjustment fitting [31].

(e) Install lockwire on the nuts [32].

SUBTASK 27-09-71-820-004

(6) Adjust the aft pushrods [53] for the aft flap [51] (Figure 505).

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Measure the mismatch between the aft flap [51] and main flap at the inboard and outboard ends of the aft flap [51].

(e) If the mismatch at the inboard and outboard ends of the aft flap [51] is not in the limit of 0.000 ±0.030 in. (0.000 ±0.762 mm), then adjust the length of the applicable aft pushrod [53].

NOTE: The tolerance on the mismatch is smaller than the normal adjustment tolerance. This increases the effect of the lateral trim adjustment.

1) Loosen the nuts [52] on the aft pushrod [53].

2) Turn the applicable aft pushrod [53] until the mismatch is in the limit at the inboard and outboard ends of the aft flap [51].

NOTE: For each 1/4 turn of the aft pushrods, the trailing edge of the aft flap will move approximately 0.04 in. (1.02 mm).

3) Tighten the nut [52] on the aft pushrod [53].

4) Install lockwire on the nuts [52].

SUBTASK 27-09-71-940-002

(7) Put the airplane back to its usual condition.

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

H. Inboard Flap Bullnose Seal Compression Adjustment

NOTE: Use these steps if the flap position 40 trim inputs are out of limits or if the aileron trim change between flap positions 15 and 40 is not in the limit of 1.4 units. This adjustment will typically affect only flap position 40 trim.

NOTE: The front of the bullnose seals are not installed on adjustable retainers, therefore it is necessary to add or remove shims to adjust the forward portion of the bullnose seal compression. After the shim thickness has been adjusted, the aft retainer must be adjusted to achieve consistent seal compression.

SUBTASK 27-09-71-970-015

(1) Find the side from which to decrease the bullnose seal shim [110].

(a) Flight test condition: Right Trim at the 40-unit flap condition.

NOTE: Right aileron trim shows a left wing heavy condition.

1) Decrease shim [110] thickness below the bullnose seal [107] on the right main flap.

(b) Flight test condition: Left Trim at the 40-unit flap condition.

NOTE: Left aileron trim shows a right wing heavy condition.

1) Decrease shim [110] thickness below the bullnose seal [107] on the left main flap.

SUBTASK 27-09-71-970-016

(2) Find the correct thickness of the bullnose shim [110] to replace the existing shim [110].

(a) Extend the trailing edge flaps to the 15-unit or 30-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(b) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

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WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) If the nose and main landing gear downlock pins are not installed, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-09-71-020-004

(3) Remove the bullnose seal [107] (Figure 507).

(a) If necessary, move the torque tube door [94] up and inboard to get access to the bullnose seal [107].

(b) Remove the bolts [108] and washers [109] that attach the bullnose seal [107] to the inboard flap [71].

(c) Remove the bullnose seal [107] from the inboard flap [71].

SUBTASK 27-09-71-800-010

(4) Measure the thickness of the bullnose seal [107].

NOTE: The bullnose shim can be made of more than one part.

NOTE: The bullnose shim can be one part that has different thicknesses.

NOTE: If the initial shim is less than 0.10 in. (2.54 mm), then you can install the shorter bullnose seal alternative. The short bullnose seal is 0.24 in. (6.10 mm) shorter than the tall bullnose seal.

(a) If the bullnose shim [110] has different thickness measure the thickness at locations A, B and C.

1) Determine the maximum thickness.

(b) Record the maximum thickness of the bullnose shim [110].

SUBTASK 27-09-71-800-011

(5) Make a new shim [110] for the bullnose seal [107].

(a) Make the new shim 0.10 in. (2.54 mm) less thick than the maximum thickness of the used shim.

NOTE: The new shim can be constant thickness even if the original shim was variable thickness.

(b) Make the outline of the bullnose seal [107] on the shim material.

NOTE: The material for the shim is optional. Non-metal materials can be used as the shim material. Nylon is one such material.

(c) Cut out the shim [110] of the material.

1) Make sure that the shim aligns with the shape of the bullnose seal [107] in the limit of 0.0 ±0.1 in. (0.0 ±2.5 mm).

(d) Drill the holes in the shim [110] to align with the holes in the bullnose seal [107].

SUBTASK 27-09-71-420-004

(6) Install the bullnose seal [107] and the new shim [110].

(a) If the shim material is metal, apply a layer of sealant, A00247, between the shim and the inboard flap [71].

(b) Put the bullnose seal [107] and the shim in their position on the inboard flap [71].

(c) Install the bullnose seal [107] and the washers [109] to attach the bullnose seal [107].

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1) Make sure that the grip length of the bolts [108] is correct with the added thickness with the shims.

(d) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(e) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(f) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(g) Adjust the seal retainer at the aft end of the bullnose seal [107] until the seal compression on the upper aft end of the seal is the same as the compression at point B.

(h) Release the torque tube door [94] and let it close.

SUBTASK 27-09-71-940-007

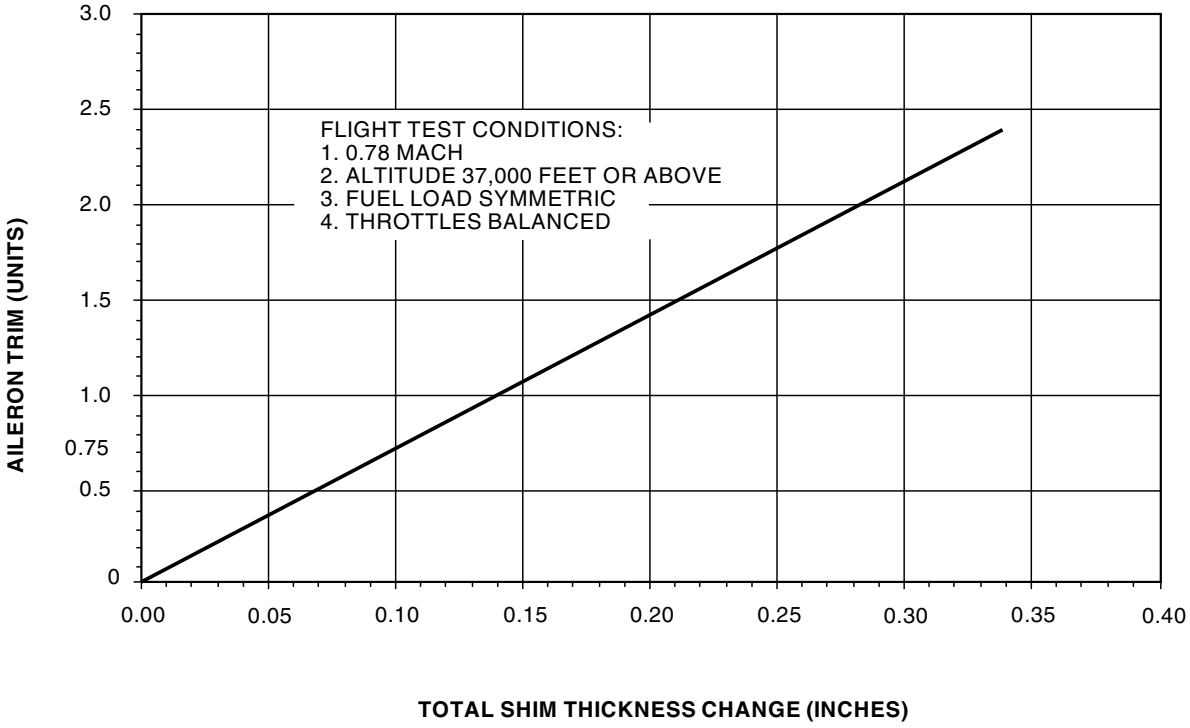
(7) Put the airplane back to its usual condition.

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AILERON TRIM (UNITS) _____ RIGHT TRIM / LEFT TRIM

TOTAL SHIM THICKNESS CHANGE (INCHES) _____

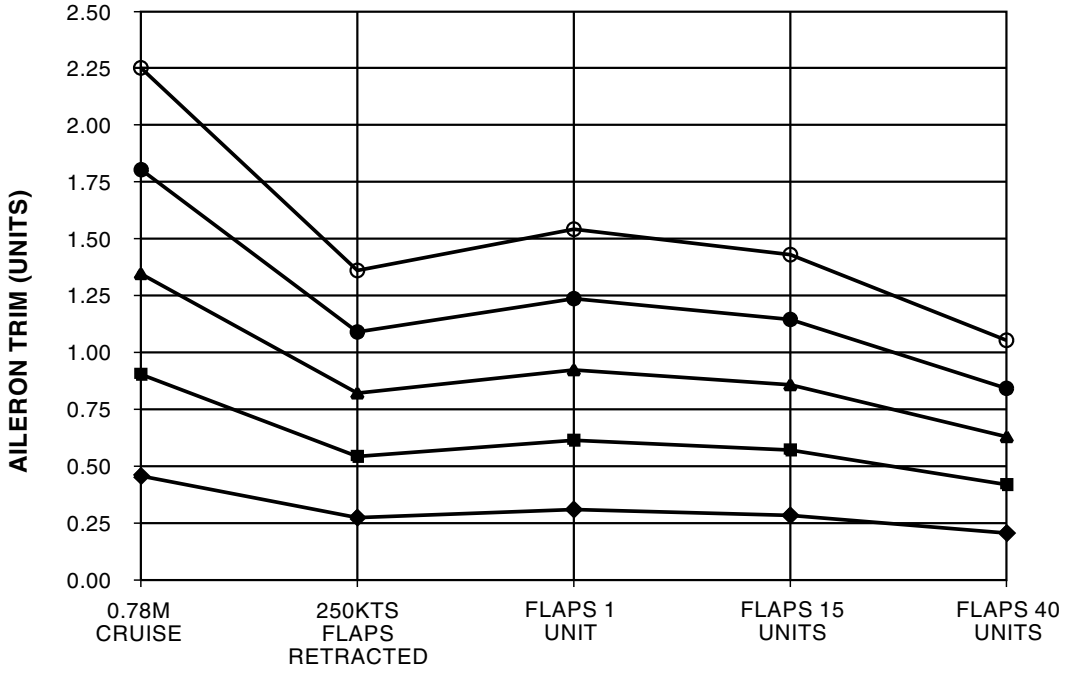
SHIM CHANGE (INCHES) LEFT WING _____

RIGHT WING _____

2412215 S00061530247_V1

Lateral Trim Correction for Cruise Condition
Figure 501/27-09-71-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AILERON TRIM (UNITS) _____ RIGHT TRIM / LEFT TRIM

TOTAL SHIM THICKNESS CHANGE (INCHES) _____

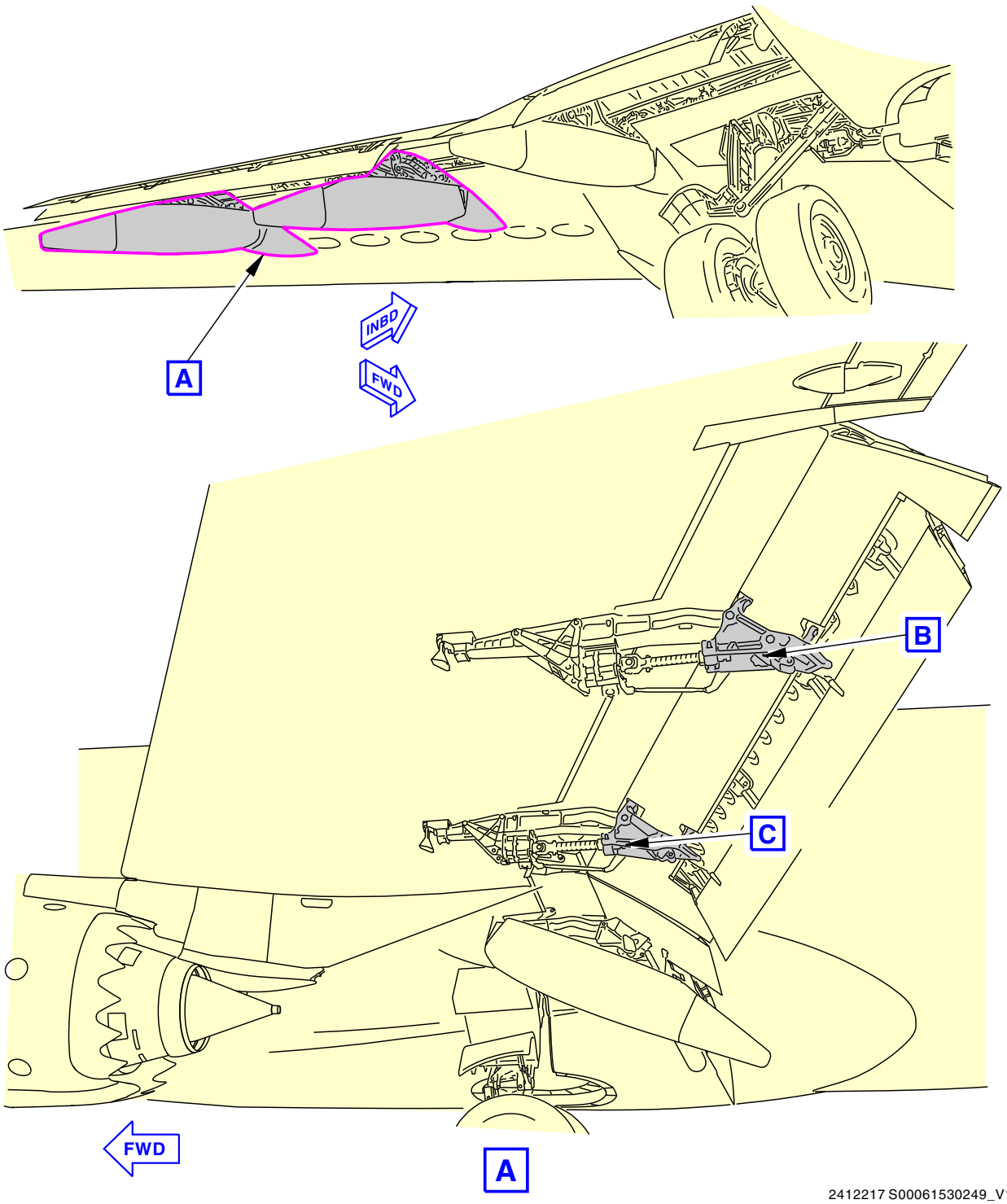
SHIM CHANGE (INCHES) LEFT WING _____

RIGHT WING _____

2412216 S00061530248_V1

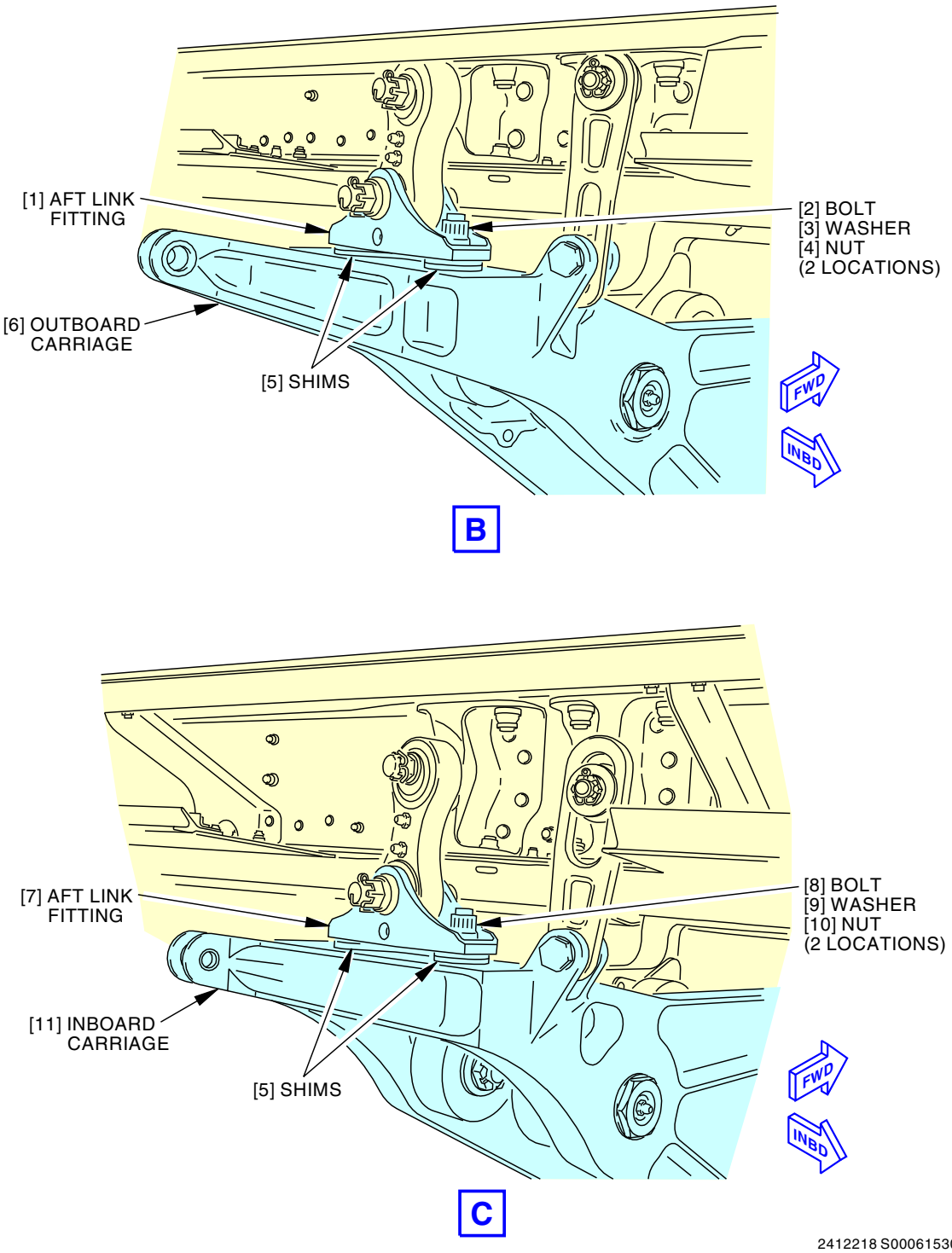
Lateral Trim Correction for Cruise Condition
Figure 501/27-09-71-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



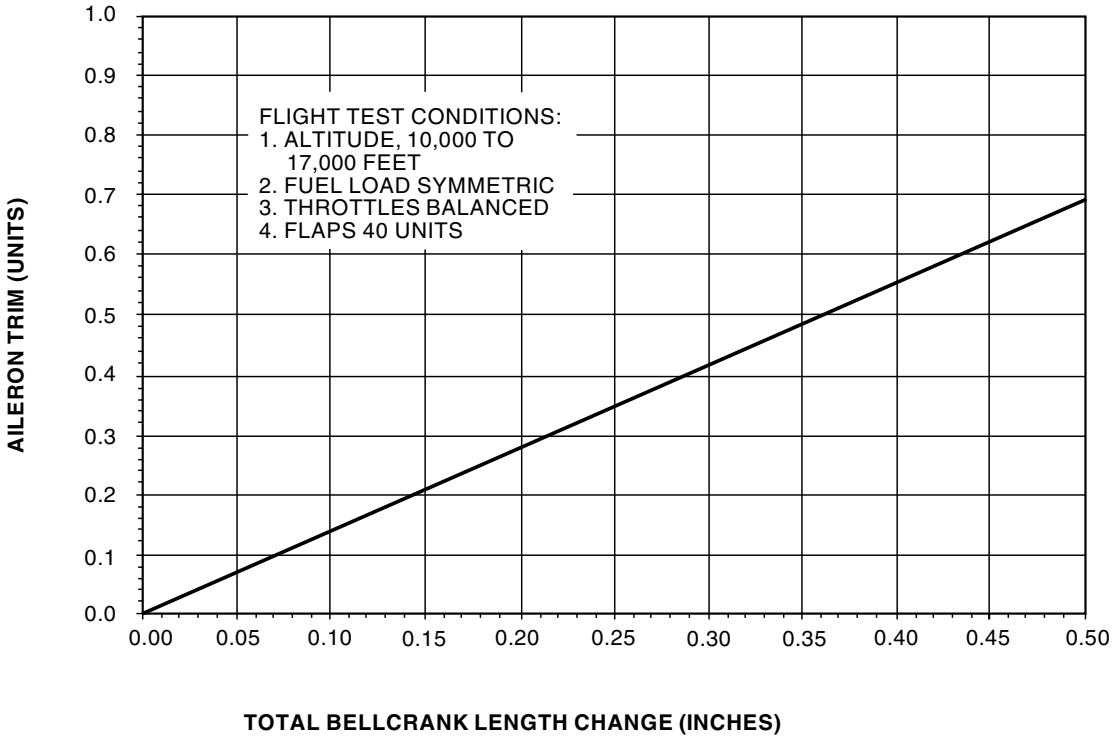
Outboard Flap Shim Thickness Change
Figure 502/27-09-71-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Shim Thickness Change
Figure 502/27-09-71-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AILERON TRIM (UNITS) REQUIRED WITH FLAPS AT 40 UNITS _____ RIGHT TRIM / LEFT TRIM

TOTAL BELLCRANK LENGTH CHANGE _____

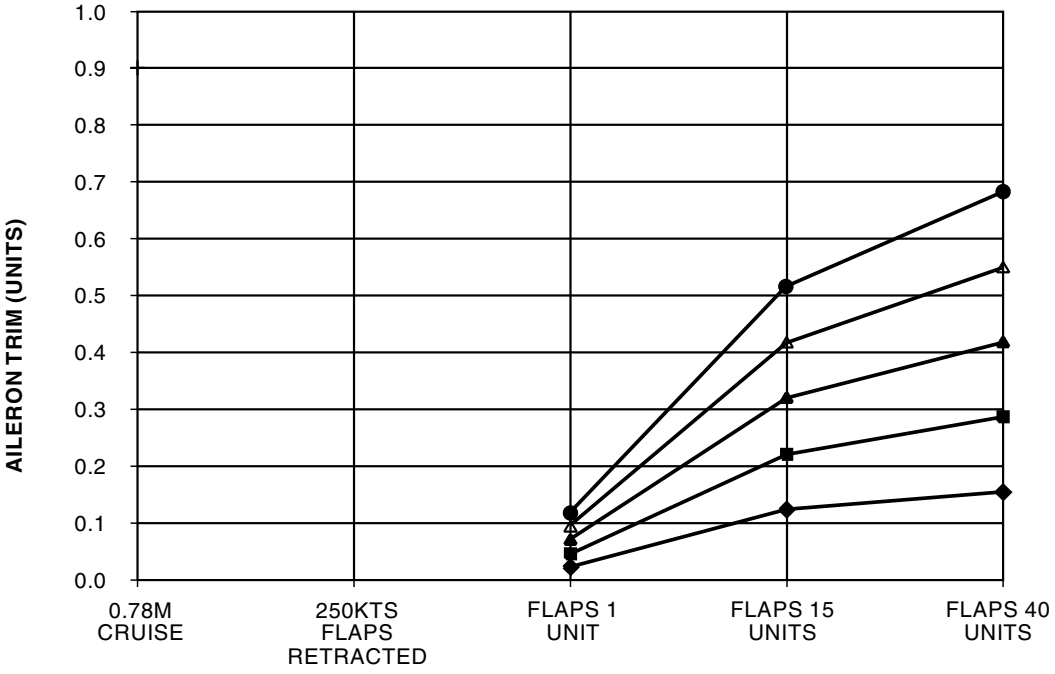
LEFT WING BELLCRANK LENGTH CHANGE _____

RIGHT WING BELLCRANK LENGTH CHANGE _____

2412219 S00061530251_V1

Lateral Trim Correction for Flaps 40 Unit Conditions
Figure 503/27-09-71-990-803 (Sheet 1 of 2)

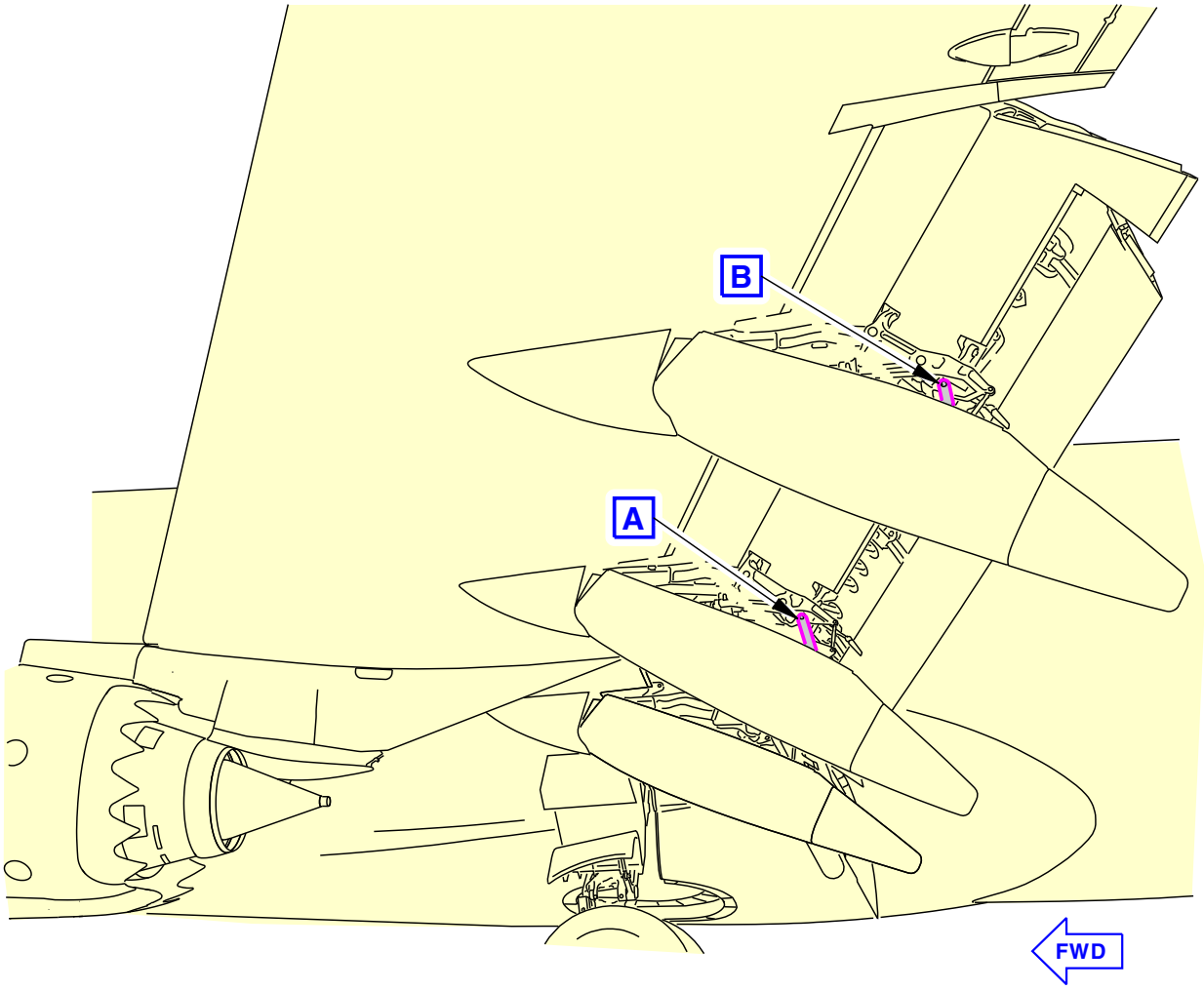
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412220 S00061530252_V1

Lateral Trim Correction for Flaps 40 Unit Conditions
Figure 503/27-09-71-990-803 (Sheet 2 of 2)

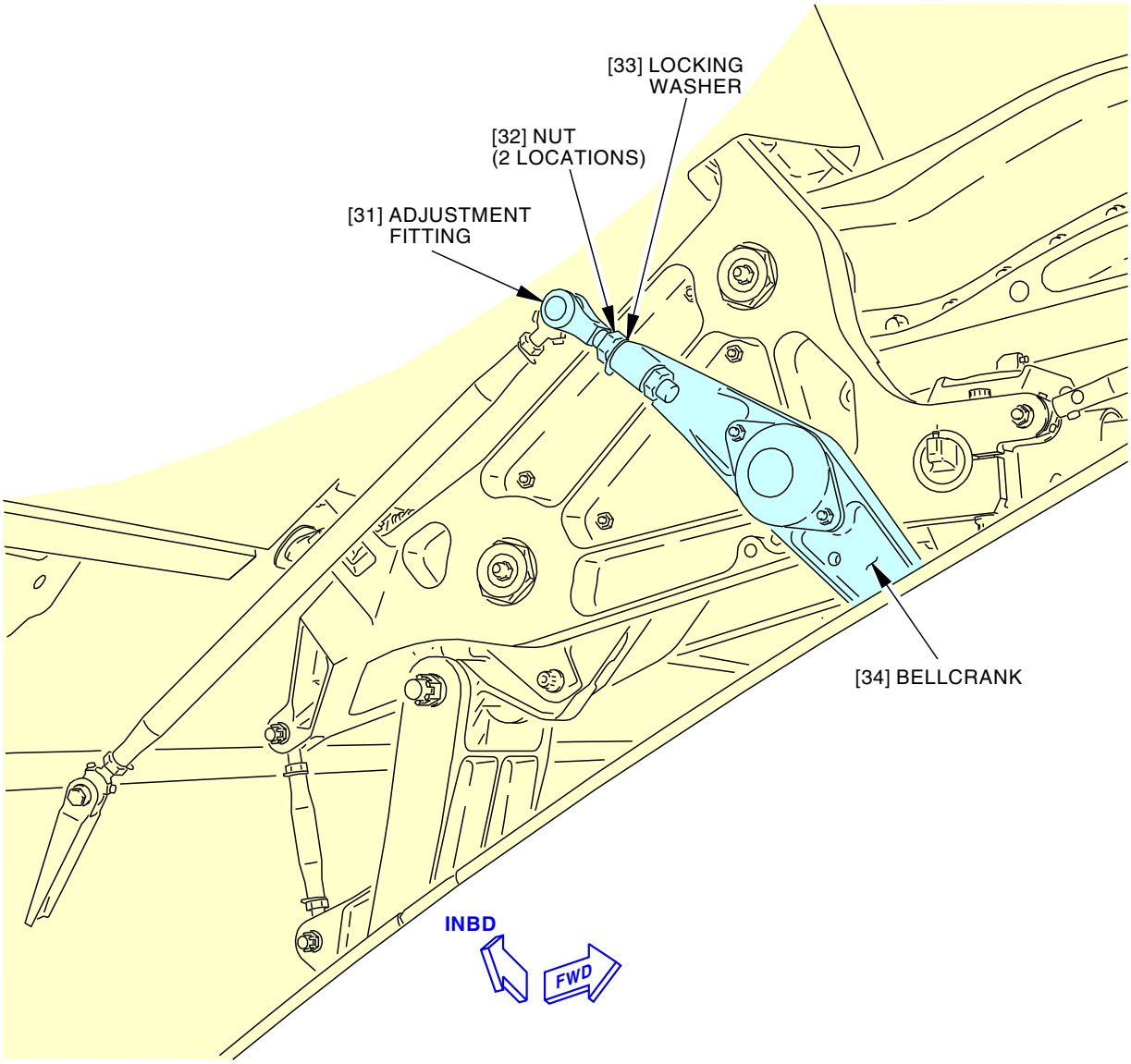
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412221 S00061530253_V1

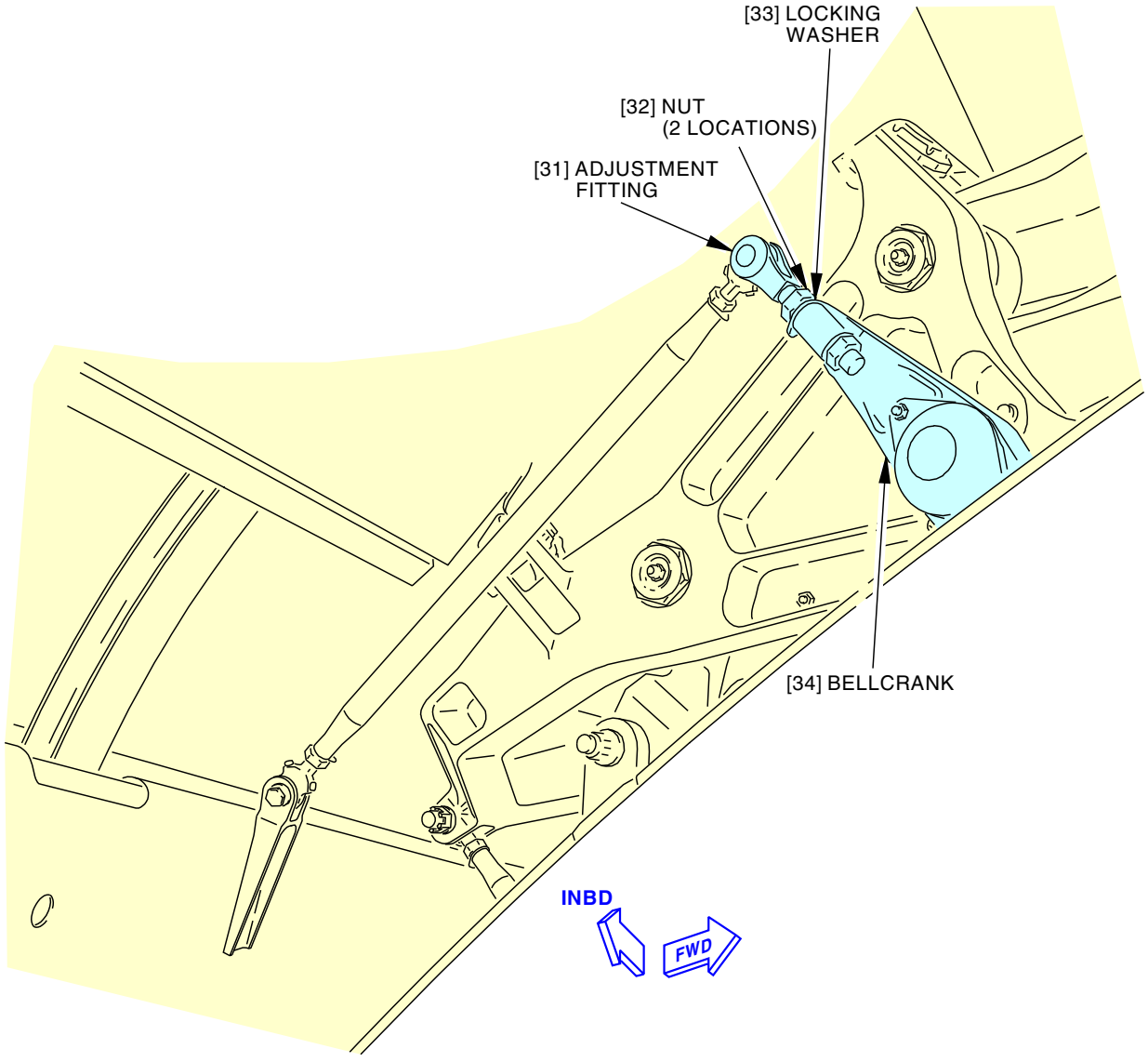
Outboard Aft Flap Bellcrank Adjustment
Figure 504/27-09-71-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



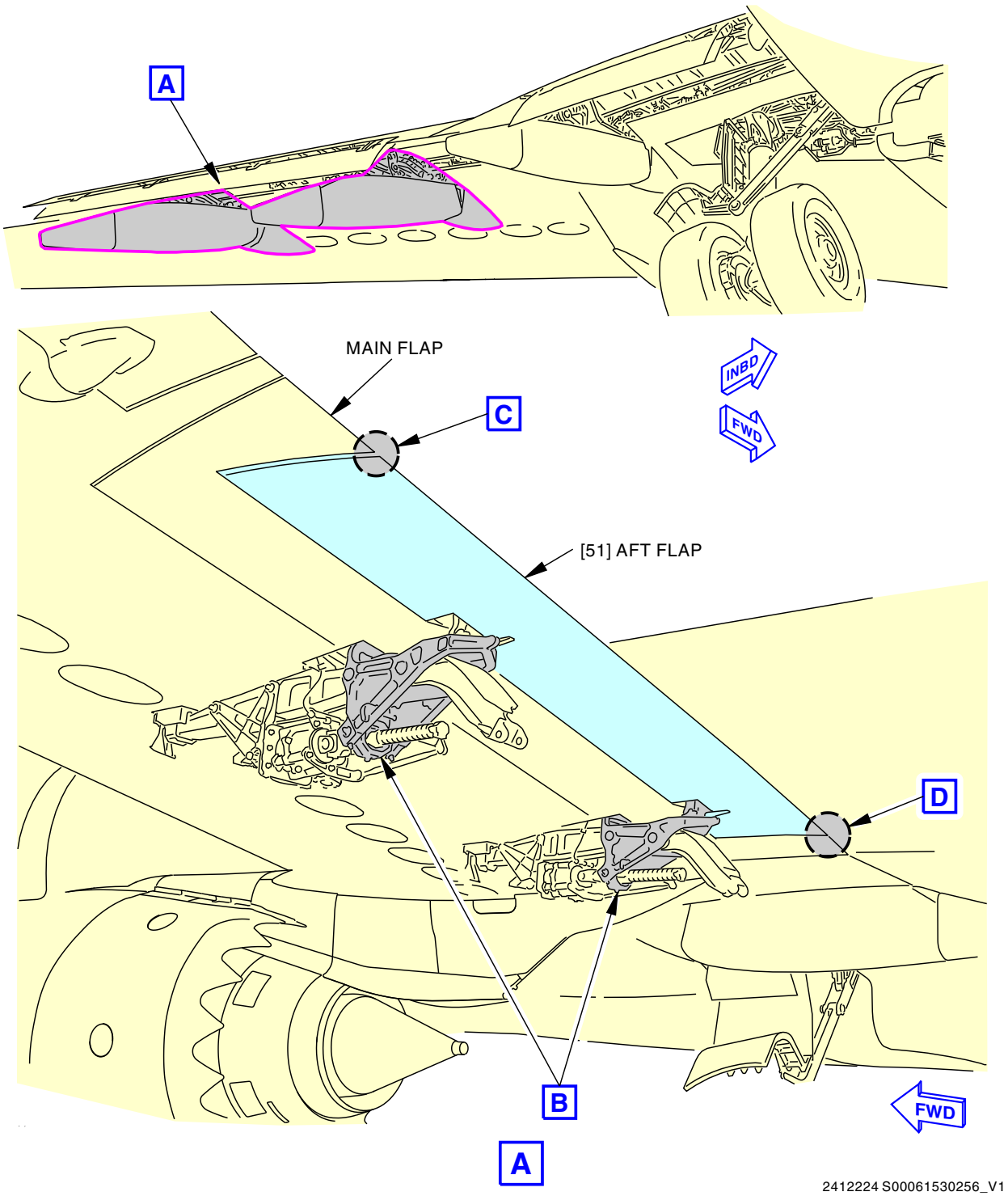
Outboard Aft Flap Bellcrank Adjustment
Figure 504/27-09-71-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



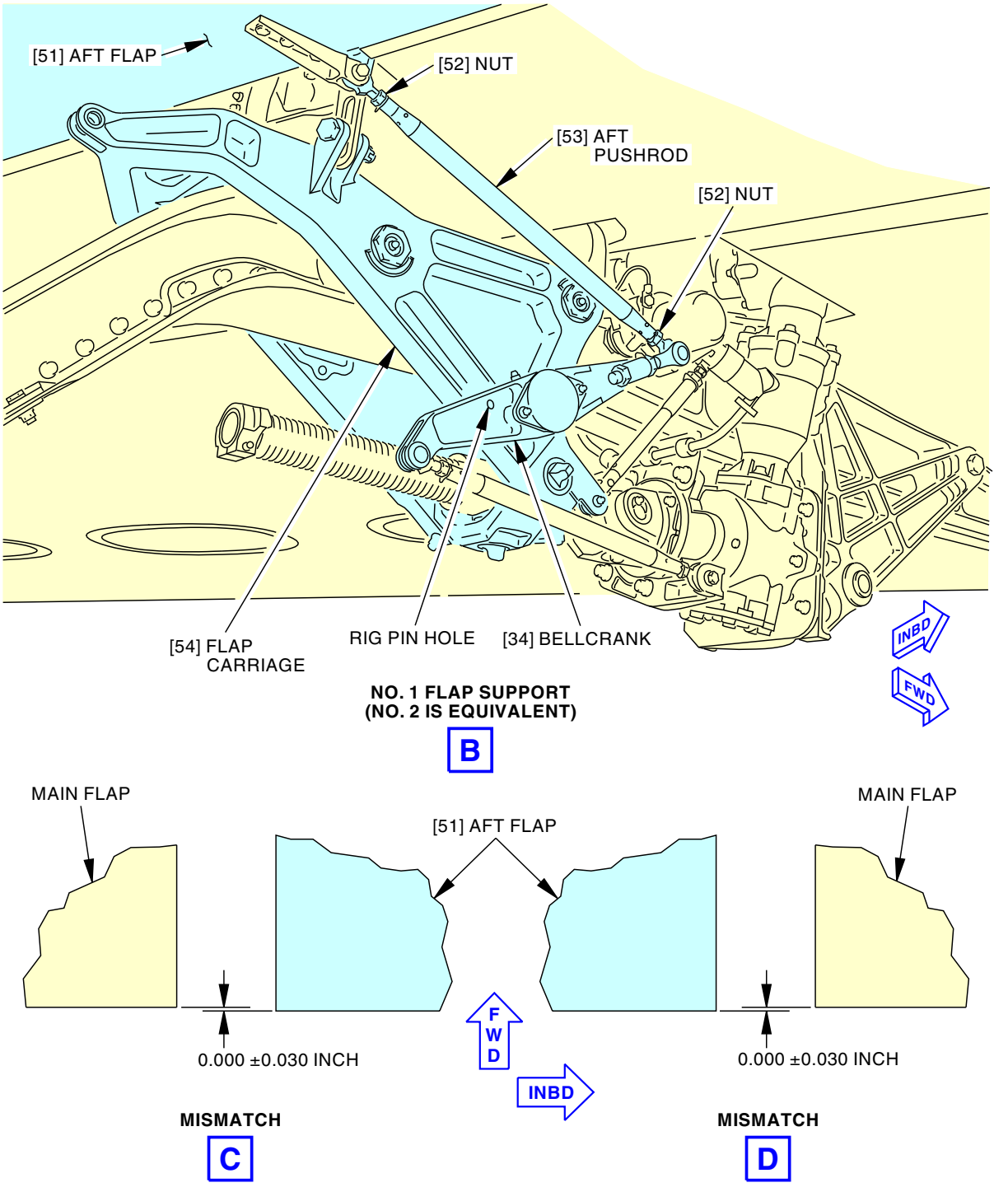
Outboard Aft Flap Bellcrank Adjustment
Figure 504/27-09-71-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



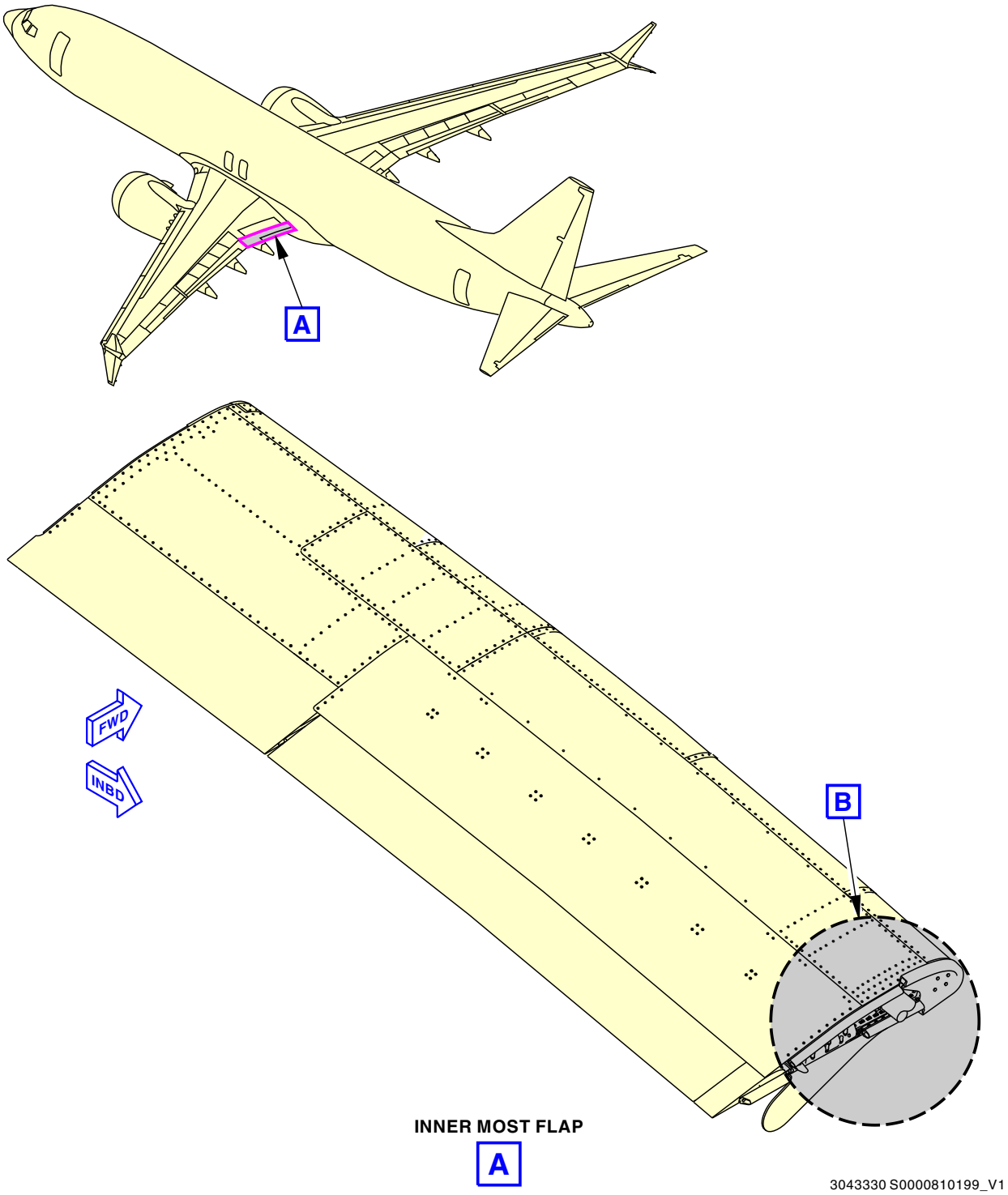
Aft Flap Pushrod Adjustment
Figure 505/27-09-71-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



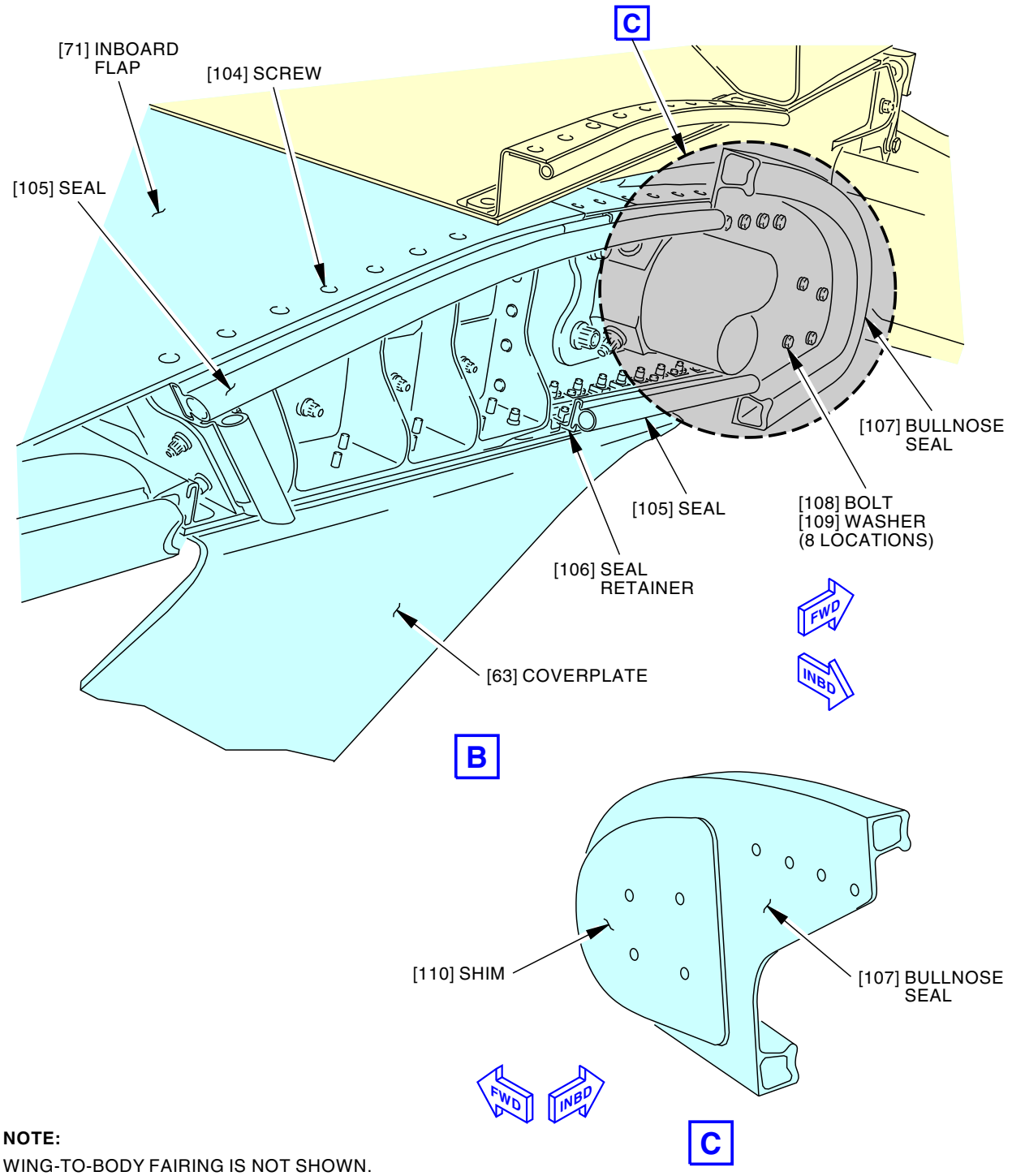
Aft Flap Pushrod Adjustment
Figure 505/27-09-71-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Trailing Edge Flap Adjustment
Figure 506/27-09-71-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

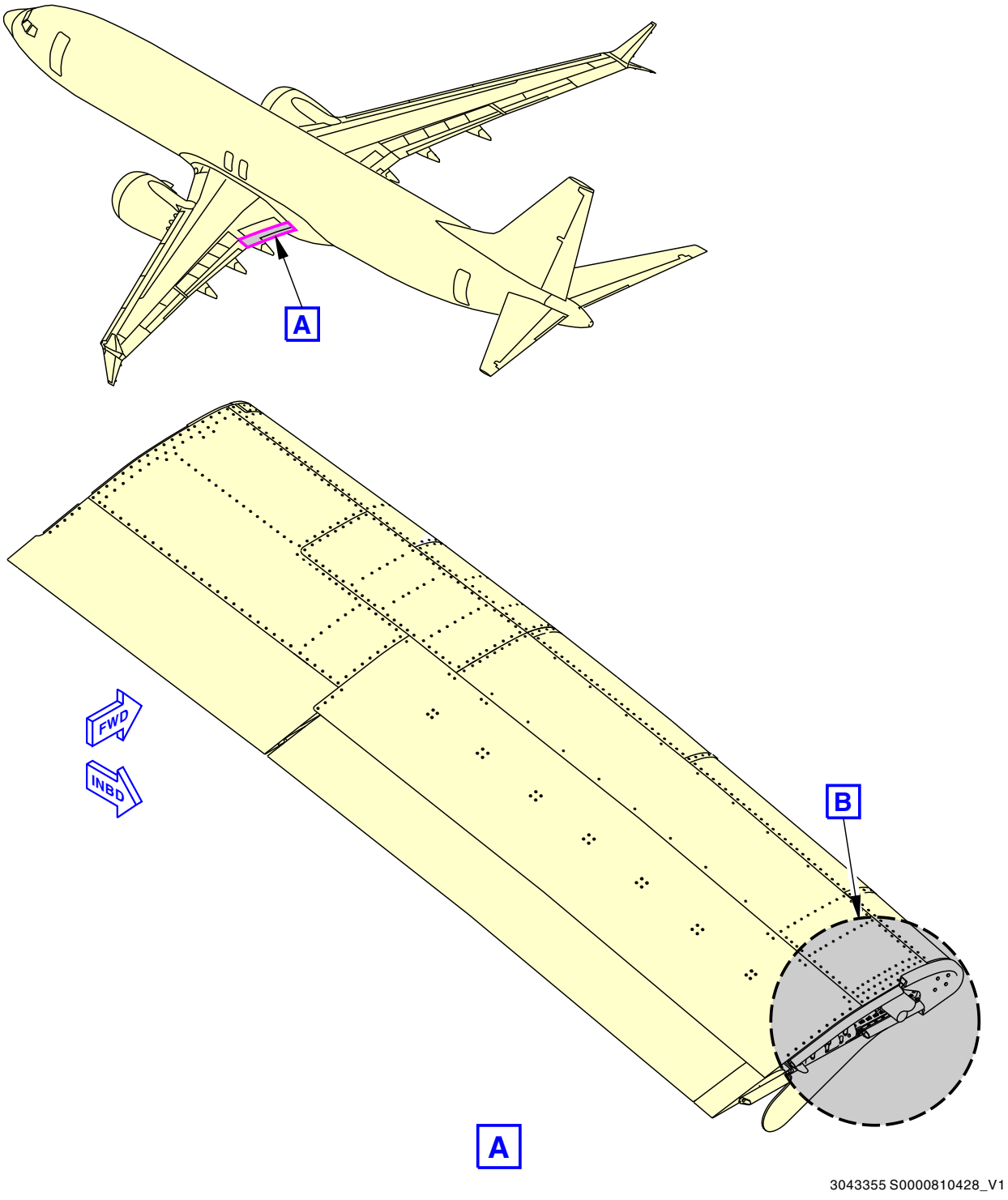


NOTE:
WING-TO-BODY FAIRING IS NOT SHOWN.

3043334 S0000802299_V1

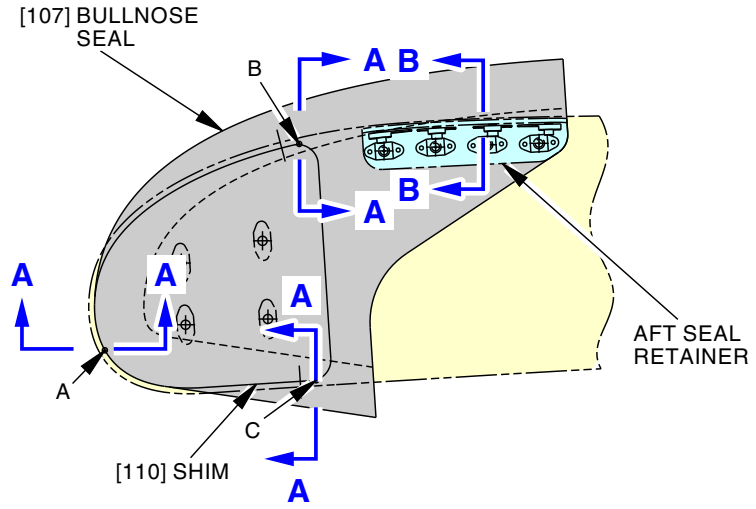
Inboard Trailing Edge Flap Adjustment
Figure 506/27-09-71-990-807 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



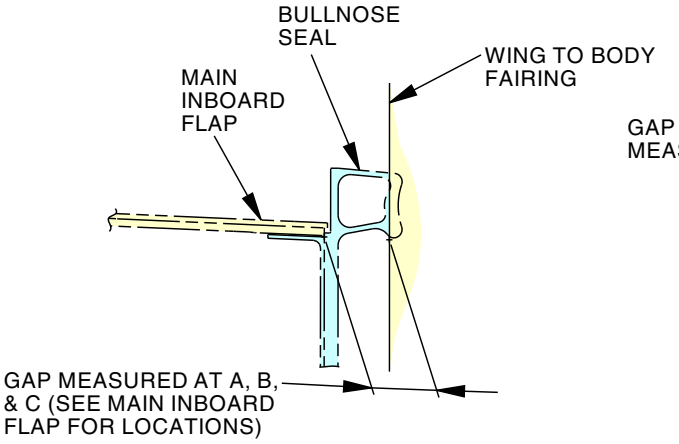
Bullnose Seal Measurement
Figure 507/27-09-71-990-808 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



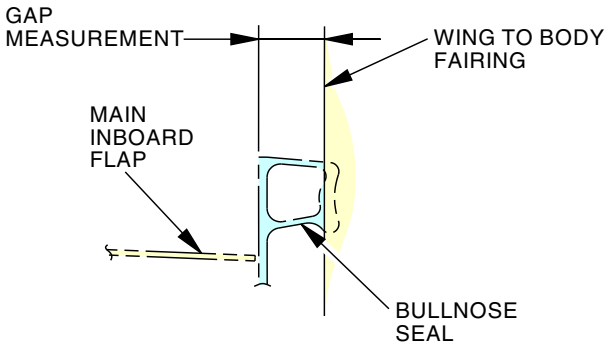
MAIN INBOARD FLAP

B



GAP MEASUREMENT - FORWARD END

A-A



GAP MEASUREMENT - AFT END

B-B

2412236 S00061530268_V2

Bullnose Seal Measurement
Figure 507/27-09-71-990-808 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-71-820-802

3. Aileron Balance Tab Adjustment to Equalize Lateral Manual Reversion Forces

A. General

(1) Use this procedure to adjust the aileron balance tab if the difference in the lateral manual reversion forces is more than the permitted 2 to 1 ratio.

(2) In this task the aileron tab control rods are referred to as the "control rods".

B. References

Reference	Title
27-11-00-700-803	Manual Reversion Control Friction Test (P/B 501)
27-11-00-820-802	Pogo and Power Control Unit (PCU) Adjustment (P/B 501)
27-11-00-820-803	Aileron Balance Tab Adjustment (Recommended Method) (P/B 501)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for the Adjustment

SUBTASK 27-09-71-860-007

(1) Make sure the aileron balance tab is correctly adjusted.

(a) To do a check of the adjustment of the aileron balance tab, do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

SUBTASK 27-09-71-860-008

(2) Make sure the aileron control wheel forces, with power off, are not more than the specified limits.

(a) To do a check of the aileron control wheel forces, do this task: Manual Reversion Control Friction Test, TASK 27-11-00-700-803.

SUBTASK 27-09-71-860-009

(3) Make sure the stop clearances at the quadrants of the power control unit are not out of tolerance.

(a) To do a check of the stop clearances, do this task: Pogo and Power Control Unit (PCU) Adjustment, TASK 27-11-00-820-802.

SUBTASK 27-09-71-860-010

(4) If the Flaps Up trim is more than 0.75 unit, make the trim correction first before you do the manual reversion correction.

(a) To adjust the trailing edge flap for lateral trim, do this task: Trailing Edge Flap Adjustment for Lateral Trim and Test, TASK 27-09-71-820-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-71-860-011

(5) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

E. Aileron Balance Tab Adjustment To Equalize Lateral Manual Reversion Forces

SUBTASK 27-09-71-970-010

(1) Make a record of the force necessary to turn the control wheel approximately 30 degrees in the clockwise direction.

SUBTASK 27-09-71-970-011

(2) Make a record of the force necessary to turn the control wheel approximately 30 degrees in the counterclockwise direction.

SUBTASK 27-09-71-970-012

(3) Divide the counterclockwise force by the clockwise force to get the force ratio, or divide the clockwise force by the counterclockwise force to get a force ratio value greater than 1.0.

SUBTASK 27-09-71-970-013

(4) Use the force ratio to find the correct length change for the control rod (Figure 508).

NOTE: For the left or right aileron balance tab, you must change the length of the control rods in sets. The adjustment of the two control rods must be the same amount. It is recommended that you split the adjustment equally between the left and right control rod sets.

(a) To correct high left forces (control wheel counterclockwise), do one of these steps:

1) Make the left control rod set shorter.
2) Make the right control rod set longer.
3) Make the left control rod set shorter and make the right control rod set longer.

(b) To correct high right forces (control wheel clockwise), do one of these steps:

1) Make the right control rod set shorter.
2) Make the left control rod set longer.
3) Make the right control rod set shorter and make the left control rod set longer.

SUBTASK 27-09-71-820-008

(5) Adjust the aileron balance tab [111] (Figure 509):

(a) Do these steps to get access to the aileron tab control rods [113]:

1) Move the aileron trailing edge to the down position.
2) Remove the bolts [122] that attach the forward removable fairing [123] to the aileron [112].
3) Remove the bolts [120] that attach the aft removable fairing [121] to the aileron balance tab [111].

(b) Loosen the jamnuts [124] and jamnuts [126] on the aileron tab control rods [113].

(c) Do these steps if coarse adjustment is necessary;

1) Remove the pins [119], nuts [118], washers [117], bushings [116], washers [115] and bolts [114] to disconnect the aileron tab control rods [113] from the aileron balance tab [111].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Turn the rod ends on the aileron tab control rods [113] for adjustment.

NOTE: One-half turn of the rod end lengthens the control rod 0.021 in. (0.53 mm). One-half turn of the rod end and the barrel [125] together changes the position of the tab trailing edge 0.025 in. (0.64 mm).

a) To raise the trailing edge of the aileron balance tab [111], lengthen the aileron tab control rods [113].

b) To lower the trailing edge of the aileron balance tab [111], shorten the aileron tab control rods [113].

3) Connect the aileron tab control rods [113] to the aileron balance tab [111];

a) Install the bushings [116], washers [115], washers [117], bolts [114] and nuts [118].

b) If there is binding between the aileron tab control rod [113] and the bolt [114] or deflection of the aileron tab control rods [113], adjust the control rod length.

c) Make sure there is a minimum of 0.015 in. (0.38 mm) gap between the bushing [116] and the washer [115].

d) Tighten the nuts [118] to 50 in-lb (5.6 N·m) - 80 in-lb (9.0 N·m).

e) Install the pins [119].

(d) Do these steps if fine adjustment is necessary:

1) Turn the barrel [125] on the aileron tab control rods [113].

NOTE: One turn of the barrel lengthens the control rod 0.008 in. (0.20 mm).

a) To raise the trailing edge of the aileron balance tab [111], lengthen the aileron tab control rods [113].

b) To lower the trailing edge of the aileron balance tab [111], shorten the aileron tab control rods [113].

2) Make sure the threads cover the inspection holes in the barrel [125].

(e) Tighten the jamnuts [124] to 100 in-lb (11.3 N·m) - 140 in-lb (15.8 N·m).

(f) Tighten the jamnuts [126] to 80 in-lb (9.0 N·m) - 100 in-lb (11.3 N·m).

(g) Install the bolts [120] that attach the aft removable fairing [121] to the aileron balance tab [111].

(h) Install the bolts [122] that attach the forward removable fairing [123] to the aileron [112].

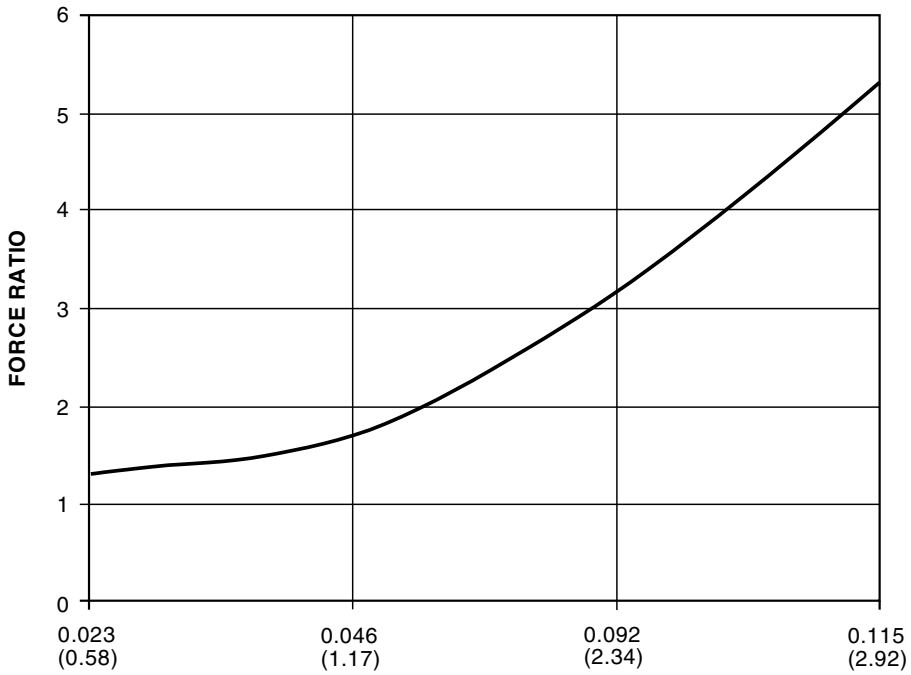
F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-71-860-012

(1) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———

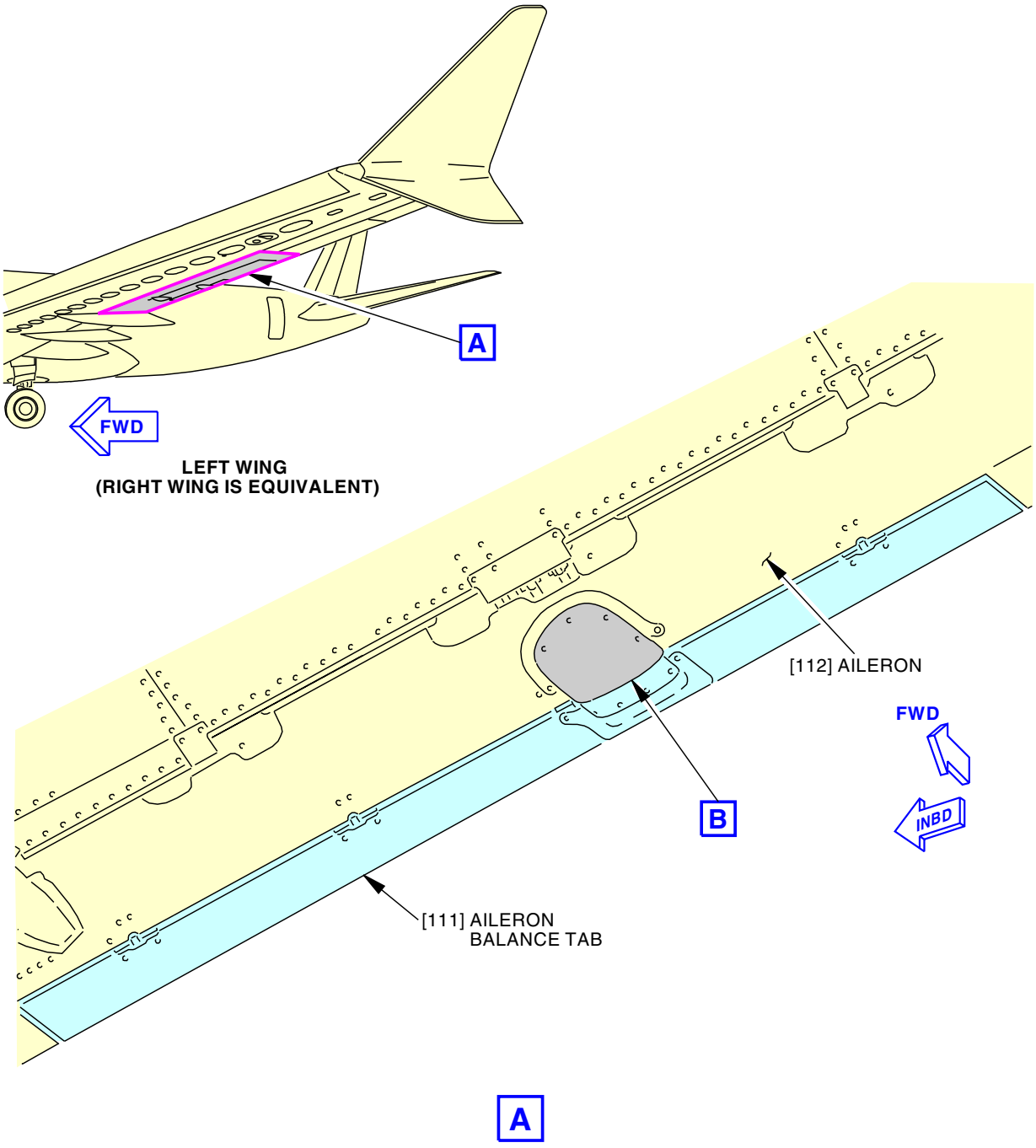
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412237 S00061530270_V1

Manual Reversion Force Correction
Figure 508/27-09-71-990-809

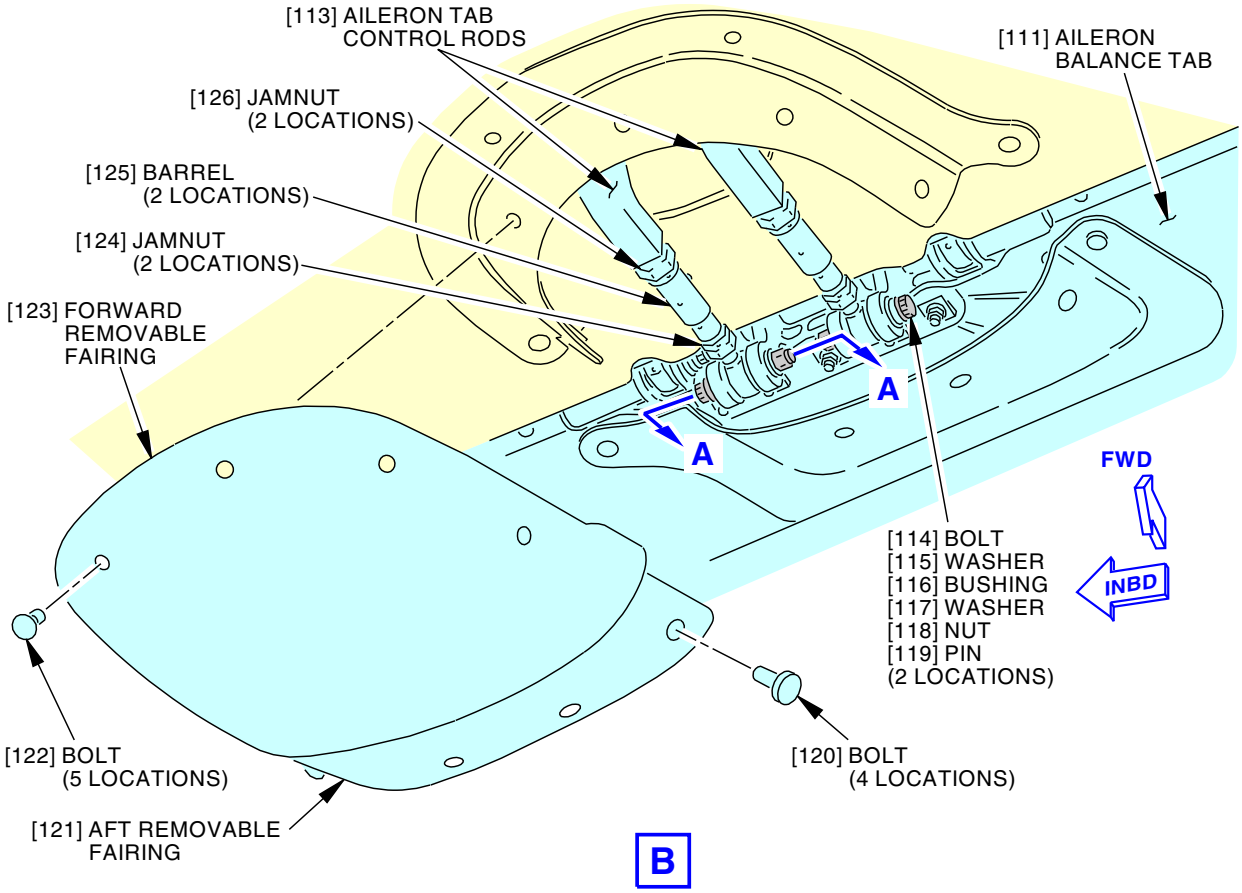
ECCN 9E991 BOEING PROPRIETARY - See title page for details

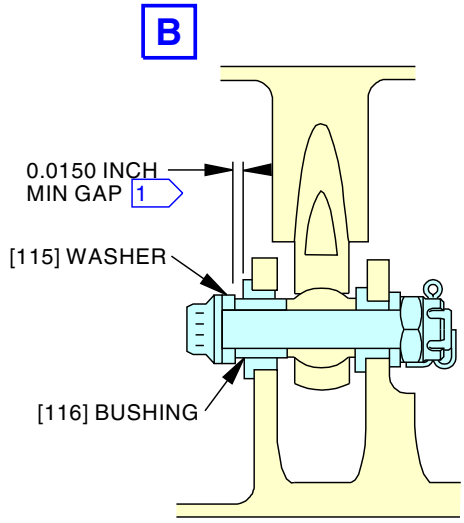


2412238 S00061530271_V1

Aileron Balance Tab Adjustment
Figure 509/27-09-71-990-810 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





INBOARD AILERON TAB CONTROL ROD
(OUTBOARD AILERON TAB CONTROL ROD IS OPPOSITE)

A-A

1 0.0150 INCH (0.38 mm) GAP REFERS TO HINGE 2 AND CONTROL ROD CONNECTIONS ONLY.

2412239 S00061530272_V1

Aileron Balance Tab Adjustment
Figure 509/27-09-71-990-810 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-71-860-801

4. Rudder Trim Adjustment for Power On Discrepancy Correction

A. General

(1) It is necessary to do the rudder power on discrepancy correction if the airplane does not meet the rudder trim requirements shown in the table found in this task (TASK 27-09-71-820-801).

B. References

Reference	Title
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-820-804	Control Rod for Main Rudder Power Control Unit Adjustment (P/B 501)
27-21-00-820-805	Control Rod for Standby Rudder Power Control Unit Adjustment (P/B 501)

C. Location Zones

Zone	Area
325	Vertical Fin - Rudder

D. Procedure

SUBTASK 27-09-71-860-014

(1) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-09-71-820-010

(2) Adjust the rudder trim:

(a) Trim until the rudder trim indicator is ±0.25 units of the position noted on the flight squawk.

(b) Loosen the two index plate screws on the tailcone.

(c) Put the index plate at a position where the two sides of the rudder trailing edge are within the width of the tab on the index plate.

(d) Tighten the index plate screws.

SUBTASK 27-09-71-820-011

(3) Use the rudder trim knob to set the trim to indicate zero.

(a) Make sure you can install the rig pin, R-5.

SUBTASK 27-09-71-860-015

(4) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-09-71-820-012

(5) Adjust the input of the main power control unit (PCU) to align the rudder with the new index position. To do this, do this task: Control Rod for Main Rudder Power Control Unit Adjustment, TASK 27-21-00-820-804.

SUBTASK 27-09-71-820-013

(6) Adjust the input of the standby PCU to align with the main PCU. To do this, do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-09-71-820-014

(7) Adjust the input of the rudder position sensor to align the rudder with the new index plate position.

SUBTASK 27-09-71-720-001

(8) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

——— END OF TASK ———

TASK 27-09-71-860-802

5. Rudder Trim Adjustment for Power Off Discrepancy Correction

A. References

Reference	Title
27-21-00-820-805	Control Rod for Standby Rudder Power Control Unit Adjustment (P/B 501)

B. Location Zones

Zone	Area
320	Subzone - Vertical Fin and Rudder
325	Vertical Fin - Rudder

C. Procedure

SUBTASK 27-09-71-820-015

(1) Do a check of the standby rudder standby power control unit adjustment. To do this, do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

——— END OF TASK ———

TASK 27-09-71-970-801

6. Flight Controls Adjustment Record

(Figure 510)

A. Location Zones

Zone	Area
190	Subzone - Wing-to-Body Fairing
300	Empennage
500	Left Wing
600	Right Wing

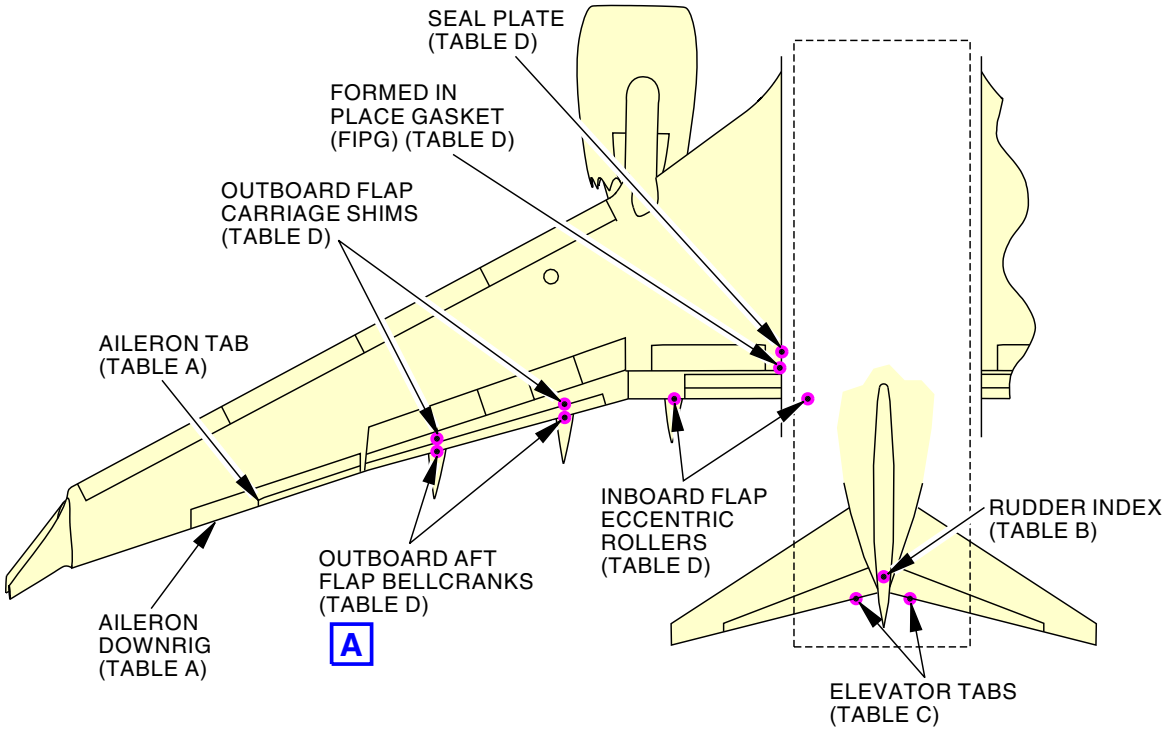
B. Procedure

SUBTASK 27-09-71-970-014

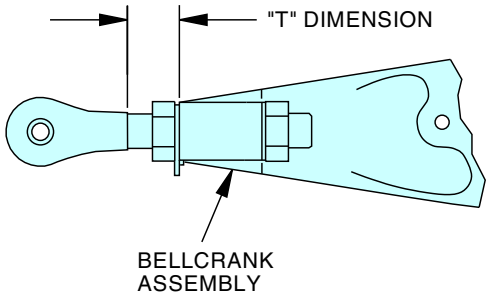
(1) You can use this figure to record the initial rigging condition of the flight control surfaces.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS OPPOSITE)



OUTBOARD AFT FLAP BELLCRANK

A

2412240 S00061530277_V1

Flight Controls Surface Mismatch Record
Figure 510/27-09-71-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERONS		
	AILERON DOWNRIG:	LHS_____ RHS_____
3	AILERON TAB:	LHS_____ RHS_____

TABLE A

RUDDER	
	INDEX LOCATION TO APL ¢_____
	T.E. WITHIN INDEX YES_____ NO_____
	RUDDER TRIM_____

TABLE B

ELEVATORS (TAB RIGGING LIMITS)	
1	SET STAB = 4 UNITS (B = 39.17 ±0.01)_____
	SET ELEV TO ALIGN WITH INDEX = ±0.04_____ (HYDRAULIC POWER OFF)
1	FINAL TAB SETTING PRIOR TO DELIVERY (+0.20/+0.50) LEFT_____ RIGHT_____

TABLE C

LATERAL TRIM CONFIGURATION		
	SEAL PLATE: LHS: 149A7330-_____	THICKNESS_____ NOT USED_____
	RHS: 149A7330-_____	THICKNESS_____ NOT USED_____
	FORMED IN PLACE GASKET (FIPG): LHS:	USED_____ NOT USED_____
	RHS:	USED_____ NOT USED_____
4	INBD FLAP ECCENTRIC ROLLER: LHS	OUTBD_____ LHS INBD_____
	RHS	OUTBD_____ RHS INBD_____
	OUTBD FLAP CARRIAGE SHIM: LHS	OUTBD_____ LHS INBD_____
	RHS	OUTBD_____ RHS INBD_____
2	OUTBD AFT FLAP BELLCRANK "T": LHS	OUTBD_____ LHS INBD_____
	RHS	OUTBD_____ RHS INBD_____--

TABLE D

1 (+) INDICATES CONTROL SURFACE ABOVE TRAILING EDGE.
(-) INDICATES CONTROL SURFACE BELOW TRAILING EDGE.

2 MUST AGREE WITHIN ±0.050.

3 MEASURE AILERON TAB (ALL MODELS) AT OUTBOARD END OF TAB, WITH THE AILERON IN THE DOWNRIG POSITION.

4 ALL FOUR ECCENTRIC ROLLERS ON THE SAME FLAP MUST BE AT THE SAME POSITION.

2412241 S00061530278_V2

Flight Controls Surface Mismatch Record
Figure 511/27-09-71-990-812

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT CONTROLS SURFACES - INSPECTION/CHECK

1. General

A. This procedure contains these tasks:

(1) The inspection of the aileron.

(2) The inspection of the aileron balance tab freeplay.

(3) The inspection of the rudder.

(4) The inspection of the horizontal stabilizer.

(5) The inspection of the spoilers.

TASK 27-09-91-200-801

2. Aileron - Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-11-200-801	Aileron Inspection (P/B 601)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy
STD-1238	Indicator - Dial
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

C. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for the Check

SUBTASK 27-09-91-860-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply power to the hydraulic systems A and B (TASK 29-11-00-860-801).

E. Do a Check of the Aileron Freeplay

SUBTASK 27-09-91-220-001

(1) Do a freeplay check of one aileron with no movement of the opposite aileron or the control wheel:

(a) Make sure the control wheel is at the center.

(b) Attach a mount, STD-1279, to the top wing structure (outboard of the aileron).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Attach a dial indicator, STD-1238 to take measurements from the outboard corner of the aileron trailing edge.

(d) Put the plunger of the dial indicator, STD-1238 within 0.1 in. (2.54 mm) forward of the trailing edge of the aileron.

1) Adjust the dial indicator, STD-1238 to zero.

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(e) With the push/pull scale 0-25 pound (0-11 kilogram), STD-753, push up with a force of approximately 5 lbf (22.24 N).

NOTE: Apply the load to the aileron balance tab cutout rib (adjacent to the outboard edge of the aileron tab) and centered within 0.5 in. (12.70 mm) of the trailing edge.

1) Make a record of the travel shown on the dial indicator.

2) Slowly remove the force.

(f) Do not adjust the dial indicator, STD-1238.

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(g) With the push/pull scale 0-25 pound (0-11 kilogram), STD-753, push down with a force of approximately 5 lbf (22.24 N).

NOTE: Apply the load to the aileron balance tab cutout rib (adjacent to the outboard edge of the aileron tab) and centered within 0.5 in. (12.70 mm) of the trailing edge.

1) Make a record of the travel shown on the dial indicator.

2) Slowly remove the force.

(h) Make sure the total up and down freeplay of the aileron is not more than 0.1 in. (2.54 mm).

(i) Remove the dial indicator, STD-1238.

(j) Remove the mount, STD-1279.

SUBTASK 27-09-91-200-002

(2) If the freeplay is not in the acceptable limits, do this task: Aileron Inspection, TASK 27-11-11-200-801.

SUBTASK 27-09-91-220-002

(3) Do the same freeplay check on the opposite aileron.

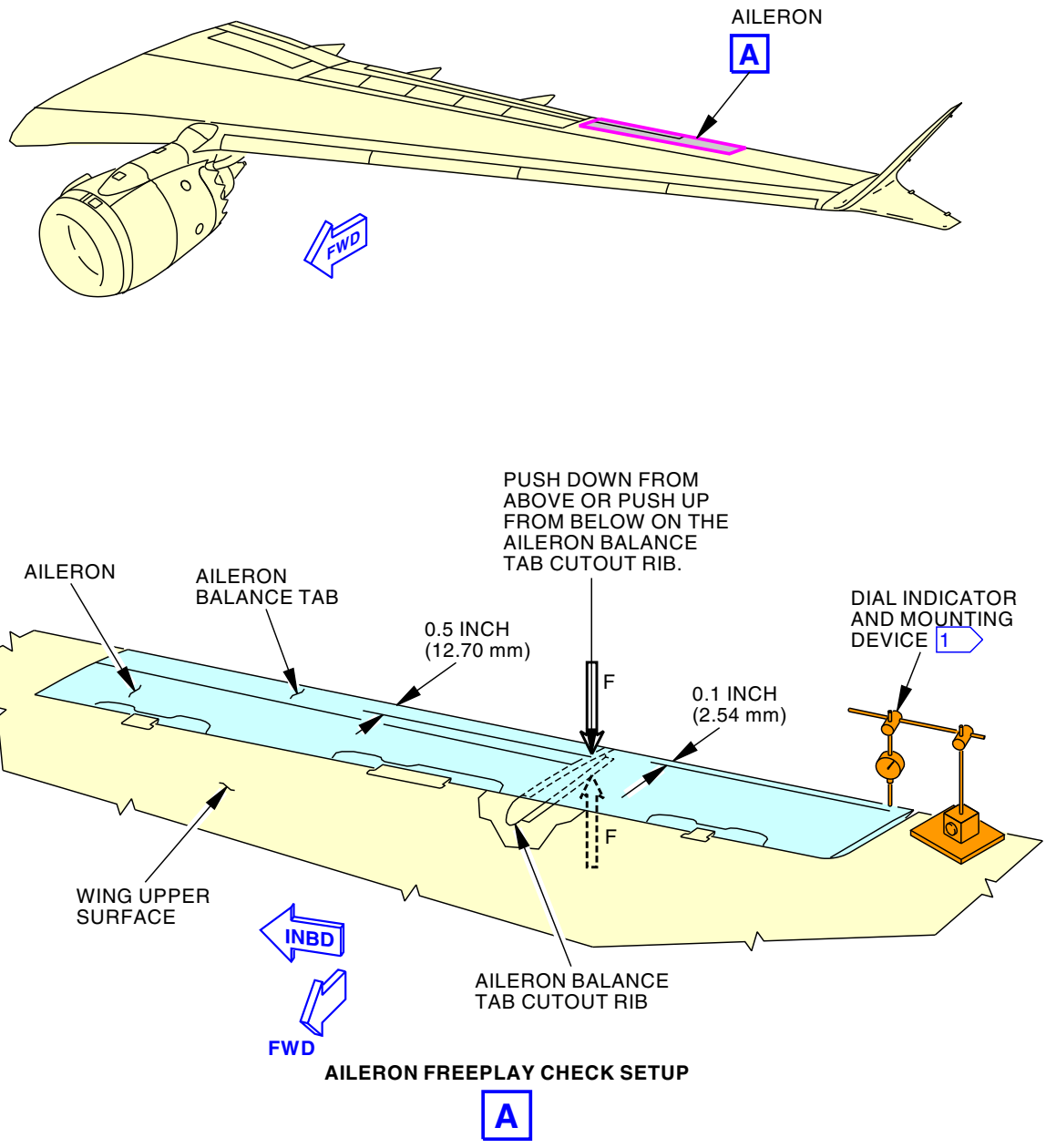
F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-91-000-001

(1) Remove power from the hydraulic systems A and B (TASK 29-11-00-860-805).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AILERON FREEPLAY CHECK SETUP

A

1 THE PLUNGER SHOULD BE WITHIN 0.1 INCH (2.54 mm) FORWARD OF THE TRAILING EDGE OF THE AILERON.

2412242 S00061530282_V2

Aileron Freeplay Check
Figure 601/27-09-91-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-CMR-04

TASK 27-09-91-200-802

3. Aileron Balance Tab Freeplay - Inspection

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-21-200-801	Aileron Balance Tab Inspection (P/B 601)
27-11-34-200-801	Aileron Tab Control Rods Inspection (P/B 601)
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th
STD-1238	Indicator - Dial
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator
STD-1303	Caliper - Dial

C. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for the Check

SUBTASK 27-09-91-863-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply power to the hydraulic systems A and B (PAGEBLOCK 29-11-00/201).

E. Aileron Balance Tab Freeplay Check

SUBTASK 27-09-91-220-003

(1) Do a freeplay check of one aileron balance tab with no movement of the aileron:

(a) Make sure that the aileron does not move while you perform this freeplay check of the balance tab.

NOTE: If the aileron moves, the reading on the indicator will not be accurate.

(b) Make sure that the control wheel is at the center.

(c) Attach the mount, STD-1279, and dial indicator, STD-1238, to the aileron.

(d) Put the plunger of the dial indicator, STD-1238, within 0.1 in. (2.54 mm) forward of the aileron balance tab trailing edge, and opposite of the tab control rods.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Adjust the dial indicator, STD-1238, to zero.

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(e) With the push/pull scale 0-25 pound (0-11 kilogram), STD-753, push up with a force of approximately 5 lbf (22.24 N).

1) Apply the force 0.25 in. (6.35 mm) from the trailing edge of the aileron balance tab, directly under the plunger of the dial indicator, STD-1238.

2) Make a record of the travel shown on the dial indicator, STD-1238.

3) Slowly remove the force.

(f) Do not adjust the dial indicator, STD-1238.

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(g) With the push/pull scale 0-25 pound (0-11 kilogram), STD-753, push down with a force of approximately 5 lbf (22.24 N).

1) Apply the force 0.25 in. (6.35 mm) from the trailing edge of the aileron balance tab, 0.5 in. (12.70 mm) or less from the plunger of the dial indicator, STD-1238.

2) Make a record of the travel shown on the dial indicator, STD-1238.

3) Slowly remove the force.

(h) Add the up and down freeplay of the aileron balance tab to get the total up and down freeplay of the aileron balance tab.

1) Make sure that the total up and down freeplay of the aileron balance tab is not more than 0.06 in. (1.52 mm).

(i) Remove the dial indicator, STD-1238.

(j) Remove the mount, STD-1279.

SUBTASK 27-09-91-220-012

(2) Do these steps to make sure that the axial play (inboard-outboard direction) of the aileron balance tab is not more than 0.04 in. (1.02 mm).

(a) Hold the aileron balance tab around the trailing edge and with hand pressure, move it outboard.

(b) Use a 0.0 - 0.5 Inch feeler gauge, STD-1107, or a dial caliper, STD-1303, to measure the clearance between the aileron and the outboard end of the aileron balance tab.

1) Make a record of this clearance.

(c) Hold the aileron balance tab around the trailing edge and with hand pressure, move it inboard.

(d) Measure the clearance between the aileron and the outboard end of the aileron balance tab.

1) Make a record of the clearance dimension.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Make sure that the difference between the two measured clearances, or the axial play, is not more than 0.04 in. (1.02 mm).

SUBTASK 27-09-91-200-001

(3) If the freeplay of the aileron balance tab is not in the acceptable limits, do these tasks:

- Aileron Balance Tab Inspection, TASK 27-11-21-200-801
- Aileron Tab Control Rods Inspection, TASK 27-11-34-200-801.

SUBTASK 27-09-91-220-004

(4) Do the same freeplay check on the aileron balance tab of the opposite aileron.

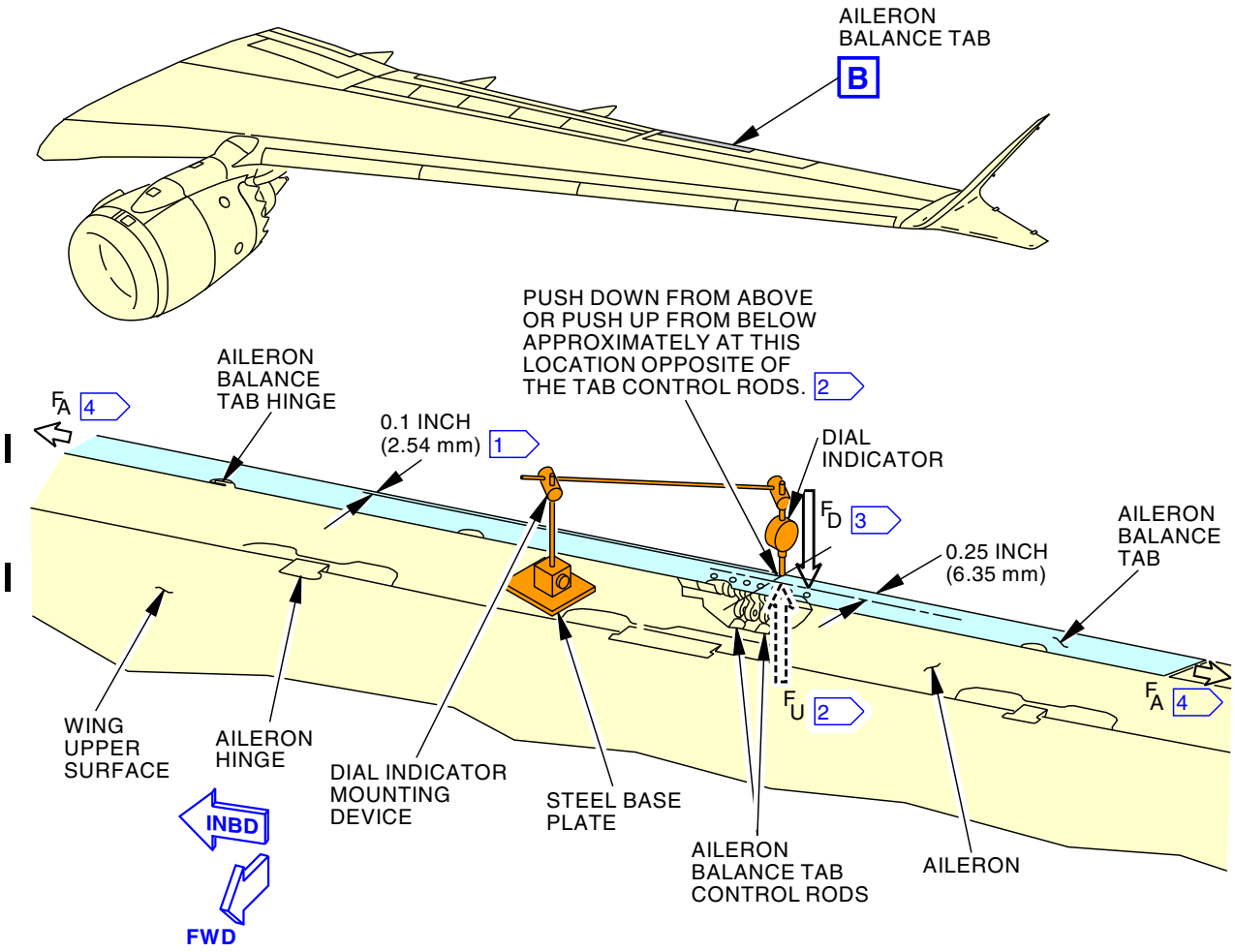
F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-91-860-007

(1) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT AILERON BALANCE TAB FREEPLAY CHECK
(RIGHT AILERON BALANCE TAB IS OPPOSITE)

B

1 THE PLUNGER SHOULD BE WITHIN 0.1 INCH (2.54 mm) FORWARD OF THE TRAILING EDGE OF THE AILERON BALANCE TAB, AND OPPOSITE OF THE TAB CONTROL RODS.

2 APPLY THE UPWARD FORCE, FU, 0.25 INCH (6.35 mm) FORWARD OF THE TRAILING EDGE OF THE AILERON BALANCE TAB, APPROXIMATELY UNDER THE PLUNGER OF THE DIAL INDICATOR.

3 APPLY THE DOWNWARD FORCE, FD, 0.25 INCH (6.35 mm) FORWARD OF THE TRAILING EDGE OF THE AILERON BALANCE TAB, 0.5 INCH (12.70 mm), OR LESS, FROM THE PLUNGER OF THE DIAL INDICATOR.

4 USE HAND PRESSURE TO MOVE THE AILERON OUTBOARD, THEN INBOARD TO DETERMINE THE AILERON BALANCE TAB AXIAL FREEPLAY.

2412243 S00061530284_V2

Aileron Balance Tab Freeplay Check
Figure 602/27-09-91-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-91-200-803

4. Rudder Inspection

(Figure 603)

A. General

(1) Use this task to do a check of the rudder control system freeplay.

B. References

Reference	Title
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES

C. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy
STD-1238	Indicator - Dial
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Procedure

SUBTASK 27-09-91-860-003

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply power to the hydraulic systems A and B (PAGEBLOCK 29-11-00/201).

SUBTASK 27-09-91-220-005

(2) Do the rudder hinge bearing and Power Control Unit (PCU) bearing freeplay check:

(a) Make sure the rudder and rudder pedals are in the neutral position.

(b) Make sure the rudder trim indicator is at the zero unit of trim.

(c) Attach the dial indicator, STD-1238 with mount, STD-1279 at the lower end of the rudder trailing edge.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION USE A LOADING BLOCK AT THE SPECIFIED LOCATION TO MOVE THE RUDDER SURFACE. TOO MUCH FORCE OR THE INCORRECT LOCATION WILL CAUSE DAMAGE TO THE RUDDER.

(d) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753 to move the rudder to the left side with a force of 12 ±4 lbf (53.38 ±17.79 N) and release slowly.

NOTE: Apply the force approximately6 in. (152.40 mm) -8 in. (203.20 mm) from the bottom of the trailing edge and 3 in. (76.20 mm) forward of the trailing edge.

1) Make a record of the rudder position on the dial indicator.

CAUTION USE A LOADING BLOCK AT THE SPECIFIED LOCATION TO MOVE THE RUDDER SURFACE. TOO MUCH FORCE OR THE INCORRECT LOCATION WILL CAUSE DAMAGE TO THE RUDDER.

(e) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753 to move the rudder to the right side with a force of 12 ±4 lbf (53.38 ±17.79 N) and release slowly.

NOTE: Apply the force approximately 6 in. (152.40 mm) - 8 in. (203.20 mm) from the bottom of the trailing edge and 3 in. (76.20 mm) forward of the trailing edge.

1) Make a record of the rudder position on the dial indicator, STD-1238.

(f) Make sure the difference between the left and right positions is not more than 0.05 in. (1.27 mm).

1) If the difference is more than 0.05 in. (1.27 mm), then replace the bearings on the rudder hinge or power control units.

(g) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753 to move the rudder to the left side with a force of 12 ±4 lbf (53.38 ±17.79 N) and release slowly.

NOTE: Apply the force approximately 6 in. (152.40 mm) - 8 in. (203.20 mm) from the bottom of the trailing edge and 3 in. (76.20 mm) forward of the trailing edge.

1) Make a record of the rudder position on the dial indicator, STD-1238.

(h) Make sure the difference between the two left positions is not more than 0.03 in. (0.76 mm).

(i) Remove the dial indicator, STD-1238 from the rudder.

SUBTASK 27-09-91-860-004

(3) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

——— END OF TASK ———

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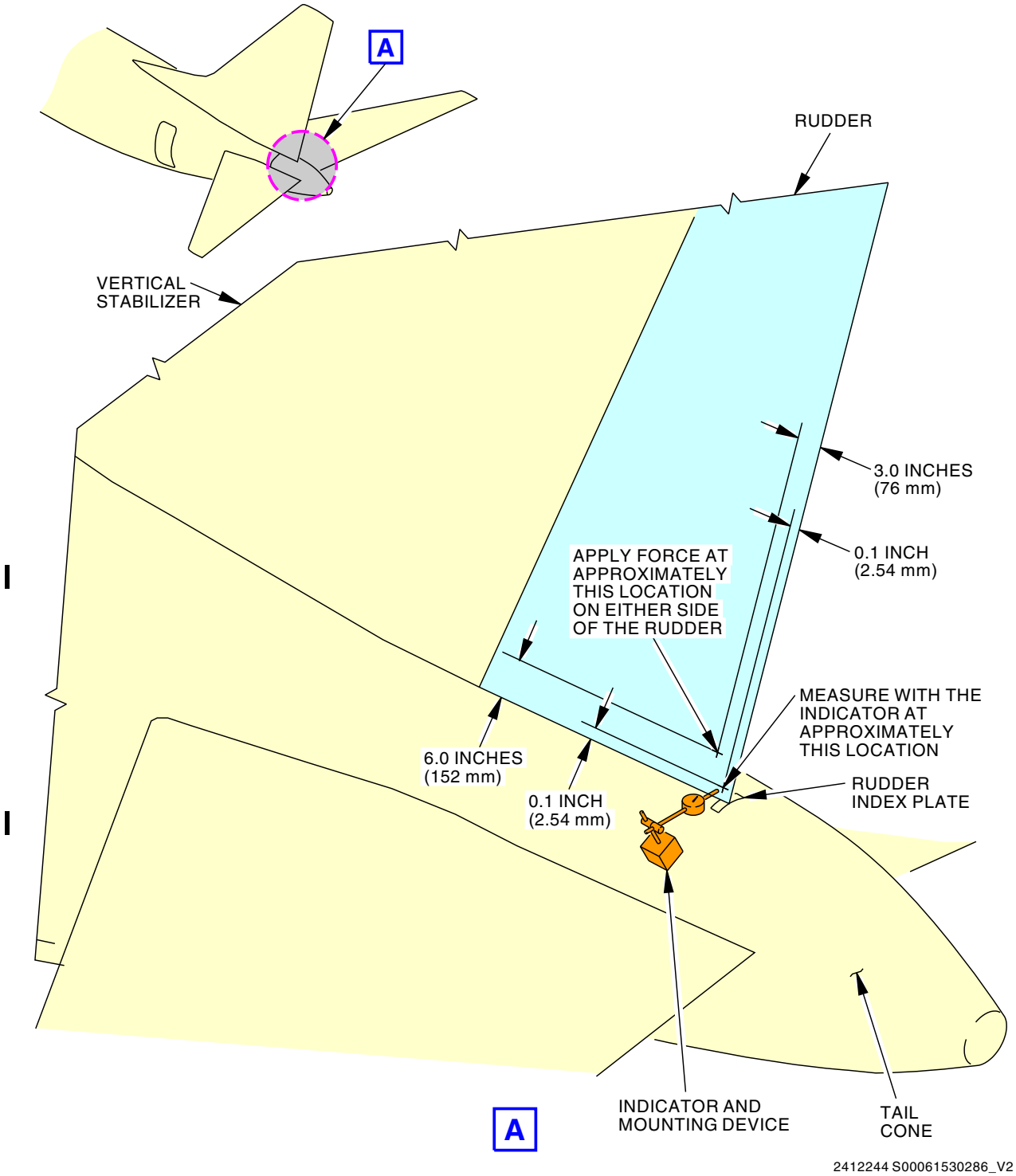

Rudder Hinge and PCU Bearing Freeplay Check
Figure 603/27-09-91-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-CMR-10

TASK 27-09-91-200-804

5. Horizontal Stabilizer - Inspection

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is to calculate the freeplay of the horizontal stabilizer (Figure 604). The freeplay is measured individually at three support locations that support the weight of the horizontal stabilizer: the jackscrew, the Left Hand Side (LHS) pivot hinge, and the Right Hand Side (RHS) pivot hinge. A total freeplay value will then be calculated using the freeplay values of the three locations.

(2) All three supports are under load due to the horizontal stabilizer static weight. To measure the freeplay at a support, an adequate amount of reverse load is needed. Weights are placed on top of the front spar area to create the required reverse load at the support where the freeplay is to be measured. Weights such as shotbags and persons are used as examples in this procedure.

NOTE: The user has the option to use other types of weights in the procedure.

(3) The freeplay is measured using a displacement gauge, such as a dial indicator, STD-1238, to check the movement (or slack) at the support mechanism when the load at the support is reversed.

NOTE: The user has the option to use other types of displacement gauges to replace the following tools in the procedure:

- dial indicator, STD-1238
- mount, STD-1279

(4) For the LHS pivot hinge or the RHS pivot hinge freeplay measurement, a table is provided to calculate each individual weight's contribution to the total reverse load. A total of 2500 ± 200 lbs of reverse load is required. This table is intended to facilitate the user in the placement of weights to meet the required reverse load at the pivot hinge support where the freeplay is to be measured.

(5) For the jackscrew freeplay measurement, two sets of weights of a total of 1000 ± 40 lbs (500 ± 20 lbs per set) are required. The weights are applied in the area of the front spar of the horizontal stabilizer.

(6) For this task, only these dimensions will be used:

(a) Linear dimensions are in inches (in.)

(b) Weights are in pounds (lbs.)

NOTE: The tolerances of the pivot hinge total reverse load and the total jackscrew weights are provided. The variation of individual weights and distance measurements must meet those tolerances given.

B. References

Reference	Title
27-41-31-000-801	Horizontal Stabilizer Center Section Hinge Fitting Removal (P/B 401)
27-41-31-400-801	Horizontal Stabilizer Center Section Hinge Fitting Installation (P/B 401)
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)

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(Continued)

Reference	Title
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1238	Indicator - Dial
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Check

SUBTASK 27-09-91-010-001

(1) On the stabilizer trim actuator, do this step:

(a) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-09-91-480-001

(2) Using either the STAB TRIM switches on the control wheels or using the stabilizer manual trim wheel on the control stand, set the horizontal stabilizer at 4 units of trim as indicated by the horizontal stabilizer position indicator on the control stand.

G. Horizontal Stabilizer Freeplay Inspection

SUBTASK 27-09-91-220-014

(1) Do a check of the freeplay for the pivot hinges (LHS and RHS) of the stabilizer center section (Figure 605).

(a) Measure the freeplay of the LHS pivot hinge (D1):

1) Attach a dial indicator, STD-1238, with a mount, STD-1279, to the LHS of the fuselage at the Body Station 1156 pivot bulkhead (Figure 605 (Sheet 1), View A).

a) Make sure that the plunger of the dial indicator, STD-1238, is approximately perpendicular to the stabilizer lower surface where it contacts the LHS retainer.

b) Position the dial indicator, STD-1238, to allow for subsequent plunger extension and dial travel of 0.13 inches minimum.

2) Set the dial indicator, STD-1238, to zero.

NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should be stable at zero before weight application.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Gently place weights on top of the RHS stabilizer front spar in the area shown (Figure 605 (Sheet 3)).
   a) Protect the upper surface of the horizontal stabilizer as necessary to make sure that the weights do not cause damage.
   b) Apply weights per the "Weight Application Requirements and Calculation of Total Reverse Load (For Pivot Hinge Freeplay Measurements Only)" section of this task.
4) Record the measurement of the extension of the plunger of the dial indicator, STD-1238 as "D1".

   NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should show a stable reading when recording the freeplay measurement.
5) Gently remove the weights from the RHS stabilizer.
6) Make sure that the dial indicator value returns to 0 ± 0.003 inch.
   a) If this is not met, check the plunger contact, mount, and function of the dial indicator, STD-1238, to troubleshoot.
   b) If this is not met, redo the freeplay check of the LHS pivot hinge.
7) Remove the dial indicator, STD-1238, and mount, STD-1279, from the LHS of the fuselage.

(b) Measure the freeplay of the RHS pivot hinge (D2):
1) Attach a dial indicator, STD-1238, with a mount, STD-1279, to the RHS of the fuselage at the Body Station 1156 pivot bulkhead (Figure 605 (Sheet 1), View A).
   a) Make sure that the plunger of the dial indicator, STD-1238, is approximately perpendicular to the stabilizer lower surface where it contacts the RHS retainer.
   b) Position the dial indicator, STD-1238, to allow for subsequent plunger extension and dial travel of 0.13 inches minimum.
2) Set the dial indicator, STD-1238, to zero.

   NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should be stable at zero before weight application.
3) Gently place weights on top of the LHS stabilizer front spar in the area shown (Figure 605 (Sheet 3)).
   a) Protect the upper surface of the horizontal stabilizer as necessary to make sure that the weights do not cause damage.
   b) Apply weights per the "Weight Application Requirements and Calculation of Total Reverse Load (For Pivot Hinge Freeplay Measurements Only)" section of this task.
4) Record the measurement of the extension of the plunger of the dial indicator, STD-1238 as "D2".

   NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should show a stable reading when recording the freeplay measurement.
5) Gently remove the weights from the LHS stabilizer.
6) Make sure that the dial indicator value returns to 0 ± 0.003 inch.

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a) If this is not met, check the plunger contact, mount, and function of the dial indicator, STD-1238, to troubleshoot.

b) If this is not met, redo the freeplay check of the RHS pivot hinge.

7) Remove the dial indicator, STD-1238, and mount, STD-1279, from the RHS of the fuselage.

SUBTASK 27-09-91-220-015

(2) Do a check of the freeplay for the stabilizer jackscrew (Figure 607).

(a) Measure the freeplay of the stabilizer jackscrew (D3):

1) Make sure that the stabilizer is at 4 units of trim.

2) Attach a dial indicator, STD-1238, with a mount, STD-1279, to the Body Station 1088 bulkhead structure (Figure 607, View B).

a) Make sure that the plunger of the dial indicator, STD-1238, is approximately perpendicular to the surface where it contacts the stabilizer center section (Texas Star structure).

b) Position the dial indicator, STD-1238, to allow for subsequent plunger contraction and dial travel of 0.13 inches minimum.

3) Set the dial indicator, STD-1238, to zero.

NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should be stable at zero before weight application.

4) Gently place weights on top of the LHS and RHS stabilizer front spars (Figure 607, View C).

a) Protect the upper surface of the horizontal stabilizer as necessary to make sure that the weights do not cause damage.

b) Place weights within the weight application area shown. Distribute the weights to avoid localized high pressure at contact.

5) Record the measurement of the contraction of the plunger of the dial indicator, STD-1238, as "D3".

NOTE: Movement of equipment or personnel inside the fuselage can cause inaccuracy with the dial indicator readings. The dial indicator, STD-1238, should show a stable reading when recording the freeplay measurement.

6) Gently remove the weights from the LHS and RHS stabilizers.

7) Make sure that the dial indicator value returns to 0 ± 0.003 inch.

a) If this is not met, check the plunger contact, mount, and function of the dial indicator, STD-1238, to troubleshoot.

b) If this is not met, redo the freeplay check of the stabilizer jackscrew.

8) Remove the dial indicator, STD-1238, and mount, STD-1279, from the Body Station 1088 bulkhead structure.

SUBTASK 27-09-91-220-016

(3) Calculate the total freeplay, referred as “H”, of the horizontal stabilizer:

(a) Use the values D1, D2, and D3 to calculate H:

$H = 1.25 \times D3 + [(D1 + D2)/2]$

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SUBTASK 27-09-91-220-017

(4) Do a check of the D1, D2, D3, and H values:

(a) If the "D1" value is more than 0.066 inch, then replace the LHS bearing.

1) Remove the hinge fitting. Do this task: Horizontal Stabilizer Center Section Hinge Fitting Removal, TASK 27-41-31-000-801.

2) Make sure that the bearing is replaced and that other related parts are serviceable.

3) Install a new or serviceable hinge fitting. Do this task: Horizontal Stabilizer Center Section Hinge Fitting Installation, TASK 27-41-31-400-801.

(b) If the "D2" value is more than .066 inch, then replace the RHS bearing.

1) Remove the hinge fitting. Do this task: Horizontal Stabilizer Center Section Hinge Fitting Removal, TASK 27-41-31-000-801.

2) Make sure that the bearing is replaced and that other related parts are serviceable.

3) Install a new or serviceable hinge fitting. Do this task: Horizontal Stabilizer Center Section Hinge Fitting Installation, TASK 27-41-31-400-801.

(c) If the "D3" value is more than 0.056 inch, then replace the stabilizer ball nut, ballscrew, and jackscrew gearbox.

1) Remove the stabilizer ball nut, ballscrew, and jackscrew gearbox. Do this task: Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801.

2) Install the new or serviceable stabilizer ball nut, ballscrew, and jackscrew gearbox. Do this task: Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801.

(d) If the "H" value is more than 0.078 inch, then do one or both of the following replacement options as necessary:

1) Replace the bearings at both the LHS and RHS pivot hinge support (Horizontal Stabilizer Center Section Hinge Fitting Removal, TASK 27-41-31-000-801 and Horizontal Stabilizer Center Section Hinge Fitting Installation, TASK 27-41-31-400-801) and other related parts that are not serviceable.

2) Replace the stabilizer ball nut, ballscrew, and jackscrew gearbox (Stabilizer Ball Nut and Jackscrew Gearbox Removal, TASK 27-41-81-000-801 and Stabilizer Ball Nut and Jackscrew Gearbox Installation, TASK 27-41-81-400-801).

NOTE: Fleet history shows that the hinge bearings wear significantly more than the jackscrew does, and this should be considered when making repairs to restore “H” to within limits.

(5) If any replacement(s) are done to restore D1, D2, D3, and H values to be within their respective limits, then perform the horizontal stabilizer freeplay inspection procedure again for verification.

(6) Record the inspection date and the following data of the freeplay check in a history log:

(a) D1, D2, D3, and H values.

(b) Any replaced parts when restoring D1, D2, D3, and H values to be within their respective limits.

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H. Weight Application Requirements and Calculation of Total Reverse Load (For Pivot Hinge Freeplay Measurements Only)

(Figure 606)

NOTE: This section is for providing additional information on how to apply weights and calculate the total reverse load.

SUBTASK 27-09-91-220-018

WARNING MAKE SURE THAT THE WEIGHTS ARE STABLE AND SAFELY SET. DO NOT LET PERSONNEL IN THE AREA BELOW THE STABILIZER. IF YOU DO NOT OBEY, THE WEIGHTS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO THE AIRCRAFT.

(1) Apply enough weights during Pivot Hinge Freeplay Inspections so that a Total Reverse Load of 2500 ± 200 lbs is achieved (Figure 605 (Sheet 3)).

NOTE: Make sure that proper fall protection is in place when personnel are used as weights. The weight per person should not exceed 220 lbs.

(a) Make sure that any weights used have a base area to contact the stabilizer with in order to avoid localized loading point. Soft padding, if needed, can be used to distribute the load and protect the surface of the horizontal stabilizer.

(b) For any type of weights applied, make sure that the pressure at the contact area is less than 4 psi average.

SUBTASK 27-09-91-940-001

(2) Locate Point 0 on the horizontal stabilizer upper surface.

(a) Point 0 is the upper aft and inboard corner of the leading edge (LE) skin common to LE Station 198.23.

SUBTASK 27-09-91-970-001

(3) For each weight (or stack of weights) applied, do the following:

(a) Record the weight (or total of the stacked weights) in pounds.

(b) Record the distance in inches.

NOTE: This is the distance between Point 0 and the Center of Gravity (CG) of the applied weight (or stack of weights), along the direction of the front spar centerline.

(c) If the CG of the individual weight (or individual stack of weights) cannot be placed along the front spar, it is acceptable to shift the weight(s) in the AFT direction, so long as the CG of the weight(s) is approximately positioned atop an inspar rib.

SUBTASK 27-09-91-970-002

(4) Calculate the Total Reverse Load using the table below:

NOTE: In the Total Reverse Load table, weight and distance must be recorded in pounds and inches. Using metric values will cause the calculated Total Reverse Load to be in error.

Table 601/27-09-91-993-801 Total Reverse Load Table

Weight locations	(A) Enter the weight in lbs.	(B) Enter the distance in inches.	(C)	(D) Multiply (B) by (C)	(E)	(F) Add (E) to (D)	Reverse Load in lbs. Multiply (A) by (F)

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Table 601/27-09-91-993-801 Total Reverse Load Table (Continued)

Weight locations	(A)	(B)	(C)	(D)	(E)	(F)	Reverse Load in lbs.
1			x 0.016		+ 3.068		
2			x 0.016		+ 3.068		
3			x 0.016		+ 3.068		
4			x 0.016		+ 3.068		
5			x 0.016		+ 3.068		
6			x 0.016		+ 3.068		
7			x 0.016		+ 3.068		
8			x 0.016		+ 3.068		
9			x 0.016		+ 3.068		
10			x 0.016		+ 3.068		
11			x 0.016		+ 3.068		
12			x 0.016		+ 3.068		
	REFERENCE TOTAL WEIGHT (lbs):						TOTAL REVERSE LOAD (lbs):

(a) For example, refer to Figure 608.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-91-080-001

(1) Remove the dial indicator, STD-1238.

SUBTASK 27-09-91-080-002

(2) Remove the mount, STD-1279.

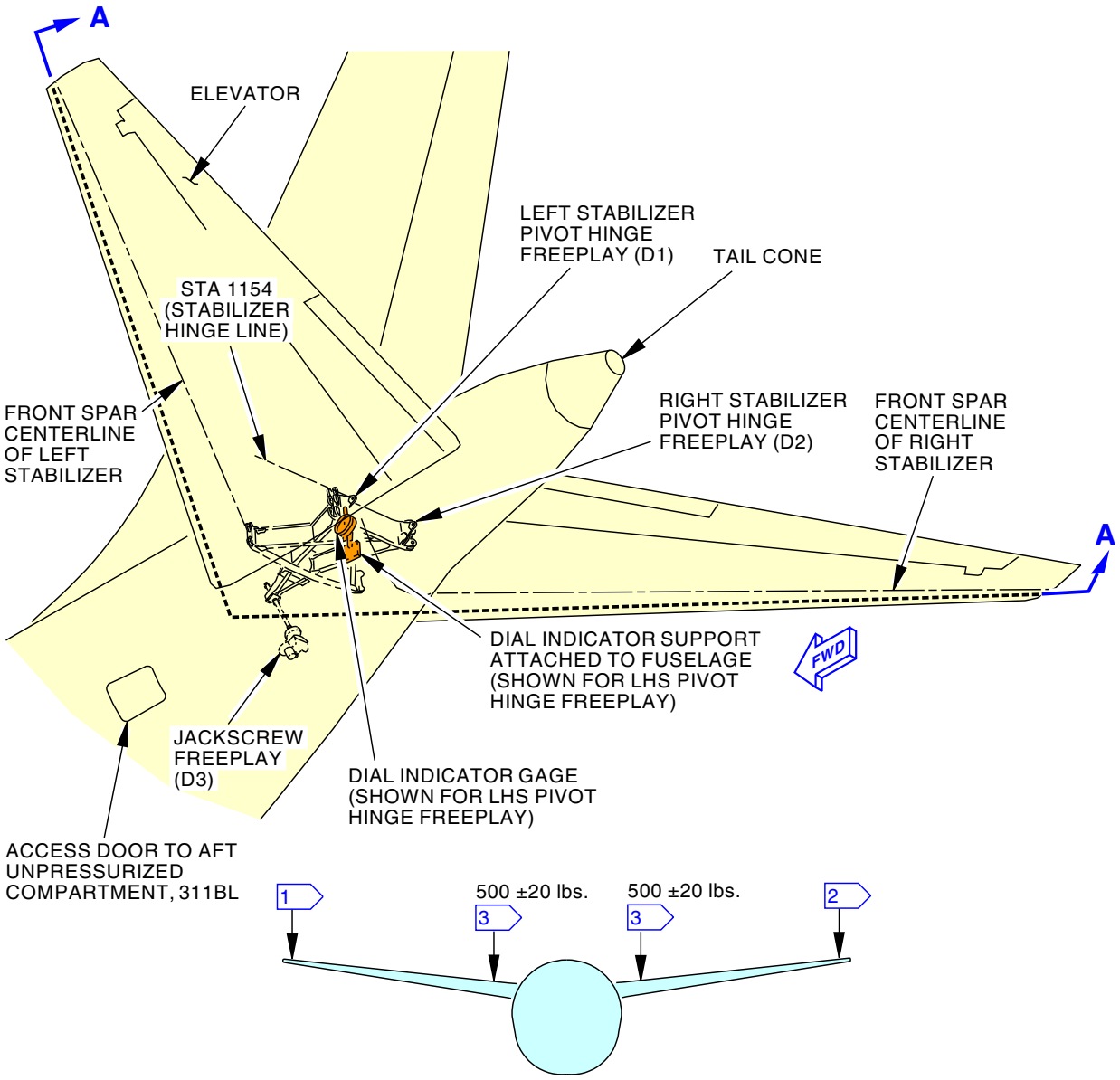
SUBTASK 27-09-91-410-001

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LOOKING AFT FROM FRONT SPAR OF LEFT AND RIGHT STABILIZERS)

A-A

1. APPLY WEIGHTS ON THE OUTBOARD AREA OF THE RIGHT STABILIZER ABOVE THE FRONT SPAR TO DETERMINE FREEPLAY AT THE LEFT STABILIZER PIVOT HINGE.
2. APPLY WEIGHTS ON THE OUTBOARD AREA OF THE LEFT STABILIZER ABOVE THE FRONT SPAR TO DETERMINE FREEPLAY AT THE RIGHT STABILIZER PIVOT HINGE.
3. APPLY 500 ±20 LBS. NEXT TO THE FUSELAGE, ON TOP OF THE FRONT SPAR (ON LEFT AND RIGHT SIDES) TO DETERMINE THE STABILIZER JACKSCREW FREEPLAY.

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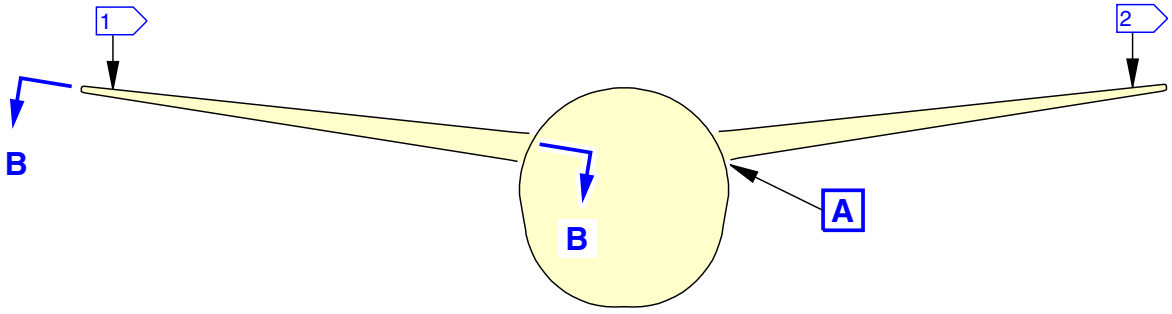
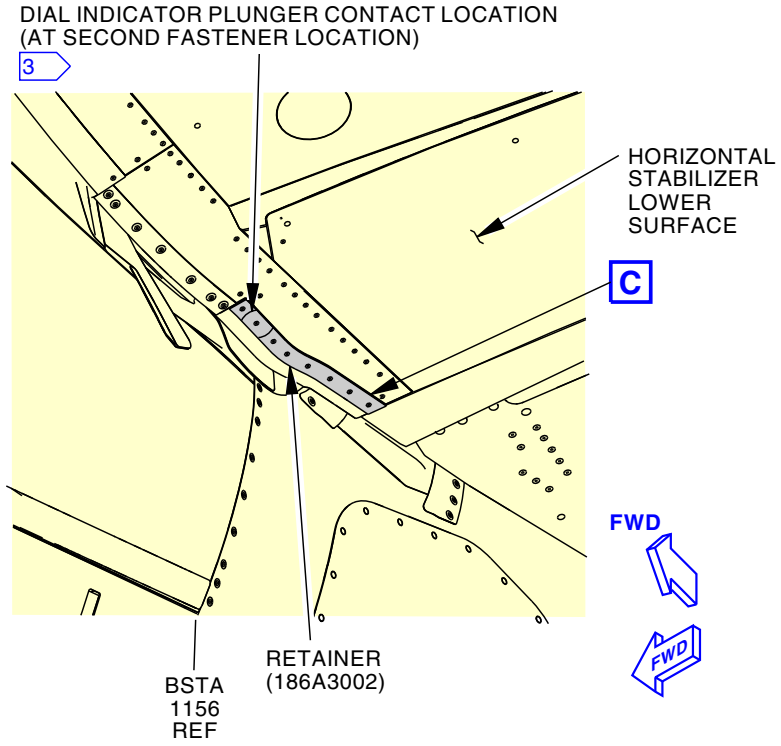
Horizontal Stabilizer Freeplay Overview
Figure 604/27-09-91-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(VIEW IN THE AFT DIRECTION)
(FROM FRONT SPAR OF LEFT AND RIGHT STABILIZERS)

1. APPLY WEIGHTS ON THE OUTBOARD AREA OF THE RIGHT STABILIZER ABOVE THE FRONT SPAR TO DETERMINE FREEPLAY AT THE LEFT STABILIZER PIVOT HINGE.
2. APPLY WEIGHTS ON THE OUTBOARD AREA OF THE LEFT STABILIZER ABOVE THE FRONT SPAR TO DETERMINE FREEPLAY AT THE RIGHT STABILIZER PIVOT HINGE.
3. THE PLUNGER HEAD SHOULD NOT CONTACT THE FASTENER HEAD.



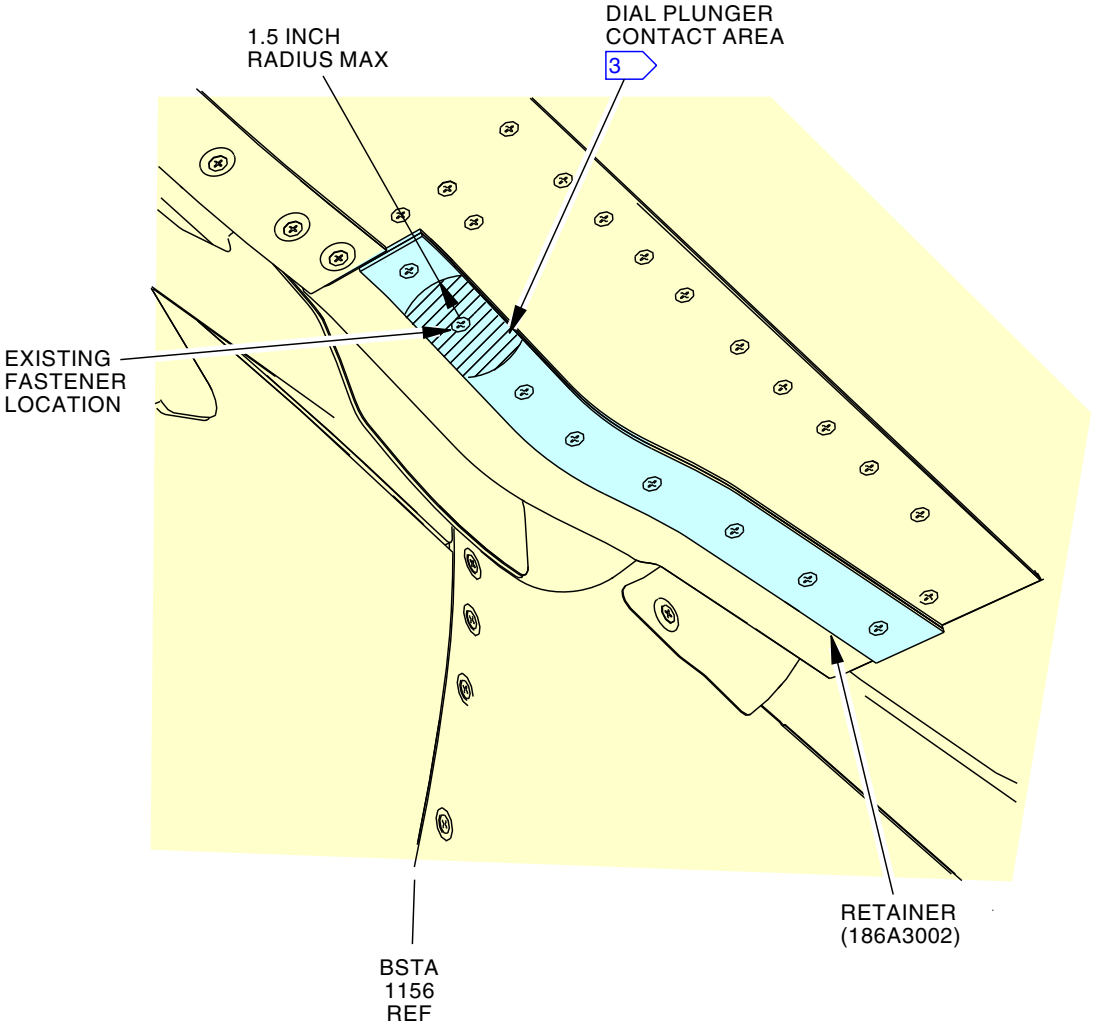
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)
(LEFT PIVOT HINGE INSPECTION IS SHOWN, RIGHT PIVOT HINGE INSPECTION IS OPPOSITE)

A

3011068 S0000784988_V1

Horizontal Stabilizer Pivot Hinge Freeplay Inspection
Figure 605/27-09-91-990-806 (Sheet 1 of 3)

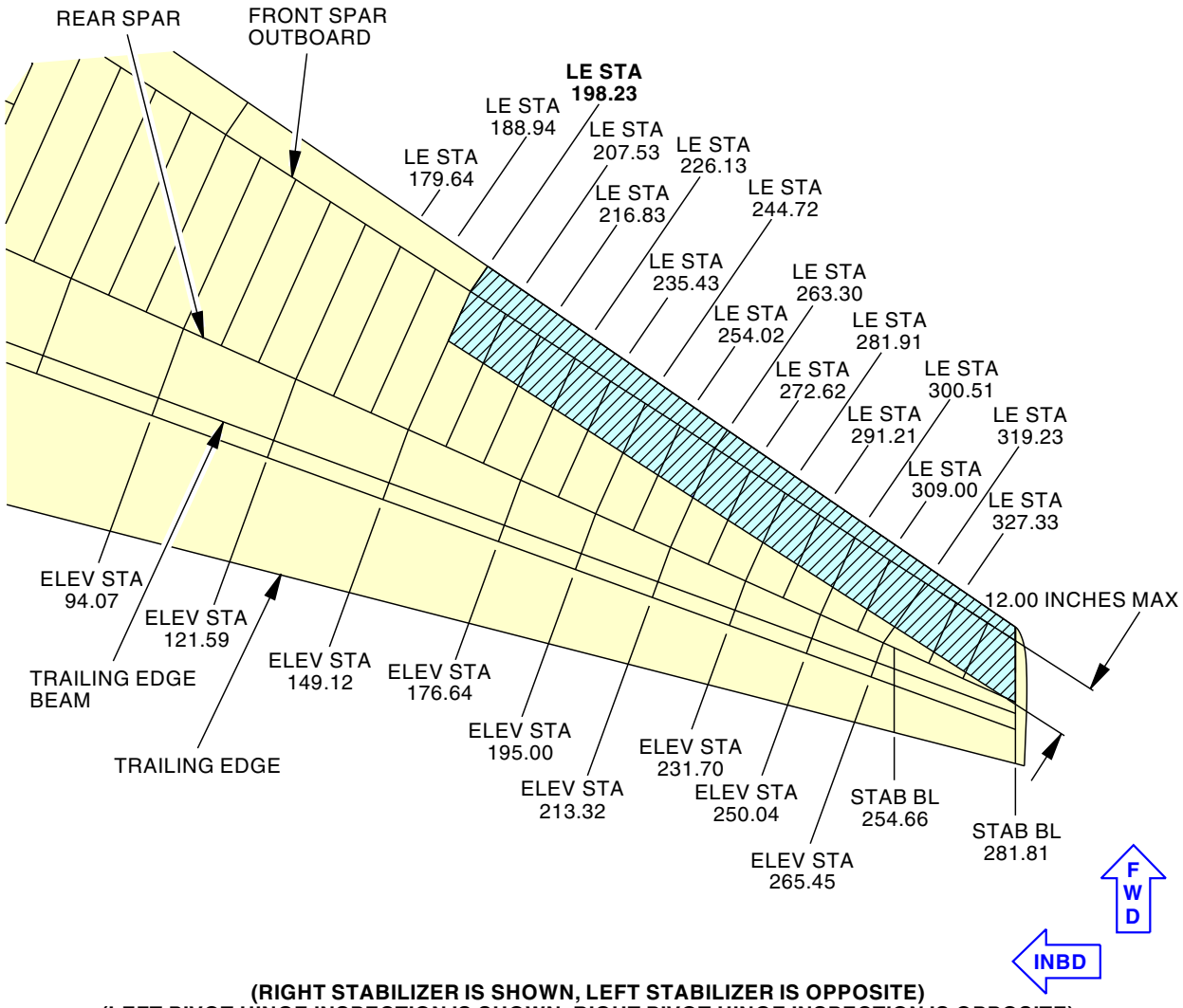
ECCN 9E991 BOEING PROPRIETARY - See title page for details



3016237 S0000789234_V1

Horizontal Stabilizer Pivot Hinge Freeplay Inspection
Figure 605/27-09-91-990-806 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(RIGHT STABILIZER IS SHOWN, LEFT STABILIZER IS OPPOSITE)
(LEFT PIVOT HINGE INSPECTION IS SHOWN, RIGHT PIVOT HINGE INSPECTION IS OPPOSITE)

B-B

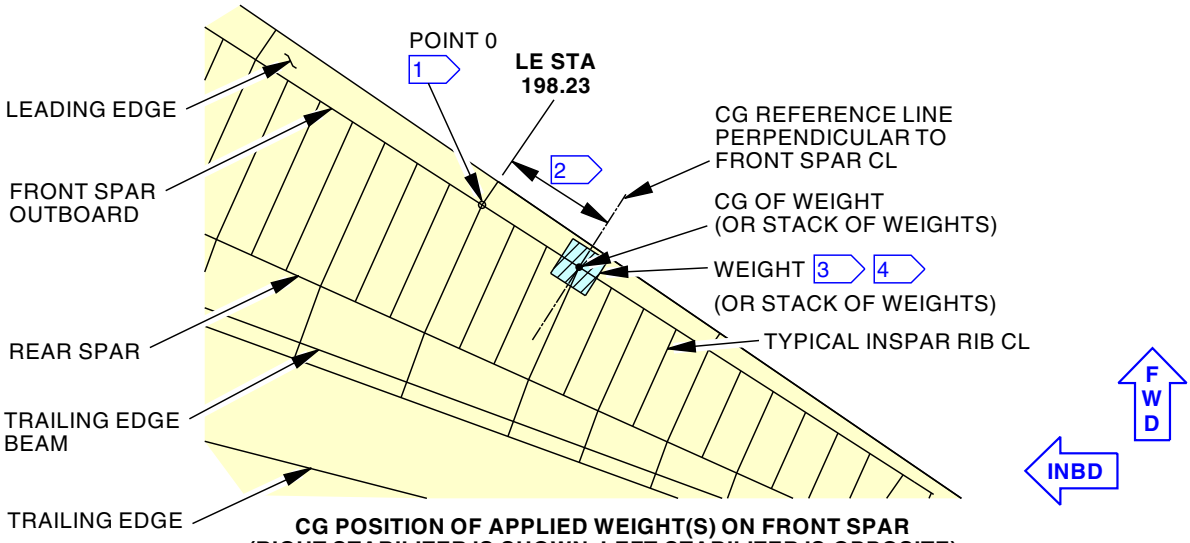
LEGEND:

WEIGHT APPLICATION AREA

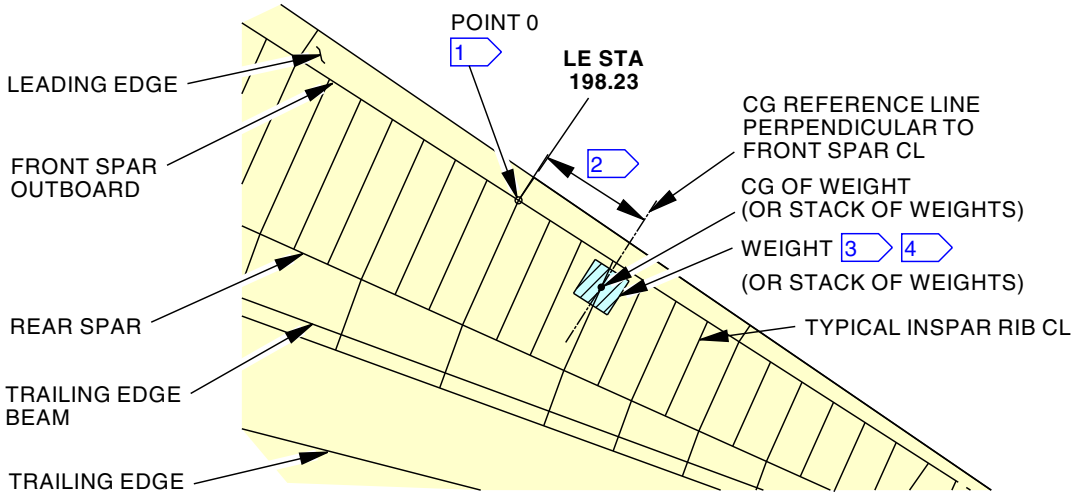
3011071 S0000784990_V1

Horizontal Stabilizer Pivot Hinge Freeplay Inspection
Figure 605/27-09-91-990-806 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CG POSITION OF APPLIED WEIGHT(S) ON FRONT SPAR
(RIGHT STABILIZER IS SHOWN, LEFT STABILIZER IS OPPOSITE)
(LEFT PIVOT HINGE INSPECTION IS SHOWN, RIGHT PIVOT HINGE INSPECTION IS OPPOSITE)



CG POSITION OF APPLIED WEIGHT(S) AFT ON FRONT SPAR ON THE RIB
(RIGHT STABILIZER IS SHOWN, LEFT STABILIZER IS OPPOSITE)
(LEFT PIVOT HINGE INSPECTION IS SHOWN, RIGHT PIVOT HINGE INSPECTION IS OPPOSITE)

LEGEND:

WEIGHT(S) CONTACT AREA

1 POINT 0 IS THE UPPER AFT AND INBOARD CORNER OF THE 186A1210 REMOVABLE LEADING EDGE SKIN.

2 DISTANCE ALONG THE FRONT SPAR CENTERLINE BETWEEN POINT 0 AND THE CENTER OF GRAVITY (CG) OF THE APPLIED WEIGHT (OR STACK OF WEIGHTS).

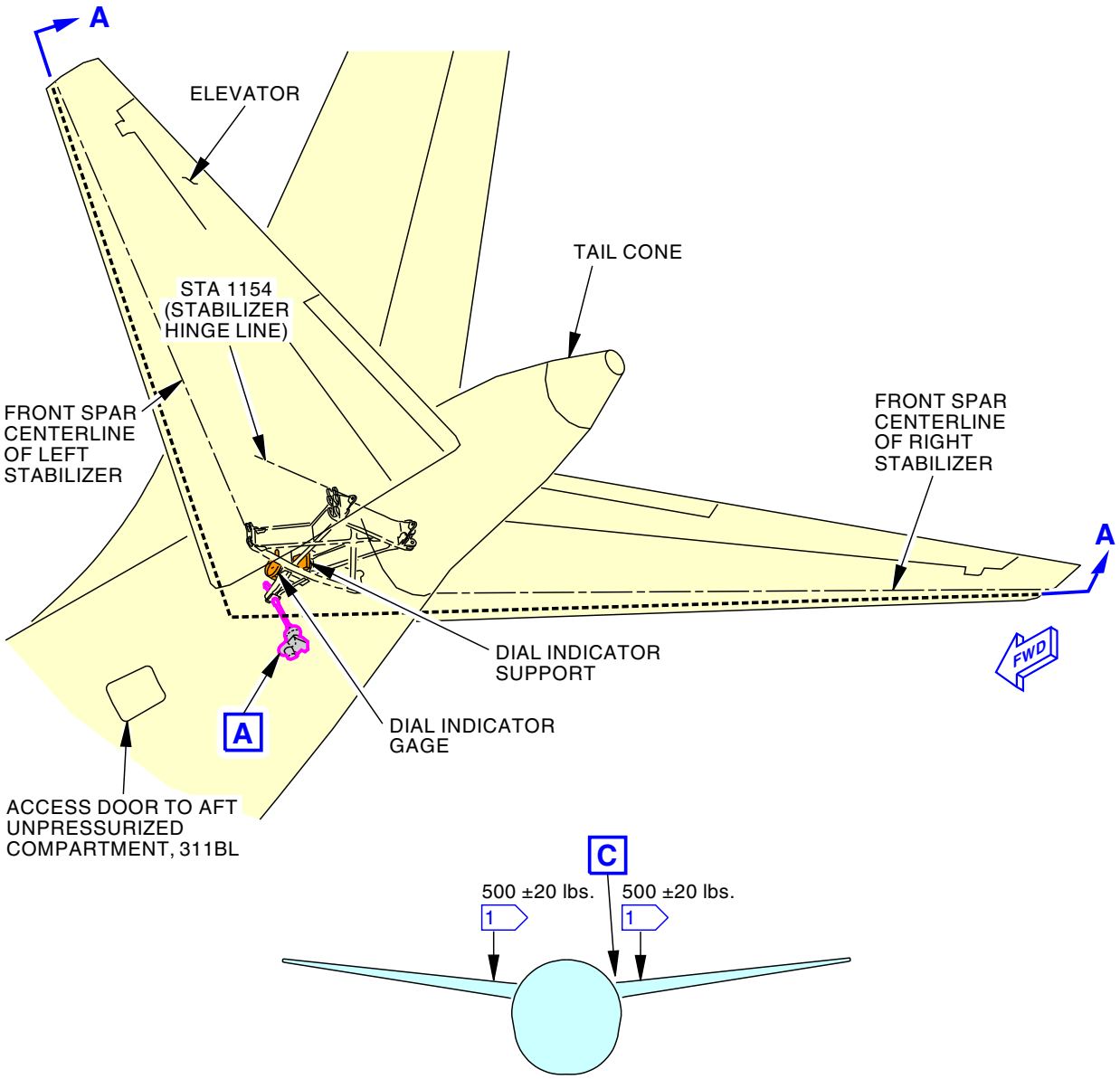
3 A SQUARE SHAPED WEIGHT IS SHOWN. OTHER SHAPED WEIGHTS MAY BE USED. THE USER SHALL CONSIDER THE WEIGHT VARIATIONS AND THE VARIATIONS IN DETERMINING THE CG, WHEN DEMONSTRATING THAT THE TOTAL REVERSE LOAD REQUIREMENT IS MET

4 THE CONTACT AREA OF THE WEIGHTS (OR STACK OF WEIGHTS) APPLIED SHOULD RESULT IN A PRESSURE LESS THAN 4 PSI AVERAGE.

3011070 S0000784991_V1

Weight Application Requirements and Calculating Total Reverse Load
Figure 606/27-09-91-990-807

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LOOKING AFT FROM FRONT SPAR OF LEFT AND RIGHT STABILIZERS)

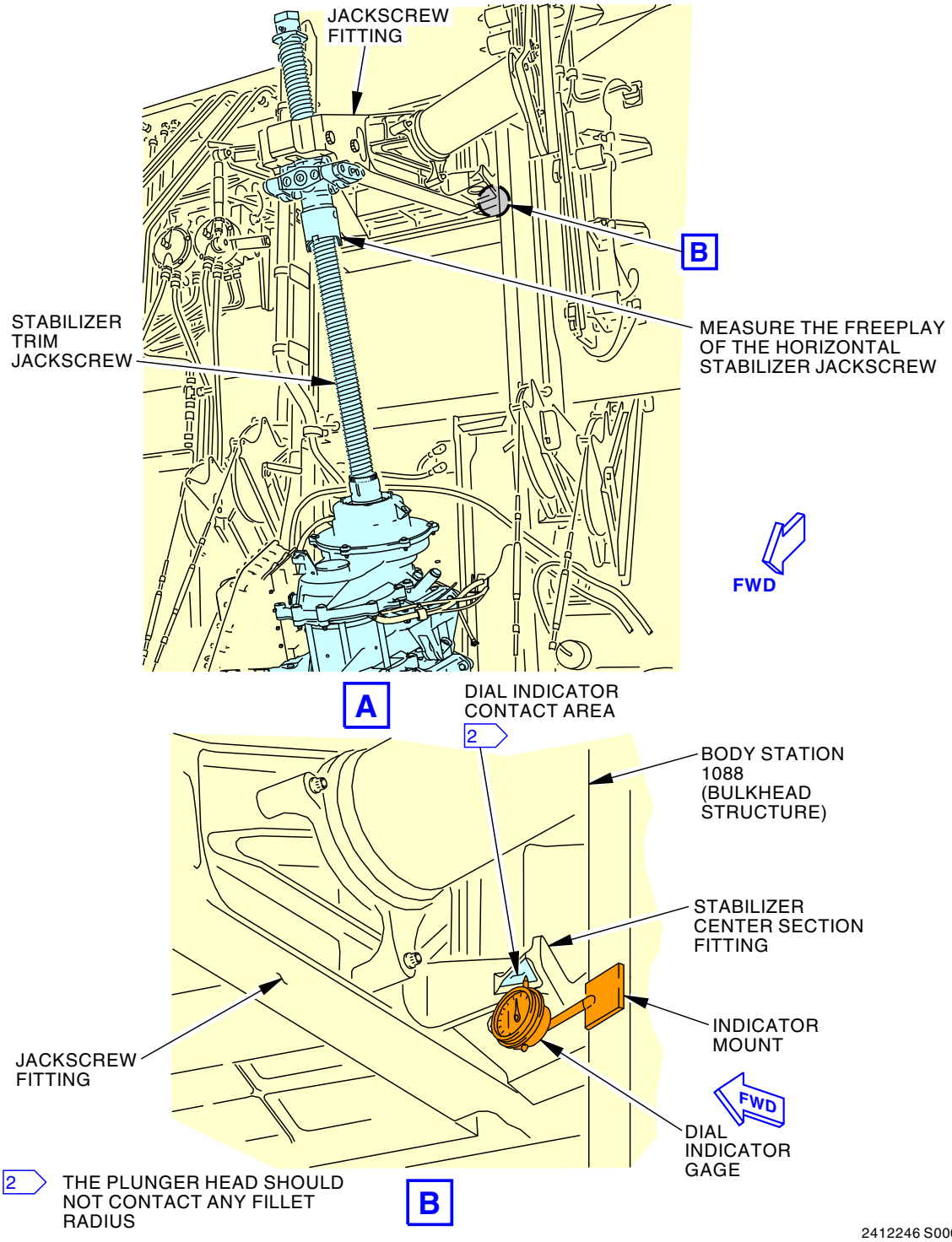
A-A

1 APPLY 500 ±20 LBS. NEXT TO THE FUSELAGE, ON TOP OF THE FRONT SPAR (ON LEFT AND RIGHT SIDES) TO DETERMINE THE STABILIZER JACKSCREW FREEPLAY.

2412245 S00061530288_V2

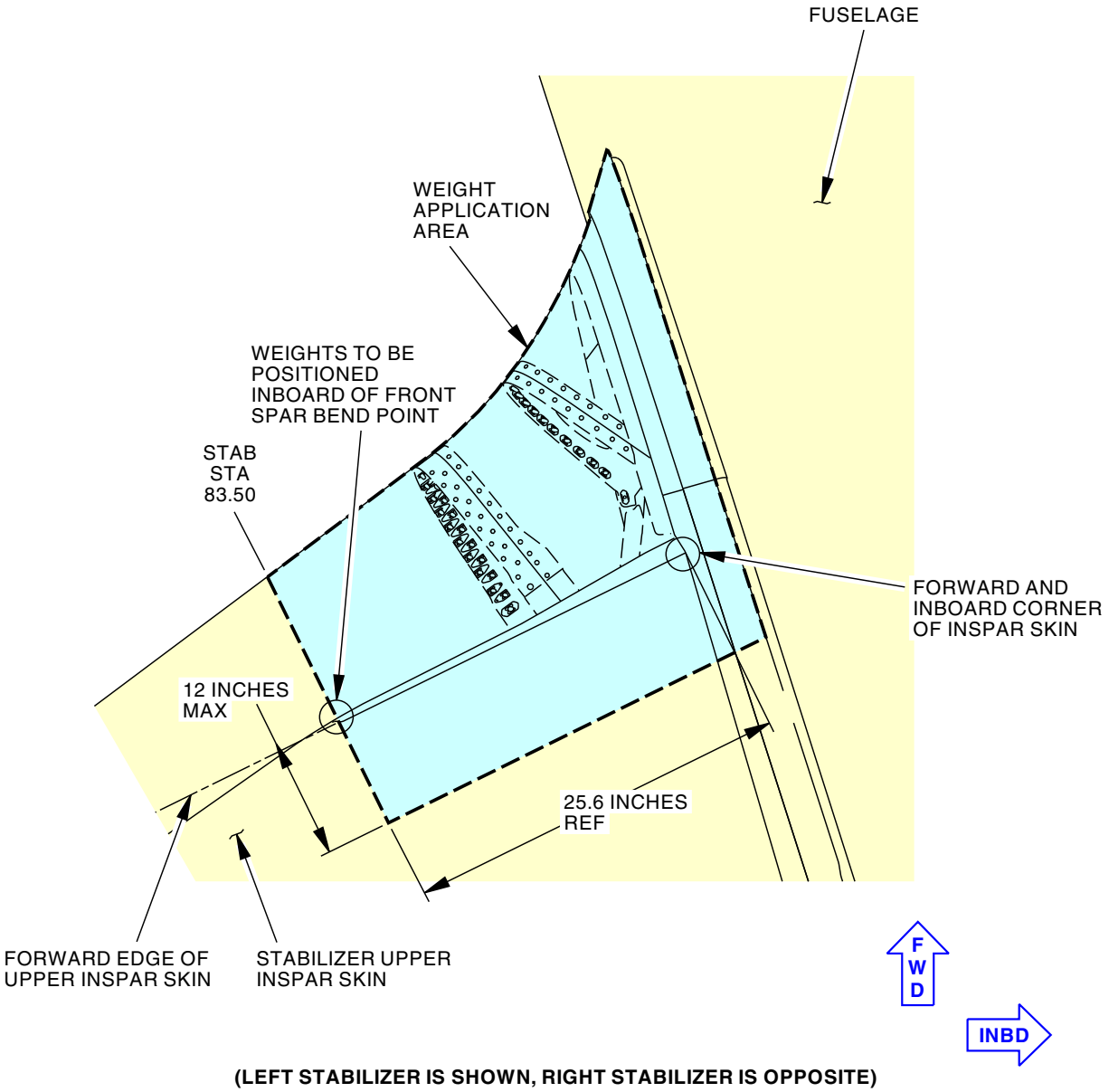
Horizontal Stabilizer Jackscrew Freeplay Inspection
Figure 607/27-09-91-990-808 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Horizontal Stabilizer Jackscrew Freeplay Inspection
Figure 607/27-09-91-990-808 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT STABILIZER IS SHOWN, RIGHT STABILIZER IS OPPOSITE)

C

3011075 S0000784993_V2

Horizontal Stabilizer Jackscrew Freeplay Inspection
Figure 607/27-09-91-990-808 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TOTAL REVERSE LOAD TABLE							
Weight Locations	(A) Enter the weight in lbs.	(B) Enter the distance in inches	(C)	(D) Multiply (B) by (C)	(E)	(F) Add (E) to (D)	Reverse Load in Pounds Multiply (A) by (F)
1	50	6	x 0.016	0.096	+ 3.068	3.164	158.200
2	50	18	x 0.016	0.288	+ 3.068	3.356	167.800
3	50	30	x 0.016	0.480	+ 3.068	3.548	177.400
4	50	42	x 0.016	0.672	+ 3.068	3.740	187.000
5	50	54	x 0.016	0.864	+ 3.068	3.932	196.600
6	50	66	x 0.016	1.056	+ 3.068	4.124	206.200
7	50	78	x 0.016	1.248	+ 3.068	4.316	215.800
8	50	90	x 0.016	1.440	+ 3.068	4.508	225.400
9	50	102	x 0.016	1.632	+ 3.068	4.700	235.000
10	50	114	x 0.016	1.824	+ 3.068	4.892	244.600
11	50	126	x 0.016	2.016	+ 3.068	5.084	254.200
12	50	138	x 0.016	2.208	+ 3.068	5.276	263.800

REFERENCE TOTAL WEIGHT (lbs) =	600

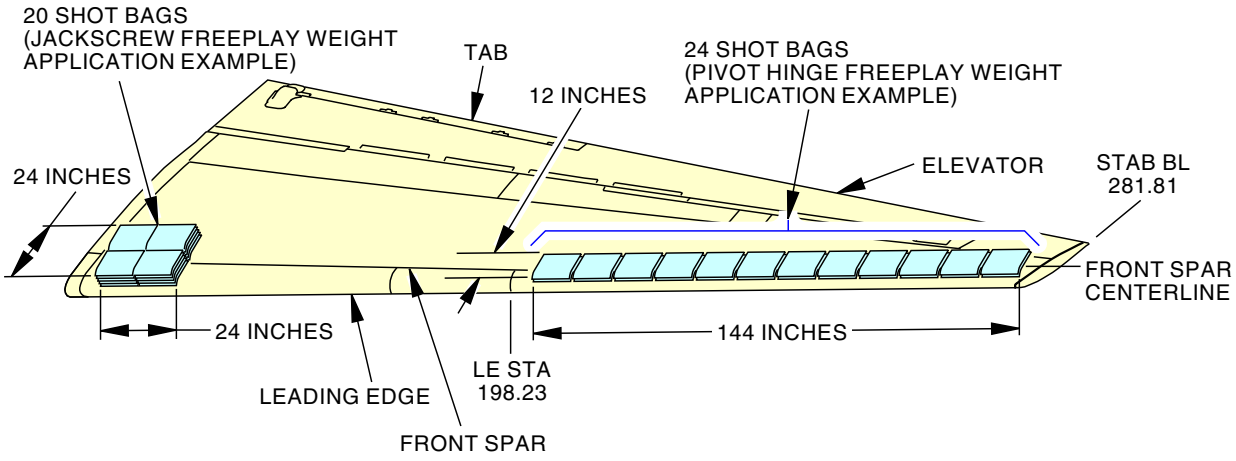
TOTAL REVERSE LOAD (lbs) (ADD ALL VALUES IN REVERSE LOAD COLUMN TO GET TOTAL REVERSE LOAD) =	2532.000

EXAMPLE 1: TOTAL REVERSE LOAD CALCULATION

3011076 S0000784994_V1

Total Reverse Load Examples and Weight Application
Figure 608/27-09-91-990-809 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



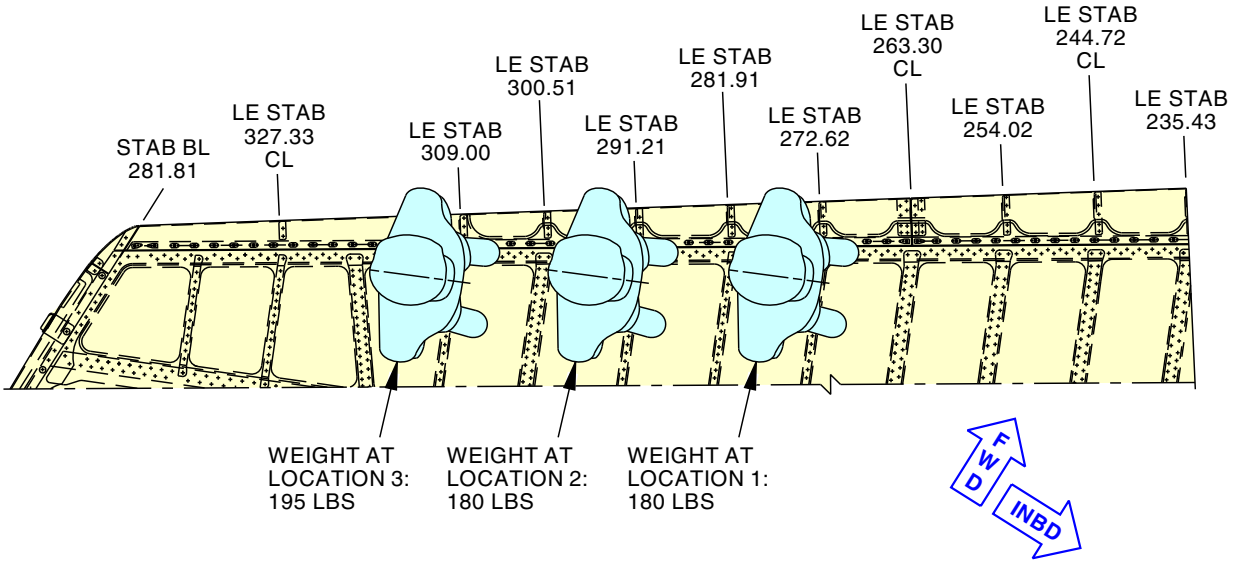
NOMINAL SHOTBAG SIZE: 12 INCHES BY 12 INCHES
NOMINAL SHOTBAG WEIGHT: 25 POUNDS

EXAMPLE 2: WEIGHT APPLICATION USING SHOT BAGS

3011078 S0000784996_V1

Total Reverse Load Examples and Weight Application
Figure 608/27-09-91-990-809 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Weight Locations	Weight of person in (lbs)	Distance in inches	Reverse Load in (lbs)
1	180	74	765.4
2	180	92	817.2
3	195	110	941.5
TOTAL REVERSE LOAD: 2524.0			

EXAMPLE 3: WEIGHT APPLICATION USING PERSONS

3011080 S0000784997_V1

Total Reverse Load Examples and Weight Application
Figure 608/27-09-91-990-809 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-09-91-200-805

6. Spoiler Inspection

(Figure 609)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
STD-1238	Indicator - Dial
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

C. Location Zones

Zone	Area
552	Left Wing - Spoiler No. 6
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
566	Left Wing - Spoiler No. 1
652	Right Wing - Spoiler No. 7
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11
666	Right Wing - Spoiler No. 12

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Check

SUBTASK 27-09-91-860-005

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Extend the trailing edge flaps to the FLAP DOWN position with primary control. Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

NOTE: You can do a check of the spoilers with hydraulic power on or off.

SUBTASK 27-09-91-480-002

(2) Attach a mount, STD-1279 to the spoiler trailing edge.

(a) Adjust the dial indicator, STD-1238 to zero.

E. Spoiler Inspection

SUBTASK 27-09-91-220-010

(1) Do a check of the freeplay for spoilers No. 1, 2, 3, 4, 5, 8, 9, 10, 11 and 12:

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(a) Use a force gauge, COM-1557 and apply approximately 21 lbf (93.41 N), 0.5 in. (12.70 mm) forward of the spoiler trailing edge and directly opposite of the power control actuator.

NOTE: The up force of approximately 21 lbf (93.41 N) consists of the spoiler panel weight of 16 lb (7.26 kg) plus 5 lbf (22.24 N) push force.

(b) Measure the freeplay on the inboard edge of the spoiler not more than 0.5 in. (12.70 mm) from the trailing edge.

(c) Make sure the spoiler freeplay is not more than 0.1 in. (2.54 mm).

SUBTASK 27-09-91-220-011

(2) Do a check of the freeplay for spoilers No. 6 and 7 (graphite/composite):

CAUTION PUT SUFFICIENT PADDING BETWEEN THE FORCE SCALE, AND THE CONTROL SURFACE TO PREVENT DAMAGE TO THE CONTROL SURFACE. THE FORCE SCALE CAN CAUSE DAMAGE TO THE CONTROL SURFACE.

(a) Use a force gauge, COM-1557 and apply an up force of approximately 32 lbf (142.34 N), 0.5 in. (12.70 mm) forward of the spoiler trailing edge and at the middle between the two spoiler power control actuators.

NOTE: The up force of approximately 32 lbf (142.34 N) consists of the spoiler panel weight of 27 lb (12.25 kg) plus 5 lbf (22.24 N) push force.

(b) Measure the freeplay on the inboard edge of the spoiler not more than 0.5 in. (12.70 mm) from the trailing edge.

(c) Make sure the spoiler freeplay is not more than 0.2 in. (5.08 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-09-91-080-003

(1) Remove the dial indicator, STD-1238.

SUBTASK 27-09-91-080-004

(2) Remove the mount, STD-1279.

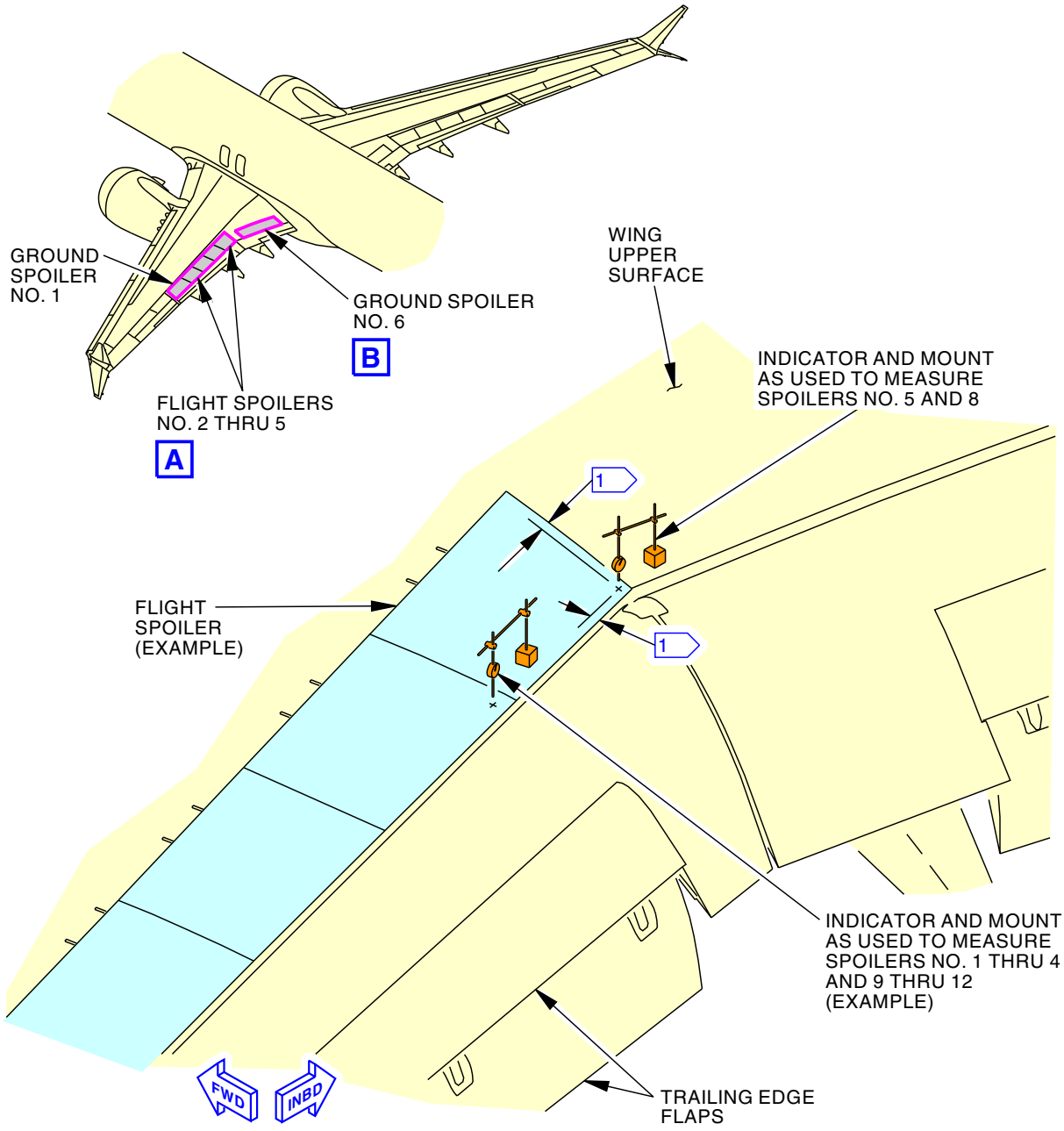
SUBTASK 27-09-91-860-006

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Retract the trailing edge flaps with primary control. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT SPOILERS NO. 2 THRU 5 FREEPLAY CHECK
(FLIGHT SPOILERS NO. 8 THRU 11 ARE OPPOSITE)

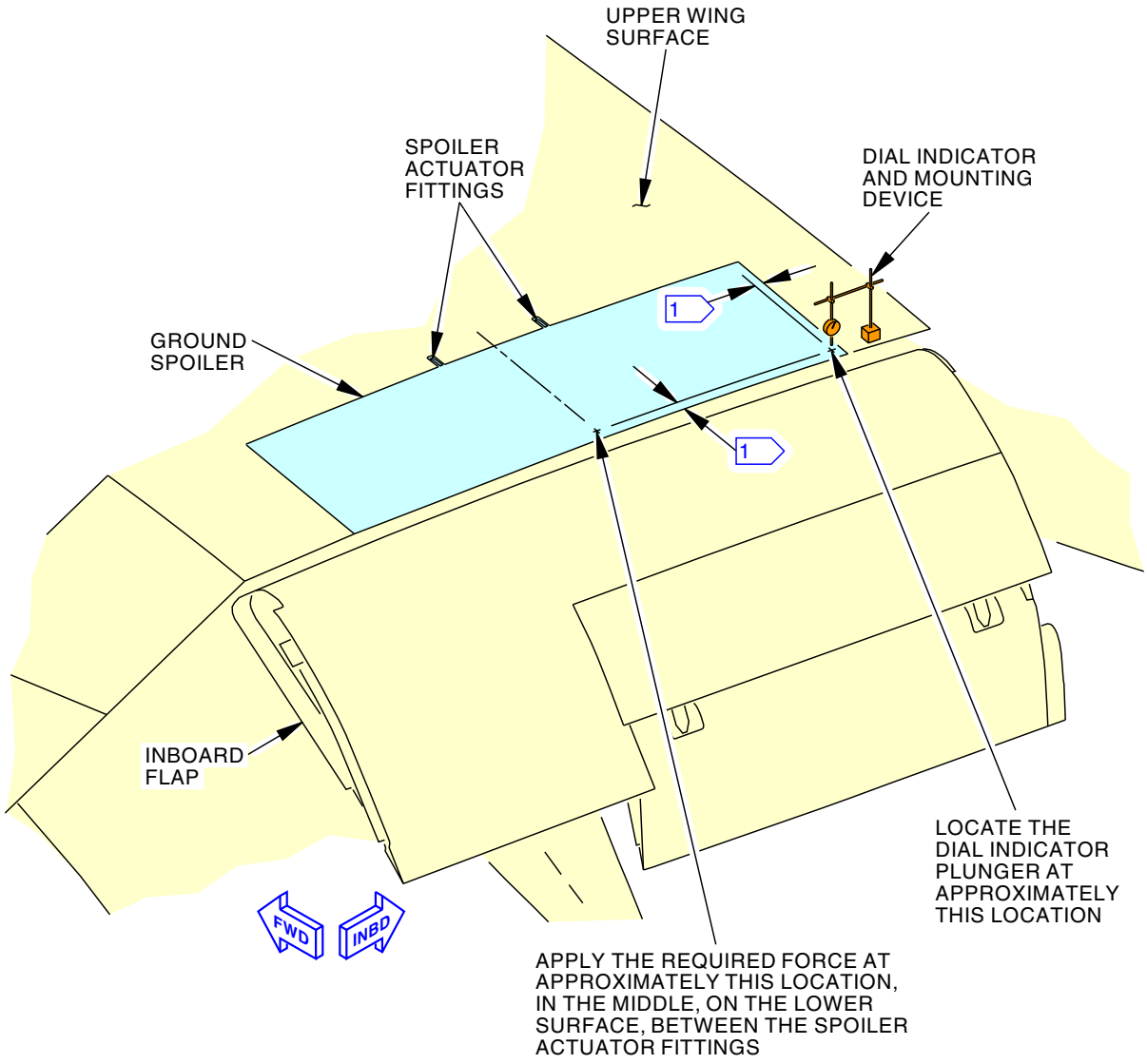
A

1 INDICATOR PLUNGER LOCATION TYPICAL ON EACH SPOILER 0.5 INCH (12.5 mm)

2412247 S00061530291_V1

Flight and Ground Spoiler Freeplay Check
Figure 609/27-09-91-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



GROUND SPOILER NO. 6 FREEPLAY CHECK
(GROUND SPOILER NO. 7 IS OPPOSITE)

B

2412248 S00061530292_V1

Flight and Ground Spoiler Freeplay Check
Figure 609/27-09-91-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON AND AILERON TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Pressure from the aileron hydraulic systems A and B - Deactivation.

(2) Pressure to the aileron hydraulic systems A and B - Activation.

TASK 27-11-00-860-801

2. Pressure from the Aileron Hydraulic Systems A and B - Deactivation

(Figure 201)

A. General

(1) This procedure removes pressure from the aileron hydraulic systems A and B before you do maintenance on the aileron control system.

B. References

Reference	Title
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Pressure from the Aileron Hydraulic Systems A and B - Deactivation

WARNING

MAKE SURE THAT THERE IS NO PRESSURE IN THE HYDRAULIC SYSTEM. PRESSURE IN THE HYDRAULIC SYSTEM CAN MOVE THE CONTROL SURFACES, CABLES, LANDING GEARS, AND LANDING GEAR DOORS QUICKLY. THEIR MOVEMENT CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

SUBTASK 27-11-00-860-001

(1) Remove pressure from the aileron hydraulic systems A and B.

(a) Set the FLT CONTROL A and B switches on the forward overhead panel, P5, to the OFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

(c) Set the ELEC 2, HYD PUMPS A and ELEC 1, HYD PUMPS B switches on the forward overhead panel, P5, to the OFF position.

(d) Operate the rudder pedals to decrease the remaining hydraulic system pressure.

SUBTASK 27-11-00-480-001

(2) Install the lock, SPL-1675, on the flight controls shutoff valves for systems A and B.

(a) Disconnect the electrical connectors from the shutoff valves.

NOTE: The flight controls shutoff valve is part of the flight controls hydraulic module. The hydraulic module for hydraulic system A is found in the left main wheel well. The hydraulic module for hydraulic system B is found in the right main wheel well.

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(c) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

(d) Make sure that the manual override levers on the shutoff valves are moved to position 2.

(e) Install the lock, SPL-1675, on each shutoff valve.

1) Make sure to install the detent pin.

F. Aileron Control System - Tryout

NOTE: This tryout is to make sure that the Aileron Control System is in a zero energy state.

SUBTASK 27-11-00-010-015

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-11-00-410-011

(2) Make sure that the lock, SPL-1675, is correctly installed on each flight controls shutoff valve.

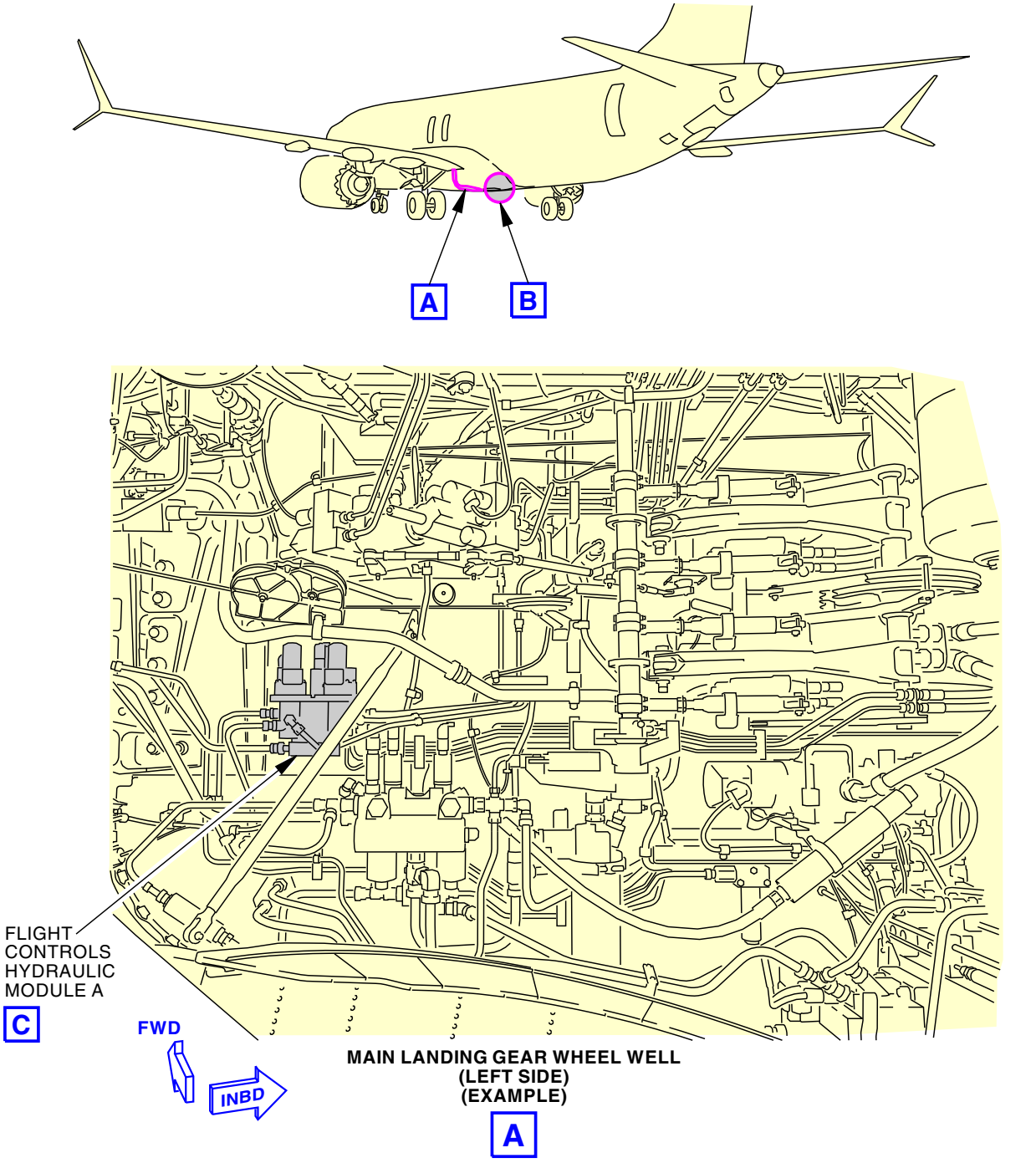
SUBTASK 27-11-00-710-001

(3) Rotate the captain's or first officer's control wheel through full travel in each direction from the neutral position.

NOTE: The force required to move the aileron control surfaces increases significantly when the wheel rotation has exceeded 7 degrees.

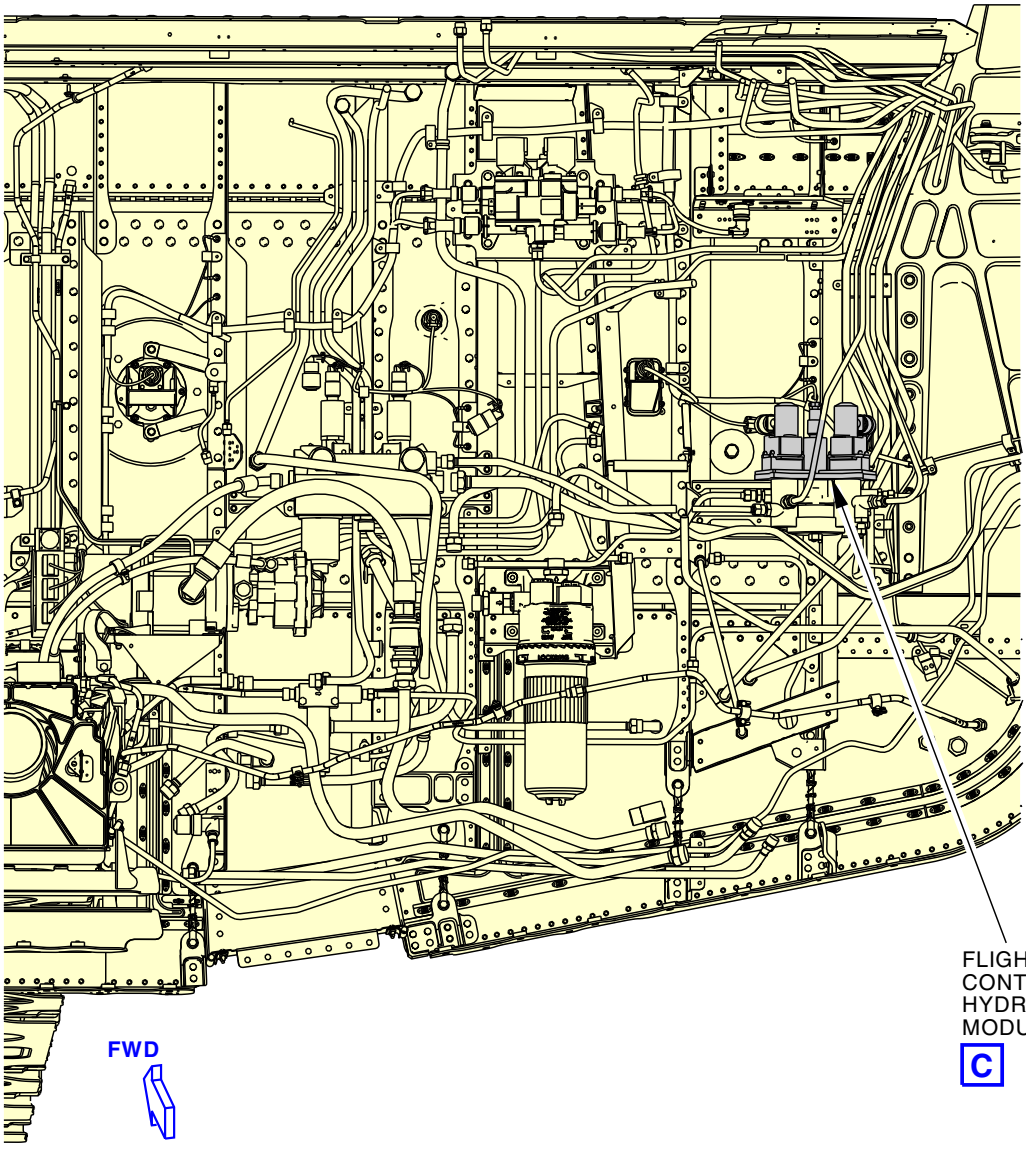
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Lock Installation
Figure 201/27-11-00-990-801 (Sheet 1 of 4)

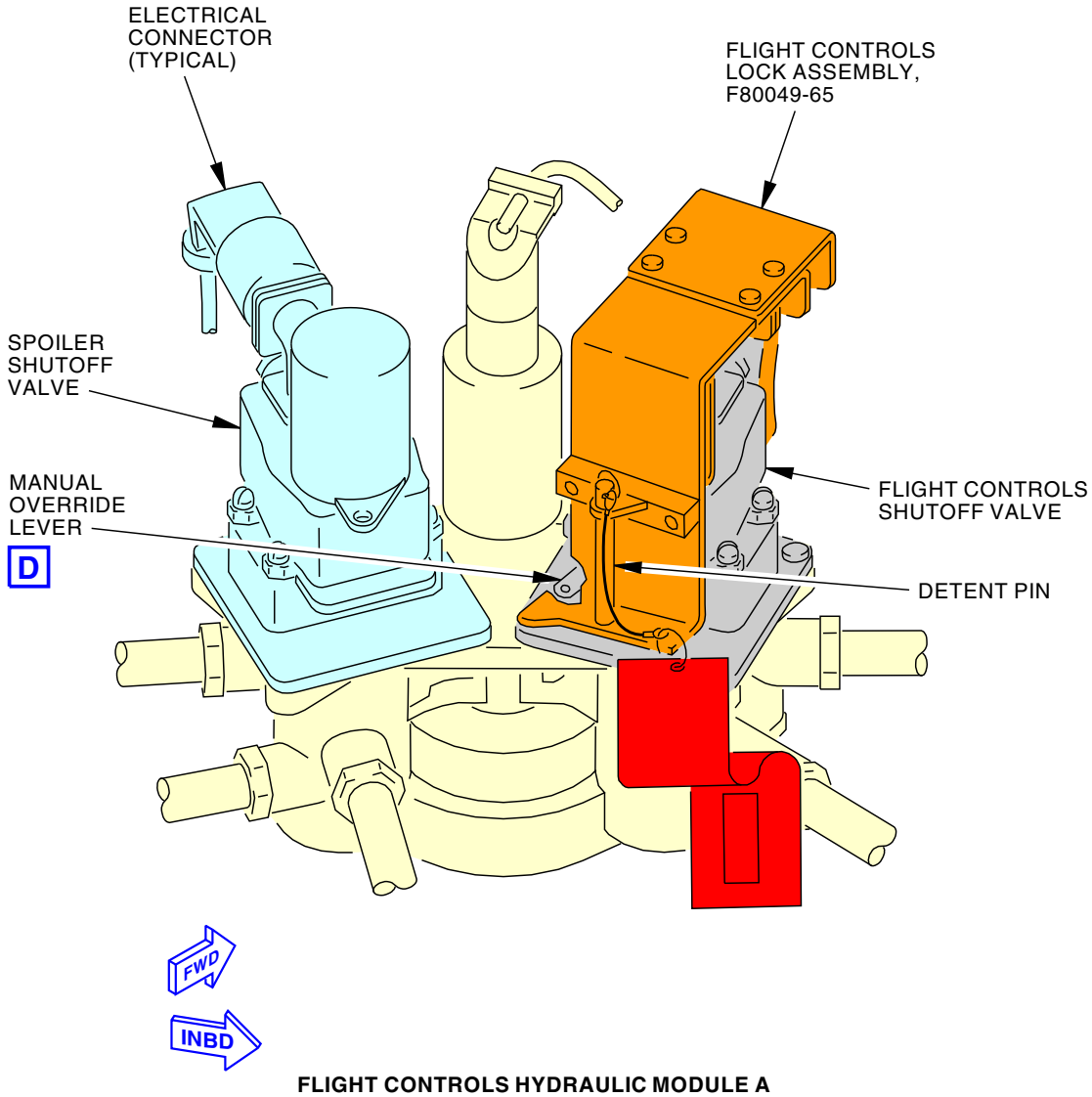
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412250 S00061530298_V3

Flight Controls Hydraulic Module Lock Installation
Figure 201/27-11-00-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



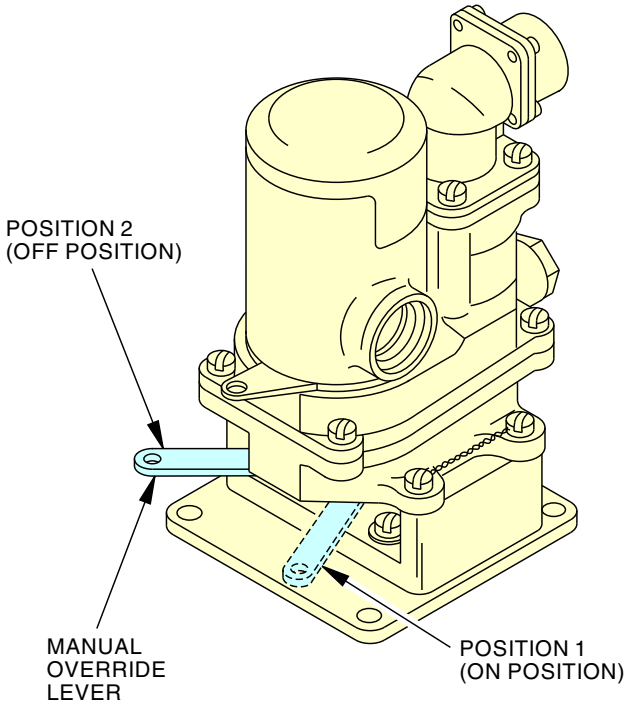
FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412251 S00061530299_V4

Flight Controls Hydraulic Module Lock Installation
Figure 201/27-11-00-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



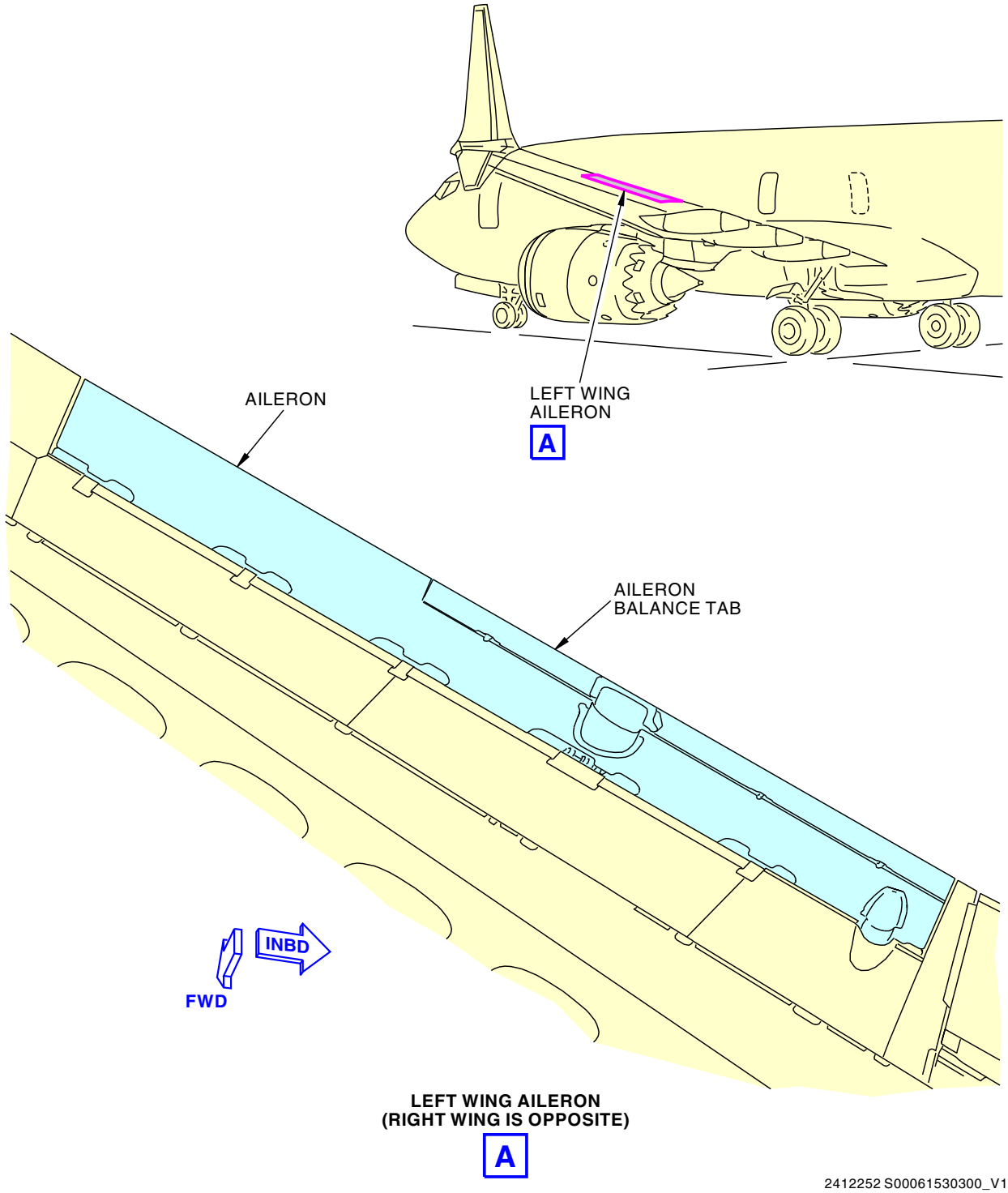
**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

D

2844536 S0000662328_V3

**Flight Controls Hydraulic Module Lock Installation
Figure 201/27-11-00-990-801 (Sheet 4 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron
Figure 202/27-11-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-860-802

3. Pressure to the Aileron Hydraulic Systems A and B - Activation

(Figure 201)

A. General

(1) This task will put the aileron hydraulic systems A and B back to the condition before pressure removal.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

F. Pressure to the Aileron Hydraulic Systems A and B Activation

SUBTASK 27-11-00-080-001

(1) Remove the lock, SPL-1675, from the flight controls shutoff valves for systems A and B.

(a) Remove the lock, SPL-1675, from the shutoff valves.

1) Make sure that the detent pin is removed first from the lock, SPL-1675.

(b) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, correct the problem (SWPM 20-60-03).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Apply D5026NS or ZC-026 compound, G50171, to the connectors (SWPM 20-60-03).

(d) Install electrical connectors on the shutoff valves.

(e) Move the manual override levers on the shutoff valves to position 1.

SUBTASK 27-11-00-860-103

(2) Set the ELEC 2, HYD PUMPS A and ELEC 1, HYD PUMPS B switches, on the P5 forward overhead panel, to the ON position.

SUBTASK 27-11-00-860-002

(3) Set the FLT CONTROL A and B switches, on the P5 forward overhead panel, to the ON position.

SUBTASK 27-11-00-860-003

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-11-00-610-001

(5) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Adjustment of the aileron cables
(2) Adjustment of the pogo and Power Control Unit (PCU)
(3) Adjustment of the aileron balance tab (Recommended Method)
(4) Adjustment of the aileron balance tab (Alternate Method)
(5) Adjustment of the aileron feel and centering unit
(6) Check of the aileron system adjustment
(7) Test of the aileron surface friction and motion
(8) Test of the manual reversion control friction
(9) Test of the aileron response (operation)
(10) Test of the control wheel centering check
(11) Test of the aileron control wheel force
(12) Test of the aileron trim response
(13) Operational test of the transfer mechanism
(14) Functional test of the transfer mechanism
(15) Test of the control wheel travel stop
(16) Test of the control wheel travel interference
(17) Test of the aileron balance tab position
(18) Test of the aileron travel
(19) Functional test of the aileron PCU pogos
(20) Flight test to find and correct asymmetrical flight control forces

TASK 27-11-00-820-801

2. Aileron Cables Adjustment

(Figure 501, Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Before you do cable adjustment, permit a minimum of one hour at a constant ambient temperature of ±5°F (±2.8°C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to the table below:

Table 501/27-11-00-993-802 Control Cable Grades and Diameters

CONTROL CABLE DIAMETER (TERMINAL SIZE REF)	CONSTRUCTION FIRST DASH NUMBER *[1]								
	GRADE A				GRADE B		GRADE D		GRADE K
	ZINC		TIN OVER ZINC		ZINC	TIN OVER ZINC	ZINC	TIN OVER ZINC	ZINC
	7 X 7	7 X 19	7 X 7	7 X 7 (RT)	7 X 19	7 X 19	7 X 19	7 X 19	7 X 19
.094 (3/32)	3B	3A	3D	3E *[2]	- — —	- — —	- — —	- — —	- — —
.125 (1/8)	- — —	4A	- — —	- — —	4F	4C	4J	4H	4K
.188 (3/16)	- — —	- — —	- — —	- — —	- — —	- — —	6J*[3]	- — —	- — —

*[1] First dash number in the part number of the cable. Example: BACC2C-3D-01085-CE is Grade A, Tin Over Zinc, 7 x 7.

*[2] Code 3E is specified only where there is a specific requirement for REDUCED TOLERANCE (RT) percent elongation wire rope, 7 X 7 RT, per BMS7-265.

*[3] Only Grade D .125 (1/8) cables (4J and 4H) are high zinc cables.

(e) It is recommended that cable assemblies on each side of a cable loop be replaced at the same time using the same cable grade material in order to minimize asymmetric relaxation.

(2) Make sure that you only adjust the applicable aileron cable or cables.

B. References

Reference	Title
27-09-14-860-802	Cable Control - Tension Measurement (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1671	Straight Edge - Control Wheel Part #: C27097-1 Supplier: 81205 Part #: SE27-0001 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

F. Prepare for the Adjustment

SUBTASK 27-11-00-480-002

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-00-010-016

(2) Open this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-11-00-010-001

(3) Remove these access panels if you adjust cables AA and AB or cables ACBA and ACBB (TASK 53-14-01-020-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-00-860-004

(4) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-00-480-003

(5) Use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (TASK 27-09-14-860-802).

NOTE: This step measures the cable tension to make sure that the cable adjustment is necessary.

G. Aileron Transfer Cables ACBA and ACBB Adjustment

SUBTASK 27-11-00-860-005

(1) Make sure that the captain's and the first officer's control wheels are in the neutral position:

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

(b) Operate the aileron trim switches on the control stand panel, P8, until you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585 (Figure 501).

(c) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

SUBTASK 27-11-00-820-002

WARNING

MAKE SURE THAT THERE IS NO PRESSURE IN THE HYDRAULIC SYSTEM. PRESSURE IN THE HYDRAULIC SYSTEM CAN MOVE THE CONTROL SURFACES, CABLES, LANDING GEARS, AND LANDING GEAR DOORS QUICKLY. THEIR MOVEMENT CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(2) If you install new ACBA1, ACBA2, ACBB1, and ACBB2 cables, do these steps to adjust the cables (Figure 502):

(a) Install the straight edge, SPL-1671, across the top of the two control wheels.

(b) Tighten cables ACBA2 and ACBB2 to 140 lbf (623 N) - 175 lbf (778 N).

1) Make sure that one end of the first officer's control wheel is 0.50 in. (12.70 mm) or less from the straight edge, SPL-1671.

(c) Remove the straight edge, SPL-1671.

(d) Cycle the control wheels ± 90 degrees 25 times.

(e) Decrease the cable tension to 0 lbf (0 N) - 20 lbf (89 N).

(f) Repeat these steps for cables ACBA1 and ACBB1.

(g) Attach the straight edge, SPL-1671, across the upper ends of both control wheels.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Tighten cables ACBA2 and ACBB2 to the specified cable rigging tension for ACBA2 and ACBB2 (TASK 27-09-14-860-802).

1) Make sure that one end of the first officer's control wheel is 0.20 in. (5.08 mm) or less from the straight edge, SPL-1671.

(i) Tighten cables ACBA1 and ACBB1 to the specified cable rigging tension for ACBA1 and ACBB1 (TASK 27-09-14-860-802).

1) Make sure that one end of the first officer's control wheel is 0.20 in. (5.08 mm) or less from the straight edge, SPL-1671.

(j) Remove the straight edge, SPL-1671.

(k) Cycle the control wheels ± 90 degrees 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables ACBA1, ACBA2, ACBB1, and ACBB2 (TASK 27-09-14-860-802).

(l) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

(m) Do not adjust cables ACBA1, ACBA2, ACBB1, and ACBB2 after they have been tightened to the specified cable rigging tension (TASK 27-09-14-860-802).

SUBTASK 27-11-00-750-004

(3) Use a low tension cable tensiometer, COM-1553, to measure the cable tension (TASK 27-09-14-860-802).

SUBTASK 27-11-00-820-003

(4) If the ACBA1, ACBA2, ACBB1, and ACBB2 cables are not new, do these steps to adjust the cables:

(a) Attach the straight edge, SPL-1671, across the upper ends of both control wheels.

(b) Tighten cables ACBA2 and ACBB2 to the specified cable rigging tension for ACBA2 and ACBB2 (TASK 27-09-14-860-802).

1) Make sure that one end of the first officer's control wheel is 0.20 in. (5.08 mm) or less from the straight edge, SPL-1671.

(c) Tighten cables ACBA1 and ACBB1 to the specified cable rigging tension for ACBA1 and ACBB1 (TASK 27-09-14-860-802).

1) Make sure that one end of the first officer's control wheel is 0.20 in. (5.08 mm) or less from the straight edge, SPL-1671.

(d) Remove the straight edge, SPL-1671.

(e) Cycle the control wheels ± 90 degrees 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables ACBA1, ACBA2, ACBB1 and ACBB2 (TASK 27-09-14-860-802).

(f) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

SUBTASK 27-11-00-480-006

(5) Install the turnbuckle clip locks.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Aileron Body Cables AA and AB Adjustment

SUBTASK 27-11-00-860-007

(1) Make sure that the captain's and the first officer's control wheels are in the neutral position:

> **WARNING** KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

(b) Operate the aileron trim switches, on the P8 control stand panel, until you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585 (Figure 501).

(c) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

SUBTASK 27-11-00-210-001

(2) Make sure that the centering cam follower roller is firmly in the cam detent (Figure 505).

SUBTASK 27-11-00-820-004

> **WARNING** MAKE SURE THAT THERE IS NO PRESSURE IN THE HYDRAULIC SYSTEM. PRESSURE IN THE HYDRAULIC SYSTEM CAN MOVE THE CONTROL SURFACES, CABLES, LANDING GEARS, AND LANDING GEAR DOORS QUICKLY. THEIR MOVEMENT CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(3) If you install new cables AA and AB, do these steps to adjust the cables (Figure 502):

(a) Tighten the turnbuckles on the cables to get the tension to 230 lbf (1023 N) - 250 lbf (1112 N).

(b) Operate the captain's control wheel 25 times.

1) Do not turn the control wheel more than 100 degrees from the neutral position.

(c) Reduce the tension in the cables to get the specified cable rigging tension for cables AA and AB (TASK 27-09-14-860-802).

(d) Operate the captain's control wheel 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables AA and AB (TASK 27-09-14-860-802).

(e) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

SUBTASK 27-11-00-750-005

(4) Use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (TASK 27-09-14-860-802).

SUBTASK 27-11-00-820-005

(5) If the cables AA and AB are not new, do these steps to adjust the cables:

(a) Tighten the turnbuckles on the cables to get the specified cable rigging tension for cables AA and AB (TASK 27-09-14-860-802).

(b) Operate the captain's control wheel 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables AA and AB (TASK 27-09-14-860-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

SUBTASK 27-11-00-860-010

(6) Make sure that you can easily install and remove these rig pins from the rigging pin kit, SPL-1585 (Figure 501):

- Rig pin A/S-4 in the aileron bus drum
- Rig pin A/S-15 in the aileron trim actuator.

SUBTASK 27-11-00-820-006

(7) If you cannot easily install and remove the rig pin A/S-4 or rig pin A/S-15, adjust the cables AA and AB:

NOTE: Do not adjust the cables ACBA1, ACBA2, ACBB1, and ACBB2.

(a) Loosen the turnbuckle on one cable and tighten the turnbuckle on the other cable the same quantity until you can easily install and remove the rig pin.

SUBTASK 27-11-00-860-011

(8) Use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension.

(a) Make sure that the cable tension is still within the specified cable rigging tension for cables AA and AB (TASK 27-09-14-860-802).

SUBTASK 27-11-00-860-012

(9) Attach the straight edge, SPL-1671, on the captain's and first officer's control wheels.

(a) Make sure that one end of the first officer's control wheel is 0.20 in. (5.08 mm) or less from the straight edge, SPL-1671.

SUBTASK 27-11-00-420-001

(10) Install the turnbuckle clip locks.

I. Aileron Wing Cables ABSA and ABSB Adjustment

SUBTASK 27-11-00-820-007

(1) Make sure that the pogos and power control unit is correctly adjusted before you do the wing cables adjustment (TASK 27-11-00-820-802).

SUBTASK 27-11-00-480-007

(2) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum.

SUBTASK 27-11-00-820-008

WARNING

MAKE SURE THAT THERE IS NO PRESSURE IN THE HYDRAULIC SYSTEM. PRESSURE IN THE HYDRAULIC SYSTEM CAN MOVE THE CONTROL SURFACES, CABLES, LANDING GEARS, AND LANDING GEAR DOORS QUICKLY. THEIR MOVEMENT CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(3) If you install new cables ABSA and ABSB, do these steps to adjust the cables (Figure 502):

(a) Tighten the turnbuckles on the cables to get the tension to 420 lbf (1868 N) - 440 lbf (1957 N).

(b) Remove the rig pin A/S-4.

(c) Operate the captain's control wheel 25 times.

1) Do not turn the control wheel more than 100 degrees from the neutral position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the rig pin A/S-4.

(e) Reduce the tension in the cables to get the specified cable rigging tension for cables ABSA and ABSB (TASK 27-09-14-860-802).

(f) Remove the rig pin A/S-4.

(g) Operate the captain's control wheel 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables ABSA and ABSB (TASK 27-09-14-860-802).

(h) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

SUBTASK 27-11-00-750-006

(4) Use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension (TASK 27-09-14-860-802).

SUBTASK 27-11-00-820-009

(5) If the cables ABSA and ABSB are not new, do these steps to adjust cables ABSA and ABSB:

(a) Tighten the turnbuckles until you get the specified cable rigging tension for cables ABSA and ABSB (TASK 27-09-14-860-802).

(b) Remove the rig pin A/S-4.

(c) Operate the captain's control wheel 10 times.

1) Make sure that the cable tension is still within the specified cable rigging tension for cables ABSA and ABSB (TASK 27-09-14-860-802).

(d) Put the captain's control wheel back to the neutral position.

1) Move the control wheel quickly back and forth about neutral to make sure that it is in the center position.

SUBTASK 27-11-00-480-008

(6) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum.

SUBTASK 27-11-00-860-013

(7) Make sure that the aileron is in the rig position (Figure 506).

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.20 ±2.54 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.20 ±2.54 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

(a) If the aileron is not in the rig position, adjust the turnbuckles for each cable.

SUBTASK 27-11-00-860-014

(8) Use a high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to measure the cable tension.

(a) Make sure that the cable tension is still within the specified cable rigging tension for cables ABSA and ABSB (TASK 27-09-14-860-802).

SUBTASK 27-11-00-420-002

(9) Install the turnbuckle clip locks.

SUBTASK 27-11-00-080-002

(10) Remove rig pin A/S-4.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-410-002

(1) Install these access panels if they were removed to adjust cables AA and AB or cables ACBA and ACBB (TASK 53-14-01-420-801).

(a) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-00-410-012

(2) Close this access door:

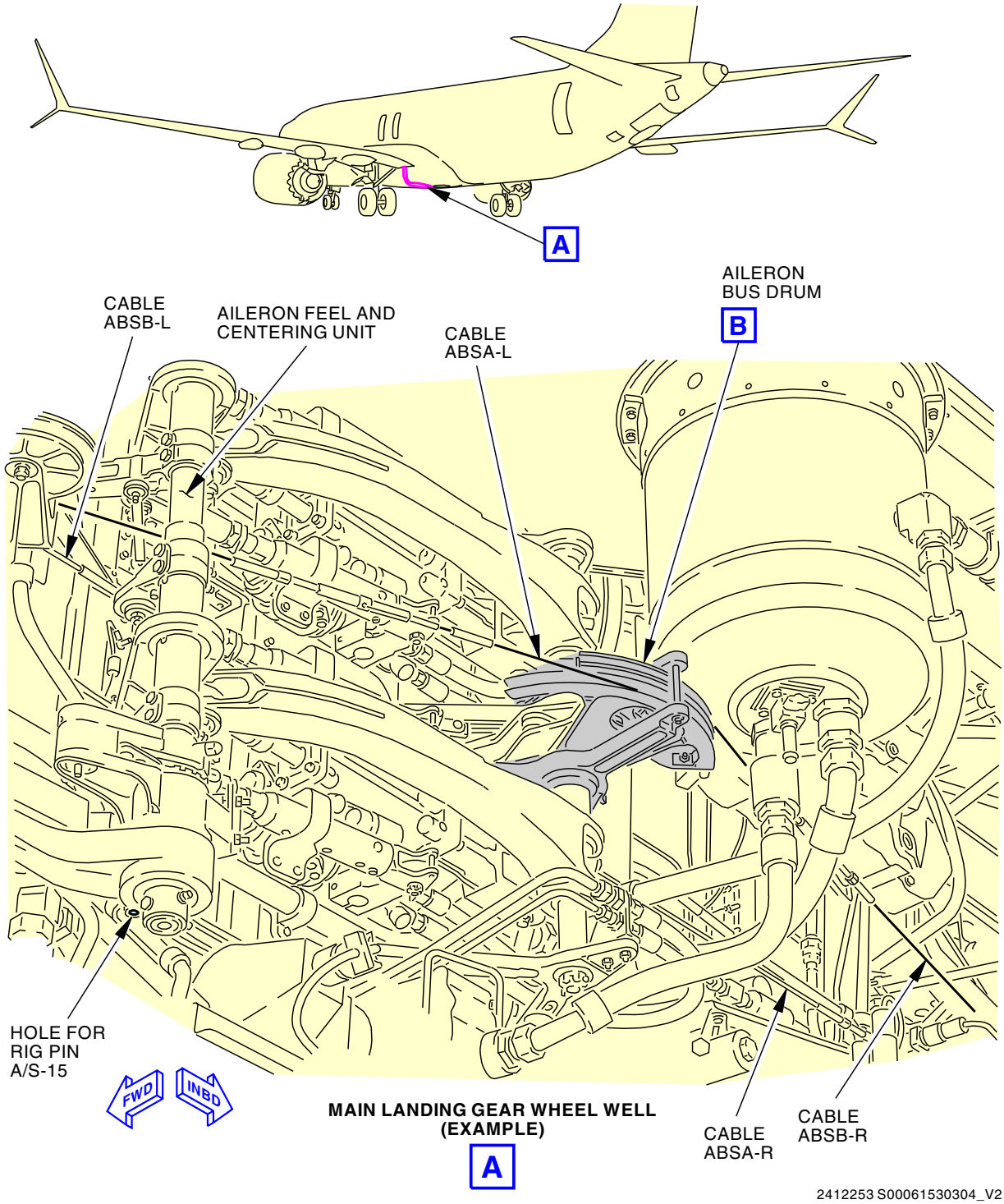
Number	Name/Location
112A	Forward Access Door

SUBTASK 27-11-00-860-015

(3) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

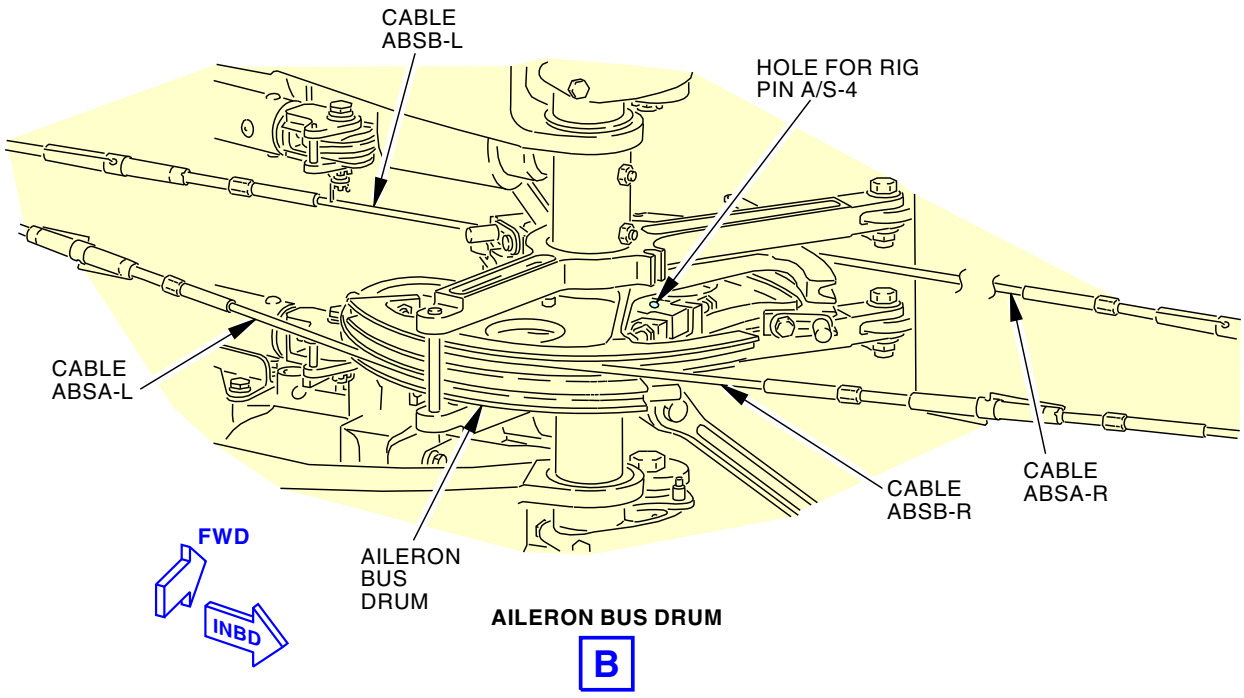
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rig Pin Location
Figure 501/27-11-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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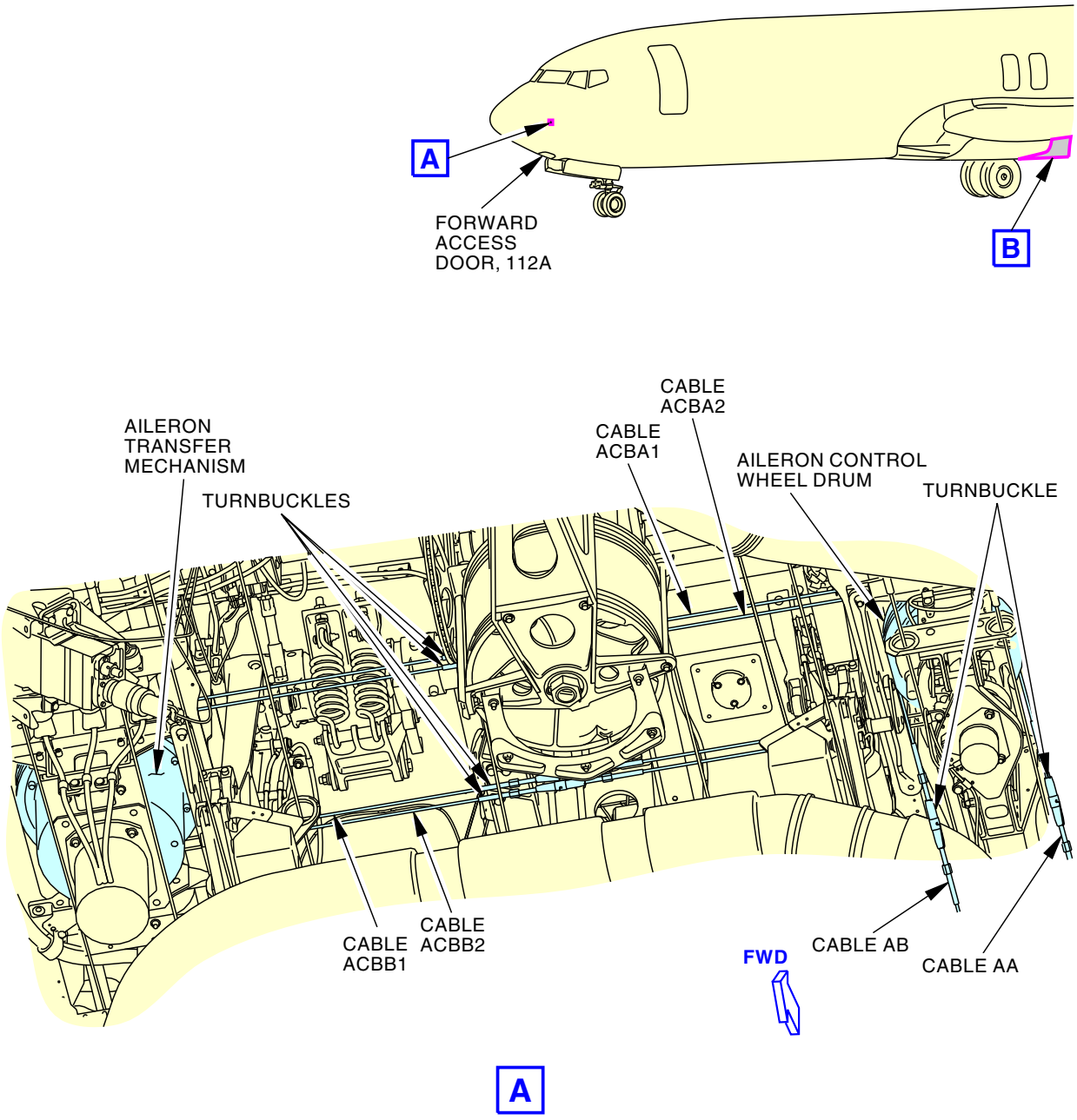
Rig Pin Location
Figure 501/27-11-00-990-803 (Sheet 2 of 2)

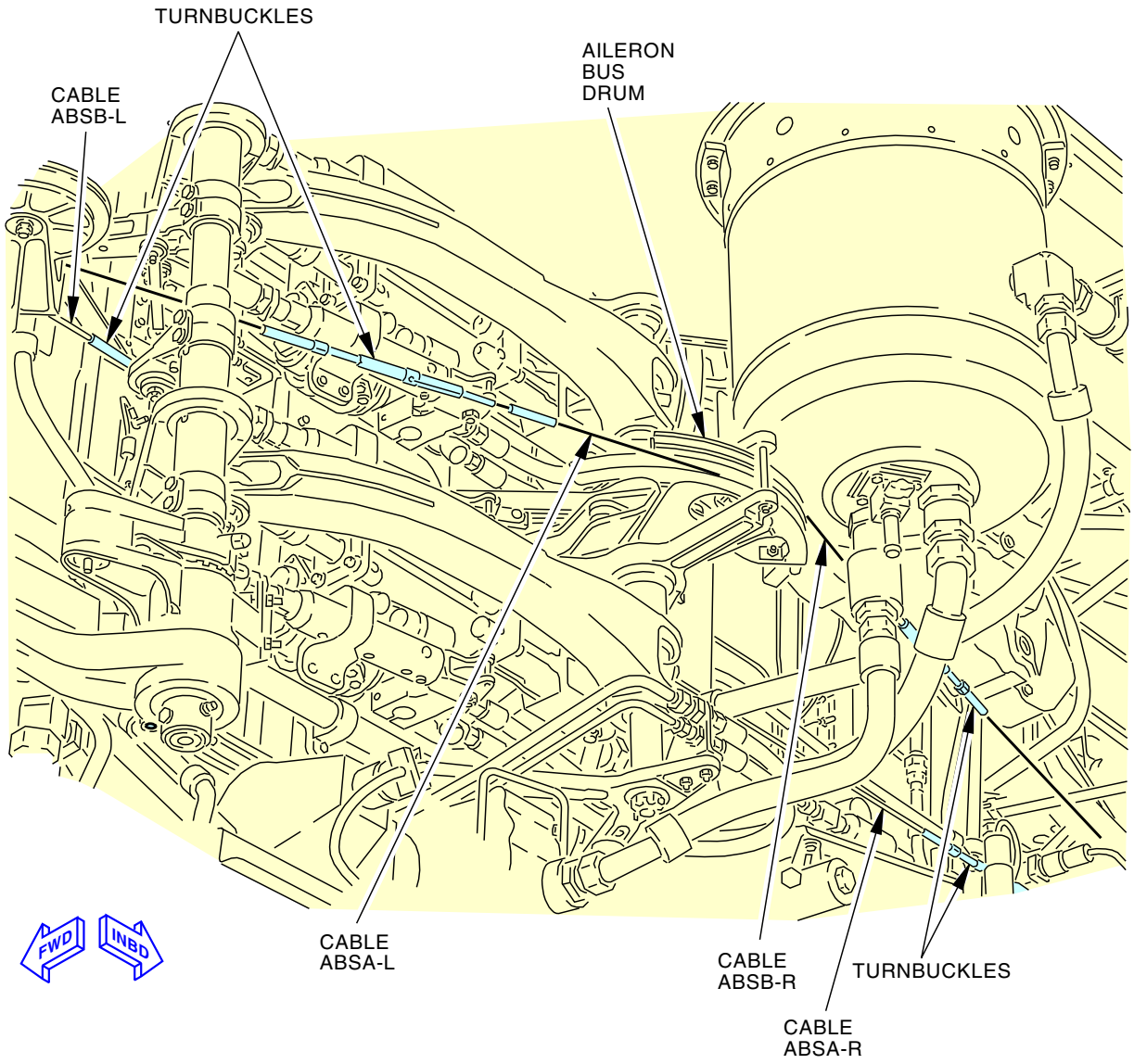
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412256 S00061530307_V2

Aileron Cable Adjustment
Figure 502/27-11-00-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL
(EXAMPLE)

B

2412257 S00061530308_V2

Aileron Cable Adjustment
Figure 502/27-11-00-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-820-802

3. Pogo and Power Control Unit (PCU) Adjustment

(Figure 503)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G02436	Lockwire - MS20995NC40, Monel - 0.040 Inch (1.016 mm) Diameter	NASM20995

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Adjustment

SUBTASK 27-11-00-480-009

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-00-860-016

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

SUBTASK 27-11-00-860-017

(3) Operate the aileron trim switches on the control stand panel, P8, until you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator (Figure 501).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-860-018

(4) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

F. Pogo and the Power Control Unit (PCU) Adjustment

SUBTASK 27-11-00-860-019

(1) Make sure that you can freely install and remove the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum (Figure 501).

SUBTASK 27-11-00-820-010

(2) If you cannot easily install and remove the rig pin A/S-4, adjust the pogos [1] in the specified sequence:

NOTE: When adjustment of the four pogos is necessary, make sure that you follow these instructions in the specified sequence. Incorrect adjustment of the upper and lower pogos on system A or B PCU when adjusted in the opposite directions will cause the incorrect condition of 'free fit' of rig pin A/S 4.

(a) Disconnect the upper and lower pogos from system B PCU and the upper pogo from system A PCU.

1) Remove the pins [8], nuts [7], washers [6], bushings [5], washers [4] and bolts [3] to disconnect the four pogos [1] from the power control units.

(b) Adjust the lower (primary) pogo [1] on system A PCU:

NOTE: The initial length of the pogo (rod-end to rod-end) is approximately 13.78 in. (350.0 mm) and the drain holes are down.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

1) Pressurize hydraulic system A (TASK 29-11-00-860-801).
2) Loosen the locknut [2] on the pogo [1].
3) Turn the shaft in the barrel and left clevis to adjust the length of the pogo [1] until you can freely install and remove rig pin A/S-4 in the aileron bus drum.
4) Tighten the locknut [2] to 160 ±10 in-lb (18.1 ±1.2 N·m).
5) Make sure that you can freely install and remove rig pin A/S-4.
   a) If it is necessary, adjust the lower pogo [1] on system A PCU again.
6) Remove power from hydraulic system A (TASK 29-11-00-860-805).
7) Make sure that the bushing flanges on the left hand clevis are pointed up, and the drain hole in the clevis barrel is pointed down, when the clevis is re-connected.
8) Install MS20995NC40 lockwire, G02436, on the locknut [2].

(c) Adjust the lower (primary) pogo on system B PCU;

NOTE: You must adjust the lower pogo on system A PCU first before you adjust the lower pogo on system B PCU.

1) Install the bolt [3], washer [4], bushing [5], washer [6], nut [7] and pin [8] to connect the lower pogo to the system B PCU.

NOTE: The initial length of the pogo (rod-end to rod-end) is approximately 13.78 in. (350.0 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that the drain holes on the pogo [1] are down.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

2) Pressurize hydraulic system B (TASK 29-11-00-860-801).
3) Loosen the locknut [2] on the pogo [1].
4) Turn the shaft in the barrel and the left clevis to adjust the length of the lower pogo [1] on system B PCU until you can easily install and remove rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum.
5) Tighten the locknut [2] to 160 ±10 in-lb (18.1 ±1.2 N·m).
6) Make sure that you can easily install the rig pin A/S-4 in the aileron bus drum.
   a) If it is necessary, adjust the lower pogo [1] on system B PCU again.
7) Remove power from hydraulic system B (TASK 29-11-00-860-805).
8) Make sure that the bushing flanges on the left hand clevis are pointed up, and the drain hole in the celvis barrel pointed down, when the clevis is re-connected.
9) Install MS20995NC40 lockwire, G02436 on the locknut [2].

(d) Adjust the upper (secondary) pogo [1] on system A PCU:

1) Loosen the locknut [2] on the pogo [1].
2) Turn the shaft in the barrel and left clevis to adjust the length of the upper pogo [1] until you can easily install the bolt [3].
   a) Install the bolt [3] with the washer [4], bushing [5], washer [6], nut [7] and pin [8] to connect the upper pogo [1] to the system A PCU.
   b) Make sure that the drain holes on the pogo [1] are down.
3) Tighten the locknut [2] to 160 ±10 in-lb (18.1 ±1.2 N·m).
4) Make sure that the bolt [3] fits freely in its hole.
   a) If it is necessary, adjust the upper pogo [1] on system A PCU again.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

5) Pressurize hydraulic system A (TASK 29-11-00-860-801).
6) Make sure that you can freely install and remove the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum (Figure 501).

CAUTION DO NOT ADJUST THE LOWER POGO ON SYSTEM B PCU. YOU CAN GET FREE RIG PIN WHEN THE POGOS ARE INCORRECTLY ADJUSTED IN OPPOSITE DIRECTIONS. YOU WILL MISRIG THE SYSTEM B PCU IF YOU ADJUST THE SYSTEM B POGO.

7) If you cannot freely install and remove the rig pin A/S-4, do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Remove the pin [8], nut [7], washer [6], bushing [5], washer [4] and bolt [3] to disconnect the upper pogo [1] from the system A PCU.

b) Adjust the length of the lower pogo [1] on system A PCU again until you can easily install and remove the rig pin A/S-4.

c) Do the adjustment of the upper pogo [1] on system A PCU again from the beginning.

d) Do not adjust the lower pogo [1] on the system B PCU.

8) Remove power from hydraulic system A (TASK 29-11-00-860-805).

9) Install MS20995NC40 lockwire, G02436, on the locknut [2].

(e) Adjust the upper (secondary) pogo [1] on system B PCU:

1) Turn the shaft in the barrel and left clevis to adjust the length of the upper pogo [1] until you can easily install the bolt [3] in the PCU lever.

a) Install the bolt [3] with washer [4], bushing [5], washer [6], nut [7] and pin [8] to connect the upper pogo [1] to the system B PCU.

b) Make sure that the drain holes on the pogo are down.

2) Tighten the locknut [2] to 160 ±10 in-lb (18.1 ±1.2 N·m).

3) Make sure that the bolt [3] fits freely in the hole.

a) Adjust the upper pogo [1] on system B again if it is necessary.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

4) Pressurize hydraulic system B (TASK 29-11-00-860-801).

5) Make sure that you can easily install and remove the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum (Figure 501).

CAUTION DO NOT ADJUST THE UPPER OR LOWER POGO ON SYSTEM A PCU. YOU CAN GET FREE RIG PIN WHEN THE POGOS ARE INCORRECTLY ADJUSTED IN OPPOSITE DIRECTIONS. YOU WILL MISRIG THE SYSTEM A PCU IF YOU ADJUST THE SYSTEM A POGOS.

6) If you cannot easily install and remove the rig pin A/S-4, do these steps:

a) Remove the pins [8], nuts [7], washers [6], bushings [5], washers [4] and bolts [3] to disconnect the upper pogo [1] from the system B PCU.

b) Adjust the lower pogo [1] on system B PCU again until you can easily install and remove rig pin A/S-4, from the rigging pin kit, SPL-1585.

c) Do the adjustment of the upper pogo [1] on system B PCU again from the beginning.

7) Remove power from hydraulic system B (TASK 29-11-00-860-805).

8) Make sure that the left pogo clevis bushing flanges are pointed up, and the drain hole in the pogo barrel is pointed down, when the pogo is re-connected.

9) Install MS20995NC40 lockwire, G02436, on the locknut.

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SUBTASK 27-11-00-480-010

(3) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum.

SUBTASK 27-11-00-480-011

(4) Install the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator.

SUBTASK 27-11-00-820-011

(5) Visually do a check to make sure that the valve arms on the upper and lower pogos for each PCU are at the center between the stops (Figure 503, View C).

(a) If the valve arms are not at the center between the stops, adjust the four pogos [1] in the same specified sequence as above.

SUBTASK 27-11-00-820-012

(6) Make sure that the gaps between the lug on the top aileron bus drum and the screws [12] on the bottom aileron bus drum are0.05 ±0.01 in. (1.27 ±0.25 mm) (Figure 503, View A-A).

(a) If the gap is out of tolerance, do these steps;

1) Remove the MS20995NC40 lockwire, G02436.

2) Loosen the nut [13].

3) Adjust the screw [12] until the gap is 0.05 ±0.01 in. (1.27 ±0.25 mm).

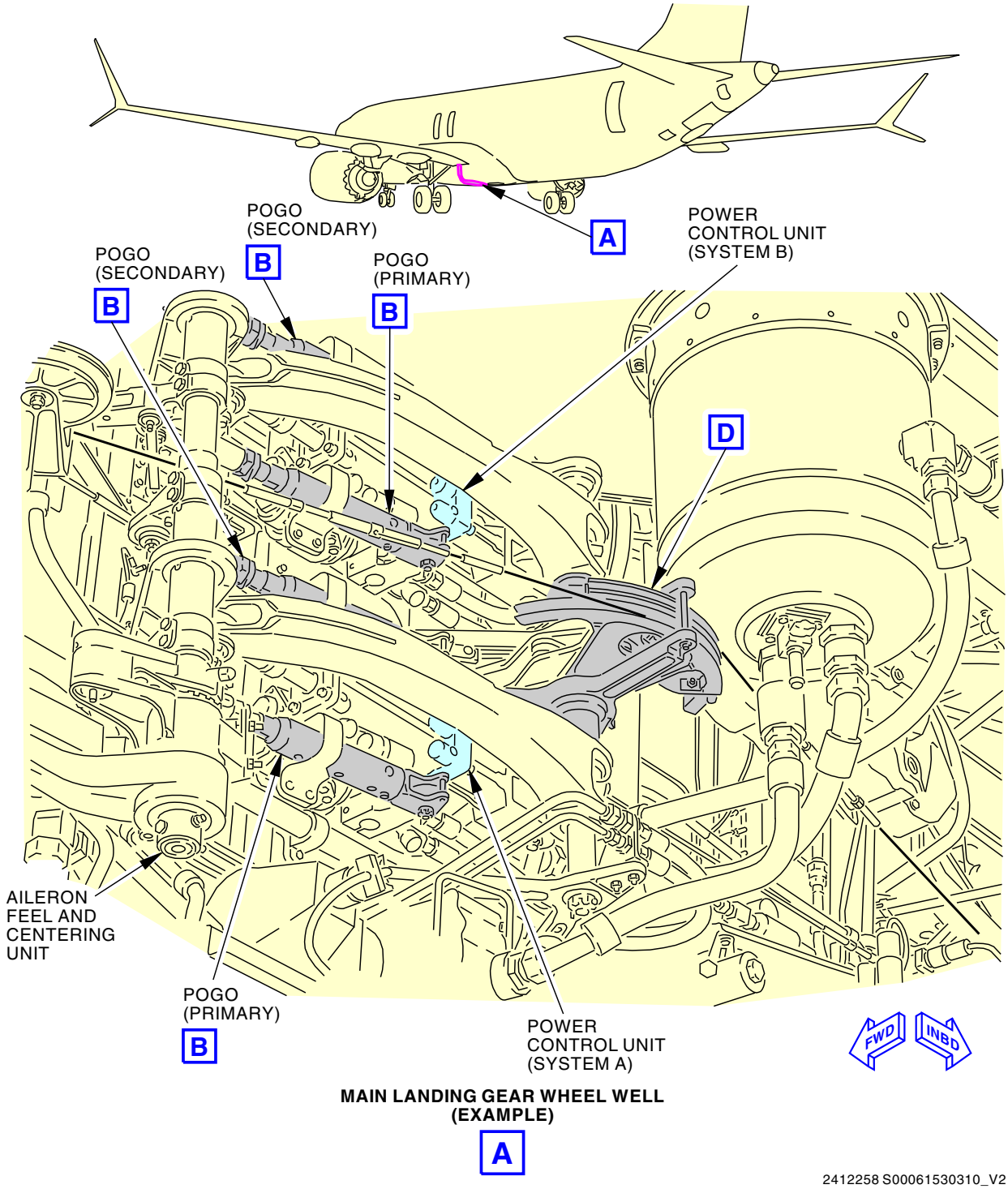
4) Install the MS20995NC40 lockwire, G02436, on the two screws [12] and nuts [13].

SUBTASK 27-11-00-080-003

(7) Remove rig pins A/S-15 and A/S-4.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL
(EXAMPLE)

A

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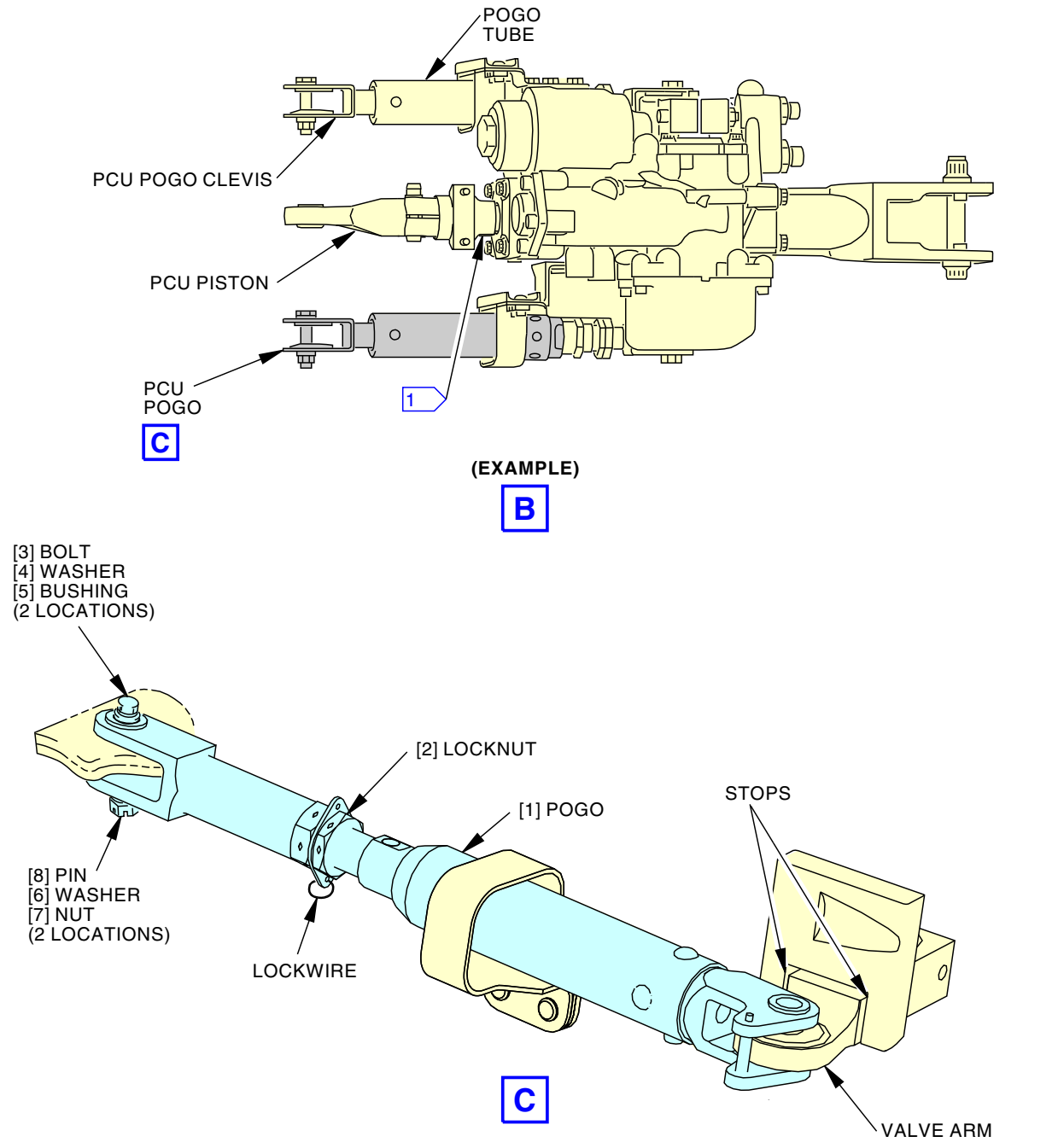
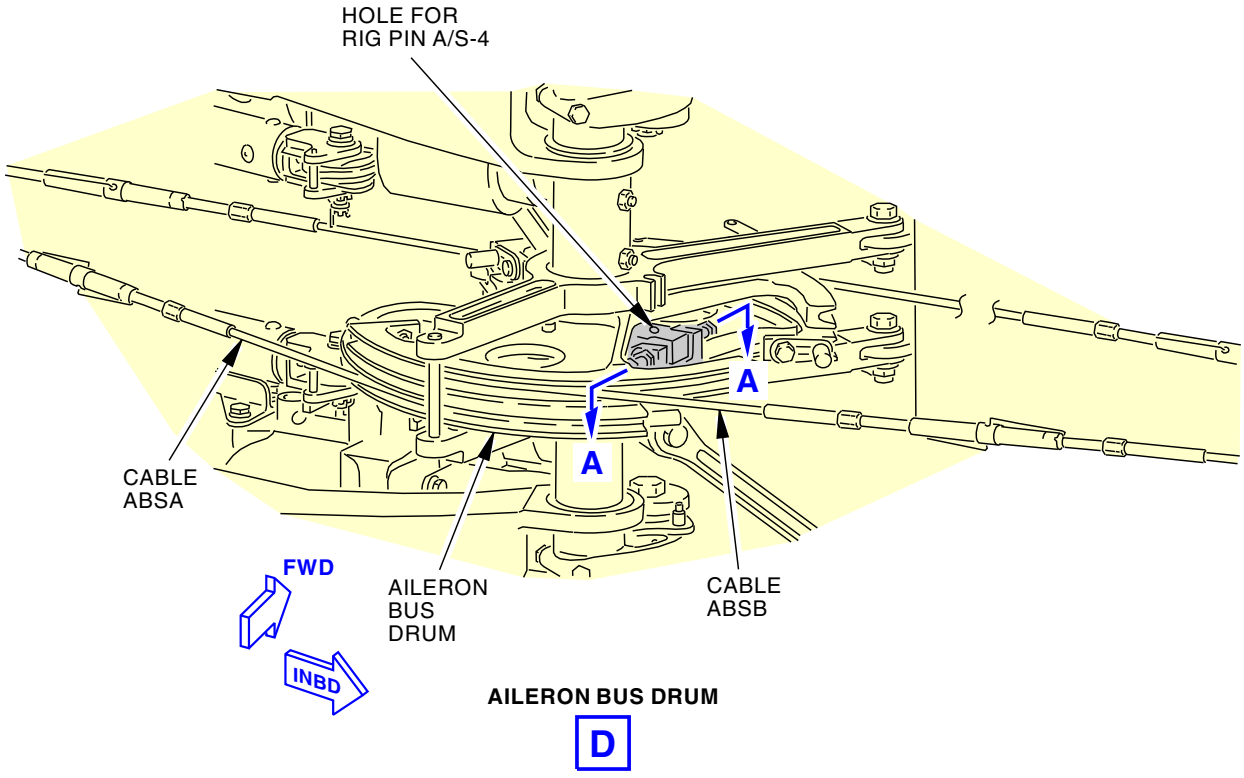
Aileron Pogo and Power Control Unit Adjustment
Figure 503/27-11-00-990-805 (Sheet 1 of 3)

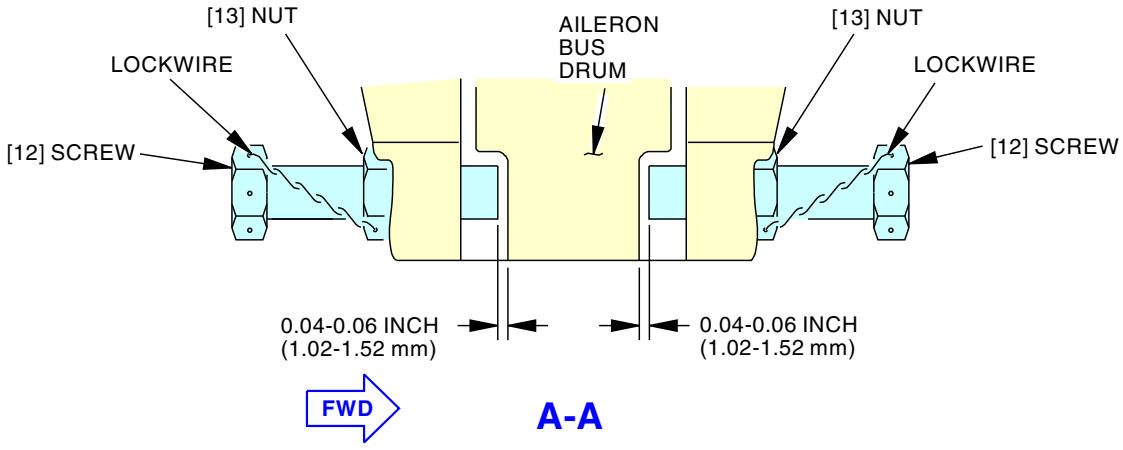
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Pogo and Power Control Unit Adjustment
Figure 503/27-11-00-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Aileron Pogo and Power Control Unit Adjustment
Figure 503/27-11-00-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-820-803

4. Aileron Balance Tab Adjustment (Recommended Method)

(Figure 504)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1682	Protractor - Aileron Tab Alignment Part #: F80222-11 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Prepare for Adjustment

SUBTASK 27-11-00-860-020

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

E. Aileron Balance Tab Adjustment (Recommended Method)

NOTE: You can adjust the aileron balance tab [31] with the aileron [32] in the faired position or with the aileron [32] at the downrig position.

NOTE: Measurements can also be taken with protractor, SPL-1682, if it is necessary.

SUBTASK 27-11-00-820-013

(1) Do these steps to do a check of the aileron balance tab [31] with the aileron [32] in the faired position:

(a) Align the lower surface of the aileron trailing edge flush with the lower trailing edge surface of the adjacent fixed wing structure to ±0.03 in. (0.76 mm) at the outboard end of the aileron.

(b) Make sure that the outboard lower trailing edge surface of the aileron balance tab [31] aligns with the lower trailing edge surface of the aileron [32] to ±0.03 in. (0.76 mm).

1) If this condition is not met, adjust the aileron balance tab [31].

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SUBTASK 27-11-00-220-001

(2) Do these steps to do a check of the aileron balance tab [31] with the aileron [32] in the downrig position (Figure 506):

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

(a) Measure the vertical distance between the lower surface of the aileron balance tab [31] to the lower surface of the aileron [32] at the outboard end of the aileron balance tab [31] (dimension A)(Figure 504):

NOTE: You must measure the distance from the lower aft most points of the aileron balance tab [31] and the aileron [32].

1) Make sure the dimension A is 0.078 ±0.070 in. (1.98 ±1.78 mm).

(b) If the dimension A is out of tolerance, adjust the aileron balance tab [31].

SUBTASK 27-11-00-820-014

(3) Do these steps to adjust the aileron balance tab [31]:

(a) Move the aileron trailing edge to the down position.

(b) Remove the bolts [45] that attach the forward removable fairing [46] to the aileron.

(c) Remove the bolts [43] that attach the aft removable fairing [44] to the aileron balance tab [31].

(d) Loosen the jam nuts [47] and jam nuts [49] on the aileron tab control rods [33].

NOTE: You must adjust the two aileron tab control rods [33] the same quantity.

(e) Do these steps if a coarse adjustment is necessary:

1) Remove the pins [42], nuts [41], washers [40], bushings [39], washers [38] and bolts [37] to disconnect the aileron tab control rods [33] from the aileron balance tab [31].

2) Turn the rod ends on the tab control rods [33] for adjustment.

NOTE: One-half turn of the rod end changes the position of the tab trailing edge 0.067 in. (1.70 mm). One-half turn of the rod end and the barrel [48] together changes the position of the tab trailing edge 0.080 in. (2.03 mm).

a) To raise the trailing edge of the aileron balance tab [31], lengthen the aileron tab control rods [33].

b) To lower the trailing edge of the aileron balance tab [31], shorten the aileron tab control rods [33].

3) Connect the aileron tab control rods [33] to the aileron balance tab [31].

a) Install the bushings [39], washers [38], washers [40], bolts [37] and nuts [41].

b) If there is binding between the aileron tab control rods [33] and the bolt [37], adjust the length of the aileron tab control rods [33].

c) Make sure there is a minimum of 0.015 in. (0.38 mm) gap between the bushing [39] and the washer [38].

d) Tighten the nuts [41] to 65 ±15 in-lb (7.3 ±1.7 N·m).

e) Install the pins [42].

(f) Do these steps if fine adjustment is necessary:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Turn the barrels [48] on the aileron tab control rods [33].

NOTE: One turn of the barrel, with the rod end fixed, changes the position of the tab trailing edge 0.027 in. (0.69 mm).

a) To raise the trailing edge of the aileron balance tab [31], lengthen the aileron tab control rods [33].

b) To lower the trailing edge of the aileron balance tab [31], shorten the aileron tab control rod [33].

2) Make sure the threads are visible in the inspection holes in the barrel [48].

(g) Tighten the jam nuts [47] to 120 ±20 in-lb (13.6 ±2.3 N·m).

(h) Tighten the jam nuts [49] to 90 ±10 in-lb (10.2 ±1.2 N·m).

(i) Install the bolts [43] that attach the aft removable fairing [44] to the aileron balance tab [31].

(j) Install the bolts [45] that attach the forward removable fairing [46] to the aileron.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-080-019

(1) If used to take measurements, remove the protractor, SPL-1682.

SUBTASK 27-11-00-440-001

(2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-00-700-001

(3) Do this task: Flight Test to Find and Correct Asymmetrical Flight Control Forces, TASK 27-11-00-750-801.

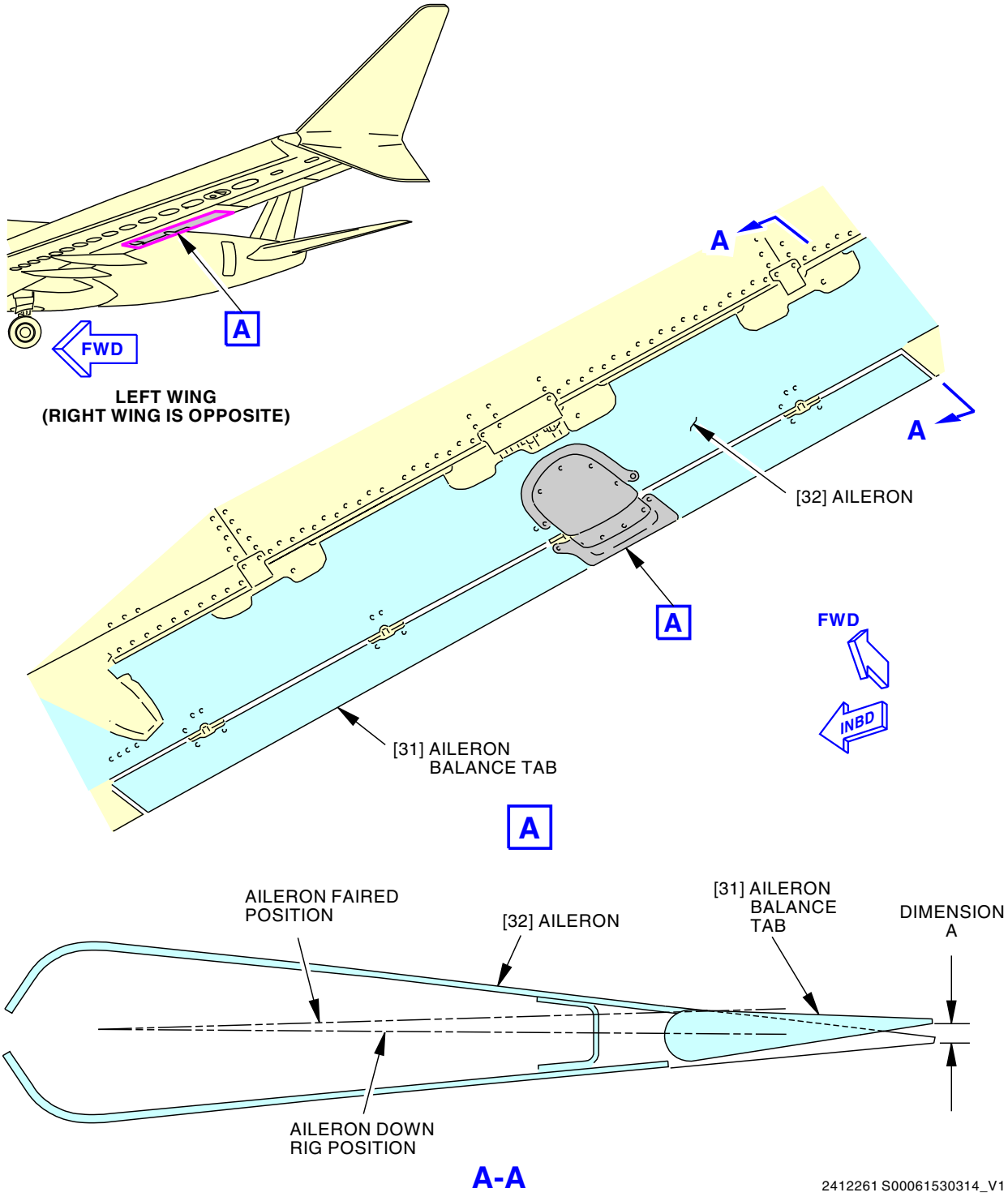
NOTE: For each aileron tab, if both control rods [33] are adjusted, then flight test is necessary.

If only one rod is adjusted, and you can verify that the remaining rod had not been replaced or adjusted since the last flight test, then flight test is not necessary.

If only one rod is adjusted, and you can not verify that the remaining rod had not been replaced or adjusted since the last flight test, then flight test is necessary.

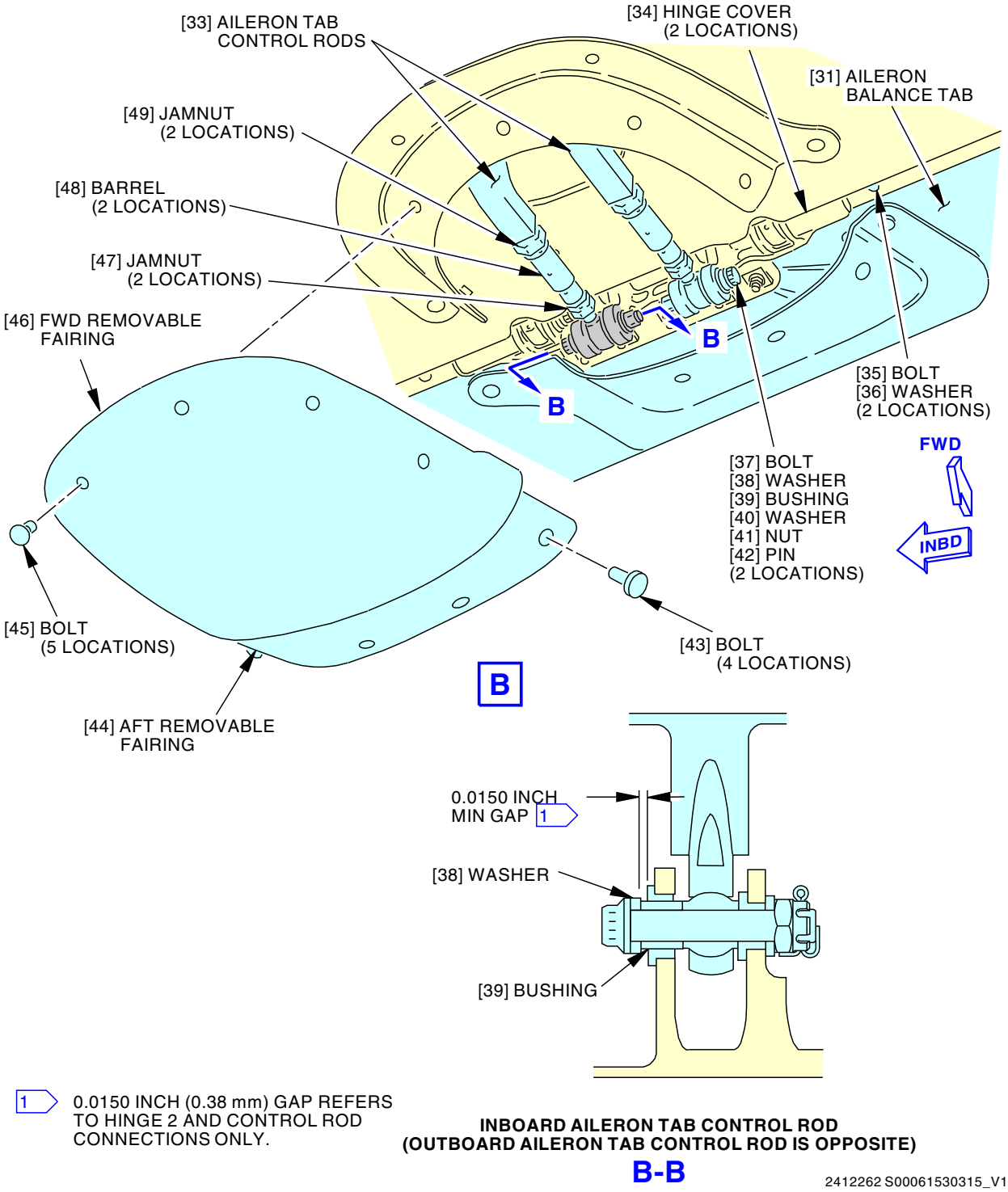
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Balance Tab Adjustment
Figure 504/27-11-00-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Balance Tab Adjustment
Figure 504/27-11-00-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-820-805

5. Aileron Feel and Centering Unit Adjustment

(Figure 505)

A. General

(1) The aileron feel and centering unit is referred to as the "centering unit" in this task.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Adjustment

SUBTASK 27-11-00-480-012

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-860-025

WARNING	MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THE CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR CAN MOVE SUDDENLY WITH THE PRESSURIZATION OF A HYDRAULIC SYSTEM. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-00-820-017

(3) Make sure that the springs [63] on the feel and centering unit [61] are not loose.

(a) If the springs [63] are loose, tighten the nuts [65] on the eyebolts [66] until you see 4 to 5 threads beyond the nuts [65].

(b) Do not stretch the springs [63] from free length.

F. Aileron Feel and Centering Unit Adjustment

SUBTASK 27-11-00-860-026

(1) Shake the control wheels to make sure that the wheels are in the neutral position.

SUBTASK 27-11-00-710-002

(2) Do this task: Control Wheel Centering Check, TASK 27-11-00-700-804.

SUBTASK 27-11-00-970-001

(3) Measure the control wheel breakout force in the clockwise and counterclockwise directions:

(a) Install the adapter, SPL-1674, to the captain's control wheel.

NOTE: If the adapter is not available, put a tangent force to the captain's control wheel at a 6.5 in. (165 mm) radius.

(b) Remove the map holder assembly from the first officer's control wheel.

(c) Install the mount, SPL-1670 and the protractor, SPL-1680, to the first officer's control wheel.

(d) Set the indicator on the protractor, SPL-1680, to zero degrees.

(e) Turn the control wheel clockwise until the aileron starts to move.

1) Using a push/pull scale 0-25 pound (0-11 kilogram), STD-753, make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(f) Release the control wheel.

(g) Turn the control wheel counterclockwise until the aileron starts to move.

1) Using a push/pull scale 0-25 pound (0-11 kilogram), STD-753, make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

SUBTASK 27-11-00-820-018

(4) If the control wheels center properly, and breakout forces are within the limits above, then no adjustment is necessary.

SUBTASK 27-11-00-820-019

(5) If the control wheels are not in the center or the breakout forces are out of tolerance, adjust the tension of the springs [63] on the centering unit [61]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Hold the eyebolt [66] while you tighten or loosen the nut [65] in 1/2 turn increments.

NOTE: You must tighten the two eyebolts [66] equally. Tighten the eyebolts [66] to increase the spring forces. Loosen the eyebolts [66] to decrease the spring forces.

(b) Adjust the nuts [65] until the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(c) Tighten the checknuts [64].

(d) Make sure that the shaft [70] can turn freely.

SUBTASK 27-11-00-750-001

(6) After adjustment of breakout forces above, do the following steps to do a check of the breakout forces and make sure that the control wheel is centered properly:

(a) Turn the control wheel clockwise until the aileron starts to move.

1) Make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(b) Release the control wheel.

1) Make sure that the control wheel goes back to the neutral position in 0.0 ±0.4 units of trim (2.4 degrees).

(c) Turn the control wheel counterclockwise until the aileron starts to move.

1) Make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(d) Release the control wheel.

1) Make sure that the control wheel goes back to the neutral position in 0.0 ±0.4 units of trim (2.4 degrees).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-080-004

(1) Remove the adapter, SPL-1674, from the captain's aileron control wheel.

SUBTASK 27-11-00-080-005

(2) Remove the mount, SPL-1670 and the protractor, SPL-1680, from the first officer's control wheel.

SUBTASK 27-11-00-410-006

(3) Install the map holder assembly to the first officer's control wheel.

SUBTASK 27-11-00-080-006

(4) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

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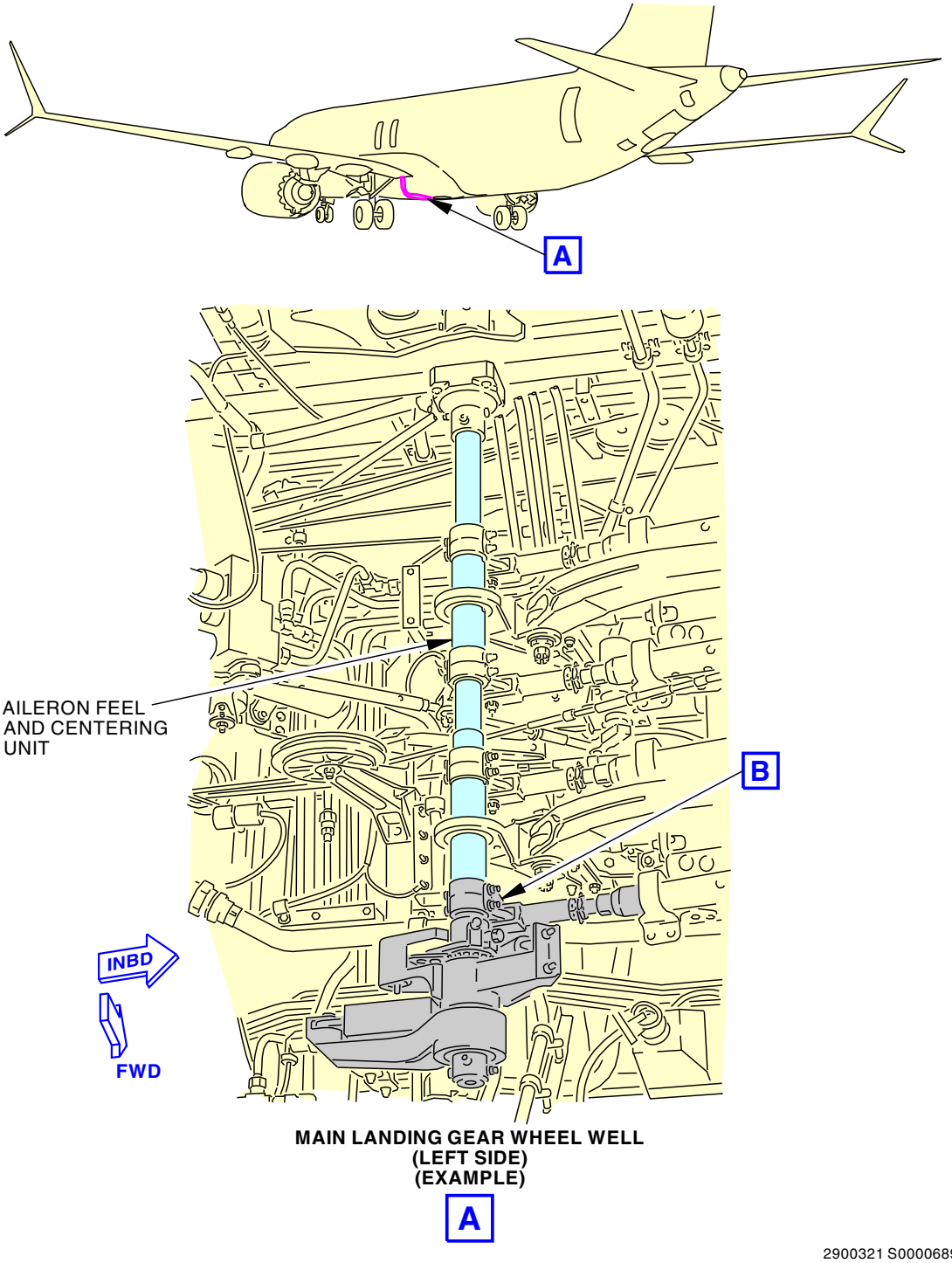
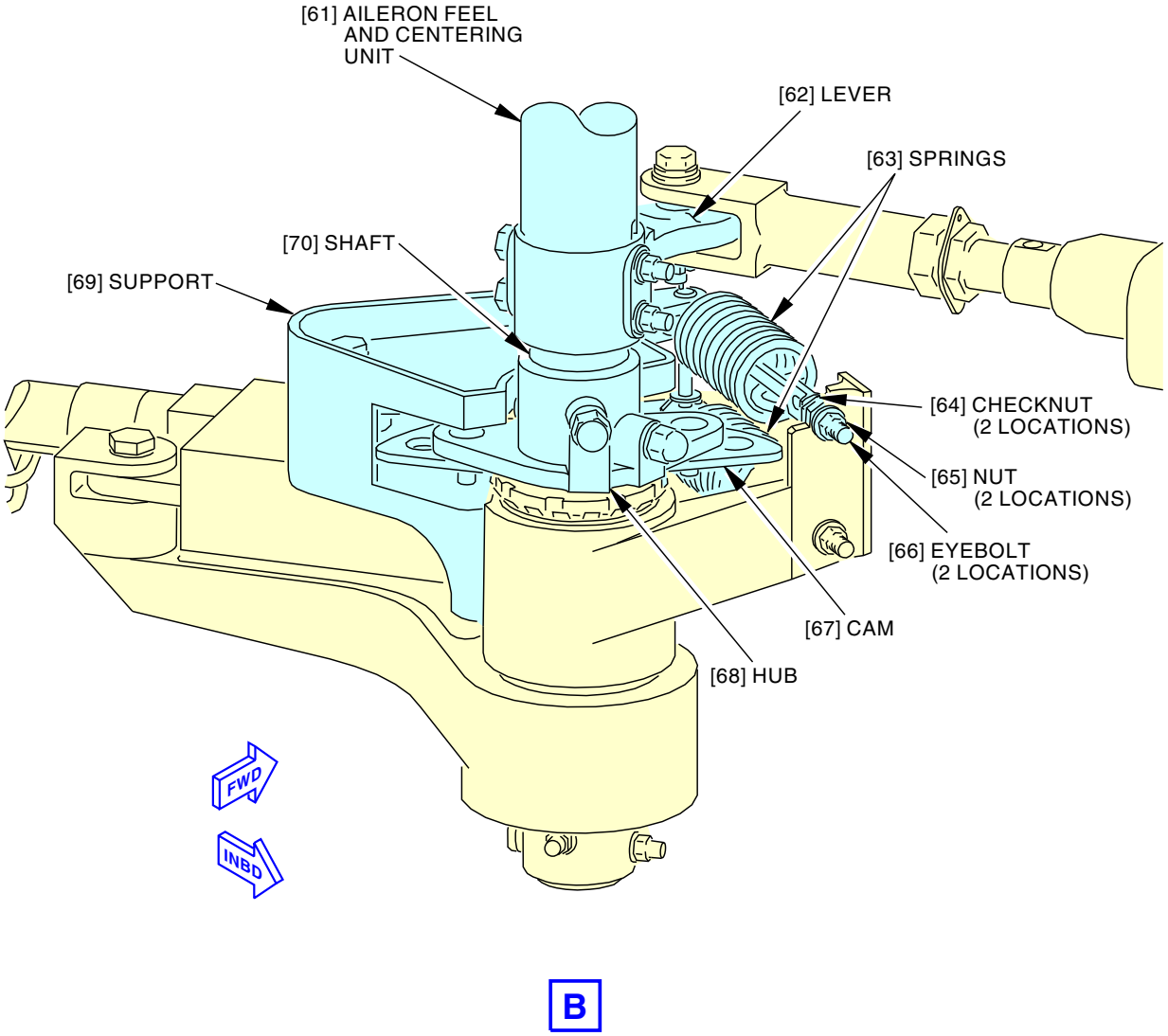


Aileron Feel and Centering Unit Adjustment
Figure 505/27-11-00-990-808 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Aileron Feel and Centering Unit Adjustment
Figure 505/27-11-00-990-808 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-820-806

6. Do A Check of the Aileron System Adjustment

(Figure 501, Figure 504, Figure 506)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1671	Straight Edge - Control Wheel Part #: C27097-1 Supplier: 81205 Part #: SE27-0001 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Check

SUBTASK 27-11-00-480-013

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-00-010-004

(2) Open this access panel:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Do a Check of the Aileron System Adjustment

SUBTASK 27-11-00-820-020

(1) Do a check of the aileron system adjustment.

(a) Attach the straight edge, SPL-1671, on the captain's and first officer's control wheels.

(b) Make sure that a rig pin A/S-4, from the rigging pin kit, SPL-1585, can be freely installed in the aileron bus drum (Figure 501).

1) If a rig pin A/S-4 cannot be freely installed, do this task: Pogo and Power Control Unit (PCU) Adjustment, TASK 27-11-00-820-802.

(c) Remove rig pin A/S-4 from the aileron bus drum.

(d) Remove the straight edge, SPL-1671, from the captain's and first officer's control wheels.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(f) Operate the aileron trim switches on the control stand panel, P8, until the rig pin A/S-15 from the rigging pin kit, SPL-1585, can be freely installed and removed (Figure 501).

(g) Make sure that the captain's control wheel is the center of the neutral position.

1) Gently move the control wheel in the backlash band.

2) Make sure that the center of the backlash band aligns with the protractor zero position.

(h) Make sure that the index mark on the captain's control wheel aligns with the zero mark on the control column.

(i) Attach the straight edge, SPL-1671, on the captain's and first officer's control wheels.

(j) Make sure that the top ends of the control wheels touch the straight edge, SPL-1671.

(k) Make sure that one end of the first officer's control wheel is no more than 0.20 in. (5.1 mm) from the straight edge, SPL-1671.

1) If the control wheels do not align, adjust the cables ACBA and ACBB, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

(l) Make sure that these rig pins, from the rigging pin kit, SPL-1585, can be freely installed and removed (Figure 501):

NOTE: Install these rig pins at the same time.

1) Rig pin A/S-4 in the aileron bus drum

2) Rig pin A/S-15 in the aileron trim actuator.

(m) If the above rig pins cannot be freely installed and removed, adjust the cables AA and AB, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

(n) Remove the straight edge, SPL-1671, from the captain's and first officer's control wheels.

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(o) Make sure that the aileron is in the rig position (Figure 506).

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

1) If the aileron is not in the rig position, adjust the cables ABSA and ABSB, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

(p) Make sure that the aileron balance tab aligns with the aileron.

1) Measure the distance between the rig position of the aileron balance tab [31] to the aileron lower surface (dimension A) (Figure 504).

NOTE: You must measure from the lower aft most point of the aileron balance tab.

a) At the outboard end of the aileron balance tab, make sure that the dimension A is 0.078 ±0.070 in. (2.0 ±1.8 mm) or 1.07 ±0.25 degrees.

2) If the aileron balance tab does not align with the aileron, do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-410-003

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-11-00-860-028

(2) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

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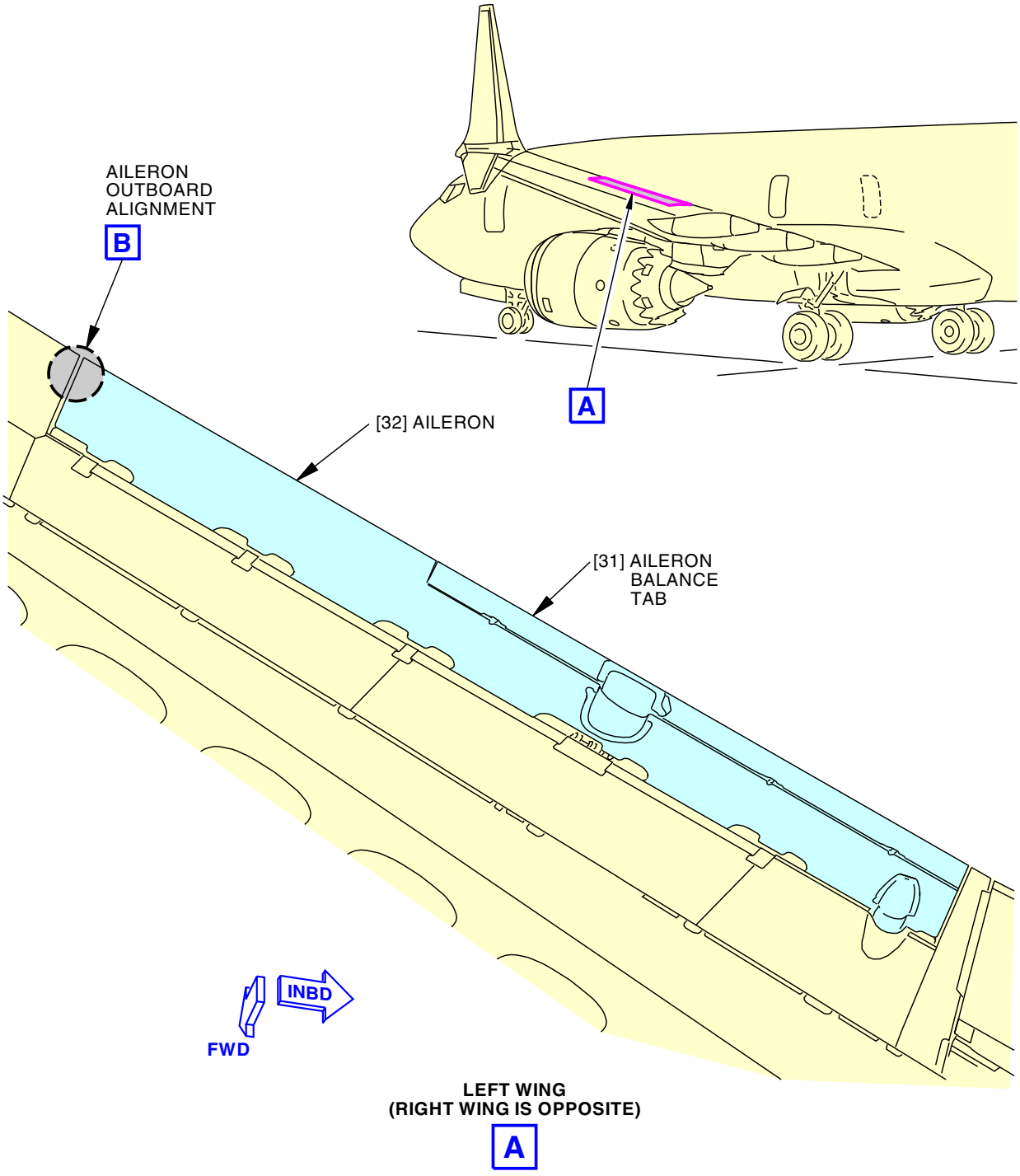

Aileron System Adjustment
Figure 506/27-11-00-990-809 (Sheet 1 of 2)

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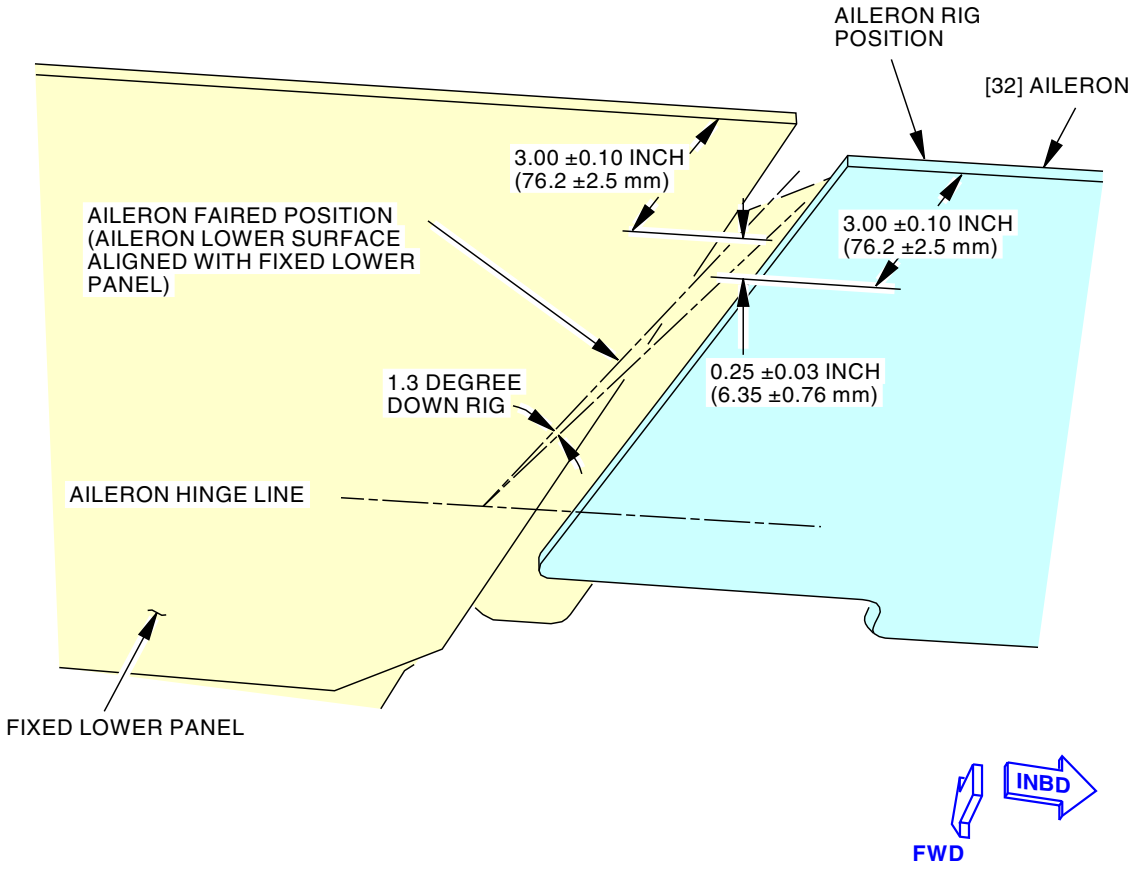

AILERON OUTBOARD ALIGNMENT

B

2412269 S00061530325_V4

Aileron System Adjustment
Figure 506/27-11-00-990-809 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-700-801

7. Aileron Surface Friction and Motion Test

(Figure 506, Figure 507)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-11-00-860-029

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-00-020-001

(2) Disconnect the aileron control rod [81] from the aileron [32]. (Figure 507)

(a) Remove the pin [82], nut [83], washer [84], bushing [85], washer [88] and bolt [89] to disconnect the aileron control rod [81] from the aileron [32].

SUBTASK 27-11-00-860-030

(3) Make sure that the Flap Lever is in the up, retracted position.

D. Do a Test of the Aileron Friction and Motion

SUBTASK 27-11-00-720-001

(1) Do a test of the aileron friction and motion:

NOTE: During this test, the force is positive (+) if you need to push the aileron to get it to a specified position. The force is negative (-) if you need to hold the aileron to keep it at a specified position.

(a) Move the aileron surface to the rig position and release (Figure 506).

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

(b) If the aileron moves away from the rig position, do these steps:

1) Hold the aileron at the rig position with a force scale at 8.75 ±0.50 in. (222.3 ±12.8 mm) aft of the hinge centerline and perpendicular to the aileron chord plane (held negative (-) force).

2) Slowly apply or relax the force as it is necessary until the aileron moves up and down from the rig position.

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a) Measure the force that is necessary to move the aileron up (up positive (+) force).

b) Measure the force that is necessary to move the aileron down (down positive (+) force).

3) Add the up force with the down force.

NOTE: Add the forces with the same signs. Subtract forces with the opposite signs.

4) Make sure the total of the two values is not more than 5 lbf (22.2 N).

(c) If the aileron does not move away from the rig position, do these steps;

1) Slowly apply a force perpendicular to the aileron chord plane 8.75 ±0.50 in. (222.3 ±12.8 mm) aft of the hinge centerline.

2) Measure the force that is necessary to move the aileron up (up force).

3) Measure the force that is necessary to move the aileron down (down force).

4) Add the up force with the down force.

NOTE: Add the forces with the same signs. Subtract forces with the opposite signs.

5) Make sure the total of the two forces is not more than 5 lbf (22.2 N).

(d) Measure the maximum positive force necessary to move the aileron to these specified positions:

1) Make sure that the aileron moves smoothly throughout its travel, and that there is no binding at the aileron hinges and seals.

2) Move the aileron from the rig position to the full down position.

3) Move the aileron from the full down position to the full up position.

4) Move the aileron from the full up position to the rig position.

(e) Make sure the force is not more than 13 lbf (57.8 N) for aileron down.

(f) Make sure the force is not more than 3 lbf (13.3 N) aileron up.

(g) Measure the aileron travel before the aileron touches the wing structure at the upper and lower limits of travel.

NOTE: Apply only enough force to maintain contact while you measure the aileron travel.

1) Make sure the aileron travels a minimum of 3.67 in. (93.2 mm) up before the aileron touches the structure.

2) Make sure the aileron travels a minimum of 3.15 in. (80.0 mm) down before the aileron touches the structure.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-020-002

(1) Connect the aileron control rod [81] to the aileron [32].

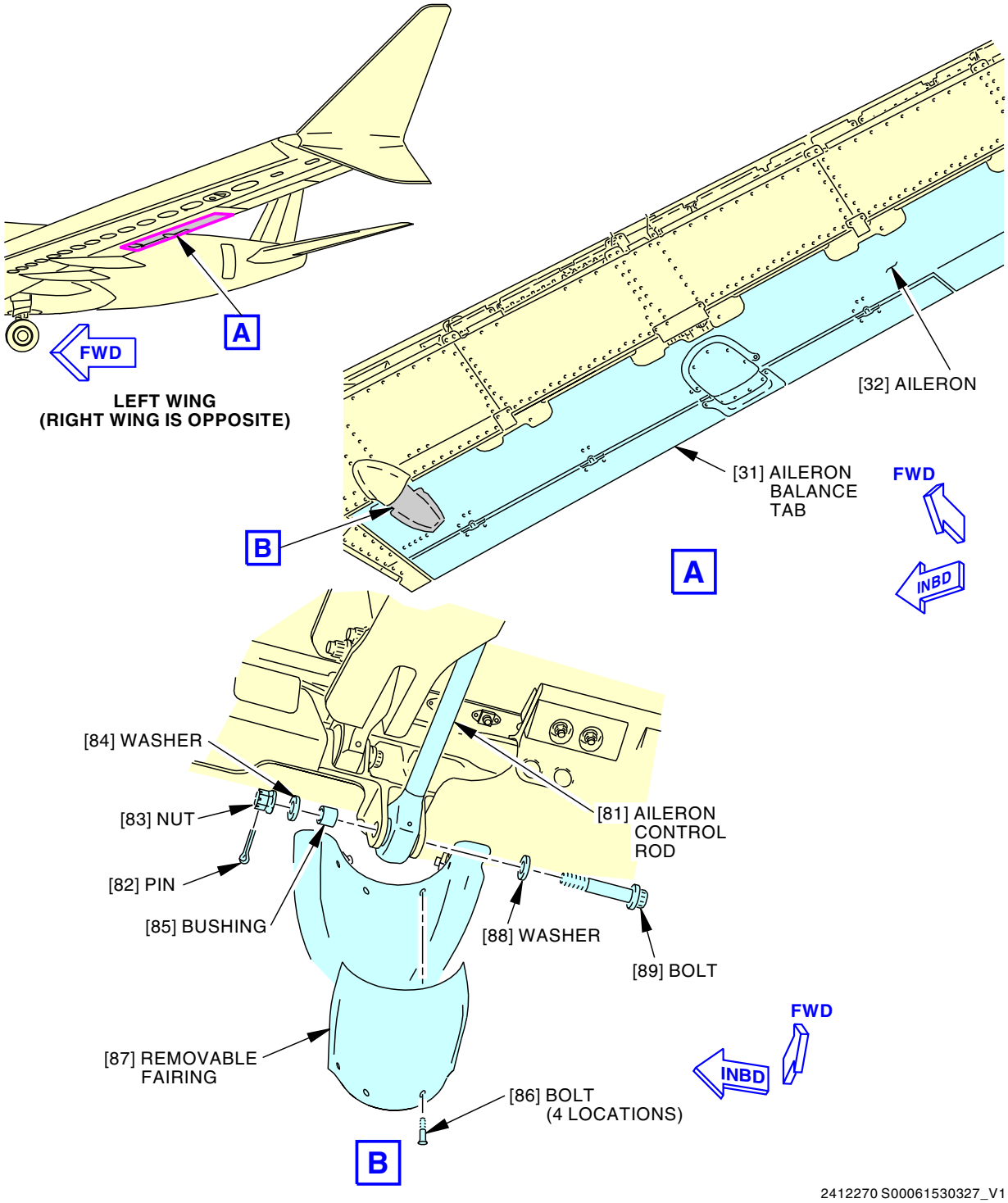
(a) Install the bushing [85], bolt [89], washer [88], washer [84], nut [83], and pin [82] to connect the aileron control rod [81] to the aileron.

SUBTASK 27-11-00-860-031

(2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Surface Friction and Motion Test
Figure 507/27-11-00-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-700-803

8. Manual Reversion Control Friction Test

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205
STD-1019	Wrench - Torque, 0 to 600 in-lbs (0 to 67.78 N·m)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Prepare for the Test

SUBTASK 27-11-00-010-010

(1) Remove the map holder assembly from the first officer's control wheel.

SUBTASK 27-11-00-480-015

(2) Install the mount, SPL-1670, and the protractor, SPL-1680, to the first officer's control wheel.

SUBTASK 27-11-00-480-016

(3) Install the adapter, SPL-1674, to the captain's control wheel.

SUBTASK 27-11-00-860-037

(4) Make sure that the aileron trim system is at the center.

SUBTASK 27-11-00-860-038

(5) Set the protractor, SPL-1680, to zero degrees.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Manual Reversion Control Friction Test

SUBTASK 27-11-00-730-001

(1) Do the manual reversion control friction test:

(a) Use the torque wrench, STD-1019, on the adapter, SPL-1674, to measure the force that is necessary to turn the captain's control wheels in the clockwise direction.

NOTE: If the adapter, SPL-1674, is not available, apply a tangent force to the captain's control wheel at 6.5 in. (165 mm).

1) Turn the control wheel in the clockwise direction until the ailerons start to move.

a) Make sure that the force is 215 in-lb (24.3 N·m) or 33.1 lbf (147.2 N) or less.

2) Continue to turn the control wheel to 20 degrees.

a) Make sure that the force is 243 in-lb (27.5 N·m) or 37.4 lbf (166.4 N) or less.

3) Continue to turn the control wheel to 40 degrees.

a) Make sure that the force is 279 in-lb (31.5 N·m) or 42.9 lbf (190.8 N) or less.

4) Continue to turn the control wheel to 75 degrees.

a) Make sure that the force is 333 in-lb (37.6 N·m) or 51.2 lbf (227.7 N) or less.

(b) Measure the force that is necessary to turn the captain's control wheel in the counterclockwise direction.

NOTE: If the adapter, SPL-1674, is not available, apply a tangent force to the captain's control wheel at 6.5 in. (165 mm) radius.

1) Turn the control wheel in the counterclockwise direction until the ailerons start to move.

a) Make sure that the force is 215 in-lb (24.3 N·m) or 33.1 lbf (147.2 N) or less.

2) Continue to turn the control wheel to 20 degrees.

a) Make sure that the force is 243 in-lb (27.5 N·m) or 37.4 lbf (166.4 N) or less.

3) Continue to turn the control wheel to 40 degrees.

a) Make sure that the force is 279 in-lb (31.5 N·m) or 42.9 lbf (190.8 N) or less.

4) Continue to turn the control wheel to 75 degrees.

a) Make sure that the force is 333 in-lb (37.6 N·m) or 51.2 lbf (227.7 N) or less.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-080-009

(1) Remove the mount, SPL-1670, and the protractor, SPL-1680, from the first officer's control wheel.

SUBTASK 27-11-00-410-005

(2) Install the map holder assembly to the first officer's control wheel.

SUBTASK 27-11-00-080-010

(3) Remove the adapter, SPL-1674, from the captain's control wheel.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-710-801

9. Aileron Response (Operational) Test

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Prepare for the Test

SUBTASK 27-11-00-860-041

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

D. Aileron Response (Operational) Test

SUBTASK 27-11-00-710-003

(1) Do the aileron response test:

(a) Turn the aileron control wheel through full travel in each direction from the neutral position.

1) Make sure the ailerons can move smoothly through the full range of travel.

(b) Remove pressure from the hydraulic system A (TASK 29-11-00-860-805).

(c) Turn the aileron control wheel in the clockwise direction from the neutral position.

1) Make sure the trailing edges of the left aileron moves down and the aileron tab moves up.

2) Make sure the trailing edges of the right aileron moves up and the aileron tab moves down.

(d) Turn the aileron control wheel in the counterclockwise direction from the neutral position.

1) Make sure the trailing edges of the left aileron moves up and the aileron tab moves down.

2) Make sure the trailing edges of the right aileron moves down and the aileron tab moves up.

(e) Remove pressure from the hydraulic system B (TASK 29-11-00-860-805).

(f) Pressurize the hydraulic system A (TASK 29-11-00-860-801)..

(g) Turn the aileron control wheel in the clockwise direction from the neutral position.

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1) Make sure the trailing edges of the left aileron moves down and the aileron tab moves up.

2) Make sure the trailing edges of the right aileron moves up and the aileron tab moves down.

(h) Turn the aileron control wheel in the counterclockwise direction from the neutral position.

1) Make sure the trailing edges of the left aileron moves up and the aileron tab moves down.

2) Make sure the trailing edges of the right aileron moves down and the aileron tab moves up.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-860-042

(1) Remove pressure from the hydraulic system A (TASK 29-11-00-860-805).

——— END OF TASK ———

TASK 27-11-00-700-804

10. Control Wheel Centering Check

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Check

SUBTASK 27-11-00-860-045

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

D. Control Wheel Centering Check

SUBTASK 27-11-00-720-003

(1) Do the centering check:

(a) Turn the captain's control wheel in the clockwise direction from the neutral position (zero units) to 6 units of trim (36 degrees).

(b) Turn the captain's control wheel back to 2 units of trim and release the control wheel.

(c) Make sure the control wheel goes back to the neutral position in 0.0 ±0.4 units of trim (±2.4 degrees).

(d) Turn the captain's control wheel in the counterclockwise direction from the neutral position (zero units) to 6 units of trim.

(e) Turn the captain's control wheel back to 2 units of trim and release the control wheel.

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(f) Make sure the control wheel goes back to the neutral position in 0.0 ±0.4 units of trim (±2.4 degrees).

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-860-046

(1) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

——— END OF TASK ———

TASK 27-11-00-700-805

11. Aileron Control Wheel Force Test

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-11-00-860-049

(1) Make sure that you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-860-050

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THE CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR CAN MOVE SUDDENLY WITH THE PRESSURIZATION OF A HYDRAULIC SYSTEM. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-00-480-017

(3) Install the adapter, SPL-1674, to the captain's control wheel.

NOTE: If the adapter is not available, put a tangent force to the captain's control wheel at a 6.5 in. (165 mm) radius.

SUBTASK 27-11-00-010-011

(4) Remove the map holder assembly from the first officer's control wheel.

SUBTASK 27-11-00-480-018

(5) Install the mount, SPL-1670 and the protractor, SPL-1680, to the first officer's control wheel.

E. Do a Test of the Control Wheel Force

SUBTASK 27-11-00-730-002

(1) Do a check of the control wheel force:

(a) Set the indicator on the protractor, SPL-1680, to zero degrees.

(b) Turn the control wheel clockwise until the aileron starts to move.

1) Make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(c) Continue to turn the control wheel clockwise to 5 degrees.

1) Make sure that the force to turn the control wheel is not more than 35.5 in-lb (4.0 N·m) or 5.5 lbf (24.5 N).

(d) Continue to turn the control wheel clockwise to 20 degrees.

1) Make sure that the force to turn the control wheel is not more than 56.0 in-lb (6.3 N·m) or 8.5 lbf (37.8 N).

(e) Continue to turn the control wheel clockwise to 40 degrees.

1) Make sure that the force to turn the control wheel is not more than 89.5 in-lb (10.1 N·m) or 14.0 lbf (62.3 N).

(f) Continue to turn the control wheel clockwise to 75 degrees.

1) Make sure that the force to turn the control wheel is not more than 123.5 in-lb (14.0 N·m) or 19.0 lbf (84.5 N).

(g) Release the control wheel.

1) Make sure that the control wheel goes back to the neutral position.

(h) Turn the control wheel counterclockwise until the aileron starts to move.

1) Make sure that the force to turn the control wheel is not more than 29.0 in-lb (3.3 N·m) or 4.5 lbf (20.0 N).

(i) Continue to turn the control wheel counterclockwise to 5 degrees.

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1) Make sure that the force to turn the control wheel is not more than 35.5 in-lb (4.0 N·m) or 5.5 lbf (24.5 N).

(j) Continue to turn the control wheel counterclockwise to 20 degrees.

1) Make sure that the force to turn the control wheel is not more than 56.0 in-lb (6.3 N·m) or 8.5 lbf (37.8 N).

(k) Continue to turn the control wheel counterclockwise to 40 degrees.

1) Make sure that the force to turn the control wheel is not more than 89.5 in-lb (10.1 N·m) or 14.0 lbf (62.3 N).

(l) Continue to turn the control wheel counterclockwise to 75 degrees.

1) Make sure that the force to turn the control wheel is not more than 123.5 in-lb (14.0 N·m) or 19.0 lbf (84.5 N).

(m) Release the control wheel.

1) Make sure that the control wheel goes back to the neutral position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-080-011

(1) Remove the adapter, SPL-1674, from the captain's aileron control wheel.

SUBTASK 27-11-00-080-012

(2) Remove the mount, SPL-1670 and the protractor, SPL-1680, from the first officer's control wheel.

SUBTASK 27-11-00-410-007

(3) Install the map holder assembly to the first officer's control wheel.

SUBTASK 27-11-00-080-013

(4) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-11-00-730-801

12. Aileron Trim Response Test

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205

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(Continued)

Reference	Description
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-11-00-860-054

(1) Make sure that you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator.

(2) Remove rig pin A/S-15 from the aileron trim actuator.

SUBTASK 27-11-00-480-019

(3) Install the adapter, SPL-1674, on the captain's control wheel.

NOTE: If the adapter, SPL-1674, is not available, put a tangent force to the captain's control wheel at a 6.5 in. (165.1 mm) radius.

SUBTASK 27-11-00-010-012

(4) Remove the map holder assembly from the first officer's control wheel.

SUBTASK 27-11-00-480-020

(5) Install the mount, SPL-1670, and the protractor, SPL-1680, on the first officer's control wheel.

SUBTASK 27-11-00-860-097

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize hydraulic systems A and B (TASK 29-11-00-860-801).

E. Aileron Trim Response Test

SUBTASK 27-11-00-730-005

(1) Operate the Captain's control wheel through full travel clockwise and counterclockwise a minimum six times.

(a) Turn the captain's control wheel back to the neutral position.

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SUBTASK 27-11-00-730-006

(2) Make sure that the pointer decal on the captain's and first officer's control wheels align with the aileron trim decal (zero unit) to a tolerance of 0.00 ±0.02 in. (0.0 ±0.5 mm).

SUBTASK 27-11-00-730-007

(3) At the same time push and hold the aileron trim switches in the LEFT WING DOWN direction until the trim actuator stops.

(a) Make sure that the two control wheels turn in the counterclockwise direction.

SUBTASK 27-11-00-730-008

(4) Record the necessary time for the actuator to move to full LEFT WING DOWN trim.

(a) Make sure the time is less than 30 seconds.

SUBTASK 27-11-00-730-009

(5) Record the captain's wheel position at full LEFT WING DOWN trim.

(a) Make sure the wheel position is at a minimum 9.5 units.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-017

(6) Manually turn the captain's control wheel to the left stop (105 degrees) counterclockwise.

SUBTASK 27-11-00-730-026

(7) Manually turn and hold the captain's control wheel to the right stop (105 degrees) clockwise.

(a) Make sure that the control wheel moves freely through travel.

SUBTASK 27-11-00-730-027

(8) Release the captain's control wheel.

(a) Make sure that the control wheel goes back to at least 9.5 units counterclockwise position.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-028

(9) Record the captain's wheel position.

SUBTASK 27-11-00-730-029

(10) At the same time push and hold both aileron trim switches until the captain's and first officer's control wheels align with the aileron trim decal (zero unit) to a tolerance of 0.00 ±0.02 in. (0.0 ±0.5 mm)

(a) Shake the Captain's control wheel to get zero trim units.

SUBTASK 27-11-00-730-030

(11) At the same time push and hold the aileron trim switches in the RIGHT WING DOWN direction until the trim actuator stops.

(a) Make sure that the two control wheels turn in the clockwise direction.

SUBTASK 27-11-00-730-031

(12) Record the necessary time for the actuator to move to full RIGHT WING DOWN trim.

(a) Make sure the time is less than 30 seconds.

SUBTASK 27-11-00-730-032

(13) Record the captain's wheel position at full RIGHT WING DOWN trim.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure the wheel position is at a minimum 9.5 units.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-033

(14) Manually turn the captain's control wheel to the left stop (105 degrees) clockwise.

SUBTASK 27-11-00-730-034

(15) Manually turn and hold the captain's control wheel to the right stop (105 degrees) counterclockwise.

(a) Make sure that the control wheel moves freely through travel.

SUBTASK 27-11-00-730-035

(16) Release the captain's control wheel.

(a) Make sure that the control wheel goes back to at least 9.5 units clockwise position.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-036

(17) Record the captain's wheel position.

SUBTASK 27-11-00-730-037

(18) At the same time push and hold the aileron trim switches in the RIGHT WING DOWN direction until the trim actuator stops.

(a) Make sure that the control wheel is at least 9.5 units clockwise position.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-038

(19) Turn and hold the captain's control wheel at 75 degrees counterclockwise.

SUBTASK 27-11-00-730-039

(20) Record the force to hold the captain's wheel at 75 degrees counterclockwise.

(a) Make sure that the force to hold the control wheel is not more than 137 in-lb (15.5 N·m) or 21.0 lbf (93.4 N).

SUBTASK 27-11-00-730-040

(21) Release the captain's control wheel.

SUBTASK 27-11-00-730-041

(22) At the same time push and hold the aileron trim switches in the LEFT WING DOWN direction until the trim actuator stops.

(a) Make sure that the control wheel is at least 9.5 units counterclockwise position.

NOTE: When you read the control wheel position, shake the captain's control wheel to make sure that the control system is centered in the trim detent.

SUBTASK 27-11-00-730-042

(23) Turn and hold the captain's control wheel at 75 degrees clockwise.

SUBTASK 27-11-00-730-043

(24) Record the force to hold the captain's wheel at 75 degrees clockwise.

(a) Make sure that the force to hold the control wheel is not more than 137 in-lb (15.5 N·m) or 21.0 lbf (93.4 N).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-730-044

(25) Release the captain's control wheel.

SUBTASK 27-11-00-730-045

(26) At the same time push and hold both aileron trim switches in the RIGHT WING DOWN direction until the captain's and first officer's control wheels align with the aileron trim decal (zero unit) to a tolerance of 0.00 ±0.02 in. (0.0 ±0.5 mm)

(a) Shake the Captain's control wheel to get zero trim units.

SUBTASK 27-11-00-730-046

(27) At the same time push and hold the FORWARD aileron trim switch in the LEFT WING DOWN direction for a minimum of 3 seconds.

(28) At the same time push and hold the FORWARD aileron trim switch in the RIGHT WING DOWN direction for a minimum of 3 seconds.

(a) Make sure that the control wheels do not move.

SUBTASK 27-11-00-730-047

(29) At the same time push and hold the AFT aileron trim switch in the LEFT WING DOWN direction for a minimum of 3 seconds.

(30) At the same time push and hold the AFT aileron trim switch in the RIGHT WING DOWN direction for a minimum of 3 seconds.

(a) Make sure that the control wheels do not move.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-860-055

(1) Remove power from hydraulic systems A and B (TASK 29-11-00-860-805).

SUBTASK 27-11-00-080-014

(2) Remove the adapter, SPL-1674, from the captain's aileron control wheel.

SUBTASK 27-11-00-080-015

(3) Remove the mount, SPL-1670, and the protractor, SPL-1680, from the first officer's control wheel.

SUBTASK 27-11-00-410-008

(4) Install the map holder assembly to the first officer's control wheel.

——— END OF TASK ———

TASK 27-11-00-710-802

13. Transfer Mechanism Operational Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Prepare for the Test

SUBTASK 27-11-00-860-058

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THE CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR CAN MOVE SUDDENLY WITH THE PRESSURIZATION OF A HYDRAULIC SYSTEM. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-00-210-002

(2) Make sure the FLT CONTROL A and B switches, on the forward overhead panel, P5, are ON.

SUBTASK 27-11-00-860-059

(3) Make sure that the aileron trim control system is at the neutral position.

D. Transfer Mechanism Operational Test

SUBTASK 27-11-00-710-004

(1) Do the operational test of the transfer mechanism:

(a) Operate the two aileron trim switches to put the aileron control wheels to the neutral (zero unit) position.

(b) Shake the control wheel to center the aileron system.

(c) Turn the captain's control wheel fully clockwise and hold.

(d) Turn the first officer's control wheel counterclockwise through neutral and beyond 10 units left aileron, and return the control wheel to full clockwise.

1) After the initial breakout, the force required to continue wheel motion should increase steadily and smoothly.

Verify that there is no binding or sudden increase in the force required to turn the wheel.

(e) Turn the captain's control wheel fully counterclockwise and hold.

(f) Turn the first officer's control wheel clockwise through neutral and beyond 10 units right aileron, and return the control wheel to full counterclockwise.

1) After the initial breakout, the force required to continue wheel motion should increase steadily and smoothly.

Verify that there is no binding or sudden increase in the force required to turn the wheel.

(g) Return the captain's control wheel to neutral.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-860-060

(1) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-700-806

14. Transfer Mechanism Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-11-00-860-063

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-00-860-098

(2) Make sure that the FLT CONTROL A and B switches, on the P5 forward overhead panel, are in the ON position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-860-064

(3) Make sure that you can freely install and remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator (Figure 501).

SUBTASK 27-11-00-010-013

(4) Remove the map holder assembly from the captain's control wheel:

(a) Remove the three screws that hold the map holder assembly to the control wheel.

NOTE: The three screws will be used to install the torque adapter in the next subtask.

(b) Remove the map holder assembly.

SUBTASK 27-11-00-480-021

(5) Install the torque adapter, SPL-1674, on the captain's control wheel.

NOTE: If the adapter, SPL-1674, is not available, apply a tangent force to the captain's control wheel at 6.5 in. (165 mm) radius.

(a) Use the three screws from the map holder assembly to install the torque adapter.

SUBTASK 27-11-00-860-100

(6) Do one of the steps that follow:

(a) Use the MAX Display System (MDS) to view the captain and first officer's control column positions during this test.

1) Follow the steps on the MDS:

a) MAINT

b) MAINT DATA PGS

c) 27 FLIGHT CONTROL - DISPLAY

d) CAPT CTRL WHL and SCE FO CTRL WHL.

(b) Install the mount, SPL-1670, and protractor, SPL-1680, to the captain's control wheel.

E. Transfer Mechanism Functional Test

SUBTASK 27-11-00-720-004

(1) Do the functional test of the transfer mechanism:

(a) Operate the two aileron trim switches to put the aileron control wheels to the neutral (zero unit) position.

(b) Shake the control wheel to center the aileron system.

(c) Hold the first officer's control wheel at the neutral position.

(d) Turn the captain's control wheel clockwise from the neutral position.

1) Make sure that the breakout force is 240 in-lb (27 N·m) - 436 in-lb (49 N·m) or 37 lbf (165 N) - 67 lbf (298 N).

NOTE: The “breakout” force occurs when the captain's control wheel starts to move with the first officer's control wheel hold in the neutral position.

2) Make sure that the force at 75 degrees is 330 in-lb (37 N·m) - 676 in-lb (76 N·m) or 51 lbf (227 N) - 104 lbf (463 N).

(e) Turn the captain's control wheel counterclockwise from the neutral position.

1) Make sure that the breakout force is 240 in-lb (27 N·m) - 436 in-lb (49 N·m) or 37 lbf (165 N) - 67 lbf (298 N).

NOTE: The “breakout” force occurs when the captain's control wheel starts to move with the first officer's control wheel hold in the neutral position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the force at 75 degrees is 330 in-lb (37 N·m) - 676 in-lb (76 N·m) or 51 lbf (227 N) - 104 lbf (463 N).

(f) Turn and hold the first officer's control wheel clockwise at 80 degrees from the neutral position.

(g) Turn the captain's control wheel counterclockwise until the transfer mechanism stops touch.

1) Make sure that the captain's control wheel turns a minimum of 138 degrees from the starting position (80 degrees clockwise).

2) Make sure that the transfer mechanism can move freely when you turn the control wheel.

(h) Turn and hold the first officer's control wheel counterclockwise at 80 degrees from the neutral position.

(i) Turn the captain's control wheel clockwise until the transfer mechanism stops touch.

1) Make sure that the captain's control wheel turns a minimum of 138 degrees from the starting position (80 degrees counterclockwise).

2) Make sure that the transfer mechanism can move freely when you turn the control wheel.

(j) Turn and hold the first officer's control wheel clockwise at 80 degrees from the neutral position.

(k) Turn the captain's control wheel counterclockwise 130 degrees from the starting position (80 degrees clockwise).

1) Make sure that the maximum force to turn the captain's control wheel is 900 in-lb (102 N·m) or 138 lbf (614 N).

(l) Turn and hold the first officer's control wheel counterclockwise at 80 degrees from the neutral position.

(m) Turn the captain's control wheel clockwise 130 degrees from the starting position (80 degrees counterclockwise).

1) Make sure that the maximum force to turn the captain's control wheel is 900 in-lb (102 N·m) or 138 lbf (614 N).

(n) Return both control wheels to neutral.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-860-065

(1) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-11-00-080-016

(2) If applicable, remove the mount, SPL-1670, and protractor, SPL-1680, from the captain's control wheel.

SUBTASK 27-11-00-000-001

(3) Remove the torque adapter, SPL-1674, from the captain's control wheel:

(a) Remove the three screws that hold the torque adapter to the control wheel.

(b) Remove the torque adapter, SPL-1674.

SUBTASK 27-11-00-410-009

(4) Install the map holder assembly to the captain's control wheel:

(a) Pup the map holder assembly in place on the captain's control wheel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Install the three screws that hold the map holder assembly.

SUBTASK 27-11-00-860-099

(5) Make sure that the FLT CONTROL A and B switches, on the P5 forward overhead panel, are in the ON position.

——— END OF TASK ———

TASK 27-11-00-700-807

15. Control Wheel Travel Stop Test

NOTE: This procedure is a scheduled maintenance task.

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Do a Test of the Control Wheel Travel Stop

SUBTASK 27-11-00-020-005

(1) Remove the map holder assembly from the first officer's control wheel.

SUBTASK 27-11-00-480-022

(2) Install the mount, SPL-1670 and the protractor, SPL-1680, on the first officer's control wheel.

(a) Set the indicator on the protractor, SPL-1680, to zero degree.

SUBTASK 27-11-00-720-005

(3) Do the test of the control wheel travel stop:

(a) Turn the captain's control wheel clockwise until the control wheel stops.

1) Make sure the first officer's control wheel turns a minimum of 105 degrees.

NOTE: A minimum of 105 degrees control wheel travel is required for the captain's control wheel to touch the forward stop. This large deflection can be necessary for certain flight conditions in manual reversion.

The system reaches the aft quadrant stop at approximately 90 degrees. Additional force will be necessary to stretch the control cable past 90 degrees until the control wheel stops.

(b) Turn the captain's control wheel counterclockwise until the control wheel stops.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure the first officer's control wheel moves freely and turns a minimum of 105 degrees.

NOTE: Turn the control wheel 105 degrees clockwise to make sure the minimum travel requirements of the control wheel are met and that there are no obstructions in the control column and control wheel installations. A minimum of 105 degrees control wheel travel is required for the captain's control wheel to touch the forward stop. This large deflection can be necessary for certain flight conditions in manual reversion. The system reaches the aft stops at approximately 90 degrees. Apply additional force to turn the control wheel more than 90-95 degrees. The control cables stretch slightly when the control wheels are turned beyond 90 degrees.

SUBTASK 27-11-00-080-017

(4) Remove the protractor, SPL-1680 and the mount, SPL-1670, from the first officer's control wheel.

SUBTASK 27-11-00-420-003

(5) Install the map holder assembly to the first officer's control wheel.

——— END OF TASK ———

TASK 27-11-00-700-808

16. Control Wheel Travel Interference Test

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Control Wheel Travel Interference Test

SUBTASK 27-11-00-700-002

(1) Do the test of the control wheel travel interference:

(a) Hold the control column full forward and do the following steps:

1) Turn the control wheel to the full left (counterclockwise) position.

a) Make sure that you make a slow and deliberate movement of the control wheel.

NOTE: If you move the control wheel too quickly, the binding will not be felt.

2) Make sure that the control wheel travel is smooth through the full turn.

3) Turn the control wheel to the center position.

4) Turn the control wheel to the full right (clockwise) position.

a) Make sure that you make a slow and deliberate movement of the control wheel.

NOTE: If you move the control wheel too quickly, the binding will not be felt.

5) Make sure that the control wheel travel is smooth through the full turn.

6) Turn the control wheel to the center position.

(b) Hold the control column full aft and do the following steps:

1) Turn the control wheel to the full left (counterclockwise) position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that you make a slow and deliberate movement of the control wheel.

NOTE: If you move the control wheel too quickly, the binding will not be felt.

2) Make sure that the control wheel travel is smooth through the full turn.

3) Turn the control wheel to the center position.

4) Turn the control wheel to the full right (clockwise) position.

a) Make sure that you make a slow and deliberate movement of the control wheel.

NOTE: If you move the control wheel too quickly, the binding will not be felt.

5) Make sure that the control wheel travel is smooth through the full turn.

6) Turn the control wheel to the center position.

7) Return the control column to the neutral position.

——— END OF TASK ———

TASK 27-11-00-700-809

17. Aileron Balance Tab Position Test

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

B. Aileron Balance Tab Position Test

SUBTASK 27-11-00-720-006

(1) Do a test of the position of the aileron LEFT balance tab:

NOTE: For all aileron tab measurements in this test, measure the distances from the LOWER surface of the aileron tab at the tip of the trailing edge to the LOWER surface of the aileron at the tip of the trailing edge.

(a) Set the aileron at the rig position (Figure 506).

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

(b) Measure the vertical distance from the tip of the outboard trailing edge of the aileron tab to the tip of the adjacent aileron trailing edge.

1) Make sure the distance is 0.078 ±0.070 in. (2.0 ±1.8 mm).

(c) Manually move the aileron DOWN so that the tip of the outboard lower trailing edge of the aileron is 3.39 ±0.10 in. (86.1 ±2.5 mm) below the tip of the lower trailing edge of the adjacent fixed trailing edge surface.

(d) Measure the distance from the tip of the lower surface of the aileron tab to the tip of the lower surface of the adjacent aileron trailing edge.

1) Make sure the aileron balance tab moves UP 0.88 ±0.10 in. (22.4 ±2.6 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Manually move the aileron UP so that the tip of the outboard lower trailing edge of the aileron is 4.59 ±0.10 in. (116.6 ±2.6 mm) above the tip of the lower trailing edge of the adjacent fixed trailing edge surface.

(f) Measure the distance from the tip of the lower surface of the aileron tab to the tip of the lower surface of the adjacent aileron trailing edge.

1) Make sure the aileron balance tab moves DOWN 1.14 ±0.10 in. (29.0 ±2.6 mm).

SUBTASK 27-11-00-720-007

(2) Do a test of the position of the aileron RIGHT balance tab:

NOTE: For all aileron tab measurements in this test, measure the distances from the LOWER surface of the aileron tab at the tip of the trailing edge to the LOWER surface of the aileron at the tip of the trailing edge.

(a) Set the aileron at the rig position (Figure 506).

NOTE: The aileron rig position is measured 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 ±0.1 in. (76.2 ±2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.25 ±0.03 in. (6.35 ±0.76 mm).

(b) Measure the vertical distance from the tip of the outboard trailing edge of the aileron tab to the tip of the adjacent aileron trailing edge.

1) Make sure the distance is 0.078 ±0.070 in. (2.0 ±1.8 mm).

(c) Manually move the aileron DOWN so that the tip of the outboard lower trailing edge of the aileron is 3.39 ±0.10 in. (86.1 ±2.5 mm) below the tip of the lower trailing edge of the adjacent fixed trailing edge surface.

(d) Measure the distance from the tip of the lower surface of the aileron tab to the tip of the lower surface of the adjacent aileron trailing edge.

1) Make sure the aileron balance tab moves UP 0.88 ±0.10 in. (22.4 ±2.5 mm).

(e) Manually move the aileron UP so that the tip of the outboard lower trailing edge of the aileron is 4.59 ±0.10 in. (116.6 ±2.6 mm) above the tip of the lower trailing edge of the adjacent fixed trailing edge surface.

(f) Measure the distance from the tip of the lower surface of the aileron tab to the tip of the lower surface of the adjacent aileron trailing edge.

1) Make sure the aileron balance tab moves DOWN 1.14 ±0.10 in. (29.0 ±2.5 mm).

——— END OF TASK ———

TASK 27-11-00-700-810

18. Aileron Travel Test

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Prepare for the Test

SUBTASK 27-11-00-860-074

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THE CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR CAN MOVE SUDDENLY WITH THE PRESSURIZATION OF A HYDRAULIC SYSTEM. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-00-010-014

(2) Remove the map holder assembly from the captain's aileron control wheel.

SUBTASK 27-11-00-480-023

(3) Install the mount, SPL-1670 and the protractor, SPL-1680 to the captain's aileron control wheel.

D. Aileron Travel Test

SUBTASK 27-11-00-730-004

(1) Do a test of the aileron travel:

(a) Operate the captain's aileron control wheel through at least 6 full cycles then return the wheel to neutral position.

(b) Turn the captain's aileron control wheel more than 87 degrees counterclockwise from the neutral position and hold.

(c) Measure and record the distance between the outboard lower trailing edge of the aileron and the lower trailing edge of the adjacent fixed trailing structure for both the left and right ailerons.

1) Make sure that the left aileron moves up 4.83 ±0.20 in. (122.7 ±5.1 mm).

2) Make sure that the right aileron moves down 3.63 ±0.20 in. (92.2 ±5.1 mm).

3) Make sure that the aileron balance tab moves in the opposite direction to the aileron.

(d) Turn the captain's aileron control wheel more than 87 degrees clockwise from the neutral position and hold.

(e) Measure and record the distance between the outboard lower trailing edge of the aileron and the lower trailing edge of the adjacent fixed trailing structure for both the left and right ailerons.

1) Make sure that the right aileron moves up 4.83 ±0.20 in. (122.7 ±5.1 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the left aileron moves down 3.63 ±0.20 in. (92.2 ±5.1 mm).

3) Make sure that the aileron balance tab moves in the opposite direction to the aileron.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-080-018

(1) Remove the mount, SPL-1670 and the protractor, SPL-1680 from the captain's aileron control wheel.

SUBTASK 27-11-00-410-010

(2) Install the map holder assembly to the captain's aileron control wheel.

SUBTASK 27-11-00-860-075

(3) To remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-11-00-720-801

19. Aileron Power Control Unit (PCU) Pogos - Functional Test

(Figure 501 and Figure 508)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to do a check of the force that is necessary to extend each pogo of the aileron Power Control Unit (PCU).

(2) This task is applicable for the system A and B PCUs.

B. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1749	Tool - Lock Equipment, Aileron/Elevator PCU Input Rod (POGO) Part #: C27066-1 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Aileron Power Control Unit (PCU) Pogos Functional Test

SUBTASK 27-11-00-480-026

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 27-11-00-020-003

(2) Make sure that you can freely install and remove rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim actuator (Figure 501).

SUBTASK 27-11-00-860-077

(3) Remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-11-00-280-001

(4) Do a functional test of the system A (lower) pogo.

CAUTION MAKE SURE THAT THE TOOL IS INSTALLED CORRECTLY. IF YOU DO NOT OBEY, DAMAGE TO THE LOCKWIRE CAN OCCUR

(a) Install a tool, SPL-1749, on the system A (lower) aileron PCU piston (Figure 508).

(b) Turn the Captain's control wheel clockwise from the neutral position until system A (lower) pogos extend.

NOTE: Approximately 100 lbf (445 N) force is necessary to turn the control wheel.

(c) Make sure that the pogos extend approximately 0.20 in. (5.1 mm) minimum.

NOTE: Approximately 7 units of wheel required.

(d) Return the Captain's control wheel to the neutral position.

(e) Make sure that all four pogos retract to the original position.

SUBTASK 27-11-00-280-002

(5) Do a functional test of the system B (upper) pogo.

(a) Remove a tool, SPL-1749, from the system A (lower) aileron PCU piston.

CAUTION MAKE SURE THAT THE TOOL IS INSTALLED CORRECTLY. IF YOU DO NOT OBEY, DAMAGE TO THE LOCKWIRE CAN OCCUR

(b) Install the tool, SPL-1749, on the system B (upper) aileron PCU piston (Figure 508).

(c) Turn the Captain's control wheel clockwise from the neutral position until system B (upper) pogos extend.

NOTE: Approximately 100 lbf (445 N) force is necessary to turn the control wheel.

(d) Make sure that the pogos extend approximately 0.20 in. (5.1 mm) minimum.

NOTE: Approximately 7 units of wheel required.

(e) Return the Captain's control wheel to the neutral position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Make sure that the pogos retract to the original position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-00-020-006

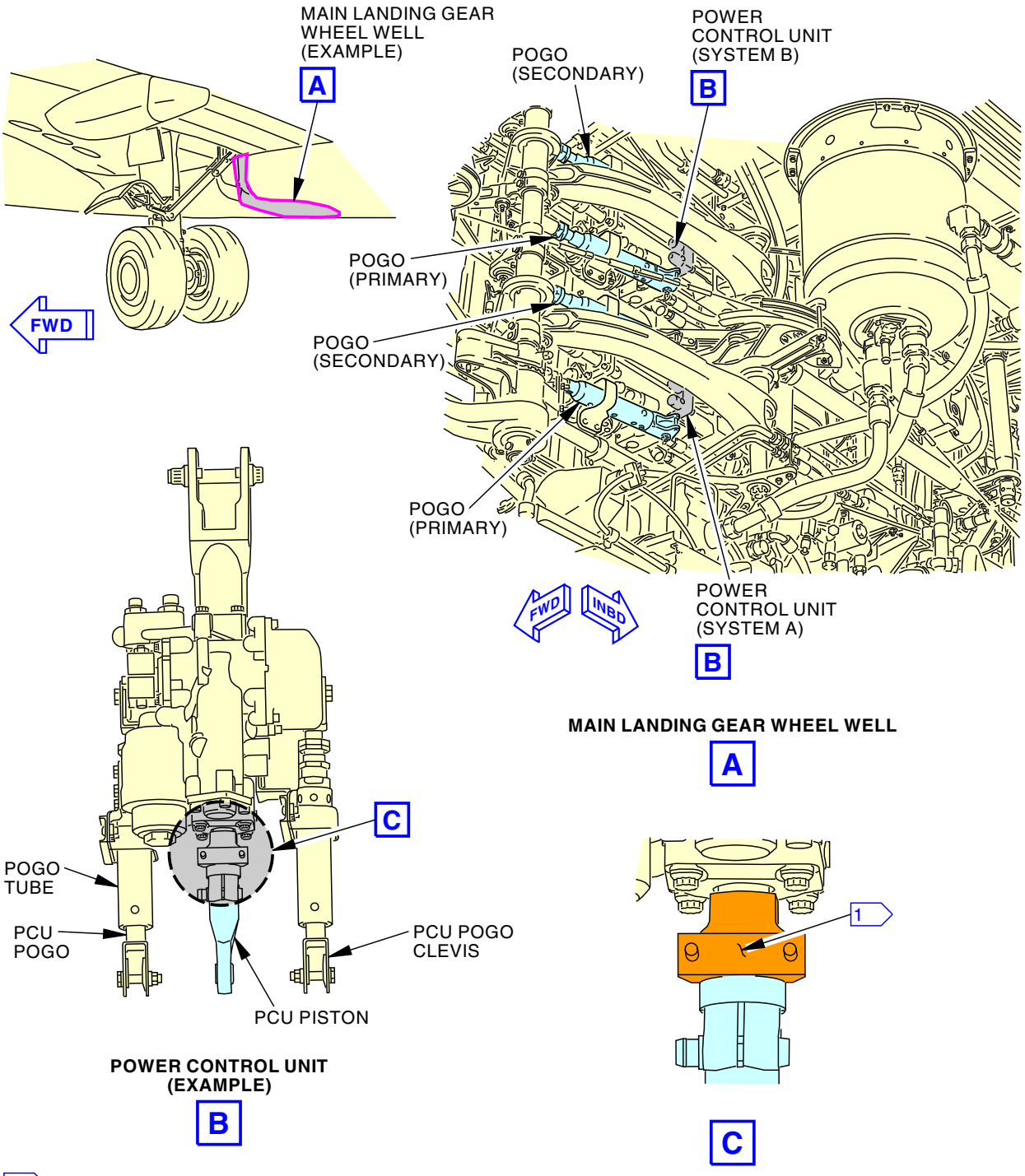
(1) Remove a tool, SPL-1749, from the system B (upper) aileron PCU piston.

SUBTASK 27-11-00-020-007

(2) Do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Power Control Unit (PCU) Pogos Functional Test
Figure 508/27-11-00-990-813

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-750-801

20. Flight Test to Find and Correct Asymmetrical Flight Control Forces

A. General

(1) An aileron system flight test to find and correct asymmetrical flight control forces is necessary after any of the following maintenance procedures:

(a) For the aileron:

1) Installation of a replacement aileron.

NOTE: Replacement of a new aileron, or one that is not the same as the one that was originally on the airplane, requires an aileron system flight test.

NOTE: A flight test is not required if the same ailerons that were removed from the airplane are re-installed without adjustment, modification, or repair.

2) Installation of an aileron that was repaired, repainted, or reworked and was subsequently rebalanced, either by on-jig or calculation method, and required adjustment of the aileron balance adjust weights (SRM 51-60).

NOTE: Any aileron which has been repaired, repainted, or reworked must meet the aerodynamic smoothness requirements of SRM 51-10-01.

3) Removal or replacement of the aileron front spar hinge bearing nearest to the tab control rods.

4) Replacement of any of the following components of the hinge bearing support fitting within the aileron front spar:

a) Installation of a replacement hinge at any of the aileron positions.

b) Installation of a replacement bearing support fitting at any of the aileron positions.

c) Installation of a replacement bearing in the aileron front support hinge at the inboard position, nearest the tab control rods.

NOTE: Installation of new aileron hinge bearings (except the one nearest the tab control rods) does not make a flight test necessary if the original bearing support fittings are installed in their original locations.

5) Installation of a replacement aileron rear spar tab hinge bearing support fitting.

NOTE: Installation of new tab hinge bearings does not make a flight test necessary if the original bearing support fittings are installed in their original locations.

(b) For the aileron tab:

1) Installation of a replacement aileron balance tab.

NOTE: Replacement of a new aileron tab, or one that is not the same as the one that was originally on the airplane, requires an aileron system flight test.

NOTE: A flight test is not required if the same aileron tab that was removed is re-installed without adjustment, modification, or repair.

2) Installation of a replacement front spar hinge of the aileron balance tab.

3) Installation of replacement bushings on the aileron balance tab front spar hinge nearest the aileron tab control rods.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) After an adjustment or replacement of an aileron tab control rod.

NOTE: For each aileron balance tab, if both control rods are adjusted, then flight test is necessary.

NOTE: If only one control rod is adjusted, and you can verify that the remaining rod had not been replaced or adjusted since the last flight test, then flight test is not necessary.

NOTE: If only one control rod is adjusted, and you can not verify that the remaining rod had not been replaced or adjusted since the last flight test, then flight test is necessary.

5) Installation of an aileron tab that was repaired, repainted, or reworked and required adjustment of the aileron tab adjust weights (SRM 51-60).

NOTE: Any aileron tab which has been repaired, repainted, or reworked must meet the aerodynamic smoothness requirements of SRM 51-10-01.

B. References

Reference	Title
27-09-71-820-802	Aileron Balance Tab Adjustment to Equalize Lateral Manual Reversion Forces (P/B 501)
27-09-71-993-801	Table: Lateral Trim Limits (P/B 501)
27-21-00-820-805	Control Rod for Standby Rudder Power Control Unit Adjustment (P/B 501)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Test

SUBTASK 27-11-00-820-021

(1) Adjust the applicable system or systems before the flight test if you get these conditions (Table 27-09-71-993-801):

(a) The aileron trim is more than 3/4 unit at .78 mach and more than 37,000 feet, 3/4 unit at 250 knots and 10,000 to 17,000 feet, or more than 1 unit at any configuration other than gear up and flaps up.

(b) The rudder trim is more than 1/2 unit left or 1 unit right at .78 mach and more than 37,000 feet, 3/4 units at 250 knots and 10,000 to 17,000 feet, or 1 unit at any configuration other than gear up and flaps up.

SUBTASK 27-11-00-210-005

(2) Make sure that the airspeed is 250 knots.

SUBTASK 27-11-00-860-078

(3) Make sure that the flight altitude is 10,000 to 17,000 feet.

SUBTASK 27-11-00-860-079

(4) Make sure that the flaps are up.

SUBTASK 27-11-00-860-080

(5) Make sure that all persons are seated.

SUBTASK 27-11-00-860-081

(6) Make sure that the aileron trim is not more than 3/4 unit.

SUBTASK 27-11-00-860-082

(7) Make sure that the rudder trim is not more than 3/4 unit.

F. Flight Test

SUBTASK 27-11-00-860-083

(1) Move the control wheel to the neutral position.

SUBTASK 27-11-00-860-084

(2) Set the SPOILER A and B switches to OFF.

SUBTASK 27-11-00-860-085

(3) Make sure that the FLT CONTROL A and FLT CONTROL B switches are ON.

SUBTASK 27-11-00-860-086

(4) Set the FLT CONTROL A switch to OFF.

NOTE: The airplane may pitch up or down during transition.

SUBTASK 27-11-00-860-087

(5) Carefully move the elevators, ailerons, and rudder.

(a) Make sure that the control forces and operation do not change.

SUBTASK 27-11-00-860-088

(6) Set the FLT CONTROL A switch to ON.

SUBTASK 27-11-00-860-089

(7) Set the FLT CONTROL B switch to OFF.

NOTE: The airplane may pitch up or down during transition.

SUBTASK 27-11-00-860-090

(8) Set the FLT CONTROL A switch to ON.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the control forces and operation do not change.

SUBTASK 27-11-00-860-091

(9) Set the FLT CONTROL B switch to STBY RUD.

SUBTASK 27-11-00-860-092

(10) Set the FLT CONTROL A switch to OFF.

NOTE: The airplane may pitch up or down during transition.

SUBTASK 27-11-00-280-003

(11) When hydraulics are switched off for the test, apply pitch and roll control input as required to maintain steady level flight.

SUBTASK 27-11-00-750-002

(12) Do these steps to find and correct asymmetrical flight control forces:

(a) Trim the airplane with the rudder to keep wings level flight.

(b) Make sure that the rudder trim does not change by more than 2 units.

1) If the change is more than 2 units, do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

2) If the standby rudder is in adjustment, do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

(c) Make a note if there is a roll tendency.

(d) Turn the control wheel clockwise 30 degrees.

(e) Turn the control wheel counterclockwise 30 degrees.

(f) Make sure that the control wheel forces are symmetrical.

1) If the control wheel forces are not symmetrical by a ratio of 2 to 1 or more, then use the tool to measure the control wheel forces.

a) Use a force gauge, COM-1557, to push down on the right handgrip knob of the control wheel, until the wheel is turned 30 degrees clockwise.

b) Measure the control wheel force.

c) Use a force gauge, COM-1557, to push down on the left handgrip knob of the control wheel, until the wheel is turned 30 degrees counterclockwise.

d) Measure the control wheel force.

e) If the control wheel force in one direction is 2 or more times the force in the other direction, do this task: Aileron Balance Tab Adjustment to Equalize Lateral Manual Reversion Forces, TASK 27-09-71-820-802.

f) If the control wheel force in one direction is less than 2 times the force in the other direction, no action is necessary.

SUBTASK 27-11-00-860-093

(13) Set the FLT CONTROL A switch to STBY RUD.

SUBTASK 27-11-00-860-094

(14) Set the FLT CONTROL B switch to OFF.

SUBTASK 27-11-00-750-003

(15) Do all the steps to find and correct asymmetrical flight control forces again.

SUBTASK 27-11-00-860-095

(16) Set the SPOILER A and B, FLT CONTROL A and B switches back to ON.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-00-860-096

(17) Set the Yaw Damper switch, on the forward overhead panel, to the ON position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON AND AILERON TRIM CONTROL SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these inspection tasks:

(1) Aileron Mechanical Components from the Control Wheel to the Aileron PCU's.

(2) Aileron Mechanical Components from the Aileron PCU to the Aileron and the Flight Spoiler Mechanical Control Path.

TASK 27-11-00-210-801

2. Aileron Mechanical Components Inspection - Forward components

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Procedure

SUBTASK 27-11-00-010-007

(1) To get access to the aileron mechanical components, do this step:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-11-00-210-006

(2) Do a general visual inspection of the forward aileron mechanical components to include the following:

(a) Control wheels

(b) Aileron control drum

(c) Bus drums.

SIA 001 PRE SB 737-29-1129

SUBTASK 27-11-00-210-008

(3) Examine the support assembly and lower hose assembly:

(a) Look for any chafing damage on the support assembly from the lower hose assembly.

1) If damage is found, the allowable limits are listed below:

a) Location - Any location long the support assembly

b) Depth - less than 0.125 in. (3.175 mm)

c) Length - 0.80 in. (20.32 mm) maximum

d) Width - equal to the width of the flange on the support assembly

e) If the support assembly is out of tolerance, repair or replace the part.

(b) Look for any chafing to the lower hose assembly where contact with the support assembly could have occurred.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 001 PRE SB 737-29-1129 (Continued)

1) Replace the lower hose assembly if chafing is found.

SIA ALL

D. Return the Airplane to its Original Condition

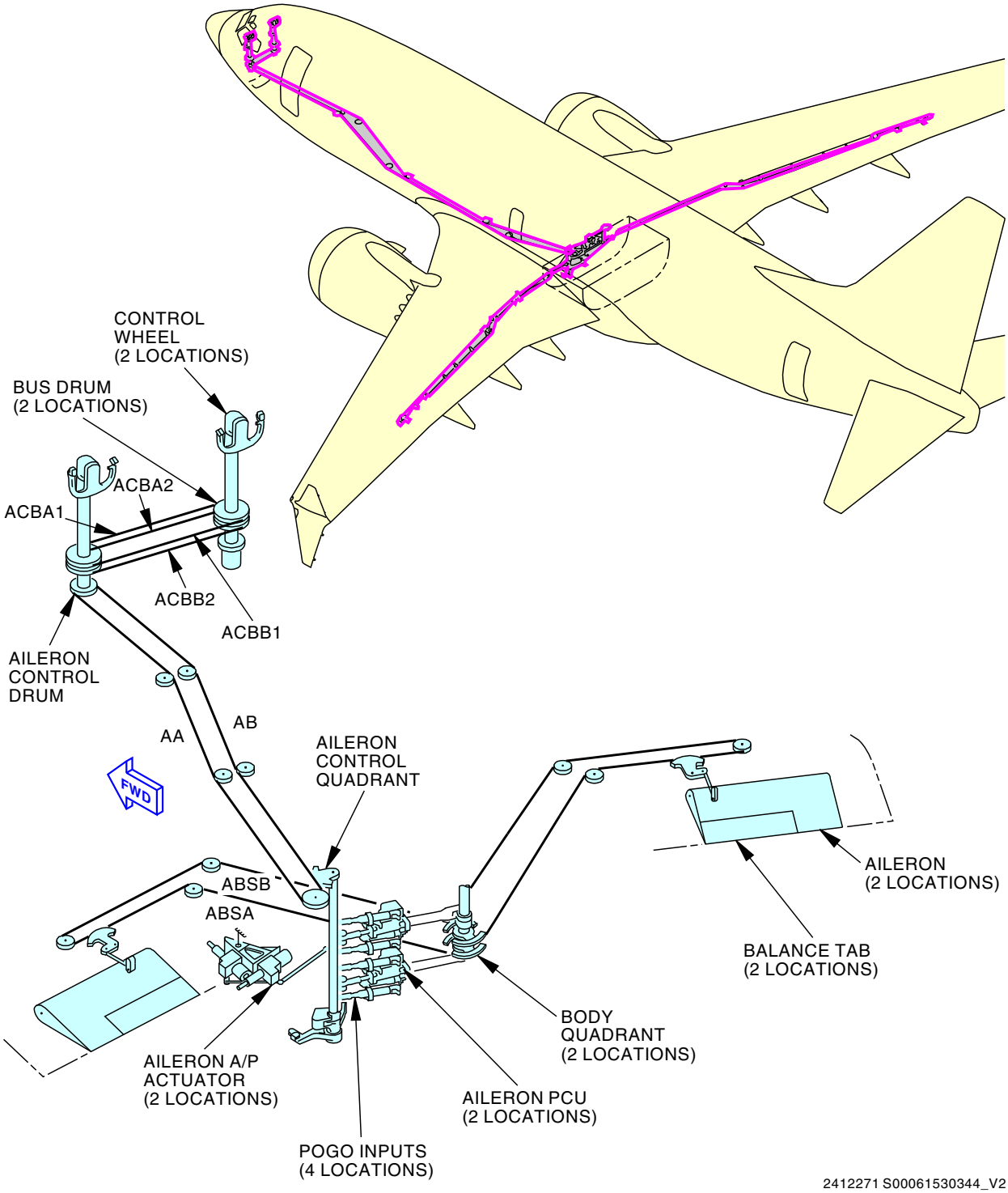
SUBTASK 27-11-00-410-004

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

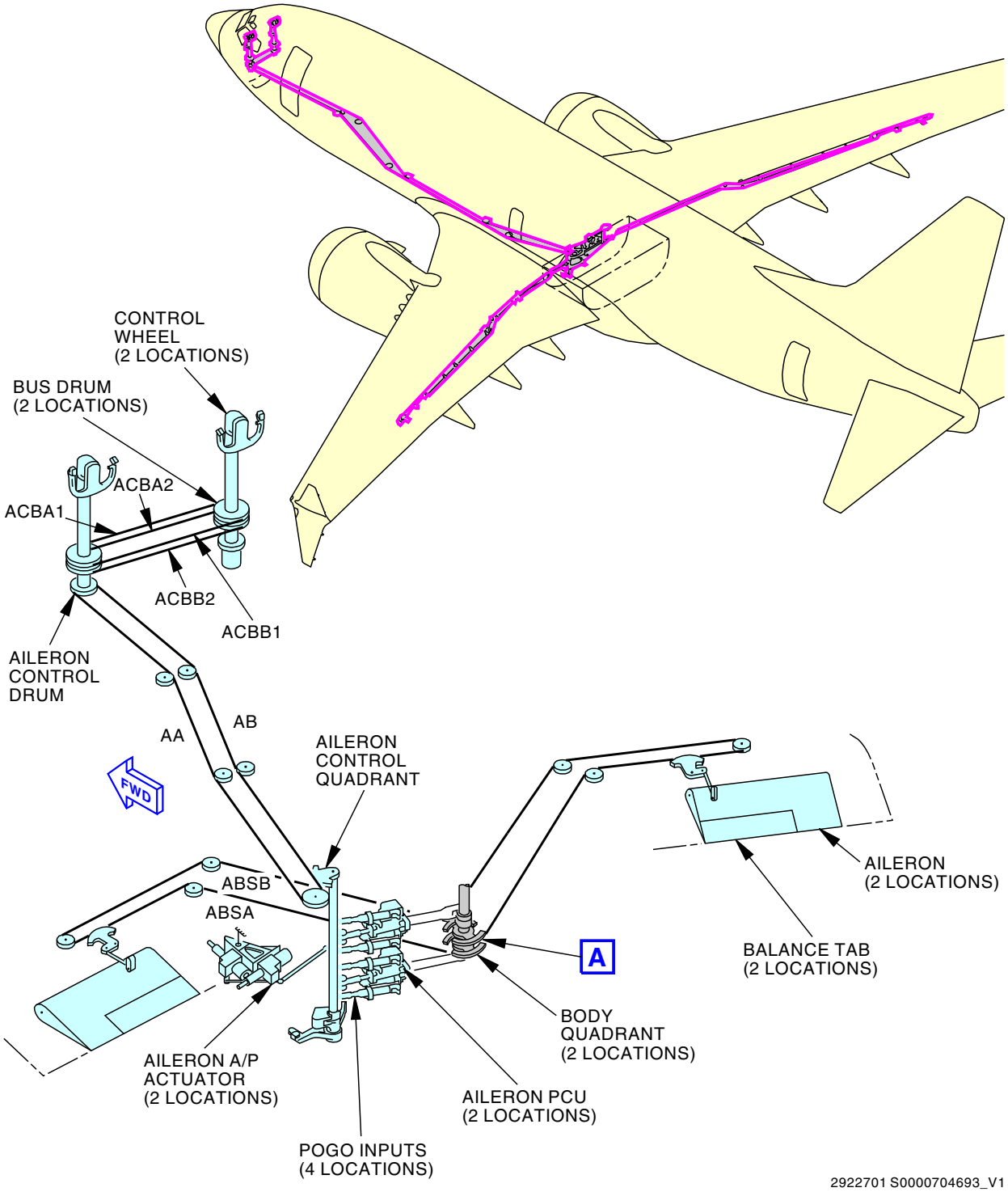
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



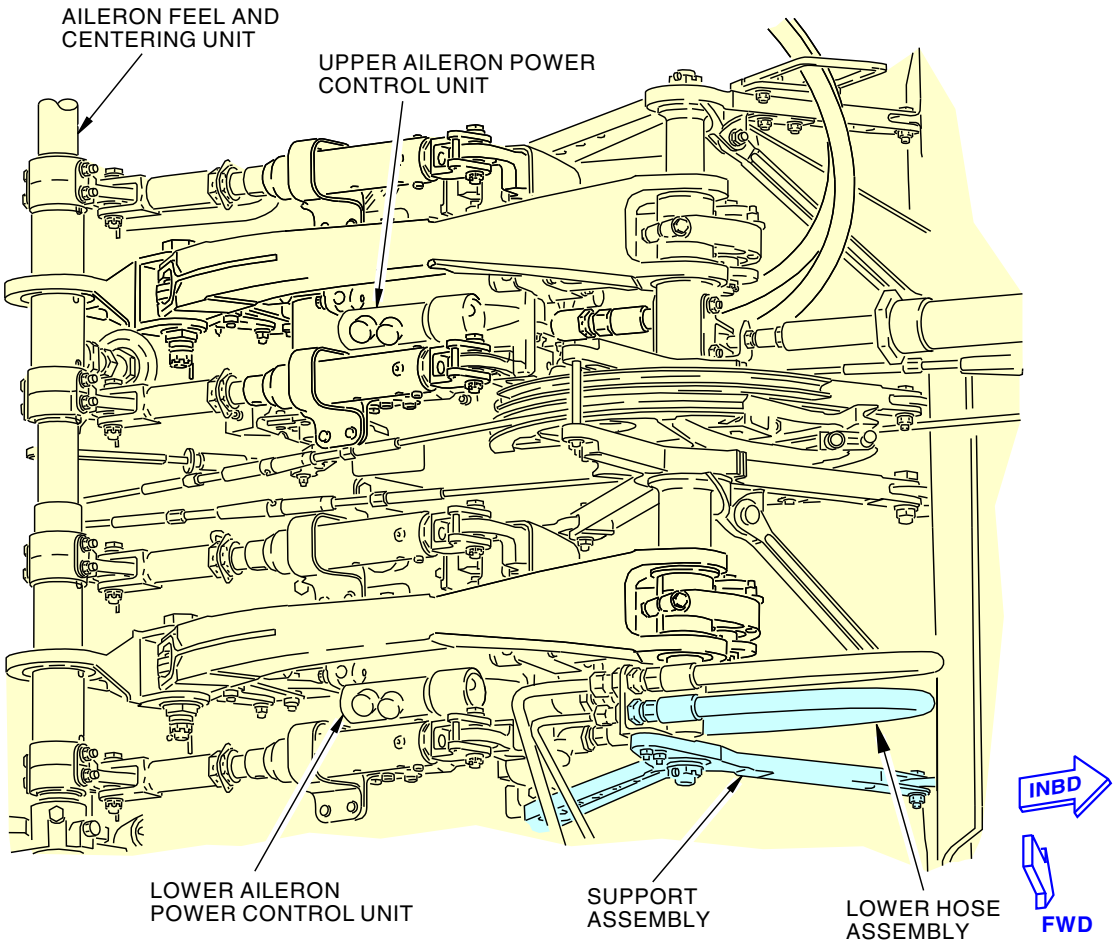
Aileron and Aileron Trim Control System
Figure 601/27-11-00-990-811 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron and Aileron Trim Control System
Figure 601/27-11-00-990-811 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Aileron and Aileron Trim Control System
Figure 601/27-11-00-990-811 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-00-210-802

3. Aileron Mechanical Components Inspection - From the Aileron PCUs to the Aileron

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Access Panels

Number	Name/Location
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

D. Procedure

SUBTASK 27-11-00-860-101

(1) Extend the trailing edge flaps (TASK 27-51-00-860-803).

SUBTASK 27-11-00-010-008

(2) Open these access panels to get access to the aileron mechanical components:

Number	Name/Location
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

SUBTASK 27-11-00-210-007

(3) Do a general visual inspection of all aileron mechanical components from the aileron Power Control Unit (PCU)s to the aileron including the following:

(a) Aileron PCUs

(b) Pogo inputs.

SUBTASK 27-11-00-010-009

(4) Close these panels:

Number	Name/Location
572BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00
672BB	Lower Aileron, Actuator Rod Fairing - WBL 472.00

SUBTASK 27-11-00-860-102

(5) Retract the trailing edge flaps (TASK 27-51-00-860-804).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Aileron Removal

(2) Aileron Installation.

B. The aileron has the aileron assembly, the aileron balance tab and four aileron balance panels.

TASK 27-11-11-000-801

2. Aileron Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-21-000-801	Aileron Balance Tab Removal (P/B 401)
27-11-34-000-801	Aileron Tab Control Rods Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2042	Sling - Aileron, Removal/Installation Part #: C27055-1 Supplier: 81205

C. Location Zones

Zone	Area
571	Left Wing - Fixed Trailing Edge
572	Left Wing - Aileron
671	Right Wing - Fixed Trailing Edge
672	Right Wing - Aileron

D. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
572AB	Lower Aileron, Hinge Cover - WBL 423.00
572CB	Lower Aileron, Hinge Cover - WBL 447.00
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
572FB	Lower Aileron, Hinge Cover - WBL 502.00
572GB	Lower Aileron, Hinge Cover - WBL 528.00
572HB	Lower Aileron, Hinge Cover - WBL 553.00
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
671DB	Lower Outboard Fixed Trailing Edge Access Panel
672AB	Lower Aileron, Hinge Cover - WBL 423.00
672CB	Lower Aileron, Hinge Cover - WBL 447.00
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00
672FB	Lower Aileron, Hinge Cover - WBL 502.00
672GB	Lower Aileron, Hinge Cover - WBL 528.00
672HB	Lower Aileron, Hinge Cover - WBL 553.00

E. Prepare for the Removal

SUBTASK 27-11-11-860-003

(1) Remove these access panels found on the lower panel of the outboard fixed trailing edge:

(a) On the left wing, open these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) On the right wing, open these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-11-860-004

(2) Remove these aileron access panels found on the lower wing surface adjacent to the leading edge of the aileron:

(a) On the left wing, open these access panels:

Number	Name/Location
572AB	Lower Aileron, Hinge Cover - WBL 423.00
572CB	Lower Aileron, Hinge Cover - WBL 447.00
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
572FB	Lower Aileron, Hinge Cover - WBL 502.00
572GB	Lower Aileron, Hinge Cover - WBL 528.00
572HB	Lower Aileron, Hinge Cover - WBL 553.00

(b) On the right wing, open these access panels:

Number	Name/Location
672AB	Lower Aileron, Hinge Cover - WBL 423.00
672CB	Lower Aileron, Hinge Cover - WBL 447.00
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00
672FB	Lower Aileron, Hinge Cover - WBL 502.00
672GB	Lower Aileron, Hinge Cover - WBL 528.00
672HB	Lower Aileron, Hinge Cover - WBL 553.00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-11-860-005

(3) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

F. Aileron Removal

SUBTASK 27-11-11-020-008

(1) Remove the aileron [1] with the sling, SPL-2042 (Figure 401).

(a) Install the sling, SPL-2042, on the aileron [1].

1) At hinge 2, do these steps (View C, Figure 402):

a) Remove the bolts [35], washers [14], radial seal retainer [37], and radial seal [39].

b) Remove the bolts [29], washers [14], radial seal retainer [33], and radial seal [31].

c) Remove and discard the pin [17].

d) Remove and keep the nut [18], washer [19], bushing [20], washer [21], and bolt [22].

2) At hinge 5, do these steps (View E, Figure 402):

a) If installed, remove the bolts [61], washers [14], and radial seal retainer [62].

b) Remove the bolts [52], washers [14], radial seal retainer [53], and radial seal [54].

c) Remove and discard the pin [55].

d) Remove and keep the nut [56], washer [57], bushing [58], washer [59], and bolt [60].

3) Attach the outboard C-bracket to the outboard clevis with the ball lock pin.

4) Attach the inboard C-bracket to the inboard clevis with the ball lock pin.

5) Put the sling in position around the trailing edge of the aileron [1].

6) Attach the inboard clevis to hinge 5 with the attached ball lock pin.

7) Attach the outboard clevis to hinge 2 with the attached ball lock pin.

8) Lift the sling with a cable and hook to hold the aileron [1].

SUBTASK 27-11-11-020-009

(2) Remove the aileron [1] with the sling, SPL-2042, attached.

(a) At hinge 6, do these steps (View F, Figure 402):

1) Remove the bolts [73] that attach the removable fairing [74] to the aileron [1].

2) Remove the removable fairing [74].

3) Remove and discard the pin [77].

4) Remove and keep the nut [78], washer [76], bushing [75], washer [72], and bolt [71] to disconnect the aileron control rod [67] from the aileron [1].

5) Remove the nut [82] and washer [83] to disconnect the bonding jumper [84] from the structure.

(b) At hinge 1, do these steps (View B, Figure 402):

1) Remove the bolts [23], washers [14], radial seal retainer [24], and radial seal [25].

2) If installed, remove the bolts [15], washers [14], and radial seal retainer [16].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Remove the nut [11] and washer [12] to disconnect the bonding jumper [13] from the structure.

(c) At hinge 3, do these steps (View C, Figure 402):

1) Remove the bolts [36], washers [14], radial seal retainer [38], and radial seal [40].

2) Remove the bolts [30], washers [14], radial seal retainer [34], and radial seal [32].

(d) At hinge 4, do these steps (View D, Figure 402):

1) Remove the bolts [86], washers [14], radial seal retainer [85], and radial seal [87].

2) Remove the bolts [43], washers [14], radial seal retainer [44], and radial seal [42].

3) Remove and discard the pins [45].

4) Remove and keep the nuts [46], washers [47], bushings [48], washers [49], and bolts [50] to disconnect the two tab control rods [41] from the forward fittings.

(e) Remove the hinge seals [7] from the balance panels [5] (View G, Figure 402).

1) Remove the bolts [4], bolts [6], bolts [27], bolts [8] with collars [9], bolts [88], washers [89], nuts [90], and balance weights [26].

2) Remove the bolts [3] and balance weights [28].

3) Remove the hinge seals [7] from the balance panels [5].

4) Remove and discard the pins [63].

5) Remove and keep the nuts [64], washers [65](under the nut), and bolts [66] to remove the aileron [1] from the aileron balance panels [5].

NOTE: The washer under the bolt is bonded to the hinge half.

(f) At hinge 6, do this step:

1) Remove and discard the pin [81].

2) Remove and keep the nut [80], washer [79], bushing [68], washer [69], and bolt [70].

(g) At hinges 1, 3 and 4, do this step:

1) Remove and discard the pin [17].

2) Remove and keep the nut [18], washer [19], bushing [20], washer [21], and bolt [22].

(h) Remove the aileron [1] from the structure.

SUBTASK 27-11-11-020-010

(3) Remove the aileron [1] without the sling, SPL-2042 (Figure 402).

(a) Disconnect the aileron control rod [67] and bonding jumper [84].

1) At hinge 6, do these steps:

a) Remove the bolts [73] that attach the removable fairing [74] to the aileron [1].

b) Remove the removable fairing [74].

c) Remove and discard the pin [77].

d) Remove and keep the nut [78], washer [76], bushing [75], washer [72], and bolt [71] to disconnect the aileron control rod [67] from the aileron [1].

e) Remove the nut [82] and washer [83] to disconnect the bonding jumper [84] from the structure.

(b) Remove the radial seals and radial seal retainers to get access to the aileron hinge and control rods connections.

1) At hinge 1, do these steps:

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a) Remove the bolts [23], washers [14], radial seal retainer [24], and radial seal [25].

b) If installed, remove thebolts [15], washers [14], radial seal retainer [16].

c) Remove the nut [11] and washer [12] to disconnect the bonding jumper [13] from the structure.

2) At hinge 2, do these steps:

a) Remove the bolts [35], washers [14], radial seal retainer [37], and radial seal [39].

b) Remove the bolts [29], washers [14], radial seal retainer [33], and radial seal [31].

3) At hinge 3, do these steps:

a) Remove the bolts [36], washers [14], radial seal retainer [38], and radial seal [40].

b) Remove the bolts [30], washers [14], radial seal retainer [34], and radial seal [32].

4) At hinge 4, do these steps:

a) Remove the bolts [86], washers [14], radial seal retainer [85], and radial seal [87].

b) Remove the bolts [43], washers [14], radial seal retainer [44], and radial seal [42].

c) Remove and discard the pins [45]; retain the nuts [46], washers [47], bushings [48], washers [49], and bolts [50] to disconnect the two tab control rods [41] from the forward fittings.

5) At hinge 5, do these steps:

a) a) If installed, remove the bolts [61], washers [14], and radial seal retainer [62].

b) Remove the bolts [52], washers [14], radial seal retainer [53], and radial seal [54].

(c) Remove the hinge seals [7] from the balance panels [5].

1) Remove the bolts [4], bolts [6], bolts [27], bolts [8] with collars [9], bolts [88], washers [89], nuts [90], and balance weights [26].

2) Remove the bolts [3] and balance weights [28].

3) Remove the hinge seals [7] from the balance panels [5].

4) Remove and discard the pins [63].

5) Remove and keep the nuts [64], washers [65](under the nut), and bolts [66] to remove the aileron [1] from the aileron balance panels [5].

NOTE: The washer under the bolt is bonded to the hinge half.

(d) Hold the aileron [1] while you remove aileron [1] from the structure.

1) At hinges 1, 2, 3, and 4, remove and discard the pin [17].

a) Remove and keep the nut [18], washer [19], bushing [20], washer [21] and bolt [22].

2) At hinge 5, remove and discard the pin [55].

a) Remove and keep the nut [56], washer [57], bushing [58], washer [59], and bolt [60].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) At hinge 6, remove and discard the pin [81].

a) Remove and keep the nut [80], washer [79], bushing [68], washer [69], and bolt [70].

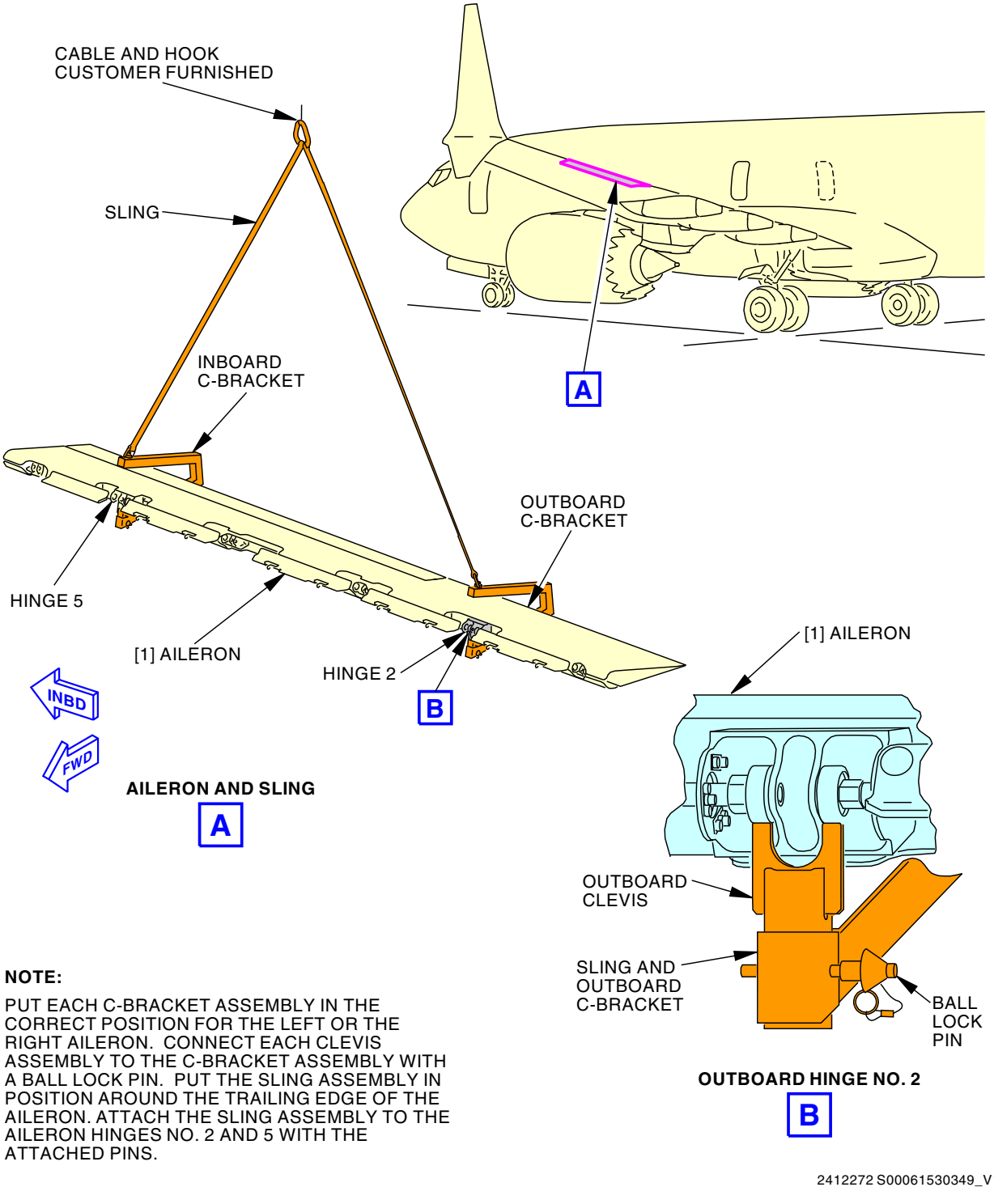
(e) Remove the aileron [1] from the structure.

SUBTASK 27-11-11-020-011

(4) If it is necessary to remove the aileron balance tab [2], do this task: Aileron Balance Tab Removal, TASK 27-11-21-000-801 or Aileron Tab Control Rods Removal, TASK 27-11-34-000-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

PUT EACH C-BRACKET ASSEMBLY IN THE CORRECT POSITION FOR THE LEFT OR THE RIGHT AILERON. CONNECT EACH CLEVIS ASSEMBLY TO THE C-BRACKET ASSEMBLY WITH A BALL LOCK PIN. PUT THE SLING ASSEMBLY IN POSITION AROUND THE TRAILING EDGE OF THE AILERON. ATTACH THE SLING ASSEMBLY TO THE AILERON HINGES NO. 2 AND 5 WITH THE ATTACHED PINS.

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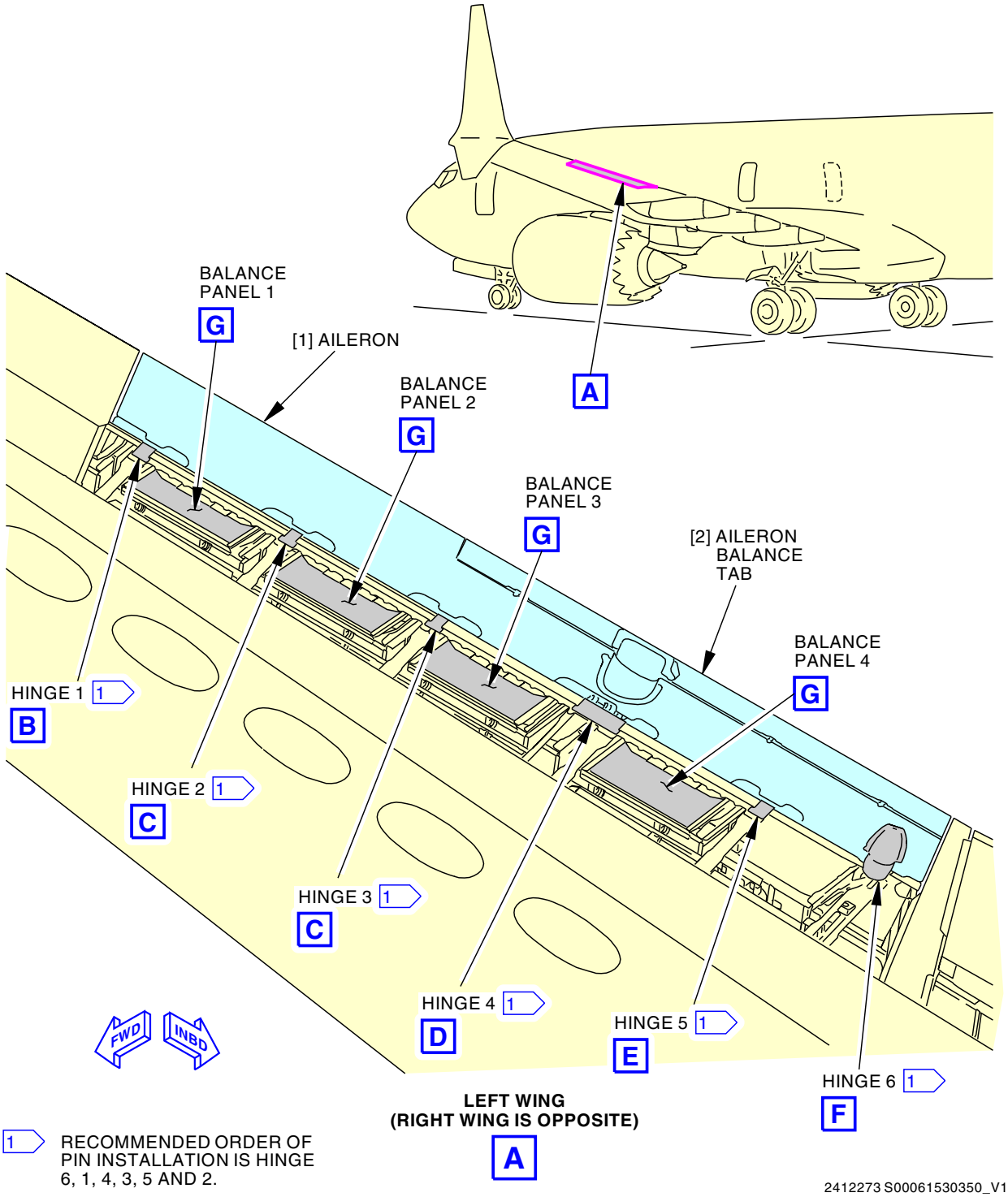
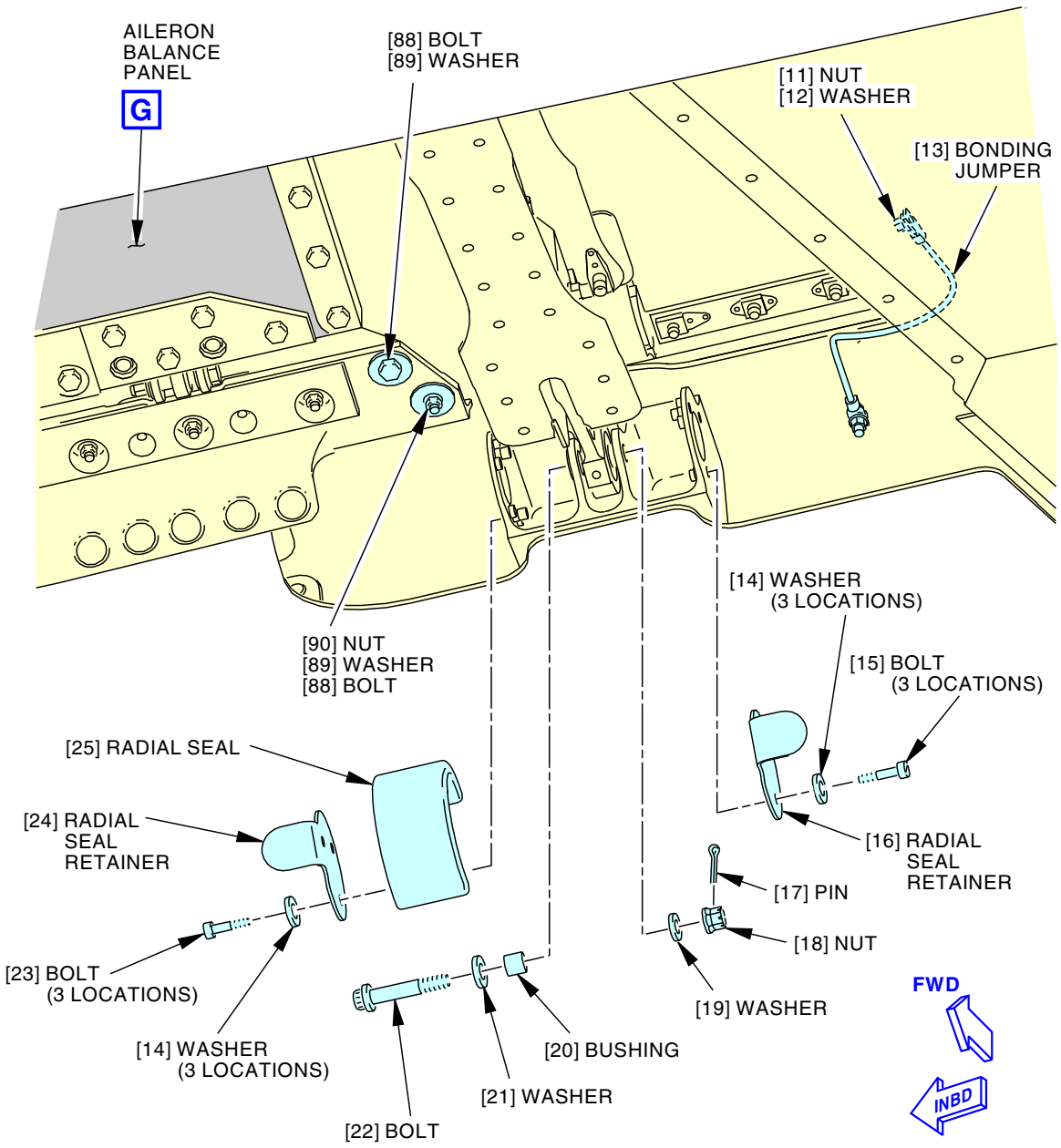
Aileron and Sling Installation
Figure 401/27-11-11-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details



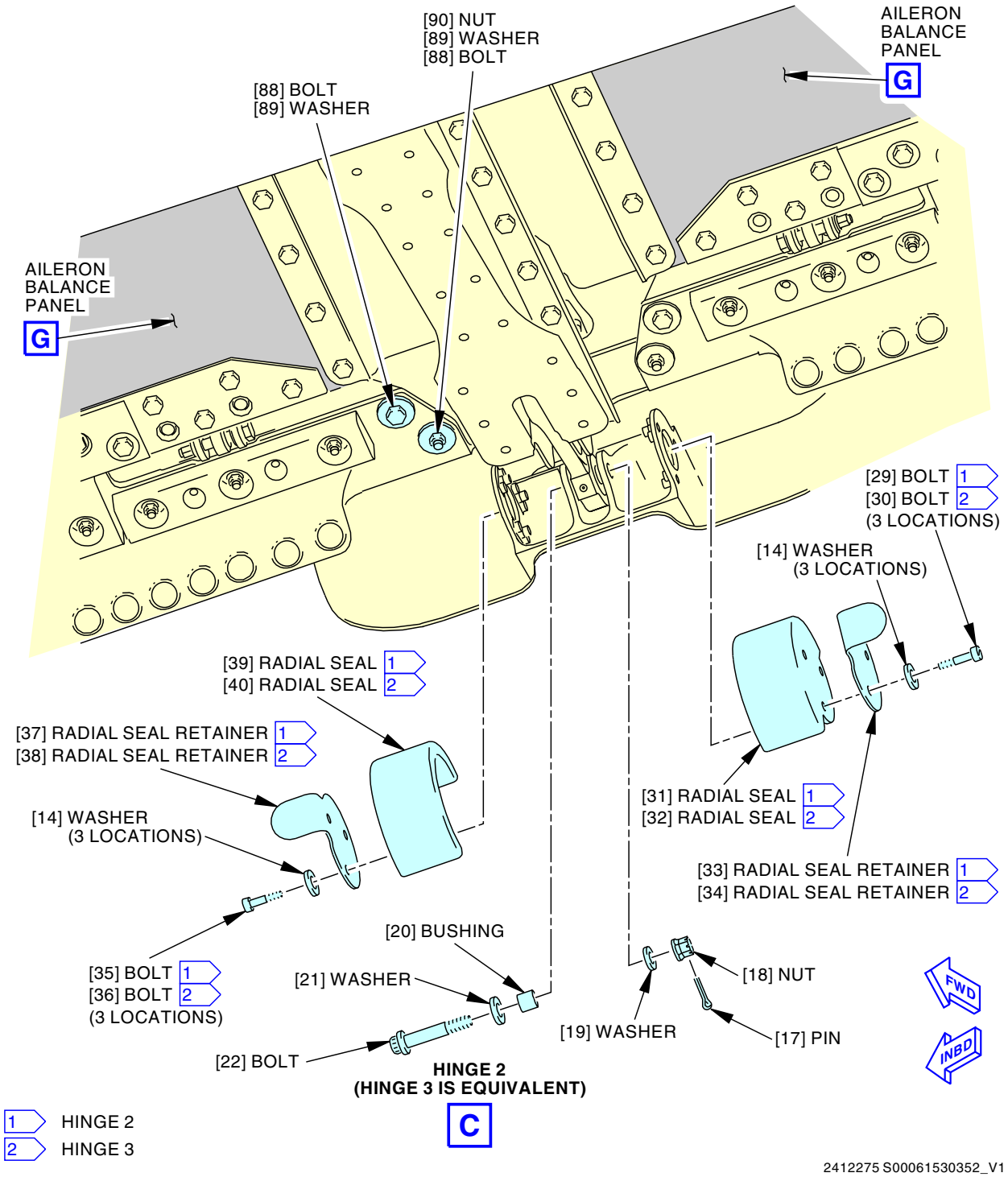
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



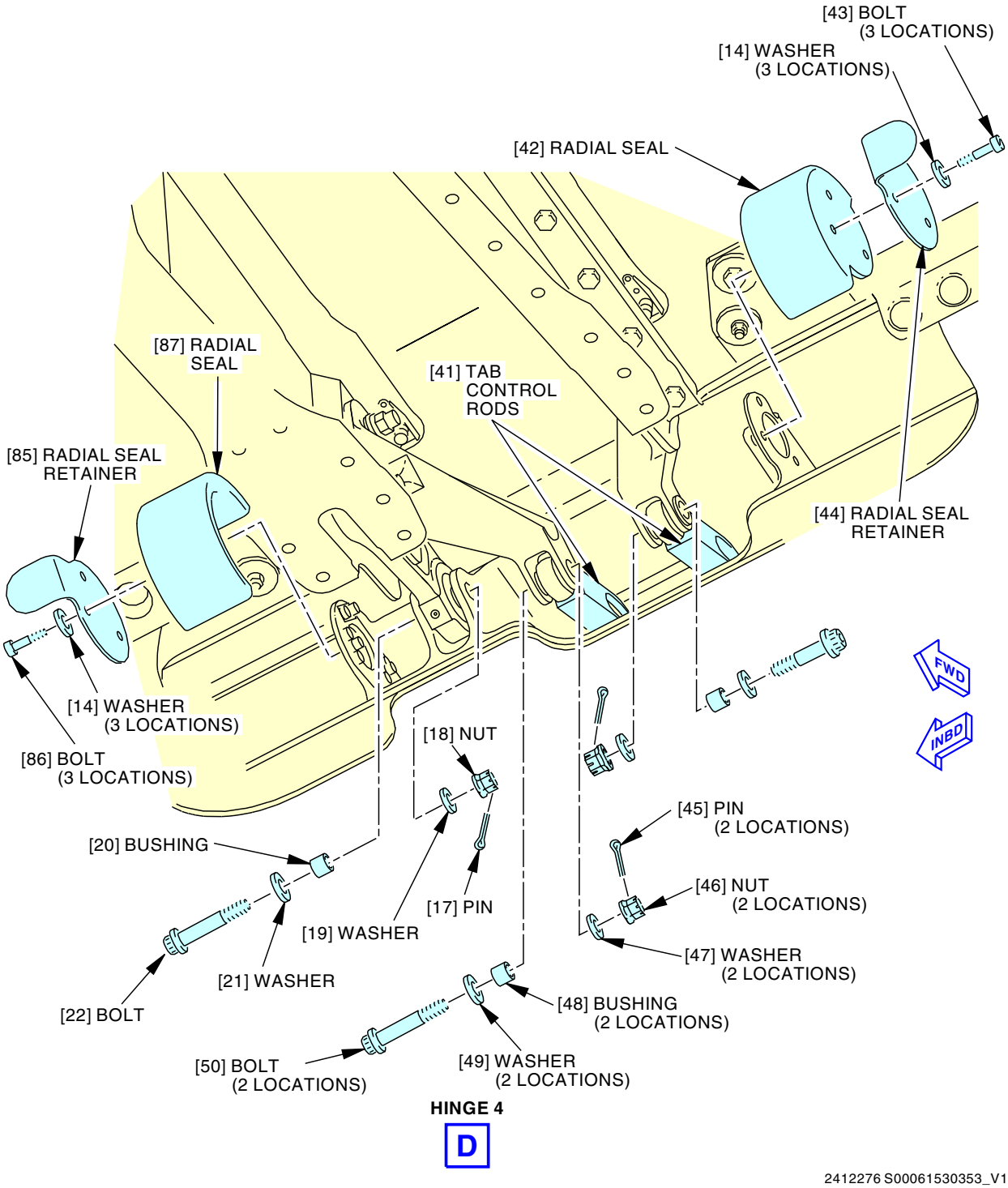
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



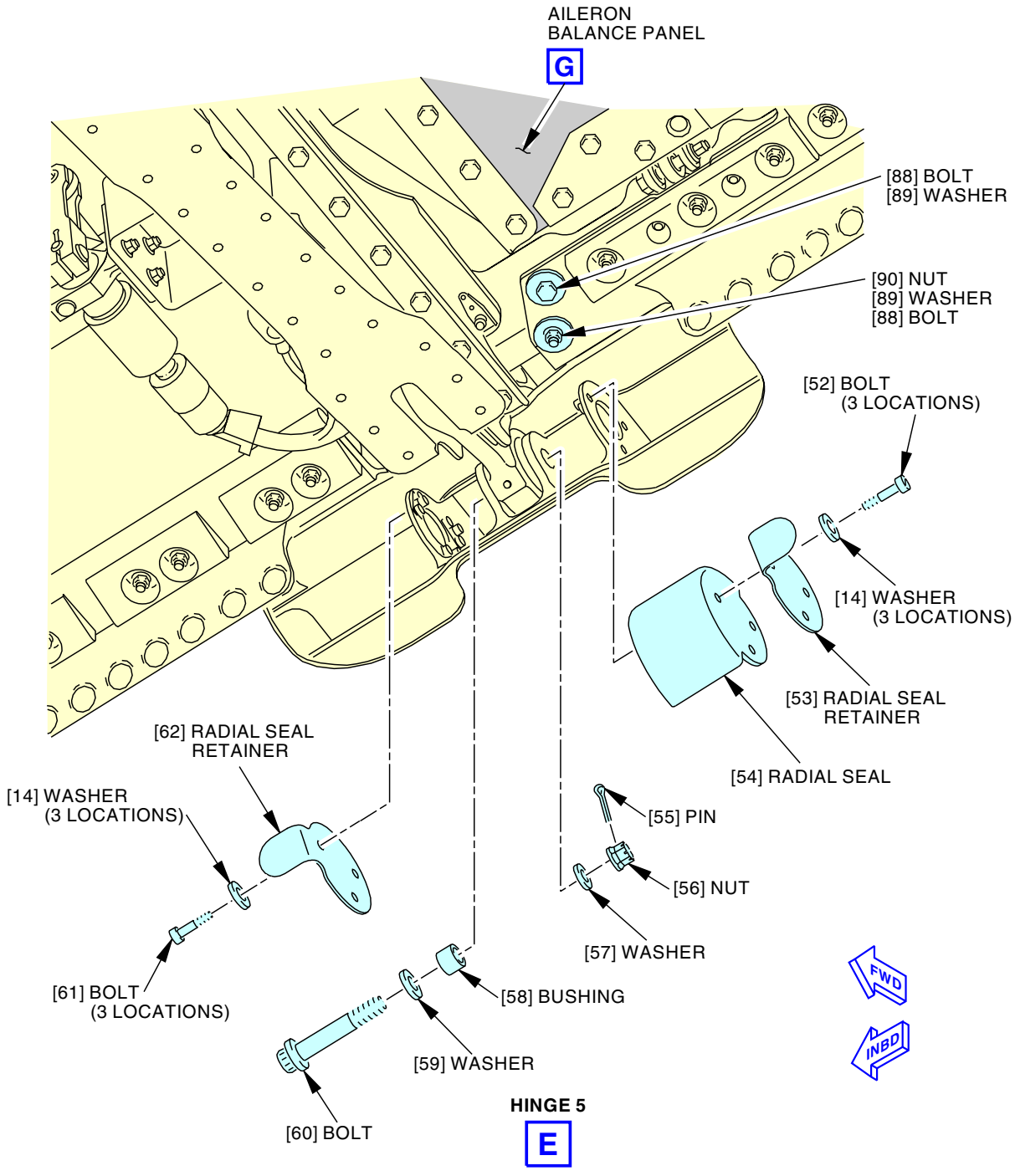
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



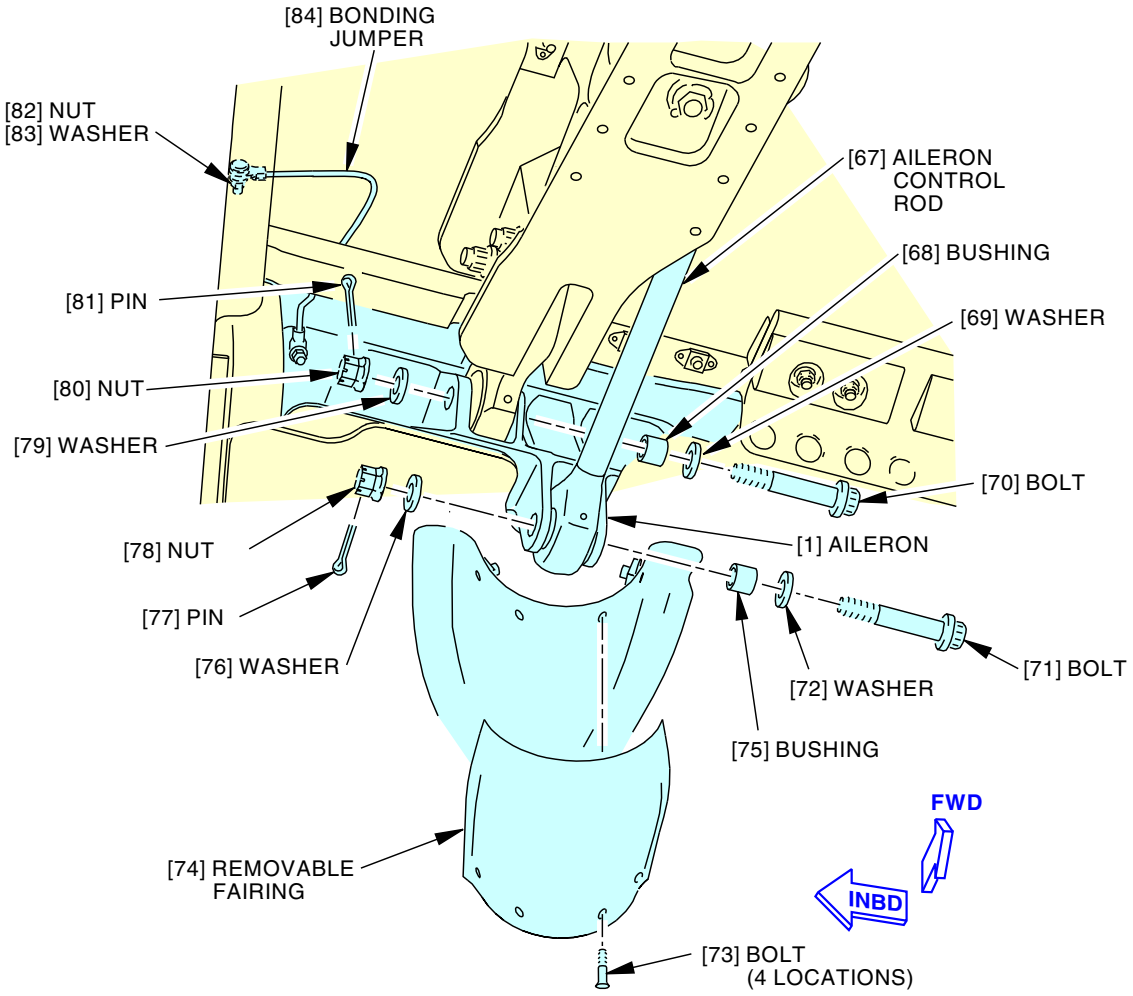
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 5 of 7)

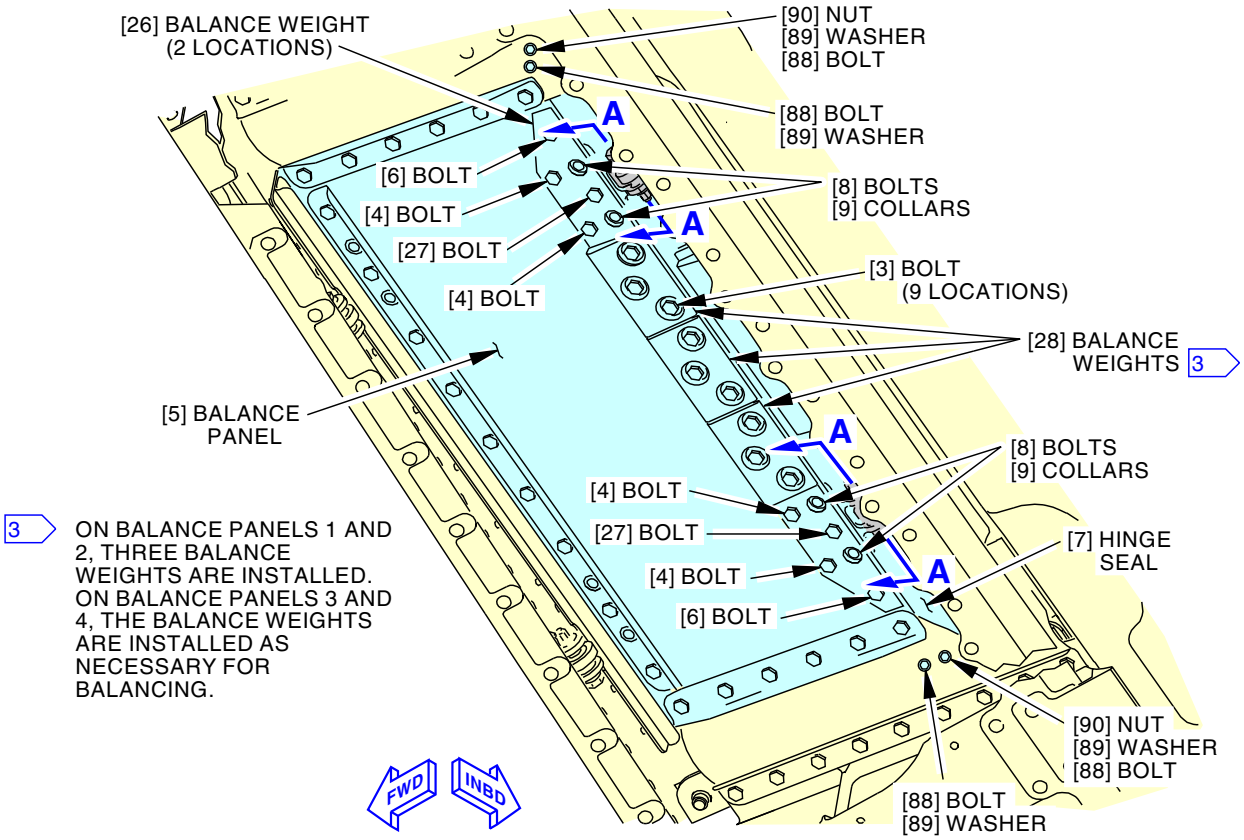
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412278 S00061530355_V1

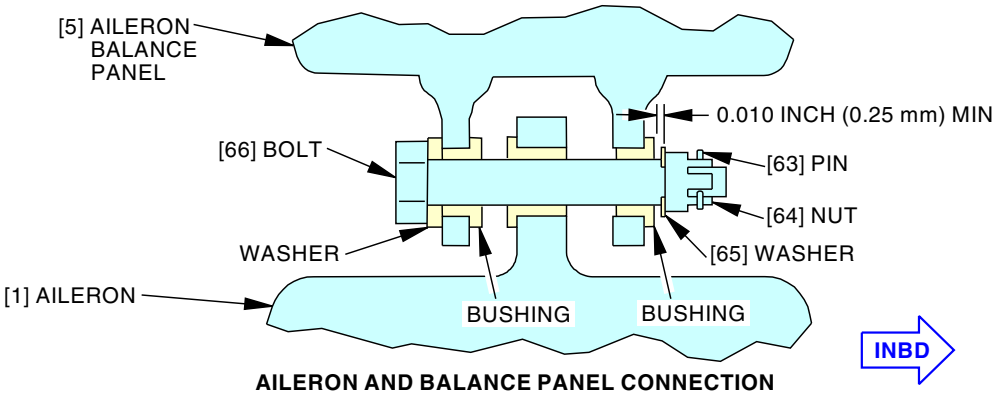
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



BALANCE PANEL 1
(BALANCE PANELS 2, 3, AND 4 ARE ALMOST THE SAME)

G



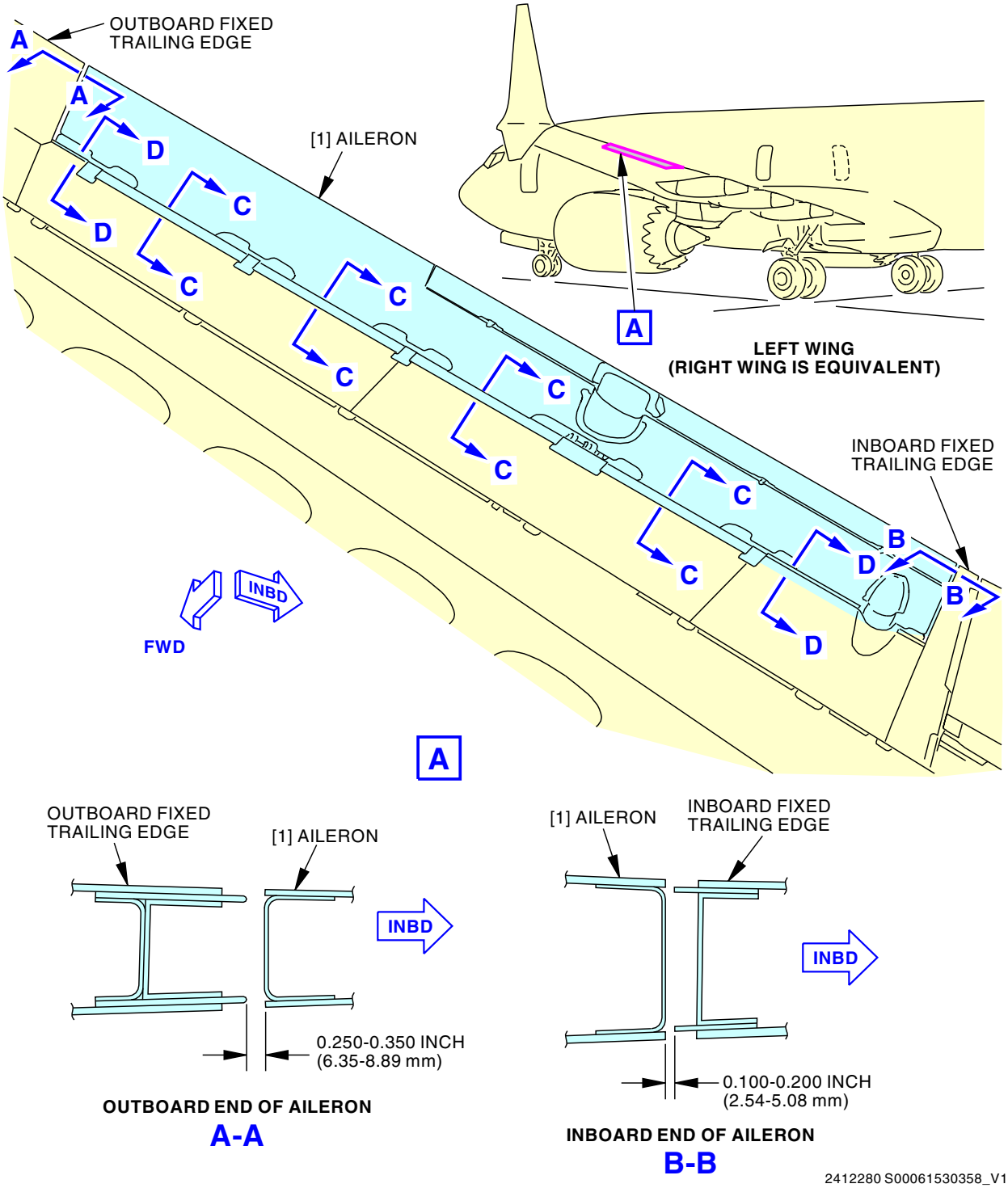
AILERON AND BALANCE PANEL CONNECTION
(OUTBOARD IS SHOWN, INBOARD IS OPPOSITE)
(EXAMPLE)

A-A

2412279 S00061530356_V1

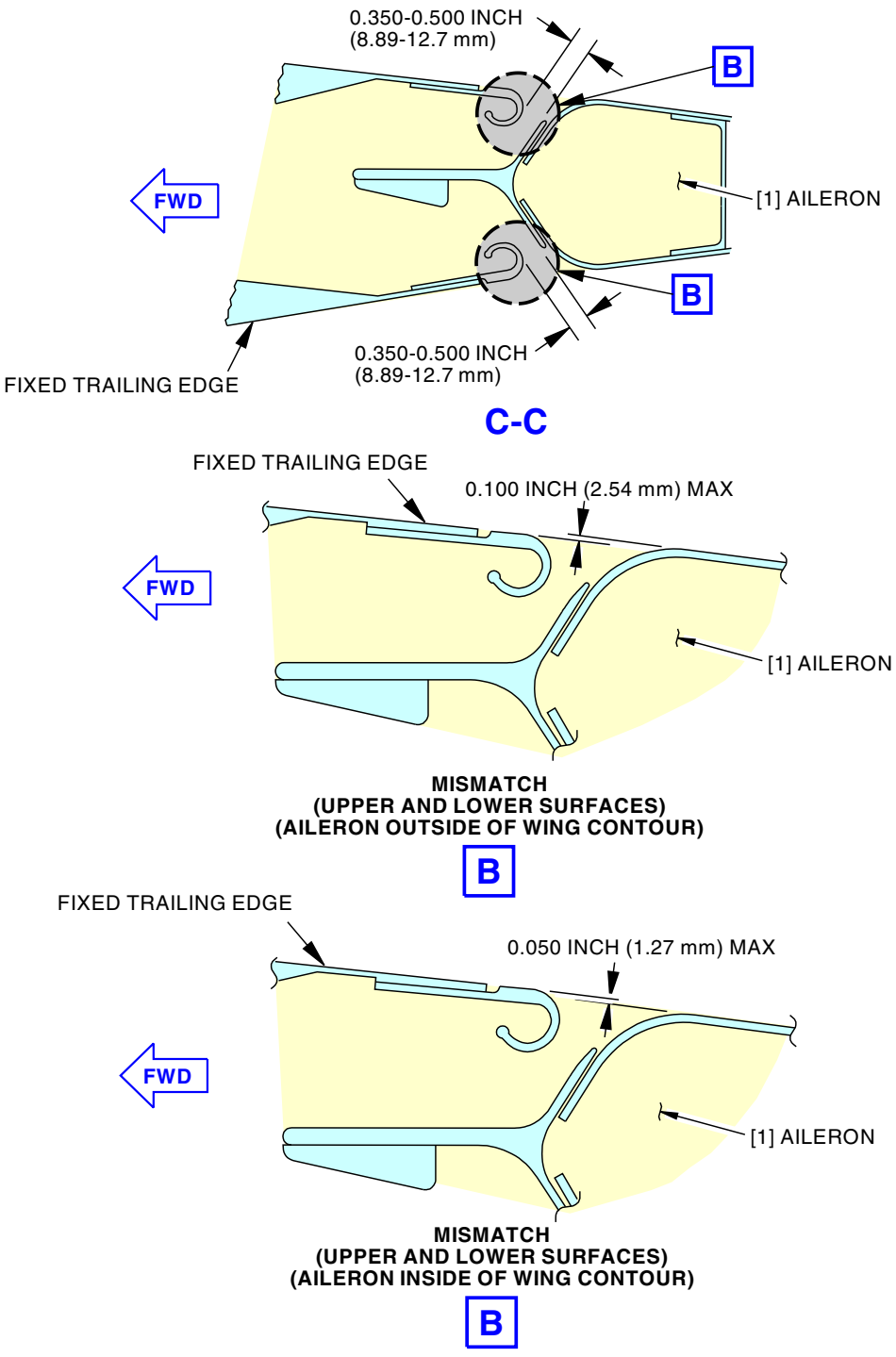
Aileron Installation
Figure 402/27-11-11-990-807 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Clearance and Mismatch Requirements
Figure 403/27-11-11-990-808 (Sheet 1 of 3)

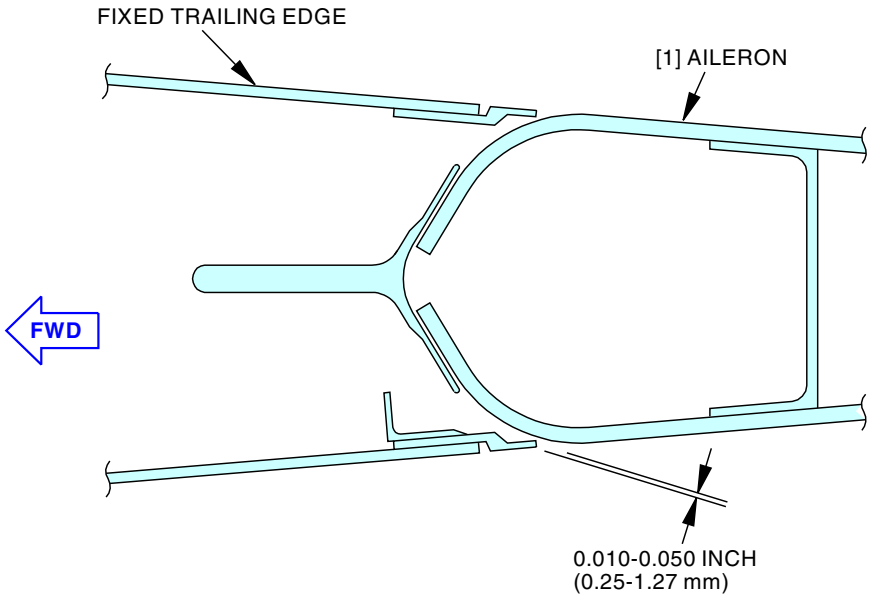
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412281 S00061530359_V1

Aileron Clearance and Mismatch Requirements
Figure 403/27-11-11-990-808 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

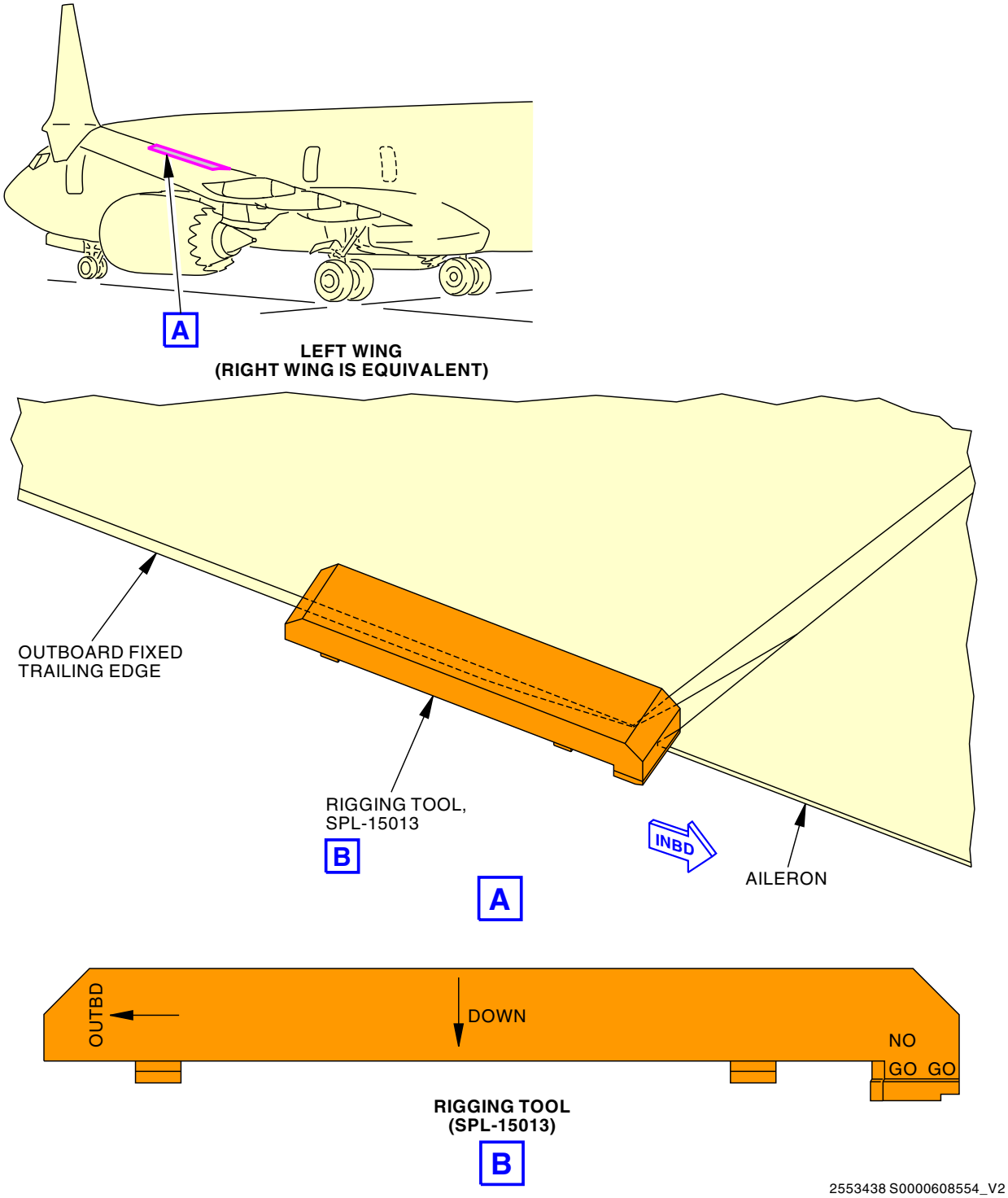


BLADE SEAL CLEARANCE
D-D

2412282 S00061530360_V1

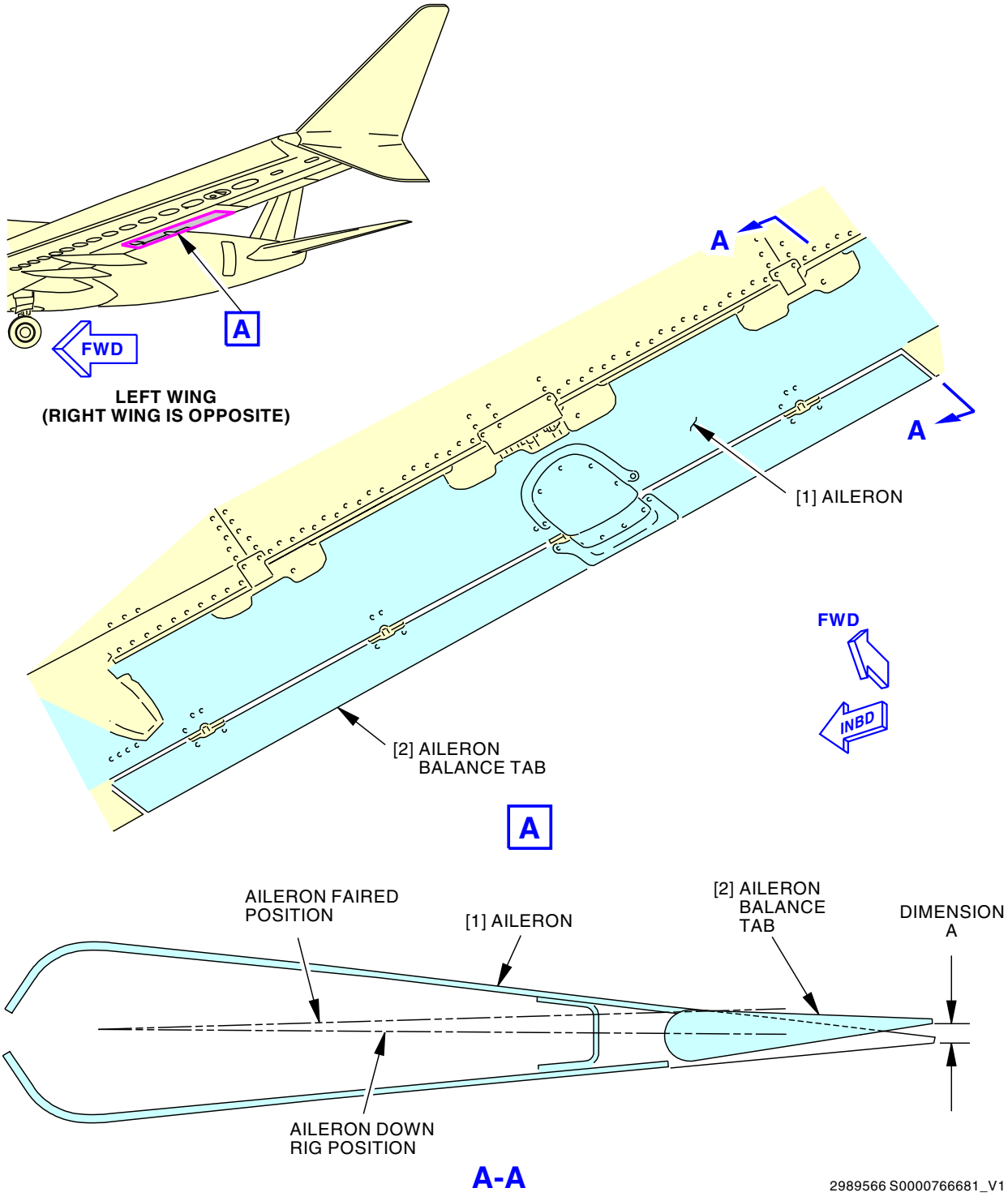
Aileron Clearance and Mismatch Requirements
Figure 403/27-11-11-990-808 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Rigging Tool
Figure 404/27-11-11-990-809

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Balance Tab Adjustment
Figure 405/27-11-11-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-11-400-801

3. Aileron Installation

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405)

A. General

(1) A flight test may be necessary after the installation of the component.

(2) Check the requirements in the "General" section of this task: Flight Test to Find and Correct Asymmetrical Flight Control Forces, TASK 27-11-00-750-801.

B. References

Reference	Title
12-22-11-640-801	Aileron Hinge Lubrication (P/B 301)
27-11-00-710-801	Aileron Response (Operational) Test (P/B 501)
27-11-00-750-801	Flight Test to Find and Correct Asymmetrical Flight Control Forces (P/B 501)
27-11-00-820-803	Aileron Balance Tab Adjustment (Recommended Method) (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-11-11-200-801	Aileron Inspection (P/B 601)
27-11-21-400-801	Aileron Balance Tab Installation (P/B 401)
27-11-34-400-801	Aileron Tab Control Rods Installation (P/B 401)
SRM 51-60-01	AILERON BALANCING PROCEDURES
SRM 51-60-03-0G-0	Aileron Tab Balance Procedure

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2042	Sling - Aileron, Removal/Installation Part #: C27055-1 Supplier: 81205
SPL-15013	Rigging Tool - Aileron Part #: C27096-1 Supplier: 81205
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
571	Left Wing - Fixed Trailing Edge
572	Left Wing - Aileron

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
671	Right Wing - Fixed Trailing Edge
672	Right Wing - Aileron

F. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
572AB	Lower Aileron, Hinge Cover - WBL 423.00
572CB	Lower Aileron, Hinge Cover - WBL 447.00
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
572FB	Lower Aileron, Hinge Cover - WBL 502.00
572GB	Lower Aileron, Hinge Cover - WBL 528.00
572HB	Lower Aileron, Hinge Cover - WBL 553.00
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel
672AB	Lower Aileron, Hinge Cover - WBL 423.00
672CB	Lower Aileron, Hinge Cover - WBL 447.00
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00
672FB	Lower Aileron, Hinge Cover - WBL 502.00
672GB	Lower Aileron, Hinge Cover - WBL 528.00
672HB	Lower Aileron, Hinge Cover - WBL 553.00

G. Aileron Installation

SUBTASK 27-11-11-220-001

(1) If you install used bolts, bushings, bearings or other components with worn areas, do this task: Aileron Inspection, TASK 27-11-11-200-801.

SUBTASK 27-11-11-420-001

(2) If you removed the aileron balance tab [2], do this task: Aileron Balance Tab Installation, TASK 27-11-21-400-801 or Aileron Tab Control Rods Installation, TASK 27-11-34-400-801.

SUBTASK 27-11-11-280-001

(3) Make sure that the correct number of balance weights [28] are installed on the lower surface of the aileron balance panels 3 and 4 (SRM PROCEDURE 51-60-03-0G-0).

SUBTASK 27-11-11-820-001

(4) Balance and stamp the aileron assembly with the new static balance hinge moment if you install a reworked, repaired, repainted, or new aileron assembly (SRM SUBJECT 51-60-01).

SUBTASK 27-11-11-400-001

(5) Install the aileron [1] with the sling, SPL-2042, (Figure 401).

(a) Make sure that the sling, SPL-2042, is installed on the aileron [1].

(b) If the sling, SPL-2042, is not installed, do these steps to install it:

1) Attach the outboard C-bracket to the outboard clevis with the ball lock pin.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Attach the inboard C-bracket to the inboard clevis with the ball lock pin.
3) Put the sling in position around the trailing edge of the aileron [1].
4) Attach the inboard clevis to hinge 5 with the attached ball lock pins.
5) Attach the outboard clevis to hinge 2 with the attached ball lock pins.
6) Lift the sling with a cable and hook to hold the aileron [1].

SUBTASK 27-11-11-420-002

(6) Install the aileron [1] on the hinges (Figure 402).
(a) Apply grease, D00633, to the outer diameters of all hinge bolts and bushings and inner diameters of bearings.
(b) Put the aileron [1] in position to install.
(c) Align the hinges with the support fittings.
(d) Connect the aileron [1] at hinge 6.
1) Install the bolt [70], washer [69], bushing [68], washer [79], and nut [80].
2) Tighten the nut [80] to 160 in-lb (18 N·m) - 240 in-lb (27 N·m).
3) Tighten the nut [80] to the lower end of the torque range.
a) Continue to tighten the nut until the next castellation aligns with the hole in the bolt [70].
4) Install the new pin [81].
(e) Connect the aileron [1], in the sequence that follows, at hinges 1, 4 and 3.
1) To install the pin in hinge 4, hold the aileron from below.
2) Install the bolt [22], washer [21], bushing [20], washer [19], and nut [18].
3) Tighten the nut [18] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).
4) Tighten the nut [18] to the lower end of the torque range.
a) Continue to tighten the nut until the next castellation aligns with the hole in the bolt [22].
5) Install the new pin [17].
(f) Remove the sling, SPL-2042, from the aileron [1].
1) Remove the outboard clevis from hinge 2.
2) Remove the inboard clevis from hinge 5.
3) Remove the sling, SPL-2042, from the trailing edge of the aileron [1].
4) Remove the ball lock pin and disconnect the outboard clevis from the outboard C-bracket.
5) Remove the ball lock pin and disconnect the inboard clevis from the inboard C-bracket.
(g) Connect the aileron [1] at hinge 5.
1) Install the bolt [60], washer [59], bushing [58], washer [57], and nut [56].
2) Tighten the nut [56] to 160 in-lb (18 N·m) - 240 in-lb (27 N·m).
3) Tighten the nut [56] to the lower end of the torque range.
a) Continue to tighten the nut until the next castellation aligns with the hole in the bolt [60].
4) Install the new pin [55].

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(h) Connect the aileron [1] at hinge 2.
  1) Install the bolt [22], washer [21], bushing [20], washer [19], and nut [18].
  2) Tighten the nut [18] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).
  3) Tighten the nut [18] to the lower end of the torque range.
    a) Continue to tighten the nut until the next castellation aligns with the hole in the bolt [22].
  4) Install the new pin [17].

(i) Align the aileron [1] with the balance panels [5].
  1) Make sure that the washer under the bolt is bonded to the hinge half.
    a) If it is necessary, bond the washer to the hinge half with sealant, A00247.
  2) Install the bolts [66], washers [65], and nuts [64].
  3) Tighten the nuts [64] to 25 in-lb (3 N·m) - 35 in-lb (4 N·m).
  4) Tighten the nuts [64] to the lower end of the torque range.
    a) Continue to tighten the nut until the next castellation aligns with the hole in the bolts [66].
  5) Make sure that the gap between the bushings and the washers [65] is 0.01 in. (0.25 mm) minimum.
  6) Install the new pins [63].

(j) Attach the hinge seals [7] to the aileron balance panels [5].
  1) Attach the hinge seals [7] to the aileron balance panels [5].
    a) Make sure that the correct number of balance weights [28] are installed on aileron balance panels 3 and 4 (SRM PROCEDURE 51-60-03-0G-0).
  2) Apply compound, C00528, to bolts [3], bolts [4], bolts [6], bolts [27], and bolts [88].
  3) Install the balance weights [28] with bolts [3].
  4) Install the balance weights [26] with the bolts [8] with collars [9], bolts [27], bolts [6], bolts [4], bolts [88], washers [89], and nuts [90].

(k) At hinge 4, connect the tab control rods [41] to the forward fittings.
  1) Install the bolts [50], washers [49], bushings [48], washers [47], and nuts [46].
  2) Tighten the nuts [46] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).
  3) Tighten the nuts [46] to the lower end of the torque range.
    a) Continue to tighten the nut until the next castellation aligns with the hole in the bolts [50].
  4) Install the new pins [45].
  5) At hinge 1, do these steps:
    a) If removed, install the radial seal retainer [16], washers [14], and bolts [15].
    b) Install the radial seal [25], radial seal retainer [24], washers [14], and bolts [23].
    c) Connect the bonding jumper [13] with washer [12] and nut [11].
  6) At hinge 2, do these steps:
    a) Install the radial seal [31], radial seal retainer [33], washers [14], and bolts [29].

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b) Install the radial seal [39], radial seal retainer [37], washers [14], and bolts [35].

7) At hinge 3, do these steps:

a) Install the radial seal [32], radial seal retainer [34], washers [14], and bolts [30].

b) Install the radial seal [40], radial seal retainer [38], washers [14], and bolts [36].

8) At hinge 4, do these steps:

a) Install the radial seal [42], radial seal retainer [44], washers [14], and bolts [43].

b) Install the radial seal [87], radial seal retainer [85], washers [14], and bolts [86].

9) At hinge 5, do these steps:

a) Install the radial seal [54], radial seal retainer [53], washers [14], and bolts [52].

b) If removed, install the radial seal retainer [62], washers [14], and bolts [61].

SUBTASK 27-11-11-640-001

(7) Do this task: Aileron Hinge Lubrication, TASK 12-22-11-640-801

SUBTASK 27-11-11-420-003

(8) Install the aileron [1] without the sling, SPL-2042.

(a) Install the aileron [1] on the hinges:

1) Apply grease, D00633, to the outer diameters of all hinge bolts and bushings and inner diameters of bearing.

2) Put the aileron [1] in position to install.

3) Align the hinges with the support fittings.

4) Connect the aileron [1] at hinges 1, 2, 3 and 4.

a) Install the bolt [22], washer [21], bushing [20], washer [19], and nut [18].

b) Tighten the nuts nut [18] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).

c) Tighten the nut [18] to the lower end of the torque range.

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [22].

d) Install the new pin [17].

5) Connect the aileron [1] to hinge 5.

a) Install the bolt [60], washer [59], bushing [58], washer [57], and nut [56].

b) Tighten the nut [56] to 160 in-lb (18 N·m) - 240 in-lb (27 N·m).

c) Tighten the nut [56] to the lower end of the torque range.

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [60].

d) Install the new pin [55].

6) Connect the aileron [1] at hinge 6.

a) Install the bolt [70], washer [69], bushing [68], washer [79], and nut [80].

b) Tighten the nut [80] to 160 in-lb (18 N·m) - 240 in-lb (27 N·m).

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c) Tighten the nut [80] to the lower end of the torque range.

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [70].

d) Install the new pin [81].

(b) Align the aileron [1] with the aileron balance panels [5].

1) Make sure that the washer under the bolt is bonded to the hinge half.

a) If it is necessary, bond the washer to the hinge half with sealant, A00247.

2) Install the bolts [66], washers [65], and nuts [64].

3) Tighten the nuts [64] to 25 in-lb (3 N·m) - 35 in-lb (4 N·m).

4) Tighten the nuts [64] to the lower end of the torque range.

a) Continue to tighten the nut until the next castellation aligns with the hole in the bolts [66].

5) Make sure that the gap between the bushings and the washers [65] is 0.01 in. (0.25 mm) minimum.

6) Install the new pins [63].

(c) Attach the hinge seals [7] to the balance panels [5]:

1) Attach the hinge seals [7] to the balance panels [5].

a) Make sure that the correct number of balance weights [28] are installed on balance panels 3 and 4 (SRM PROCEDURE 51-60-03-0G-0).

2) Apply compound, C00528 to bolts [3], bolts [4], bolts [6], bolts [27], and bolts [88].

3) Install the balance weights [28] with bolts [3].

4) Install the balance weights [26] with the bolts [8] with collars [9], bolts [27], bolts [6], bolts [4], bolts [88], washers [89], and nuts [90].

(d) At hinge 4, connect the tab control rods [41] to the forward fittings.

1) Install the bolts [50], washers [49], bushings [48], washers [47], and nuts [46].

2) Tighten the nuts [46] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).

3) Tighten the nuts [46] to the lower end of the torque range.

a) Continue to tighten the nut until the next castellation aligns with the hole in the bolts [50].

4) Install the pins [45].

(e) At hinge 1, do these steps:

1) If removed, install the radial seal retainer [16], washers [14], and bolts [15].

2) Install the radial seal [25], radial seal retainer [24], washers [14], and bolts [23].

3) Connect the bonding jumper [13] with washer [12] and nut [11].

(f) At hinge 2, do these steps:

1) Install the radial seal [31], radial seal retainer [33], washers [14], and bolts [29].

2) Install the radial seal [39], radial seal retainer [37], washers [14], and bolts [35].

(g) At hinge 3, do these steps:

1) Install the radial seal [32], radial seal retainer [34], washers [14], and bolts [30].

2) Install the radial seal [40], radial seal retainer [38], washers [14], and bolts [36].

(h) At hinge 4, do these steps:

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1) Install the radial seal [42], radial seal retainer [44], washers [14], and bolts [43].
2) Install the radial seal [87], radial seal retainer [85], washers [14], and bolts [86].

(i) At hinge 5, do theses steps:
1) Install the radial seal [54], radial seal retainer [53], washers [14], and bolts [52].
2) If removed, install the radial seal retainer [62], washers [14], and bolts [61].

SUBTASK 27-11-11-640-002

(9) Do this task: Aileron Hinge Lubrication, TASK 12-22-11-640-801.

SUBTASK 27-11-11-720-001

(10) Do the aileron surface friction and motion test.
(a) With a push/pull scale 0-25 pound (0-11 kilogram), STD-753, measure the force at 8.75 ±0.25 in. (222.25 ±6.35 mm) aft of the hinge centerline and perpendicular to the aileron chord plane.
(b) Write down the (positive) forces necessary to move each aileron through the neutral position.
(c) Write down the (negative) forces necessary to prevent movement of the aileron through the neutral position.
(d) Add these forces together.
(e) Make sure that the result is not more than 5.0 lbf (22.2 N).
1) If the result is more than 5.0 lbf (22.2 N), do these checks:
a) Make sure that all the hinge bolts are sufficiently lubricated.
b) Make sure that the torque values of the hinge bolts are as specified.
(f) Measure the force necessary to move the aileron through full travel in each direction, then back to the neutral position.

NOTE: The movement of the aileron must be free and smooth.

1) Apply the force perpendicular to the aileron chord plane 8.75 ±0.25 in. (222.25 ±6.35 mm) aft of the aileron hinge line.
2) Make sure that the maximum force is not more than 13 lbf (57.8 N) for aileron down and 3 lbf (13.3 N) for aileron up.

SUBTASK 27-11-11-420-004

(11) At hinge 6, connect the aileron control rod [67] to the aileron [1].
(a) Put the aileron control rod [67] in its position.
(b) Install the bolt [71], washer [72], bushing [75], washer [76], nut [78], and pin [77].

SUBTASK 27-11-11-420-005

(12) At hinge 6, install the removable fairing [74].
(a) Connect the bonding jumper [84] with washer [83] and nut [82].
(b) Put the removable fairing [74] in its position.
(c) Install the bolts [73] to attach the removable fairing [74] to the aileron [1].

SUBTASK 27-11-11-280-002

(13) Use the aileron control wheel to manually operate the aileron through a minimum of two full cycles, to full travel.
(a) Make sure that the aileron can move smoothly and freely.

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SUBTASK 27-11-11-220-002

(14) Do a check of the aileron clearances and mismatch.

(a) Make sure that the clearances for the upper and lower surfaces of the aileron and the fixed trailing edge are not out of tolerance.

1) At the support beams for the aileron balance panel, make sure that the clearance is 0.350 in. (8.890 mm) - 0.500 in. (12.700 mm) (View B, Figure 403).

2) At the blade seals, make sure that the clearance is 0.010 in. (0.254 mm) - 0.050 in. (1.270 mm) (View C, Figure 403).

(b) Make sure that the mismatch for the upper and lower surfaces of the aileron and the fixed trailing edge are not out of tolerance (Rigging Tool Method).

1) Set the rigging tool, SPL-15013, on the outboard fixed trailing edge.

2) Make sure that the upper surface of the aileron is between the “GO” and “NO GO” limits.

(c) Make sure that the mismatch for the upper and lower surfaces of the aileron and the fixed trailing edge are not out of tolerance (Straight Edge Method).

1) For the aileron outside of the wing contour, make sure that the maximum mismatch is 0.1 in. (2.5 mm) (View B, Figure 403).

2) For the aileron inside of the wing contour, make sure that the maximum mismatch is 0.05 in. (1.27 mm) (View B, Figure 403).

(d) Make sure that the clearance at the inboard end of the aileron is 0.1 in. (2.5 mm) - 0.2 in. (5.1 mm) (View A, Figure 403).

(e) Make sure that the clearance at the outboard end of the aileron is 0.25 in. (6.4 mm) - 0.35 in. (8.9 mm) (View A, Figure 403).

(f) Make sure that the aileron balance tab [2] aligns with the aileron:

1) Measure the distance between the rig position of the aileron balance tab [2] to the aileron lower surface (dimension A) at these three positions (View A, Figure 405).

NOTE: You must measure from the lower aft most point of the aileron balance tab.

a) At the outboard end of the aileron balance tab [2], make sure that the dimension A is 0.06 ±0.07 in. (1.52 ±1.78 mm) or 0.82 ±0.25°arc (0.01 ±0.01 rad).

b) At the middle point along the aileron balance tab [2], make sure that the dimension A is 0.065 ±0.070 in. (1.65 ±1.78 mm) or 0.60 ±0.25°arc (0.01 ±0.00 rad).

c) At the inboard end of the aileron balance tab [2], make sure that the dimension A is 0.070 ±0.070 in. (1.778 ±1.778 mm) or 0.34 ±0.25°arc (0.01 ±0.01 rad).

2) If the aileron balance tab [2] does not align with the aileron, do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-11-410-001

(1) Install these aileron access panels found on the lower wing surface adjacent to the leading edge of the aileron:

(a) For the left wing, close these access panels:

Number	Name/Location
572AB	Lower Aileron, Hinge Cover - WBL 423.00

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(Continued)

Number	Name/Location
572CB	Lower Aileron, Hinge Cover - WBL 447.00
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
572FB	Lower Aileron, Hinge Cover - WBL 502.00
572GB	Lower Aileron, Hinge Cover - WBL 528.00
572HB	Lower Aileron, Hinge Cover - WBL 553.00

(b) For the right wing, close these access panels:

Number	Name/Location
672AB	Lower Aileron, Hinge Cover - WBL 423.00
672CB	Lower Aileron, Hinge Cover - WBL 447.00
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00
672FB	Lower Aileron, Hinge Cover - WBL 502.00
672GB	Lower Aileron, Hinge Cover - WBL 528.00
672HB	Lower Aileron, Hinge Cover - WBL 553.00

SUBTASK 27-11-11-410-002

(2) Install these access panels found on the lower panel of the outboard fixed trailing edge.

(a) On the left wing, close these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) On the right wing, close these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-11-860-002

(3) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-11-710-001

(4) Do this task: Aileron Response (Operational) Test, TASK 27-11-00-710-801.

SUBTASK 27-11-11-720-002

(5) If it is necessary, do this task: Flight Test to Find and Correct Asymmetrical Flight Control Forces, TASK 27-11-00-750-801.

——— END OF TASK ———

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AILERON - INSPECTION/CHECK

1. General

A. This procedure contains the task to do a check of the aileron hinge.

TASK 27-11-11-200-801

2. Aileron Inspection

(Figure 601)

A. General

(1) This task gives wear limits and repair data for the aileron hinge inspection.

B. References

Reference	Title
27-11-11-000-801	Aileron Removal (P/B 401)
27-11-11-400-801	Aileron Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Procedure

SUBTASK 27-11-11-020-004

(1) Do this task: Aileron Removal, TASK 27-11-11-000-801.

SUBTASK 27-11-11-020-005

(2) Use these tools to do a check for worn parts of the aileron hinge:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-11-11-020-006

(3) Examine the parts of the aileron PCU linkage for worn areas:

(a) Remove the parts you want to examine.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are out of tolerance, replace or repair the parts if it is necessary.

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Table 601/27-11-11-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2525 in 6.4135 mm	0.0005 in 0.0127 mm
#1 BOLT	O.D.	0.2585 in 6.5659 mm	0.2595 in 6.5913 mm	0.2475 in 6.2865 mm	
#2 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3773 in 9.5834 mm	0.0005 in 0.0127 mm
#2 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3728 in 9.4691 mm	
#3 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2525 in 6.4135 mm	0.0005 in 0.0127 mm
#3 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	
#4 BEARING	I.D.	0.2495 in 6.3373 mm	0.2500 in 6.3500 mm	0.2520 in 6.4008 mm	0.0000 in 0.0000 mm
#4 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	
#5 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3778 in 9.5961 mm	0.0005 in 0.0127 mm
#5 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.4564 mm	
#6 BUSHING	I.D.	0.5620 in 14.2748 mm	0.5627 in 14.2926 mm	0.5645 in 14.3383 mm	0.0005 in 0.0127 mm
#6 BUSHING	O.D.	0.5610 in 14.2494 mm	0.5615 in 14.2621 mm	0.5595 in 14.2113 mm	
#7 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3755 in 9.5377 mm	0.3777 in 9.5936 mm	0.0005 in 0.0127 mm
#7 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.4564 mm	

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Table 601/27-11-11-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#8 BEARING	I.D.	0.3745 in 9.5123 mm	0.3750 in 9.5250 mm	0.3772 in 9.5809 mm	0.0000 in
#8 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.45642mm	0.0000 mm
#9 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3755 in 9.5377 mm	0.3777 in 9.5936 mm	0.0005 in
#9 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.4564 mm	0.0127 mm
#10 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3778 in 9.5961 mm	0.0005 in
#10 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.4564 mm	0.0127 mm
#11 BEARING	I.D.	0.3745 in 9.5123 mm	0.3750 in 9.5250 mm	0.3772 in 9.5809 mm	0.0000 in
#11 BOLT	O.D.	0.3735 in 9.4869 mm	0.3745 in 9.5123 mm	0.3723 in 9.4564 mm	0.0000 mm
#12 BUSHING	I.D.	0.5620 in 14.2748 mm	0.5627 in 14.2926 mm	0.5645 in 14.3383 mm	0.0005 in
#12 BUSHING	O.D.	0.5610 in 14.2494 mm	0.5615 in 14.2621 mm	0.5595 in 14.2113 mm	0.0127 mm

SUBTASK 27-11-11-020-007

(4) Do this task: Aileron Installation, TASK 27-11-11-400-801.

——— END OF TASK ———

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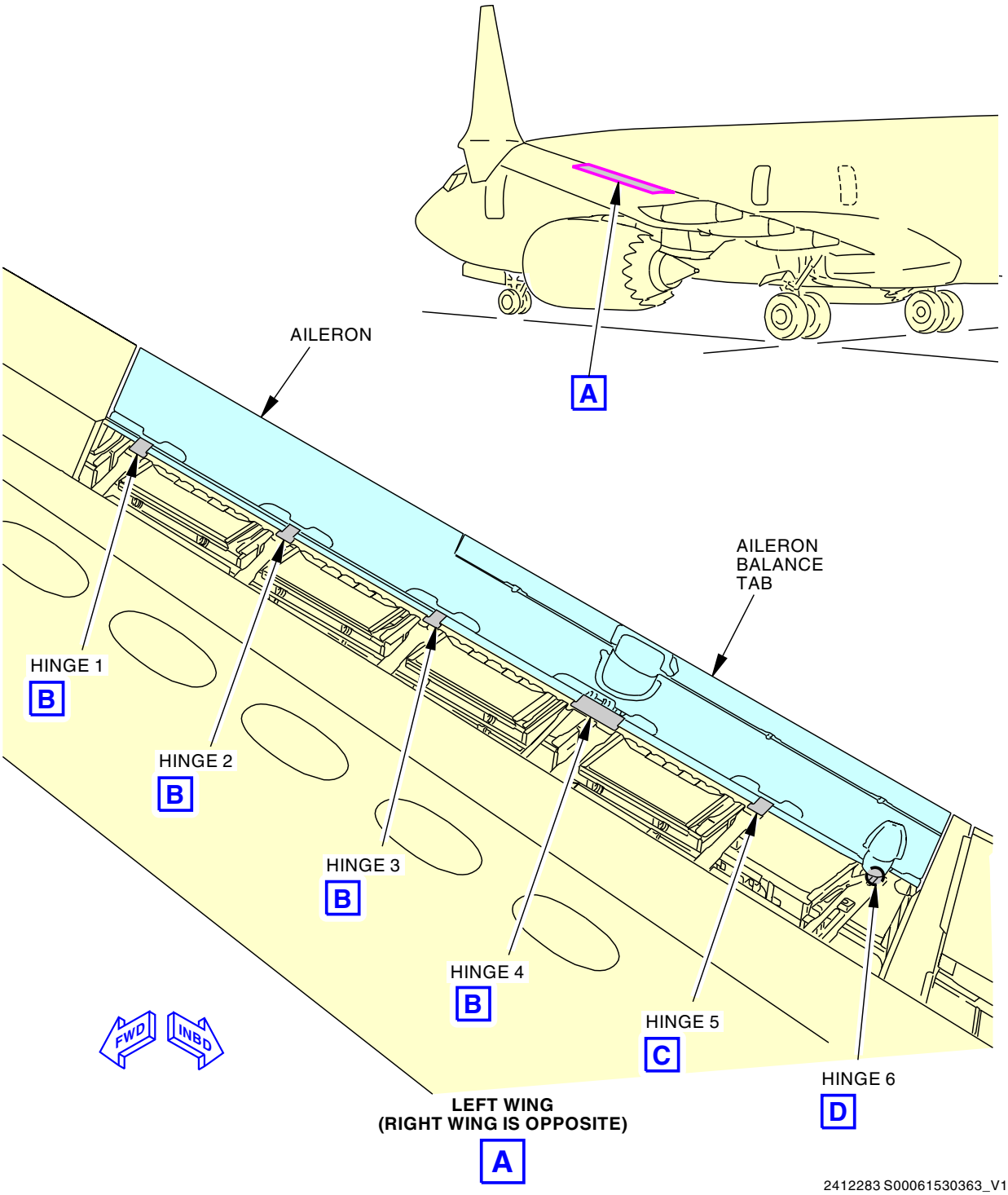

Aileron Wear Limits
Figure 601/27-11-11-990-804 (Sheet 1 of 3)

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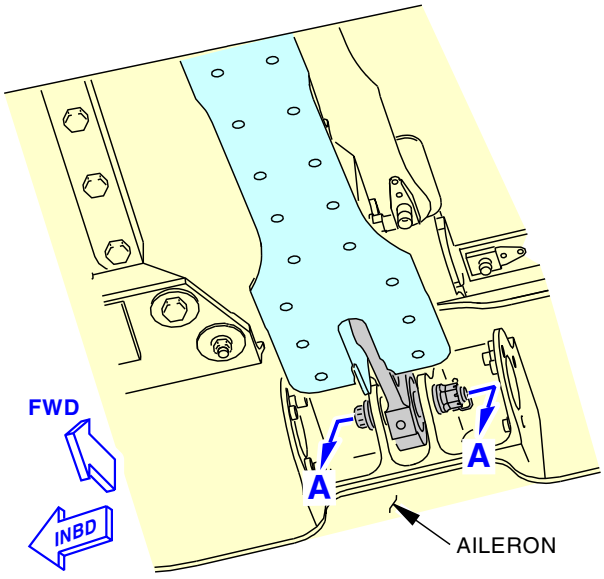
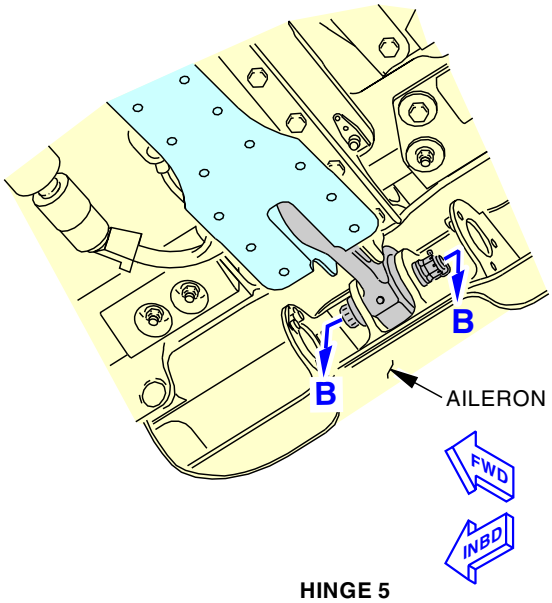


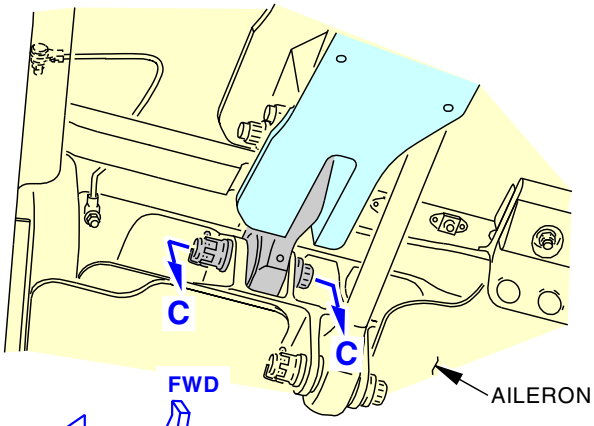
HINGE 1
(HINGES 2,3,4 ARE EQUIVALENT)

B



HINGE 5

C



HINGE 6

D

2412284 S00061530364_V1

Aileron Wear Limits
Figure 601/27-11-11-990-804 (Sheet 2 of 3)

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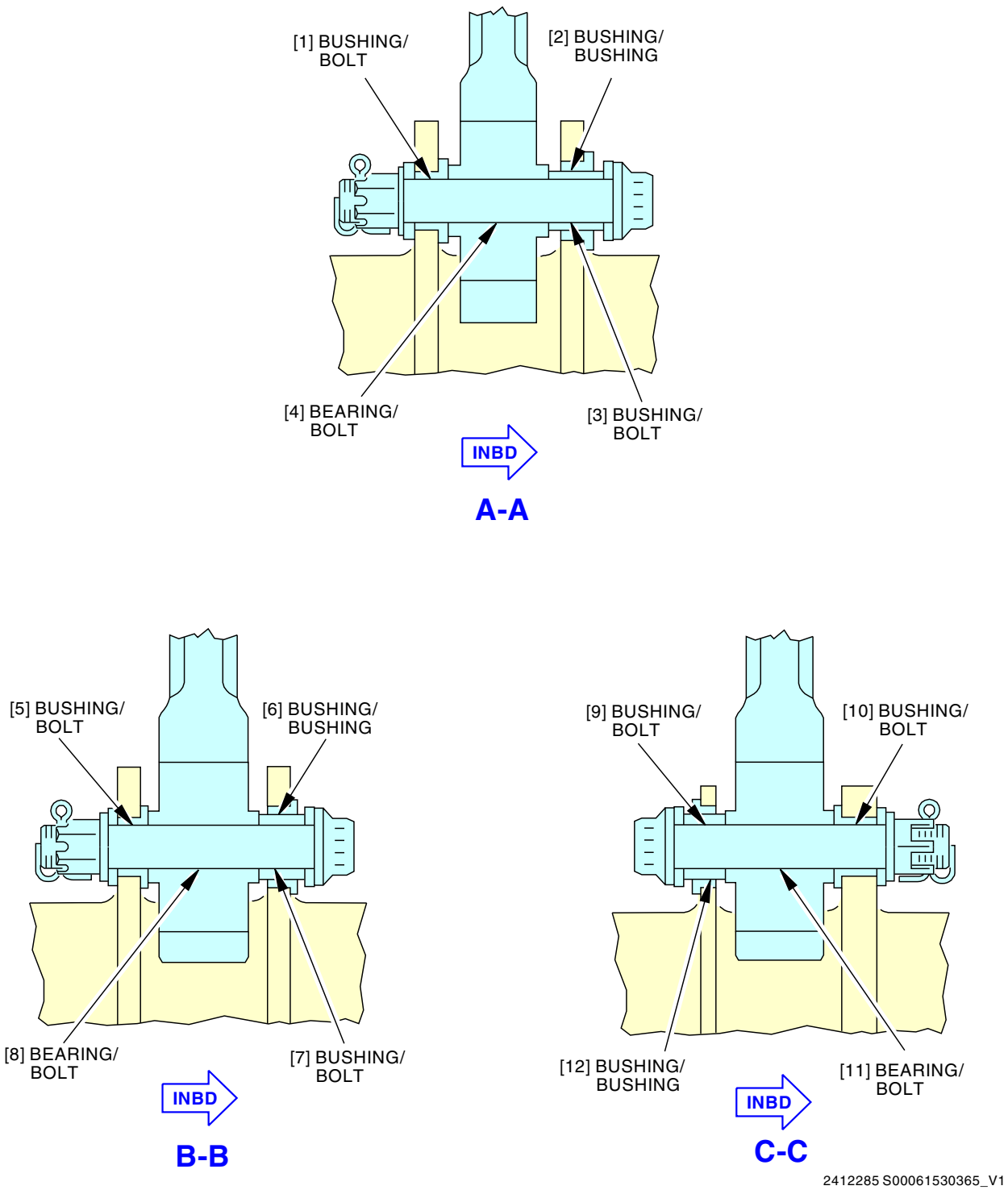

Aileron Wear Limits
Figure 601/27-11-11-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON POWER CONTROL UNIT LINKAGE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Aileron Power Control Unit Linkage Removal

(2) Aileron Power Control Unit Linkage Installation.

B. The Aileron Power Control Unit Linkage is referred to as the aileron power control unit linkage (A) [1] or aileron power control unit linkage (B) [2] in this procedure.

C. This procedure is applicable for system A and B linkages.

TASK 27-11-14-000-801

2. Aileron Power Control Unit Linkage Removal

(Figure 401)

A. References

Reference	Title
27-11-71-000-801	Aileron Power Control Unit Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 27-11-14-480-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-14-020-001

(2) Do this task: Aileron Power Control Unit Removal, TASK 27-11-71-000-801.

D. Aileron Power Control Unit Linkage Removal

SUBTASK 27-11-14-020-002

(1) Do these steps to remove the aileron power control unit linkage (A) [1] or aileron power control unit linkage (B) [2]:

(a) Disconnect cable ABSA [22] and cable ABSB [19] at the turnbuckles [3].

(b) Remove the nuts [18], washers [17], washers [16] and bolts [15] to remove the retaining plates [14] from the aileron bus drum [20].

(c) Disengage cable ABSA [22] and cable ABSB [19] from the aileron bus drum [20].

(d) Safety the disconnected cable ABSA [22] and cable ABSB [19] to secure them.

(e) Remove the cotter pin [6] and washers [5] to remove the cable retention pins [4] between both support frame [7] and support frame [21].

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(f) Remove the nuts [23] and screws [25] to disconnect the System B upper quadrant assembly from the System A lower quadrant assembly.

(g) For system A, do these steps:

1) Remove the nuts [47], washers [46], washer [45], and bolt [44] to disconnect the diagonal support [39] from the structure.

2) Remove the nuts [34], washers [33], washer [32], and bolt [31] to remove the diagonal support [39] from the support frame [21].

3) Remove the nuts [49] to remove the hydraulic fittings.

4) Remove the nut [30], washer [29], washer [28], bolt [27], nut [38], washer [37], washer [36], and bolt [35] to remove the support frame [21] from the structure.

(h) For system B, do these steps:

1) Remove the nut [68], washer [69], bushing [70], taper shims [67], washer [72], and bolt [71] to disconnect the diagonal support [62] from the structure;

2) Remove the nut [55], washer [54], washer [53], and bolt [52] to remove the diagonal support [62] from the support assembly [56];

3) Remove the nut [30], washer [29], washer [28], bolt [27], nut [66], washer [65], washer [64], and bolt [63] to remove the support frame [7] from the structure.

(i) For system A, do these steps:

1) Remove the nuts [43], washers [42], washers [41], and bolts [40] to disconnect the support assembly [50] from the structure;

2) Remove the aileron power control unit linkage (A) [1] from the airplane.

(j) For system B, do these steps:

1) Remove the nuts [43], washers [42], washers [41], and bolts [40] to disconnect the support assemblies [56] from the structure.

2) Remove the aileron power control unit linkage (B) [2] from the airplane.

——— END OF TASK ———

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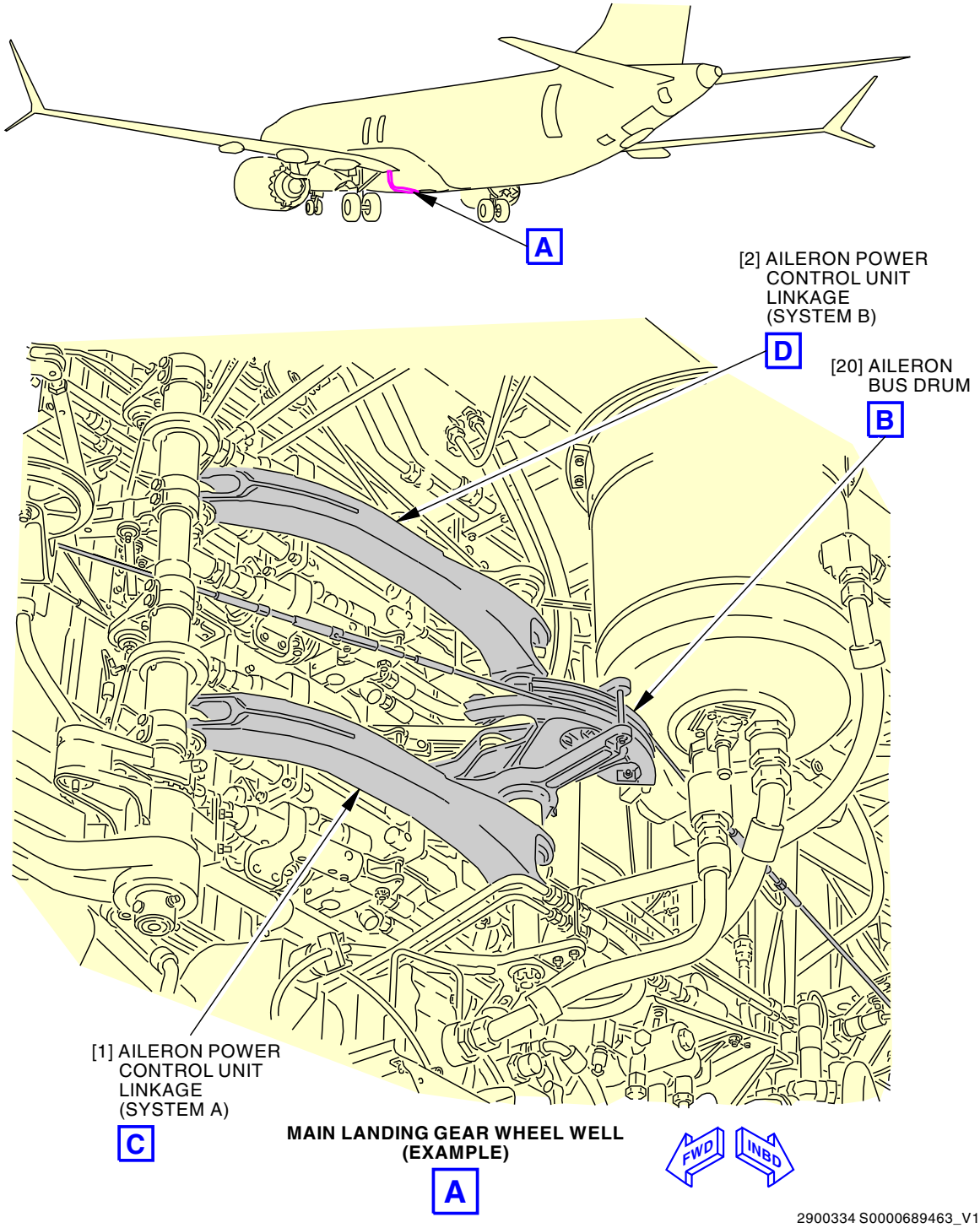

Aileron Power Control Unit Linkage Installation
Figure 401/27-11-14-990-801 (Sheet 1 of 4)

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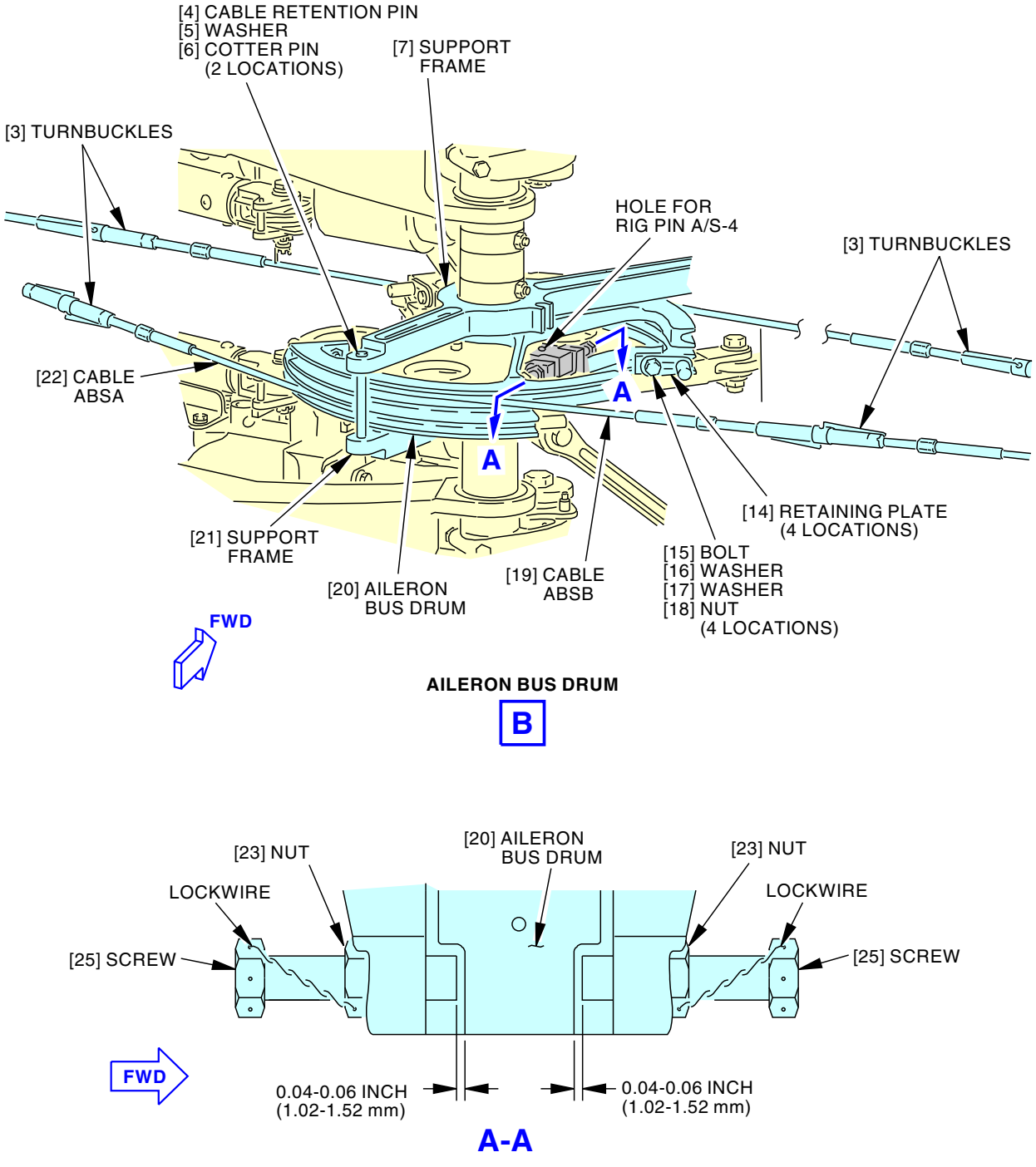

Aileron Power Control Unit Linkage Installation
Figure 401/27-11-14-990-801 (Sheet 2 of 4)

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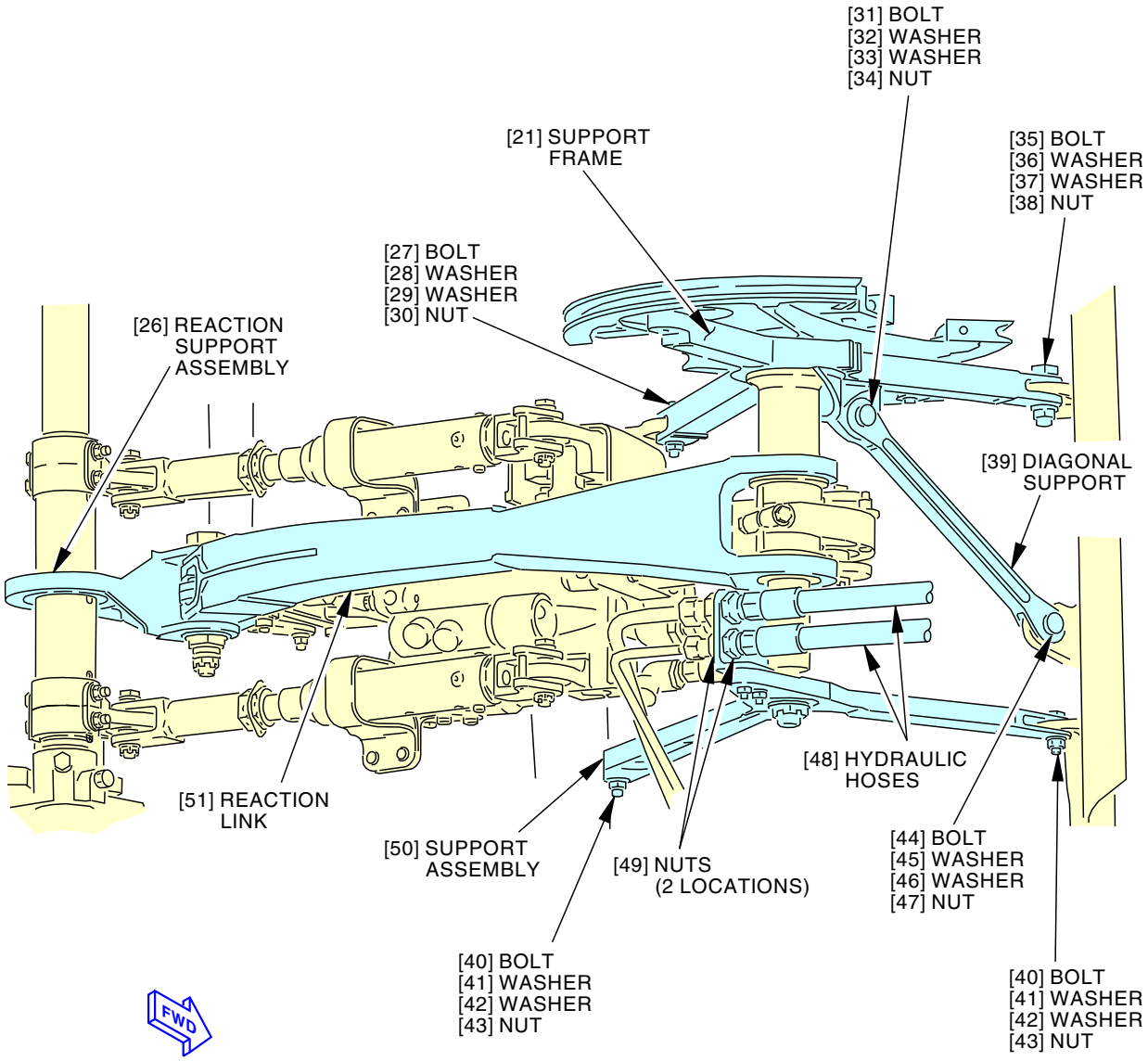

AILERON POWER CONTROL UNIT LINKAGE (SYSTEM A)

C

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Aileron Power Control Unit Linkage Installation
Figure 401/27-11-14-990-801 (Sheet 3 of 4)

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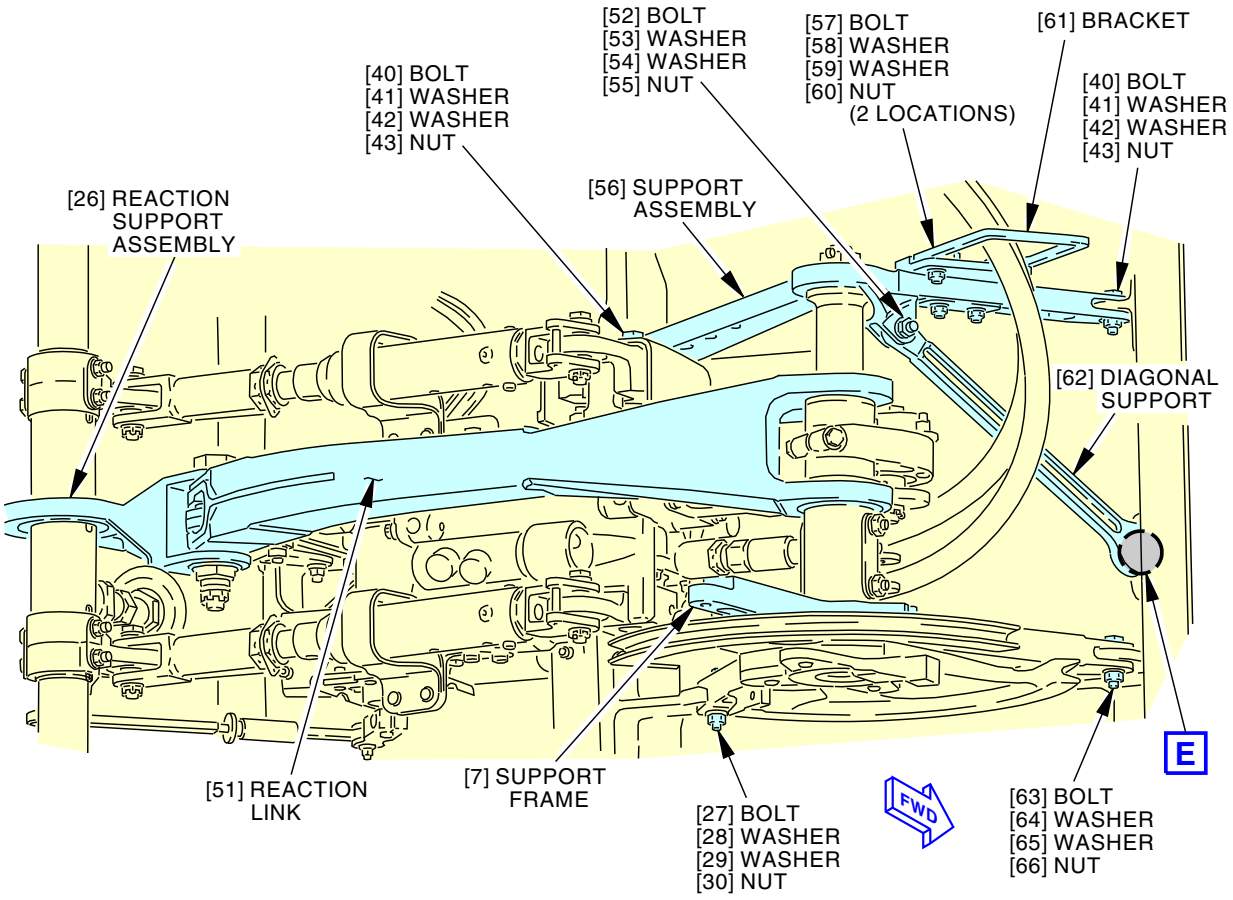
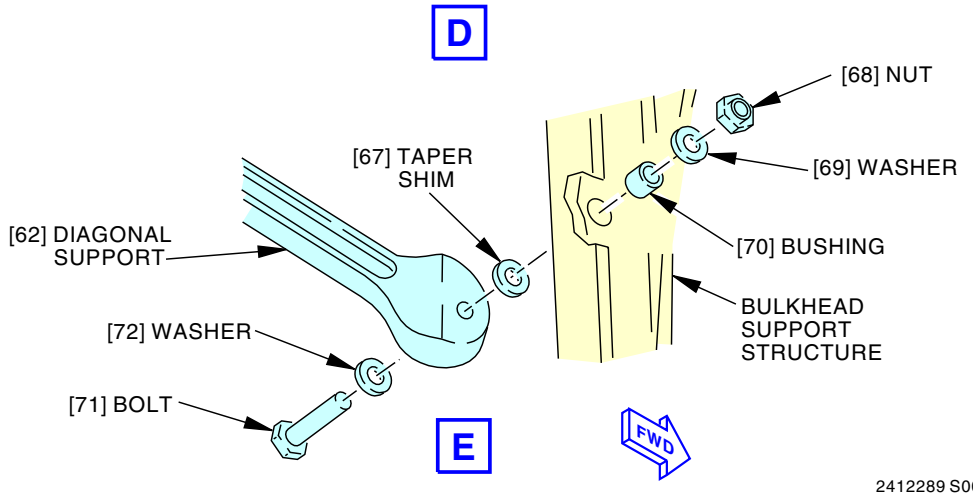


AILERON POWER CONTROL UNIT LINKAGE (SYSTEM B)



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Aileron Power Control Unit Linkage Installation
Figure 401/27-11-14-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-14-400-801

3. Aileron Power Control Unit Linkage Installation

(Figure 401)

A. References

Reference	Title
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-11-71-400-801	Aileron Power Control Unit Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G02436	Lockwire - MS20995NC40, Monel - 0.040 Inch (1.016 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Aileron power control unit linkage (A)	27-11-14-01-045	SIA ALL
2	Aileron power control unit linkage (B)	27-11-14-02-050	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Aileron Power Control Unit Linkage Installation

SUBTASK 27-11-14-420-001

(1) Install the aileron power control unit linkage (A) [1] or aileron power control unit linkage (B) [2].

(a) Put the aileron power control unit linkage (A) [1] or aileron power control unit linkage (B) [2] in its position.

(b) Apply sealant, A00247, to the bolts [40].

(c) Install the bolts [40], washers [41], washer [42], and nuts [43] to connect the support assembly [50] or support assembly [56] to the structure.

(d) For system A, do these steps:

1) Apply sealant, A00247, to bolt [31], bolt [44], bolts [27], and bolts [35].

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2) Install the diagonal support [39] to the support frame [21] with bolt [31], washer [32], washer [33], and nut [34].

3) Connect the diagonal support [39] to the structure with bolt [44], washer [45], washer [46], and nut [47].

4) Install the hydraulic fittings with nuts [49].

5) Install the bolt [27], washer [28], washer [29], nut [30], bolt [35], washer [36], washer [37], and nut [38] to connect the support frame [21] to the structure.

(e) For system B, do these steps:

1) Apply sealant, A00247, to bolt [52], bolt [71], bolt [27], bolt [63], taper shims [67], and bushing [70].

2) Install the diagonal support [62] to the support assembly [56] with bolt [52], washer [53], washer [54], and nut [55].

3) Install the diagonal support [62] to the structure with bolt [71], washer [72], taper shims [67], bushing [70], washer [69], and nut [68].

a) Install or remove the taper shim [67] as necessary to decrease the gap to 0.003 in. (0.076 mm) or less, between the diagonal support [62] and bulkhead support structure that it is attached to.

4) Install the bolt [27], washer [28], washer [29], nut [30], bolt [63], washer [64], washer [65], nut [66] to connect the support frame [7] to the structure.

(f) Install the cable retention pins [4], washers [5], and cotter pins [6].

1) Apply a maximum preload of 35 in-lb (4 N·m) during installation.

SUBTASK 27-11-14-420-002

(2) Do this task: Aileron Power Control Unit Installation, TASK 27-11-71-400-801.

SUBTASK 27-11-14-420-003

(3) Install the screws [25] and nuts [23].

(a) Make sure that the gap between the screw [25] and aileron bus drum [20] is 0.04 in. (1.02 mm) - 0.06 in. (1.52 mm).

(b) Install MS20995NC40 lockwire, G02436, with one continuous twist on the two screws [25].

SUBTASK 27-11-14-480-002

(4) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum [20].

SUBTASK 27-11-14-420-005

(5) Do these steps to connect the cable ABSA [22] and cable ABSB [19].

(a) Connect the cable ABSA [22] and cable ABSB [19] on the aileron bus drum [20].

1) Install the retaining plates [14] with bolts [15], washers [16], washers [17], and nuts [18] (TASK 20-10-93-400-801).

(b) Connect the cable ABSA [22] and cable ABSB [19] at the turnbuckles [3].

(c) Tighten the turnbuckles [3] but keep the cables tension at zero.

(d) Adjust the cable ABSA [22] and cable ABSB [19] (TASK 27-11-00-820-801).

(e) Install the turnbuckles clip locks.

SUBTASK 27-11-14-480-005

(6) Remove the rig pin A/S-4, from the rigging pin kit, SPL-1585, from the aileron bus drum [20].

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SUBTASK 27-11-14-710-001

(7) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON BALANCE TAB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of an aileron balance tab

(2) An installation of an aileron balance tab.

B. This procedure is applicable for the left and right aileron balance tab.

TASK 27-11-21-000-801

2. Aileron Balance Tab Removal

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)

B. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Aileron Balance Tab Removal

SUBTASK 27-11-21-860-001

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-21-020-001

(2) To remove an aileron balance tab [2], do these steps: (Figure 401):

(a) Remove the bolts [8] that attach the forward removable fairing [9] to the aileron [1].

1) Remove the forward removable fairing [9].

(b) Remove the bolts [6] that attach the aft removable fairing [7] to the aileron balance tab [2].

1) Remove the aft removable fairing [7].

(c) Remove the pins [12], nuts [11], washers [13], bushings [16], washers [15], and bolts [14] that attach the aileron tab control rods [10].

(d) Turn the trailing edge of the aileron balance tab [2] up until you can see the bolts [3] that attach the hinge covers [5].

(e) Remove the bolts [3] and washers [4].

(f) Remove the hinge covers [5].

(g) Disconnect the bonding jumpers [29] that are adjacent to the tab hinge 1 and 5.

1) Remove the nuts [32], washers [31], and bolts [30] to disconnect the bonding jumpers [29].

(h) To remove an aileron balance tab [2] from the aileron [1]:

1) Do these steps at tab hinge 2:

a) Remove the pin [22], nut [17], washer [21], bushing [18], washer [20], and bolt [19].

<1> Discard the pin [22].

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2) Do these steps at hinge 3:

a) Remove the pin [23], nut [28], washer [27], washer [25], and bolt [24].

<1> Discard the pin [23].

3) Do these steps at tab hinge 1, 4, and 5:

a) Remove the pins [37], nuts [38], washers [39], bushings [36], bushings [35], washers [34], and bolts [33].

<1> Discard the pins [37].

(i) Carefully remove the aileron balance tab [2] from the hinge assemblies.

(j) Remove the aileron balance tab [2] from the aileron [1].

——— END OF TASK ———

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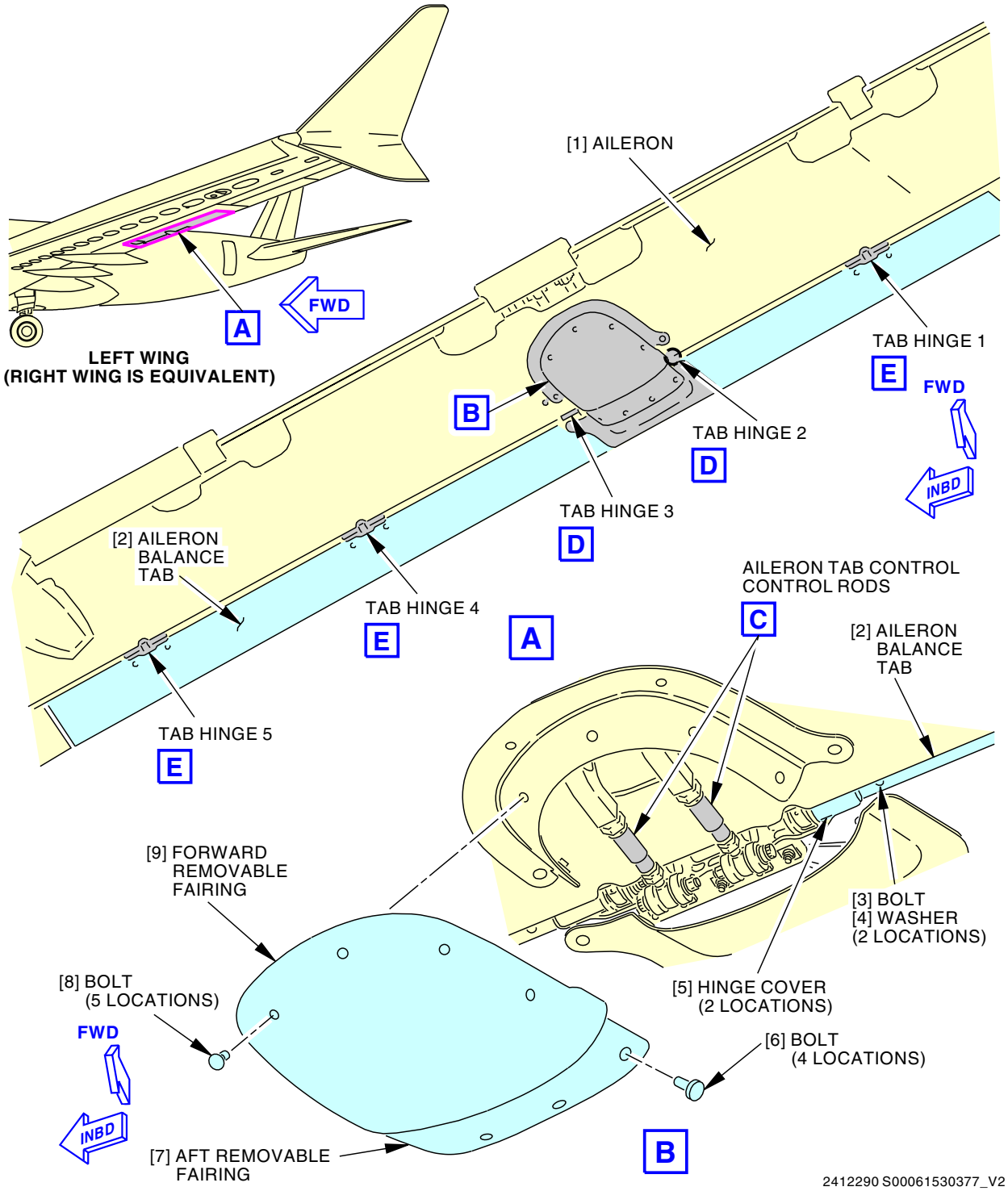

Aileron Balance Tab Installation
Figure 401/27-11-21-990-801 (Sheet 1 of 3)

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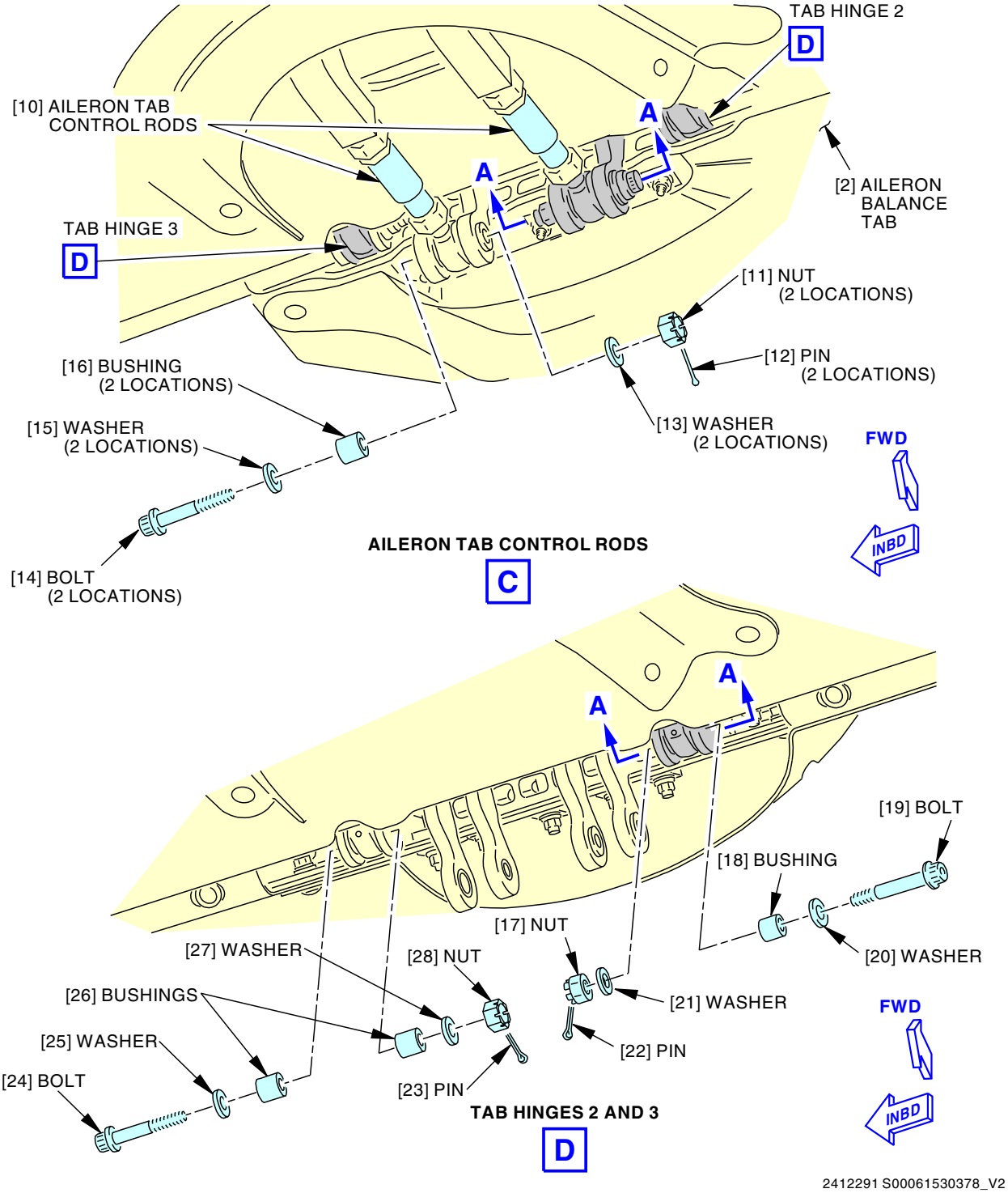
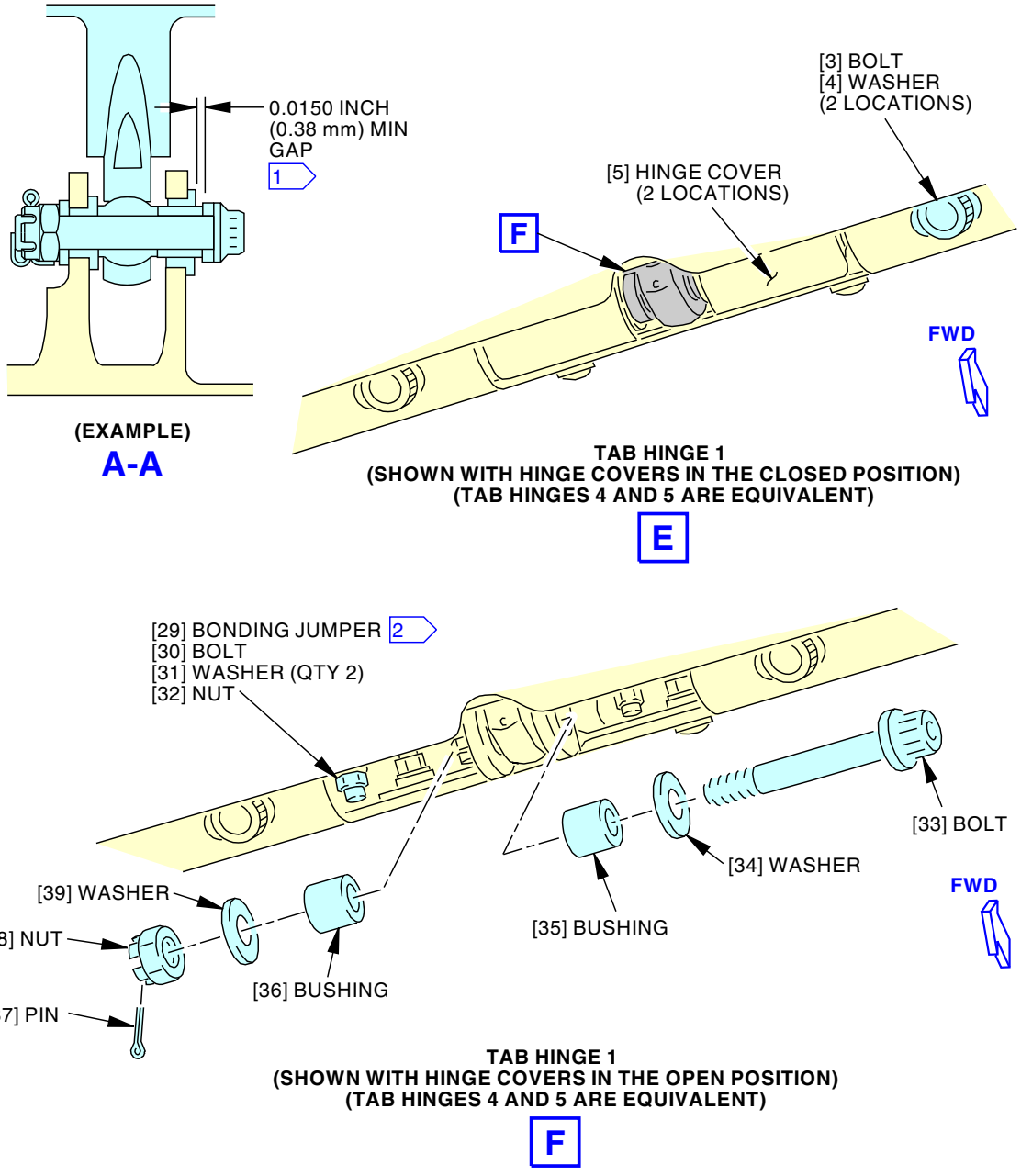


Aileron Balance Tab Installation
Figure 401/27-11-21-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 0.0150 INCH (0.38 mm) GAP REFERS TO TAB HINGE 2 AND CONTROL ROD CONNECTIONS ONLY.

2 BONDING JUMPERS ARE ON TAB HINGES 1 AND 5.

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Aileron Balance Tab Installation
Figure 401/27-11-21-990-801 (Sheet 3 of 3)

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TASK 27-11-21-400-801

3. Aileron Balance Tab Installation

A. References

Reference	Title
27-11-00-700-809	Aileron Balance Tab Position Test (P/B 501)
27-11-00-820-803	Aileron Balance Tab Adjustment (Recommended Method) (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-11-21-200-801	Aileron Balance Tab Inspection (P/B 601)
SRM 51-60-03	AILERON TAB BALANCE PROCEDURE

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Aileron balance tab	27-11-21-01-100	SIA ALL
		27-11-21-01-105	SIA ALL
12	Pin	27-11-21-01-010	SIA ALL
22	Pin	27-11-21-01-060	SIA ALL
23	Pin	27-11-21-01-060	SIA ALL
37	Pin	27-11-21-01-060	SIA ALL

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Aileron Balance Tab Installation

SUBTASK 27-11-21-220-001

(1) If you install used bearings, bushings, and bolts, do this task: Aileron Balance Tab Inspection, TASK 27-11-21-200-801.

SUBTASK 27-11-21-210-001

(2) Make sure that the balance panels have the correct number of the tab adjust weights (Figure 402).

(a) If it is necessary, add or remove tab adjust weights (SRM SUBJECT 51-60-03).

SUBTASK 27-11-21-640-001

(3) Lubricate the hinge bearings, bushing [18], bushing [26], bushing [35], bushing [36], bolt [19], bolt [24], and bolt [33] with grease, D00633, except on the threads (Figure 401).

SUBTASK 27-11-21-420-001

(4) To install an aileron balance tab [2] to the aileron [1], do these steps:

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(a) Put the aileron balance tab [2] in its position.

(b) Install the aileron balance tab [2] hinge fittings and aileron [1] fittings:

1) Do these steps at tab hinge 1, 4, and 5:

a) Install the bolts [33], washers [34], bushings [35], bushings [36], washers [39], and nuts [38].

b) Tighten the nuts [38] to 65 ±15 in-lb (7 ±2 N·m).

NOTE: Tighten the nuts [38] to the lower end of the torque range. Continue to tighten the nut until the first castellation aligns with the hole in the bolts [33].

c) Install the new pins [37].

2) Do these steps at tab hinge 3:

a) Install the bolt [24], washer [25], bushings [26], washer [27], and nut [28].

b) Tighten the nut [28] to 65 ±15 in-lb (7 ±2 N·m).

NOTE: Tighten the nut [28] to the lower end of the torque range. Continue to tighten the nut until the first castellation aligns with the hole in the bolt [24].

c) Install the new pin [23].

3) Do these steps at tab hinge 2:

a) Install the bolt [19], washer [20], bushing [18], washer [21], and nut [17].

b) Make sure that there is a minimum of 0.0150 in. (0.38 mm) gap between the washer [20] and bushing [18] (Figure 401)(View A-A).

c) Tighten the nut [17] to 65 ±15 in-lb (7 ±2 N·m).

NOTE: Tighten the nut [17] to the lower end of the torque range. Continue to tighten the nut until the first castellation aligns with the hole in the bolt [19].

d) Install the new pin [22].

(c) To install the bonding jumpers [29] at tab hinge 1 and 5, do these steps:

1) Put the bonding jumpers [29] in their positions.

2) Install bolts [30], washers [31], and nuts [32].

3) Fillet seal the bonding jumper joints with sealant, A00247 or sealant, A02315.

(d) To install the hinge covers [5] to close the hinge bolt access areas, do these steps:

1) Install the bolts [3] and washers [4].

2) Make sure that the washers [4] touch the aileron balance tab [2] on a minimum of two edges.

3) Tighten the bolts [3] to 25 ±3 in-lb (2.8 ±0.4 N·m).

(e) Connect the aileron tab control rods [10] to the aileron balance tab [2]:

1) Install the bolts [14], washers [15], bushings [16], washers [13], and nuts [11].

a) Make sure that there is a minimum of 0.0150 in. (0.38 mm) gap between the washers [15] and bushings [16] (Figure 401) (View A-A).

2) Tighten the nuts [11] to 65 ±15 in-lb (7 ±2 N·m).

3) Install the new pins [12].

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SUBTASK 27-11-21-420-002

(5) Install the bolts [6] to attach the aft removable fairing [7] to the aileron balance tab [2].

SUBTASK 27-11-21-420-003

(6) Install the bolts [8] to attach the forward removable fairing [9] to the aileron [1].

(a) Apply sealant, A02315, to the upper edge of the forward removable fairing [9] to get aerodynamic smoothing.

SUBTASK 27-11-21-710-001

(7) Operate the aileron control wheel in a full cycle.

(a) Make sure that the aileron balance tab [2] moves freely in the opposite direction of the aileron [1].

SUBTASK 27-11-21-860-002

(8) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-21-820-001

(9) Do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

SUBTASK 27-11-21-730-001

(10) Do this task: Aileron Balance Tab Position Test, TASK 27-11-00-700-809.

——— END OF TASK ———

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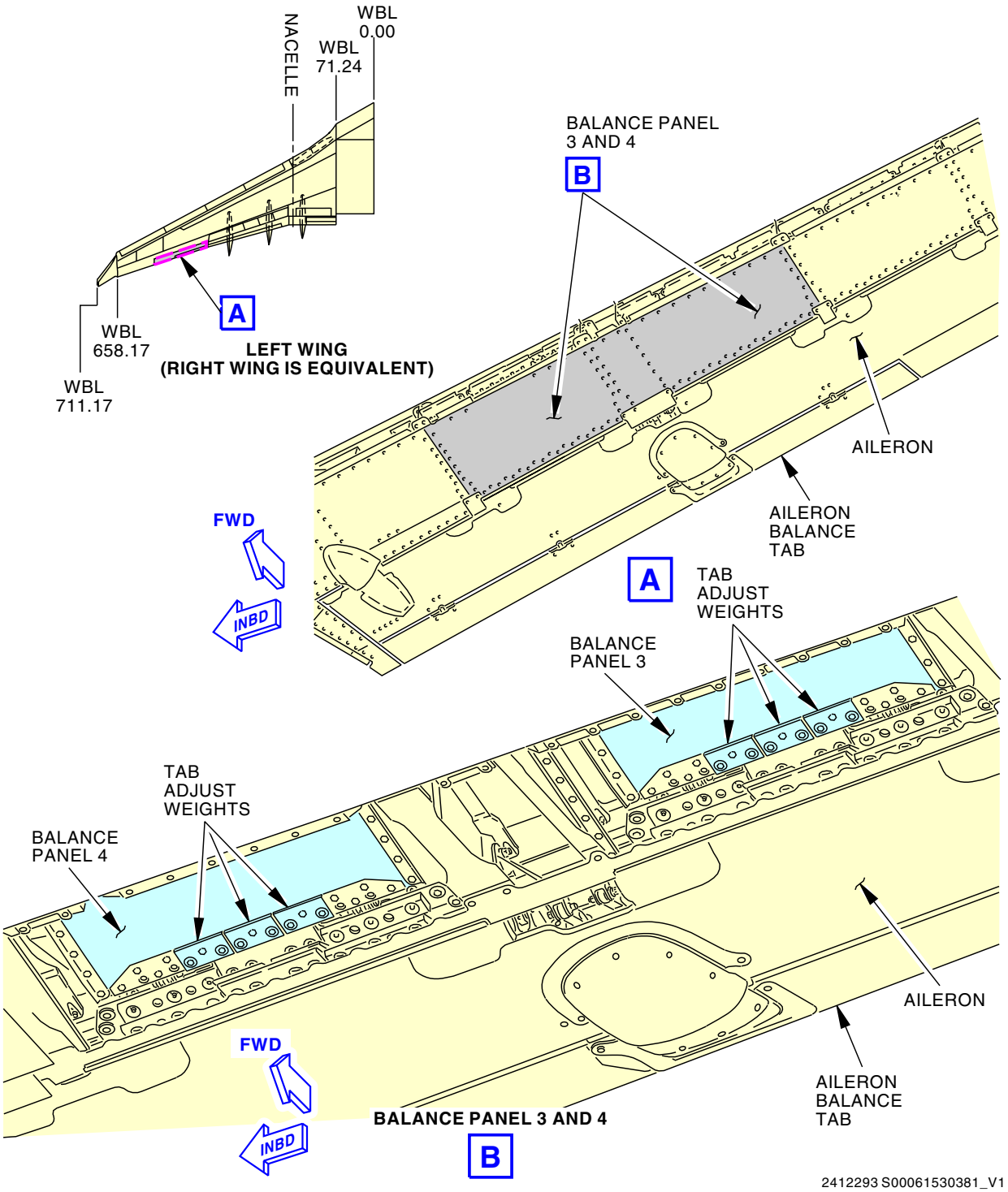

Aileron Balance Tab Adjust Weights Location
Figure 402/27-11-21-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON BALANCE TAB - INSPECTION/CHECK

1. General

A. This procedure contains the task to do a check of the aileron balance tab.

TASK 27-11-21-200-801

2. Aileron Balance Tab Inspection

(Figure 601)

A. General

(1) This task gives wear limits and repair data for the aileron balance tab inspection.

B. References

Reference	Title
27-11-21-000-801	Aileron Balance Tab Removal (P/B 401)
27-11-21-400-801	Aileron Balance Tab Installation (P/B 401)
27-11-34-000-801	Aileron Tab Control Rods Removal (P/B 401)
27-11-34-400-801	Aileron Tab Control Rods Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Procedure

SUBTASK 27-11-21-020-002

(1) Do this task: Aileron Balance Tab Removal, TASK 27-11-21-000-801 or Aileron Tab Control Rods Removal, TASK 27-11-34-000-801.

SUBTASK 27-11-21-020-003

(2) Use these tools to do a check for wear on the parts of the aileron balance tab:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-11-21-020-004

(3) Examine the parts of the aileron balance tab for worn areas:

(a) Remove the parts you want to do a check.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are out of tolerance, replace or repair the parts.

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Table 601/27-11-21-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.3750 in. (9.5250 mm)	0.3756 in. (9.5402 mm)	0.3770 in. (9.5758 mm)	0.0030 in. (0.0762 mm)
#1 BUSHING	O.D.	0.3740 in. (9.4996 mm)	0.3745 in. (9.5123 mm)	0.3725 in. (9.4615 mm)	
#2 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)
#2 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	
#3 BEARING	I.D.	0.2495 in. (6.3373 mm)	0.2500 in. (6.3500 mm)	0.2510 in. (6.3754 mm)	0.0025 in. (0.0635 mm)
#3 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	
#4 BUSHING	I.D.	0.3750 in. (9.5250 mm)	0.3756 in. (9.5402 mm)	0.3770 in. (9.5758 mm)	0.0030 in. (0.0762 mm)
#4 BUSHING	O.D.	0.3740 in. (9.4996 mm)	0.3745 in. (9.5123 mm)	0.3725 in. (9.4615 mm)	
#5 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)
#5 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	
#6 BEARING	I.D.	0.2495 in. (6.3373 mm)	0.2500 in. (6.3500 mm)	0.2510 in. (6.3754 mm)	0.0025 in. (0.0635 mm)
#6 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	
#7 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)
#7 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	
#8 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-11-21-993-802 (Continued)

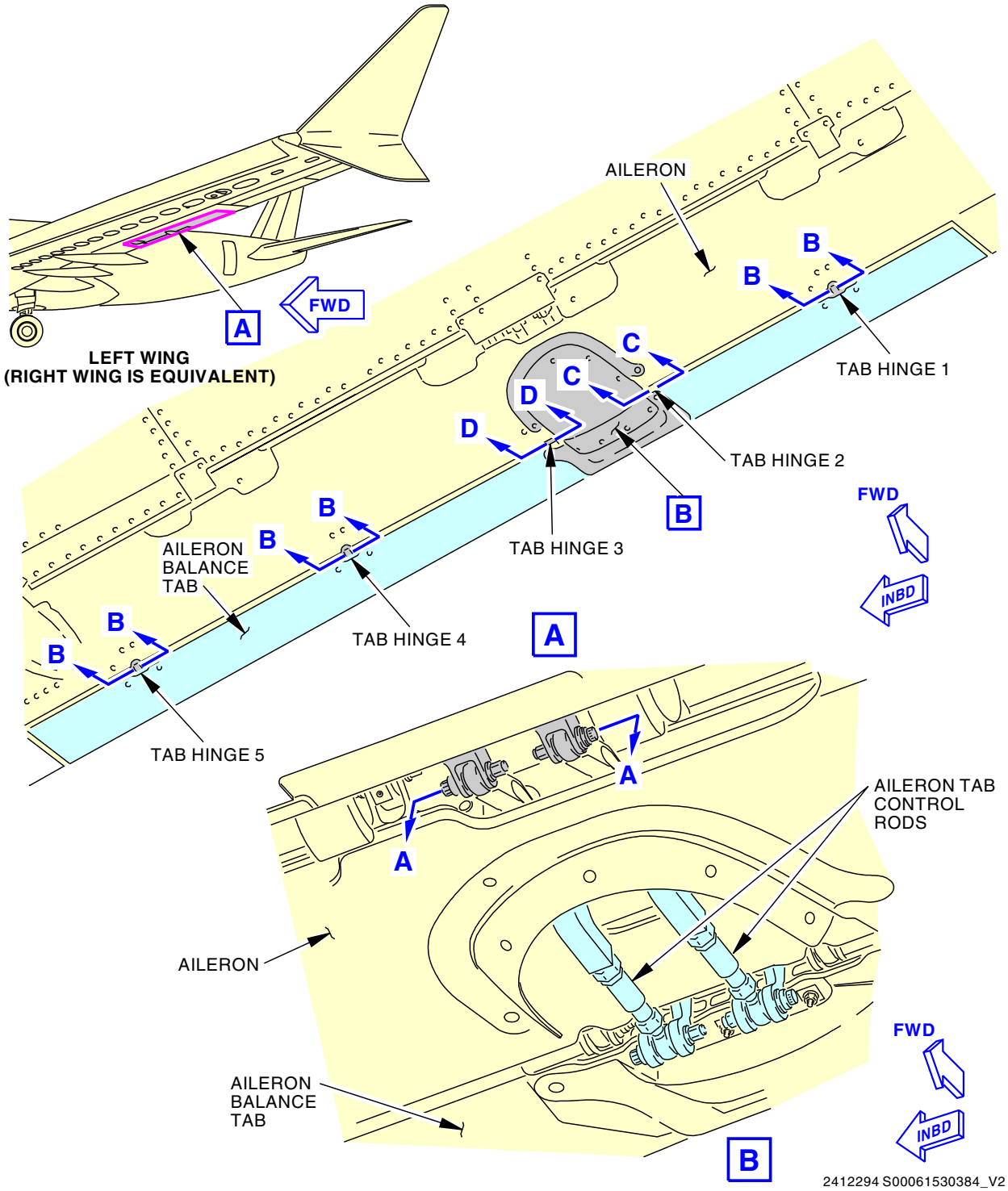
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#8 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	

SUBTASK 27-11-21-020-005

(4) Do this task: Aileron Balance Tab Installation, TASK 27-11-21-400-801 or Aileron Tab Control Rods Installation, TASK 27-11-34-400-801.

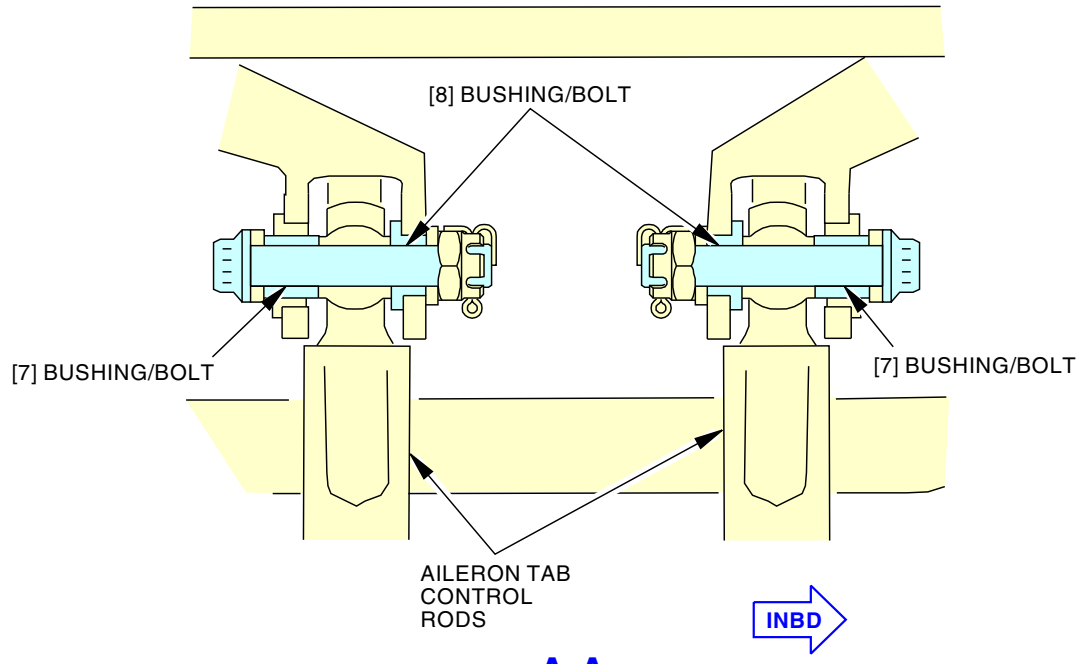
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

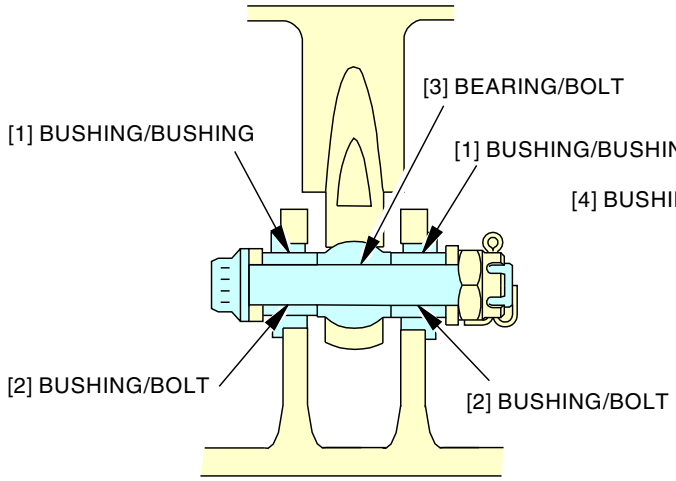


Aileron Balance Tab Wear Limits
Figure 601/27-11-21-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

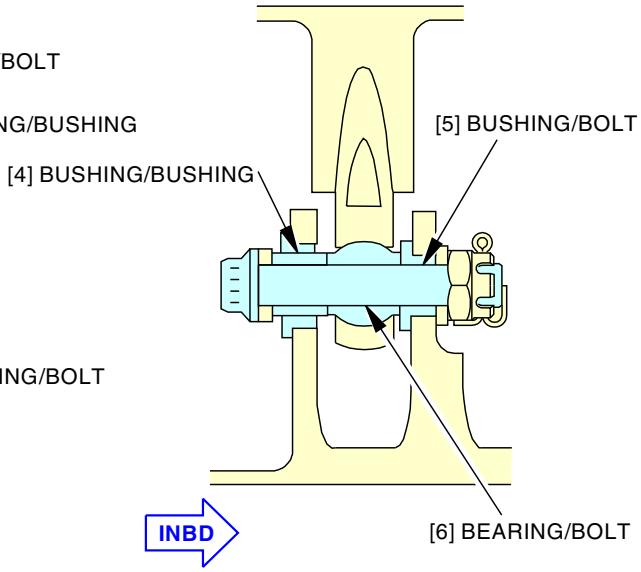


A-A



TAB HINGE 1
(TAB HINGES 4 AND 5 ARE EQUIVALENT)

B-B



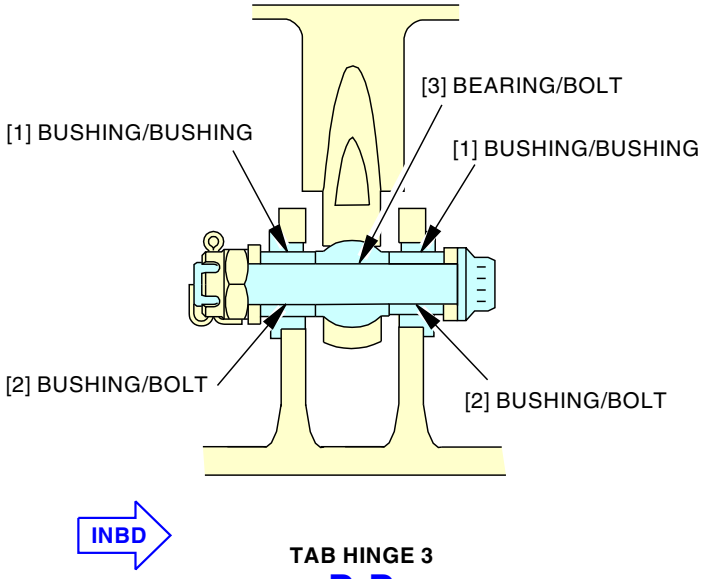
TAB HINGE 2

C-C

2412295 S00061530385_V2

Aileron Balance Tab Wear Limits
Figure 601/27-11-21-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2884123 S0000684254_V1

Aileron Balance Tab Wear Limits
Figure 601/27-11-21-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON WING QUADRANT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Aileron Wing Quadrant Removal

(2) Aileron Wing Quadrant Installation.

TASK 27-11-24-000-801

2. Aileron Wing Quadrant Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Access Panels

Number	Name/Location
571AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
671AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

E. Prepare for the Removal

SUBTASK 27-11-24-860-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-24-480-001

(2) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-24-010-001

(3) Remove the applicable panel:

(a) On the left wing, open this access panel:

Number	Name/Location
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) On the right wing, open this access panel:

Number	Name/Location
671DB	Lower Outboard Fixed Trailing Edge Access Panel

F. Aileron Wing Quadrant Removal

SUBTASK 27-11-24-020-001

(1) Do these steps to remove the aileron wing quadrant [9]:

(a) Disconnect cable ABSA [2] and cable ABSB [4] at the turnbuckles [1].

(b) Safety the disconnected cable ABSA [2] and cable ABSB [4].

(c) Remove the nuts [39], washers [38], and bolts [37] to remove the cable guard [36].

(d) Remove the nuts [8], washers [7], washers [6], and bolts [5] to remove the cable retaining plates [19] from the aileron wing quadrant [9].

(e) Disengage cable ABSA [2] and cable ABSB [4] from the aileron wing quadrant [9].

(f) Open the applicable access panel to get access to the bolt [23]:

For the left wing, open this access panel:

Number	Name/Location
571AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel

For the right wing, open this access panel:

Number	Name/Location
671AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel

(g) Remove the bolt [31] and washer [32] to disconnect the aileron position transmitter rod [33] from the aileron wing quadrant [9].

(h) Remove the pin [13], nut [14], washer [15], bushing [12], washer [11], and bolt [10] to remove the aileron control rod [17] from the aileron [16]. Discard the pin [13].

(i) Disconnect the aileron wing aileron wing quadrant [9] from the aileron hinge support [18].

1) Remove pin [26], nut [27], washer [25], bushing [24], washer [35], and bolt [23] to disconnect the aileron wing quadrant [9] from the aileron hinge support [18]. Discard the pin [26].

(j) Remove the aileron wing quadrant [9].

(k) If it is necessary, do these steps to disassemble the aileron wing quadrant [9]:

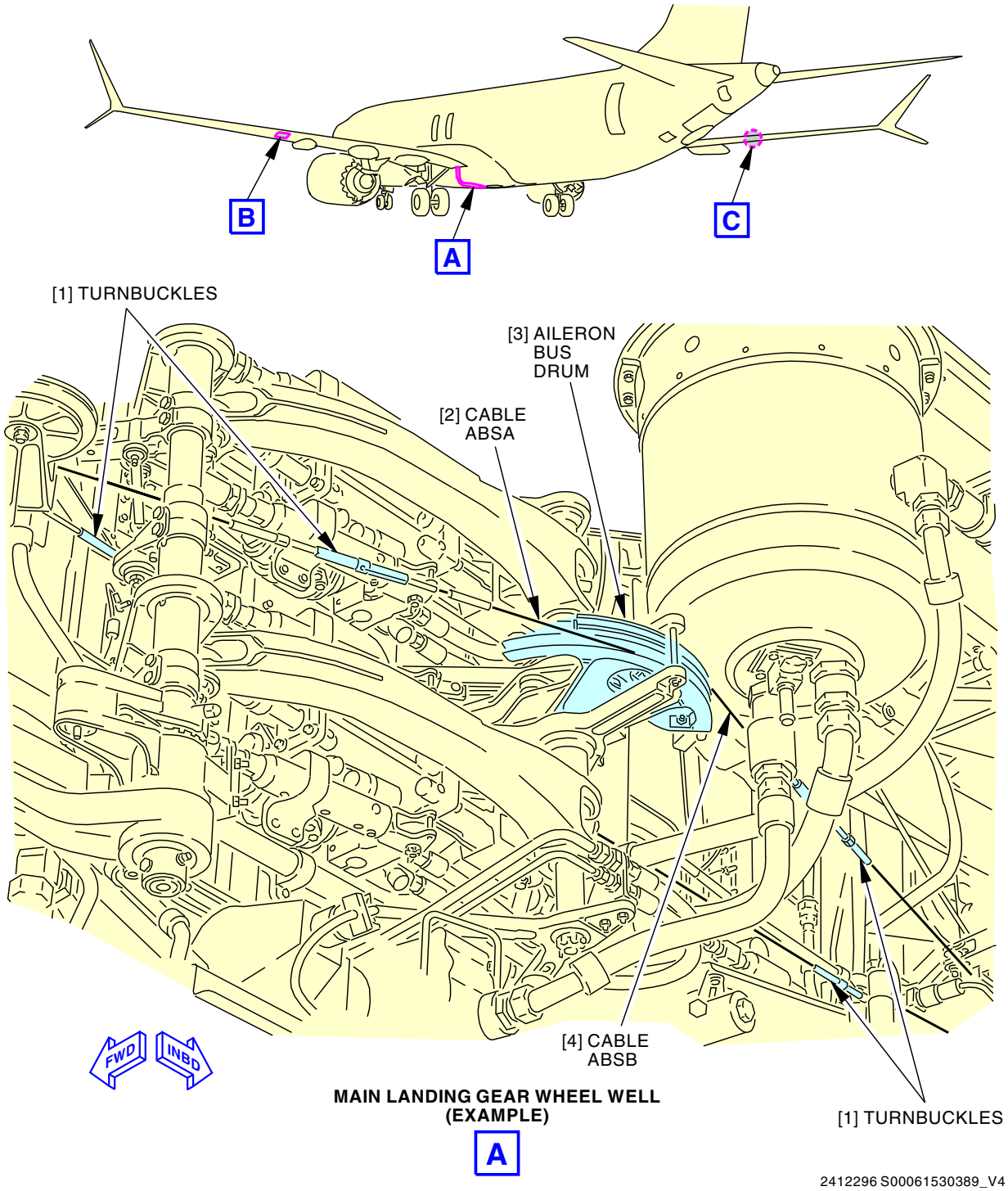
1) Remove the bushing [41], and bearings [40].

NOTE: The top bearing [40] is swaged to the wing aileron wing quadrant [9].

2) Remove the pin [28], nut [29], washer [30], bushing [22], washer [21], and bolt [20] to disconnect the aileron control rod [17] from the aileron wing quadrant [9]. Discard the pin [28].

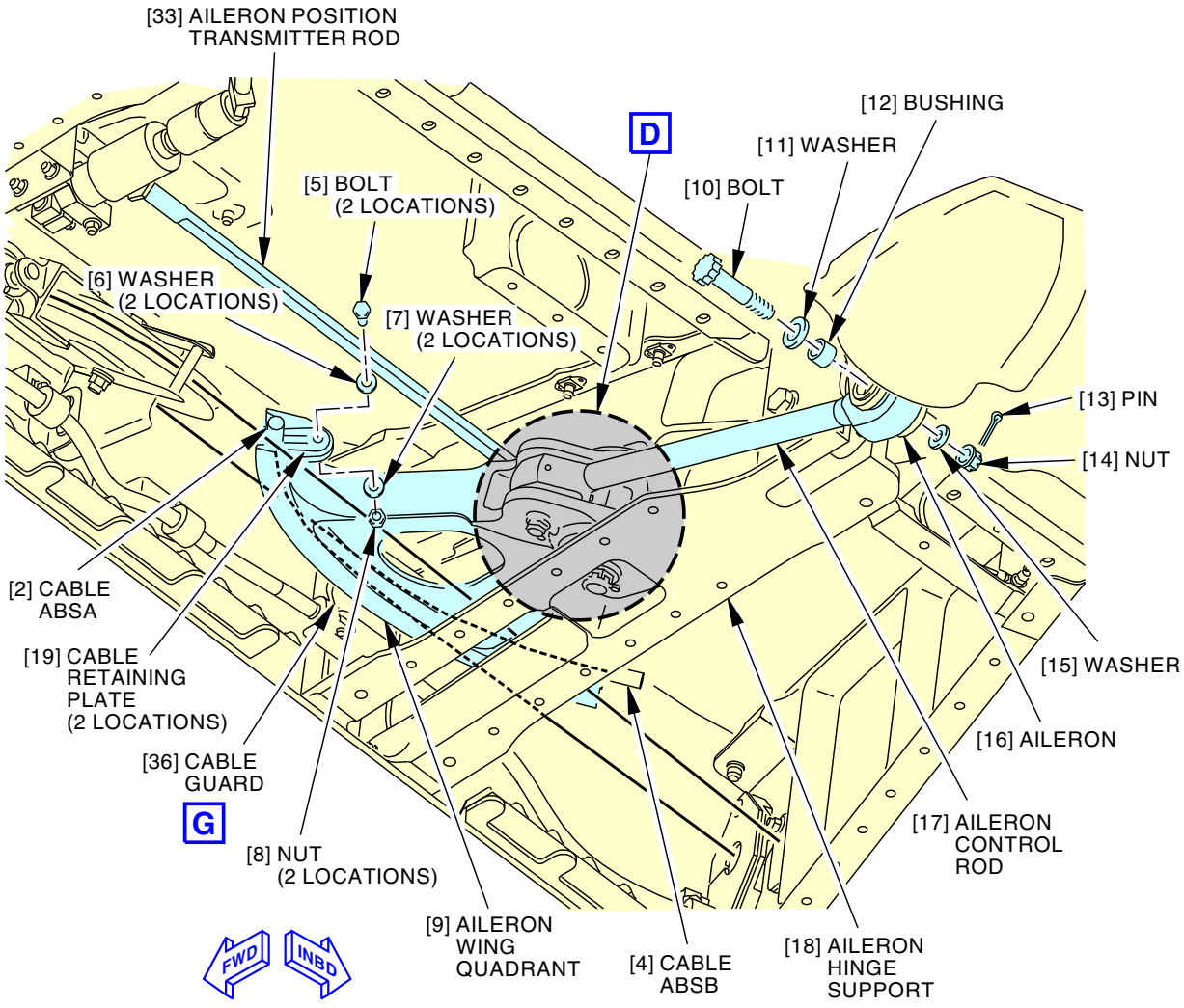
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Wing Quadrant Installation
Figure 401/27-11-24-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



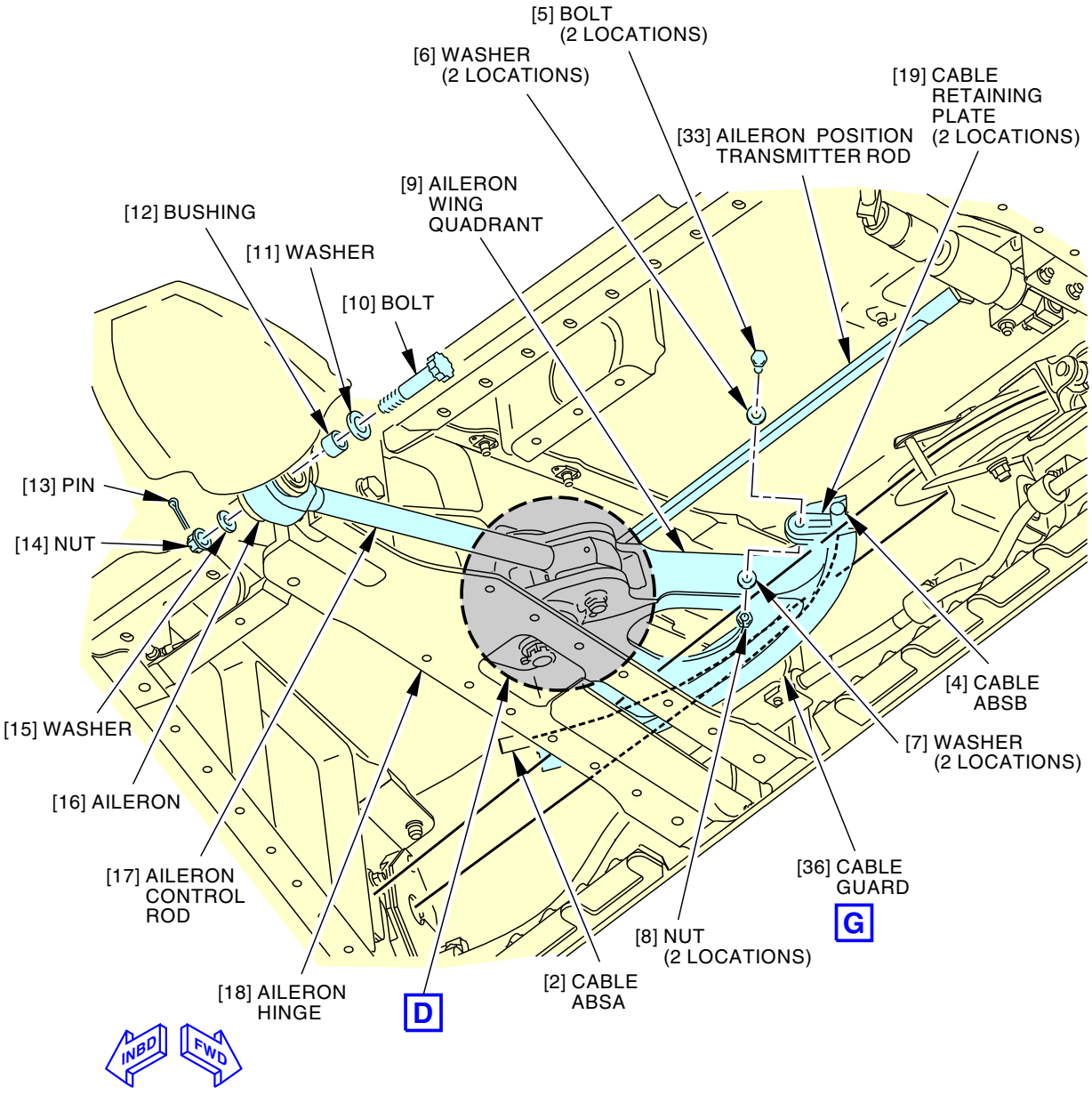
LEFT AILERON WING QUADRANT

B

2412297 S00061530390_V2

Aileron Wing Quadrant Installation
Figure 401/27-11-24-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



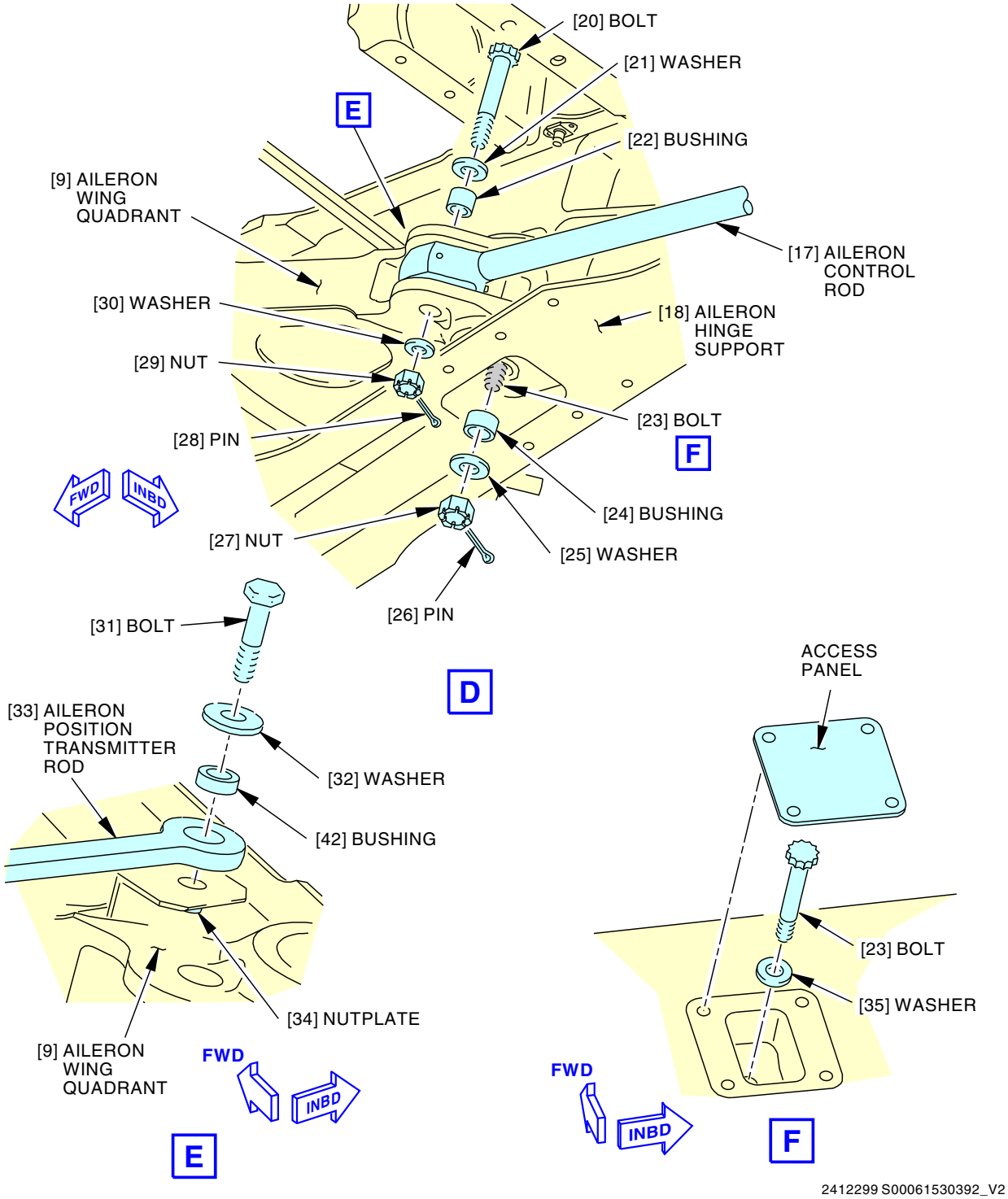
RIGHT AILERON WING QUADRANT

C

2412298 S00061530391_V2

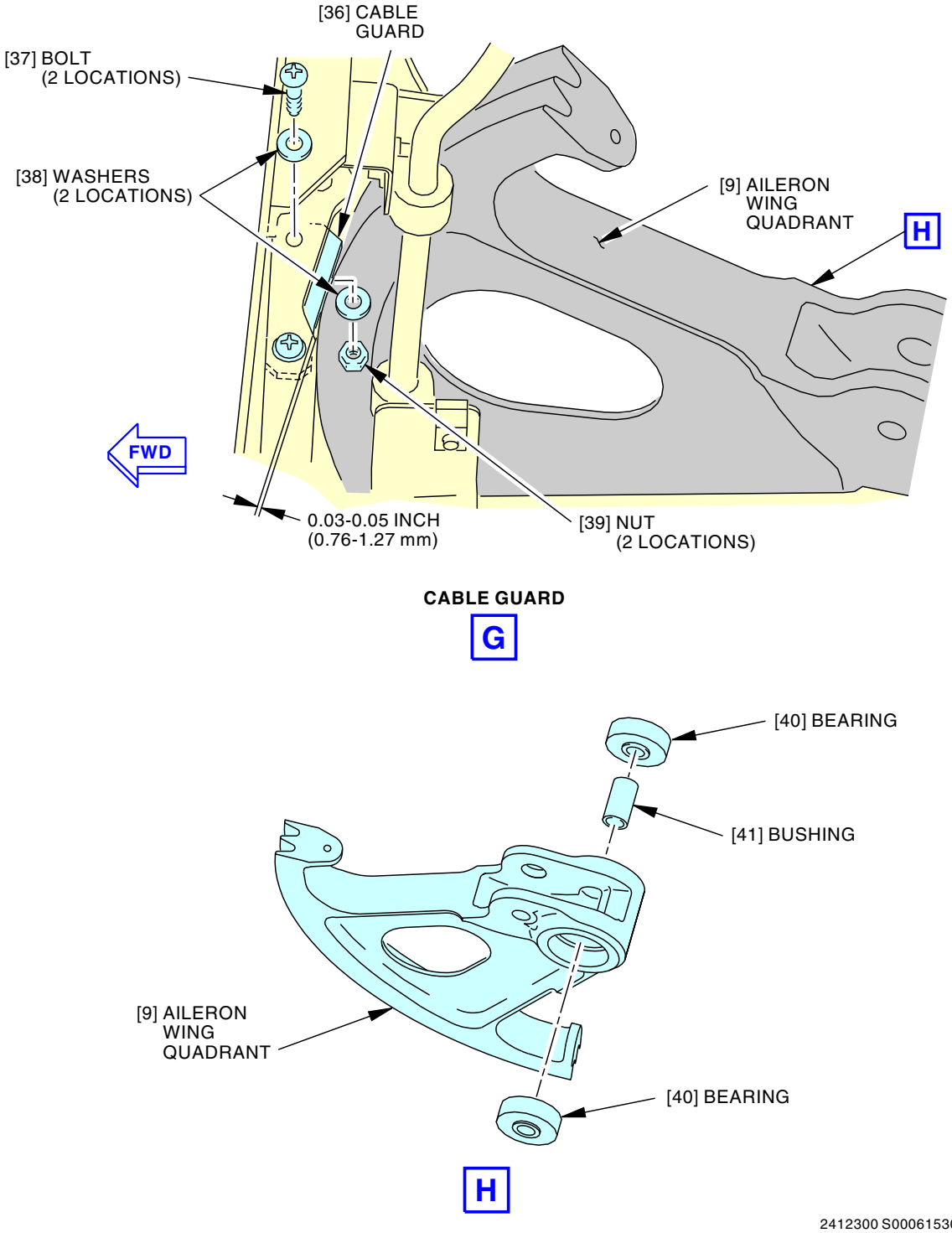
Aileron Wing Quadrant Installation
Figure 401/27-11-24-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Wing Quadrant Installation
Figure 401/27-11-24-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Wing Quadrant Installation
Figure 401/27-11-24-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-24-400-801

3. Aileron Wing Quadrant Installation

(Figure 401)

A. References

Reference	Title
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
31-31-31-700-801	Aileron Position Transmitter Installation Test (P/B 401)

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Aileron wing quadrant	27-11-24-01-085	SIA ALL
		27-11-24-01-090	SIA ALL
13	Pin	27-11-24-01-010	SIA ALL
		27-62-71-01-195	SIA ALL
26	Pin	27-11-24-01-010	SIA ALL
		27-62-71-01-195	SIA ALL
28	Pin	27-11-24-01-125	SIA ALL
		27-62-71-01-195	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Access Panels

Number	Name/Location
571AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
671AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

F. Aileron Wing Installation

SUBTASK 27-11-24-420-001

(1) Do these steps to install the aileron wing quadrant [9]:

(a) If it is necessary, do these steps to assemble the aileron wing quadrant [9]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Apply sealant, A00247, to the top bearing [40].
2) Roller swage the top bearing [40].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

3) Apply Cor-Ban 27L Compound, G50237, to the bottom bearing [40].
4) Install the bearings [40] and bushing [41] in the aileron wing quadrant [9].
5) Install the bolt [20], washer [21], bushing [22], washer [30], nut [29], and new pin [28] to connect the aileron wing quadrant [9] with the aileron control rod [17].

(b) Do this step to connect the aileron wing quadrant [9] to the aileron hinge support [18]:
1) Install the bolt [23], washer [35], bushing [24], washer [25], nut [27], and new pin [26].

(c) Install the bolt [10], washer [11], bushing [12], washer [15], nut [14], and new pin [13] to connect the aileron control rod [17] to the aileron [16].

(d) Install the bolt [31] and washer [32] to connect the aileron position transmitter rod [33] to the aileron wing quadrant [9].
1) Make sure that the aileron position transmitter rod [33] is 17.01 in. (432.05 mm) from bolt center to bolt center.
2) If it is necessary to adjust the aileron position transmitter rod [33], do this task: Aileron Position Transmitter Installation Test, TASK 31-31-31-700-801.

(e) Put cable ABSA [2] (for the left wing) and cable ABSB [4] (for the right wing) in the bottom groove of the aileron wing quadrant [9].

(f) Put cable ABSB [4] (for the left wing) and cable ABSA [2] (for the right wing) in the top groove of the aileron wing quadrant [9].

(g) Install the cable terminations through the cable retaining plates [19].

(h) Install the cable retaining plates [19] with the bolts [5], washers [6], washers [7], and nuts [8] (TASK 20-10-93-400-801).

(i) Install the cable guard [36] with bolts [37], washers [38], and nuts [39].
1) Adjust the cable guard [36] until the gap between the cable guard [36] and aileron wing quadrant [9] is 0.030 in. (0.762 mm) - 0.05 in. (1.27 mm).

(j) Connect cable ABSA [2] and cable ABSB [4] to the turnbuckles [1], but keep the cable tension at zero.

SUBTASK 27-11-24-820-001

(2) Adjust the tension of cable ABSA [2] and cable ABSB [4] (TASK 27-11-00-820-801).

SUBTASK 27-11-24-860-002

(3) Close these access panels:

(a) On the left wing, close these access panels:

Number	Name/Location
571AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the right wing, close these access panels:

Number	Name/Location
671AT	Upper Outboard Fixed Trailing Edge, Quadrant Bolt Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-24-860-003

(4) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-24-730-001

(5) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON BALANCE PANELS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron balance panel

(2) An installation of the aileron balance panel.

B. There are four aileron balance panels on each wing. This procedure is applicable for all the aileron balance panels.

TASK 27-11-31-000-801

2. Aileron Balance Panels Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)

B. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

D. Prepare for the Removal

SUBTASK 27-11-31-860-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-31-010-001

(2) Remove the applicable access panels on the lower wing surface at the balance panel.

(a) For the left wing, open these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) For the right wing, open these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

E. Aileron Balance Panels Removal

SUBTASK 27-11-31-020-001

(1) Remove the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25].

(a) Remove the bolts [1] and bolts [14] to remove the seal retainers [27] and seal retainers [30] from the aerodynamic seals [15].

(b) Write down the location and number of balance weights [11] installed on the balance panel 3 [24] or balance panel 4 [25].

(c) Remove the bolts [32], washers [31], and nuts [33] from the hinge seal [29] and aerodynamic seals [15].

(d) Remove the bolts [12] to remove the balance weights [11] from the hinge seal [29].

(e) Remove bolts [4], bolts [5], bolts [21], and bolts [2] with collars [3] to remove the balance weights [19] and hinge seal [29] from the aileron balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25].

(f) Remove the bolts [16] and washers [17] to remove the seal retainer [18] from the hinge seal [20].

(g) Remove the pins [10], nuts [9], washers [8], washers [7], and bolts [6] to remove the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25] from the aileron.

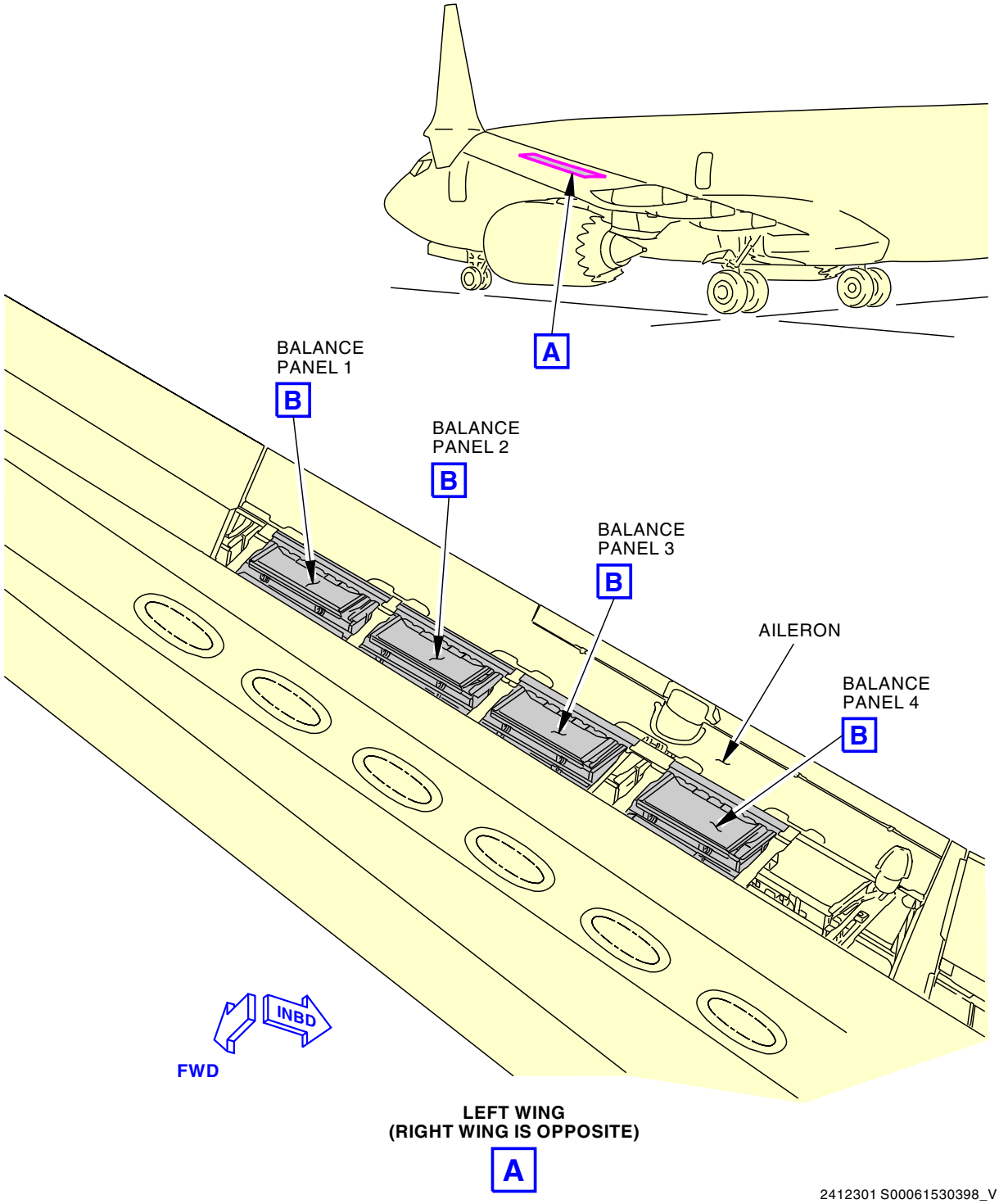
1) Discard the pin [10].

(h) Remove the pins [10], nuts [9], washers [8], washers [7], and bolts [26] to remove the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25] from the wing structure.

1) Discard the pin [10].

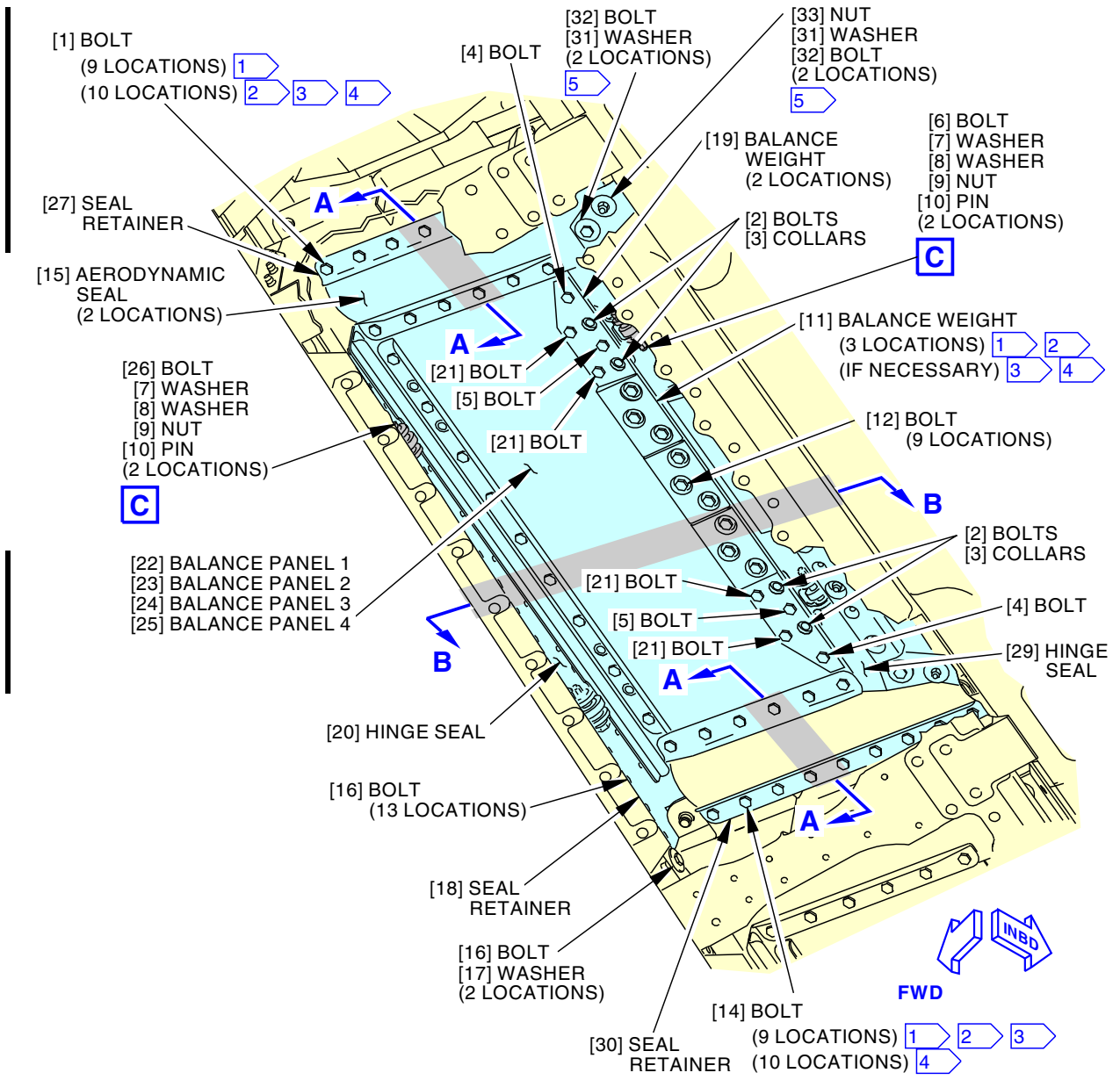
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Balance Panel Installation
Figure 401/27-11-31-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 BALANCE PANEL 1
2 BALANCE PANEL 2
3 BALANCE PANEL 3
4 BALANCE PANEL 4
5 IT IS PERMITTED TO INSTALL THE HINGE SEAL BELOW THE AERODYNAMIC SEAL OR AERODYNAMIC SEAL BELOW THE HINGE SEAL.

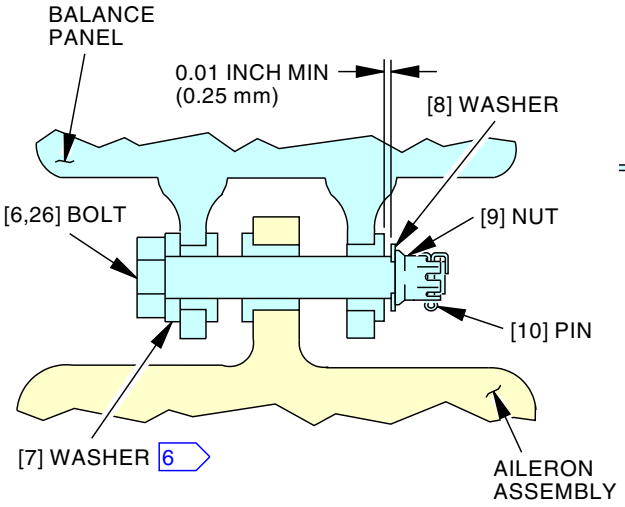
BALANCE PANEL 1
(BALANCE PANELS 2, 3, AND 4 ARE ALMOST THE SAME)

B

2412302 S00061530399_V2

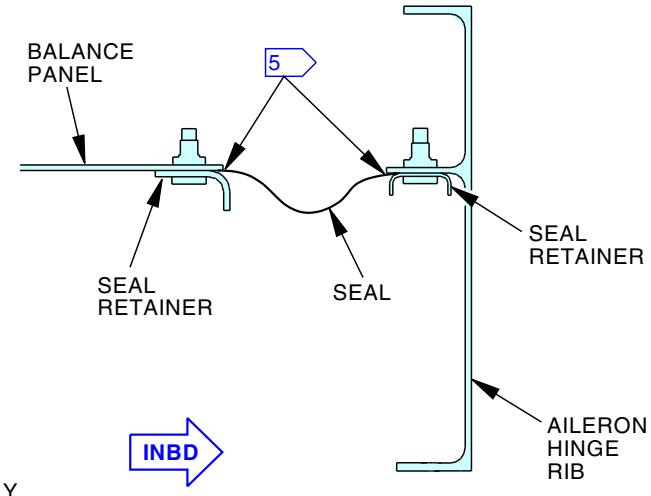
Aileron Balance Panel Installation
Figure 401/27-11-31-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



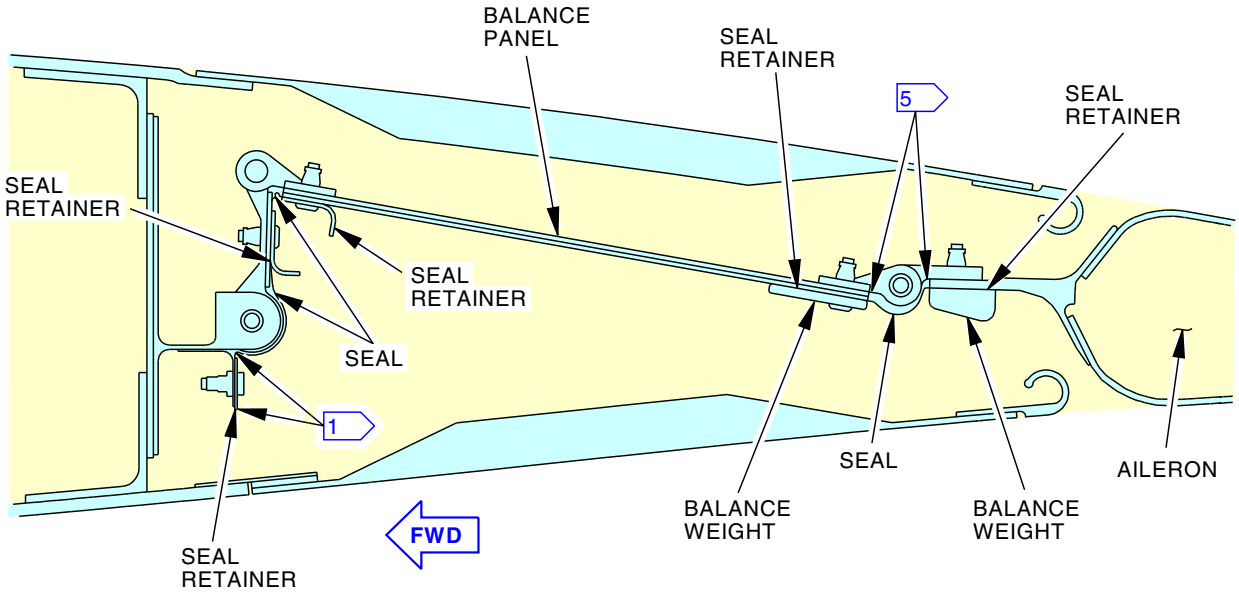
BALANCE PANEL HINGE (EXAMPLE)

C



INBOARD SEAL IS SHOWN (OUTBOARD SEAL IS OPPOSITE)

A-A



(EXAMPLE)

B-B

5 APPLY BMS 3-23 BY BRUSH TO ALL EDGES OF SEAL RETAINERS AND INTERFACE BETWEEN SEAL RETAINERS AND SEALS.

6 BOND WASHER TO HINGE HALF USING BMS 5-95 SEALANT.

2412303 S00061530400_V1

Aileron Balance Panel Installation
Figure 401/27-11-31-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-31-400-801

3. Aileron Balance Panels Installation

(Figure 401)

A. References

Reference	Title
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-11-31-210-801	Aileron Balance Panel Seals Detailed - Inspection (P/B 601)

B. Tools/Equipment

Reference	Description
STD-3911	Brush - Bristle, Medium Nylon

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G00009	Compound - Organic Corrosion Inhibiting	BMS3-23

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Pin	27-11-31-01-069	SIA ALL
		27-31-41-01-110	SIA ALL
22	Balance panel 1	27-11-31-01-519	SIA ALL
		27-11-31-01-522	SIA ALL
23	Balance panel 2	27-11-31-01-366	SIA ALL
		27-11-31-01-369	SIA ALL
24	Balance panel 3	27-11-31-01-213	SIA ALL
		27-11-31-01-216	SIA ALL
25	Balance panel 4	27-11-31-01-063	SIA ALL
		27-11-31-01-066	SIA ALL

E. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

F. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
671BB	Lower Outboard Fixed Trailing Edge Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

G. Aileron Balance Panels Installation

SUBTASK 27-11-31-220-001

(1) If you install used bolts, bushings, or other components that have worn areas, do this task: Aileron Balance Panel Seals Detailed - Inspection, TASK 27-11-31-210-801.

SUBTASK 27-11-31-420-001

(2) Install the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25].

(a) Install the bolts [26], washers [7], washers [8], and nuts [9] to attach the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25] to the wing structure.

(b) Tighten the nuts [9] to 25 in-lb (3 N·m) - 35 in-lb (4 N·m).

(c) Tighten the nut [9] to the lower end of the torque range.

1) Continue to tighten the nut [9] until the next castellation aligns with the hole in the bolt [26].

2) Make sure that the gap between the bushing face and the washer [8] under the nut [9] is 0.010 in. (0.254 mm) minimum after torque up.

(d) Install the pins [10].

(e) Make sure that the washers [7] is bonded to the hinge half.

1) If it is necessary, bond the washers [7] to the hinge half with sealant, A00247.

(f) Install the bolts [6], washers [7], washers [8], and nuts [9] to attach the aileron balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25] to the aileron.

(g) Tighten the nuts [9] to 25 in-lb (3 N·m) - 35 in-lb (4 N·m).

(h) Tighten the nut [9] to the lower end of the torque range.

1) Continue to tighten the nut [9] until the next castellation aligns with the hole in the bolt [6].

2) Make sure that the gap between the bushing face and the washer [8] under the nut [9] is 0.010 in. (0.254 mm) minimum after torque up.

(i) Install the pins [10].

(j) Make sure that the aerodynamic seals [15], hinge seals [20], and hinge seals [29] are not damaged.

(k) Install the seal retainer [18] to the hinge seal [20] with the bolts [16] and washers [17].

(l) Attach the hinge seal [29] to the balance panel 1 [22], balance panel 2 [23], balance panel 3 [24], or balance panel 4 [25].

(m) Install the balance weights [19] to the balance panel assembly with the bolts [4], bolts [5], bolts [21], and bolts [2] with collars [3].

1) Apply primer, C00259, to the holes of the balance weights [19].

2) Apply compound, C00528, to the bolts [2], bolts [4], bolts [5], and bolts [21].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Tighten the bolts [2], bolts [4], bolts [5], and bolts [21] to 35 in-lb (4 N·m) - 45 in-lb (5 N·m).

(n) Make sure that there are the same number of balance weights [11] on the new balance panel assembly as on the removed balance panel 3 [24] or balance panel 4 [25].

(o) Install the balance weights [11] to the balance panel assembly with bolts [12].

1) Apply primer, C00259, to the holes of the balance weights [11].

2) Apply compound, C00528, to the bolts [12].

3) Tighten the bolt [12] to 35 in-lb (4 N·m) - 45 in-lb (5 N·m).

(p) Install the seal retainers [27] and seal retainer [30] on the aerodynamic seals [15] with the bolts [1] and bolts [14].

SUBTASK 27-11-31-860-004

(3) Apply compound, C00528, to the bolts [32].

SUBTASK 27-11-31-420-002

(4) Install the bolts [32], nuts [33], and washers [31] to attach the hinge seal [29] and aerodynamic seal [15].

NOTE: It is permitted to install the hinge seal below the aerodynamic seal or aerodynamic seal below the hinged seal.

(a) Make sure that one seal is on top of the other across the bolts [32], nuts [33], and washers [31].

SUBTASK 27-11-31-600-001

(5) Use a medium nylon bristle brush, STD-3911, to apply corrosion inhibiting compound, G00009, to all edges of the seal retainer [18], seal retainers [27], and interface between seal retainer [18], seal retainers [27], seal retainer [30], and aerodynamic seals [15], hinge seal [20], and hinge seal [29].

SUBTASK 27-11-31-410-001

(6) Install the applicable access panels on the lower wing surface at the aileron balance panel.

(a) For the left wing, close these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) For the right wing, close these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-31-860-002

(7) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-31-710-001

(8) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON BALANCE PANEL - INSPECTION/CHECK

1. General

A. The procedure contains these tasks:

(1) Aileron Balance Panel Inspection

(2) Aileron Balance Panel Seals Detailed Inspection

TASK 27-11-31-220-801

2. Aileron Balance Panel - Inspection

(Figure 601)

A. General

(1) This task gives wear limits and repair data for the aileron balance panel inspection.

B. References

Reference	Title
27-11-31-000-801	Aileron Balance Panels Removal (P/B 401)
27-11-31-400-801	Aileron Balance Panels Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Aileron Balance Panel Inspection

SUBTASK 27-11-31-020-002

(1) Do this task: Aileron Balance Panels Removal, TASK 27-11-31-000-801.

SUBTASK 27-11-31-020-003

(2) Use these tools to do a check for wear on the parts of the aileron balance panel:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-11-31-020-004

(3) Examine the parts of the aileron balance panel for worn areas:

(a) Remove the parts you want to do a check.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are out of tolerance, replace or repair the part.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-11-31-993-801

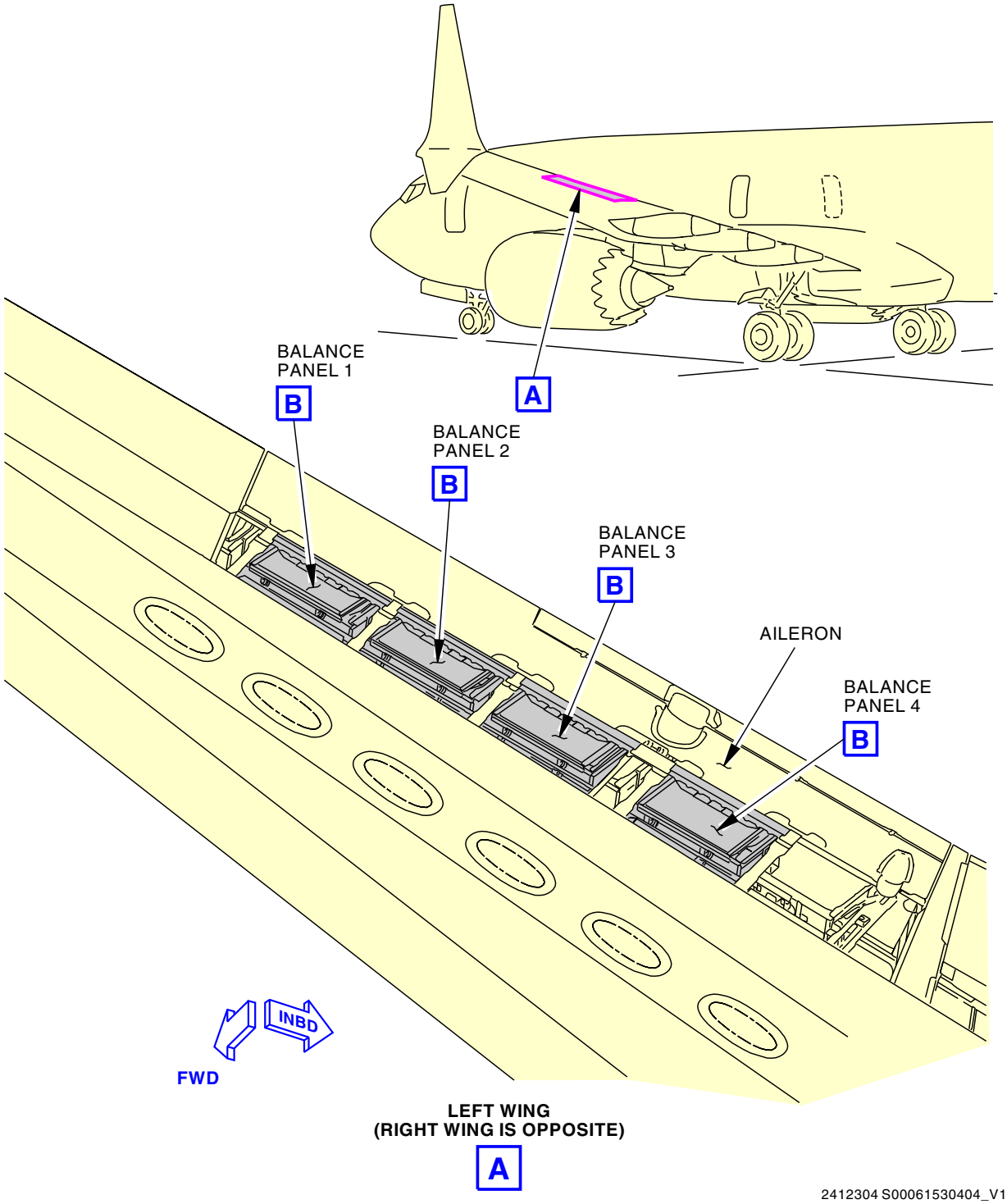
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)
#1 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	0.0030 in. (0.0762 mm)
#2 BUSHING	I.D.	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.2525 in. (6.4135 mm)	0.0040 in. (0.1016 mm)
#2 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	0.0040 in. (0.1016 mm)
#3 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.0030 in. (0.0762 mm)
#3 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	0.0030 in. (0.0762 mm)
#4 BUSHING	I.D.	0.2505 in. (6.3627 mm)	0.2515 in. (6.3881 mm)	0.2525 in. (6.4135 mm)	0.0040 in. (0.1016 mm)
#4 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2475 in. (6.2865 mm)	0.0040 in. (0.1016 mm)

SUBTASK 27-11-31-020-005

(4) Do this task: Aileron Balance Panels Installation, TASK 27-11-31-400-801.

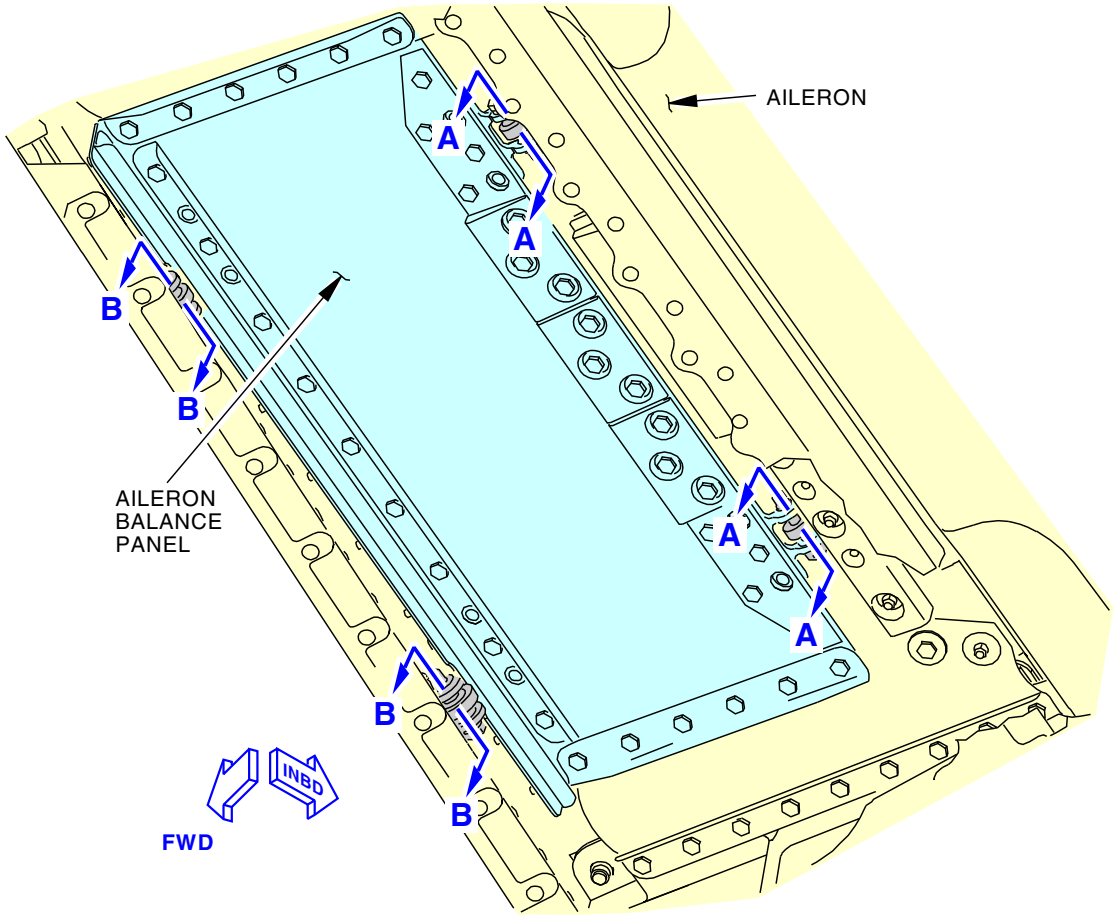
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



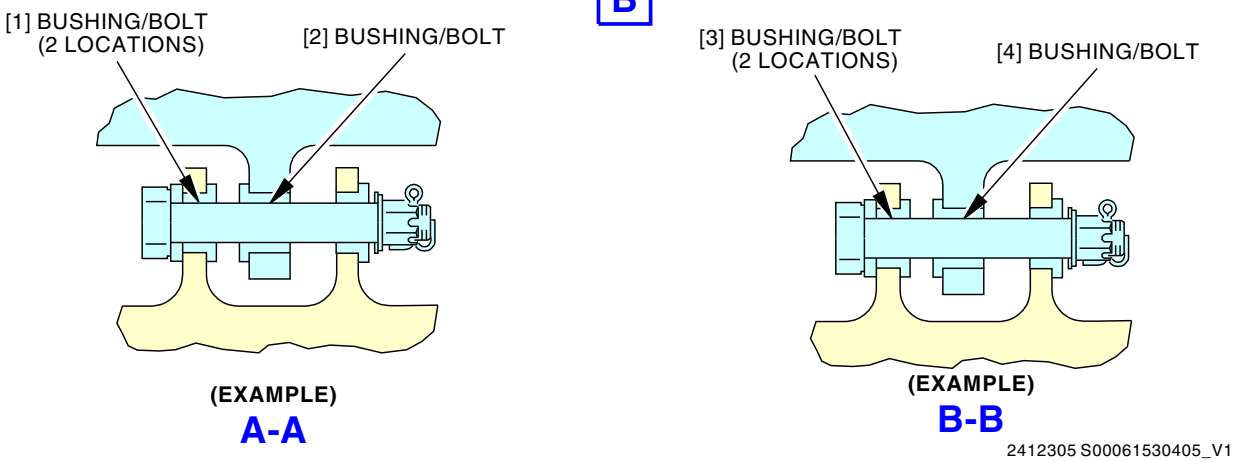
Aileron Balance Panel Wear Limits
Figure 601/27-11-31-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



BALANCE PANEL 1
(BALANCE PANELS 2, 3, AND 4 ARE ALMOST THE SAME)

B



(EXAMPLE)
A-A

(EXAMPLE)
B-B

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Aileron Balance Panel Wear Limits
Figure 601/27-11-31-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-31-210-801

3. Aileron Balance Panel Seals Detailed - Inspection

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

C. Access Panels

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

D. Aileron Balance Panel Seals Detailed Inspection

SUBTASK 27-11-31-860-003

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-31-010-002

(2) Remove the applicable access panels on the lower wing surface at the balance panel.

(a) For the left wing, open these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) For the right wing, open these access panels:

Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-31-210-001

(3) Do a detailed inspection of the seals around the aileron balance panel.

(a) Make sure that there are no creases, nicks, tears and punctures on the seals.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-31-410-002

(1) Install the applicable access panels on the lower wing surface at the balance panel.

(a) For the left wing, close these access panels:

Number	Name/Location
571BB	Lower Outboard Fixed Trailing Edge Access Panel
571CB	Lower Outboard Fixed Trailing Edge Access Panel
571DB	Lower Outboard Fixed Trailing Edge Access Panel

(b) For the right wing, close these access panels:

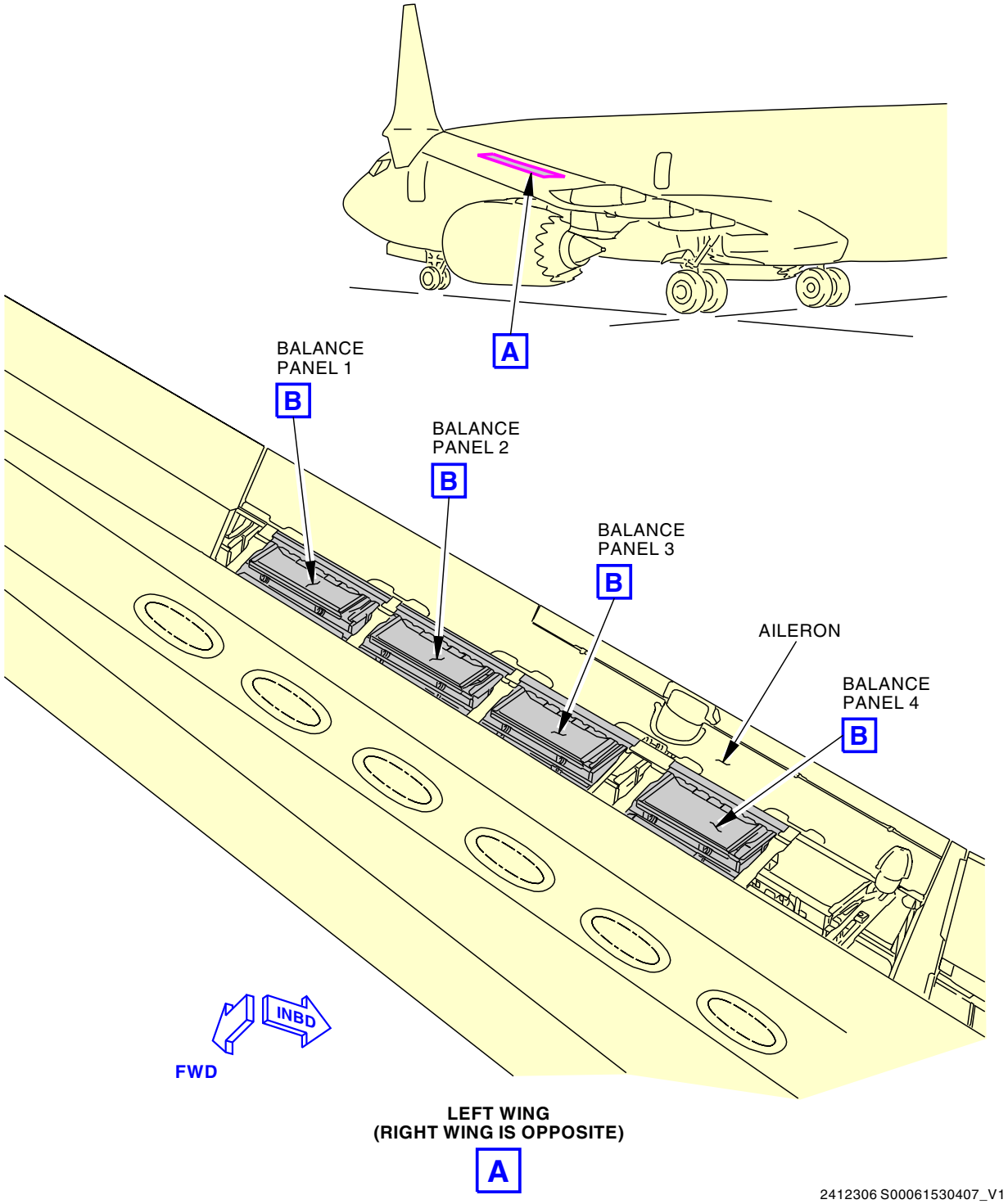
Number	Name/Location
671BB	Lower Outboard Fixed Trailing Edge Access Panel
671CB	Lower Outboard Fixed Trailing Edge Access Panel
671DB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-11-31-840-001

(2) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

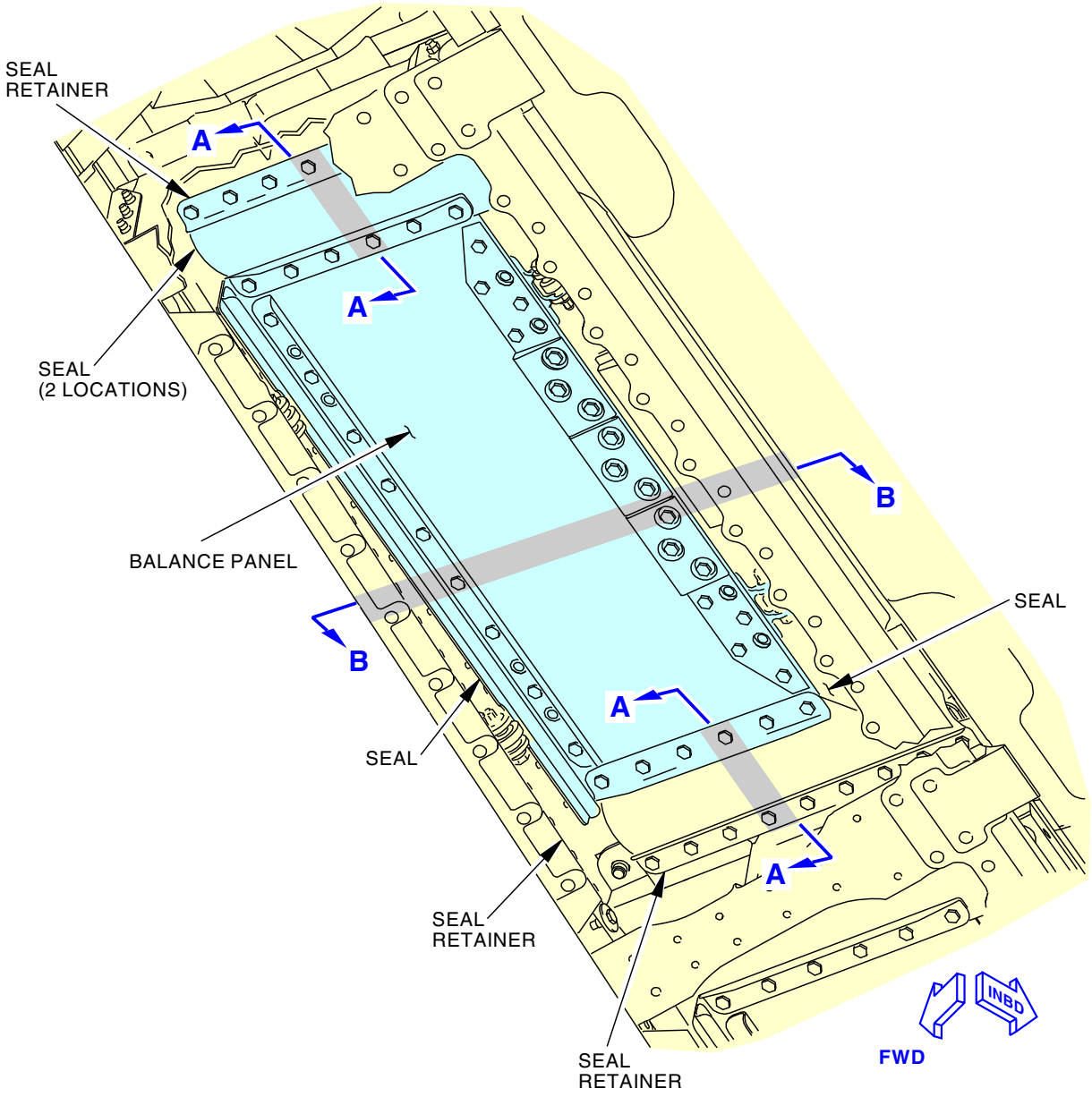
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Balance Panel Seals Detailed Inspection
Figure 602/27-11-31-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



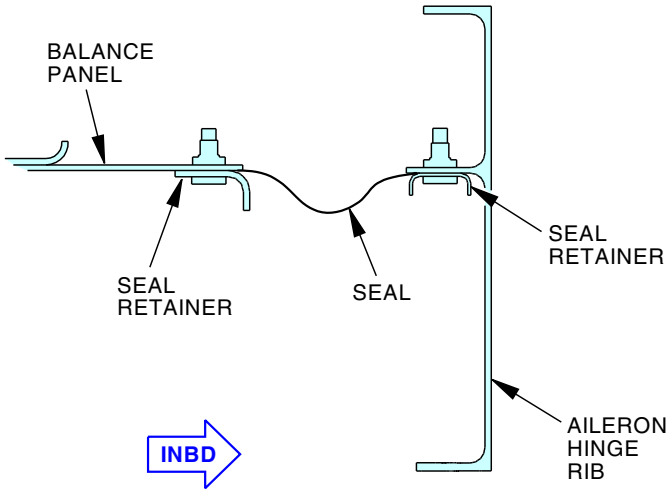
BALANCE PANEL 1
(BALANCE PANELS 2, 3, AND 4 ARE ALMOST THE SAME)

B

2412307 S00061530408_V1

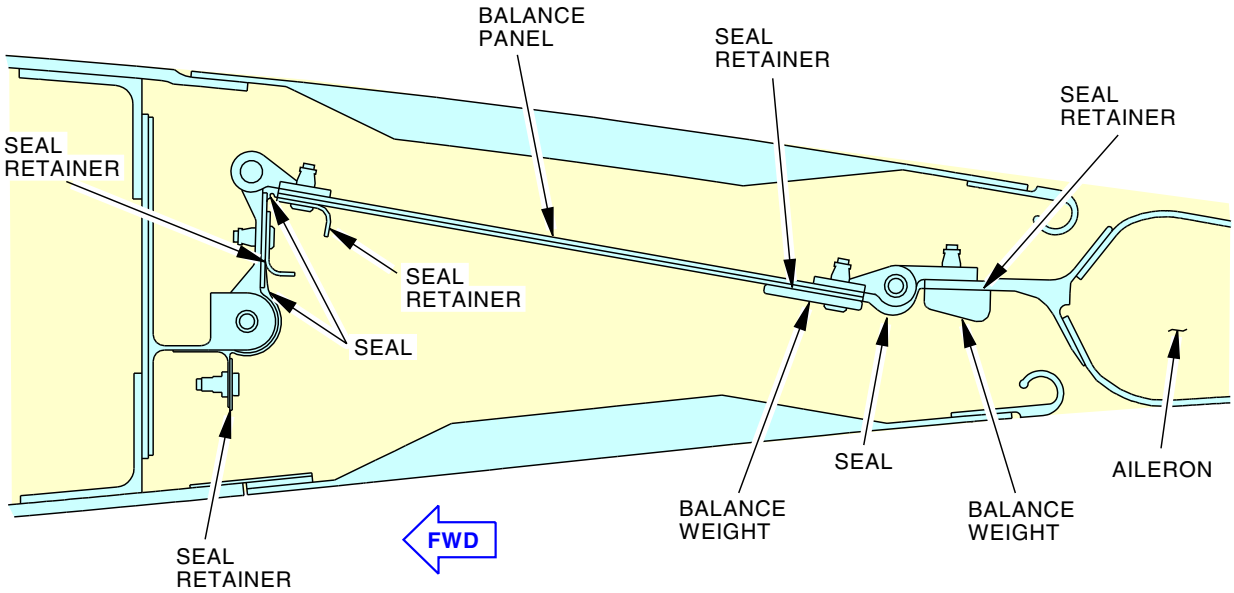
Aileron Balance Panel Seals Detailed Inspection
Figure 602/27-11-31-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



INBOARD SEAL IS SHOWN
(OUTBOARD SEAL IS OPPOSITE)

A-A



(EXAMPLE)

B-B

2412308 S00061530409_V1

Aileron Balance Panel Seals Detailed Inspection
Figure 602/27-11-31-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON TAB CONTROL RODS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of an aileron tab control rods

(2) An installation of the aileron tab control rods.

B. In this procedure the aileron tab control rods are referred to as the "control rods".

TASK 27-11-34-000-801

2. Aileron Tab Control Rods Removal

(Figure 401)

A. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

B. Access Panels

Number	Name/Location
571CB	Lower Outboard Fixed Trailing Edge Access Panel
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
671CB	Lower Outboard Fixed Trailing Edge Access Panel
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00

C. Prepare for the Removal

SUBTASK 27-11-34-010-001

(1) Remove these access panels:

(a) On the left wing, open these access panels:

Number	Name/Location
571CB	Lower Outboard Fixed Trailing Edge Access Panel
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00

(b) On the right wing, open these access panels:

Number	Name/Location
671CB	Lower Outboard Fixed Trailing Edge Access Panel
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00

D. Aileron Tab Control Rods Removal

SUBTASK 27-11-34-020-001

(1) Remove the bolts [6] that attach the forward removable fairing [2] to the aileron [1].

(a) Remove the forward removable fairing [2].

SUBTASK 27-11-34-020-002

(2) Remove the bolts [4] that attach the aft removable fairing [3] to the aileron balance tab [5].

(a) Remove the aft removable fairing [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-34-020-003

(3) Remove the aileron tab control rod [17]:

(a) Lift up the aileron trailing edge.

(b) Remove the bolts [13] and washers [14] that attach the radial seal [16] to the radial seal retainer [15] to the structure.

(c) Remove the radial seal [16] and radial seal retainer [15].

(d) Remove the pins [12], nuts [11], washers [10], bushings [9], washers [8] and bolts [7] that connect the aileron tab control rod [17] to the forward fittings. Discard the pins [12].

(e) Move the aileron trailing edge down.

(f) Remove the pins [12], nuts [11], washers [10], bushings [18], washers [8], and bolts [19] that connect the aileron tab control rod [17] to the tab mast. Discard the pins [12].

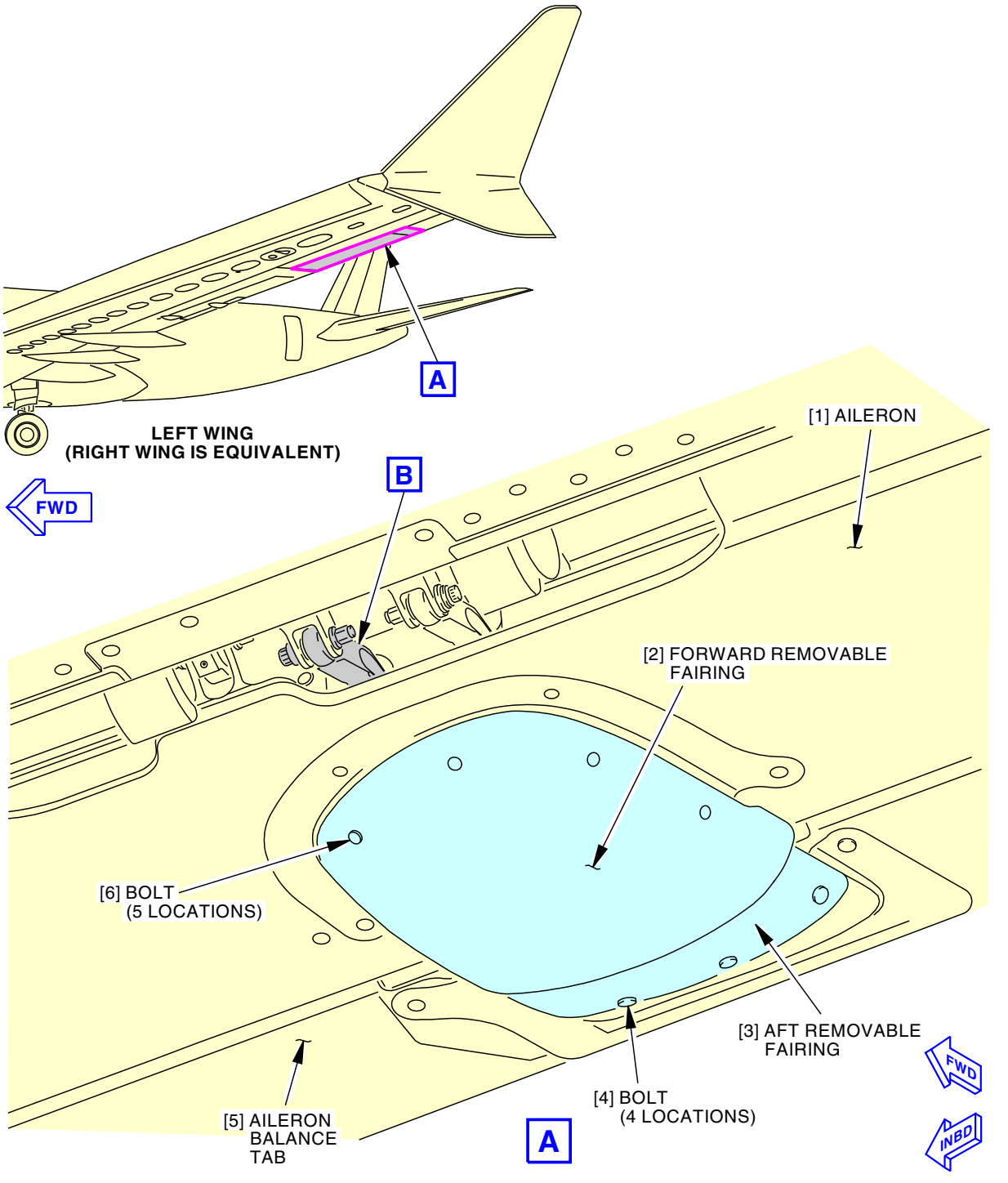
(g) Remove the aileron tab control rod [17] from the airplane.

SUBTASK 27-11-34-970-001

(4) Write down the length of the aileron tab control rod [17].

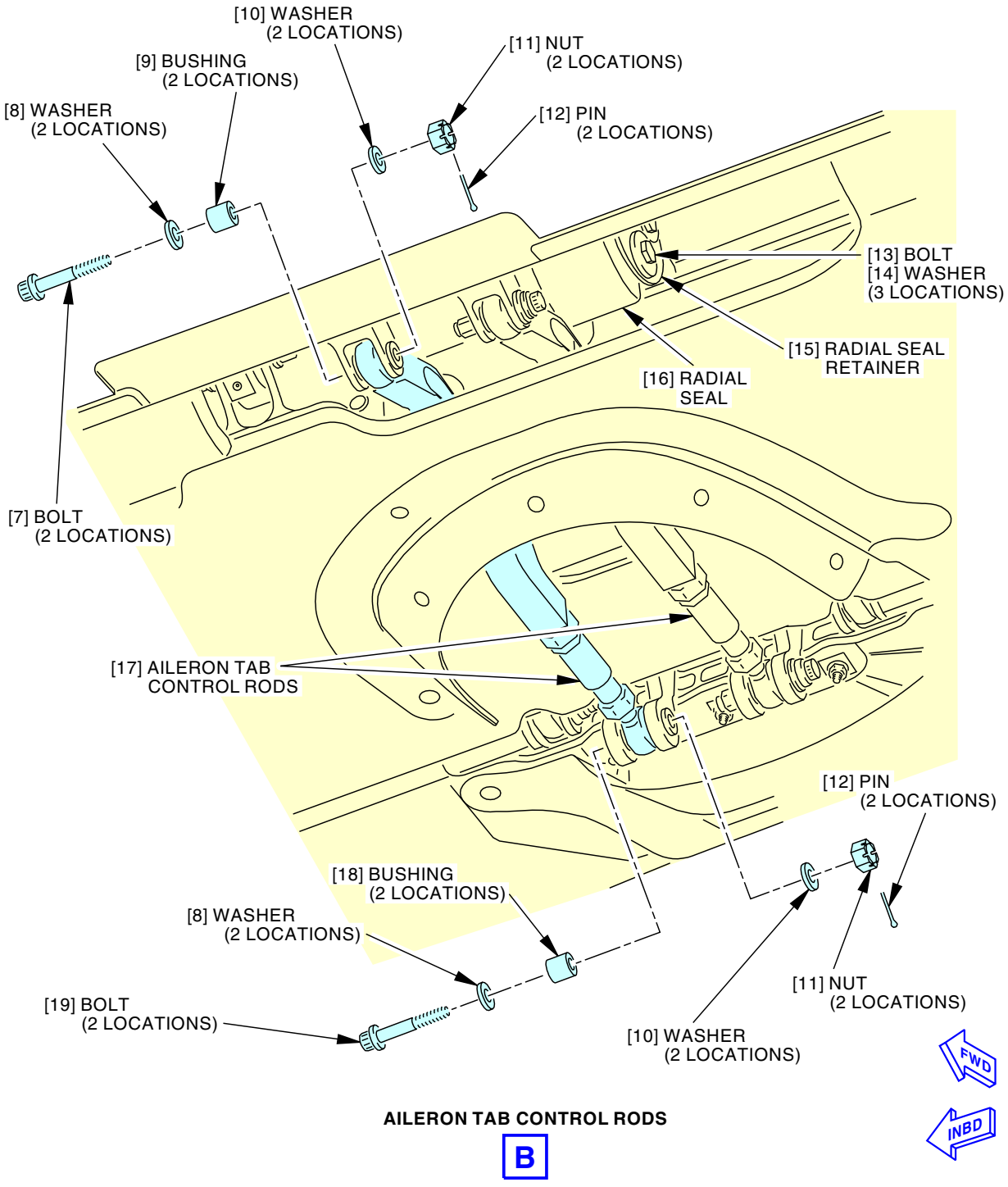
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Tab Control Rods Installation
Figure 401/27-11-34-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Tab Control Rods Installation
Figure 401/27-11-34-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-34-400-801

3. Aileron Tab Control Rods Installation

(Figure 401)

A. References

Reference	Title
27-11-00-750-801	Flight Test to Find and Correct Asymmetrical Flight Control Forces (P/B 501)
27-11-00-820-803	Aileron Balance Tab Adjustment (Recommended Method) (P/B 501)
27-11-34-200-801	Aileron Tab Control Rods Inspection (P/B 601)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Pin	27-11-21-01-010	SIA ALL
17	Aileron tab control rod	27-11-21-01-040	SIA ALL

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
572	Left Wing - Aileron
672	Right Wing - Aileron

D. Access Panels

Number	Name/Location
571CB	Lower Outboard Fixed Trailing Edge Access Panel
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00
671CB	Lower Outboard Fixed Trailing Edge Access Panel
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00

E. Prepare for installation

SUBTASK 27-11-34-220-001

(1) If you install used bolts, bushings, bearings or other components with worn areas, do this task: Aileron Tab Control Rods Inspection, TASK 27-11-34-200-801.

F. Aileron Tab Control Rods Installation

SUBTASK 27-11-34-420-001

(1) Install the aileron tab control rod [17]:

(a) Move the aileron trailing edge down.

(b) Put the two aileron tab control rods [17] in position, align the rod ends with the attach fittings.

NOTE: The length of the aileron tab control rod [17] must be the same as those written down after the removal.

(c) Connect the aileron tab control rod [17] to the tab mast with the bolts [19], washers [8], bushings [18], washers [10], and nuts [11].

1) Adjust the length of the aileron tab control rod [17] if it is necessary.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Tighten the nuts [11] to 50 in-lb (6 N·m)–80 in-lb (9 N·m).

3) Install the new pins [12].

(d) Lift up the aileron trailing edge.

(e) Install the bolts [7], washers [8], bushings [9], washers [10] and nuts [11] to connect the aileron tab control rod [17] to the forward fittings.

1) Tighten the nut [11] to 50 in-lb (6 N·m)–80 in-lb (9 N·m) until the next nut castellation aligns with the hole in the bolt.

2) Install the pins [12].

(f) Install the radial seal [16] and radial seal retainer [15] to the structure with the bolts [13] and washers [14].

SUBTASK 27-11-34-410-001

(2) Install these access panels:

(a) On the left wing, close these access panels:

Number	Name/Location
571CB	Lower Outboard Fixed Trailing Edge Access Panel
572DB	Lower Aileron, Hinge Cover - WBL 469.00
572EB	Lower Aileron, Hinge Cover - WBL 481.00

(b) On the right wing, close these access panels:

Number	Name/Location
671CB	Lower Outboard Fixed Trailing Edge Access Panel
672DB	Lower Aileron, Hinge Cover - WBL 469.00
672EB	Lower Aileron, Hinge Cover - WBL 481.00

SUBTASK 27-11-34-420-002

(3) Install the bolts [4] to attach the aft removable fairing [3] to the aileron balance tab [5].

SUBTASK 27-11-34-420-003

(4) Install the bolts [6] to attach the forward removable fairing [2] to the aileron [1].

SUBTASK 27-11-34-710-001

(5) Move the aileron control wheel through full travel.

(a) Make sure that the aileron tab moves freely.

SUBTASK 27-11-34-220-002

(6) Make sure the distance from the tab trailing edge to the extension of the aileron bottom surface is correct. To measure it, do this task: Aileron Balance Tab Adjustment (Recommended Method), TASK 27-11-00-820-803.

SUBTASK 27-11-34-820-001

(7) Do this task: Flight Test to Find and Correct Asymmetrical Flight Control Forces, TASK 27-11-00-750-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON TAB CONTROL RODS - INSPECTION/CHECK

1. General

A. This procedure contains the task to do an inspection of the aileron tab control rods.

TASK 27-11-34-200-801

2. Aileron Tab Control Rods Inspection

(Figure 601)

A. General

(1) This task gives wear limits and repair data for the aileron tab control rods inspection.

B. References

Reference	Title
27-11-21-000-801	Aileron Balance Tab Removal (P/B 401)
27-11-21-400-801	Aileron Balance Tab Installation (P/B 401)
27-11-34-000-801	Aileron Tab Control Rods Removal (P/B 401)
27-11-34-400-801	Aileron Tab Control Rods Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
572	Left Wing - Aileron
672	Right Wing - Aileron

E. Procedure

SUBTASK 27-11-34-020-004

(1) Do this task: Aileron Balance Tab Removal, TASK 27-11-21-000-801 or Aileron Tab Control Rods Removal, TASK 27-11-34-000-801.

SUBTASK 27-11-34-020-005

(2) Use these tools to do a check for wear on the parts of the aileron tab control rods:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-11-34-020-006

(3) Examine the parts of the aileron tab control rods for worn areas:

(a) Remove the parts you want to do a check.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are out of tolerance, replace or repair the parts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-11-34-993-801

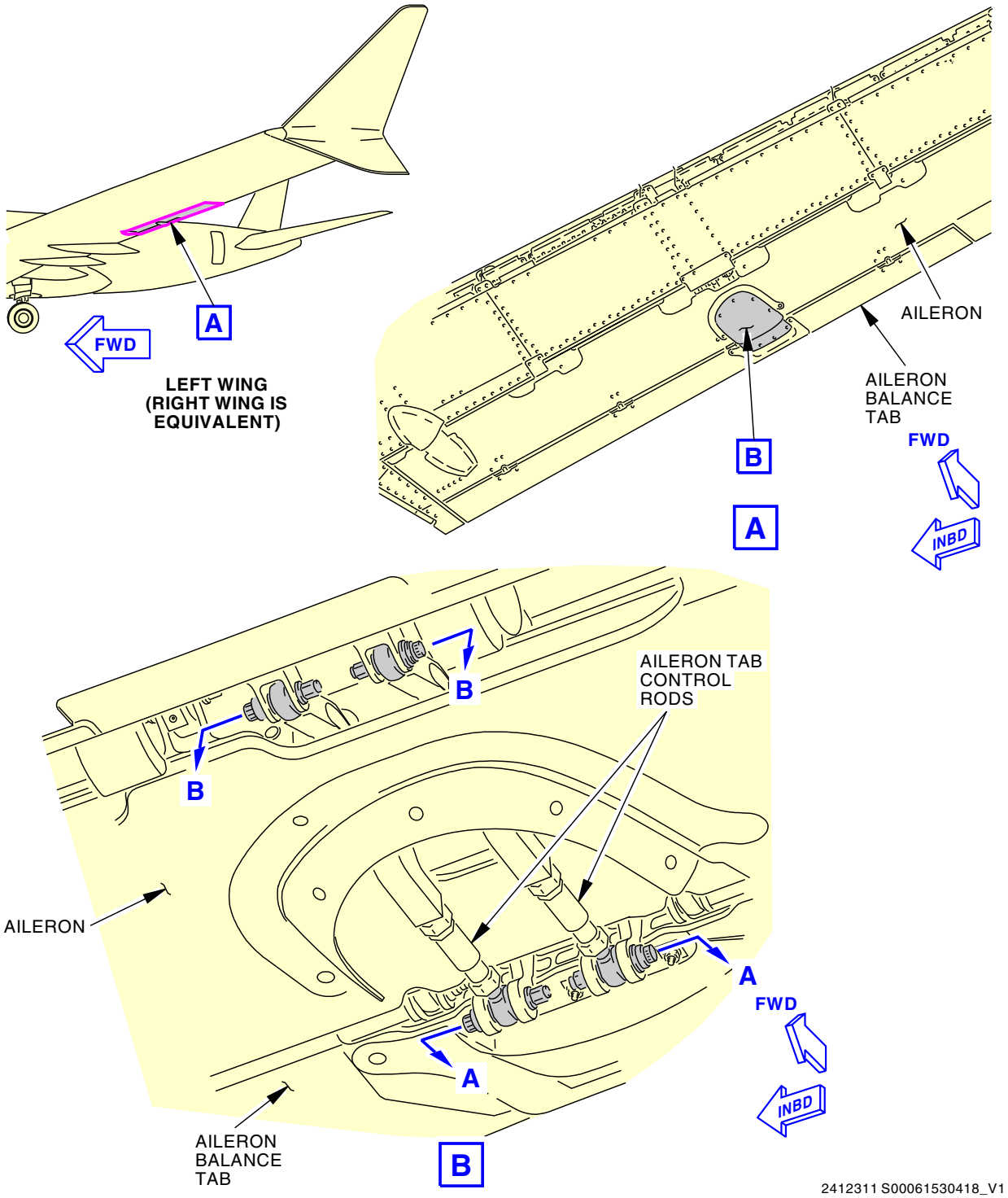
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 ROD END BEARING	I.D.	0.2495 in 6.3373 mm	0.2500 in 6.3500 mm	0.2520 in 6.4008 mm	0.0000 in 0.0000 mm
#1 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	
#2 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3773 in 9.5834 mm	0.0005 in 0.0127 mm
#2 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3728 in 9.4691 mm	
#3 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2525 in 6.4135 mm	0.0005 in 0.0127 mm
#3 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	
#4 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2525 in 6.4135 mm	0.0005 in 0.0127 mm
#4 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	

SUBTASK 27-11-34-020-007

(4) Do this task: Aileron Balance Tab Installation, TASK 27-11-21-400-801 or Aileron Tab Control Rods Installation, TASK 27-11-34-400-801.

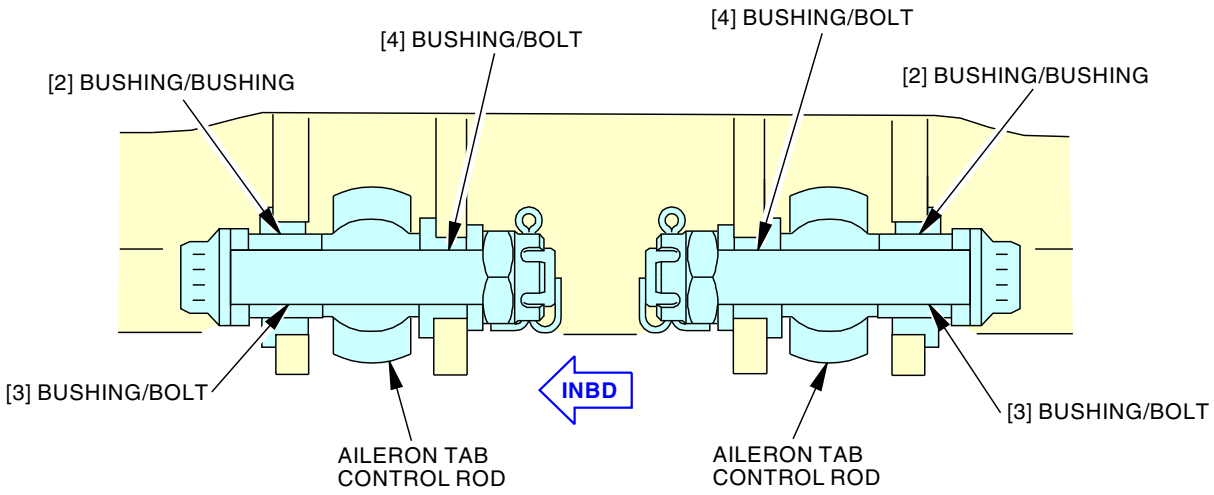
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

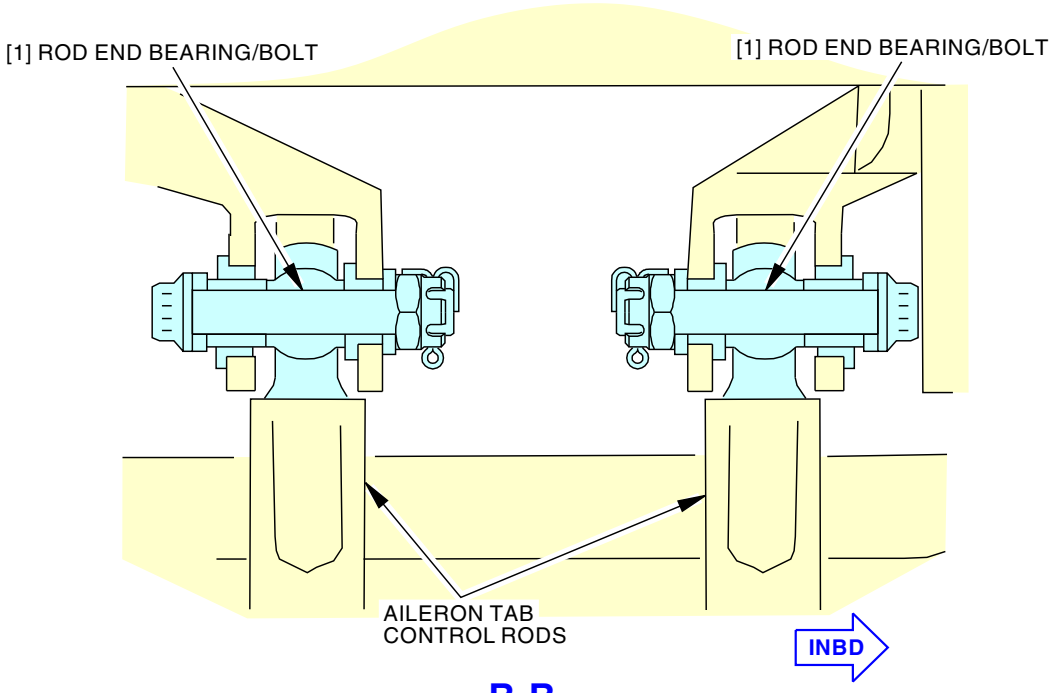


Aileron Tab Control Rods Wear Limits
Figure 601/27-11-34-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



B-B

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Aileron Tab Control Rods Wear Limits
Figure 601/27-11-34-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON CONTROL WHEEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Aileron Control Wheel Removal

(2) Aileron Control Wheel Installation

B. This procedure is applicable for the captain's and first officer's aileron control wheel [3].

TASK 27-11-41-000-801

2. Aileron Control Wheel Removal

A. References

Reference	Title
22-11-41-000-801	Autopilot Disengage Switch Removal (P/B 401)
23-51-04-000-801	Push-To-Talk (PTT) Control Wheel Switch Removal (P/B 401)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-41-97-000-801	Stabilizer Trim Control Switch Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-11-41-860-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-41-860-004

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-11-41-860-002

(3) Make sure the aileron control wheels [3] are in the neutral position.

SUBTASK 27-11-41-480-002

(4) Install the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron feel and centering unit [21] (Figure 401).

E. Aileron Control Wheel Removal

SUBTASK 27-11-41-020-001

(1) Do these steps to remove the aileron control wheel [3] (Figure 402):

(a) Remove the screws [5] that attach the medallion [6] to the aileron control wheel [3].

(b) Remove the medallion [6] from the aileron control wheel [3].

(c) Remove the pin [10], nut [4], washer [8], washer [7], spacer [9], and bolt [11]. Discard the pin [10].

(d) Write down and make a mark of the Jiffy junction modules that are on top of the terminal cover [16].

(e) Disconnect the autopilot Jiffy junction modules (TASK 22-11-41-000-801).

(f) Disconnect the PTT Jiffy junction modules, similar to autopilot.

(g) Remove the screws [12] and washers [13] to remove the terminal cover [16].

(h) Remove the screws [19], washers [18], and washers [20] to disconnect the wires from the terminal block [17].

(i) Write down and make a mark of the configuration of the identified color wires.

(j) Remove the terminal block [17] from the hub of the wheel.

(k) Carefully remove the aileron control wheel [3] from the control column.

(l) Make a mark of the positions of the aileron control wheel [3], the gear, and the sleeve assembly [1].

(m) Make a mark on the wire bundle to identify the clamp [15] location in the control wheel hub.

(n) Remove the screw [14] to remove the clamp [15] from the aileron control wheel [3].

(o) Carefully disengage the wire bundle from the aileron control wheel [3].

SUBTASK 27-11-41-020-002

(2) If you want to remove the stabilizer trim control switch, do this task: Stabilizer Trim Control Switch Removal, TASK 27-41-97-000-801.

SUBTASK 27-11-41-020-003

(3) If you want to remove the autopilot disengage switch, do this task: Autopilot Disengage Switch Removal, TASK 22-11-41-000-801.

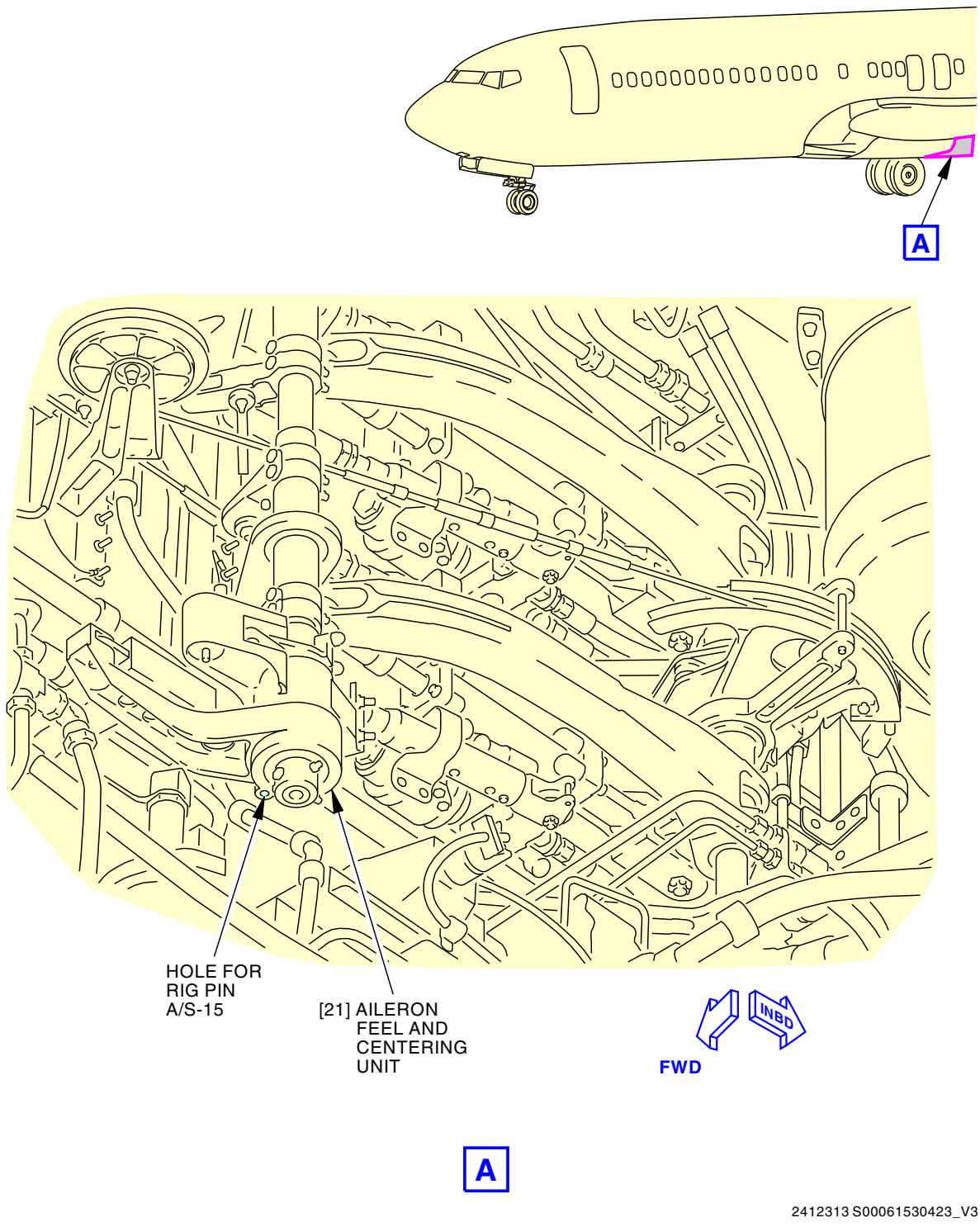
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-41-020-004

(4) If you want to remove the control wheel PTT switch, do this task: Push-To-Talk (PTT) Control Wheel Switch Removal, TASK 23-51-04-000-801.

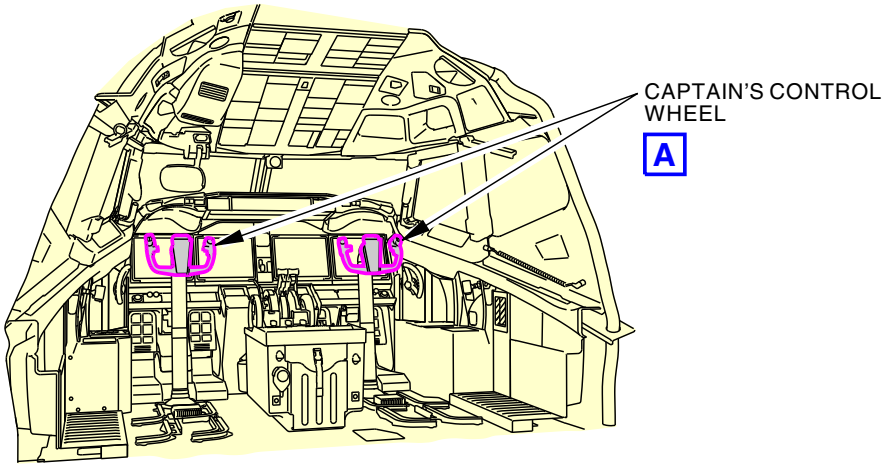
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

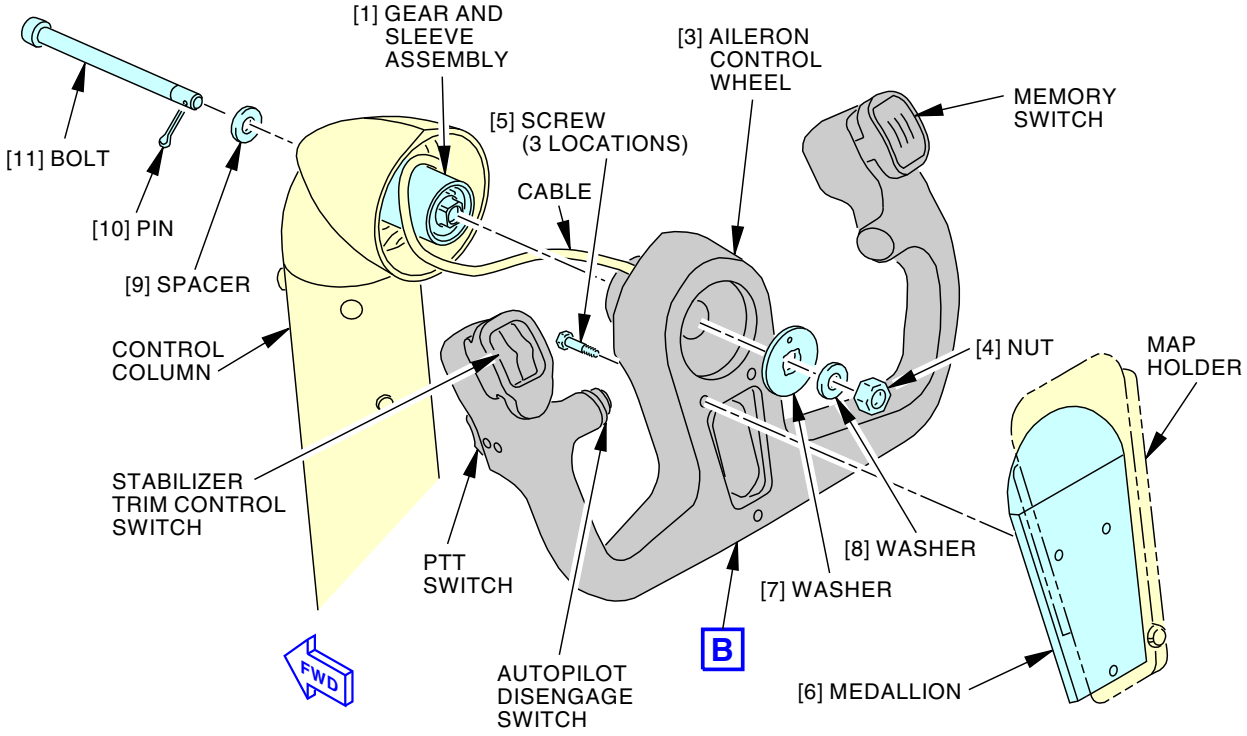


Rig Pin Installation
Figure 401/27-11-41-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



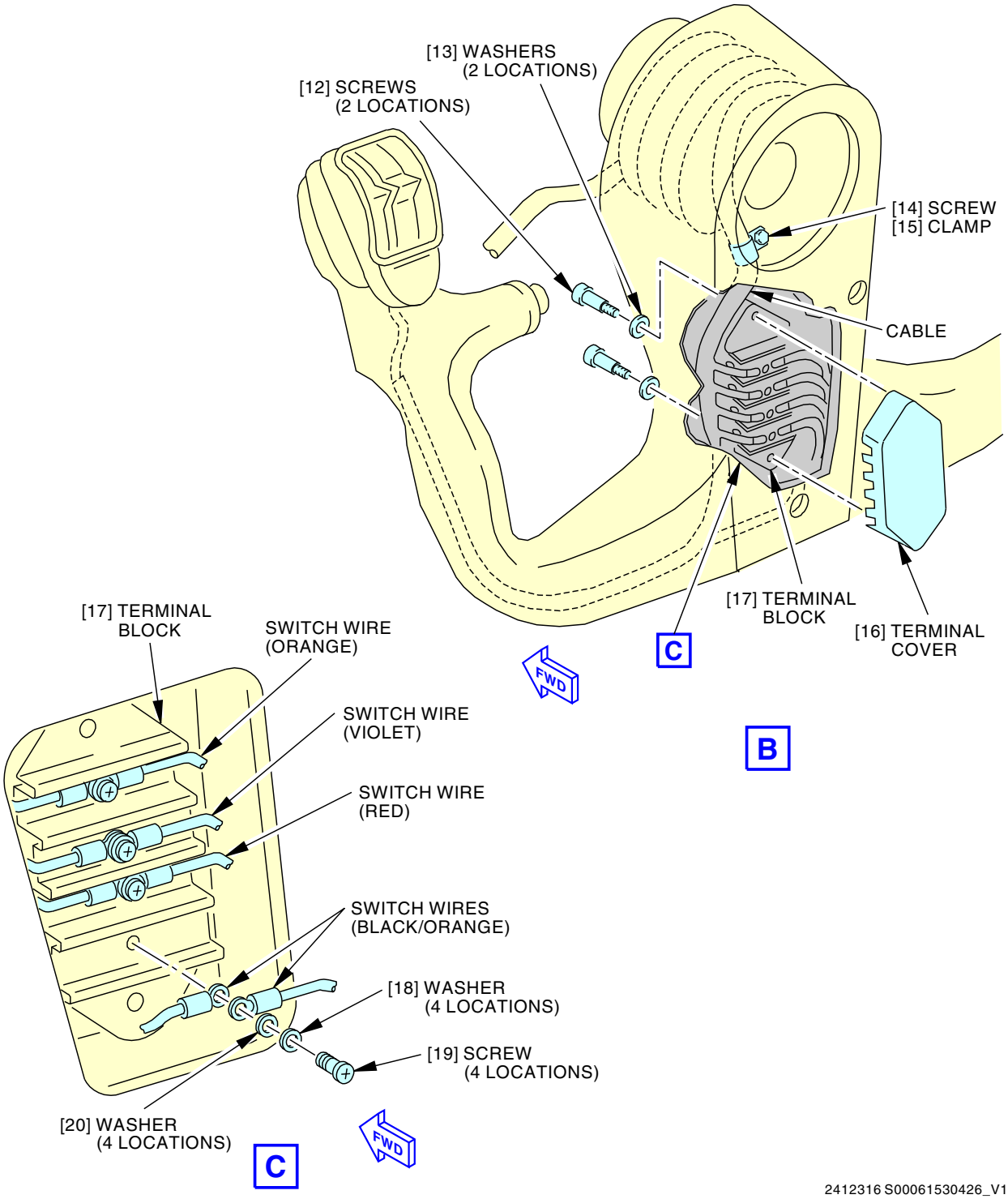
CAPTAIN'S CONTROL WHEEL
(FIRST OFFICER'S CONTROL WHEEL IS OPPOSITE)

A

2412315 S00061530425_V2

Aileron Control Wheel Installation
Figure 402/27-11-41-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Control Wheel Installation
Figure 402/27-11-41-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-41-400-801

3. Aileron Control Wheel Installation

A. References

Reference	Title
22-11-41-400-801	Autopilot Disengage Switch Installation (P/B 401)
23-51-04-400-801	Push To Talk (PTT) Control Wheel Switch Installation (P/B 401)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-41-97-400-801	Stabilizer Trim Control Switch Installation (P/B 401)
27-41-97-700-801	Stabilizer Trim Control Switch Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-17798	Multimeter - Digital, Insulation Resistance Part #: 1004-745 Supplier: U0146 Part #: 1507 Supplier: 4U744 Part #: 1587 Supplier: 89536 Part #: 1587 FC Supplier: 4U744 Part #: MIT2500 Supplier: U0146 Part #: MIT410/2 Supplier: U0146
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1671	Straight Edge - Control Wheel Part #: C27097-1 Supplier: 81205 Part #: SE27-0001 Supplier: 81205
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50550	Compound - Electrical Insulating (Dow Corning 5)	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Aileron control wheel	27-11-41-01-210	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
3 (cont.)		27-11-41-01-215	SIA ALL
10	Pin	27-11-41-01-045	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Aileron Control Wheel Installation

SUBTASK 27-11-41-020-005

(1) If you removed the stabilizer trim control switch, do this task: Stabilizer Trim Control Switch Installation, TASK 27-41-97-400-801.

SUBTASK 27-11-41-020-006

(2) If you removed the autopilot disengage switch, do this task: Autopilot Disengage Switch Installation, TASK 22-11-41-400-801.

SUBTASK 27-11-41-020-007

(3) If you removed the control wheel PTT switch, do this task: Push To Talk (PTT) Control Wheel Switch Installation, TASK 23-51-04-400-801.

SUBTASK 27-11-41-420-001

(4) Do these steps to install the aileron control wheel [3] (Figure 402):

(a) Install the terminal block [17] in the hub of the wheel.

(b) Install the screws [19], washers [18], and washers [20] to connect the terminals of the switch wires to the terminal block [17].

(c) Make sure the terminals of the switch wires are installed correctly.

(d) Attach the terminal cover [16] to the aileron control wheel [3] with washers [13] and screws [12].

(e) Reconnect the autopilot Jiffy junction modules (TASK 22-11-41-400-801).

(f) Reconnect the PTT Jiffy junction modules, similar to autopilot.

(g) Apply a small amount of the compound, G50550 to the wire bundle and the inside of the hub of the control wheel splines.

(h) Use a wire leader to put the electrical wires in the aileron control wheel [3].

(i) Put a clamp [15] at the mark on the wire bundle.

CAUTION

MAKE SURE THAT THE WIRE BUNDLE LENGTH IS CORRECT BETWEEN THE AILERON CONTROL COLUMN AND THE AILERON CONTROL WHEEL. THE AILERON CONTROL WHEEL CANNOT MOVE FREELY IF THE WIRE BUNDLE IS NOT CORRECT. THIS CAN CAUSE DAMAGE TO THE WIRE BUNDLE.

(j) Make sure the length of the wire bundle is approximately 27 in. (686 mm) between the clamp [15] in the aileron control wheel [3] and the hole in the housing.

(k) Make sure the aileron control wheel [3] moves an equal distance each direction from the neutral position.

(l) Install the clamp [15] with the screw [14] to hold the wire bundle to the aileron control wheel [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(m) Wind the wire bundle four times around the control wheel hub (Figure 402 (Sheet 2)).

1) As you look forward into the aileron control wheel [3] upper cavity do this step:

a) For the captain's aileron control wheel [3], wind the wire bundle counterclockwise.

b) For the first officer's aileron control wheel [3], wind the wire bundle clockwise .

(n) Engage the splines on the aileron control wheel [3] to the control column at the identified positions.

(o) Install the bolt [11], spacer [9], washer [7], washer [8], and nut [4].

(p) Tighten the nut [4] 85 in-lb (10 N·m)-140 in-lb (16 N·m) until the next nut castellation aligns with the hole in the bolt.

(q) Install the new pin [10].

SUBTASK 27-11-41-720-001

(5) Do these steps to check the operation of the aileron control wheel [3]:

(a) Make sure the captain's and the first officer's aileron control wheels [3] are in the neutral position.

(b) Put the straight edge, SPL-1671 across the top end of the aileron control wheels.

1) Make sure that one end of the first officer's aileron control wheel [3] is not farther than 0.20 in. (5.08 mm) from the straightedge.

(c) Remove the straight edge, SPL-1671 from the aileron control wheels [3].

(d) Install the adapter, SPL-1674 to the captain's aileron control wheel [3].

(e) Remove the map holder assembly from the first officer's control wheel.

(f) Install the mount, SPL-1670 and the protractor, SPL-1680 to the first officer's aileron control wheel [3].

(g) Remove the rig pin A/S-15, rigging pin kit, SPL-1585, from the aileron feel and centering unit (Figure 401).

CAUTION

DO NOT LET THE AILERON CONTROL WHEEL TURN MORE THAN 110 DEGREES IN EACH DIRECTION FROM NEUTRAL. IF THE AILERON CONTROL WHEEL TURNS MORE THAN 110 DEGREES DAMAGE TO THE WIRE BUNDLE CAN OCCUR.

(h) Make sure the aileron control wheel [3] can turn 108 degrees in each direction from the neutral position.

(i) Make slow and careful inputs to the aileron control wheel [3] one direction at a time.

(j) Make sure the aileron control wheel [3] moves freely and smoothly.

(k) Remove the adapter, SPL-1674 from the captain's aileron control wheel [3].

(l) Remove the mount, SPL-1670 and the protractor, SPL-1680 from the first officer's aileron control wheel [3].

(m) Install the map holder assembly to the first officer's control wheel.

SUBTASK 27-11-41-720-002

(6) Do a test of the electrical circuits for continuity changed during the replacement of the aileron control wheel [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-41-720-003

(7) Use the insulation resistance multimeter, COM-17798, to do a test of the terminal block [17] while you turn the aileron control wheel [3] from stop to stop.

(a) Do a test on the terminal block for resistance to ground, or wire to wire for a minimum insulation value of 100 Megaohms.

SUBTASK 27-11-41-420-002

(8) Do these steps to install the medallion [6].

(a) Install the medallion [6] on the aileron control wheel [3].

(b) Install the screws [5] that attach the medallion [6] to the aileron control wheel [3].

SUBTASK 27-11-41-860-005

(9) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-11-41-700-001

(10) Do the Installation Test of the autopilot switch (TASK 22-11-41-400-801).

SUBTASK 27-11-41-700-002

(11) Do the Installation Test of the PPT switch (TASK 23-51-04-400-801).

SUBTASK 27-11-41-700-003

(12) Do this task: Stabilizer Trim Control Switch Test, TASK 27-41-97-700-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-41-860-003

(1) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON CONTROL WHEEL DRUM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron control wheel drum

(2) An installation of the aileron control wheel drum.

B. The aileron control wheel drum is referred to as the "control wheel drum assembly" in this procedure.

C. The control wheel drum assembly is installed at the base of the captain's control column.

TASK 27-11-51-000-801

2. Aileron Control Wheel Drum Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

E. Prepare for the Removal

SUBTASK 27-11-51-010-001

(1) Open this access door:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-51-010-002

(2) If necessary, remove these access panels to access the aileron control wheel drum (TASK 53-14-01-020-801).

(a) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-51-860-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-51-860-002

(4) Put the captain's and first officer's control wheels in the neutral position.

SUBTASK 27-11-51-480-001

(5) Install the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim mechanism.

F. Aileron Control Wheel Drum Removal

SUBTASK 27-11-51-020-001

(1) Disconnect the cable ACBA1 [1], cable ACBA2 [21], cable ACBB1 [2], and cable ACBB2 [22] at the cable turnbuckles [3].

(a) Attach identification tags on the disconnected cables for easier assembly.

SUBTASK 27-11-51-020-002

(2) Disconnect the cable AA [4] and cable AB [6] at the cable turnbuckles [5].

(a) Attach identification tags on the disconnected cables for easier assembly.

SUBTASK 27-11-51-020-005

(3) Disconnect brake control cable LGB1A [39] and cable LGB1B [40] at the turnbuckles.

(a) Attach identification tags on the disconnected cables for easier assembly.

SUBTASK 27-11-51-020-004

(4) Remove the aileron control wheel drum assembly [19]:

(a) Remove the screw [35] and clamp [37] that attach the rudder pedal adjustment crank to the aileron control wheel drum assembly [19].

(b) Disconnect the electrical connector [15], electrical connector [30], and electrical connector [34].

(c) Remove the screws [31], washers [32], and nuts [33] to remove the wiring harness [38] from the bracket on the aileron control wheel drum assembly [19].

(d) Remove the screw [24] and clamp [26].

(e) Remove the nuts [14], washers [13], and bolts [12].

(f) Remove the nuts [11], washers [10], and bolts [9].

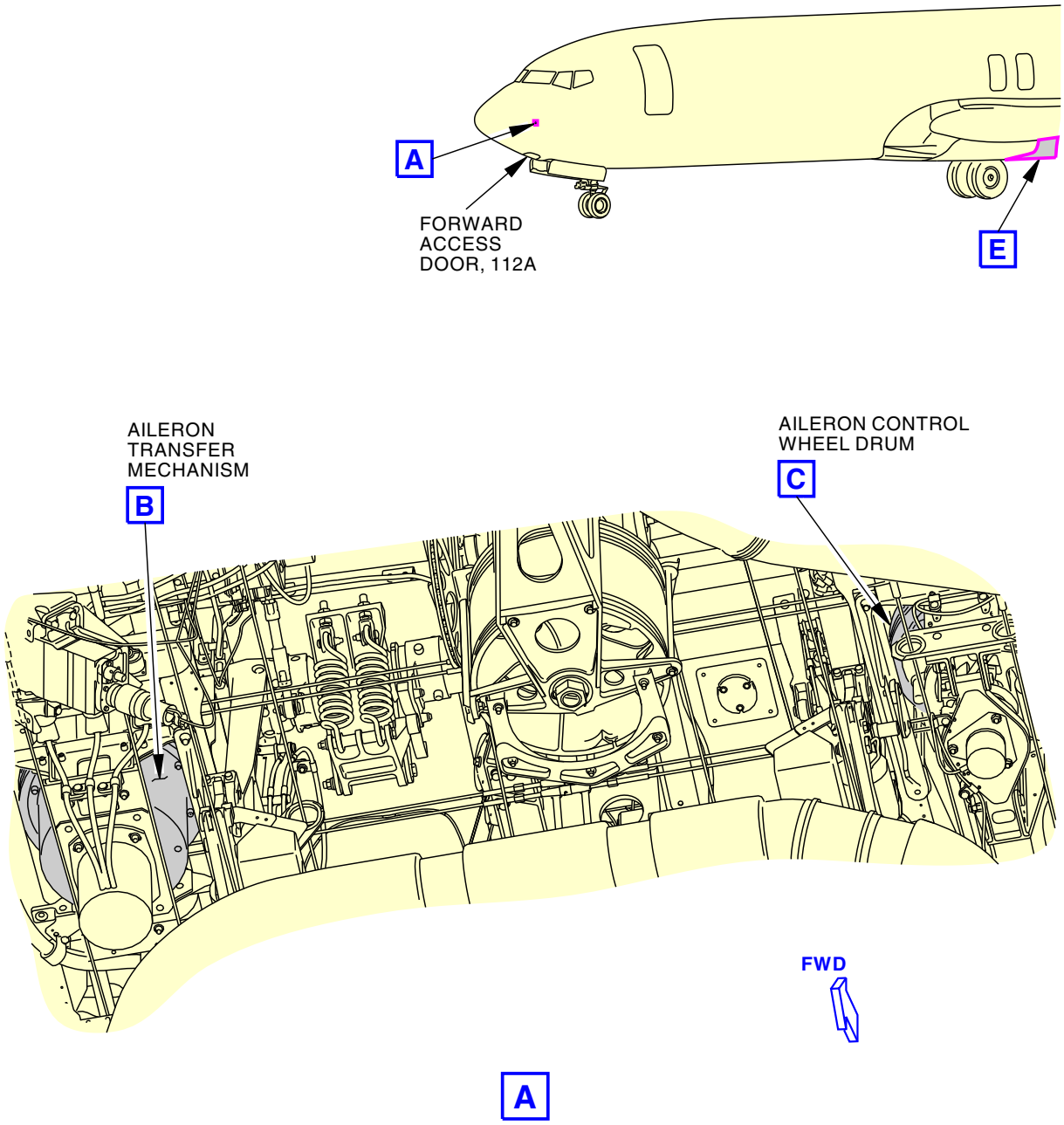
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Move the aileron control wheel drum assembly [19] down while, at the same time, you put the cable ACBA1 [1], cable ACBA2 [21], cable ACBB1 [2], and cable ACBB2 [22] through the openings.

(h) Remove the control wheel drum assembly [19] from the airplane structure.

——— END OF TASK ———

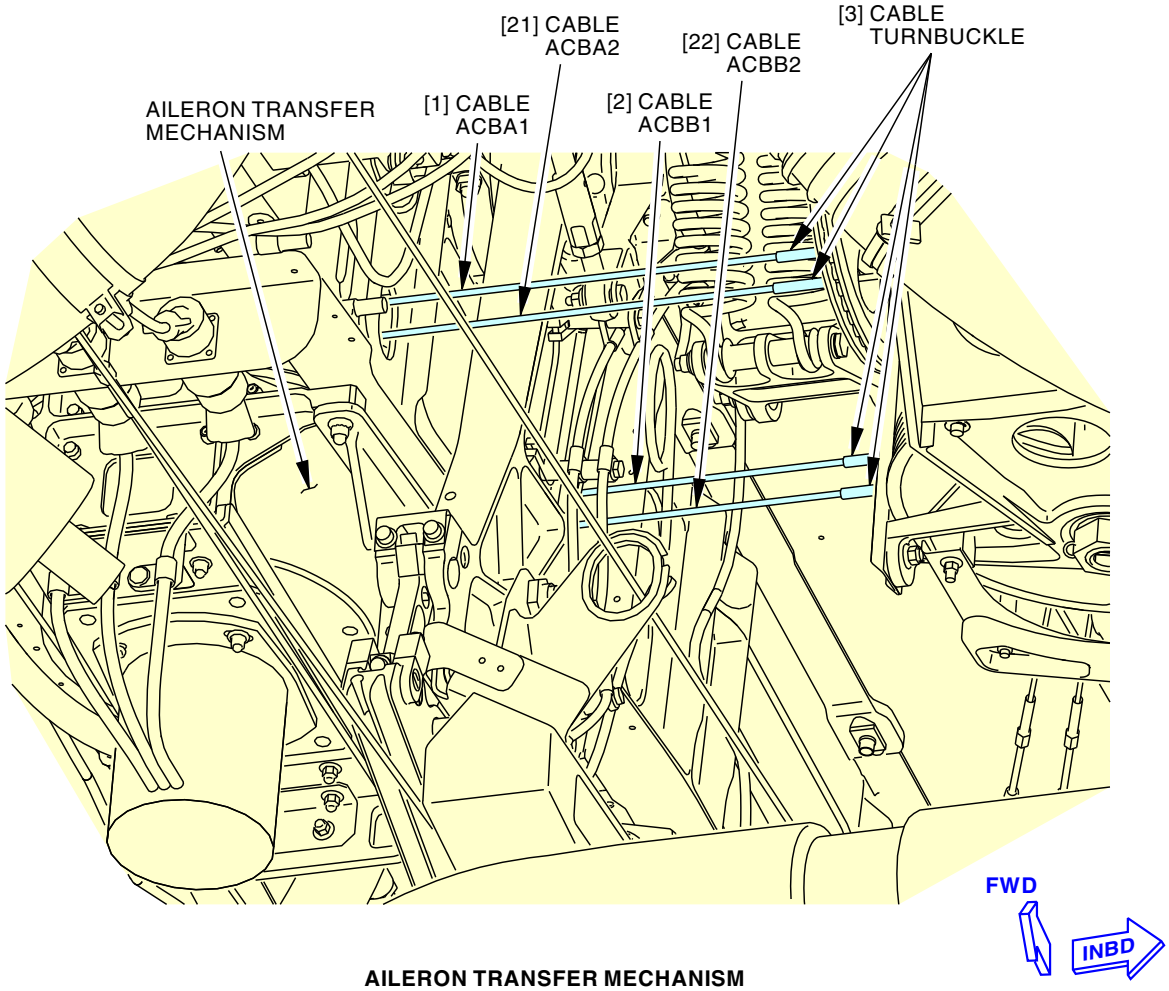
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412317 S00061530431_V1

Aileron Control Wheel Drum Installation
Figure 401/27-11-51-990-801 (Sheet 1 of 5)

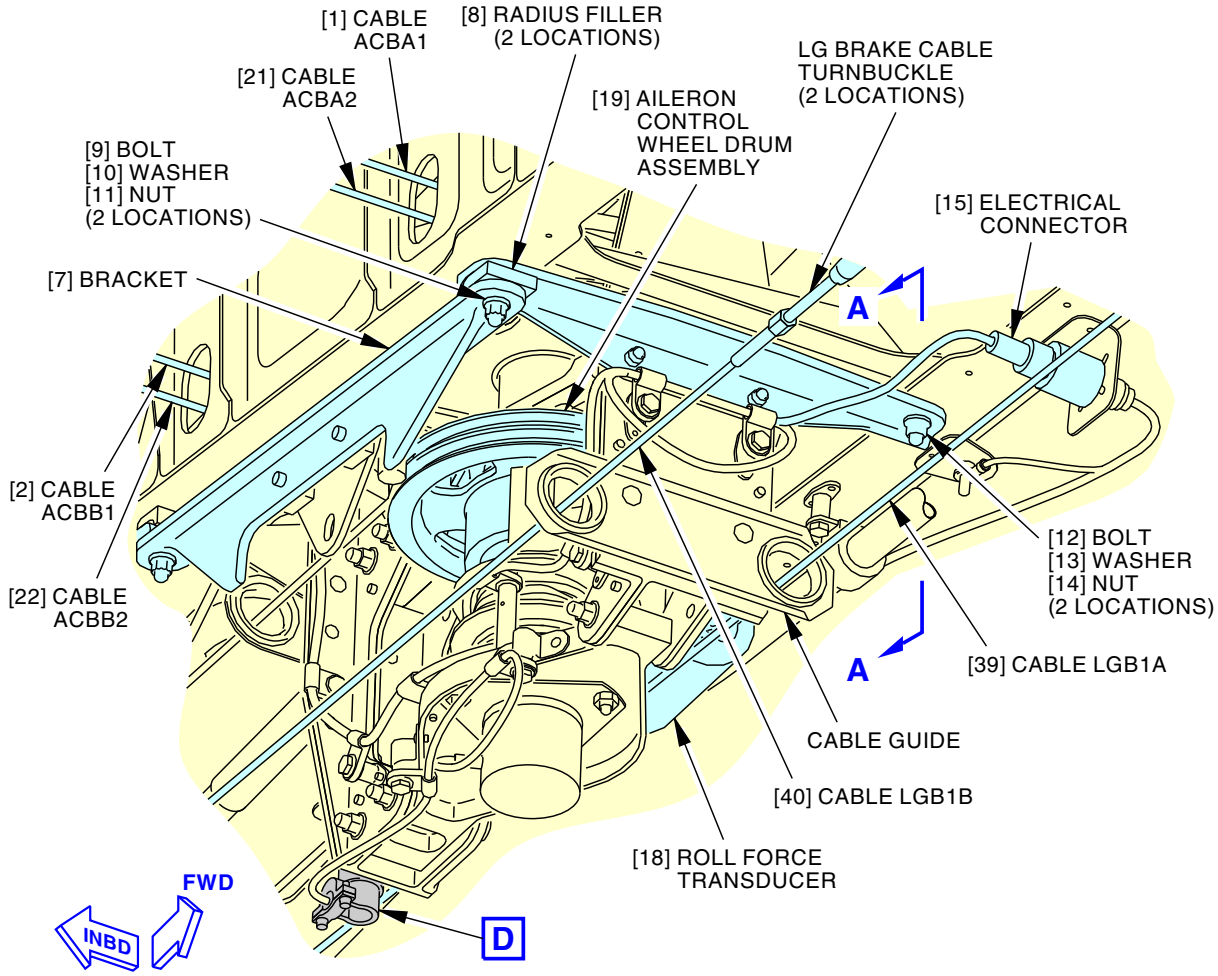
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412318 S00061530432_V1

Aileron Control Wheel Drum Installation
Figure 401/27-11-51-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



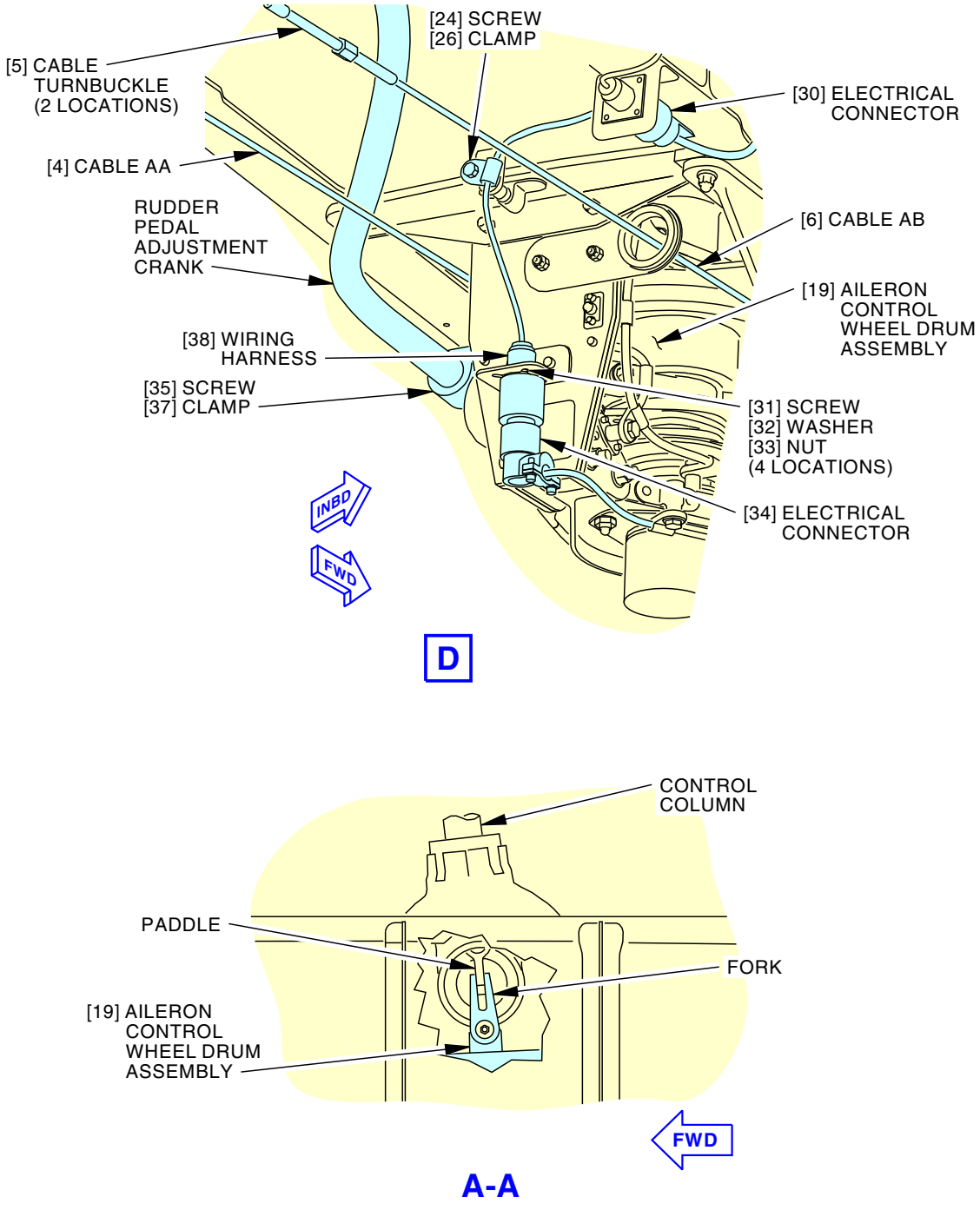
AILERON CONTROL WHEEL DRUM

C

2412319 S00061530433_V4

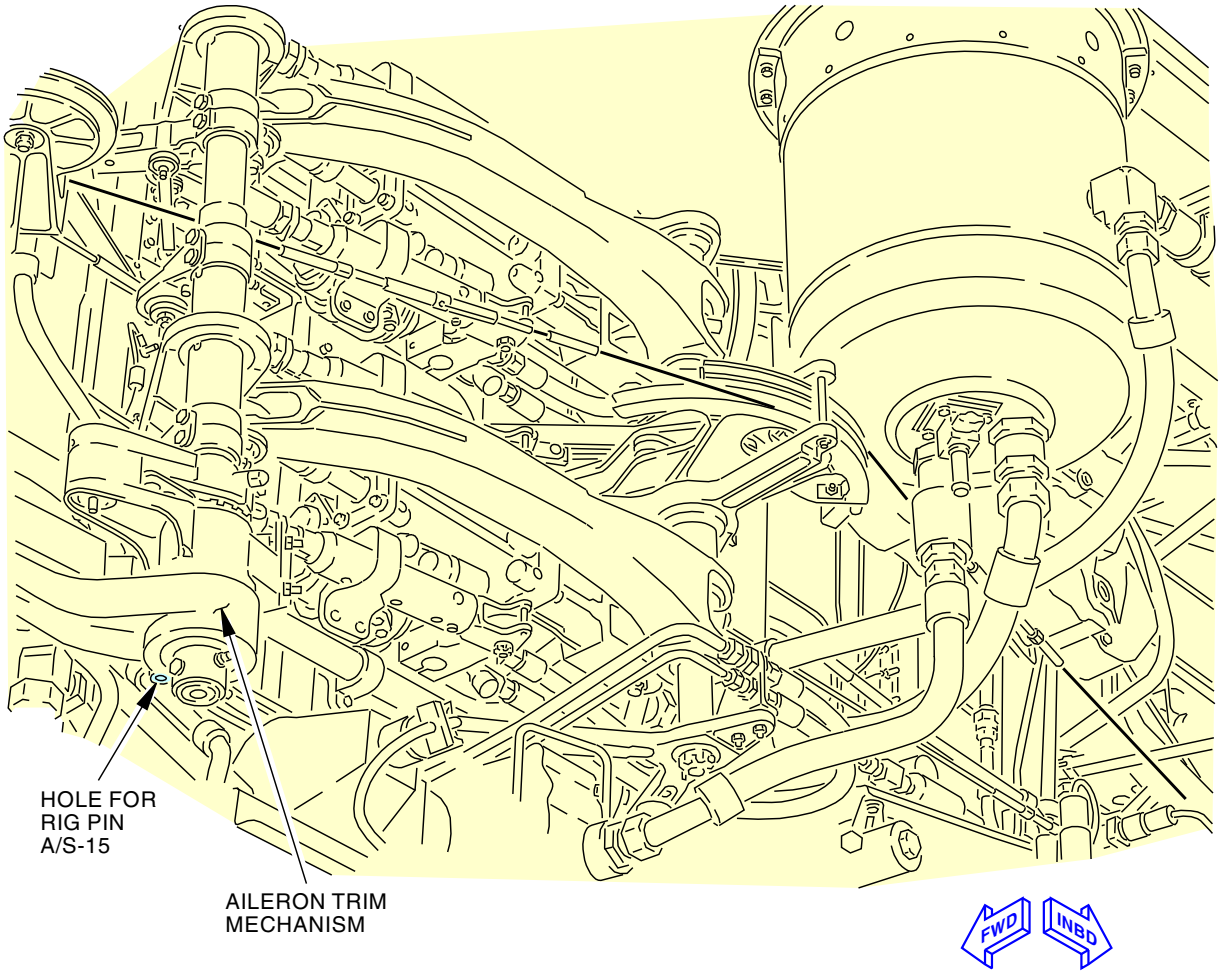
Aileron Control Wheel Drum Installation
Figure 401/27-11-51-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Control Wheel Drum Installation
Figure 401/27-11-51-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL

E

2412321 S00061530435_V2

Aileron Control Wheel Drum Installation
Figure 401/27-11-51-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-51-400-801

3. Aileron Control Wheel Drum Installation

(Figure 401)

A. References

Reference	Title
22-11-11-740-801	Roll Force Transducer Test (P/B 501)
27-11-00-700-803	Manual Reversion Control Friction Test (P/B 501)
27-11-00-700-804	Control Wheel Centering Check (P/B 501)
27-11-00-700-805	Aileron Control Wheel Force Test (P/B 501)
27-11-00-700-807	Control Wheel Travel Stop Test (P/B 501)
27-11-00-710-801	Aileron Response (Operational) Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
32-41-00-820-801	Hydraulic Brake System Adjustment (P/B 501)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50063	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122XD (Replaces MS-122DF)	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
19	Control wheel drum assembly	27-11-51-01-030	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Aileron Control Wheel Drum Installation

SUBTASK 27-11-51-210-001

WARNING

MAKE SURE THAT IT IS THE SELF-LOCKING SHEAR NUT AND NOT THE TENSION TYPE SELF-LOCKING NUT THAT CONNECTS THE FORK TO THE CONTROL WHEEL DRUM. IF AN INCORRECT NUT IS INSTALLED, THE CAPTAIN'S CONTROL COLUMN CAN BECOME DISENGAGED FROM THE FORK. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Make sure that the fork is connected to the control wheel drum with correct self-locking shear nut.

NOTE: You must see a completed bolt chamfer at the end of the nut.

SUBTASK 27-11-51-420-001

(2) Install the aileron control wheel drum assembly [19]:

SIA 001-005; AIRPLANES WITH CONTROL COLUMN PLATE ASSEMBLY, 251N1233-7

(a) Apply MS-122XD release agent, G50063 to the paddle and fork coupling assembly.

SIA ALL

(b) Put the bolts [9] and bolts [12] into position on the airplane structure.

(c) Make sure that the radius fillers [8] are bonded to the bracket [7].

(d) Lift the aileron control wheel drum assembly [19] into position while making sure that the fork and paddle engage.

(e) Install the washers [10] and nuts [11] on the bolts [9].

(f) Install the washers [13] and nuts [14] on the bolts [12].

(g) Put the ends of cable ACBA1 [1], cable ACBA2 [21], cable ACBB1 [2] and cable ACBB2 [22] through the openings.

(h) Install the screw [24] and clamp [26].

(i) Attach the wiring harness [38] to the aileron control wheel drum assembly [19] with screws [31], washers [32] and nuts [33].

(j) Connect the electrical connector [15], electrical connector [30] and electrical connector [34].

(k) Install the screw [35] and clamp [37] to attach the rudder pedal adjustment crank to the aileron control wheel drum assembly [19].

SUBTASK 27-11-51-420-003

(3) To connect the cable AA [4] and cable AB [6] at the cable turnbuckles [5], do these steps:

(a) Remove the identification tags from the disconnected cables.

(b) Connect the cable AA [4] and cable AB [6] at the cable turnbuckles [5].

(c) Tighten the cable turnbuckles [5] to remove slack but keep the cable tension at zero.

SUBTASK 27-11-51-420-004

(4) Connect the cable ACBA1 [1], cable ACBA2 [21], cable ACBB1 [2], and cable ACBB2 [22] at the cable turnbuckles [3]:

(a) Remove the identification tags from the disconnected cables.

(b) Connect the cable ACBA1 [1], cable ACBA2 [21], cable ACBB1 [2], and cable ACBB2 [22] at the cable turnbuckles [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Tighten the cable turnbuckles [3] to remove slack but keep the cable tension at zero.

SUBTASK 27-11-51-420-005

(5) To connect brake control cable LGB1A [39] and cable LGB1B [40] at the LG brake cable turnbuckles, do these steps:

(a) Remove the identification tags from the disconnected cables.

(b) Connect the cable LGB1A [39] and cable LGB1B [40] at the cable turnbuckles.

(c) Tighten the brake cable turnbuckles to remove slack but keep the cable tension at zero.

SUBTASK 27-11-51-800-001

(6) Make sure that the captain's and first officer's control wheels are in the neutral position.

SUBTASK 27-11-51-080-001

(7) Remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, from the aileron trim mechanism.

SUBTASK 27-11-51-860-003

(8) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-51-820-001

(9) Adjust the cables ACBA and ACBB and cables AA and AB (TASK 27-11-00-820-801).

SUBTASK 27-11-51-820-002

(10) Adjust the brake control cables (Hydraulic Brake System Adjustment, TASK 32-41-00-820-801):

(a) Do the steps to adjust brake cables LGB1A and LGB1B.

(b) Adjust the right side brake control cables LGB2A and LGB2B at the same time.

(c) Brake system retest is not required after rigging.

H. Aileron Control Wheel Drum Installation Test

SUBTASK 27-11-51-730-001

(1) Do this task: Manual Reversion Control Friction Test, TASK 27-11-00-700-803.

SUBTASK 27-11-51-710-001

(2) Do this task: Aileron Response (Operational) Test, TASK 27-11-00-710-801.

SUBTASK 27-11-51-720-002

(3) Do this task: Control Wheel Centering Check, TASK 27-11-00-700-804.

SUBTASK 27-11-51-720-003

(4) Do this task: Aileron Control Wheel Force Test, TASK 27-11-00-700-805.

SUBTASK 27-11-51-720-004

(5) Do this task: Control Wheel Travel Stop Test, TASK 27-11-00-700-807.

SUBTASK 27-11-51-710-002

(6) Do this task: Roll Force Transducer Test, TASK 22-11-11-740-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-51-410-003

(1) Install these access panels if they were removed to gain access to the aileron control wheel drum (TASK 53-14-01-420-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-51-410-001

(2) Close this access door:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON TRIM ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron trim actuator

(2) An installation of the aileron trim actuator.

TASK 27-11-54-000-801

2. Aileron Trim Actuator Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-11-54-860-001

(1) Put the captain's and first officer's control wheels in the neutral position.

SUBTASK 27-11-54-860-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-54-480-001

(3) Install the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim mechanism.

E. Aileron Trim Actuator Removal

SUBTASK 27-11-54-020-001

(1) Disconnect the electrical connector from the aileron trim actuator [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-11-54-020-002

(2) Remove the aileron trim actuator [1] from the aileron trim mechanism:

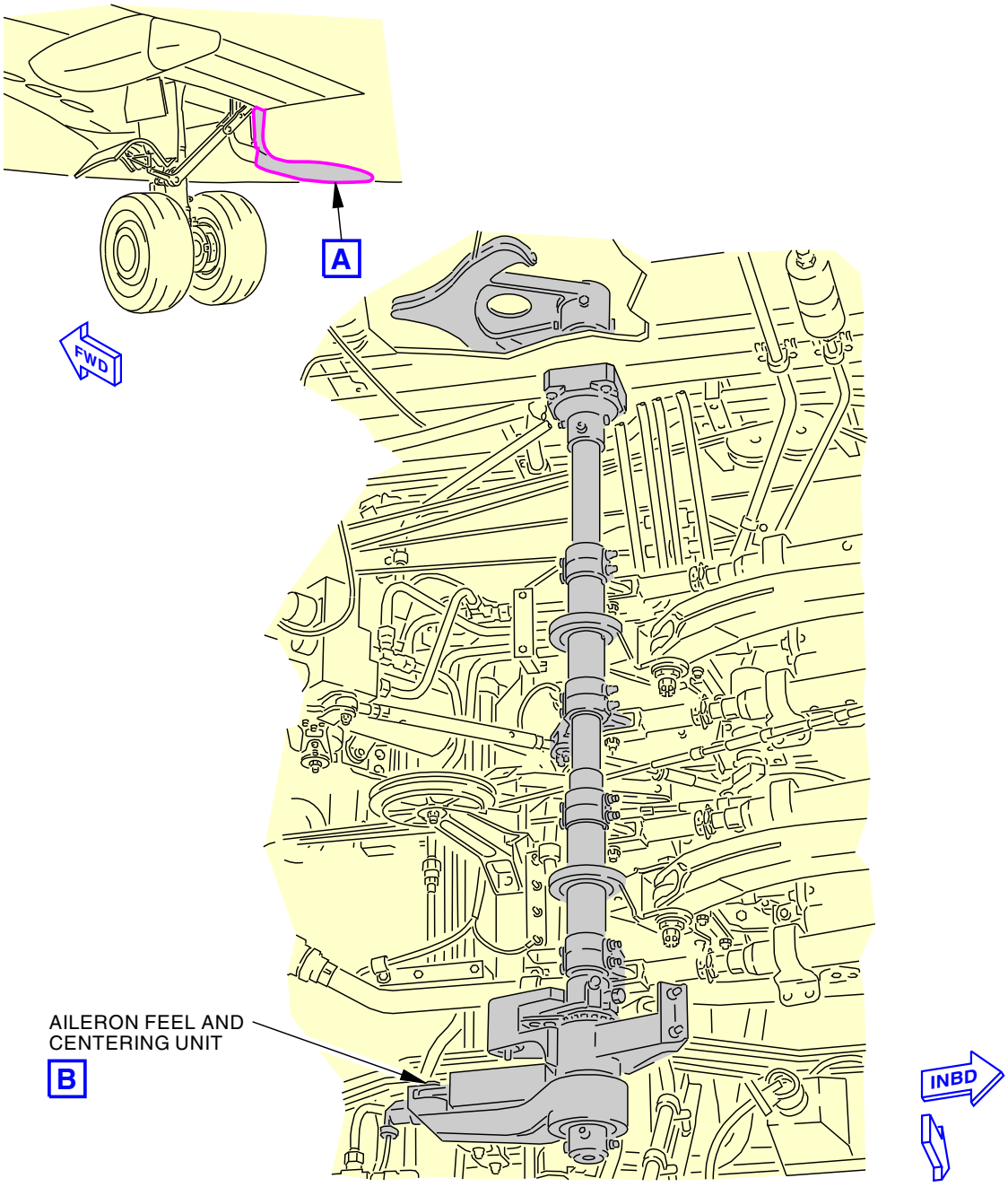
(a) Remove the nut [11], washer [9], bushing [10], washer [8], and bolt [7].

(b) Remove the nut [2], washer [4], bushing [3], washer [5], and bolt [6].

(c) Remove the aileron trim actuator [1].

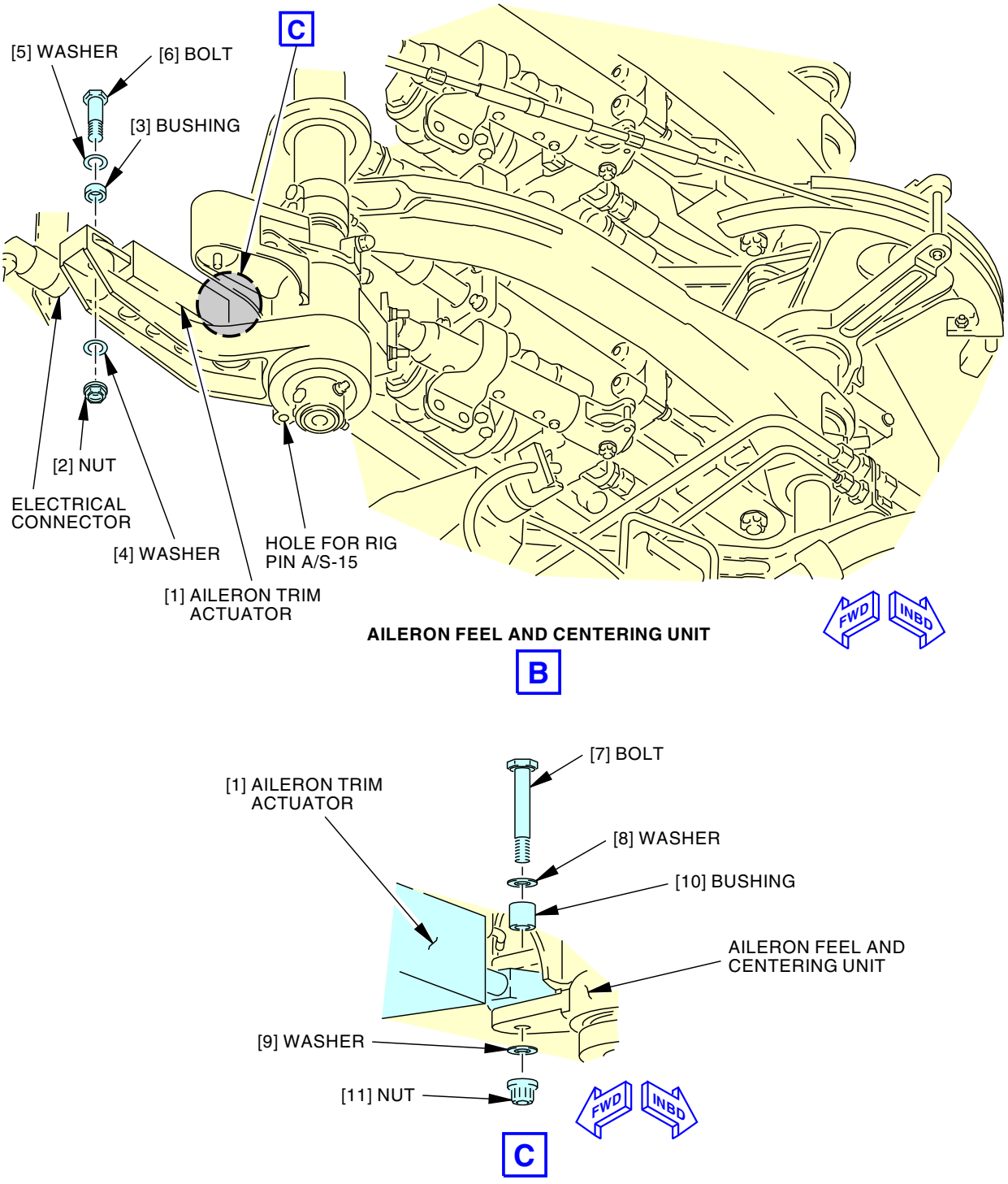
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Trim Actuator Installation
Figure 401/27-11-54-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Trim Actuator Installation
Figure 401/27-11-54-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-54-400-801

3. Aileron Trim Actuator Installation

(Figure 401)

A. References

Reference	Title
27-11-00-730-801	Aileron Trim Response Test (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Aileron trim actuator	27-11-54-01-045	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Aileron Trim Actuator Installation

SUBTASK 27-11-54-420-001

(1) Install the aileron trim actuator [1]:

(a) Make sure that the rig pin A/S-15, from the rigging pin kit, SPL-1585, is installed in the aileron trim mechanism.

(b) Put the aileron trim actuator [1] in position.

(c) Install the bolt [6], washer [5], bushing [3], washer [4], and nut [2].

(d) Install the bolt [7], washer [8], bushing [10], washer [9], and nut [11].

SUBTASK 27-11-54-420-002

(2) Do the following steps to connect the electrical connector:

(a) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

(b) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(c) Connect the electrical connector to the aileron trim actuator [1].

SUBTASK 27-11-54-860-003

(3) Make sure the captain's and first officer's control wheels are in the neutral position.

SUBTASK 27-11-54-080-001

(4) Remove the rig pin A/S-15, from the rigging pin kit, SPL-1585, from the aileron trim mechanism.

SUBTASK 27-11-54-860-004

(5) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-54-710-001

(6) Do this task: Aileron Trim Response Test, TASK 27-11-00-730-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON TRANSFER MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron transfer mechanism.

(2) An installation of the aileron transfer mechanism.

B. The aileron transfer mechanism is installed at the base of the first officer's control column.

TASK 27-11-61-000-801

2. Aileron Transfer Mechanism Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
730	Subzone - Left Main Landing Gear and Landing Gear Doors
740	Subzone - Right Main Landing Gear and Landing Gear Doors

D. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-11-61-860-004

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-11-61-010-001

(2) To get access to the aileron transfer mechanism, do this task:

(a) Open these access panels:

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-61-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-61-860-001

(4) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-61-860-002

(5) Put the aileron control wheels in the neutral position.

(a) Make sure that the aileron trim switches are at the zero trim position.

NOTE: The aileron trim switches are installed on the aft electronic control panel, P8 in the flight compartment.

SUBTASK 27-11-61-480-002

(6) Install the rig pins A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drums.

F. Aileron Transfer Mechanism Removal

SUBTASK 27-11-61-020-001

(1) Disconnect the cable ACBA1 [1], cable ACBA2 [2], cable ACBB1 [3] and cable ACBB2 [4] at the cable turnbuckles [5].

(a) Attach identification tags on the disconnected cables for easier assembly.

SUBTASK 27-11-61-020-005

(2) Disconnect the LG brake control cable LGB2A [25] and cable LGB2B [26] at the LG brake cable turnbuckles.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Attach identification tags on the disconnected cables for easier assembly.

SUBTASK 27-11-61-020-004

(3) To remove the aileron position transmitter [7] from the aileron transfer mechanism [13] do these steps:

(a) Disconnect the three electrical connectors [11].

(b) Remove the washers [9] and nuts [10].

(c) Remove the screw [28], screw [29], washers [30], clamps [27] and nuts [31].

(d) Remove the aileron position transmitter [7] from the aileron transfer mechanism [13].

SUBTASK 27-11-61-020-003

(4) Remove the aileron transfer mechanism [13]:

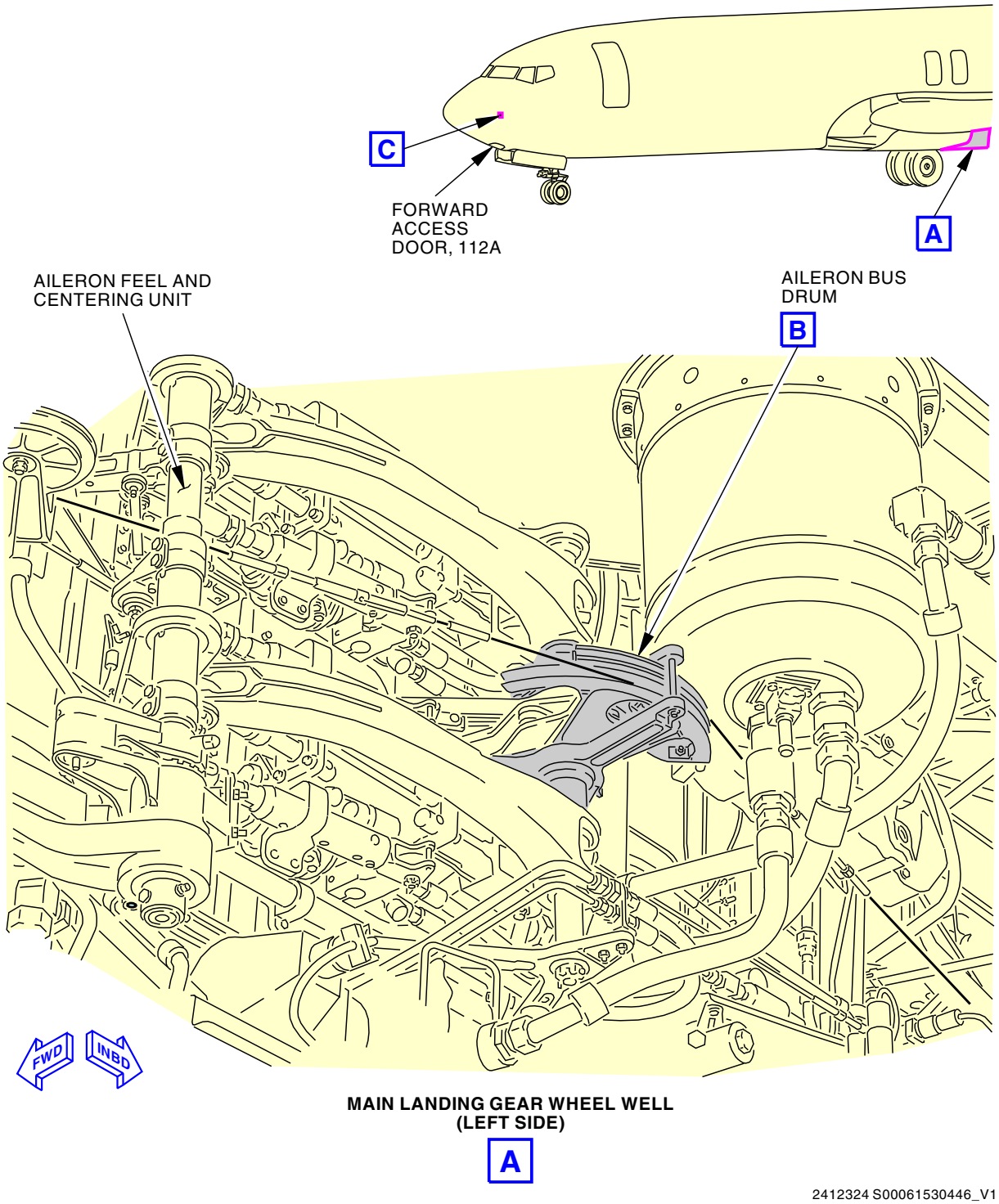
(a) Remove screw [17] and cable clamp [18] attached to the aileron transfer mechanism [13].

(b) Remove the nuts [24], washers [23], and bolts [22] that attach the aileron transfer mechanism [13] to the airplane structure.

(c) Move the aileron transfer mechanism [13] down while you put the cable ACBA1 [1], cable ACBA2 [2], cable ACBB1 [3] and cable ACBB2 [4] through the openings.

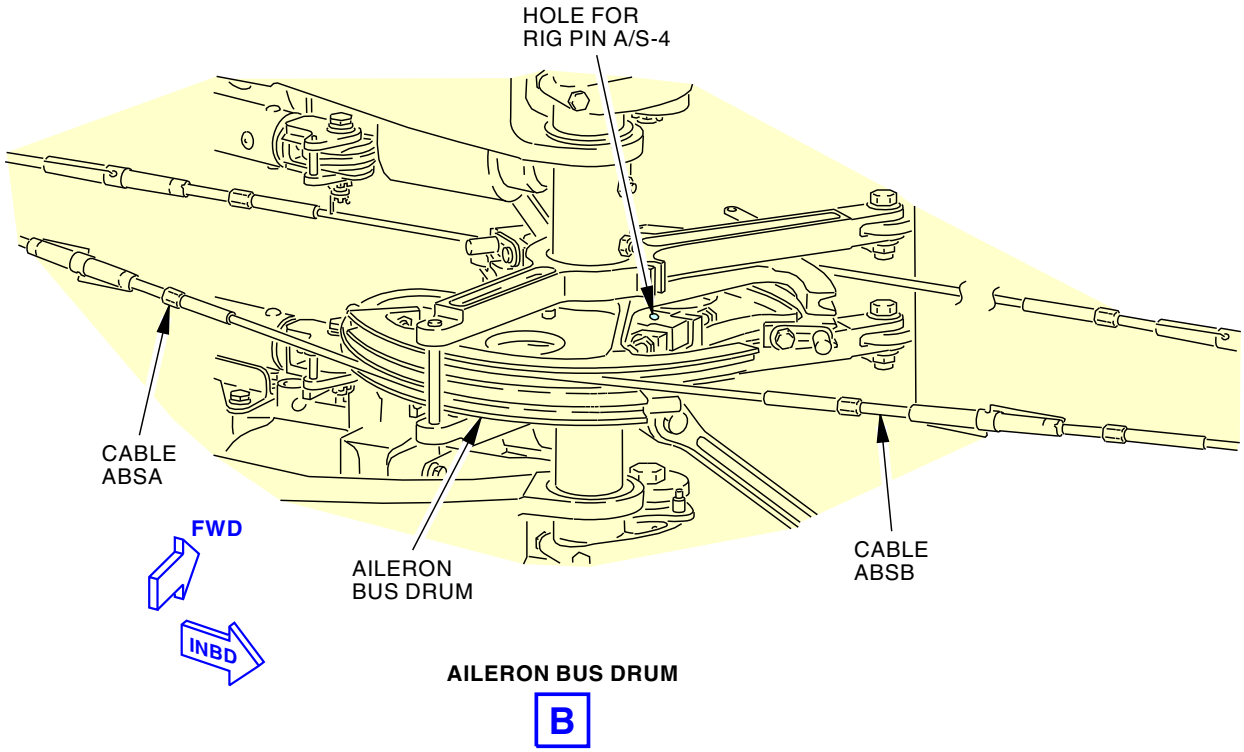
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Transfer Mechanism Installation
Figure 401/27-11-61-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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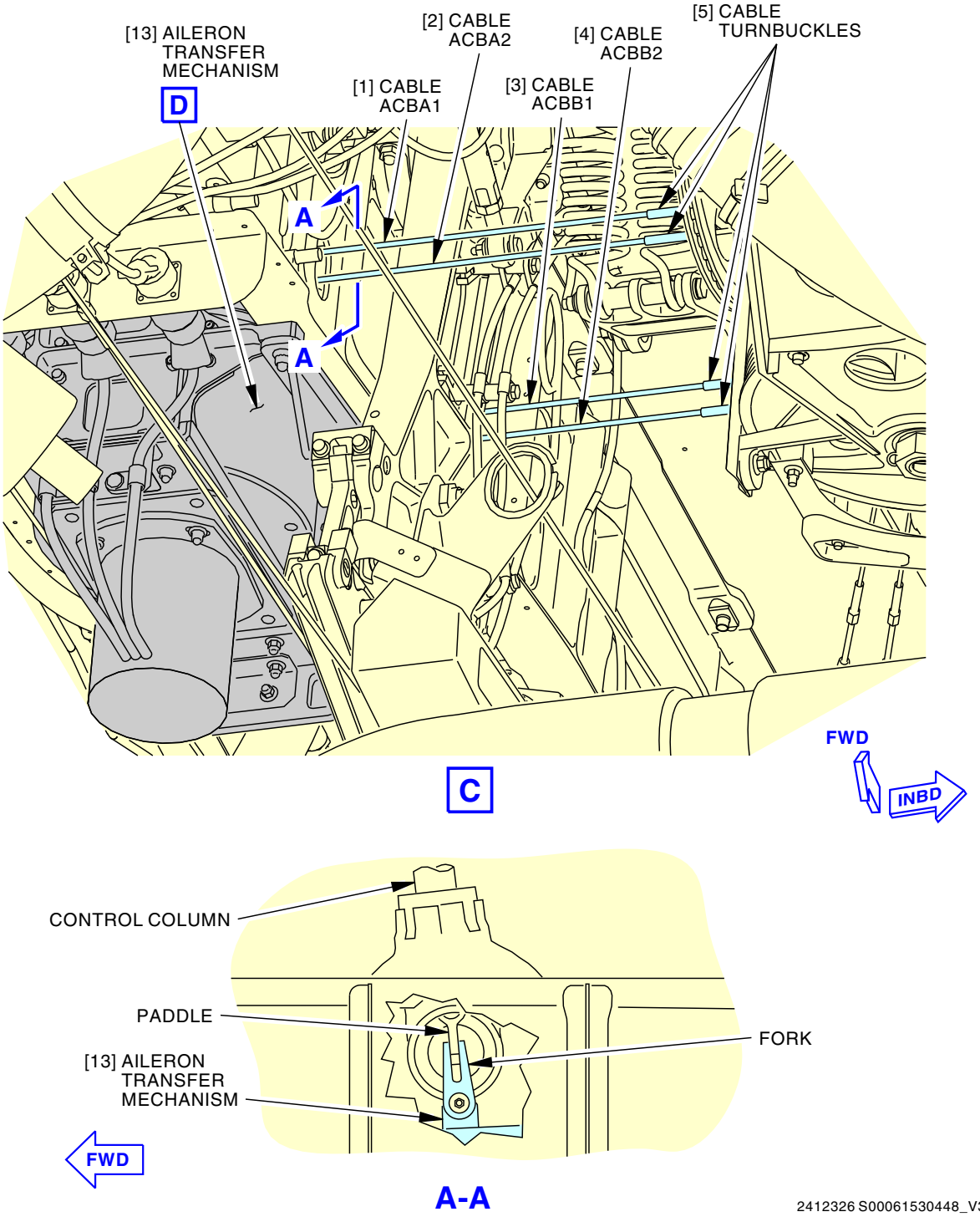
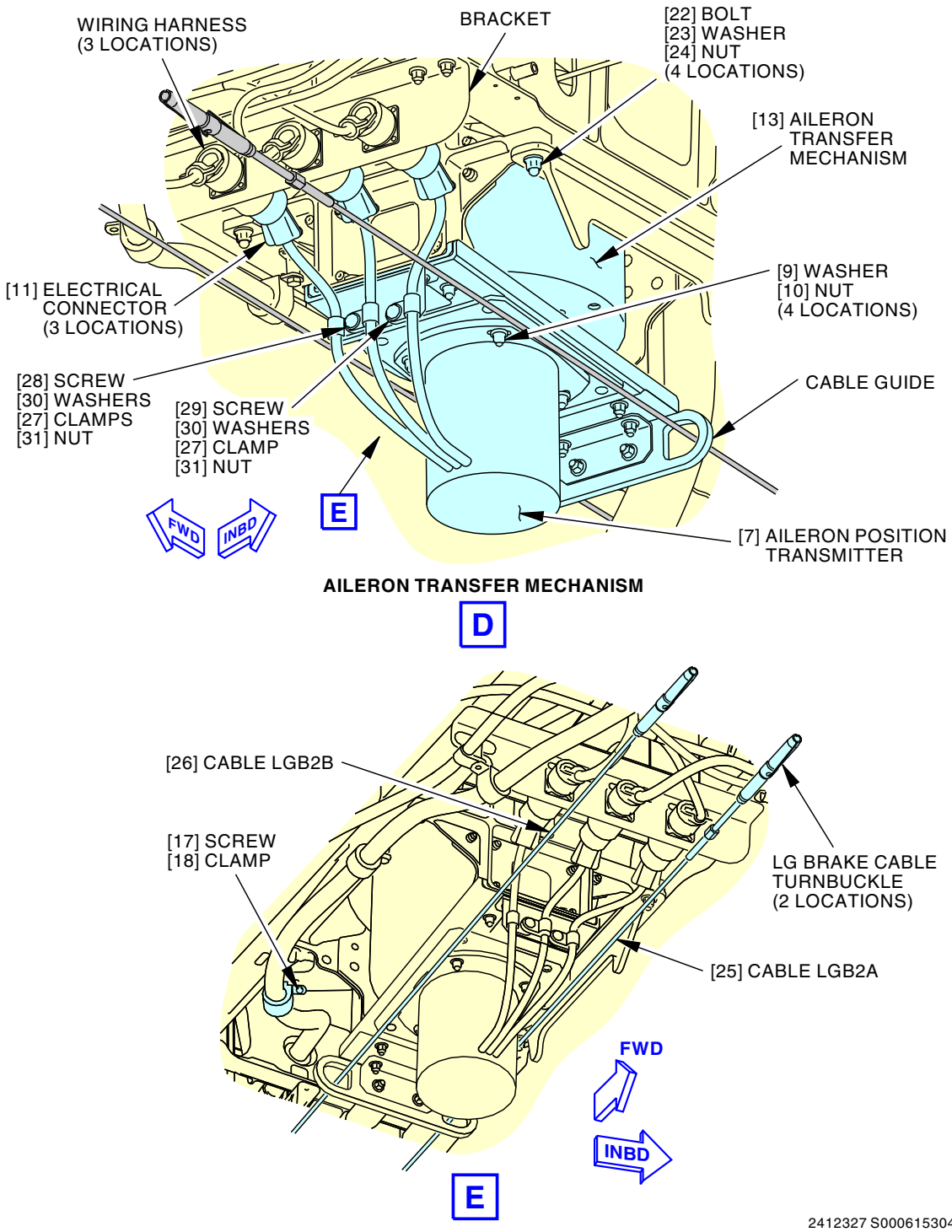
Aileron Transfer Mechanism Installation
Figure 401/27-11-61-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Transfer Mechanism Installation
Figure 401/27-11-61-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Transfer Mechanism Installation
Figure 401/27-11-61-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-61-400-801

3. Aileron Transfer Mechanism Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-00-700-803	Manual Reversion Control Friction Test (P/B 501)
27-11-00-700-804	Control Wheel Centering Check (P/B 501)
27-11-00-700-805	Aileron Control Wheel Force Test (P/B 501)
27-11-00-700-806	Transfer Mechanism Functional Test (P/B 501)
27-11-00-700-807	Control Wheel Travel Stop Test (P/B 501)
27-11-00-710-801	Aileron Response (Operational) Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-41-00-820-801	Hydraulic Brake System Adjustment (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50063	Lubricant - PTFE Release Agent - Miller-Stephenson MS-122XD (Replaces MS-122DF)	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
13	Aileron transfer mechanism	27-11-61-01-070	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
730	Subzone - Left Main Landing Gear and Landing Gear Doors
740	Subzone - Right Main Landing Gear and Landing Gear Doors

F. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Aileron Transfer Mechanism Installation

SUBTASK 27-11-61-420-001

(1) Install the aileron transfer mechanism [13]:

SIA 001-005; AIRPLANES WITH CONTROL COLUMN PLATE ASSEMBLY, 251N1233-7

(a) Apply MS-122XD release agent, G50063 to the paddle and fork coupling assembly.

SIA ALL

(b) Put the bolts [22] into position on the airplane structure.

(c) Lift the aileron transfer mechanism [13] into position while you make sure that the fork and paddle engage.

(d) Install the washers [23] and nuts [24] on the bolts [22] to attach the aileron transfer mechanism [13] to the airplane structure.

(e) Put the ends of the cable ACBA1 [1], cable ACBA2 [2], cable ACBB1 [3] and cable ACBB2 [4] through the openings.

(f) Install the screw [17] and clamp [18] to connect the rudder pedal adjustment cable to the aileron transfer mechanism [13].

SUBTASK 27-11-61-420-002

(2) Install the aileron position transmitter [7] on the aileron transfer mechanism [13]:

(a) Put the aileron position transmitter [7] in position.

(b) Install the washers [9] and nuts [10].

(c) Install the screw [28], screw [29], washers [30], clamps [27] and nuts [31].

(d) Connect the three electrical connectors [11].

SUBTASK 27-11-61-420-003

(3) Connect the cable ACBA1 [1], cable ACBA2 [2], cable ACBB1 [3] and cable ACBB2 [4] to the cable turnbuckles [5].

(a) Remove the identification tags from the disconnected cables.

(b) Connect the cable ACBA1 [1], cable ACBA2 [2], cable ACBB1 [3] and cable ACBB2 [4] to the cable turnbuckles [5].

(c) Tighten the cable turnbuckles [5] to remove slack but keep the cable tension at zero.

SUBTASK 27-11-61-420-004

(4) To connect brake control cable LGB2A [25] and cable LGB2B [26] at the LG brake cable turnbuckles, do these steps:

(a) Remove the identification tags from the disconnected cables.

(b) Connect the cable LGB2A [25] and cable LGB2B [26] at the cable turnbuckles.

(c) Tighten the brake cable turnbuckles to remove slack but keep the cable tension at zero.

SUBTASK 27-11-61-080-002

(5) Remove the rig pins A/S-4, from the rigging pin kit, SPL-1585, from the aileron bus drums.

SUBTASK 27-11-61-820-001

(6) Adjust the cable ACBA and cable ACBB (TASK 27-11-00-820-801).

SUBTASK 27-11-61-820-002

(7) Adjust the brake control cables LGB2A and LGB2B (Hydraulic Brake System Adjustment, TASK 32-41-00-820-801):

(a) Do the steps to adjust brake cables LGB2A and LGB2B.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Adjust the left side brake control cables LGB1A and LGB1B at the same time.

(c) Brake system retest is not required after rigging.

H. Aileron Transfer Mechanism Installation Test

SUBTASK 27-11-61-860-003

(1) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-61-730-002

(2) Do this task: Manual Reversion Control Friction Test, TASK 27-11-00-700-803.

SUBTASK 27-11-61-710-001

(3) Do this task: Aileron Response (Operational) Test, TASK 27-11-00-710-801.

SUBTASK 27-11-61-720-001

(4) Do this task: Control Wheel Centering Check, TASK 27-11-00-700-804.

SUBTASK 27-11-61-730-003

(5) Do this task: Aileron Control Wheel Force Test, TASK 27-11-00-700-805.

SUBTASK 27-11-61-720-002

(6) Do this task: Transfer Mechanism Functional Test, TASK 27-11-00-700-806.

SUBTASK 27-11-61-730-004

(7) Do this task: Control Wheel Travel Stop Test, TASK 27-11-00-700-807.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-11-61-860-005

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-11-61-410-001

(2) Close these access panels:

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-11-61-080-003

(3) Remove the downlock pins from the landing gear (Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON TRANSFER MECHANISM - INSPECTION/CHECK

1. General

A. This procedure has this inspection task:

(1) Aileron Transfer Mechanism

TASK 27-11-61-210-801

2. Aileron Transfer Mechanism Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Aileron Transfer Mechanism Inspection

SUBTASK 27-11-61-010-002

(1) Get access to the aileron transfer mechanism:

(a) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-11-61-210-001

(2) Do a general visual inspection of the aileron transfer mechanism.

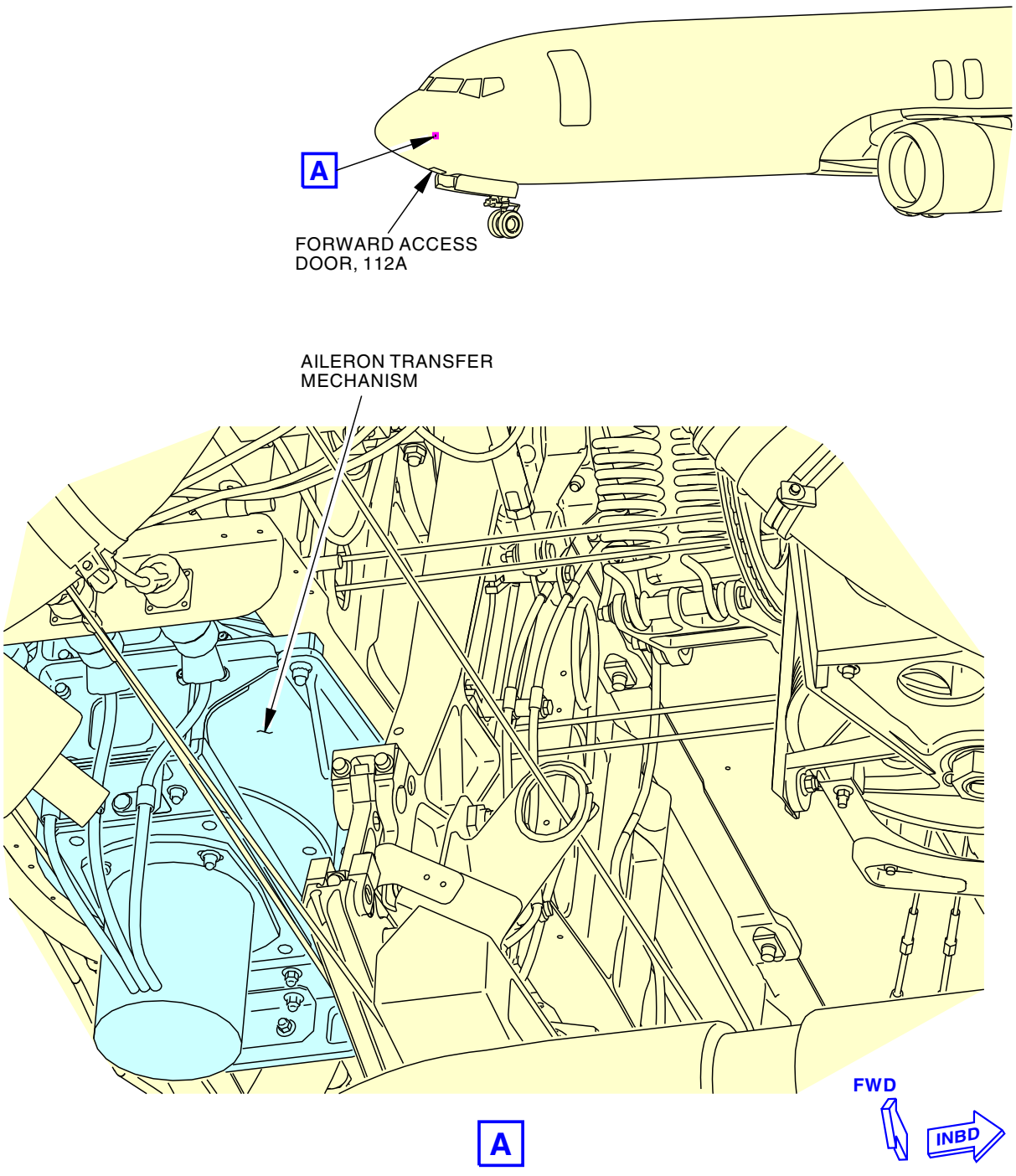
SUBTASK 27-11-61-410-002

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Transfer Mechanism Inspection
Figure 601/27-11-61-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON POWER CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron power control unit

(2) An installation of the aileron power control unit.

B. The aileron power control unit is referred to as the "power control unit" in this procedure.

C. The two power control units supply hydraulic power to the aileron. The power control unit at the bottom is connected to hydraulic system A. The power control unit at the top is connected to hydraulic system B.

D. This procedure is applicable for the power control units that are connected to hydraulic systems A and B.

TASK 27-11-71-000-801

2. Aileron Power Control Unit Removal

(Figure 401)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-11-71-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-71-860-001

(2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

E. Aileron Power Control Unit Linkage Removal

SUBTASK 27-11-71-020-001

(1) Disconnect hydraulic lines [4] at the inlet ports and hydraulic lines [40] at the outlet ports of the power control unit [1]. Use a 1 U.S.-gal (3.81 l) oil resistant container, STD-203 to contain any hydraulic fluid leakage. Discard the packing [2] and packing [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the caps and plugs on hydraulic lines [4], hydraulic lines [40] and ports.

SUBTASK 27-11-71-020-002

(2) Remove the power control unit [1]:

(a) Remove the pins [13], nuts [12], washers [11], bushings [10], washers [9], and bolts [8] to disconnect the pogos [7] from the power control unit [1]. Discard the pins [13].

(b) Remove the bolts [30], washers [31], bolts [32] and washers [33] to disconnect the bracket assemblies from the power control unit [1].

(c) Remove the pin [23], nut [22], washer [21], nut [24], washers [25], bushings [26], washers [28], and bolt [14] to disconnect the power control unit [1] from the reaction support assembly [27]. Discard the pin [23].

(d) Remove the nut [20], washer [19], washers [17], spacer [16] and bolt [15] to disconnect the safety link [18] from the reaction support assembly [27].

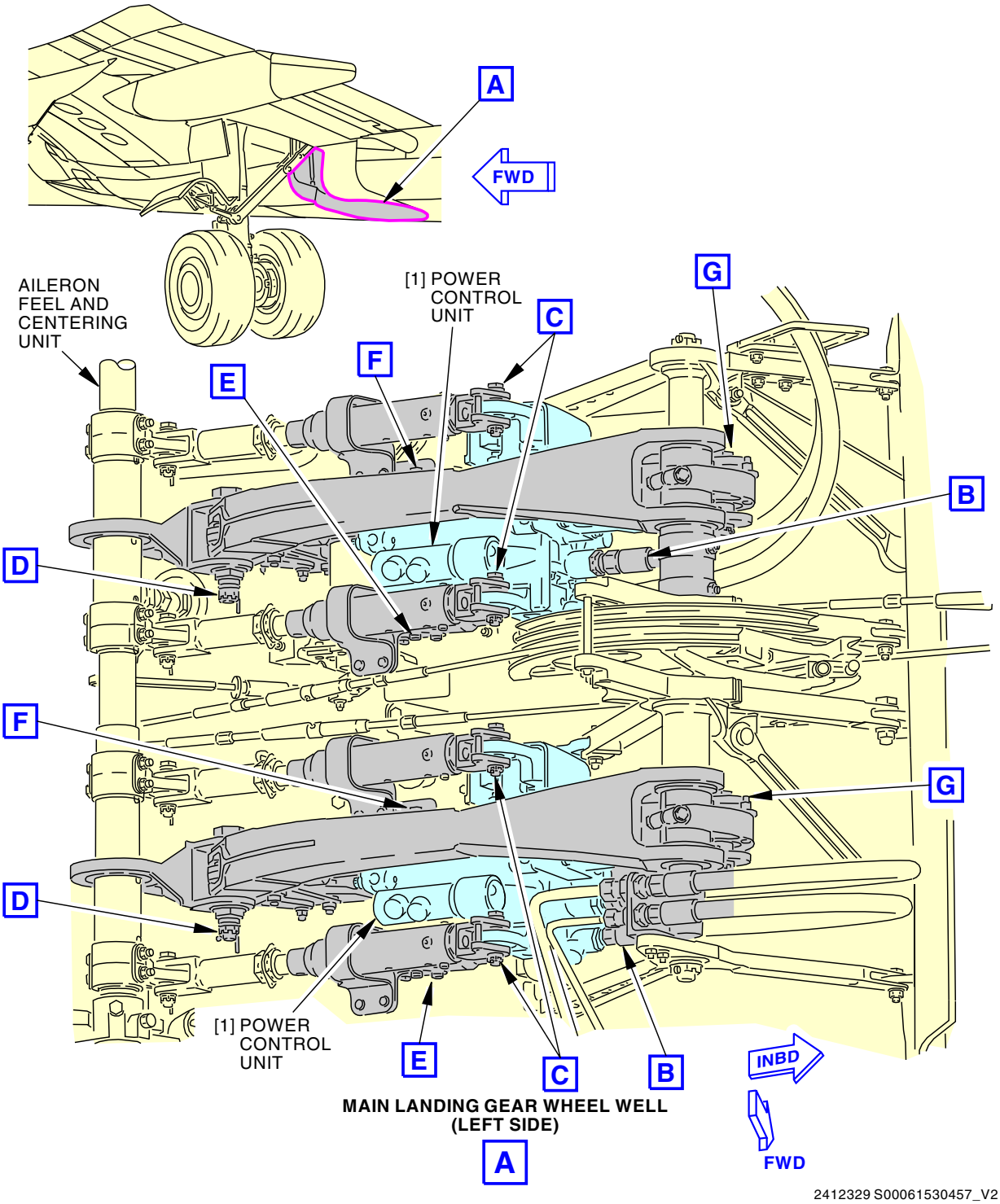
(e) Move the reaction link [29] aft to get access to the power control unit [1].

(f) Remove the pin [37], nut [38], washer [39], washer [35], and bolt [34] to disconnect the power control unit [1] from the output lever assembly [36]. Discard the pin [37].

(g) Remove the power control unit [1].

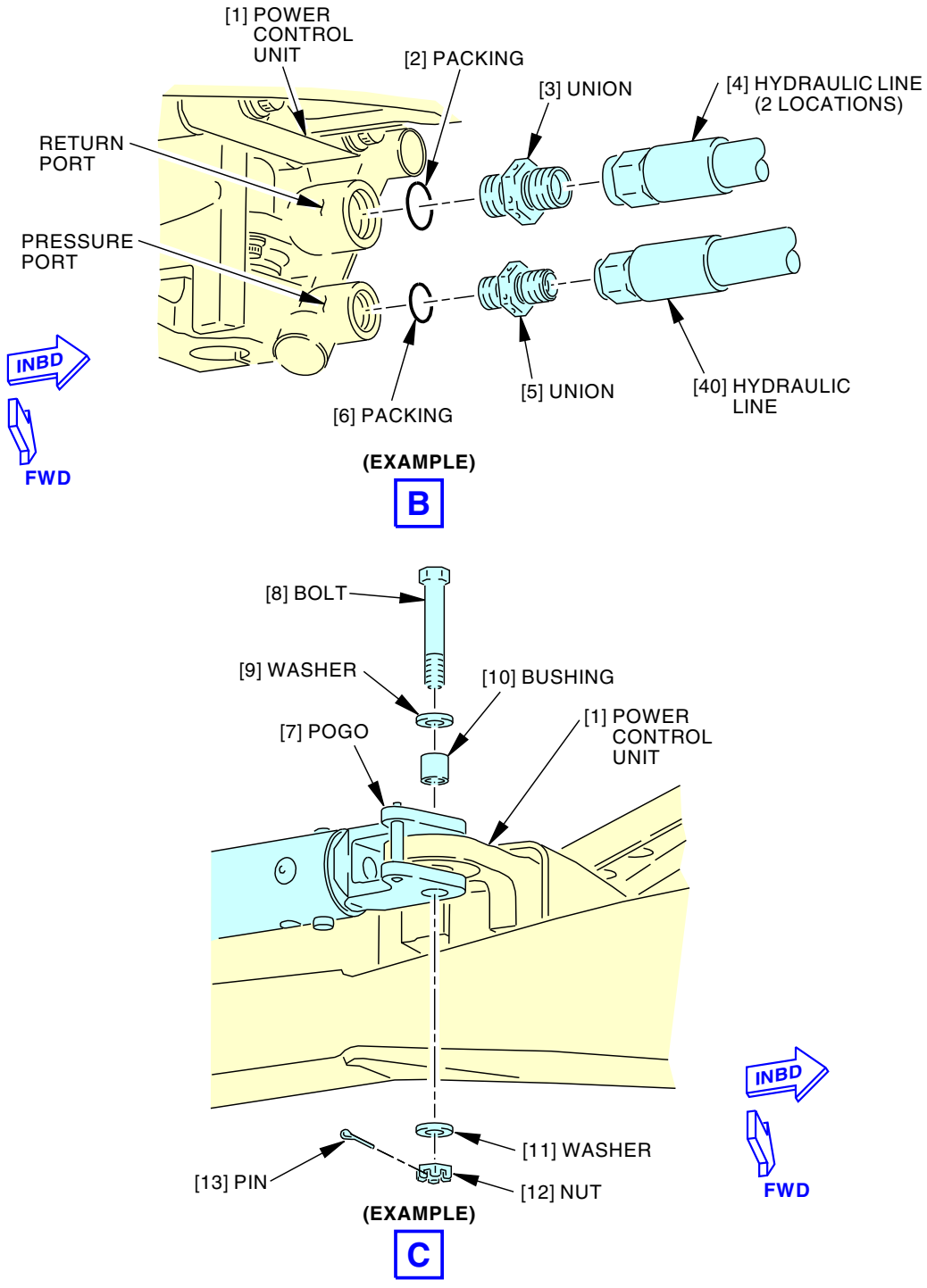
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



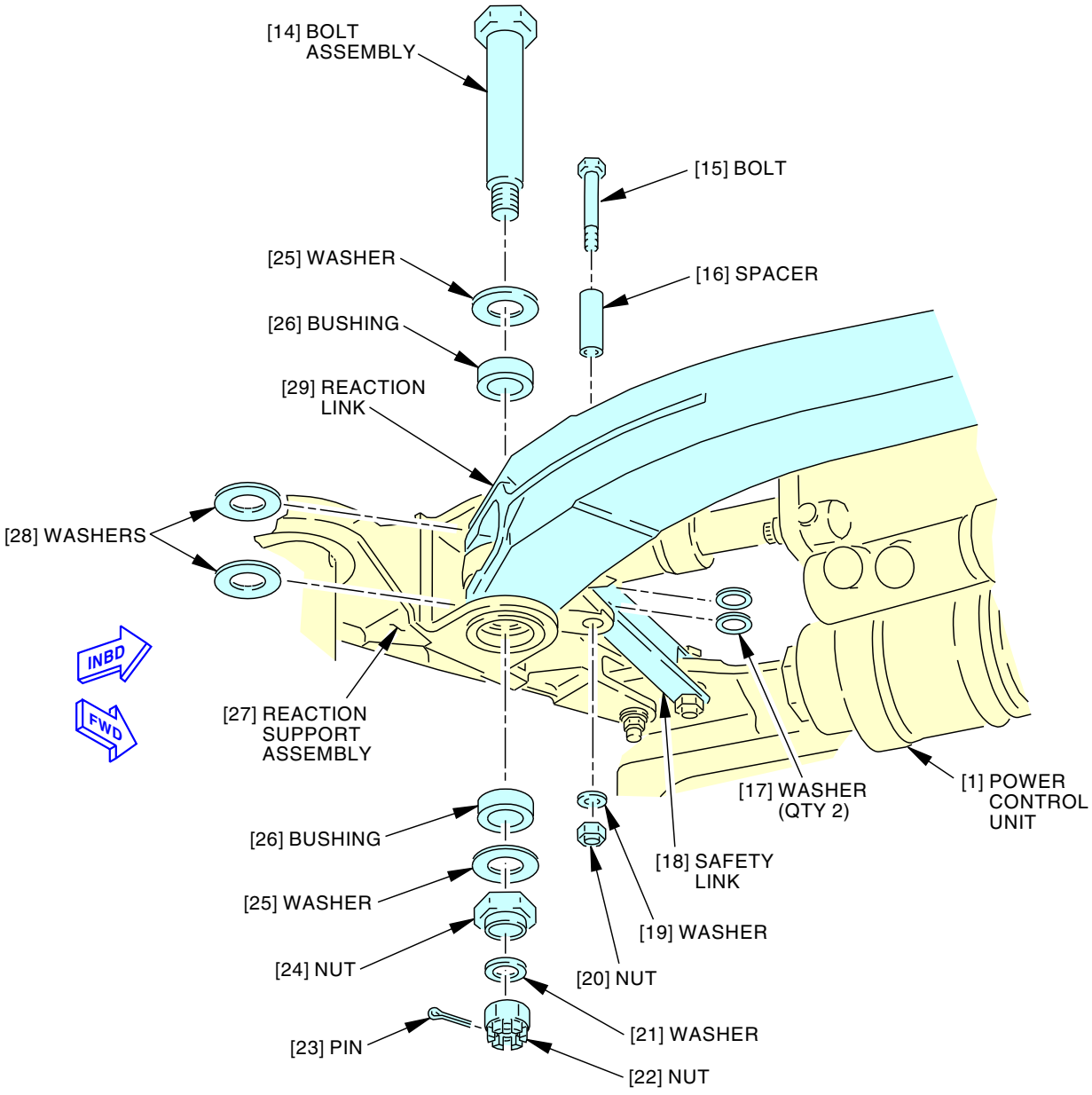
Aileron Power Control Unit Installation
Figure 401/27-11-71-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



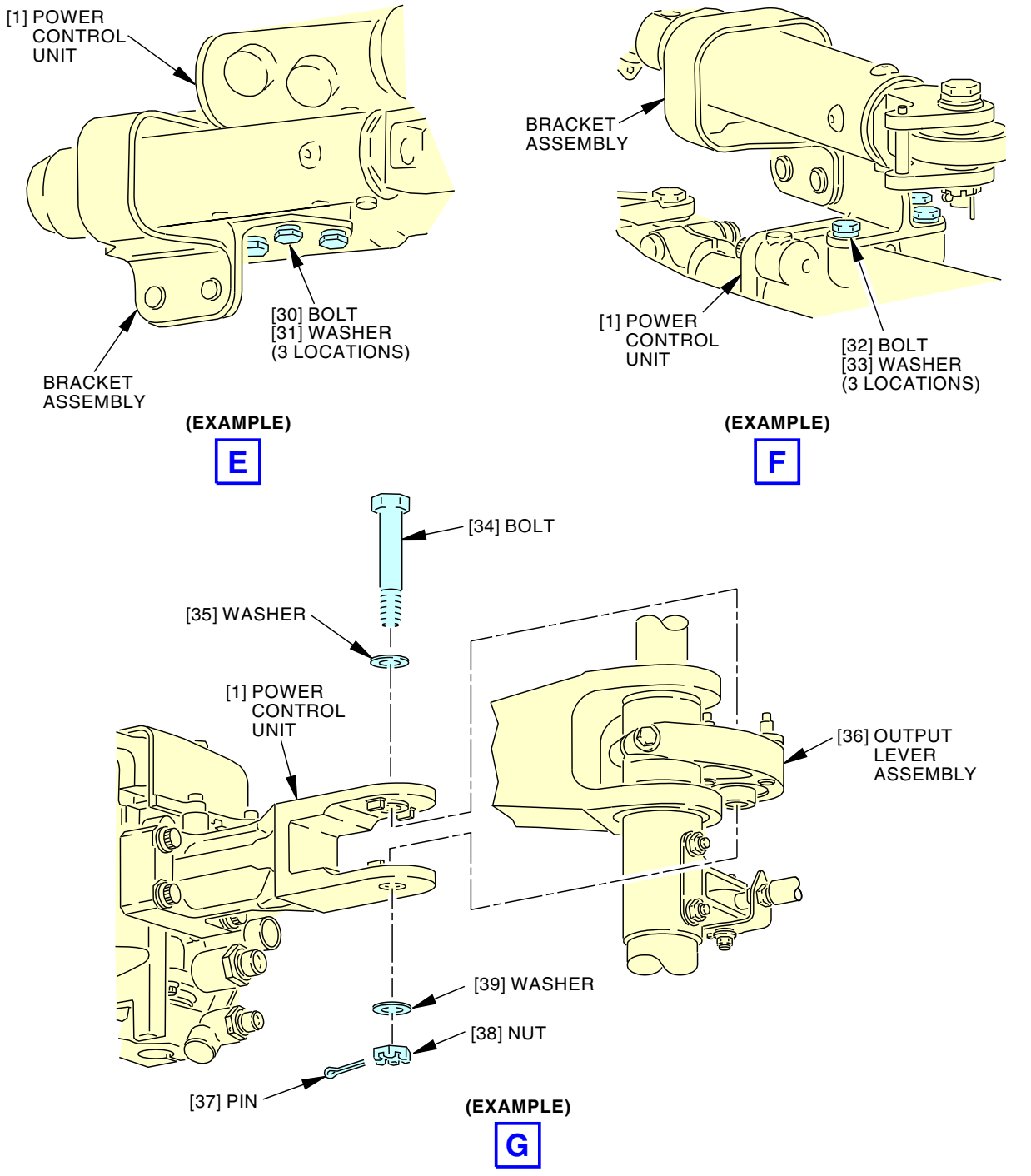
Aileron Power Control Unit Installation
Figure 401/27-11-71-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Power Control Unit Installation
Figure 401/27-11-71-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Aileron Power Control Unit Installation
Figure 401/27-11-71-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-71-400-801

3. Aileron Power Control Unit Installation

(Figure 401)

A. References

Reference	Title
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-710-801	Aileron Response (Operational) Test (P/B 501)
27-11-00-820-802	Pogo and Power Control Unit (PCU) Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Power control unit	27-11-71-01-430	SIA ALL
2	Packing	27-11-71-10-530	SIA ALL
6	Packing	27-11-71-10-535	SIA ALL
13	Pin	27-11-71-01-115	SIA ALL
23	Pin	27-11-71-01-280	SIA ALL
37	Pin	27-11-71-01-330	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Aileron Power Control Unit Installation

SUBTASK 27-11-71-420-001

(1) If they are not installed, install the union [3], union [5], new packing [2], and new packing [6].

(a) Apply hydraulic fluid, D00153, to the new packing [2] and new packing [6].

(b) Install the union [3], new packing [2], union [5], and new packing [6] in the ports on the power control unit [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Tighten the union [3] to 170 ±9 in-lb (19 ±1 N·m).

2) Tighten the union [5] to 110 ±6 in-lb (12 ±1 N·m).

SUBTASK 27-11-71-860-002

(2) Make sure the power control unit [1] is filled with hydraulic fluid, D00153.

SUBTASK 27-11-71-820-001

(3) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 27-11-71-420-002

(4) Install the power control unit [1]:

(a) Put the power control unit [1] in its position.

(b) Install the bolt [34], washer [35], washer [39], and nut [38] to connect the power control unit [1] to the output lever assembly [36].

1) Coat the mating surfaces with grease, D00633, prior to assembly.

(c) Tighten the nut [38] to the lower end of the torque range 300 in-lb (33.9 N·m) - 410 in-lb (46.3 N·m).

1) Continue to tighten the nut [38] until the next castellation aligns with the hole in the bolt [34].

(d) Install the new pin [37].

(e) Move the reaction link [29] to put the power control unit [1] between the fork end of the reaction link [29].

(f) Connect the power control unit [1] to the reaction support assembly [27].

1) Install the bolt [14], washers [25], bushings [26], washers [28], and nut [24].

a) Coat the mating surfaces with grease, D00633, prior to assembly.

2) Tighten the nut [24] to 300 in-lb (33.9 N·m) - 350 in-lb (39.5 N·m).

3) Install the washer [21], nut [22] and new pin [23].

4) Tighten the nut [22] to the lower end of the torque range 170 in-lb (19.2 N·m) - 250 in-lb (28.2 N·m).

a) Continue to tighten the nut [22] until the next castellation aligns with the hole in the bolt [14].

(g) Apply sealant, A00247, to the bolt [15] and spacer [16] .

(h) Install the bolt [15], spacer [16], washers [17], washer [19], and nut [20] to connect the safety link [18] to the reaction support assembly [27].

(i) Connect the bracket assemblies to the power control unit [1] with bolts [30], washers [31], bolts [32], and washers [33].

(j) Apply grease, D00633, to the bolts [8] and nuts [12].

(k) Connect the pogos [7] to the power control unit [1] with bolts [8], washers [9], bushings [10], washers [11], nuts [12], and new pin [13].

1) Install the bolt [8] with the bolt head up.

(l) Tighten the nuts [12] to the lower end of the torque range 60 in-lb (6.8 N·m) - 90 in-lb (10.2 N·m).

1) Continue to tighten the nuts [12] until the next castellation aligns with the hole in the bolts [8].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-71-020-003

(5) Remove the caps and plugs from hydraulic lines [4], hydraulic lines [40], and the ports of the power control unit [1].

SUBTASK 27-11-71-420-003

(6) Connect hydraulic lines [4] to the inlet ports and hydraulic lines [40] to the outlet ports of the power control unit [1].

(a) Tighten the B-nuts on hydraulic lines [4] to 170 ±9 in-lb (19 ±1 N·m).

(b) Tighten the B-nuts on hydraulic lines [40] to 110 ±6 in-lb (12 ±1 N·m).

(c) Make sure that there is a minimum clearance of 0.75 in. (19.05 mm) between the flexible hose and the adjacent structure after you tighten the flexible hose.

SUBTASK 27-11-71-860-004

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) To pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-11-71-860-005

(8) Operate the aileron control wheel to bleed the system.

SUBTASK 27-11-71-790-001

(9) Examine the connections of the power control unit [1] for leaks.

SUBTASK 27-11-71-860-006

(10) To remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-11-71-860-007

(11) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-71-820-002

(12) Do this task: Pogo and Power Control Unit (PCU) Adjustment, TASK 27-11-00-820-802.

SUBTASK 27-11-71-710-001

(13) Do this task: Aileron Response (Operational) Test, TASK 27-11-00-710-801.

SUBTASK 27-11-71-730-001

(14) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aileron feel and centering unit

(2) An installation of the aileron feel and centering unit.

(3) A removal of the aileron feel and centering unit cam follower bearing.

(4) An installation of the aileron feel and centering unit cam follower bearing.

B. The aileron feel and centering unit is referred to as the "centering unit" in this procedure.

TASK 27-11-81-000-801

2. Aileron Feel and Centering Unit - Removal

(Figure 401 or Figure 402)

A. References

Reference	Title
25-22-00-000-801	Passenger Seat Removal (P/B 401)
25-27-15-000-801	Carpet Removal (P/B 401)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1671	Straight Edge - Control Wheel Part #: C27097-1 Supplier: 81205 Part #: SE27-0001 Supplier: 81205
STD-1112	Clamps - Stainless Steel, 8-9 Inch Adjustable

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Aileron feel and centering unit	27-11-81-01-070	SIA ALL

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-11-81-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-11-81-860-001

(2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-11-81-480-002

(3) With a 8-9 Inch adjustable stainless steel clamp, STD-1112, install the straight edge, SPL-1671, across the top ends of the two control wheels to keep the control wheels in the neutral position.

SUBTASK 27-11-81-210-001

(4) Make sure that the aileron trim switches are at the zero trim position.

NOTE: The aileron trim switches are installed on the aft electronic control panel, P8, in the flight compartment.

SUBTASK 27-11-81-480-003

(5) Install the rig pin A/S-15, from the rigging pin kit, SPL-1585, in the aileron trim mechanism (Figure 401).

SUBTASK 27-11-81-480-004

(6) Install the rig pin A/S-4, from the rigging pin kit, SPL-1585, in the aileron bus drum (Figure 401).

SIA 001-014

SUBTASK 27-11-81-020-001

(7) Above the left main wheel well, do this task: Passenger Seat Removal, TASK 25-22-00-000-801.

SIA ALL

SUBTASK 27-11-81-020-002

(8) Above the left main wheel well, do this task: Carpet Removal, TASK 25-27-15-000-801.

SUBTASK 27-11-81-020-003

(9) Above the left main wheel well, do this task: Passenger Cabin Floor Panel Removal, TASK 53-21-00-000-801.

F. Aileron Feel and Centering Unit Removal

SUBTASK 27-11-81-020-004

(1) Remove the aileron feel and centering unit [11] (Figure 402).

(a) Remove the electrical connector from the aileron trim actuator [15].

(b) Loosen cable turnbuckle [3] for cable AB [1] and cable AA [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Remove the pin [32], nuts [61], washers [33], nuts [34], washers [35], bushings [36], washers [37], and bolt assembly [27] from the reaction links [29].

NOTE: The four bushings in the reaction support assemblies are free floating and concealed by the washers above and below them. They can be easily misplaced or lost during disassembly.

1) Discard the pin [32].

(d) Make sure that the four concealed bushings [36] are captured on the disassembly and retained for reassembly of the new support assembly [30] to the reaction link [29].

(e) Remove the nut [41], washer [42], washer [44], and bolt [45] to disconnect the autopilot actuator rod [43] from the aileron feel and centering unit [11].

(f) Record the position and orientation of the aileron position sensor rod [38] before removal as an aid for installation.

(g) Remove the bolt [46], washer [39], and nut [40] to remove the aileron position sensor rod [38] from the aileron feel and centering unit [11].

(h) Remove the pin [25], nuts [24], washers [23], bushings [21], washers [20], and bolts [19] to disconnect the pogos [22] from the lever assemblies [26].

1) Discard the pin [25].

(i) Disconnect the aileron feel and centering unit [11] from the airplane structure.

1) Remove the nut [4], washer [5], bushing [6], washer [7], and bolt [8].

2) Remove the nuts [16], washers [17], washers [31], bushings [28], washers [13] and bolts [14].

(j) Remove the aileron control quadrant [47] from the shaft:

1) Remove the cable AA [2] and cable AB [1] from the aileron control quadrant [47]:

a) Disconnect the left cable AA [2] and cable AB [1] at the cable turnbuckle [3].

b) Remove the nuts [59], washers [58], washers [62] (if applicable), and bolt [57] to remove retaining plates [60] from the aileron control quadrant [47].

c) Remove the cable AA [2] and cable AB [1] from the aileron control quadrant [47].

d) Secure the disconnected cable AA [2] and cable AB [1] with clamps.

e) Attach identification tags to the disconnected cables for easier assembly.

2) Remove the nut [51], washer [50], washer [49], and bolt [48] to disconnect the aileron control quadrant [47] from the shaft.

3) Remove the aileron control quadrant [47] from the shaft.

(k) Remove the nuts [56], washers [55], washer [53] and bolts [52] to disconnect the bearing housing [54] from the pressure deck.

(l) Carefully lower and remove the aileron feel and centering unit [11].

END OF TASK

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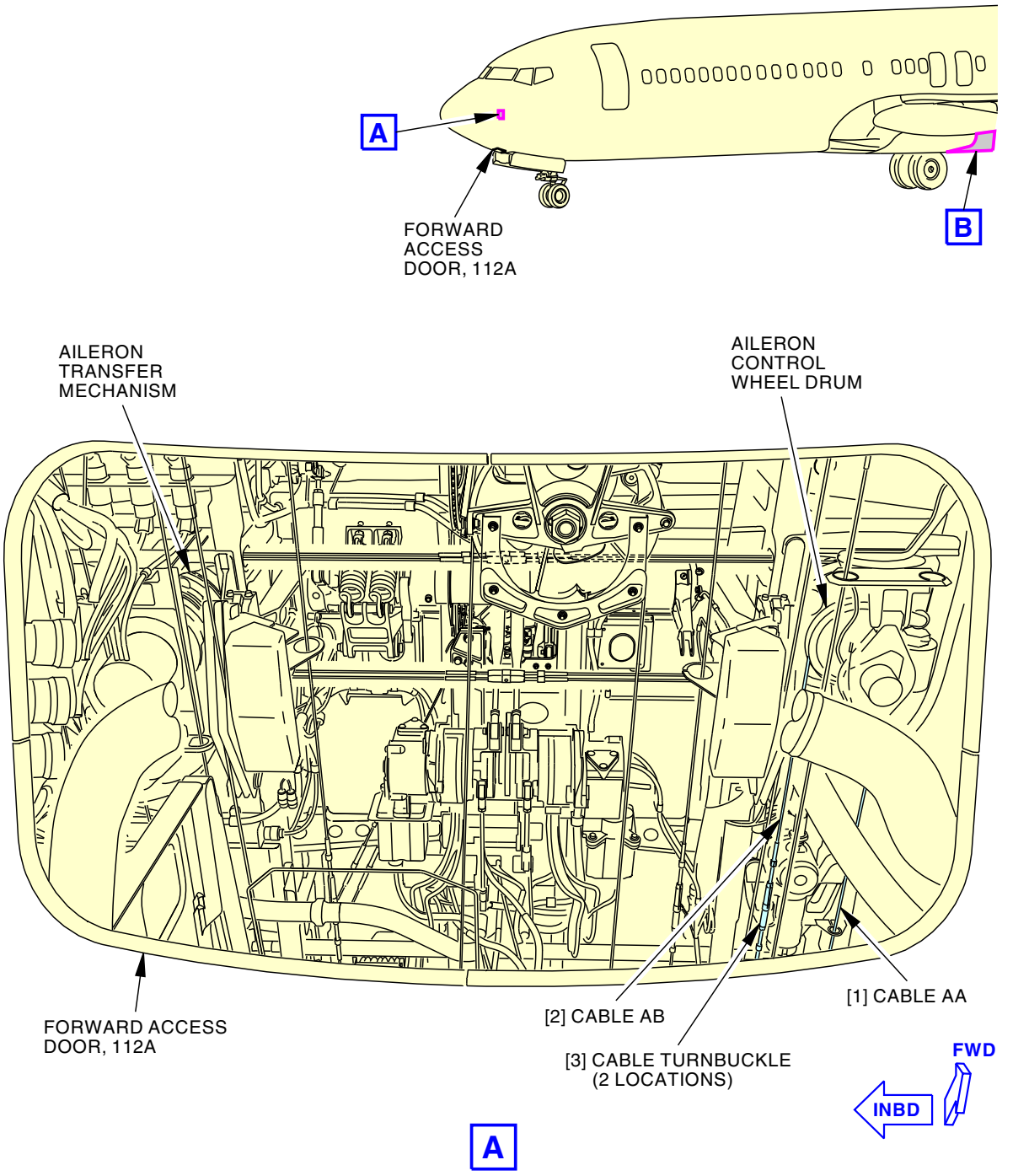
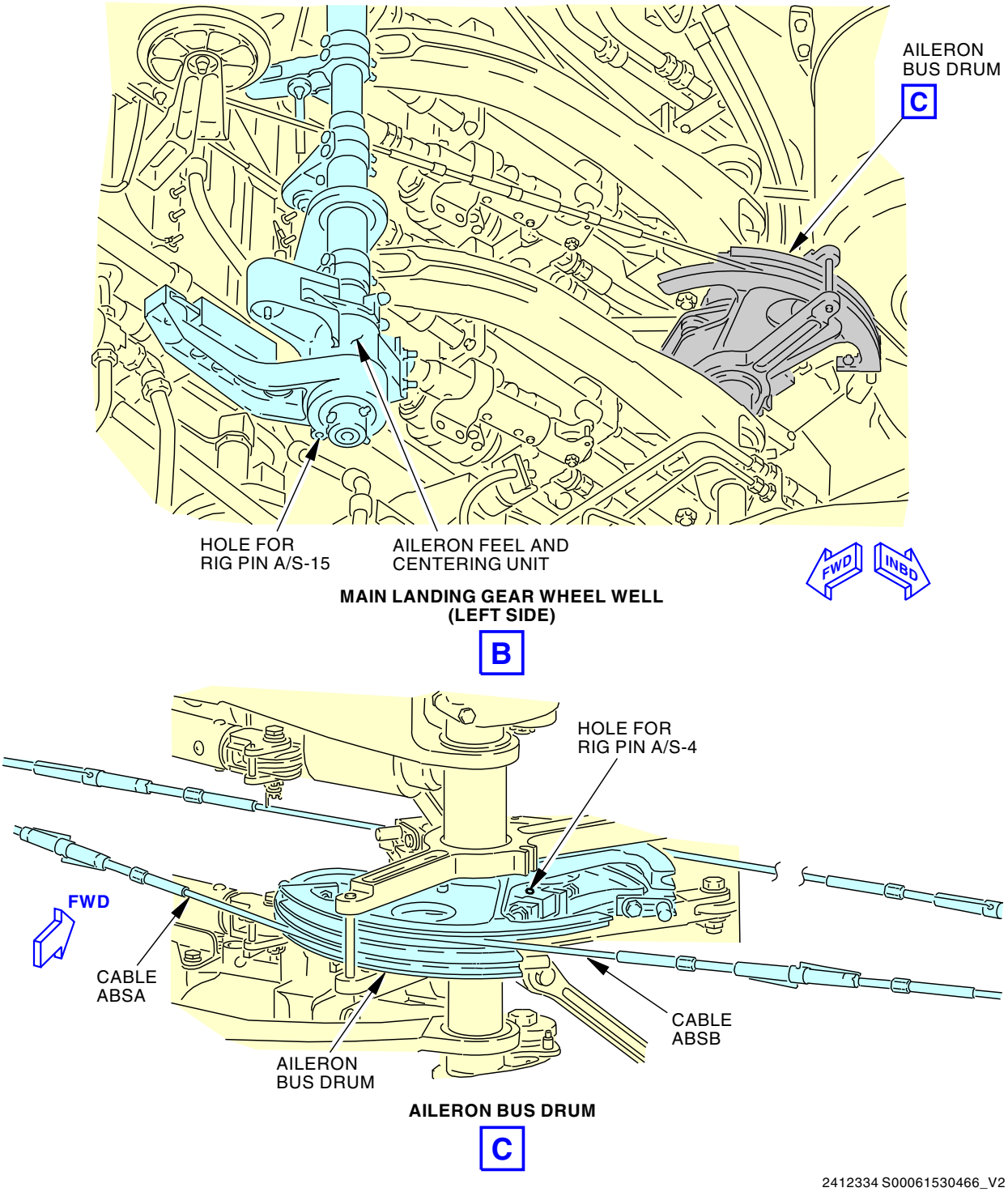


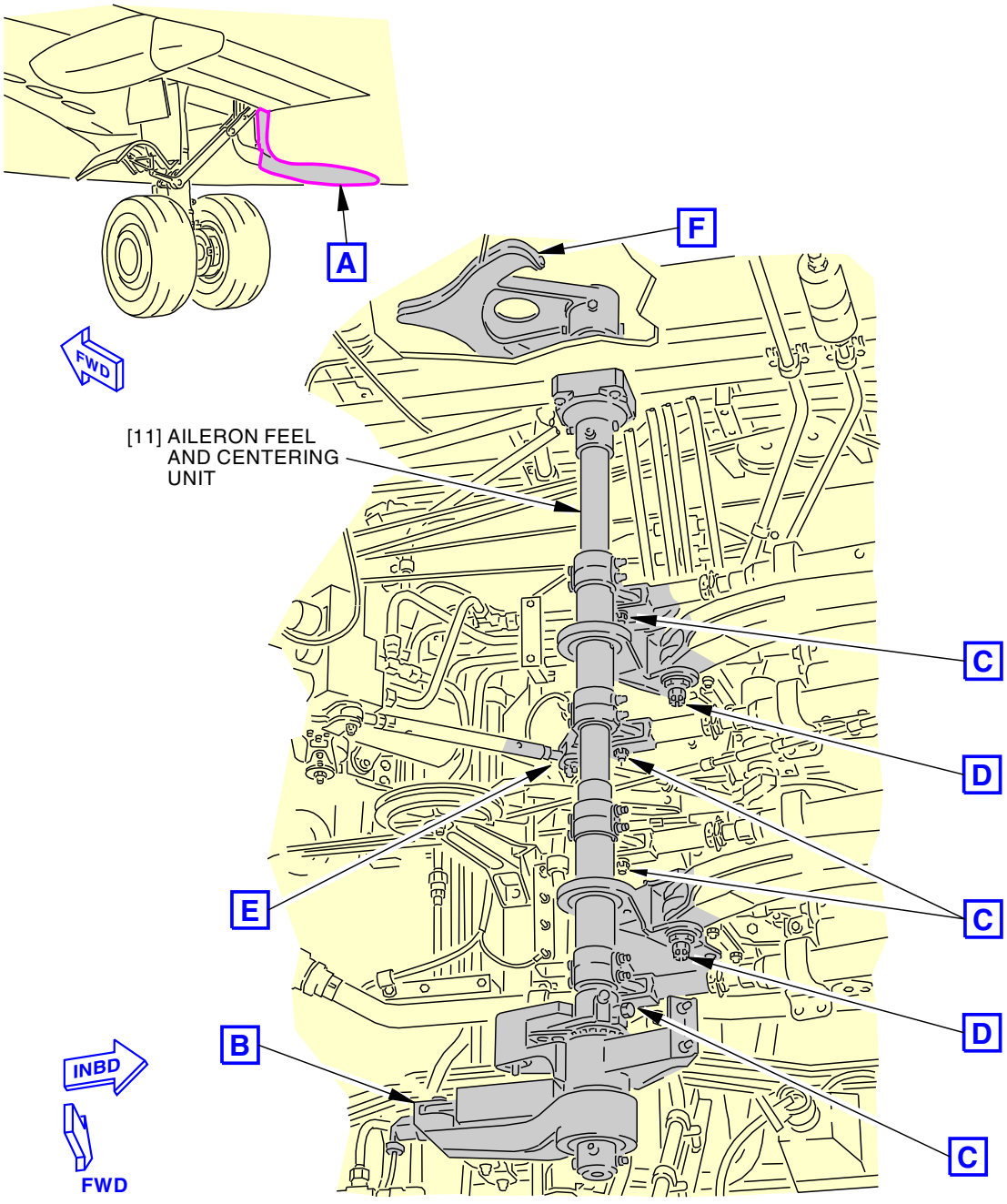
Rig Pin and Turnbuckle Location
Figure 401/27-11-81-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



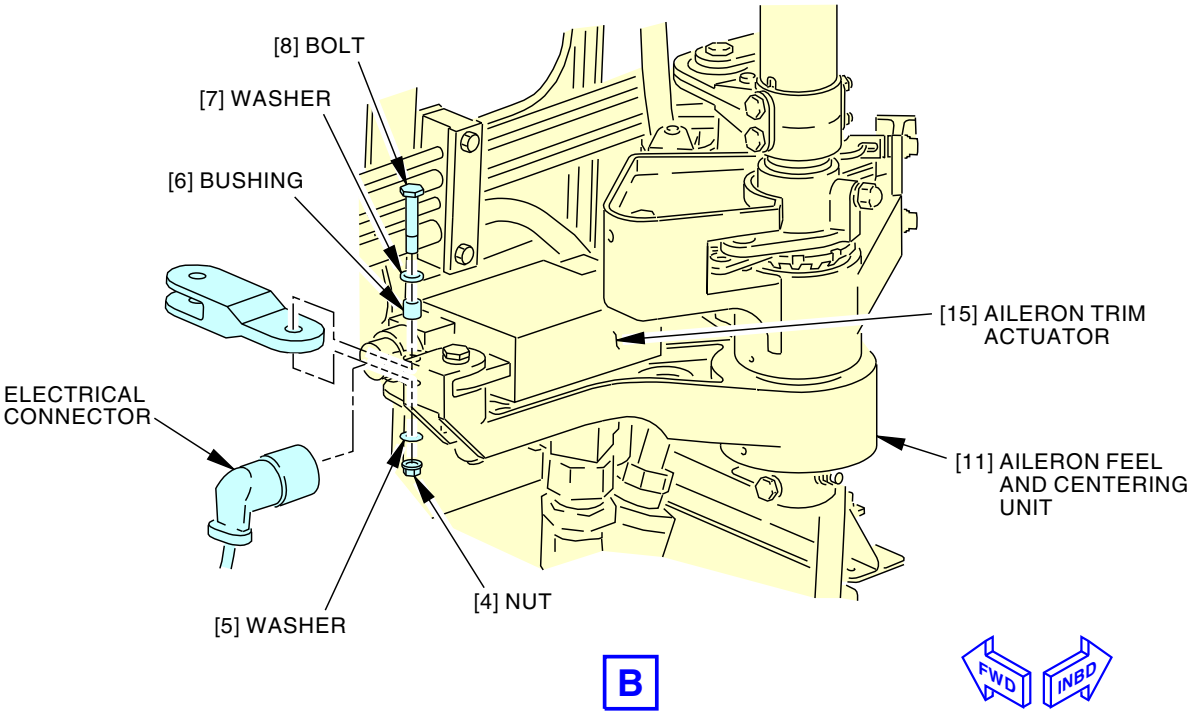
Rig Pin and Turnbuckle Location
Figure 401/27-11-81-990-801 (Sheet 2 of 2)

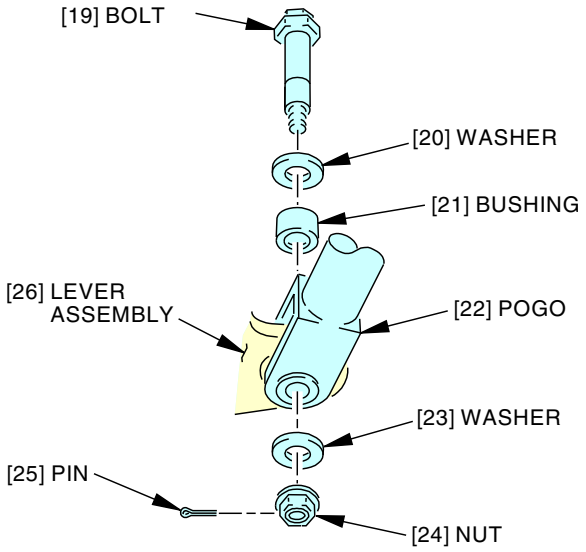
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Feel and Centering Unit Installation
Figure 402/27-11-81-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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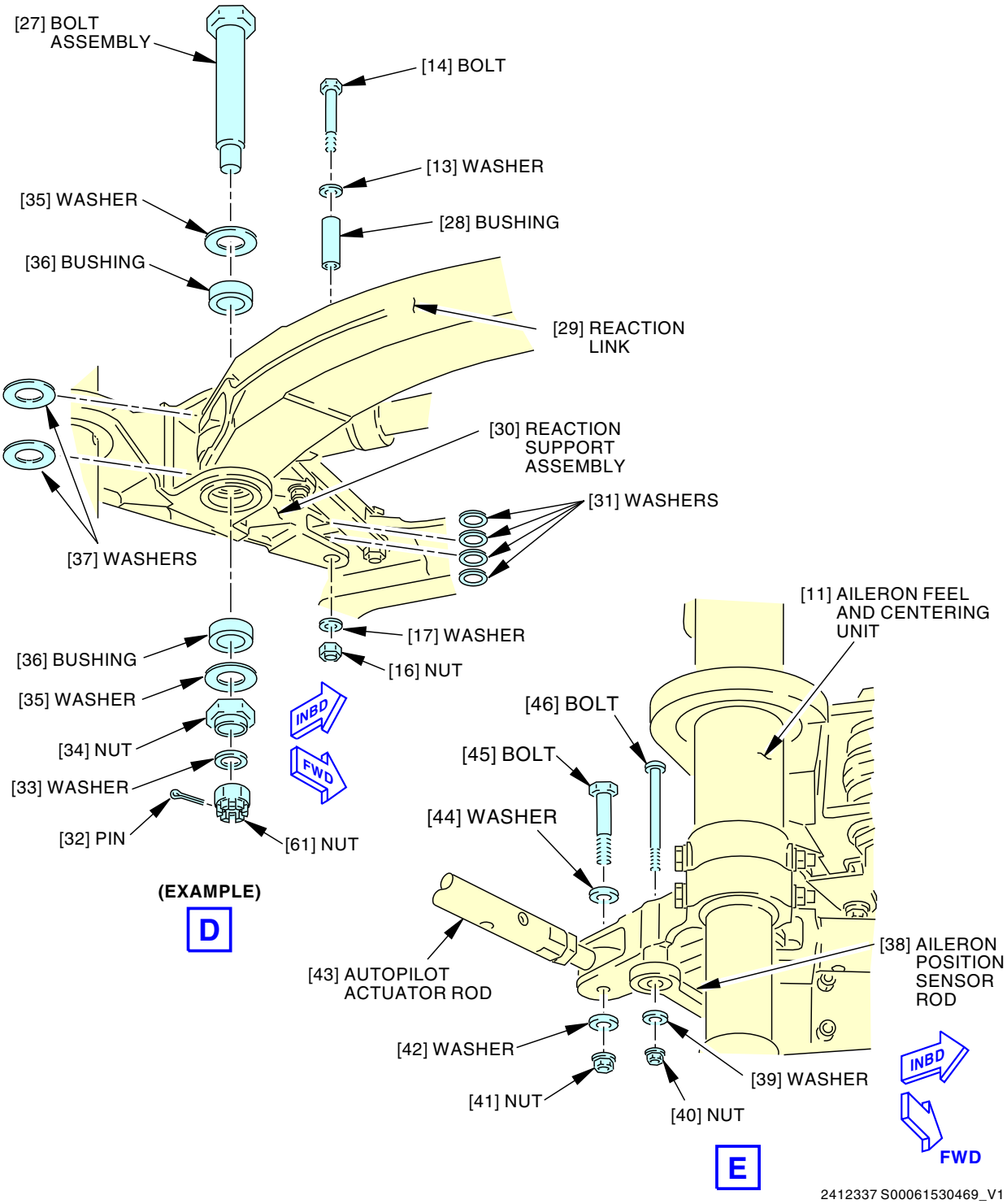
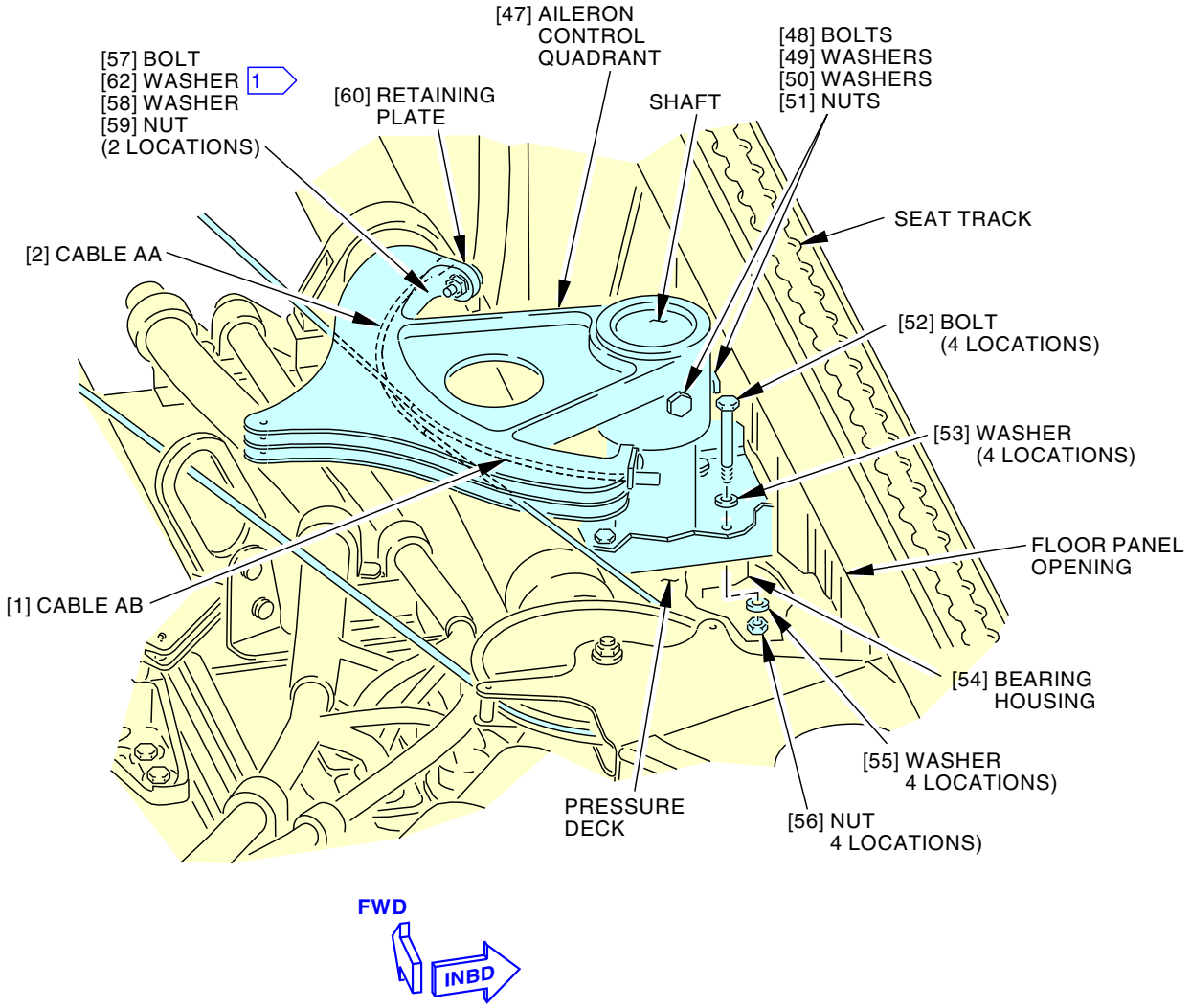
Aileron Feel and Centering Unit Installation
Figure 402/27-11-81-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Feel and Centering Unit Installation
Figure 402/27-11-81-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron Feel and Centering Unit Installation
Figure 402/27-11-81-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-81-400-801

3. Aileron Feel and Centering Unit Installation

(Figure 401 or Figure 402)

A. References

Reference	Title
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
22-11-25-820-801	Autopilot Aileron Actuator Adjustment (P/B 501)
22-11-29-820-801	Aileron Position Sensor Adjustment (P/B 501)
25-22-00-400-801	Passenger Seat Installation (P/B 401)
25-27-15-400-801	Carpet - Installation (P/B 401)
27-11-00-700-803	Manual Reversion Control Friction Test (P/B 501)
27-11-00-700-805	Aileron Control Wheel Force Test (P/B 501)
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-11-00-820-802	Pogo and Power Control Unit (PCU) Adjustment (P/B 501)
27-11-00-820-805	Aileron Feel and Centering Unit Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
51-22-00-390-806	Fillet Seal Application (P/B 201)
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1671	Straight Edge - Control Wheel Part #: C27097-1 Supplier: 81205 Part #: SE27-0001 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Aileron feel and centering unit	27-11-81-01-070	SIA ALL
25	Pin	27-11-71-01-115	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

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F. Aileron Feel and Centering Unit Installation

SUBTASK 27-11-81-420-001

(1) Install the aileron feel and centering unit [11] (Figure 402).

(a) If the aileron control quadrant [47] is attached to the aileron feel and centering unit [11], remove the aileron control quadrant [47].

1) Remove and keep the nuts [51], washers [50], washers [49], and bolts [48].

(b) Make sure that the spherical race of the bearing housing [54] does not bind in the outer housing.

(c) Make sure that the maximum torque to turn the bearing housing [54] around the shaft is 3 in-lb (0.3 N·m) - 5 in-lb (0.6 N·m).

(d) Apply a fillet seal between the bearing housing [54] and pressure deck with sealant, A00247 (TASK 51-22-00-390-806).

(e) Put the aileron feel and centering unit [11] in position with the shaft through the pressure deck.

(f) Install the bolts [52], washers [53], washers [55], and nuts [56].

1) Tighten the nuts [56] to 20 in-lb (2.3 N·m) - 25 in-lb (2.8 N·m).

(g) Attach the reaction support assemblies [30] to the structure (View D, Figure 402).

1) Install the bolts [14], washers [13], bushings [28], washers [31], washers [17], and nuts [16].

a) Install the washers [31] between the lug and clevis.

NOTE: There must be a minimum of one washer on each side of the lug.

(h) Attach the aileron feel and centering unit [11] to the structure (View B, Figure 402).

1) Install the bolt [8], washer [7], bushing [6], washer [5], and nut [4].

2) Connect the electrical connector to the aileron trim actuator [15].

(i) Connect the reaction link [29] to the reaction support assembly [30].

1) Install the bolt assemblies [27], washers [35], bushings [36], washers [37], and nuts [34].

2) Tighten the nuts [34] to 300 in-lb (34 N·m) - 350 in-lb (40 N·m).

3) Install the washers [33], nuts [61], and new pin [32].

(j) Install the aileron control quadrant [47] on the shaft.

1) If it is necessary, apply sealant, A00247, on the disk of the aileron control quadrant [47].

2) Engage the aileron control quadrant [47] on the shaft.

a) Make sure that the tip of the aileron control quadrant [47] points in the outboard direction.

3) Install the bolts [48], washers [49], washers [50], and nuts [51].

(k) Connect the pogos [22] to the aileron feel and centering unit [11] with the bolts [19], washers [20], bushings [21], washers [23], nuts [24], and new pin [25].

1) Make sure that you install the bolts [19] and bushings [21] with the head up.

(l) Make sure that the top and bottom pogos [22] on each power control unit is at the center between the stops.

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1) If it is necessary to adjust the pogo [22], do this task: Pogo and Power Control Unit (PCU) Adjustment, TASK 27-11-00-820-802.

(m) Connect the autopilot actuator rod [43] with the bolt [45], washer [44], washer [42], and nut [41].

CAUTION

POSITION AND ORIENT AILERON POSITION SENSOR ROD AS RECORDED IN REMOVAL. UPON INSTALLATION OF THE AILERON POSITION SENSOR, PLACE THE AILERON POSITION SENSOR ROD AND CRANK SUCH THAT THEY ARE POINTED FORWARD RELATIVE TO THE FUSELAGE. AN INCORRECT INSTALLATION OF THE ROD CAN CAUSE DAMAGE TO EQUIPMENT WHEN AUTOPILOT IS ENGAGED.

(n) Connect the aileron position sensor rod [38] with bolt [46], washer [39], and nut [40] (Figure 402).

1) Adjust the aileron position sensor (TASK 22-11-29-820-801).

NOTE: Adjustment of the aileron position sensor is necessary for it to operate correctly.

SUBTASK 27-11-81-420-002

CAUTION

MAKE SURE THAT THE ROUTING OF CABLES AA AND AB IS CORRECT. IF THE ROUTING IS INCORRECT, IT CAN INCREASE FRICTION WHICH CAN CAUSE DAMAGE TO THE CABLES.

(2) Connect the cable AA [2] and cable AB [1] to the aileron control quadrant [47].

(a) Remove the identification tags from the cable AA [2] and cable AB [1] (Figure 402).

(b) Remove the clamps from the cable AA [2] and cable AB [1].

(c) Install the retaining plate [60] with bolts [57], washers [62] (if applicable), washers [58], and nuts [59] (TASK 20-10-93-400-801).

SUBTASK 27-11-81-420-003

(3) Connect the cable AA [2] and cable AB [1] to the cable turnbuckles [3].

(a) Tighten the cable turnbuckles [3] but keep the cable tension at zero.

SUBTASK 27-11-81-820-001

(4) Adjust the tension of cable AA [2] and cable AB [1], do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

SUBTASK 27-11-81-080-001

(5) Remove the clamp and the straight edge, SPL-1671, from the two aileron control wheels.

SUBTASK 27-11-81-480-005

(6) Make sure that the rig pin A/S-15, from the rigging pin kit, SPL-1585, goes through the two walls of the aileron trim mechanism.

SUBTASK 27-11-81-080-002

(7) Remove the rig pin A/S-4, from the rigging pin kit, SPL-1585, from the aileron bus drum.

SUBTASK 27-11-81-400-001

(8) Do this task: Passenger Cabin Floor Panel Installation, TASK 53-21-00-400-801.

SUBTASK 27-11-81-400-002

(9) Do this task: Carpet - Installation, TASK 25-27-15-400-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 001-014

SUBTASK 27-11-81-400-003

(10) Do this task: Passenger Seat Installation, TASK 25-22-00-400-801.

SIA ALL

SUBTASK 27-11-81-860-002

(11) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-81-820-002

(12) Do this task: Aileron Feel and Centering Unit Adjustment, TASK 27-11-00-820-805.

SUBTASK 27-11-81-820-003

(13) Do this task: Pogo and Power Control Unit (PCU) Adjustment, TASK 27-11-00-820-802.

SUBTASK 27-11-81-730-001

(14) Do this task: Aileron Control Wheel Force Test, TASK 27-11-00-700-805.

SUBTASK 27-11-81-730-002

(15) Do this task: Manual Reversion Control Friction Test, TASK 27-11-00-700-803.

SUBTASK 27-11-81-730-003

(16) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

SUBTASK 27-11-81-820-004

(17) Do this task: Autopilot Aileron Actuator Adjustment, TASK 22-11-25-820-801.

SUBTASK 27-11-81-820-005

(18) Do this task: Aileron Position Sensor Adjustment, TASK 22-11-29-820-801.

——— END OF TASK ———

TASK 27-11-81-000-802

4. Cam Follower Bearing Removal

(Figure 403)

A. References

Reference	Title
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

C. Prepare for Removal

SUBTASK 27-11-81-490-001

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

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SUBTASK 27-11-81-864-001

(2) Make sure hydraulic pressure is removed. If necessary, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

D. Cam Follower Bearing Removal

SUBTASK 27-11-81-030-001

(1) Loosen the nuts [70] to relieve the tension on the springs [72].

NOTE: Record the number of times you turn the nuts [70]. This will make it easier to adjust the centering unit after installation.

SUBTASK 27-11-81-020-005

(2) Remove the cotter pins [75] from the pin [73].

(a) Discard the cotter pins [75].

SUBTASK 27-11-81-020-006

(3) Remove the pin [73] and washers [74] from the arm [85].

SUBTASK 27-11-81-030-002

(4) Disconnect the springs [72] from the eye bolts [71].

SUBTASK 27-11-81-020-007

(5) Remove the cotter pin [83], bolt [80], washer [81], washers [87], washer [88] (if installed), washer [89], and nut [82] from the arm [85] and support [86].

(a) Discard the cotter pin [83].

SUBTASK 27-11-81-020-008

(6) Remove the arm [85] from the support [86].

SUBTASK 27-11-81-020-009

(7) Remove the cotter pin [79], bolt [76], washer [77], and nut [78] from the arm [85].

(a) Discard the cotter pin [79].

SUBTASK 27-11-81-020-010

(8) Remove the bearing [84] from the arm [85].

——— END OF TASK ———

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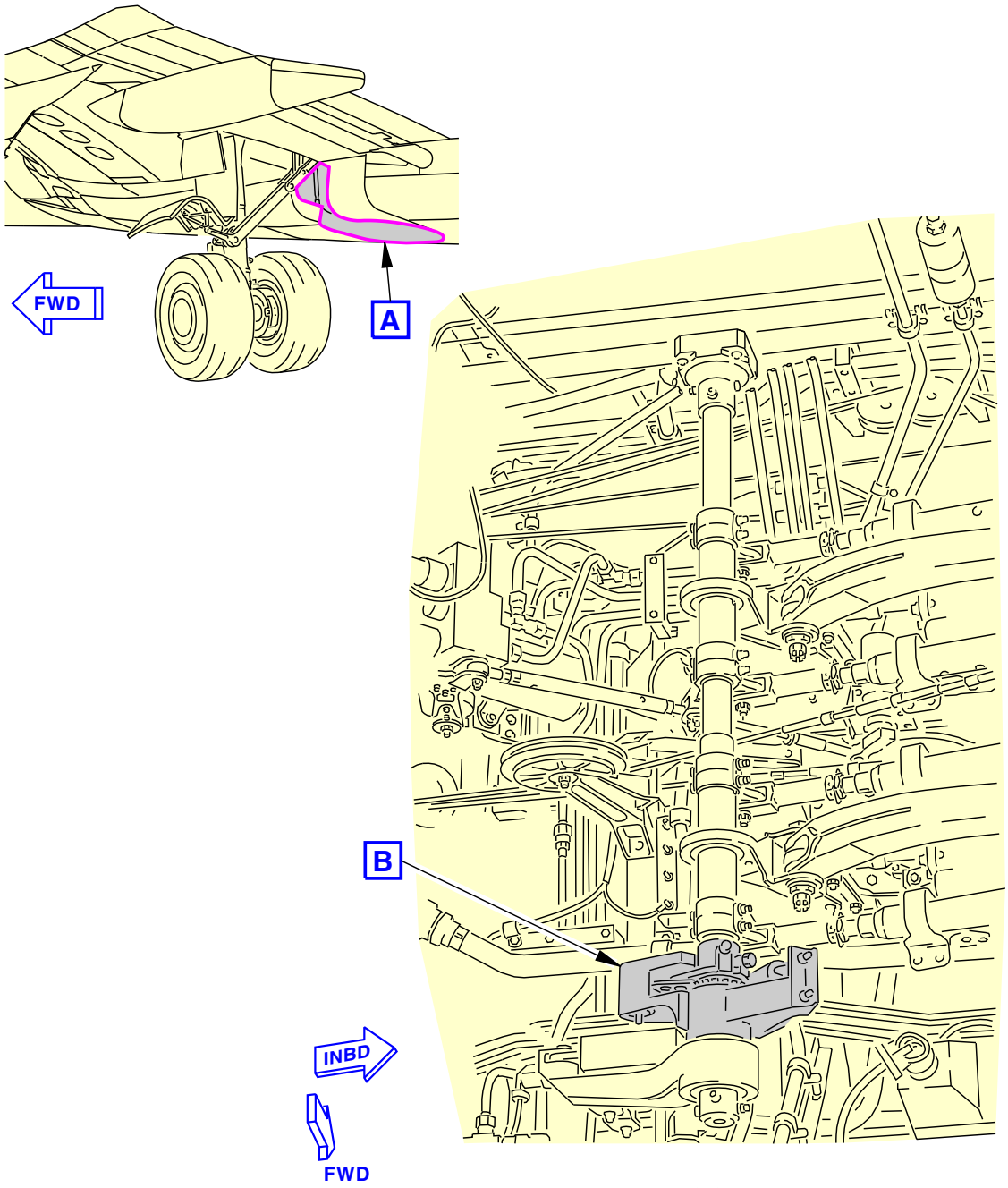

Cam Follower Bearing Installation
Figure 403/27-11-81-990-803 (Sheet 1 of 2)

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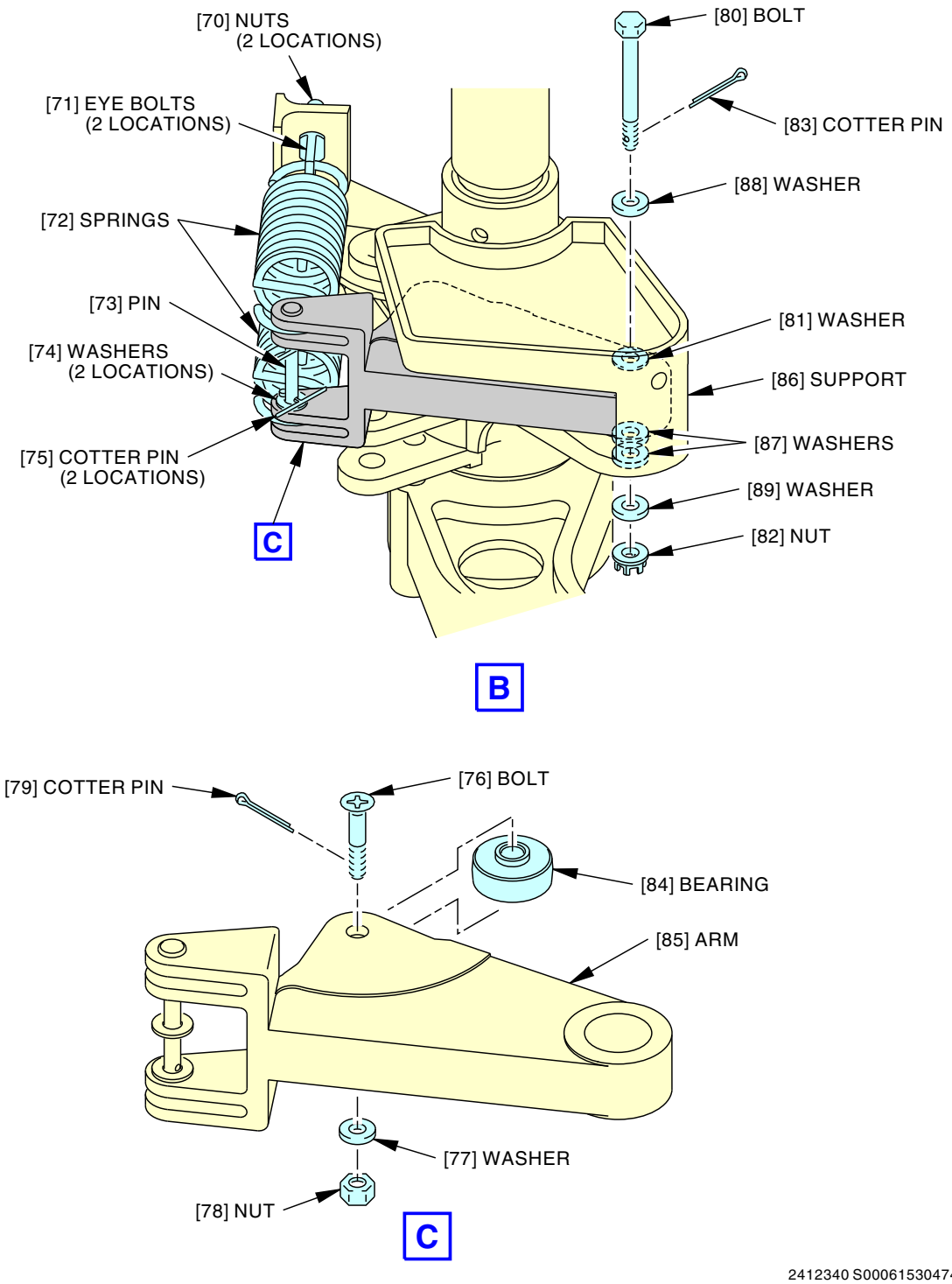


Cam Follower Bearing Installation
Figure 403/27-11-81-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-81-400-802

5. Cam Follower Bearing Installation

(Figure 403)

A. References

Reference	Title
27-11-00-700-803	Manual Reversion Control Friction Test (P/B 501)
27-11-00-700-805	Aileron Control Wheel Force Test (P/B 501)
27-11-00-700-810	Aileron Travel Test (P/B 501)
27-11-00-820-805	Aileron Feel and Centering Unit Adjustment (P/B 501)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
75	Cotter pin	27-11-81-01-320	SIA ALL
79	Cotter pin	27-11-81-01-350	SIA ALL
83	Cotter pin	27-11-81-01-380	SIA ALL
84	Bearing	27-11-81-01-355	SIA ALL
85	Arm	27-11-81-01-360	SIA ALL

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Installation of the Cam Follower Bearing

SUBTASK 27-11-81-420-004

(1) Put the bearing [84] in place in the arm [85] and install the bolt [76], washer [77], nut [78], and new cotter pin [79].

SUBTASK 27-11-81-420-005

(2) Install the arm [85] in the support [86].

(a) Put the arm [85] in its position in the support [86].

(b) Put the washer [88], washer [81], and washers [87] between the arm [85] and support [86] as necessary to achieve the cam roller dimension of 0.1025 ±0.0300 in. (2.6 ±0.8 mm).

(c) Install the bolt [80], washer [89], and nut [82].

1) If necessary, install the unused washers [81], washers [87], and washers [88] under the head of the bolt [80] to align the cotter pin [83] with the hole in the end of the bolt [80].

(d) Install the new cotter pin [83].

SUBTASK 27-11-81-430-001

(3) Connect the springs [72] to the eye bolts [71].

SUBTASK 27-11-81-420-006

(4) With the springs [72] in place, install the pin [73], washers [74], and new cotter pins [75] on the arm [85] so that the springs [72] are connected to the pin [73].

SUBTASK 27-11-81-430-002

(5) Tighten the nuts [70] to the pre-removal tension.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-11-81-212-001

(6) Make sure that the bearing [84] is in the center of the cam in the support [86].

SUBTASK 27-11-81-863-001

(7) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

SUBTASK 27-11-81-820-006

(8) Do this task: Aileron Feel and Centering Unit Adjustment, TASK 27-11-00-820-805.

SUBTASK 27-11-81-720-001

(9) Do this task: Aileron Control Wheel Force Test, TASK 27-11-00-700-805.

SUBTASK 27-11-81-720-002

(10) Do this task: Manual Reversion Control Friction Test, TASK 27-11-00-700-803.

SUBTASK 27-11-81-720-003

(11) Do this task: Aileron Travel Test, TASK 27-11-00-700-810.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON FEEL AND CENTERING UNIT - INSPECTION/CHECK

1. General

A. This procedure has this task:

(1) Aileron Feel and Centering Unit Springs Detailed Inspection

TASK 27-11-81-210-801

2. Aileron Feel and Centering Unit Springs Detailed Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-11-81-000-802	Cam Follower Bearing Removal (P/B 401)
27-11-81-400-802	Cam Follower Bearing Installation (P/B 401)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

C. Aileron Feel and Centering Unit Springs Detailed Inspection

SUBTASK 27-11-81-210-002

(1) Do a detailed inspection of the springs on the aileron feel and centering unit.

(a) Examine the springs for correct installation.

(b) Examine the springs for damage.

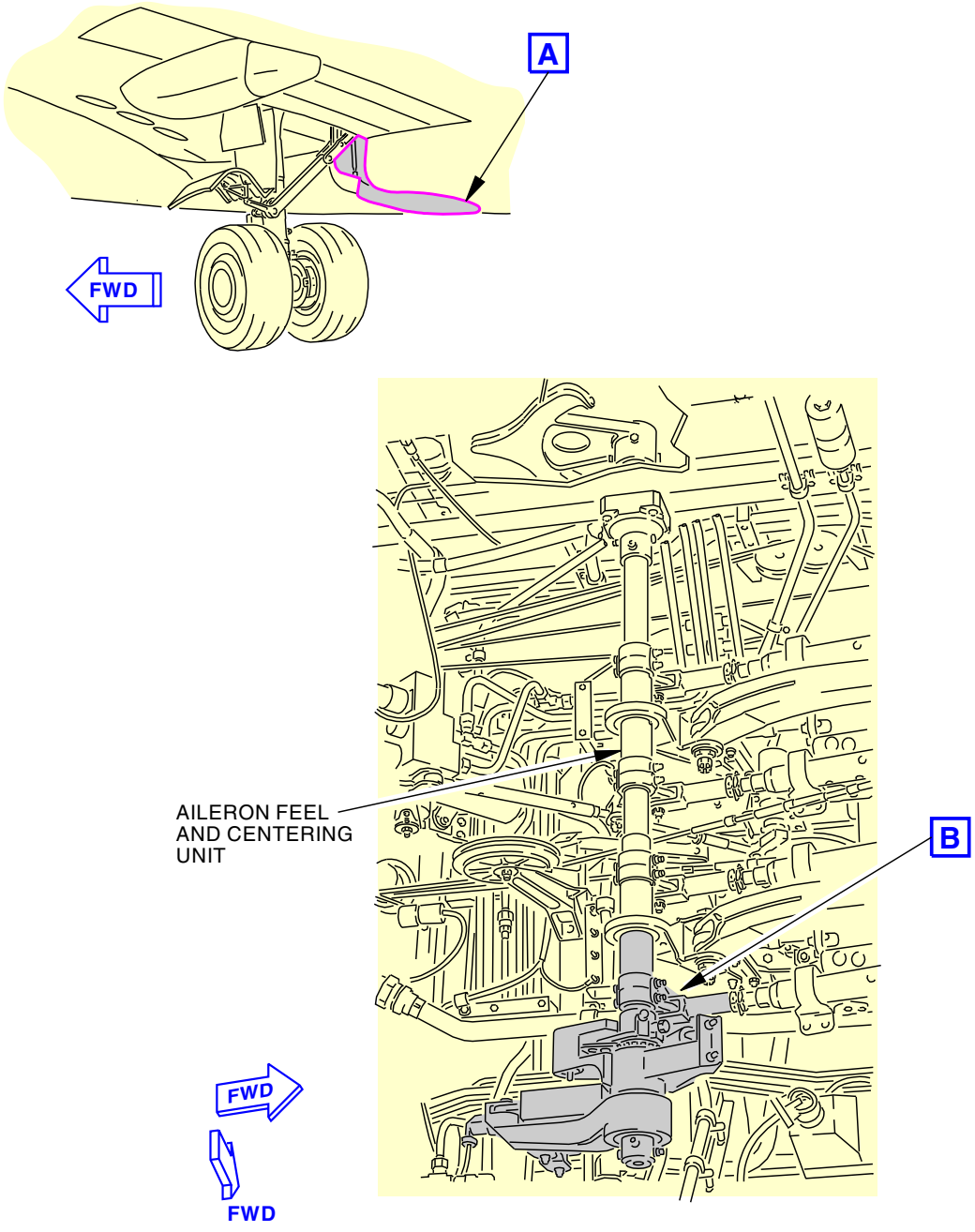
1) If one or both springs are found with damage, worn or broken, do these tasks:

a) Cam Follower Bearing Removal, TASK 27-11-81-000-802.

b) Cam Follower Bearing Installation, TASK 27-11-81-400-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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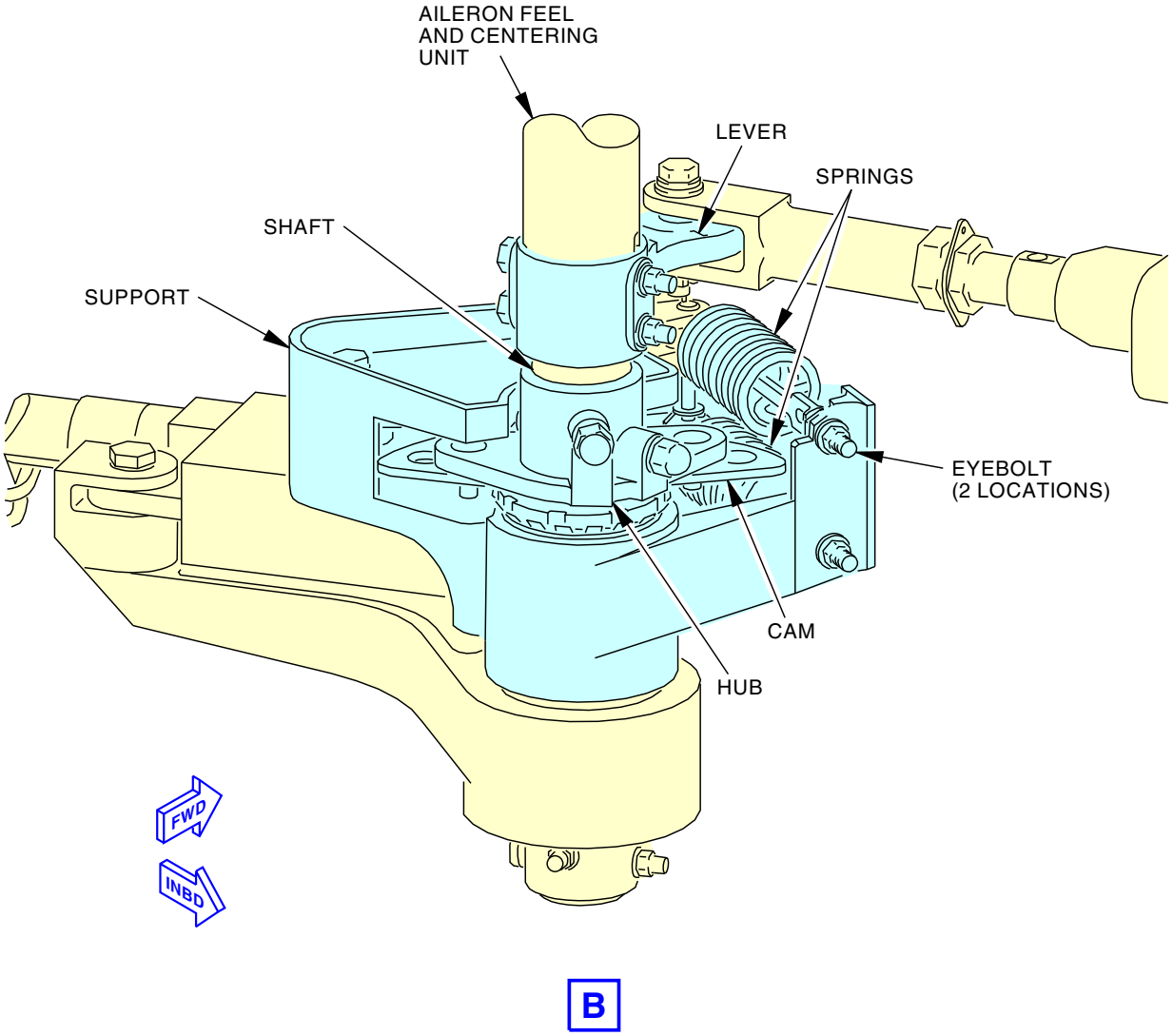
Aileron Feel and Centering Unit Spring Visual Inspection
Figure 601/27-11-81-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Aileron Feel and Centering Unit Spring Visual Inspection
Figure 601/27-11-81-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AILERON/RUDDER TRIM CONTROL MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Aileron and Rudder Trim Control Module Removal

(2) Aileron and Rudder Trim Control Module Installation

(3) Trim Control Switches Removal

(4) Trim Control Switches Installation

(5) Rudder Trim Indicator Removal

(6) Rudder Trim Indicator Installation

B. The Aileron and Rudder Trim Control Module is referred to as the "trim control module assembly [22]" in this procedure.

TASK 27-11-94-000-801

2. Aileron and Rudder Trim Control Module Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-11-94-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

C. Aileron and Rudder Trim Control Module Removal

SUBTASK 27-11-94-020-001

(1) Do these steps to remove the trim control module assembly [22]:

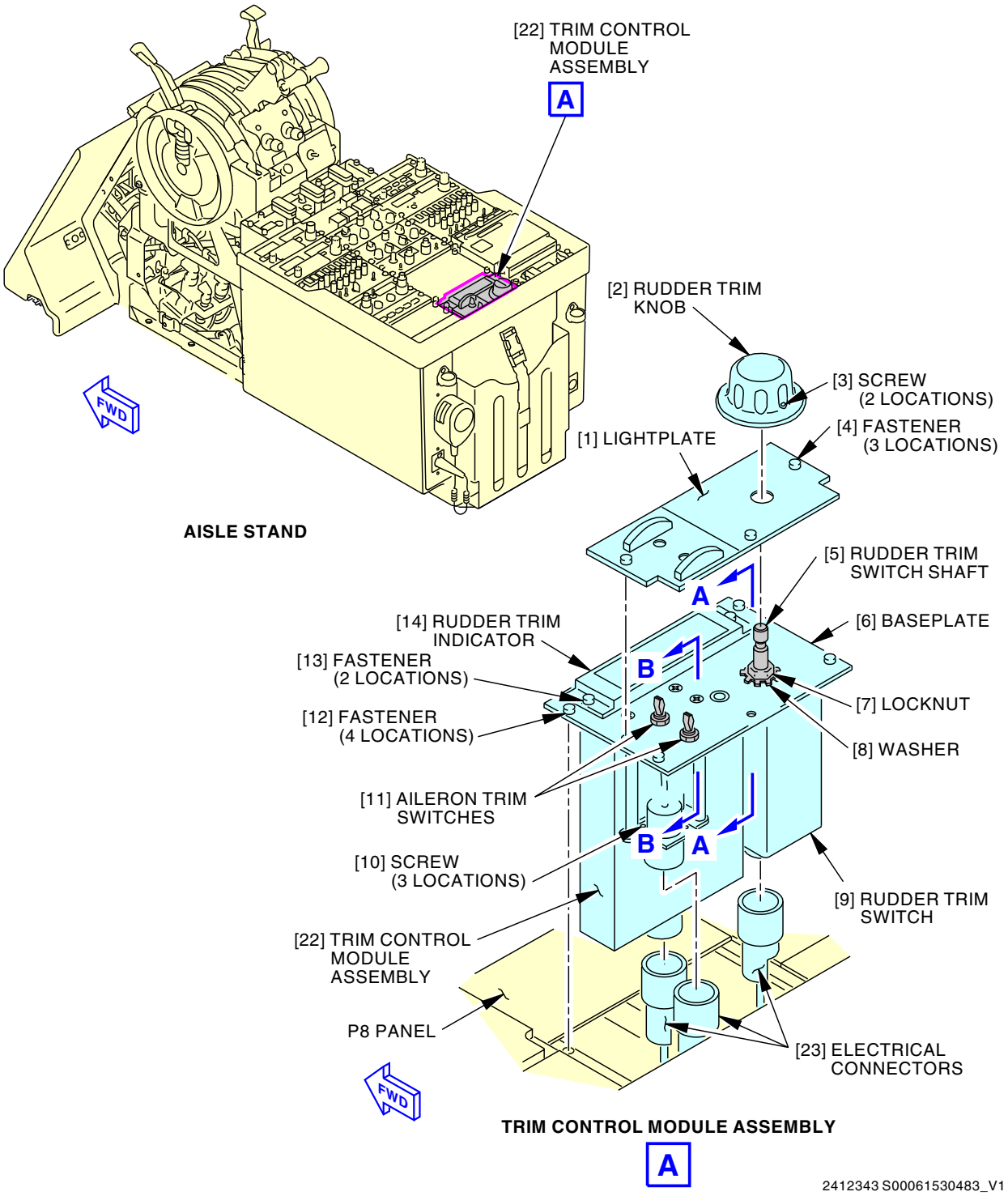
(a) Remove the four fasteners [12] from the trim control module assembly [22].

(b) Lift the trim control module assembly [22] clear of the P8 panel.

(c) Disconnect the three electrical connectors [23] from the trim control module assembly [22].

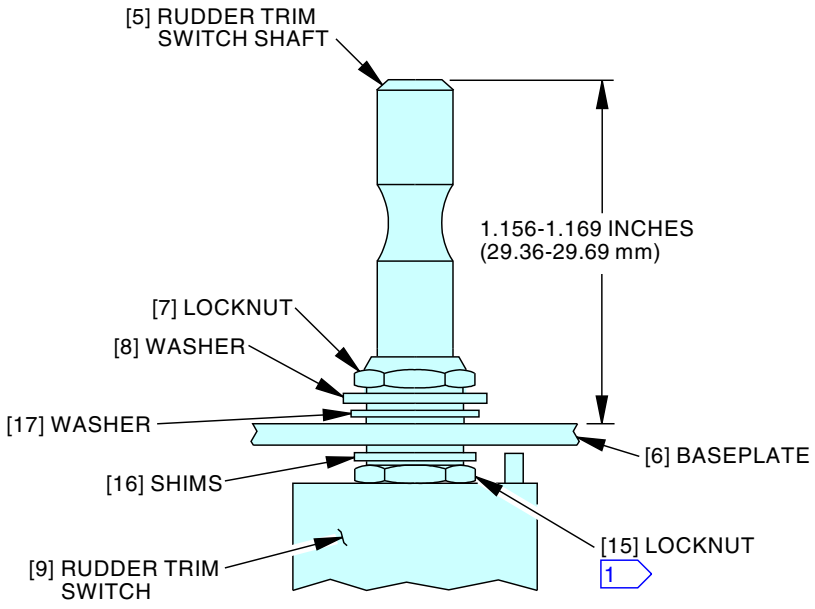
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

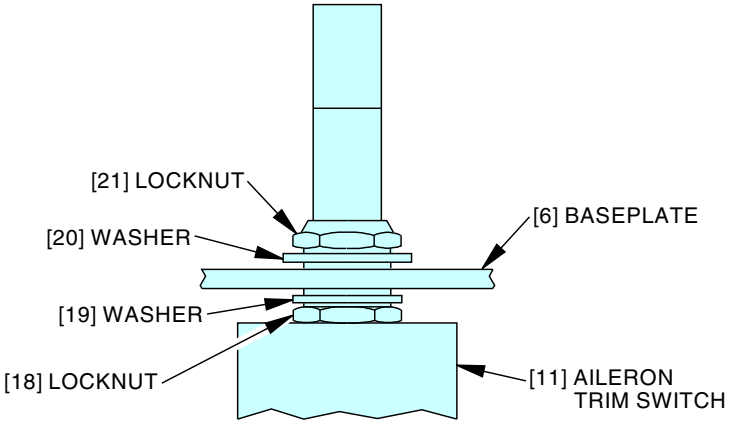


Aileron/Rudder Trim Control Module
Figure 401/27-11-94-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



B-B

NOTE:

1 DO NOT CHANGE THIS LOCKNUT SETTING DURING THE SWITCH INSTALLATION OR ADJUSTMENT. IT IS POSSIBLE THAT THE SWITCH WILL NOT ALIGN IF YOU CHANGE THE LOCKNUT SETTING.

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Aileron/Rudder Trim Control Module
Figure 401/27-11-94-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-94-400-801

3. Aileron and Rudder Trim Control Module Installation

(Figure 401)

A. References

Reference	Title
27-11-00-730-801	Aileron Trim Response Test (P/B 501)
27-21-00-700-807	Rudder Trim System Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Trim control module assembly	27-11-94-02-030	SIA ALL

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Aileron and Rudder Trim Control Module Installation

SUBTASK 27-11-94-420-001

(1) Do these steps to install the trim control module assembly [22]:

(a) Connect the electrical connectors [23] to the trim control module assembly [22].

(b) Put the trim control module assembly [22] on the P8 panel.

(c) Install the fasteners [12].

SUBTASK 27-11-94-860-002

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-11-94-730-001

(3) Do this task: Aileron Trim Response Test, TASK 27-11-00-730-801.

SUBTASK 27-11-94-710-001

(4) Do this task: Rudder Trim System Test, TASK 27-21-00-700-807.

——— END OF TASK ———

TASK 27-11-94-000-802

4. Trim Control Switches Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Prepare for the Removal

SUBTASK 27-11-94-020-002

(1) Do this task: Aileron and Rudder Trim Control Module Removal, TASK 27-11-94-000-801.

C. Trim Control Switches Removal

SUBTASK 27-11-94-020-003

(1) Do these steps to remove the rudder trim knob [2]:

(a) Loosen the screws [3] from the rudder trim knob [2].

(b) Remove the rudder trim knob [2] from the rudder trim switch shaft [5].

SUBTASK 27-11-94-020-004

(2) Remove the fasteners [4] to remove the lightplate [1].

SUBTASK 27-11-94-020-005

(3) Do these steps to remove the rudder trim switch [9]:

(a) Bend the tab down on the washer [8].

(b) Remove the locknut [7], washer [8], and washer [17] from the rudder trim switch shaft [5].

(c) Remove the rudder trim switch [9] from behind the baseplate [6].

(d) Remove the shims [16] from the rudder trim switch shaft [5].

1) Make sure the locknut [15] is installed on the rudder trim switch shaft [5].

NOTE: The locknut [15] is installed on the rudder trim switch shaft [5] with the correct torque value. For correct operation of the rudder trim switch [9], do not move the locknut [15].

SUBTASK 27-11-94-020-006

(4) Do these steps to remove the aileron trim switches [11]:

(a) Remove locknuts [21] and washers [20] from the aileron trim switches [11].

(b) Remove the aileron trim switches [11] from behind the baseplate [6].

(c) Remove the washers [19] and locknuts [18] from the aileron trim switches [11].

(d) Disconnect the electrical wires from the aileron trim switches [11].

——— END OF TASK ———

TASK 27-11-94-400-802

5. Trim Control Switches Installation

(Figure 401)

A. References

Reference	Title
27-11-00-730-801	Aileron Trim Response Test (P/B 501)
27-21-00-700-807	Rudder Trim System Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Rudder trim switch	27-11-94-02-020	SIA ALL

C. Location Zones

Zone	Area
211	Flight Compartment - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
212	Flight Compartment - Right

D. Trim Control Switches Installation

SUBTASK 27-11-94-420-002

(1) Do these steps to install the aileron trim switches [11]:

(a) Connect electrical wires on the aileron trim switches [11].

(b) Install locknuts [18] and washers [19] on the aileron trim switches [11].

(c) Put the aileron trim switches [11] up through the baseplate [6].

(d) Install the washers [20] and locknuts [21] on the aileron trim switches [11].

SUBTASK 27-11-94-420-003

(2) Do these steps to install the rudder trim switch [9]:

(a) Install the shims [16] on the rudder trim switch [9].

1) Use the necessary number of shims [16] to get a dimension of 1.156 in. (29.362 mm)-1.169 in. (29.693 mm) from the top of the baseplate [6] to the end of the rudder trim switch shaft [5].

(b) Put the rudder trim switch [9] up through the baseplate [6].

(c) Install the washer [17], washer [8], and locknut [7] on the rudder trim switch shaft [5].

(d) Tighten the locknut [7] to 36 in-lb (4 N·m)-40 in-lb (5 N·m).

(e) Bend the tab on the washer [8] over the flat of the locknut [7].

NOTE: Small deformation of the star washer [8] is permitted.

SUBTASK 27-11-94-420-004

(3) Install the lightplate [1] with fasteners [4].

SUBTASK 27-11-94-420-005

(4) Do these steps to install the rudder trim knob [2]:

(a) Make sure the surfaces between the rudder trim knob [2] and the lightplate [1] are free of contaminates.

(b) Put the rudder trim knob [2] fully down on the rudder trim switch shaft [5].

(c) Make sure the rudder trim knob [2] is 0.010 in. (0.254 mm)–0.050 in. (1.270 mm) from the top of the lightplate [1].

(d) Install the set screws [3] on the rudder trim knob [2].

(e) Tighten the set screws [3] on the rudder trim knob [2].

SUBTASK 27-11-94-420-006

(5) Do this task: Aileron and Rudder Trim Control Module Installation, TASK 27-11-94-400-801.

SUBTASK 27-11-94-730-002

(6) If you replaced the rudder trim switch [9], do this task: Rudder Trim System Test, TASK 27-21-00-700-807.

SUBTASK 27-11-94-730-003

(7) If you replaced the aileron trim switches [11], do this task: Aileron Trim Response Test, TASK 27-11-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-11-94-000-803

6. Rudder Trim Indicator Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-11-94-860-003

(1) Make sure that the rudder is in the neutral position.

SUBTASK 27-11-94-860-004

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

C. Rudder Trim Indicator Removal

SUBTASK 27-11-94-020-007

(1) Do these tasks to remove the rudder trim indicator [14]:

(a) Remove the fasteners [13] that connect the rudder trim indicator [14] to the baseplate [6].

(b) Disconnect the electrical connector from the rudder trim indicator [14].

(c) Remove the rudder trim indicator [14] from the baseplate [6].

——— END OF TASK ———

TASK 27-11-94-400-803

7. Rudder Trim Indicator Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
14	Rudder trim indicator	27-11-94-02-020	SIA ALL

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Rudder Trim Indicator Installation

SUBTASK 27-11-94-420-007

(1) Do these steps to install the rudder trim indicator [14]:

(a) Connect the electrical connector to the rudder trim indicator [14].

(b) Put the rudder trim indicator [14] on the baseplate [6].

(c) Install the fasteners [13] to attach the rudder trim indicator [14] to the baseplate [6].

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SUBTASK 27-11-94-860-005

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-11-94-280-001

(3) Do this check to make sure that the rudder trim indicator [14] is in the null position.

(a) With the rudder in the neutral position, make sure the rudder trim indicator [14] is at the zero position.

SUBTASK 27-11-94-820-001

(4) If the rudder trim indicator [14] is not at the null position, do these steps to adjust the rudder trim indicator [14]:

(a) Remove the fasteners [13] that attach the rudder trim indicator [14] to the baseplate [6].

NOTE: Do not disconnect the electrical connector.

(b) Turn the adjustment screw on the bottom of the rudder trim indicator [14] until the indicator is at 0.0 ±0.1 unit.

(c) Install the rudder trim indicator [14] to the baseplate [6] with the fasteners [13].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER AND RUDDER TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Rudder Hydraulic System A, B, or Standby Pressurization

(a) Use this task to pressurize either hydraulic system A or B, both hydraulic systems A and B, or to pressurize the standby hydraulic system.

(2) Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization

(3) Pressure from the Rudder Hydraulic Systems A, B and Standby - Deactivation.

(4) Pressure to the Rudder Hydraulic Systems A, B, and Standby - Activation.

B. Hydraulic systems A, B, and standby must have pressure removed before maintenance is done on the rudder control system. This is to prevent injury to persons because of accidental operation of the control system while you do maintenance. You must be careful to put maintenance stands and equipment away from control surface travel.

C. Electric pump 1 pressurizes the hydraulic system B and electric pump 2 pressurizes the hydraulic system A. Electric pump 1 heat exchanger is installed in the fuel tank 2. Electric pump 2 heat exchanger is installed in the fuel tank 1.

D. This procedure operates the electric hydraulic system A or B pumps to pressurize the hydraulic systems A and B. Pressurization of the hydraulic systems with the engine-driven hydraulic pumps is not included in this procedure.

TASK 27-21-00-800-801

2. Rudder Hydraulic System A, B, or Standby Pressurization

(Figure 201)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
24-22-00-860-801	Supply Electrical Power (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

NOTE: This procedure supply the steps to pressurize either hydraulic system A or B, both systems A and B, or to pressurize the standby hydraulic system.

SUBTASK 27-21-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

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SUBTASK 27-21-00-860-002

CAUTION

DO NOT OPERATE SYSTEM A OR B HYDRAULIC PUMPS FOR MORE THAN TWO MINUTES WITHOUT FUEL IN THE FUEL TANKS. THE NO. 1 (FOR SYSTEM A) AND NO. 2 (FOR SYSTEM B) FUEL TANKS MUST HAVE A MINIMUM OF 250 GALLONS (1675 POUNDS/760 KILOGRAMS) OF FUEL IN THEM. IF THERE IS NOT SUFFICIENT FUEL IN THE FUEL TANKS, THE HYDRAULIC FLUID WILL BECOME TOO HOT.

(2) Make sure the No. 1 and No. 2 fuel tanks each have 250 gal (946 l) (1675 lb (760 kg)) of fuel in them.

SUBTASK 27-21-00-210-001

(3) Make sure the hydraulic reservoirs are full. To fill the reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-21-00-860-003

(4) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-00-860-004

(5) Set the parking brake.

SUBTASK 27-21-00-480-001

WARNING

MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-21-00-860-005

WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(7) Pressurize the rudder hydraulic system A, B or Standby (Figure 201):

(a) Set the ELEC 2, HYD PUMPS A or ELEC 1, HYD PUMPS B switch on the forward overhead panel to the ON position.

NOTE: Intermittent system A or B electric pump operation must be kept to a limit of five starts in a 5 minutes period. After the fifth start, operate the pump for more than 5 minutes or turn the pump off for a minimum of 5 minutes.

(b) For the hydraulic system A pressurization, set the FLT CONTROL A switch on the forward overhead panel to the ON position.

(c) For the hydraulic system B pressurization, set the FLT CONTROL B switch on the forward overhead panel to the ON position.

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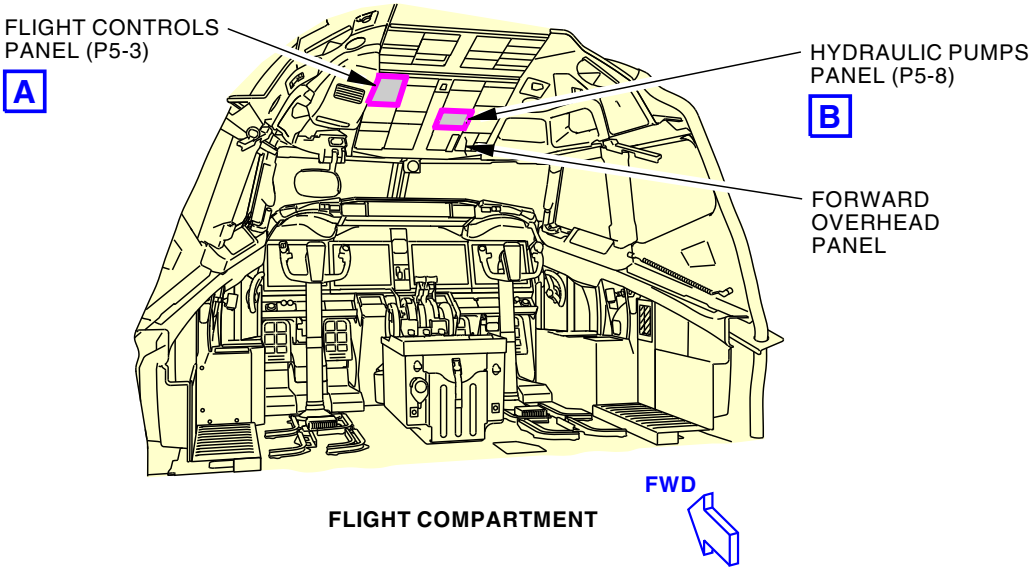
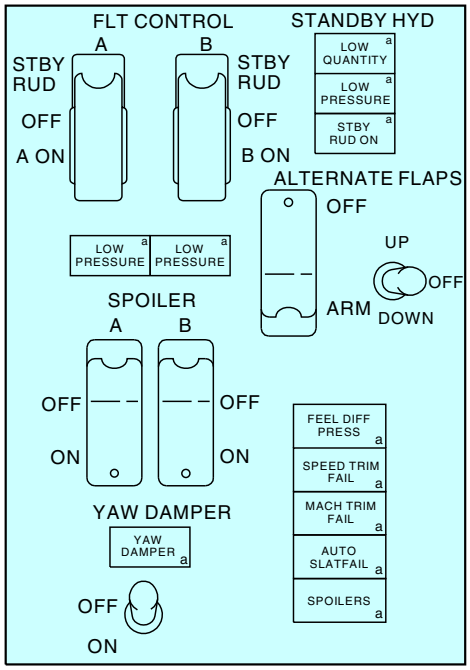
(d) For the standby hydraulic system, set the FLT CONTROL A or B switch on the forward overhead panel to the STDBY RUD position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

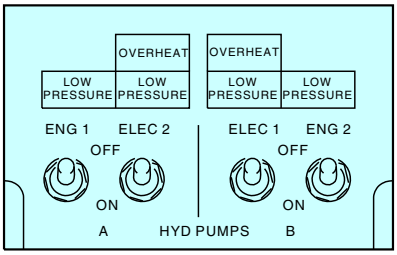


FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A



HYDRAULIC PUMPS PANEL (P5-8)

B

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Rudder Power Control Switches
Figure 201/27-21-00-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-840-801

3. Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization

(Figure 201)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

B. Procedure

SUBTASK 27-21-00-860-006

(1) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-21-00-860-007

(2) Set the FLT CONTROL A and B switches on the forward overhead panel to the OFF position.

——— END OF TASK ———

TASK 27-21-00-800-802

4. Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation

(Figure 201, Figure 202, Figure 203)

A. General

(1) This procedure removes pressure from the rudder hydraulic systems A, B, and Standby before you do maintenance on the rudder and rudder trim control system.

B. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
324	Vertical Fin - Rear Spar To Trailing Edge
325	Vertical Fin - Rudder

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Procedure

SUBTASK 27-21-00-860-008

(1) Set the FLT CONTROL A and B switches on the forward overhead panel to the OFF position.

SUBTASK 27-21-00-860-009

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-00-860-010

(3) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-21-00-870-001

(4) Operate the rudder pedals or the control column to decrease the remaining hydraulic system pressure.

SUBTASK 27-21-00-860-011

(5) If it is necessary to open a hydraulic line, you must release pressure from the reservoir for the applicable hydraulic system. To release it, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-21-00-480-002

(6) Install the flight controls ground locks to the flight controls shutoff valves (Figure 202, Figure 203):

(a) Disconnect the electrical connector from the flight controls shutoff valve at the flight controls hydraulic modules A and B.

(b) Disconnect the electrical connector from the standby flight controls shutoff valve at the standby flight controls hydraulic module.

(c) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(d) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

(e) Put the manual override lever at the flight control A and B shutoff valves in the position 2 (OFF position). Leave the Standby valve in the position 1 (OFF position).

NOTE: In normal condition, the A and B valves are in position 1 (ON position) and the Standby valve is in position 1 (OFF position).

(f) Install the lock, SPL-1675 on the three flight controls shutoff valves.

1) Install the lockpins.

F. Rudder and Rudder Trim Control System - Tryout

NOTE: This tryout is to make sure the Rudder and Rudder Trim Control System is in a zero energy state.

SUBTASK 27-21-00-710-001

(1) In the flight deck, push the Captain's or First Officer's rudder pedals to their stops, left and right.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the rudder control surface does not move when you continue to push the rudder pedals.

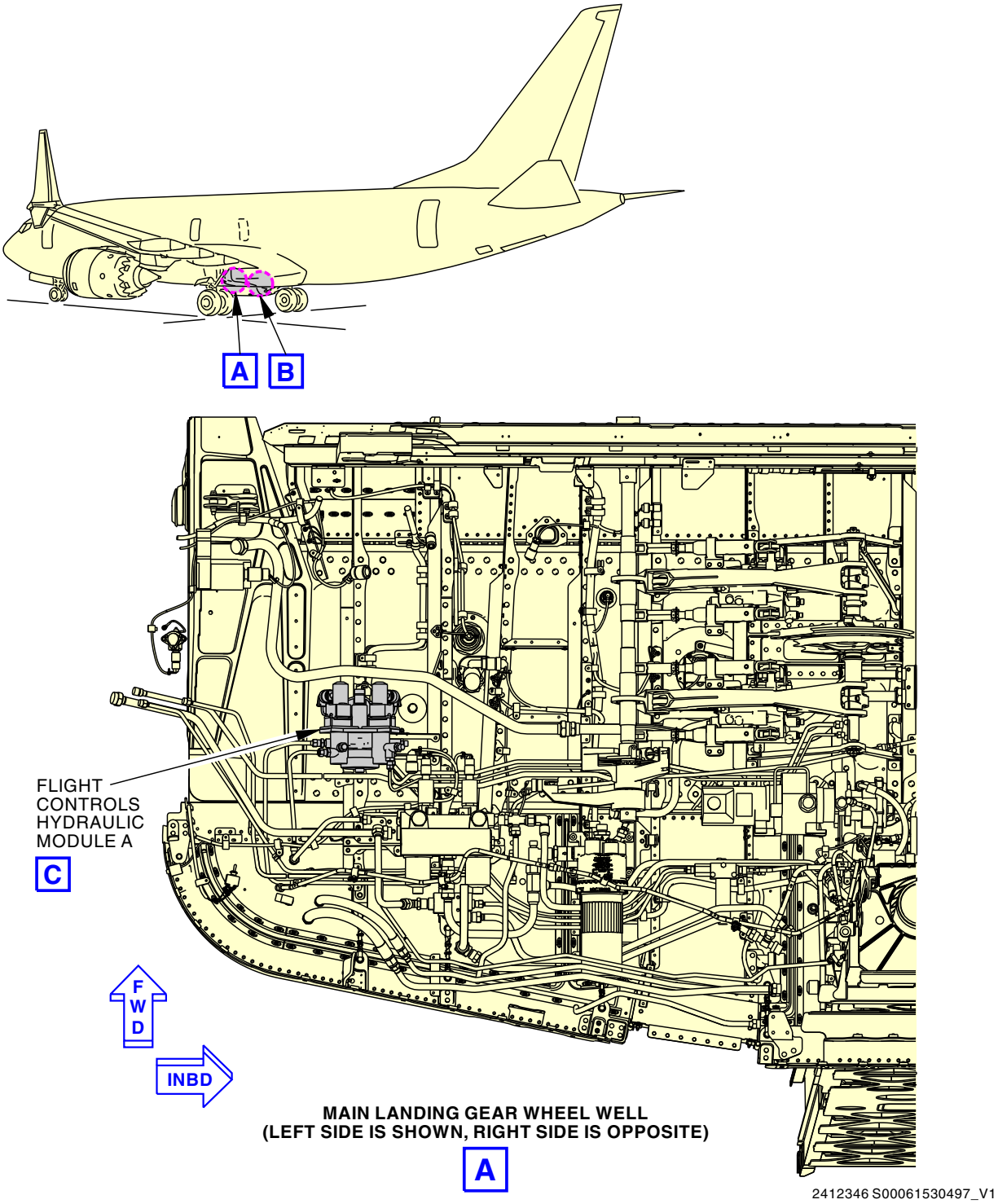
SUBTASK 27-21-00-710-002

(2) Operate the rudder trim knob on the control stand panel, P8, to simulate the rudder function.

(a) Make sure that the rudder control surface does not move.

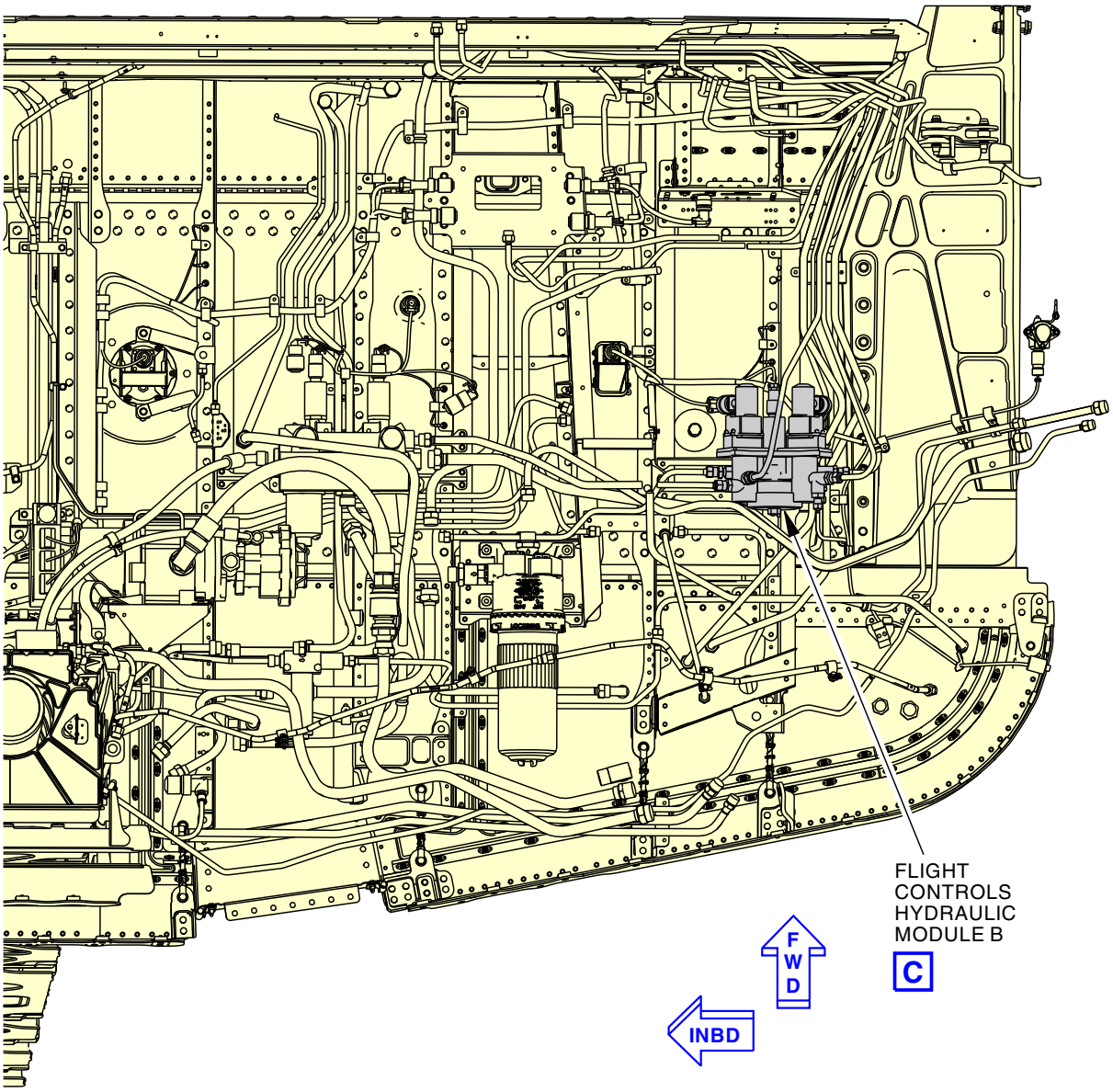
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



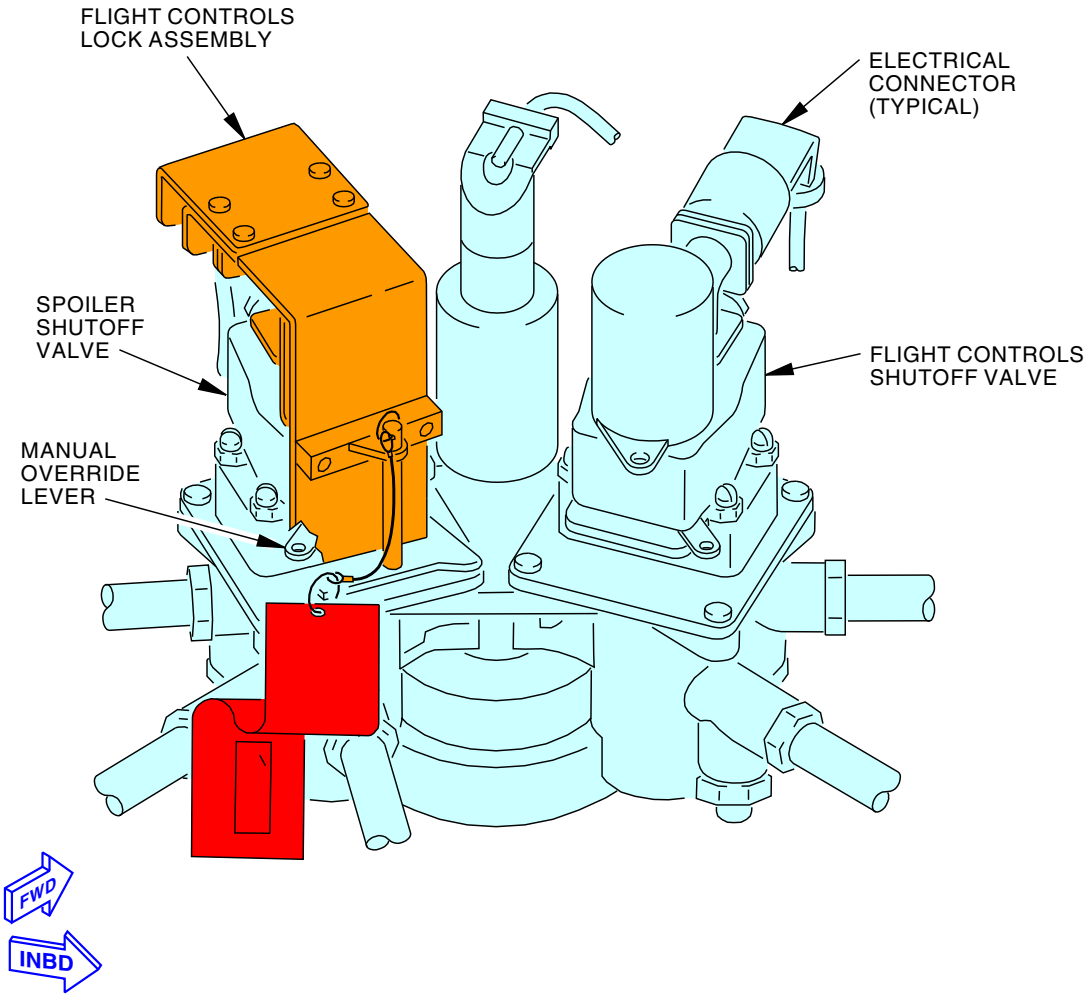
Flight Controls Hydraulic Module Lock Installation
Figure 202/27-21-00-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Lock Installation
Figure 202/27-21-00-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



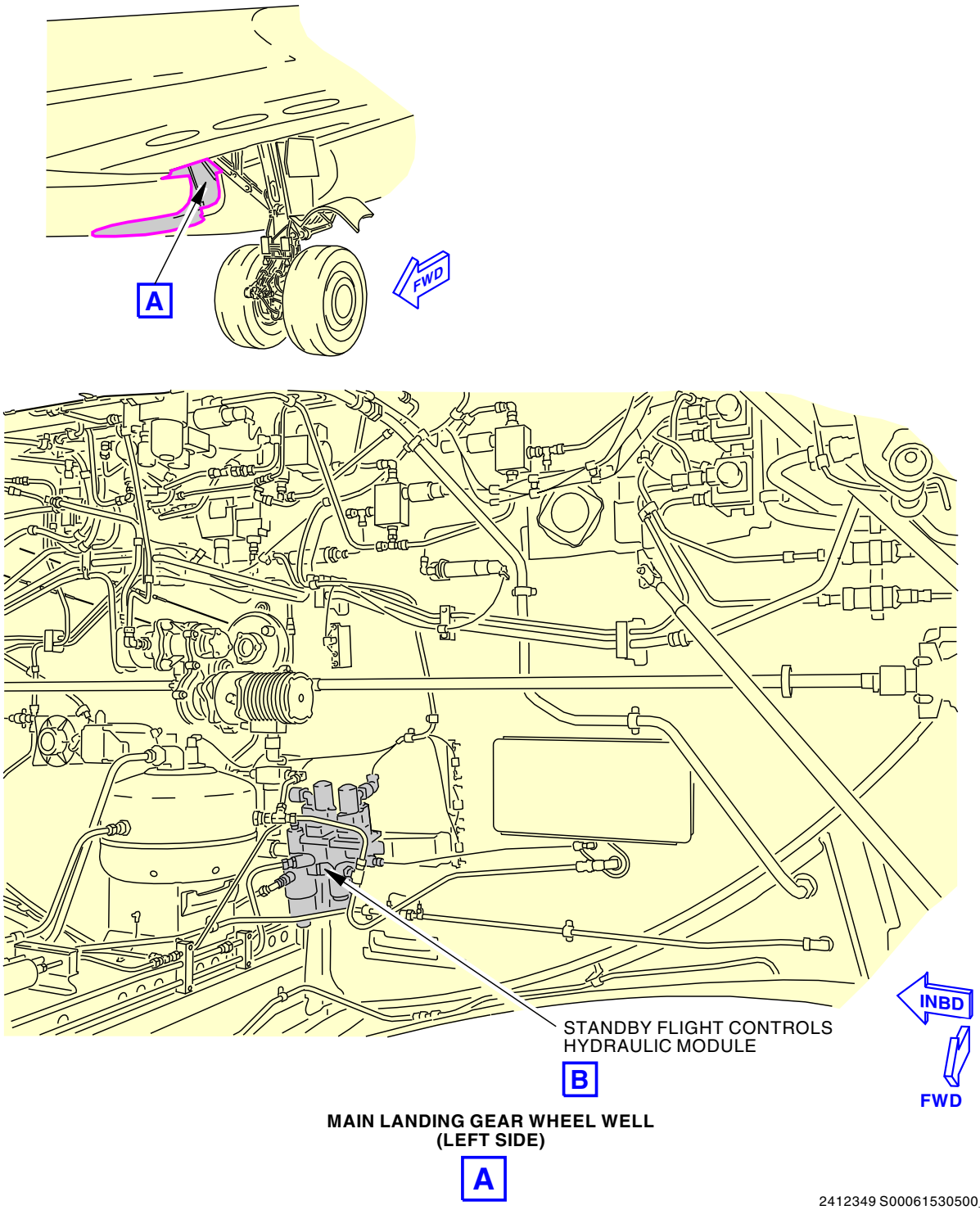
FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412348 S00061530499_V1

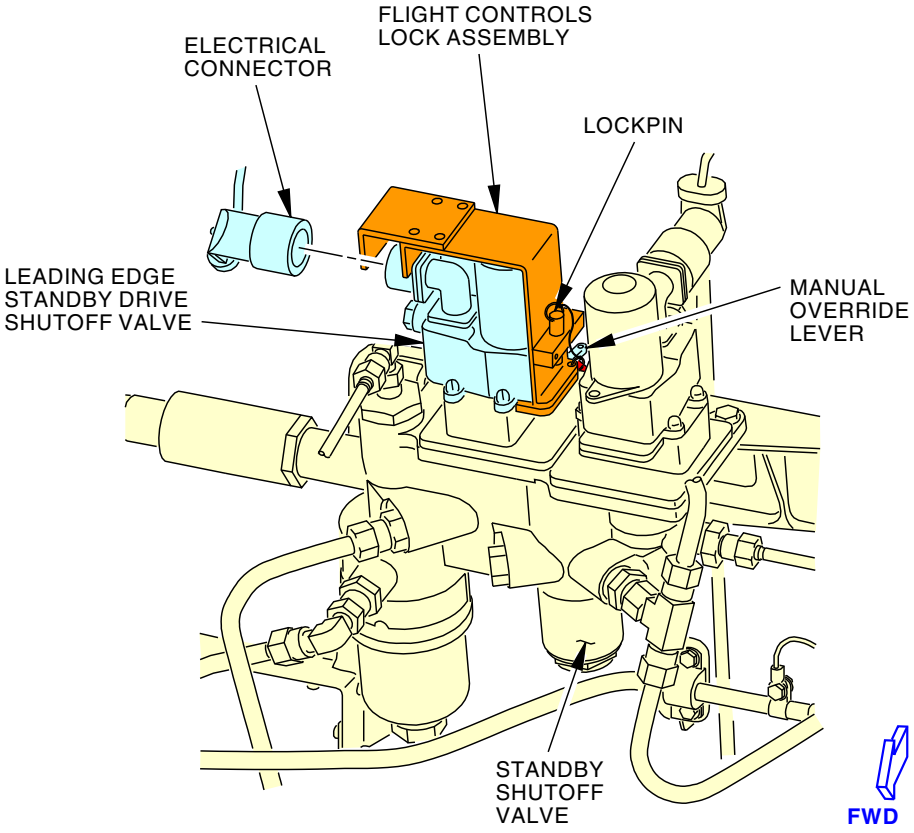
Flight Controls Hydraulic Module Lock Installation
Figure 202/27-21-00-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Standby Flight Controls Hydraulic Module Lock Installation
Figure 203/27-21-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STANDBY FLIGHT CONTROLS HYDRAULIC MODULE

B

2412350 S00061530501_V1

Standby Flight Controls Hydraulic Module Lock Installation
Figure 203/27-21-00-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-840-802

5. Pressure to the Rudder Systems A, B, and Standby - Activation

(Figure 201, Figure 202, Figure 203)

A. General

(1) This task will put the rudder hydraulic systems A, B, and Standby back to the condition before pressure removal.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

F. Pressure to the Rudder Systems A, B, and Standby Activation

SUBTASK 27-21-00-080-002

(1) Remove the flight control ground locks from the flight control shutoff valves (Figure 202, Figure 203):

(a) Remove the lockpins.

(b) Remove the lock, SPL-1675, from the three flight controls shutoff valves.

(c) Put the manual override lever at the three flight controls shutoff valves A and B in the position 1 (ON position).

(d) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, correct the problem (SWPM 20-60-03).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Apply D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

(f) Connect the electrical connector to the flight controls shutoff valve at the flight controls hydraulic modules A and B.

(g) Connect the electrical connector to the flight controls shutoff valve at the standby flight controls hydraulic module.

SUBTASK 27-21-00-860-110

(2) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the ON position.

SUBTASK 27-21-00-860-012

(3) Set the FLT CONTROL A and B switches on the forward overhead panel to the ON position.

SUBTASK 27-21-00-860-013

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-00-860-014

(5) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER AND RUDDER TRIM CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Rudder Forward Quadrant Adjustment - Use this task to adjust the rudder forward quadrant.

(2) Rudder Pedals Adjustment - Use this task to adjust the rudder pedals.

(3) Rudder Control Cables RA and RB Adjustment - Use this task to adjust the rudder control cables. This task also includes steps to adjust the rudder forward quadrant and rudder pedals.

(4) Control Rod for Main Rudder Power Control Unit Adjustment - Use this task to adjust the control rod for the main rudder power control unit.

(5) Control Rod for Standby Rudder Power Control Unit Adjustment - Use this test to adjust the control rod for the standby rudder power control unit.

(6) Rudder Pedal Adjustment and Limit Travel Test - Use this test make sure the rudder pedals can move through their full travel and the pedal adjustment crank operates correctly.

(7) Rudder Hinge Bearing and PCU Freeplay - Use this task to do a check of the freeplay of the rudder control system.

(8) Rudder Centering Test - Use this test to make sure the rudder is in its center position.

(9) Rudder Pedal Forces Test - Use this test to make sure the rudder pedals operate with the correct force.

(10) Rudder Travel Test - Use this test to make sure the rudder operates correctly.

(11) Standby Rudder Power Control Unit Deadband Test - Use this test to make sure the standby rudder power control unit is in the correct rigged position.

(12) Rudder Trim System Test - Use this test to make sure the rudder system operates correctly.

(13) Wheel to Rudder Interconnect System Test - Use this test to make sure the wheel to rudder function of the standby rudder power control unit operates correctly.

(14) Rudder Hinge Friction Test - Use this task to do a check of the rudder hinge for excessive friction.

(15) Main Rudder PCU Internal Hydraulic Leakage Test - Use this task to do a check for excessive internal hydraulic leakage in the main rudder PCU.

(16) Rudder Override Operational Test - Use this task to verify that the override mechanisms on the torque tube are operational.

(17) Rudder Main PCU Force Fight Monitor Test - Use this task to verify that the STBY RUD ON light on the overhead panel P5-3 is functional.

TASK 27-21-00-820-801

2. Rudder Forward Quadrant Adjustment

(Figure 501, Figure 502)

A. General

(1) Use this test to make sure the rudder forward quadrant is adjusted correctly. After you adjust the rudder forward quadrant, you must re-adjust the rudder pedals and control cables.

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
27-09-14-860-802	Cable Control - Tension Measurement (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
32-51-00-820-805	Nose Wheel Steering System Adjustment (P/B 501)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

F. Prepare for the Test

SUBTASK 27-21-00-860-015

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-00-010-001

(2) Open this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-00-010-002

(3) Open these access panels:

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
114BW	Forward Nose Wheel Well Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

G. Rudder Forward Quadrant Adjustment

SUBTASK 27-21-00-710-003

(1) Do the rudder forward quadrant adjustment:

(a) Do these steps to set the jackshaft yoke to the middle position:

NOTE: The middle position of the jackshaft yoke is where the number of turns of the shaft from the full forward and full aft adjustment are the same.

1) Turn the rudder pedal adjustment crank to move the rudder pedals full forward.

2) Turn the rudder pedal adjustment crank to move the rudder pedals full aft.

a) Record the number of turns.

3) Turn the rudder pedal adjustment crank half the recorded number of turns forward.

(b) Install the rig pin R-3 from the rigging pin kit, SPL-1585, in the forward hole in the captain's rudder forward quadrant.

(c) Install the rig pin R-4 from the rigging pin kit, SPL-1585, in the forward hole in the first officer's rudder forward quadrant.

(d) If you can not install rig pins R-3 or R-4, adjust the bus rod [6]:

1) Turn the turnbuckles to release the tension of rudder control cables RA and RB.

2) Remove the pin [5], nut [4], washer [3], spacer [2], bolt [1] to disconnect the bus rod [6] from rudder forward quadrant.

a) Discard the pin [5].

3) Install the rig pin R-3 from the rigging pin kit, SPL-1585, in the forward hole in the captain's rudder forward quadrant.

4) Install the rig pin R-4 from the rigging pin kit, SPL-1585, in the forward hole in the first officer's rudder forward quadrant.

5) Adjust the bus rod [6] until you can install the bolt [1] through the rudder forward quadrant.

6) Install the spacer [2], washer [3], nut [4], and new pin [5].

7) If necessary, adjust the brake pushrod [12] to the nose wheel steering. To adjust them, do this task: Nose Wheel Steering System Adjustment, TASK 32-51-00-820-805.

8) Make sure that the control cables RA and RB are at the correct tension (TASK 27-09-14-860-802).

(e) Make sure that the clearance between the cable guard blocks and the rudder forward quadrants is 0.030 in. (0.76 mm) - 0.050 in. (1.27 mm) through full travel.

(f) Remove the rig pins R-3 and R-4.

(g) Remove the nut [45], washer [49], washer [48], and bolt assembly [47] to disconnect the standby rudder PCU standby rudder PCU control rod [34] from the rudder control torque tube [33] (Figure 502).

(h) For each main rudder PCU control rod do this task:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the nut [45], washer [44], washer [43] and bolt assembly [42] to disconnect the two main rudder PCU control rod [36] from the rudder control torque tube [33] (Figure 502).

(i) Move the captain's rudder forward quadrant until you can install the rig pin R-3 in the aft rig pin hole.

(j) Make sure that there is no clearance between the captain's forward quadrant and quadrant stop. Add or subtract shims as needed to bring the clearance to zero.

(k) Remove the rig pin R-3.

(l) Move the first officer's rudder forward quadrant until you can install the rig pin R-4 in the aft rig pin hole.

(m) Make sure that there is no clearance between the first officer's forward quadrant and quadrant stop. Add or subtract shims as needed to bring the clearance to zero.

(n) Remove the rig pin R-4.

(o) Connect the main rudder PCU control rod [36] to the center crank [41].

1) Install the bolt assembly [42] with the bolt head end up and washer [43].

2) Tighten the outer bolt of the bolt assembly [42] to 70 in-lb (7.9 N·m) - 85 in-lb (9.6 N·m).

3) Install the washer [44] and nut [45].

CAUTION DO NOT TIGHTEN THE OUTER BOLT OF THE BOLT ASSEMBLY [42] AFTER YOU TIGHTEN THE NUT [45]. DAMAGE TO EQUIPMENT CAN OCCUR.

4) Tighten the nut [45] to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).

(p) Install the bolt assembly [47] with the bolt head end up, washer [48] (under bolt), washer [49] (under nut), and nut [50] to connect the standby rudder PCU control rod [34] to the upper crank [46].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-820-001

(1) Do this task: Rudder Pedals Adjustment, TASK 27-21-00-820-802.

SUBTASK 27-21-00-820-002

(2) Do this task: Control Rod for Main Rudder Power Control Unit Adjustment, TASK 27-21-00-820-804.

SUBTASK 27-21-00-410-001

(3) Close these access panels:

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-010-003

(4) Close this access door:

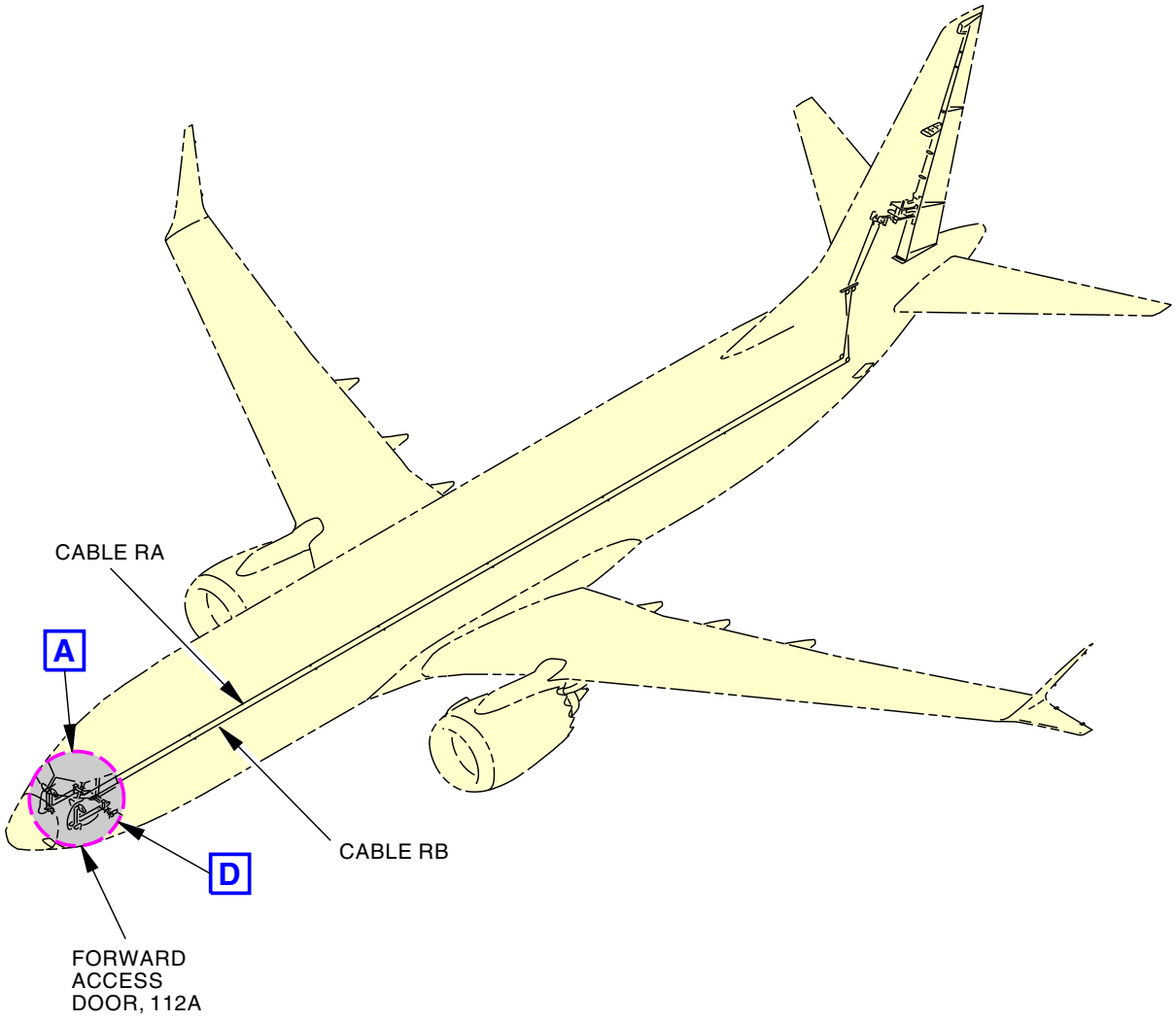
Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-00-860-016

(5) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

END OF TASK

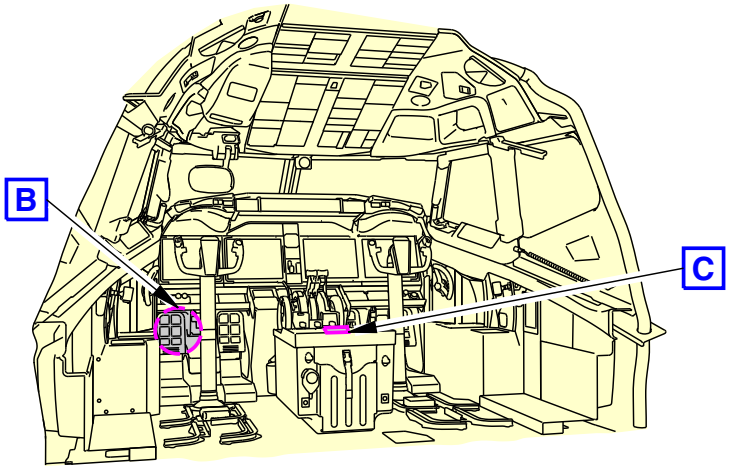
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412351 S00061530505_V1

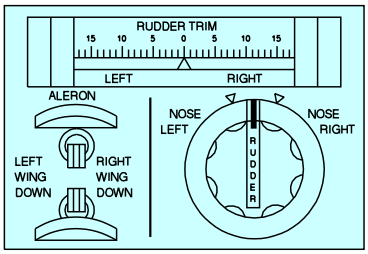
Rudder Control System Forward Components
Figure 501/27-21-00-990-804 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



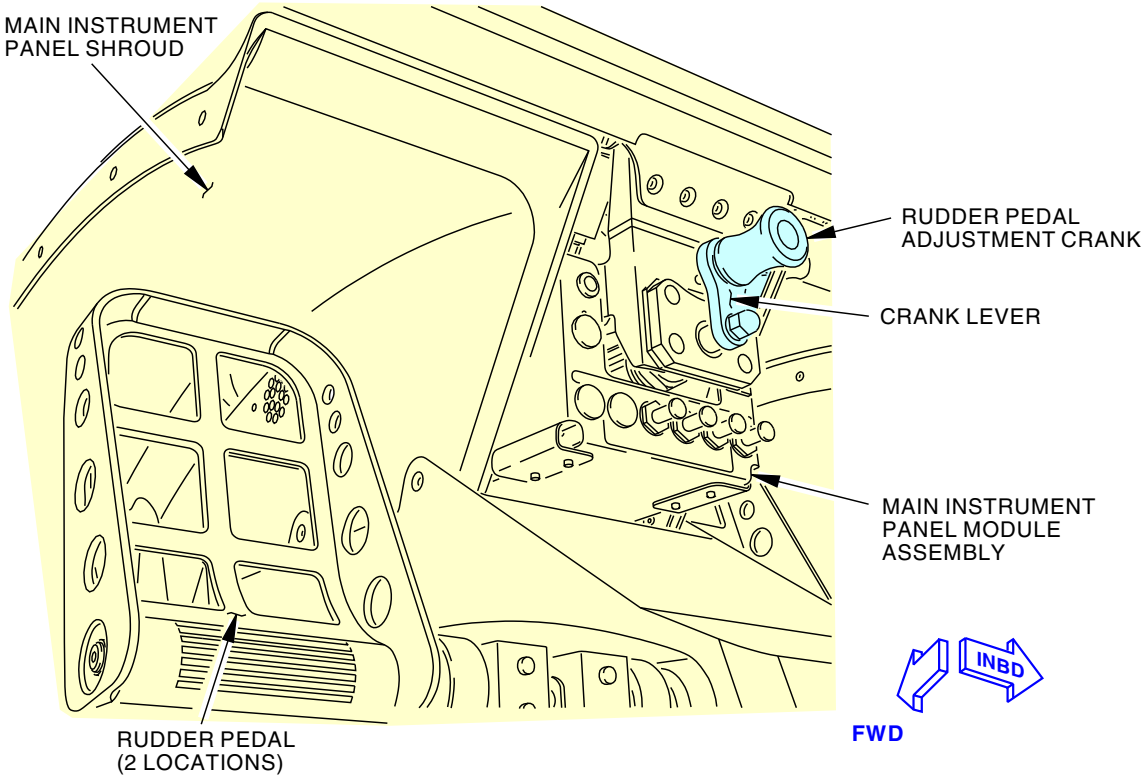
FLIGHT COMPARTMENT

A



AILERON AND RUDDER TRIM MODULE (P8)

C



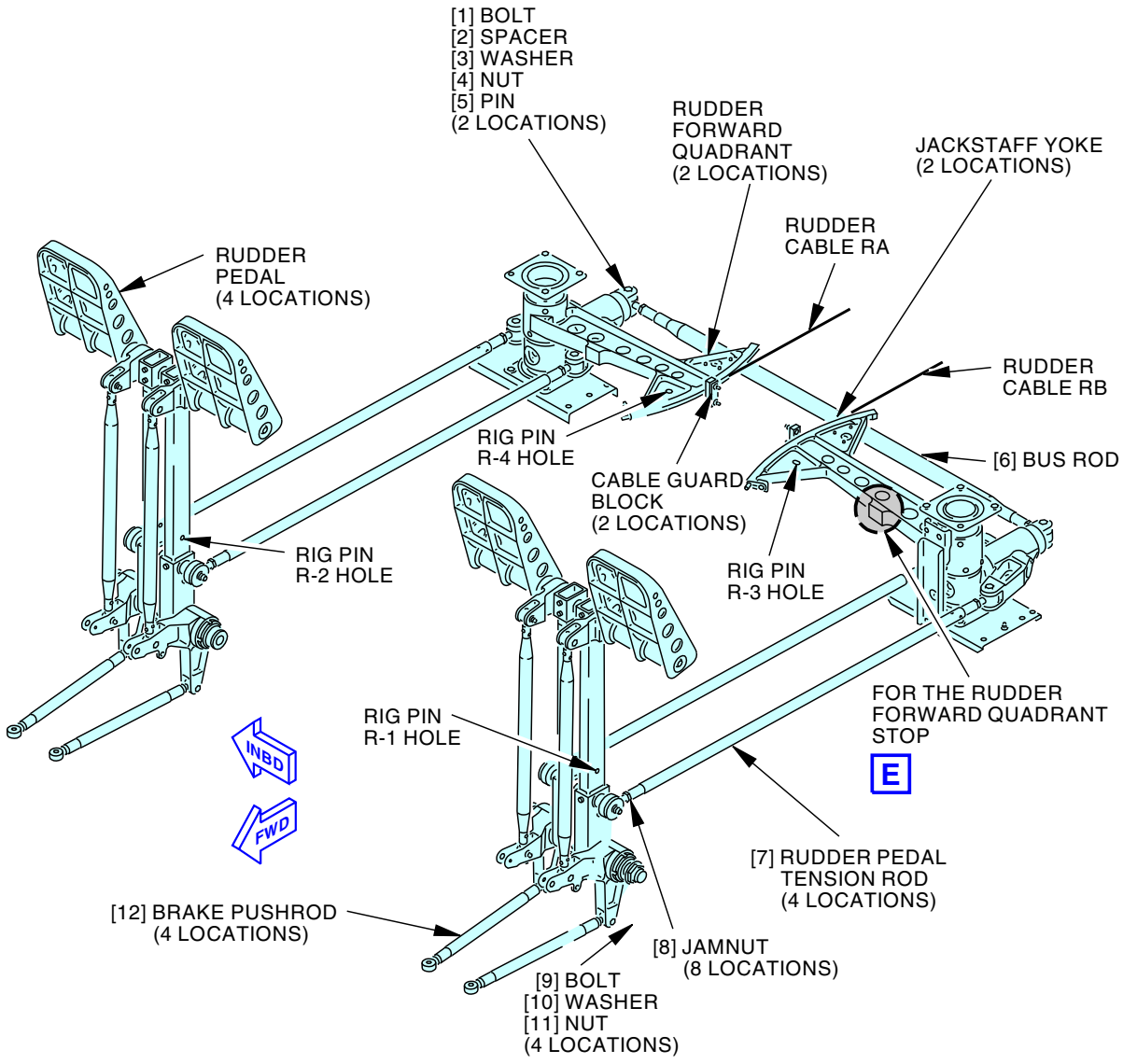
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

B

2412352 S00061530506_V2

Rudder Control System Forward Components
Figure 501/27-21-00-990-804 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



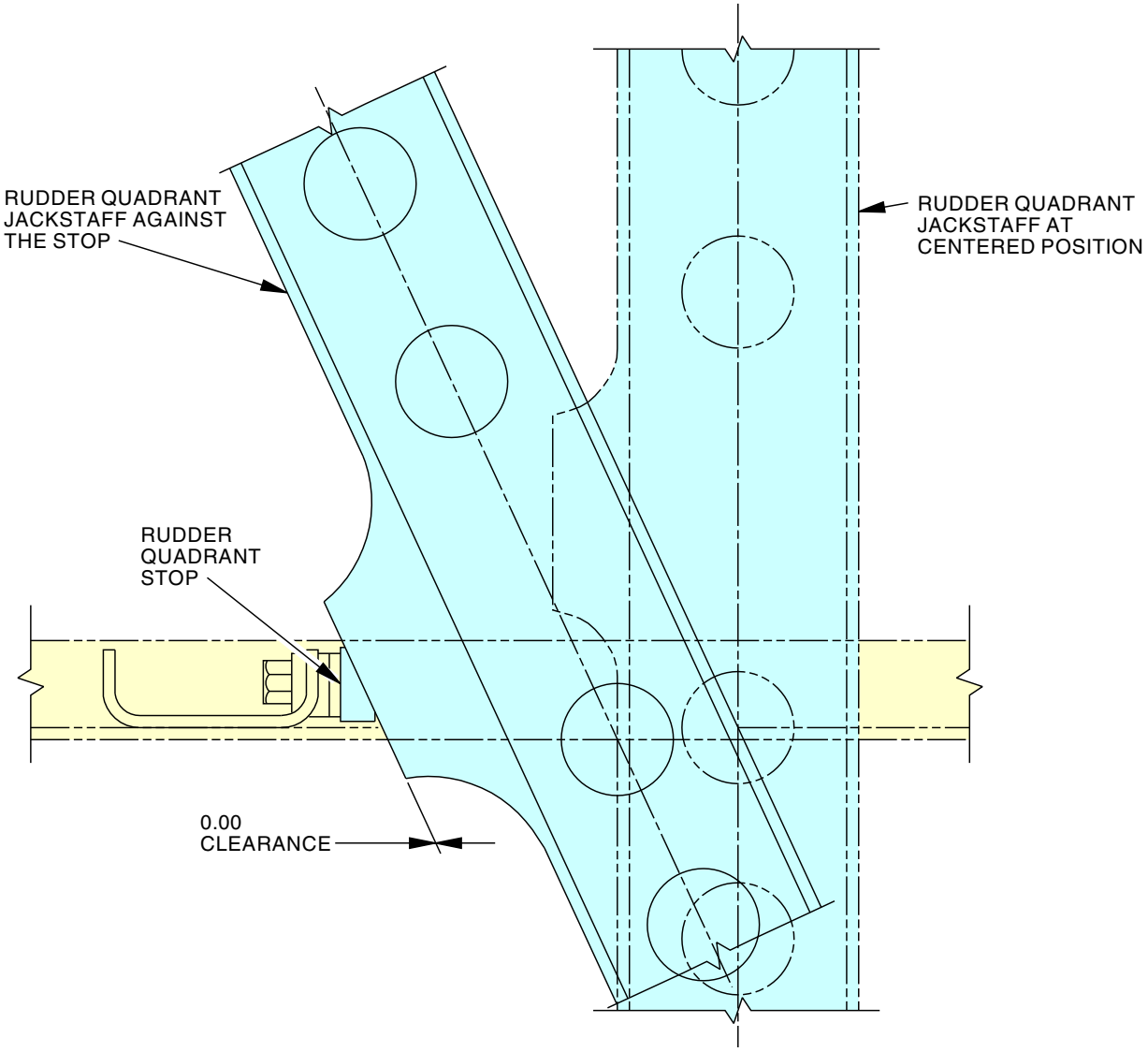
PEDAL SHAFTS AND FORWARD QUADRANTS

D

2412353 S00061530507_V1

Rudder Control System Forward Components
Figure 501/27-21-00-990-804 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RUDDER QUADRANT STOP

E

2412354 S00061530508_V1

Rudder Control System Forward Components
Figure 501/27-21-00-990-804 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-820-802

3. Rudder Pedals Adjustment

(Figure 501)

A. General

(1) Use this task to adjust the rudder pedals to the center position.

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel
324CL	Vertical Fin, Access

F. Prepare for the Test

SUBTASK 27-21-00-860-017

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-00-010-004

(2) Open these access doors:

Number	Name/Location
112A	Forward Access Door
324CL	Vertical Fin, Access

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-010-005

(3) Open these access panels:

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

G. Rudder Pedals Adjustment

SUBTASK 27-21-00-710-004

(1) Do the rudder pedals adjustment:

(a) Install the rig pin R-5 from the rigging pin kit, SPL-1585, in the rudder feel and centering unit (Figure 502).

(b) Install the rig pin R-3 from the rigging pin kit, SPL-1585, in the captain's rudder forward quadrant (Figure 501).

(c) Install the rig pin R-4 from the rigging pin kit, SPL-1585, in the first officer's rudder forward quadrant (Figure 501).

(d) Do these steps to set the jackshaft yoke to the middle position:

NOTE: The middle position of the jackshaft yoke is where the number of turns of the shaft from the full forward and full aft adjustment are the same.

1) Turn the rudder pedal adjustment crank to move the rudder pedals full forward.

2) Turn the rudder pedal adjustment crank to move the rudder pedals full aft.

a) Record the number of turns.

3) Turn the rudder pedal adjustment crank half the recorded number of turns forward.

(e) Make sure that you can install these rig pins from the rigging pin kit, SPL-1585:

1) Rig pin R-1 on the captain's rudder pedals.

2) Rig pin R-2 on the first officer's rudder pedals.

(f) If you can not install the rig pins R-1 and R-2 freely, then do these steps:

1) Determine which pedal arm is out-of-line with the rigging pin hole.

a) If you have problem with installing rig pin R-1, then adjust the captain's side.

b) If you have problem with installing rig pin R-2, then adjust the first officer's side.

c) If you have problem with installing both rig pins R-1 and R-2, then adjust both sides.

2) Loosen both jamnut [8] on the rudder pedal tension rod [7].

3) Remove the bolt [9], washer [10] and nut [11] to disconnect the rudder pedal tension rod [7] at the forward end.

4) Adjust the length of rudder pedal tension rod [7] until you can install rig pin R-1 or R-2 easily.

a) Turn the rod end or rod body of the rudder pedal tension rod [7] as necessary to adjust the length.

b) Keep the lube fitting on the rudder pedal tension rod [7] down.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Install the bolt [9], washer [10] and nut [11] to connect the rudder pedal tension rod [7].

6) Tighten the jamnut [8].

7) Make sure you can see the threads through the holes on the rudder pedal tension rod [7].

(g) Remove the rig pins R-1, R-2, R-3, R-4, and R-5.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-410-002

(1) Close these access panels:

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 27-21-00-940-001

(2) Close these access doors:

Number	Name/Location
112A	Forward Access Door
324CL	Vertical Fin, Access

SUBTASK 27-21-00-860-018

(3) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

——— END OF TASK ———

TASK 27-21-00-820-803

4. Rudder Control Cables RA and RB Adjustment

(Figure 501 and Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to adjust the rudder control cables RA and RB. This task includes steps to adjust the rudder forward quadrant and rudder pedals.

(2) Before you do cable adjustment, permit a minimum of one hour at a constant ambient temperature of ± 5 degrees F (± 2.8 degrees C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to: Control Cable Grades and Diameters/Table 27-11-00-993-802.

(e) It is recommended that cable assemblies on each side of a cable loop be replaced at the same time using the same cable grade of material in order to minimize asymmetric relaxation.

B. References

Reference	Title
27-09-14-860-802	Cable Control - Tension Measurement (P/B 201)
27-09-17-860-801	Location of the Flight Control Cables Air Pressure Seals (P/B 201)
27-11-00-993-802	Table: Control Cable Grades and Diameters (P/B 501)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
324	Vertical Fin - Rear Spar To Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel
311BL	Stabilizer Trim Access Door
324AL	Vertical Fin, Aft Fin Access Door
324CL	Vertical Fin, Access

F. Prepare for the Adjustment

SUBTASK 27-21-00-860-019

(1) Make sure that the rudder trim indicator is at the zero unit of trim.

SUBTASK 27-21-00-730-001

(2) Do this task: Rudder Pedal Adjustment and Limit Travel Test, TASK 27-21-00-700-801.

SUBTASK 27-21-00-860-020

(3) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-00-860-022

(4) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-00-010-006

(5) Open these access doors:

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door
324AL	Vertical Fin, Aft Fin Access Door
324CL	Vertical Fin, Access

SUBTASK 27-21-00-480-003

(6) Use a low tension cable tensiometer, COM-1553, or high tension cable tensiometer, COM-1554, to measure the cable tension (TASK 27-09-14-860-802).

NOTE: This step measures the cable tension to make sure that the cable adjustment is necessary.

SUBTASK 27-21-00-010-007

(7) If cable adjustment is required, open these access panels:

(Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801)

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Rudder Control Cables RA and RB Adjustment

SUBTASK 27-21-00-820-003

(1) If you install new rudder control cables RA and RB, do these steps to stretch the cables (Figure 502):

(a) Operate the rudder trim indicator until you can install the rig pin R-5 in the rudder feel and centering unit easily.

(b) Adjust the turnbuckles in the cables RA and RB to get a tension of 300 lbf (1334 N) ± 20 lbf (89 N) each.

1) Make sure that you can install the rig pin R-3 from the rigging pin kit, SPL-1585, freely in the captain's rudder forward quadrant.

(c) Remove the rig pins R-3 and R-5.

(d) Adjust the pressure seals at the aft pressure bulkhead with the control cables RA and RB, do this task: Location of the Flight Control Cables Air Pressure Seals, TASK 27-09-17-860-801.

(e) Make sure that the cables RA and RB do not touch the pulley or quadrant flanges for the total cable travel.

(f) Make sure that the cables RA and RB are in less than 2 degrees of the plane of the pulley or the quadrant.

(g) Make sure that you install the cables through the grommets in the structure.

(h) Make sure that the cables do not move from the neutral rig position.

(i) Make sure that the pulleys turn freely with sufficient clearance with the guards.

(j) Remove the nut [50], washer [49], washer [48], and bolt assembly [47] to disconnect the standby rudder PCU control rod [34] from the rudder control torque tube [33].

(k) Remove the nut [45], washer [44], washer [43], and bolt assembly [42] to disconnect the main rudder PCU control rod [36] from the rudder control torque tube [33].

(l) Move the rudder pedals 25 times through full travel.

(m) Connect the main rudder PCU control rod [36] to the center crank [41].

1) Install the bolt assembly [42] with the bolt head end up and washer [43].

2) Torque the outer bolt of the bolt assembly [42] to 70 in-lb (7.9 N·m) - 85 in-lb (9.6 N·m).

3) Install the washer [44] and nut [45].

CAUTION DO NOT TIGHTEN THE OUTER BOLT OF THE BOLT ASSEMBLY [42] AFTER YOU TIGHTEN THE NUT [45]. DAMAGE TO EQUIPMENT CAN OCCUR.

4) Torque the nut [45] to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).

(n) Install the bolt assembly [47] with the bolt head end up, washer [48] (under bolt), washer [49] (under nut), and nut [50] to connect the standby rudder PCU control rod [34] to the upper crank [46].

SUBTASK 27-21-00-820-004

(2) Adjust the control cables RA and RB to their correct cable rigging tension.

(a) Use a low tension cable tensiometer, COM-1553, or high tension cable tensiometer, COM-1554, to measure the cable tension.

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(b) Install the rig pin R-5 from the rigging pin kit, SPL-1585, in the rudder feel and centering unit.

(c) Adjust the turnbuckles in the cables RA and RB to get the cable tensions (TASK 27-09-14-860-802).

NOTE: Adjust the tensions close to the maximum values in the table. The cables will stretch over a period of time.

(d) Make sure that you can install these rig pins from the rigging pin kit, SPL-1585 (Figure 501):

1) Rig pin R-3 in the captain's rudder forward quadrant.
2) Rig pin R-4 in the first officer's rudder forward quadrant.

(e) If you can not install the rig pins R-3 and R-4 freely, do these steps:

1) Turn the turnbuckles to release the tension of the control cables RA and RB.
2) Remove the pin [5], nut [4], washer [3], spacer [2], and bolt [1] to disconnect one end of the bus rod [6] from rudder forward quadrant.
   a) Discard the pin [5].
3) Install the rig pins R-3 in the captain's rudder forward quadrant.
4) Install the rig pin R-4 in the first officer's rudder forward quadrant.
5) Adjust the bus rod [6] until you can install the bolt [1] easily.
6) Install the bolt [1], spacer [2], washer [3], nut [4], and new pin [5] to connect the bus rod [6] to the rudder forward quadrant.
7) Adjust the turnbuckles on the control cables RA and RB to get the correct tensions (TASK 27-09-14-860-802).

(f) Do these steps to adjust the captain's and first officer's pedals to the neutral adjustment position:

NOTE: The middle position of the rudder pedals is where the number of turns of the shaft from the full forward and full aft adjustment are the same.

1) Turn the rudder pedal adjustment crank to move the rudder pedals full forward.
2) Turn the rudder pedal adjustment crank to move the rudder pedals full aft.
   a) Record the number of turns.
3) Turn the rudder pedal adjustment crank half the number of turns forward.

(g) Install these rig pins from the rigging pin kit, SPL-1585:

1) Rig pin R-1 on the captain's rudder pedals.
2) Rig pin R-2 on the first officer's rudder pedals.

(h) If you can not install the rig pin R-1 or R-2 freely, do these steps:

1) Loosen the jamnut [8] from the applicable rudder pedal tension rod [7].

   NOTE: If you can not install rig pin R-1, adjust the captain's rudder pedal tension rods. If you can not install the rig pin R-2, adjust the first officer's rudder pedal tension rods. You are only required to adjust the applicable rudder pedal tension rod that is out of rig.

2) Remove the nut [11], washer [10], bolt [9] from the forward end of the rudder pedal tension rod [7].
3) Adjust the rudder pedal tension rod [7] until you can install the applicable rig pin freely.

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a) Make sure that you keep the lube fitting on the rudder pedal tension rod [7] in the down direction.

4) Install the bolt [9], washer [10], and nut [11].

5) Tighten the jamnut [8].

(i) Do a check on the rudder forward quadrant bus rod [6] and rudder pedal tension rod [7].

1) Make sure that the rod ends cover at least 50 percent of the inspection holes at two end of the rods (10 locations).

(j) Remove the rig pins R-1, R-2, R-3, R-4, and R-5.

(k) Operate the rudder pedals through one full travel cycle.

1) Make sure that the control cables RA and RB are at the correct tensions (TASK 27-09-14-860-802).

(l) Install the locking clips on the turnbuckles.

H. Put the Airplane Back To Its Usual Condition

SUBTASK 27-21-00-010-008

(1) Close these access panels:

(Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801)

Number	Name/Location
113AW	Forward Nose Wheel Well Panel
113BW	Forward Nose Wheel Well Panel
114AW	Forward Nose Wheel Well Panel
114BW	Forward Nose Wheel Well Panel

SUBTASK 27-21-00-010-009

(2) Close these access doors:

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door
324AL	Vertical Fin, Aft Fin Access Door
324CL	Vertical Fin, Access

SUBTASK 27-21-00-860-023

(3) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

——— END OF TASK ———

TASK 27-21-00-820-804

5. Control Rod for Main Rudder Power Control Unit Adjustment

(Figure 501, Figure 502)

A. General

(1) Use this task to adjust the control rod for the main rudder power control unit (PCU).

B. References

Reference	Title
27-11-94	AILERON/RUDDER TRIM CONTROL MODULE
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324CL	Vertical Fin, Access
324DL	Trailing Edge Access

F. Prepare for the Adjustment

SUBTASK 27-21-00-840-001

(1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-00-010-010

(2) To get access to the main PCU, do this step:

Open this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-00-010-011

(3) To get access to the rudder feel and centering unit, do this step:

Open this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

SUBTASK 27-21-00-820-005

(4) Manually hold the rudder in the neutral position over the index plate.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-840-002

(5) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-21-00-860-025

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

(a) Move the rudder pedals to bleed the main rudder PCU until the movement of the rudder is smooth.

SUBTASK 27-21-00-980-001

(7) Make sure that the rudder pedals are in the neutral position.

(a) If it is necessary, tap on the rudder pedals lightly to put the rudder pedals to the neutral position.

SUBTASK 27-21-00-480-004

(8) Install rig pin R-5 from the rigging pin kit, SPL-1585, in the rudder feel and centering unit.

(a) Make sure that you can install the rig pin R-5 freely. If you cannot install the rig pin freely, adjust the rudder trim actuator:

1) Jiggle and release the feel and centering unit input arm to make sure that the system is centered.

2) Move the rudder trim knob until rig pin R-5 can be installed freely.

(9) Make sure that the rudder trim indicator is at 0.00 +/- 0.25 unit of trim.

(a) If indicator is not at 0.00 +/- 0.25 unit of trim, adjust the trim indicator per AILERON/RUDDER TRIM CONTROL MODULE, SUBJECT 27-11-94.

SUBTASK 27-21-00-860-026

(10) Set the FLT CONTROL A and B switches to OFF.

SUBTASK 27-21-00-480-005

(11) Install the rig pins R-3, and R-4 (Figure 501).

(a) If only one rig pin can be inserted freely, adjust the bus rod, do this task: Rudder Forward Quadrant Adjustment, TASK 27-21-00-820-801.

(b) If both rig pins cannot be installed freely, adjust the control cables RA and RB, do this task: Rudder Control Cables RA and RB Adjustment, TASK 27-21-00-820-803.

(12) Install the rig pins R-1 and R-2.

(a) If you cannot install the rig pins freely, adjust the pedal tension rods, do this task: Rudder Pedals Adjustment, TASK 27-21-00-820-802.

SUBTASK 27-21-00-080-003

(13) Remove the rig pins R-1, R-2, R-3, R-4, and R-5.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Control Rods for the Main PCU Adjustment

SUBTASK 27-21-00-860-027

> **WARNING** MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Set the FLT CONTROL B switch to ON.

SUBTASK 27-21-00-210-002

(2) Make sure that the YAW DAMPER switch on the forward overhead panel, P5-3, is in the OFF position and the YAW DAMPER light is illuminated.

SUBTASK 27-21-00-860-028

(3) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

Do not change the position of the rudder trim knob until the Main PCU control rods and the Standby PCU control rod have been adjusted.

SUBTASK 27-21-00-820-006

(4) Do these steps to put the rudder trailing edge to the left of the index plate:

NOTE: Always start the adjustment of the control rod with the rudder at this position.

(a) Loosen the clamp nut [35] on the lower main rudder PCU control rod [36] until you can rotate the sleeve [37].

(b) Rotate the sleeve [37] until the rudder trailing edge is between 0.30 in. (7.6 mm) to 0.50 in. (12.7 mm) to the left of the index plate.

NOTE: One full rotation of the sleeve will move the rudder trailing edge 0.18 degree (0.18 inch). Rotate the sleeve clockwise (looking aft) will move the rudder trailing edge left. Rotate the sleeve counter-clockwise (looking aft) will move the rudder trailing edge right.

SUBTASK 27-21-00-860-029

(5) Set the FLT CONTROL B switch to OFF and FLT CONTROL A switch to ON.

SUBTASK 27-21-00-820-007

(6) Do these steps to put the rudder trailing edge to the left of the index plate:

NOTE: Always start the adjustment of the control rod with the rudder at this position.

(a) Loosen the clamp nut [35] on the upper main rudder PCU control rod [36] until you can rotate the sleeve [37].

(b) Rotate the sleeve [37] until the rudder trailing edge is between 0.30 in. (7.6 mm) - 0.50 in. (12.7 mm) to the left of the index plate.

NOTE: One full rotation of the sleeve will move the rudder trailing edge 0.18 degree (0.18 inch). Rotate the sleeve clockwise (looking aft) will move the rudder trailing edge left. Rotate the sleeve counter-clockwise (looking aft) will move the rudder trailing edge right.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-030

(7) Set the FLT CONTROL A switch to OFF.

SUBTASK 27-21-00-080-004

(8) Install the rig pin R-5 in the rudder feel and centering unit.

SUBTASK 27-21-00-980-002

(9) Push the rudder trailing edge to the right of the index plate 10 in. (254 mm) or more to rotate the overrides out of the detent position then smoothly return the rudder back to the center position.

(10) Do not move the rudder surface again until both of the main rudder PCU control rod [36] have been adjusted.

SUBTASK 27-21-00-080-005

(11) Remove the rig pin R-5.

SUBTASK 27-21-00-860-031

(12) Set the FLT CONTROL A switch to ON.

SUBTASK 27-21-00-820-008

(13) Do this adjustment to the upper main rudder PCU control rod [36]:

(a) Loosen the clamp nut [35] on the upper main rudder PCU control rod [36] until you can rotate the sleeve [37].

(b) Rotate the sleeve [37] until the rudder trailing edge is within the center of the index plate.

1) Make sure that the rudder trailing edge does not go beyond the center of the index plate on to the right side. If this happens, start the adjustment again with the rudder trailing edge positioned to the left of the index plate.

(c) Tighten the clamp nut [35] on the upper main rudder PCU control rod [36].

(d) Do not torque the clamp nut [35] at this time.

(e) Make sure that the rudder trailing edge is still within the center of the index plate.

SUBTASK 27-21-00-860-032

(14) Set the FLT CONTROL A switch to OFF and set the FLT CONTROL B switch to ON.

SUBTASK 27-21-00-820-009

(15) Do this adjustment to the lower main rudder PCU control rod [36]:

(a) Loosen the clamp nut [35] on the lower main rudder PCU control rod [36] until you can rotate the sleeve [37].

(b) Rotate the sleeve [37] until the rudder trailing edge is within the center of the index plate.

1) Make sure that the rudder trailing edge does not go beyond the center of the index plate on to the right side. If this happens, start the adjustment again with the rudder trailing edge positioned to the left of the index plate.

(c) Tighten the clamp nut [35] on the lower main rudder PCU control rod [36].

(d) Do not torque the clamp nut [35] at this time.

(e) Make sure that the rudder trailing edge is still within the center of the index plate.

SUBTASK 27-21-00-820-010

(16) Set the FLT CONTROL A switch to ON.

(a) Make sure that the rudder trailing edge is still within the center of the index plate.

SUBTASK 27-21-00-820-011

(17) Set the FLT CONTROL B switch to OFF.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the rudder trailing edge is still within the center of the index plate.

SUBTASK 27-21-00-820-012

(18) Set the FLT CONTROL A switch to OFF and FLT CONTROL B switch to ON.

(a) Make sure that the rudder trailing edge is still within the center of the index plate.

SUBTASK 27-21-00-860-033

(19) Set the FLT CONTROL A switch to ON.

SUBTASK 27-21-00-420-001

(20) Tighten the clamp nut [35] on the upper and lower main rudder PCU control rod [36] to 100 in-lb (11.3 N·m) - 150 in-lb (16.9 N·m).

SUBTASK 27-21-00-860-034

(21) Tap on the rudder pedals lightly to put the rudder pedals to the neutral position.

SUBTASK 27-21-00-860-035

(22) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-21-00-700-001

(23) Verify voltage between pin 18 and pin 20 of connector, D10064, on the E1-1 shelf is between 4.38 VDC to 5.62 VDC.

(a) If the voltage measured is not between 4.38 VDC to 5.62 VDC adjust the main rudder PCU control rod [36].

SUBTASK 27-21-00-820-013

(24) Make sure that you can install and remove rig pin R-5 freely.

H. Put the Airplane Back To Its Usual Condition

SUBTASK 27-21-00-820-014

(1) If it is necessary check the standby rudder PCU, do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

SUBTASK 27-21-00-860-036

(2) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

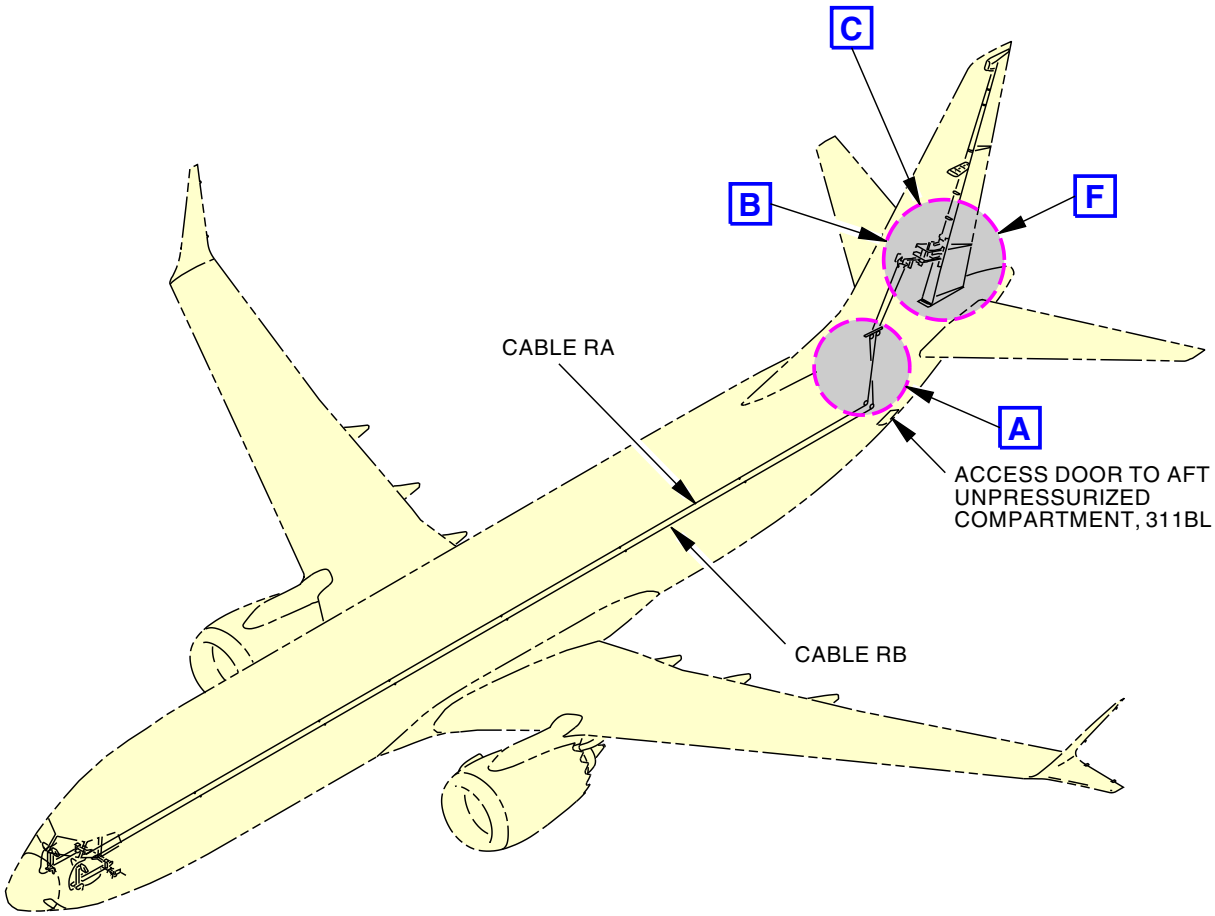
SUBTASK 27-21-00-410-003

(3) Close these access panels:

Number	Name/Location
324CL	Vertical Fin, Access
324DL	Trailing Edge Access

——— END OF TASK ———

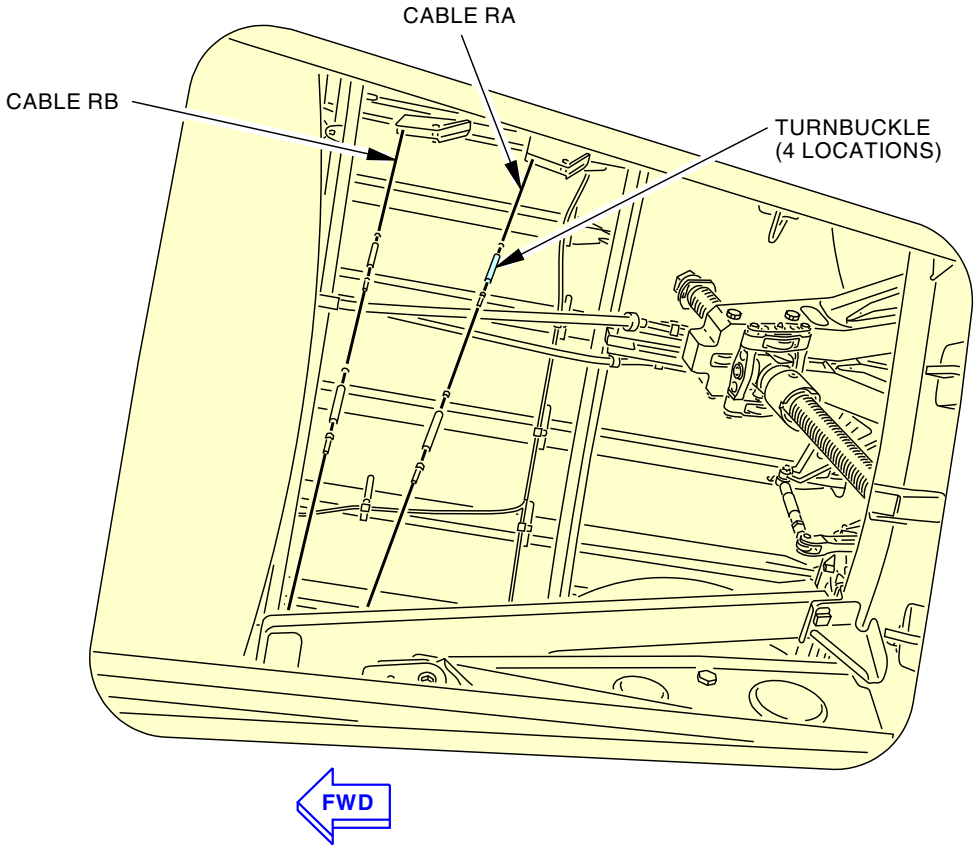
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412355 S00061530512_V1

Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 1 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



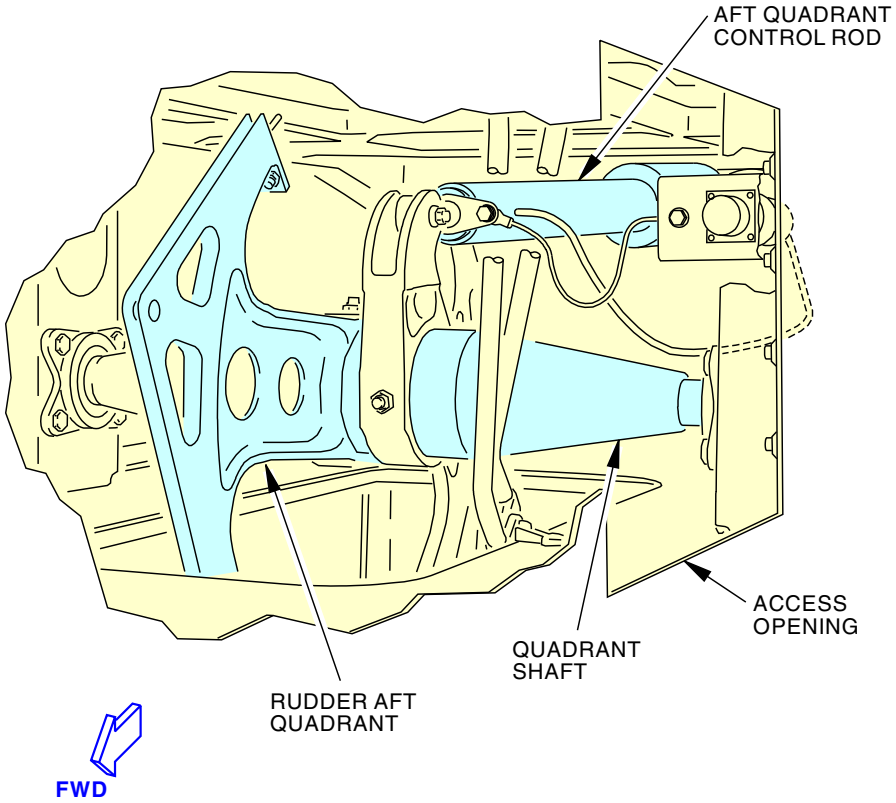
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412356 S00061530513_V1

**Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 2 of 8)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



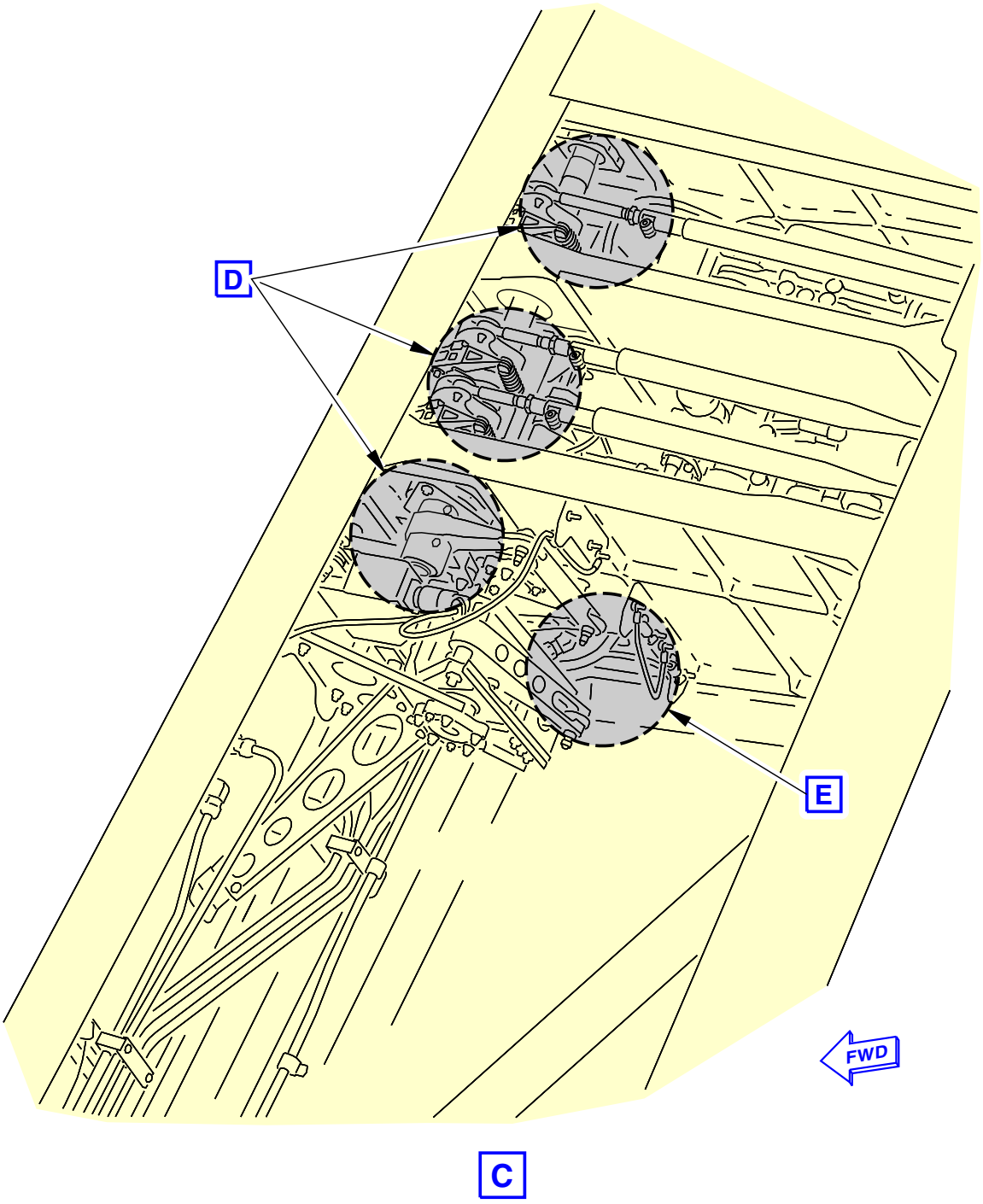
RUDDER AFT QUADRANT

B

2412357 S00061530514_V1

Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 3 of 8)

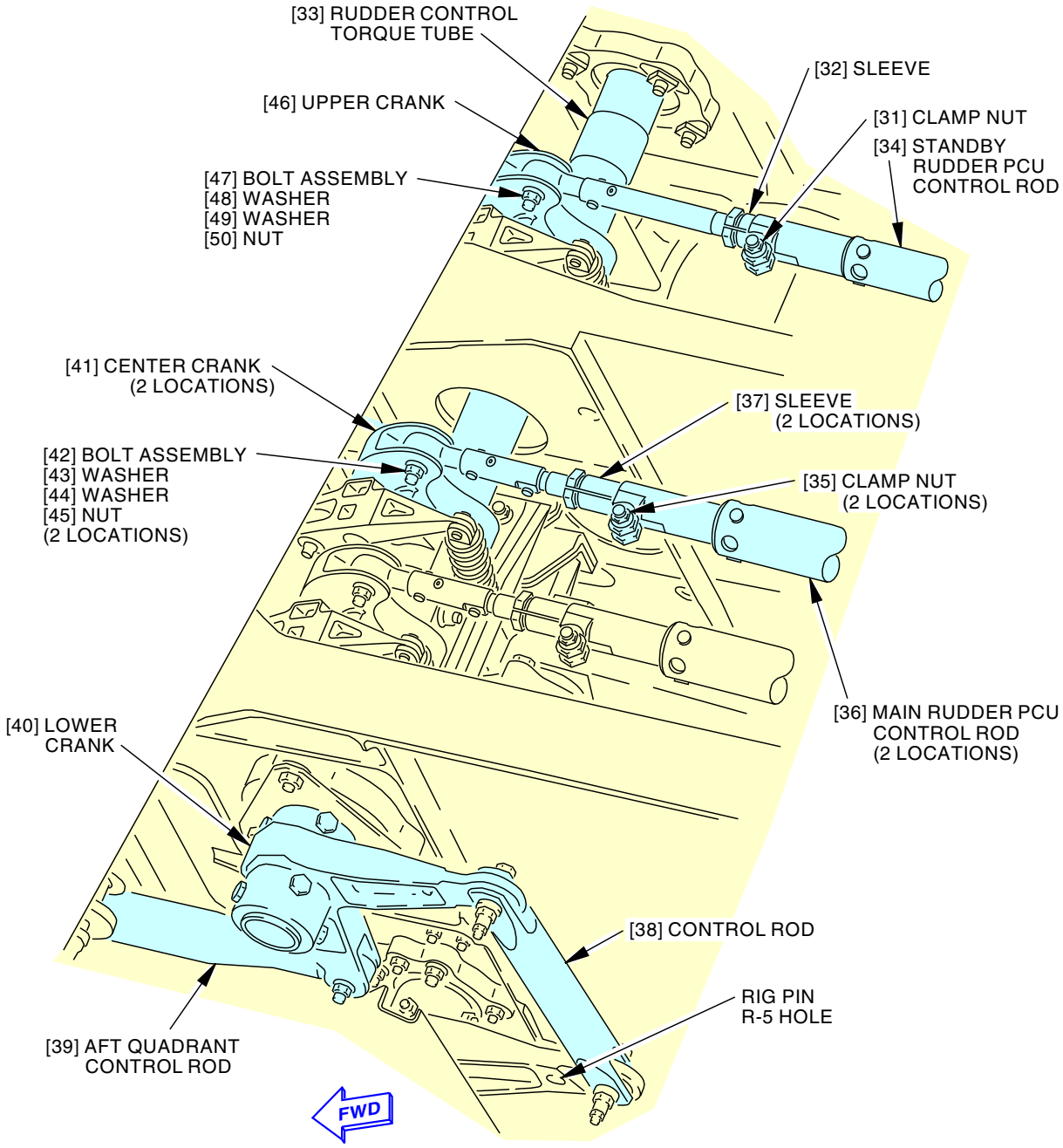
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412358 S00061530515_V1

Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 4 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



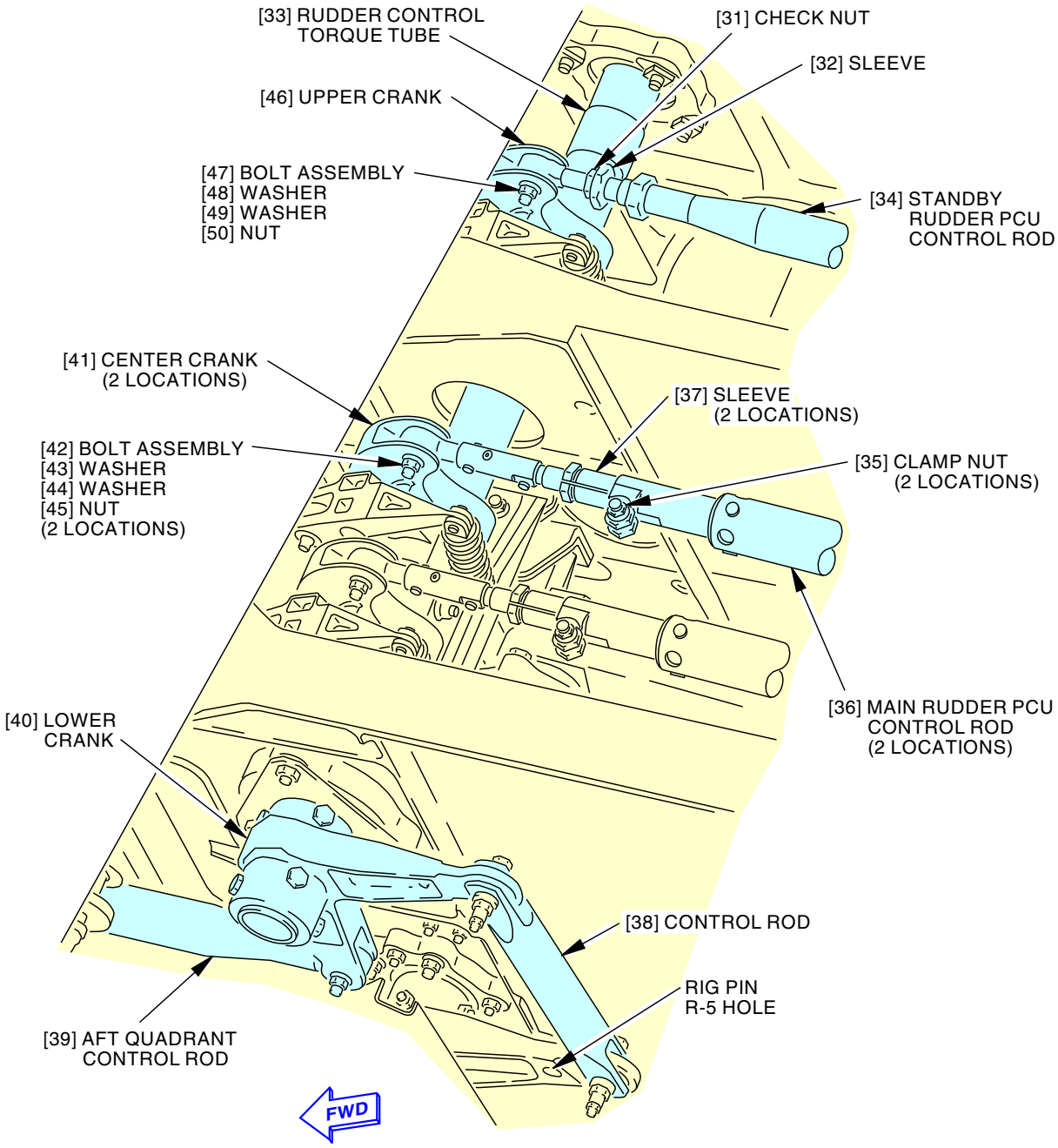
RUDDER CONTROL TORQUE TUBE

D

2412359 S00061530516_V1

Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 5 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



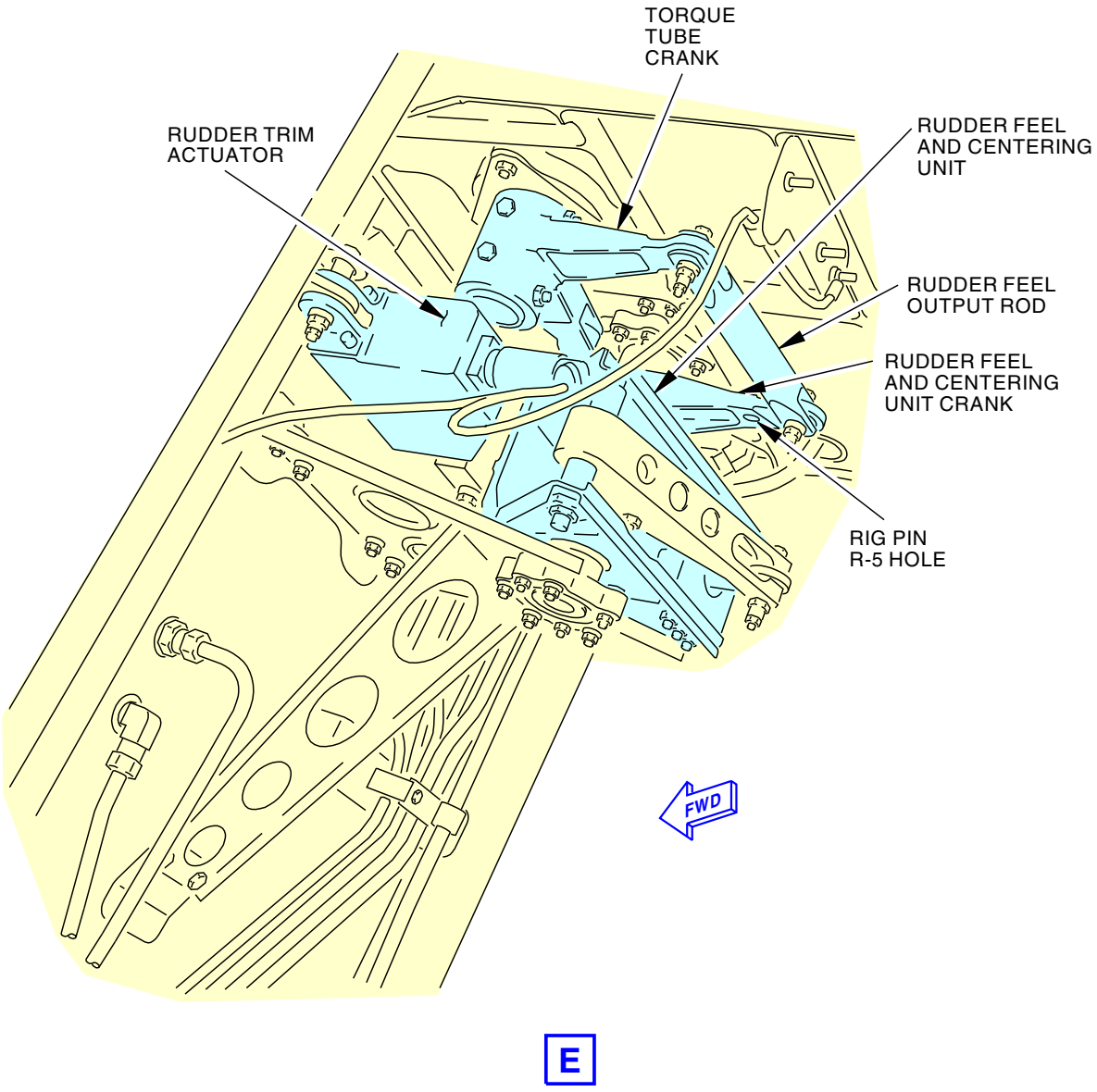
RUDDER CONTROL TORQUE TUBE

D

2412360 S00061530517_V1

Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 6 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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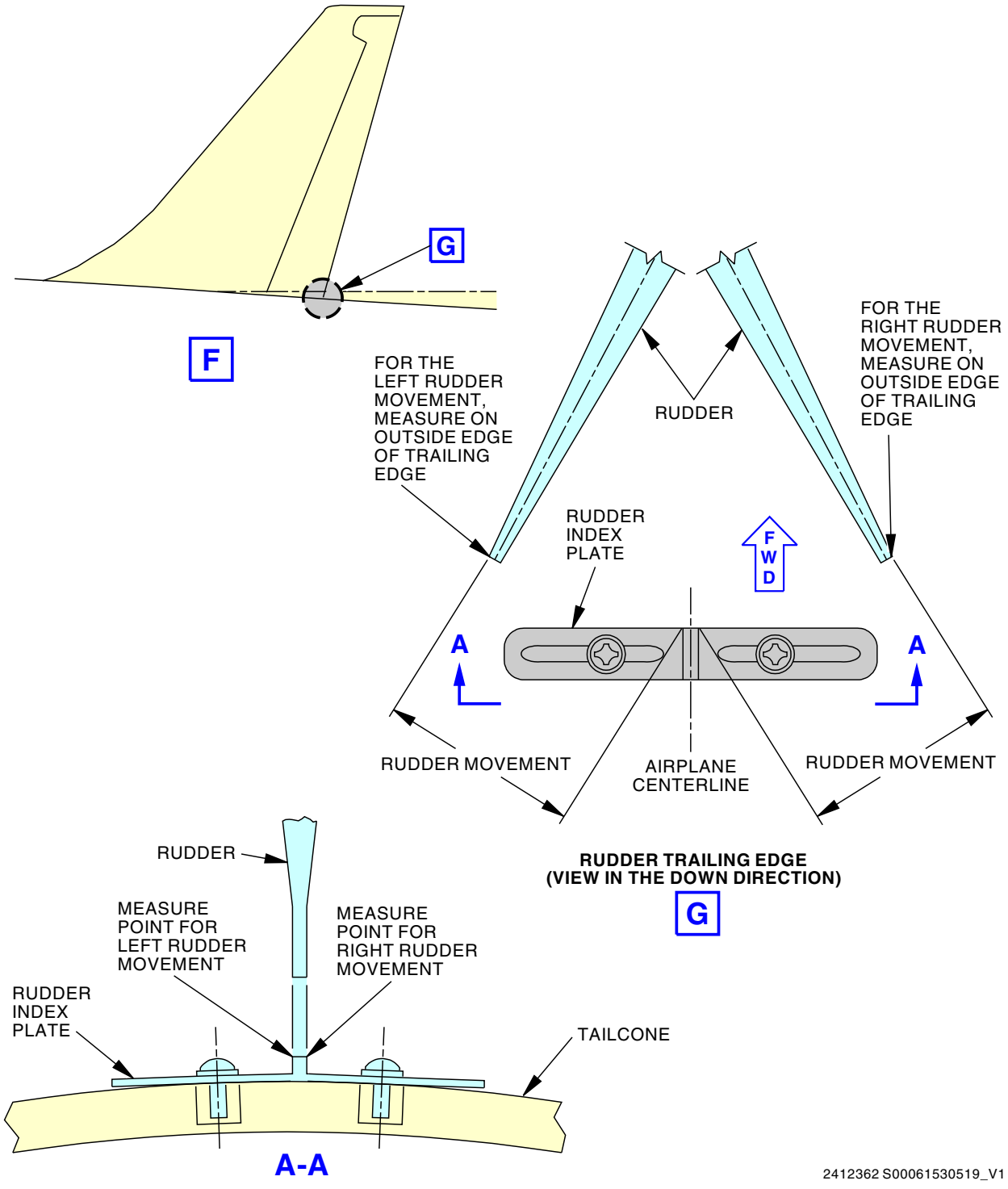
Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 7 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Control System Aft Components
Figure 502/27-21-00-990-805 (Sheet 8 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-820-805

6. Control Rod for Standby Rudder Power Control Unit Adjustment

(Figure 502)

A. General

(1) Use this task to adjust the control rod for the standby rudder power control unit (PCU). The rudder main PCU must be adjusted before you adjust the standby rudder PCU.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324CL	Vertical Fin, Access
324DL	Trailing Edge Access

E. Prepare for the Adjustment

SUBTASK 27-21-00-010-012

(1) To get access to the standby rudder PCU, do this step:

Open this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-00-010-013

(2) To get access to the rudder feel and centering unit, do this step:

Open this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-039

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Pressurize the standby rudder hydraulic system. To pressurize it, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-00-860-040

(4) Move the rudder pedals through ten cycles to flush and bleed the standby rudder PCU.

SUBTASK 27-21-00-860-041

(5) Set the FLT CONTROL A and B switches to the ON position.

SUBTASK 27-21-00-860-042

(6) Make sure that the rudder trim indicator is in the neutral position (Figure 501).

SUBTASK 27-21-00-480-006

(7) Make sure that you can install and remove the rig pin R-5 freely with no movement of the rudder feel and centering unit output crank (Figure 502).

SUBTASK 27-21-00-860-043

(8) Align the ADIRS. To align the ADIRS, do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

F. Control Rod of the Standby Rudder PCU Adjustment

SUBTASK 27-21-00-710-005

(1) Adjust the standby rudder PCU control rod [34] of the standby rudder PCU:

(a) Set FLT CONTROL A and B switches to the STBY RUD position.

(b) Set the YAW DAMPER switch on the forward overhead panel, P5-3, to the ON position.

1) Make sure that the YAW DAMPER light goes out after approximately 2 seconds.

(c) Move the control wheel approximately 30 degrees clockwise.

1) Make sure that the rudder moves to the right.

(d) Release the control wheel.

(e) Do these steps to initiate a zero yaw damper command output from the stall Management Yaw Damper No. 2 (SMYD No. 2), M1748:

NOTE: The SMYD No. 2 is installed on the E3-2 electrical equipment rack.

1) Push and release the ON/OFF button on the front BITE display of the SMYD No. 2.

2) Push and release the up arrow or down arrow button until the GROUND TEST shows on the display.

3) Push the YES button to get access to the ground test option.

4) Push and release the up arrow or down arrow button until the SERVO TEST? shows on the display.

5) Push the YES button to start the servo test.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER. THE RUDDER CAN MOVE QUICKLY WHEN YOU PUSH THE "YES" BUTTON ON THE SMYD NO. 2. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

6) Push the YES button when the RUDDER CLEARED? shows on the display.

7) Push the YES button when the FLT CTRL A STBY? shows on the display.

8) Push the YES button when the FLT CTRL B STBY? shows on the display.

9) Push the YES button when YAW DMPR ENGAGED? shows on the display.

10) Push the YES button when the ZERO COMMAND? shows on the display.

NOTE: A yaw damper command value and LVDT position will show for 10 seconds each, then the END ZERO COMMAND? will show on the display. You can push the NO button to show these values again.

SUBTASK 27-21-00-820-015

(2) Do this adjustment to the standby rudder PCU control rod [34] (Figure 502):

(a) Loosen the clamp nut [31] on the standby rudder PCU control rod [34] until you can rotate the sleeve [32].

(b) Rotate the sleeve [32] until the rudder trailing edge is within the center of the index plate.

NOTE: One full rotation of the sleeve [32] will move the rudder trailing edge 0.18 degree (0.18 inch). Rotate the sleeve [32] clockwise (looking aft) will move the rudder trailing edge left. Rotate the sleeve [32] counter-clockwise (looking aft) will move the rudder trailing edge right.

(c) Tighten the clamp nut [31] on the standby rudder PCU control rod [34].

1) Do not torque the clamp nut [31] at this time.

(d) Make sure that the rudder trailing edge is still within the center of the index plate.

(e) Tighten the clamp nut [31] on the standby rudder PCU control rod [34] to 100 in-lb (11.3 N·m) - 150 in-lb (16.9 N·m).

SUBTASK 27-21-00-820-016

(3) Do this adjustment to the standby rudder PCU control rod [34] (Figure 502):

(a) If the rudder trailing edge is greater than 0.50 in. (12.7 mm) from the neutral position, then do this coarse adjustment to the standby rudder PCU control rod [34]:

WARNING MAKE SURE THAT YOU SET THESE SWITCHES TO THE OFF POSITION BEFORE YOU DISCONNECT THE CONTROL ROD FROM THE STANDBY RUDDER PCU. THE CONTROL ROD CAN MOVE QUICKLY AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

1) Set the FLT CONTROL A and B switches to OFF.

2) Loosen the two checknut [31] on the standby rudder PCU control rod [34].

3) Remove the nut [50], washer [49], washer [48], and bolt assembly [47] to disconnect the standby rudder PCU control rod [34] from the upper crank [46] of the rudder control torque tube [33].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Turn the control rod end for half a turn relative to the sleeve [32]; and turn the sleeve [32] and the control rod end together for half a turn.

NOTE: The sum of half turn of each is equal to 0.67 in. (17.0 mm) at the rudder trailing edge.

5) Keep number of threads that you can see in the two parts are approximately same.

6) Install the bolt assembly [47] with the bolt head end up, washer [48] (under bolt), washer [49] (under nut), and nut [50] to connect the standby rudder PCU control rod [34] to the upper crank [46].

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER. THE RUDDER CAN MOVE QUICKLY WHEN YOU PUSH THE `YES` BUTTON ON THE SMYD NO. 2. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

7) Set the FLT CONTROL A and B switches to the STANDBY RUD position.

(b) If the rudder trailing edge is less than 0.50 in. (12.7 mm) from the neutral position, then do this fine adjustment to the standby rudder PCU control rod [34]:

1) Loosen the checknut [31] on the standby rudder PCU control rod [34].

2) Turn the adjustable sleeve [32] until the two sides of the rudder trailing edge are in the width of the rudder index tab.

3) Tighten the two checknut [31].

(c) Do a check for minimum thread engagement of the rod. Make sure that you can see the rod from the inspection hole in the tube.

SUBTASK 27-21-00-820-017

(4) Make sure that you can install and remove the rig pin R-5 freely.

SUBTASK 27-21-00-860-111

(5) Push and release the ON/OFF button to turn off the SMYD BITE display.

SUBTASK 27-21-00-860-112

(6) Set the YAW DAMPER switch, on the P5-3 overhead panel, to the OFF position.

SUBTASK 27-21-00-860-044

(7) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-00-820-018

(8) Set the FLT CONTROL A and B switches to ON.

(a) Make sure that the STBY RUD ON light is not illuminated after 5 seconds.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-480-007

(1) Remove the rig pin R-5.

SUBTASK 27-21-00-860-045

(2) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-410-004

(3) Close these access panels:

Number	Name/Location
324CL	Vertical Fin, Access
324DL	Trailing Edge Access

END OF TASK

TASK 27-21-00-700-801

7. Rudder Pedal Adjustment and Limit Travel Test

(Figure 503)

A. General

(1) Use this test to make sure that the rudder pedals can move through their full travel and pedal adjustment crank operates correctly.

(2) It is recommended to measure pedal travel by projecting a line from the pivot point of the pedal normal to the heel rest wear plate at each pedal position and marking the pedal position on a piece of masking tape that applied to the heel rest. Measuring the distance between marks is the measured pedal travel.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Rudder Pedal Adjustment and Limit Travel Test

SUBTASK 27-21-00-420-007

(1) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism (TASK 32-00-01-480-801).

NOTE: The Nose Landing Gear (NLG) will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism. The nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-046

(2) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-00-730-002

(3) Do these steps to set the jackshaft yokes to the middle positions:

NOTE: The middle positions of the jackshaft yokes is where the number of turns of the shaft from the full forward and full aft adjustment are the same.

(a) Turn the rudder pedal adjustment cranks for both the captain and first officer to move the rudder pedals full forward.

(b) Turn the rudder pedal adjustment cranks to move the rudder pedals full aft.

1) Keep a record of number of turns.

(c) Turn the rudder pedal adjustment cranks back half of the number of recorded turns to set the jackshaft yoke to the middle position.

(d) Make sure that you can install rig pins R-1 and R-2 easily.

(e) Remove the rig pins R-1 and R-2.

SUBTASK 27-21-00-730-003

(4) Do the captain's rudder pedal adjustment and the limit travel.

(a) Make sure that the rudder trim indicator is at the zero unit of trim.

NOTE: Rudder in neutral position.

(b) Turn the rudder pedal adjustment crank to move the captain's pedals full forward.

(c) Push the captain's left pedal forward until it touches the stop and hold.

1) Measure the forward travel of the captain's left pedal from the middle position of the pedal adjustment.

2) Make sure that the forward travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the captain's left pedal.

(d) Push the captain's right pedal forward until it touches the stop and hold.

1) Measure the forward travel of the captain's right pedal from the middle position of the pedal adjustment.

2) Make sure that the forward travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the captain's right pedal.

(e) Push forward on both the captain's left and right pedals at the same time.

1) Apply a light load of approximately 2.5 lb (1.1 kg) on each pedal equally and simultaneously.

(f) Turn the rudder pedal adjustment crank to move the captain's pedals to full aft position.

1) Turn the crank at a rate of one revolution (turn) per second.

(g) Make sure that the adjustment crank moves smooth and without any chatter.

(h) Push the captain's left pedal forward until it touches the stop and hold.

1) Measure the aft travel of the captain's right pedal from the middle position of the pedal adjustment.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the aft travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the captain's left pedal.

(i) Push the captain's right pedal forward until it touches the stop and hold.

1) Measure the aft travel of the captain's left pedal from the middle position of the pedal adjustment.

2) Make sure that the aft travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the captain's right pedal.

(j) Turn the rudder pedal adjustment crank to move the captain's pedals to full forward position.

NOTE: No load is applied to the rudder pedals during this step.

1) Turn the crank at a rate of one revolution (turn) per second.

(k) Make sure that the adjustment crank only chattered slightly and there is no binding when the crank is turned.

NOTE: The tendency to chatter will increase as the rate of adjustment increases.

SUBTASK 27-21-00-730-004

(5) Do the first officer's rudder pedal adjustment and the limit travel.

(a) Make sure that the rudder trim indicator is at the zero unit of trim.

NOTE: Rudder in neutral position.

(b) Turn the rudder pedal adjustment crank to move the first officer's pedals full forward.

(c) Push the first officer's left pedal forward until it touches the stop and hold.

1) Measure the forward travel of the first officer's left pedal from the middle position of the pedal adjustment.

2) Make sure that the forward travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the first officer's left pedal.

(d) Push the first officer's right pedal forward until it touches the stop and hold.

1) Measure the forward travel of the first officer's right pedal from the middle position of the pedal adjustment.

2) Make sure that the forward travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the first officer's right pedal.

(e) Push on both the first officer's left and right pedals at the same time.

1) Apply a light load of approximately 2.5 lb (1.1 kg) each pedal equally and simultaneously.

(f) Turn the rudder pedal adjustment crank to move the first officer's pedals to full aft position.

1) Turn the crank at a rate of one revolution (turn) per second.

(g) Make sure that the adjustment crank moves smooth and without any chatter.

(h) Turn the rudder pedal adjustment crank to move the first officer's pedals to full aft position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) Push the first officer's left pedal forward until it touches the stop and hold.

1) Measure the aft travel of the first officer's right pedal from the middle position of the pedal adjustment.

2) Make sure that the aft travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the first officer's left pedal.

(j) Push the first officer's right pedal forward until it touches the stop and hold.

1) Measure the aft travel of the first officer's left pedal from the middle position of the pedal adjustment.

2) Make sure that the aft travel, which measured at the pedal pivot point is at a minimum of 6.04 in. (153.4 mm).

3) Release the first officer's right pedal.

(k) Turn the rudder pedal adjustment crank to move the first officer's pedals to full forward position.

NOTE: No load is applied to the rudder pedals during this step.

1) Turn the crank at a rate of one revolution (turn) per second.

(l) Make sure that the adjustment crank only chatters slightly and there is no binding when the crank is turned.

NOTE: The tendency to chatter will increase as the rate of adjustment increases.

SUBTASK 27-21-00-860-047

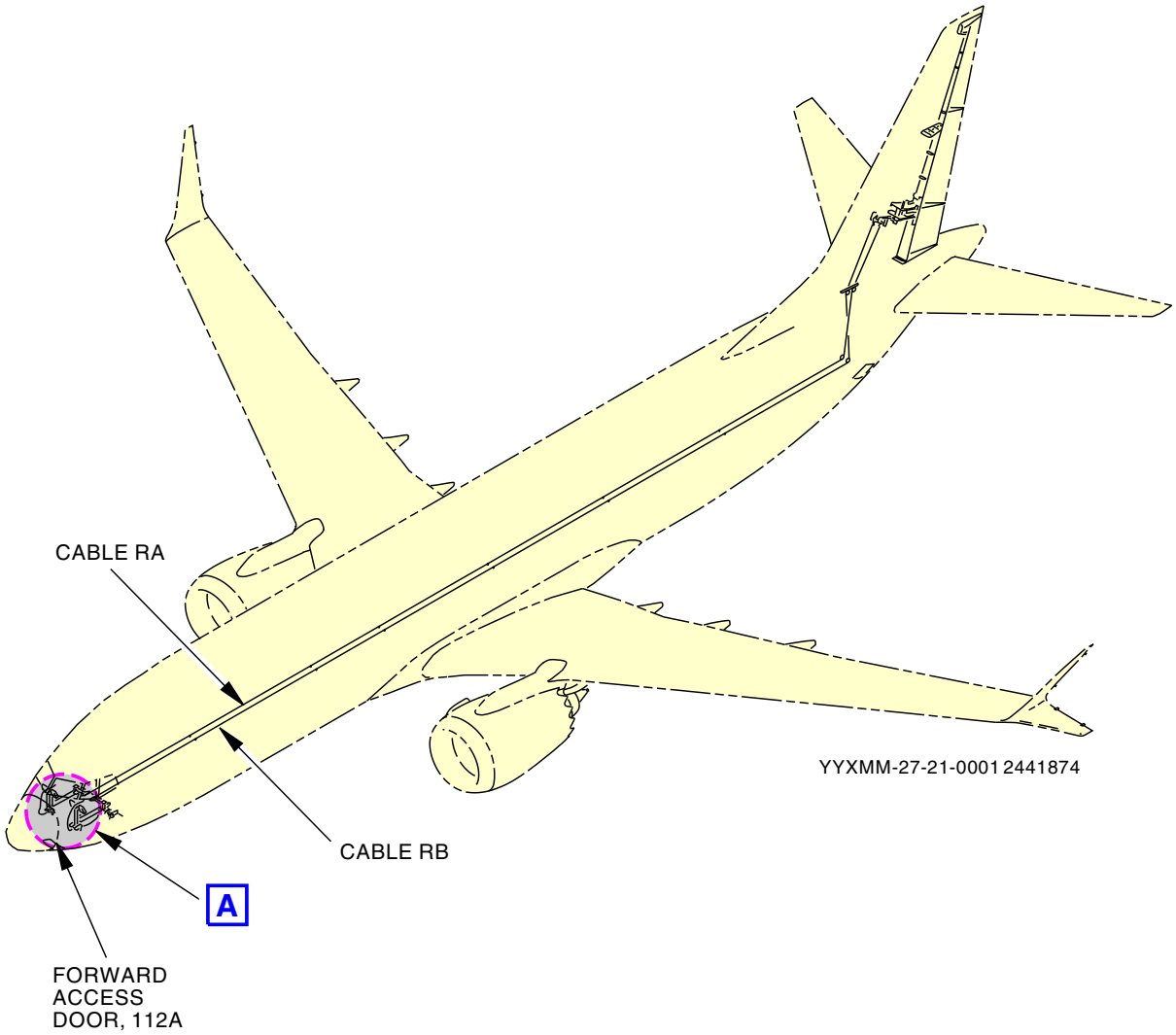
(6) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-020-001

(7) Remove the NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism (TASK 32-00-01-080-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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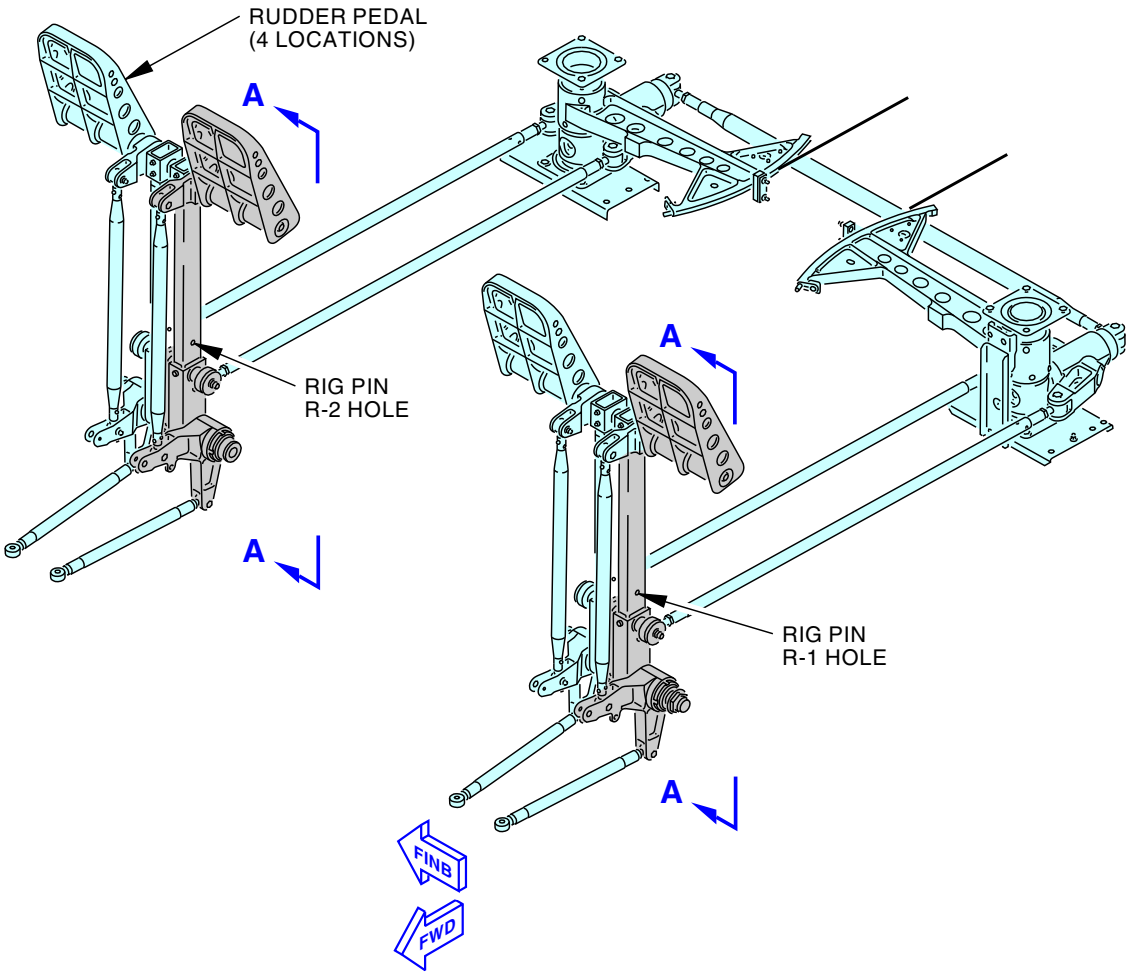
Rudder Control System Forward Components
Figure 503/27-21-00-990-806 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



PEDAL SHAFTS AND FORWARD QUADRANTS

A

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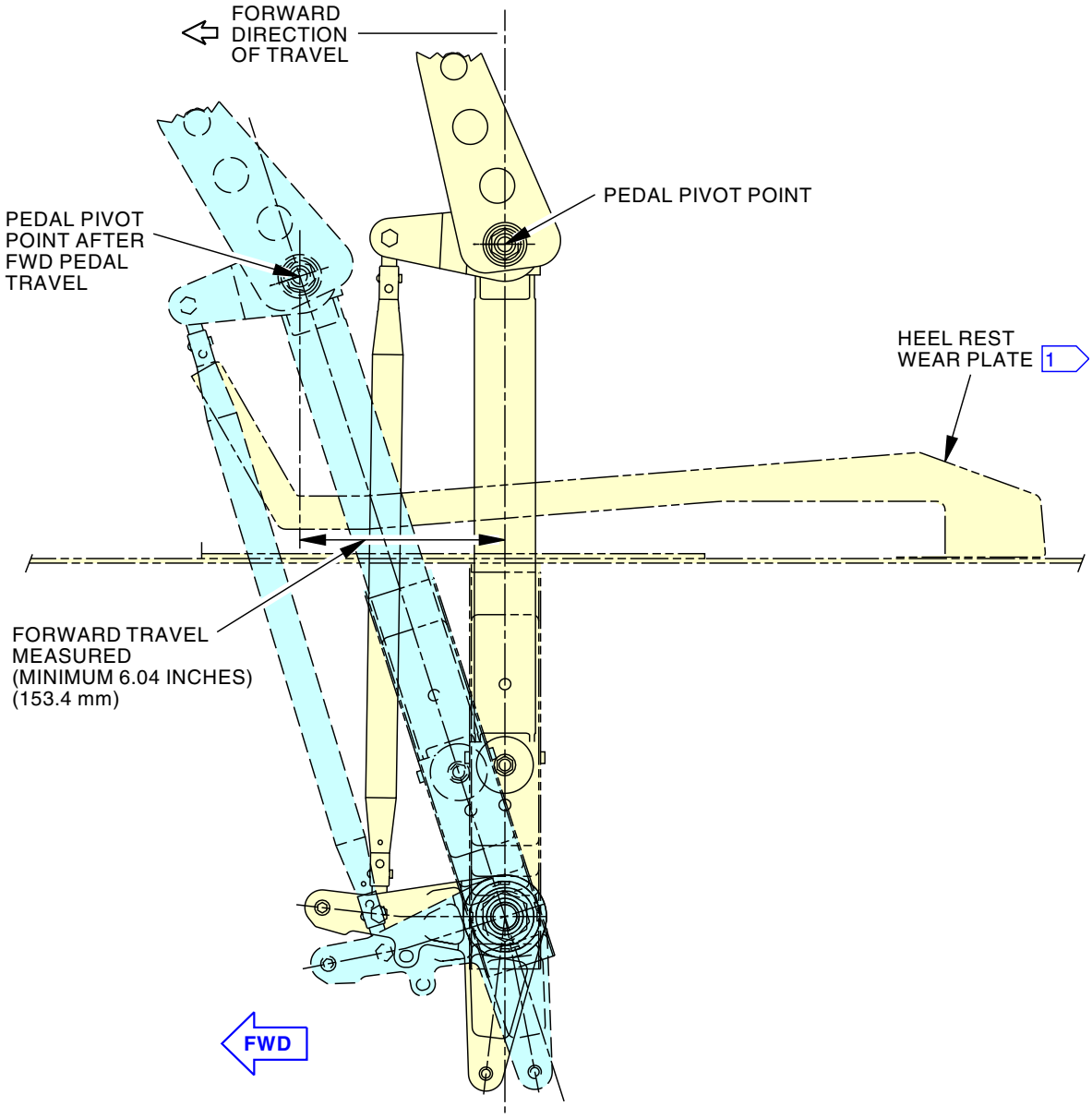
Rudder Control System Forward Components
Figure 503/27-21-00-990-806 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

A-A

1 MASKING TAPE CAN BE APPLIED TO THE HEEL REST WEAR PLATE TO MARK THE PEDAL POSITION FOR PEDAL TRAVEL MEASUREMENT.

2412365 S00061530524_V2

Rudder Control System Forward Components
Figure 503/27-21-00-990-806 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-802

8. Rudder Hinge Bearing and PCU Bearing Freeplay

(Figure 504)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to check the freeplay of the rudder control system.

(2) This test will have two rudder left position readings. This will verify that the indicator does not move during the test.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy
STD-1238	Indicator - Dial
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Rudder Hinge Bearing and PCU Bearing Freeplay

SUBTASK 27-21-00-420-002

(1) Install the, NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism as given in: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

NOTE: Nose landing gear will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

Nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-048

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-00-730-005

(3) Do the rudder hinge bearing and Power Control Unit (PCU) bearing freeplay:

(a) Make sure that the rudder and rudder pedals are in the neutral position.

1) If it is necessary, move the rudder pedals lightly to set the rudder to the neutral position.

(b) Make sure that the rudder trim indicator is at zero units of trim.

(c) Make sure not to move rudder pedals during this test.

(d) Attach the dial indicator, STD-1238, with the mount, STD-1279, at the lower end of the rudder trailing edge.

CAUTION USE A LOADING BLOCK AND DO NOT PUT MORE THAN 50 LBF (222 N) ON THE RUDDER WHEN YOU MOVE THE RUDDER SURFACE BY AN EXTERNAL FORCE. APPLY THE EXTERNAL FORCE APPROXIMATELY BETWEEN 6 TO 8 INCHES (150 TO 200 MILLIMETERS) FROM THE BOTTOM OF THE TRAILING EDGE AND APPROXIMATELY 3 INCHES (80 MILLIMETERS) FORWARD OF THE TRAILING EDGE. IF YOU DO NOT APPLY FORCE AT THIS LOCATION, YOU CAN CAUSE DAMAGE TO THE RUDDER.

(e) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder to the left side with a force of 12 lbf (53.4 N) ± 4.0 lbf (17.8 N) and release slowly.

1) Make a record of the rudder position on the dial indicator.

(f) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder to the right side with a force of 12 lbf (53.4 N) ± 4.0 lbf (17.8 N) and release slowly.

1) Make a record of the rudder position on the dial indicator.

(g) Make sure that the total left and right freeplay between the left and right positions is not more than 0.05 in. (1.3 mm).

1) If the total left and right freeplay is more than 0.05 in. (1.3 mm), then replace the bearings on the rudder hinge or power control units and repeat this test.

(h) Use a block, STD-1278 and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder to the left side with a force of 12 lbf (53.4 N) ± 4.0 lbf (17.8 N) and release slowly.

NOTE: This check compares the two left positions to verify that the dial indicator did not move during the test. If the check shows that the dial indicator had moved, the test has to be repeated.

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1) Make a record of the rudder position on the dial indicator.

(i) Make sure that the difference between the two left positions is not more than 0.03 in. (0.8 mm).

1) If the difference is more than 0.03 in. (0.8 mm), then repeat the freeplay check.

(j) Remove the dial indicator, STD-1238, from the rudder.

SUBTASK 27-21-00-860-049

(4) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-860-050

(5) Remove the, NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism as given in: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

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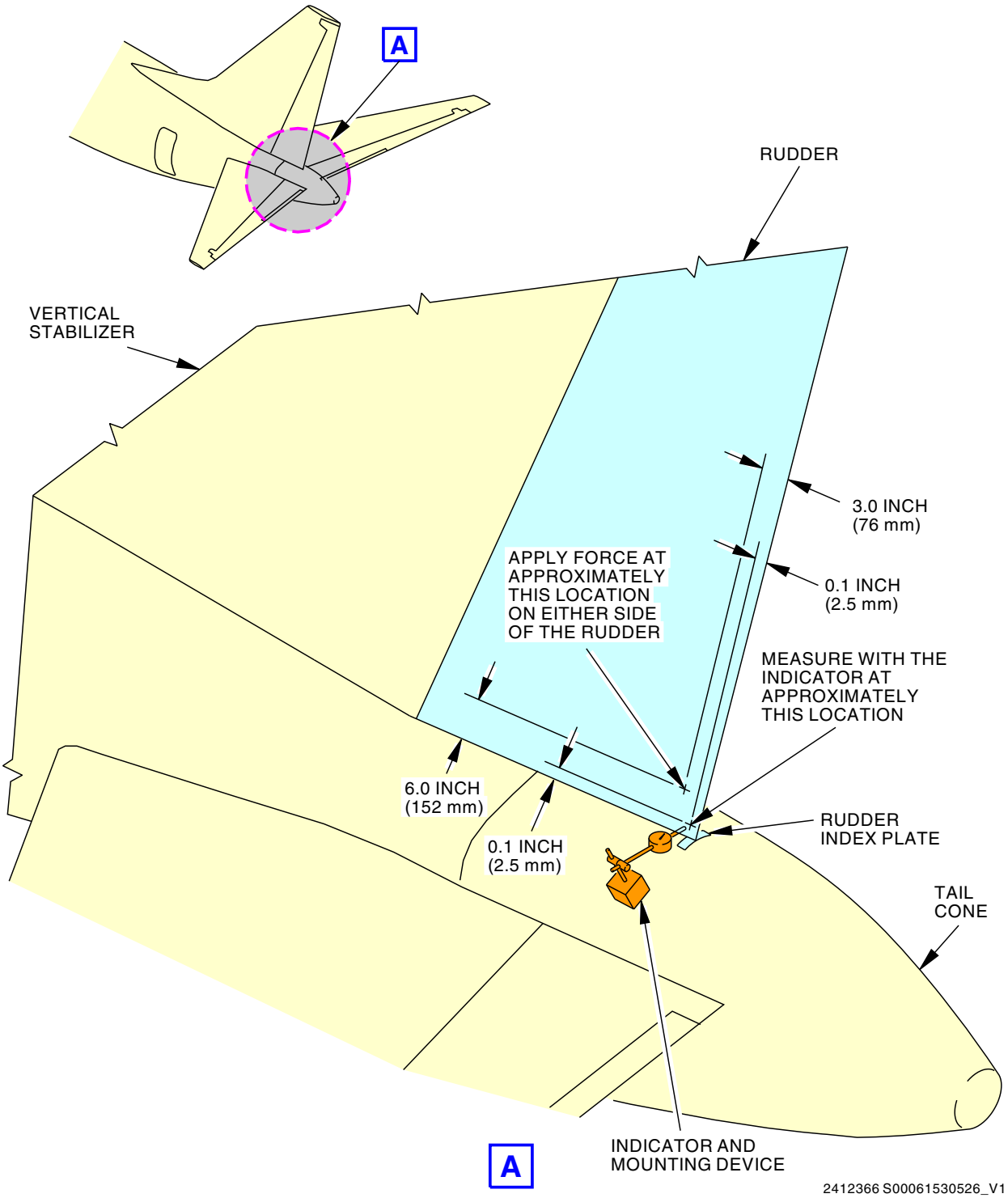

Rudder Hinge and PCU Bearing Freeplay Check
Figure 504/27-21-00-990-807

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-803

9. Rudder Centering Test

A. General

(1) Use this test to make sure the rudder is in its center position.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

E. Rudder Centering Test

SUBTASK 27-21-00-420-003

(1) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism (TASK 32-00-01-480-801).

NOTE: The nose landing gear (NLG) will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

The nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

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SUBTASK 27-21-00-860-052

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the rudder hydraulic systems A and B (TASK 27-21-00-800-801).

SUBTASK 27-21-00-860-053

(3) Align the ADIRS (TASK 34-21-00-820-802 or TASK 34-21-00-820-801 or TASK 34-21-00-820-803).

SUBTASK 27-21-00-730-006

(4) Do the test of the rudder centering test:

(a) Make sure the rudder is in the neutral position.

1) If it is necessary, move the rudder pedals lightly to set the rudder to the neutral position.

(b) Make sure that the rudder trim indicator is at 0.0 ± 0.25 units of trim.

(c) Move the captain's left rudder pedal approximately 0.5 in. (12.7 mm) forward and release quickly.

1) Make sure the rudder goes back to the neutral position within 0.00 ±0.05 in. (0.00 ±1.27 mm).

(d) Move the captain's right rudder pedal approximately 0.5 in. (12.7 mm) forward and release quickly.

1) Make sure the rudder goes back to the neutral position within 0.00 ±0.05 in. (0.00 ±1.27 mm).

(e) Set FLT CONTROL A and B switches to the STBY RUD position.

1) Make sure that the STANDBY HYD LOW PRESSURE light on the forward overhead panel, P5-3, goes off.

(f) Set the YAW DAMPER switch on the forward overhead panel, P5-3, to the ON position.

(g) Do these steps to initiate a zero yaw damper command output from the stall Management Yaw Damper No. 2 (SMYD No. 2), M1748:

NOTE: The SMYD No. 2 is installed on the E3-2 electrical equipment rack.

1) Push and release the ON/OFF button on the front BITE display of the SMYD No. 2.

2) Push and release the up arrow or down arrow button until the GROUND TEST shows on the display.

3) Push the YES button to get access to the ground test option.

4) Push and release the up arrow or down arrow button until the SERVO TEST? shows on the display.

5) Push the YES button to start the servo test.

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WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE RUDDER. THE RUDDER CAN MOVE QUICKLY WHEN YOU PUSH THE `YES` BUTTON ON THE SMYD NO. 2. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

6) Push the YES button when the RUDDER CLEARED? shows on the display.

7) Push the YES button when the FLT CTRL A STBY? shows on the display.

8) Push the YES button when the FLT CTRL B STBY? shows on the display.

9) Push the YES button when YAW DMPR ENGAGED? shows on the display.

10) Push the YES button when the ZERO COMMAND? shows on the display.

NOTE: A yaw damper command value and LVDT position will show for 10 seconds each, then the END ZERO COMMAND? will show on the display. You can push the NO button to show these values again.

(h) Move the captain's left rudder pedal approximately 0.5 in. (12.7 mm) forward and release quickly.

1) Make sure the rudder goes back to the neutral position within 0.00 ±0.05 in. (0.00 ±1.27 mm).

(i) Move the captain's right rudder pedal approximately 0.5 in. (12.7 mm) forward and release quickly.

1) Make sure the rudder goes back to the neutral position within 0.00 ±0.05 in. (0.00 ±1.27 mm).

(j) Push and release the ON/OFF button on the SMYD No. 2.

SUBTASK 27-21-00-860-054

(5) Set the YAW DAMPER switch on the forward overhead panel, P5-3, to the OFF position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-860-055

(1) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-860-056

(2) Remove the NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism (TASK 32-00-01-080-801).

END OF TASK

TASK 27-21-00-700-804

10. Rudder Pedal Forces Test

(Figure 505)

A. General

(1) Use this test to make sure the rudder pedals operate with the correct forces.

NOTE: To make the measurements, the forces must be applied with the pedal moving away from the neutral position. If the pedal moves more than the specified distances, the test must be repeated and started with the pedal at the neutral position.

(2) You may need two people to do the test. One person can sit in one of the seats and push on the tool. The other person can measure the rudder pedal movement and record the results.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(3) It may be useful to take three readings on each rudder pedal for better accuracy on the rudder pedal forces test.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205
SPL-1681	Adapter - Force Check Tool, Rudder Pedal Part #: F80212-30 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

E. Rudder Pedal Forces Test

SUBTASK 27-21-00-420-004

(1) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism (TASK 32-00-01-480-801).

NOTE: Nose landing gear will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

Nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

SUBTASK 27-21-00-860-058

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the rudder hydraulic systems A and B (TASK 27-21-00-800-801).

SUBTASK 27-21-00-730-007

(3) Do the test of the rudder pedal forces test:

(a) Set the captain's and first officer's rudder pedal adjustment cranks to the middle position (Figure 501).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the rudder pedals are in the neutral position.

(c) Install adapter, SPL-1681, on the captain's left rudder pedal.

1) Push on the adapter, SPL-1681, until the rudder starts to move.

2) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501):

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

Table 501/27-21-00-993-802

Angle from Horizontal	Multiplication Factor
0°	1.0
5°	1.0
10°	0.98
15°	0.97
20°	0.94
25°	0.91
30°	0.87
35°	0.82
40°	0.77
45°	0.71

3) Make sure the pedal force is 18.0 lbf (80.1 N) or less.

4) Push again on the adapter, SPL-1681, until the captain's left rudder pedal is 3.60 ±0.10 in. (91.4 ±2.6 mm) forward from the neutral position.

NOTE: When the rudder pedal reaches 3.60 ±0.10 in. (91.4 ±2.6 mm), DO NOT relax the force on the tool until measurement is taken, or the test will fail. If the 3.60 ±0.10 in. (91.4 ±2.6 mm) travel limit is exceeded, release the pedal to neutral and start again.

NOTE: You can use a ruler or straightedge that is put against the rudder pedal, to measure the rudder pedal movement. It may help to attach a pointer to the pedal, with tape.

5) Multiply the compression gage value on the adapter, SPL-1681 by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

6) Make sure the pedal force is between 60.0 lbf (266.9 N) to 82.0 lbf (364.8 N).

7) Remove the adapter, SPL-1681, from the captain's left pedal.

(d) Install the adapter, SPL-1681, on the captain's right rudder pedal.

1) Push on the adapter, SPL-1681, until the rudder starts to move.

2) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

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3) Make sure that the pedal force is 18.0 lbf (80.1 N) or less.

4) Push again on the adapter, SPL-1681, until the captain's right rudder pedal is 3.60 ±0.10 in. (91.4 ±2.6 mm) forward from the neutral position.

NOTE: When the rudder pedal reaches 3.60 ±0.10 in. (91.4 ±2.6 mm), DO NOT relax the force on the tool until measurement is taken, or the test will fail. If the 3.60 ±0.10 in. (91.4 ±2.6 mm) travel limit is exceeded, release the pedal to neutral and start again.

5) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

6) Make sure the pedal force is between 60.0 lbf (266.9 N) to 82.0 lbf (364.8 N).

7) Remove the adapter, SPL-1681, from the captain's right pedal.

(e) Install the adapter, SPL-1681, on the first officer's left rudder pedal.

1) Push on the adapter, SPL-1681, until the rudder starts to move.

2) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

3) Make sure that the pedal force is 18.0 lbf (80.1 N) or less.

4) Push again on the adapter, SPL-1681, until the first officer's left rudder pedal is 3.60 ±0.10 in. (91.4 ±2.6 mm) forward from the neutral position.

NOTE: When the rudder pedal reaches 3.60 ±0.10 in. (91.4 ±2.6 mm), DO NOT relax the force on the tool until measurement is taken, or the test will fail. If the 3.60 ±0.10 in. (91.4 ±2.6 mm) travel limit is exceeded, release the pedal to neutral and start again.

5) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

6) Make sure the pedal force is between 60.0 lbf (266.9 N) to 82.0 lbf (364.8 N).

7) Remove the adapter, SPL-1681, from the first officer's left pedal.

(f) Install the adapter, SPL-1681, on the first officer's right rudder pedal.

1) Push on the adapter, SPL-1681, until the rudder starts to move.

2) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

3) Make sure the pedal force is 18.0 lbf (80.1 N) or less.

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4) Push again on the adapter, SPL-1681, until the first officer's right rudder pedal is 3.60 ±0.10 in. (91.4 ±2.6 mm) forward from the neutral position.

NOTE: When the rudder pedal reaches 3.60 ±0.10 in. (91.4 ±2.6 mm), DO NOT relax the force on the tool until measurement is taken, or the test will fail. If the 3.60 ±0.10 in. (91.4 ±2.6 mm) travel limit is exceeded, release the pedal to neutral and start again.

5) Multiply the compression gage value on the adapter, SPL-1681, by a multiplication factor given in (Table 501).

NOTE: The angle from the horizontal value is also shown on the adapter, SPL-1681.

6) Make sure that the pedal force is between 60.0 lbf (266.9 N) to 82.0 lbf (364.8 N).

7) Remove the adapter, SPL-1681, from the first officer's right pedal.

SUBTASK 27-21-00-860-059

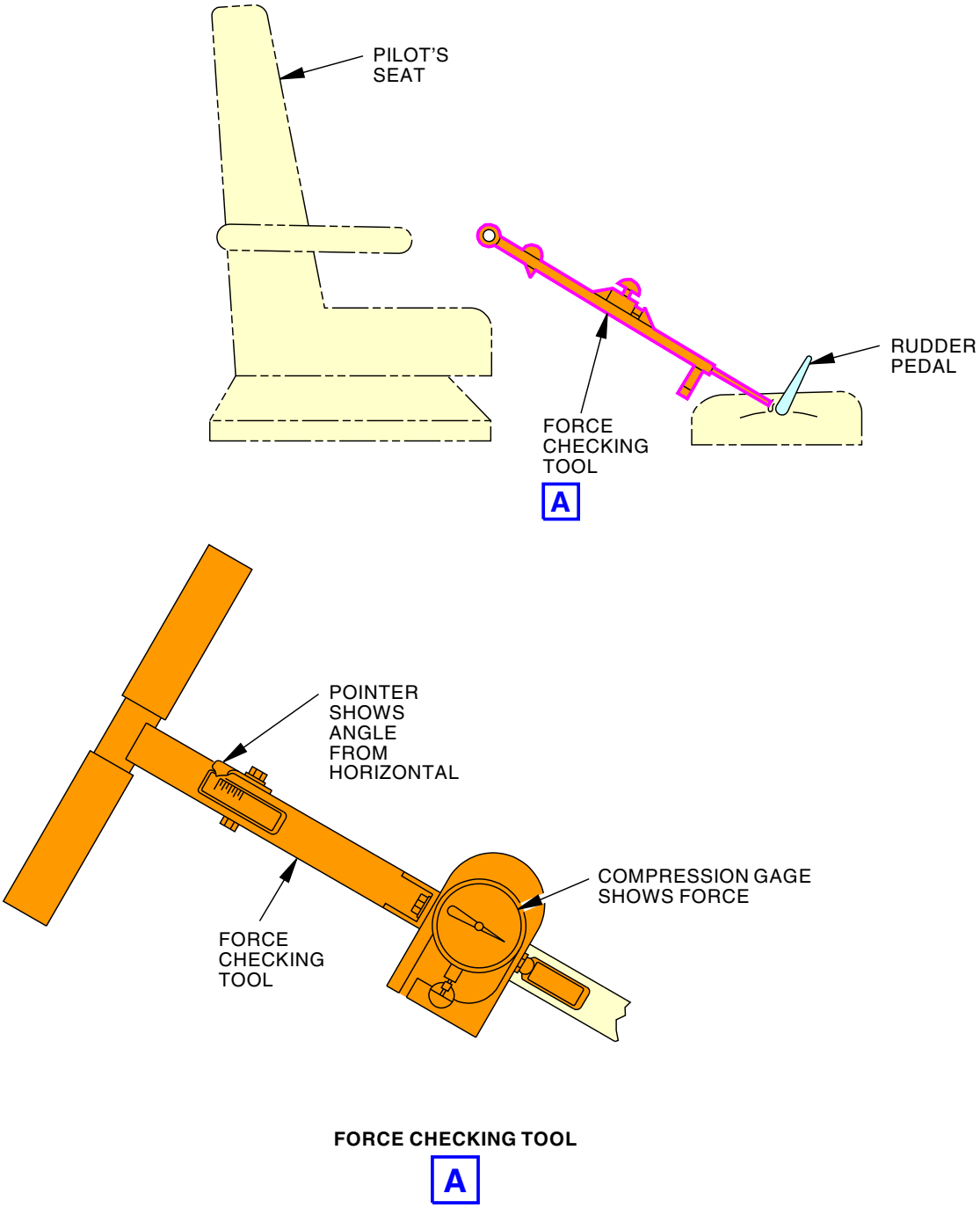
(4) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-860-060

(5) Remove the, NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism (TASK 32-00-01-080-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FORCE CHECKING TOOL

A

2412367 S00061530529_V1

Rudder Pedal Force Checking Tool
Figure 505/27-21-00-990-808

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-805

11. Rudder Travel Test

A. General

(1) Use this test to make sure the rudder operates correctly.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

E. Rudder Travel Test

SUBTASK 27-21-00-420-005

(1) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism as given in: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

NOTE: Nose landing gear will move when the rudder pedals are moved. To prevent NLG movement, lockout pin in the nose wheel steering mechanism should be installed.

Nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

SUBTASK 27-21-00-860-062

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the rudder hydraulic systems A and B, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-00-730-008

(3) Do the test of the rudder travel test:

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(a) Set the FLT CONTROL A switch to the ON position and FLT CONTROL B switch to the OFF position.

(b) Set the captain's and first officer's rudder pedal adjustment cranks to the middle position (Figure 501).

(c) Make sure the rudder pedals are in the neutral position.

1) If it is necessary, move the rudder pedals lightly to set the rudder to the neutral position.

2) Make sure that the rudder trim indicator is at 0.0 ± 0.25 units of trim.

(d) Push and hold captain's left pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 24.28 ±0.92 in. (616.71 ±23.37 mm) (26.00 +/- 1.00 degrees) rudder trailing edge left.

3) Release the captain's left pedal.

(e) Push and hold the captain's right pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 24.28 ±0.92 in. (616.71 ±23.37 mm) (26.00 +/- 1.00 degrees) rudder trailing edge right.

3) Release the captain's right pedal.

(f) Make sure that the wire bundle W443 has a minimum clearance of 0.5 in. (12.700 mm) from left forward rudder quadrant full travel motion, while operating the rudder pedals (Figure 506).

(g) Set the FLT CONTROL B switch to the ON position and FLT CONTROL A switch to the OFF position.

(h) Push and hold captain's left pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 24.28 ±0.92 in. (616.71 ±23.37 mm) (26.00 +/- 1.00 degrees) rudder trailing edge left.

3) Release the captain's left pedal.

(i) Push and hold the captain's right pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 24.28 ±0.92 in. (616.71 ±23.37 mm) (26.00 +/- 1.00 degrees) rudder trailing edge right.

3) Release the captain's right pedal.

(j) Make sure that the wire bundle W443 has a minimum clearance of 0.5 in. (12.700 mm) from left forward rudder quadrant full travel motion, while operating the rudder pedals (Figure 506).

(k) Set the FLT CONTROL B switch to the STBY position.

(l) Push and hold captain's left pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 22.62 +0.92 / -0.91 in. (574.55 +23.37 / -23.11 mm) (24.25 +/- 1.00 degrees) rudder trailing edge left.

3) Release the captain's left pedal.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(m) Push and hold the captain's right pedal until it touches the forward quadrant stop.

1) Measure the rudder travel.

2) Make sure that the dimension is 22.62 +0.92 / -0.91 in. (574.55 +23.37 / -23.11 mm) (24.25 +/- 1.00 degrees) rudder trailing edge right.

3) Release the captain's right pedal.

(n) Make sure that the wire bundle W443 has a minimum clearance of 0.5 in. (12.700 mm) from left forward rudder quadrant full travel motion, while operating the rudder pedals (Figure 506).

SUBTASK 27-21-00-860-063

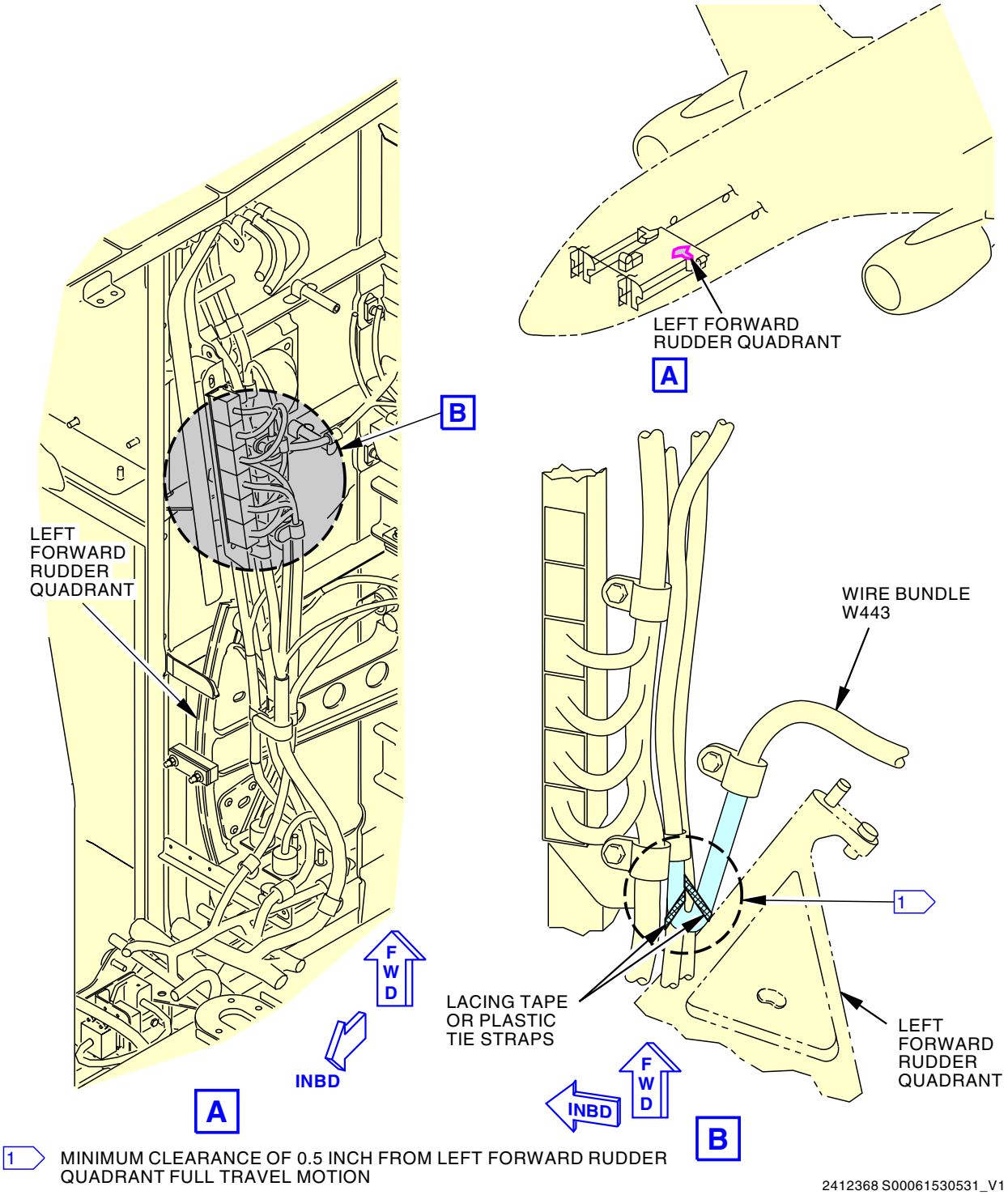
(4) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-080-006

(5) Remove the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism as given in: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Wire Bundle W443 Clearance
Figure 506/27-21-00-990-809

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-806

12. Standby Rudder Power Control Unit Deadband Test

A. General

(1) Use this test to make sure the standby rudder power control unit (PCU) is in the correct rigged position.

(a) Make sure that the YAW DAMPER switch on the P5-3 overhead panel is in the OFF position.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

D. Standby Rudder Power Control Unit Deadband Test

SUBTASK 27-21-00-860-064

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize the standby rudder hydraulic system (TASK 27-21-00-800-801)..

SUBTASK 27-21-00-860-065

(2) Move the rudder pedals through ten cycles to flush and bleed the standby rudder PCU.

SUBTASK 27-21-00-860-066

(3) Set the FLT CONTROL A and B switches to the ON position.

SUBTASK 27-21-00-730-009

(4) Do the test of the standby rudder PCU deadband test:

(a) Make sure that the rudder is in the neutral position.

1) If necessary, move the rudder pedals lightly to put the rudder to the neutral position.

2) Make sure that the rudder trim indicator is at 0.00 ± 0.25 unit of trim.

(b) Set the FLT CONTROL A and B to the STANDBY RUD position.

(c) Use your hands to push the rudder to the right, then slowly remove the load.

1) Move your hands away from the rudder.

2) Measure the rudder right position from the center of the rudder trailing edge to the centerline of the index plate.

3) Record this measurement as A.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Push the rudder by hands to the left, then slowly remove the load.

1) Move your hands away from the rudder.

2) Measure the rudder left position from the center of the rudder trailing edge to the centerline of the index plate.

3) Record this measurement as B.

(e) Make sure that the difference between A and B is 0.2 in. (5 mm) or less.

1) If the difference is more than 0.2 in. (5 mm), do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-860-067

(1) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

——— END OF TASK ———

TASK 27-21-00-700-807

13. Rudder Trim System Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure the rudder trim system operates correctly.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the System Test

SUBTASK 27-21-00-420-006

(1) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism (TASK 32-00-01-480-801).

NOTE: The nose landing gear (NLG) will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

The nose gear steering does not need to be disconnected if the airplane is jacked up such that the nose gear is fully extended.

SUBTASK 27-21-00-860-069

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize both rudder hydraulic systems A and B (TASK 27-21-00-800-801).

NOTE: It is necessary to pressurize both systems A and B for this task.

F. Rudder Trim System Test

SUBTASK 27-21-00-730-010

(1) Do the test of the rudder trim system:

(a) Make sure the rudder is in the neutral position.

1) If it is necessary, move the rudder pedals lightly to put the rudder to the neutral position.

2) Make sure the rudder trim indicator is at 0.00 ± 0.25 units of trim.

(b) Move the rudder trim knob to NOSE LEFT until the mark on the rudder trim knob is aligned with the indicator mark on the lightplate under the trim knob.

1) Make sure the rudder did not move.

(c) Move the rudder trim knob to NOSE RIGHT until the mark on the rudder trim knob is aligned with the indicator mark on the lightplate under the trim knob.

1) Make sure the rudder did not move.

(d) Move the rudder trim knob to NOSE RIGHT until the rudder trim indicator shows 10.0 ± 0.25 units of trim.

1) Make sure the rudder moves 10.12 ±1.26 in. (257.0 ±32.1 mm) (10.74 ± 1.35 degrees) to the right side.

(e) Move the rudder trim knob to NOSE RIGHT until the rudder stops.

1) Make sure the rudder moves 16.89 ±0.93 in. (429.0 ±23.6 mm) (18.03 ± 1.00 degrees) to the right side.

2) Make sure the rudder trim indicator is at least 15 units of trim.

(f) Move the rudder trim knob to NOSE LEFT until the rudder trim indicator shows 10.0 ± 0.25 units of trim.

1) Make sure the rudder moves 10.12 ±1.26 in. (257.0 ±32.1 mm) (10.74 ± 1.35 degrees) to the left side.

(g) Move the rudder trim knob to NOSE LEFT until the rudder stops.

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1) Make sure the rudder moves 16.89 ±0.93 in. (429.0 ±23.6 mm) (18.03 ± 1.00 degrees) to the left side.

2) Make sure the rudder trim indicator is at least 15 units of trim.

(h) Make sure the rudder trim knob operates smoothly and goes back to the center freely.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-860-070

(1) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-860-071

(2) Remove the NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism (TASK 32-00-01-080-801).

——— END OF TASK ———

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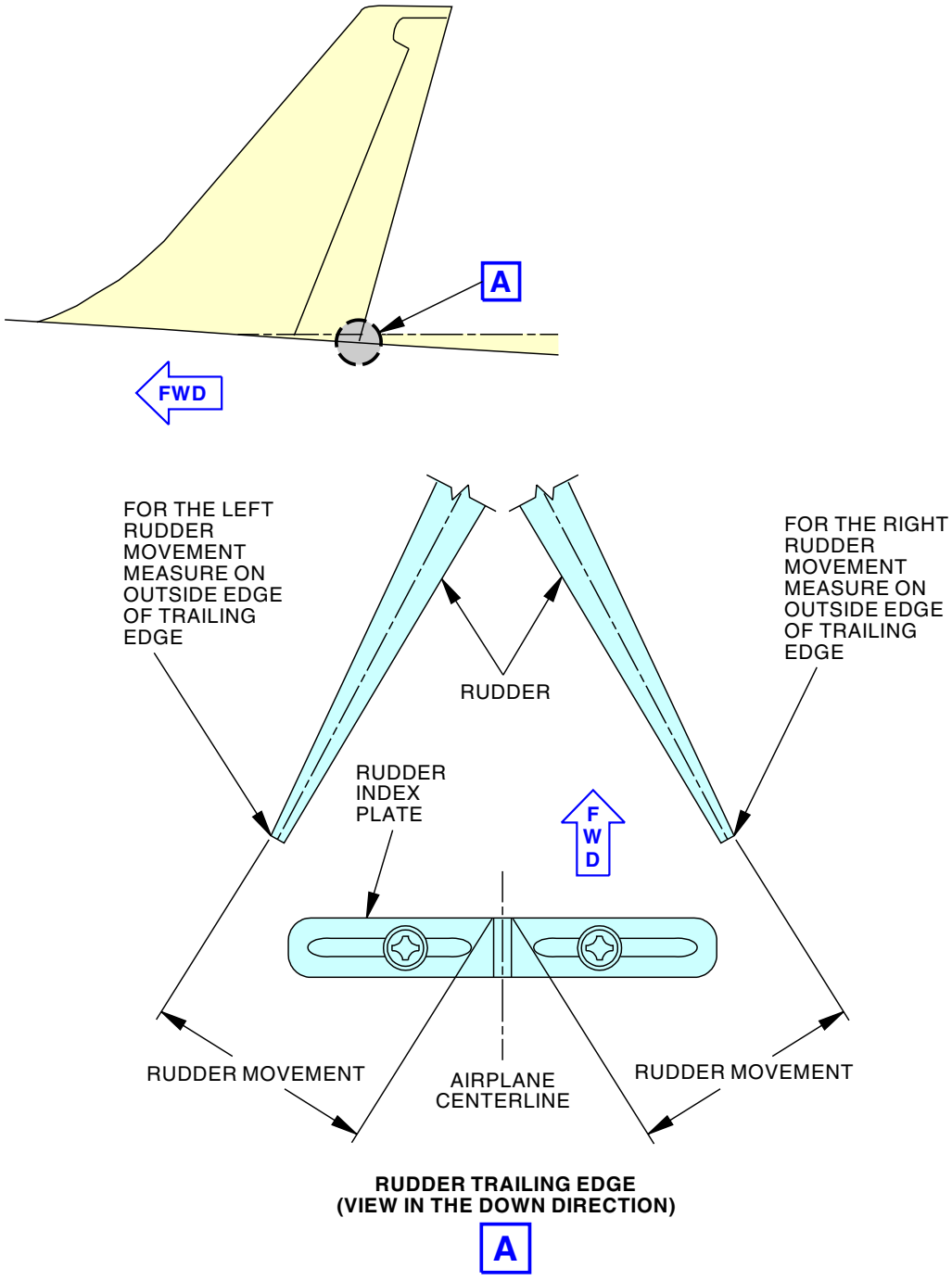

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RUDDER TRIM SYSTEM TEST
Figure 507/27-21-00-990-812

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-808

14. Wheel to Rudder Interconnect System Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure the wheel to rudder function of the standby rudder Power Control Unit (PCU) operates correctly.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
325	Vertical Fin - Rudder

D. Prepare for the System Test

SUBTASK 27-21-00-860-072

(1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-073

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the rudder hydraulic systems A and B (TASK 27-21-00-800-801).

SUBTASK 27-21-00-860-074

(3) Move the flaps to a position other than up position (TASK 27-51-00-860-803).

E. Wheel to Rudder Interconnect System Test

SUBTASK 27-21-00-730-011

(1) Do the test of the wheel to rudder interconnect system:

NOTE: The rudder will move past the center position to the opposite direction when the control wheel returns to the neutral position. To return the rudder to the center position with the control wheel at neutral, you must set the YAW DAMPER switch on the overhead panel to the OFF position then back to the ON position.

(a) Make sure that the Air Data Inertial Reference System (ADIRS) is aligned. Do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

(b) Make sure the rudder is in the neutral position.

1) Make sure the rudder trim indicator is at 0.0 ± 0.25 unit of trim.

2) If it is necessary, move the rudder pedals lightly to put the rudder to the neutral position.

(c) Set the FLT CONTROL A and B switches, on the forward overhead panel, P5, to the STBY RUD position.

(d) Set the YAW DAMPER switch, on the forward overhead panel, P5, to the ON position.

(e) Slowly turn the Captain's wheel left to 2 units (12°) of wheel and hold. .

NOTE: Use aileron trim marker on control column to measure wheel travel.

1) Make sure the rudder moves 2.47 ±0.25 in. (62.74 ±6.35 mm) (2.4 ± 0.3 degrees) to the left side.

(f) Slowly turn the captain's wheel right to 2 units (12°) of wheel and hold.

1) Make sure the rudder moves from left to right.

2) Make sure the rudder moves2.47 ±0.25 in. (62.74 ±6.35 mm) (2.4 ± 0.3 degrees) to the right side.

(g) Slowly turn the captain's control wheel to the full right and hold.

1) Make sure the rudder moves 2.47 ±0.25 in. (62.74 ±6.35 mm) (2.4 ± 0.3 degrees) to the right side.

(h) Slowly turn the captain's control wheel to the full left and hold.

NOTE: The rudder should move left 2.47 ±0.25 in. (62.74 ±6.35 mm) before the wheel has reached neutral.

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1) Make sure the rudder moves 2.47 ±0.25 in. (62.74 ±6.35 mm) (2.4 ± 0.3 degrees) to the left side.

(i) Slowly turn the captain's control wheel back to the neutral position.

1) Make sure the rudder moves 2.47 ±0.25 in. (62.74 ±6.35 mm) (2.4 ± 0.3 degrees) and the rudder surface has moved to the right.

2) Put the YAW DAMPER switch, on the P5 panel, in the OFF position.

3) Put the YAW DAMPER switch, on the P5 panel, in the ON position.

NOTE: This will restore the rudder to neutral with the control wheel at neutral.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-00-860-075

(1) Put the YAW DAMPER switch, on the P5 panel, in the OFF position.

SUBTASK 27-21-00-860-076

(2) Return the flaps to the retracted position (TASK 27-51-00-860-804).

SUBTASK 27-21-00-860-077

(3) Set the FLT CONTROL A and B switches, on the forward overhead panel, P5, to the ON position.

SUBTASK 27-21-00-860-078

(4) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

——— END OF TASK ———

TASK 27-21-00-700-809

15. Rudder Hinge Friction Test

(Figure 504)

A. General

(1) Use this test to make sure that the rudder hinge friction is within limit.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-753	Scale - Push/Pull, 0-25 pound (0-11 kilogram) Capacity, 1/4 pound (113 gram) Accuracy
STD-1238	Indicator - Dial
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator

D. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Rudder Hinge Friction Test

SUBTASK 27-21-00-860-079

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU REMOVE OR INSTALL HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU REMOVE HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If hydraulic pressure is powered, do this step to turn off hydraulic power:

(a) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-00-730-012

CAUTION

MAKE SURE TO APPLY EXTERNAL FORCE THAT IS APPROXIMATELY AT BETWEEN 6 INCHES (152 MM) AND 18 INCHES (457MM) FROM THE BOTTOM OF THE TRAILING EDGE. IF YOU DO NOT APPLY FORCE AT THIS LOCATION, YOU CAN CAUSE DAMAGE TO THE RUDDER.

(2) Do the rudder hinge friction check:

NOTE: If the dial indicator is not available, you can use a ruler to measure the rudder trailing edge placement in this test.

(a) Make sure that the rudder and rudder pedals are in the neutral position.

(b) Make sure that the rudder trim indicator is at zero units of trim.

(c) Use a block, STD-1278, and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder fully to the left side.

1) Make sure that there is no sign of binding, rough spots, or excessive friction at any point of travel.

a) If binding or excessive friction exist, the bearings can be out of alignment, damaged, or improperly installed, correct this condition and repeat this check.

(d) Use a block, STD-1278, and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder fully to the right side.

1) Make sure that there is no sign of binding, rough spots, or excessive friction at any point of travel.

a) If binding or excessive friction exist, the bearings can be out of alignment, damaged, or improperly installed, correct this condition and repeat this check.

(e) Attach the mount, STD-1279, on the tail cone.

(f) Place the pointer of the dial indicator, STD-1238, at the lower aft corner of the rudder trailing edge.

(g) Use a block, STD-1278, and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder 2.25 in. (5.72 cm) ± 0.1 in. (0.25 cm) to the left side.

1) Make sure that the force to move the rudder is less than 16.3 lbf (72.5 N).

(h) Use a block, STD-1278, and push/pull scale 0-25 pound (0-11 kilogram), STD-753, to move the rudder 2.25 in. (5.72 cm) ± 0.1 in. (0.25 cm) to the right side.

1) Make sure that the force to move the rudder is less than 16.3 lbf (72.5 N).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) Remove the dial indicator, STD-1238, and block, STD-1278, from the rudder.

——— END OF TASK ———

27-CMR-05

TASK 27-21-00-700-810

16. Main Rudder PCU Internal Hydraulic Leakage Test

(Figure 508)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to do a check for excessive internal hydraulic leakage for the main rudder Power Control Unit (PCU).

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1499	Pin - Lock, NLG Towing Lever Part #: A09003-2 Supplier: 81205 Opt Part #: A09003-1 Supplier: 81205

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
324DL	Trailing Edge Access

F. Prepare for the Main Rudder PCU Check

SUBTASK 27-21-00-840-003

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	9	C01447	FLIGHT CONT RUDDER AUTHORITY LIMITER

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-21-00-840-004

(2) If required, open this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-00-860-081

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Pressurize the rudder hydraulic systems A and B, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-00-860-082

(4) Put the FLT CONTROL A and B switches, on the P5-3 panel, to the ON position.

SUBTASK 27-21-00-860-083

(5) Install the NLG towing lever pin, SPL-1499, in the nose wheel steering mechanism (TASK 32-00-01-480-801).

NOTE: Nose Landing Gear (NLG) will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

SUBTASK 27-21-00-980-003

(6) Move the rudder pedals through 5 cycles of full travel.

SUBTASK 27-21-00-980-004

(7) Center the rudder pedals and remove feet from the pedals.

SUBTASK 27-21-00-010-014

(8) Get access to the main electronics equipment compartment, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-21-00-700-002

(9) Use a digital voltmeter to make sure that the 4.38 Vdc to 5.62 Vdc between pin 18 and pin 20 of connector D10064, on the E1-1 shelf in the EE bay.

(a) If the voltage is not 4.38 Vdc to 5.62 Vdc, adjust the control rod (TASK 27-21-00-820-804).

SUBTASK 27-21-00-210-003

(10) Make sure that the STBY RUD ON light, on the P5-3 overhead panel, is not illuminated.

SUBTASK 27-21-00-860-084

(11) Put the FLT CONTROL A switch, on the P5-3 panel, to the OFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Rudder Main PCU System B Internal Leakage Check in the Extend Direction

NOTE: You will need 3 persons to complete this task.

There is a time limit to complete some steps in this task.

SUBTASK 27-21-00-860-085

(1) Use the Flap/Slat Electronics Unit (FSEU), on the E1-1 shelf in the main equipment center, to command the Rudder Pressure Limiters (RPL) to the "LOW" pressure state.

NOTE: The command will remain active for only 75 seconds after it is set.

(a) Push the ON/OFF button on the front panel of the FSEU, on E1-1 shelf, to turn on the display.

1) The display will show EXISTING FAULTS?.

(b) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.

1) The display will show SET OUTPUTS?.

(c) Select SET OUTPUTS? from the OTHER FUNCTNS? menu.

1) The display will show RUD PRES LIMIT?.

(d) Select RUD PRES LIMIT? from the SET OUTPUTS? menu.

1) The display will show SET ON?.

(e) Select SET ON? from the RUD PRES LIMIT? menu.

1) The display will show CMD ON, SET OFF?.

NOTE: You only have 75 seconds to complete the next 3 tasks. If you do not finish in 75 seconds, you will have to repeat the test and start with the steps to use the FSEU to command the RPL to the "LOW" state.

SUBTASK 27-21-00-980-005

(2) Push the left rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-006

(3) Manually hold the main rudder PCU lower control rod at location B and pull forward with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-003

(4) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is between 1.87 VDC to 2.62 VDC.

SUBTASK 27-21-00-980-007

(5) Release the main rudder PCU control rod.

SUBTASK 27-21-00-980-008

(6) Release the rudder pedal.

SUBTASK 27-21-00-860-086

(7) The display screen on the FSEU should show CMD ON, SET OFF?.

(a) Select YES. The display will show CMD OFF, SET ON?.

SUBTASK 27-21-00-980-009

(8) Push the left rudder pedal until it touches the forward quadrant stop and hold.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-980-010

(9) Manually hold the main rudder PCU lower control rod at location B and pull forward with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-004

(10) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is less than 1.87 VDC.

SUBTASK 27-21-00-980-011

(11) Release the main rudder PCU lower control rod.

SUBTASK 27-21-00-980-012

(12) Release the left rudder pedal.

NOTE: The test of system B was completed in the extend direction.

H. Rudder Main PCU System B Internal Leakage Check in the Retract Direction

SUBTASK 27-21-00-860-087

(1) Use the FSEU, on the E1-1 shelf in the main equipment center, to command the RPL to the "LOW" pressure state.

NOTE: The command will remains active for only 75 seconds after it is set.

(a) Push the ON/OFF button on the front panel of the FSEU, on E1-1 shelf, to turn on the display.

1) The display will show EXISTING FAULTS?.

(b) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.

1) The display will show SET OUTPUTS?.

(c) Select SET OUTPUTS? from the OTHER FUNCTNS? menu.

1) The display will show RUD PRES LIMIT?.

(d) Select RUD PRES LIMIT? from the SET OUTPUTS? menu.

1) The display will show SET ON?.

(e) Select SET ON? from the RUD PRES LIMIT? menu.

1) The display will show CMD ON, SET OFF?.

NOTE: You only have 75 seconds to complete the next 3 tasks. If you do not finish in 75 seconds, you will have to repeat the test and start with the steps to use the FSEU to command the RPL to the "LOW" state.

SUBTASK 27-21-00-980-013

(2) Push the right rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-014

(3) Manually hold the main rudder PCU lower control rod at location B and pull aft with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-005

(4) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is between 7.37 VDC to 8.13 VDC.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-980-015

(5) Release the main rudder PCU control rod.

SUBTASK 27-21-00-980-016

(6) Release the rudder pedal.

SUBTASK 27-21-00-860-088

(7) The display screen on the FSEU should show CMD ON, SET OFF?.

(a) Select YES.

1) The display will show CMD OFF, SET ON?.

SUBTASK 27-21-00-980-017

(8) Push the right rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-018

(9) Manually hold the main rudder PCU lower control rod at location B and pull aft with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-006

(10) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is greater than 8.13 VDC.

SUBTASK 27-21-00-980-019

(11) Release the main rudder PCU lower control rod.

SUBTASK 27-21-00-980-020

(12) Release the right rudder pedal.

NOTE: The test of system B was completed in the retract direction.

I. Rudder Main PCU System A Internal Leakage Check in the Extend Direction

NOTE: You will need 3 persons to complete this task. There is a time limit to complete some steps in this task.

SUBTASK 27-21-00-860-089

(1) Put the FLT CONTROL A switch, on the P5-3 panel, to the ON position.

SUBTASK 27-21-00-860-090

(2) Put the FLT CONTROL B switch, on the P5-3 panel, to the OFF position.

SUBTASK 27-21-00-860-091

(3) Use the FSEU, on the E1-1 shelf in the main equipment center, to command the RPL to the "LOW" pressure state.

NOTE: The command will remains active for only 75 seconds after it is set.

(a) Push the ON/OFF button on the front panel of the FSEU, on E1-1 shelf, to turn on the display.

1) The display will show EXISTING FAULTS?.

(b) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.

1) The display will show SET OUTPUTS?.

(c) Select SET OUTPUTS? from the OTHER FUNCTNS? menu.

1) The display will show RUD PRES LIMIT?.

(d) Select RUD PRES LIMIT? from the SET OUTPUTS? menu.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) The display will show SET ON?.

(e) Select SET ON? from the RUD PRES LIMIT? menu.

1) The display will show CMD ON, SET OFF?.

NOTE: You only have 75 seconds to complete the next 3 tasks. If you do not finish in 75 seconds, you will have to repeat the test and start with the steps to use the FSEU to command the RPL to the "LOW" state.

SUBTASK 27-21-00-980-021

(4) Push the left rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-022

(5) Manually hold the main rudder PCU upper control rod at location A and pull forward with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-007

(6) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is between 7.37 VDC to 8.13 VDC.

SUBTASK 27-21-00-980-023

(7) Release the main rudder PCU control rod.

SUBTASK 27-21-00-980-024

(8) Release the rudder pedal.

SUBTASK 27-21-00-860-092

(9) The display screen on the FSEU should show CMD ON, SET OFF?.

(a) Select YES.

1) The display will show CMD OFF, SET ON?.

SUBTASK 27-21-00-980-025

(10) Push the left rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-026

(11) Manually hold the main rudder PCU upper control rod at location A and pull forward with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-008

(12) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is greater than 8.13 VDC.

SUBTASK 27-21-00-980-027

(13) Release the main rudder PCU upper control rod.

SUBTASK 27-21-00-980-028

(14) Release the left rudder pedal.

NOTE: The test of system A was completed in the extend direction.

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J. Rudder Main PCU System A Internal Leakage Check in the Retract Direction

NOTE: You will need 3 persons to complete this task. There is a time limit to complete some steps in this task.

SUBTASK 27-21-00-860-093

(1) Use the FSEU, on the E1-1 shelf in the main equipment center, to command the RPL to the "LOW" pressure state.

NOTE: The command will remains active for only 75 seconds after it is set.

(a) Push the ON/OFF button on the front panel of the FSEU, on E1-1 shelf, to turn on the display.

1) The display will show EXISTING FAULTS?.

(b) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.

1) The display will show SET OUTPUTS?.

(c) Select SET OUTPUTS? from the OTHER FUNCTNS? menu.

1) The display will show RUD PRES LIMIT?.

(d) Select RUD PRES LIMIT? from the SET OUTPUTS? menu.

1) The display will show SET ON?.

(e) Select SET ON? from the RUD PRES LIMIT? menu.

1) The display will show CMD ON, SET OFF?.

NOTE: You only have 75 seconds to complete the next 3 tasks. If you do not finish in 75 seconds, you will have to repeat the test and start with the steps to use the FSEU to command the RPL to the "LOW" state.

SUBTASK 27-21-00-980-029

(2) Push the right rudder pedal until it touches the forward quadrant stop and hold.

SUBTASK 27-21-00-980-030

(3) Manually hold the main rudder PCU upper control rod at location A and pull aft with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-009

(4) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is between 1.87 VDC to 2.62 VDC.

SUBTASK 27-21-00-980-031

(5) Release the main rudder PCU control rod.

SUBTASK 27-21-00-980-032

(6) Release the rudder pedal.

SUBTASK 27-21-00-860-094

(7) The display screen on the FSEU should show CMD ON, SET OFF?.

(a) Select YES.

1) The display will show CMD OFF, SET ON?.

SUBTASK 27-21-00-980-033

(8) Push the right rudder pedal until it touches the forward quadrant stop and hold.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-980-034

(9) Manually hold the main rudder PCU upper control rod at location A and pull aft with a force of approximately to 30 lbf (133 N) - 40 lbf (178 N) until it touches the stop and hold (Figure 508).

NOTE: If the control rods are not held against the stops, the voltage reading will differ from the limits in the following step.

SUBTASK 27-21-00-700-010

(10) Make sure that the voltage between pin 18 and pin 20 of connector D10064, on the E1-1 shelf, is less than 1.87 VDC.

SUBTASK 27-21-00-980-035

(11) Release the main rudder PCU upper control rod.

SUBTASK 27-21-00-980-036

(12) Release the right rudder pedal.

NOTE: The test of system A was completed in the retract direction.

SUBTASK 27-21-00-860-095

(13) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-480-008

(14) Remove the NLG towing lever pin, SPL-1499, from the nose wheel steering mechanism (TASK 32-00-01-080-801).

SUBTASK 27-21-00-410-005

(15) If required, close this access panel:

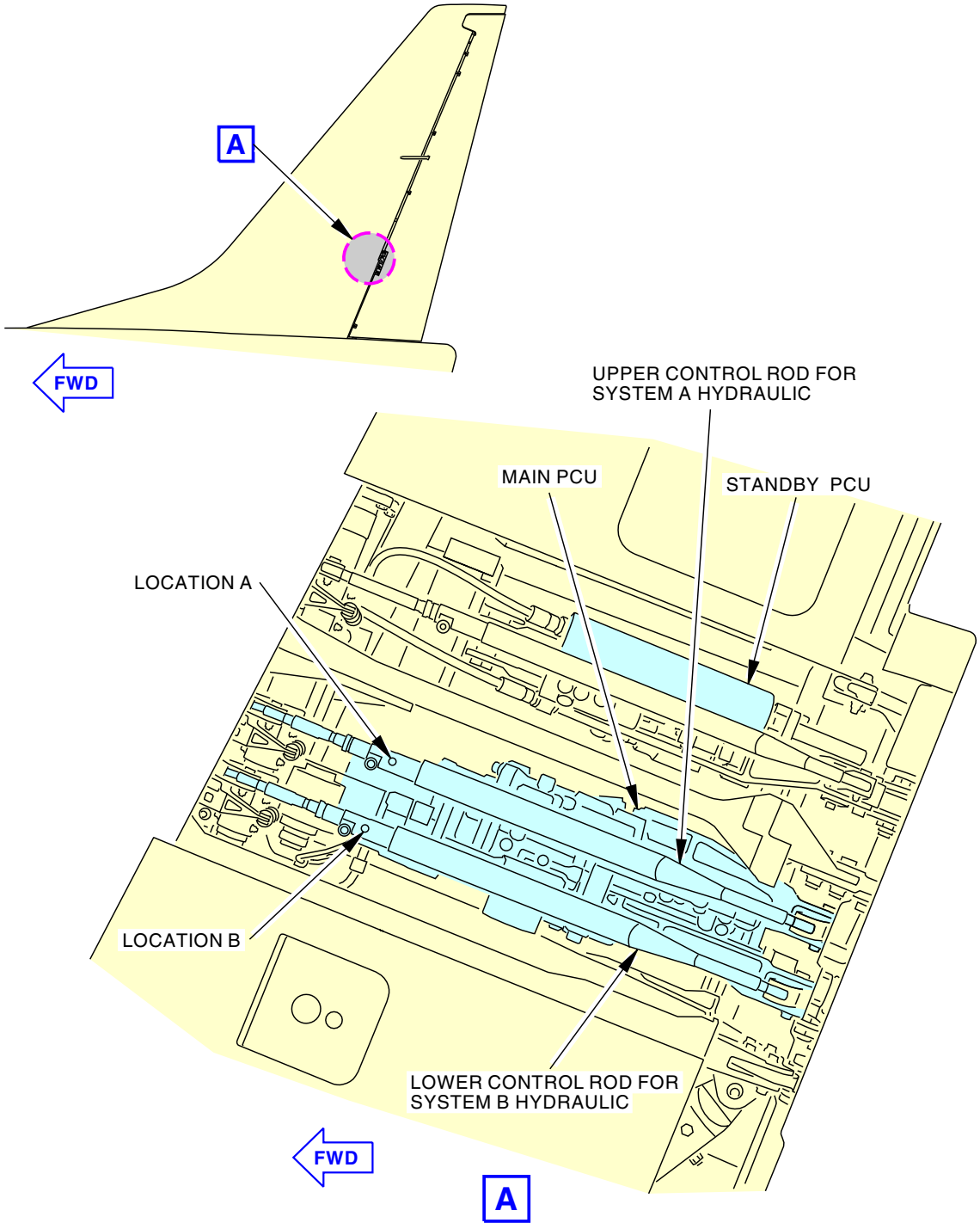
Number	Name/Location
324DL	Trailing Edge Access

Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Main Rudder PCU Internal Leakage Test
Figure 508/27-21-00-990-810

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-811

17. Rudder Override Operational Test

(Figure 509)

NOTE: This procedure is a scheduled maintenance task.

A. General

WARNING MAKE SURE THAT YOU FOLLOW THE TASK STEPS IN THE CORRECT SEQUENCE. IF YOU DO NOT, IT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Use this test to make sure that the override mechanisms installed on the torque tube are operational.

B. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

D. Procedure

SUBTASK 27-21-00-840-005

(1) Put the FLT CONTROL A and B switches, on the P5 panel, to the OFF position.

SUBTASK 27-21-00-010-015

(2) To gain access to the torque tube, do this task:

Open these access panels:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

SUBTASK 27-21-00-730-013

(3) Do the rudder override operational test:

(a) Make sure that the rudder and rudder pedals are in the neutral position.

(b) Manually hold the rudder aft edge in the centered position.

(c) Observe the torque tube override assemblies and do these steps:

1) Slowly push on the captain's left rudder pedal forward full travel then return the pedal to the neutral position.

NOTE: It will require more force than normal operation for the override mechanism to breakout of the detent position.

2) Make sure that all 3 override assemblies breakout of their detent positions.

3) Make sure that there is no sign of binding or interferences at any point of travel on the three override assemblies.

a) If binding or excessive friction exist, the override assemblies may be damaged or improperly installed. Correct this condition and repeat this check.

(d) Observe the torque tube override assemblies and do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Slowly push on the captain's right rudder pedal forward full travel then return the pedal to the neutral position.

   NOTE: It will require more force than normal operation for the override mechanism to breakout of the detent position.

2) Make sure that all 3 override assemblies breakout of their detent positions.

3) Make sure that there is no sign of binding or interferences at any point of travel on the three override assemblies.

   a) If binding or excessive friction exist, the override assemblies may be damaged or improperly installed. Correct this condition and repeat this check.

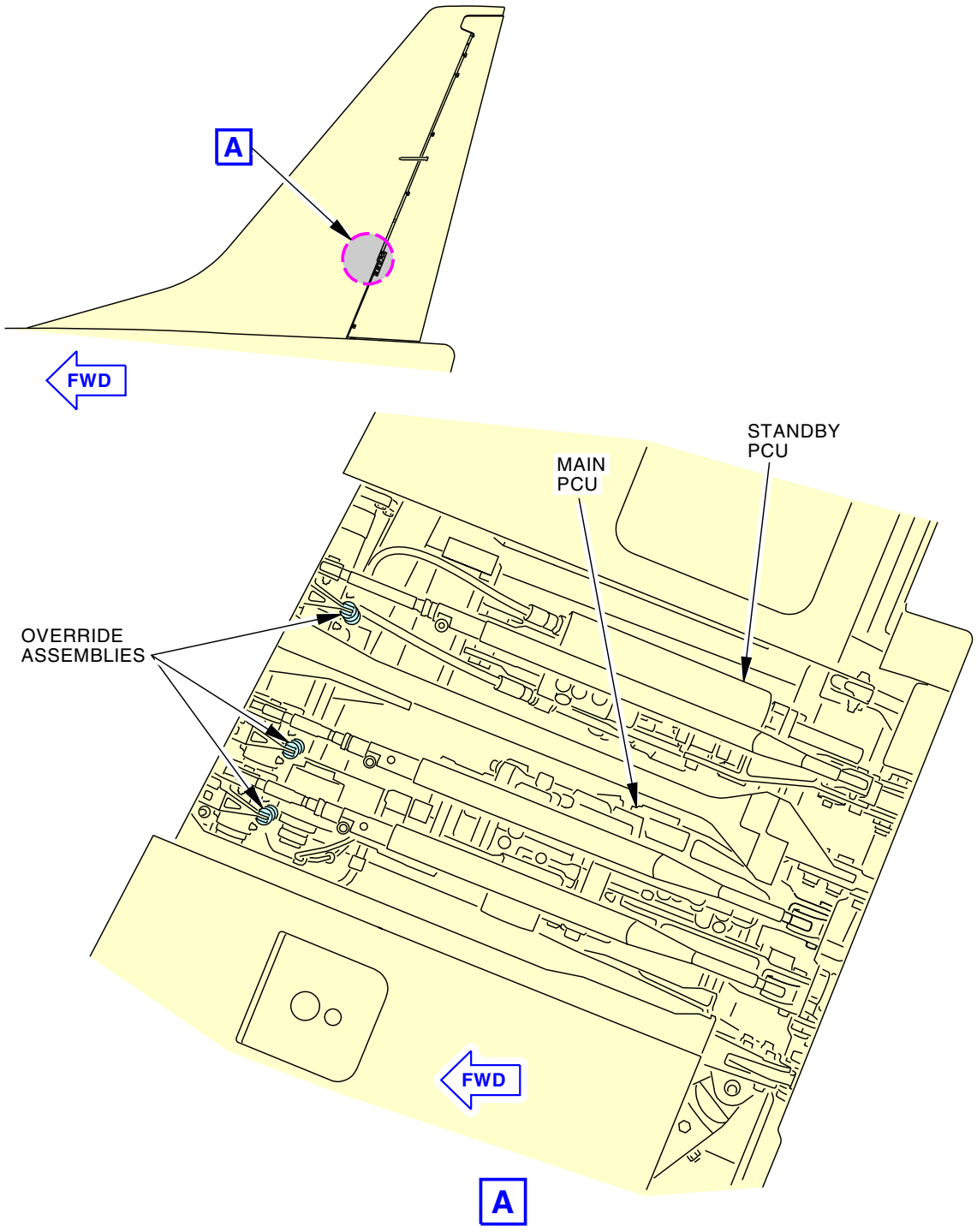
SUBTASK 27-21-00-410-006

(4) Install these access panels:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Override Operational Test
Figure 509/27-21-00-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-00-700-812

18. Rudder Main PCU Force Fight Monitor Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure that the STBY RUD ON light on the overhead panel P5-3 is functional.

B. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
324CL	Vertical Fin, Access
324EL	Vertical Fin, Access

E. Rudder Main PCU Force Fight Monitor Test

SUBTASK 27-21-00-860-098

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Pressurize the rudder hydraulic systems A and B (TASK 27-21-00-800-801).

SUBTASK 27-21-00-860-099

(2) Put the FLT CONTROL A and B switches, on the P5 panel, to the ON position.

SUBTASK 27-21-00-860-100

(3) Make sure that the airplane is in the air mode (TASK 32-09-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-010-017

(4) To get access to the P92 panel, open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-21-00-860-113

WARNING

WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

WARNING

DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(5) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

SUBTASK 27-21-00-410-008

(6) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-21-00-860-101

(7) Move the rudder pedals through 5 cycles of full travel.

SUBTASK 27-21-00-210-004

(8) Make sure that the STBY RUD ON light on the overhead panel P5-3 is not on.

SUBTASK 27-21-00-860-102

(9) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-00-860-103

(10) Put the FLT CONTROL B switch, on the P5 panel, to the STBY RUD position.

SUBTASK 27-21-00-210-005

(11) Make sure that the STBY RUD ON light on the overhead panel P5-3 is on.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-860-104

(12) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-00-860-105

(13) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

SUBTASK 27-21-00-010-016

(14) To get access to the rudder main PCU, do this step:

(a) Open these access panels:

Number	Name/Location
324CL	Vertical Fin, Access
324EL	Vertical Fin, Access

SUBTASK 27-21-00-860-106

(15) Put the FLT CONTROL B switch, on the P5 panel, to the ON position.

SUBTASK 27-21-00-730-014

WARNING MAKE SURE THAT YOU FOLLOW THE STEPS IN THIS TASK CORRECT SEQUENCE. IF YOU DO NOT OBEY, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(16) Do the Force Fight Monitor test:

(a) Make sure that the STBY RUD ON light and STANDBY HYD LOW PRESS light on the overhead panel P5-3 are off.

(b) Move the rudder pedals through 2 cycles of full travel.

NOTE: This will relieve any standby hydraulic system residual pressure.

1) If it is necessary, jiggle the rudder pedals to put the pedals to the neutral position.

(c) Manually hold the rudder main PCU upper control rod at location A (Figure 508) and pull aft with sufficient force to break out the input override (approximately 30 lbf (133 N)).

1) Hold the control rod in this position for at least 7 seconds, then release.

(d) Make sure that the STBY RUD ON light and STANDBY HYD LOW PRESS light on the overhead panel P5-3 are on.

NOTE: The standby hydraulic pumps will not activate.

(e) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

(f) Make sure that the STANDBY HYD LOW PRESS light on the overhead panel P5-3 is off.

NOTE: The standby hydraulic pumps will activate.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Open this circuit breaker on the P6-2 panel for at least 2 seconds, then close:

1) Open and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

(h) Make sure that the STBY RUD ON light on the overhead panel P5-3 is off.

(i) Put the FLT CONTROL B switch, on the P5 panel, to the STBY RUD position.

(j) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

(k) Put the FLT CONTROL B switch, on the P5 panel, to the ON position.

(l) Move the rudder pedals through 2 cycles of full travel.

1) If it is necessary, jiggle the rudder pedals to put the pedals to the neutral position.

(m) Manually hold the rudder main PCU upper control rod at location A (Figure 508) and pull forward with sufficient force to break out the input override (approximately 30 lbf (133 N)).

1) Hold the control rod in this position for at least 7 seconds, then release.

(n) Make sure that the STBY RUD ON light and STANDBY HYD LOW PRESS light on the overhead panel P5-3 are on.

NOTE: STANDBY HYD LOW PRESS light will not come on until hydraulic pressure has bled off (approximately 5 minutes).

NOTE: The standby hydraulic pumps will not activate.

(o) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

(p) Make sure that the STANDBY HYD LOW PRESS light on the overhead panel P5-3 is off.

NOTE: The standby hydraulic pumps will activate.

(q) Open this circuit breaker on the P6-2 panel for at least 2 seconds, then close:

1) Open and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

(r) Make sure that the STBY RUD ON light on the overhead panel P5-3 is off.

SUBTASK 27-21-00-860-107

(17) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-00-860-108

(18) Put the airplane back to the ground mode (TASK 32-09-00-860-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-00-410-007

(19) Install these access panels:

Number	Name/Location
324CL	Vertical Fin, Access
324EL	Vertical Fin, Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the rudder

(2) An installation of the rudder.

TASK 27-21-11-000-801

2. Rudder Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-24-000-801	Standby Rudder Power Control Unit Removal (P/B 401)
27-21-91-000-801	Main Rudder Power Control Unit Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2033	Sling Eqpt - Rudder, Removal / Instl Part #: C27035-20 Supplier: 81205

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge
325	Vertical Fin - Rudder

D. Access Panels

Number	Name/Location
324ACL	Rudder Nose Cover/Rudder Hinge No. 8 At Rudder Station 276.24
324ADL	Rudder Nose Cover/Rudder Hinge No. 7 At Rudder Station 257.92
324AEL	Rudder Nose Cover/Rudder Hinge No. 6 At Rudder Station 239.61
324AFL	Rudder Nose Cover/Rudder Hinge No. 5 At Rudder Station 184.67
324AHL	Rudder Nose Fairing/Rudder Hinge No. 4 At Rudder Station 129.74.
324AJL	Rudder Nose Fairing/Rudder Hinge No. 3 At Rudder Station 70.65
324AKL	Rudder Nose Fairing/Rudder Hinge No. 2 At Rudder Station 53.48
324ALL	Rudder Nose Cover/Rudder Hinge No. 1 At Rudder Station 6.96

E. Prepare for the Removal

SUBTASK 27-21-11-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-11-020-001

(2) Remove the seals and seal attachment plates from each side of the fin at the rudder balance weight.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-11-010-001

(3) Remove these covers:

Number	Name/Location
324ACL	Rudder Nose Cover/Rudder Hinge No. 8 At Rudder Station 276.24
324ADL	Rudder Nose Cover/Rudder Hinge No. 7 At Rudder Station 257.92
324AEL	Rudder Nose Cover/Rudder Hinge No. 6 At Rudder Station 239.61
324AFL	Rudder Nose Cover/Rudder Hinge No. 5 At Rudder Station 184.67
324AHL	Rudder Nose Fairing/Rudder Hinge No. 4 At Rudder Station 129.74.
324AJL	Rudder Nose Fairing/Rudder Hinge No. 3 At Rudder Station 70.65
324AKL	Rudder Nose Fairing/Rudder Hinge No. 2 At Rudder Station 53.48
324ALL	Rudder Nose Cover/Rudder Hinge No. 1 At Rudder Station 6.96

SUBTASK 27-21-11-860-002

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

F. Rudder Removal

SUBTASK 27-21-11-480-001

(1) Do these steps to install the rudder sling, SPL-2033 (Figure 401):

NOTE: If you use the crane, do this step when you have enough room for the crane.

(a) Install the hoist fittings on the rudder [1] with a ¼ in. (6.4 mm) drive socket.

(b) Install four ropes to make sure that the rudder does not rotate and hit the airplane.

(c) Attach the sling to the hoist fittings installed on the rudder [1].

SUBTASK 27-21-11-020-002

(2) Remove the nut [46], washers [45], and bolt [44] to disconnect the bonding jumper [47] from the vertical fin at hinge 9 (Figure 402).

SUBTASK 27-21-11-020-003

(3) Disconnect the control rod of the rudder position transmitter from the vertical fin:

(a) Remove the bolt [23], washer [24], and washer [25].

(b) Disconnect the control rod.

SUBTASK 27-21-11-020-004

CAUTION

REMOVE THE CONTROL ROD FROM THE PCU BEFORE YOU DISCONNECT THE PCU FROM THE RUDDER. IF YOU DO NOT REMOVE THE CONTROL ROD FIRST, DAMAGE TO THE CONTROL ROD CAN OCCUR DURING THE CHECK.

(4) Do these steps to disconnect the rudder main power control unit (PCU) from the rudder [1]:

(a) Disconnect and remove the control rods [51] from the main PCU (TASK 27-21-91-000-801).

(b) Remove nut [15], washer [14], nut [13], washer [12], bushing [11], bolt [10], and bolt [9].

SUBTASK 27-21-11-020-005

(5) Do these steps to disconnect the rudder standby power control unit (PCU) from the rudder [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Disconnect and remove the control rod [52] from the standby PCU (TASK 27-21-24-000-801).

(b) Remove nut [29], washer [28], bushing [50], washer [27], and bolt [26].

SUBTASK 27-21-11-020-006

(6) Move the rudder [1] to the neutral position.

SUBTASK 27-21-11-020-007

(7) Lift the rudder [1] until the load is removed from its hinges.

SUBTASK 27-21-11-020-008

WARNING MAKE SURE THAT THE CRANE WILL HOLD THE RUDDER IN A STABLE POSITION WHEN YOU REMOVE THE HINGE BOLTS. ACCIDENTAL RUDDER MOVEMENT WHEN YOU DISCONNECT IT FROM THE AIRPLANE CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Remove the hinge bolts from the hinges:

(a) At hinges 1, 4, 5, 6, and 8, remove the pins [35], nuts [34], washers [33], bushings [32], washers [31], and bolt [30] from the hinges.

1) Discard the pins [35].

(b) At hinge 7, remove the pin [43], nut [42], washer [41], washer [39], bushing [38], washer [37], and bolt [36] from the hinge.

1) Discard the pin [43].

(c) At hinge 2, remove the pin [2], nut [3], washer [4], spacer [5], bushing [6], washer [7], and bolt [8] from the hinge.

1) Discard the pin [2].

(d) At hinge 3, remove the pin [22], nut [21], washer [20], adjustment bushing [19], bushing [18], washer [17], and bolt [16] from the hinge.

1) Discard the pin [22].

(e) At hinge 9, remove the pin [35], nut [34], washer [33], bushing [32], washer [31], and bolt [30] from the hinge.

1) Discard the pin [35].

SUBTASK 27-21-11-020-009

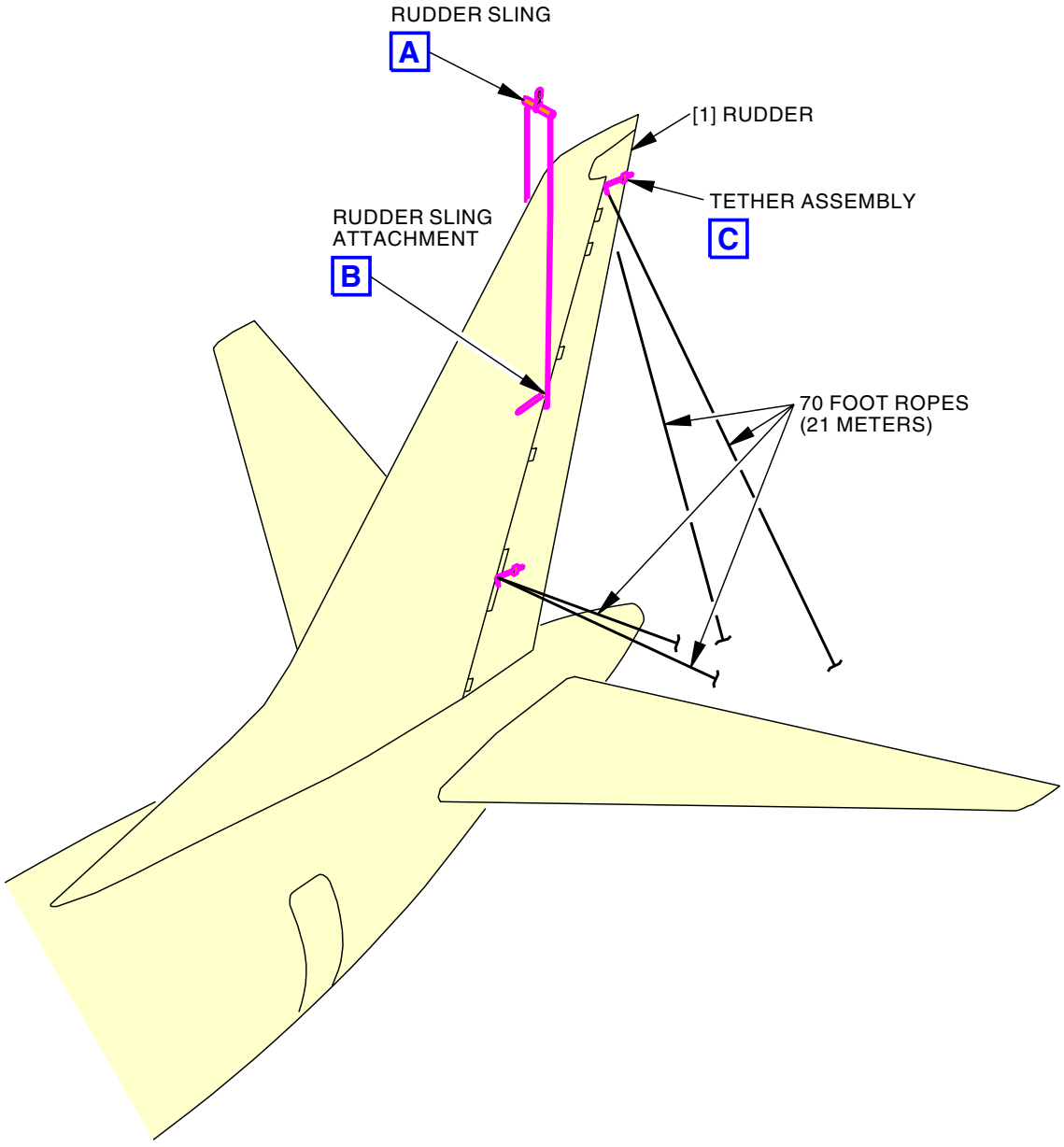
CAUTION YOU MUST MOVE THE RUDDER UP BEFORE YOU REMOVE IT FROM THE VERTICAL FIN. IF YOU DO NOT MOVE THE RUDDER UP, YOU CAN CAUSE DAMAGE TO THE RUDDER TIP.

(9) Do this step to remove the rudder [1]:

(a) Move the rudder [1] up and aft from the vertical fin and lower to the ground.

END OF TASK

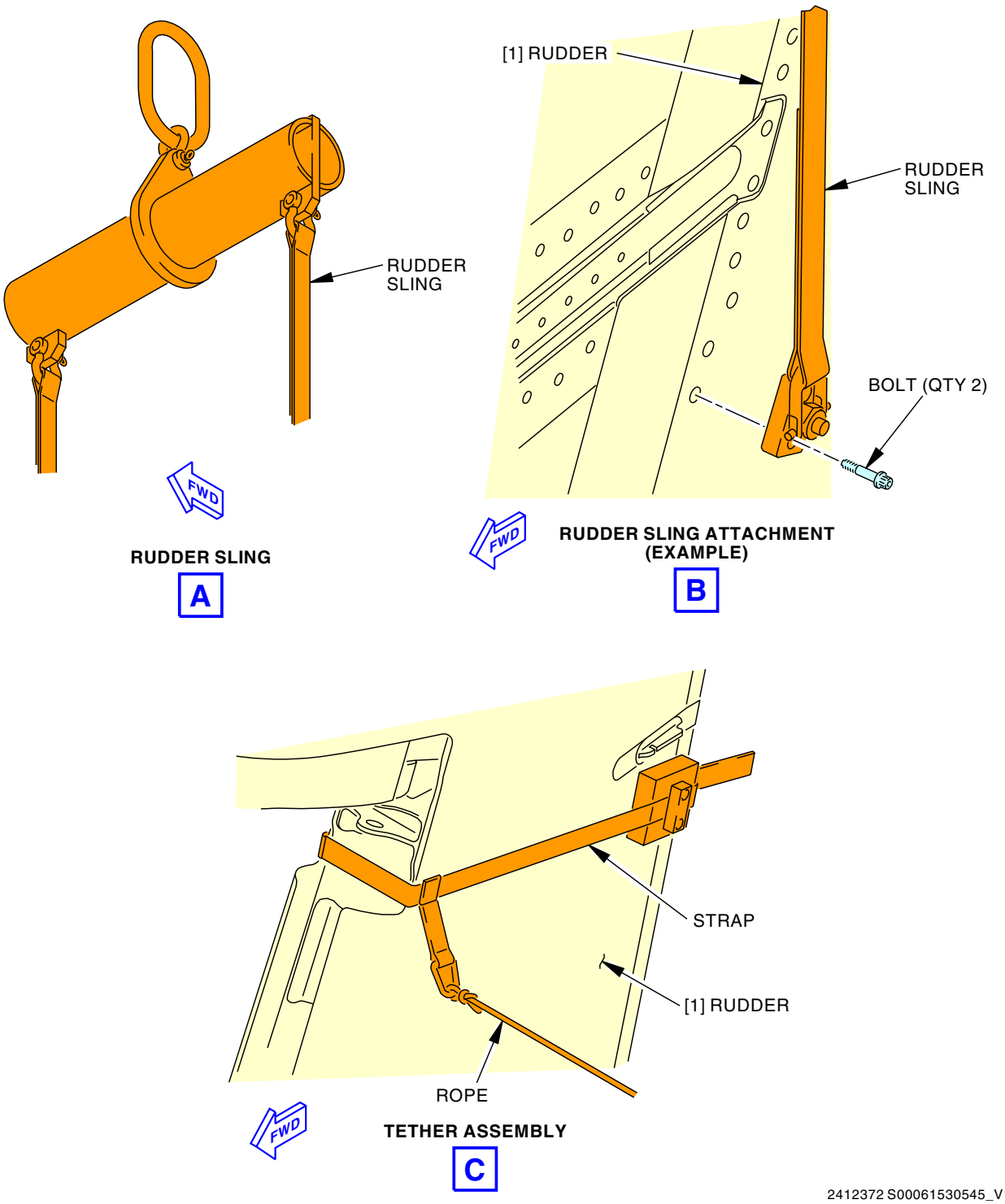
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412371 S00061530544_V1

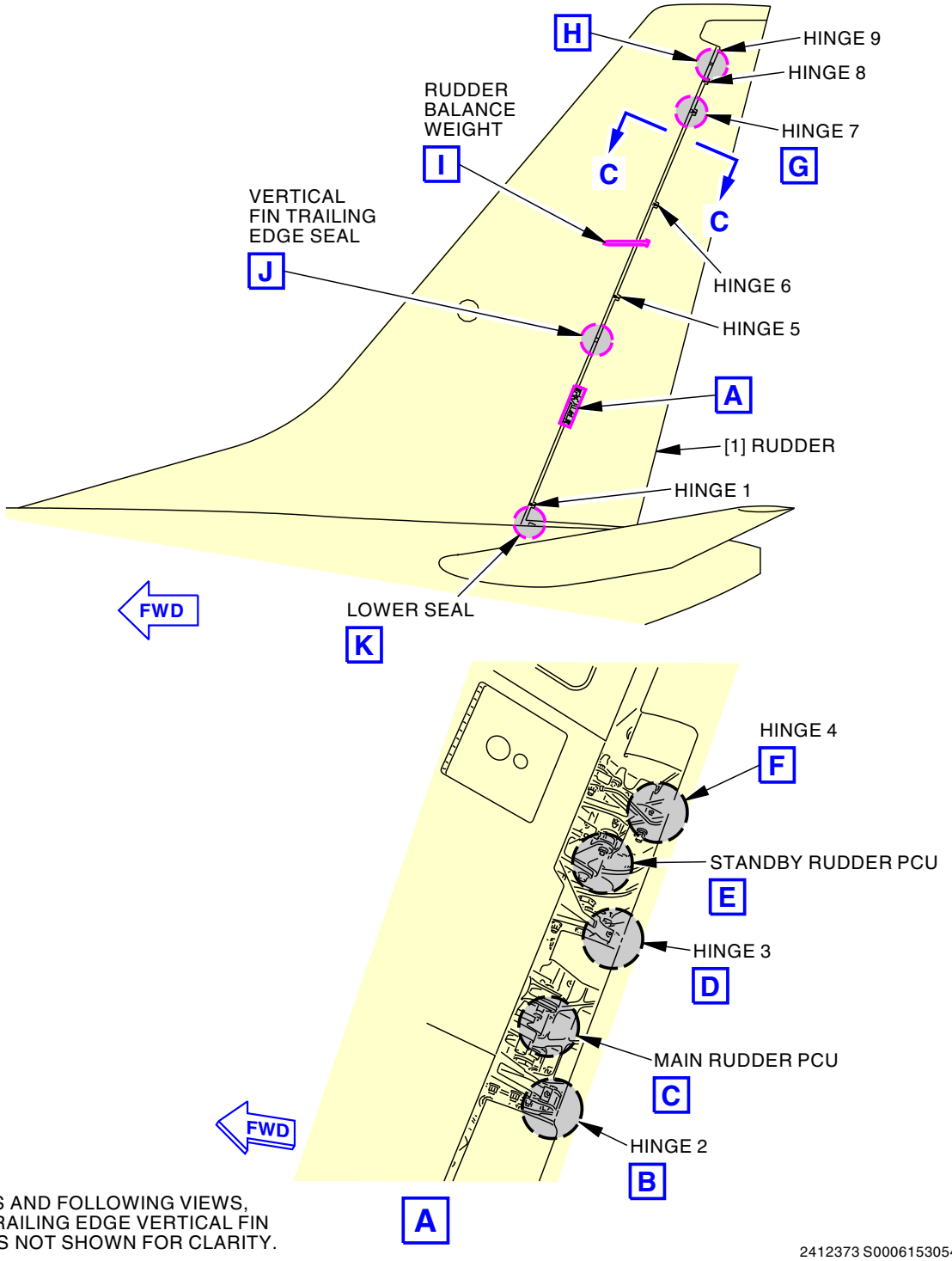
Rudder Sling Installation
Figure 401/27-21-11-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Sling Installation
Figure 401/27-21-11-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



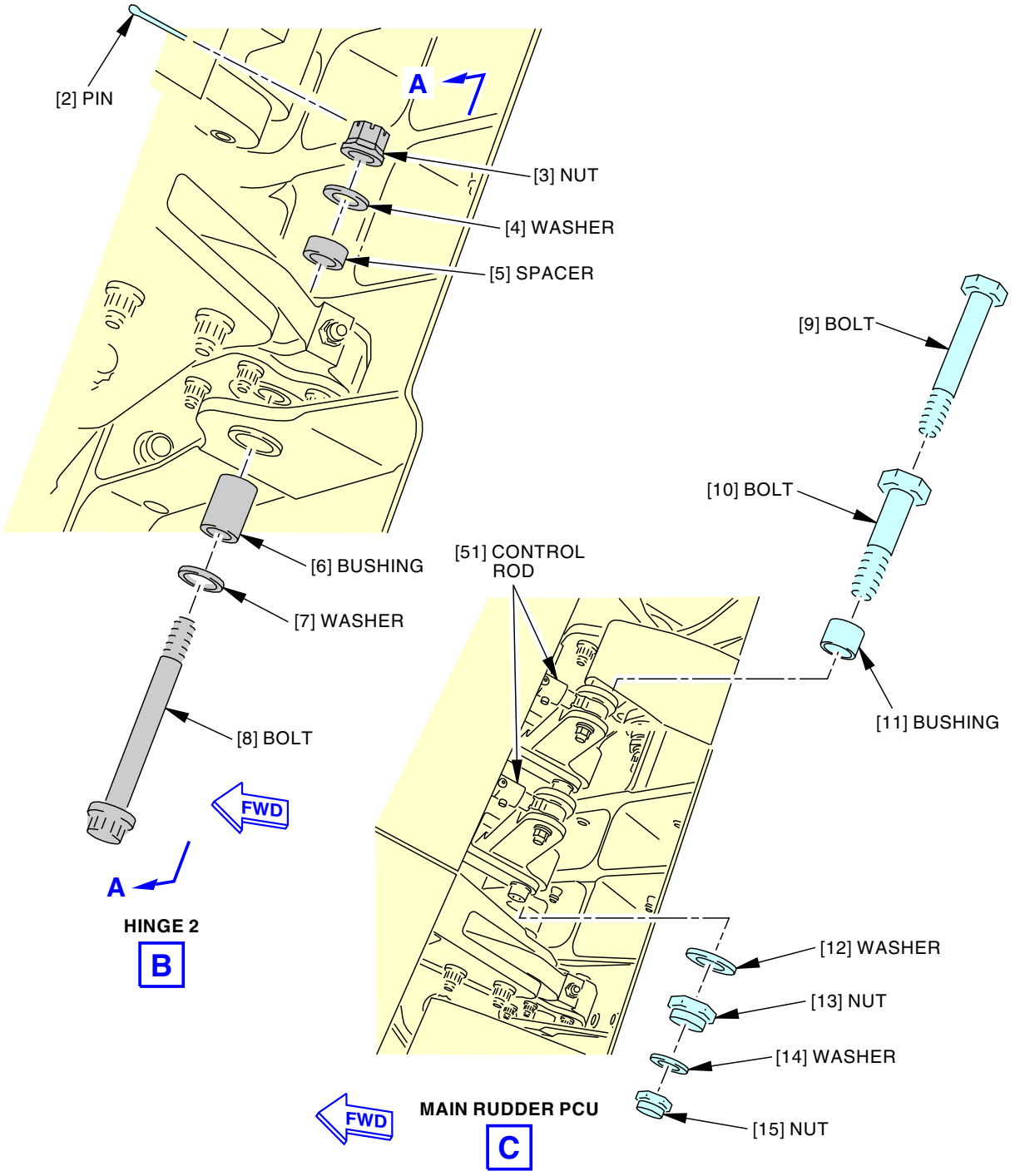
NOTE:

IN THIS AND FOLLOWING VIEWS, THE TRAILING EDGE VERTICAL FIN SEAL IS NOT SHOWN FOR CLARITY.

2412373 S00061530546_V1

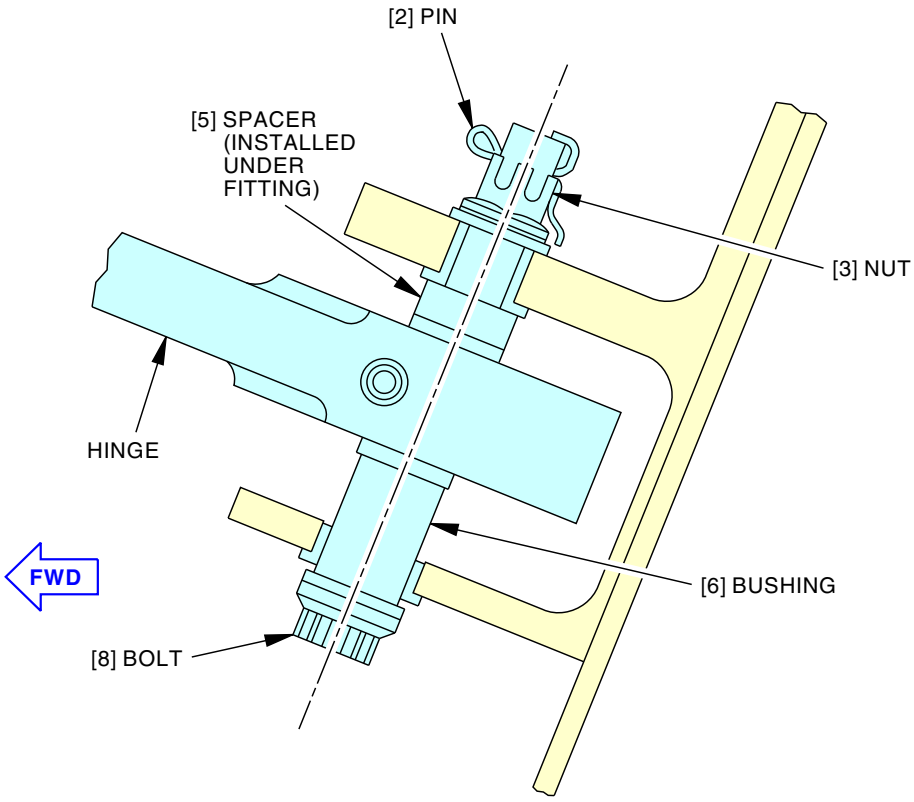
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

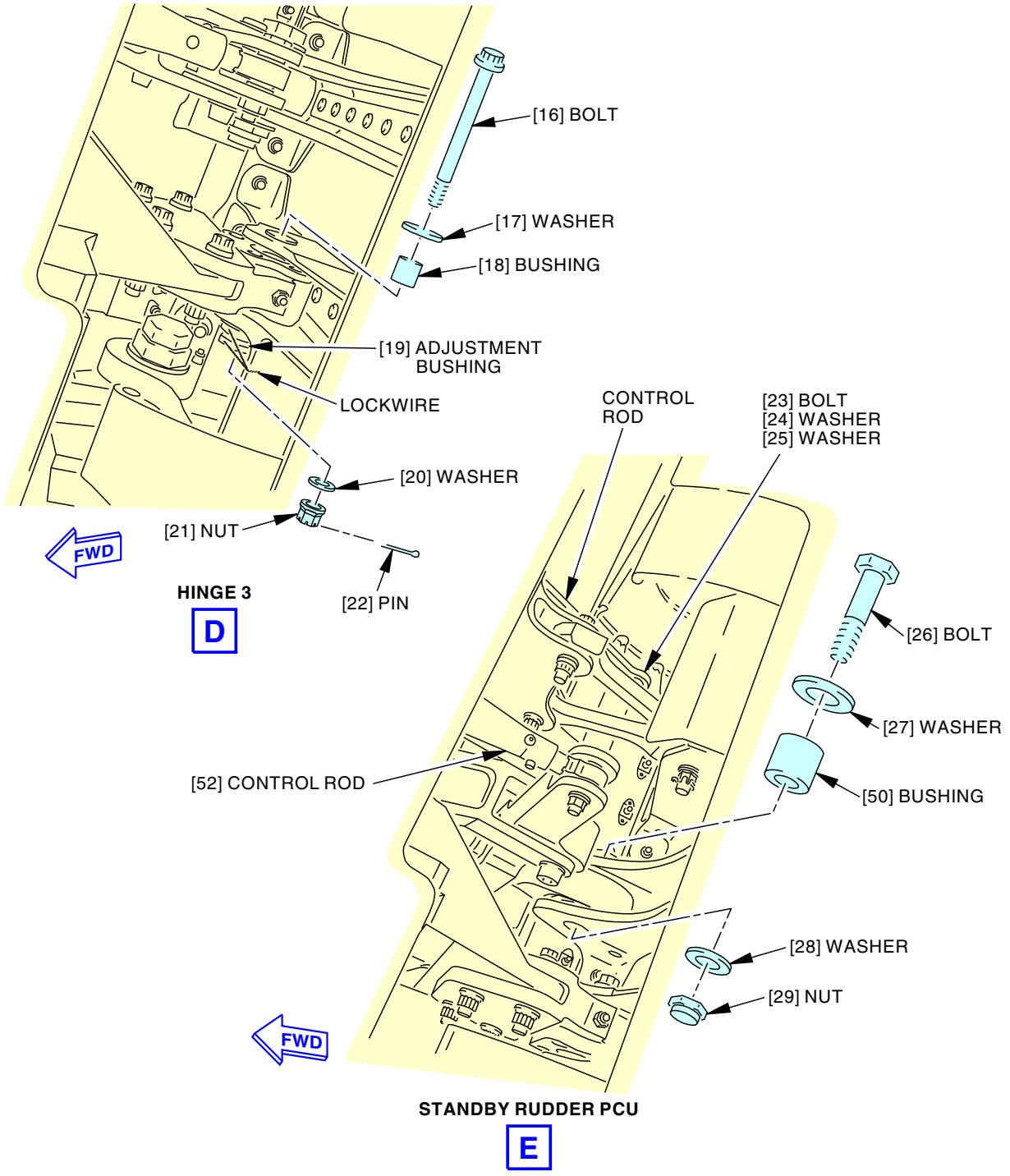


HINGE 2
A-A

2412375 S00061530548_V1

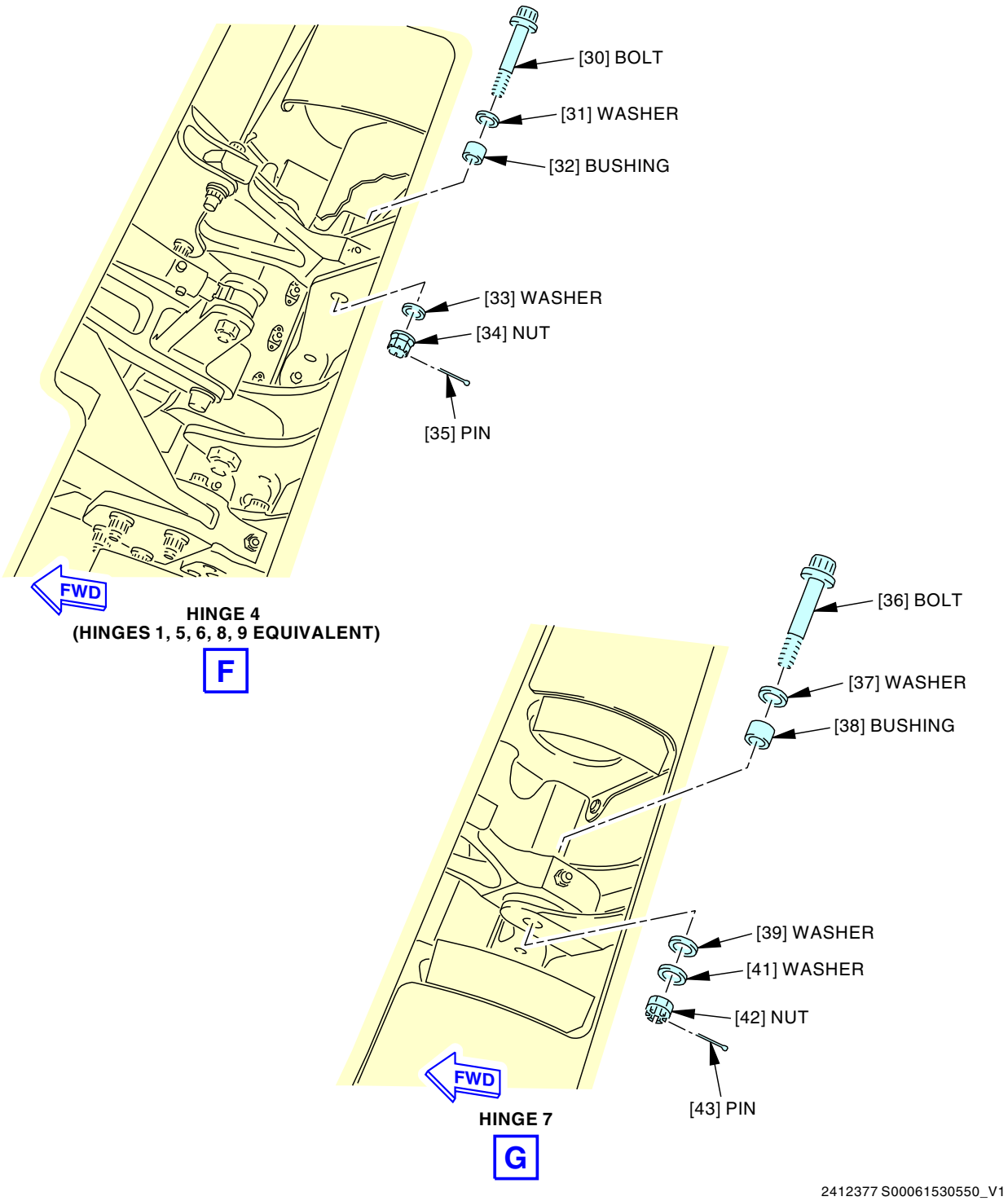
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



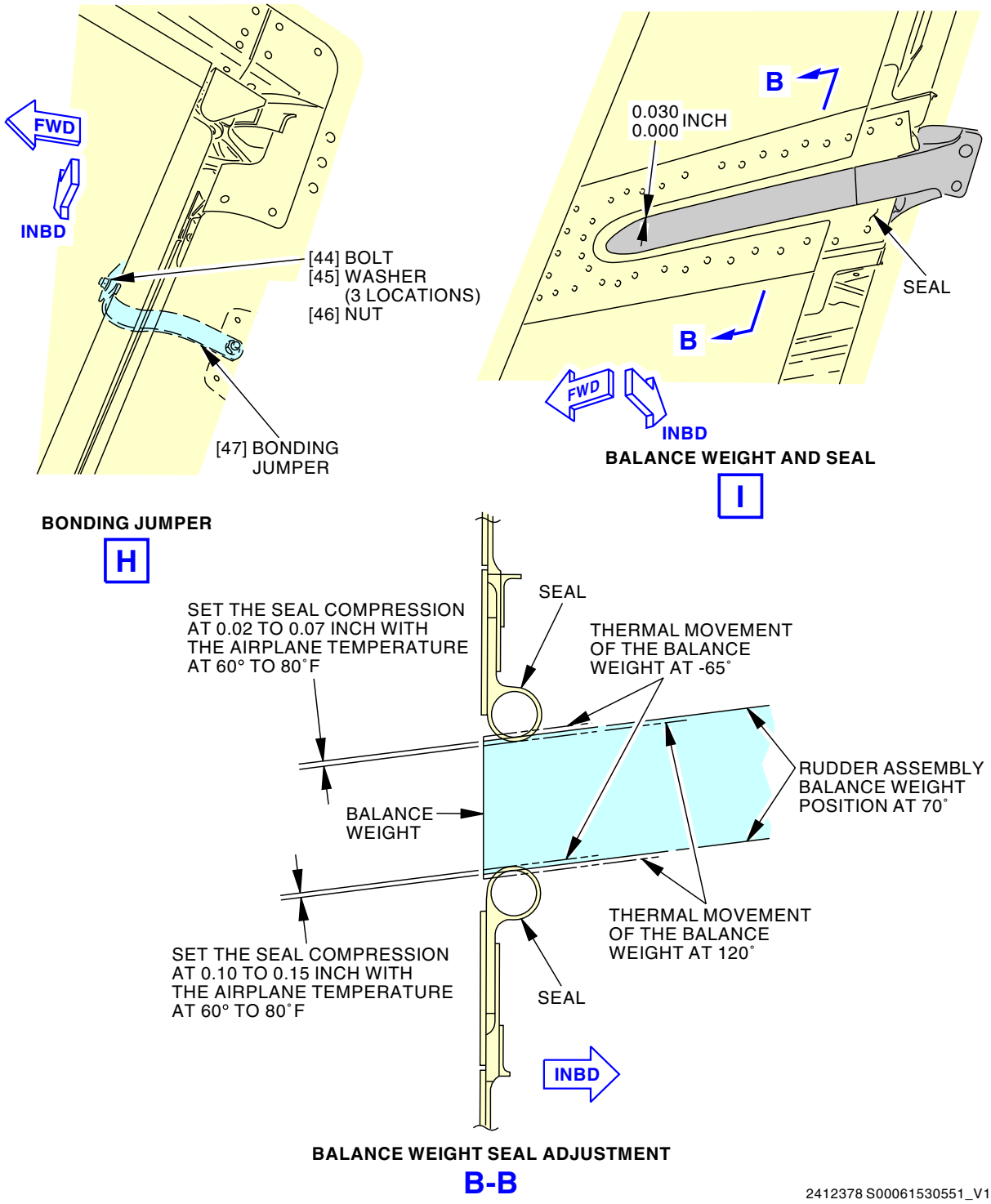
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



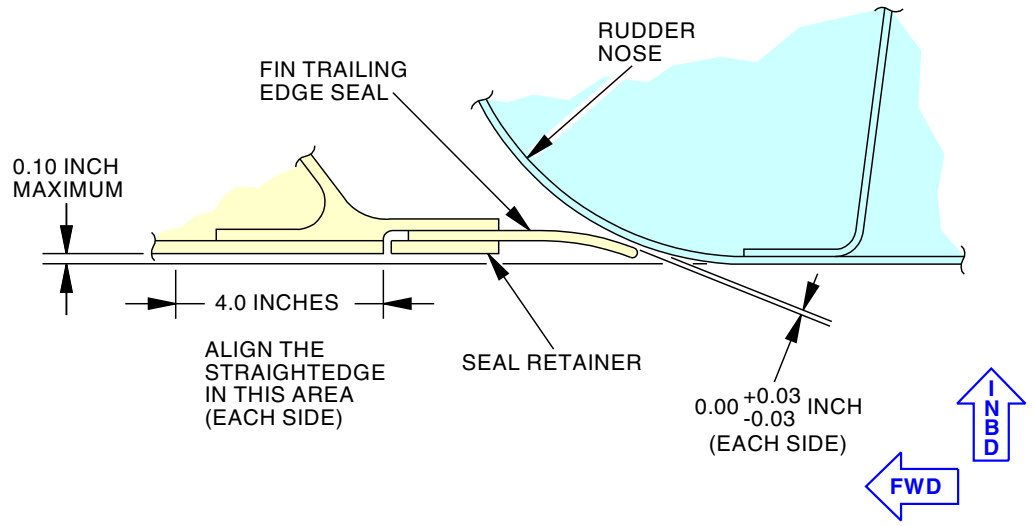
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



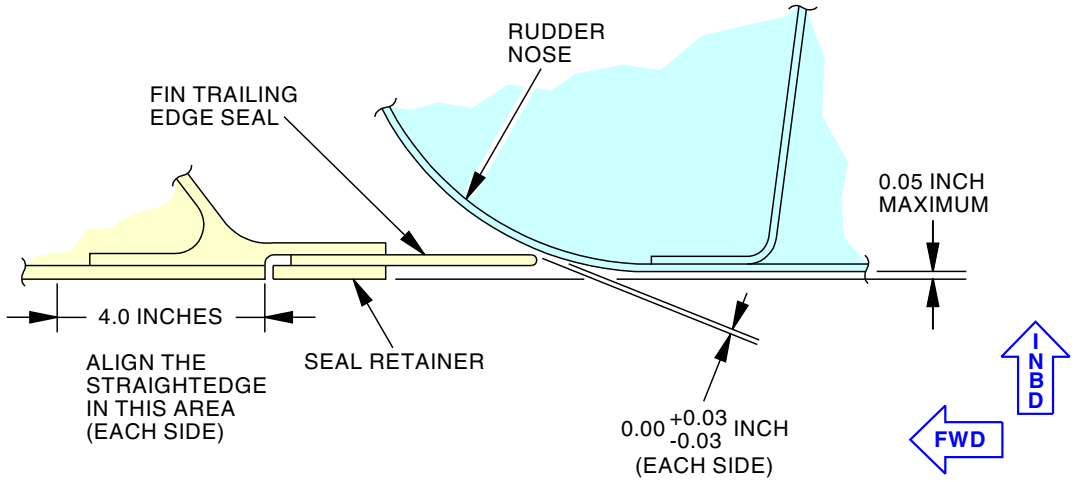
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



POSITIVE MISMATCH

C-C



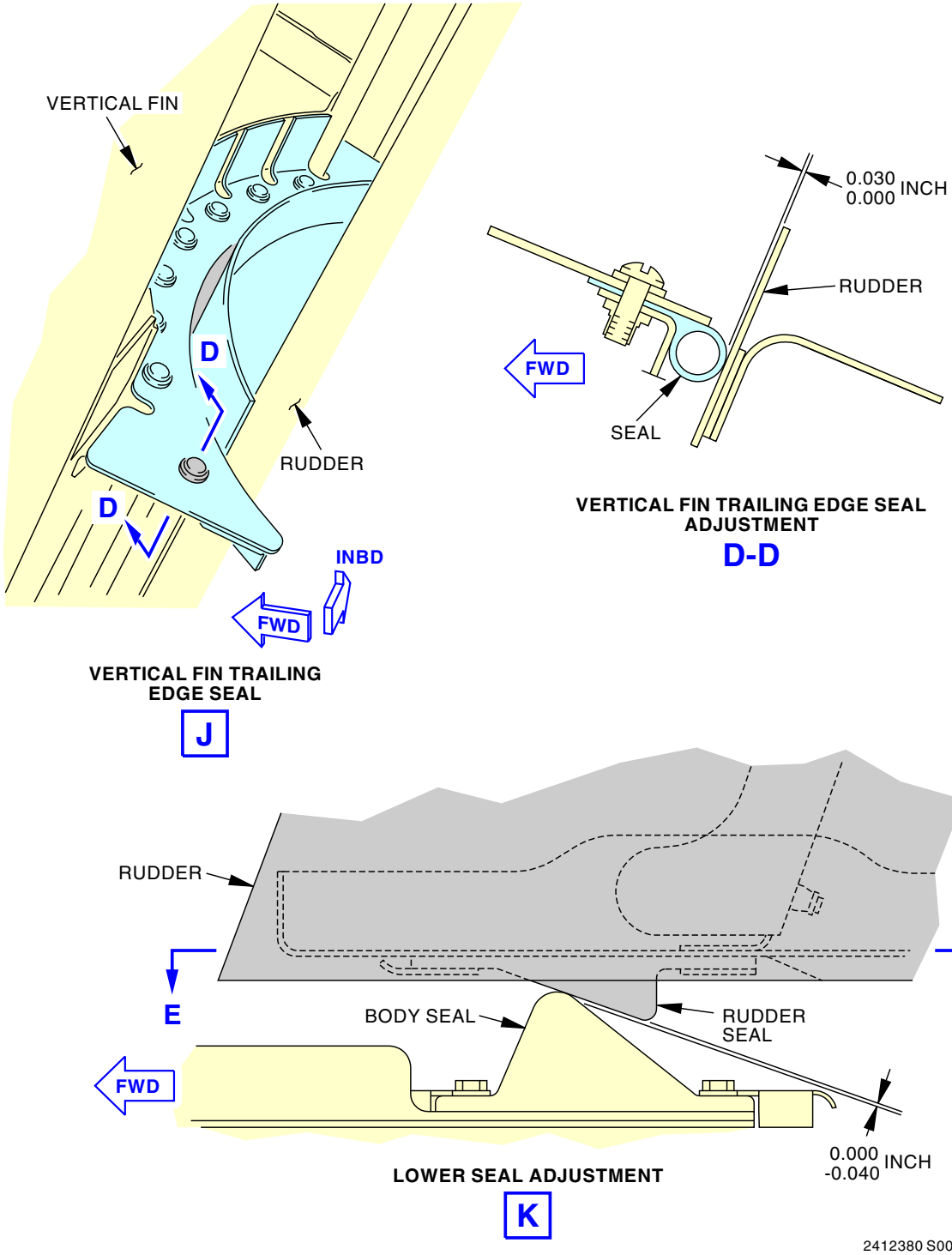
NEGATIVE MISMATCH

C-C

2412379 S00061530552_V1

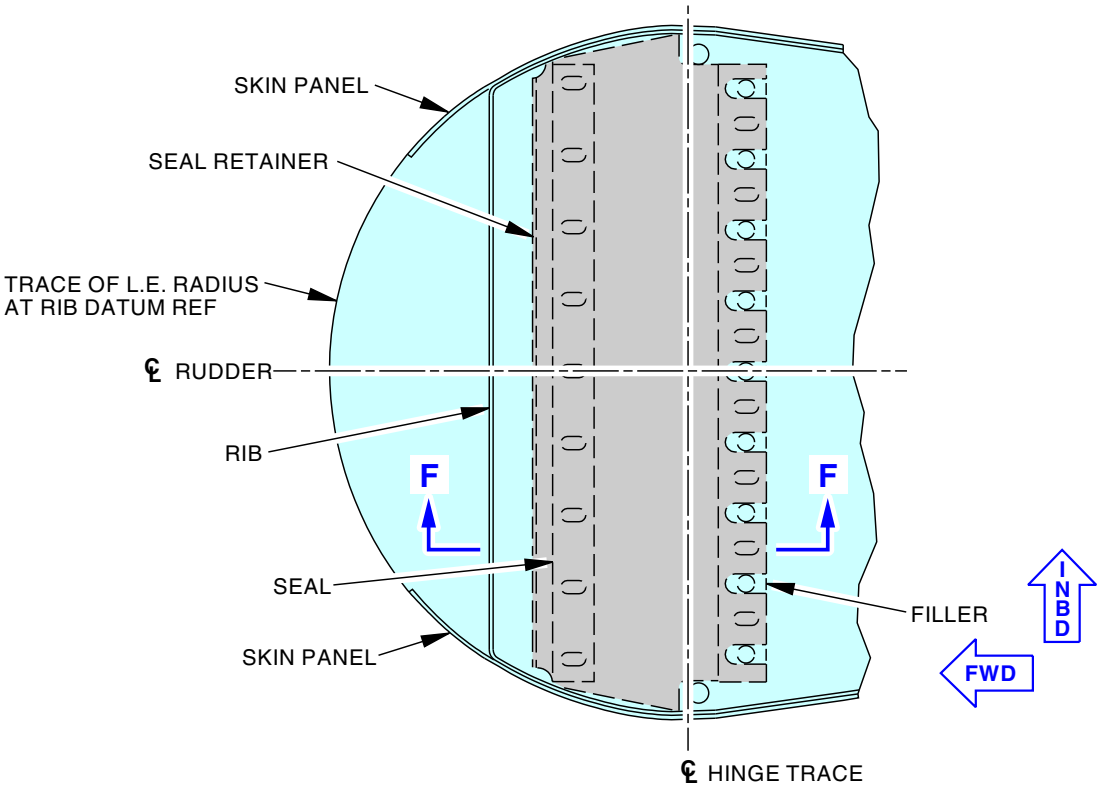
Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

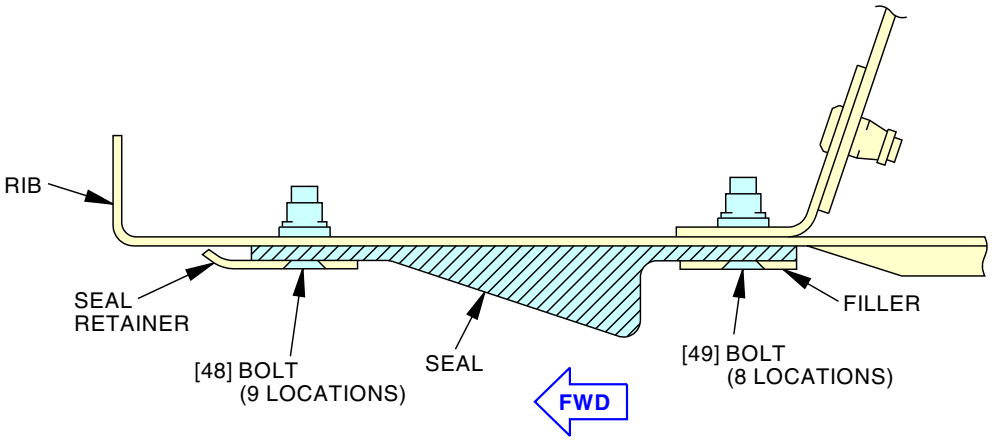


Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



E-E



F-F

2412381 S00061530554_V1

Rudder Installation
Figure 402/27-21-11-990-802 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-11-400-801

3. Rudder Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-21-00-700-802	Rudder Hinge Bearing and PCU Bearing Freeplay (P/B 501)
27-21-00-700-803	Rudder Centering Test (P/B 501)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-700-809	Rudder Hinge Friction Test (P/B 501)
27-21-24-400-801	Standby Rudder Power Control Unit Installation (P/B 401)
27-21-91-400-801	Main Rudder Power Control Unit Installation (P/B 401)
31-31-41-700-801	Rudder Position Transmitter Installation Test (P/B 401)
SRM 51-60-07-0G-0	Rudder Balance Procedure

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-2033	Sling Eqpt - Rudder, Removal / Instl Part #: C27035-20 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Rudder	55-40-00-01A-080	SIA ALL
2	Pin	55-40-00-01A-005	SIA ALL
22	Pin	55-40-00-01A-005	SIA ALL
35	Pin	55-40-00-01A-005	SIA ALL
43	Pin	55-40-00-01A-005	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge
325	Vertical Fin - Rudder

F. Access Panels

Number	Name/Location
324ACL	Rudder Nose Cover/Rudder Hinge No. 8 At Rudder Station 276.24
324ADL	Rudder Nose Cover/Rudder Hinge No. 7 At Rudder Station 257.92
324AEL	Rudder Nose Cover/Rudder Hinge No. 6 At Rudder Station 239.61
324AFL	Rudder Nose Cover/Rudder Hinge No. 5 At Rudder Station 184.67
324AHL	Rudder Nose Fairing/Rudder Hinge No. 4 At Rudder Station 129.74.
324AJL	Rudder Nose Fairing/Rudder Hinge No. 3 At Rudder Station 70.65
324AKL	Rudder Nose Fairing/Rudder Hinge No. 2 At Rudder Station 53.48
324ALL	Rudder Nose Cover/Rudder Hinge No. 1 At Rudder Station 6.96

G. Rudder Installation

CAUTION

BE CAREFUL WHEN YOU MOVE THE RUDDER. IF THE CONTROL ROD HITS THE VERTICAL STABILIZER, DAMAGE CAN OCCUR.

SUBTASK 27-21-11-820-004

(1) Balance and stamp the rudder assembly with the new static balance hinge moment if you install a reworked, repaired, repainted, or new rudder assembly (SRM PROCEDURE 51-60-07-0G-0).

SUBTASK 27-21-11-860-003

(2) Loosen all the seals at the trailing edge of the fin and move them fully forward.

SUBTASK 27-21-11-080-001

(3) Connect the rudder sling, SPL-2033, to the rudder [1] (Figure 401).

SUBTASK 27-21-11-420-001

(4) Do these steps to put the rudder [1] in its position and connect the hinges:

NOTE: A maximum of two washers are allowed under the bolt head or two washers under the nut. No more than three washers are allowed on any individual bolt unless relief for the bolt is necessary. A maximum of four washers are allowed on an individual bolt if one each is used for fillet distortion compensation, fillet relief, finish protection, and grip adjustment or counterbore substitution.

(a) Apply a thin layer of grease, D00633, to the smooth surfaces of all the hinge bolts (outer diameter), bushings (inner diameter), and bearings before you install them.

(b) Put the rudder sling, SPL-2033, in its position and connect it to the rudder [1] (Figure 401).

(c) Lift the rudder [1] to its position on the vertical fin.

1) Use the ropes to make sure that the rudder does not hit the airplane.

(d) Install the bolts, washers, spacers, and bushings that follow:

1) At hinges 1, 4, 5, 6, 8, and 9, install the bushings [32], washers [31], and bolts [30] to the hinge fittings.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) At hinge 2, install the spacer [5] (under the fitting), bushing [6], washer [7], and bolt [8] to the hinge fitting.

3) At hinge 3, install the bushing [18], washer [17], and bolt [16] to the hinge fitting.

4) At hinge 7, install bushing [38], washer [37], and bolt [36] to the hinge fitting.

(e) Release the rudder [1] slowly until the load is on its hinges.

(f) Make sure that the torque required to rotate the bolts is less than 100 in-lb (11.3 N·m).

(g) Install the nuts, washers, and pins in the order that follow:

1) At hinge 2, install the washer [4] (above the fitting) and nut [3].

a) Tighten the nut [3] to the lower end of the torque range 150 in-lb (16.9 N·m) - 200 in-lb (22.6 N·m).

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [8].

b) Install the new pin [2].

2) At hinges 1, 4, 5, 6, 8, and 9, install the washers [33] and nuts [34].

a) Tighten the nuts [34] to the lower end of the torque range 150 in-lb (16.9 N·m) - 200 in-lb (22.6 N·m).

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [30].

b) Install the new pin [35].

3) At hinge 3, do these steps:

a) Install the adjustment bushing [19] at hinge 3.

b) Adjust the adjustment bushing [19] until it is against the fin bearing with finger tight pressure only.

c) Install the washer [20] and nut [21].

d) Tighten the nut [21] to the lower end of the torque range 150 in-lb (16.9 N·m) - 200 in-lb (22.6 N·m).

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [16].

e) Install the new pin [22].

f) Install the MS20995C32 lockwire, G01048, from the adjustment bushing [19] to hinge fitting.

g) Fill the holes of the MS20995C32 lockwire, G01048, with sealant, A00247.

4) At hinge 7, install the washer [39], washer [41], and nut [42].

a) Tighten the nut [42] to the lower end of the torque range 150 in-lb (16.9 N·m) - 200 in-lb (22.6 N·m).

<1> Continue to tighten the nut until the next castellation aligns with the hole in the bolt [36].

b) Install the new pin [43].

SUBTASK 27-21-11-620-001

(5) Apply sealant, A00247, to both ends of the bonding jumper [47] and their fasteners.

SUBTASK 27-21-11-420-002

(6) Connect the control rod for the rudder position transmitter to the vertical fin:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the washer [25], washer [24], and bolt [23].

SUBTASK 27-21-11-420-003

(7) Install the bolt [44], washers [45], and nut [46] to connect the bonding jumper [47] to the vertical fin at hinge 9.

(a) Measure the electrical bonding resistance between the vertical fin and rudder [1].

1) Use an intrinsically safe approved bonding meter, COM-1550.

2) Make sure that the electrical bonding resistance is 0.01 ohm (10 milliohm) or less.

SUBTASK 27-21-11-080-002

(8) Remove the rudder sling, SPL-2033.

SUBTASK 27-21-11-220-001

(9) Make sure that there is clearance between all the seals and the forward part of the rudder and the balance weight.

(a) Manually move the rudder approximately seven degrees in each direction to examine the clearance.

SUBTASK 27-21-11-710-001

(10) Move the rudder to the left and right from the neutral position.

(a) Make sure that rudder moves left and right a minimum of 30 degrees from the neutral position.

SUBTASK 27-21-11-420-004

(11) Do this step to connect the rudder standby power control unit (PCU) to the rudder [1]:

(a) Install bolt [26], washer [27], bushing [50], washer [28], and nut [29].

(b) Tighten the nut [29] to 350 in-lb (39.5 N·m) - 400 in-lb (45.2 N·m) .

(c) Install the rudder standby PCU control rod [52] (TASK 27-21-24-400-801).

SUBTASK 27-21-11-420-005

(12) Do these steps to connect the rudder main PCU to the rudder [1]:

(a) Install the bushing [11], bolt [10], bolt [9], washer [12], and nut [13].

1) Tighten the nut [13] to 900 in-lb (102 N·m) - 1050 in-lb (119 N·m).

CAUTION

DO NOT TIGHTEN THE NUT [13] AFTER YOU TIGHTEN THE NUT[15]. YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Install washer [14] and nut [15].

1) Tighten the nut [15] to 450 in-lb (51 N·m) - 550 in-lb (62 N·m).

(c) Install the control rods [51] that you removed between the torque tube and the main PCU (TASK 27-21-91-400-801).

SUBTASK 27-21-11-220-002

(13) Make sure that the mismatch between the rudder [1] and the vertical fin is correct at each of rib locations (View B-B, Figure 402).

SUBTASK 27-21-11-820-001

(14) Adjust the seals at the trailing edge of the vertical fin and tighten them (Views J and C-C, Figure 402).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-11-820-002

(15) Adjust the balance weight seals on the vertical fin and tighten the seal retainers (Views I and A-A, Figure 402).

SUBTASK 27-21-11-820-003

(16) Adjust the seal compression for the lower (rudder to body) seal (Views K, D-D, and E-E, Figure 402):

(a) Move the rudder [1] to its neutral position.

(b) Make sure that the seals contact and that the seal compression is 0.00 in. (0.00 mm) - -0.04 in. (-1.02 mm).

(c) If it is necessary, do these steps to adjust the seal:

1) Loosen the bolts [48] and bolts [49] from the seal.

2) Adjust the seal until they both contact and the seal compression is 0.00 in. (0.00 mm) - -0.04 in. (-1.02 mm).

3) Tighten the bolts [48] and bolts [49].

(d) Make sure that the seal does not cause a blockage at the left and right rudder drain holes.

SUBTASK 27-21-11-860-004

(17) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-11-220-003

(18) Do this task: Rudder Hinge Bearing and PCU Bearing Freeplay, TASK 27-21-00-700-802.

SUBTASK 27-21-11-220-004

(19) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

SUBTASK 27-21-11-220-005

(20) Do this task: Rudder Centering Test, TASK 27-21-00-700-803.

SUBTASK 27-21-11-220-006

(21) Do this task: Rudder Hinge Friction Test, TASK 27-21-00-700-809.

SUBTASK 27-21-11-220-007

(22) Do this task: Rudder Position Transmitter Installation Test, TASK 31-31-41-700-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-11-410-001

(1) Install these covers:

Number	Name/Location
324ACL	Rudder Nose Cover/Rudder Hinge No. 8 At Rudder Station 276.24
324ADL	Rudder Nose Cover/Rudder Hinge No. 7 At Rudder Station 257.92
324AEL	Rudder Nose Cover/Rudder Hinge No. 6 At Rudder Station 239.61
324AFL	Rudder Nose Cover/Rudder Hinge No. 5 At Rudder Station 184.67
324AHL	Rudder Nose Fairing/Rudder Hinge No. 4 At Rudder Station 129.74.
324AJL	Rudder Nose Fairing/Rudder Hinge No. 3 At Rudder Station 70.65
324AKL	Rudder Nose Fairing/Rudder Hinge No. 2 At Rudder Station 53.48

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
324ALL	Rudder Nose Cover/Rudder Hinge No. 1 At Rudder Station 6.96

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER INDEX PLATE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the rudder index plate.

(2) An installation of the rudder index plate.

TASK 27-21-17-000-801

2. Rudder Index Plate Removal

(Figure 401)

A. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

B. Rudder Index Plate Removal

SUBTASK 27-21-17-930-001

(1) Put a tape on the airplane adjacent to the rudder index plate [1].

(a) Accurately make a mark of the position of the rudder index plate [1] on the tape.

SUBTASK 27-21-17-020-001

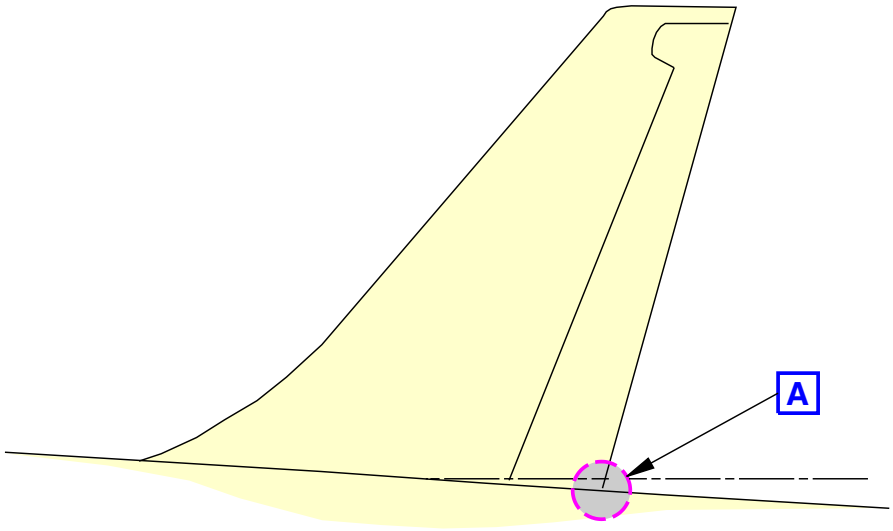
(2) Remove the screws [2] and washers [3] to remove the rudder index plate [1].

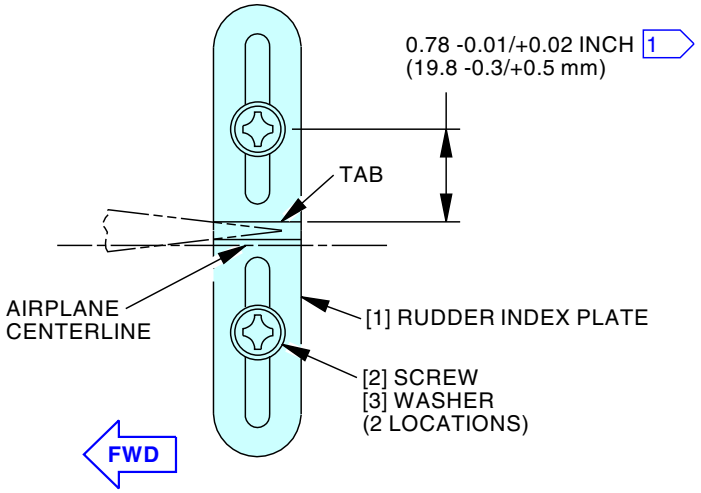
SUBTASK 27-21-17-020-002

(3) Remove the rudder index plate [1] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





RUDDER INDEX PLATE

A

NOTE:

1 THIS DIMENSION MAY BE DIFFERENT IF THE INDEX PLATE HAS BEEN ADJUSTED FOR LATERAL TRIM.

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Rudder Index Plate Installation
Figure 401/27-21-17-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-17-400-801

3. Rudder Index Plate Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Rudder index plate	27-21-17-01-025	SIA ALL

B. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

C. Rudder Index Plate Installation

SUBTASK 27-21-17-420-001

(1) If there is tape with a mark that shows the correct position, then do these steps to install the rudder index plate [1]:

(a) Put the rudder index plate [1] in its position and align it with the mark.

(b) Install the screws [2] and washers [3] to install the rudder index plate [1].

(c) Remove the tape (that has the mark on it) from the airplane.

SUBTASK 27-21-17-420-002

(2) If there is not a tape with a mark that shows the correct position, then do these steps to install the rudder index plate [1]:

(a) Put the rudder index plate [1] in its position (Figure 401).

(b) Install the screws [2] and washers [3] to install the rudder index plate [1].

(c) Make sure the rudder index plate [1] is set at 0.78 +0.02 / -0.01 in. (19.8 +0.5 / -0.3 mm) (Figure 401).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STANDBY RUDDER POWER CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the standby rudder power control unit (PCU)

(2) An installation of the standby rudder PCU.

TASK 27-21-24-000-801

2. Standby Rudder Power Control Unit Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

E. Prepare for the Removal

SUBTASK 27-21-24-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-24-860-002

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-24-010-001

(3) Remove this access panel:

Number	Name/Location
324DL	Trailing Edge Access

F. Standby Rudder PCU Removal

SUBTASK 27-21-24-020-001

(1) Disconnect the hydraulic lines [12] from the power control unit [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE THAT YOU CAREFULLY DRAIN HYDRAULIC FLUID INTO A SUITABLE CONTAINER. CAREFULLY CLEAN, DRY, AND DISPOSE OF ALL LEAKAGE. HYDRAULIC FLUID CAUSES DAMAGE TO RUBBER, COPPER, PLASTICS, PAINTS, AND MANY OTHER MATERIALS.

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the hydraulic connections.

(b) Disconnect the hydraulic lines [12] from the power control unit [4].

(c) Install the plugs and caps to the hydraulic lines [12] and ports.

(d) Install a tag on the hydraulic lines [12] to make sure that you install them correctly.

1) Discard the packing [3] and packing [11].

SUBTASK 27-21-24-020-002

(2) Disconnect the electrical connector [1] from the power control unit [4].

SUBTASK 27-21-24-020-003

CAUTION

MAKE SURE THAT YOU REMOVE THE VERNIER CONTROL ROD FROM THE PCU BEFORE YOU DISCONNECT THE PCU FROM THE RUDDER. IF YOU DO NOT REMOVE THE VERNIER CONTROL ROD FIRST, IT CAN CAUSE DAMAGE TO THE VERNIER CONTROL ROD.

(3) Disconnect the vernier control rod [9] from the power control unit [4].

(a) Remove the nut [8], washer [7], washer [6], and bolt [5] to disconnect the control rod [9] from the power control unit [4].

(b) Remove the nut [28], washer [27], washer [26], and bolt [25] to disconnect the control rod [9] from the power control unit [4].

(c) Remove the control rod [9] from the airplane.

SUBTASK 27-21-24-020-004

CAUTION

MAKE SURE THAT YOU MOVE THE PCU CAREFULLY DURING THE REMOVAL OR INSTALLATION OF THE PCU. THE PCU CAN HIT THE BOLTS. THIS CAN CAUSE DAMAGE TO THE BOLTS.

(4) Remove the power control unit [4].

(a) Remove the nut [24], washers [23], bushing [22], washer [21], and bolt [20] to disconnect the power control unit [4] from the rudder.

CAUTION

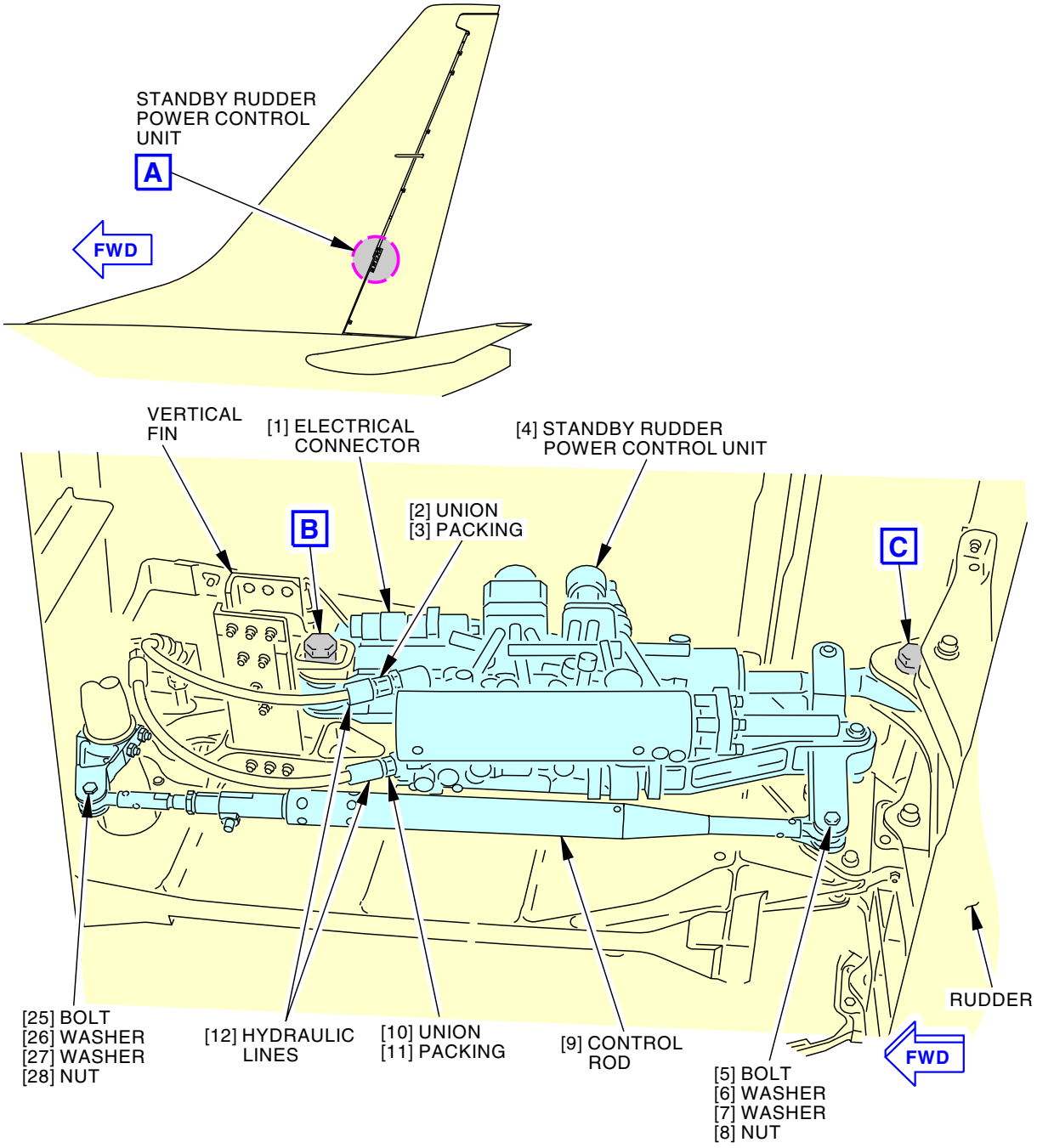
MAKE SURE THAT YOU HOLD THE STANDBY RUDDER PCU DURING THE REMOVAL OF THE STANDBY RUDDER PCU. THE STANDBY RUDDER PCU CAN FALL AND CAUSE DAMAGE TO THE STANDBY RUDDER PCU.

(b) Remove the nut [19], washer [18], washer [17], bushing [16], bushing [15], washer [14], and bolt [13] that attach the power control unit [4] to the airplane structure.

(c) Remove the power control unit [4] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



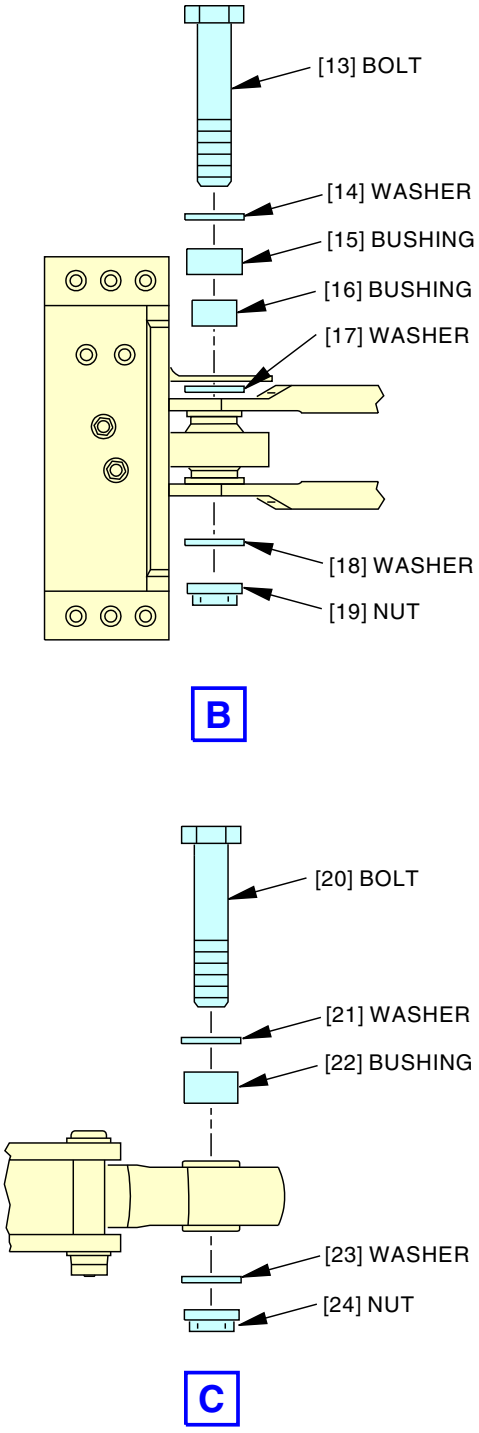
STANDBY RUDDER POWER CONTROL UNIT

A

2412383 S00061530564_V1

Standby Rudder Power Control Unit Installation
Figure 401/27-21-24-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412384 S00061530565_V2

Standby Rudder Power Control Unit Installation
Figure 401/27-21-24-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-24-400-801

3. Standby Rudder Power Control Unit Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-700-806	Standby Rudder Power Control Unit Deadband Test (P/B 501)
27-21-00-820-805	Control Rod for Standby Rudder Power Control Unit Adjustment (P/B 501)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
27-21-24-210-801	Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection (P/B 601)

B. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Power control unit	27-21-24-01-125	SIA ALL
9	Control rod	27-21-24-01-066	SIA ALL

E. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

F. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

G. Standby Rudder PCU Installation

SUBTASK 27-21-24-220-001

(1) Examine the standby rudder PCU and all connections to the standby rudder PCU for worn areas, do this task: Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection, TASK 27-21-24-210-801.

SUBTASK 27-21-24-420-001

(2) If it the unions and packings are not installed in the power control unit [4], do these steps:

(a) Lubricate the unions and packings with hydraulic fluid, D00153.

(b) Install the union [2] and new packing [3] in the power control unit [4].

(c) Install the union [10] and new packing [11] in the power control unit [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-24-420-002

CAUTION MAKE SURE THAT YOU MOVE THE PCU CAREFULLY DURING THE REMOVAL OR INSTALLATION OF THE PCU. THE PCU CAN HIT THE BOLTS. THIS CAN CAUSE DAMAGE TO THE BOLTS.

(3) Install the power control unit [4].

NOTE: Follow the instructions to install the PCU carefully and do the procedure in the specified sequence. Damage to the control rod [9] may occur if you do not follow the instructions correctly.

(a) Put the power control unit [4] in its position.

(b) Install the bolt [13], washers [14], bushing [15], bushing [16], washer [17], washer [18], and nut [19] to connect the power control unit [4] to the airplane structure.

1) Tighten the nut [19] to 450 ±50 in-lb (51 ±6 N·m) or tighten the bolt [13] to 525 ±50 in-lb (59 ±6 N·m).

(c) Install the bolt [20], washer [21], bushing [22], washer [23], and nut [24] to connect the power control unit [4] to the rudder.

1) Tighten the nut [24] to 350 ±25 in-lb (40 ±3 N·m) or tighten the bolt [20] to 413 ±25 in-lb (47 ±3 N·m).

SUBTASK 27-21-24-420-003

(4) Connect the vernier control rod [9] to the power control unit [4].

(a) Install the bolt [25], washer [26], washer [27], and nut [28] to connect the control rod [9] to the power control unit [4].

(b) Install the bolt [5], washer [6], washer [7], and nut [8] to connect the control rod [9] to the power control unit [4].

SUBTASK 27-21-24-020-005

CAUTION MAKE SURE THAT YOU CORRECTLY INSTALL THE HYDRAULIC LINES TO THE STANDBY RUDDER PCU. MAKE SURE THAT THE CORRECT UNIONS ARE INSTALLED IN THE HYDRAULIC PORTS. YOU CAN CAUSE DAMAGE TO THE STANDBY RUDDER PCU.

(5) Connect the hydraulic lines [12] to the power control unit [4].

CAUTION MAKE SURE THAT YOU CAREFULLY DRAIN HYDRAULIC FLUID INTO A SUITABLE CONTAINER. CAREFULLY CLEAN, DRY, AND DISPOSE OF ALL LEAKAGE. HYDRAULIC FLUID CAUSES DAMAGE TO RUBBER, COPPER, PLASTICS, PAINTS, AND MANY OTHER MATERIALS.

(a) Remove the caps and plugs from the hydraulic lines [12] and ports.

(b) Remove the identification tags from the hydraulic lines [12].

(c) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, used to catch fluids from the hydraulic lines [12].

(d) Connect the hydraulic lines [12] to the power control unit [4].

(e) Tighten the B-nuts on the hydraulic lines [12] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-21-24-020-006

(6) Connect the electrical connector [1] to the power control unit [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-24-860-003

(7) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-24-820-001

(8) Do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

SUBTASK 27-21-24-860-004

(9) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-24-710-001

(10) Do this task: Standby Rudder Power Control Unit Deadband Test, TASK 27-21-00-700-806.

SUBTASK 27-21-24-710-002

(11) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-24-410-001

(1) Install this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-24-410-002

(2) If it is necessary, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STANDBY RUDDER POWER CONTROL UNIT - INSPECTION/CHECK

1. General

A. This procedure contains these tasks:

(1) Standby Rudder Power Control Unit General Visual Inspection

(2) Standby Rudder Power Control Unit Detail Visual Inspection.

TASK 27-21-24-210-801

2. Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)

B. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324FL	Vertical Fin, Access

D. Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection

SUBTASK 27-21-24-010-002

(1) Open this access panel:

Number	Name/Location
324FL	Vertical Fin, Access

SUBTASK 27-21-24-860-005

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the standby hydraulic system, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-24-210-001

(3) Do a general visual inspection of the standby rudder power control unit.

SUBTASK 27-21-24-210-002

(4) Do a general visual inspection to make sure there are no hydraulic leaks from the standby rudder power control unit.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-24-860-006

(5) Remove pressure from the standby hydraulic system, do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-24-410-003

(6) Close this access panel:

Number	Name/Location
324FL	Vertical Fin, Access

END OF TASK

TASK 27-21-24-210-802

3. **Standby Rudder Power Control Unit Detail Visual Inspection**

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

B. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

C. Standby Rudder Power Control Unit Detail Visual Inspection

SUBTASK 27-21-24-010-003

(1) Open this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-24-210-003

(2) Do a detailed visual inspection of the standby rudder power control unit attachment points.

(a) Examine the attachment points for security and damage.

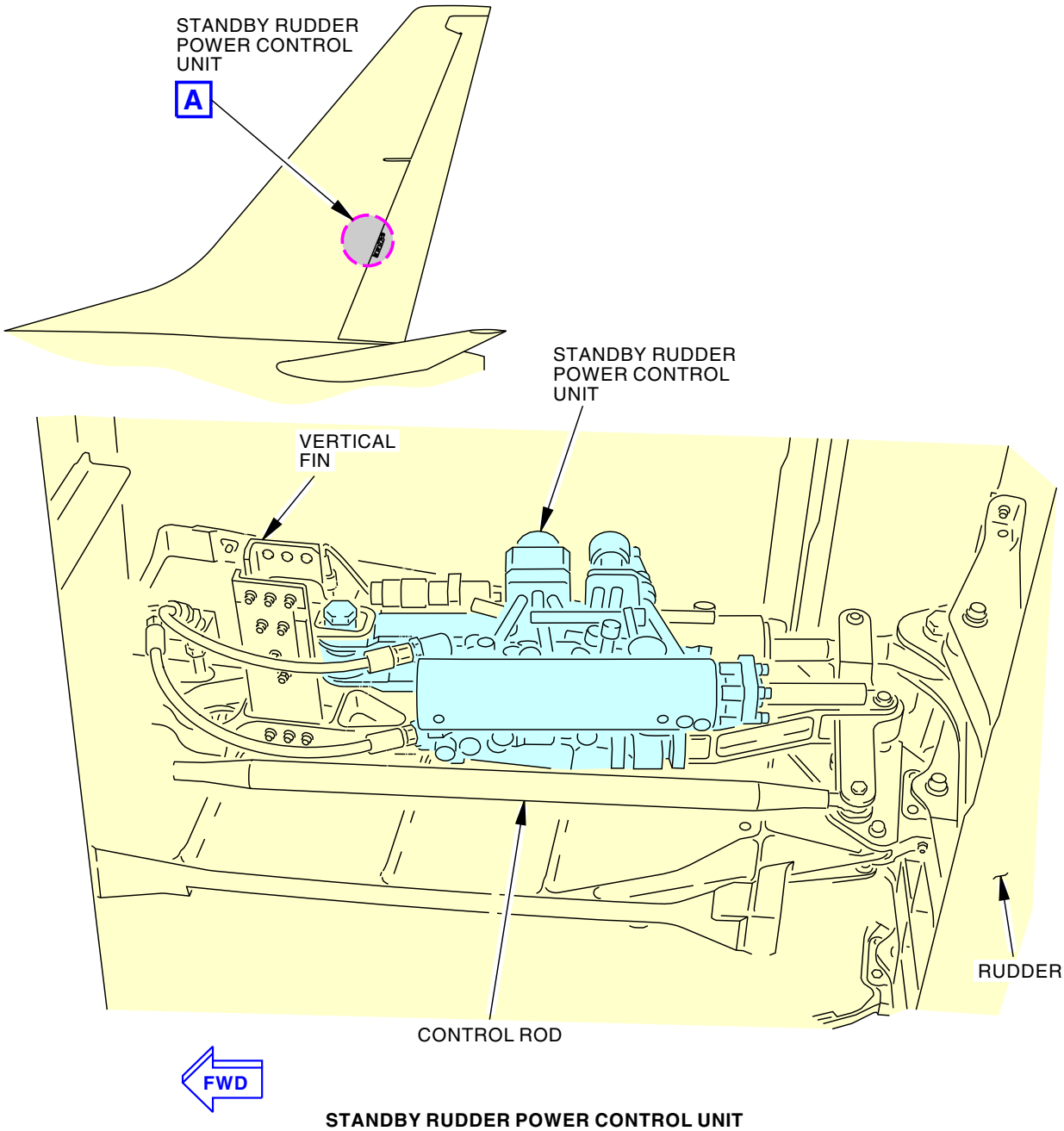
SUBTASK 27-21-24-410-004

(3) Close this access panel:

Number	Name/Location
324DL	Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STANDBY RUDDER POWER CONTROL UNIT

A

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Standby Rudder Power Control Unit Visual Inspection
Figure 601/27-21-24-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER PEDALS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the rudder pedals

(2) An installation of the rudder pedals.

B. This procedure is applicable for the captain's rudder pedals and first officer's rudder pedals.

TASK 27-21-31-000-801

2. Rudder Pedals Removal

(Figure 401, Figure 402)

A. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-31-00-000-801	Elevator and Tab Control System - Deactivation (P/B 201)
33-11-00-990-801	Figure: Lighting Modules (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

E. Prepare for the Removal

SUBTASK 27-21-31-040-001

(1) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-31-040-002

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-31-040-003

(3) Do this task: Elevator and Tab Control System - Deactivation, TASK 27-31-00-000-801

SUBTASK 27-21-31-020-011

(4) If necessary, remove the Captain and First Officer's seats. Do this task: Captain and First Officer Seat Removal, TASK 25-11-01-000-801.

SUBTASK 27-21-31-010-002

(5) Open this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-31-010-001

(6) Remove these access panels to get access to the captains's and first officer's rudder forward quadrant [31]. (TASK 53-14-01-020-801)

(a) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-21-31-480-001

(7) Install the rig pin R-3 from the rigging pin kit, SPL-1585 in the forward rig pin hole of the captain's rudder forward quadrant [31] (Figure 401).

SUBTASK 27-21-31-480-002

(8) Install the rig pin R-4 from the rigging pin kit, SPL-1585 in the forward rig pin hole of the first officer's rudder forward quadrant [31] (Figure 401).

F. Rudder Pedals Removal

SIA 003 PRE SB 737-27A1313

SUBTASK 27-21-31-020-001

(1) Remove top cover and pedal shrouds. Do the following steps:

(a) Remove the screws [24], screws [29] and washers [25] that attach the top cover [23] to the lower cover [32].

(b) Remove the screws [26] that attach the outboard pedal shroud [21] and inboard pedal shroud [22] to the top cover [23].

(c) Remove the screws [27] that attach the outboard pedal shroud [21] and the inboard pedal shroud [22] to the stanchion walls.

(d) Remove the outboard pedal shroud [21] and the inboard pedal shroud [22] to gain access to the bolt [34] that attaches the pedal adjustment cable [35] to the top cover [23].

NOTE: Ensure that no ducting is attached to the pedal shrouds.

1) Remove the bolt [34] that attaches the pedal adjustment cable [35] to the cable standoff on the top cover [23].

(e) Remove the top cover [23].

1) If it is necessary, pull the control column aft, move the pedals, and turn the top cover [23] as it clears adjacent structure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 001, 002, 004-999; SIA 003 POST SB 737-27A1313

SUBTASK 27-21-31-020-010

(2) Remove top cover and pedal shrouds. Do the following steps:

(a) Remove the lighting module [33]:

1) Loosen the fasteners [36] on the front of the lighting module [33]. (Figure 33-11-00-990-801)

2) Pull the lighting module [33] aft and clear of the top cover [23].

NOTE: Do not disconnect the electrical connectors from the lighting module [33].

(b) Remove the screws [24], screws [29] and washers [25] that attach the top cover [23] to the lower cover [32].

(c) Remove the screws [27] that attach the outboard pedal shroud [21] and inboard pedal shroud [22] to the stanchion walls.

(d) Remove the screws [28] that attach the angle brackets [30] to the top cover [23].

NOTE: Ensure the angle brackets remain attached to the pedal shrouds.

(e) Remove the outboard pedal shroud [21] and the inboard pedal shroud [22] to gain access to the bolt [34] that attaches the pedal adjustment cable [35] to the top cover [23].

NOTE: Ensure that no ducting is attached to the pedal shrouds.

1) Remove the bolt [34] that attaches the pedal adjustment cable [35] to the cable standoff on the top cover [23].

(f) Remove the top cover [23].

1) If it is necessary, pull the control column aft, move the pedals, and turn the top cover [23] as it clears adjacent structure.

SIA ALL

SUBTASK 27-21-31-020-005

(3) Remove the nuts [10], washers [9], bushings [8], and bolts [7] to disconnect the two brake pushrods [11] from the bellcranks [6].

SUBTASK 27-21-31-020-006

(4) Remove the screws [19] and brackets [20] from the rudder pedals [12].

SUBTASK 27-21-31-020-007

(5) Remove the pin [3A], nuts [3], washers [2], and bolts [1] to disconnect the two rudder pedal tension rods [4]from the rudder pedals [12].

SUBTASK 27-21-31-020-009

(6) Remove the rudder pedals [12] from the support structure:

(a) Remove the nut [13] and washer [17].

(b) Hold the rudder pedals [12] and pull the support shaft [16] out.

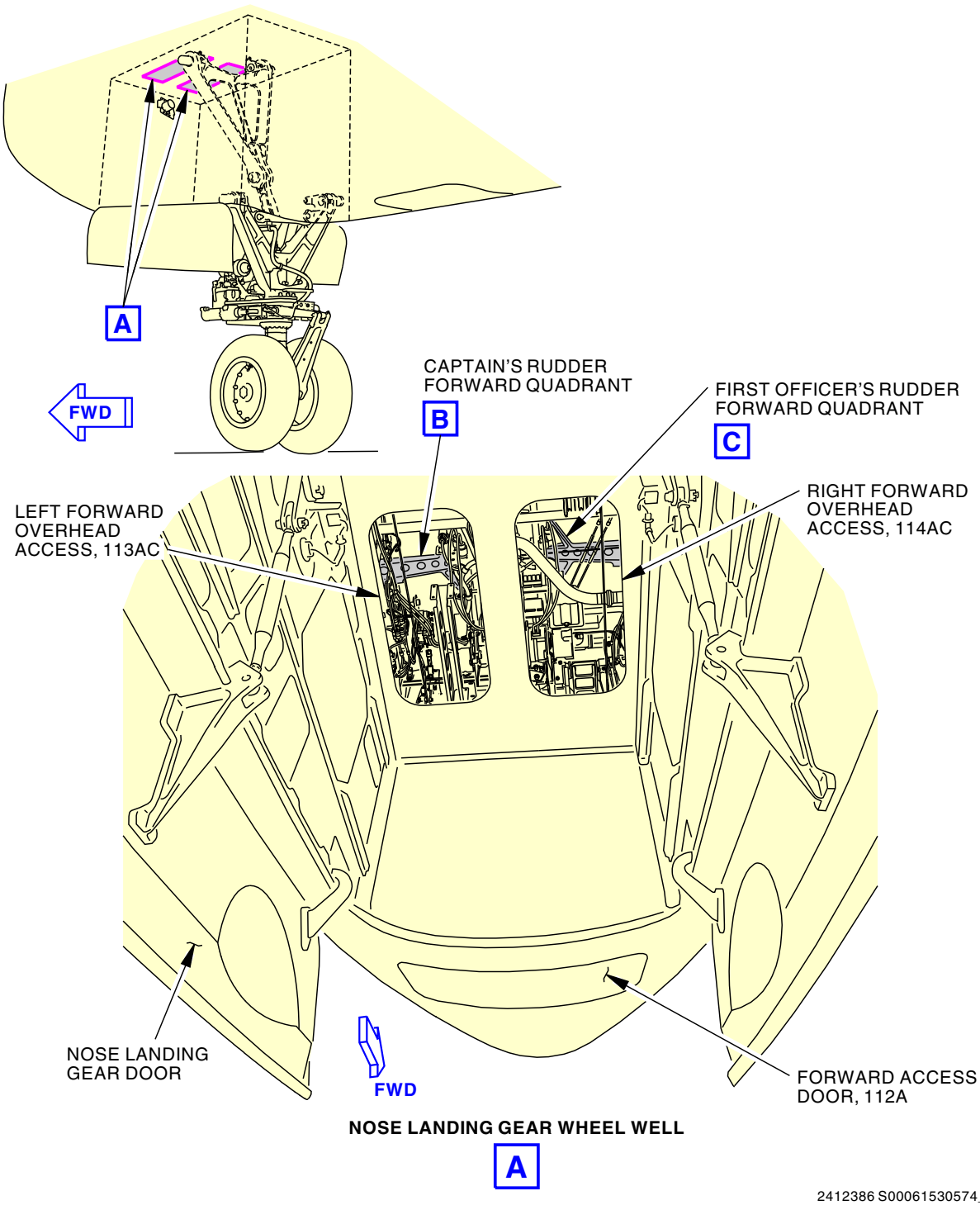
NOTE: The bushings, bearings, and washers will be loosed as the support shaft [16] is removed.

(c) Pull each rudder pedal [12] through the floor beams, into the flight compartment.

(d) Remove the rudder pedals [12] from the airplane.

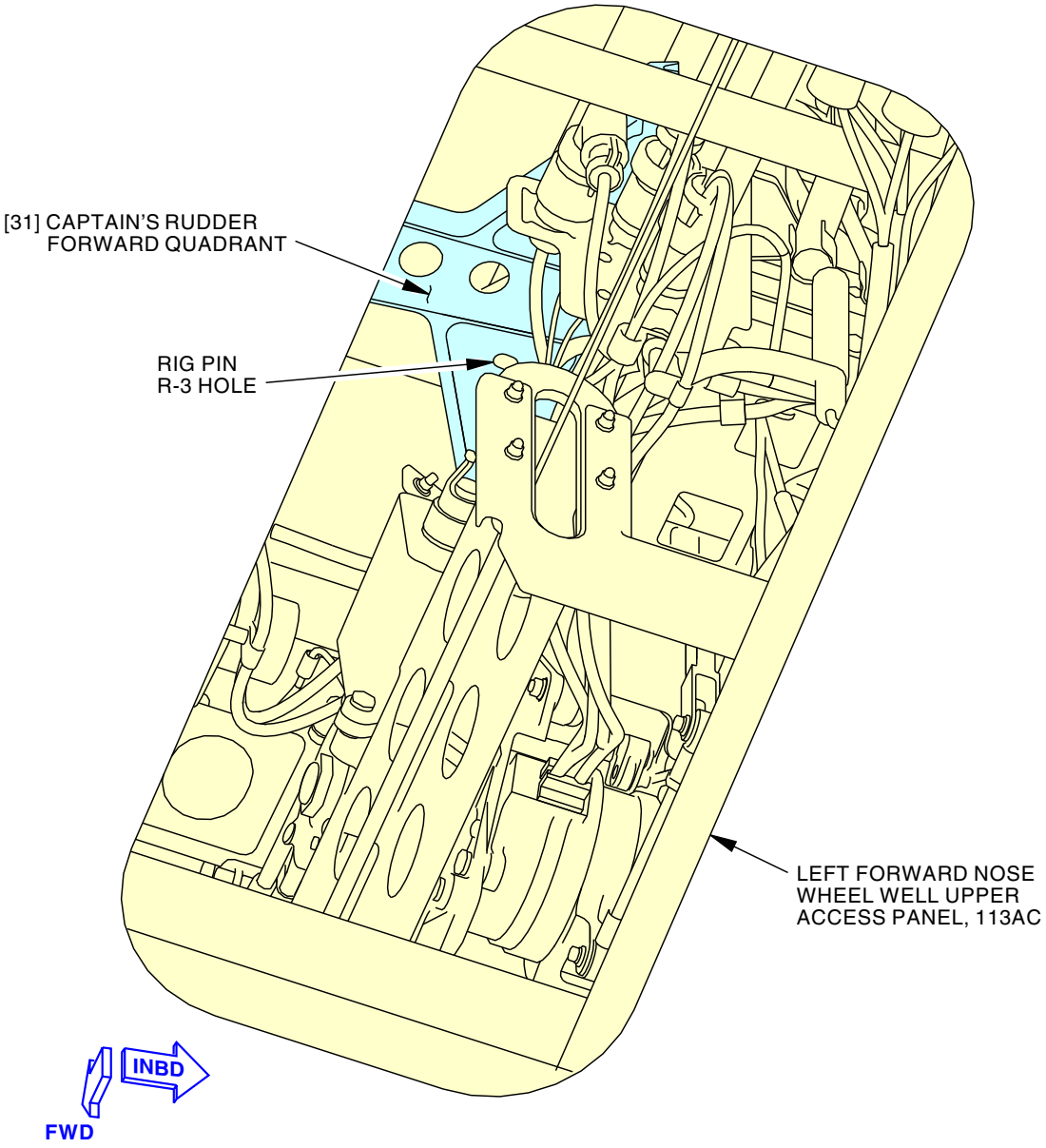
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-31-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CAPTAIN'S RUDDER FORWARD QUADRANT

B

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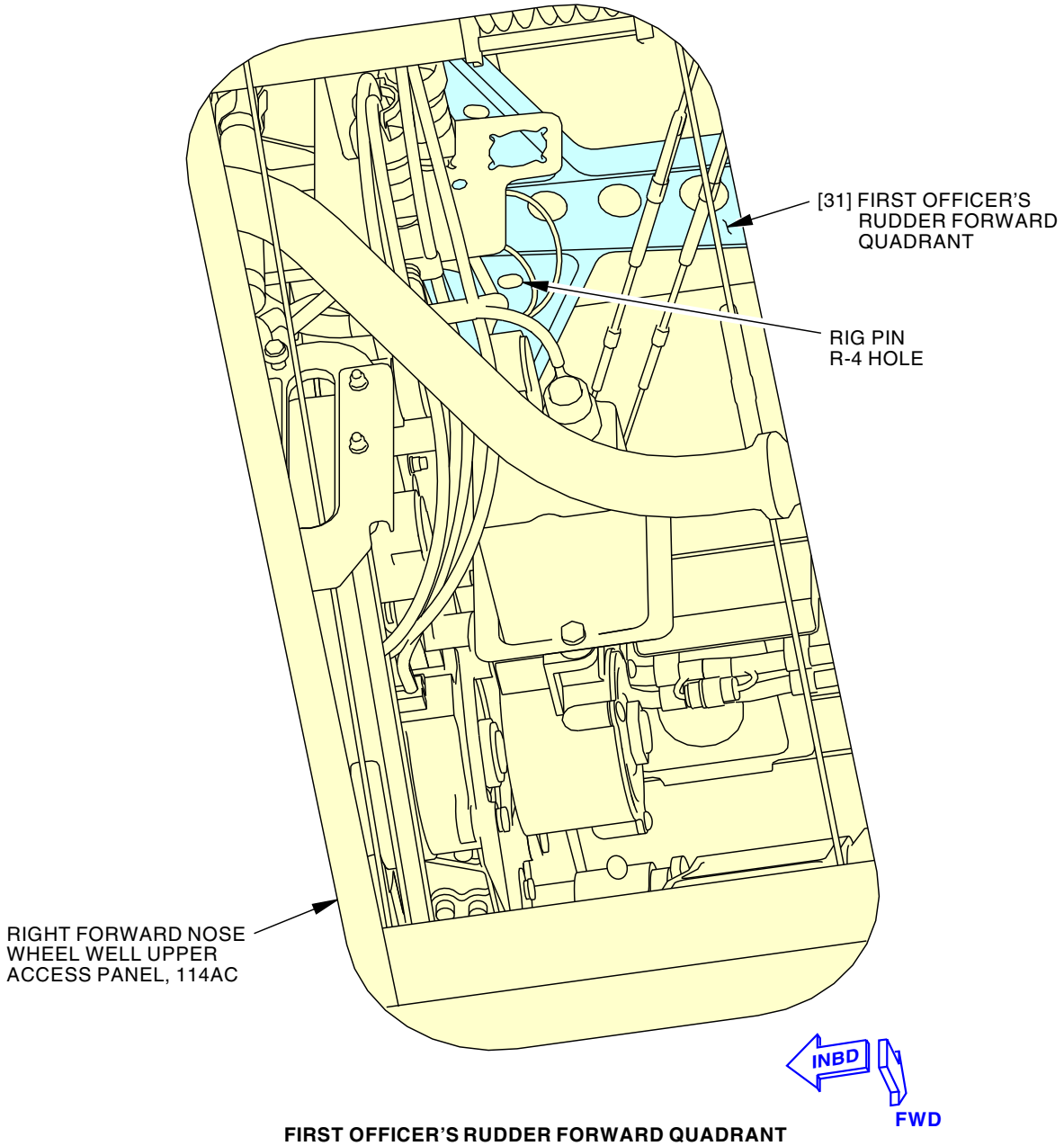
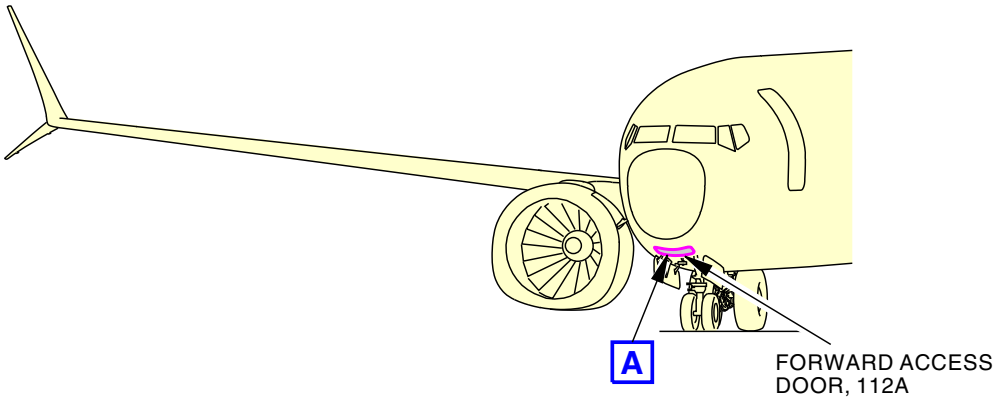
Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-31-990-801 (Sheet 2 of 3)

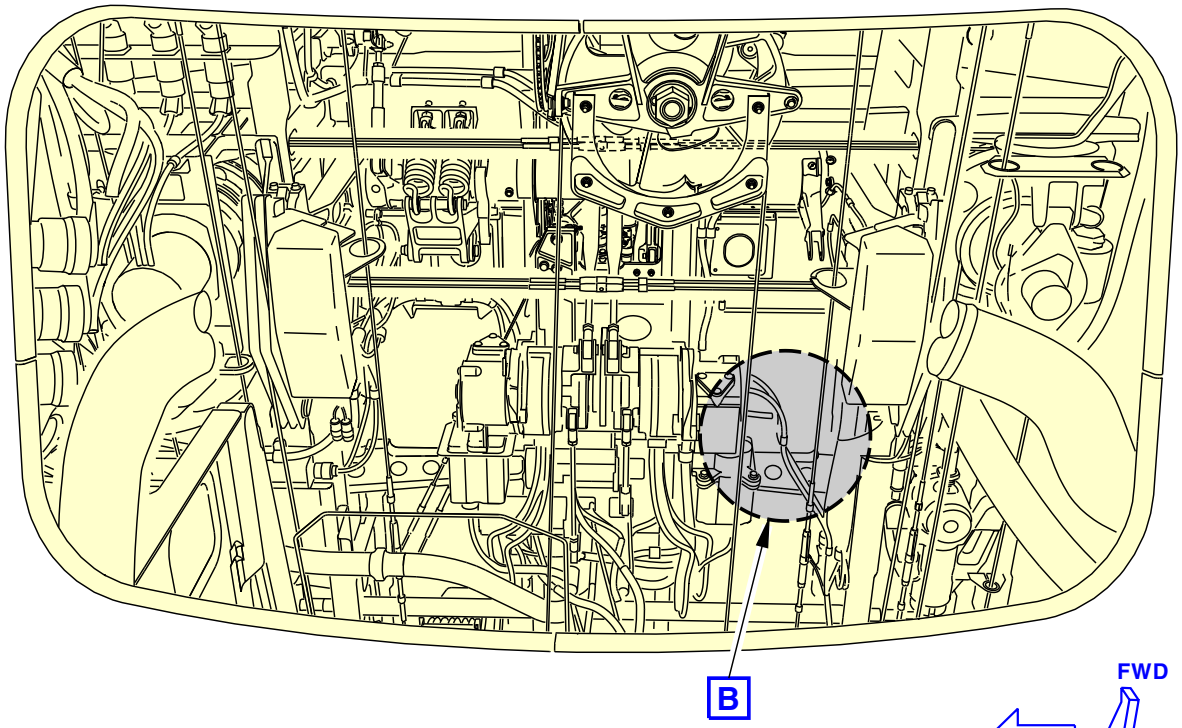
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-31-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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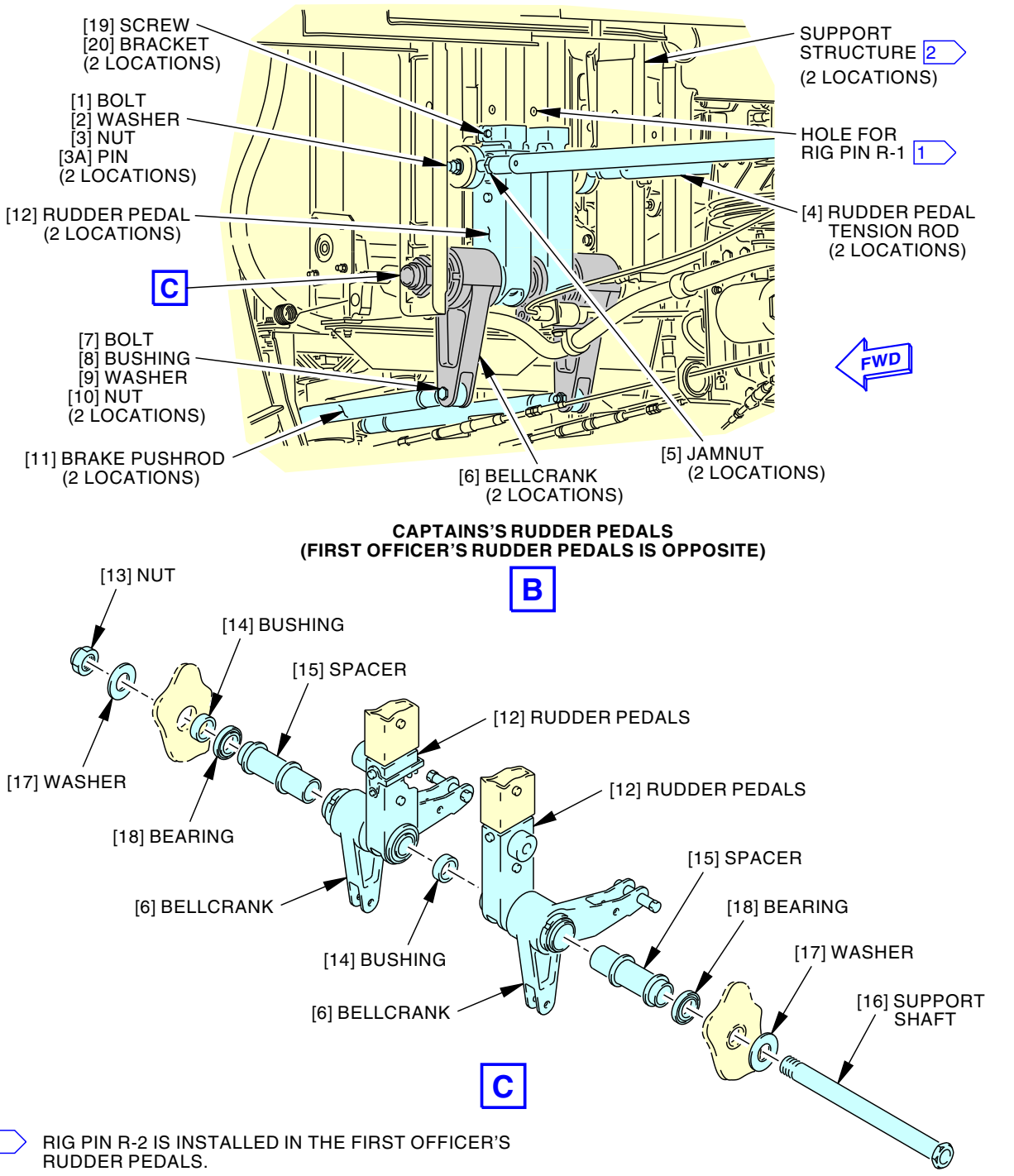
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 RIG PIN R-2 IS INSTALLED IN THE FIRST OFFICER'S RUDDER PEDALS.

2 FLOOR BEAMS ARE NOT SHOWN FOR CLARITY.

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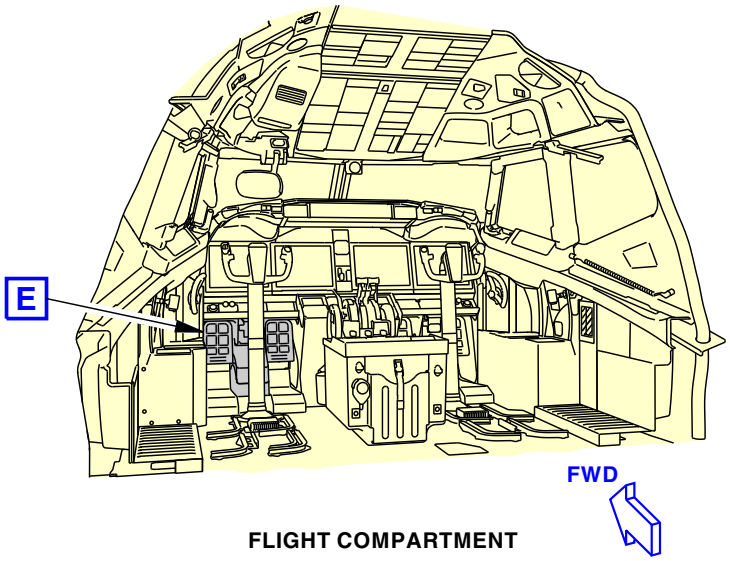
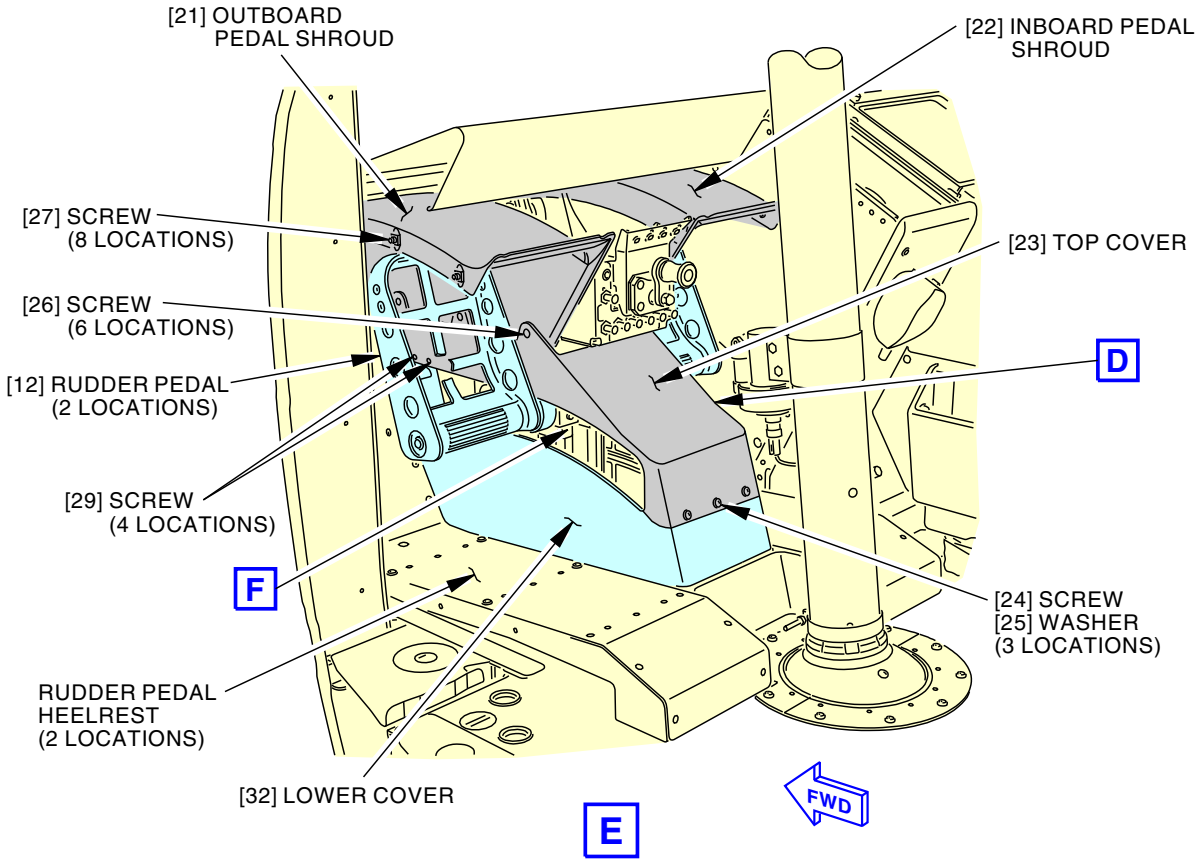
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



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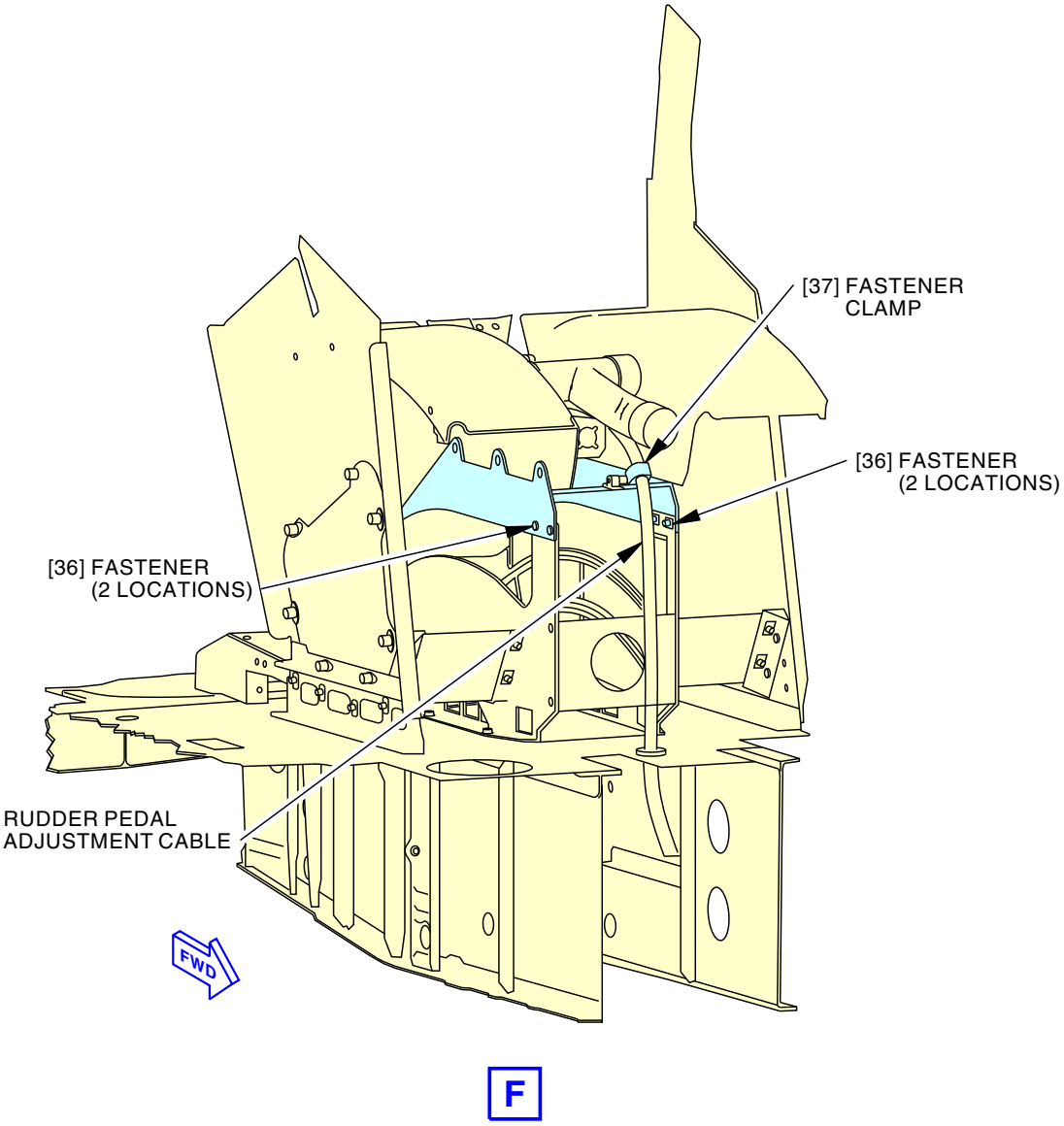
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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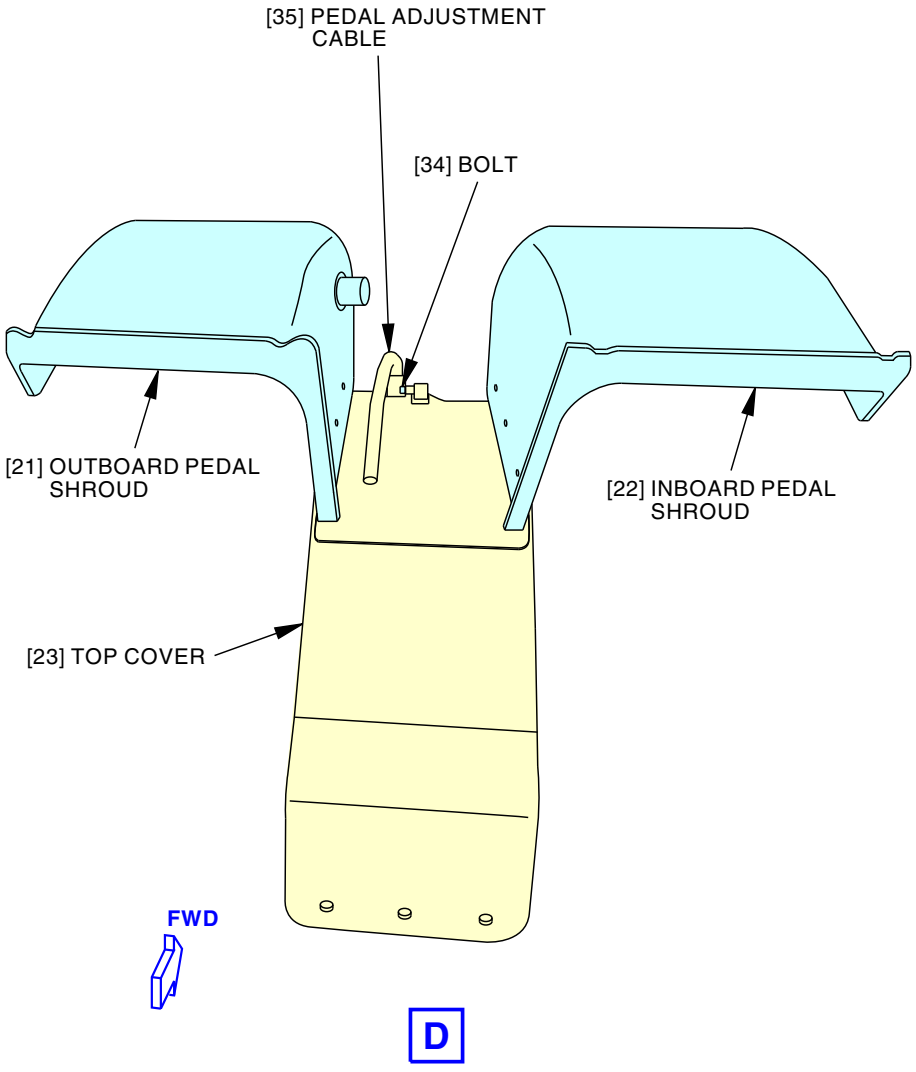
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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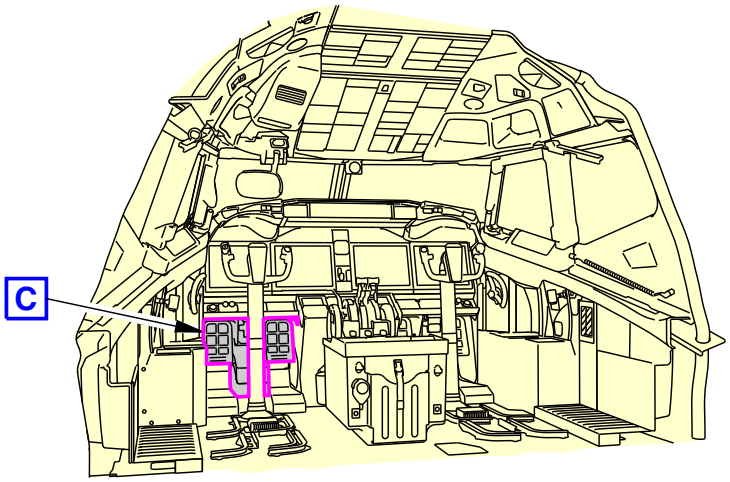
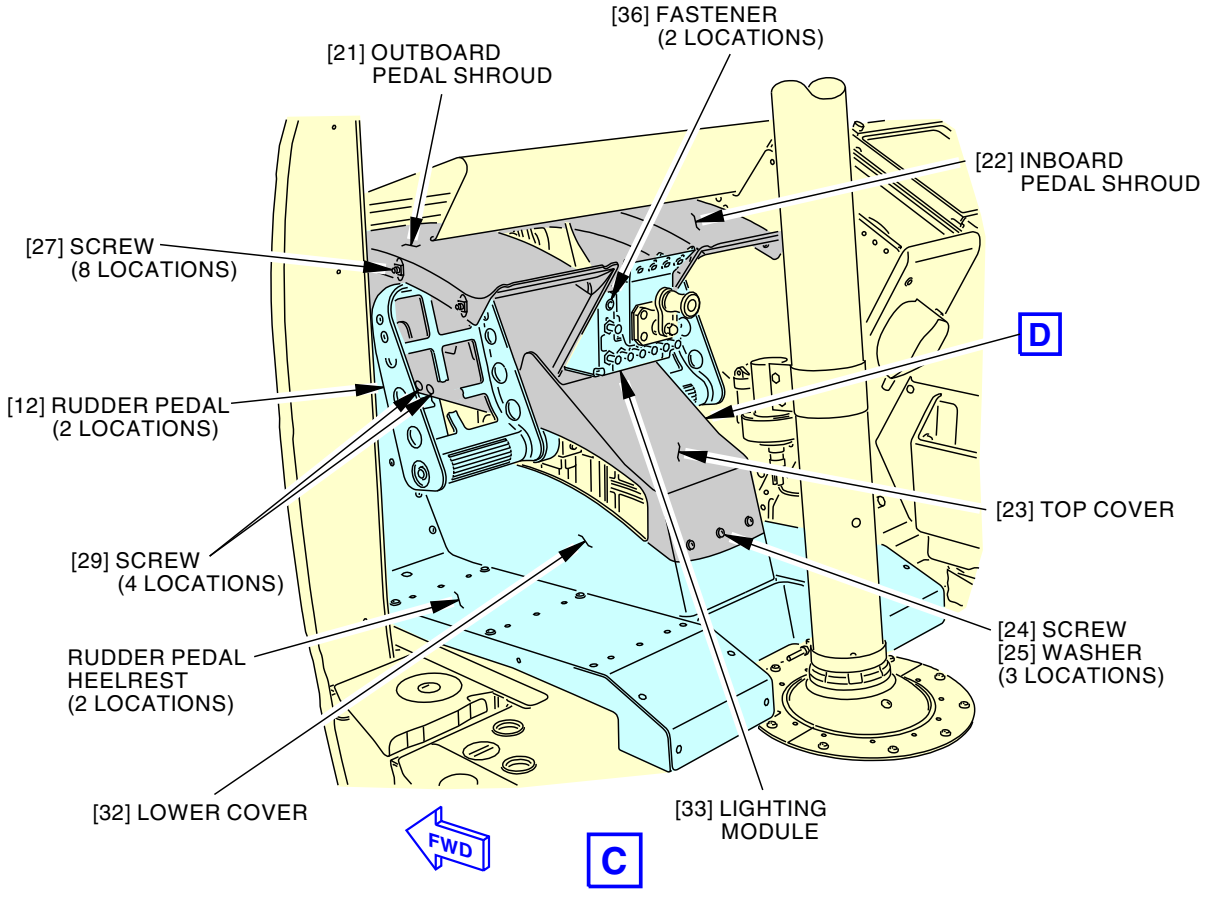
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



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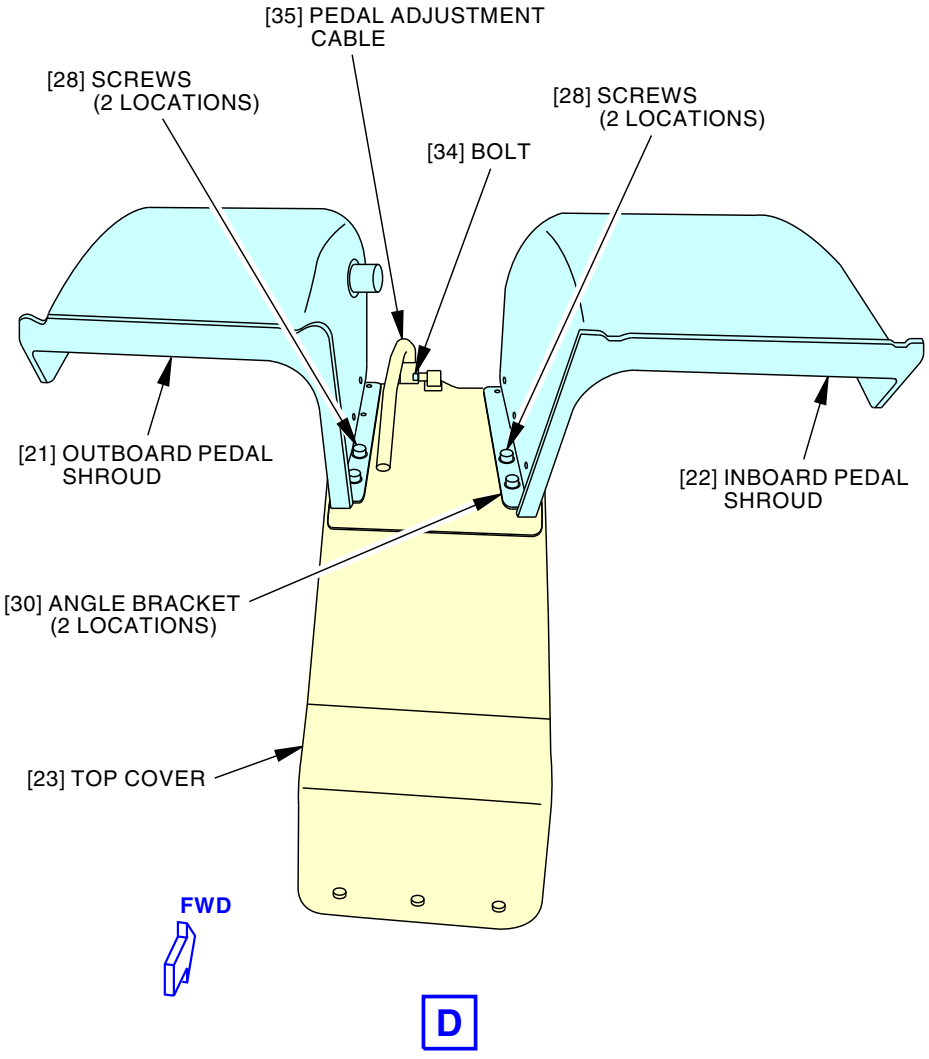
Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Rudder Pedals Installation
Figure 402/27-21-31-990-802 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-31-400-801

3. Rudder Pedals Installation

(Figure 401, Figure 402)

A. References

Reference	Title
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)
27-11-00-860-802	Pressure to the Aileron Hydraulic Systems A and B - Activation (P/B 201)
27-21-00-700-801	Rudder Pedal Adjustment and Limit Travel Test (P/B 501)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
27-31-00-400-801	Elevator and Tab Control System - Activation (P/B 201)
33-11-00-990-801	Figure: Lighting Modules (P/B 201)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Rudder pedal tension rod	27-21-51-02-085	SIA ALL
		27-21-51-03-050	SIA ALL
6	Bellcrank	27-21-31-02-170	SIA ALL
		27-21-31-02-175	SIA ALL
		27-21-31-02-185	SIA ALL
		27-21-31-02-190	SIA ALL
12	Rudder pedal	27-21-31-02-150	SIA ALL
		27-21-31-02-155	SIA ALL
16	Support shaft	27-21-31-02-205	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

F. Rudder Pedals Installation

SUBTASK 27-21-31-480-003

(1) Make sure that the rig pin R-3 from the rigging pin kit, SPL-1585, is installed in the captain's rudder forward quadrant [31].

SUBTASK 27-21-31-480-004

(2) Make sure that the rig pin R-4 from the rigging pin kit, SPL-1585, is installed in the first officer's rudder forward quadrant [31].

SUBTASK 27-21-31-420-001

(3) Install the rudder pedals [12]:

(a) Put the spacers [15] and bearings [18] into the rudder pedals [12].

(b) Put the inboard rudder pedal [12] between the support structure and align the holes.

(c) Put the washer [17] on the support shaft [16].

(d) Install the support shaft [16] from the inboard side through the hole in the support structures and through the bushing [14] and rudder pedal [12].

(e) Install the bushing [14] on the support shaft [16].

(f) Install the washer [17] and nut [13] on the support shaft [16].

1) Tighten the nut [13] to 200 in-lb (22.6 N·m) - 500 in-lb (56.5 N·m).

(g) Make sure the support shaft [16] is not free to turn in the support structures.

SUBTASK 27-21-31-820-001

(4) Do these steps to adjust the rudder pedal position:

(a) Turn the rudder pedal adjustment crank in the full clockwise direction for the installed rudder pedals [12] until the jackshaft is in its full forward position.

(b) Turn the rudder pedal adjustment crank 4 turns in the counterclockwise direction.

(c) If you install the captain's rudder pedals [12], then install the rig pin R-1 from the test set rigging pin kit, SPL-1585, in the captain's rudder pedals [12].

(d) If you install the first officer's rudder pedals [12], then install the rig pin R-2 from the test set rigging pin kit, SPL-1585, in the first officer's rudder pedals [12].

SUBTASK 27-21-31-820-002

(5) Do these steps to adjust the two rudder pedal tension rods [4]:

(a) Loosen the jamnuts [5] on the two rudder pedal tension rods [4].

(b) Turn the rudder pedal tension rods [4] until you can attach them to the rudder pedals [12].

(c) Make sure you can see the rod end threads through the inspection holes at two ends of the rudder pedal tension rods [4] after the adjustment.

(d) Make sure that the threads show in at least one-half of the inspection hole.

(e) Tighten the jamnuts [5] on the rudder pedal tension rods [4].

SUBTASK 27-21-31-420-002

(6) Install the bolts [1], washers [2], nuts [3] and pin [3A] to connect the two rudder pedal tension rods [4]to the rudder pedals [12].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-31-420-003

(7) Install the brackets [20] and the screws [19] on the rudder pedals [12].

SUBTASK 27-21-31-420-004

(8) Install the bolts [7], bushings [8], washers [9], and nuts [10] to connect the two brake pushrods [11] to the bellcranks [6].

(a) Adjust the length of the brake pushrods [11], if it is necessary.

SIA 003 PRE SB 737-27A1313

SUBTASK 27-21-31-420-006

(9) Install top cover and pedal shrouds. Do the following steps:

(a) Put the top cover [23] on the lower cover [32].

(b) Attach the pedal adjustment cable [35] to the top cover [23].

1) Install bolt [34] through clamp on pedal adjustment cable [35] and into cable standoff on top cover [23].

(c) Install the screws [24], screws [29] and washers [25] to attach the top cover [23] to the lower cover [32].

WARNING MAKE SURE THE SCREWS THAT ATTACH THE PEDAL SHROUDS ARE INSTALLED, SEATED, AND TIGHTENED TO THE CORRECT TORQUE. IF THE SCREWS ARE NOT INSTALLED CORRECTLY, THEY CAN CAUSE INTERFERENCE WITH THE MOTION OF THE RUDDER PEDALS. THIS CAUSES A DANGEROUS FLIGHT CONDITION.

(d) Put the outboard pedal shroud [21] in its position.

NOTE: If necessary ensure that all ducting is properly attached and positioned.

WARNING MAKE SURE THE SCREWS THAT ATTACH THE PEDAL SHROUDS ARE INSTALLED, SEATED, AND TIGHTENED TO THE CORRECT TORQUE. IF THE SCREWS ARE NOT INSTALLED CORRECTLY, THEY CAN CAUSE INTERFERENCE WITH THE MOTION OF THE RUDDER PEDALS. THIS CAUSES A DANGEROUS FLIGHT CONDITION.

1) Install screws [26] to attach the outboard pedal shroud [21] to the top cover [23].

2) Tighten the screws [26] to a torque of 35 ±1 in-lb (4 ±0 N·m).

3) Make sure there is no gap between the outboard pedal shroud [21] and the top cover [23] at each screw [26] location.

NOTE: Pedal shroud is flexible and can push back from top cover during installation of fasteners.

WARNING MAKE SURE THE SCREWS THAT ATTACH THE PEDAL SHROUDS ARE INSTALLED, SEATED, AND TIGHTENED TO THE CORRECT TORQUE. IF THE SCREWS ARE NOT INSTALLED CORRECTLY, THEY CAN CAUSE INTERFERENCE WITH THE MOTION OF THE RUDDER PEDALS. THIS CAUSES A DANGEROUS FLIGHT CONDITION.

(e) Put the inboard pedal shroud [22] in its position.

NOTE: If necessary ensure that all ducting is properly attached and positioned.

1) Install screws [26] to attach the inboard pedal shroud [22] to the top cover [23].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 003 PRE SB 737-27A1313 (Continued)

2) Tighten the screws [26] to a torque of 35 ±1 in-lb (4 ±0 N·m).

3) Make sure there is no gap between the inboard pedal shroud [22] and the top cover [23] at each screw [26] location.

NOTE: Pedal shroud is flexible and can push back from top cover during installation of fasteners.

(f) Install the screws [27] to attach the outboard pedal shroud [21] and inboard pedal shroud [22] to the stanchion walls.

SIA 001, 002, 004-999; SIA 003 POST SB 737-27A1313

SUBTASK 27-21-31-420-010

(10) Install top cover and shrouds. Do the following steps:

(a) Put the top cover [23] on the lower cover [32].

(b) Attach the pedal adjustment cable [35] to the top cover [23].

1) Install bolt [34] through clamp on pedal adjustment cable [35] and into cable standoff on top cover [23].

(c) Install the screws [24], screws [29] and washers [25] to attach the top cover [23] to the lower cover [32].

(d) Put the outboard pedal shroud [21] in its position.

NOTE: If necessary ensure that all ducting is properly attached and positioned.

1) Install screws [28] into the angle bracket [30].

2) Tighten the screws [28] to a torque of 20 in-lb (2 N·m).

(e) Put the inboard pedal shroud [22] in its position.

NOTE: If necessary ensure that all ducting is properly attached and positioned.

1) Install screws [28] into the angle bracket [30].

2) Tighten the screws [28] to a torque of 20 in-lb (2 N·m).

(f) Install the screws [27] to attach the outboard pedal shroud [21] and inboard pedal shroud [22] to the stanchion walls.

(g) Install the lighting module [33].

1) Put the lighting module [33] into its position. (Figure 33-11-00-990-801)

2) Align the pins on the back of the lighting module [33] with the holes in the bracket below the rudder pedal adjustment crank.

3) Tighten the fasteners [36].

SIA ALL

SUBTASK 27-21-31-080-001

(11) Remove rig pins R-3 and R-4 (Figure 401).

SUBTASK 27-21-31-080-002

(12) Remove rig pin R-1 or R-2 (Figure 402).

SUBTASK 27-21-31-730-001

(13) Do this task: Rudder Pedal Adjustment and Limit Travel Test, TASK 27-21-00-700-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-31-410-001

(1) Install the access panels for the captain's and first officer's rudder forward quadrant [31]. (TASK 53-14-01-420-801)

(a) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-21-31-410-002

(2) Close this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-31-420-011

(3) If removed, install the Captain and First Officer's seats. Do this task: Captain and First Officer Seat Installation, TASK 25-11-01-400-801.

SUBTASK 27-21-31-440-001

(4) Do this task: Elevator and Tab Control System - Activation, TASK 27-31-00-400-801.

SUBTASK 27-21-31-440-002

(5) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-31-440-003

(6) Do this task: Pressure to the Aileron Hydraulic Systems A and B - Activation, TASK 27-11-00-860-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER PEDAL ADJUSTMENT CRANK - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a rudder pedal adjustment crank

(2) An installation of a rudder pedal adjustment crank.

B. The rudder pedal adjustment crank is referred to as the "crank assembly" in this procedure.

C. The crank assembly includes the crank lever [14] and cable [1].

D. The procedure is applicable for the captain's and first officer's crank assembly.

E. It is not necessary to remove the cable to remove the crank lever.

TASK 27-21-41-000-801

2. Rudder Pedal Adjustment Crank Removal

(Figure 401)

A. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
221	Passenger Compartment - Aft of Control Compartment to Forward Entry Door - Left
222	Passenger Compartment - Aft of Control Compartment to Forward Entry Door - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 27-21-41-010-001

(1) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-41-010-002

(2) Open the main instrument panel shroud to get access to the rudder pedal adjustment cable [1].

SUBTASK 27-21-41-010-003

(3) Open the main instrument panel module assembly [14].

E. Crank Assembly Removal

SUBTASK 27-21-41-020-001

(1) Do these steps to remove the crank lever [10]:

(a) Remove the nut [8] and washer [9] from the crank lever [10].

(b) Remove the crank lever [10] from the bearing retainer [12].

(c) Remove the spacer [11].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-41-020-002

(2) Do these steps to remove the rudder pedal adjustment cable [1] from the crank lever [10]:

(a) Remove the MS20995C32 lockwire, G01048, from the cable retaining nut [13].

(b) Loosen the cable retaining nut [13].

(c) Pull the rudder pedal adjustment cable [1] forward until it disconnects from the crank support bracket [7].

SUBTASK 27-21-41-020-003

(3) Do these steps to disconnect the rudder pedal adjustment cable [1] from the rudder jackshaft [4]:

(a) Loosen the retaining nut [3] at the rudder jackshaft [4].

(b) Hold the retaining nut [3] and pull the rudder pedal adjustment cable [1] rudder jackshaft [4].

(c) Remove the retaining nut [3] and washer [2].

SUBTASK 27-21-41-020-004

(4) Do these steps to remove the rudder pedal adjustment cable [1]:

(a) Remove the bolts [5] from the cable clamps [6].

(b) Remove the cable clamp [6] and keep a record of their locations.

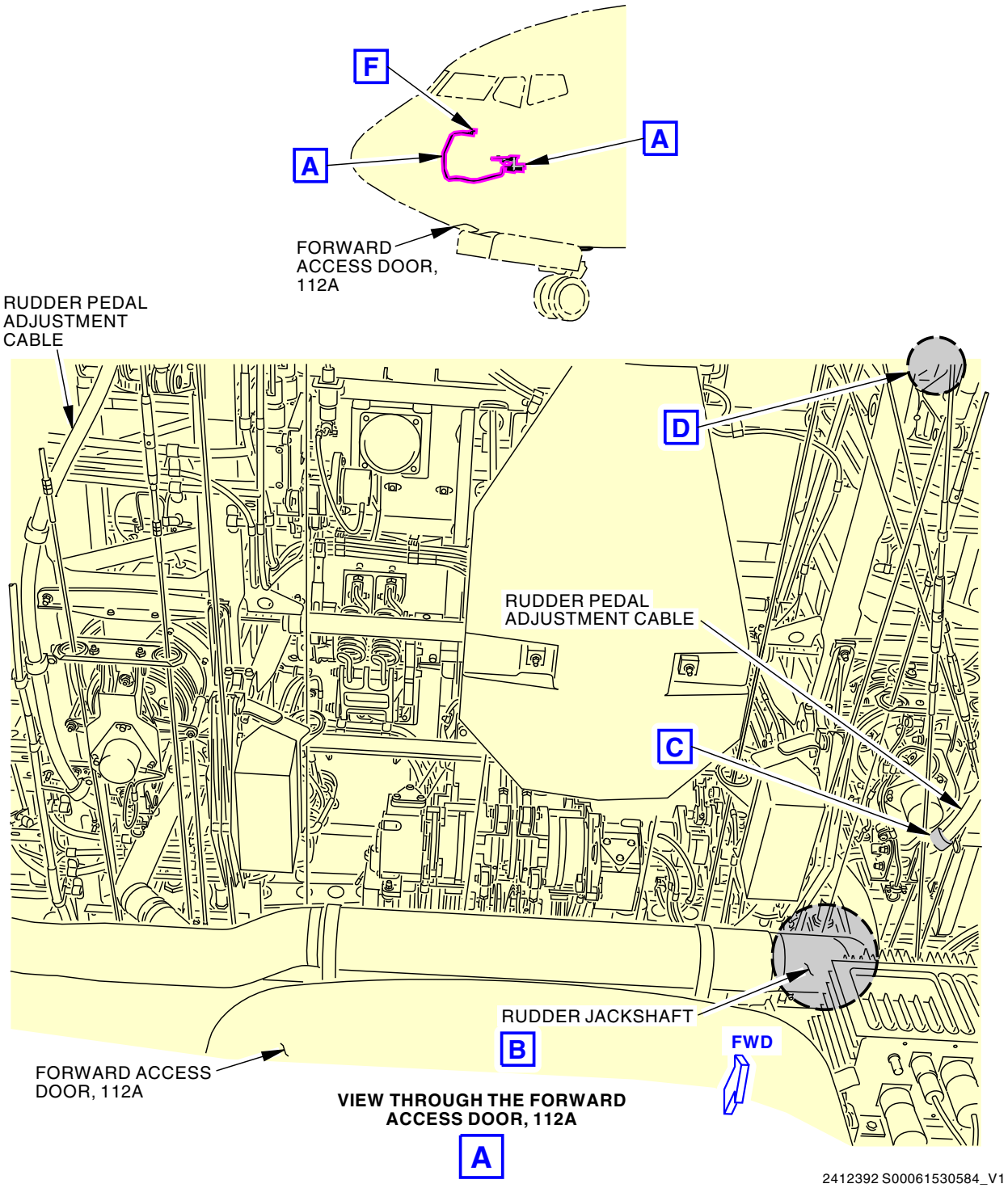
(c) Remove the elastic grommet.

(d) Pull the rudder pedal adjustment cable [1] through the grommet hole.

(e) Remove the rudder pedal adjustment cable [1].

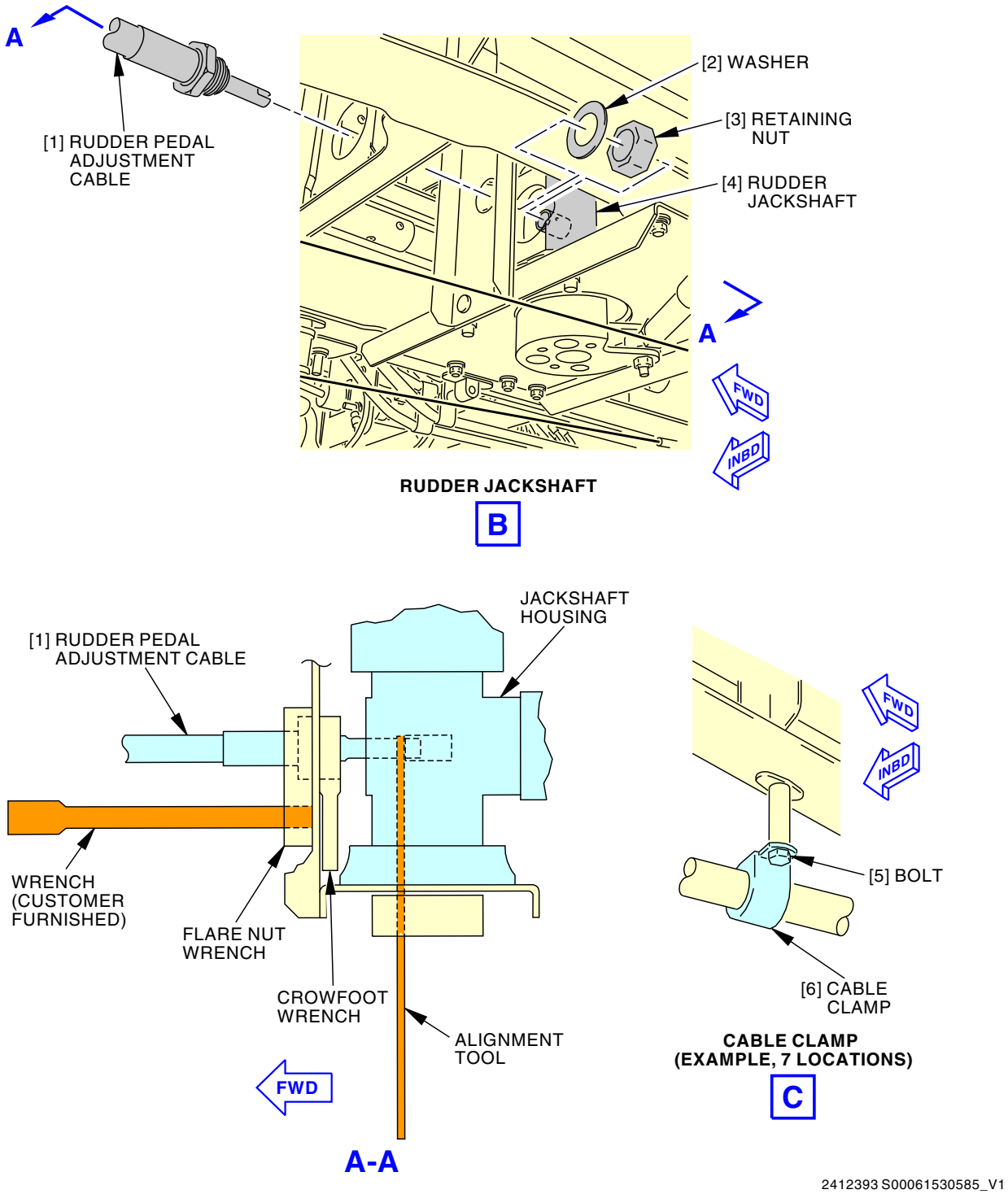
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



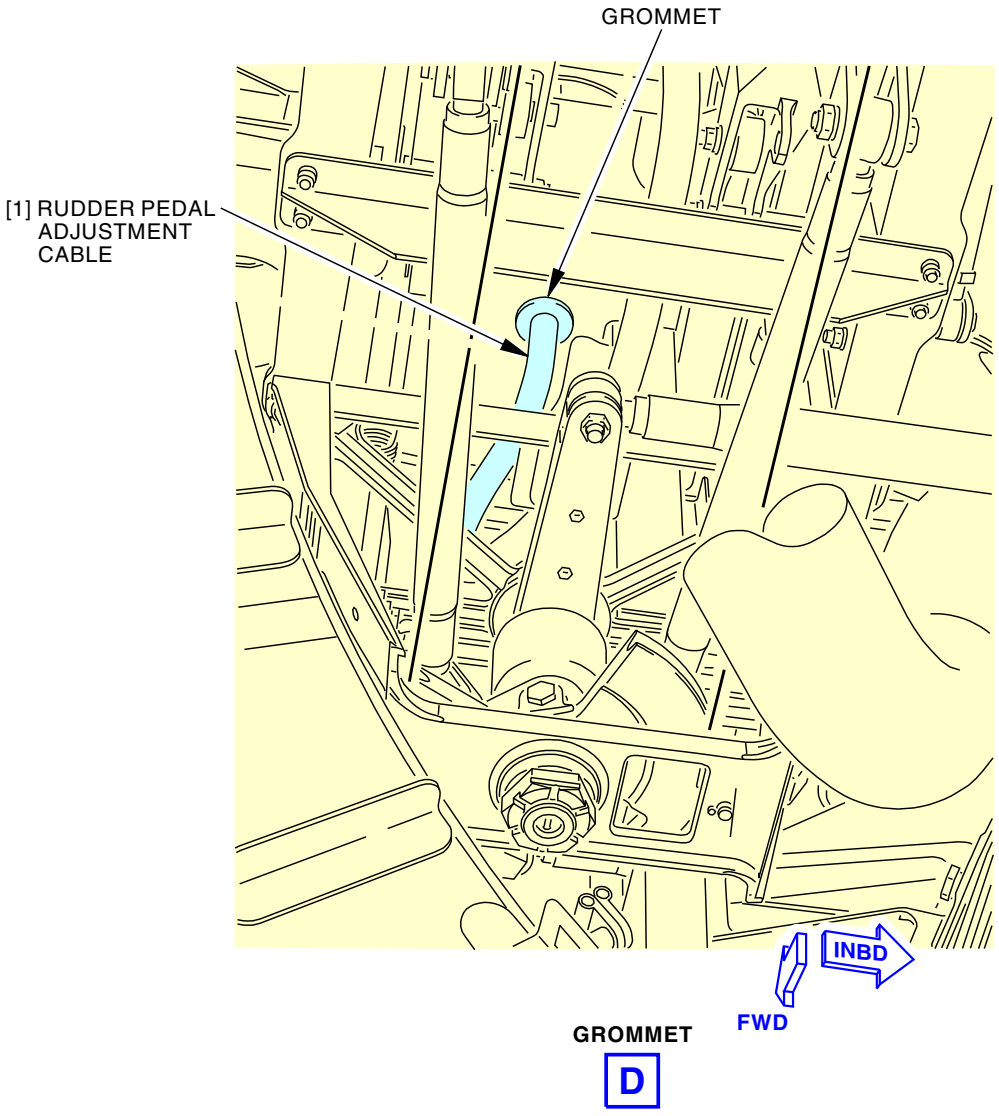
Rudder Pedal Adjustment Crank Installation
Figure 401/27-21-41-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Pedal Adjustment Crank Installation
Figure 401/27-21-41-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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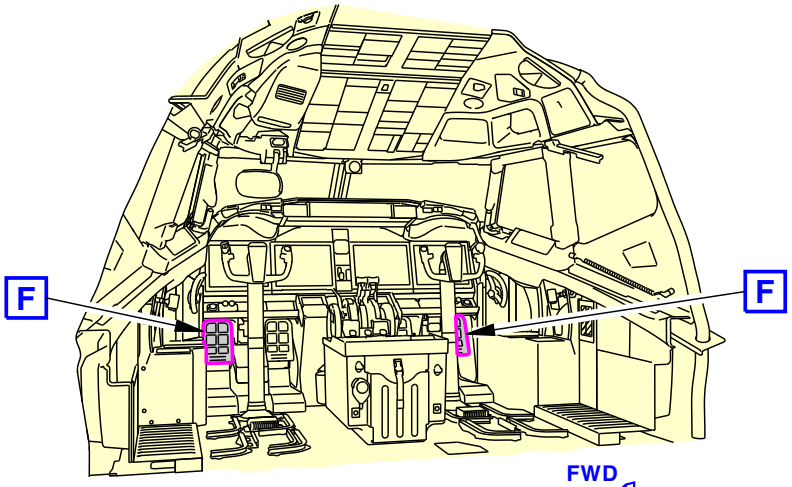
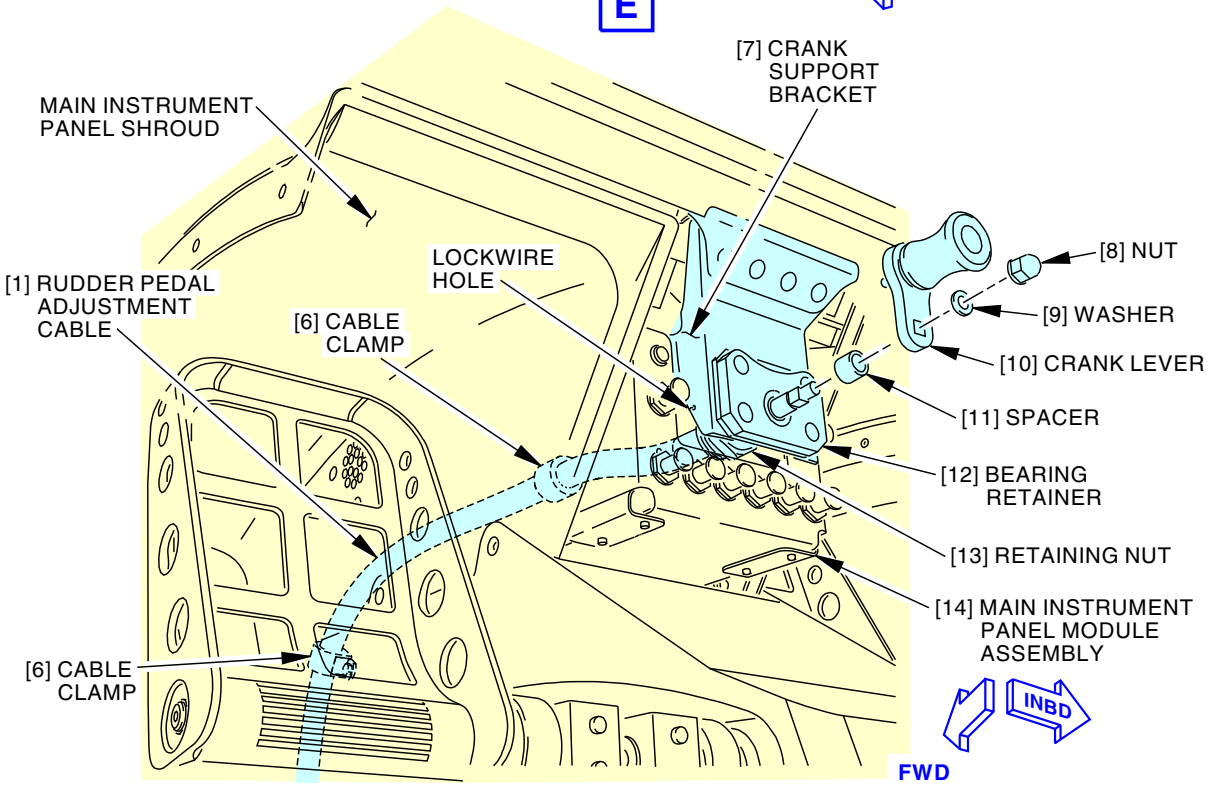
Rudder Pedal Adjustment Crank Installation
Figure 401/27-21-41-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT

E



LEFT MAIN INSTRUMENT PANEL MODULE ASSEMBLY
(RIGHT MAIN INSTRUMENT PANEL MODULE ASSEMBLY IS EQUIVALENT)

F

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Rudder Pedal Adjustment Crank Installation
Figure 401/27-21-41-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-41-400-801

3. Rudder Pedal Adjustment Crank Installation

(Figure 401)

A. References

Reference	Title
27-21-00-700-801	Rudder Pedal Adjustment and Limit Travel Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1689	Equipment - Alignment, Rudder Pedal Adjustment (B27064-5 included in kit B27064-1 & -2) Part #: B27064-1 Supplier: 81205 Part #: B27064-2 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Rudder pedal adjustment cable	27-21-41-37-025	SIA ALL
10	Crank lever	27-21-41-37-025	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
221	Passenger Compartment - Aft of Control Compartment to Forward Entry Door - Left
222	Passenger Compartment - Aft of Control Compartment to Forward Entry Door - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

G. Rudder Pedal Adjustment Crank Installation

SUBTASK 27-21-41-420-001

(1) Do these steps to install the rudder pedal adjustment cable [1]:

(a) Install the grommet on the rudder pedal adjustment cable [1].

(b) Push the rudder pedal adjustment cable [1] through the grommet hole.

NOTE: One end of the cable should reach the crank lever [10] and the other end should reach the rudder jackshaft [4].

(c) Install the cable clamps [6] and bolts [5] on the rudder pedal adjustment cable [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure that the rudder pedal adjustment cable [1] radius is more than 5.0 inches (127 millimeters) for all the curves in the rudder pedal adjustment cable [1].

NOTE: If the rudder pedal adjustment cable [1] radius is less than 5.0 inches (127 millimeters), the rudder pedal adjustment cable [1] will not operate correctly.

SUBTASK 27-21-41-420-002

(2) Connect the rudder pedal adjustment cable [1] to the rudder jackshaft [4]:

(a) Put the washer [2] and retaining nut [3] on the rudder pedal adjustment cable [1].

(b) Put the rudder pedal adjustment cable [1] through the rudder jackshaft [4].

(c) Apply a thin layer of grease, D00013 to the outside diameter of the rudder pedal adjustment cable [1] before it is installed in the rudder jackshaft [4].

(d) Do these steps:

1) Install the alignment tool equipment (B27064-5), SPL-1689 through the hole in the bottom of the rudder jackshaft [4] to hold the jackshaft universal joint in its position.

2) Turn the rudder pedal adjustment cable [1] end until it engages the jackshaft pin.

3) Use the crowfoot wrench to hold the retaining nut [3].

4) Use the flare nut wrench to hold the sleeve of the rudder pedal adjustment cable [1].

(e) Tighten the retaining nut [3].

1) Tighten the retaining nut [3] to 90 +310 / -0 in-lb (10.2 +35.1 / -0.0 N·m) before it touches the jackshaft support.

2) Turn the retaining nut [3] 1/4 to 1/2 of a turn more when it touches the jackshaft support.

SUBTASK 27-21-41-420-003

(3) Do these steps to connect the rudder pedal adjustment cable [1] to the crank lever [10]:

(a) Put the cable retaining nut [13] on one end of the rudder pedal adjustment cable [1].

(b) Push the rudder pedal adjustment cable [1] through the crank support bracket [7] and bearing retainer [12].

(c) Tighten the cable retaining nut [13].

1) Tighten the cable retaining nut [13] finger tight plus one quarter turn.

(d) Install the MS20995C32 lockwire, G01048 on the retaining nut [13].

NOTE: To get the best MS20995C32 lockwire, G01048, angle, make sure that the aft cable assembly can turn easily and smoothly.

SUBTASK 27-21-41-420-004

(4) Do these steps to install the crank lever [10]:

(a) Install the spacer [11] on the rudder pedal adjustment cable [1].

(b) Install the crank lever [10], washer [9], and nut [8].

SUBTASK 27-21-41-410-001

(5) Close the main instrument panel module assembly [14].

SUBTASK 27-21-41-410-002

(6) Close the main instrument panel module shroud.

SUBTASK 27-21-41-710-001

(7) Do this task to test the rudder pedal adjustment cranks: Rudder Pedal Adjustment and Limit Travel Test, TASK 27-21-00-700-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-41-410-003

(8) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER FORWARD QUADRANT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a rudder forward quadrant

(2) An installation of the a rudder forward quadrant.

B. The rudder forward quadrant includes the quadrant and jackshaft.

C. This procedure is applicable for the captain's and first officer's rudder forward quadrants.

TASK 27-21-51-000-801

2. Rudder Forward Quadrant Removal

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
31-31-42-000-801	Rudder Pedal Position Sensor Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
311BL	Stabilizer Trim Access Door
324CL	Vertical Fin, Access

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-21-51-480-005

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-21-51-860-001

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-51-010-001

(3) To get access to the rudder feel and centering unit, do this task:

Open this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

SUBTASK 27-21-51-080-001

(4) Install rig pin R-5 from the rigging pin kit, SPL-1585, in the rudder feel and centering unit (Figure 401).

SUBTASK 27-21-51-010-002

(5) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-21-51-010-003

(6) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-51-010-004

(7) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

SUBTASK 27-21-51-020-001

(8) For the first officer's rudder forward quadrant, remove the rudder pedal position sensor (TASK 31-31-42-000-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Rudder Forward Quadrant Removal

SUBTASK 27-21-51-010-005

WARNING YOU MUST LOOSEN AND DISCONNECT THE RUDDER CABLES FROM THE RUDDER FORWARD QUADRANTS BEFORE YOU DISCONNECT THE BUS ROD. RELIEVE TENSION UNIFORMLY IN THE TWO RUDDER CABLES. IF YOU DO NOT LOOSEN THE RUDDER CABLES EQUALLY, IT CAN CAUSE INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(1) Loosen the turnbuckles [91] for the rudder cable RB [21] and rudder cable RA [22] (Figure 403).

SUBTASK 27-21-51-020-002

(2) Disconnect the applicable rudder cable from the rudder forward quadrant [39] that you will remove (Figure 402):

(a) Remove the bolt [30], washer [19], washer [31] (if applicable), and nut [20] from the cable retainer [32].

(b) Remove the rudder cable RB [21] or rudder cable RA [22] from the rudder forward quadrant [39].

SUBTASK 27-21-51-020-003

(3) Remove the pins [44], nuts [43], washers [42], and bolts [41] to disconnect the rudder pedal tension rods [40] from the rudder forward quadrant [39].

(a) Discard the pins [44].

SUBTASK 27-21-51-020-004

(4) Remove the pin [49], nut [48], washer [47], spacers [46], and bolt [45] to disconnect the bus rod [50] from the rudder forward quadrant [39].

(a) Discard the pin [49].

SUBTASK 27-21-51-020-005

(5) Remove the nuts [90], washers [89], and bolts [88] to remove the cover [87] from the floor beam structure.

SUBTASK 27-21-51-020-006

(6) Remove the nuts [73], washers [72], and bolts [71] to remove the adjustment shaft support bracket [74] from the structure.

SUBTASK 27-21-51-020-007

(7) Pull the adjustment shaft [75] and the adjustment shaft support bracket [74] forward to disengage the adjustment shaft [75] from the rudder forward quadrant [39].

SUBTASK 27-21-51-020-008

(8) Remove the nuts [54], washers [53], and screws [52] to remove the cable guard [51].

SUBTASK 27-21-51-020-009

(9) If you remove the captain's rudder forward quadrant [39], then do these steps:

(a) Remove the lockwire from the rudder pedal steering arm [24].

(b) Remove the screws [68] and washers [69] to disconnect the rudder pedal steering arm [24] from the rudder forward quadrant [39].

(c) Move the rudder pedal steering arm [24] out of the way.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Hold the rudder forward quadrant [39] and remove the jackshaft support channel [70]:

NOTE: The rudder forward quadrant is free to fall from the upper bearing housing after you remove the screws.

1) Remove the nuts [60], washers [59], and screws [58].
2) Remove the nut [63], washer [62], and screw [61].

(e) Remove the rudder forward quadrant [39] from the airplane:

1) Move the rudder forward quadrant [39] in an aft and outboard direction to clear the floor beam penetration, and remove it from the airplane.

(f) Do these steps to remove the lower bearing housing [67] from the jackshaft support channel [70]:

1) Remove the nuts [57], washers [56], and bolts [55].
2) Remove the nut [66], washer [65], and bolt [64].

SUBTASK 27-21-51-020-010

(10) If you remove the first officer's rudder forward quadrant [39], then do these steps:

(a) Remove the lockwire from the rudder pedal position sensor quadrant [23].

(b) Remove the screws [77] and washers [78] to disconnect the rudder pedal position sensor quadrant [23] from the rudder forward quadrant [39].

(c) Hold the rudder forward quadrant [39] and remove the jackshaft support channel [76]:

NOTE: The rudder forward quadrant is free to fall from the upper bearing housing after you remove the bolts and screws.

1) Remove the nuts [60], washers [59], and screws [58].
2) Remove the nuts [85], washers [84], and bolts [83].
3) Remove the support [86].
4) Remove the nut [63], washer [62], and screw [61].

(d) Remove the rudder forward quadrant [39] from the airplane:

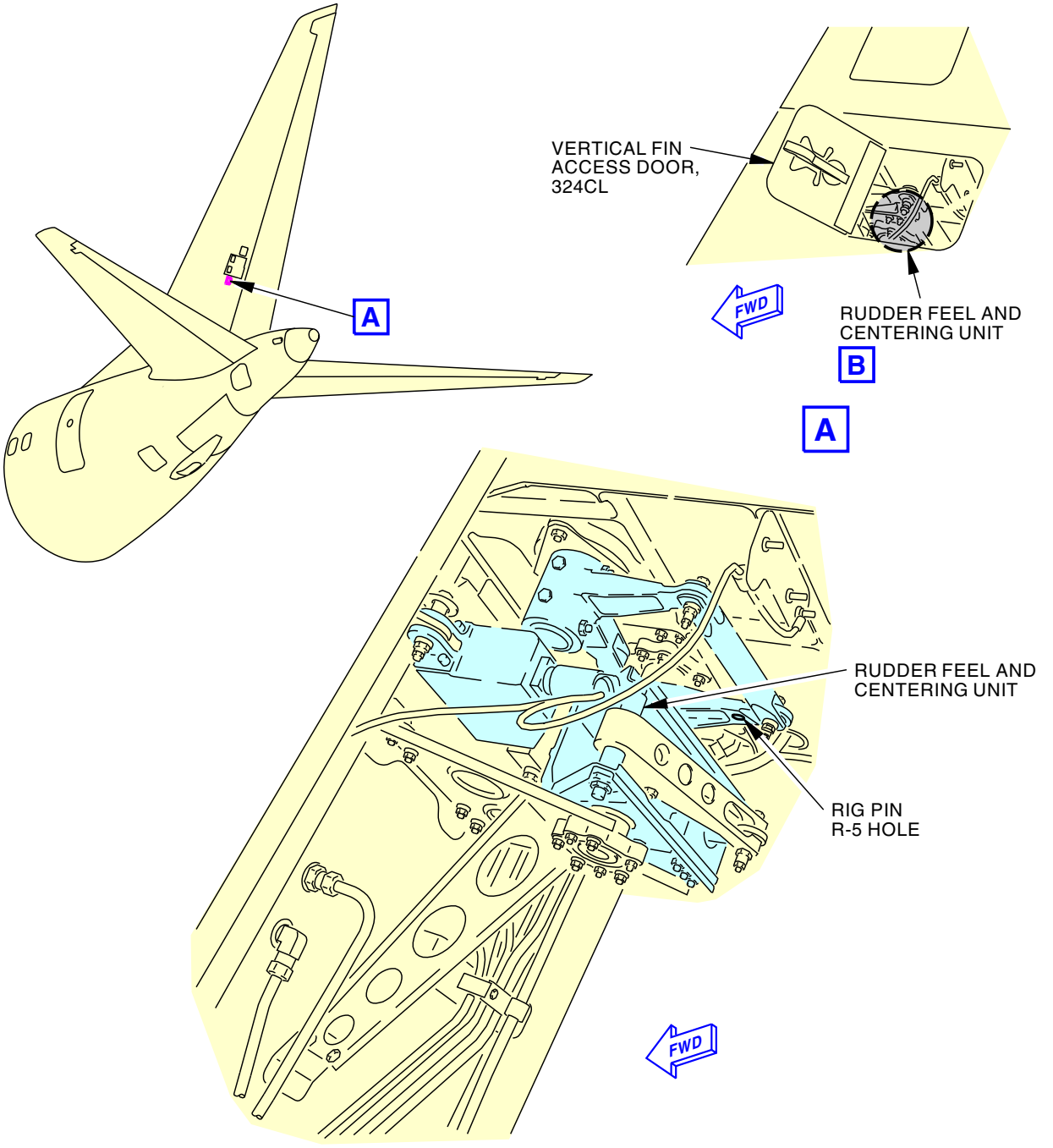
1) Move the rudder forward quadrant [39] in an aft and outboard direction to clear the floor beam penetration, and remove it from the airplane.

(e) Do these steps to remove the lower bearing housing [67] from the rudder forward quadrant [39]:

1) Remove the nuts [57], washers [56], and bolts [55].
2) Remove the nut [66], washer [65], and bolt [64].

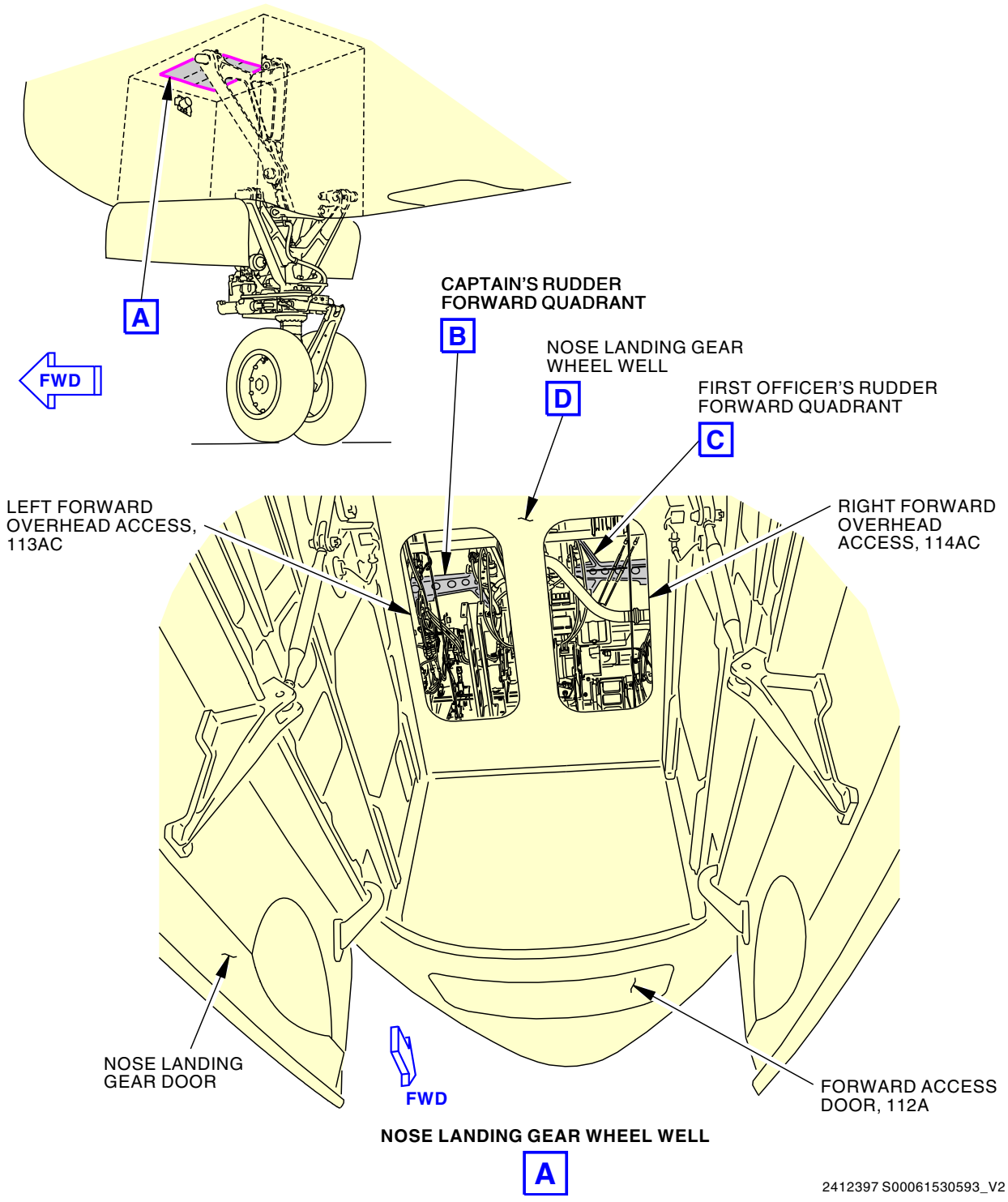
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



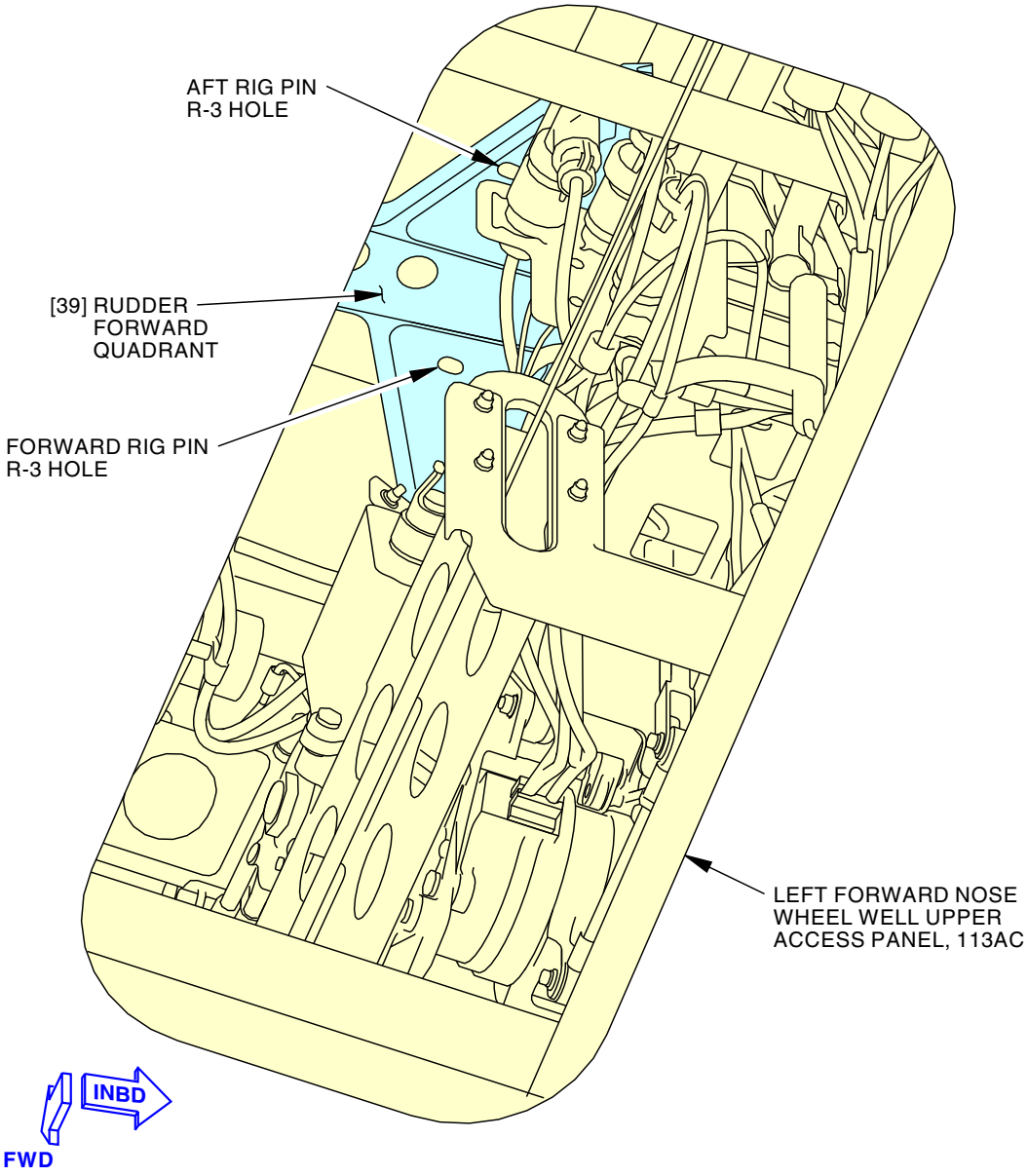
Rudder Rig Pin Installation
Figure 401/27-21-51-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



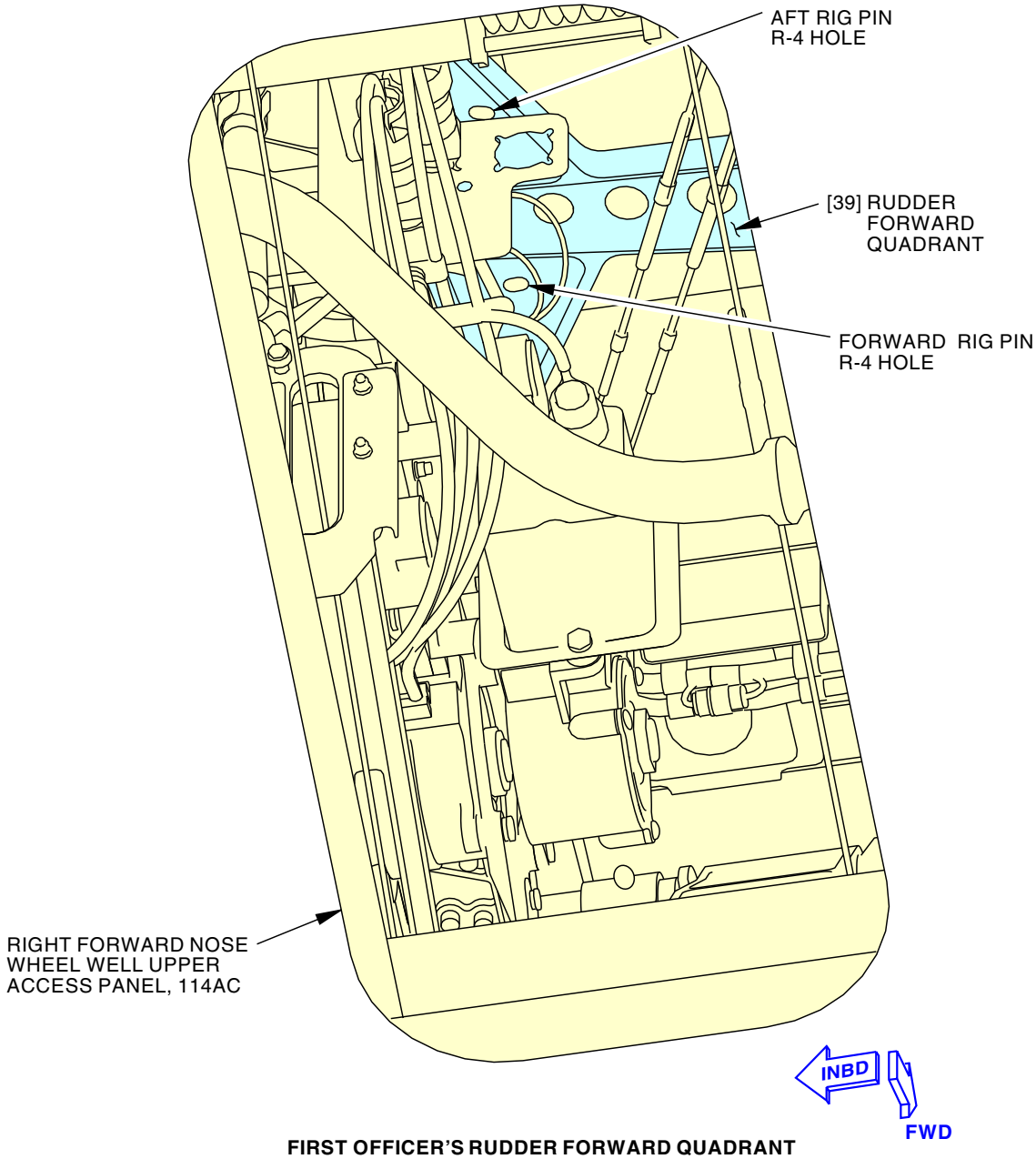
CAPTAIN'S RUDDER FORWARD QUADRANT

B

2412398 S00061530594_V1

Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



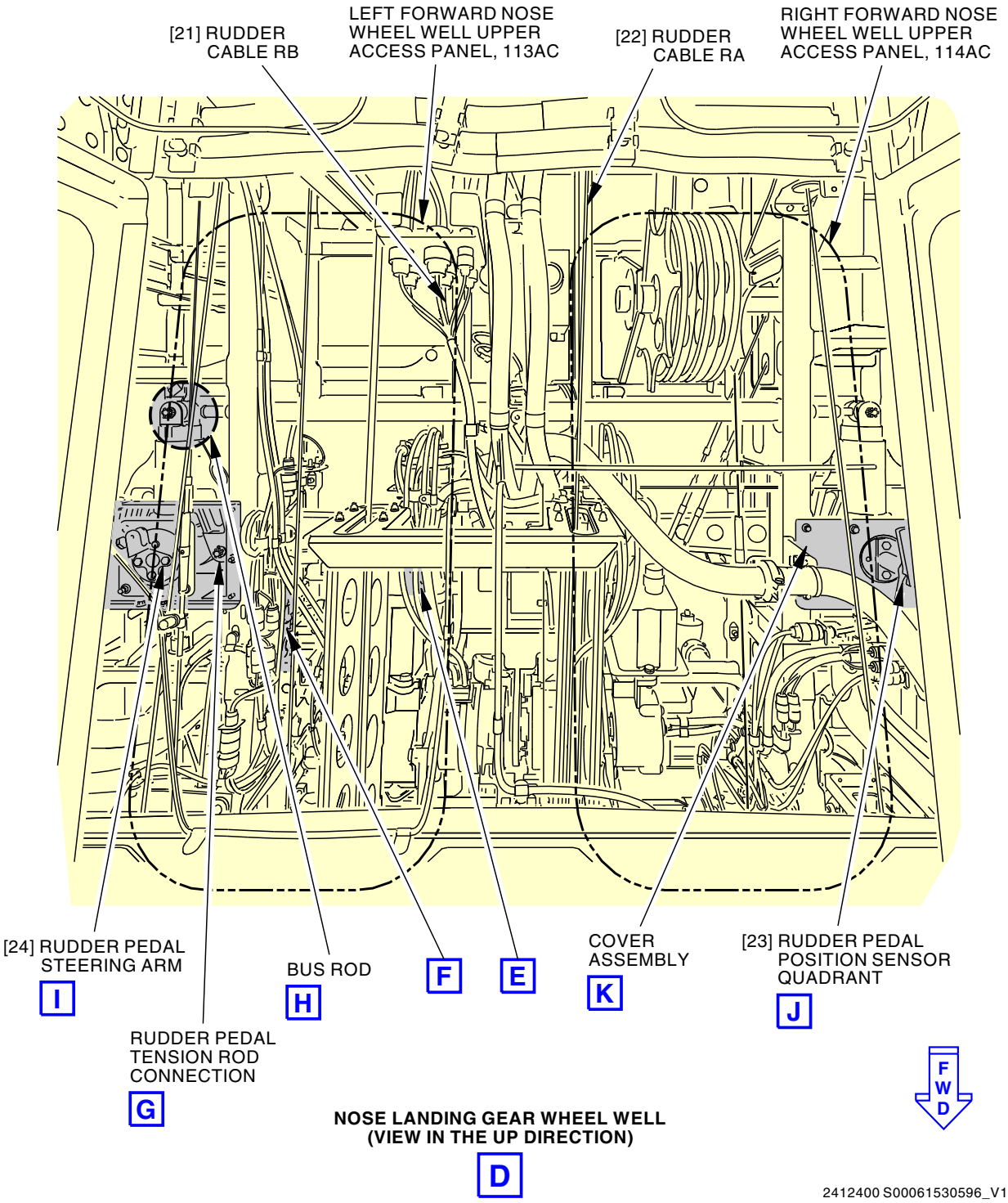
FIRST OFFICER'S RUDDER FORWARD QUADRANT

C

2412399 S00061530595_V1

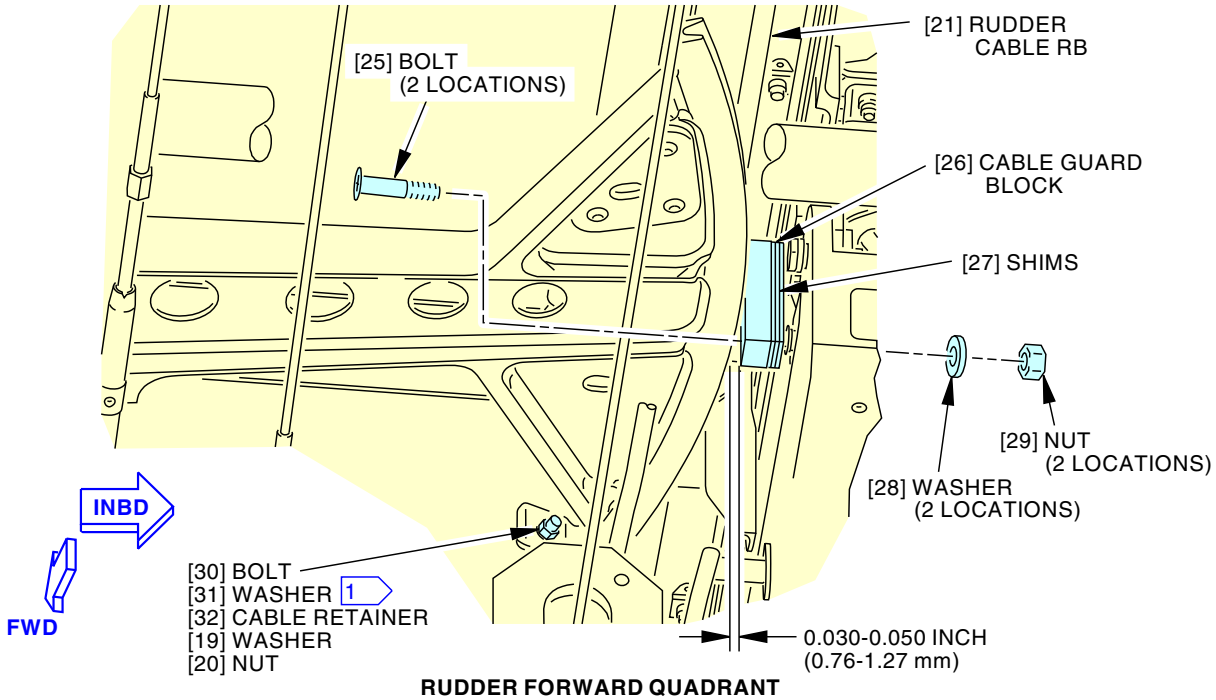
Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



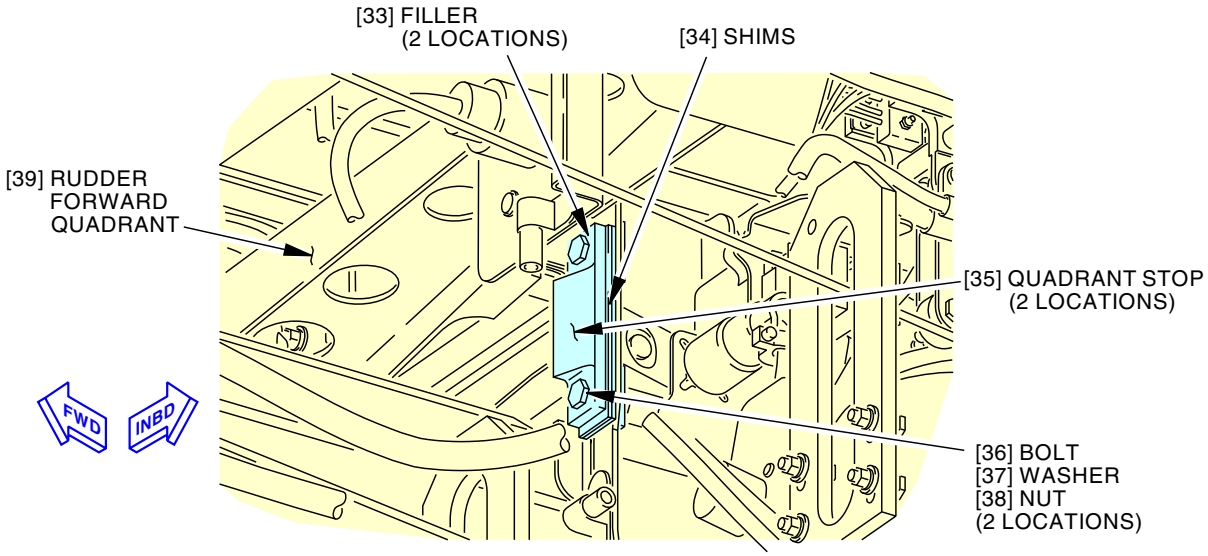
Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RUDDER FORWARD QUADRANT
(CAPTAIN'S SIDE IS SHOWN, FIRST OFFICER'S SIDE IS OPPOSITE)

E



RUDDER FORWARD QUADRANT
(CAPTAIN'S SIDE IS SHOWN, FIRST OFFICER'S SIDE IS OPPOSITE)

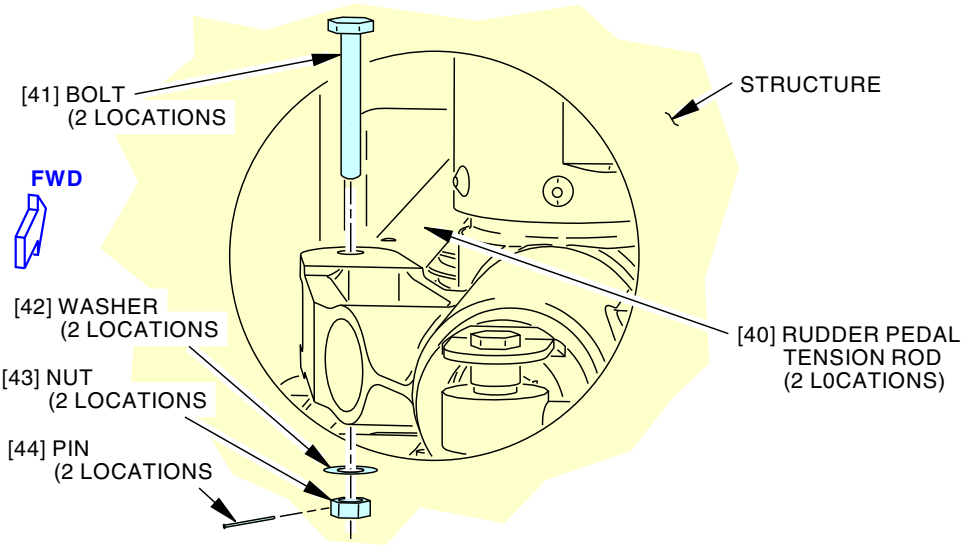
1 IF APPLICABLE

F

2412401 S00061530597_V3

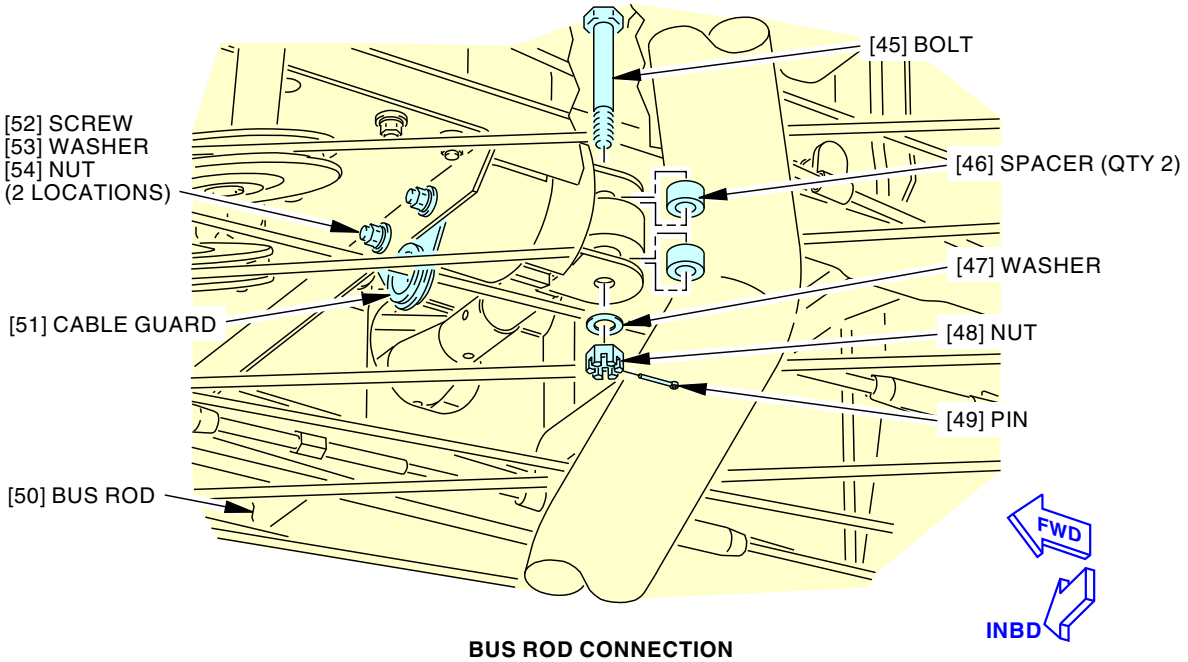
Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RUDDER PEDAL TENSION ROD CONNECTION
(RUDDER FORWARD QUADRANT)
(CAPTAIN'S SIDE IS SHOWN, FIRST OFFICER'S SIDE IS OPPOSITE)

G



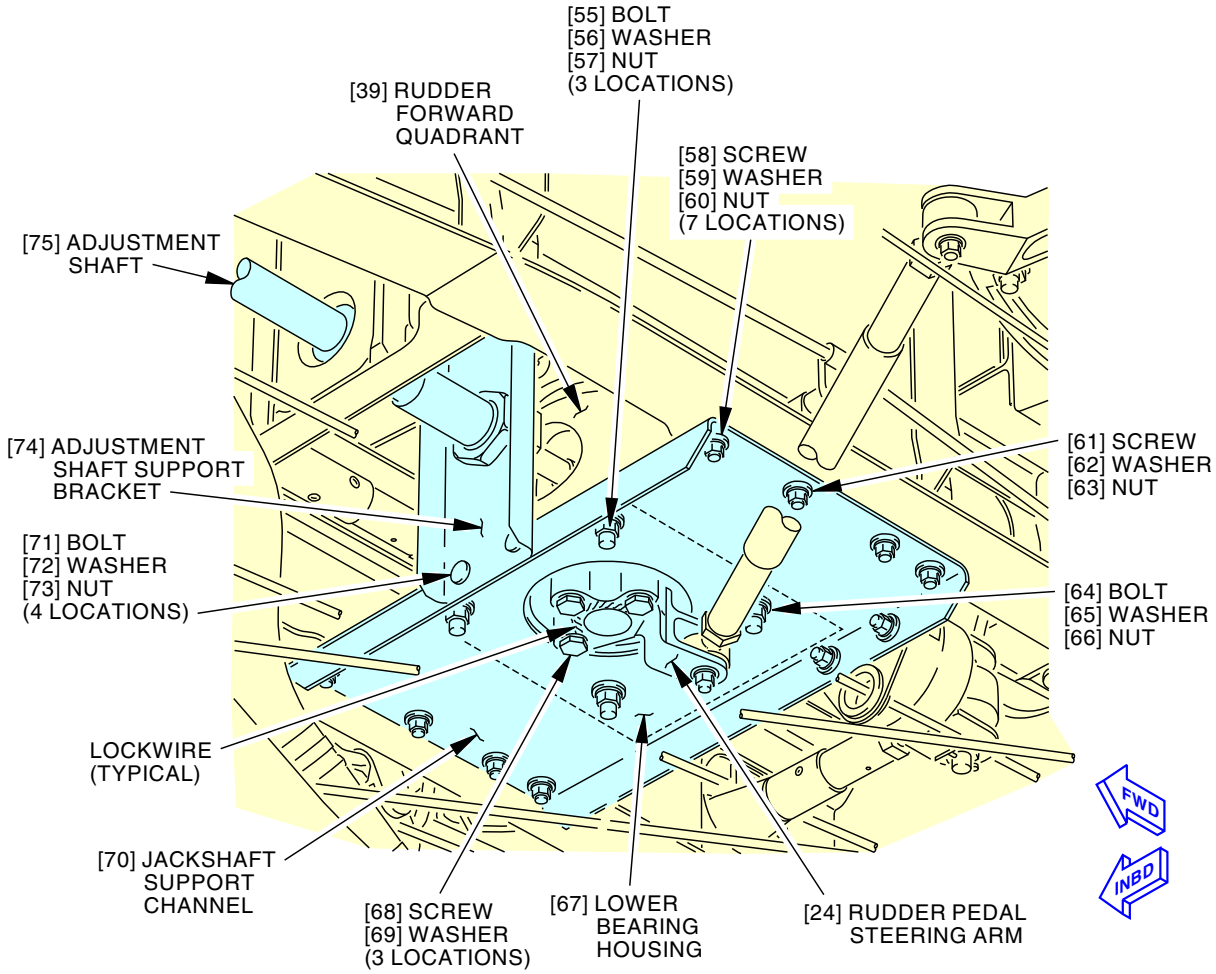
BUS ROD CONNECTION
(RUDDER FORWARD QUADRANT)
(CAPTAIN'S SIDE IS SHOWN, FIRST OFFICER'S SIDE IS OPPOSITE)

H

2412402 S00061530598_V1

Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



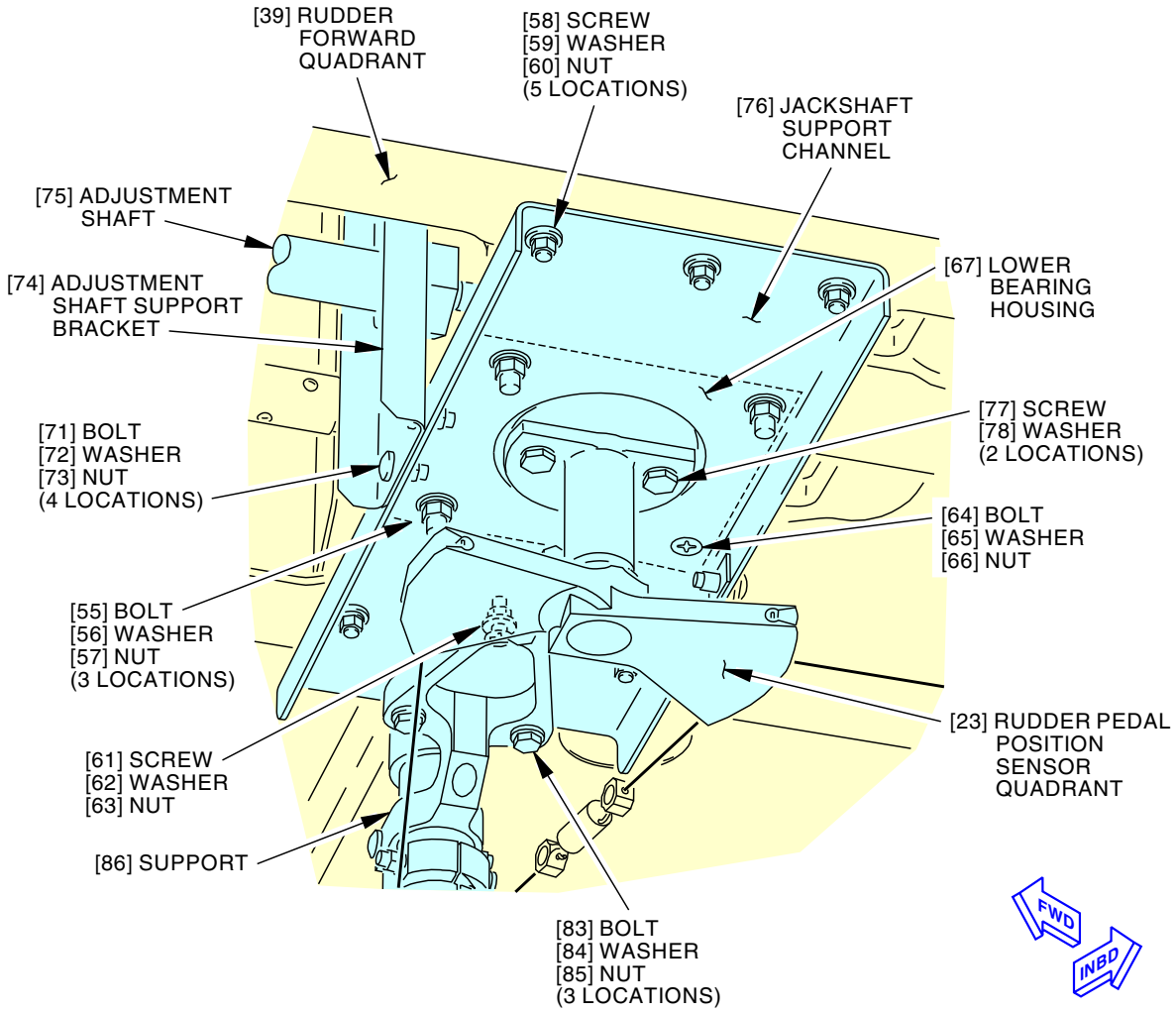
**CAPTAIN'S RUDDER FORWARD QUADRANT,
RUDDER PEDAL STEERING ARM AND ADJUSTMENT**

I

2412403 S00061530599_V1

**Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 7 of 9)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



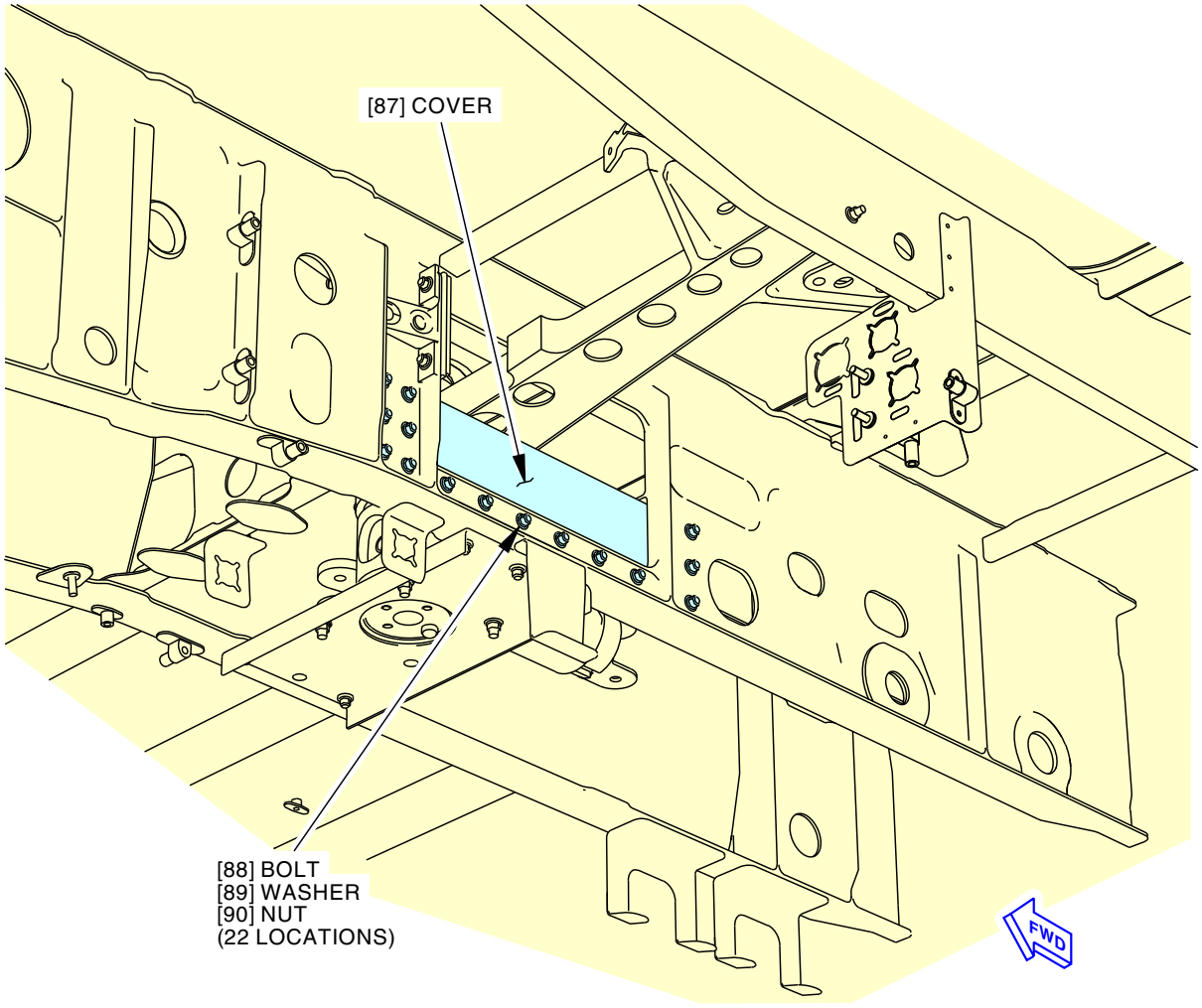
FIRST OFFICER'S RUDDER FORWARD QUADRANT, RUDDER PEDAL POSITION SENSOR QUADRANT

J

2412405 S00061530601_V1

Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



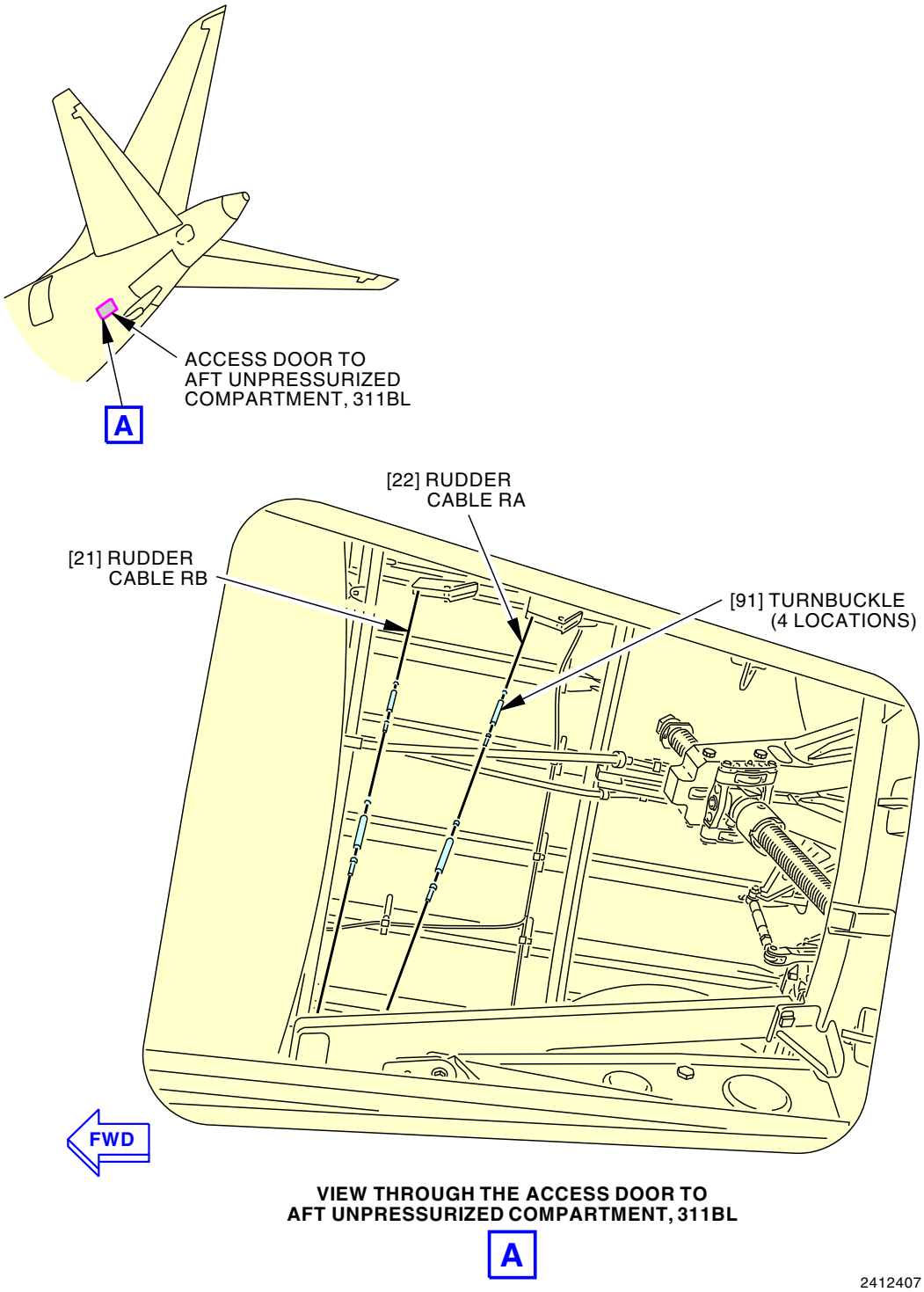
COVER ASSEMBLY

K

2412406 S00061530602_V1

Rudder Forward Quadrant Installation
Figure 402/27-21-51-990-802 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Cables and Turnbuckles Location
Figure 403/27-21-51-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-51-400-801

3. Rudder Forward Quadrant Installation

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
27-21-00-700-807	Rudder Trim System Test (P/B 501)
27-21-00-820-802	Rudder Pedals Adjustment (P/B 501)
27-21-00-820-803	Rudder Control Cables RA and RB Adjustment (P/B 501)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
31-31-42-400-801	Rudder Pedal Position Sensor Installation (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Rudder cable RB	27-21-00-09-075	SIA ALL
		27-21-00-09-085	SIA ALL
		27-21-00-09-095	SIA ALL
22	Rudder cable RA	27-21-00-09-080	SIA ALL
		27-21-00-09-085	SIA ALL
		27-21-00-09-090	SIA ALL
23	Rudder pedal position sensor quadrant	31-31-42-02-065	SIA ALL
24	Rudder pedal steering arm	32-51-21-01-225	SIA ALL
27	Shim	27-21-51-02-610	SIA ALL
		27-21-51-03-380	SIA ALL
39	Rudder forward quadrant	27-21-51-02-450	SIA ALL
		27-21-51-03-140	SIA ALL
44	Pin	27-21-51-02-065	SIA ALL
		27-21-51-03-030	SIA ALL
49	Pin	27-21-51-02-010	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
49 (cont.)		27-21-51-03-005	SIA ALL
50	Bus rod	27-21-51-02-035	SIA ALL
67	Lower bearing housing	27-21-51-02-660	SIA ALL
70	Jackshaft support channel	27-21-51-02-675	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
324	Vertical Fin - Rear Spar To Trailing Edge

F. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
311BL	Stabilizer Trim Access Door
324CL	Vertical Fin, Access

G. Rudder Forward Quadrant Installation

SUBTASK 27-21-51-420-001

(1) If you install the rudder forward quadrant [39], then do these steps (Figure 402):

(a) If it is necessary, Install the lower bearing housing [67] to the jackshaft support channel [70]:

1) Put the lower bearing housing [67] on the jackshaft support channel [70].

2) Install the bolts [55], washers [56], and nuts [57].

3) Install the bolt [64], washer [65], and nut [66].

(b) Put the rudder forward quadrant [39] in the upper bearing housing and the quadrant arm through the floor beam penetration.

(c) Attach the jackshaft support channel [70] to the airplane structure:

1) Install the screws [58], washers [59], and nuts [60].

2) Install the screw [61], washer [62], and nut [63].

(d) Install the screws [68] and washers [69] to connect the rudder pedal steering arm [24] to the rudder forward quadrant [39].

1) Install the MS20995NC32 lockwire, G01912.

(e) Install the screws [52], washers [53], and nuts [54] to attach the cable guard [51] to the jackshaft support channel [70].

SUBTASK 27-21-51-420-002

(2) If you install the first officer's rudder forward quadrant [39], then do these steps:

(a) If it is necessary, Install the lower bearing housing [67] to the jackshaft support channel [76]:

1) Put the lower bearing housing [67] on the jackshaft support channel [76].

2) Install the bolts [55], washers [56], and nuts [57].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Install the bolt [64], washer [65], and nut [66].

(b) Put the rudder forward quadrant [39] in the upper bearing housing and quadrant arm thru the floor beam penetration.

(c) Attach the jackshaft support channel [76] to the airplane structure:

1) Install the screws [58], washers [59], and nuts [60].

2) Install the screw [61], washer [62], and nut [63].

(d) Attach the support [86] to the jackshaft support channel [76]:

1) Install the bolts [83], washers [84], and nuts [85].

(e) Connect the rudder pedal position sensor quadrant [23] to the rudder forward quadrant [39].

1) Install screws [77] and washers [78].

2) Install the MS20995NC32 lockwire, G01912.

(f) Install the screws [52], washers [53], and nuts [54] to attach the cable guard [51] to the jackshaft support channel [76].

SUBTASK 27-21-51-480-001

(3) Install rig pin R-3 from the rigging pin kit, SPL-1585, in the forward rig pin hole of the captain's rudder forward quadrant [39].

SUBTASK 27-21-51-480-002

(4) Install rig pin R-4 from the rigging pin kit, SPL-1585, in the forward rig pin hole of the first officer's rudder forward quadrant [39].

SUBTASK 27-21-51-820-001

(5) Make sure that the clearance between the cable guard block [26] and the rudder forward quadrant [39] is 0.030 in. (0.762 mm) – 0.050 in. (1.270 mm).

(a) If it is necessary, add or remove the shims [27]:

1) Remove the nuts [29], washers [28], and bolts [25] from the cable guard block [26].

2) Add or remove the shims [27] laminations.

3) Install the bolts [25], washers [28], and nuts [29] to the cable guard block [26].

SUBTASK 27-21-51-420-003

(6) Temporarily install the bolt [45] to connect the bus rod [50] to the rudder forward quadrant [39].

(a) If it is necessary, adjust the bus rod [50] until rig pins R-3 and R-4 move freely.

SUBTASK 27-21-51-420-004

(7) Install the bolts [41], washers [42], nuts [43], and pins [44] to connect the rudder pedal tension rods [40] to the rudder forward quadrant [39].

(a) If it is necessary, adjust the length of the rudder pedal tension rods [40].

SUBTASK 27-21-51-080-002

(8) Remove rig pins R-3, R-4.

SUBTASK 27-21-51-420-005

(9) If you install the captain's rudder forward quadrant, then do these steps:

(a) Move the captain's rudder forward quadrant [39] until it touches the quadrant stop [35].

(b) Make sure that you can install rig pin R-3 easily in the aft rig pin hole.

1) If it is necessary, add or remove the shims [34]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Remove the nuts [38], washers [37], bolts [36], and fillers [33] from the quadrant stops [35].

b) Add or remove the shims [34] laminations.

c) Install the fillers [33], bolts [36], washers [37], and nuts [38] to the quadrant stops [35].

(c) Remove rig pin R-3.

SUBTASK 27-21-51-420-006

(10) If you install the first officer's rudder forward quadrant, then do these steps:

(a) Move the first officer's rudder forward quadrant [39] until it touches the quadrant stop [35].

(b) Make sure that you can install rig pin R-4 easily in the aft rig pin hole.

1) If it is necessary, add or remove the shims [34]:

a) Remove the nuts [38], washers [37], bolts [36], and fillers [33] from the quadrant stops [35].

b) Add or remove the shims [34] laminations.

c) Install the fillers [33], bolts [36], washers [37], and nuts [38] to the quadrant stops [35].

(c) Remove rig pin R-4.

SUBTASK 27-21-51-480-003

(11) Install rig pin R-3 in the forward rig pin hole of the captain's rudder forward quadrant.

SUBTASK 27-21-51-480-004

(12) Install rig pin R-4 in the forward rig pin hole of the first officer's rudder forward quadrant.

SUBTASK 27-21-51-420-007

(13) Connect the adjustment shaft [75] to the rudder forward quadrant [39]:

(a) Put the adjustment shaft [75] into the universal joint of the rudder forward quadrant [39], so that the slot in the adjustment shaft [75] engages with the pin in the hole.

SUBTASK 27-21-51-420-008

(14) Install the bolts [71], washers [72], and nuts [73] to attach the adjustment shaft support bracket [74] to the structure.

SUBTASK 27-21-51-420-009

(15) Install the bolts [88], washers [89], and nuts [90] to attach the cover [87] to the floor beam structure.

SUBTASK 27-21-51-860-002

(16) Do these steps to put the rudder pedals to the neutral position:

(a) Turn the adjustment crank clockwise for the rudder pedals to the full forward position.

(b) Turn the adjustment crank back four turns from the full forward position, to get to the neutral position.

SUBTASK 27-21-51-820-002

(17) Do this task: Rudder Pedals Adjustment, TASK 27-21-00-820-802.

SUBTASK 27-21-51-420-010

(18) Connect the bus rod [50] to the rudder forward quadrant [39]:

(a) Remove the bolt [45] from the bus rod [50].

(b) Turn the bus rod two full turns to make it shorter.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that you can see the threads of the two bus rod ends through the holes in the bus rod.

(d) Install the bolt [45], spacers [46], washer [47], nut [48], and new pin [49] to connect the bus rod [50] to the rudder forward quadrant [39].

SUBTASK 27-21-51-420-011

(19) Install the bolt [30], washer [19], washer [31] (if applicable), nut [20], and cable retainer [32] to connect the applicable rudder cable to the rudder forward quadrant [39] (TASK 20-10-93-400-801).

SUBTASK 27-21-51-420-012

(20) Tighten the turnbuckle [91] until rudder cable RB [21] or rudder cable RA [22] are not loose. (Figure 403)

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-51-420-013

(1) For the first officer's rudder forward quadrant, install the rudder pedal position sensor, do this task: Rudder Pedal Position Sensor Installation, TASK 31-31-42-400-801.

SUBTASK 27-21-51-080-003

(2) Remove the rig pins R-5 from the rudder feel and centering unit (Figure 401).

SUBTASK 27-21-51-080-004

(3) Remove the rig pins R-3 and R-4.

SUBTASK 27-21-51-820-003

(4) Adjust the rudder control cables RA and RB, do this task: Rudder Control Cables RA and RB Adjustment, TASK 27-21-00-820-803.

SUBTASK 27-21-51-860-003

(5) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-51-730-001

(6) Do this task: Rudder Trim System Test, TASK 27-21-00-700-807.

SUBTASK 27-21-51-010-006

(7) Close this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

SUBTASK 27-21-51-410-001

(8) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-21-51-410-002

(9) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-51-010-007

(10) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER FORWARD QUADRANT - INSPECTION/CHECK

1. General

A. This procedure has this inspection task:

(1) Rudder Mechanical Control Path

TASK 27-21-51-210-801

2. Rudder Mechanical Control Path Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Rudder Mechanical Control Path Inspection

SUBTASK 27-21-51-010-008

(1) To get access to the rudder mechanical control path, do this task:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-51-210-001

(2) Do a detailed inspection of the rudder mechanical control path.

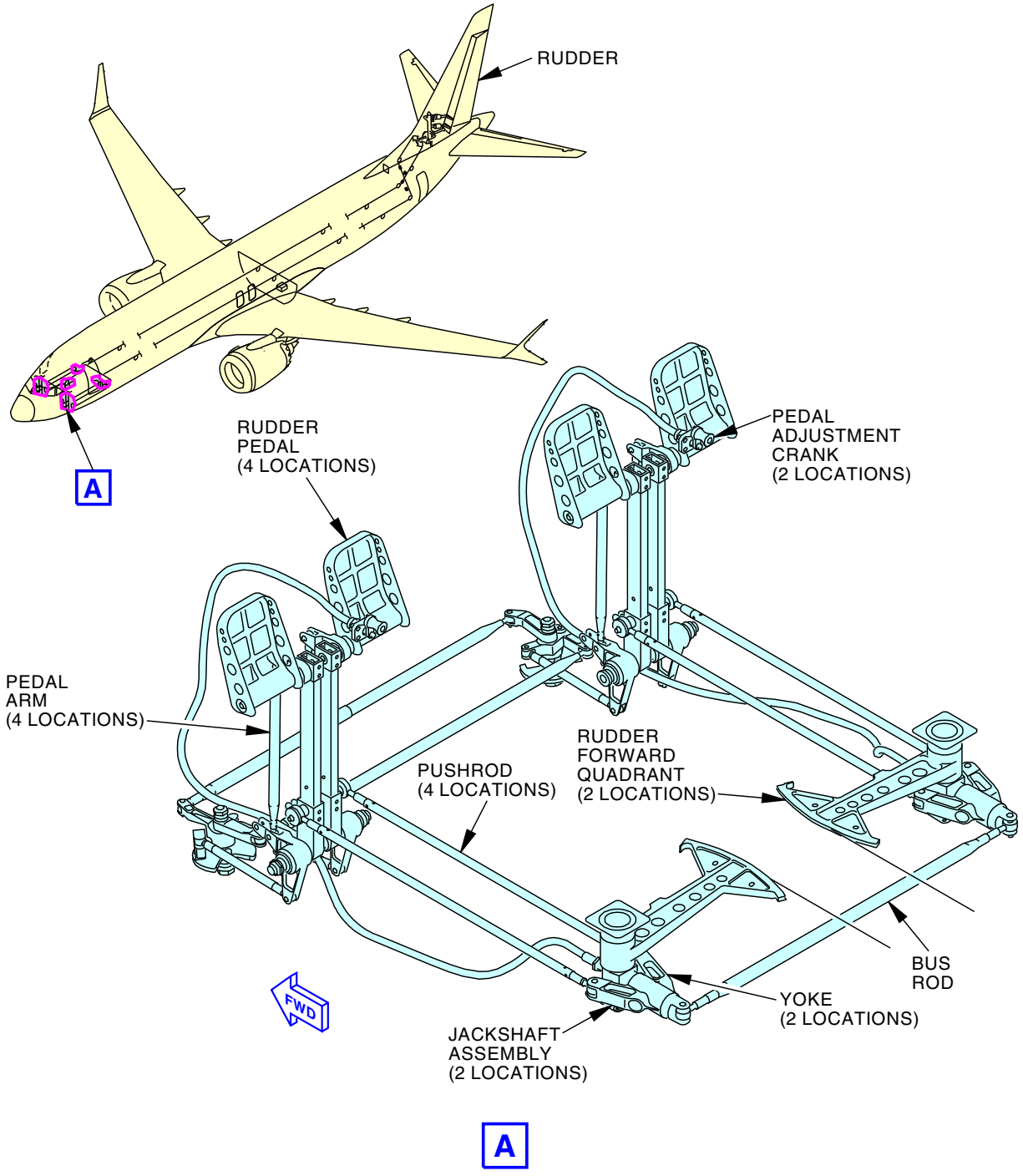
SUBTASK 27-21-51-010-009

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Rudder and Rudder Trim Control System - Rudder Pedals and Forward Quadrants
Figure 601/27-21-51-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER AFT QUADRANT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Rudder Aft Quadrant Removal

(2) Rudder Aft Quadrant

B. The rudder aft quadrant [20] includes the quadrant, the quadrant shaft [17], and the two bearing housings.

TASK 27-21-61-000-801

2. Rudder Aft Quadrant Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access
323GL	Vertical Fin, Access
324CL	Vertical Fin, Access

E. Prepare for the Removal

SUBTASK 27-21-61-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-61-010-001

(2) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-61-010-002

(3) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

SUBTASK 27-21-61-480-001

(4) Install the rig pin R-3 or R-4 from the rigging pin kit, SPL-1585, in the forward rig pin hole of the captain's or first officer's rudder forward quadrant (Figure 401).

SUBTASK 27-21-61-010-003

(5) Do these steps to get access to the rudder aft quadrant [20]:

Remove these access panels:

Number	Name/Location
323FL	Vertical Fin, Access
323GL	Vertical Fin, Access

SUBTASK 27-21-61-010-004

(6) Do these steps to get access to the cable turnbuckles [3]:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-21-61-010-005

(7) Open this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

F. Rudder Aft Quadrant Removal

(Figure 402)

SUBTASK 27-21-61-020-001

(1) Loosen the cable RA [2] and cable RB [1] at the turnbuckles [3].

SUBTASK 27-21-61-020-002

(2) Remove the bolts [9], washer [28] (if applicable), washers [11], and nuts [12] to remove the cable retainer [10] from the rudder aft quadrant [20].

SUBTASK 27-21-61-020-003

(3) Disconnect the cable RA [2] and cable RB [1] from the rudder aft quadrant [20].

SUBTASK 27-21-61-020-004

(4) Remove the nut [15], washer [14], and bolt [13] which connect the control rod [16] to the rudder aft quadrant [20].

SUBTASK 27-21-61-020-005

(5) Do these steps to remove the rudder aft quadrant [20]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the bolts [25] and washers [26] which attach the left bearing housing [19] to the airplane structure.

(b) Slide the quadrant shaft [17] towards the left until the end of the quadrant shaft [17] is clear of the hole in the right side mounting surface.

(c) Remove the left bearing housing [19] and plate [18] from the quadrant shaft [17].

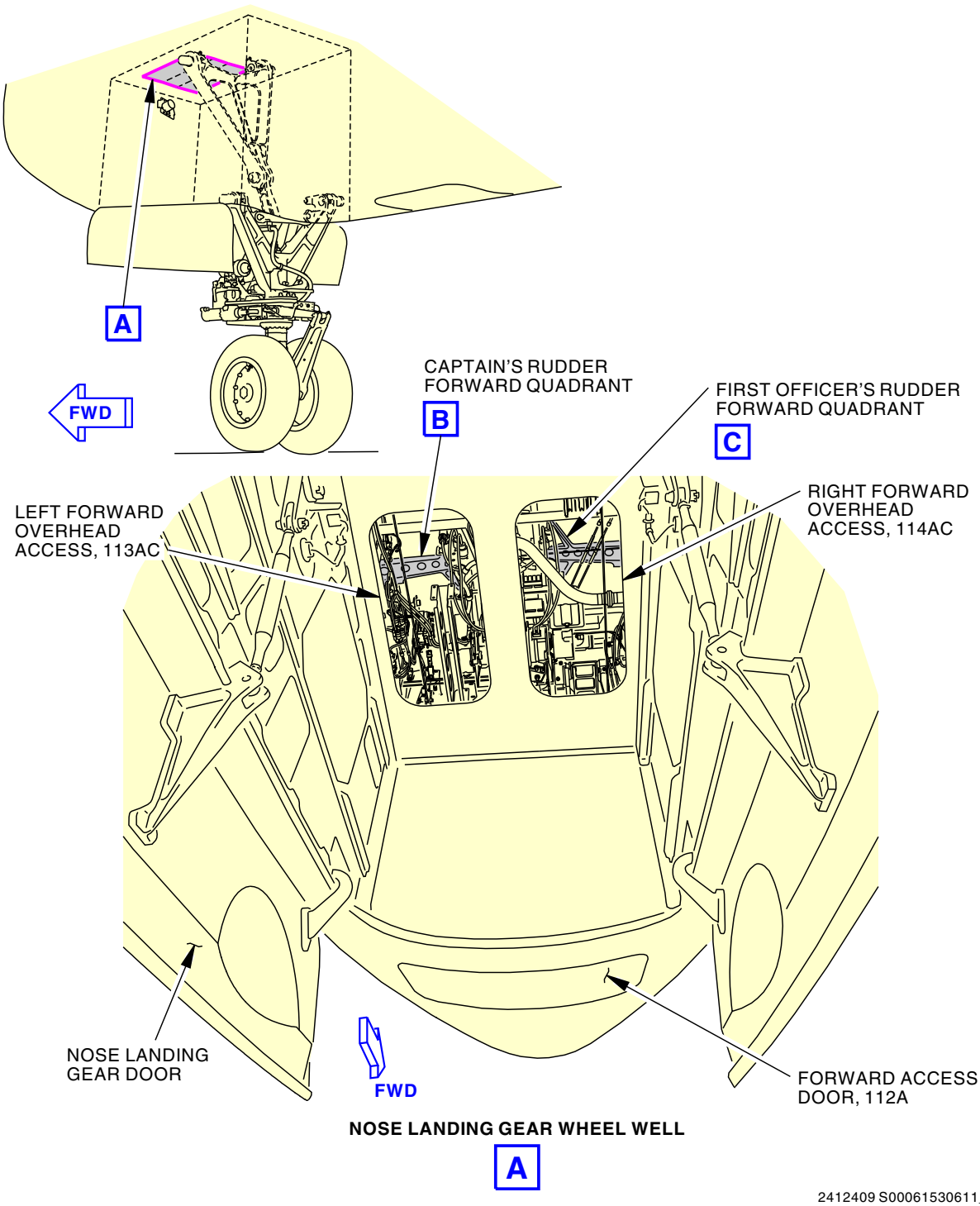
(d) Remove the nuts [7], washers [6], washers [5], bolts [4], and spacers [8] which attach the rudder aft quadrant [20] to the quadrant shaft [17].

(e) Remove the rudder aft quadrant [20] from the quadrant shaft [17].

(f) Remove the rudder aft quadrant [20], quadrant shaft [17], right bearing housing [27], and plate [18] from the airplane.

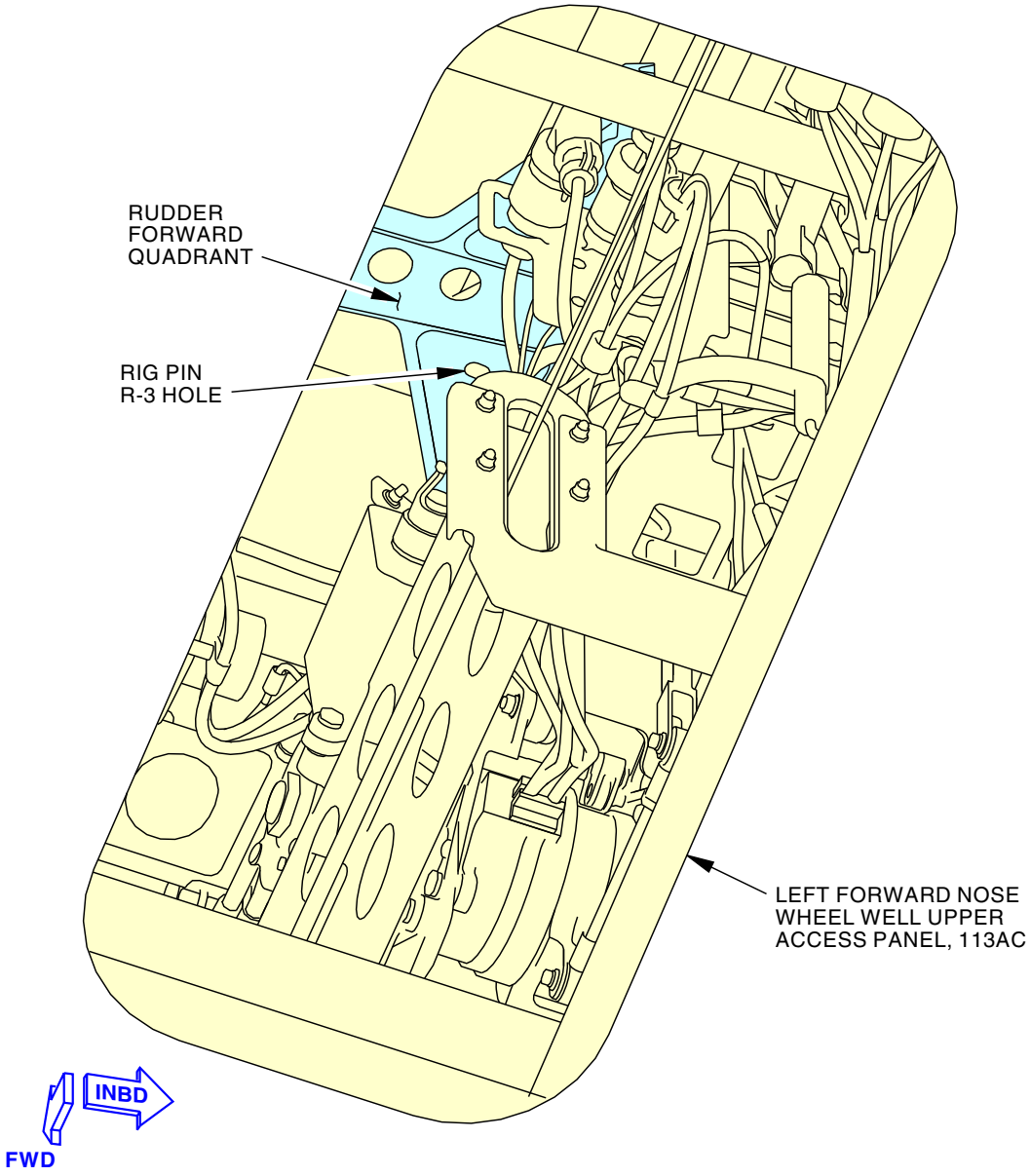
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-61-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



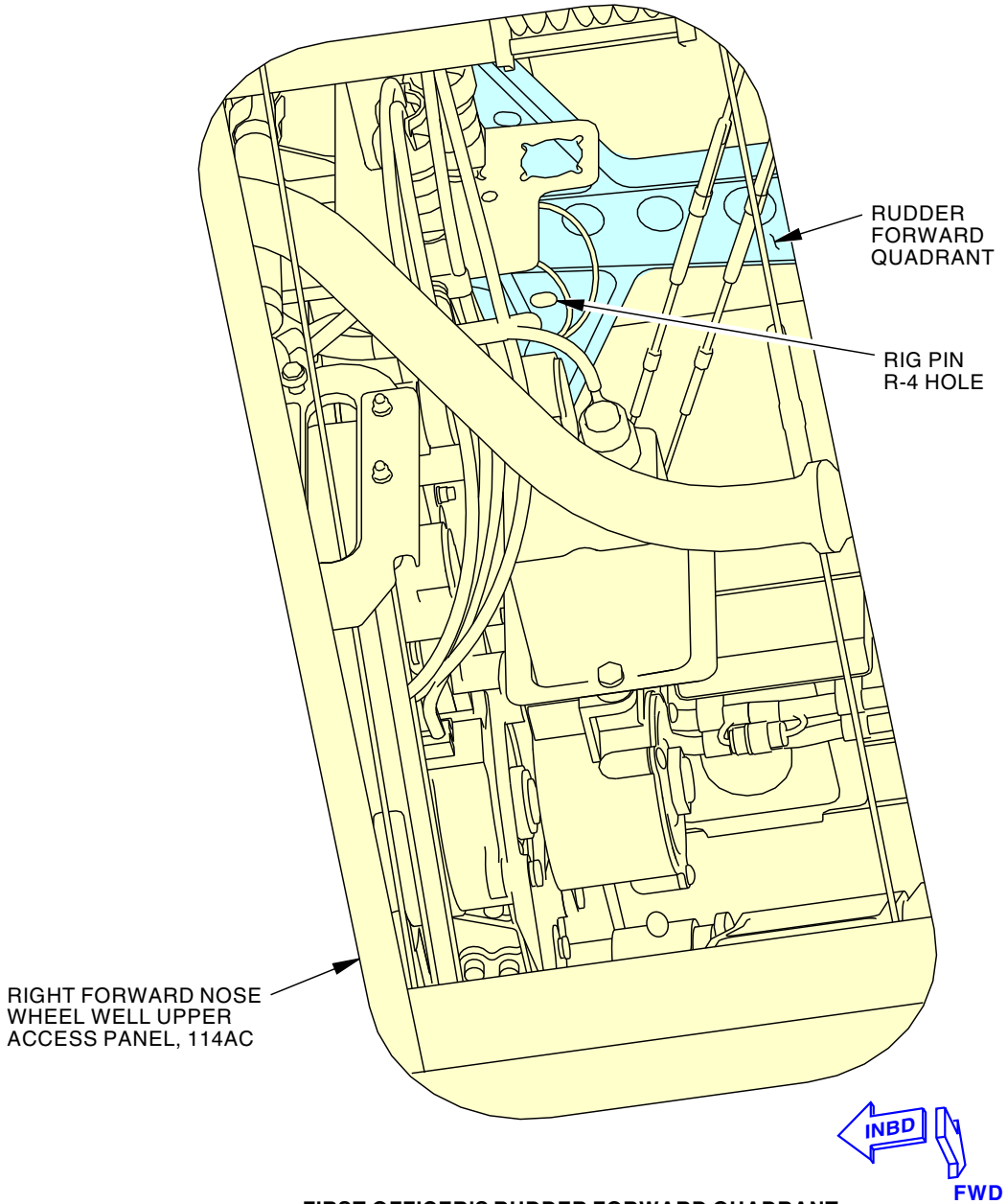
CAPTAIN'S RUDDER FORWARD QUADRANT

B

2412410 S00061530612_V2

Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-61-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



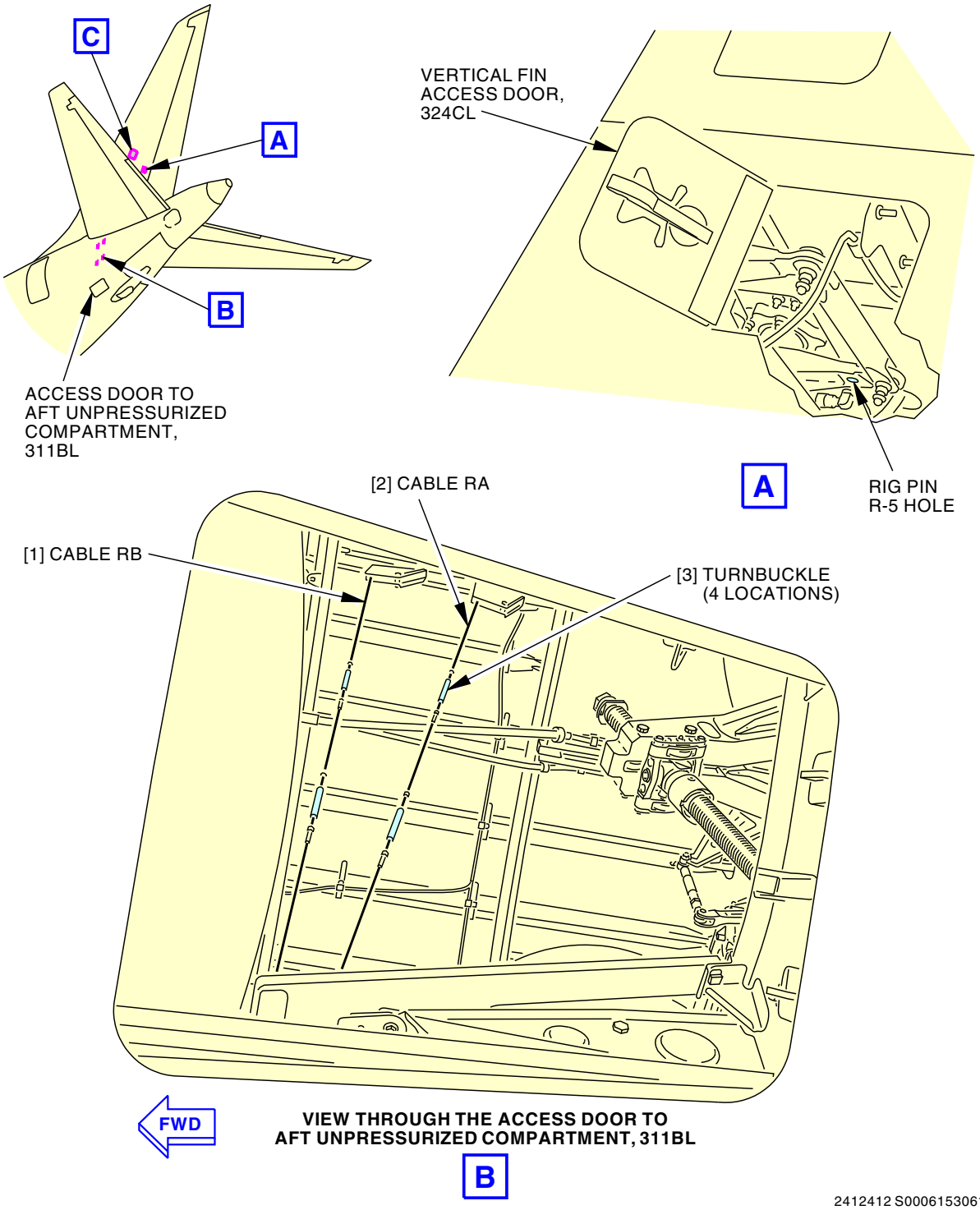
FIRST OFFICER'S RUDDER FORWARD QUADRANT

C

2412411 S00061530613_V2

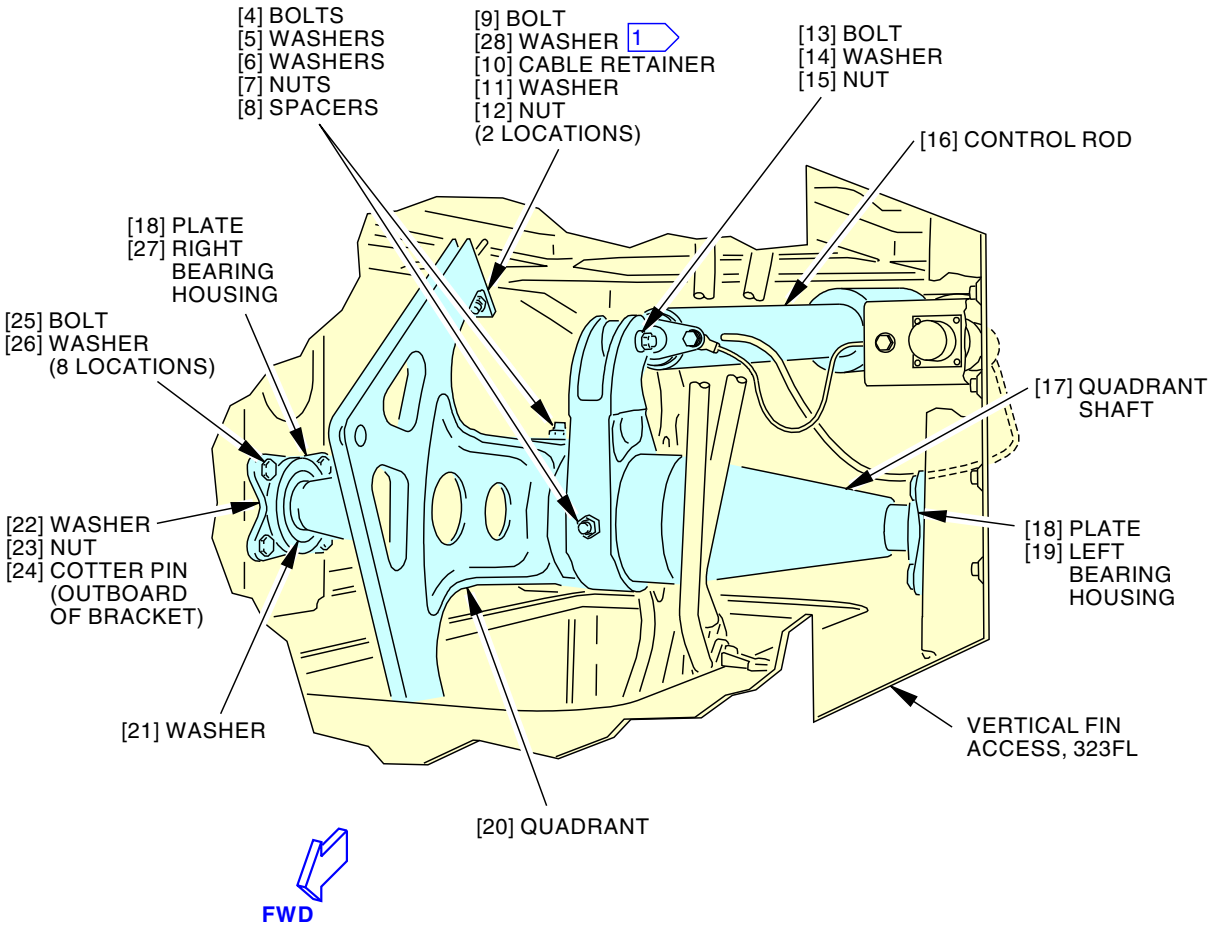
Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-61-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Aft Quadrant Installation
Figure 402/27-21-61-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RUDDER AFT QUADRANT

C

1 IF APPLICABLE

2412413 S00061530615_V2

Rudder Aft Quadrant Installation
Figure 402/27-21-61-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-61-400-801

3. Rudder Aft Quadrant Installation

(Figure 401, Figure 402)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-820-803	Rudder Control Cables RA and RB Adjustment (P/B 501)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
20	Rudder aft quadrant	27-21-61-01-060	SIA ALL
24	Cotter pin	27-21-61-01-005	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
324	Vertical Fin - Rear Spar To Trailing Edge

F. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access
323GL	Vertical Fin, Access
324CL	Vertical Fin, Access

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Rudder Aft Quadrant Installation

(Figure 402)

SUBTASK 27-21-61-860-002

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-61-420-001

(2) Do these steps to install the rudder aft quadrant [20]:

(a) Put the washer [21], plate [18], and the right bearing housing [27] on the right side of the quadrant shaft [17].

1) Make sure the countersunk side of the washer [21] is toward the center of the quadrant shaft [17].

(b) Install the washer [22] and nut [23] on the right side of the quadrant shaft [17].

1) Tighten the nut [23] to 190 in-lb (21 N·m) - 280 in-lb (32 N·m).

(c) Install a new cotter pin [24].

(d) Put all the parts through the access hole.

(e) Slide the rudder aft quadrant [20] onto the quadrant shaft [17].

(f) Install the bolts [4], spacers [8], washers [5], washers [6], and nuts [7] to attach the rudder aft quadrant [20] to the quadrant shaft [17].

(g) Put the left bearing housing [19] on the left side of the quadrant shaft [17].

(h) Put the quadrant shaft [17] and plate [18] in its position.

(i) Install the bolts [25] and washers [26] to attach the left bearing housing [19] and right bearing housing [27] to the airplane structure.

SUBTASK 27-21-61-420-002

(3) Turn the quadrant shaft [17].

(a) Make sure that the quadrant shaft [17] moves freely in the left bearing housing [19] and right bearing housing [27].

SUBTASK 27-21-61-420-003

(4) Connect the cable RA [2] and cable RB [1] to the rudder aft quadrant [20].

(a) Install the cable retainer [10], bolts [9], washer [28] (if applicable), washers [11], and nuts [12] (TASK 20-10-93-400-801).

SUBTASK 27-21-61-420-004

(5) Tighten the turnbuckles [3] until the cable RA [2] and cable RB [1] are not loose.

SUBTASK 27-21-61-420-005

(6) Install the bolt [13], washer [14], and nut [15] to connect the control rod [16] to the rudder aft quadrant [20].

SUBTASK 27-21-61-480-002

(7) Install the rig pin R-5 from the rigging pin kit, SPL-1585, to the rudder feel and centering unit (Figure 402).

SUBTASK 27-21-61-820-001

(8) Adjust the cable RA [2] and cable RB [1] (TASK 27-21-00-820-803).

SUBTASK 27-21-61-080-001

(9) Remove the rig pins R-3 and R-4 from the rudder forward quadrants (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-61-080-002

(10) Remove the rig pins R-5 from the rudder feel and centering unit.

SUBTASK 27-21-61-710-001

(11) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-61-410-001

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-21-61-940-001

(2) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 27-21-61-410-002

(3) Close this access panel:

Number	Name/Location
324CL	Vertical Fin, Access

SUBTASK 27-21-61-410-003

(4) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-21-61-410-004

(5) Install these access panels:

Number	Name/Location
323FL	Vertical Fin, Access
323GL	Vertical Fin, Access

SUBTASK 27-21-61-390-001

(6) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER AFT QUADRANT - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Detail Visual Inspection of the Rudder Aft Quadrant components

(2) General Visual Inspection of the Rudder Aft Quadrant components.

TASK 27-21-61-210-801

2. Rudder Aft Quadrant Detail Visual Inspection

(Figure 601, Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
323FL	Vertical Fin, Access
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

E. Rudder Aft Quadrant Detail Visual Inspection

SUBTASK 27-21-61-010-006

(1) Remove these access panels:

Number	Name/Location
323FL	Vertical Fin, Access
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

SUBTASK 27-21-61-210-001

(2) Do a detail visual inspection of the Rudder Aft Quadrant, Torque Tube Assembly, Feel and Centering Unit, and associated Input/Output rods.

(a) Aft quadrant

(b) Aft quadrant output rod

(c) Aft quadrant bearings

(d) Aft quadrant shaft

(e) Rudder torque tube

(f) Rudder torque tube bearings

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Rudder torque tube cranks

(h) Rudder torque tube input rods

(i) Feel and centering unit

(j) Feel and centering unit output rod

(k) Trim Actuator attachment points.

SUBTASK 27-21-61-010-007

(3) Install these access panels:

Number	Name/Location
323FL	Vertical Fin, Access
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

SUBTASK 27-21-61-390-002

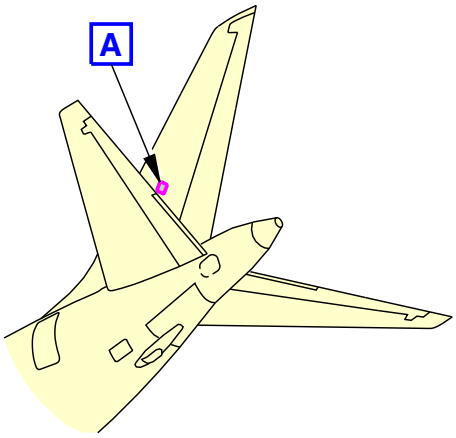
(4) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

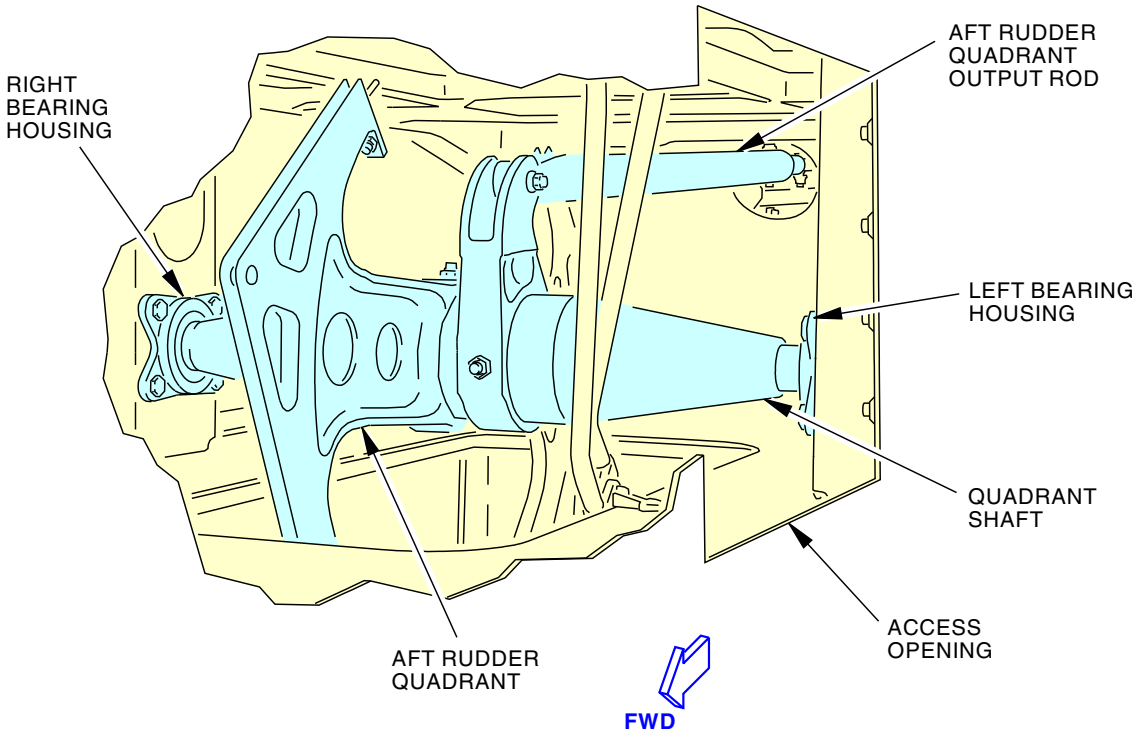
NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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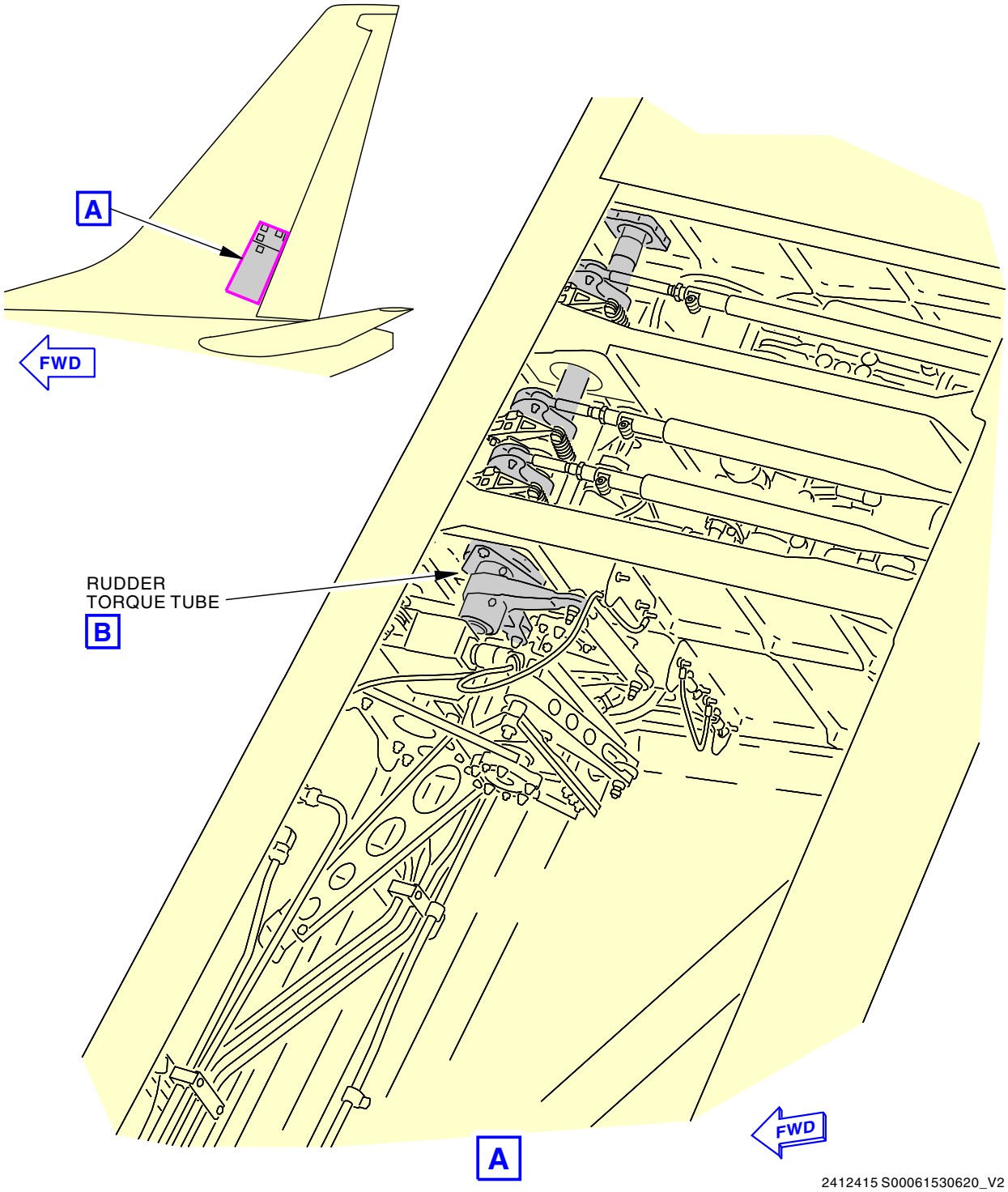
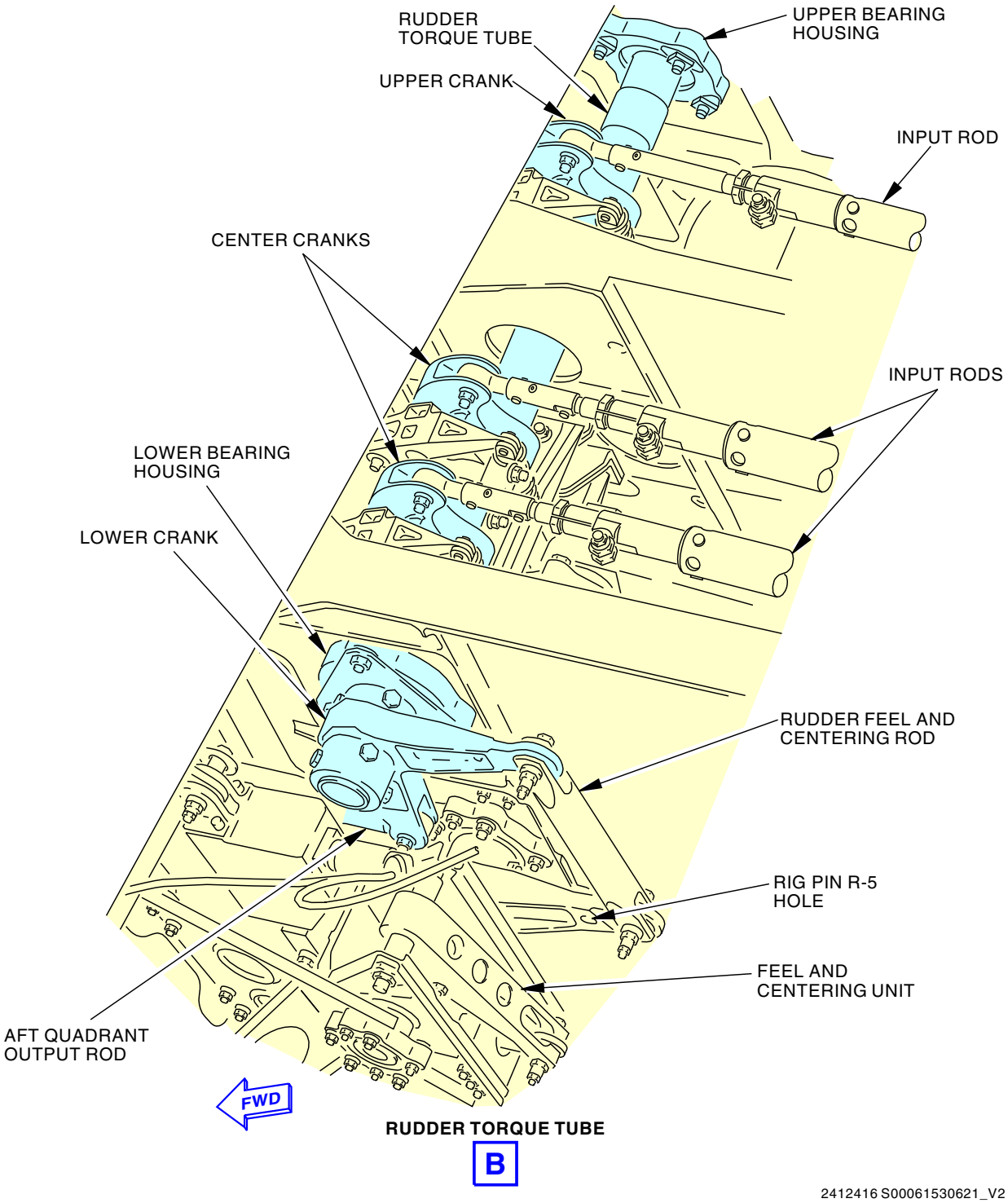
Aft Rudder Quadrant Visual Inspection
Figure 601/27-21-61-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Torque Tube Visual Inspection
Figure 602/27-21-61-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Torque Tube Visual Inspection
Figure 602/27-21-61-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-61-210-802

3. Rudder Aft Quadrant General Visual Inspection

(Figure 601, Figure 602)

A. References

Reference	Title
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
323CL	Vertical Fin, Rear Spar Access Door
323FL	Vertical Fin, Access
324DL	Trailing Edge Access

E. Rudder Aft Quadrant General Visual Inspection

SUBTASK 27-21-61-010-008

(1) Open these access panels:

Number	Name/Location
323CL	Vertical Fin, Rear Spar Access Door
323FL	Vertical Fin, Access
324DL	Trailing Edge Access

SUBTASK 27-21-61-210-002

(2) Do a general visual inspection of the Rudder Aft Quadrant, Torque Tube Assembly, Feel and Centering Unit, and associated Input/Output rods.:

(a) Aft quadrant

(b) Aft quadrant output rod

(c) Aft quadrant bearings

(d) Aft quadrant shaft

(e) Rudder torque tube

(f) Rudder torque tube bearings

(g) Rudder torque tube cranks

(h) Rudder torque tube input rods

(i) Feel and centering unit.

(j) Feel and centering unit output rod.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-61-010-009

(3) Close these access panels:

Number	Name/Location
323CL	Vertical Fin, Rear Spar Access Door
323FL	Vertical Fin, Access
324DL	Trailing Edge Access

SUBTASK 27-21-61-390-003

(4) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER CONTROL TORQUE TUBE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Rudder Control Torque Tube Removal

(2) Rudder Control Torque Tube Installation

TASK 27-21-71-000-801

2. Rudder Control Torque Tube Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-87-000-801	Rudder Trim Actuator Removal (P/B 401)

B. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

D. Prepare for the Removal

SUBTASK 27-21-71-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-71-010-001

(2) Remove these access panels:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

E. Rudder Control Torque Tube Removal

(Figure 401)

SUBTASK 27-21-71-020-001

(1) Remove the nut [33], washer [32], washer [31], and bolt [30] to disconnect the standby rudder PCU control rod [2] from the upper crank [34].

SUBTASK 27-21-71-020-002

(2) Remove the nuts [33], washers [32], washers [31], and bolts [30] to disconnect the main rudder PCU control rod [3] from the center cranks [29].

SUBTASK 27-21-71-020-003

(3) Remove the nut [11], washer [10], and bolt [9] to disconnect the aft quadrant control rod [12] from the lower crank [20].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-71-020-004

(4) Remove the nut [7], nut [6], washer [5], and bolt [4] to disconnect the control rod [8] from the lower crank [20].

SUBTASK 27-21-71-020-005

(5) Remove the rudder trim actuator [18] (TASK 27-21-87-000-801).

SUBTASK 27-21-71-020-006

(6) Do these steps to remove the rudder control torque tube [1]:

(a) Use a marker or pen to make marks to identify the installed positions of the center cranks [29] and upper crank [34].

(b) Remove the nuts [27], washers [26], washers [25], bolt [24], and bolt [28] that attach the upper crank [34] to the rudder control torque tube [1].

(c) Remove the nuts [27], washers [26], washers [25], bolts [24], and bolts [28] that attach the center cranks [29] to the rudder control torque tube [1].

(d) Remove the nuts [39], washers [38], and bolts [37] that attach the lower bearing housing [21] to the airplane structure.

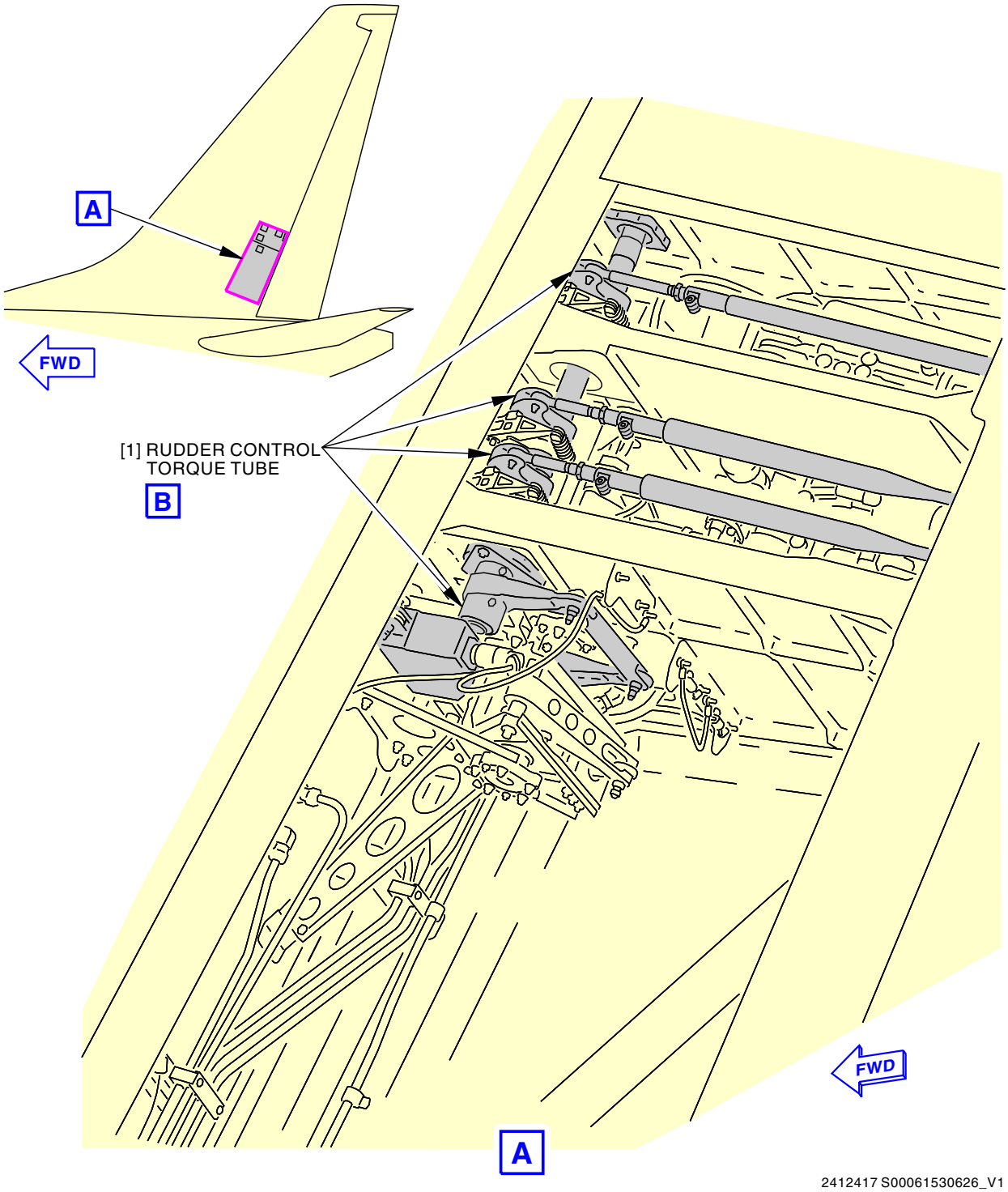
NOTE: Do not remove the lower crank [22] from the rudder control torque tube [1].

(e) Pull the rudder control torque tube [1] down through the upper bearing housing [35], upper crank [34], and center crank [29].

(f) Remove the rudder control torque tube [1], upper crank [34], and center cranks [29] from the airplane.

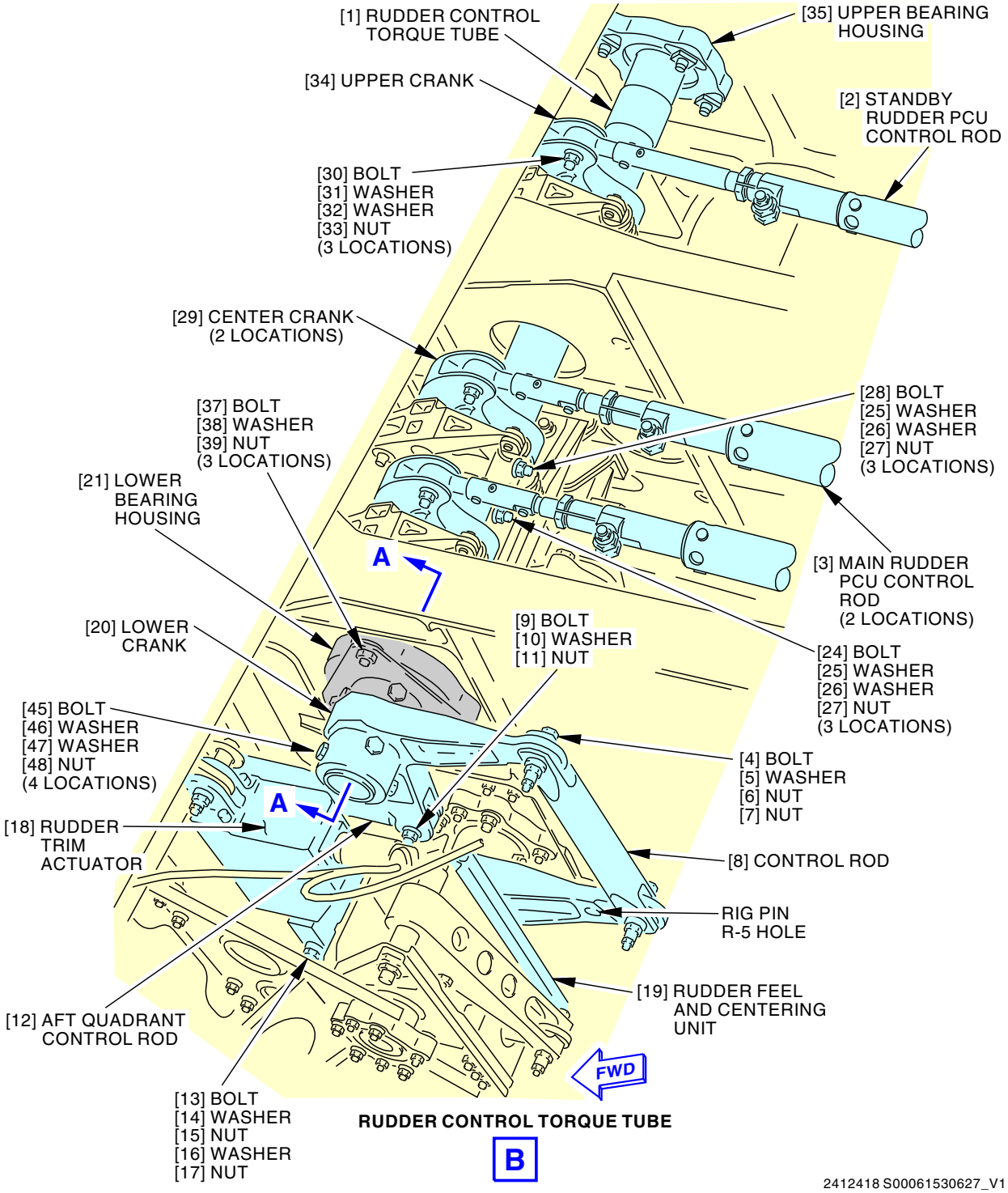
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



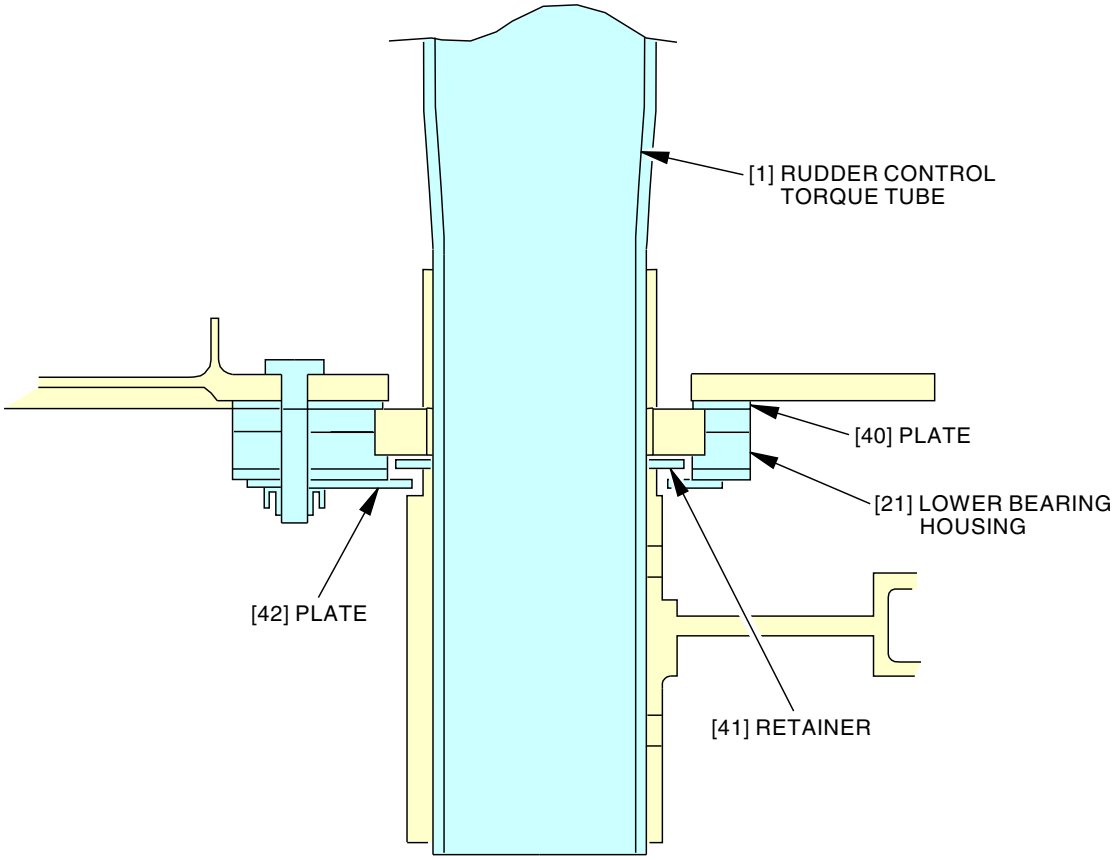
Rudder Control Torque Tube Installation
Figure 401/27-21-71-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Control Torque Tube Installation
Figure 401/27-21-71-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A

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Rudder Control Torque Tube Installation
Figure 401/27-21-71-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-71-400-801

3. Rudder Control Torque Tube Installation

(Figure 401)

A. References

Reference	Title
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-820-804	Control Rod for Main Rudder Power Control Unit Adjustment (P/B 501)
27-21-00-820-805	Control Rod for Standby Rudder Power Control Unit Adjustment (P/B 501)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
27-21-87-400-801	Rudder Trim Actuator Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Rudder control torque tube	27-21-71-01-055	SIA ALL

D. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

F. Rudder Control Torque Tube Installation

SUBTASK 27-21-71-420-001

(1) Do these steps to install the rudder control torque tube [1]:

(a) Make sure that the plate [40], lower bearing housing [21], retainer [41], and plate [42] are in their positions on the rudder control torque tube [1].

(b) Put the rudder control torque tube [1] through the structural cutouts, center cranks [29], upper crank [34], and upper bearing housing [35].

NOTE: Put the center cranks [29] and upper crank [34] in their original position before you put the rudder control torque tube [1] through the structural cutouts.

(c) Install the bolts [37], washers [38], and nuts [39] to attach the lower bearing housing [21] to the airplane structure.

(d) Do these steps to install the center crank [29] on the rudder control torque tube [1]:

1) Install the bolts [24], bolts [28], washers [25], washers [26], and nuts [27] to attach the center cranks [29] to the rudder control torque tube [1].

2) Tighten the nuts [27] to 15 in-lb (2 N·m)-25 in-lb (3 N·m) above the run-on torque.

(e) Do these steps to install the upper crank [34] to the rudder control torque tube [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Install the bolt [24], bolt [28], washers [25], washers [26], and nuts [27] to attach the upper cranks [34] to the rudder control torque tube [1].

2) Tighten the nuts [27] to 15 in-lb (2 N·m)-25 in-lb (3 N·m) above the run-on torque.

SUBTASK 27-21-71-710-001

(2) Make sure that the rudder control torque tube [1] turns freely and that there is no play in the horizontal and vertical directions.

(a) If the rudder control torque tube [1] does not turn freely, do a check of the lower bearing housing [21] and upper bearing housing [35] installation.

SUBTASK 27-21-71-420-002

(3) Install the bolt [30], washer [31] (under the bolt), washer [32] (under the nut), and nut [33] to connect the standby rudder PCU control rod [2] to the upper crank [34].

SUBTASK 27-21-71-420-003

(4) Install the bolts [30], washers [31] (under the bolt), washers [32] (under the nut), and nuts [33] to connect the main rudder PCU control rods [3] to the center crank [29].

SUBTASK 27-21-71-420-004

(5) Install the rudder trim actuator [18] (TASK 27-21-87-400-801).

SUBTASK 27-21-71-420-005

(6) Install the bolt [9], washer [10], and nut [11] to connect the aft quadrant control rod [12] to the lower crank [20].

SUBTASK 27-21-71-420-006

(7) Do these steps to connect the control rod [8] to the lower crank [20]:

(a) Install the bolt [4], washer [5], and nut [6].

1) Tighten the nut [6] to 45 in-lb (5 N·m)-60 in-lb (7 N·m).

CAUTION

DO NOT TRY TO TIGHTEN THE NUT [6] AGAIN AFTER YOU TIGHTEN THE NUT [7]. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(b) Install the nut [7].

1) Tighten the nut [7] to 12.0 in-lb (1.4 N·m)-15.0 in-lb (1.7 N·m).

SUBTASK 27-21-71-640-001

(8) Apply grease, D00633 to the upper bearing housing [35] and lower bearing housing [21].

(a) Fill the upper bearing housing [35] and lower bearing housing [21] with grease, D00633 until the grease is level with the surrounding structure.

SUBTASK 27-21-71-860-002

(9) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

G. Rudder Control Torque Tube Installation Test

SUBTASK 27-21-71-820-001

(1) Do this task: Control Rod for Main Rudder Power Control Unit Adjustment, TASK 27-21-00-820-804.

SUBTASK 27-21-71-820-002

(2) Do this task: Control Rod for Standby Rudder Power Control Unit Adjustment, TASK 27-21-00-820-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-71-710-002

(3) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

SUBTASK 27-21-71-410-001

(4) Install these access panels:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the rudder feel and centering unit.

(2) An installation of the rudder feel and centering unit.

(3) A removal of the rudder feel and centering unit spring assembly.

(4) An installation of the rudder feel and centering unit spring assembly.

TASK 27-21-82-000-801

2. Rudder Feel and Centering Unit Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access
324DR	Vertical Fin, Trailing Edge Access

E. Prepare for the Removal

SUBTASK 27-21-82-860-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-82-010-001

(2) Open these access panels:

Number	Name/Location
112A	Forward Access Door
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access
324DR	Vertical Fin, Trailing Edge Access

SUBTASK 27-21-82-010-002

(3) Remove these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

SUBTASK 27-21-82-480-001

(4) Install the rig pin R-3 or R-4 from the rigging pin kit, SPL-1585 in the forward rig pin hole of the captain's or first officer's rudder forward quadrants (Figure 401).

F. Rudder Feel and Centering Unit Removal

(Figure 402)

SUBTASK 27-21-82-020-001

(1) Remove the rudder feel and centering unit [7]:

(a) Remove the nut [27], washer [26], nut [25], washer [24], and bolt assembly [23] to disconnect the feel and rudder feel and centering unit [7] from the rudder trim actuator [1].

(b) Remove the nut [33], nut [32], washer [31], washer [30], bushing [29], and bolt assembly [28] to disconnect the rudder feel and centering unit crank [8] from the rudder feel output rod [9].

(c) Remove the nuts [6], washers [5], and bolts [4] which attach the upper bearing housing [2] and the plate [3] to the airplane structure.

(d) Hold the rudder feel and rudder feel and centering unit [7], and remove these parts from the support bracket [18]:

1) Remove the nuts [22], washers [21], washers [20], and bolts [19].

2) Remove the nuts [17], washers [16], washers [15], and bolts [14].

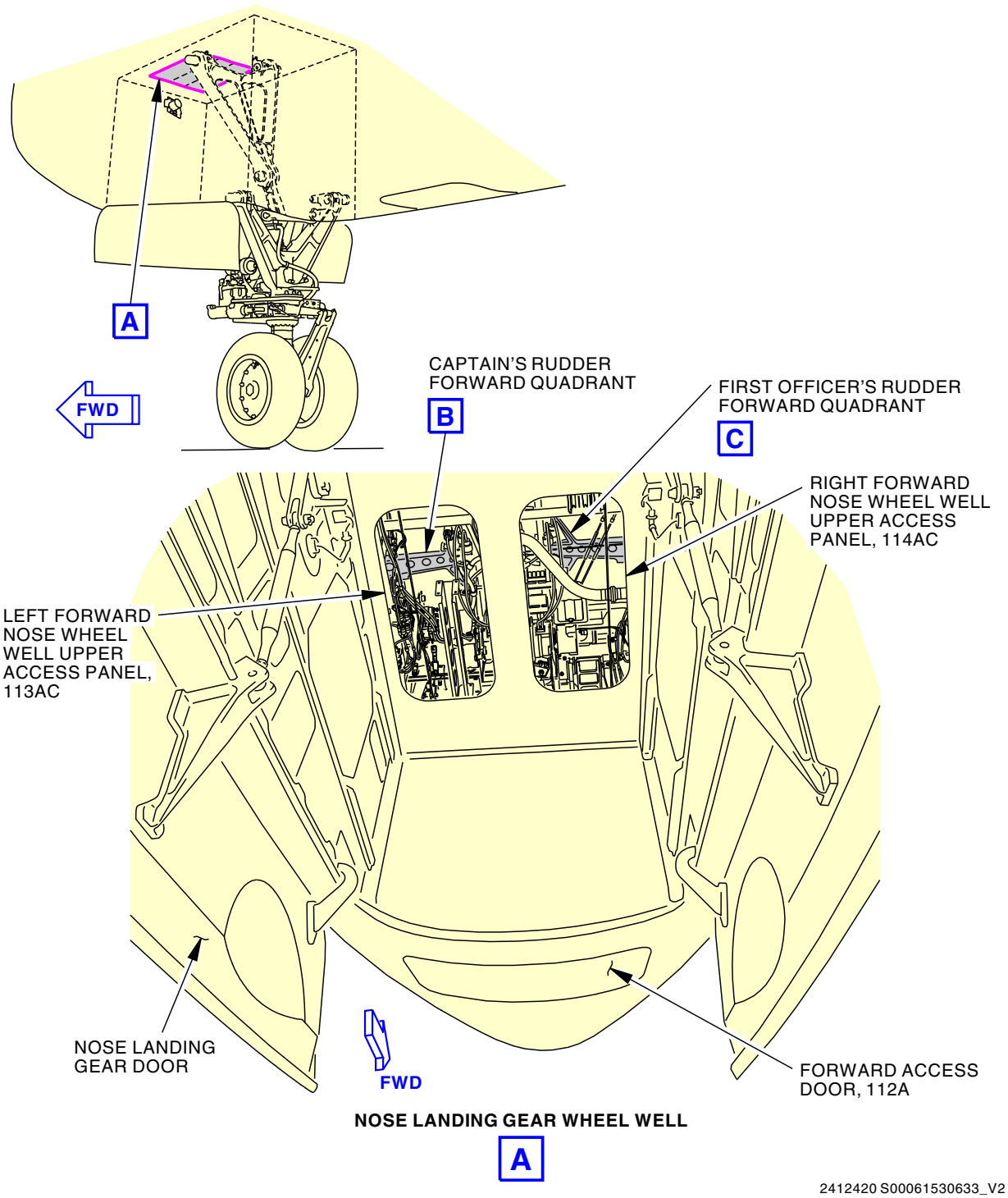
(e) Remove the nuts [13], washers [12], and bolts [11] from the lower bearing housing [10].

NOTE: If it is necessary, turn the rudder feel and centering unit [7] to get access to the bolts.

(f) Remove the rudder feel and centering unit [7] and support bracket [18].

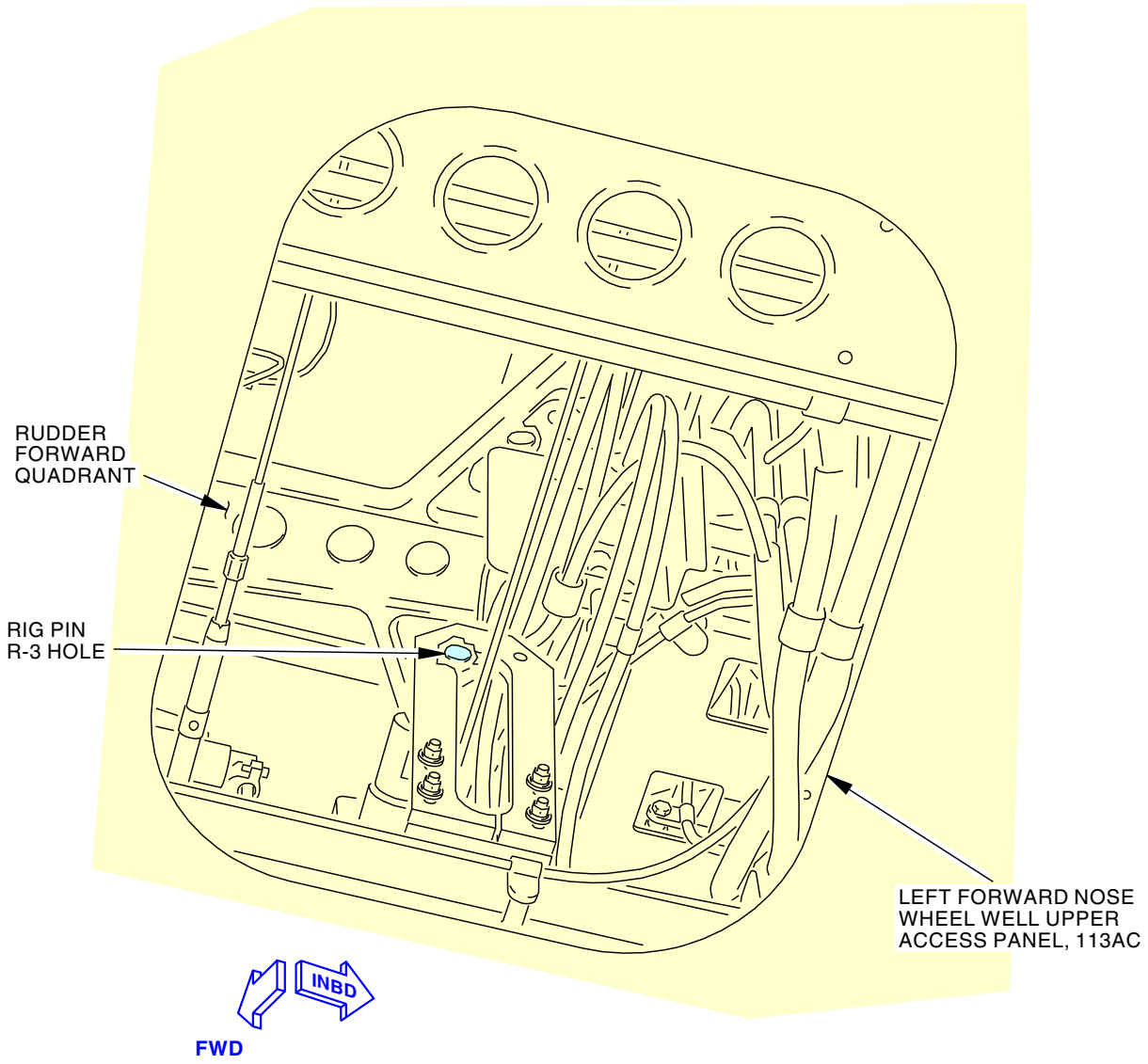
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-82-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CAPTAIN'S RUDDER FORWARD QUADRANT

B

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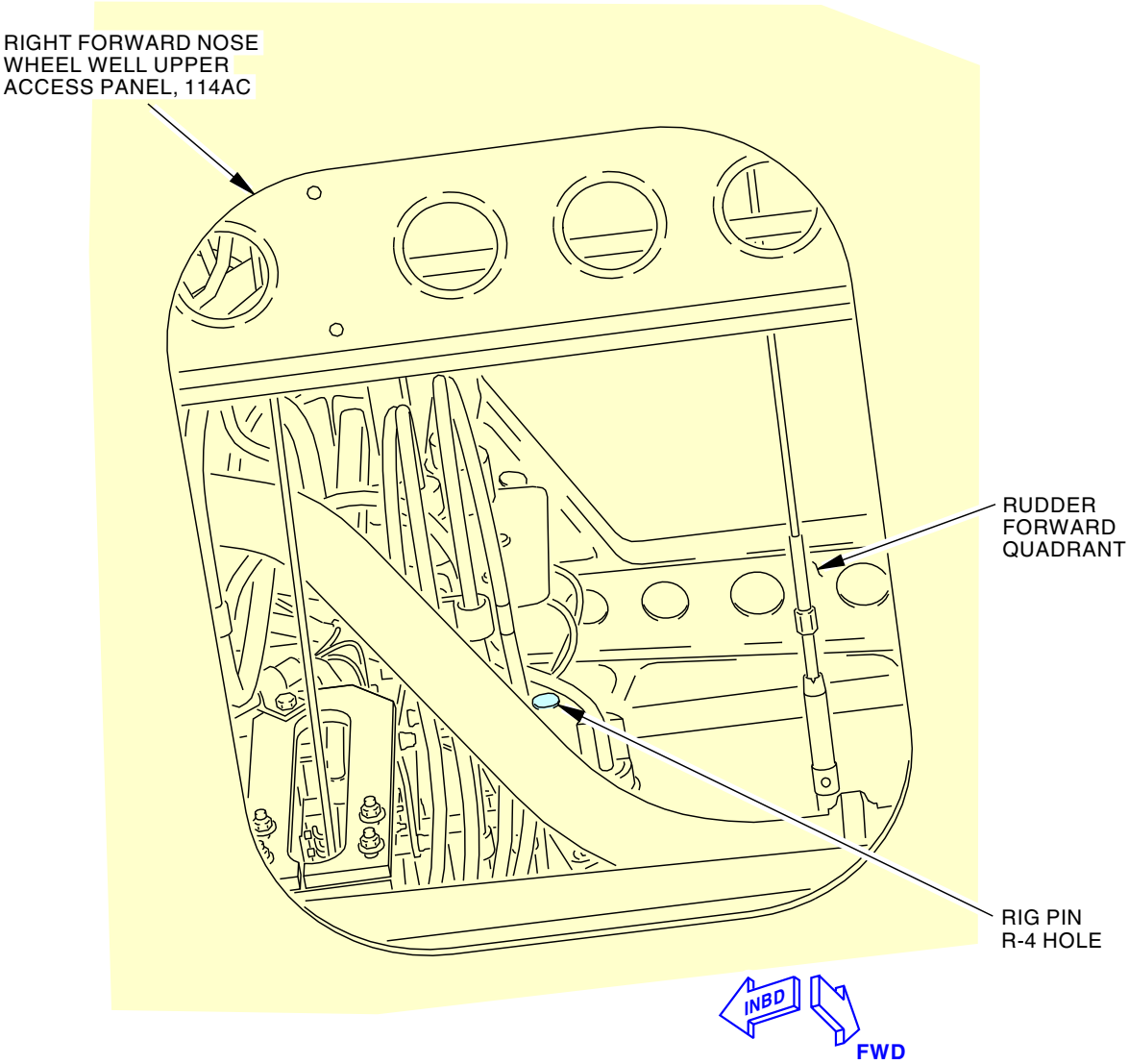
Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-82-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



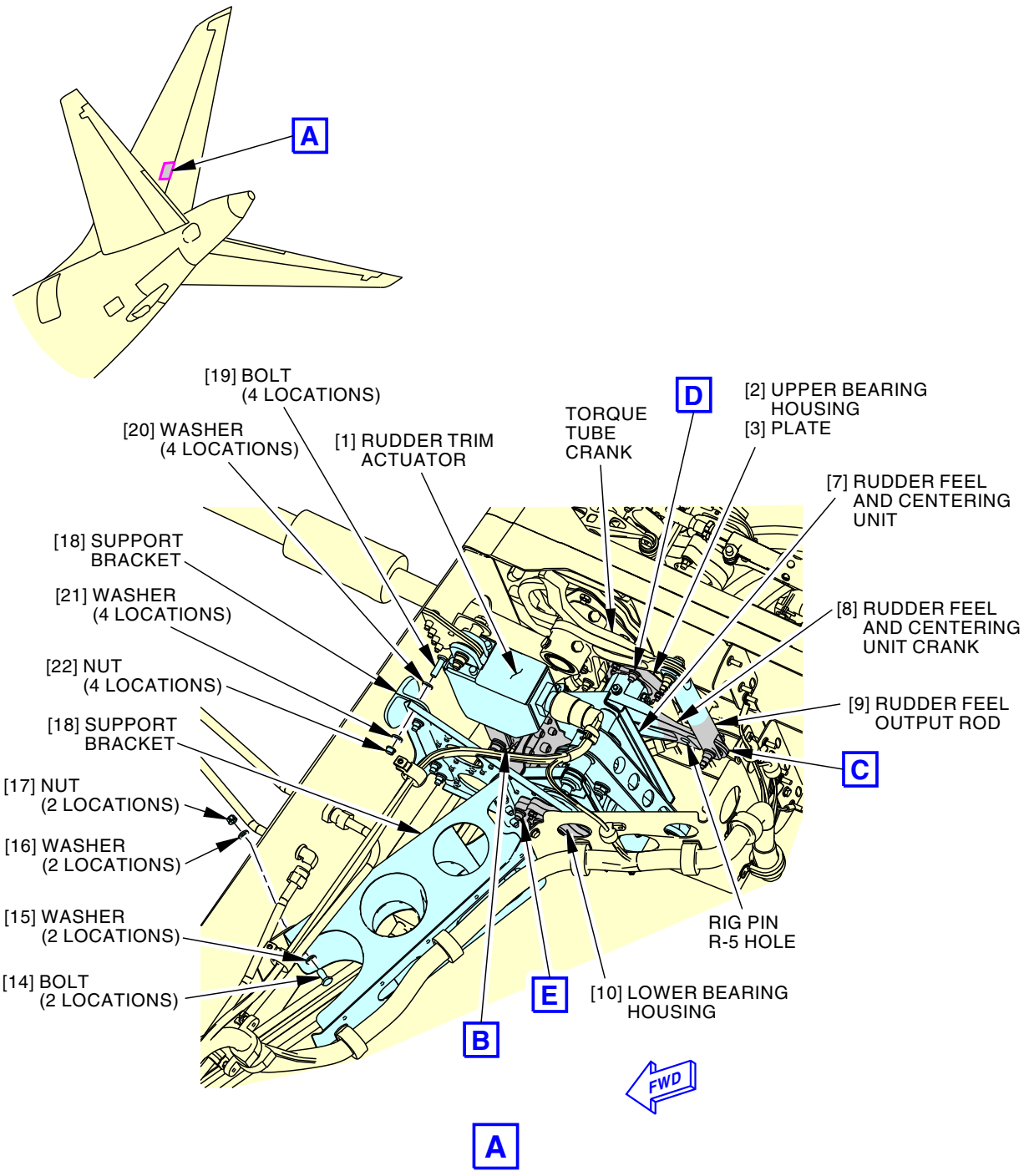
FIRST OFFICER'S RUDDER FORWARD QUADRANT

C

2412422 S00061530635_V1

Rudder Forward Quadrant Rig Pin Installation
Figure 401/27-21-82-990-801 (Sheet 3 of 3)

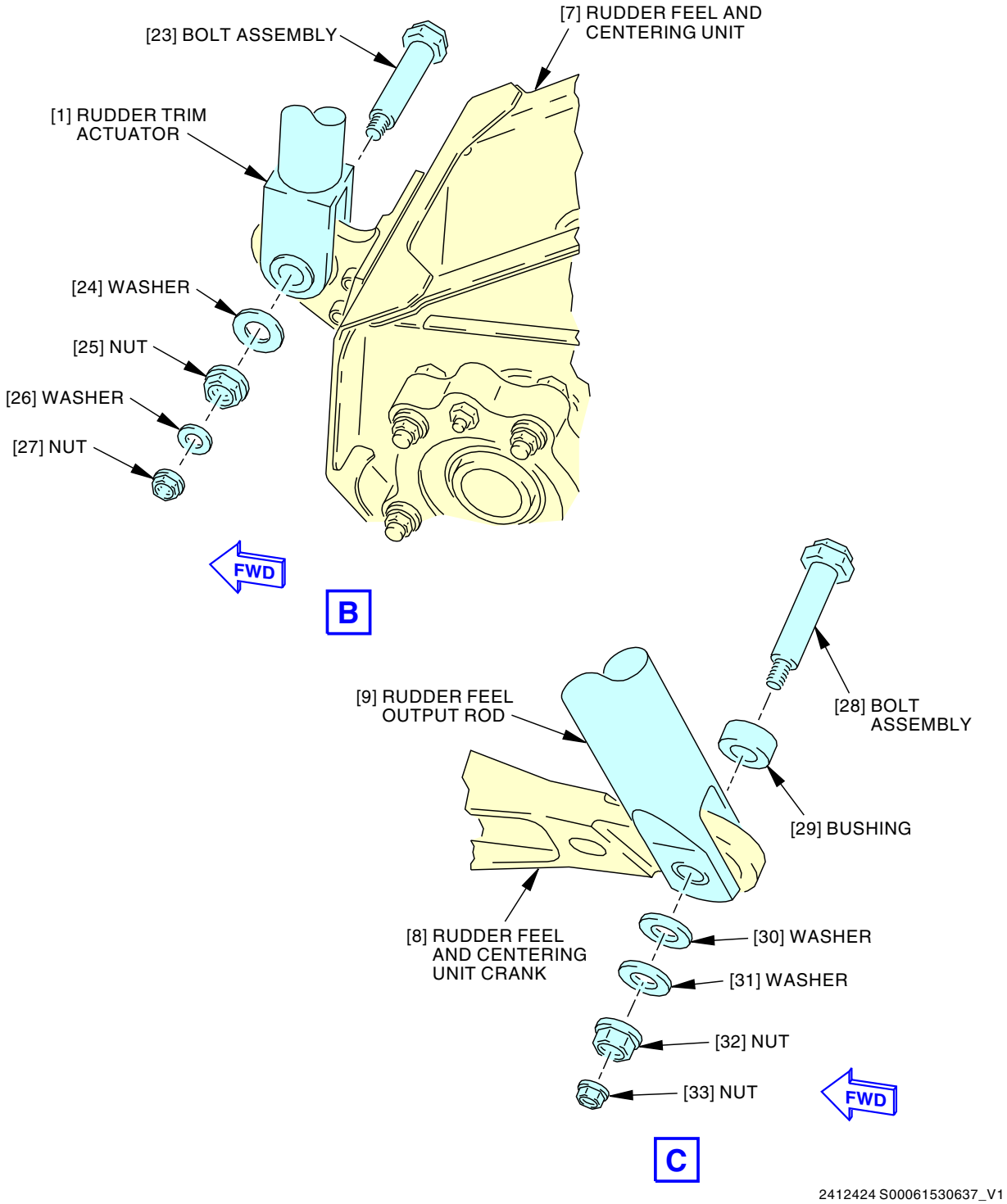
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412423 S00061530636_V1

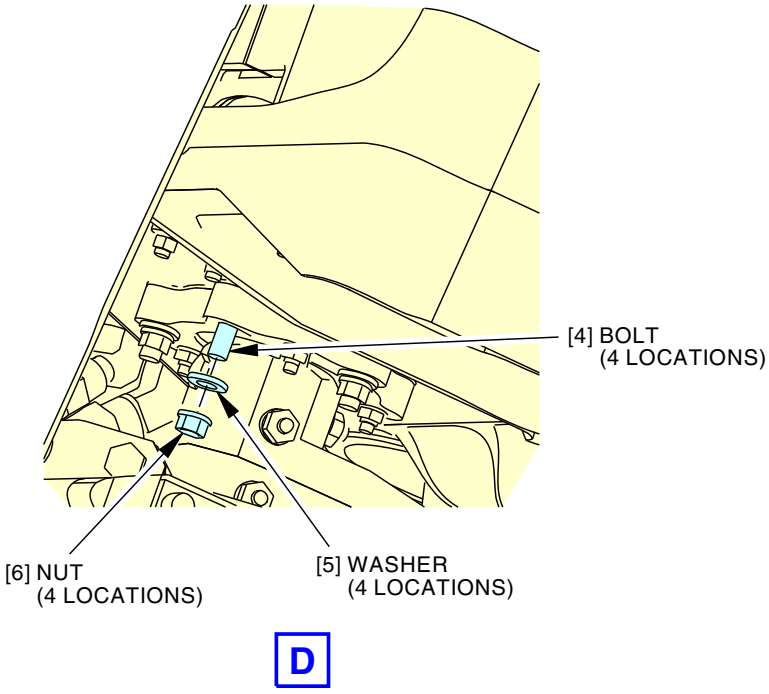
Rudder Feel and Centering Unit Installation
Figure 402/27-21-82-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Feel and Centering Unit Installation
Figure 402/27-21-82-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Feel and Centering Unit Installation
Figure 402/27-21-82-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-82-400-801

3. Rudder Feel and Centering Unit Installation

(Figure 401, Figure 402)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
12-22-21-600-802	Spring Slider Shaft Lubrication (P/B 301)
27-21-00-700-804	Rudder Pedal Forces Test (P/B 501)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
32-51-00 P/B 501	NOSE WHEEL STEERING SYSTEM - ADJUSTMENT/TEST
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Rudder feel and centering unit	27-21-82-01-155	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access
324DR	Vertical Fin, Trailing Edge Access

F. Rudder Feel and Centering Unit Installation

SUBTASK 27-21-82-640-001

(1) Lubricate the spring slider shaft (Spring Slider Shaft Lubrication, TASK 12-22-21-600-802).

SUBTASK 27-21-82-420-001

(2) Install the rudder feel and centering unit [7]:

(a) Install the bolts [11], washers [12], and nuts [13] to attach the lower bearing housing [10] to the support bracket [18].

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(b) Put the rudder feel and centering unit [7] and the support bracket [18] in their positions.

(c) Install the support bracket [18]:

1) Install the bolts [19], washers [20] (under the bolt), washers [21] (under the nut), and nuts [22].

2) Install the bolts [14], washers [15] (under the bolt), washers [16] (under the nut), and nuts [17].

(d) Install the bolts [4], washers [5], and nuts [6] to attach the upper bearing housing [2] and the plate [3] to the airplane structure.

SUBTASK 27-21-82-210-001

(3) Examine the rudder feel output rod [9] for damage.

NOTE: The feel output rod has two load paths.

SUBTASK 27-21-82-420-002

(4) Connect the rudder feel and centering unit crank [8] to the rudder feel output rod [9]:

(a) Install the bolt assembly [28], bushing [29], washer [30], washer [31], and nut [32].

1) Tighten the nut [32] 45 in-lb (5.1 N·m) to 60 in-lb (6.8 N·m).

CAUTION

DO NOT TRY TO TIGHTEN THE NUT [32] AGAIN AFTER YOU TIGHTEN THE NUT [33]. IF YOU DO, YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Install the nut [33].

1) Tighten the nut [33] 12 in-lb (1.4 N·m) to 15 in-lb (1.7 N·m).

SUBTASK 27-21-82-480-002

(5) Install the rig pin R-5 of the rigging pin kit, SPL-1585 from the rudder feel and centering unit [7].

SUBTASK 27-21-82-420-003

(6) Connect the rudder trim actuator [1] to the rudder feel and centering unit [7]:

(a) Install the bolt assembly [23], washer [24], and nut [25].

1) Tighten the nut [25] 85 in-lb (9.6 N·m) to 100 in-lb (11.3 N·m).

CAUTION

DO NOT TRY TO TIGHTEN THE NUT [26] AGAIN AFTER YOU TIGHTEN THE NUT [27]. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(b) Install the washer [26] and nut [27].

(c) Tighten the nut [27] 30 in-lb (3.4 N·m) to 35 in-lb (4.0 N·m).

SUBTASK 27-21-82-080-001

(7) Remove the rig pins R-3 or R-4 of the rigging pin kit, SPL-1585 from the rudder forward quadrants.

SUBTASK 27-21-82-080-002

(8) Remove the rig pin R-5 of the rigging pin kit, SPL-1585 from the rudder feel and centering unit [7].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Rudder Feel and Centering Unit Test

SUBTASK 27-21-82-020-002

(1) Disconnect the nose gear steering from the rudder system by rotating the towing handle, located on the left-hand side of the nose gear, to the TOW Position (NOSE WHEEL STEERING SYSTEM - ADJUSTMENT/TEST, PAGEBLOCK 32-51-00/501).

NOTE: It is not necessary to disconnect the steering if the airplane is on jacks and the nose landing gear is fully extended.

SUBTASK 27-21-82-860-002

(2) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-82-700-001

(3) Test the Feel and Centering System:

(a) Operate the rudder pedals through their full travel range three times.

(b) Make sure that the rudder trim indicator shows zero units of trim.

(c) Push the captain's left rudder pedal forward approximately 0.5 in. (13 mm) and release it.

1) Make sure that each side of the rudder trailing edge aligns with the tab on the rudder index plate.

(d) Push the captain's right rudder pedal forward approximately 0.5 in. (13 mm) and release it.

1) Make sure that each side of the rudder trailing edge aligns with the tab on the rudder index plate.

SUBTASK 27-21-82-730-001

(4) Do this task: Rudder Pedal Forces Test, TASK 27-21-00-700-804.

SUBTASK 27-21-82-730-002

(5) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-82-860-003

(1) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-82-410-001

(2) Close these access panels:

Number	Name/Location
112A	Forward Access Door
324BL	Vertical Fin, Trailing Edge Access
324DL	Trailing Edge Access
324DR	Vertical Fin, Trailing Edge Access

SUBTASK 27-21-82-410-002

(3) Install these access panels:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-82-420-004

(4) Connect steering to the rudder system by rotating the towing handle located on the left-hand side of the nose gear to the NORMAL position, if necessary.

——— END OF TASK ———

TASK 27-21-82-000-802

4. Rudder Feel and Centering Unit Spring Assembly Removal

(Figure 403)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

D. Prepare for the Removal

SUBTASK 27-21-82-860-004

(1) Open this access panel:

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

SUBTASK 27-21-82-860-005

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-82-860-006

(3) Move the rudder trim knob 5 to 7 degrees NOSE LEFT, and wait until the rudder trim indicator stops.

E. Spring Assembly Removal

SUBTASK 27-21-82-860-007

(1) Do the steps to decrease the preload on the spring assembly [50]:

(a) Make sure that the roller that is in the arm assembly of the rudder feel and centering unit [7] is centered within the detent of the cam.

NOTE: The cam is attached to the primary shaft of the rudder feel and centering unit [7].

(b) If necessary, move the rudder in the LEFT direction to center the roller in the cam.

SUBTASK 27-21-82-020-003

(2) Remove the spring assembly [50] as follows:

(a) Remove the nut [57], washer [56], nut [55], and washer [54].

1) Keep the washer [54] and the washer [56] for installation if they are not damaged.

2) Discard the nut [55] and the nut [57].

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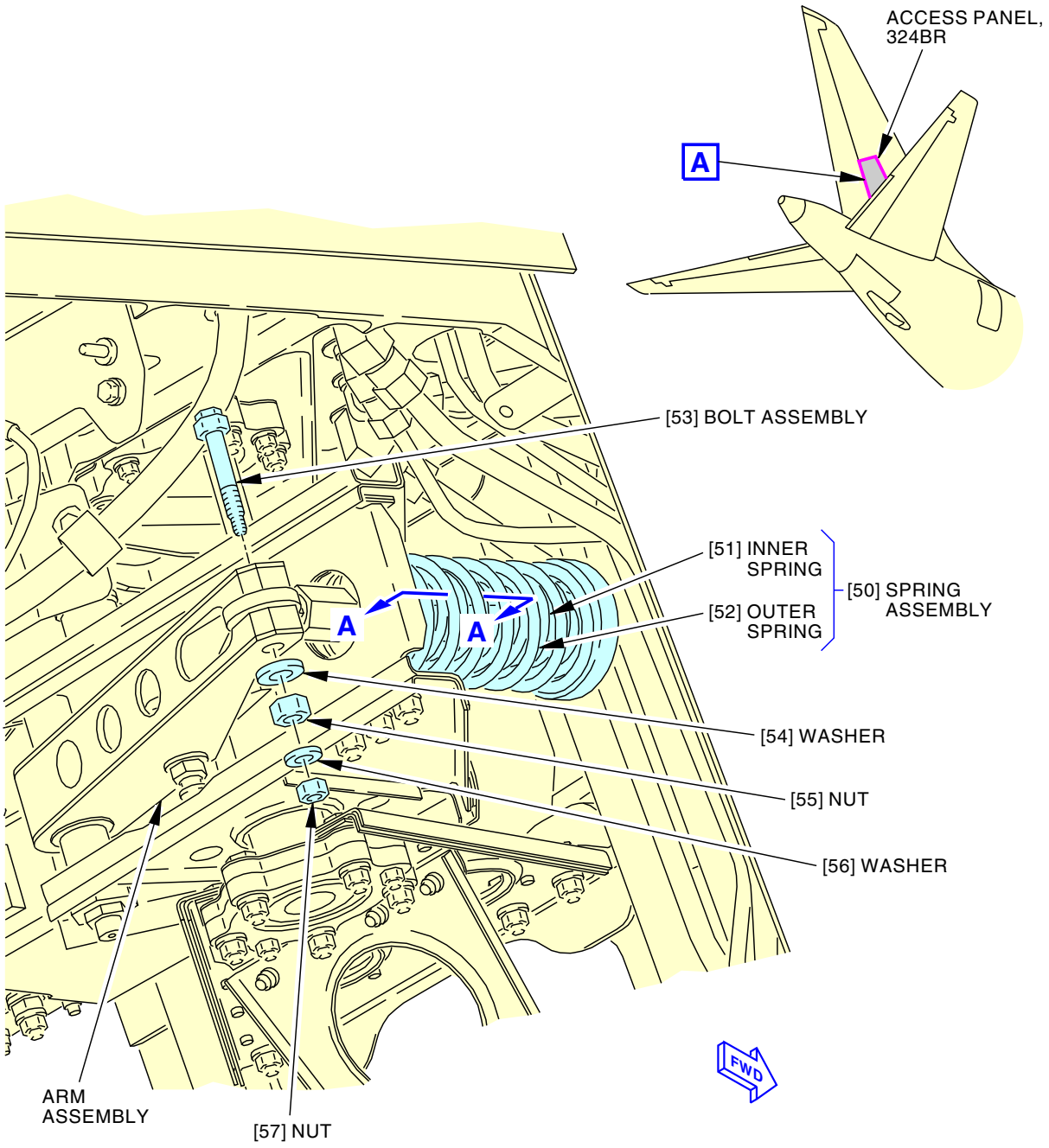
(b) Remove the bolt [53].

1) If necessary to remove the load on the bolt [53], use hand pressure to compress the spring assembly [50].

(c) Remove the spring assembly [50].

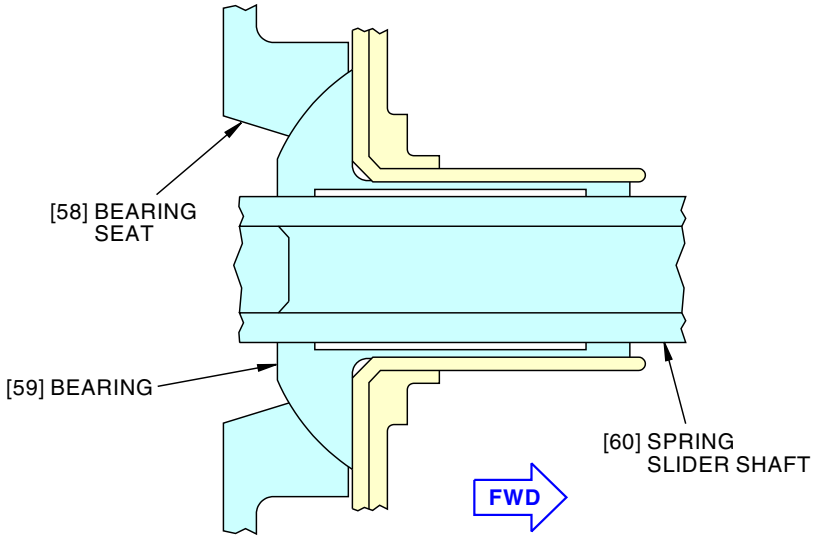
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Feel and Centering Unit Spring Assembly Installation
Figure 403/27-21-82-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A

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Rudder Feel and Centering Unit Spring Assembly Installation
Figure 403/27-21-82-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-82-400-802

5. Rudder Feel and Centering Unit Spring Assembly Installation

(Figure 403)

A. References

Reference	Title
12-22-21-600-802	Spring Slider Shaft Lubrication (P/B 301)
27-21-00-700-804	Rudder Pedal Forces Test (P/B 501)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
C00032	Coating - Protective Enamel, General Use	BMS10-60 Type I
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

E. Spring Assembly Installation

SUBTASK 27-21-82-420-005

(1) Do these steps to install the spring assembly [50]:

(a) Lubricate the bearing [59] with grease, D00633.

1) Make sure to apply grease, D00633 on the bearing [59] surface that touches the bearing seat [58].

(b) Lubricate the spring slider shaft [60]. To lubricate it, do this task: Spring Slider Shaft Lubrication, TASK 12-22-21-600-802.

(c) Insert the spring assembly [50] through the bearing seat [58].

(d) Install the bolt [53], washer [54], and nut [55].

1) Tighten the nut [55] to 55 ±5 in-lb (6 ±1 N·m).

(e) Install the washer [56] and nut [57].

CAUTION DO NOT TRY TO TIGHTEN THE NUT [55] AGAIN AFTER YOU TIGHTEN THE NUT [57], YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

1) Tighten the nut [57] to 13.5 ±1.5 in-lb (1.5 ±0.2 N·m).

(f) On the rudder feel and centering unit, use a black marker or rubber stamp to mark the R after the serial number.

NOTE: The suffix R indicates the springs have been changed out.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Apply protective coating, C00032 or equivalent that is resistant to hydraulic fluid.

(g) Move the rudder trim knob until the rudder trim indicator returns to 0.00 +/-0.25 units of trim.

F. Spring Assembly Post-Installation Test

SUBTASK 27-21-82-730-003

(1) Test the Feel and Centering System:

(a) Operate the rudder pedals through their full travel range three times.

(b) Make sure the rudder trim indicator shows zero units of trim.

(c) Push the captain's left rudder pedal forward approximately 0.5 inch and release it.

1) Make sure each side of the rudder trailing edge aligns with the tab on the rudder index plate.

(d) Push the captain's right rudder pedal forward approximately 0.5 inch and release it.

1) Make sure that each side of the rudder trailing edge aligns with the tab on the rudder index plate.

SUBTASK 27-21-82-420-006

(2) Connect the steering for the nose landing gear to the rudder system if it disconnected.

SUBTASK 27-21-82-730-004

(3) Do this task: Rudder Pedal Forces Test, TASK 27-21-00-700-804.

SUBTASK 27-21-82-730-005

(4) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-82-860-008

(1) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-82-860-009

(2) Close this access panel:

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER FEEL AND CENTERING UNIT SPRING ASSEMBLY - INSPECTION/CHECK

1. General

A. This procedure has this task:

(1) Inspection of the rudder feel and centering unit inner spring.

TASK 27-21-82-211-801

2. Rudder Feel and Centering Unit Inner Spring - Inspection

Figure 27-21-82-990-803

A. General

(1) This task does a detailed visual inspection of the inner spring in the rudder feel and centering unit spring assembly.

B. References

Reference	Title
27-21-82 P/B 401	RUDDER FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION
27-21-82-990-803	Figure: Rudder Feel and Centering Unit Spring Assembly Installation (P/B 401)

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

E. Prepare for the Inspection

SUBTASK 27-21-82-860-010

(1) Open this access panel:

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

F. Rudder Feel and Centering Unit Inner Spring Inspection

SUBTASK 27-21-82-211-001

(1) Do the inspection of the inner spring as follows:

(a) Do a close visual inspection of the inner spring.

(b) Use a soft tool to push on the side of the inner spring, make sure that it is not loose or broken.

(c) If the inner spring is loose or broken, replace the spring assembly. (RUDDER FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION, PAGEBLOCK 27-21-82/401)

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-82-860-011

(1) Close this access panel:

Number	Name/Location
324BR	Vertical Fin, Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER TRIM ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Rudder Trim Actuator Removal

(2) Rudder Trim Actuator Installation

TASK 27-21-87-000-801

2. Rudder Trim Actuator Removal

(Figure 401)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

C. Access Panels

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access

D. Prepare for the Removal

SUBTASK 27-21-87-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-87-860-002

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-87-010-001

(3) Open this access panel:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access

E. Rudder Trim Actuator Removal

SUBTASK 27-21-87-020-001

(1) Use these steps to remove the rudder trim actuator [1]:

(a) Disconnect the electrical connector [9] from the rudder trim actuator [1].

(b) Remove the nut [4], washer [5], self locking nut [6], washer [7], and bolt assembly [3] to disconnect the rudder feel and centering unit [2] from the rudder trim actuator [1].

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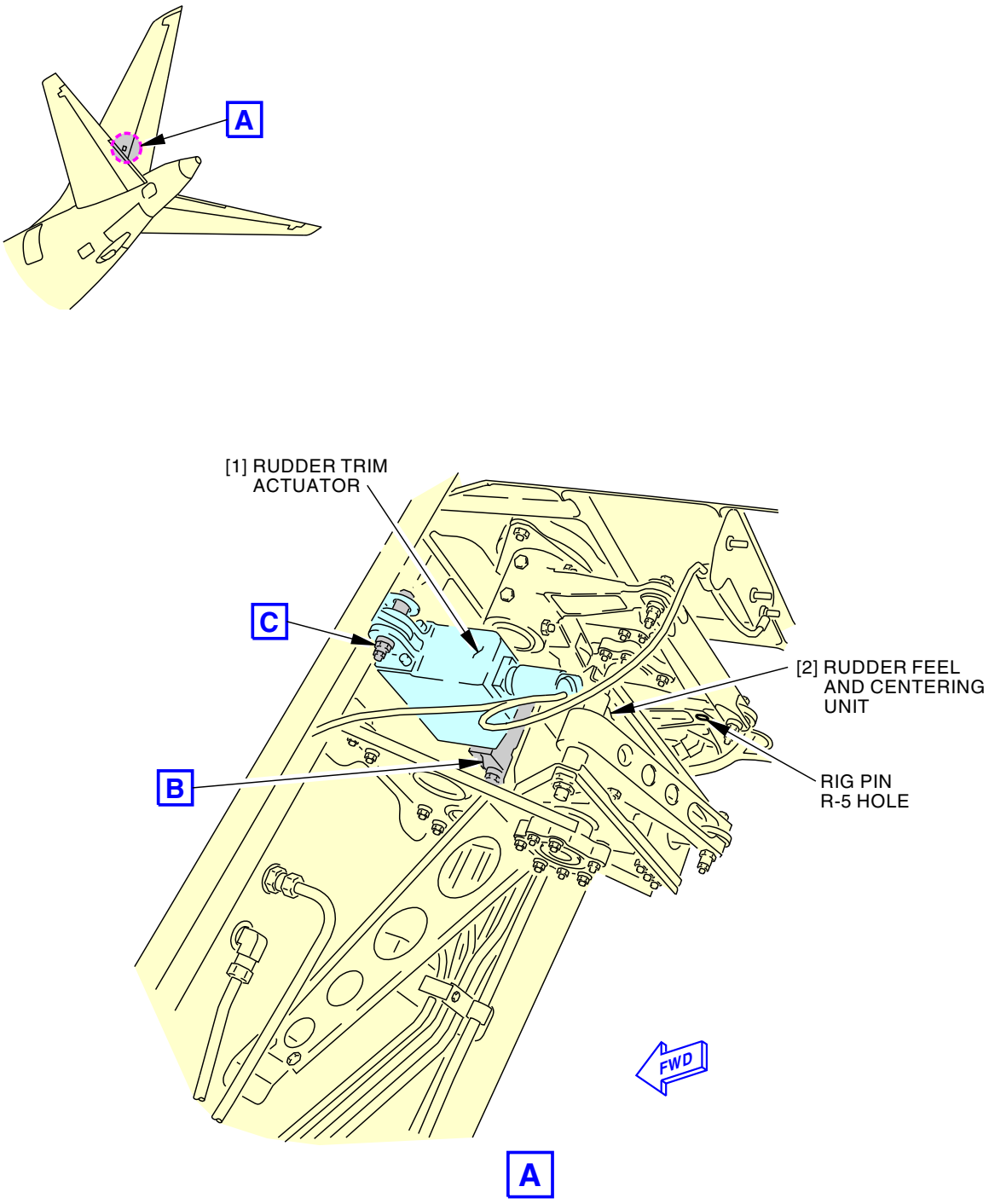
(c) Remove the nut [10], washer [11], self locking nut [12], washer [13], bushing [14], and bolt [8] that attach the rudder trim actuator [1] to the airplane structure.

(d) Remove the rudder trim actuator [1] from the airplane.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Trim Actuator Installation
Figure 401/27-21-87-990-801 (Sheet 1 of 2)

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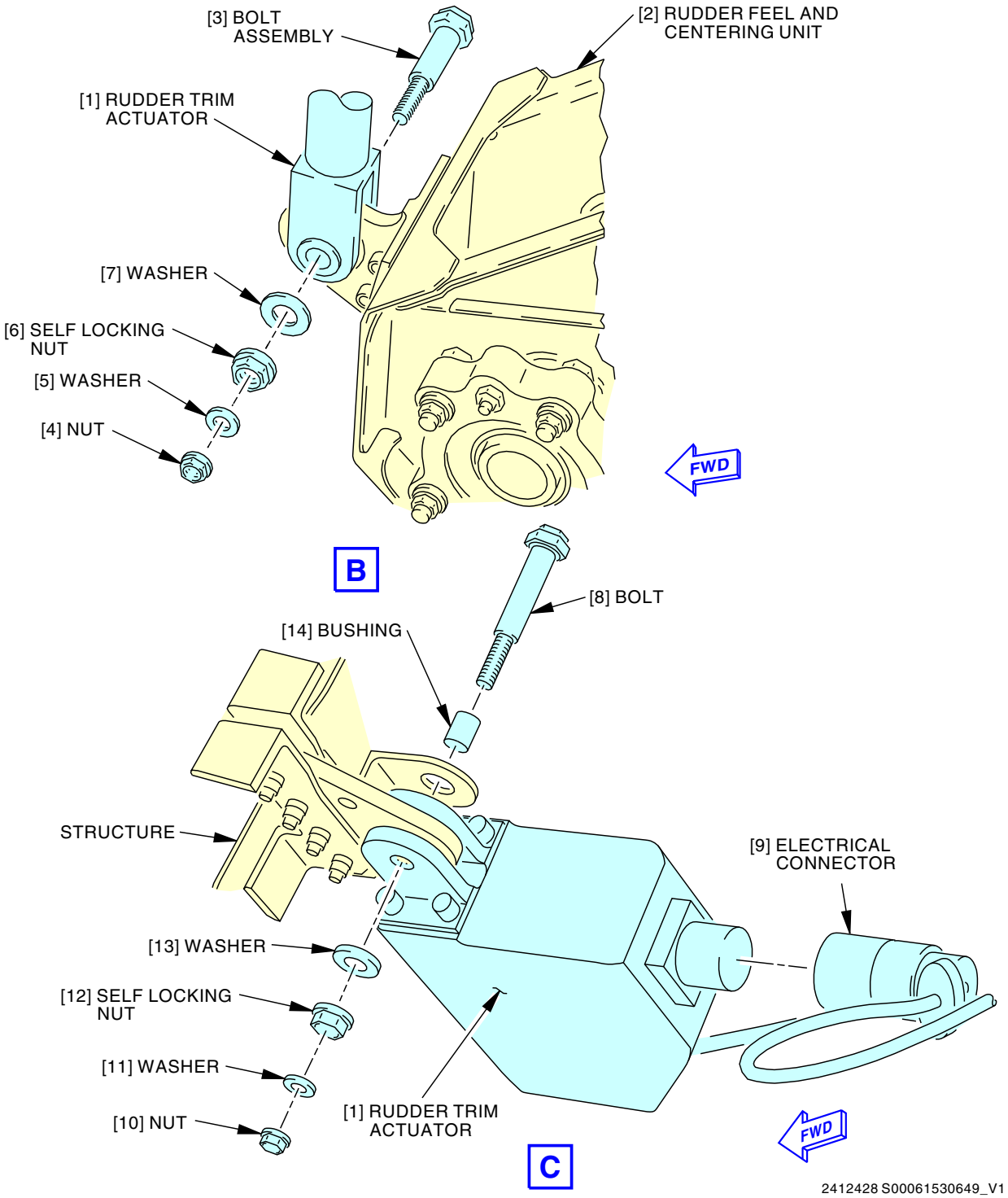


Rudder Trim Actuator Installation
Figure 401/27-21-87-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-87-400-801

3. Rudder Trim Actuator Installation

(Figure 401)

A. References

Reference	Title
27-11-94-990-801	Figure: Aileron/Rudder Trim Control Module (P/B 401)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-700-807	Rudder Trim System Test (P/B 501)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access

E. Rudder Trim Actuator Installation

(Figure 401)

SUBTASK 27-21-87-860-003

(1) Make sure that these circuit breakers are open:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-87-860-004

(2) Make sure that you remove pressure from the rudder hydraulic systems A and B (TASK 27-21-00-800-802).

SUBTASK 27-21-87-420-001

(3) Use these steps to install the rudder trim actuator [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the bolt [8], bushing [14], washer [13], and self locking nut [12] to connect the rudder trim actuator [1] to the airplane structure.

1) Tighten the self locking nut [12] to 85 in-lb (10 N·m)-100 in-lb (11 N·m).

CAUTION DO NOT TRY TO TIGHTEN THE SELF LOCKING NUT AFTER YOU TIGHTEN THE OUTER NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(b) Install the washer [11] and nut [10].

1) Tighten the nut [10] to 30 in-lb (3 N·m)-35 in-lb (4 N·m).

(c) Install the bolt assembly [3], washer [7], and self locking nut [6] to connect the rudder trim actuator [1] to the rudder feel and centering unit [2].

1) Tighten the self locking nut [6] to 85 in-lb (10 N·m)-100 in-lb (11 N·m).

CAUTION DO NOT TRY TO TIGHTEN THE SELF LOCKING NUT AFTER YOU TIGHTEN THE OUTER NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(d) Install the washer [7] and nut [4].

1) Tighten the nut [4] to 30 in-lb (3 N·m)-35 in-lb (4 N·m).

(e) Connect the electrical connector [9] to the rudder trim actuator [1].

SUBTASK 27-21-87-860-005

(4) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-87-860-006

(5) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-87-860-007

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

SUBTASK 27-21-87-820-001

(7) Operate the rudder trim knob until you can install the rig pin R-5 from the rigging pin kit, SPL-1585 to the rudder feel and centering unit [2].

SUBTASK 27-21-87-820-002

(8) If the rudder trim indicator reading is not 0.0 +/- 0.1 unit, turn the adjustment screw on the bottom of the rudder trim indicator until the pointer reads 0.0 +/- 0.1 unit (Figure 27-11-94-990-801).

SUBTASK 27-21-87-480-001

(9) Remove the rig pin R-5 from the rudder feel and centering unit [2].

SUBTASK 27-21-87-730-001

(10) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-87-730-002

(11) Do this task: Rudder Trim System Test, TASK 27-21-00-700-807.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-87-860-008

(1) If it is necessary, do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-87-410-001

(2) Install this access panel:

Number	Name/Location
324BL	Vertical Fin, Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN RUDDER POWER CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the main rudder power control unit (PCU)

(2) An installation of the main rudder PCU

(3) A removal of the main rudder PCU load limiter solenoid valve

(4) An installation of the main rudder PCU load limiter solenoid valve

TASK 27-21-91-000-801

2. Main Rudder Power Control Unit Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425
SPL-1727	Lock - Ground, Rudder, PCU Removed Part #: C27057-1 Supplier: 81205
SPL-1732	Equipment - Removal/Installation, Rudder PCU Part #: C27049-36 Supplier: 81205 Opt Part #: C27049-1 Supplier: 81205
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

C. Location Zones

Zone	Area
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-21-91-210-001

CAUTION

CARE MUST BE TAKEN TO PROPERLY SUPPORT THE PCU DURING REMOVAL, STORAGE, AND INSTALLATION TO PREVENT CONTACT WITH THE SUMMING LEVER BOLTS, WHICH COULD BEND OR BREAK THE PROTRUDING END OF THE INNER BOLT. HANDLING DAMAGE TO THE THREADED END OF THE SUMMING LEVER INNER BOLT WILL LIKELY CAUSE DAMAGE TO THE THREADS OF THE SUMMING LEVER OUTER BOLT.

(1) Do the visual inspection of the external summing levers [3] inner bolt (View C-C, Figure 401).

NOTE: You can see the bolt through the space between the rudder fairings and the vertical fin blade seal from the right side when the rudder turned to the left with hydraulic power OFF.

(a) Make sure that the bolt have the nut and collar.

(b) If the bolt has damage, then replace the bolt.

SUBTASK 27-21-91-860-001

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-91-860-002

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-91-860-003

(4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-21-91-010-001

(5) To get access to the main rudder Power Control Unit (PCU), do this step:

(a) Remove this access panel:

Number	Name/Location
324DL	Trailing Edge Access

F. Main Rudder PCU Removal

SUBTASK 27-21-91-020-001

CAUTION

REMOVE THE CONTROL ROD FROM THE PCU BEFORE YOU DISCONNECT THE PCU FROM THE RUDDER. IF YOU DO NOT REMOVE THE CONTROL ROD FIRST, DAMAGE TO THE CONTROL ROD CAN OCCUR DURING THE CHECK.

(1) Remove the control rods [8]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the nuts [7], washers [6], washers [5], and bolts [4] to disconnect the control rods [8] from the external summing levers [3].

(b) Remove the nuts [44], washers [43], washers [42], and bolts [41] to disconnect the control rods [8] from the input cranks [10].

(c) Remove the control rods [8] from the airplane.

SUBTASK 27-21-91-480-001

(2) Install the equipment, SPL-1732 (Figure 402):

(a) Install the bracket assembly [56] with screws [51] and washers [52] to the vertical fin.

1) Tighten the screws [51] to 18 in-lb (2.0 N·m) - 25 in-lb (2.8 N·m).

(b) Install the beam assembly [55] with screws [53] and washers [54] to the main rudder power control unit [1].

1) Tighten the screws [53] to 45 in-lb (5.1 N·m) - 60 in-lb (6.8 N·m)..

(c) Install the arm assembly [57] to the bracket assembly [56].

SUBTASK 27-21-91-020-002

(3) Remove the nut [32], washer [31], nut [30], washer [29], and bolt assembly [28] to disconnect the rod assembly [2] from the rudder.

SUBTASK 27-21-91-020-003

CAUTION

MAKE SURE THAT YOU HOLD THE MAIN RUDDER PCU DURING THE REMOVAL OF THE FORWARD MANIFOLD. IF THE MAIN RUDDER PCU FALLS, IT CAN CAUSE DAMAGE.

(4) Remove the nut [27], washer [26], nut [25], washer [24], washer [33], bushing [23], and bolt assembly [22] to disconnect the forward manifold [11] from the vertical fin structure.

SUBTASK 27-21-91-020-004

(5) Disconnect the electrical connectors [9] from the main rudder power control unit [1].

SUBTASK 27-21-91-020-005

(6) Disconnect the hydraulic lines from the main rudder power control unit [1].

CAUTION

MAKE SURE THAT YOU CAREFULLY DRAIN HYDRAULIC FLUID INTO A SUITABLE CONTAINER. CAREFULLY CLEAN, DRY, AND DISPOSE OF ALL LEAKAGE. HYDRAULIC FLUID CAUSES DAMAGE TO RUBBER, COPPER, PLASTICS, PAINTS, AND MANY OTHER MATERIALS.

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the hydraulic connections.

(b) Disconnect the hydraulic system A return line [12] from the main rudder power control unit [1].

(c) Disconnect the hydraulic system A pressure line [21] from the main rudder power control unit [1].

(d) Disconnect the hydraulic system B return line [14] from the main rudder power control unit [1].

(e) Disconnect the hydraulic system B pressure line [13] from the main rudder power control unit [1].

(f) Install the caps/plugs, STD-14686, to the hydraulic lines and ports.

(g) Install a tag on the hydraulic lines to make sure you install them correctly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-91-020-006

CAUTION

MAKE SURE THAT YOU MOVE THE PCU CAREFULLY DURING THE REMOVAL OR INSTALLATION OF THE PCU. THE PCU CAN HIT THE BOLTS. THIS CAN CAUSE DAMAGE TO THE BOLTS.

CAUTION

THE PCU SHOULD NEVER BE SET DIRECTLY ON A HARD SURFACE WITHOUT SUPPORTS OR OTHER METHODS TO PREVENT CONTACT WITH THE SUMMING LEVER BOLTS. IF NOT, IT CAN CAUSE DAMAGE.

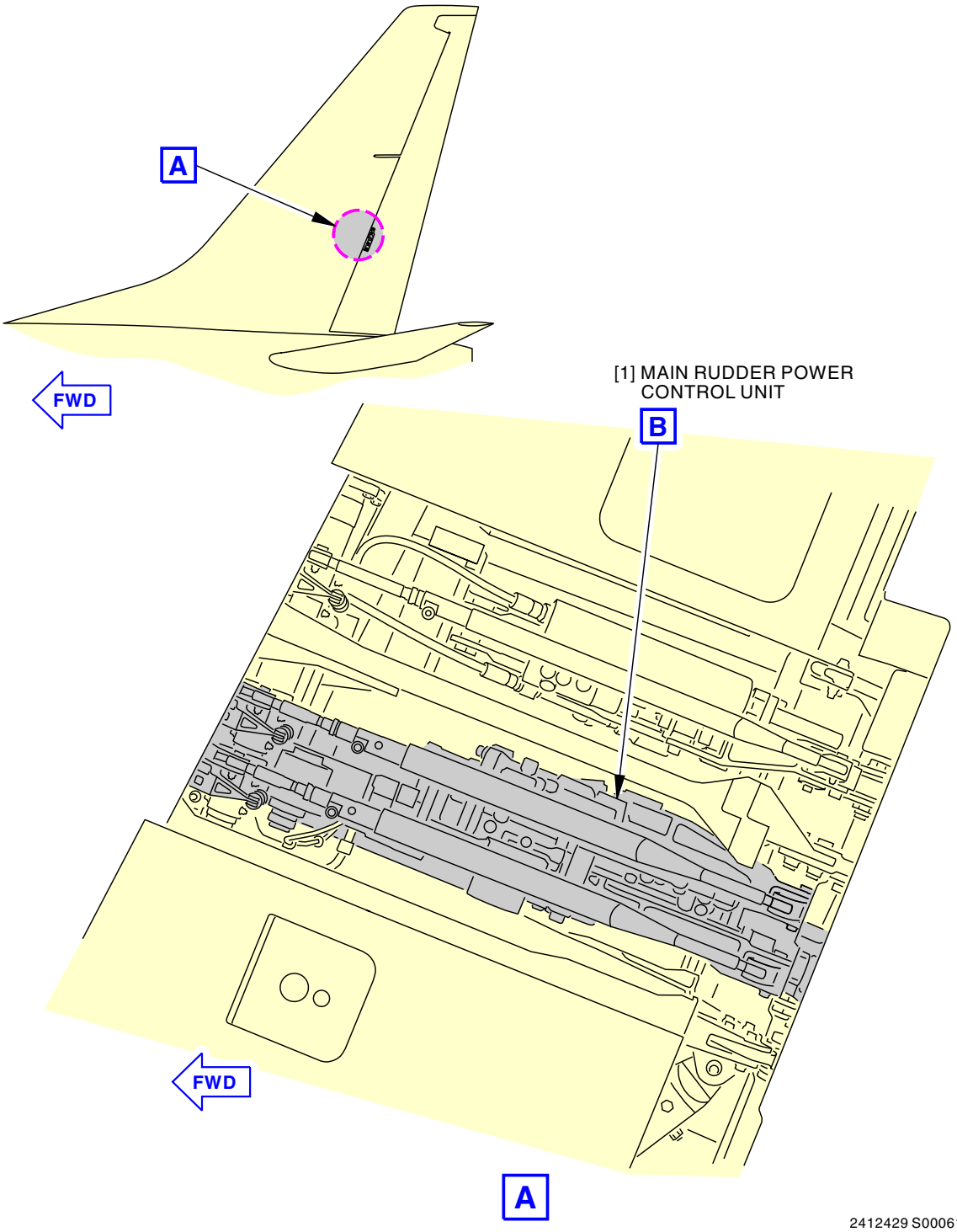
(7) Use a fishpole hoist, COM-1563, to remove the main rudder power control unit [1] from the airplane.

SUBTASK 27-21-91-480-002

(8) Install the lock, SPL-1727, to hold the rudder in its position.

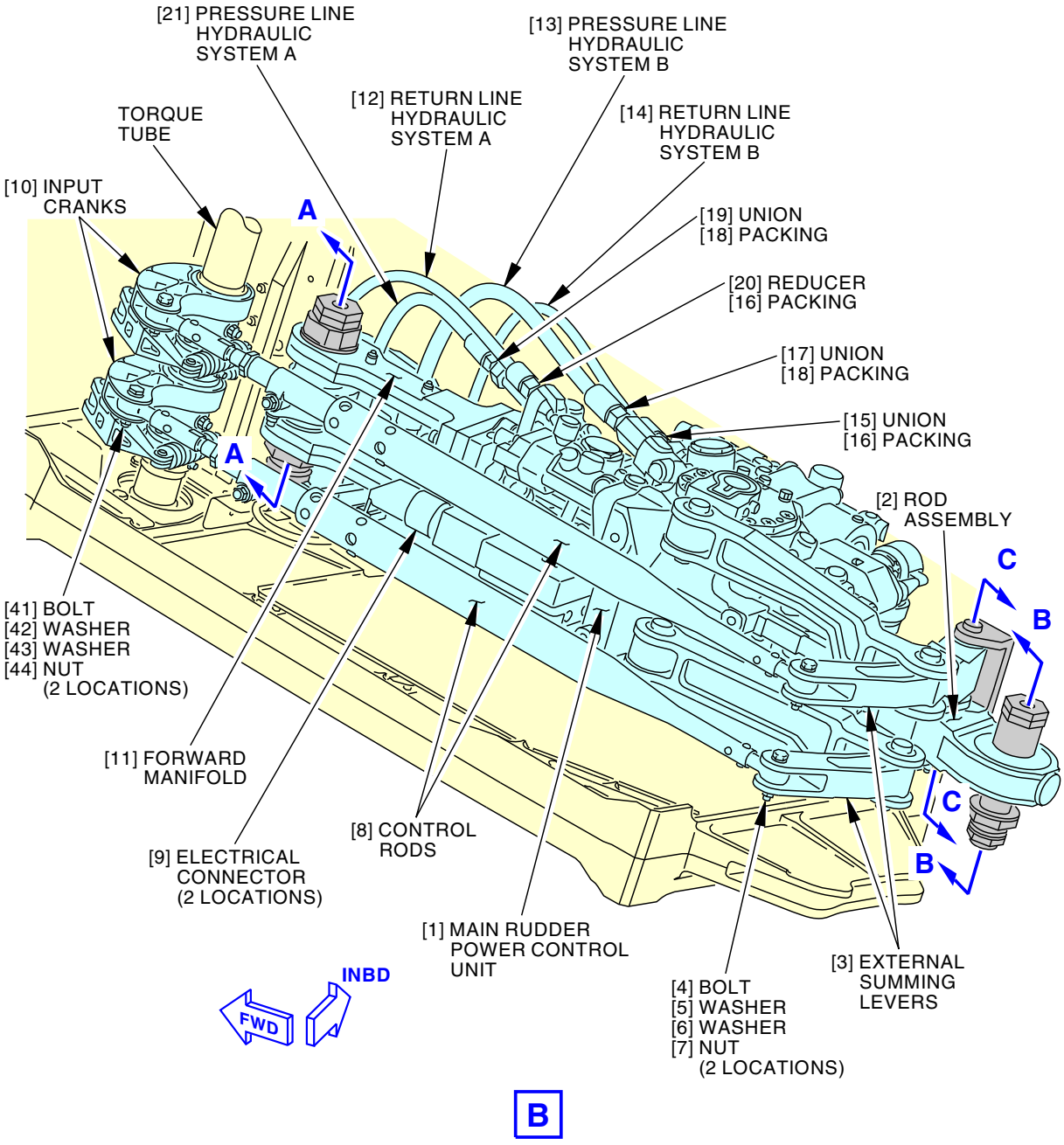
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Rudder Power Control Unit Installation
Figure 401/27-21-91-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Main Rudder Power Control Unit Installation
Figure 401/27-21-91-990-801 (Sheet 2 of 4)

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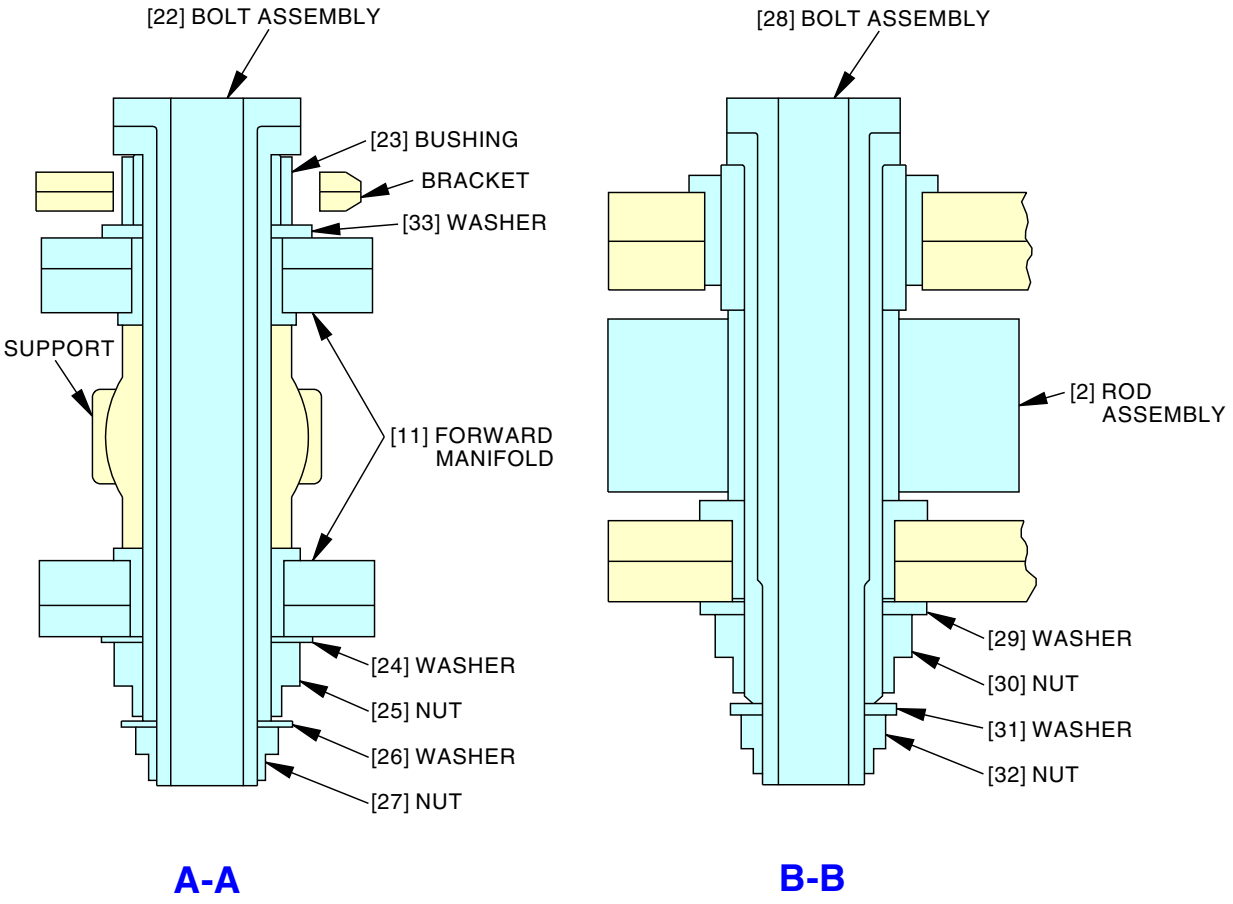

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Main Rudder Power Control Unit Installation
Figure 401/27-21-91-990-801 (Sheet 3 of 4)

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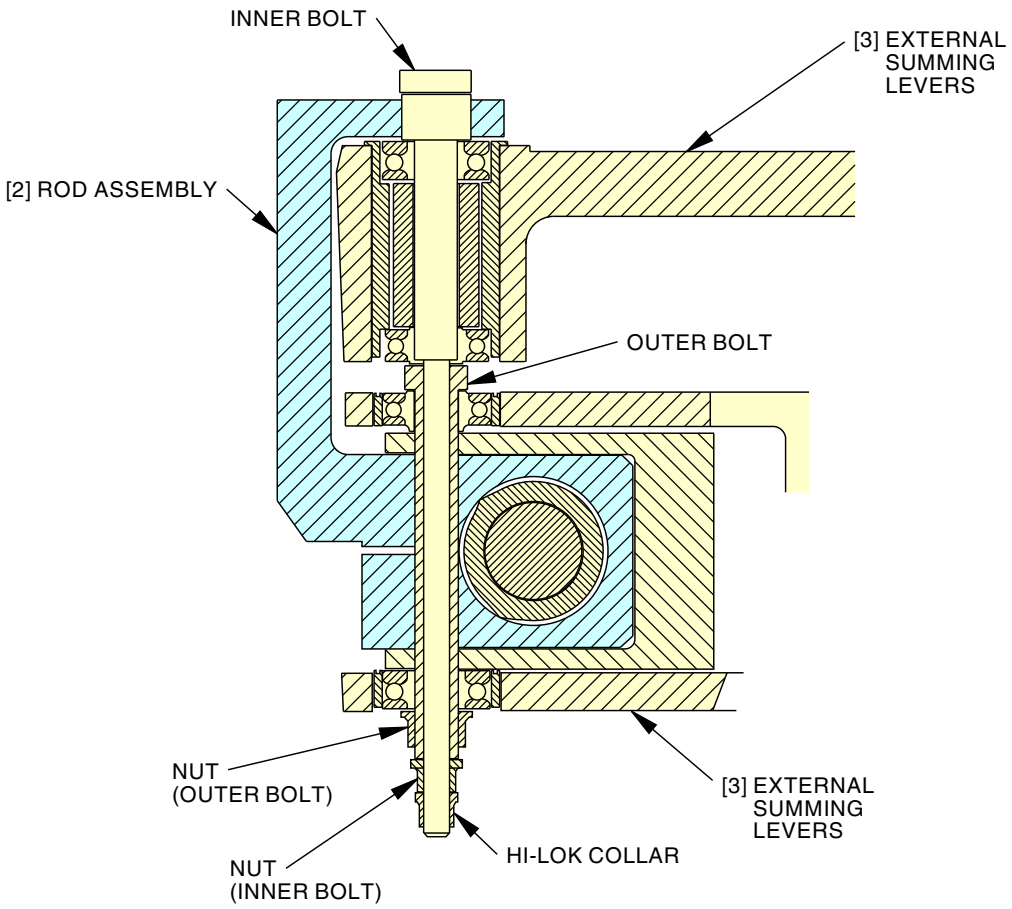

C-C

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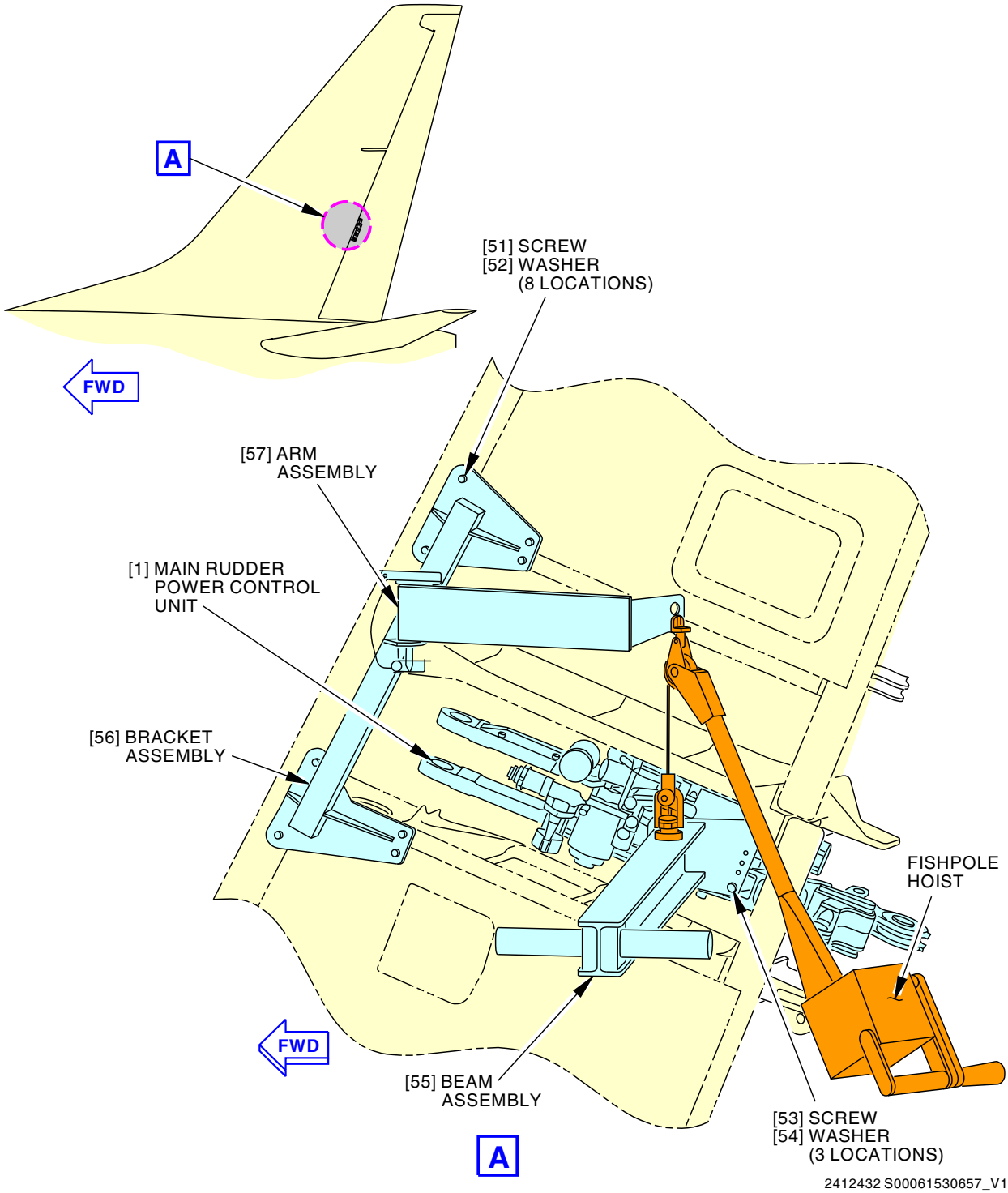
Main Rudder Power Control Unit Installation
Figure 401/27-21-91-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Rudder PCU Tool Installation
Figure 402/27-21-91-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-91-400-801

3. Main Rudder Power Control Unit Installation

(Figure 401, Figure 402)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-10-20-800-801	Cap and Plug Hydraulic Fittings (P/B 201)
27-21-00-700-802	Rudder Hinge Bearing and PCU Bearing Freeplay (P/B 501)
27-21-00-700-803	Rudder Centering Test (P/B 501)
27-21-00-700-804	Rudder Pedal Forces Test (P/B 501)
27-21-00-700-805	Rudder Travel Test (P/B 501)
27-21-00-700-809	Rudder Hinge Friction Test (P/B 501)
27-21-00-700-810	Main Rudder PCU Internal Hydraulic Leakage Test (P/B 501)
27-21-00-700-812	Rudder Main PCU Force Fight Monitor Test (P/B 501)
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-820-804	Control Rod for Main Rudder Power Control Unit Adjustment (P/B 501)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1563	Hoist - Fishpole, 500 lb Safe Working Limit (SWL) Part #: 10/4180 Supplier: K1425 Part #: PF51-003-1 Supplier: 1YRX6 Part #: PF51-009-1 Supplier: 1YRX6 Opt Part #: 10/3641 Supplier: K1425 Opt Part #: 10/3641C1 Supplier: K1425 Opt Part #: MINILIFT Supplier: K1425
SPL-1727	Lock - Ground, Rudder, PCU Removed Part #: C27057-1 Supplier: 81205
SPL-1731	Equipment - Torque Wrench, Rudder PCU Attachment Part #: C27042-1 Supplier: 81205
SPL-1732	Equipment - Removal/Installation, Rudder PCU Part #: C27049-36 Supplier: 81205 Opt Part #: C27049-1 Supplier: 81205
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Main rudder power control unit	27-21-91-02-190	SIA ALL
8	Control rod	27-21-91-02-045	SIA ALL
16	Packing	27-21-91-02-200	SIA ALL
18	Packing	27-21-91-02-200	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
324	Vertical Fin - Rear Spar To Trailing Edge

F. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

G. Main Rudder PCU Installation

SUBTASK 27-21-91-080-001

(1) Remove the lock, SPL-1727.

SUBTASK 27-21-91-480-003

(2) Install the equipment, SPL-1732, to the main rudder power control unit [1] (Figure 402).

SUBTASK 27-21-91-420-001

CAUTION

MAKE SURE THAT YOU FOLLOW THE INSTRUCTIONS TO INSTALL THE MAIN RUDDER CAREFULLY AND DO THE PROCEDURE IN THE SPECIFIED SEQUENCE. DAMAGE TO THE VERNIER CONTROL ROD [9] MAY OCCUR IF YOU DO NOT FOLLOW THE INSTRUCTIONS CORRECTLY.

CAUTION

MAKE SURE THAT YOU MOVE THE PCU CAREFULLY DURING THE REMOVAL OR INSTALLATION OF THE PCU. THE PCU CAN HIT THE BOLTS. THIS CAN CAUSE DAMAGE TO THE BOLTS.

CAUTION

MAKE SURE THE SUMMING LEVER BOLTS WERE NOT DAMAGED OR BENT DURING REMOVAL, STORAGE OR INSTALLATION OF THE PCU.

(3) Install the main rudder power control unit [1] (Figure 401):

(a) Use a fishpole hoist, COM-1563, to put the main rudder power control unit [1] in its position with the forward manifold [11] in the forward direction.

(b) Connect the forward manifold [11] to the vertical fin structure:

1) Install the washer [33], bushing [23], bolt assembly [22], washer [24], and nut [25].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Use the equipment, SPL-1731, to tighten the nut [25] to 1000 in-lb (113.0 N·m) - 1200 in-lb (135.6 N·m).

3) Install the washer [26] and nut [27].

CAUTION DO NOT TIGHTEN THE NUT [25] AFTER YOU TIGHTEN THE NUT [27]. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

4) Tighten the nut [27] to 650 in-lb (73.4 N·m) - 800 in-lb (90.4 N·m)..

(c) Connect the rod assembly [2] to the rudder:

1) Install the bolt assembly [28], washer [29], and nut [30].

2) Tighten the nut [30] to 900 in-lb (101.7 N·m) - 1050 in-lb (118.6 N·m).

3) Install the washer [31] and nut [32].

CAUTION DO NOT TIGHTEN THE NUT [30] AFTER YOU TIGHTEN THE NUT [32]. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

4) Tighten the nut [32] 450 in-lb (50.8 N·m) - 550 in-lb (62.1 N·m).

SUBTASK 27-21-91-080-002

(4) Remove the equipment, SPL-1732, from the main rudder power control unit [1]:

(a) Remove the screws [53] and washers [54] from the beam assembly [55].

(b) Remove the screws [51] and washers [52] from the bracket assembly [56].

(c) Remove the bracket assembly [56] and beam assembly [55].

SUBTASK 27-21-91-020-007

CAUTION MAKE SURE THAT YOU CORRECTLY INSTALL THE HYDRAULIC LINES TO THE MAIN RUDDER PCU. MAKE SURE THAT YOU INSTALL THE CORRECT UNIONS IN THE HYDRAULIC PORTS. YOU CAN CAUSE DAMAGE TO THE MAIN RUDDER PCU.

(5) Connect the hydraulic lines to the main rudder power control unit [1]:

CAUTION MAKE SURE THAT YOU CAREFULLY DRAIN HYDRAULIC FLUID INTO A SUITABLE CONTAINER. CAREFULLY CLEAN, DRY, AND DISPOSE OF ALL LEAKAGE. HYDRAULIC FLUID CAUSES DAMAGE TO RUBBER, COPPER, PLASTICS, PAINTS, AND MANY OTHER MATERIALS.

(a) Remove the caps/plugs, STD-14686, from the hydraulic lines and ports (TASK 20-10-20-800-801).

(b) If the main rudder power control unit [1] does not have the unions and packings installed, do these steps:

1) Apply hydraulic fluid, D00153, to the unions, reducer and packings.

2) Install the union [15] and packing [16].

3) Install the union [17] and packing [18].

4) Install the union [19] and packing [18].

5) Install the reducer [20] and packing [16].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Connect the hydraulic system A return line [12] to the main rudder power control unit [1].

1) Tighten the B-nut on hydraulic system A return line [12] to 110 ±6 in-lb (12 ±1 N·m).

(d) Connect the hydraulic system A pressure line [21] to the main rudder power control unit [1].

1) Tighten the B-nut on hydraulic system A pressure line [21] to 110 ±6 in-lb (12 ±1 N·m).

(e) Connect the hydraulic system B return line [14] to the main rudder power control unit [1].

1) Tighten the B-nut on hydraulic system B return line [14] to 110 ±6 in-lb (12 ±1 N·m).

(f) Connect the hydraulic system B pressure line [13] to the main rudder power control unit [1].

1) Tighten the B-nut on hydraulic system B pressure line [13] to 170 ±9 in-lb (19 ±1 N·m).

(g) Remove the 1 U.S.-gal (3.81 l) oil resistant container, STD-203, put below the hydraulic connections.

SUBTASK 27-21-91-420-002

(6) Install the control rods [8]:

(a) Put the control rods [8] in its position with the adjustment end in the forward direction.

(b) Connect the control rods [8] to the external summing lever [3]:

1) Install the bolts [4], washers [5], washers [6], and nuts [7].

(c) Connect the control rods [8] to the input cranks [10]:

1) Install the bolts [41], washers [42], washers [43], and nuts [44].

SUBTASK 27-21-91-020-008

(7) Connect the electrical connectors [9] to the main rudder power control unit [1].

SUBTASK 27-21-91-860-004

(8) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-91-860-005

(9) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	15	C01628	FORCE FIGHT MONITOR

SUBTASK 27-21-91-860-006

(10) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-91-860-007

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-91-870-001

(12) Move the rudder pedals to bleed the main rudder Power Control Unit (PCU) until the movement of the rudder is smooth.

SUBTASK 27-21-91-790-001

(13) Examine the hydraulic connections for leakage.

SUBTASK 27-21-91-860-008

(14) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-91-820-001

(15) Do this task: Control Rod for Main Rudder Power Control Unit Adjustment, TASK 27-21-00-820-804.

SUBTASK 27-21-91-820-002

(16) Do this task: Rudder Main PCU Force Fight Monitor Test, TASK 27-21-00-700-812.

SUBTASK 27-21-91-820-003

(17) Do this task: Main Rudder PCU Internal Hydraulic Leakage Test, TASK 27-21-00-700-810.

SUBTASK 27-21-91-730-001

(18) Do this task: Rudder Pedal Forces Test, TASK 27-21-00-700-804.

SUBTASK 27-21-91-730-002

(19) Do this task: Rudder Hinge Friction Test, TASK 27-21-00-700-809.

SUBTASK 27-21-91-730-003

(20) Do this task: Rudder Hinge Bearing and PCU Bearing Freeplay, TASK 27-21-00-700-802.

SUBTASK 27-21-91-730-004

(21) Do this task: Rudder Centering Test, TASK 27-21-00-700-803.

SUBTASK 27-21-91-730-005

(22) Do this task: Rudder Travel Test, TASK 27-21-00-700-805.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-91-410-001

(1) Install this access panel:

Number	Name/Location
324DL	Trailing Edge Access

SUBTASK 27-21-91-410-002

(2) If it is necessary, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-91-000-802

4. Main Rudder PCU Load Limiter Solenoid Valve Removal

(Figure 403)

A. General

(1) There is two load limiter solenoid valves, one yaw damper solenoid valve, and one transfer valve installed on the main rudder PCU. For the transfer valve and yaw damper solenoid, refer to PAGEBLOCK 22-23-21/401.

(2) Each of the two main rudder PCU load limiter solenoid valves is referred to as the "solenoid valve [71]" in this procedure. This procedure is applicable to both solenoid valves.

B. References

Reference	Title
22-23-21 P/B 401	MAIN RUDDER POWER CONTROL UNIT (PCU) SOLENOID AND ELECTROHYDRAULIC SERVO VALVES - REMOVAL/INSTALLATION
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

D. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

E. Prepare for the Removal

SUBTASK 27-21-91-860-009

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-91-860-010

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-91-010-002

(3) To get access to the main rudder power control unit [1], do this step:

Remove this access panel:

Number	Name/Location
324DL	Trailing Edge Access

F. Solenoid Valve Removal

SUBTASK 27-21-91-020-009

(1) Do these steps to remove the solenoid valve [71]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the bolts [72]] that attach the solenoid valve [71] to the main rudder power control unit [1].

(b) Remove the seal plate [73].

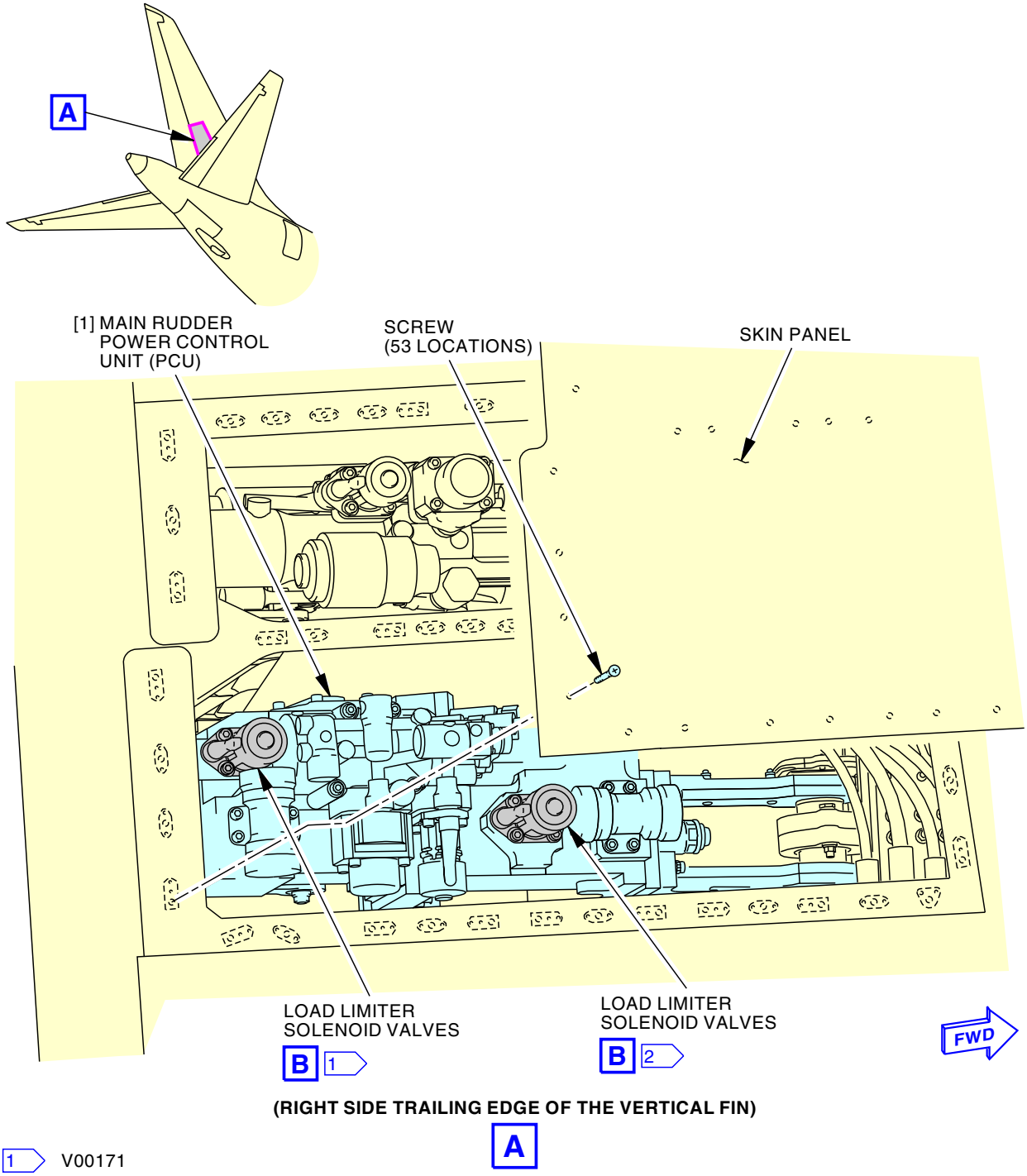
(c) Remove the o-ring [74]. Discard the o-ring [74].

(d) Remove the solenoid valve [71].

(e) Put plugs on the main rudder power control unit [1] ports.

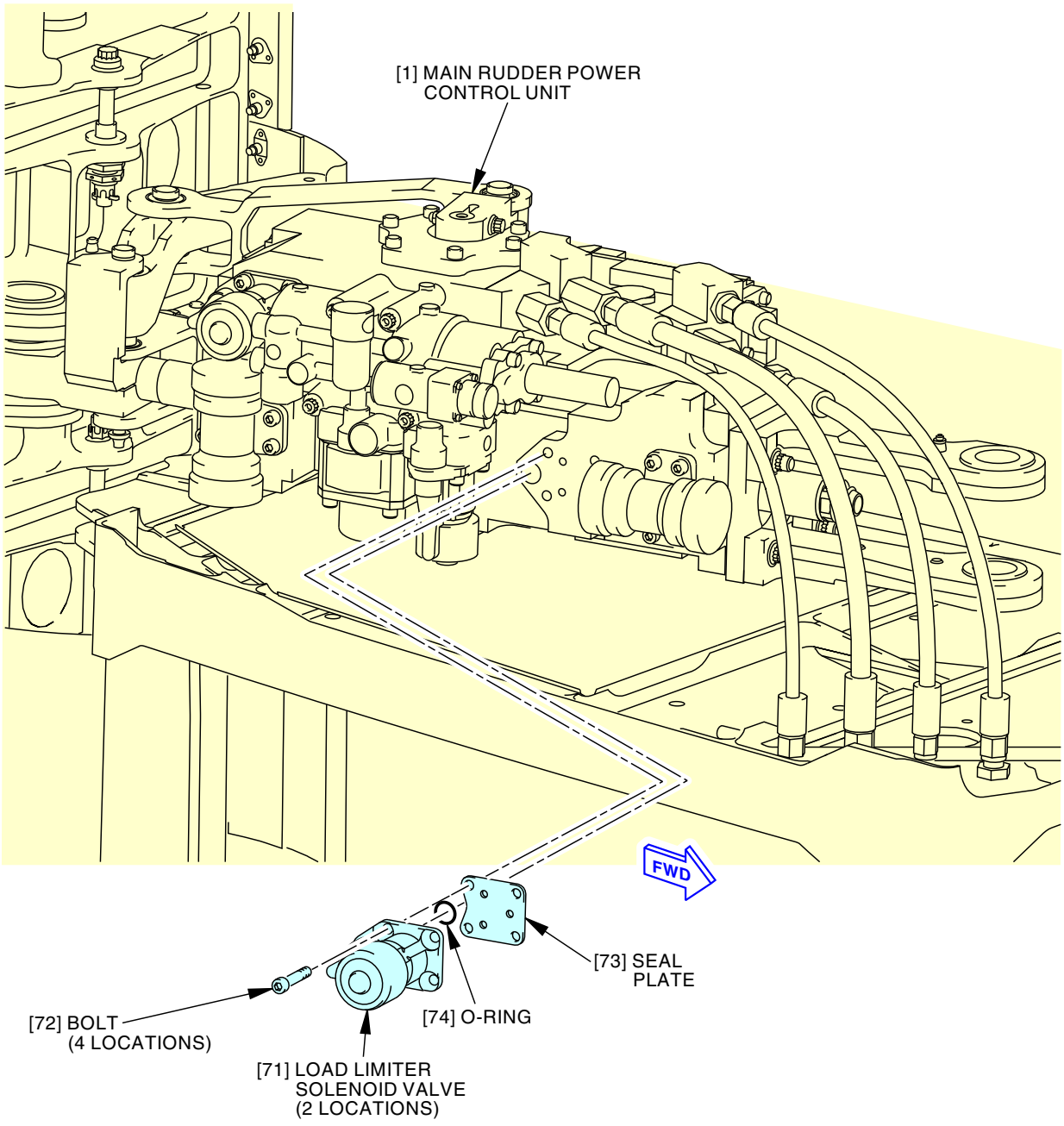
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Rudder PCU Load Limiter Solenoid Valve Installation
Figure 403/27-21-91-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Main Rudder PCU Load Limiter Solenoid Valve Installation
Figure 403/27-21-91-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-91-400-802

5. Main Rudder PCU Load Limiter Solenoid Valve Installation

(Figure 403)

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
71	Solenoid valve	27-21-91-02-232	SIA ALL
		27-21-91-02-332	SIA ALL
74	O-ring	27-21-91-02-328	SIA ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left
324	Vertical Fin - Rear Spar To Trailing Edge

E. Access Panels

Number	Name/Location
324DL	Trailing Edge Access

F. Prepare for the Installation

SUBTASK 27-21-91-860-011

(1) Make sure you remove pressure from the rudder hydraulic systems A and B. To remove it, do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

G. Solenoid Valve Installation

SUBTASK 27-21-91-020-010

(1) Do these steps to install the solenoid valve [71]:

(a) Remove the plugs on the main rudder power control unit [1] ports.

(b) Clean the seal plate [73].

(c) Lubricate the new o-ring [74] with hydraulic fluid, D00153.

(d) Install the new o-ring [74].

(e) Install the seal plate [73].

(f) Install the solenoid valve [71].

(g) Install the bolts [72] that attach the solenoid valve [71] to the seal plate [73].

(h) Tighten the bolts [72] to 50 in-lb (5.6 N·m) – 70 in-lb (7.9 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-91-860-012

(2) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-91-860-013

(3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

SUBTASK 27-21-91-410-003

(4) Install this access panel:

Number	Name/Location
324DL	Trailing Edge Access

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STANDBY RUDDER POWER CONTROL UNIT SHUTOFF VALVE - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of the rudder valve motor from the standby rudder power control unit (PCU) shutoff valve

(2) An installation of the rudder valve motor to the standby rudder PCU shutoff valve

(3) A removal of the standby rudder power control unit (PCU) shutoff valve

(4) An installation of the standby rudder PCU shutoff valve

(5) An installation test of the standby rudder PCU shutoff valve.

B. The standby rudder PCU shutoff valve is referred to as the "shutoff valve" in this procedure.

C. You do not have to remove the shutoff valve from the modular package assembly to remove the rudder valve motor.

TASK 27-21-94-000-801

2. Rudder Valve Motor Removal

(Figure 201, Figure 202)

A. General

(1) This task includes the steps to remove the rudder valve motor.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Prepare for the Removal

SUBTASK 27-21-94-860-001

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-94-860-002

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

E. Rudder Valve Motor Removal

SUBTASK 27-21-94-020-001

(1) Disconnect the electrical connector [5] from the rudder valve motor [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(b) If you find corrosion, correct the problem (SWPM 20-60-03).

SUBTASK 27-21-94-020-002

(2) Move the manual override lever [2] on the rudder valve motor [4] to position 2.

SUBTASK 27-21-94-020-003

(3) Remove the lockwire and screws [6] from the rudder valve motor [4].

SUBTASK 27-21-94-020-004

(4) Remove the rudder valve motor [4] from the standby rudder PCU shutoff valve [1].

SUBTASK 27-21-94-020-013

(5) If you will install new rudder valve motor [4], remove the rudder valve motor name plate [14] (Figure 202).

(a) Keep the rudder valve motor name plate [14] for the subsequent installation.

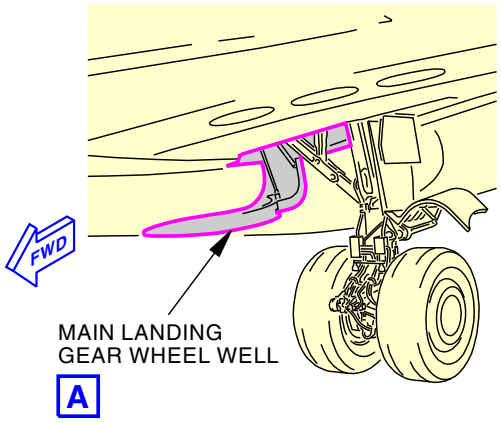
NOTE: Name plate is for rudder valve motor accountability/traceability and will be installed on new rudder valve motor.

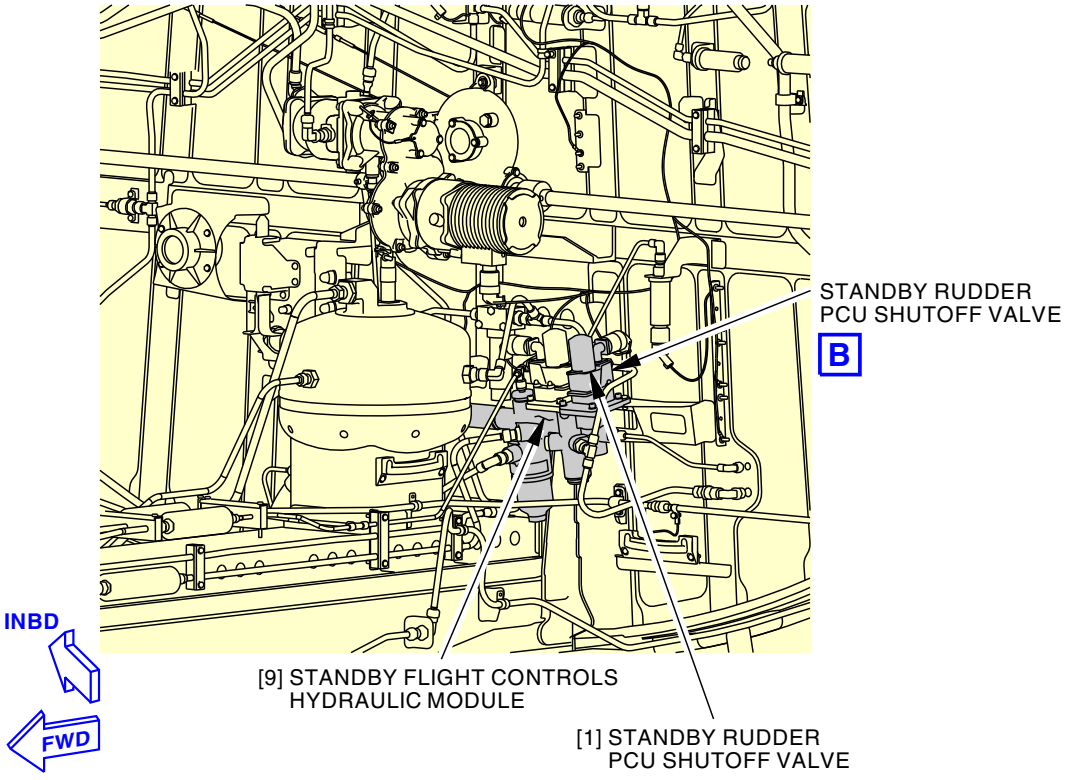
SUBTASK 27-21-94-020-014

(6) If you will replace the standby rudder PCU shutoff valve [1], make sure that the rudder valve motor name plate [14] is maintained with the removed standby rudder PCU shutoff valve [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





**MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)**

A

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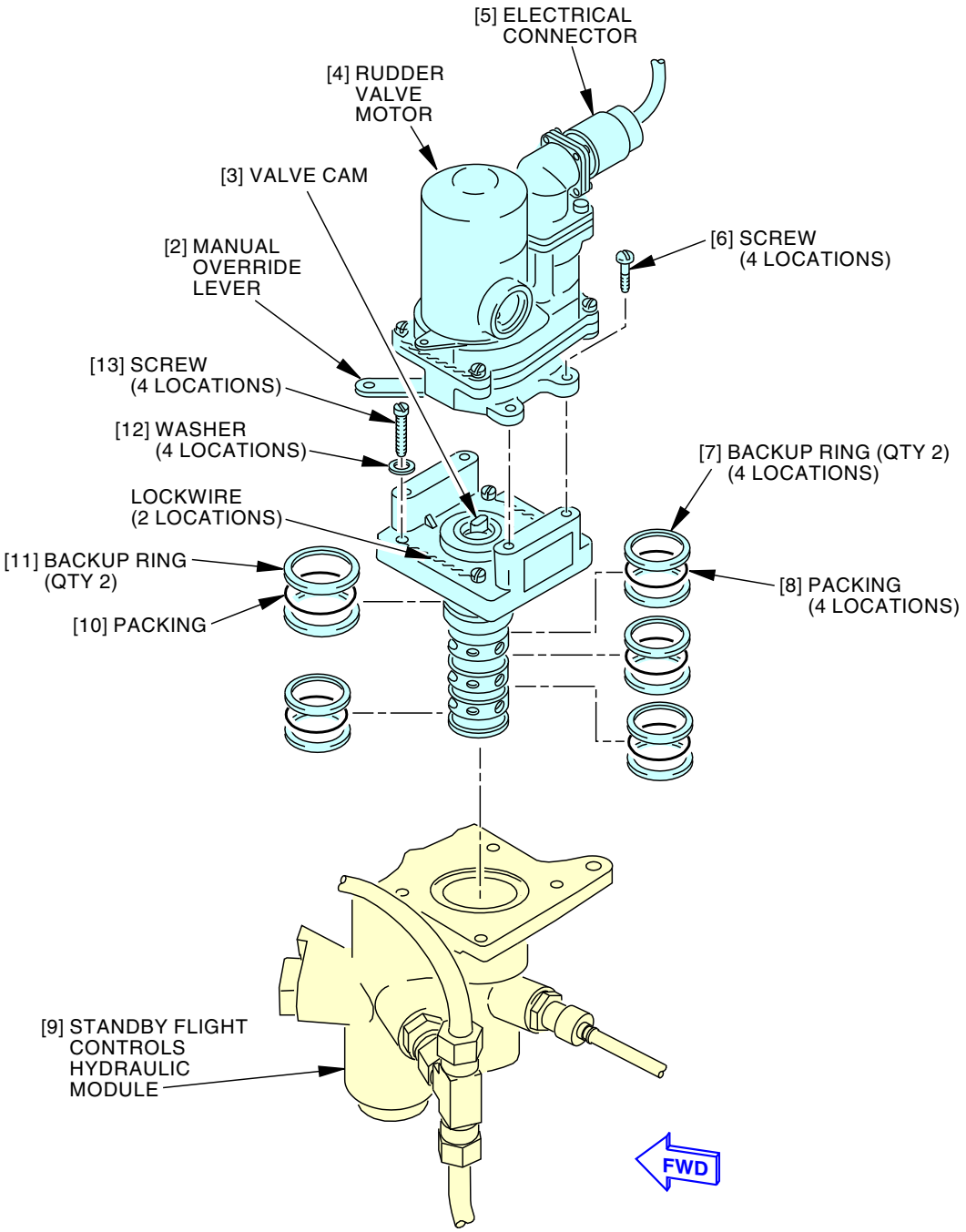
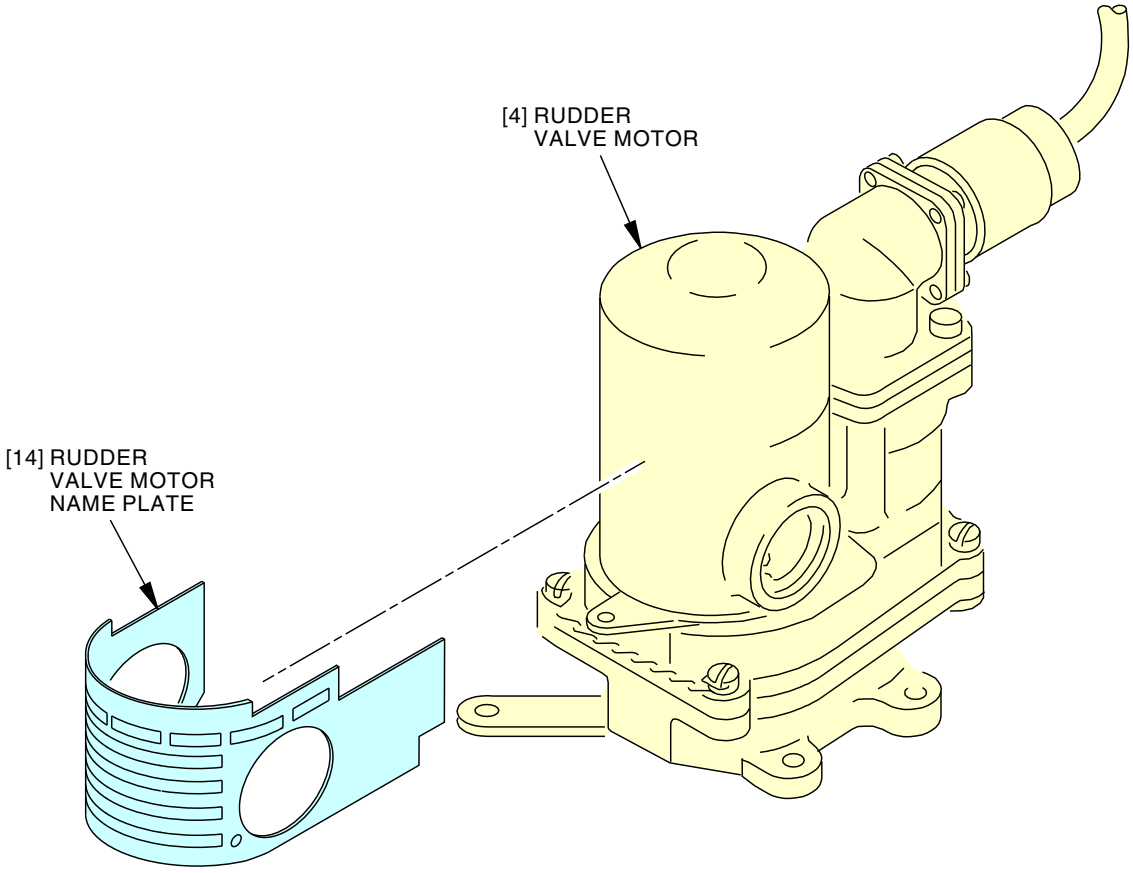
**Standby Rudder PCU Shutoff Valve Installation
Figure 201/27-21-94-990-801 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Standby Rudder PCU Shutoff Valve Installation
Figure 201/27-21-94-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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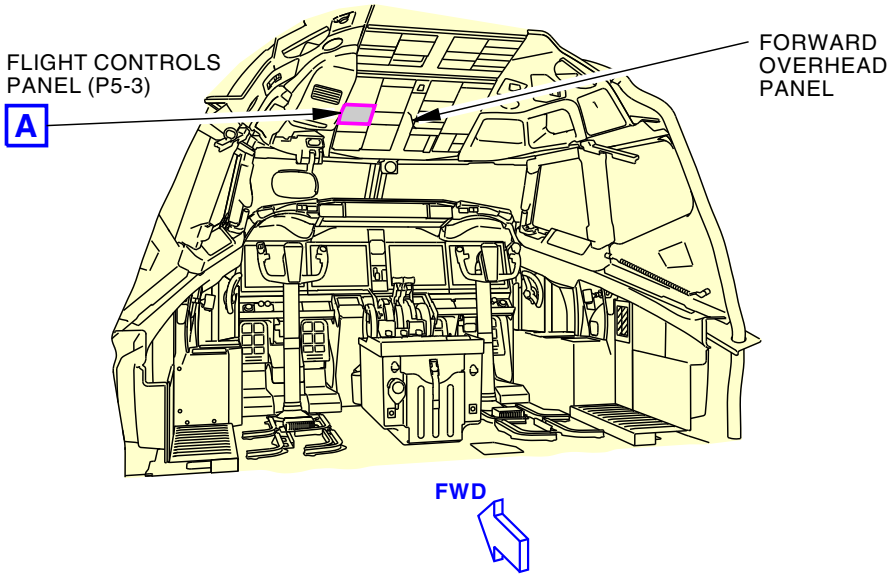
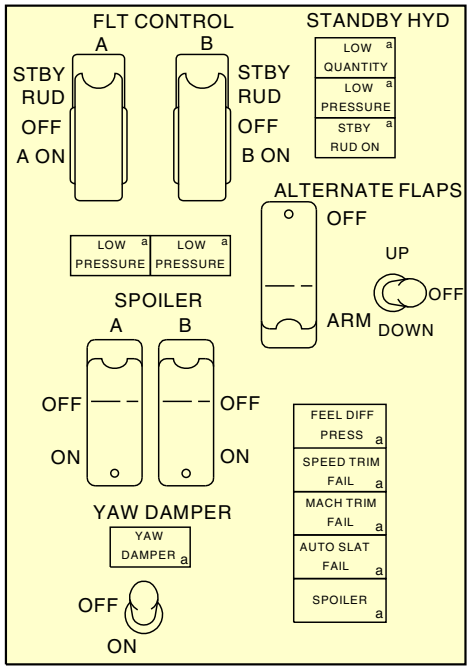
Rudder Valve Motor Name Plate Installation
Figure 202/27-21-94-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A

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Flight Control Switches
Figure 203/27-21-94-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-94-400-801

3. Rudder Valve Motor Installation

(Figure 201, Figure 202)

A. General

(1) This task includes the steps to install the rudder valve motor.

B. References

Reference	Title
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Rudder valve motor	27-21-94-02-035	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

F. Rudder Valve Motor Installation

SUBTASK 27-21-94-420-009

(1) If you install new rudder valve motor [4], install the removed rudder valve motor name plate [14] (Figure 202).

SUBTASK 27-21-94-420-010

(2) If you install new standby rudder PCU shutoff valve [1], install the new rudder valve motor name plate [14] on the rudder valve motor [4] (Figure 202).

NOTE: If you do not install new standby rudder PCU shutoff valve, use the rudder valve motor name plate that is maintained with the removed standby rudder PCU shutoff valve.

SUBTASK 27-21-94-020-005

(3) Make sure that the manual override lever [2] on the rudder valve motor [4] is in position 2.

SUBTASK 27-21-94-420-001

(4) Put the rudder valve motor [4] on the standby rudder PCU shutoff valve [1].

(a) Make sure that the rudder valve motor [4] is engaged with the valve cam [3].

SUBTASK 27-21-94-420-002

(5) Install the screws [6] that attach the rudder valve motor [4] to the standby rudder PCU shutoff valve [1].

(a) Tighten the screws [6] to 17 in-lb (1.92 N·m) - 20 in-lb (2.26 N·m).

(b) Install MS20995C20 lockwire, G50225, on the screws [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-94-210-001

(6) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can inspect the electrical connector(s) after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If you find corrosion, correct the problem (SWPM 20-60-03).

SUBTASK 27-21-94-800-001

(7) Apply D5026NS or ZC-026 compound, G50171, to the electrical connector [5] (SWPM 20-60-03).

SUBTASK 27-21-94-420-003

(8) Connect the electrical connector [5] to the rudder valve motor [4].

SUBTASK 27-21-94-860-003

(9) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-94-860-004

(10) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-94-730-001

(11) Do this task: Standby Rudder PCU Shutoff Valve Installation Test, TASK 27-21-94-710-801.

END OF TASK

TASK 27-21-94-000-802

4. Standby Rudder PCU Shutoff Valve Removal

(Figure 201)

A. General

(1) This task provides instructions to remove the shutoff valve (with the rudder valve motor attached) from the standby flight controls hydraulic module.

B. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Prepare for the Removal

SUBTASK 27-21-94-860-005

(1) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-94-860-006

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

E. Shutoff Valve Removal

SUBTASK 27-21-94-020-006

(1) Disconnect the electrical connector [5] from the rudder valve motor [4].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-21-94-020-007

(2) Remove the lockwires from the screws [13].

SUBTASK 27-21-94-020-008

(3) Remove the screws [13] and washers [12] which attach the standby rudder PCU shutoff valve [1] to the standby flight controls hydraulic module [9].

SUBTASK 27-21-94-020-009

CAUTION

DO NOT LET HYDRAULIC FLUID GET ON EQUIPMENT. IF HYDRAULIC FLUID GETS ON EQUIPMENT, IMMEDIATELY CLEAN IT FROM THE EQUIPMENT. HYDRAULIC FLUID CAN CAUSE DAMAGE TO EQUIPMENT.

(4) Put a container below the standby rudder PCU shutoff valve [1] to catch hydraulic fluid.

SUBTASK 27-21-94-020-010

(5) Carefully turn and pull directly up on the standby rudder PCU shutoff valve [1] to remove it from the standby flight controls hydraulic module [9].

SUBTASK 27-21-94-020-011

(6) Put a cover on the standby flight controls hydraulic module [9] to keep dirt out.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-94-400-802

5. Standby Rudder PCU Shutoff Valve Installation

(Figure 201)

A. General

(1) This task provides instructions to install the shutoff valve (with the rudder valve motor attached) to the standby flight controls hydraulic module.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-21-00-840-802	Pressure to the Rudder Systems A, B, and Standby - Activation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Packing	27-21-94-02-025	SIA ALL
10	Packing	27-21-94-02-015	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

F. Standby Rudder PCU Shutoff Valve Installation

SUBTASK 27-21-94-020-012

(1) Remove the cover from the standby flight controls hydraulic module [9].

SUBTASK 27-21-94-420-004

(2) If the shutoff valve does not have the packings [8], packing [10], backup rings [7], and backup rings [11] installed, do these steps:

(a) Lubricate the packings [8], packing [10], backup rings [7], and backup rings [11] with hydraulic fluid, D00153.

(b) Install the packings [8], packing [10], backup rings [7], and backup rings [11] to the standby rudder PCU shutoff valve [1].

SUBTASK 27-21-94-420-005

(3) Carefully install the standby rudder PCU shutoff valve [1] in the standby flight controls hydraulic module [9].

SUBTASK 27-21-94-420-006

(4) Install the washers [12] and screws [13] which attach the standby rudder PCU shutoff valve [1] to the standby flight controls hydraulic module [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Tighten the screws [13] to 78 in-lb (8.8 N·m) – 82 in-lb (9.3 N·m).

SUBTASK 27-21-94-420-007

(5) Install the MS20995C32 lockwire, G01048, on the screws [13].

SUBTASK 27-21-94-210-002

(6) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-21-94-800-002

(7) Apply the D5026NS or ZC-026 compound, G50171, to the electrical connector [5] (SWPM 20-60-03).

SUBTASK 27-21-94-420-008

(8) Connect the electrical connector [5] to the rudder valve motor [4].

SUBTASK 27-21-94-860-007

(9) Do this task: Pressure to the Rudder Systems A, B, and Standby - Activation, TASK 27-21-00-840-802.

SUBTASK 27-21-94-860-008

(10) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-21-94-710-001

(11) Do this task: Standby Rudder PCU Shutoff Valve Installation Test, TASK 27-21-94-710-801.

SUBTASK 27-21-94-860-009

(12) If it is necessary, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

TASK 27-21-94-710-801

6. Standby Rudder PCU Shutoff Valve Installation Test

(Figure 201, Figure 203)

A. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
211	Flight Compartment - Left

C. Procedure

SUBTASK 27-21-94-860-011

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Rudder Hydraulic System A, B, or Standby Pressurization, TASK 27-21-00-800-801.

SUBTASK 27-21-94-860-012

(2) Make sure the FLIGHT CONTROL A and B switches are in the ON position.

NOTE: The FLIGHT CONTROL A and B switches are on the upper left corner of the pilot's overhead panel.

SUBTASK 27-21-94-860-013

(3) Make sure the manual override lever on the rudder valve motor is in position 1.

SUBTASK 27-21-94-860-014

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Put the FLIGHT CONTROL A or B switch to the STDBY RUD position.

SUBTASK 27-21-94-860-015

(5) Make sure the manual override lever on the rudder valve motor is in position 2.

SUBTASK 27-21-94-860-016

(6) Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

NOTE: Nose landing gear will move when the rudder pedals are moved. To prevent NLG movement, install a lockout pin in the nose wheel steering mechanism.

SUBTASK 27-21-94-710-002

(7) Push the rudder pedals until they touches the forward quadrant stops.

(a) Have a second maintenance personnel visually make sure that the rudder moves correctly.

SUBTASK 27-21-94-790-001

(8) Make sure there is no hydraulic fluid leakage from the shutoff valve.

SUBTASK 27-21-94-860-017

(9) Put the FLIGHT CONTROL A or B switch to the ON position.

SUBTASK 27-21-94-860-018

(10) Make sure the manual override lever on the rudder valve motor is in position 1.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-94-860-019

(11) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-94-860-020

(12) Do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

RUDDER HYDRAULIC FUSE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the rudder hydraulic fuse

(2) An installation of the rudder hydraulic fuse.

TASK 27-21-95-000-801

2. Rudder Hydraulic Fuse Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-21-00-800-802	Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation (P/B 201)
27-41-00-800-801	Horizontal Stabilizer Trim Control System - Deactivation (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-21-95-040-001

(1) Do this task: Horizontal Stabilizer Trim Control System - Deactivation, TASK 27-41-00-800-801.

(a) If the lock, SPL-1672, is not available, install the DO NOT OPERATE tag, STD-858, on the stabilizer trim wheel.

SUBTASK 27-21-95-860-001

(2) Do this task: Pressure from the Rudder Hydraulic Systems A, B, and Standby - Deactivation, TASK 27-21-00-800-802.

SUBTASK 27-21-95-860-002

(3) Do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-95-010-001

(4) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Rudder Hydraulic Fuse Removal

SUBTASK 27-21-95-020-003

(1) Remove the bolt [1], washer [2], and nut [3].

SUBTASK 27-21-95-020-002

(2) Remove the bolt [8], washer [9], nut [10], and clamp [4].

(a) Leave the clamp [11] around the hydraulic line [12].

SUBTASK 27-21-95-020-001

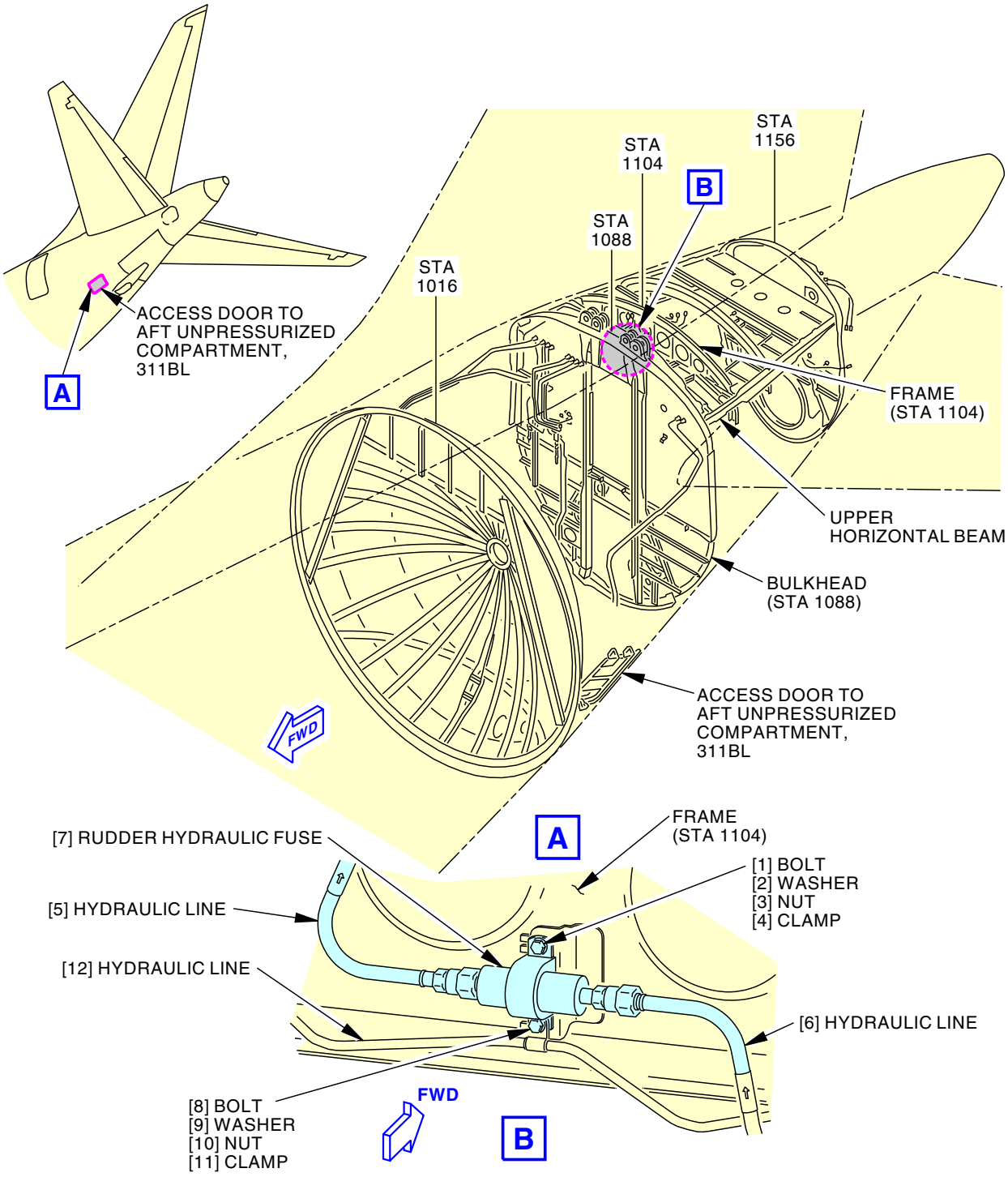
(3) Do these steps to remove the rudder hydraulic fuse [7]:

(a) Disconnect the hydraulic line [5] and hydraulic line [6] from the rudder hydraulic fuse [7].

(b) Remove the rudder hydraulic fuse [7].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Rudder Hydraulic Fuse Installation
Figure 401/27-21-95-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-21-95-400-801

3. Rudder Hydraulic Fuse Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-21-00-800-801	Rudder Hydraulic System A, B, or Standby Pressurization (P/B 201)
27-21-00-840-801	Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization (P/B 201)
27-41-00-800-802	Horizontal Stabilizer Trim Control System - Activation (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Rudder hydraulic fuse	27-21-95-01-040	SIA ALL

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Rudder Hydraulic Fuse Installation

SUBTASK 27-21-95-420-001

(1) Do these steps to install the rudder hydraulic fuse [7]:

(a) Put the rudder hydraulic fuse [7] in its position.

NOTE: The flow direction arrow on the rudder hydraulic fuse [7] must agree with the arrow on the airplane.

(b) Connect the hydraulic line [5] and hydraulic line [6] to the rudder hydraulic fuse [7].

(c) Tighten the B-nuts on hydraulic line [5] and hydraulic line [6] to 270 ±14 in-lb (31 ±2 N·m).

SUBTASK 27-21-95-420-002

(2) Install the clamp [4] with the bolt [1], washer [2], and nut [3].

SUBTASK 27-21-95-420-003

(3) Install the clamp [11] with the bolt [8], washer [9], and nut [10].

SUBTASK 27-21-95-860-005

(4) Do these steps to do a test of the rudder hydraulic fuse [7]:

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the rudder hydraulic system B (TASK 27-21-00-800-801).

(b) Move the rudder pedals through their full travel three times.

(c) Make sure that the rudder moves correctly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-21-95-210-001

(5) Visually examine the rudder hydraulic fuse [7] for hydraulic leaks.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-21-95-440-001

(1) Do this task: Horizontal Stabilizer Trim Control System - Activation, TASK 27-41-00-800-802.

(a) If installed, remove the DO NOT OPERATE tag from the stabilizer trim wheel.

SUBTASK 27-21-95-860-006

(2) Do this task: Put the Rudder Hydraulic Systems A, B, and Standby Back to the Condition Before the Pressurization, TASK 27-21-00-840-801.

SUBTASK 27-21-95-410-001

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Test the LE Hydraulic Fuses

SUBTASK 27-21-95-720-001

(1) Do the functional test of the LE hydraulic fuses with the suppliers recommended component maintenance test instructions and test equipment.

NOTE: The suppliers instructions give a reverse flow test, internal leakage test, pressure drop test, volumetric capacity test and reset test for the fuses. This is an off-airplane bench test.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR AND TAB CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Elevator Hydraulic System A and B - Pressurization

(2) Put the Elevator Hydraulic Systems A and B Back to the Condition before the Pressurization

(3) Remove Pressure from the Elevator Hydraulic Systems A and B

(4) Put the Elevator Hydraulic Systems A and B Back to the Condition before the Pressure Removal

(5) Null Procedure - Mach Trim Actuator

(6) Elevator Control Pushrod - Visual Inspection

(7) Elevator Feel and Centering Unit - Detailed Inspection

(8) Elevator Feel and Centering Unit Output Rod - Detailed Visual Inspection

(9) Elevator Tab and Tab Mechanism - Detailed Visual Inspection

(10) Elevator and Tab Control System - Deactivation

(11) Elevator and Tab Control System - Activation.

B. Hydraulic systems A, B must have pressure removed before maintenance is done on the elevator control system. This is to prevent injury to persons because of accidental operation of the control system while you do maintenance. You must be careful to put maintenance stands and equipment away from control surface travel.

C. Electric pump 1 pressurizes the hydraulic system B and electric pump 2 pressurizes the hydraulic system A. Electric pump 1 heat exchanger is installed in the fuel tank 2. Electric pump 2 heat exchanger is installed in the fuel tank 1.

D. This procedure operates the electric hydraulic system A or B pumps to pressurize the hydraulic systems A and B. Pressurization of the hydraulic systems with the engine-driven hydraulic pumps is not included in this procedure.

TASK 27-31-00-800-801

2. Elevator Hydraulic System A and B - Pressurization

(Figure 201)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Pressurization of the Elevator Hydraulic System A and B

SUBTASK 27-31-00-860-002

CAUTION

DO NOT OPERATE SYSTEM A OR B HYDRAULIC PUMPS FOR MORE THAN TWO MINUTES WITHOUT FUEL IN THE FUEL TANKS. THE NO. 1 (FOR SYSTEM A) AND NO. 2 (FOR SYSTEM B) FUEL TANKS MUST HAVE A MINIMUM OF 250 GALLONS (1675 POUNDS/760 KILOGRAMS) OF FUEL IN THEM. IF THERE IS NOT SUFFICIENT FUEL IN THE FUEL TANKS, THE HYDRAULIC FLUID WILL BECOME TOO HOT.

(1) Make sure that the No. 1 and No. 2 fuel tanks each have 250 gallons (1675 pounds/760 kilograms) of fuel in them.

SUBTASK 27-31-00-210-001

(2) Make sure that the hydraulic reservoirs are full.

(a) To fill the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-31-00-860-003

(3) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-31-00-860-004

(4) Set the parking brake.

SUBTASK 27-31-00-480-001

WARNING

MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL THE LANDING GEARS BEFORE YOU PRESSURIZE THE HYDRAULIC SYSTEM. WITHOUT THE GROUND LOCKS, THE LANDING GEARS CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-31-00-860-005

WARNING

KEEP PERSONNEL AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize the elevator hydraulic system A:

(a) Set the ELEC 2, HYD PUMPS A switch on the forward overhead panel to the ON position.

(b) To pressurize the hydraulic system A, set the FLT CONTROL A switch on the forward overhead panel to the ON position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-780-001

WARNING KEEP PERSONNEL AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

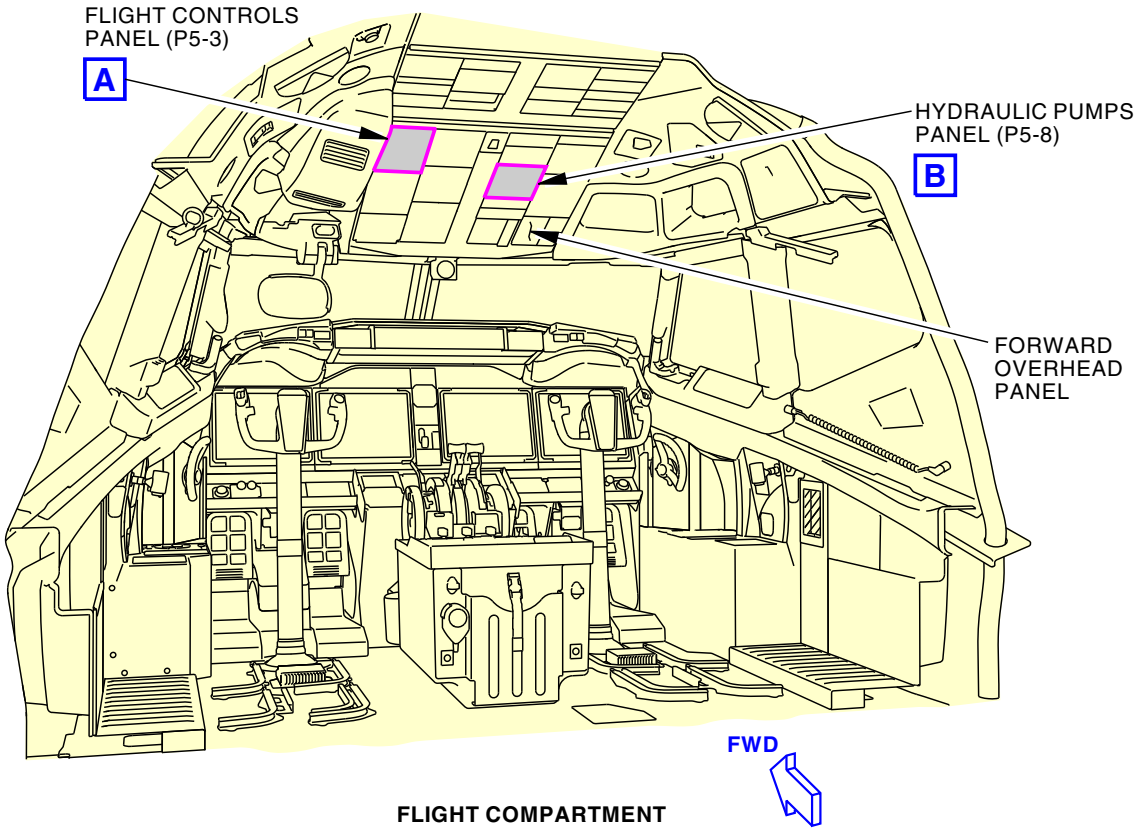
(7) Pressurize the elevator hydraulic system B:

(a) Set the ELEC 1, HYD PUMPS B switch on the forward overhead panel to the ON position.

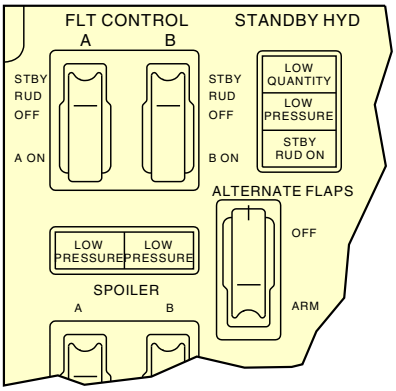
(b) To pressurize the hydraulic system B, set the FLT CONTROL B switch on the forward overhead panel to the ON position.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

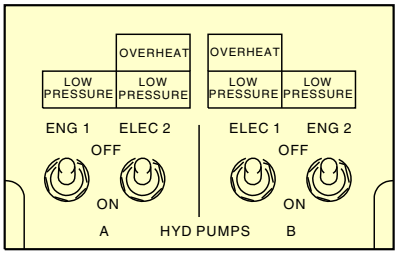


FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A



HYDRAULIC PUMPS PANEL (P5-8)

B

2412439 S00061530682_V2

Elevator Power Control Switches
Figure 201/27-31-00-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-840-801

3. Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization

(Figure 201)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

B. Putting the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization

SUBTASK 27-31-00-860-006

(1) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-31-00-860-007

(2) Set the FLT CONTROL A and B switches on the forward overhead panel to the OFF position.

——— END OF TASK ———

TASK 27-31-00-800-802

4. Pressure from the Elevator Hydraulic Systems A and B Removal

(Figure 201, Figure 202)

A. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Pressure from the Elevator Hydraulic Systems A and B Removal

SUBTASK 27-31-00-860-008

(1) Set the FLT CONTROL A and B switches on the forward overhead panel to the OFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-009

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-31-00-860-010

(3) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-31-00-870-001

(4) Operate the rudder pedals to decrease the remaining hydraulic system pressure.

SUBTASK 27-31-00-860-011

(5) If it is necessary to open a hydraulic line, you must release pressure from the reservoir for the applicable hydraulic system (TASK 29-09-00-860-802).

SUBTASK 27-31-00-480-002

(6) Install the flight controls hydraulic module locks (Figure 202):

(a) Disconnect the electrical connectors from the flight controls shutoff valve at the flight controls hydraulic modules A and B.

(b) Examine the connectors for corrosion.

1) If corrosion is found, refer to SWPM 20-60-03 to correct the problem.

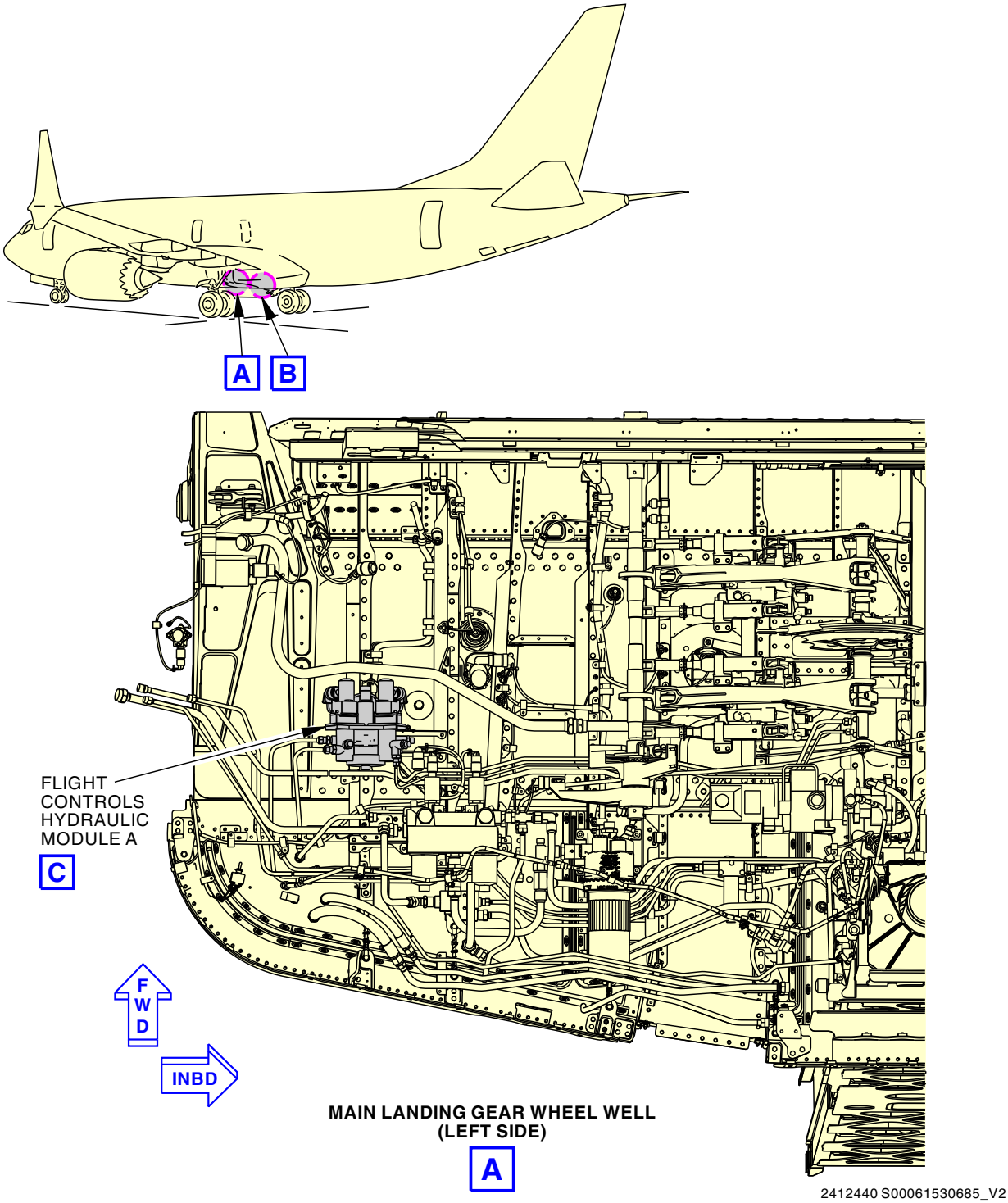
(c) Put the manual override lever at the two flight controls shutoff valves in the position 2 (OFF position).

(d) Install the lock, SPL-1675, on the two flight controls shutoff valves.

1) Install the lockpins.

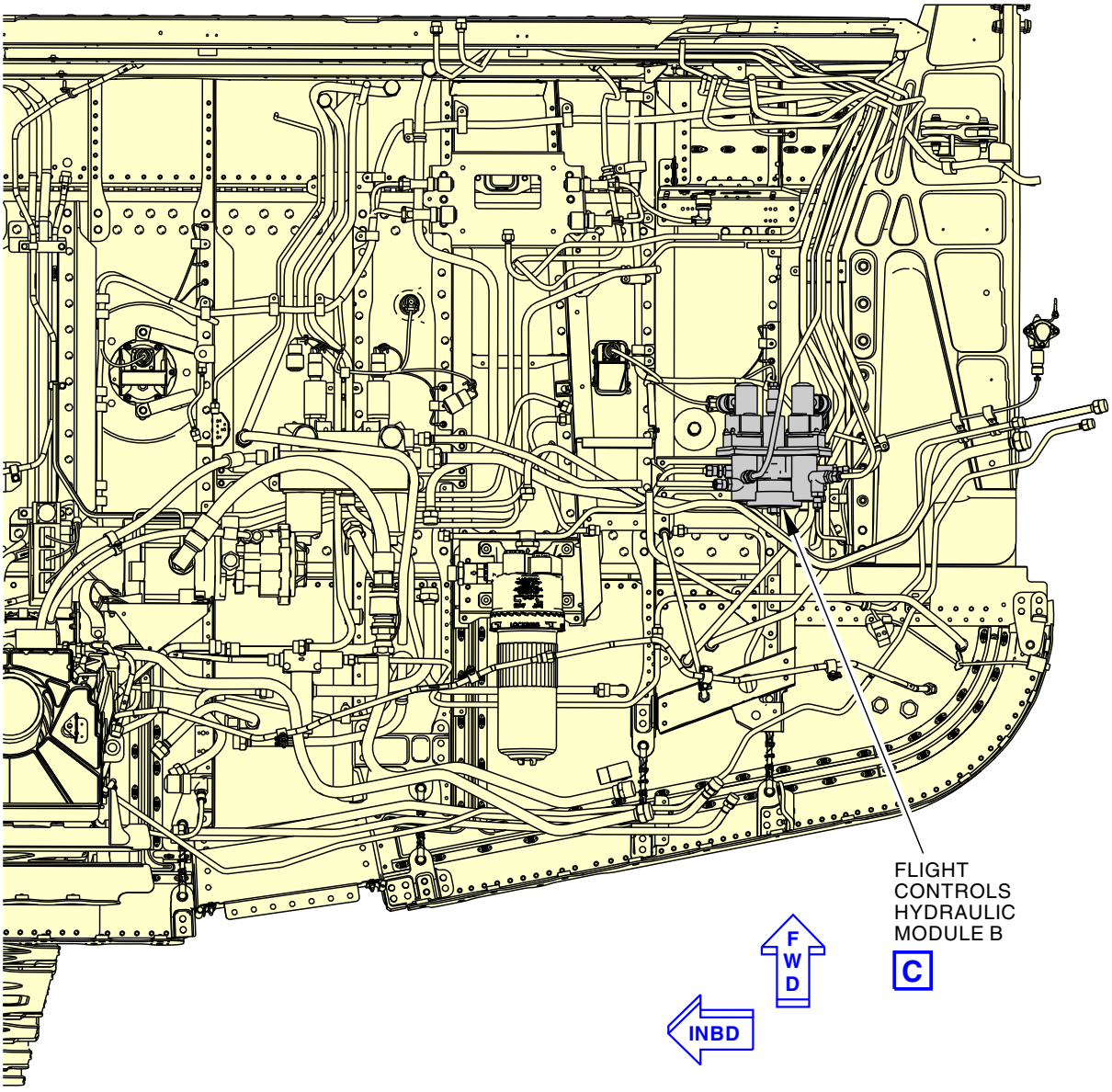
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



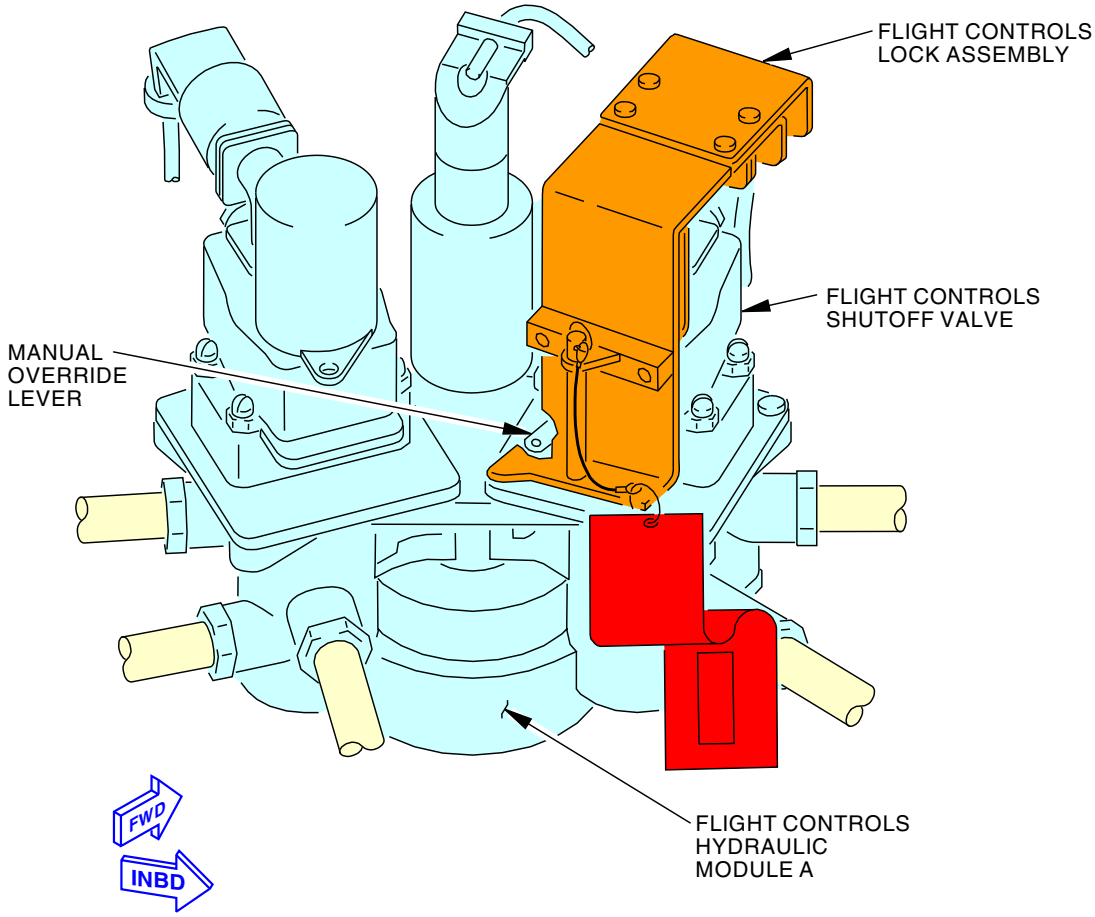
Flight Controls Hydraulic Module Lock Installation
Figure 202/27-31-00-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Lock Installation
Figure 202/27-31-00-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412442 S00061530687_V3

Flight Controls Hydraulic Module Lock Installation
Figure 202/27-31-00-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-840-802

5. Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal

(Figure 201, Figure 202)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-09-31-710-801	Flight Controls Shutoff Valve Test (P/B 501)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

E. Put the Elevator Systems A and B Back to the Condition Before the Pressure Removal

SUBTASK 27-31-00-080-002

(1) Remove the flight controls hydraulic module locks from the flight controls shutoff valves.

(a) Remove the lockpins.

(b) Remove the lock, SPL-1675, from the two flight controls shutoff valves.

(c) Put the manual override lever at the two flight controls shutoff valves in the position 1 (ON position).

(d) Examine the connectors for corrosion.

1) If there is corrosion, refer to SWPM 20-60-03 to correct the problem.

(e) Apply the D5026NS or ZC-026 compound, G50171, to the connectors (SWPM 20-60-03).

(f) Connect the electrical connectors to the flight controls shutoff valve at the flight controls hydraulic modules A and B.

SUBTASK 27-31-00-860-012

(2) Set the FLT CONTROL A and B switches on the forward overhead panel to the ON position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-013

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-31-00-860-157

(4) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel, P5, to the ON position.

SUBTASK 27-31-00-700-006

(5) Do a test of the flight controls shutoff valve (TASK 27-09-31-710-801).

SUBTASK 27-31-00-860-014

(6) If it is necessary, fill the hydraulic reservoirs (TASK 12-12-00-610-801).

——— END OF TASK ———

TASK 27-31-00-700-801

6. Null Procedure - Mach Trim Actuator

A. References

Reference	Title
22-11-00-993-825	Table: (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Test

SUBTASK 27-31-00-860-016

(1) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand, to the CUTOUT position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-017

(2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.

SUBTASK 27-31-00-860-018

(3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.

SUBTASK 27-31-00-860-019

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Supply hydraulic power to hydraulic systems A and B (TASK 29-11-00-860-801).

SUBTASK 27-31-00-010-001

(5) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-980-001

(6) Do these steps to set the B dimension:

NOTE: The B dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. To do this, one person must be in the tail of the airplane with a headset and the other person in the flight compartment.

(a) Turn the stab trim wheel handle on the control stand to set the B dimension.

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(b) Use the trammel bar, SPL-1677, to measure the B dimension.

(c) Make sure that the B dimension is 39.17 ±0.01 in. (994.92 ±0.26 mm).

F. Null Procedure for Mach Trim Actuator

SUBTASK 27-31-00-740-001

(1) Push the INIT REF key on the Control Display Unit (CDU) keyboard.

NOTE: It is necessary to follow all the on-screen instructions for this test.

(a) Push the Line Select Key (LSK) that is adjacent to each selection:

1) INDEX
2) MAINT
3) DFCS

NOTE: Whenever the DFCS LSK is selected the DFCS BITE test will run.

4) EXTENDED MAINTENANCE
5) RIGGING

SUBTASK 27-31-00-740-002

(2) Push the LSK adjacent to <ELEVATOR on the CDU.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-740-003

(3) Push the LSK adjacent to <ELEV RIG on the CDU.

SUBTASK 27-31-00-740-012

(4) Push CONTINUE.

SUBTASK 27-31-00-740-004

(5) Follow the instructions on the CDU and push the LSK adjacent to <CONTINUE until Test 51.02 MT ACT POS menu shows on the CDU.

NOTE: The DFCS BITE Rigging Test will move the mach trim actuator to the fully extended position.

SUBTASK 27-31-00-740-005

(6) Use Test 51.02 and 51.03 to make sure that the MT ACT POS for FCC channel A is within limits (Table 22-11-00-993-825).

NOTE: For Tests 51.02 and 51.03, there is no value for the B side; N/A.

SUBTASK 27-31-00-740-006

(7) Continue with test 51.02 until test 51.03 is displayed.

(a) Make sure that the value limits are within an acceptable range (Table 22-11-00-993-825).

(b) Look for “A” adjacent to the applicable LSK and make sure that the Z value shown is between the upper and lower limit.

NOTE: The null procedure for the mach trim actuator is complete.

SUBTASK 27-31-00-860-020

(8) Select PREV MENU (LSK 6R) on the CDU, and do the steps that follow:

(a) Select EXIT (LSK 6L) on the RIGGING INDEX screen.

(b) Complete the instructions on the END OF BITE RIGGING screen.

(c) Select CONTINUE (LSK 6L).

(d) Select EXIT (LSK 6L) on the TEST COMPLETE screen.

(e) Complete the instructions on the END OF DFCS screen.

(f) Select EXIT (LSK 6L).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-410-033

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-840-004

(2) Remove hydraulic power from hydraulic systems A and B (TASK 29-11-00-860-805).

SUBTASK 27-31-00-860-165

(3) Set the STAB TRIM PRI switch, S272, on the control stand, to the NORMAL position.

SUBTASK 27-31-00-860-166

(4) Set the left and right IRS select switches, on the P5 aft overhead panel, to the OFF position.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-200-801

7. Elevator Control Pushrod - Detailed Visual Inspection

(Figure 203)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

E. Elevator Control Pushrod Detailed Visual Inspection

SUBTASK 27-31-00-010-002

(1) Open these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

SUBTASK 27-31-00-860-021

(2) If hydraulic systems A and B have pressure, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-200-001

(3) Do a detailed visual inspection of the elevator control pushrods (on both elevators) (Figure 203).

(a) Make sure that all hardware is installed and secure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Check for unusual wear and loose parts at the two connection points of the elevator control pushrod.

NOTE: Try to wiggle or move connection bolts with hand pressure only.

SUBTASK 27-31-00-420-001

(4) Tighten and properly secure any loose items.

SUBTASK 27-31-00-960-001

(5) If replacement is necessary, replace any worn or loose parts with new hardware.

SUBTASK 27-31-00-410-001

(6) Close these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

SUBTASK 27-31-00-390-002

(7) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-00-741-001

(8) If hydraulic pressure in systems A and B is necessary, do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

TASK 27-31-00-200-802

8. Elevator Feel and Centering Unit Detailed Inspection

(Figure 203)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

B. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Detailed Inspection of the Elevator Feel and Centering Unit

SUBTASK 27-31-00-780-002

(1) If hydraulic systems A and B have pressure, remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-00-010-003

(2) Open these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-200-002

(3) Do a detailed inspection of the Elevator Feel and Centering Unit.

(a) Check for any hydraulic leaks at the actuator seals and hydraulic line connections.

(b) Check for unusual wear or loose parts at the Feel and Centering Unit connection points.

1) Make sure that all of the hardware is installed and secure.

a) Tighten and properly secure any loose items.

2) If replacement is necessary, replace any loose or worn hardware with new hardware.

SUBTASK 27-31-00-410-002

(4) Close these access panels:

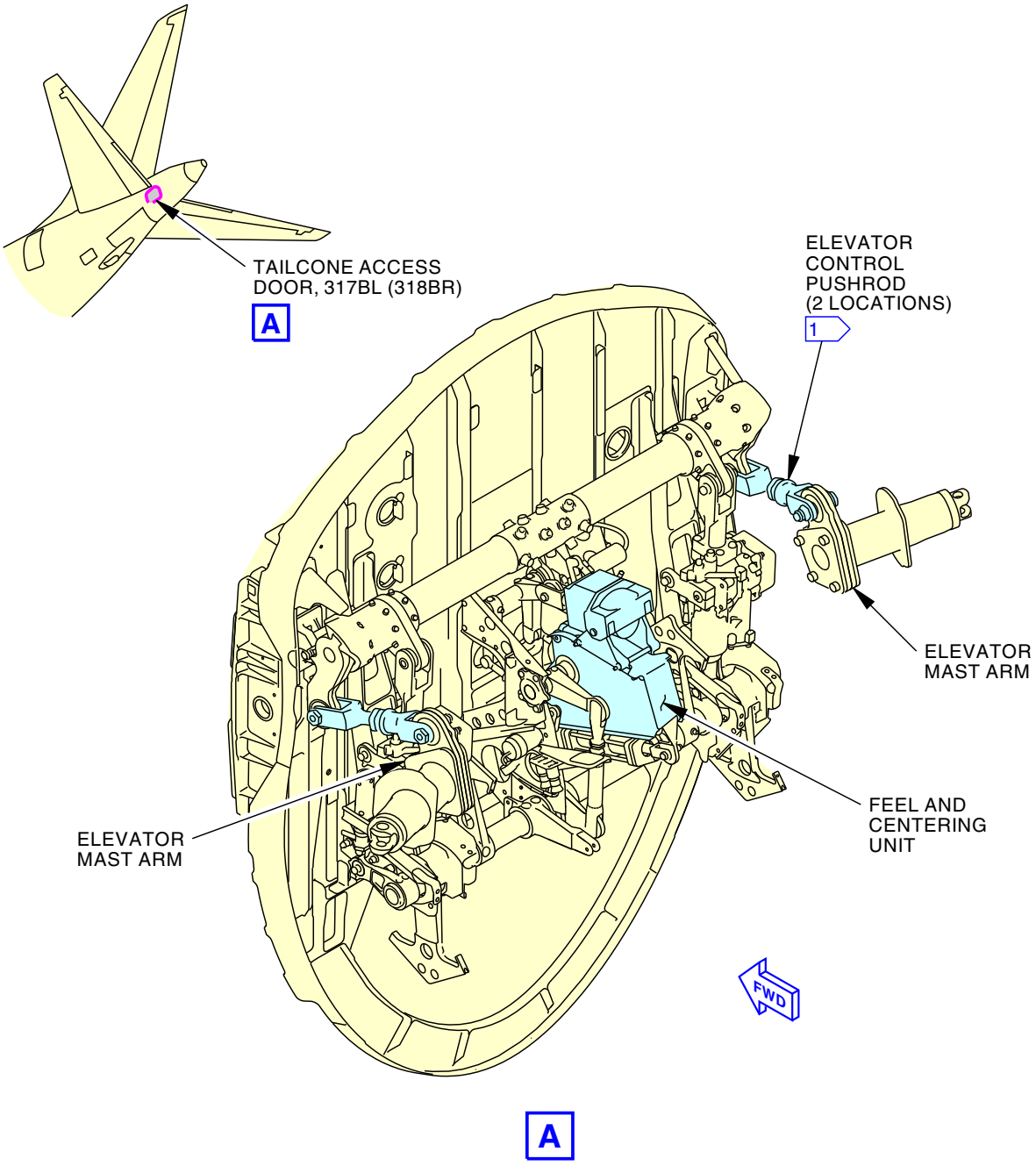
Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-840-001

(5) If you need hydraulic pressure in systems A and B, do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 ACCESS TO THE FORWARD ELEVATOR CONTROL PUSHROD CONNECTION POINT IS THROUGH THE TAILCONE ACCESS DOOR 317BL AND 318BR. ACCESS TO THE ELEVATOR CONTROL PUSHROD AFT CONNECTION POINT IS AT THE TOP OF THE ELEVATOR AT THE ELEVATOR MAST ARM.

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Elevator Feel and Centering Unit/Elevator Control Pushrod
Figure 203/27-31-00-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-211-801

9. Elevator Feel and Centering Unit Output Rod - Detailed Visual Inspection

Figure 204

A. General

(1) This procedure provides instructions for the detailed visual inspection of the elevator feel and centering unit output rod.

B. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

C. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

D. Detailed Visual Inspection of the Elevator Feel and Centering Unit Output Rod

SUBTASK 27-31-00-780-003

(1) If hydraulic systems A and B have pressure, remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-00-010-004

(2) Open these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-211-001

(3) Do a detailed visual inspection of the Elevator Feel and Centering Unit Output Rod:

(a) Check for unusual wear or loose parts at the Output Rod connection points.

1) Make sure that all of the hardware is installed and secure.

a) Tighten and properly secure any loose items.

2) If replacement is necessary, replace any loose or worn hardware with new hardware.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-410-003

(1) Close these access panels:

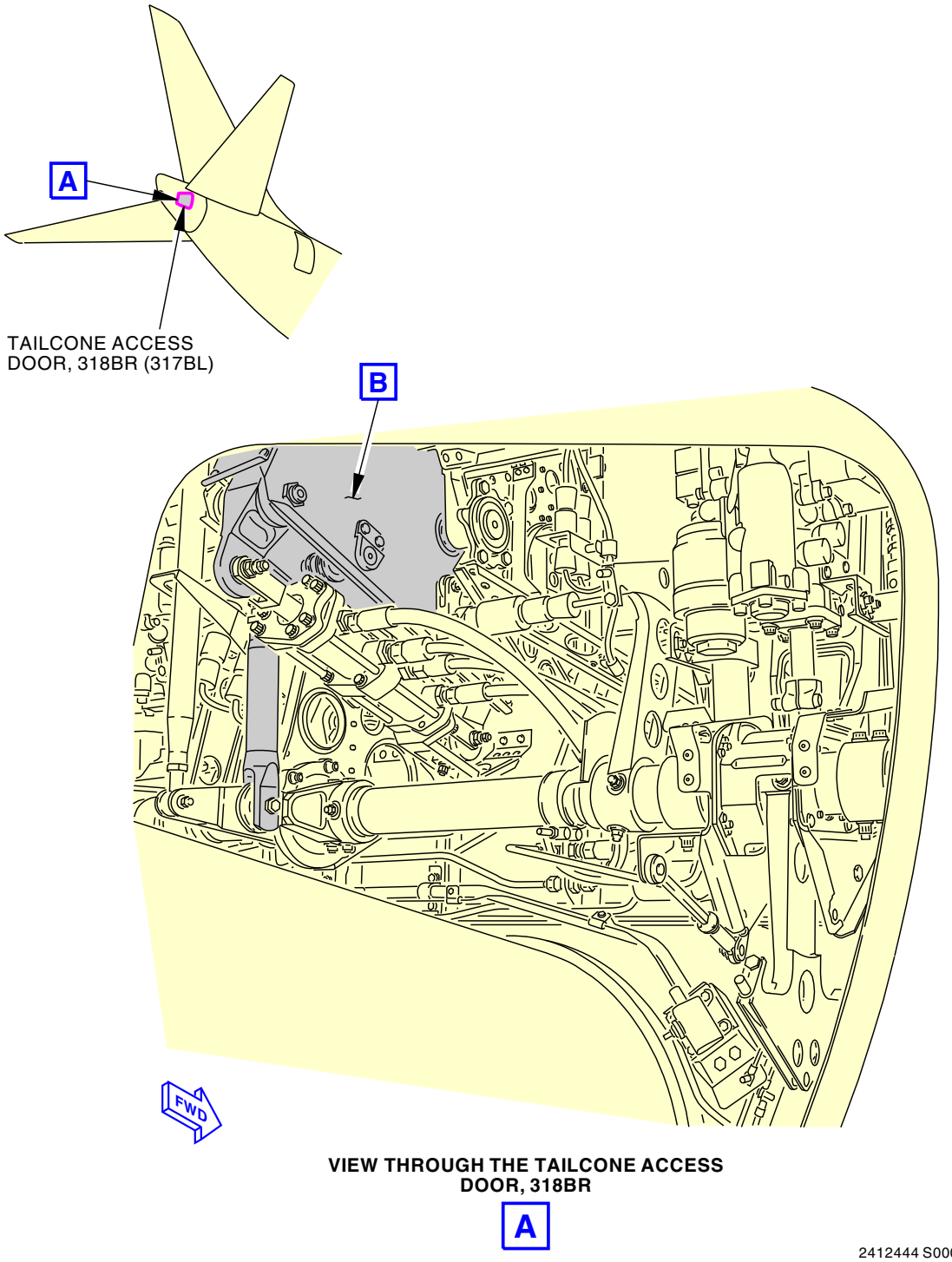
Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-840-002

(2) If necessary, apply hydraulic pressure in systems A and B (TASK 27-31-00-840-802).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



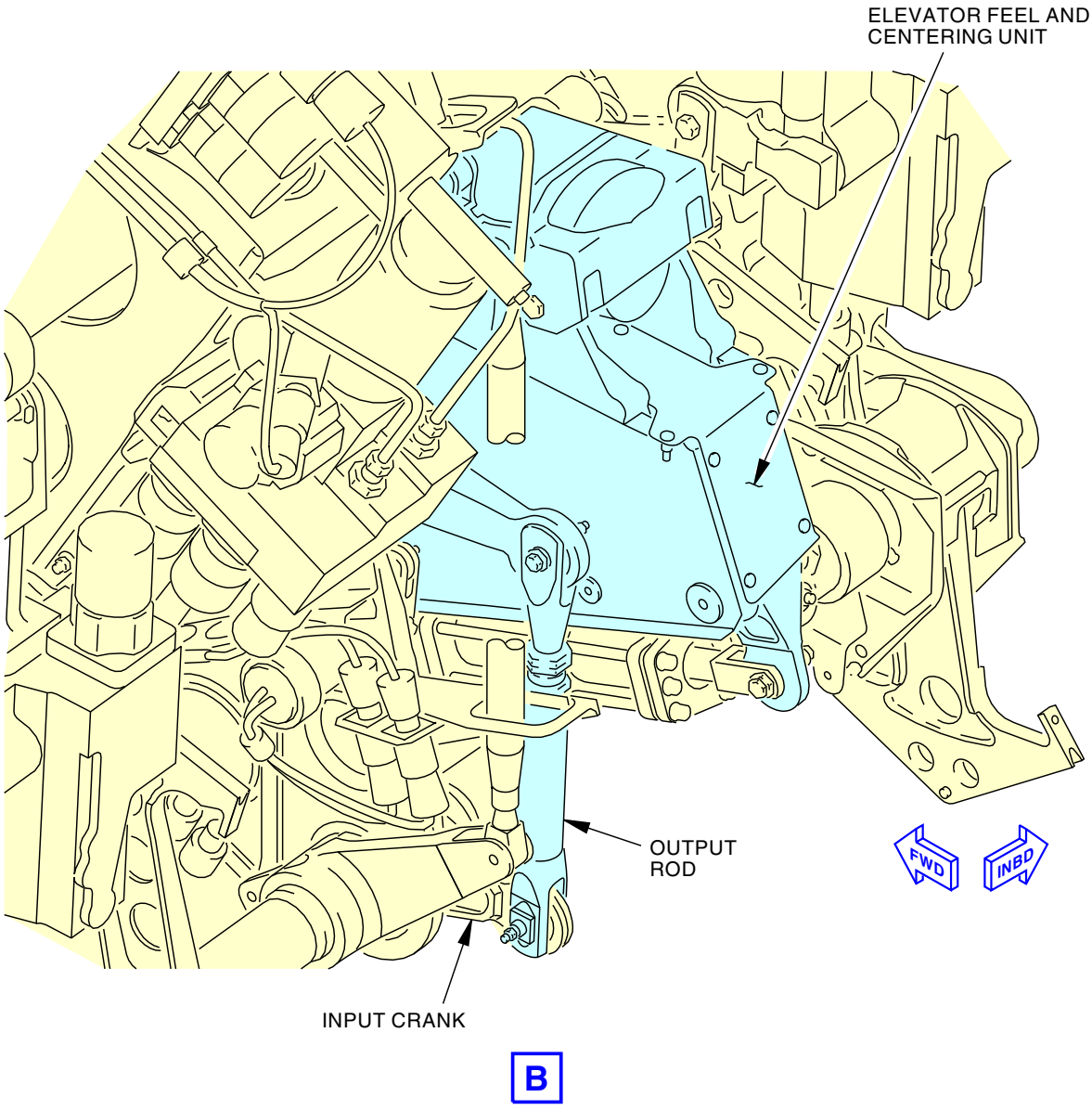
VIEW THROUGH THE TAILCONE ACCESS DOOR, 318BR

A

2412444 S00061530694_V2

Elevator Feel and Centering Unit Output Rod - Detailed Visual Inspection
Figure 204/27-31-00-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Elevator Feel and Centering Unit Output Rod - Detailed Visual Inspection
Figure 204/27-31-00-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-CMR-01

TASK 27-31-00-220-801

10. Elevator Tab and Tab Mechanism - Detailed Visual Inspection

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This procedure is a Certification Maintenance Requirement (CMR).

B. References

Reference	Title
27-31-31-400-801	Elevator Tab Installation (P/B 401)
27-31-34-400-801	Elevator Tab Control Mechanism - Installation (P/B 401)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

D. Location Zones

Zone	Area
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

F. Detailed Visual Inspection of the Elevator Tab and Tab Mechanism

SUBTASK 27-31-00-860-022

(1) Remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-00-010-005

(2) Open these access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-200-003

(3) Do a detailed visual inspection of the elevator tab hinges (Figure 205).

(a) Make sure that all hardware is installed and secure (TASK 27-31-31-400-801).

(b) Check for unusual wear and loose parts.

NOTE: Try to wiggle or move hinge bolts with hand pressure only.

(c) Inspect the lug assembly bearings to ensure the bearings are lubricated and in good condition.

SUBTASK 27-31-00-420-002

(4) Tighten and properly secure any loose items.

SUBTASK 27-31-00-960-002

(5) Replace, as necessary, with any new hardware.

SUBTASK 27-31-00-200-004

(6) Do a detailed inspection for security and condition of the elevator tab control mechanism and elevator tab pushrod attachment (Figure 206).

(a) Make sure that all hardware is installed and secure (TASK 27-31-34-400-801).

(b) Check for unusual wear or loose parts by lightly wiggling the pushrods.

SUBTASK 27-31-00-200-005

(7) Do a detailed visual inspection for security and condition of the elevator tab pushrod and elevator tab mast fitting to pushrod attachment (Figure 207).

(a) Turn the tab assembly trailing edge down so that the installation of the tab pushrods to the tab mast fittings are visible (TASK 27-31-34-400-801).

NOTE: This can also be done in the balanced mode with the trailing edge down.

SUBTASK 27-31-00-420-003

(8) Tighten and properly secure any loose items.

SUBTASK 27-31-00-960-003

(9) Replace, as necessary, with any new hardware.

SUBTASK 27-31-00-860-023

(10) Put the Elevator Hydraulic Systems A and B back to the condition before the pressure removal (TASK 27-31-00-840-802).

SUBTASK 27-31-00-410-004

(11) Close these access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-390-004

(12) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

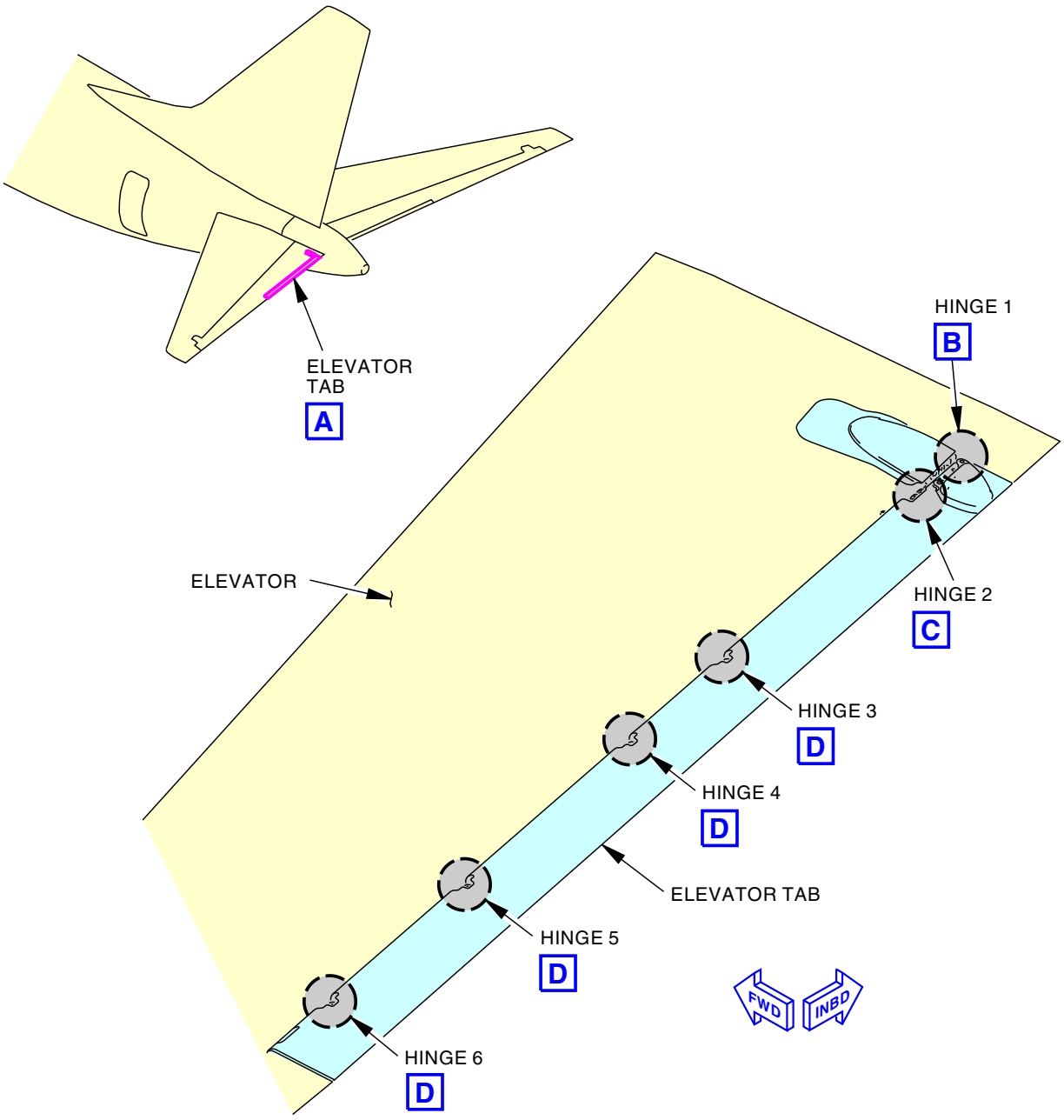
(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-00-840-003

(13) Put the airplane back to its normal condition.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



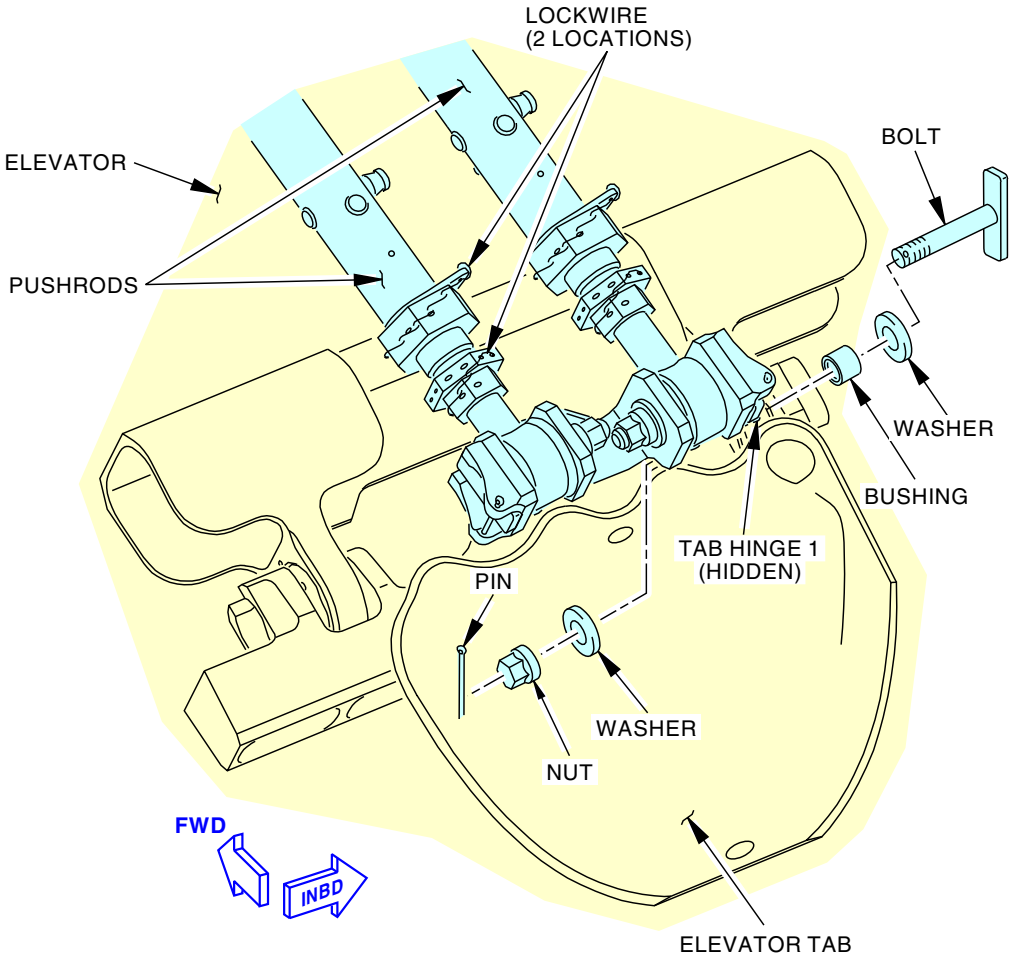
LEFT ELEVATOR TAB
(RIGHT ELEVATOR TAB IS OPPOSITE)

A

2412446 S00061530697_V1

Elevator Tab Hinges - Inspection
Figure 205/27-31-00-990-805 (Sheet 1 of 3)

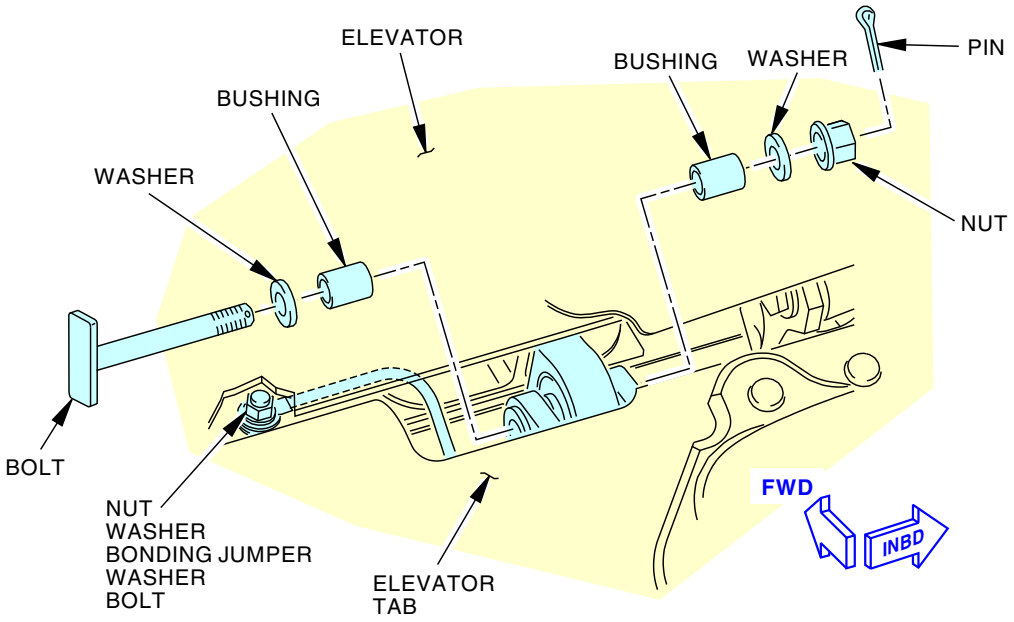
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412447 S00061530698_V2

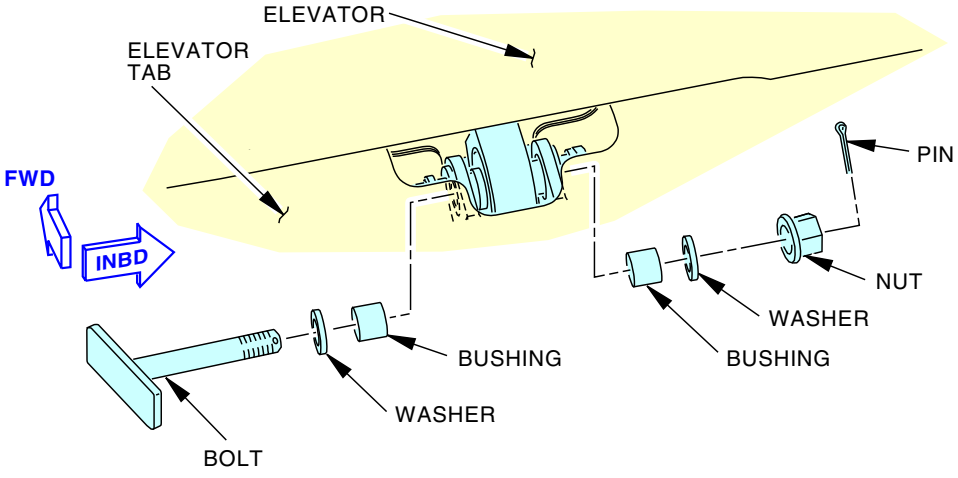
Elevator Tab Hinges - Inspection
Figure 205/27-31-00-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HINGE 2

C



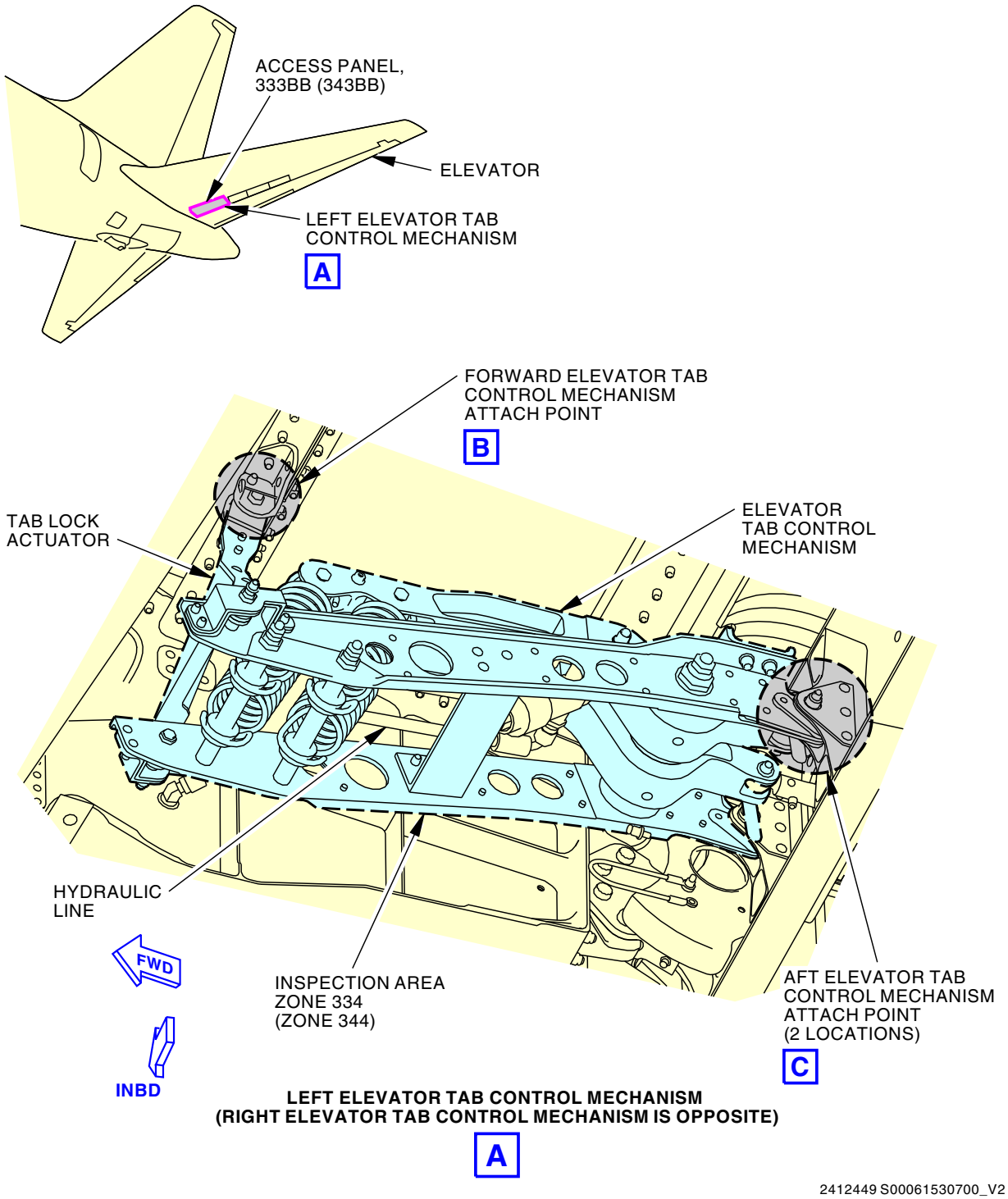
HINGE 3
(HINGES 4, 5, AND 6 ARE EQUIVALENT)

D

2412448 S00061530699_V1

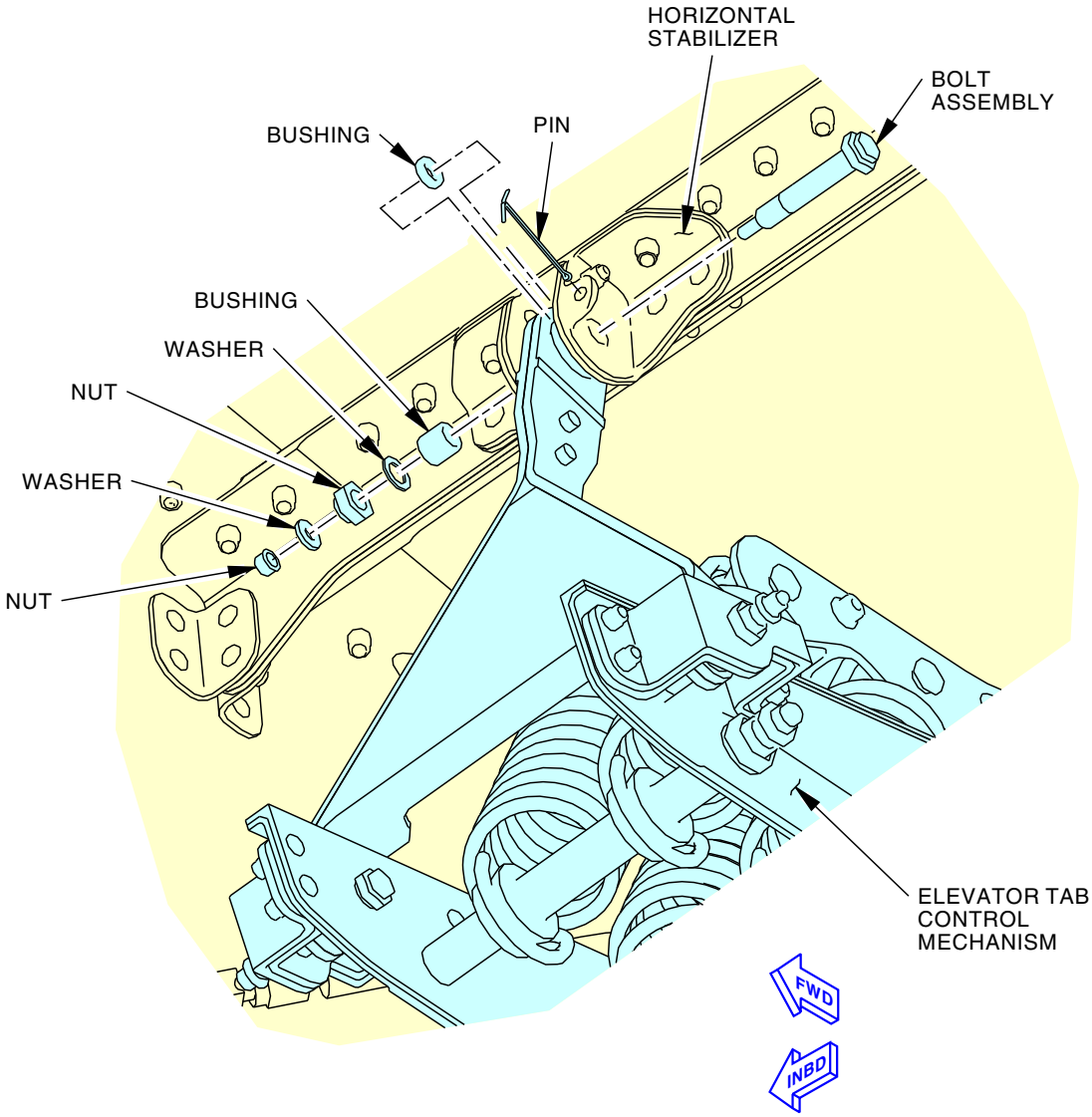
Elevator Tab Hinges - Inspection
Figure 205/27-31-00-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Mechanism and Elevator Tab Pushrod Attachment - Inspection
Figure 206/27-31-00-990-806 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



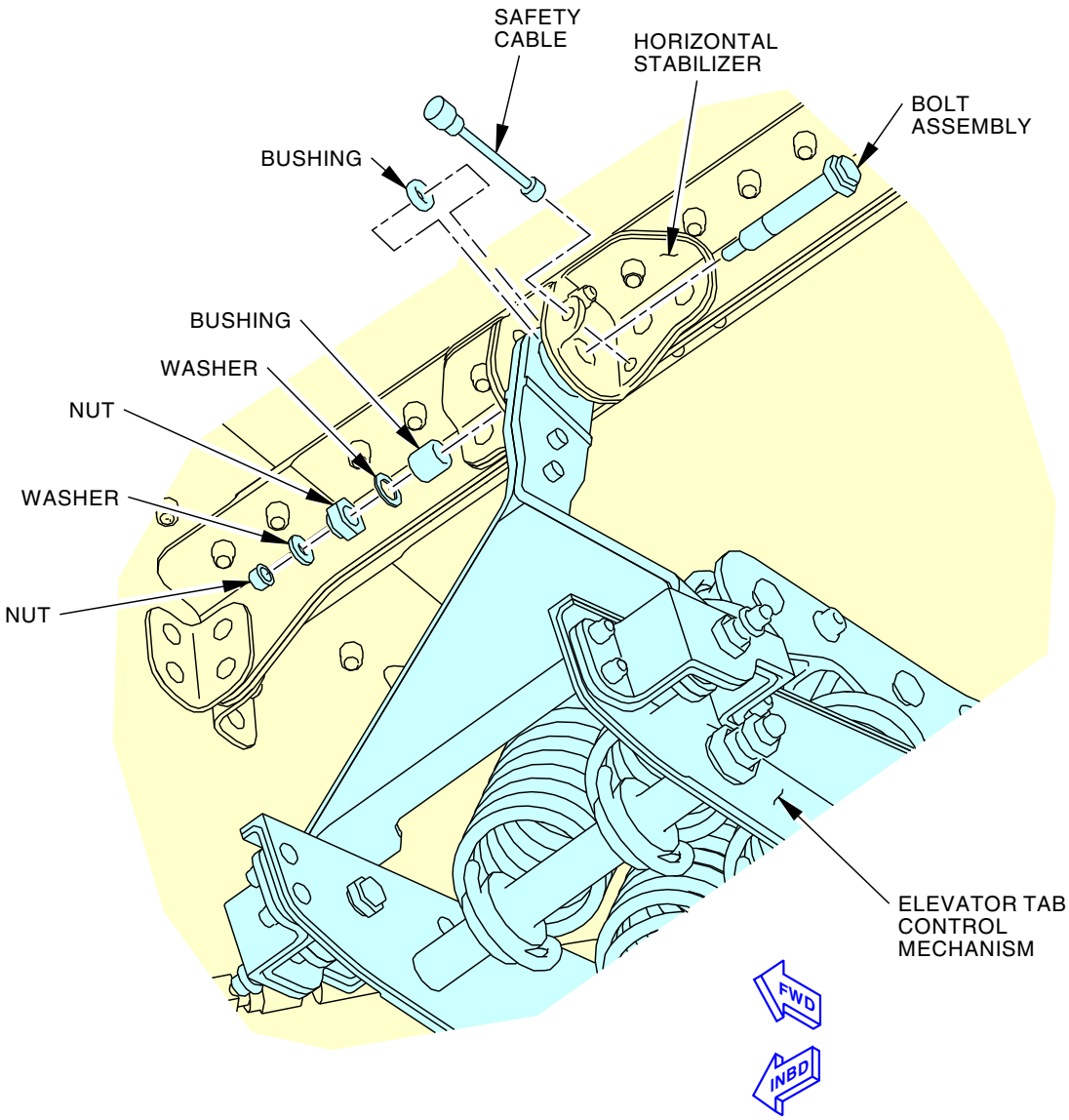
FORWARD ELEVATOR TAB CONTROL MECHANISM ATTACH POINT

B

2412450 S00061530701_V3

Elevator Tab Control Mechanism and Elevator Tab Pushrod Attachment - Inspection
Figure 206/27-31-00-990-806 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



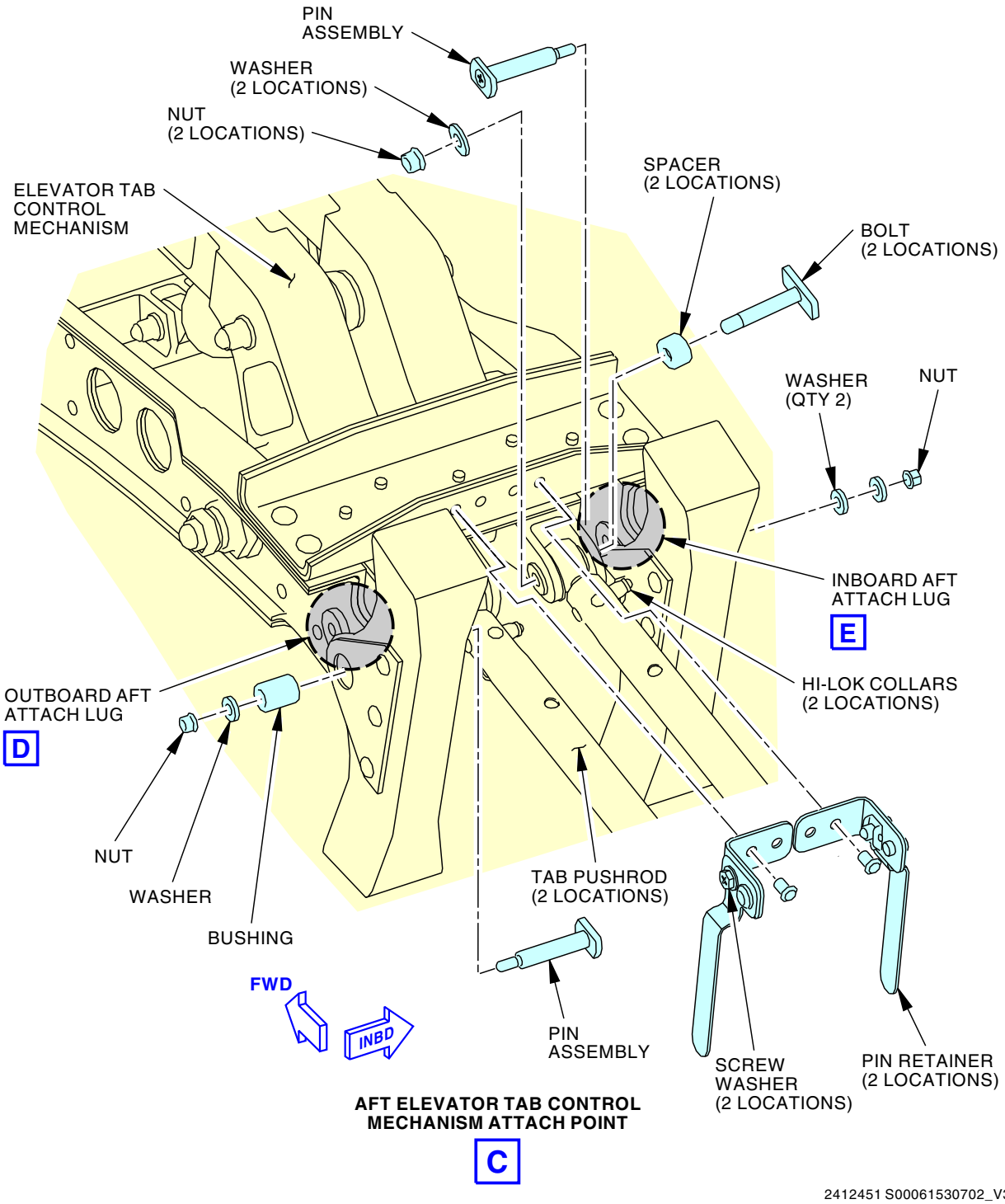
FORWARD ELEVATOR TAB CONTROL MECHANISM ATTACH POINT

B

2978808 S0000757155_V1

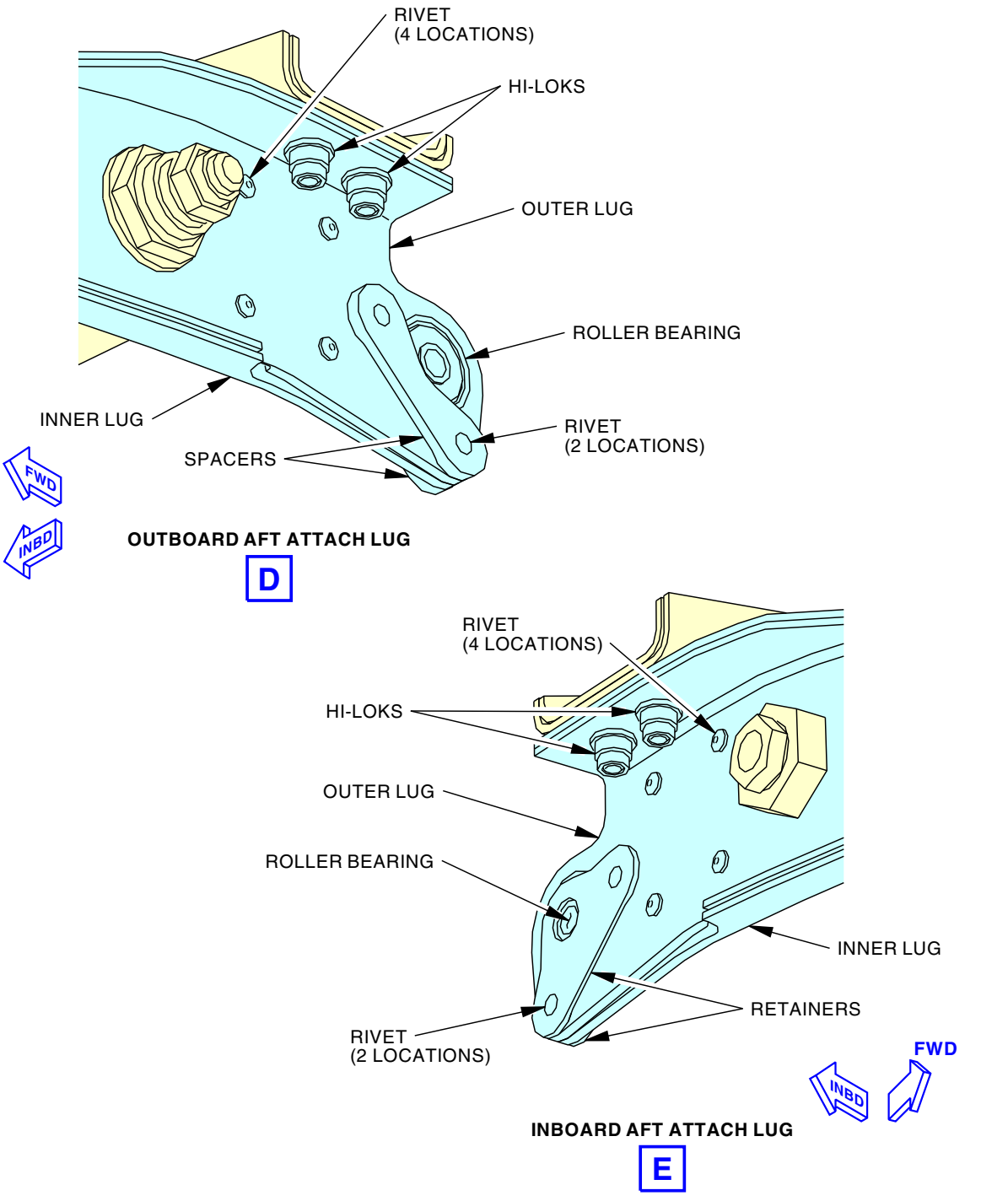
Elevator Tab Control Mechanism and Elevator Tab Pushrod Attachment - Inspection
Figure 206/27-31-00-990-806 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



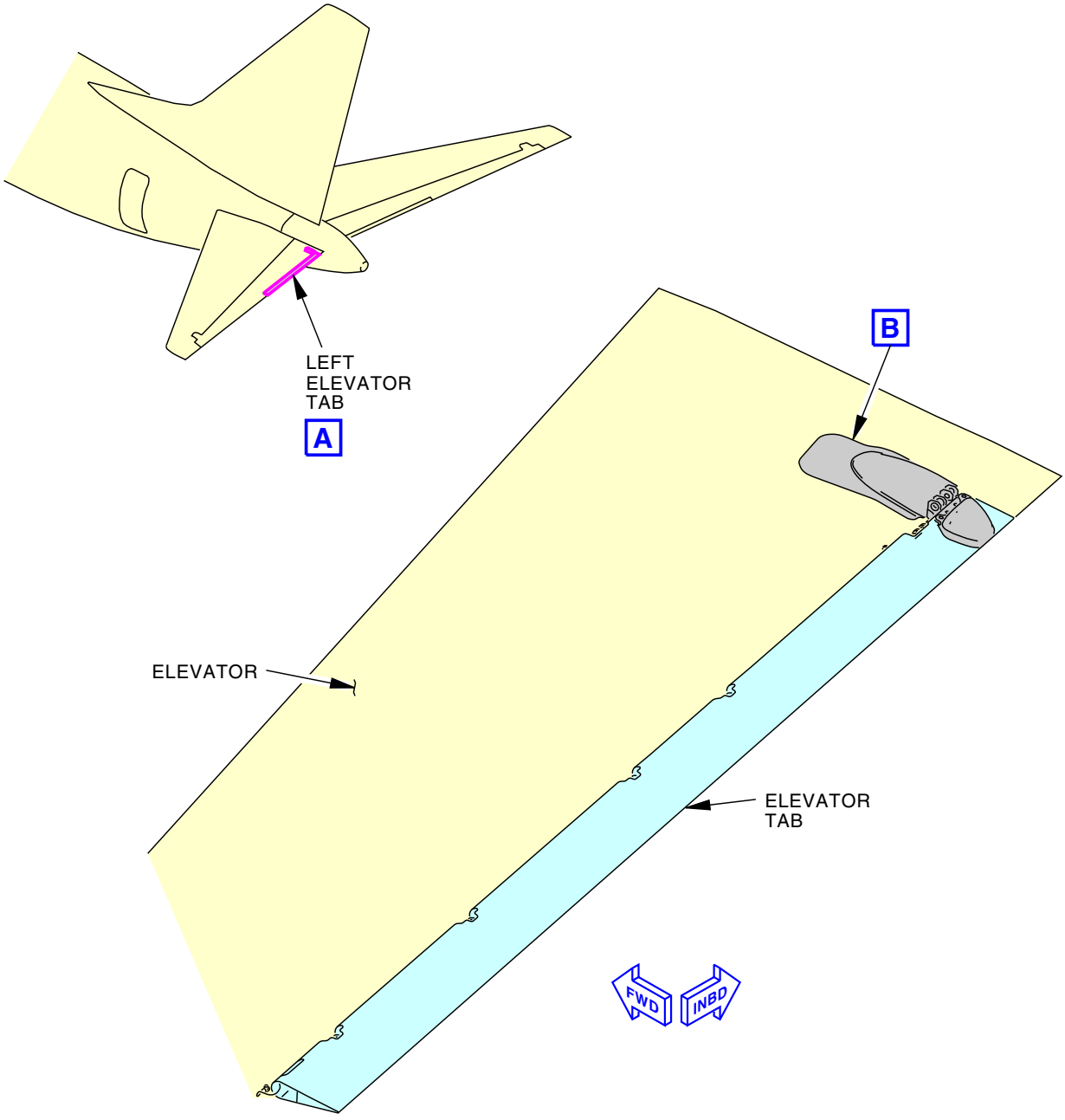
Elevator Tab Control Mechanism and Elevator Tab Pushrod Attachment - Inspection
Figure 206/27-31-00-990-806 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Mechanism and Elevator Tab Pushrod Attachment - Inspection
Figure 206/27-31-00-990-806 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



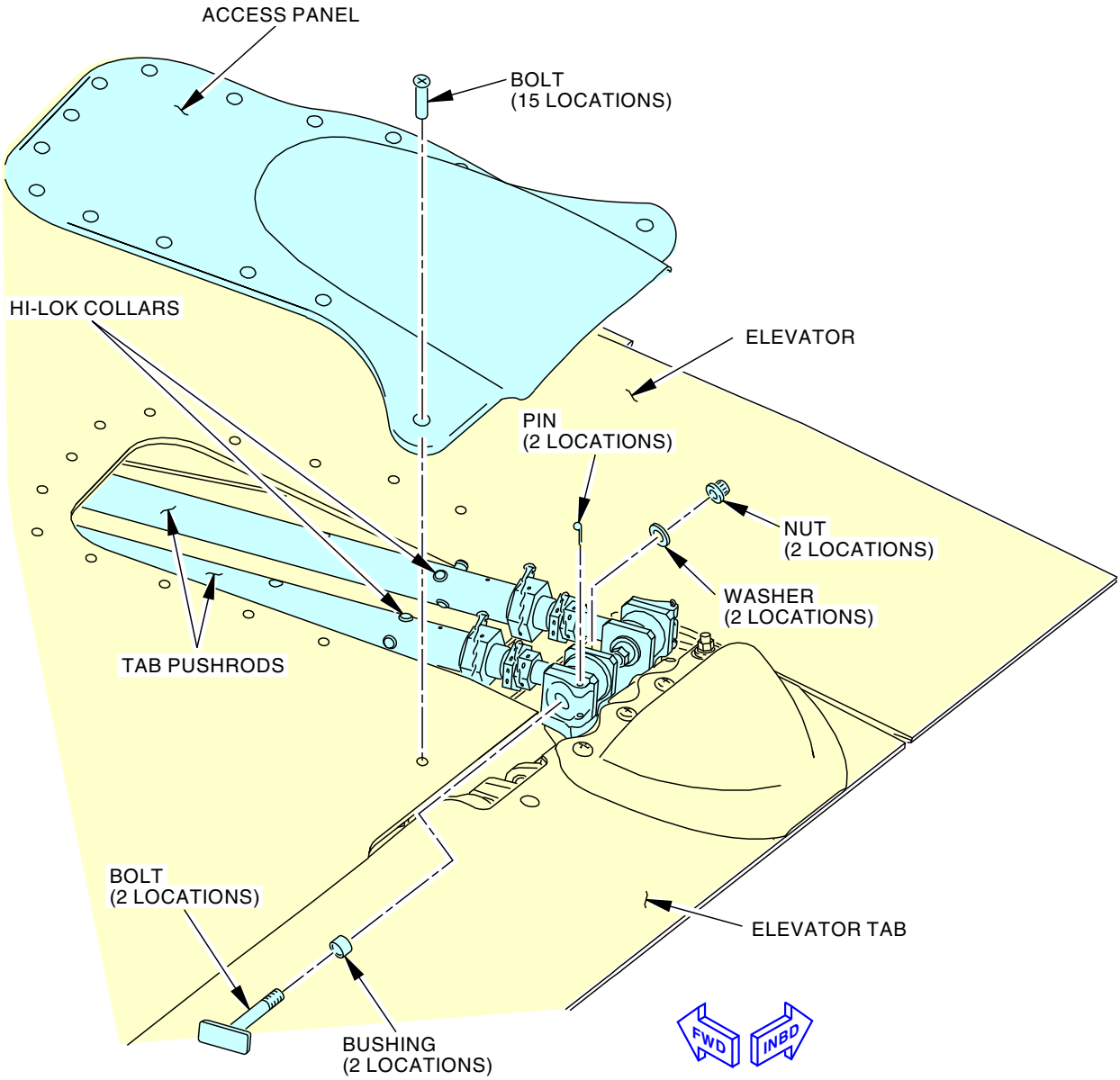
LEFT ELEVATOR TAB
(RIGHT ELEVATOR TAB IS OPPOSITE)

A

2412453 S00061530704_V1

Elevator Tab Pushrod and Elevator Tab Mast Fitting to Pushrod Attachment - Inspection
Figure 207/27-31-00-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Pushrod and Elevator Tab Mast Fitting to Pushrod Attachment - Inspection
Figure 207/27-31-00-990-807 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-000-801

11. Elevator and Tab Control System - Deactivation

(Figure 208)

A. General

(1) Use this task to deactivate the elevator and tab control system.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Deactivation of the Elevator and Tab Control System

SUBTASK 27-31-00-860-025

(1) Set the FLT CONTROL A and B switches on the forward overhead panel to the OFF position.

SUBTASK 27-31-00-860-026

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-31-00-860-027

(3) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC

SUBTASK 27-31-00-040-001

(4) Install the flight controls lock assembly:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Disconnect the electrical connector from the flight controls shutoff valve at the flight controls hydraulic modules A and B.

NOTE: For hydraulic system A, the flight control shut off valve is mounted on the inboard side of the hydraulic module A in the left main wheel well. For hydraulic system B, the flight control shutoff valve is mounted on the outboard side of the hydraulic module B in the right main wheel well.

(b) Put the manual override lever at the two flight controls shutoff valves in the position 2 (OFF position).

(c) Install the lock, SPL-1675, on the two flight control shut off valves.

1) Install the lockpins.

SUBTASK 27-31-00-780-004

(5) Move the control column forward and aft to decrease the remaining hydraulic system pressure until the display unit shows less than 60 psi (414 kPa) for System Hydraulics A and B.

NOTE: You can view the hydraulic pressure, for the applicable system, on the display unit for the engine display.

SUBTASK 27-31-00-210-002

WARNING

MAKE SURE THAT THERE IS NO PRESSURE IN THE HYDRAULIC SYSTEM. PRESSURE IN THE HYDRAULIC SYSTEM CAN MOVE THE CONTROL SURFACES, CABLES, LANDING GEARS, AND LANDING GEAR DOORS QUICKLY. THEIR MOVEMENT CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(6) Do the elevator and tab control system tryout.

NOTE: This tryout is to make sure that the elevator and tab control system is in a zero energy state.

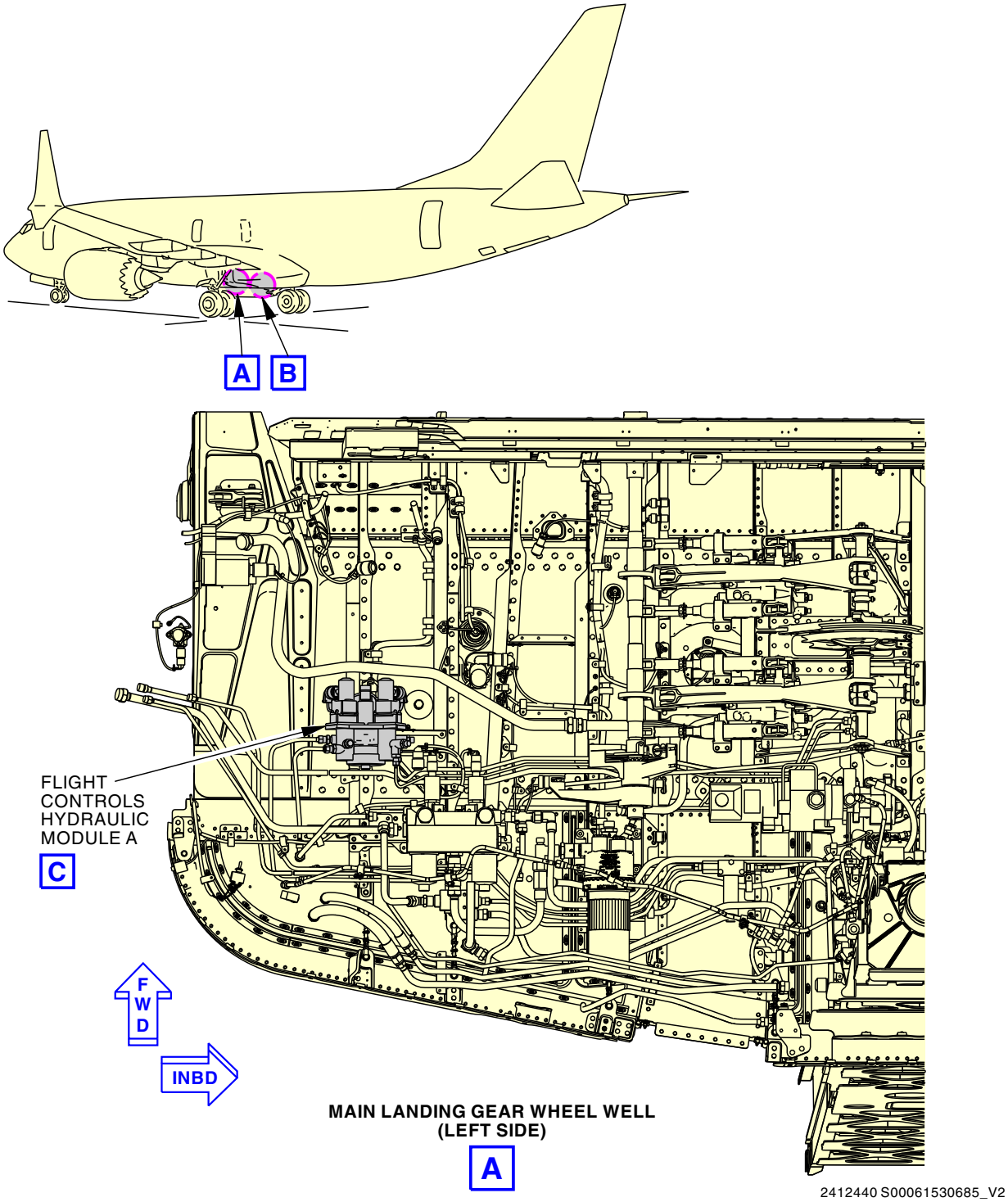
(a) Move the captain's control column forward and aft.

1) Make sure that the column forces are much higher than usual and that a small dead band condition exist when the direction is changed.

(b) Install a DO NOT OPERATE tag on the captain's and first officer's control wheel.

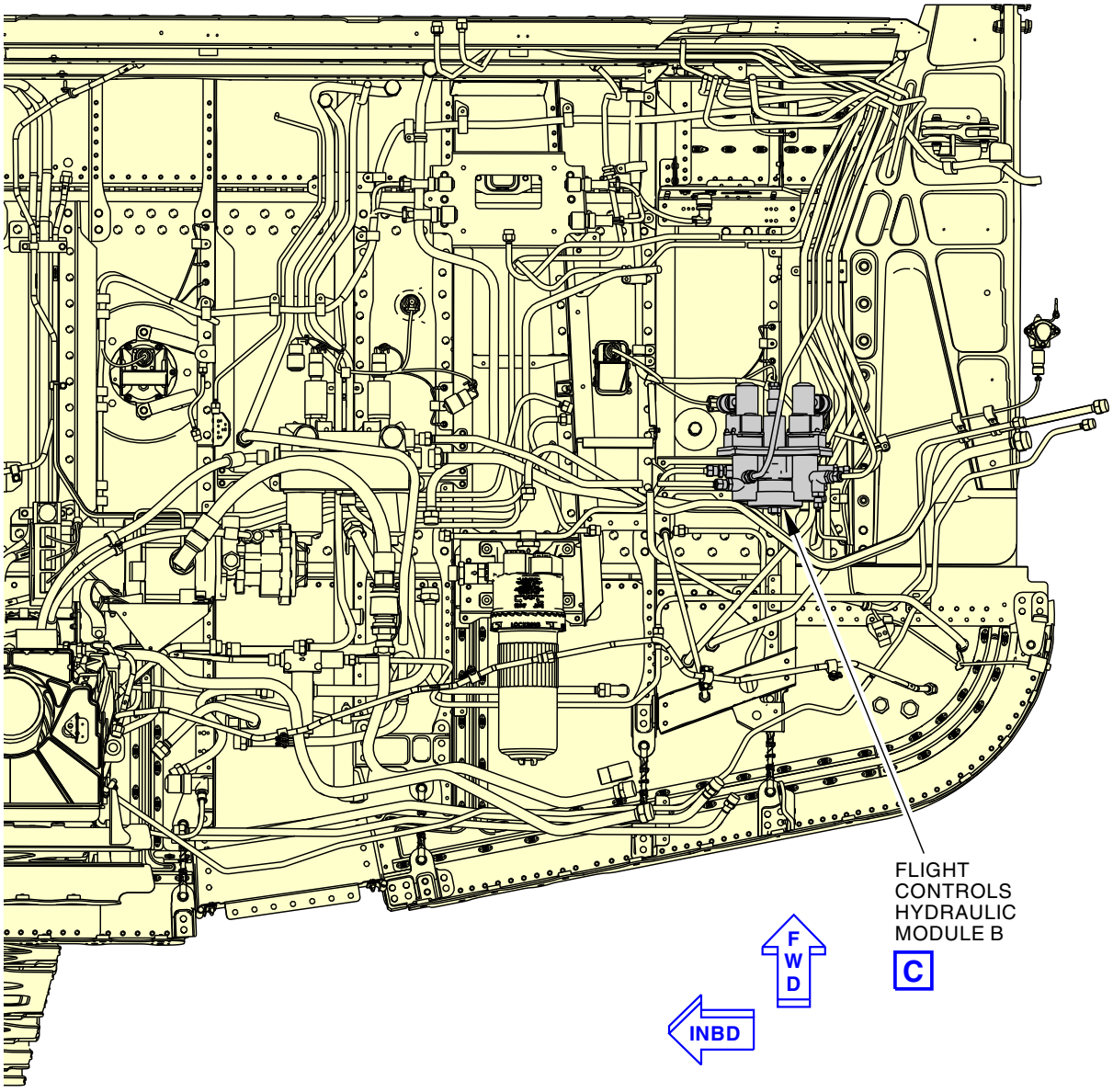
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



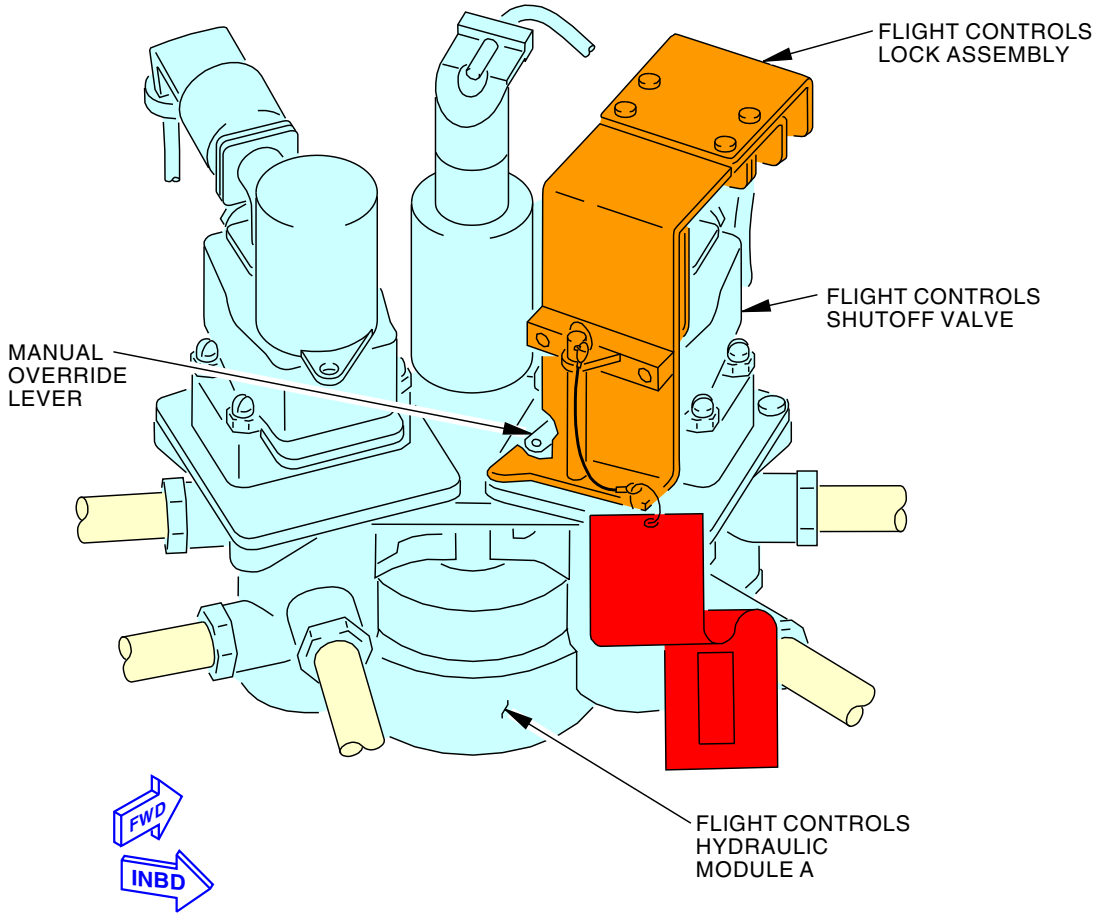
Flight Controls Hydraulic Module Lock Installation
Figure 208/27-31-00-990-808 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Lock Installation
Figure 208/27-31-00-990-808 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2412442 S00061530687_V3

Flight Controls Hydraulic Module Lock Installation
Figure 208/27-31-00-990-808 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-400-801

12. Elevator and Tab Control System - Activation

(Figure 208)

A. General

(1) Use this task to activate the elevator and tab control system.

B. References

Reference	Title
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Activation of the Elevator and Tab Control System

SUBTASK 27-31-00-860-028

(1) Remove the flight controls lock assembly from the flight controls shutoff valves:

(a) Remove the lockpins.

(b) Remove the lock, SPL-1675, from the two flight controls shutoff valves.

(c) Put the manual override lever at the two flight controls shutoff valves in the position 1 (ON position).

(d) Examine the electrical connectors for corrosion.

1) If there is corrosion, refer to SWPM 20-60-03 to correct the problem.

(e) Apply D5026NS or ZC-026 compound, G50171 to the connectors (SWPM 20-60-03).

(f) Connect the electrical connector to the flight controls shutoff valve at the flight controls hydraulic modules A and B.

SUBTASK 27-31-00-440-001

(2) Set the FLT CONTROL A and B switches on the P5 forward overhead panel to the ON position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-410-005

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

SUBTASK 27-31-00-410-006

(4) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC

SUBTASK 27-31-00-080-003

(5) Remove the DO NOT OPERATE tag on the captain's and first officer's control wheel.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR AND ELEVATOR TRIM CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Operational Test - Elevator and Elevator Trim Control System - Use this task to do a quick check of the elevator control system.1

(2) Operational Test - Elevator Tab Control System - Use this task to do a quick check of the elevator tab control system.

(3) Operational Test - Elevator Control Column Override - Use this task to do a quick check of the control column override assembly.

(4) Functional Test - Elevator Control Column Override - Use this task to do a functional check of the control column override assembly.

(5) Elevator Control Cables EA and EB and Pitch Force Transducers Adjustment - Use this task to adjust the elevator control cable and pitch force transducers.

(6) Pitch Force Transducer Operational Test - Use this task to do an operational test of the pitch control wheel steering force transducers.

(7) Elevator Control Pushrods Adjustment - Use this task to adjust the control pushrods which connect the elevator to the output torque tube.

(8) Input Rods of the Elevator Power Control Unit - Use this task to adjust the two input rods (primary and secondary) of the right and left elevator power control units (PCUs).

(9) Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit Adjustment - Use this task to adjust the input rods which connect the neutral shift mechanism to the stabilizer. It also includes steps to adjust the output rod which connect the feel and centering unit to the input torque tube.

(10) Elevator Tab Pushrods Adjustment - Use this task to adjust the elevator tab pushrods.

(11) Input Rod of the Elevator Feel Computer Adjustment - Use this test to adjust the input rod (stabilizer pushrod) of the elevator feel computer.

(12) Elevator Surface Friction and Balance Test - Use this task to make sure the elevators are balanced.

(13) Elevator Balance Panels Test - Use this test to make sure the elevator balance panels are installed properly.

(14) Elevator Limit Travel Test - Use this test to make sure the elevator operates correctly.

(15) Elevator Output Torque Tube Linkage Test - Use this task to do a check of the elevator output torque tube bus linkage.

(16) Elevator Tab Linkage Test - Use this task to do a check of the elevator tab control system.

(17) Manual Mode Test - Use this task to make sure the control columns and control wheels operate freely.

(18) Control Column Travel and Centering Test - Use this test to make sure the control columns can move through their full travel. This test also includes the centering test of the control columns.

(19) Control Column Power Force Test - Use this test to make sure the control columns move with a correct force.

(20) Neutral Shift Test - Use this test to make sure the neutral shift mechanism moves the elevator correctly when the stabilizer moves. When the stabilizer moves, it provides input to the elevator PCUs.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(21) Feel Differential Pressure Light Test - Use this test to make sure the FEEL DIFF PRESS light and the trailing edge flaps switch, S1051 operate correctly.

(22) Feel Differential Pressure Light Test - Use this test to make sure the FEEL DIFF PRESS light operates correctly.

(23) Pitot Probe Leak Test - Use this test to make sure there is no leakage at the pitot probes.

(24) Feel Force System Test - Use this test to make sure the elevator feel computer operates correctly. The elevator feel computer changes the control columns forces as the airspeed changes.

(25) Sensor Null Test - Use this test to make sure the elevator is in the correct rig position with DFCS Computer BITE.

(26) Elevator PCU Input Rod (Pogo) Functional Test - Use this task to do a check of force required to compress and extend each input rod (pogo) of the elevator power control unit (PCU).

(27) Elevator Power Off Flight Test

(28) Elevator Tab Pushrod Adjustment after the Elevator Power Off Flight Test

(29) Elevator Jam Landing Assist Test

TASK 27-31-00-710-801

2. Elevator and Elevator Trim Control System - Operational Test

A. General

(1) Use this task to do a quick check of the elevator control system.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Elevator and Elevator Trim Control System Operational Test

SUBTASK 27-31-00-860-029

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-710-001

(2) Operate the control column with the systems A and B hydraulic power:

(a) Set the FLT CONTROL A and B switches, on the forward overhead panel, P5, to the ON position.

(b) Move the control column full aft.

1) Make sure that the elevators move full up and the system operates smoothly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Move the control column full forward.

1) Make sure that the elevators move full down and the system operates smoothly.

SUBTASK 27-31-00-710-002

(3) Operate the control column with the system B hydraulic power:

(a) Set the FLT CONTROL A switch, on the forward overhead panel, P5, to the OFF position.

(b) Move the control column full aft.

1) Make sure that the elevators move full up and the system operates smoothly.

(c) Move the control column full forward.

1) Make sure that the elevators move full down and the system operates smoothly.

SUBTASK 27-31-00-710-003

(4) Operate the control column with the system A hydraulic power:

(a) Set the FLT CONTROL A switch, on the forward overhead panel, P5, to the ON position.

(b) Set the FLT CONTROL B switch, on the forward overhead panel, P5, to the OFF position.

(c) Move the control column full aft.

1) Make sure that the elevators move full up and the system operates smoothly.

(d) Move the control column full forward.

1) Make sure that the elevators move full down and the system operates smoothly.

SUBTASK 27-31-00-860-030

(5) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———

TASK 27-31-00-700-802

3. Elevator Tab Control System - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to do a quick check of the elevator tab control system.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Test

SUBTASK 27-31-00-860-031

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-00-860-032

(2) Make sure that the flaps are in the full up position.

SUBTASK 27-31-00-860-033

(3) Make sure that the control column is in the neutral position.

SUBTASK 27-31-00-760-001

(4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

E. Operational Test - Elevator Tab Control System

SUBTASK 27-31-00-730-001

(1) Do the operational test of the elevator tab control system:

(a) Move and hold the control column full aft.

1) Make sure that the elevator tabs move down.

(b) Move and hold the control column full forward.

1) Make sure that the elevator tabs move up.

(c) Release the control column.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Cycle the control column and return it to neutral.

(e) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

(f) Set the flaps to the 5 degree position.

(g) Move and hold the control column full forward.

1) Make sure that the left elevator tab is below the elevator and the right elevator tab is above the elevator.

(h) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

1) Make sure that there is an 8-12 second time delay before the right elevator tab begins to move.

(i) Cycle the control column full forward and full aft.

1) Make sure that both elevator tabs move in the same direction as the elevators.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-034

(1) Set the flaps to the full up position.

SUBTASK 27-31-00-860-035

(2) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———

TASK 27-31-00-710-802

4. Elevator Control Column Override - Operational Test

A. General

(1) Use this task to do a quick check of the elevator control column override assembly.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Elevator Control Column Override - Operational Test

SUBTASK 27-31-00-860-036

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-710-004

(2) Do an operational test of the elevator control column override:

(a) Override Test of the First Officer's Control Column:

1) Push the captain's and first officer's control columns forward.
2) Hold the captain's control column forward (against the forward stop).
3) Pull the first officer's control column aft.
4) Make sure that you can pull the first officer's control column aft.
5) Release the captain's and first officer's control columns go to the neutral position.

(b) Override Test of the Captain's Control Column:

1) Push the captain's and first officer's control columns forward.
2) Hold the first officer's control column forward (against the forward stop).
3) Pull the captain's control column aft.
4) Make sure that you can pull the captain's control column aft.
5) Release the captain's and first officer's control columns go to the neutral position.

SUBTASK 27-31-00-860-037

(3) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———

TASK 27-31-00-720-801

5. Elevator Control Column Override - Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to do a functional check of the elevator control column override.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
STD-755	Scale - Spring, Push/Pull Type, 0 - 150lbs (0 - 68kg) Capacity

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Elevator Control Column Override - Functional Test

SUBTASK 27-31-00-860-038

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-710-005

(2) Do the functional test of the elevator control column override:

(a) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

1) Put a 6 in. (152 mm) strip of adhesive tape vertically on the right elevator index plate (View A,Figure 501, Sheet 2).

2) Make a mark on the tape where the upper surface of the right elevator trailing edge would extend to the tape.

3) Attach the spring scale, STD-755, and adapter, SPL-1674, to the captain's control column.

NOTE: The force gage is a push pull scale for measuring control column loads.

4) Block the first officer's control wheel in the neutral position.

NOTE: One mechanic can hold the first officer's control wheel steady in the neutral position.

5) Slowly pull the captain's control column aft and hold at a minimum right elevator position of 1.95 ±0.05 in. (50 ±2 mm) (Figure 501, Sheet 1).

6) Make sure that the captain's control column force is 40 lbf (178 N) - 100 lbf (445 N).

7) Release the captain's control column slowly to center the system.

(b) Push the captains's control column slowly forward and hold at a minimum right elevator position of 1.95 ±0.05 in. (50 ±2 mm)(Figure 501, Sheet 1).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that the captain's control column force is 32 lbf (142 N) - 102 lbf (454 N).

(d) Remove the spring scale, STD-755, and adapter, SPL-1674, from the captain's control column.

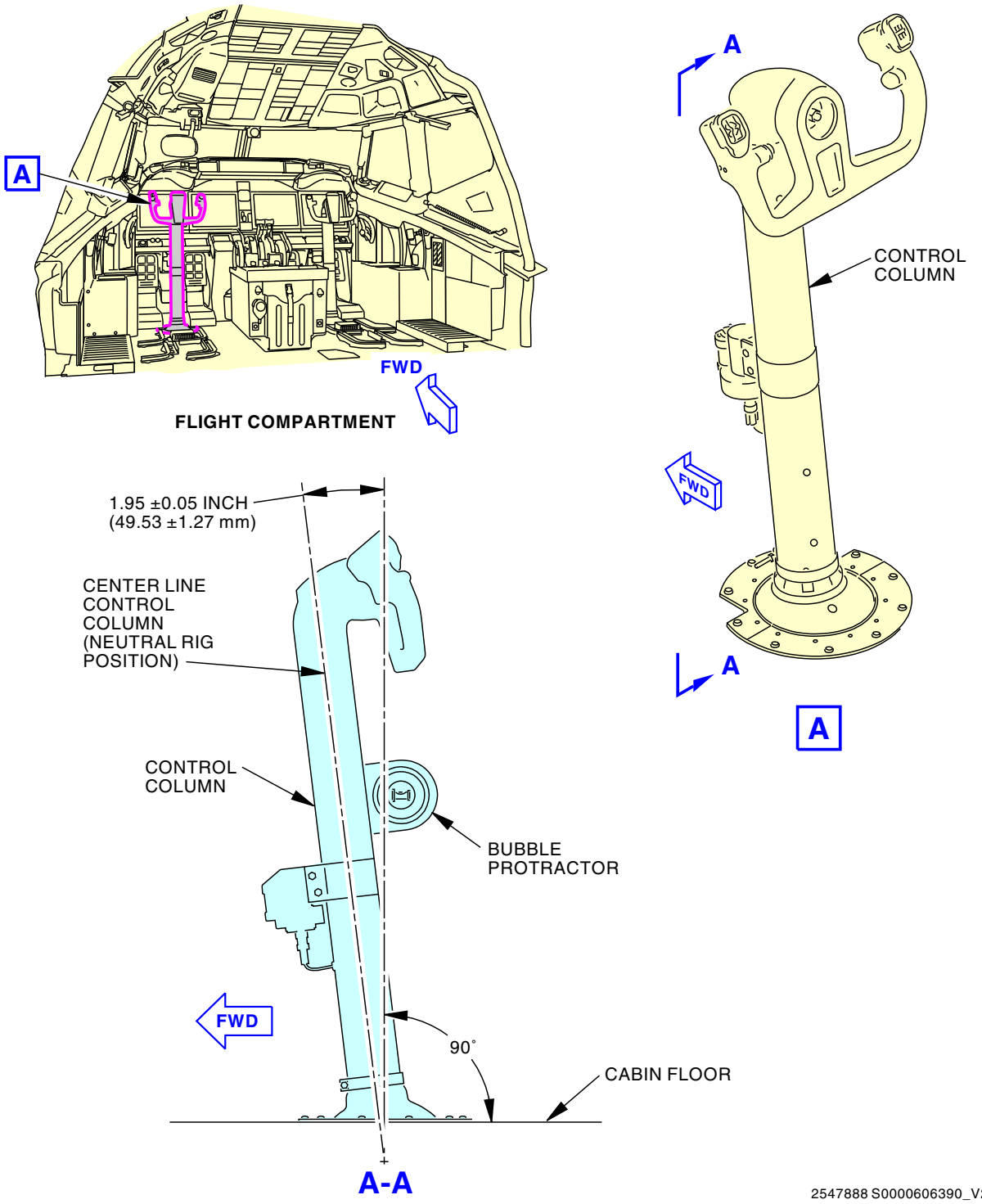
F. Put the Airplane Back to its Usual Condition

SUBTASK 27-31-00-860-039

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

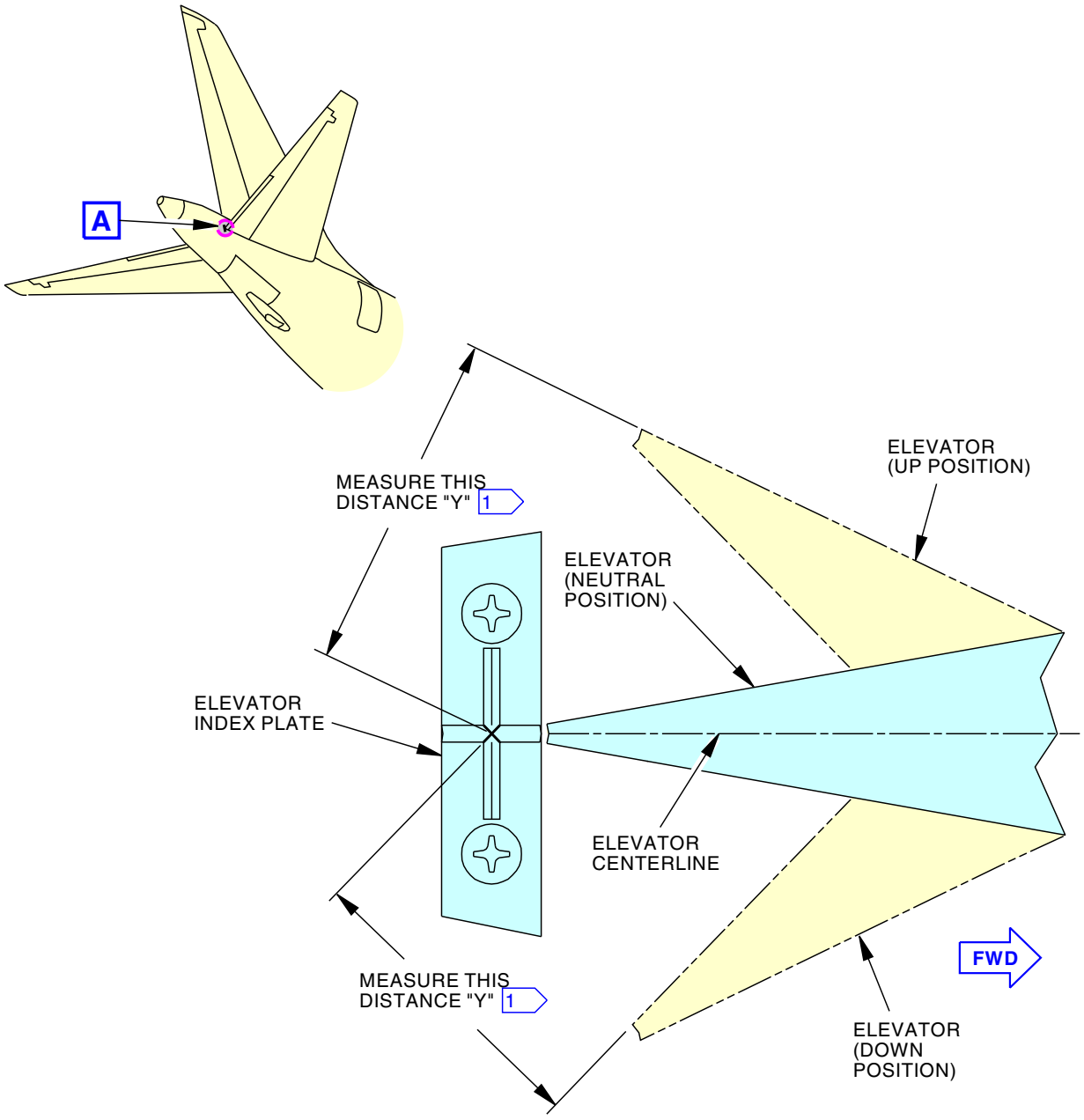
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Control Column Override - Functional Test
Figure 501/27-31-00-990-828 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 THE DISTANCE "Y" IS MEASURED FROM THE MIDDLE OF THE ELEVATOR INDEX PLATE TO THE UPPER SURFACE OF THE INBOARD EDGE OF THE ELEVATOR.

MEASUREMENT LOCATION (RIGHT SIDE)

A

2547889 S0000606391_V1

Elevator Control Column Override - Functional Test
Figure 501/27-31-00-990-828 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-801

6. Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment

(Figure 502, Figure 503, Figure 504)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this task to adjust the elevator control cables and pitch force transducers.

(2) Before you do cable adjustment, permit a minimum of one hour at a constant ambient temperature of ± 5 degrees F (± 2.8 degrees C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

(d) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to: Control Cable Grades and Diameters/Table 27-11-00-993-802.

(e) It is recommended that cable assemblies on each side of a cable loop be replaced at the same time using the same cable grade material in order to minimize asymmetric relaxation.

B. References

Reference	Title
22-11-92-820-801	Pitch Force Transducer Adjustment (DFCS BITE Test) (P/B 501)
27-09-14-860-802	Cable Control - Tension Measurement (P/B 201)
27-11-00-993-802	Table: Control Cable Grades and Diameters (P/B 501)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Prepare for the Adjustment

SUBTASK 27-31-00-860-041

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-040

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-006

(3) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-00-010-007

(4) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-042

CAUTION: MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(5) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-480-003

(6) Use a low tension cable tensiometer, COM-1553, or high tension cable tensiometer, COM-1554, to measure the cable tension (TASK 27-09-14-860-802).

NOTE: This step measures the cable tension to make sure that the cable adjustment is necessary.

G. Elevator Control Cables EA and EB and Pitch Force Transducers Adjustment

SUBTASK 27-31-00-020-001

(1) Remove the nuts [3], washers [2], and bolts [1] from the adjustable end of the two pitch force transducers (Figure 502).

NOTE: The bolts [1] will be installed when you complete the adjustment of the pitch force transducers.

SUBTASK 27-31-00-710-006

(2) Adjust the elevator control cables EA and EB and the pitch force transducers:

(a) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the elevator aft quadrant (Figure 504).

1) Make sure that you can move the rig pin freely.

2) If it is necessary, move the elevator by hand until you can install the rig pin E-5.

(b) Install the rig pin E-1 from the rigging pin kit, SPL-1585, in the elevator left forward quadrant (Figure 502).

1) Make sure that you can move the rig pin E-1 freely.

(c) Remove the nuts [6], washers [5], and bolts [4] from the two elevator forward quadrants.

NOTE: The bolts [4] will be installed when you complete the adjustment of the pitch force transducers.

(d) Install the rig pins E-2 and E-3 from the rigging pin kit, SPL-1585, through the installation holes of the bolts [4] (Figure 502).

1) Make sure that you can move the rig pins E-2 and E-3 freely.

(e) Use a low tension cable tensiometer, COM-1553, or high tension cable tensiometer, COM-1554, to measure the cable tension (TASK 27-09-14-860-802).

(f) If you install new elevator control cables EA and EB, then do these steps to stretch the cables:

1) Adjust the turnbuckles on the EAL, EAR, EBL, and EBR cables to 300 ±20 lbf (1334 ±89 N) or 300 ±20 lb (136 ±9 kg).

2) Adjust the seals in the pressure bulkhead, if it is necessary, to keep the cables straight.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Remove the rig pin E-1 from the elevator left forward quadrant.
4) Remove the rig pin E-5 from the elevator aft quadrant.
5) Move the control column 25 times through full travel.
6) Install the rig pin E-5 to the elevator aft quadrant.
   a) Make sure that you can move the rig pin E-5 freely.
   b) If it is necessary, move the elevator by hand until the rig pin holes align.
7) Install the rig pin E-1 to the elevator left forward quadrant.
   a) Make sure that you can move the rig pin E-1 freely.
8) Make sure that the rig pins E-2 and E-3 move freely through the installation holes of the bolts [4].

(g) Adjust the control cables EA and EB to their correct cable rigging tension:
1) Adjust the turnbuckles to get the cable tension (TASK 27-09-14-860-802):

NOTE: Adjust the tensions close to the maximum values in the table. The cables will stretch over a period of time.

(h) Adjust the pitch force transducers (TASK 22-11-92-820-801).
(i) Make sure that the tension of control cables EA and EB are at the correct tension (TASK 27-09-14-860-802).
(j) Make sure that you can move the rig pins E-1, E-2, E-3, and E-5 freely.
(k) Remove the rig pins E-2 and E-3.
(l) Install the bolts [1], washers [2], and nuts [3].
(m) Install the bolts [4], washers [5], and nuts [6].
1) Torque the nuts [6] to 200 ±40 in-lb (23 ±5 N·m).
(n) Install the locking clips on the turnbuckles.
(o) Remove the rig pins E-1 and E-5.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-940-001

(1) Close these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-940-002

(2) Close this access panel:

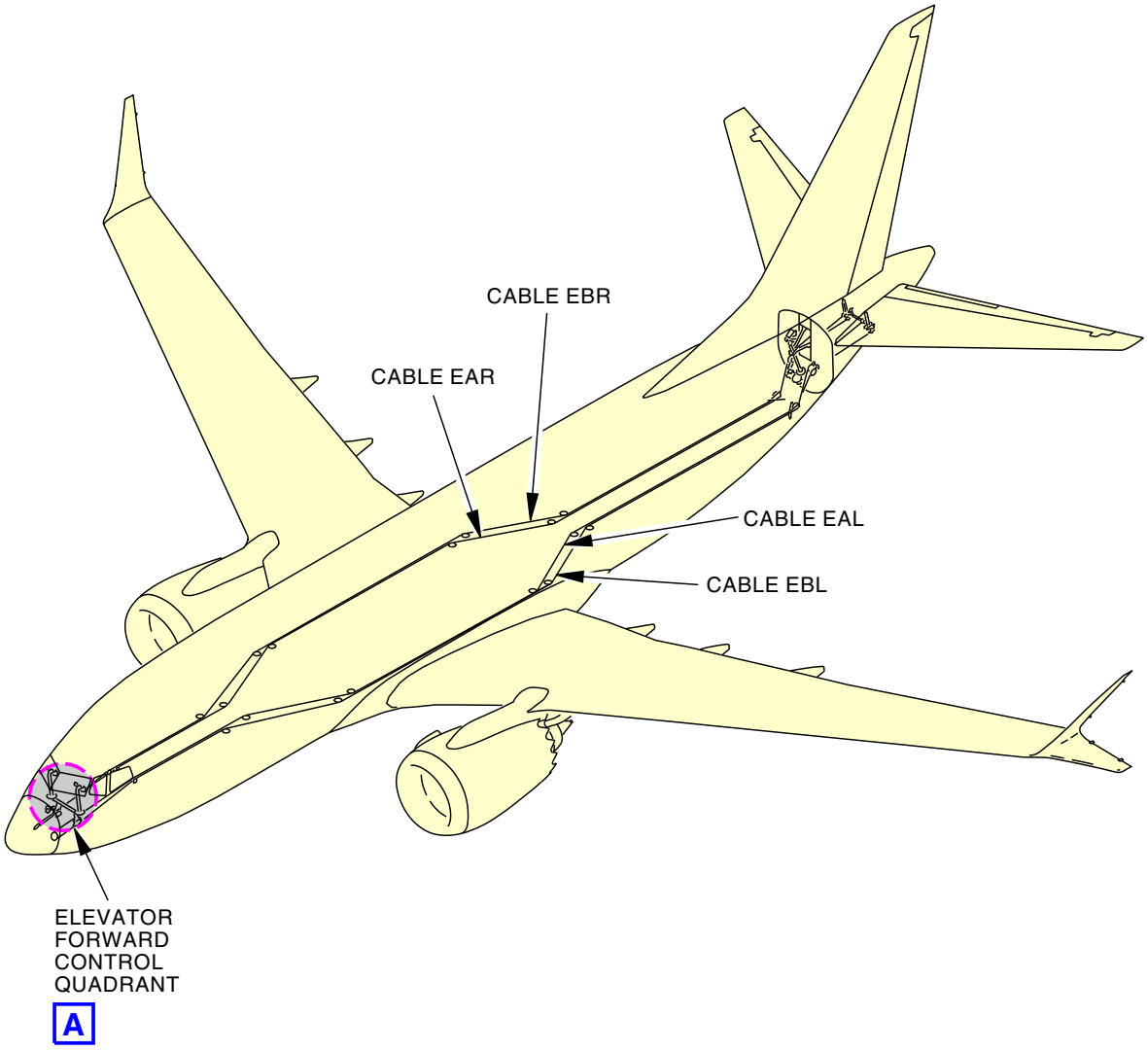
Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-00-860-043

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

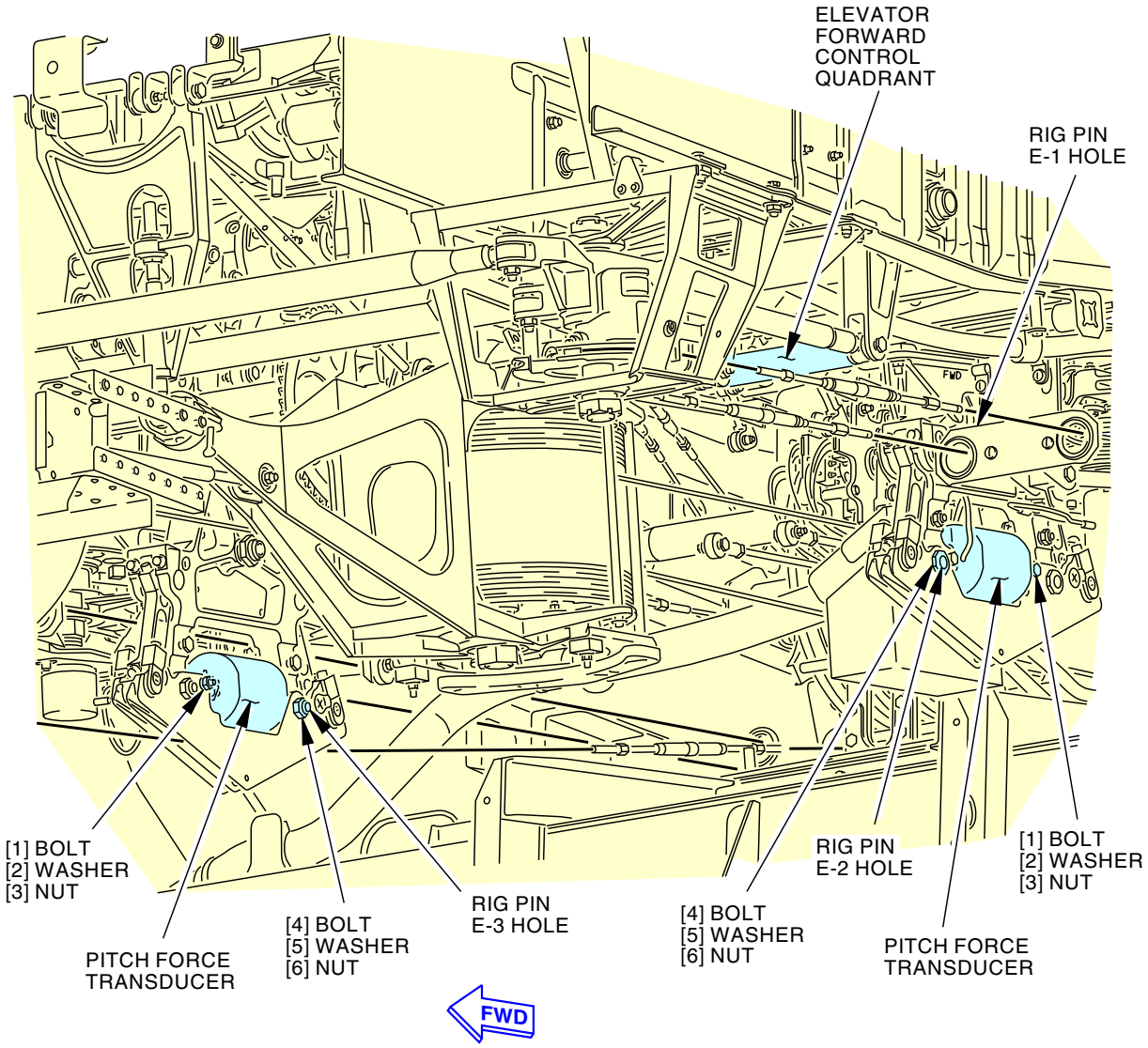


**ELEVATOR AND TAB CONTROL CABLES,
CONTROL COLUMN AND FORWARD QUADRANT**

2412455 S00061530714_V2

**Elevator Control Cables Adjustment
Figure 502/27-31-00-990-809 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



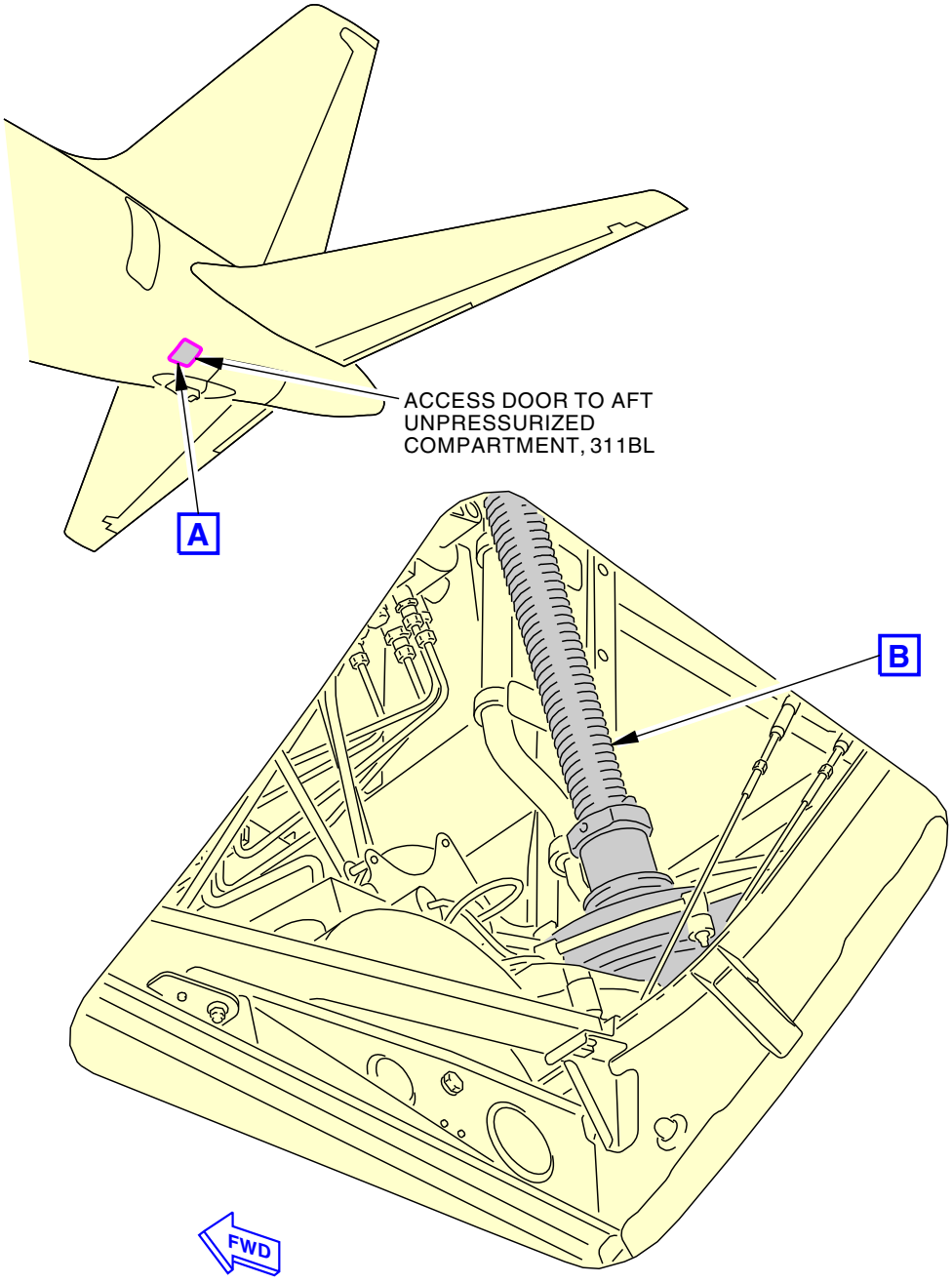
ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY

A

2412456 S00061530715_V1

Elevator Control Cables Adjustment
Figure 502/27-31-00-990-809 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



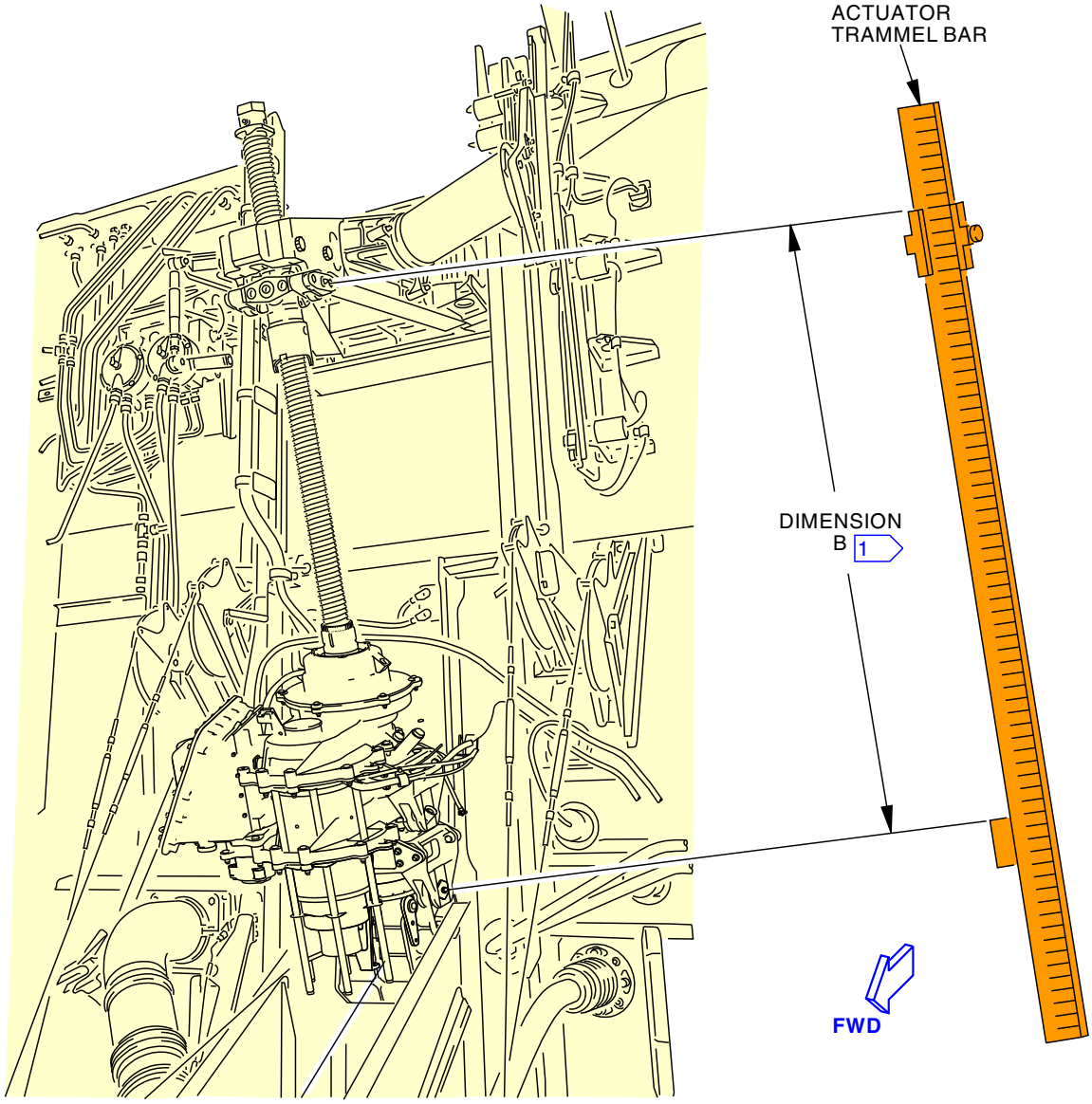
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412457 S00061530716_V1

**Stabilizer Trim Jackscrew Setting
Figure 503/27-31-00-990-810 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

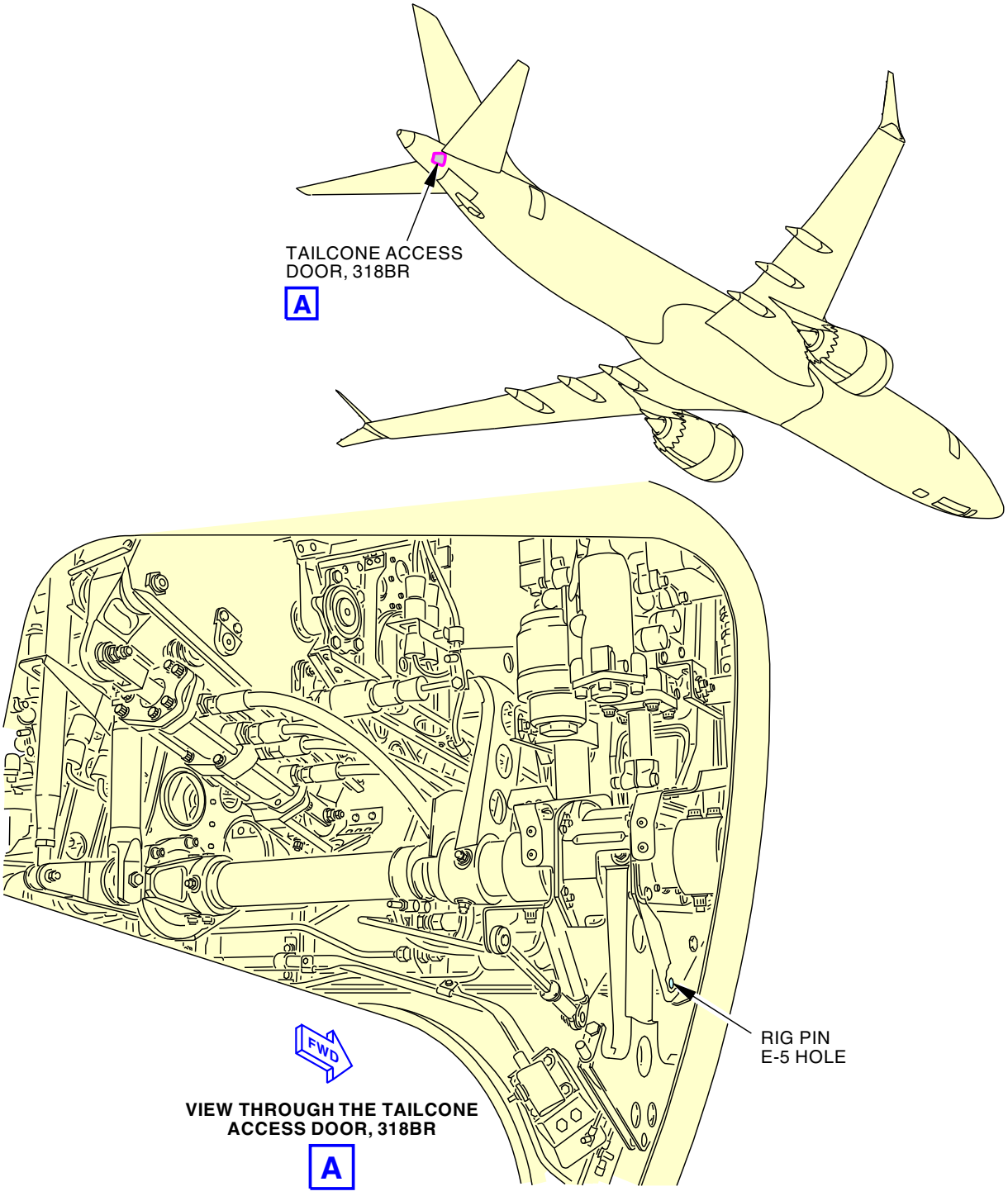
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412458 S00061530717_V2

Stabilizer Trim Jackscrew Setting
Figure 503/27-31-00-990-810 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Aft Control Quadrant Rig Pin Location
Figure 504/27-31-00-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-710-805

7. Pitch Force Transducer Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test makes sure that the pitch force transducers operate correctly.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
31-65-00-970-801	System Maintenance Data Pages Function (P/B 201)
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-11321	Device - Universal Maintenance (UMD) Part #: G45004-3 Supplier: 81205 Part #: G45004-31 Supplier: 81205 Opt Part #: G45003-3 Supplier: 81205 Opt Part #: G45004-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare For the Operational Test

SUBTASK 27-31-00-860-142

WARNING

KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER, AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task to supply hydraulic power to Hydraulic Systems A and B: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

F. Pitch Force Transducer Test - DFCS BITE

SUBTASK 27-31-00-980-004

(1) Do these steps to put the control wheel to the center:

NOTE: The power control units must be serviceable for the correct adjustment of the cables in relation to the roll force transducer.

(a) Turn the control wheel in the clockwise direction 30 degrees.

(b) Turn the control wheel in the counterclockwise direction 30 degrees.

(c) Slowly turn the control wheel to the center.

SUBTASK 27-31-00-860-139

(2) Attach the DO NOT OPERATE tags, STD-858, to the control columns.

SUBTASK 27-31-00-860-140

(3) Set the aileron trim to 0.0 unit.

SUBTASK 27-31-00-860-141

(4) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the CUTOUT position.

SUBTASK 27-31-00-860-143

(5) Make sure that the VHF NAV and IRS switches, on the forward overhead panel, P5, are in the NORMAL positions.

SUBTASK 27-31-00-860-144

(6) Set the left and right IRS select switches, on the aft overhead panel, P5, to the ALIGN or NAV position.

SUBTASK 27-31-00-740-010

(7) Make these selections to get access to the PITCH CWS test:

(a) Push the INIT REF key on the CDU keyboard.

(b) <INDEX

(c) MAINT>

(d) <DFCS

(e) <EXTENDED MAINTENANCE

(f) <RIGGING

(g) <CWS

(h) Do the preparation steps as shown on the CDU display.

(i) <PITCH CWS

(j) <CONTINUE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Pitch Force Transducer - Manual Test

SUBTASK 27-31-00-480-014

(1) Connect the force gauge, COM-1557, to the center hub of the captains control column.

SUBTASK 27-31-00-730-015

(2) Do the steps shown on the CDU to complete the test:

(a) Make sure that the values for the A side and B side are between the limits that show on the CDU display.

SUBTASK 27-31-00-080-011

(3) Remove the force gauge, COM-1557, from the control wheels.

H. Pitch Force Transducer Interface Test - DFCS BITE

SUBTASK 27-31-00-740-011

(1) Make these selections on the CDU to do a transducer interface test:

(a) Push the INIT REF key on the CDU keyboard.

(b) <INDEX

(c) MAINT>

(d) <DFCS

(e) <LRU REPLACEMENT TESTS

(f) <CHANNEL A AND B

(g) Push the NEXT PAGE key on the CDU keyboard.

(h) <PITCH SENS

(i) Do the preparation steps as shown on the CDU.

(j) <CONTINUE

(k) Make sure that the test is completed with no failure.

(l) Push the INIT REF key on the CDU keyboard to get out of the BITE.

I. Existing Faults Check

SUBTASK 27-31-00-480-015

(1) Do these steps if you use the universal maintenance device, SPL-11321 (ML), to get access to the Existing Faults function:

(a) Connect the maintenance laptop (TASK 46-13-00-480-801).

(b) Use the universal maintenance device, SPL-11321, to get access to the Onboard Network System (ONS) maintenance browser.

SUBTASK 27-31-00-860-145

(2) Or, do these steps if you use the MAX Display System (MDS) Multi Function Display (MFD) to get access to the Existing Faults function:

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(a) If the MAINT or ONBD MAINT button does not show on the MFD, push the SYS key on the Multi-Function Panel (P9–82)

NOTE: To navigate/tab through the selectable elements on the Multi-Function Display (MFD), turn the Rotary Selector knob on the P9-82 panel or the MAINT SELECTOR knob on the P61-4 panel in the clockwise or counterclockwise direction until the desired element is highlighted.

NOTE: To make a selection on the MFD, push the center selection button SEL of the Rotary Selector knob on the P9-82 panel or the MAINT SELECTOR knob on the P61-4 panel.

(b) When the MAINT button shows, select it.

(c) Select the ONBD MAINT button from the Maintenance Menu bar.

SUBTASK 27-31-00-700-005

(3) From the ONS maintenance browser main menu, go to the 27 Flight Controls display in the EXTENDED MAINT>EXISTING FAULTS (TASK 31-65-00-970-801).

(a) Make sure that these Flight Control Computer (FCC) or Spoiler Control Electronics (SCE) maintenance messages do not show:

1) 27-02320

2) 27-02330

3) 27-02060

4) 27-02070

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-710-014

(1) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-31-00-860-155

(2) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the NORMAL position.

——— END OF TASK ———

TASK 27-31-00-820-802

8. Elevator Control Pushrods - Adjustment

(Figure 503, Figure 505, Figure 506, Figure 519)

A. General

(1) Use this test to adjust the elevator control pushrods that connect the output torque tube to the elevators.

(2) The elevator power-off flight test is required after adjustment of an elevator control pushrod.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

G. Prepare for the Adjustment

SUBTASK 27-31-00-860-045

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-044

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-009

(3) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-046

CAUTION: MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

H. Elevator Control Pushrods Adjustment

SUBTASK 27-31-00-860-047

(1) Push down on the trailing edge of the right elevator [30], to bottom out the elevator PCU [31] in the extended position.

SUBTASK 27-31-00-710-007

(2) Make sure that the right elevator [30] is in the full down position with the inboard end of the elevator trailing edge 10.43 +0.09 / -0.32 in. (264.92 +2.29 / -8.13 mm) below the index mark (Figure 519).

(a) Remove the nut [27], nut [26], washer [25], bushing [24], and bolt [23] to disconnect the right elevator control pushrod [28] from the elevator buss crank [22].

SIA 015

1) If installed, remove the washer, BACW10EG24CK, under the head of the bolt [23].

SIA ALL

(b) Loosen the checknut [29] on the right elevator control pushrod [28].

(c) Adjust the elevator control pushrod [28] until the elevator [30] is in the full down position with the inboard end of the elevator trailing edge at 10.43 +0.09 / -0.32 in. (264.92 +2.29 / -8.13 mm) below the index mark (Figure 506).

NOTE: One half turn of the elevator control pushrod is equal to 0.20 in. (5.1 mm) at the elevator trailing edge.

(d) Lubricate the bolt [23] and bushing [24] with grease, D00633.

1) Wipe off the excess of grease, D00633.

(e) Install the bolt [23], bushing [24], washer [25], and nut [26] (Figure 505).

SIA 015

1) If removed, install the washer, BACW10EG24CK, under the head of the bolt [23].

SIA ALL

2) Tighten the nut [26] by hand.

SUBTASK 27-31-00-980-002

(3) Push down on the trailing edge of the left elevator [30], to bottom out of the elevator PCU [31] in the extended position.

SUBTASK 27-31-00-820-001

(4) Make sure that the left elevator [30] is in the full down position with the inboard end of the elevator trailing edge 10.43 +0.09 / -0.32 in. (264.92 +2.29 / -8.13 mm) from the elevator neutral index mark (Figure 519).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the nut [27], nut [26], washer [25], bushing [24], and bolt [23] to disconnect the left elevator control pushrod [28] from the elevator buss crank [22].

SIA 015

1) If installed, remove the washer, BACW10EG24CK, under the head of the bolt [23].

SIA ALL

(b) Loosen the checknut [29] on the left elevator control pushrod [28].

(c) Adjust the elevator control pushrod [28] until the elevator [30] is in the full down position with the inboard end of the elevator trailing edge at 10.43 +0.09 / -0.32 in. (264.92 +2.29 / -8.13 mm) from the elevator neutral index mark (Figure 506).

NOTE: One half turn of the elevator control pushrod is equal to 0.20 in. (5.1 mm) at the elevator trailing edge.

(d) Lubricate the bolt [23] and bushing [24] with grease, D00633.

1) Wipe off the excess of grease, D00633.

(e) Install the bolt [23], bushing [24], washer [25], and nut [26] (Figure 505).

SIA 015

1) If removed, install the washer, BACW10EG24CK, under the head of the bolt [23].

SIA ALL

2) Tighten the nut [26] by hand.

SUBTASK 27-31-00-970-001

(5) Make sure that the final dimension in the full down position of the left elevator [30] is 0.00 ±0.12 in. (0.0 ±3.0 mm) of the final dimension in the full down position of the right elevator [30].

(a) If it is necessary, re-adjust the right elevator [30] to 10.43 +0.09 / -0.32 in. (264.92 +2.29 / -8.13 mm) from the index plate (Figure 519).

SUBTASK 27-31-00-420-004

(6) Tighten the checknuts [29] on the left and right elevator control pushrods [28] to 750 in-lb (85 N·m) - 900 in-lb (102 N·m).

(a) Install MS20995NC32 lockwire, G01912, on the checknuts [29].

SUBTASK 27-31-00-420-005

(7) Tighten the nuts [26] to 600 in-lb (67.8 N·m) - 700 in-lb (79.1 N·m).

SUBTASK 27-31-00-420-006

CAUTION

DO NOT TRY TO TIGHTEN THE NUT [26] AGAIN AFTER YOU TIGHTEN THE NUT [27]. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(8) Install the nuts [27].

(a) Tighten the nuts [27] to 170 in-lb (19.2 N·m) - 240 in-lb (27.1 N·m).

NOTE: Bolts protrusion through the nuts can be 0.01 in. (0.25 mm) minimum.

SUBTASK 27-31-00-860-048

(9) Release the elevator PCUs [31] from their extended position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-940-003

(1) Close these access panels:

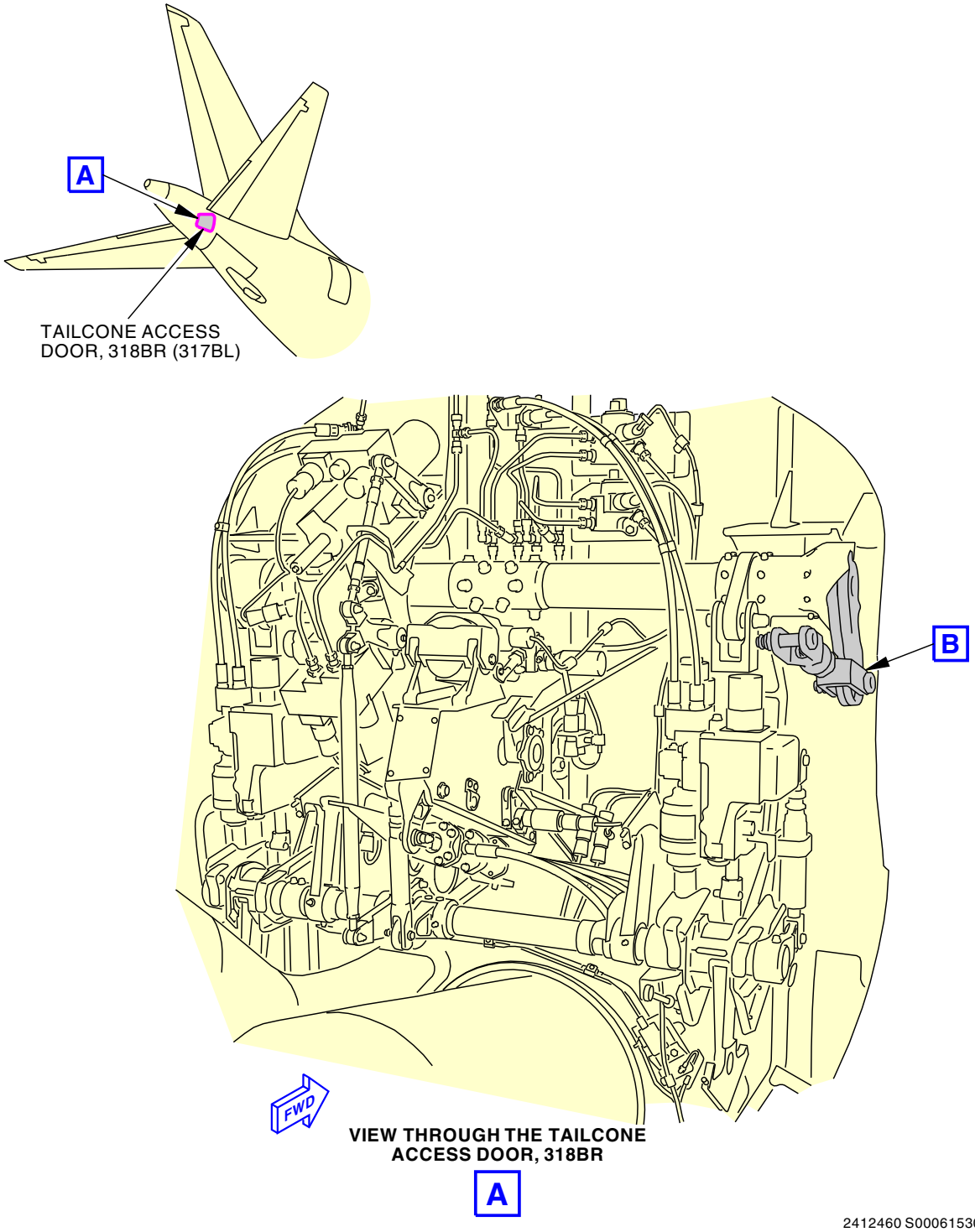
Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-750-001

(2) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

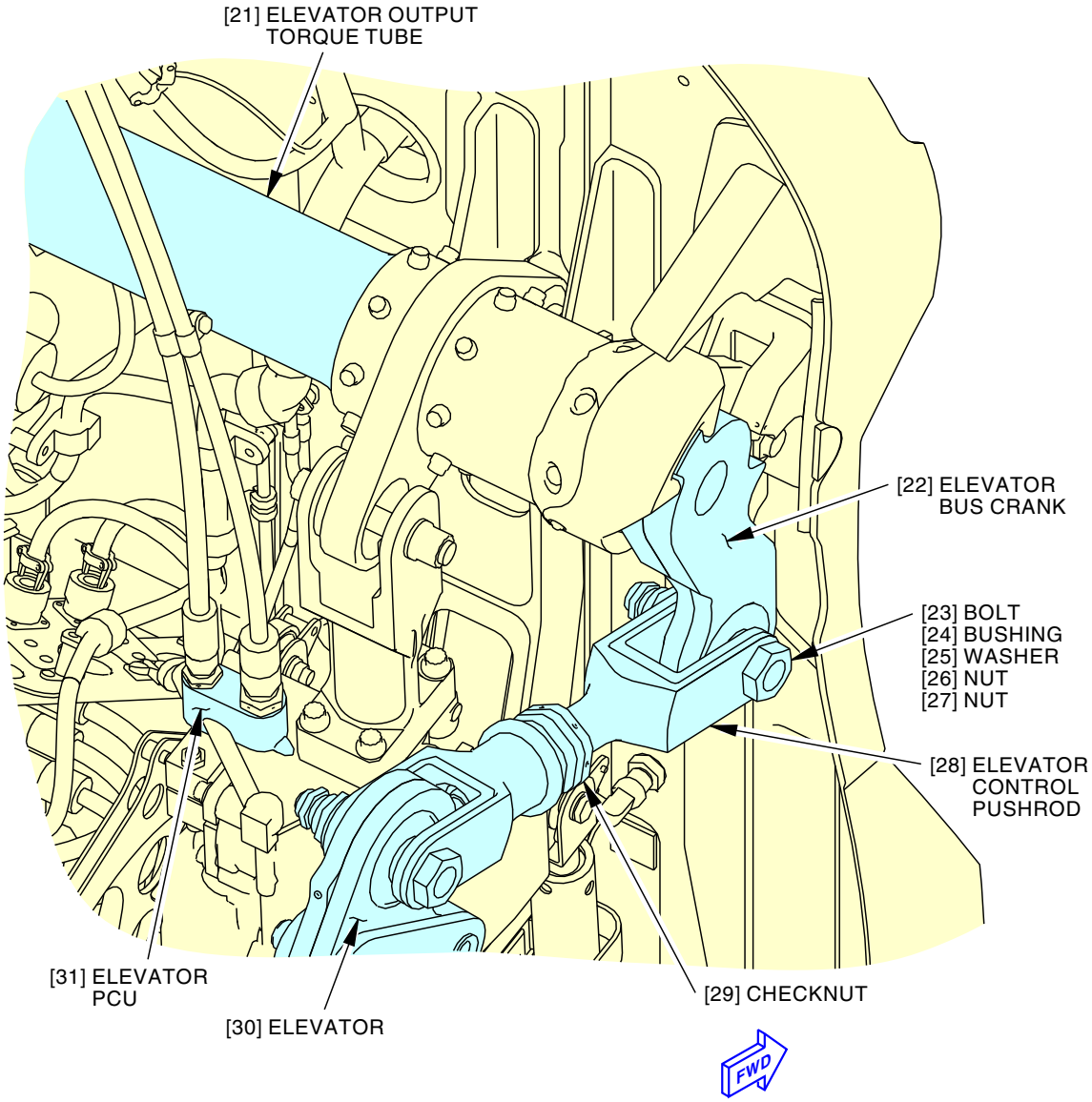
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Pushrods Adjustment
Figure 505/27-31-00-990-812 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



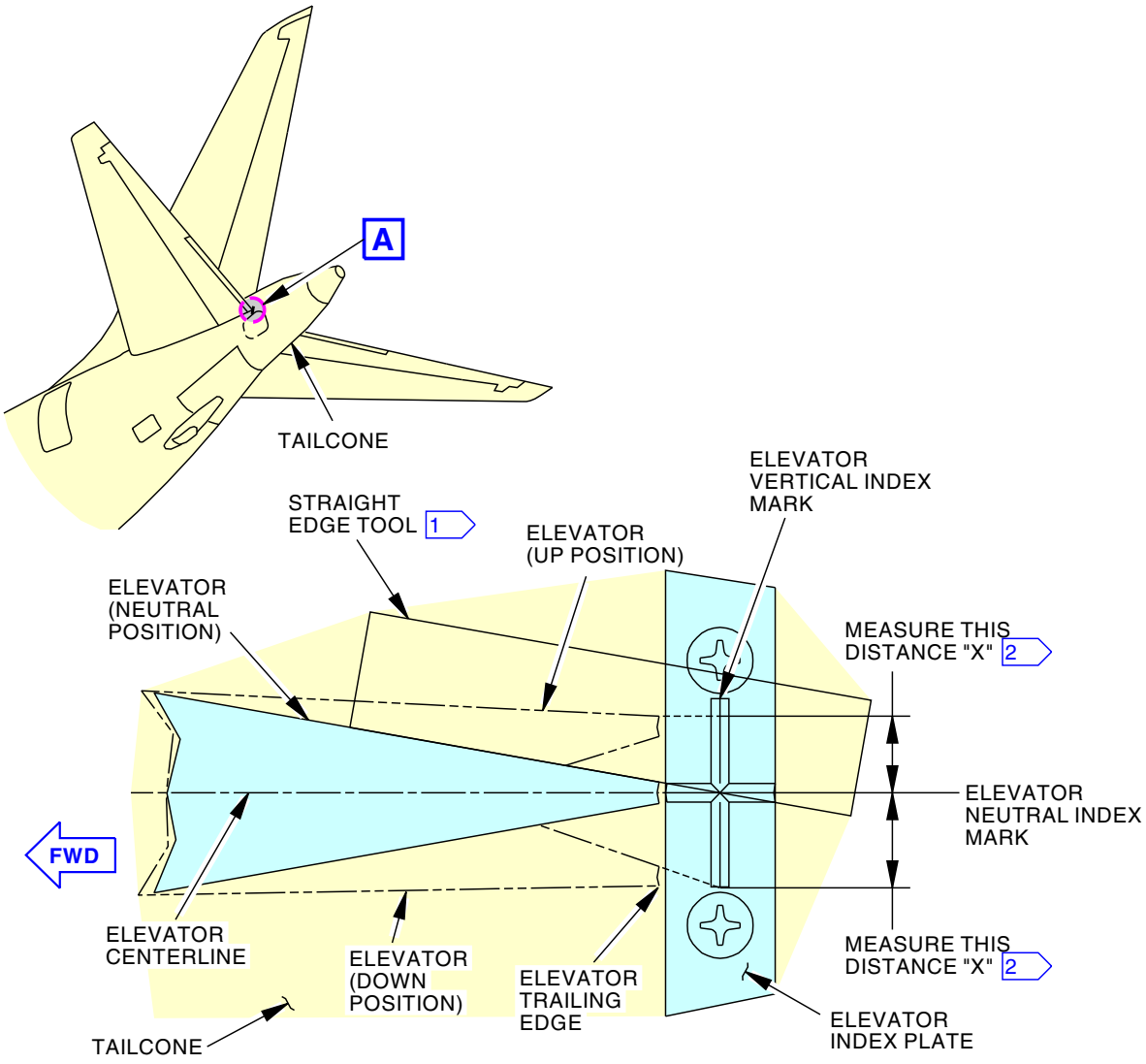
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

B

2412461 S00061530721_V3

Elevator Pushrods Adjustment
Figure 505/27-31-00-990-812 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR TAB PUSHROD ADJUSTMENT MEASUREMENTS (LEFT SIDE)

A

1 ELEVATOR IS AT NEUTRAL WHEN THE BOTTOM EDGE OF A STRAIGHT EDGE TOOL PLACED ON THE UPPER ELEVATOR SURFACE PASSES THROUGH THE MIDDLE OF THE ELEVATOR INDEX PLATE, AS SHOWN.

2 THE DISTANCE "X" IS MEASURED USING A STRAIGHT EDGE TOOL ON THE UPPER SURFACE OF THE ELEVATOR TO INTERSECT WITH THE ELEVATOR VERTICAL INDEX MARK AT THE ELEVATOR NEUTRAL INDEX MARK.

2412462 S00061530722_V1

Elevator Tab Adjustment
Figure 506/27-31-00-990-813

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-803

9. Input Rods of the Elevator Power Control Unit - Adjustment

(Figure 503, Figure 504, Figure 506, Figure 507)

A. General

(1) Use this test to adjust the two input rods (primary and secondary) of the right and left elevator power control units (PCUs).

NOTE: For this procedure, the primary input rod is on the left side of the PCUs and the secondary input rod is on the right side of the PCUs when looking forward. This applies to both left and right elevator PCUs.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Prepare for the Adjustment

SUBTASK 27-31-00-860-050

(1) Make sure the adjustment of elevator control pushrods is satisfactory. To adjust them, do this task: Elevator Control Pushrods - Adjustment, TASK 27-31-00-820-802.

SUBTASK 27-31-00-860-051

(2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-010-011

(3) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-860-052

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-860-053

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Pressurize the elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-480-004

(6) Install the rig pin E-5 from the rigging pin kit, SPL-1585 to the elevator aft quadrant (Figure 507).

NOTE: Make sure the rig pin E-5 fits freely in the rig pin hole.

G. Input Rods for the Elevator PCU Adjustment

SUBTASK 27-31-00-820-002

(1) Adjust the input rods for the elevator PCU (Figure 507):

NOTE: This procedure adjusts both the right and left elevator PCU input rods.

(a) If adjusting the right elevator PCU, do the following:

1) Set the FLT CONTROL A switch to the off position and FLT CONTROL B switch to the on position.

(b) If adjusting the left elevator PCU, do the following:

1) Set the FLT CONTROL B switch to the off position and FLT CONTROL A switch to the on position.

(c) Measure the distance from the upper trailing edge surface of the right elevator to the neutral index mark of the index plate (Figure 506).

(d) If the distance is greater than 0.06 in. (1.5 mm), do the following adjustment:

1) Remove the nut [55], washer [54], washer [53], and bolt [52] to disconnect the secondary input rod [58] from the upper attach point (Figure 507).

2) Loosen the checknut [57] on the primary input rod [59].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Rotate the primary input rod [59] tube until the distance from the trailing edge of the elevator to the index plate is no more than 0.06 in. (1.5 mm) (Figure 506).

4) Tighten the checknut [57] to 195 in-lb (22 N·m) - 235 in-lb (27 N·m). (Figure 507)

   a) Check the elevator trailing edge to index plate dimension after torquing the checknut [57].

      NOTE: The dimension can change after the checknut has been tightened.

5) Loosen the checknut [57] on the secondary input rod [58].

6) Rotate the secondary input rod [58] tube until the upper attach bolt [52] can be freely installed through the clevis and the PCU crank arm.

7) Install the bolt [52], washer [53], washer [54], and nut [55].

8) Tighten the nut [55].

9) Tighten the checknut [57] to 195 in-lb (22 N·m) - 235 in-lb (27 N·m).

   a) After torquing the checknut [57], check the elevator trailing edge to index plate dimension with FLT CONTROL A and FLT CONTROL B switch on.

      NOTE: The dimension can change after the checknut has been tightened.

10) Install lockwire on the checknuts [57] of the input rods.

    NOTE: Install lockwire from the checknut [57] to the input rod tube, and then to the small hole in the upper clevis.

11) If the right elevator PCU input rods have been adjusted, set the FLT CONTROL B switch to the off position.

12) If the left elevator PCU input rods have been adjusted, set the FLT CONTROL A switch to the off position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-080-004

(1) Remove the rig pin E-5 from the elevator aft quadrant.

SUBTASK 27-31-00-940-004

(2) Close these access panels:

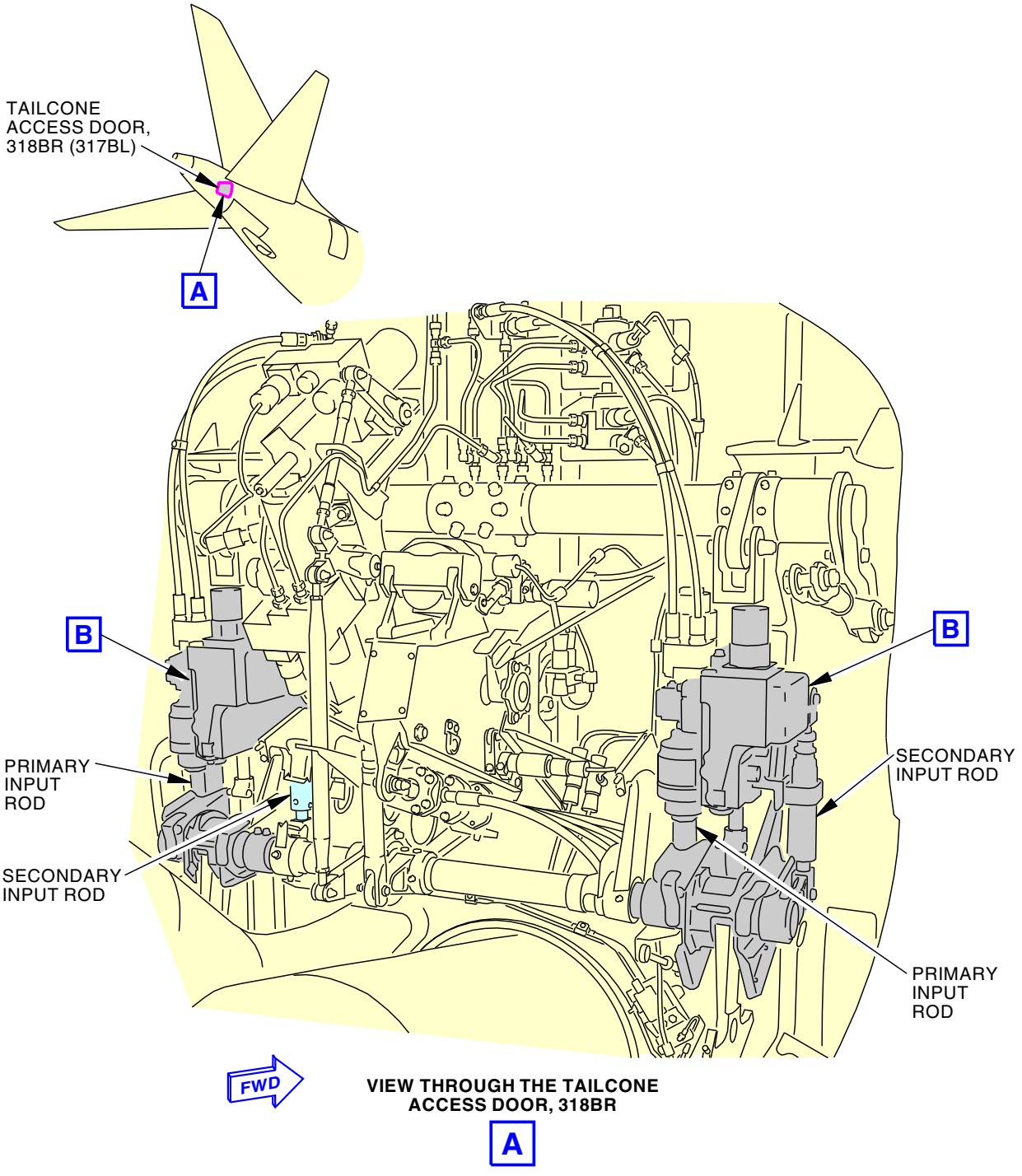
Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-860-054

(3) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———

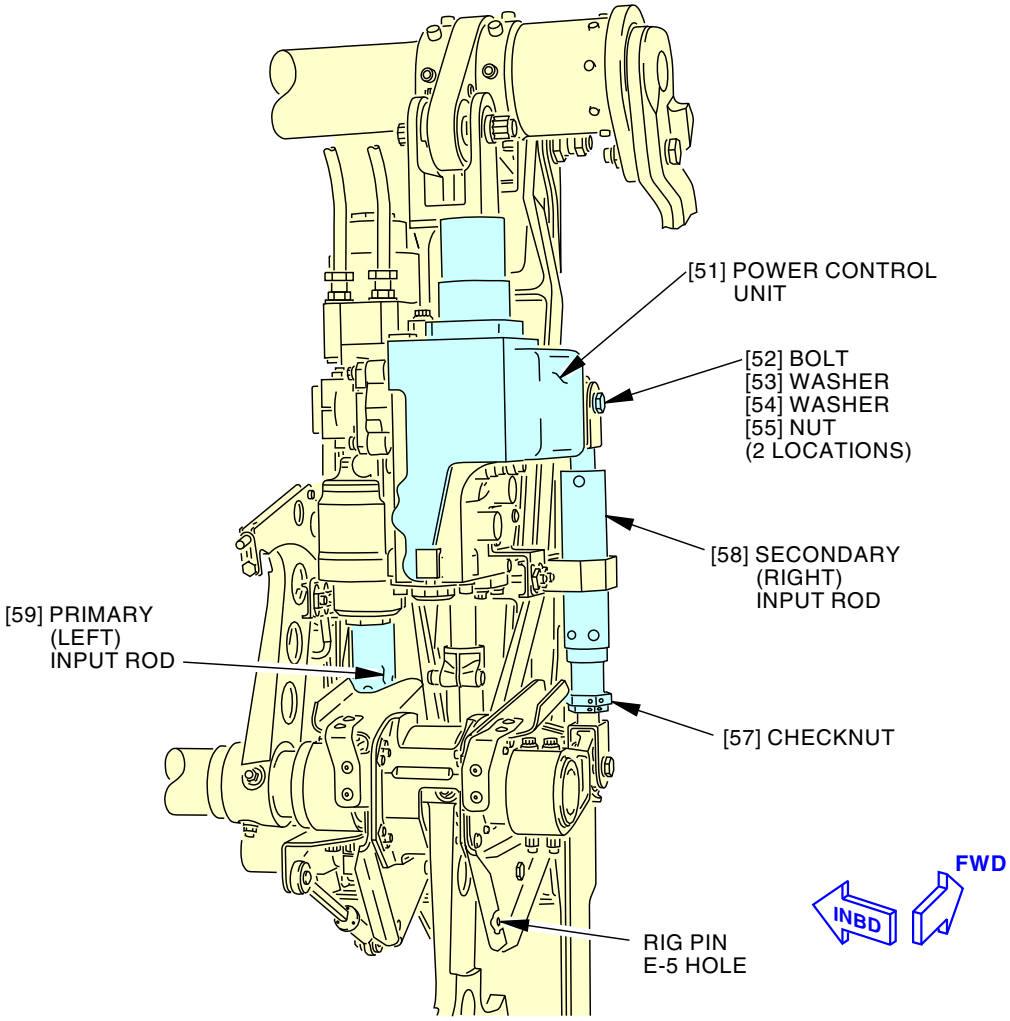
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412463 S00061530724_V2

Elevator PCU Input Rods Adjustment
Figure 507/27-31-00-990-814 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RIGHT POWER CONTROL UNIT
(LEFT POWER CONTROL UNIT IS EQUIVALENT)

B

2412465 S00061530726_V1

Elevator PCU Input Rods Adjustment
Figure 507/27-31-00-990-814 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-804

10. Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment

(Figure 503, Figure 508)

A. General

(1) Use this test to adjust the input rods which connect the elevator neutral shift mechanism to the stabilizer. This test also includes steps to adjust the output rod which connects the elevator feel and centering unit to the input torque tube.

B. References

Reference	Title
22-11-14-820-801	Elevator Neutral Shift Sensor Adjustment and Test (P/B 501)
22-11-31-820-801	Stabilizer Position Sensor Adjustment and Test (P/B 501)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Adjustment

SUBTASK 27-31-00-860-056

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-055

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-013

(3) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-00-860-057

CAUTION MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)), (View B, Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-480-005

(5) Install the rig pin E-5 from the rigging pin kit, SPL-1585, to the elevator aft quadrant (Figure 508).

H. Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Elevator Feel and Centering Unit Adjustment

SUBTASK 27-31-00-220-001

(1) Measure the distance "Z" between the centerline of the left neutral shift crank bolt [82] and the aft side of the vertical bulkhead (View D, Figure 508).

(a) Make sure that the distance is 1.057 ±0.030 in. (26.85 ±0.76 mm).

(b) If the distance is not 1.057 ±0.030 in. (26.85 ±0.76 mm), adjust the neutral shift input rods [84] of the elevator elevator neutral shift mechanism bellcrank [87]:

1) Remove the nut [79], washer [78], washer [77], and bolt [76] to disconnect the output rod of the elevator feel and centering unit [71] from the input crank [75].

2) Loosen the checknuts on the neutral shift input rods [84].

3) Remove the nuts [85], washers [86], washers [83], washers [81], and bolts [82] to disconnect the neutral shift input rods [84] from the elevator neutral shift mechanism bellcrank [87].

4) Adjust the neutral shift input rods [84] until you get a "Z" dimension of 1.057 ±0.030 in. (26.85 ±0.76 mm) at the left neutral shift input rod [84].

5) Install the bolts [82], washers [81], washers [83], washers [86], and nuts [85] to connect the stabilizer position sensor input rods [80] and neutral shift input rods [84] to the elevator neutral shift mechanism bellcrank [87].

a) Install the MS20995NC32 lockwire, G01912.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-820-004

(2) Adjust the output rod of the elevator feel and centering unit [71] (View B, Figure 508):

(a) If it is not disconnected, remove the nut [79], washer [78], washer [77], and bolt [76] to disconnect the output rod [74] of the elevator feel and centering unit [71] from the input crank [75].

(b) Measure the distance between the bolt hole in the output rod [74] and the bolt hole in the input crank [75]:

(c) If the distance is greater than 0.06 in. (1.52 mm), then do these steps:

1) Turn the clevis [131] in the sleeve [73] half turn and/or sleeve [73] in the output rod [74] end half turn.

NOTE: Use a combination of clevis/sleeve rotations in order to keep the number of threads exposed approximately equal in both parts.

2) Make sure that the distance of the two bolt holes is less than 0.06 in. (1.52 mm).

3) Keep the number of threads that you can see in the two parts approximately the same.

(d) If the distance is less than 0.06 in. (1.52 mm), then do these steps:

1) Turn the sleeve [73] until you can install the bolt [76] easily.

a) Turn the output rod [74] end and sleeve [73] in the same direction.

2) Keep the number of threads that you can see in the two parts are approximately same.

CAUTION

DO NOT TRY TO TIGHTEN THE BOLT AGAIN AFTER YOU TIGHTEN THE NUT. YOU CAN CAUSE DAMAGE TO EQUIPMENT.

3) Install the bolt [76], washer [77], washer [78], and nut [79] to connect the output rod [74] to the input crank [75].

a) Tighten the bolt [76] to 75 in-lb (8 N·m) - 85 in-lb (10 N·m).

b) Tighten the nut [79] to 15 in-lb (2 N·m) - 20 in-lb (2 N·m).

SUBTASK 27-31-00-820-005

(3) If it is necessary, do this task: Elevator Neutral Shift Sensor Adjustment and Test, TASK 22-11-14-820-801.

SUBTASK 27-31-00-820-006

(4) If it is necessary, do this task: Stabilizer Position Sensor Adjustment and Test, TASK 22-11-31-820-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-080-005

(1) Remove the rig pin E-5 from the elevator aft quadrant.

SUBTASK 27-31-00-940-005

(2) Close these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

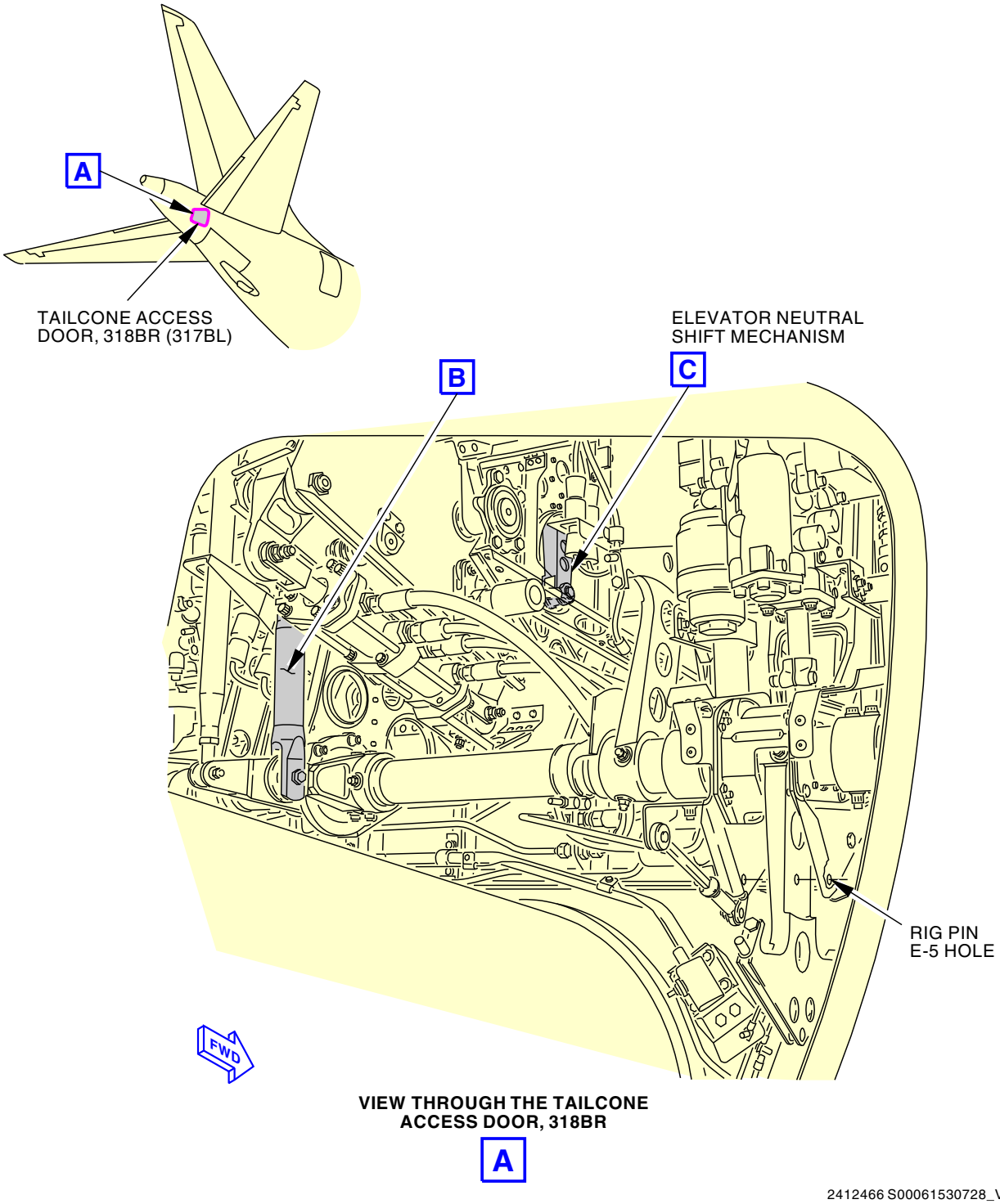
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-058

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

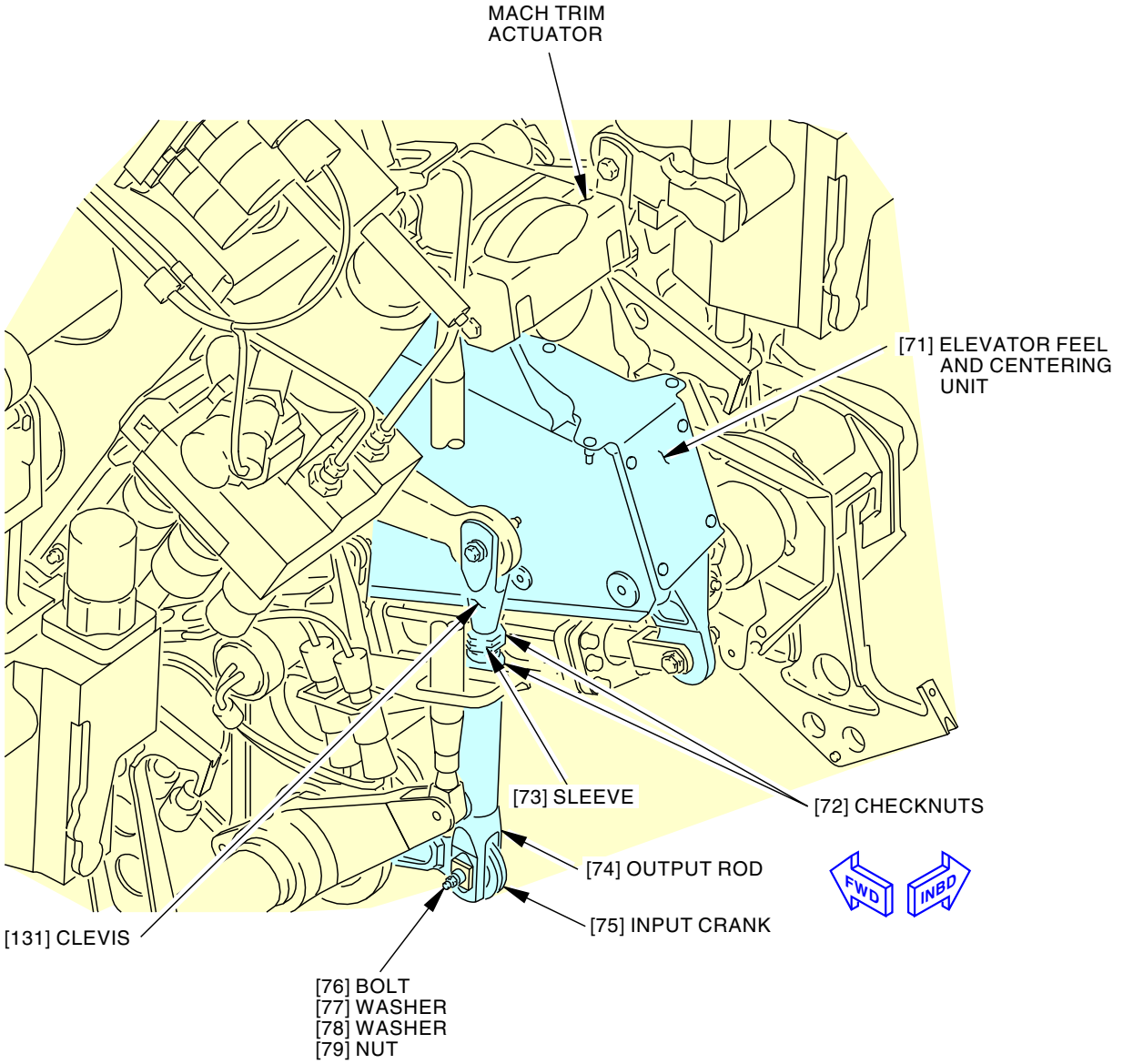
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Neutral Shift Mechanism Input Rods and Elevator Feel and Centering Unit Output Rod Adjustment
Figure 508/27-31-00-990-815 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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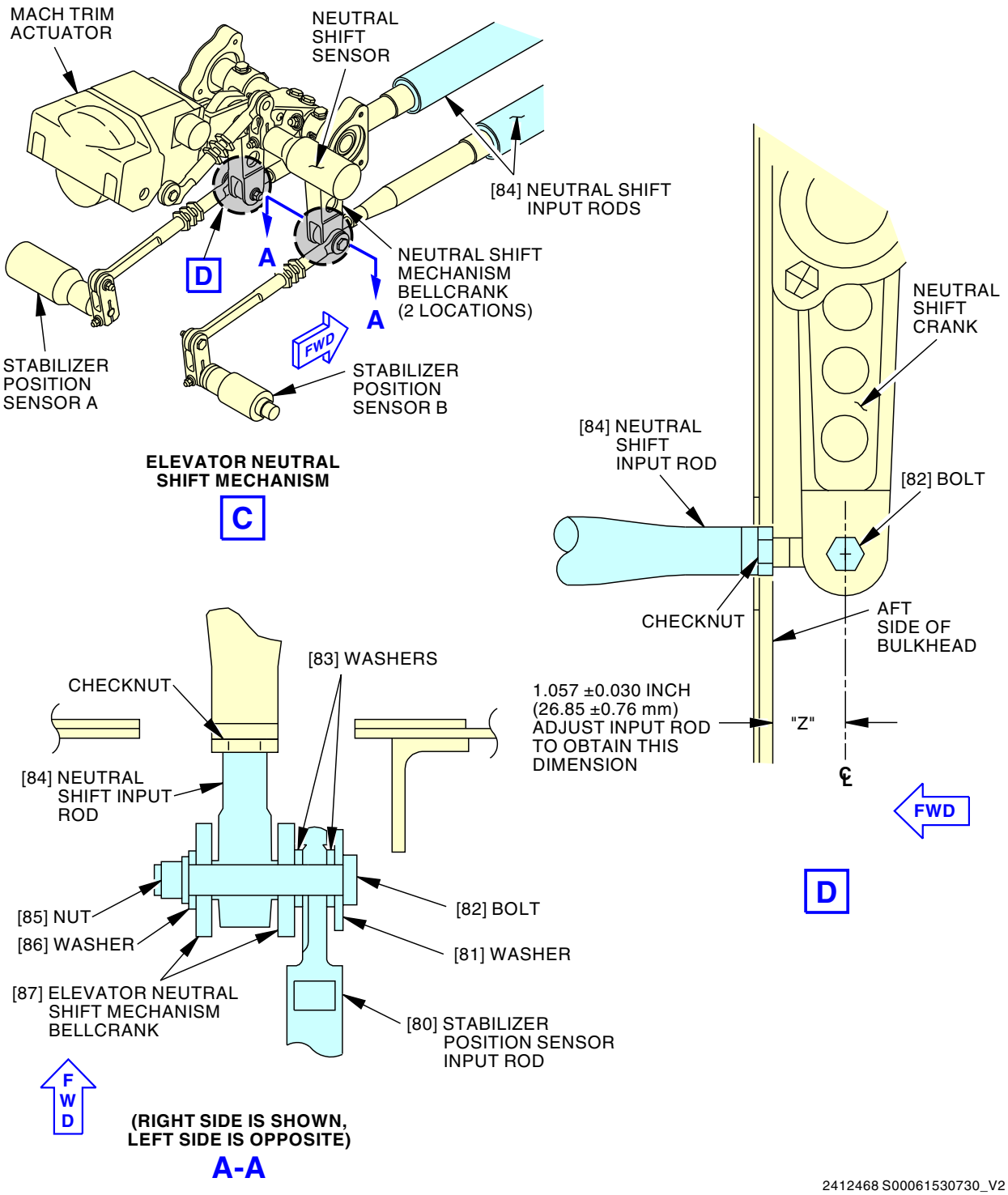
Elevator Neutral Shift Mechanism Input Rods and Elevator Feel and Centering Unit Output Rod Adjustment
Figure 508/27-31-00-990-815 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Neutral Shift Mechanism Input Rods and Elevator Feel and Centering Unit Output Rod Adjustment
Figure 508/27-31-00-990-815 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-805

11. Elevator Tab Pushrods - Adjustment

(Figure 503, Figure 506, Figure 509, Figure 510)

NOTE: A flight test is required if either or both of the elevator tab pushrods are adjusted Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

A. General

(1) Use this test to adjust the elevator tab pushrods. This task is applicable for the left and right elevator tab pushrods.

NOTE: Adjustment of the elevator tab pushrods to a dimension recorded subsequent to the last successful flight test will reduce the probability that a second flight test will be required.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
33-44-04-040-801	Tailcone Anti-Collision Light Deactivation (P/B 201)
33-44-04-440-801	Tailcone Anti-Collision Light Activation (P/B 201)
49-11-00-040-801	APU System - Deactivation (P/B 201)
49-11-00-440-801	APU System - Activation (P/B 201)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D50004	Compound - Antiseize	BMS3-28

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
344	Right Horizontal Stabilizer - Elevator

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

G. Prepare for the Adjustment

SUBTASK 27-31-00-860-147

(1) Do this task: APU System - Deactivation, TASK 49-11-00-040-801.

SUBTASK 27-31-00-860-148

(2) Do this task: Tailcone Anti-Collision Light Deactivation, TASK 33-44-04-040-801.

SUBTASK 27-31-00-860-060

(3) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-059

(4) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-015

(5) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-010-016

(6) For the left elevator tab pushrods, remove this access panel:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

SUBTASK 27-31-00-010-017

(7) For the right elevator tab pushrods, remove this access panel:

Number	Name/Location
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-860-061

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(8) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

H. Elevator Tab Pushrods Adjustment

SUBTASK 27-31-00-820-007

(1) Make sure to perform the adjustment of the pushrods on one elevator at a time, starting with the right elevator.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-020-002

(2) Loosen the four checknut [103] and checknut [105] from the tab pushrods [110].

SUBTASK 27-31-00-860-062

(3) Push the elevator trailing edge full up by hand.

SUBTASK 27-31-00-860-063

(4) While you move the elevator trailing edge down, align the center of the elevator trailing edge with the index mark in ±0.04 in. (1.0 mm), or less (Figure 506).

(a) Keep the elevators at this position while you measure and adjust the tab pushrods.

(b) If the elevator position is changed, you must put the elevator trailing edge at the full up position and do this step again before you continue.

SUBTASK 27-31-00-480-006

(5) Install the elevator tab rigging bar, SPL-10345 (Figure 510).

(a) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge (from inboard).

1) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

(b) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

(c) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

(d) Slide step gage FWD under elevator tab to obtain reading.

SUBTASK 27-31-00-820-008

(6) Adjust the tab pushrods [110] until the gap measured from the elevator tab faired position to the elevator tab rigged up position with the elevator tab rigging bar, SPL-10345, (dimension X) is the same dimension that you measured and recorded prior to the last successful flight test and before any pushrod adjustment.

NOTE: Adjustment of the elevator tab pushrods to a dimension recorded subsequent to the last successful flight test will reduce the probability that a second flight test will be required.

NOTE: You may need to do a coarse adjustment of the elevator tab pushrods if the gap between the elevator tab trailing edge and the fixture is too much.

You must always do a fine adjustment of the elevator tab pushrods if dimension X is not in the tolerance.

NOTE: While adjusting the elevator tab pushrods, the number of threads showing on the elevator tab pushrod ends should be approximately equal to the number of threads showing on the bushing [104].

(a) After tab pushrod adjustment, make sure the distance between the left elevator tab and the elevator tab rigging bar, SPL-10345, is within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm) (Figure 510).

(b) After tab pushrod adjustment, make sure the distance between the right elevator tab and the elevator tab rigging bar, SPL-10345, is within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm) (Figure 510).

(c) If the distance between the left elevator tab and the elevator tab rigging bar, SPL-10345, is not within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm), then adjust to 0.36 ±0.01 in. (9.14 ±0.26 mm) (Figure 510).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) If the distance between the right elevator tab and the elevator tab rigging bar, SPL-10345, is not within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm), then adjust to 0.36 ±0.01 in. (9.14 ±0.26 mm) (Figure 510).

SUBTASK 27-31-00-820-009

(7) If the prior tab location was not measured or recorded, then adjust to 0.36 ±0.01 in. (9.14 ±0.26 mm) (Figure 510).

(a) After adjustment, make sure the distance between the left elevator tab and the elevator tab rigging bar, SPL-10345, is within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm) (Figure 510).

(b) After adjustment, make sure the distance between the right elevator tab and the elevator tab rigging bar, SPL-10345, is within 0.20 in. (5.08 mm) - 0.50 in. (12.70 mm) (Figure 510).

SUBTASK 27-31-00-820-010

(8) If it is necessary, do this coarse adjustment of the elevator tab pushrods by turning the tab rod ends (Figure 509):

(a) Remove the pins [111], nuts [109], washers [108], bolts [106], and bushings [107] from the tab pushrods [110].

(b) Turn the tab pushrod ends until the distance between the elevator tab trailing edge and the elevator tab rigging bar, SPL-10345, (dimension X) is the same dimension that you measured and recorded subsequent to the last successful flight test and before any pushrod adjustment. If the prior tab location was not measured or recorded, then adjust to 0.36 ±0.01 in. (9.14 ±0.26 mm).

NOTE: One half turn of the tab pushrod end is equal to 0.10 in. (2.54 mm) at the elevator tab trailing edge.

(c) Apply compound, D50004, on the threads of the nuts [109].

(d) Install the bushings [107], bolts [106], washers [108], and nuts [109] to connect the tab pushrods [110] to the elevator tab [102].

NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard

1) If you loosened or removed the nuts [109], they need to be replaced and not re-installed.

a) Using new nuts with compound, D50004, will ensure that they have the required run-on torque of 3.5 in-lb (0.4 N·m).

SUBTASK 27-31-00-820-011

(9) Do this fine adjustment of the elevator tab pushrods (Figure 509):

(a) Turn the bushing [104] to adjust the length of the tab pushrods [110].

NOTE: One half turn of the bushing [104] is equal to 0.01 in. (0.3 mm) at the elevator tab trailing edge.

(b) Loosen the nuts [109] that attach the tab pushrods [110] to the elevator tabs [102].

(c) Remove the pins [111] from in front of the head of the bolts [106].

(d) Move the rectangle bolt heads out of the anti-rotation bolt bosses and make sure that you can easily turn the bolts [106] by hand.

1) If it is necessary, adjust the bushing [104] on the tab pushrods [110].

NOTE: One half turn of the bushing/rod end assembly is equal to 0.11 in. (2.79 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Apply compound, D50004, on the threads of the nuts [109].

CAUTION

TIGHTEN THE NUTS [109] CORRECTLY. IF YOU TIGHTEN THEM INCORRECTLY THEN THE PUSHRODS CAN BECOME DISCONNECTED. THIS CAN CAUSE DAMAGE TO THE ELEVATOR, AND STABILIZER.

(f) Tighten the nuts [109] to 70 in-lb (8 N·m) - 80 in-lb (9 N·m) and install pins [111].

1) If you loosened or removed the old nuts [109], they need to be replaced with compound, D50004, and not re-installed.

a) Using new nuts [109] with compound, D50004, will ensure that they have the required run-on torque of 3.5 in-lb (0.4 N·m).

(g) Tighten the checknuts [103] and checknuts [105] on the tab pushrods [110] to 150 in-lb (17 N·m) - 200 in-lb (23 N·m).

(h) Install lockwire on the checknut [103] and between the bushing [104] and checknut [105].

SUBTASK 27-31-00-220-002

(10) Make sure that the gap measured from the elevator tab faired position to the elevator tab rigged up position with the elevator tab rigging bar, SPL-10345, (dimension X) is the same dimension that you measured and recorded subsequent to the last successful flight test and before any pushrod adjustment.

(a) If the prior tab location was not measured or recorded, then adjust to 0.36 ±0.01 in. (9.14 ±0.26 mm).

SUBTASK 27-31-00-220-003

(11) Do a check of the thread engagement of the tab pushrod [110] ends and bushings [104]:

(a) Make sure that the end of the bushing [104] covers the inspection hole on each tab pushrod [110].

(b) Make sure that the inspection hole of each tab pushrod end bearing is not shown.

(c) If the thread engagement is not correct, you must do the coarse adjustment again.

SUBTASK 27-31-00-200-006

(12) Verify that the forward and aft tab rod end bearings are aligned in the correct alignment (Figure 509):

(a) Rotate each tab rod counterclockwise (when facing forward) until contact is made between the tab rod end and surrounding structure.

1) This initial contact point is the start of the measurement of the rod end bearing alignment.

(b) Rotate each tab rod clockwise (when facing forward) until contact is made between the tab rod end and surrounding structure.

1) Measure the distance travelled between the contact points as the tab rod was rotated clockwise from contact point to contact point.

(c) There should be a minimum of 0.040 in. (1.016 mm) travel from contact point to contact point.

1) If there is less than 0.040 in. (1.016 mm) of travel from contact point to contact point, adjust the tab rod end until a minimum travel of 0.040 in. (1.016 mm) is achieved.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If it was necessary to adjust the tab rods, make sure you torque the check nuts to the proper torque and do a check of the rod end rotation from contact point to contact point.

SUBTASK 27-31-00-420-007

(13) Install lockwire on the checknut [103] and checknut [105] (Figure 509).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-149

(1) Do this task: APU System - Activation, TASK 49-11-00-440-801.

SUBTASK 27-31-00-860-150

(2) Do this task: Tailcone Anti-Collision Light Activation, TASK 33-44-04-440-801.

SUBTASK 27-31-00-410-011

NOTE: Depending on which systems have been disturbed, you may not have to do a power-off flight test. To see if you need to do a power-off flight test, check the requirements in the ''General'' section at the beginning of the power-off flight test task Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

(3) Install these access panels:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-390-003

(4) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-00-940-006

(5) Close this access panel:

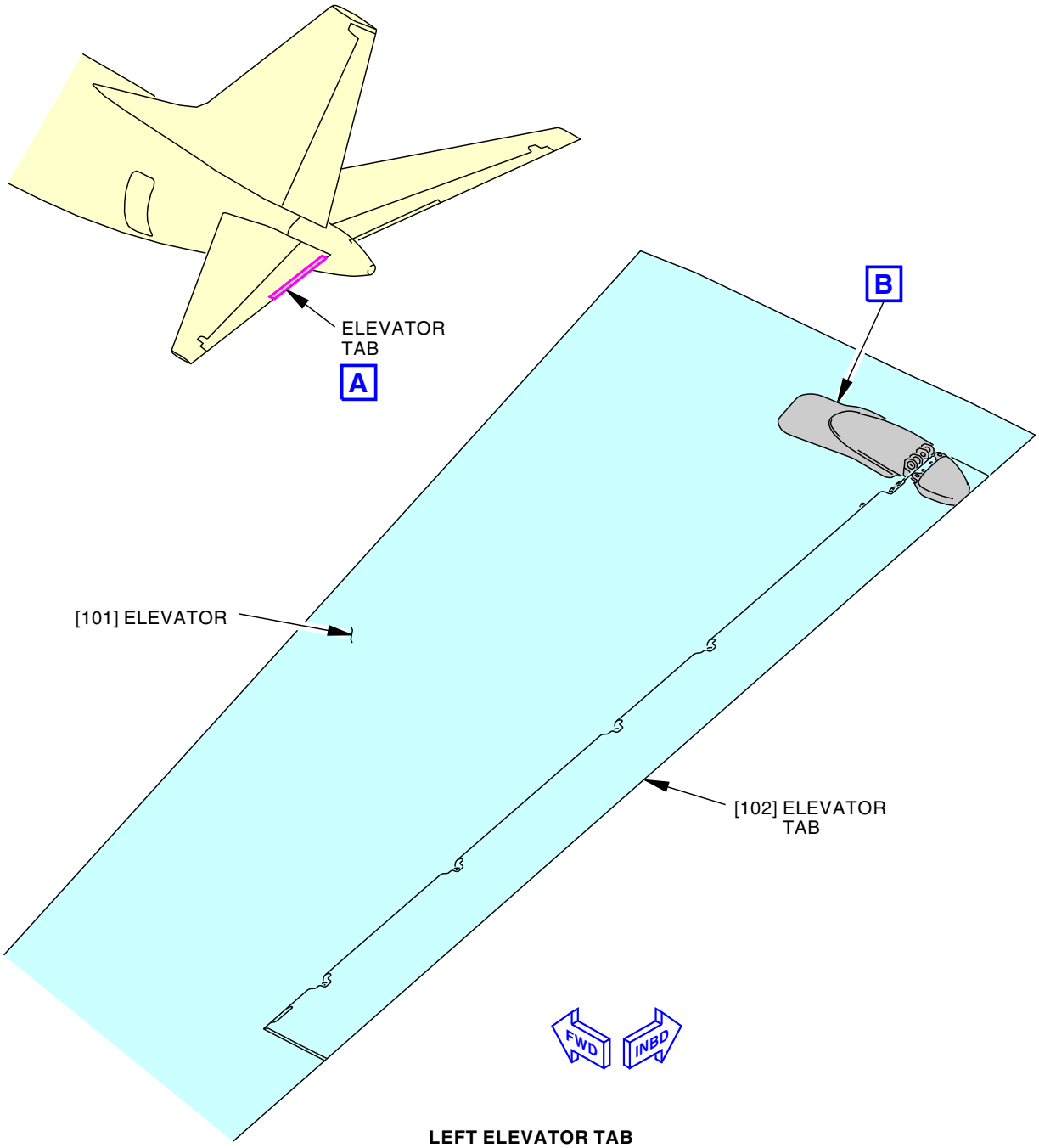
Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-064

(6) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

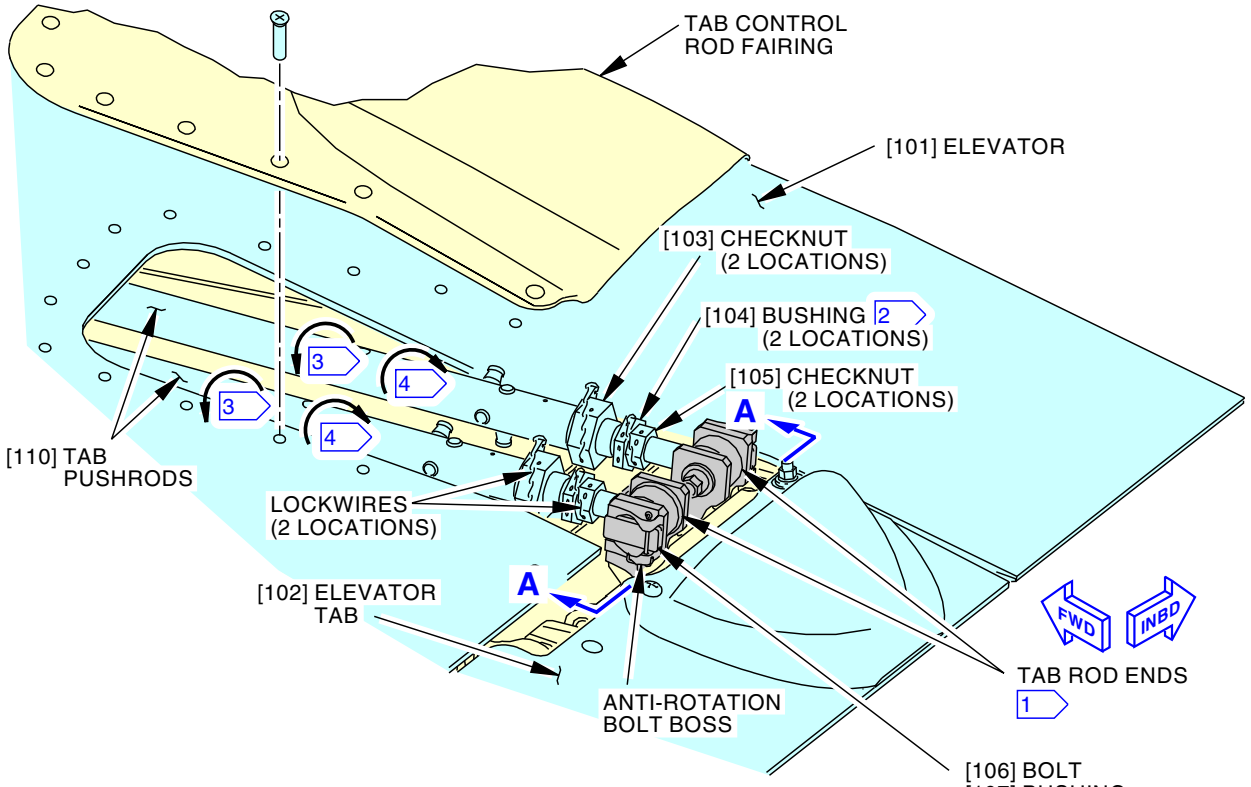
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



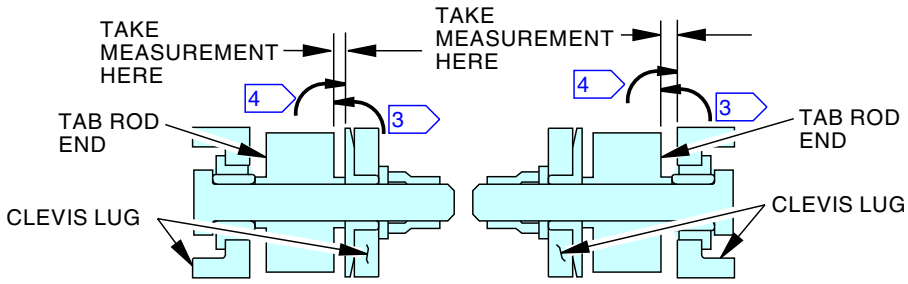
Elevator Tab Pushrods Adjustment
Figure 509/27-31-00-990-816 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT ELEVATOR TAB PUSHRODS
(RIGHT ELEVATOR TAB PUSHRODS ARE OPPOSITE)

B



A-A

1 TURN THE ELEVATOR TAB ROD ENDS TO MAKE COARSE ADJUSTMENTS OF THE ELEVATOR TAB TRAILING EDGE.

2 TURN THE BUSHING [104] (VERNIER COLLAR) TO MAKE FINE ADJUSTMENTS OF THE ELEVATOR TAB TRAILING EDGE.

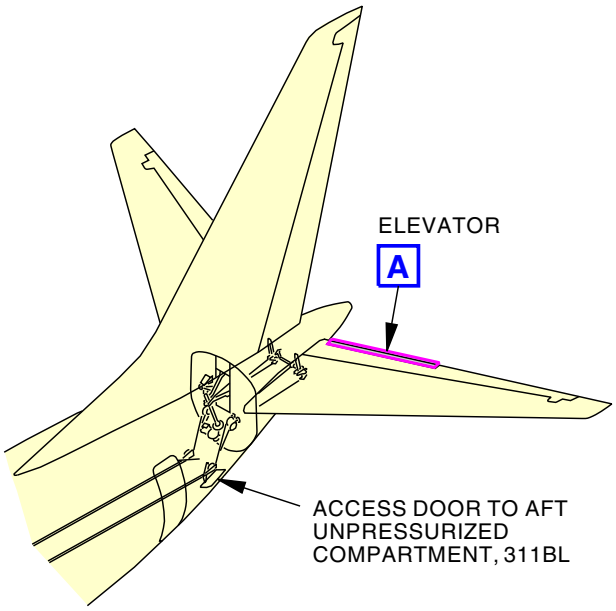
3 ROTATE THE TAB PUSHRODS COUNTERCLOCKWISE UNTIL CONTACT IS MADE. START THE MEASUREMENT.

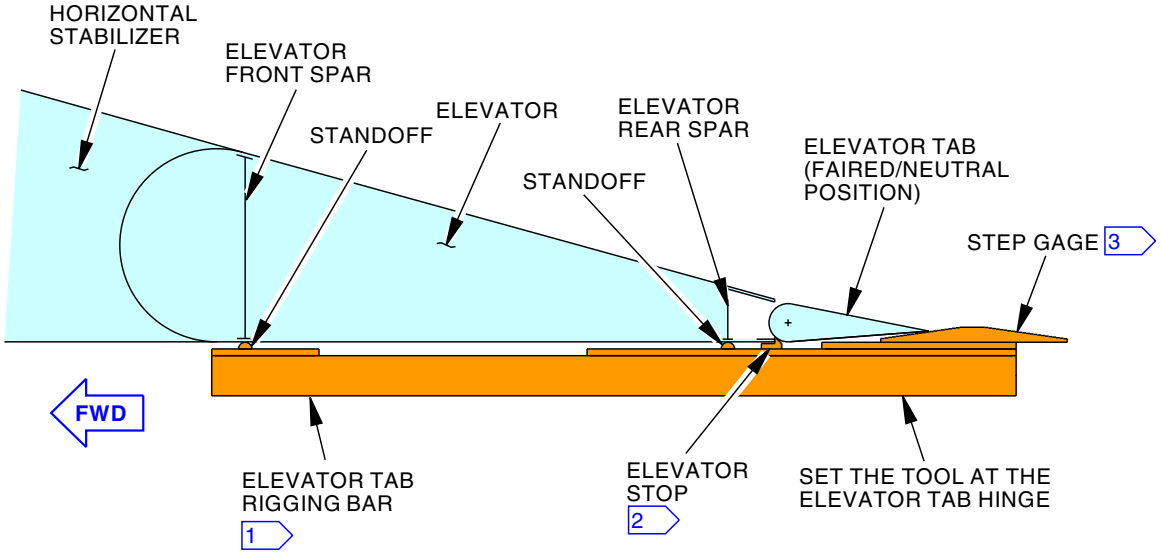
4 ROTATE THE TAB PUSHRODS CLOCKWISE UNTIL CONTACT IS MADE. END THE MEASUREMENT. THE MINIMUM TRAVEL (WHILE ROTATING EACH PUSHROD FROM CONTACT TO CONTACT) SHOULD BE 0.040 INCH (1.02 mm).

2412470 S00061530733_V2

Elevator Tab Pushrods Adjustment
Figure 509/27-31-00-990-816 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





ELEVATOR

A

1 RIGGING BAR PART NUMBER C27083.

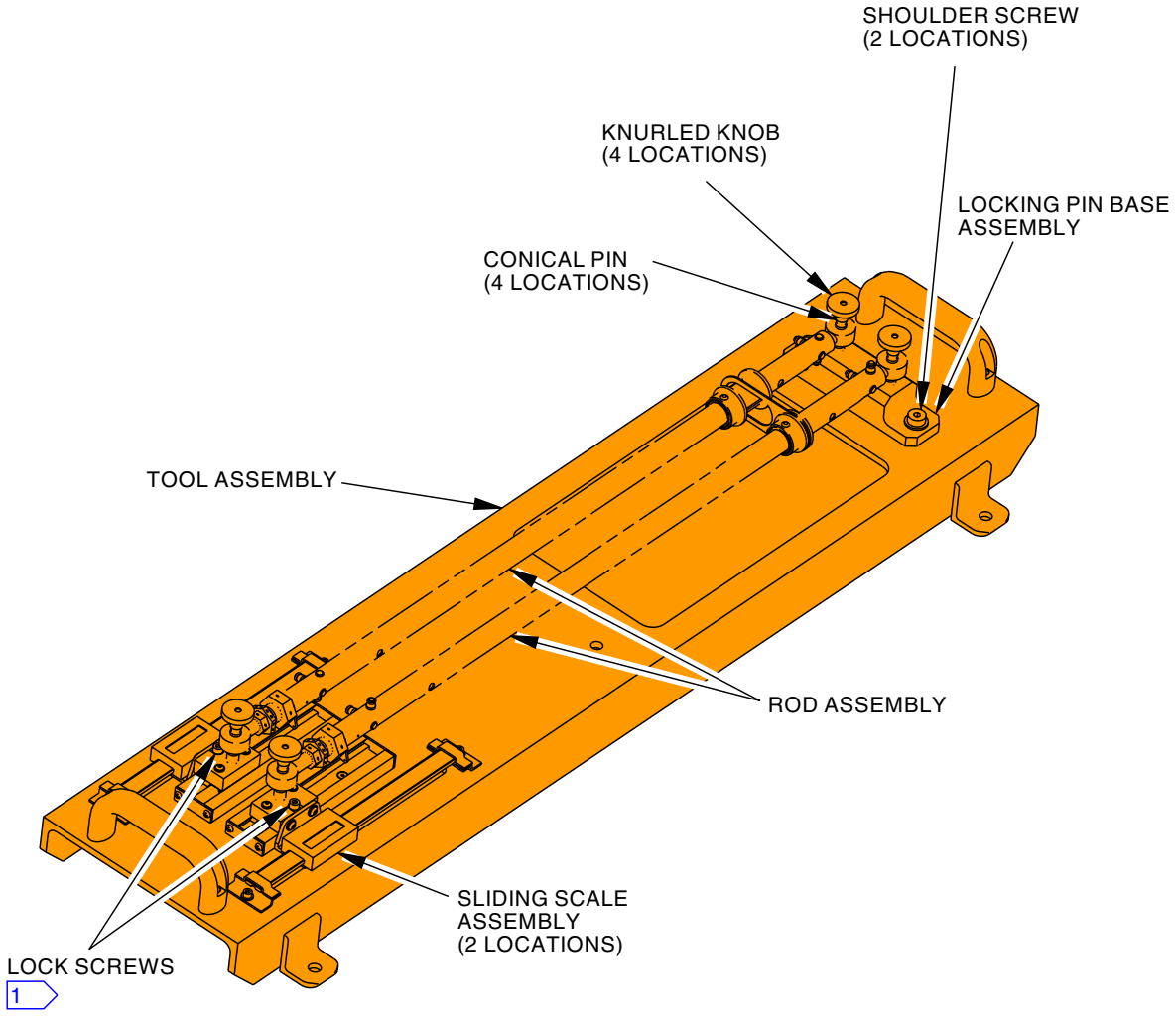
2 PUSH RIGGING BAR FWD UNTIL ELEVATOR STOP INDEXES ON THE AFT EDGE OF ELEVATOR NEAR ELEVATOR REAR SPAR.

3 SLIDE STEP GAGE FWD UNDER ELEVATOR TAB TO OBTAIN READING.

2412471 S00061530734_V3

Elevator Tab Fixture Bar Installation
Figure 510/27-31-00-990-818

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 LOCK SCREW IS USED FOR TOOL TRANSPORT ONLY. REMOVE DURING USE

2412472 S00061530735_V1

Elevator Tab Pushrod Length Adjustment Tool
Figure 511/27-31-00-990-819

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-806

12. Input Rod of the Elevator Feel Computer - Adjustment

(Figure 503, Figure 512)

A. General

(1) Use this test to adjust the input rod (stabilizer pushrod) of the elevator feel computer.

B. References

Reference	Title
22-11-31-710-801	Stabilizer Position Sensor Test (P/B 501)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Adjustment

SUBTASK 27-31-00-860-066

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-065

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-018

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-068

CAUTION: MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

G. Input Rod of the Elevator Feel Computer Adjustment

SUBTASK 27-31-00-410-012

(1) Make sure you can install the rig pin E-4 from the rigging pin kit, SPL-1585 in the rig pin holes in the input arm [122] and elevator feel computer [127].

SUBTASK 27-31-00-820-012

(2) If you can not install the rig pin E-4 easily, adjust the input rod [121] of the elevator feel computer [127] (Figure 512):

(a) Remove the nut [125], washer [124], washer [128], and bolt [123] to disconnect the input rod [121] from the input arm [122].

(b) Install the rig pin E-4 in the rig pin holes in the input arm [122] and elevator feel computer [127].

(c) Loosen the checknut [126].

(d) Adjust the input rod [121] until you can install the bolt [123] easily through the input arm [122] and input rod [121].

(e) Install the bolt [123], washer [128], washer [124] and nut [125].

1) Make sure that the recessed side of the washer [128] is oriented towards the head of the bolt [123].

2) Tighten the nut [125] to 63 in-lb (7.1 N·m) to 67 in-lb (7.6 N·m).

(f) Tighten the checknut [126].

1) Tighten the checknut [126] to 63 in-lb (7.1 N·m) to 67 in-lb (7.6 N·m).

(g) Remove the rig pin E-4.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-820-013

(1) Do this task: Stabilizer Position Sensor Test, TASK 22-11-31-710-801.

SUBTASK 27-31-00-410-013

(2) Close this access panel:

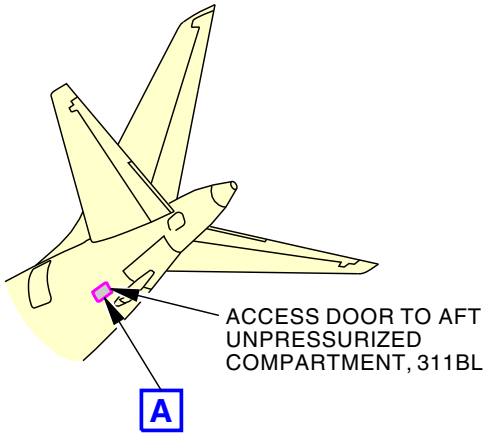
Number	Name/Location
311BL	Stabilizer Trim Access Door

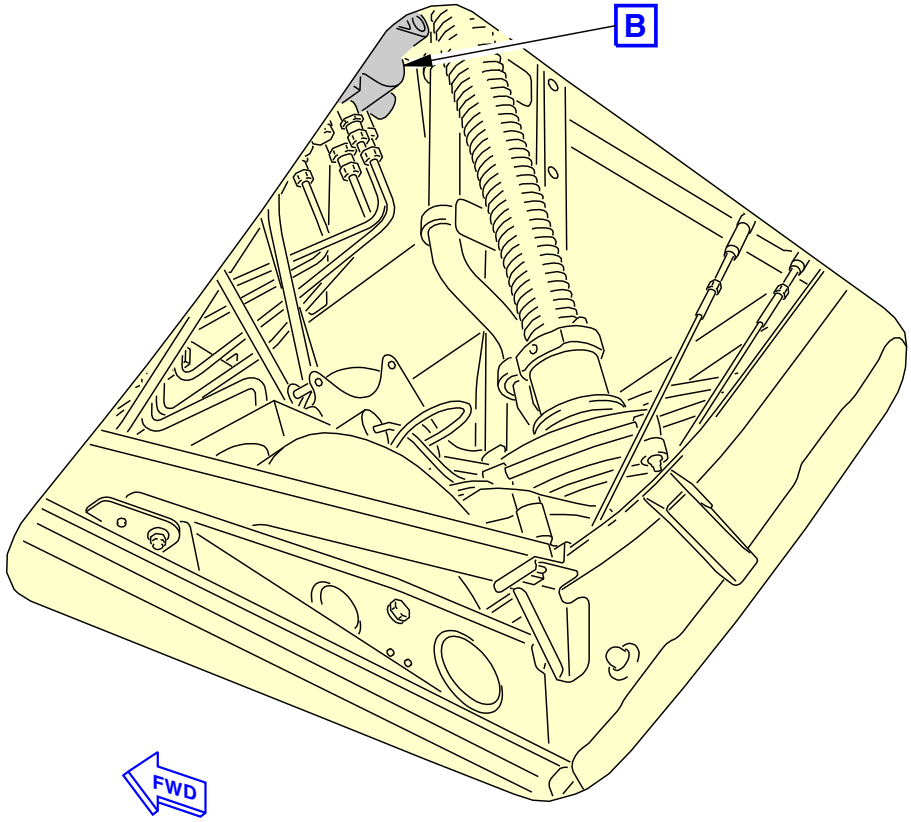
SUBTASK 27-31-00-860-070

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





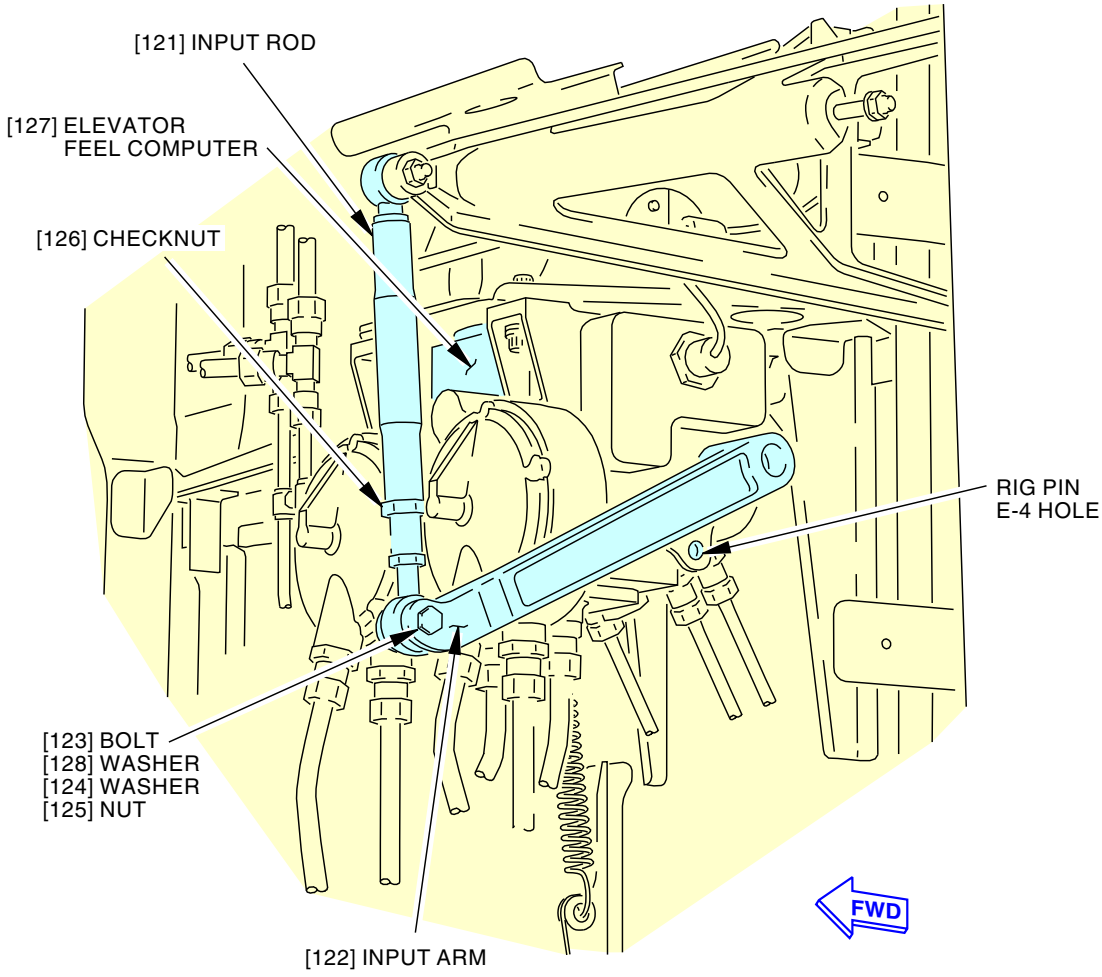
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412473 S00061530737_V1

**Elevator Feel Computer Input Rod Adjustment
Figure 512/27-31-00-990-820 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412474 S00061530738_V2

Elevator Feel Computer Input Rod Adjustment
Figure 512/27-31-00-990-820 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-700-803

13. Elevator Surface Friction and Balance - Test

(Figure 503, Figure 506)

A. General

(1) Use this test to make sure the elevators are balanced.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
SRM 51-60-04-0G-0	Elevator Balance Procedure
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-072

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-071

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-019

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-073

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-860-146

(5) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-860-074

(6) Move the control columns in a longitudinal (forward to aft) direction through full travel 20 times.

G. Elevator Surface Friction and Balance Test

SUBTASK 27-31-00-730-002

CAUTION DO NOT PUT A LOAD OF MORE THAN 65 POUNDS (290 NEWTONS) ON THE ELEVATORS AT ONE TIME. IF THE LOAD IS TOO HEAVY, IT CAN CAUSE DAMAGE TO THE ELEVATORS.

(1) Do the elevator surface friction and balance test:

(a) Hold the captain's control column at the neutral position.

(b) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

(c) Move the elevator with your hand until the right elevator trailing edge aligns with the elevator neutral index mark (Figure 506).

1) Release the elevator trailing edge.

(d) If the right elevator trailing edge moves down from the index mark, then do the elevator balance adjustment (Elevator Balance Procedure/SRM PROCEDURE 51-60-04-0G-0).

(e) If the right elevator trailing edge moves up from the index mark, then do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

1) Turn on the A and B hydraulic systems to center the elevator, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.
2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.
3) Hold the captain's control column in the neutral position.
4) Use the block, STD-1278 and force gauge, COM-1557 to measure the minimum force required to move the elevator trailing edge down 0.75 ±0.15 in. (19.05 ±3.81 mm) (1.25 ±0.24 degrees) from the neutral index mark (this force is referred to as the "down force").
   a) Make a record of this down force.
5) Hold the captain' control column in the neutral position.
6) Use the block, STD-1278 and force gauge, COM-1557 to measure the minimum force required to hold the elevator trailing edge at the index mark (which is referred to as the "up force").
   a) Make a record of this up force.
7) Make sure the difference between the down force and up force is equal or less than 20 lbf (89 N).
8) If the difference between the down force and up force is greater than 20 lbf (89 N), then see IFIM and do the applicable procedure(s).

(f) If the right elevator trailing edge stays at the index mark, then do these steps:

1) Hold the captain's control column in the neutral position.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

2) Turn on the A and B hydraulic systems to center the elevator, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.
3) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.
4) Use the force gauge, COM-1557 to measure the force required to move the elevator trailing edge down 0.75 ±0.15 in. (19.05 ±3.81 mm) (1.25 ±0.24 degrees) from the index mark (which is referred to as the "down force").
   a) Make a record of this down force.
5) Use the force gauge, COM-1557 to measure the force required to move the elevator trailing edge up 0.75 ±0.15 in. (19.05 ±3.81 mm) (1.25 ±0.24 degrees) from the index mark (which is referred to as the "up force").
   a) Make a record of this up force.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

6) If the down force is less than the up force, then do a check of the elevator balance adjustment (Elevator Balance Procedure/SRM PROCEDURE 51-60-04-0G-0).

7) Calculate the sum of the down force and the up force.

8) Make sure the sum of the down force and the up force is equal or less than 32 lbf (142 N).

9) If the sum of the down force and the up force is greater than 32 lbf (142 N), then see IFIM and do the applicable procedure(s).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-075

(1) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-00-410-014

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-804

14. Elevator Balance Panels - Test

(Figure 503)

A. General

(1) Use this test to make sure that the elevator balance panels are installed properly. This task is applicable for the left and right elevator balance panels.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Test

SUBTASK 27-31-00-860-077

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-076

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-020

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-078

(4) Use the stab trim switches on the control wheel to set the stabilizer at approximately 4 units of trim.

SUBTASK 27-31-00-860-079

(5) Move the control columns in a longitudinal direction (forward and aft) through full travel one time.

F. Elevator Balance Panels Test

SUBTASK 27-31-00-200-007

(1) Make sure that the bulb seal gaps in the balance panel bay are 0.02 ±0.01 in. (0.51 ±0.26 mm) (TASK 27-31-41-400-801).

SUBTASK 27-31-00-200-008

(2) Move each elevator (left and right side) by hand through the full travel to make sure that the elevator moves smoothly and freely.

(a) Visually make sure that each of the bulb seals do not bind as the elevator moves through the full travel.

(b) Make sure that the forward hinge seal cloth is not tight at all elevator positions.

SUBTASK 27-31-00-410-015

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-700-001

(4) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-080

(1) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

TASK 27-31-00-700-805

15. Elevator Travel Limit - Test

(Figure 503, Figure 519)

A. General

(1) Use this test to make sure that the elevator operates correctly through the full travel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-082

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-081

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-021

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-083

CAUTION: MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (995 ±0 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

G. Elevator Travel Limit Test

SUBTASK 27-31-00-730-003

CAUTION: DO NOT PUT A LOAD OF MORE THAN 65 POUNDS (290 NEWTONS) ON THE ELEVATORS AT ONE TIME. IF THE LOAD IS TOO HEAVY, IT CAN CAUSE DAMAGE TO THE ELEVATORS.

(1) Do the elevator travel limit test with hydraulics off.

(a) Check for binding at the left and right elevators:

1) Use your hand to move the right elevator through the full travel.

a) Make sure that there is no binding through the full travel.

2) Use your hand to move the left elevator through the full travel.

a) Make sure that there is no binding through the full travel.

(b) Move and hold the captain's control column aft until it touches the stops.

1) Make sure that the right elevator moves 11.82 in. (300 mm) - 13.83 in. (351 mm) up from the index mark (Figure 519).

(c) Move and hold the captain's control column forward until it touches the stops.

1) Make sure that the right elevator moves 9.15 in. (232 mm) - 10.44 in. (265 mm) down from the index mark.

(d) Move and hold the captain's control column aft until it touches the stops.

1) Make sure that the left elevator moves 11.82 in. (300 mm) - 13.83 in. (351 mm) up from the index mark (Figure 519).

(e) Move and hold the captain's control column forward until it touches the stops.

1) Make sure that the left elevator moves 9.15 in. (232 mm) - 10.44 in. (265 mm) down from the index mark (Figure 519).

(f) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-00-730-004

(2) Do the elevator travel limit test with hydraulics on.

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WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(b) Move and hold the captain's control column aft until it touches the stops.

1) Make sure that the right elevator moves up 12.94 in. (329 mm) - 14.06 in. (357 mm) from the index mark (Figure 519).

(c) Move and hold the captain's control column forward until it touches the stops.

1) Make sure that the right elevator moves down 9.69 in. (246 mm) - 10.56 in. (268 mm) from the index mark (Figure 519).

(d) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the OFF position.

(e) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

(f) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(g) Move and hold the captain's control column aft until it touches the stops.

1) Make sure that the right elevator moves up 12.94 in. (329 mm) - 14.06 in. (357 mm) from the index mark (Figure 519).

(h) Move and hold the captain's control column forward until it touches the stops.

1) Make sure that the right elevator moves down 9.69 in. (246 mm) - 10.56 in. (268 mm) from the index mark (Figure 519).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-084

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-016

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-806

16. Elevator Output Torque Tube Buss Linkage Test

(Figure 503)

A. General

(1) Use this test to do a check of the elevator output torque tube buss linkage.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.

D. Consumable Materials

Reference	Description	Specification
G50314	Tape - Masking	BAC5034-4 Type VII Class 2

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Prepare for the Test

SUBTASK 27-31-00-860-167

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-085

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-00-010-022

(3) Open this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-087

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-860-088

(5) Operate the elevator in the full travel 6 times.

SUBTASK 27-31-00-860-089

(6) Make sure that the control column is in the neutral position.

H. Elevator Output Torque Tube Buss Linkage Test

SUBTASK 27-31-00-730-005

CAUTION DO NOT PUT A LOAD OF MORE THAN 65 POUNDS (290 NEWTONS) ON THE ELEVATORS AT ONE TIME. IF THE LOAD IS TOO HEAVY, IT CAN CAUSE DAMAGE TO THE ELEVATORS.

(1) Do a test of the elevator output torque tube:

(a) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the OFF position.

(b) Make sure that the FLT CONTROL B switch on the forward overhead panel, P5, is in the ON position.

(c) Use a block, STD-1278, and force gauge, COM-1557, on the top side of the right elevator trailing edge, to apply a downward force of 17.5 ±2.5 lbf (77.84 ±11.12 N) to the right elevator trailing edge.

1) Slowly release the force.

2) Make a mark of the elevator position on the tailcone after you remove the force.

NOTE: You can use masking tape, G50314, to make the mark.

(d) Use a block, STD-1278, and force gauge, COM-1557, on the bottom side of the right elevator trailing edge, to apply an upward force of 10 ±1 lbf (44 ±5 N) to the right elevator trailing edge.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Hold the elevator in this position with the force you have applied.
2) Make a mark of the elevator position on the tailcone before you remove the force.

   NOTE: You can use masking tape, G50314, to make the mark.
3) Slowly remove the force.
   a) Make sure that the distance between the up and down position of the right elevator is 0.21 in. (5.33 mm) or less.
   b) Remove the mark on the tailcone.

(e) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the ON position.

(f) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the OFF position.

(g) Use a block, STD-1278, and force gauge, COM-1557, on the top side of the left elevator trailing edge, to apply a downward force of 17.5 ±2.5 lbf (77.84 ±11.12 N) to the left elevator trailing edge.
1) Slowly release the force.
2) Make a mark of the elevator position on the tailcone after you remove the force.

   NOTE: You can use masking tape, G50314, to make the mark.

(h) Use a block, STD-1278, and force gauge, COM-1557, on the bottom side of the left elevator trailing edge, to apply an upward force of 10 ±1 lbf (44 ±5 N) to the left elevator trailing edge.
1) Hold the elevator in this position with the force you have applied.
2) Make a mark of the elevator position on the tailcone before you remove the force.

   NOTE: You can use masking tape, G50314, to make the mark.
3) Slowly remove the force.
   a) Make sure that the distance between the up and down position of the left elevator is 0.21 in. (5.33 mm) or less.
   b) Remove the mark on the tailcone.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-090

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-017

(2) Close this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-807

17. Elevator Tab Linkage - Test

(Figure 503, Figure 506, Figure 510, Figure 519)

A. General

(1) Use this test to do a check of the elevator tab control system.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-091

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-860-092

(2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-760-002

(3) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

SUBTASK 27-31-00-010-023

(4) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-093

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(5) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-860-094

(6) Make sure the control column is in the neutral position.

G. Elevator Tab Linkage Test

SUBTASK 27-31-00-730-006

CAUTION

DO NOT PUT A LOAD OF MORE THAN 65 POUNDS (290 NEWTONS) ON THE ELEVATORS AT ONE TIME. IF THE LOAD IS TOO HEAVY, IT CAN CAUSE DAMAGE TO THE ELEVATORS.

(1) Do the elevator tab linkage test:

(a) Cycle the control column forward and aft to center the system.

(b) Make sure that the flaps are fully retracted.

1) If necessary, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(c) Move the left elevator tab up and down by hand to determine if the elevator tab is loose.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure the looseness is not greater than 0.03 in. (0.76 mm) total movement at the trailing edge of the left elevator tab.

(d) Move the right elevator tab up and down by hand to determine if the elevator tab is loose.

1) Make sure the looseness is not greater than 0.03 in. (0.76 mm) total movement at the trailing edge of the right elevator tab.

(e) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

(f) Move the right elevator by hand to align it with the index mark in ±0.06 in. (1.52 mm) (Figure 506).

(g) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge of the right elevator (from inboard) (Figure 510).

1) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

2) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

3) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

(h) Make sure that the distance measured from the right elevator tab faired/neutral position to the rigged up position is in 0.20 in. (5.08 mm) - 0.42 in. (10.67 mm).

(i) Move the left elevator by hand to align it with the index mark in ±0.06 in. (1.52 mm).

(j) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge of the left elevator (from inboard)(Figure 510).

1) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

2) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

3) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

(k) Make sure that the distance measured from the left elevator tab faired/neutral position to the rigged up position is in 0.20 in. (5.08 mm) - 0.42 in. (10.67 mm).

(l) Remove the elevator tab rigging bar, SPL-10345.

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(m) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(n) Lightly move the control column forward and aft a small amount to make sure that the system is in the neutral position.

(o) Verify that the right elevator is aligned with the index mark in ±0.06 in. (1.52 mm).

(p) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "neutral tab position").

1) Make a record of this neutral tab position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(q) Move and hold the control column full aft.

1) Use a scale to make sure the trailing edge of the right elevator is in 13.39 in. (340.11 mm) - 14.53 in. (369.06 mm) of the index mark (Figure 519).

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "down tab position").

a) Make a record of this down tab position.

b) Release the control column.

(r) Move and hold the control column full forward.

1) Use a scale to make sure the trailing edge of the right elevator is in 9.98 in. (253.49 mm) - 10.88 in. (276.35 mm) of the index mark.

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "up tab position").

a) Make a record of this up tab position.

b) Release the control column.

(s) Add the neutral tab position to the down tab position.

1) Make sure the sum is 1.06 in. (26.92 mm) - 1.40 in. (35.56 mm).

(t) Subtract the neutral tab position from up tab position.

1) Make sure the difference is between 0.80 in. (20.32 mm) and 1.08 in. (27.43 mm).

(u) Lightly move the control column forward and aft a small amount to make sure that the system is in the neutral position.

(v) Verify that the left elevator is aligned with the index mark in ±0.06 in. (1.52 mm).

(w) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "neutral tab position").

1) Make a record of this neutral tab position.

(x) Move and hold the control column full aft.

1) Use a scale to make sure the trailing edge of the left elevator is in 13.39 in. (340.11 mm) - 14.53 in. (369.06 mm) of the index mark.

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "down tab position").

a) Make a record of this down tab position.

b) Release the control column.

(y) Move and hold the control column full forward.

1) Use a scale to make sure the trailing edge of the left elevator is in 9.98 in. (253.49 mm) - 10.88 in. (276.35 mm) of the index mark.

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "up tab position").

a) Make a record of this up tab position.

b) Release the control column.

(z) Add the neutral tab position to the down tab position.

1) Make sure the sum is 1.06 in. (26.92 mm) - 1.40 in. (35.56 mm).

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(aa) Subtract the neutral tab position from the up tab position.

1) Make sure the difference is 0.80 in. (20.32 mm) - 1.08 in. (27.43 mm).

(ab) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

(ac) Move the flap control lever to the 5-unit position.

(ad) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

1) Make sure that the right tab begins to move in 10 ±2 seconds.

(ae) Lightly move the control column forward and aft a small amount to make sure that the system is in the neutral position.

(af) Verify that the right elevator is aligned with the index mark in ±0.06 in. (1.52 mm).

1) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "neutral tab position).

a) Make a record of this neutral tab position.

(ag) Move and hold the control column full aft.

1) Use a scale to make sure the trailing edge of the right elevator is in 13.39 in. (340.11 mm) - 14.53 in. (369.06 mm) of the index mark.

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "up tab position").

a) Make a record of this up tab position.

b) Release the control column.

(ah) Move and hold the control column full forward.

1) Use a scale to make sure the trailing edge of the right elevator is in 9.98 in. (253.49 mm) - 10.88 in. (276.35 mm) of the index mark.

2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the right elevator to the bottom edge of the elevator tab (this is referred to as the "down tab position").

a) Make a record of this down tab position.

b) Release the control column.

(ai) Add the neutral tab position to the up tab position.

1) Make sure the sum is between 0.8 in. (20.32 mm) - 1.2 in. (30.48 mm).

(aj) Subtract the neutral tab position from the down tab position.

1) Make sure the difference is between 0.6 in. (15.24 mm) - 0.9 in. (22.86 mm).

(ak) Move the left elevator by hand to align it with the index mark in ±0.06 in. (1.52 mm).

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1) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "neutral tab position").
   a) Make a record of this neutral tab position.

(al) Move and hold the control column full aft.
   1) Use a scale to make sure the left elevator is in 13.39 in. (340.11 mm) - 14.53 in. (369.06 mm) of the index mark.

(am) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "up tab position").
   1) Make a record of this up tab position.

(an) Move and hold the control column full forward.
   1) Use a scale to make sure the trailing edge of the left elevator is in 9.98 in. (253.49 mm) - 10.88 in. (276.35 mm) of the index mark.
   2) Use a 6 in. (152.40 mm) scale to measure from the bottom edge of the left elevator to the bottom edge of the elevator tab (this is referred to as the "down tab position").
      a) Make a record of this down tab position.
      b) Release the control column.

(ao) Add the neutral tab position to the up tab position.
   1) Make sure the sum is between 0.8 in. (20.32 mm) - 1.2 in. (30.48 mm).

(ap) Subtract the neutral tab position from the down tab position.
   1) Make sure the difference is between 0.6 in. (15.24 mm) - 0.9 in. (22.86 mm).

(aq) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-095

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-018

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-808

18. Manual Mode - Test

(Figure 503)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure the control columns and control wheels operate freely.

B. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-096

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-040-002

(2) Do the following to isolate the spoilers to keep them from moving when you turn the control wheel:

(a) Turn the A and B Spoiler Shutoff Switches on the P5-3 panel to the OFF position.

SUBTASK 27-31-00-010-024

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-097

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Manual Mode Test

SUBTASK 27-31-00-730-007

(1) Do the manual mode test:

(a) Make sure the control columns and control wheels move freely:

1) Move the control column in a longitudinal direction (forward and aft), and while moving the control column forward and aft, rotate the control wheel between the left and right stops.

a) Repeat this step nine more times.

2) Rotate and hold the control wheel against the left stop and move the control column in a longitudinal direction (forward and aft) between the stops.

3) Rotate and hold the control wheel against the right stop and move the control column in a longitudinal direction (forward and aft) between the stops.

4) Hold the control column full forward and rotate the control wheel left and right between the stops.

5) Hold the control column full aft and rotate the control wheel left and right between the stops.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-098

(1) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-00-040-003

(2) If necessary, turn the A and B Spoiler Shutoff Switches on the P5-3 panel to the ON position.

SUBTASK 27-31-00-410-019

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-809

19. Control Column Travel and Centering - Test

(Figure 503, Figure 506, Figure 513, and Figure 519)

A. General

(1) Use this test to make sure that the control columns can move through their full travel. This also includes a centering test of the control columns.

(2) Use this test to verify two separate requirements:

(a) Minimum forward and aft travel.

(b) Total stop to stop travel.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-100

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-099

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-010-025

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-101

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim to 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

G. Control Column Travel and Centering Test

SUBTASK 27-31-00-730-008

(1) Do the control column travel test (Figure 513).

(a) Attach the adapter, SPL-1674, and protractor, SPL-1680, to the captain's control column (Figure 513).

(b) Move the captain's control column full aft until it touches the stop and hold it in that position.

NOTE: This measures the minimum aft travel.

1) Make sure that the right elevator trailing edge moves to 11.82 in. (300.23 mm) - 13.83 in. (351.28 mm) up from the index mark (Figure 519).

a) Make sure that the position of the captain's control column is at a minimum of 14 degrees aft of the column neutral rig position (Figure 513).

(c) Move the captain's control column full forward until it touches the stop and hold it in that position.

NOTE: This measures the minimum forward travel.

1) Make sure that the right elevator trailing edge moves to 9.15 in. (232.41 mm) - 10.44 in. (265.18 mm) down from the index mark (Figure 519).

2) Make sure that the position of the captain's control column is at a minimum of 12.8 degrees forward of the column neutral rig position.

a) Release the control column.

(d) Move the captain's control column full forward and note the degree forward measurement.

NOTE: Enough force is required to stretch the control cables allowing the column to hit the forward stop.

(e) Move the captain's control column full aft and note the degree aft measurement.

NOTE: Enough force is required to stretch the control cables allowing the column to hit the aft stop.

1) Release the control column.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the total stop to stop travel of the captain's control column is a minimum of 28.4 degrees (Figure 513).

NOTE: This measures the total stop to stop travel.

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Do this task : Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

(g) Move the captain's control column lightly forward and aft to make sure that it is in the neutral position.

1) Make sure that the position of the captain's control column is in 6.1 - 7.7 degrees of the vertical position (90 degrees).

(h) Remove the adapter, SPL-1674, and protractor, SPL-1680, from the captain's control column.

(i) Attach the adapter, SPL-1674, and protractor, SPL-1680, to the first officer's control column (Figure 513).

(j) Move the first officer's control column lightly forward and aft to make sure that it is in the neutral position.

1) Make sure that the position of the first officer's control column is in 6.1 - 7.7 degrees of the vertical position.

(k) Remove the adapter, SPL-1674, and protractor, SPL-1680, from the first officer's control column.

SUBTASK 27-31-00-730-009

(2) Do the elevator centering test.

(a) Set the FLT CONTROL B switch, on the P5 forward overhead panel, to the OFF position.

(b) Make sure that the FLT CONTROL A switch, on the P5 forward overhead panel, is in the ON position.

(c) Make sure that the captain's control column is at the neutral position.

1) Make sure that the right elevator aligns with the index mark in ±0.06 in. (1.52 mm) (Figure 506).

(d) Set the FLT CONTROL B switch to the ON position.

1) Make sure that the right elevator aligns with the index mark in ±0.06 in. (1.52 mm).

(e) Set the FLT CONTROL A switch to the OFF position.

(f) Make sure that the FLT CONTROL B switch is in the ON position.

1) Make sure that the right elevator aligns with the index mark in ±0.06 in. (1.52 mm).

(g) Set the FLT CONTROL A switch to the ON then to the OFF position.

1) Make sure that there is less than 0.02 in. (0.51 mm) movement at the right elevator trailing edge.

(h) Set the FLT CONTROL B switch to the OFF then to the ON then to the OFF position.

1) Make sure that there is less than 0.02 in. (0.51 mm) movement at the right elevator trailing edge.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) Set the FLT CONTROL A and B switches to the ON position.

(j) Make sure that the captain's control column is at the neutral position.

1) Make sure that the right elevator aligns with the index mark in ±0.06 in. (1.52 mm).

(k) Move the captain's control column forward approximately 2 degrees and release.

1) Make sure that the right elevator trailing edge aligns with the index mark in 0.00 ±0.12 in. (0.0 ±3.0 mm).

(l) Move the captain's control column aft approximately 2 degrees and release.

1) Make sure that the right elevator trailing edge aligns with the index mark in 0.00 ±0.12 in. (0.0 ±3.0 mm).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-102

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-020

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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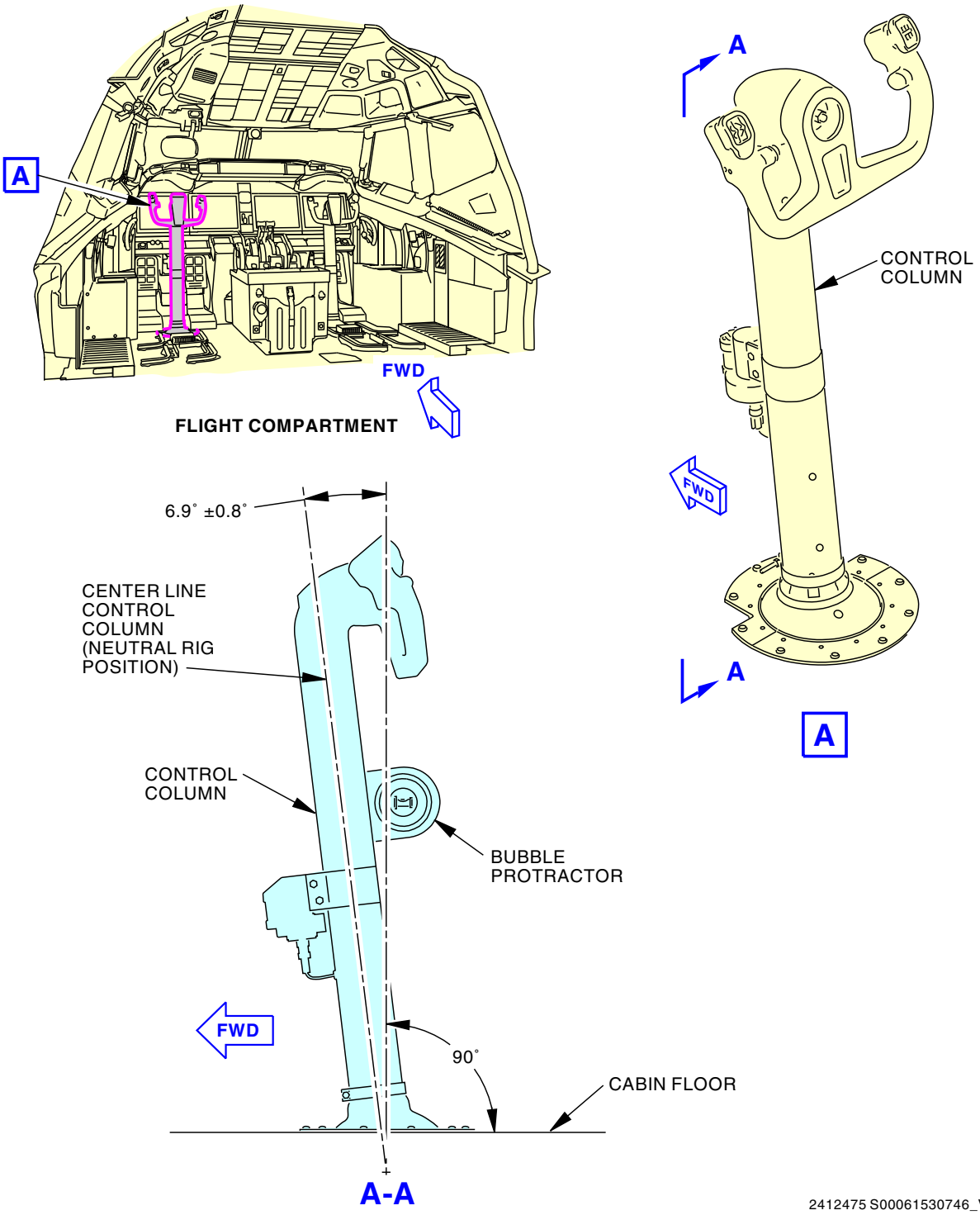

Elevator Control Column Protractor Installation
Figure 513/27-31-00-990-821

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TASK 27-31-00-700-810

20. Control Column Power Force - Test

(Figure 503, Figure 513, Figure 519)

A. General

(1) Use this test to make sure the control columns move with the correct input force.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1674	Assembly - Adapter, Control Wheel, Torque and Force Test Part #: C27060-22 Supplier: 81205 Opt Part #: C27060-1 Supplier: 81205 Opt Part #: F72867-1 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

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D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-104

(1) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-103

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-00-010-026

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-105

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

G. Control Column Power Force Test

SUBTASK 27-31-00-730-010

(1) Do the control column force test (with hydraulics unpressurized):

(a) Move the captain's control column slowly aft and hold at the elevator trailing edge up position of 3.59 in. (91.19 mm) -3.69 in. (93.73 mm) (Figure 519).

1) Use the force gauge, COM-1557 to make sure the force to hold the control column is between11 lbf (48.93 N) -53 lbf (235.76 N) (Figure 513).

2) Center the control column.

(b) Move the captain's control column slowly forward and hold at the elevator trailing edge down position of3.64 in. (92.46 mm) -3.74 in. (95.00 mm) (Figure 519).

1) Use the force gauge, COM-1557 to make sure the force to hold the control column is between19 lbf (84.52 N) -63 lbf (280.24 N) (Figure 513).

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SUBTASK 27-31-00-730-011

(2) Do the control column force test (with hydraulics pressurized):

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(b) Move the captain's control column lightly forward and aft to put the system in the neutral position.

1) Make sure the position of the captain’s control column is in 6.1 - 7.7 degrees of the vertical position (90 degrees). (Figure 515), (Figure 513)

2) Attach "DO-NOT-MOVE" tags on the control columns.

(c) Attach approximately 36 in. (914.40 mm) of masking tape to the tailcone, forward of the right elevator index plate (Figure 519).

NOTE: Make sure there are approximately 18 in. (457.20 mm) of masking tape above the index plate and approximately 18 in. (457.20 mm) of masking tape below the index plate.

(d) Make a mark of the neutral position of the elevator trailing edge on the masking tape.

1) Use this mark of the neutral position as reference.

(e) Make marks of the right elevator positions on the masking tape (from the two tables below).

(f) Move the captain's control column slowly aft with the force gauge, COM-1557.

1) Hold the captain's control column at these elevator positions (that have been marked on the masking tape of the right elevator) and make sure the forces to move the control column are in these limits:

NOTE: Put a straight edge on the top of the trailing edge surface of the elevator surface to measure the elevator position at the surface of the tailcone.

NOTE: The "breakout" is when the elevator starts to move.

Table 501/27-31-00-993-802

RIGHT ELEVATOR POSITION (T.E. UP)	REQUIRED COLUMN FORCE (AFT)
BREAKOUT	3 lbf (13.34 N) -7 lbf (31.14 N)
1.9 in. (48.26 mm) - 2 in. (50.80 mm)	14.5 lbf (64.50 N) - 21.5 lbf (95.64 N)
5.05 in. (128.27 mm) - 5.15 in. (130.81 mm)	21 lbf (93.41 N) - 27 lbf (120.10 N)
9.4 in. (238.76 mm) -9.5 in. (241.30 mm)	29.5 lbf (131.22 N) -36.5 lbf (162.36 N)

(g) Move the captain's control column slowly forward with the force gauge, COM-1557.

1) Hold the captain's control column at these elevator positions and make sure the forces to move the control column are in these limits:

NOTE: The "breakout" is when the elevator starts to move.

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Table 502/27-31-00-993-803

RIGHT ELEVATOR POSITION (T.E. DOWN)	REQUIRED COLUMN FORCE (FORWARD)
BREAKOUT	3.5 lbf (15.57 N) - 7.5 lbf (33.36 N)
1.9 in. (48.26 mm) - 2 in. (50.80 mm)	17.5 lbf (77.84 N) - 21.5 lbf (95.64 N)
5.05 in. (128.27 mm) - 5.15 in. (130.81 mm)	28.5 lbf (126.77 N) - 35.5 lbf (157.91 N)
9.4 in. (238.76 mm) -9.5 in. (241.30 mm)	34.8 lbf (154.80 N) - 42.8 lbf (190.38 N)

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-080-006

(1) Remove the adapter, SPL-1674 and protractor, SPL-1680 from the captain's control column.

SUBTASK 27-31-00-860-106

(2) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-021

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-811

21. Neutral Shift - Test

(Figure 503, Figure 506, Figure 519)

A. General

(1) Use this test to make sure the elevator neutral shift mechanism moves the elevator when the stabilizer moves. When the stabilizer moves, it gives a mechanical input to the elevator PCUs.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left

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(Continued)

Zone	Area
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-107

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-860-108

(2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-010-027

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-109

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 21.32 ±0.10 in. (541.53 ±2.54 mm) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

G. Neutral Shift Test

SUBTASK 27-31-00-730-012

(1) Do the neutral shift test:

(a) Make sure the right elevator trailing edge moves up 13.9 in. (353.1 mm) - 14.9 in. (378.5 mm) from the index mark (Figure 519).

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CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(b) Use the bar, SPL-1677 to set the "B" dimension at 45.84 ±0.10 in. (1164.34 ±2.54 mm).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

(c) Move the captain's control column aft and forward lightly to make sure it is in the neutral position.

(d) Make sure the right elevator trailing edge moves down 3.2 in. (81.3 mm) - 3.8 in. (96.5 mm) from the index mark.

SUBTASK 27-31-00-700-002

(2) Do the following steps to check the elevator system:

NOTE: You use the Flight Management Computer Control Display Unit (FMC CDU) to do the following Built-In-Test Equipment (BITE) test.

(a) Push the INIT REF key on the CDU keyboard.

1) Push the Line Select Key (LSK) that is adjacent to each selection:

a) INDEX

b) MAINT

c) DFCS

d) EXTENDED MAINTENANCE

e) RIGGING

f) ELEVATOR

NOTE: After you make this selection, the CONTINUE will show. Do the instructions that show on the CDU display before you push the LSK that is adjacent to CONTINUE.

g) COMPLETE ELEV RIG

NOTE: This selection contains the ELEV RIG test.

h) During this test, do the instructions that show on the CDU display.

i) After you do the instructions that show on the CDU display, push the LSK that is adjacent to CONTINUE.

2) Do the Elevator Rigging Check:

a) Make sure that the values for the A and B sides are between the limits that show on the CDU display or in this task.

Table 503/27-31-00-993-804

Test		Limits:
51.01	STAB POS (VAC)	-0.07 to 0.07

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CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

b) Use the trammel bar, SPL-1677, to measure the B dimension.

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

c) Make sure that the B dimension is 39.17 ±0.01 in. (994.92 ±0.26 mm).

Table 504/27-31-00-993-805

Test		Limits
51.02	MT ACT POS (VAC)	-8.70 to -6.35
Note: No value for B side; N/A		
51.03	MT ACT POS (VAC)	-0.20 TO 0.20
Note: No value for B side; N/A		
51.04	NSS POS (VAC)	-1.77 to -1.67

d) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0.00 ±0.06 in. (0.00 ±1.52 mm).

Table 505/27-31-00-993-806

Test		Limits
51.05	ELEV POS (VAC)	-0.55 to -0.45
51.06	ELEV LVDT (VAC)	-2.05 to -1.95
51.07	ELEV POS (VAC)	-0.55 TO -0.45

e) Make sure that the elevator trailing edge aligns with the elevator index on the tail cone at 0.00 ±0.06 in. (0.00 ±1.52 mm).

Table 506/27-31-00-993-807

Test		Limits
51.08	ELEV POS (VAC)	-0.55 to -0.45
51.09	ELEV POS (VAC)	-0.55 to -0.45
51.10	ELEV POS (VAC)	-0.55 to -0.45
51.11	ELEV POS (VAC)	-0.55 to -0.45

f) Set the B dimension to 28.27 ±0.01 in. (71.81 ±0.03 cm).

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

g) Use the trammel bar, SPL-1677, to measure the B dimension.

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

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h) Make sure that the B dimension is at 28.27 ±0.01 in. (71.81 ±0.03 cm).

Table 507/27-31-00-993-808

Test		Limits
51.12	STAB POS (VAC)	4.47 to 5.29
51.13	ELEV LVDT (VAC)	-0.06 to 0.06
51.14	ELEV POS (VAC)	-0.10 to 0.10
51.15	NSS POS (VAC)	-0.20 to 0.20

3) Do these steps to get out of the BITE test:

NOTE: If there are instructions on the CDU display, it is necessary to do the instructions that show on the CDU display.

a) Push the LSK adjacent to PREV MENU on test 51.16 screen.

b) Push the LSK adjacent to PREV MENU on the ELEVATOR RIGGING screen.

c) Push the LSK adjacent to CONTINUE on the RIGGING INDEX screen.

d) Push the LSK adjacent to EXIT on the RIGGING INDEX screen.

e) Push the LSK adjacent to CONTINUE on the END OF BITE RIGGING screen.

f) Push the LSK adjacent to EXIT until you get out of the BITE test.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-110

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-022

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-700-812

22. Feel Differential Pressure Light - Test

A. General

(1) Use this test to make sure the FEEL DIFF PRESS light operates correctly.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

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(Continued)

Zone	Area
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Test

SUBTASK 27-31-00-860-111

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

(1) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-010-028

(2) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Feel Differential Pressure Light Test

SUBTASK 27-31-00-860-112

(1) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the OFF position.

(a) Make sure the FEEL DIFF PRESS light on the forward overhead panel, P5, illuminates after a minimum of 35 seconds.

NOTE: The time required for the system to bleed down will vary. It may take up to 120 seconds for the FEEL DIFF PRESS light to illuminate.

SUBTASK 27-31-00-860-113

(2) Set the FLT CONTROL A switch to the OFF position.

(a) Make sure the FEEL DIFF PRESS light goes off.

SUBTASK 27-31-00-860-114

(3) Set the FLT CONTROL B switch to the ON position.

(a) Wait for a minimum of 35 seconds.

(b) Make sure the FEEL DIFF PRESS light comes on.

NOTE: The time required for the system to bleed down will vary. It may take up to 120 seconds for the FEEL DIFF PRESS light to illuminate.

SUBTASK 27-31-00-860-115

(4) Set the FLT CONTROL A switch to the ON position.

(a) Make sure the FEEL DIFF PRESS light goes off.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-116

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-023

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-790-801

23. Pitot System Leak - Test

(Figure 514)

A. General

(1) Use this test to do a leak check of the pitot system.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197

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(Continued)

Reference	Description
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: CSA75700HT-3 Supplier: 3BSK6 Part #: P75701-4 Supplier: 38002 Part #: P75701M2-3 Supplier: 38002
COM-16577	Plug - Pitot Part #: BACP20AU6D Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
323	Vertical Fin - Front Spar To Rear Spar

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Pitot System Leak Test

SUBTASK 27-31-00-010-039

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-160

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

F. Pitot System Leak Test

SUBTASK 27-31-00-390-001

(1) Seal the drain hole in each pitot probe on the vertical fin.

NOTE: The pitot drain hole must be sealed to hold pressure during the test.

SUBTASK 27-31-00-480-008

CAUTION

MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(2) At the two elevator pitot probes on the vertical fin, do these steps:

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(a) Install the pitot test adapter, COM-1916, to the pitot probes.

(b) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, to the pitot test adapter, COM-1916.

SUBTASK 27-31-00-480-007

(3) Inside the aft unpressurized compartment, below the elevator feel computer, do these steps:

(a) Remove the drain plugs from the pitot lines.

(b) If the regulator, SPL-1742, is used for the leak test, do these steps:

1) Connect the pressure gage lines from the regulator, SPL-1742, to the drain holes of the pitot lines.

(c) If the air data model test set, COM-1914, is used for the leak test, do these steps:

1) Install the pitot plugs, COM-16577, on the ends of the pitot lines.

2) Install a streamer on the opening of the aft unpressurized compartment.

a) Make sure that you can easily see the streamer from the ground.

NOTE: This is to remind you to remove the pitot plugs and install the drain plugs again when the test is completed.

SUBTASK 27-31-00-790-001

(4) Do a pitot system leak test:

CAUTION

DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (34.5 KPA) (437 KNOTS OF COMPUTED AIRSPEED (KCAS)), DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG (34.5 KPA) (437 KCAS), IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(a) Operate the air data model test set, COM-1914, or regulator, SPL-1742, to apply pressure 0.90 +0.07 / -0.00 psig (6.21 +0.48 / -0.00 kPa) to simulate 194 to 201 kcas.

(b) Set the shutoff valve in the air data model test set, COM-1914, or regulator, SPL-1742, to the OFF position.

(c) Make sure that the pressure does not decrease more than 0.2 psig (1.4 kPa) (8 kcas) during a 2-minute time.

NOTE: The low pressure pressurization steps above ensure that there is no significant system leak before you apply full pressure in the following steps.

1) Fix any pitot system or pressurization equipment leaks, as necessary, before proceeding.

(d) Operate the air data model test set, COM-1914, or regulator, SPL-1742, to apply pressure 4.8 ±0.1 psig (33.1 ±0.7 kPa) to simulate 425 to 433 kcas.

(e) Set the shutoff valve in the air data model test set, COM-1914, or regulator, SPL-1742, to the OFF position.

(f) Make sure that the pressure does not decrease more than 0.3 psig (2.1 kPa) (12 kcas) during a 2-minute time.

(g) Operate the air data model test set, COM-1914, or regulator, SPL-1742, to decrease the pressure to zero.

SUBTASK 27-31-00-160-001

(5) Remove the seal from the drain hole in each pitot probe.

SUBTASK 27-31-00-080-007

(6) At the two elevator pitot probes on the vertical fin, do these steps:

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(a) Remove the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, and pitot test adapter, COM-1916.

(b) Remove the pitot test adapter, COM-1916, from the pitot probes.

SUBTASK 27-31-00-080-008

(7) In the aft unpressurized compartment, below the elevator feel computer, do these steps:

(a) If the regulator, SPL-1742, is used for the leak test, do these steps:

1) Disconnect the pressure gage lines of the regulator, SPL-1742, from the drain holes of the pitot lines.

(b) If the air data model test set, COM-1914, is used for the leak test, do these steps:

1) Remove the pitot plug, COM-16577, that were installed on the ends of the pitot lines.

2) Remove the streamer on the opening of the aft unpressurized compartment.

(c) Install the drain plugs on the pitot lines.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-161

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-00-410-032

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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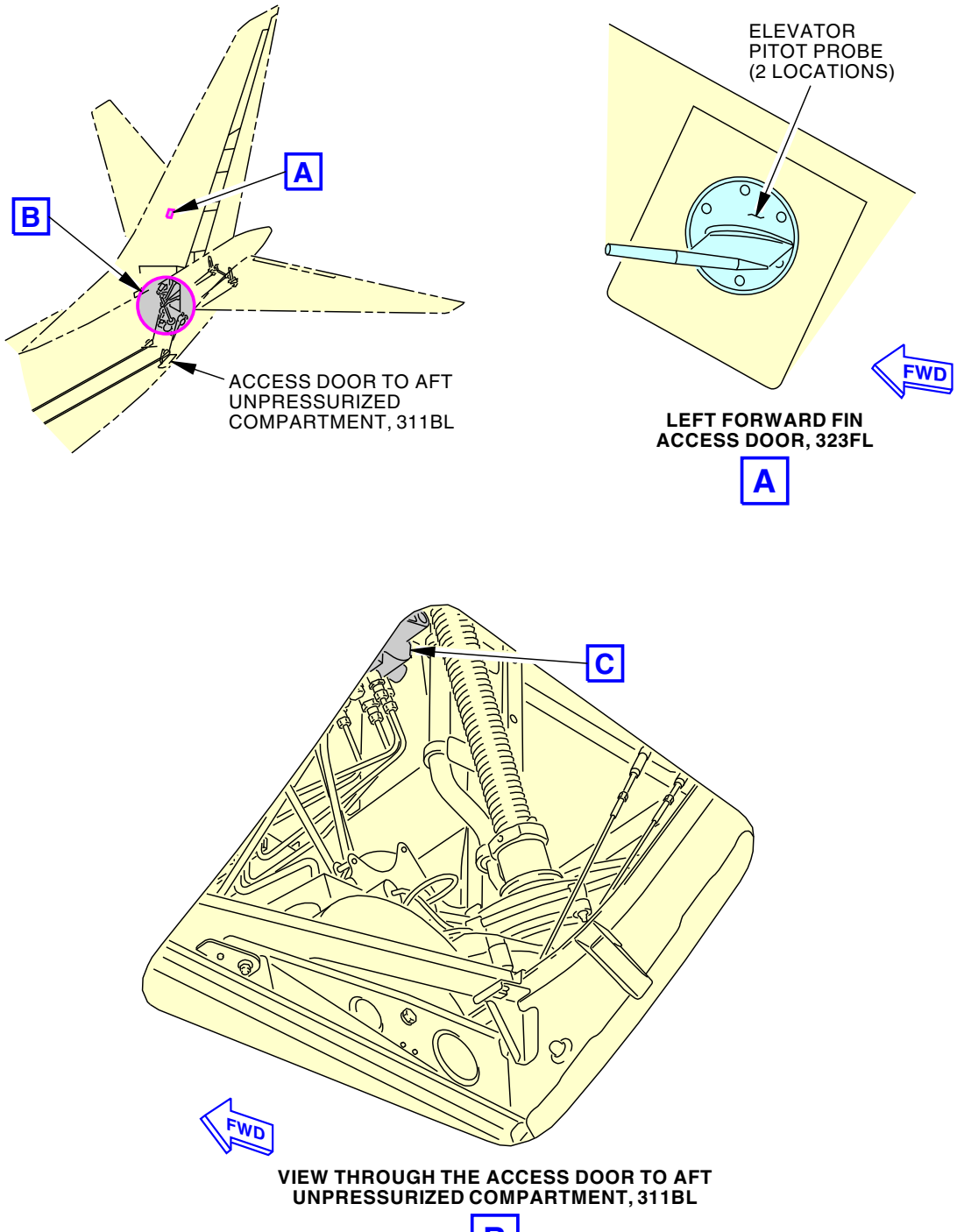

2412476 S00061530751_V2

Elevator Pitot-Static System
Figure 514/27-31-00-990-822 (Sheet 1 of 2)

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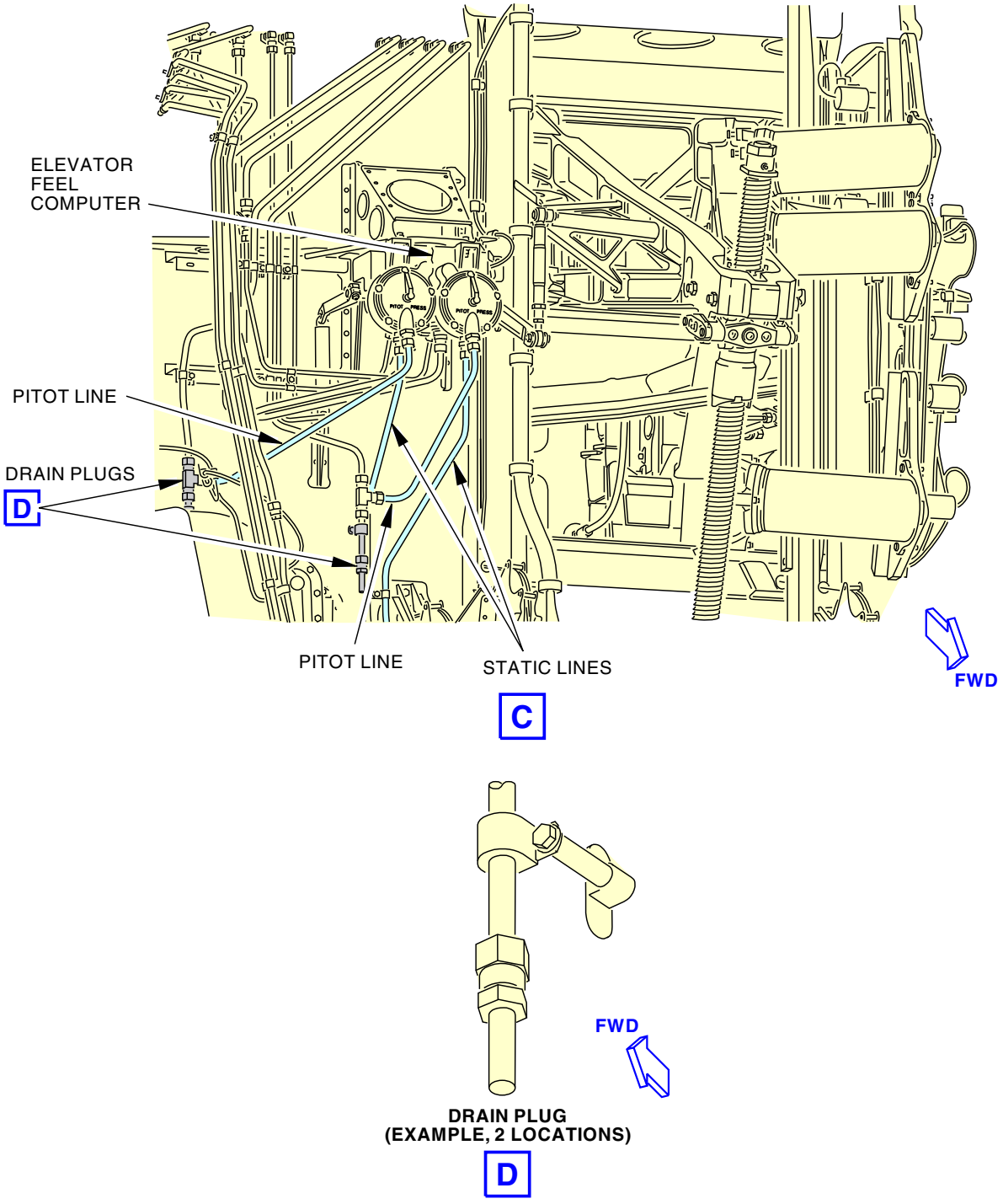

Elevator Pitot-Static System
Figure 514/27-31-00-990-822 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-700-813

24. Feel Force System - Test

(Figure 503, Figure 514, Figure 519)

A. General

(1) Use this test to make sure that the elevator feel computer operates correctly. The elevator feel computer changes the control column forces as the airspeed changes.

B. References

Reference	Title
22-11-00-820-802	Elevator Rigging Test (P/B 501)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

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(Continued)

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

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E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-153

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

SUBTASK 27-31-00-860-117

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the elevator hydraulic systems A and B, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-860-118

(3) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-00-860-164

(4) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-00-480-009

(5) At the two pitot probes on the vertical fin, do these steps:

(a) Seal the drain hole on each pitot probe.

CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(b) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, to the two pitot probes on the vertical fin.

SUBTASK 27-31-00-010-030

(6) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-480-010

(7) Inside the aft unpressurized compartment, below the elevator feel computer, do these steps:

(a) Remove the restrictor valves from the bottom of the pitot lines.

(b) If the regulator, SPL-1742, or equivalent is used, do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Connect the pressure gage lines from the regulator, SPL-1742, or equivalent, to the drain holes of the pitot lines.

(c) If the air data model test set, COM-1914, is used, do these steps:

1) Install plugs over the ends of the pitot lines.

2) Install a highly visible streamer on the opening of the aft unpressurized compartment.

a) Make sure that the streamer can be easily seen from the ground.

NOTE: This is to remind to remove the plugs and install the restrictor valves again when the test is completed.

SUBTASK 27-31-00-860-119

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(8) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677, and not the stabilizer indicator in the flight deck.

G. Feel Force System Test

SUBTASK 27-31-00-730-013

(1) Do the feel force system test:

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Make sure that elevator hydraulic systems A and B is pressurize: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(b) Make sure that FLT CONTROL A and FLT CONTROL B switches are in the ON position.

CAUTION

DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (437 KCAS) DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG, IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(c) Operate the regulator, SPL-1742, or air data model test set, COM-1914, to increase the pressure 0.77 psig (5.3 kPa) - 0.87 psig (6.0 kPa) (185 knots).

(d) Apply masking tape on the tail cone along direction of the travel of the elevator trailing edge.

(e) Move the captain's control column lightly to put the system in the neutral position, then release.

1) Make a mark of the neutral position of the elevator trailing edge on the masking tape.

(f) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

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1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 28 lbf (125 N).

(g) Move the captain's control column slowly aft until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 36 lbf (160 N) - 45 lbf (200 N).

(h) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 27.5 lbf (122 N).

(i) Move the captain's control column slowly forward until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 44 lbf (196 N) - 53 lbf (236 N).

(j) Set the FLT CONTROL B switch, on the P5 forward overhead panel, to the OFF position.

(k) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 28 lbf (125 N).

(l) Move the captain's control column slowly aft until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 36 lbf (160 N) - 45 lbf (200 N).

(m) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 27.5 lbf (122 N).

(n) Move the captain's control column slowly forward until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 44 lbf (196 N) - 53 lbf (236 N).

(o) Set the FLT CONTROL A switch, on the P5 forward overhead panel, to the OFF position.

(p) Set the FLT CONTROL B switch to the ON position.

(q) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 28 lbf (125 N).

(r) Move the captain's control column slowly aft until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 36 lbf (160 N) - 45 lbf (200 N).

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(s) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 17 lbf (76 N) - 27.5 lbf (122 N).

(t) Move the captain's control column slowly forward until the elevator trailing edge is at 4.75 in. (120.65 mm) - 4.85 in. (123.19 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 44 lbf (196 N) - 53 lbf (236 N).

(u) Set the FLT CONTROL A switch to the ON position.

CAUTION DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (437 KCAS) DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG, IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(v) Operate the regulator, SPL-1742, or air data model test set, COM-1914, to increase the pressure 2.42 psig (16.7 kPa) - 2.52 psig (17.4 kPa) (315 knots).

(w) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold (Figure 519).

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 28 lbf (125 N) - 44 lbf (196 N).

(x) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold.

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 30 lbf (133 N) - 46 lbf (205 N).

(y) Set the FLT CONTROL B switch to the OFF position.

(z) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold.

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 28 lbf (125 N) - 44 lbf (196 N).

(aa) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold.

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 30 lbf (133 N) - 46 lbf (205 N).

(ab) Set the FLT CONTROL B switch to the ON position.

(ac) Set the FLT CONTROL A switch, on the P5 forward overhead panel, to the OFF position.

(ad) Move the captain's control column slowly aft until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold.

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 28 lbf (125 N) - 44 lbf (196 N).

(ae) Move the captain's control column slowly forward until the elevator trailing edge is at 1.15 in. (29.21 mm) - 1.25 in. (31.75 mm) from the neutral position, and hold.

1) Use the force gauge, COM-1557, to make sure that the force required to keep the control column at this position is 30 lbf (133 N) - 46 lbf (205 N).

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(af) Move the captain's control column slowly to the neutral position.

(ag) Set the FLT CONTROL A switch to the ON position.

(ah) Make sure that the FLT CONTROL B switch is in the ON position.

(ai) Operate the regulator, SPL-1742, or air data model test set, COM-1914, to decrease the pressure to 0.0 psig (0.0 kPa) (0 knots).

SUBTASK 27-31-00-730-014

(2) Do a test of the autopilot authority in the elevator rigging test, do this task: Elevator Rigging Test, TASK 22-11-00-820-802.

SUBTASK 27-31-00-080-009

(3) At the two pitot probes on the vertical fin, do these steps:

(a) Remove the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, from the pitot probes.

(b) Remove the seal from the drain hole in each pitot probe.

SUBTASK 27-31-00-430-002

(4) Inside the aft unpressurized compartment, do these steps:

(a) If the regulator, SPL-1742, or equivalent is used for the test, do these steps:

1) Disconnect the pressure gage lines of the regulator, SPL-1742, or equivalent, from the drain holes of the pitot lines.

(b) If the air data model test set, COM-1914, is used for the test, do these steps:

1) Remove the plugs that were installed over the ends of the pitot lines.

2) Remove the highly visible streamer that is installed on the opening of the aft unpressurized compartment.

(c) Install the restrictor valves on the bottom of the pitot lines.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-163

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-00-410-025

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-120

(3) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-860-154

(4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

END OF TASK

TASK 27-31-00-700-814

25. Sensor Null - Test

(Figure 503)

A. General

(1) Use this test to do the elevator rigging test with the DFCS computer BITE. The control display unit (CDU) is necessary for this procedure.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-31-00-860-121

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize elevator hydraulic systems A and B. To pressurize them, do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

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SUBTASK 27-31-00-010-031

(2) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-00-860-122

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(3) Use the bar, SPL-1677 to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

G. Sensor Null Test

SUBTASK 27-31-00-740-008

(1) Do the sensor null test:

(a) Do this BITE test on the control display unit (CDU):

1) Push the INIT REF key on the CDU keyboard.

2) Push the Line Select Key (LSK) that is adjacent to these selections:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary. During the BITE test, if the "CONTINUE" shows, then push the LSK that is adjacent to "CONTINUE" after you do the instructions that show on the CDU display.

a) INDEX

b) MAINT

c) DFCS

d) EXTENDED MAINTENANCE

e) RIGGING

f) ELEVATOR

g) CONTINUE

3) Do the instructions that show on the CDU and push the LSK adjacent to these selections:

a) CONTINUE

b) ELEV RIG

4) Make sure the BITE display values on the A and B sides are in the limit as shown below:

NOTE: During the BITE test, if the "CONTINUE" shows, then push the LSK that is adjacent to "CONTINUE" after you do the instructions that show on the CDU display.

Table 508/27-31-00-993-809

Test 51.01	STAB POS (VAC)	Limits: -0.07 TO 0.07

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Table 508/27-31-00-993-809 (Continued)

Use the bar, SPL-1677 to set the "B" dimension as on the CDU. Test 51.02		
Test 51.02	MT ACT POS (VAC)	Limits: -8.70 to -6.35
51.03	MT ACT POS (VAC)	Limits: -0.20 to 0.20
Test 51.04	NSS POS (VAC)	Limits: -1.77 to -1.67
Make sure the elevator trailing edge aligns with the index mark +/- 0.06 inch (1.5 millimeters).		
Test 51.05	ELEV POS (VAC)	Limits: -0.55 to -0.45
Test 51.06	ELEV LVDT (VAC)	Limits: -2.05 to -1.95
Test 51.07	ELEV POS (VAC)	Limits: -0.55 to -0.45
Make sure the elevator trailing edge aligns with the index mark +/- 0.06 inch (1.5 millimeters).		
Test 51.08	ELEV POS (VAC)	Limits: -0.55 to -0.45
Test 51.09	ELEV POS (VAC)	Limits: -0.55 to -0.45
Test 51.10	ELEV POS (VAC)	Limits: -0.55 to -0.45
Test 51.11	ELEV POS (VAC)	Limits: -0.55 to -0.45
Test 51.12	STAB POS (VAC)	Limits: 4.47 to 5.29
Test 51.13	ELEVATOR LVDT	Limits: -0.06 to -0.06
Test 51.14	ELEVATOR POS	Limits: -0.20 to 0.20
Test 51.15	NSS POS	Limits: -0.20 to 0.20

5) Push the INIT/REF key.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-123

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-410-026

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-00-820-807

26. Elevator Power Control Unit (PCU) Input Rod (Pogo) - Functional Test

(Figure 503, Figure 515)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is applicable for the left and right elevator PCUs.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1749	Tool - Lock Equipment, Aileron/Elevator PCU Input Rod (POGO) Part #: C27066-1 Supplier: 81205

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Prepare for the Functional Test

SUBTASK 27-31-00-860-124

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize the elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-00-010-032

(2) Open these access doors:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-125

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(3) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 503).

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

G. Elevator Power Control Unit (PCU) Input Rod (Pogo) Functional Test

SUBTASK 27-31-00-740-009

(1) Do this BITE test on the control display unit (CDU):

(a) Push the INT REF key on the CDU keyboard.

(b) Null the mach trim actuator (TASK 27-31-00-700-801).

(c) Push the Line Select Key (LSK) that is adjacent to these selections:

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary. During the BITE test, if the CONTINUE shows, then push the LSK that is adjacent to CONTINUE after you do the instructions that show on the CDU display.

1) INDEX
2) MAINT
3) DFCS
4) EXTENDED MAINTENANCE
5) RIGGING
6) ELEVATOR
7) CONTINUE

(d) Do the instructions that show on the CDU and push the LSK adjacent to these selections:

1) CONTINUE
2) ELEV RIG

(e) Make sure the BITE display values on the A and B sides are in the limit as shown below:

NOTE: During the BITE test, if the "CONTINUE" shows, then push the LSK that is adjacent to "CONTINUE" after you do the instructions that show on the CDU display.

(f) Make sure that the mach trim actuator voltage is 0.00 ± 0.20 VAC.

(g) Make sure that the flaps are in the full up position.

(h) Make sure that the values for the A side are between the limits that show on the CDU display.

1) Test 51.03 MT ACT POS (VAC) limits: -0.20 to 0.20

(i) Push the INIT/REF key.

(j) Cycle the pilot control column (full forward, full aft) to make sure the elevator has full travel.

(k) Make sure the captain's control column is at the neutral position.

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(l) Make sure the right elevator trailing edge position is ±0.06 in. (1.5 mm) (±0.10 degree) with index plate.

NOTE: Use a straight edge on top of the elevator to make a line to the index plate.

SUBTASK 27-31-00-860-126

(2) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-00-480-011

(3) Install the tool, SPL-1749, on both elevator PCU pistons.

(a) Make sure that the tool, SPL-1749, is installed correctly to prevent damage to the lockwire.

SUBTASK 27-31-00-970-002

(4) Measure the distance that the PCU pogo clevis moves away from the end of the tube when you do a check for extension.

SUBTASK 27-31-00-860-127

(5) Move the captain and first officer's control column aft until all four elevator PCU pogos extend approximately 0.3 in. (7.6 mm).

NOTE: Total column force will be approximately 140 lbf (623 N).

SUBTASK 27-31-00-860-128

(6) Remove the force on the control columns slowly.

SUBTASK 27-31-00-080-010

(7) Remove the tool, SPL-1749, from the two elevator PCU pistons.

SUBTASK 27-31-00-860-129

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-00-860-130

(9) Cycle the pilot control column (full forward, full aft) to make sure the elevator has full travel.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-00-860-131

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

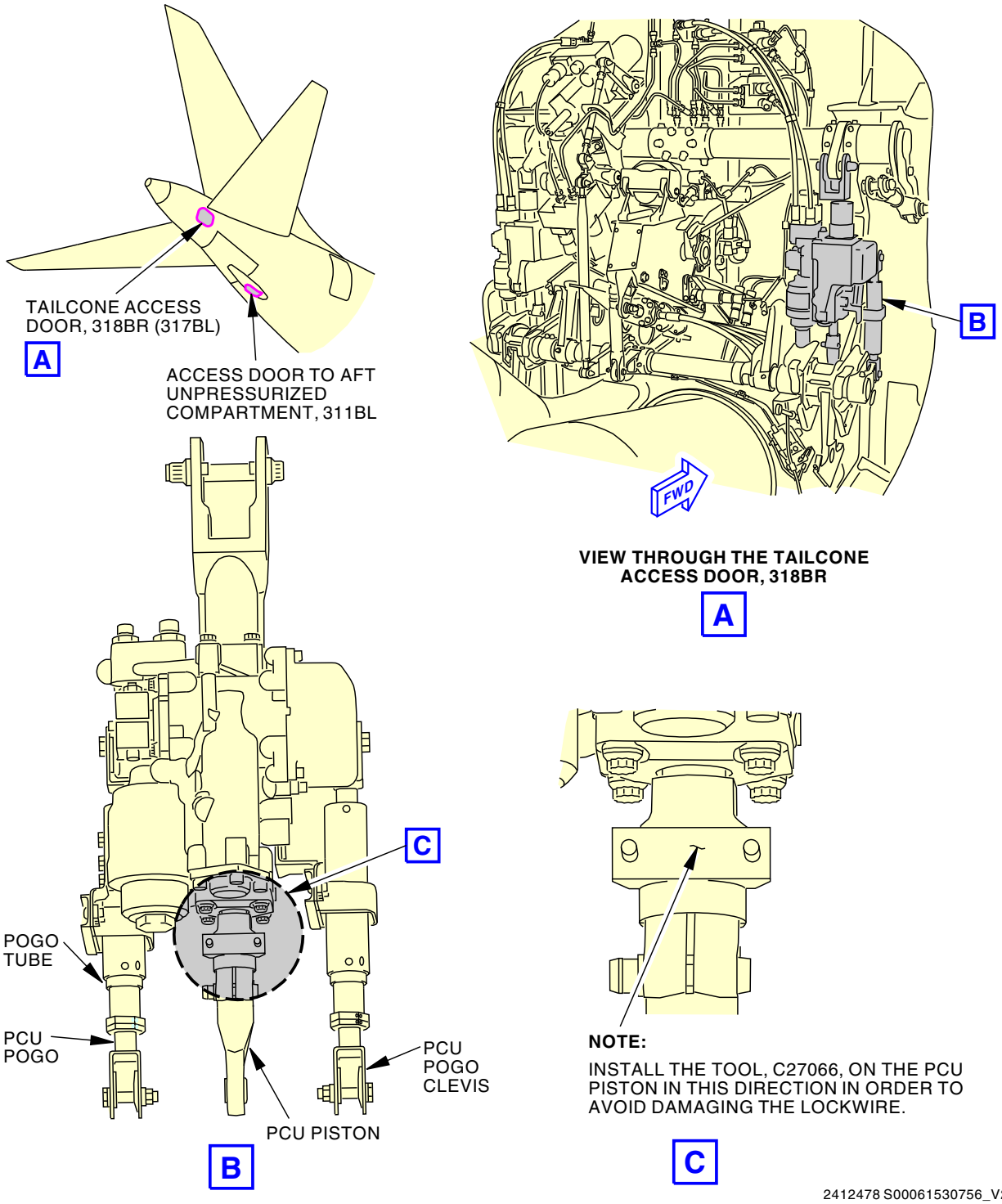
SUBTASK 27-31-00-410-027

(2) Close these access doors:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Aileron/Elevator Power Control Unit (PCU) Input Rod Functional Test Tool
Figure 515/27-31-00-990-823

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-710-803

27. Elevator Power-Off Flight Test

(Figure 516, Figure 517)

A. General

(1) The flight test is necessary because the maintenance action can affect the flight characteristics of the airplane and incorrect adjustment can cause a pitch and attitude upset in the event of a dual simultaneous hydraulic system loss. Since the magnitude and attitude of this pitch upset cannot be predicted to sufficient accuracy or verified on the ground, a flight test is necessary to determine the unbalanced moment. The unbalanced moment is reflected in terms of the number and direction the pilot must turn the stabilizer trim wheel to return the airplane to level flight after initiating manual reversion. If the number and direction of stabilizer trim wheel turns are not within limits, then the elevator tab pushrods need to be re-adjusted and a subsequent flight test performed. The number and direction of stabilizer trim wheel turns should be recorded during the manual reversion flight test since this information is needed to correctly re-adjust the pushrods.

(2) This flight test is necessary after you have completed one of the following maintenance tasks:

(a) For the elevator:

1) After a replacement of an elevator.

NOTE: Replacement of an elevator with a new elevator, or with one that is not the same as the one that was originally on the airplane, requires a flight test.

NOTE: If the elevator which was removed from the airplane is reinstalled without repair, adjustment, or modification, a flight test is not required.

2) After a replacement or adjustment of an elevator control pushrod.

NOTE: Replacement of the elevator output torque tube crank arm bearing does not require a flight test.

NOTE: Replacement of the elevator mast arm bearing does not require a flight test.

3) After a replacement of an elevator hinge bearing plate (Figure 517).

NOTE: Flight test is not required if all of the following conditions are met:

- The elevator is not removed from the airplane during replacement of the elevator bearing plate(s).

- Adjacent elevator bearing plates are not removed at the same time.

- No more than two elevator bearing plates are removed at the same time on the same side.

NOTE: Flight test is not required if only the bearing is replaced and the original elevator bearing plate is reinstalled in its original location.

4) After a replacement of an elevator hinge fitting plate (Figure 517).

5) After a maintenance where re-balance of the elevator is necessary regardless of procedure used, either on-jig or by calculation (SRM SUBJECT 51-60-04).

NOTE: A flight test is not necessary following repair and/or repainting of the elevator if the re-balance method used does not result in adjustment of the balance weights.

(b) For the elevator tab:

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1) After a replacement of an elevator tab.

NOTE: A flight test is not necessary if the same elevator tab is removed and reinstalled after it was repaired, repainted, and rebalanced and the following conditions are met:

- The elevator tab stays within the balance limits for Center of Gravity (CG) and weight after it was repaired, repainted, and rebalanced (SRM PROCEDURE 51-60-00-0G-0) and no adjustment of the elevator tab adjust weights is necessary following repair and/or repaint.

- Any repair and/or paint application to the elevator tab provides a smooth continuous finish to all edges.

2) After a replacement or adjustment of one or both of the elevator tab pushrods.

NOTE: If only one pushrod is replaced or adjusted and you can verify that the remaining pushrod was not replaced or adjusted since the last flight test, then a flight test is not necessary.

NOTE: If only one pushrod is replaced or adjusted and you cannot verify that the remaining pushrod was not replaced or adjusted since the last flight test, then a flight test is necessary.

NOTE: If the same elevator tab pushrods are removed and re-installed without adjustment in the same left and right locations on the same elevator tab, a flight test is not required.

3) After a replacement of an elevator tab hinge bearing (Figure 518).

NOTE: It is not necessary to do a flight test if you do not remove the elevator tab hinge fitting assemblies from the elevator when you replace the bearing.

4) After replacement of an elevator tab hinge fitting (Figure 518).

5) After a replacement of the inboard elevator tab hinge bushing (Figure 518).

NOTE: It is not necessary to do a flight test if you replace bolts at any elevator tab hinge location, or if you replace bushings at any other tab hinge location.

6) After the replacement of a new or repaired elevator tab control mechanism.

(c) For the stabilizer:

1) After a replacement of the horizontal stabilizer.

NOTE: A power-off flight test is not necessary if the horizontal stabilizer is removed and the same stabilizer, elevator, and elevator tab are re-installed (without elevator or elevator tab rework or adjustment).

(d) For the tailcone:

1) After a replacement of the tailcone.

NOTE: A power-off flight test is not required if the following conditions are met:

- The same tailcone is removed and re-installed (without elevator or elevator tab rework or adjustment).

- The elevator and rudder position is recorded prior to removal (relative to the respective index plates).

- The elevator and rudder position remains the same after re-installation.

(3) Dual Hydraulics Failure: Please read the subsequent instructions before you do the flight test.

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(a) Sudden dual hydraulic failure or selection of both flight control switches to off or standby will put the airplane in manual reversion and cause elevator movement to a deflection that balances the air load. The intent of the airplane design and Aircraft Maintenance Manual procedures is to have the resultant pitch upset be easily manageable, but if an out of tolerance elevator tab rigging exists on the airplane, the pitch upset could be significant. Flight Crews, especially for check flights after elevator tab maintenance, should be prepared in the event of a large upset.

(b) Upset recovery techniques are discussed in the maneuvers section of the Flight Crew Training Maneuvers. These techniques provide good guidance in the case of a large upset. Additional items to consider for a dual hydraulic failure are:

1) Elevator forces will be high and elevator control authority reduced in manual reversion hydraulics should not be restored with large column inputs present.

(c) If the pitch upset is significant, immediately accomplish the Upset Recovery maneuver found in the non-normal maneuvers section in the Quick Reference Handbook. For example, the use of bank angle in the event of large nose up pitch rate, described in this section, may be beneficial.

(d) If performing a maintenance check (where hydraulics are available to be restored), the pilot's should coordinate the restoration of hydraulics to ensure that column input is small at time hydraulics are restored. Restoring hydraulics with large column input will result in a large sudden elevator command that may generate a pitch upset in the opposite direction. The pilot flying should reduce column input at the time hydraulics are restored by using stabilizer trim or by momentarily allowing the airplane to maneuver. At the time hydraulics are restored, the pilot flying should be prepared to apply column inputs to maintain control as normal column feel forces return.

B. References

Reference	Title
27-09-71 P/B 501	FLIGHT CONTROLS TRIM CORRECTION - ADJUSTMENT/TEST
SRM 51-60-00-0G-0	Control Surface Balance Procedures
SRM 51-60-04	ELEVATOR BALANCE PROCEDURE

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Prepare for Flight Test

SUBTASK 27-31-00-860-132

(1) Before doing a flight test to verify the elevator tab pushrod adjustment, make sure that you adjust the appropriate system if either of these conditions exist:

(a) Aileron trim requirement is more than 3/4 unit.

NOTE: If the aileron trim requirement is more than 3/4 unit, you need to adjust the aileron trim per the applicable section of PAGEBLOCK 27-09-71/501 before doing an elevator tab adjustment power-off flight test.

(b) Rudder trim requirement is more than 3/4 unit.

NOTE: If the rudder trim requirement is more than 3/4 unit, you need to adjust the rudder trim per the applicable section of PAGEBLOCK 27-09-71/501 before doing an elevator tab adjustment power-off flight test.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-820-014

(2) Adjust the elevator tab pushrods before the flight test, do this task: Elevator Tab Pushrods - Adjustment, TASK 27-31-00-820-805.

E. Flight Test Procedure

SUBTASK 27-31-00-710-008

(1) Make sure that you satisfy these flight conditions:

(a) Indicated Airspeed: 250 kcas

(b) Altitude: Flight Level 15,000 ft (4572 m).

NOTE: The altitude should be within 500 ft (152 m) of the 15,000 ft (4572 m) level to get good flight results. Altitude variation more than 500 ft (152 m) is large enough to cause misleading test results.

(c) Weight requirement:

1) less than 135,000 lb (61,235 kg)

(d) Percentage of MAC center of gravity

NOTE: See Figure 516.

NOTE: The Center of Gravity (CG) percentage Mean Aerodynamic Chord (MAC) is calculated by dispatch based on fuel loads, cargo loading, and passenger loading. This information is calculated for the pilot to enter into the Flight Management Computer (FMC) to get the recommended stabilizer setting for takeoff.

Because the percent MAC center of gravity (for this test) is being used for a flight test with minimal flight crew, no cargo, and a normal fuel burn is anticipated; recording the CG in percent of MAC at takeoff is sufficient for proper adjustment of the tabs.

(e) N1 equal for both engines

(f) Wing fuel loads equal

(g) Flaps up

SUBTASK 27-31-00-860-133

(2) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand, to the CUTOUT position.

NOTE: A speed trim fail master caution annunciation may occur if thresholds are exceeded.

NOTE: As soon as you complete the power off flight test, you must move the STAB TRIM PRI switch to the NORMAL position.

SUBTASK 27-31-00-710-009

(3) Set the SPOILER A and B switches, on the P5 forward overhead panel, to the OFF position.

NOTE: Hold control wheel firmly when you turn the SPOILER A and B switches OFF to control any upset which might occur in pitch or roll direction. If wheel input required to maintain steady flight increases when SPOILER A and B switches are turned off, this could indicate unusual spoiler movement. If the required wheel input increases more than approximately 2 units, higher than normal wheel forces may occur when the FLT CONTROL A and B are turned to STBY RUD.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-00-860-134

(4) Set the FLT CONTROL A and B switches, on the P5 forward overhead panel, to the STDBY RUD position.

NOTE: To successfully complete the test, the airplane must be re-trimmed to the same airspeed. To provide a greater precision for the maneuver, someone other than the pilot in command should set the switches.

SUBTASK 27-31-00-860-135

(5) If the airplane pitches, use the elevator to re-trim the airplane to the same airspeed:

(a) Manually turn the stabilizer trim wheel to reduce column force to zero.

(b) Keep a record of the number of turns required to re-trim the airplane.

NOTE: During the initial rotation of the stabilizer trim wheel, there might be some freeplay. Do not count the turns until you remove the freeplay.

(c) Keep a record of the center of gravity of the airplane.

SUBTASK 27-31-00-860-136

(6) After completing the elevator power-off flight test portion of the flight, return the switches to their normal flight positions as follows:

NOTE: These are the switches that were moved for the power-off flight test

(a) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand, to the NORMAL position.

(b) Set the FLT CONTROL A and B switches, on the P5 forward overhead panel, to the ON position.

(c) Set the SPOILER A and B switches, on the P5 forward overhead panel, to the ON position.

SUBTASK 27-31-00-700-003

(7) Make sure that the number of turns of the stabilizer trim wheel in the airplane Nose Up or Nose Down direction, are within the limits of the corresponding region in the referenced chart (Figure 516).

NOTE: An example on how to use the Elevator Tab Rig Adjustment Chart is provided in TASK 27-31-00-820-808 in the section Elevator Tab Pushrod Adjustment.

SUBTASK 27-31-00-700-004

(8) If the number of turns of the stabilizer trim wheel in the airplane Nose Up or Nose Down direction, are more than the limits, do the steps that follow:

(a) Make sure that the rigging of the elevator control pushrods, input rod of the Power Control Unit (PCU), and output rod of the elevator feel and centering unit is correct.

(b) If the rigging of the elevator control pushrods, input rod of the elevator PCU, and output rod of the elevator feel and centering unit is satisfactory, do this task: Elevator Tab Pushrod - Adjustment after the Elevator Power-Off Flight Test, TASK 27-31-00-820-808.

(c) If the rigging of the elevator control pushrods, input rod of the elevator PCU, or output rod of the elevator feel and centering unit is not correct, do these tasks:

1) Elevator Control Pushrods - Adjustment, TASK 27-31-00-820-802.

2) Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803.

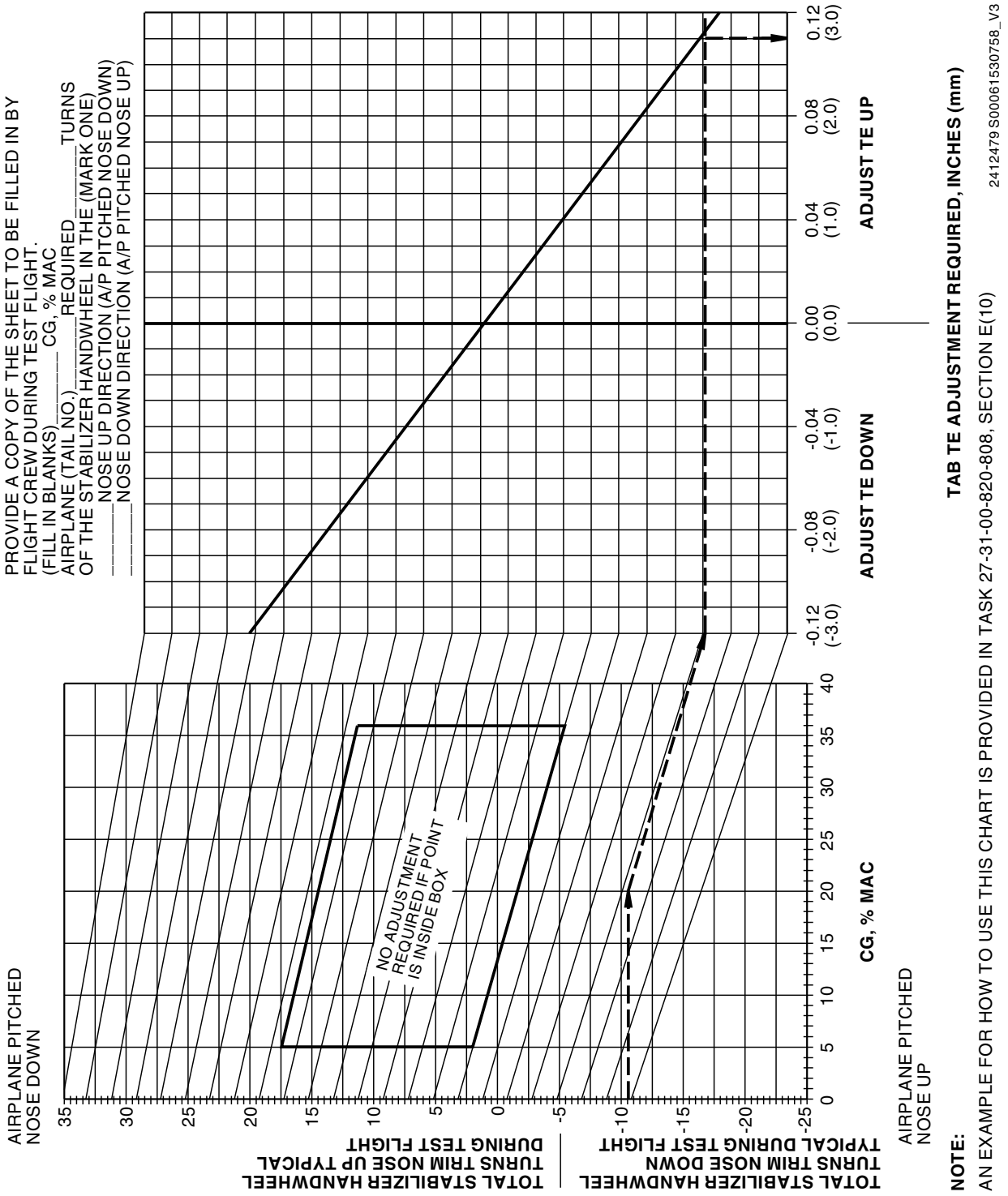
3) Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment, TASK 27-31-00-820-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Elevator Tab Pushrod - Adjustment after the Elevator Power-Off Flight Test, TASK 27-31-00-820-808.

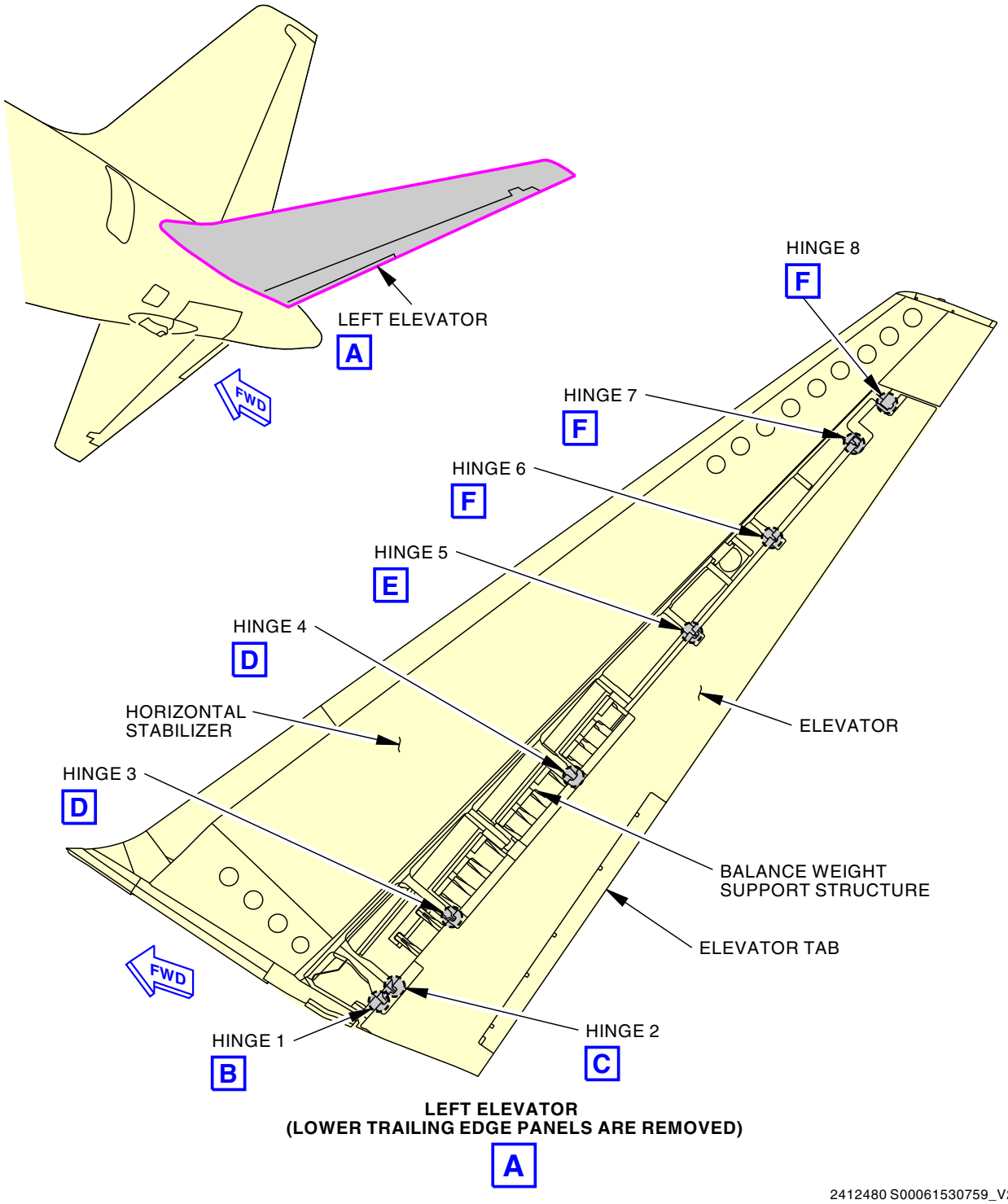
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Rig Adjustment Chart
Figure 516/27-31-00-990-824

ECCN 9E991 BOEING PROPRIETARY - See title page for details

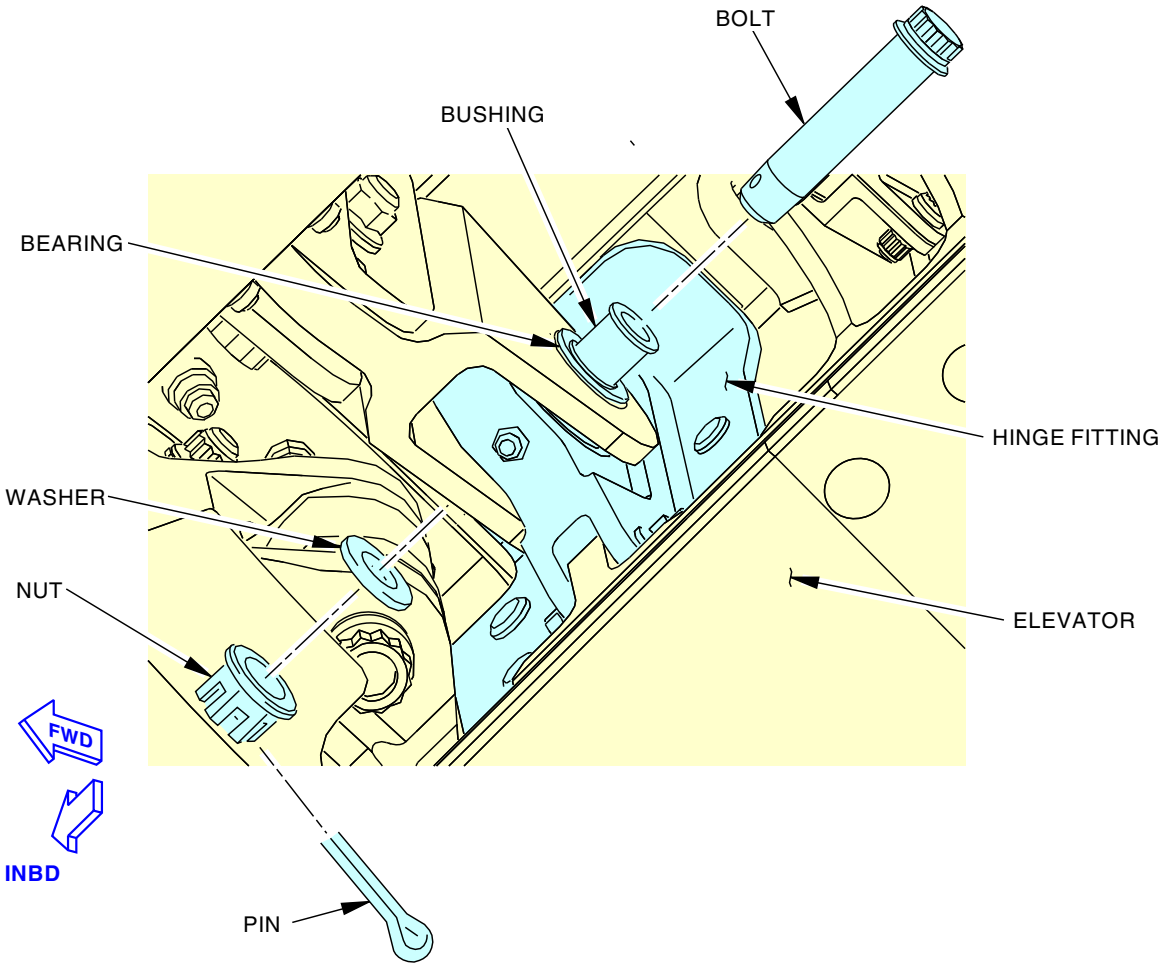


LEFT ELEVATOR
(LOWER TRAILING EDGE PANELS ARE REMOVED)
A

2412480 S00061530759_V2

Elevator Hinge Assemblies
Figure 517/27-31-00-990-825 (Sheet 1 of 4)

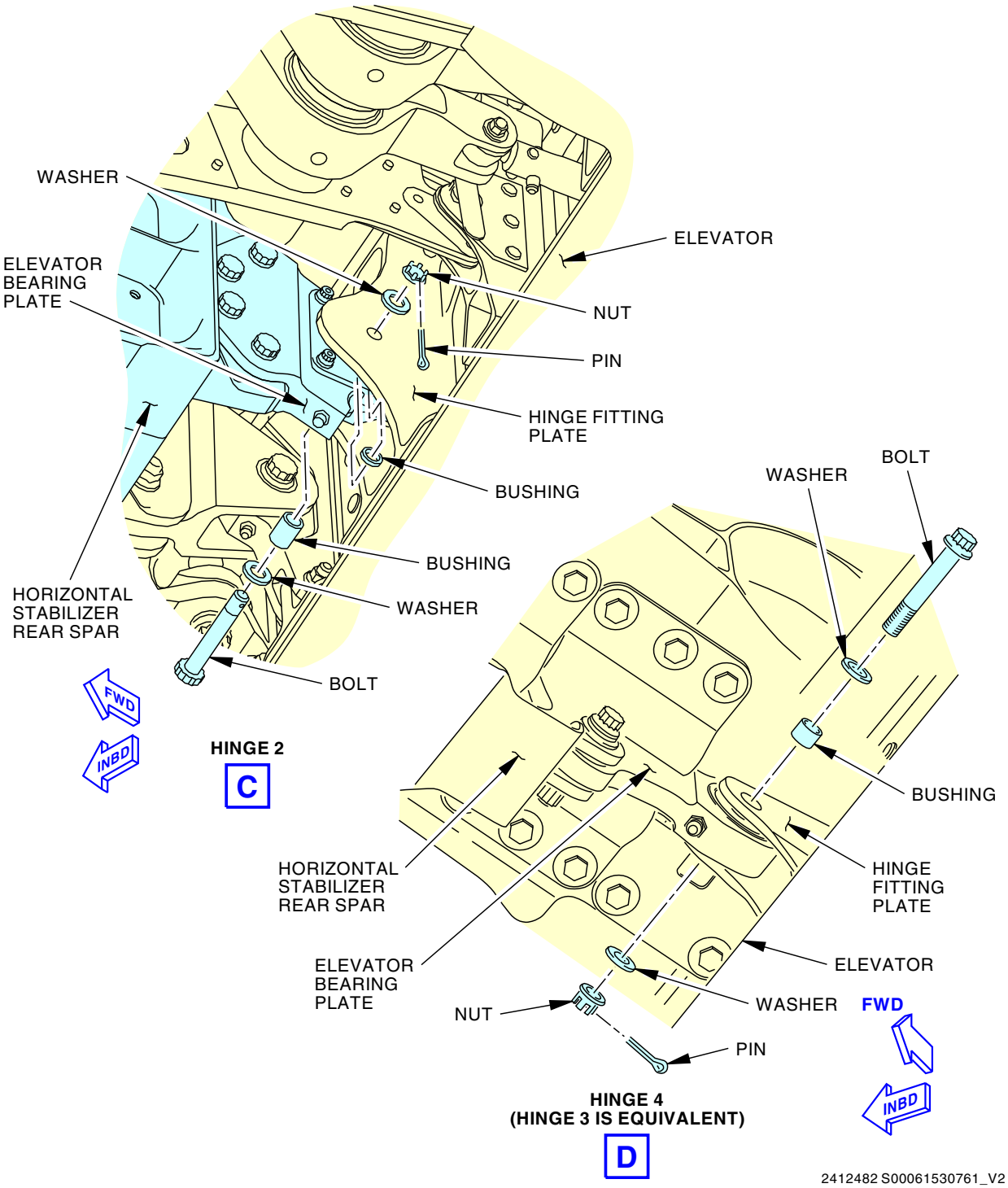
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412481 S00061530760_V2

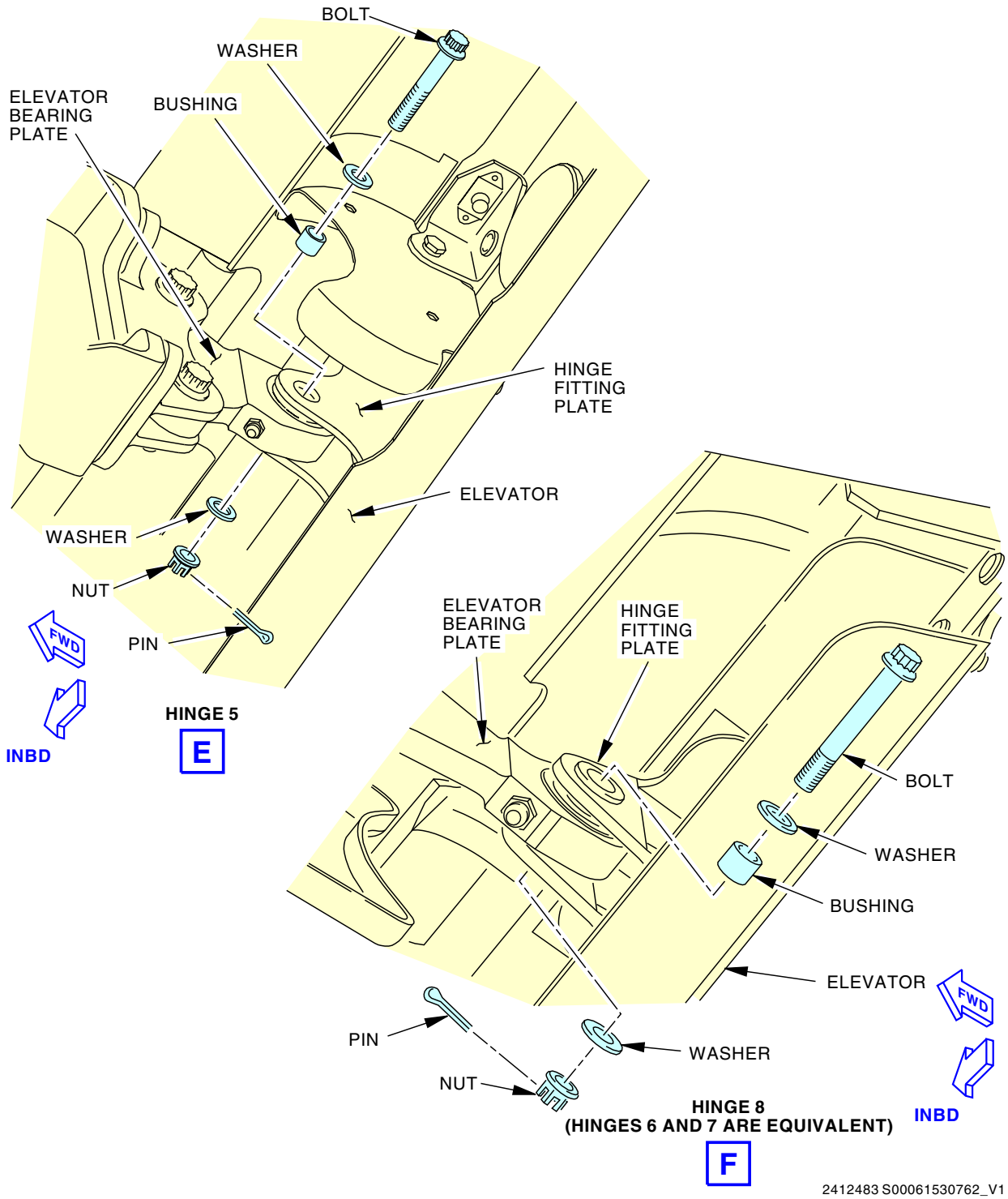
Elevator Hinge Assemblies
Figure 517/27-31-00-990-825 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



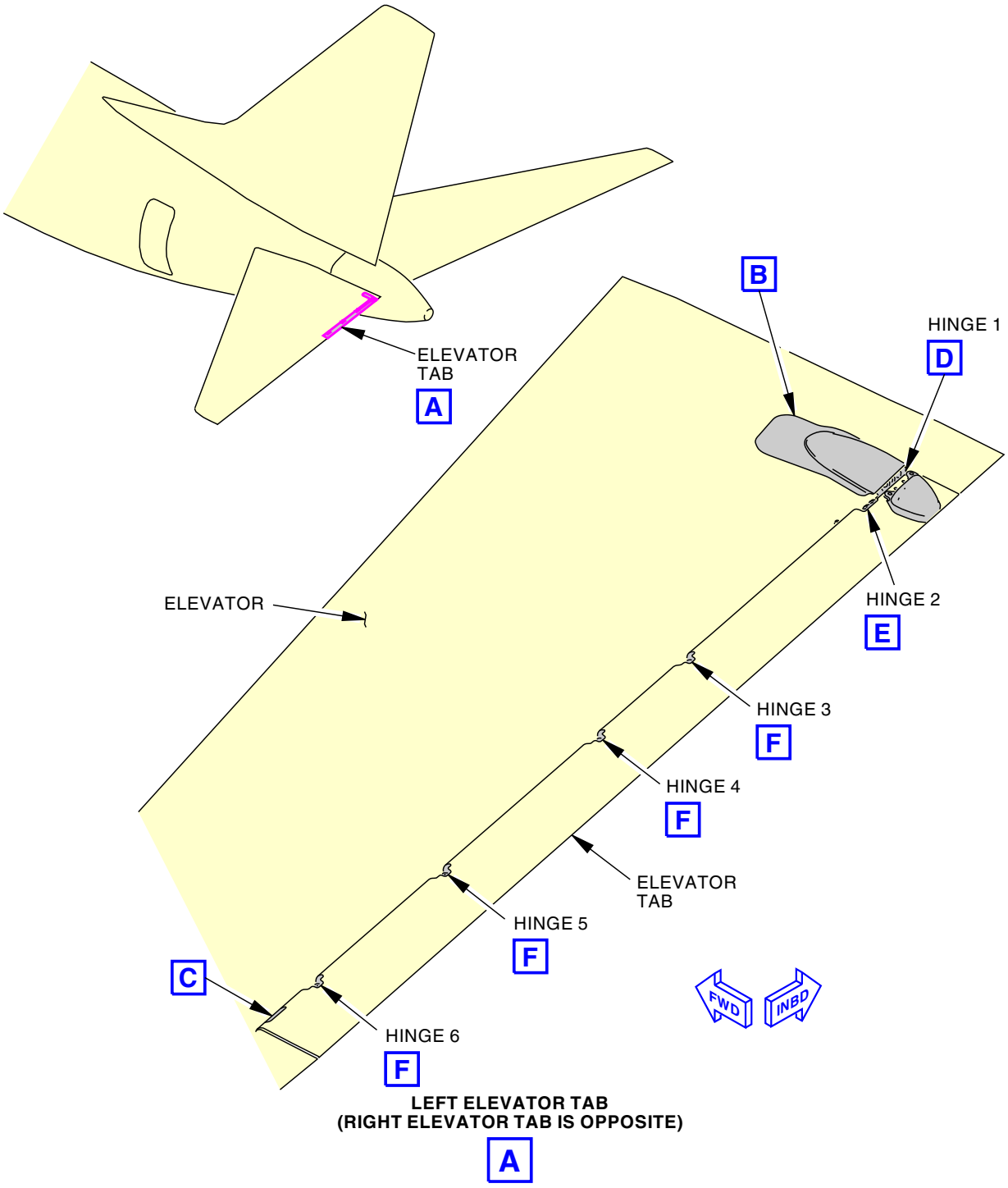
Elevator Hinge Assemblies
Figure 517/27-31-00-990-825 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



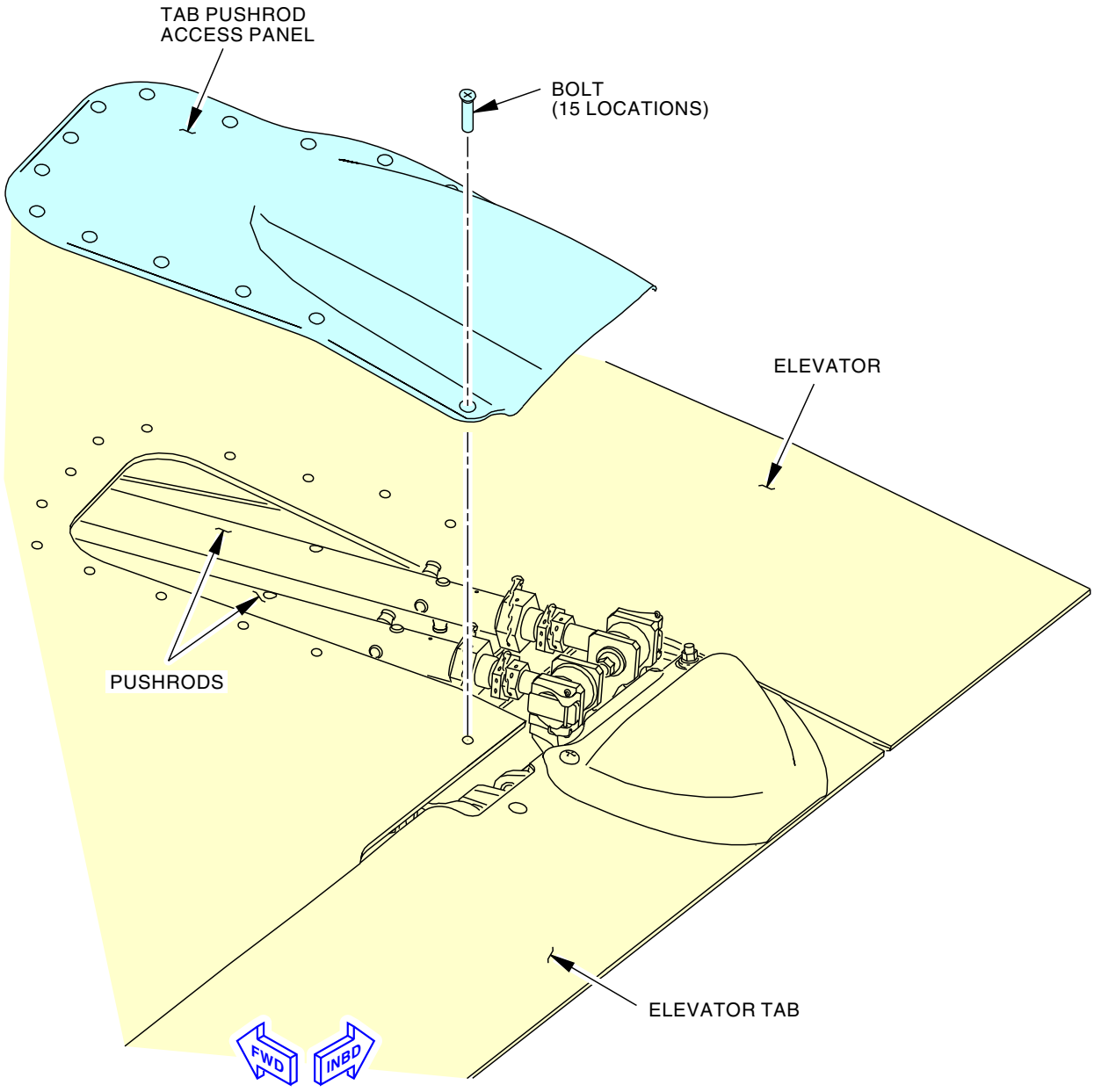
Elevator Hinge Assemblies
Figure 517/27-31-00-990-825 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Hinge Assemblies
Figure 518/27-31-00-990-826 (Sheet 1 of 4)

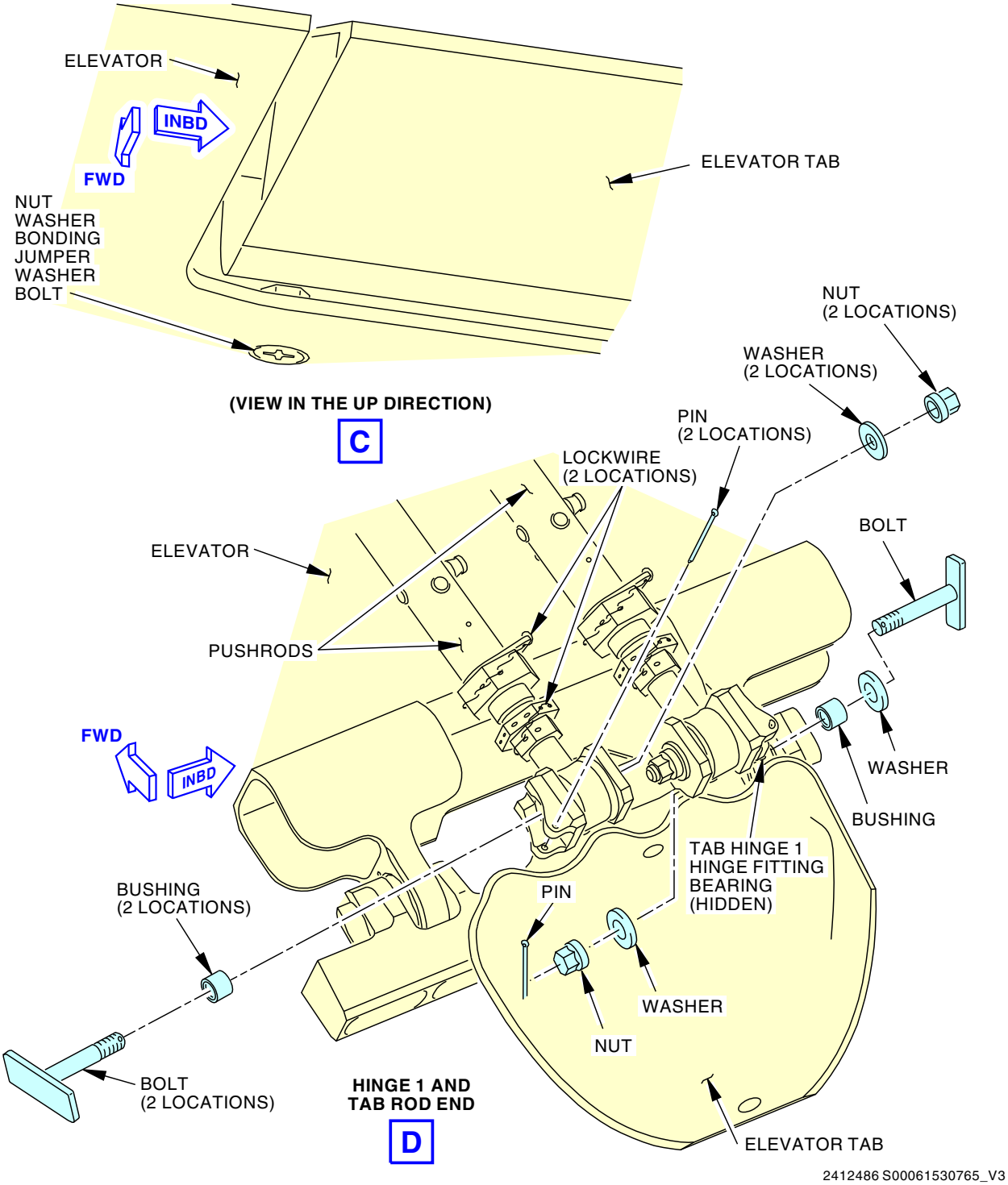
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412485 S00061530764_V2

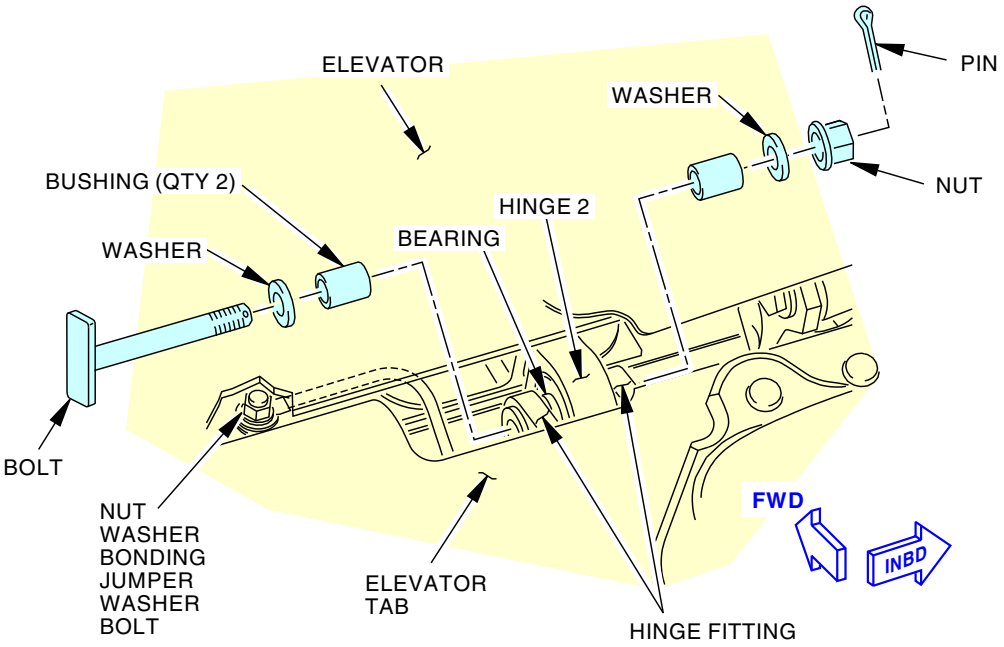
Elevator Tab Hinge Assemblies
Figure 518/27-31-00-990-826 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



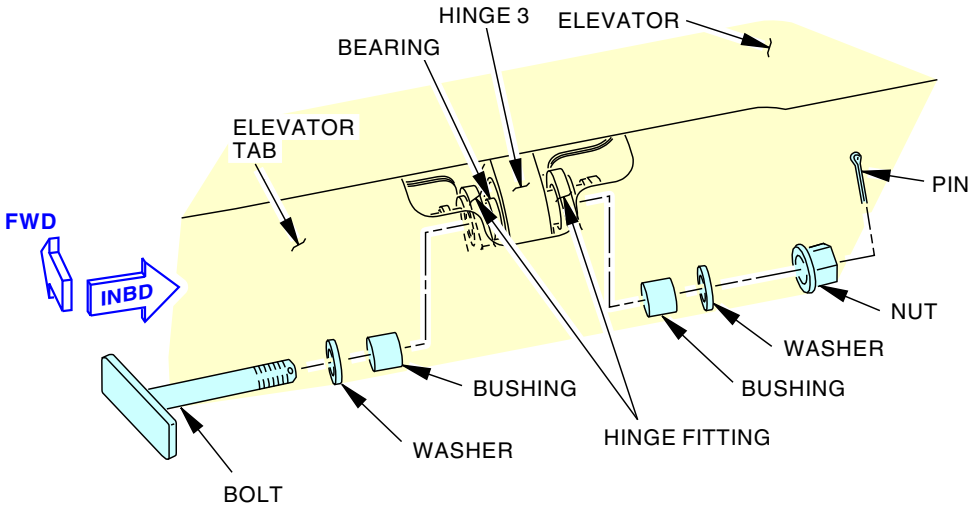
Elevator Tab Hinge Assemblies
Figure 518/27-31-00-990-826 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HINGE 2

E



HINGE 3
(HINGES 4, 5, AND 6 ARE EQUIVALENT)

F

2412487 S00061530766_V2

Elevator Tab Hinge Assemblies
Figure 518/27-31-00-990-826 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-00-820-808

28. Elevator Tab Pushrod - Adjustment after the Elevator Power-Off Flight Test

(Figure 503, Figure 506, Figure 509, Figure 510, Figure 516)

NOTE: For each elevator tab, if both pushrods are adjusted, then the Elevator Power-Off Flight Test, TASK 27-31-00-710-803 is necessary. If only one pushrod is adjusted and you can verify that the remaining rod has not been replaced or adjusted since the last flight test, then this flight test is not necessary. If only one pushrod is adjusted and you cannot verify that the remaining pushrod has not been replaced or adjusted since the last flight test, then the Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

A. General

(1) Use this procedure to adjust the elevator tab if the number of turns of the stabilizer trim wheel during the elevator power off flight test are more than the allowable limits. (Figure 509, Figure 516)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

E. Elevator Tab Pushrod Adjustment

SUBTASK 27-31-00-970-003

(1) Get the number and direction (airplane nose up or airplane nose down) of stabilizer wheel turns necessary to trim the airplane during the power-off flight test.

SUBTASK 27-31-00-970-004

(2) Get the record of the Center of Gravity that was made during the power-off flight test.

SUBTASK 27-31-00-010-035

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

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SUBTASK 27-31-00-010-036

(4) For the left elevator tab pushrods, remove this access panel:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

SUBTASK 27-31-00-010-037

(5) For the right elevator tab pushrods, remove this access panel:

Number	Name/Location
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-480-012

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(6) Use the bar, SPL-1677, to set the "B" dimension to 39.17 ±0.01 in. (994.92 ±0.26 mm). (Figure 503)

NOTE: The “B” dimension must be set with the trammel bar, SPL-1677 and not the stabilizer indicator in the flight deck.

SUBTASK 27-31-00-980-003

(7) Push the elevator trailing edge full up by hand.

SUBTASK 27-31-00-820-015

(8) Then, while you move the elevator down from the trailing edge up position, align the elevator with the index mark in ±0.04 in. (1.0 mm), or less (Figure 506).

NOTE: Keep the elevators at this position while you adjust the tab pushrods. If the elevator position is changed, you must put the elevator trailing edge at full up position and do this step again before you continue.

SUBTASK 27-31-00-480-013

(9) Install the elevator tab rigging bar, SPL-10345 (Figure 510).

(a) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the inboard side of the third elevator tab hinge.

1) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

(b) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

(c) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

SUBTASK 27-31-00-820-016

(10) Adjust the tab pushrods [110] using the Elevator Tab Rig Adjustment Chart. (Figure 516)

NOTE: If necessary, the example below shows how to use the Elevator Tab Rig Adjustment Chart.

NOTE: An example of how to use the Elevator Tab Rig Adjustment Chart is shown with the dashed lines with arrows.

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The example assumes 10.5 airplane nose down handwheel turns are needed to retrim the airplane with a center of gravity of 20 percent MAC on the left chart. Follow the diagonal lines to the left side of the right chart. Make a horizontal line across the chart. Draw a line down from the point where the horizontal line intersects the thick diagonal line on the right chart.

The example shows that you will need to adjust the elevator tab to 0.11 in. (2.8 mm) trailing edge up from the current position to bring the airplane to a neutral elevator tab trim.

NOTE: For coarse adjustment, a half turn of the tab rod end results in approximately 0.10 in. (2.5 mm) at the tab trailing edge Figure 509.

For finer adjustment, one full turn of the bushing [104] (vernier collar) results in approximately0.02 in. (0.5 mm) at the elevator tab trailing edge.

The number of threads showing on the pushrod ends should be approximately equal to the number of threads showing on the bushing [104].

The elevator tab should be adjusted to the nearest 0.01 in. (0.3 mm) shown on the scale at the bottom of the right chart of the Elevator Tab Rig Adjustment Chart.

SUBTASK 27-31-00-820-017

(11) If it is necessary, do this coarse adjustment of the elevator tab pushrods: (Figure 509, Figure 516)

(a) Remove the pins [111], nuts [109], washers [108], bolts [106], and bushings [107] from the tab pushrods [110].

(b) Turn the tab pushrod ends until the adjustment dimension is within 0.1 in. (3 mm).

NOTE: One half turn of the tab pushrod end is equal to 0.10 in. (2.5 mm) at the elevator tab trailing edge.

(c) Install the bushings [107], bolts [106], washers [108], and new nuts [109] to connect the tab pushrods [110] to the elevator tab [102].

NOTE: If you loosened or removed the nuts [109], they need to be replaced and not re-installed. Using new nuts will ensure that they have the required run-on torque of 3.5 in-lb (0.40 N·m).

NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard.

(d) Install the elevator tab rigging bar, SPL-10345 (Figure 510).

1) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge (from inboard).

a) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

2) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

3) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

4) Slide step gage FWD under elevator tab to obtain reading.

(e) Make sure that the adjustment measurement is within 0.1 in. (3 mm).

(f) Tighten the new nuts [109] to 70 in-lb (7.9 N·m) - 80 in-lb (9.0 N·m).

SUBTASK 27-31-00-820-018

(12) Do this fine adjustment of the elevator tab pushrods Figure 509:

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(a) Turn the bushing [104] to adjust the length of the tab pushrods [110].

NOTE: One half turn of the bushing [104] is equal to 0.01 in. (0.3 mm) at the elevator tab trailing edge.

(b) Loosen the nuts [109] that attach the tab pushrods [110] to the elevator tab [102].

(c) Remove the pins [111] from in front of the head of the bolts [106].

(d) Move the rectangle bolt heads out of the anti-rotation bolt bosses and make sure that you can easily turn the bolts [106] by hand.

1) If it is necessary, adjust the bushing [104] on the tab tab pushrods [110].

NOTE: One half turn of the bushing/rod end assembly is equal to 0.11 in. (2.8 mm).

CAUTION

TIGHTEN THE NUTS [109] CORRECTLY. IF YOU TIGHTEN THEM INCORRECTLY THEN THE PUSHRODS CAN BECOME DISCONNECTED. THIS CAN CAUSE DAMAGE TO THE ELEVATOR, AND STABILIZER.

(e) Tighten the new nuts [109] to 70 in-lb (7.9 N·m) - 80 in-lb (9.0 N·m) and install pins [111].

NOTE: If you loosened or removed the nut [109], they need to be replaced and not re-installed. Using new nuts will ensure that they have the required run-on torque of 3.5 in-lb (0.40 N·m).

(f) Tighten the checknuts [103] and checknuts [105] on the tab pushrods [110] to 150 in-lb (16.9 N·m) - 200 in-lb (22.6 N·m).

SUBTASK 27-31-00-220-004

(13) Make sure that the adjustment measurement is the same.

(a) Install the elevator tab rigging bar, SPL-10345 (Figure 510).

1) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge (from inboard).

a) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

2) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

3) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

4) Slide step gage FWD under elevator tab to obtain reading.

(b) Make sure that the adjustment measurement is the same.

SUBTASK 27-31-00-220-005

(14) Do a check of the thread engagement of the tab pushrod ends and bushings [104]:

NOTE: See Figure 509.

(a) Make sure that the end of the bushing [104] covers the inspection hole on each tab pushrod [110].

(b) Make sure that the inspection hole of each tab pushrod end bearing is not shown.

(c) If the thread engagement is not correct, you must do the coarse adjustment again.

NOTE: See Figure 516.

SUBTASK 27-31-00-430-003

(15) Install lockwire on the checknuts [103] and checknuts [105] Figure 509.

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SUBTASK 27-31-00-410-028

(16) For the right elevator tab pushrods, install this access panel:

Number	Name/Location
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-00-410-029

(17) For the left elevator tab pushrods, install this access panel:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

SUBTASK 27-31-00-410-030

(18) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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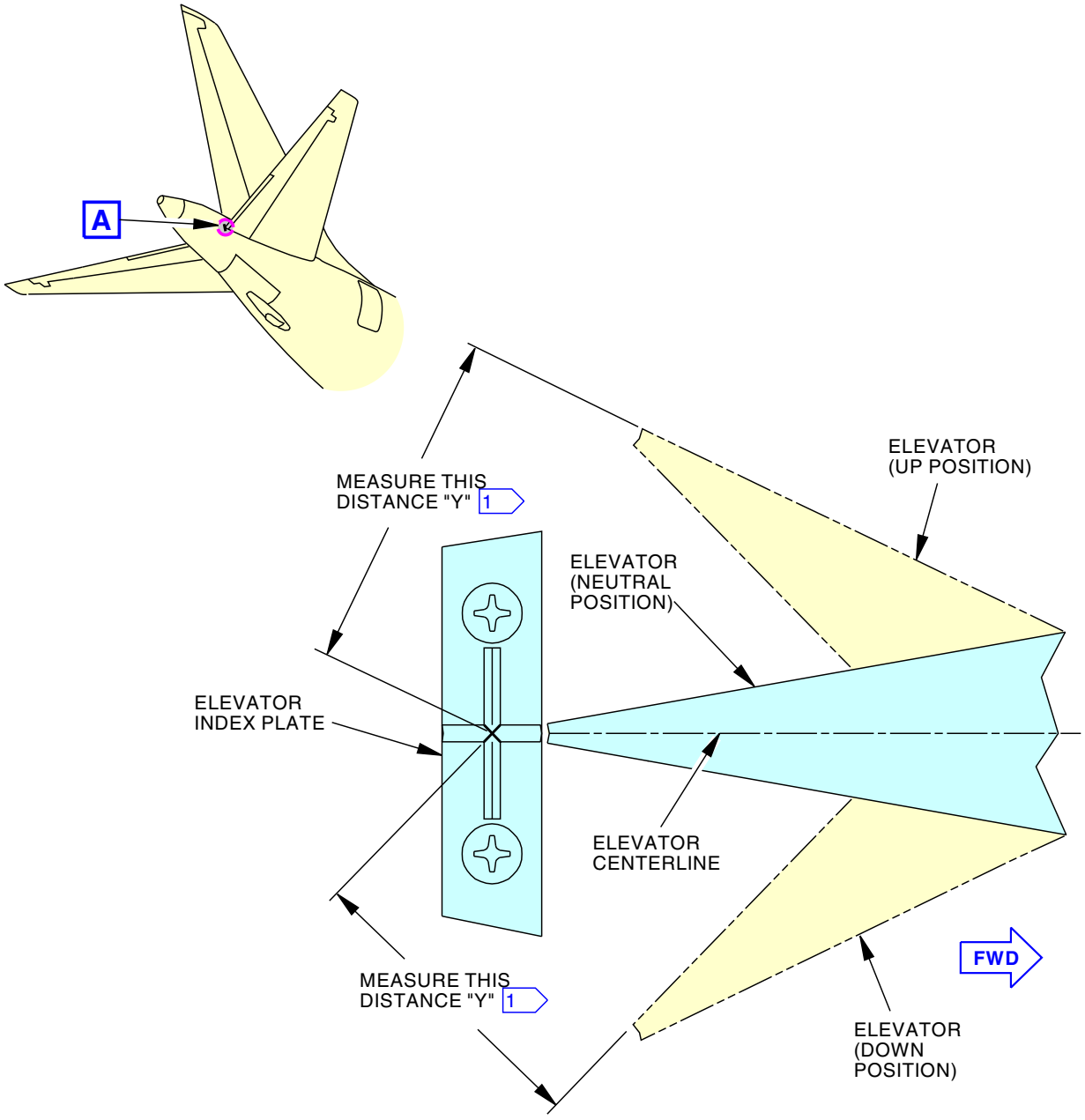

1 THE DISTANCE "Y" IS MEASURED FROM THE MIDDLE OF THE ELEVATOR INDEX PLATE TO THE UPPER SURFACE OF THE INBOARD EDGE OF THE ELEVATOR.

MEASUREMENT LOCATION (RIGHT SIDE)

A

2412488 S00061530768_V1

Elevator Full Travel Measurements
Figure 519/27-31-00-990-827

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TASK 27-31-00-710-804

29. Elevator Jam Landing Assist - Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to do the operational tests on the Elevator Jam Switch, S1214, and ASSIST ON light, L1383.

B. References

Reference	Title
27-61-45-730-801	Spoiler Control Electronics Self Test (P/B 501)
31-65-00-970-801	System Maintenance Data Pages Function (P/B 201)
46-13-02-700-805	Existing Faults Check (P/B 201)
SWPM 20-83-11	ASSEMBLY AND INSTALLATION OF PUSH BUTTON, ROCKER, AND TOGGLE SWITCHES
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-31-00-710-010

(1) On the MAX Display System (MDS), go to the 27 FLIGHT CONTROLS display in the MAINT DATA PGS (TASK 31-65-00-970-801).

(a) Make sure that all four GEAR ON GRND values read “NEAR”.

SUBTASK 27-31-00-710-011

(2) On the Onboard Maintenance Function (OMF), go to the EXISTING FAULTS page for Chapter 27, Spoiler Control (TASK 46-13-02-700-805).

(a) Make sure that 27-0266X RADIO ALT DATA INVALID is NOT set.

1) If 27-0266X RADIO ALT DATA INVALID is SET, run the SCE TEST to clear the fault (TASK 27-61-45-730-801).

a) Do the steps in the Prepare for the Test again.

b) Do not proceed until the fault has been cleared.

E. Elevator Jam Landing Assist Test

SUBTASK 27-31-00-860-156

(1) Do these steps to check configuration of ELEVATOR JAM LANDING ASSIST switch:

(a) On the aft P5 panel, lift the ELEVATOR JAM LANDING ASSIST switch guard and attempt to put the switch to the middle detent.

NOTE: The ELEVATOR JAM SWITCH can have a middle detent position that does not activate the elevator jam landing assist function.

(b) If the switch has a middle detent position, replace this switch with a two position switch PN 64AT34-3 (SWPM 20-83-11).

SUBTASK 27-31-00-720-001

(2) Do these steps to test the ASSIST ON, L1383, light indicator:

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(a) On the P5 panel, push and hold the ASSIST ON, L1383, light indicator.

1) Make sure that the light comes on.

(b) Release the ASSIST ON light indicator.

1) Make sure that the light turns off.

(c) If the light does not come on, refer to the IFIM and do the applicable procedure(s).

(d) Re-test per initial test procedures.

1) Do the test of the ASSIST ON, L1383, light indicator again.

SUBTASK 27-31-00-710-012

(3) Do these steps to test the ELEVATOR JAM LANDING ASSIST switch:

(a) Put the ELEVATOR JAM LANDING ASSIST switch to the ON position (full forward).

(b) Make sure that the ASSIST ON light comes on.

SUBTASK 27-31-00-710-013

(4) While the switch is in the ON position, do these steps:

(a) Open the EXISTING FAULTS for Chapter 27, Spoiler Control, using the OMF (TASK 46-13-02-700-805).

(b) Make sure that the ELEV JAM SW FAULT, 27-0016X does not show.

SUBTASK 27-31-00-860-137

(5) Put the ELEVATOR JAM LANDING ASSIST switch to the OFF position.

(a) Make sure that the ASSIST ON light turns off.

——— END OF TASK ———

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ELEVATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator

(2) An installation of the elevator

(3) A removal of the elevator control pushrod

(4) An installation of the elevator control pushrod.

B. When it is necessary to balance the elevator, make sure you do a check of the elevator and the elevator tab part numbers. Refer to Chapter 51 of the Structural Repair Manual when you balance the elevator-elevator tab combination after the structural repairs or after you put on new paint.

C. If you install a tab on the elevator during the elevator installation, make sure the number of the elevator control tab adjust weights agree with the tab data plate.

TASK 27-31-11-000-801

2. Elevator - Removal

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-32-200-802	Elevator Tab Freeplay - Check (P/B 601)
53-53-00-000-801	Tailcone Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-2034	Sling - Elevator Hoisting Part #: C27034-31 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
335	Left Horizontal Stabilizer - Tip
344	Right Horizontal Stabilizer - Elevator
345	Right Horizontal Stabilizer - Tip

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D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334BB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334DB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334EB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334FB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334LB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344BB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344DB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344EB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344FB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344LB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 213.32
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

E. Prepare for the Removal

SUBTASK 27-31-11-860-001

(1) Make sure that pressure is removed from the elevator hydraulic systems A and B, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-11-000-001

(2) Do this task: Tailcone Removal, TASK 53-53-00-000-801.

SUBTASK 27-31-11-010-001

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

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SUBTASK 27-31-11-010-003

(4) For the left elevator, remove these access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge

SUBTASK 27-31-11-010-004

(5) For the right elevator, remove these access panels:

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-11-010-005

(6) For the left elevator, open these access panels:

Number	Name/Location
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334BB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334DB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334EB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334FB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334LB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover

SUBTASK 27-31-11-010-006

(7) For the right elevator, open these access panels:

Number	Name/Location
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344BB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344DB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344EB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344FB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344LB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 213.32
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

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SUBTASK 27-31-11-860-002

(8) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

SUBTASK 27-31-11-860-003

CAUTION MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

(9) Use the bar, SPL-1677, to set “B” dimension at 4 units of trim 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 401).

SUBTASK 27-31-11-820-001

(10) Measure and record the elevator tab position.

NOTE: Measuring and recording the elevator tab position before you remove the tab may improve the manual reversion success rate if the tab needs to be adjusted after installation.

(a) If the same tab will be re-installed, then do the following before removing the tab:

1) Make sure that the elevator tab meets the freeplay limits, do this task: Elevator Tab Freeplay - Check, TASK 27-31-32-200-802.

(b) While you move the elevator trailing edge down, align the projected center of the elevator trailing edge with the index mark within ±0.04 in. (1 mm), or less.

1) Measure and record the elevator tab position.

SUBTASK 27-31-11-480-005

(11) Install the rig pin E-5 from rigging pin kit, SPL-1585, in the elevator aft quadrant (Figure 402).

F. Elevator Removal

SUBTASK 27-31-11-020-001

(1) Put the elevator tab control mechanism [22] in a neutral position.

(2) Attach the elevator tab control mechanism [22] to the elevator with clamps.

NOTE: This step prevents the rods from scraping the elevator surface.

(3) Remove the elevator connections to the elevator tab control mechanism [22] (Figure 404).

(a) Remove the screws [17] and washers [25] from the pin retainer [18] and rotate the pin retainer [18] arms away from the bolt [12] heads.

(b) Remove the nut [19], washer [20], bushing [21], and pin assembly [26] that attach the outboard aft attach lug to the elevator [1].

(c) Remove the nut [24], washers [23], and pin assembly [11] that attach the inboard aft attach lug to the elevator [1].

(d) Remove the nuts [16], washers [15], bolts [12], and spacers [13] that attach the tab pushrods [14] to the elevator tab control mechanism [22].

(e) Do not remove the elevator mast arms [91] from the aft attach lugs.

SUBTASK 27-31-11-480-002

(4) If you do not use the sling, SPL-2034, to remove the elevator, you must properly support the elevator while removing the hinge bolts.

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(5) Do the following to install the sling, SPL-2034, to the elevator [1] (Figure 403):

(a) Find the bolts [3] on the elevator [1] to attach the sling, SPL-2034.

1) The bolts [3] are on the upper panel next to elevator hinge 3 and hinge 5 (Figure 403).

(b) Remove the bolts [3] from the elevator [1].

(c) Install the forward sling fittings on the elevator [1].

1) Install the bolts [3] to attach each sling fitting to the elevator [1].

(d) Install the aft sling fitting on the elevator [1].

(e) Attach the straps from the forward sling fittings to the aft sling fitting.

(f) Attach the sling, SPL-2034, to the forward sling fittings and aft sling fitting.

(g) Connect an overhead crane to the primary support sling on the sling, SPL-2034.

(h) Connect a tether line to the aft sling fitting.

(i) Use the sling, SPL-2034, to hold the elevator [1].

SUBTASK 27-31-11-020-002

(6) Disconnect the pushrod [38] of the elevator position transmitter [37] from the elevator [1] (Figure 405).

(a) Disconnect the electrical connector [39] from the elevator position transmitter [37].

(b) Remove the bolt [42], washer [41] and spacer [40] from the pushrod [38].

SUBTASK 27-31-11-020-003

(7) Remove the nut [31], nut [32], washer [33], bushing [34], and bolt assembly [35] to disconnect the elevator control pushrod [36] from the elevator [1].

SUBTASK 27-31-11-020-004

(8) Disconnect the balance panels from the elevator [1] (Figure 405).

(a) The bulb seal of the balance panel can be removed for easier removal of the elevator.

SUBTASK 27-31-11-000-002

(9) If necessary, remove the applicable bulb seal (Figure 406).

(a) Remove the bolts [84] and washers [85].

SUBTASK 27-31-11-020-005

(10) Remove the elevator [1] in the following order (Figure 405):

(a) At elevator hinge 1, remove the pin [50], nut [49], washer [48], and bolt [47].

1) Discard the pin [50].

(b) At elevator hinge 2, remove the pin [55], nut [54], washer [53], bolt [51], and bushing [52].

1) Discard the pin [55].

(c) At elevator hinge 4, remove the pin [68], nut [67], washer [66], bolt [63], washer [64], and bushing [65].

1) Discard the pin [68].

(d) At elevator hinge 5, remove pin [73], nut [74], washer [72], bolt [69], washer [70], and bushing [71].

1) Discard the pin [73].

(e) Remove the nuts [82] and washers [83] to disconnect the bonding jumpers [81] from the horizontal stabilizer [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) At elevator hinges 6, 7, and 8, remove the pins [80], nuts [79], washers [78], bolts [75], washers [76], and bushings [77].

1) If it is necessary, pull on the tether line to remove the bolts [75].

2) Discard the pins [80].

(g) At elevator hinge 3, remove the lockwire, pin [62], nut [61], washer [60], bushing [59], bolt [56], and washer [57].

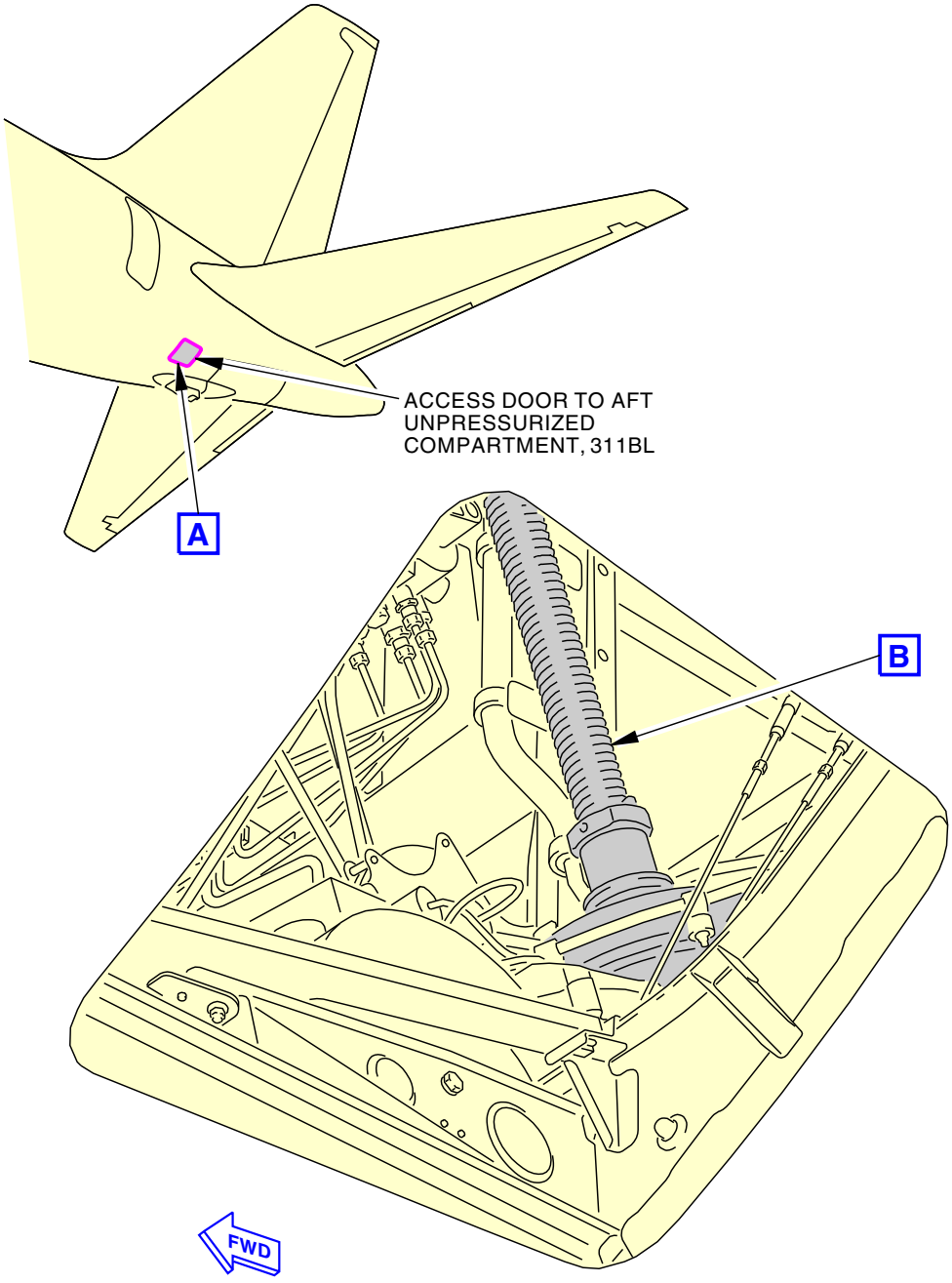
1) Discard the pin [62].

(h) Remove the lockwire from the bushing [58] at hinge 3 and remove the bushing [58].

(i) Remove the elevator [1] from the airplane.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



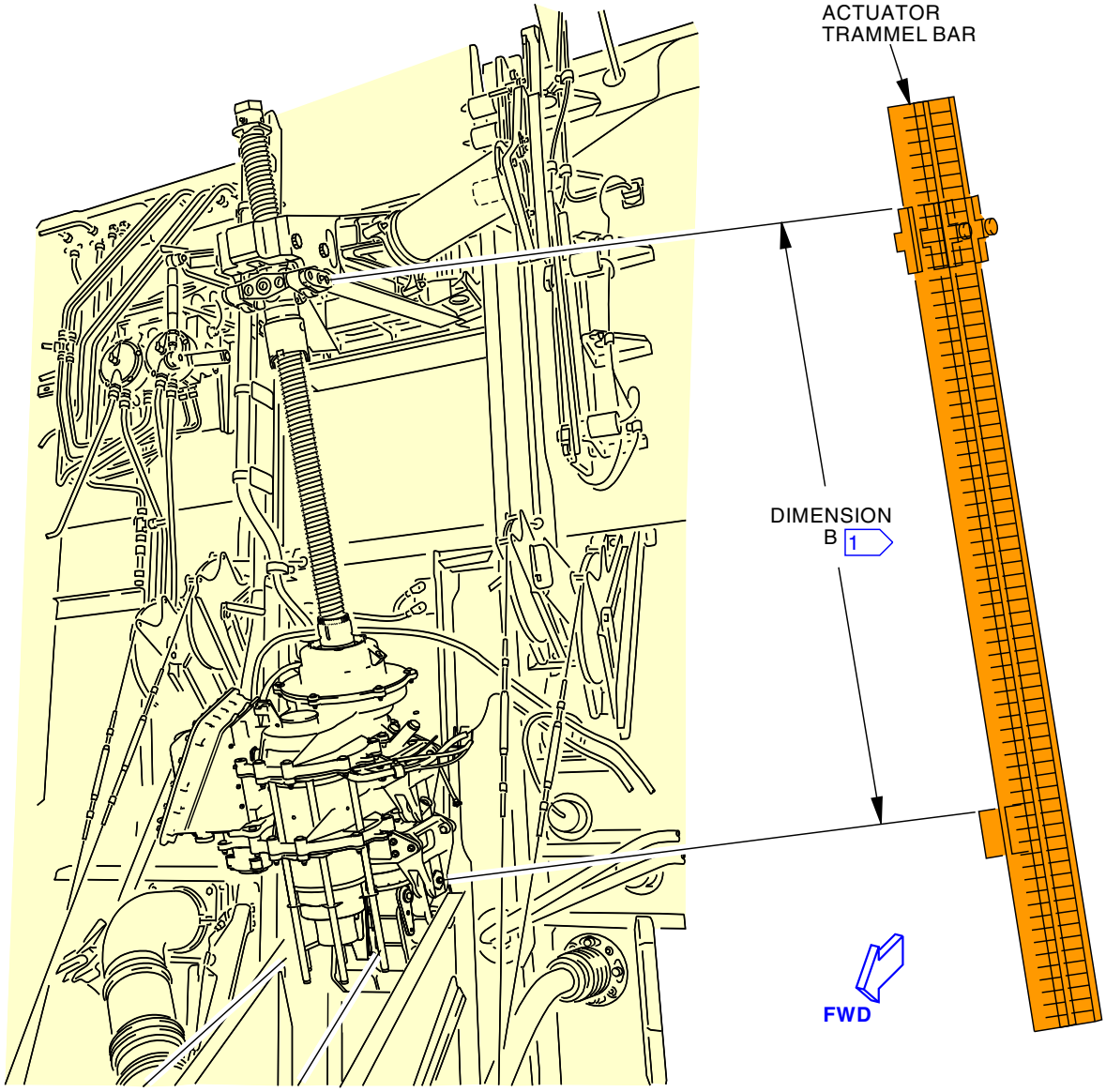
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412489 S00061530772_V1

**Stabilizer Trim Jackscrew Setting
Figure 401/27-31-11-990-801 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

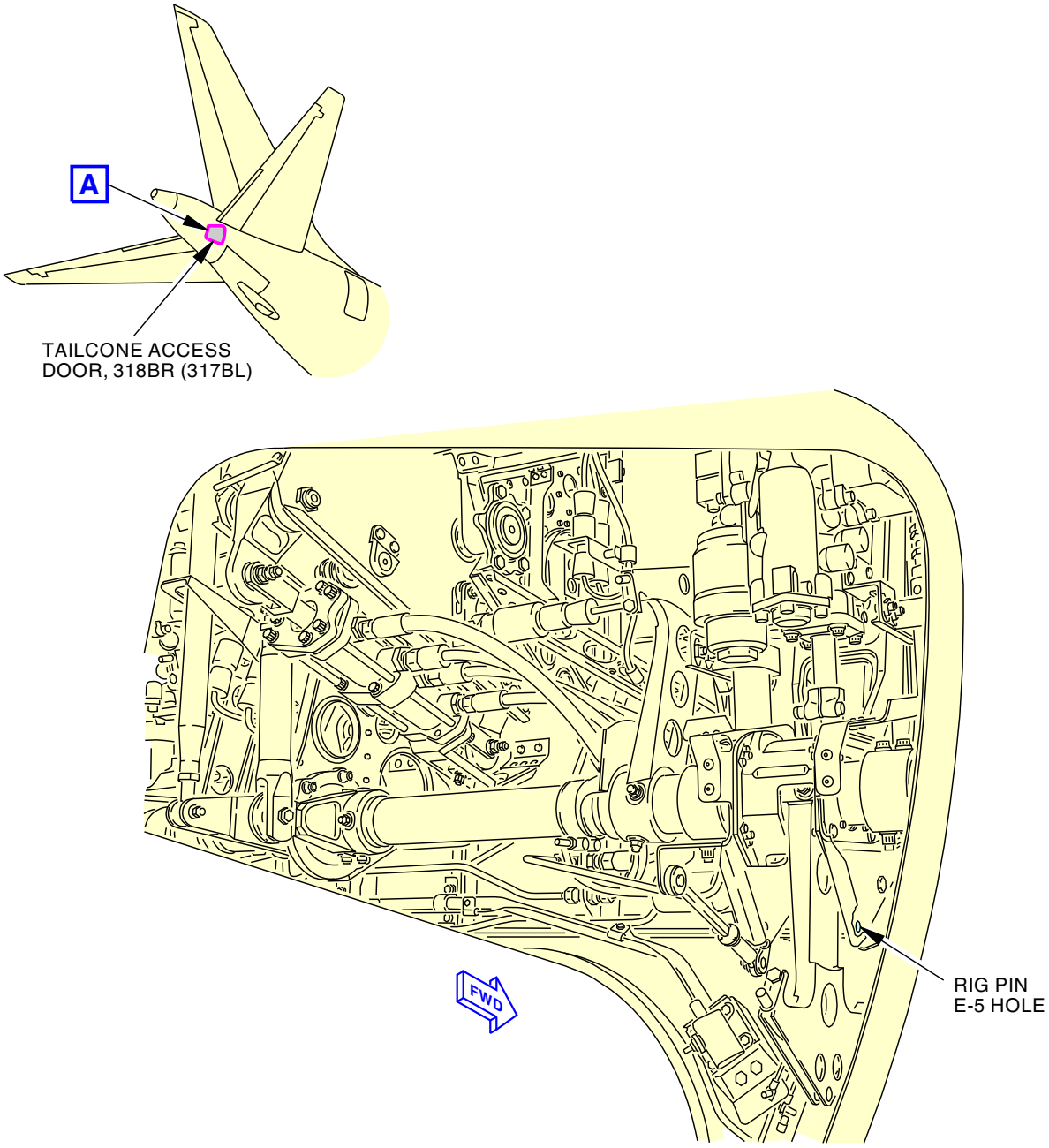
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412490 S00061530773_V2

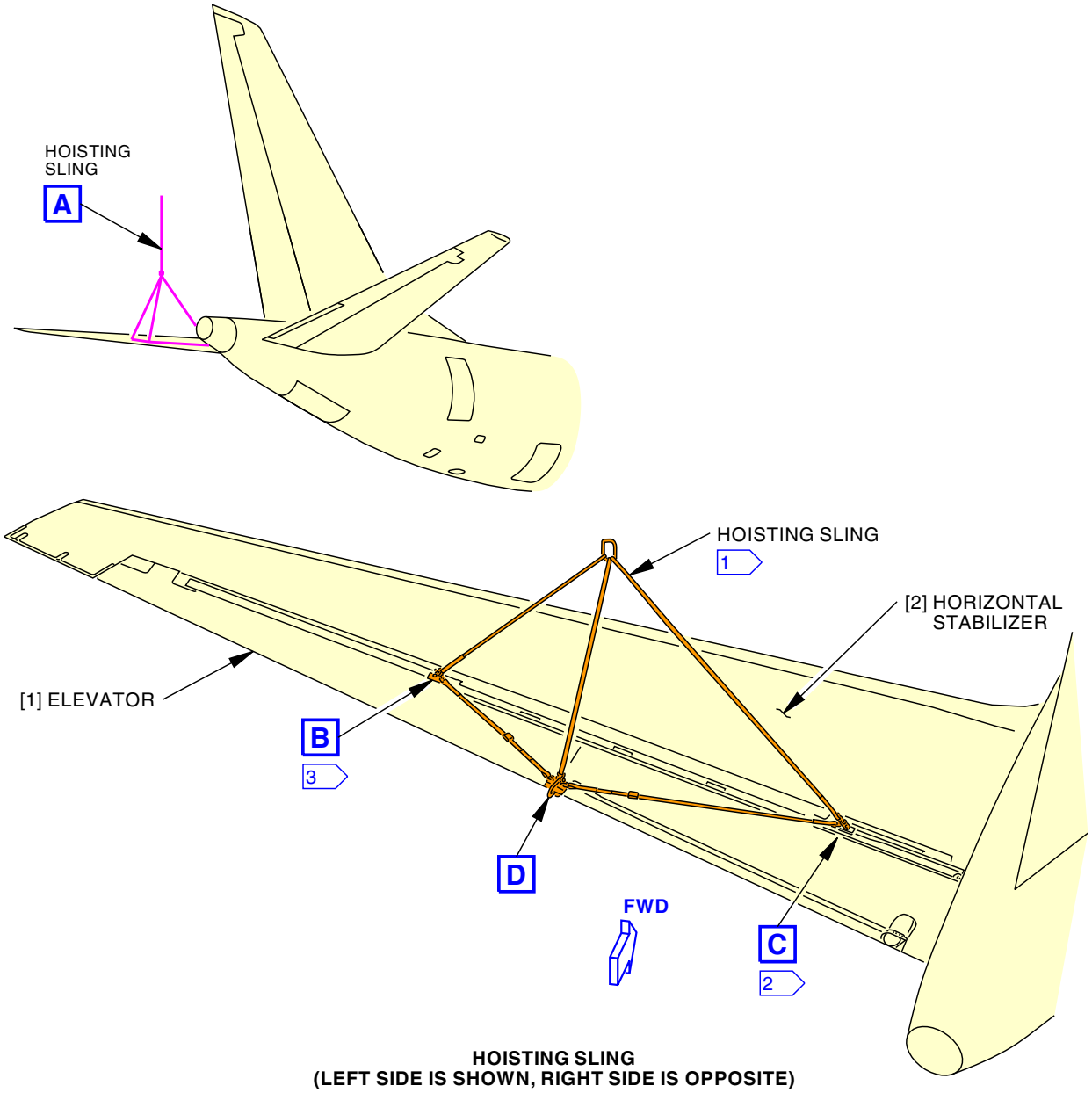
Stabilizer Trim Jackscrew Setting
Figure 401/27-31-11-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Rig Pin Installation
Figure 402/27-31-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HOISTING SLING
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

A

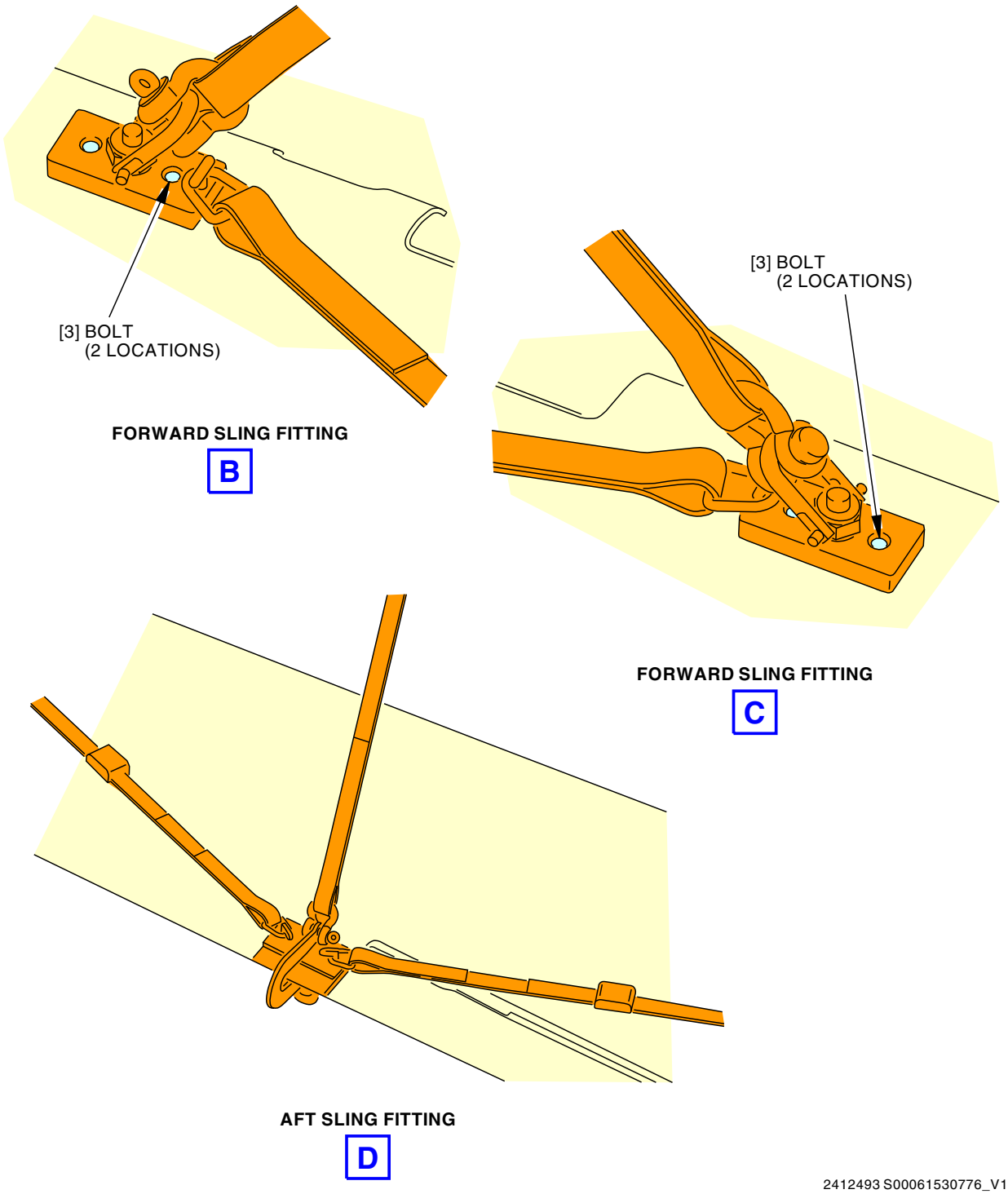
NOTE:

1. THIS SLING CAN BE USED TO FACILITATE THE HANDLING OF THE ELEVATOR.
2. THE INBOARD FORWARD SLING FITTING CAN BE FOUND NEXT TO HINGE 3.
3. THE OUTBOARD FORWARD SLING FITTING CAN BE FOUND NEXT TO HINGE 5.

2412492 S00061530775_V2

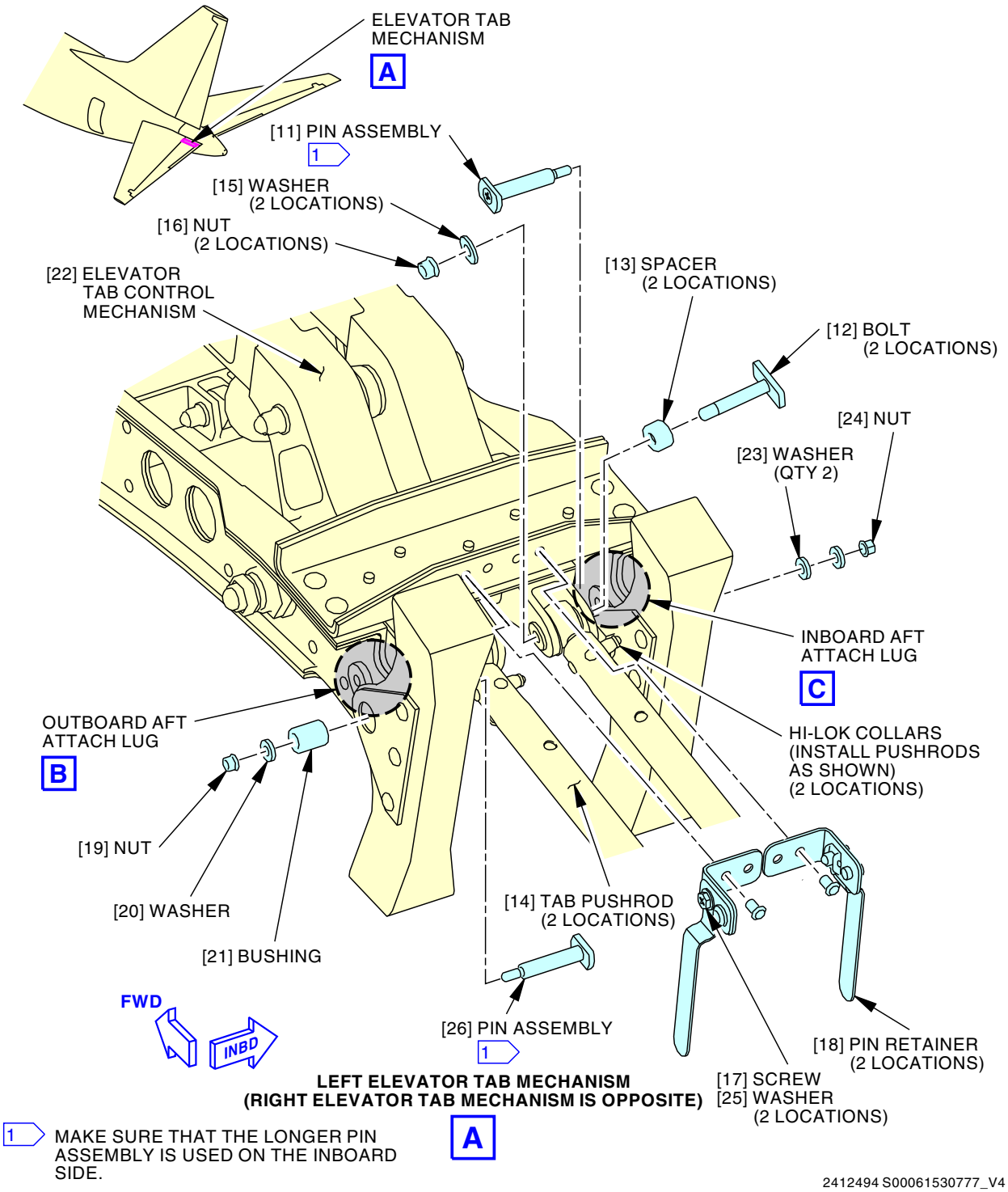
Elevator Hoisting Sling Installation
Figure 403/27-31-11-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



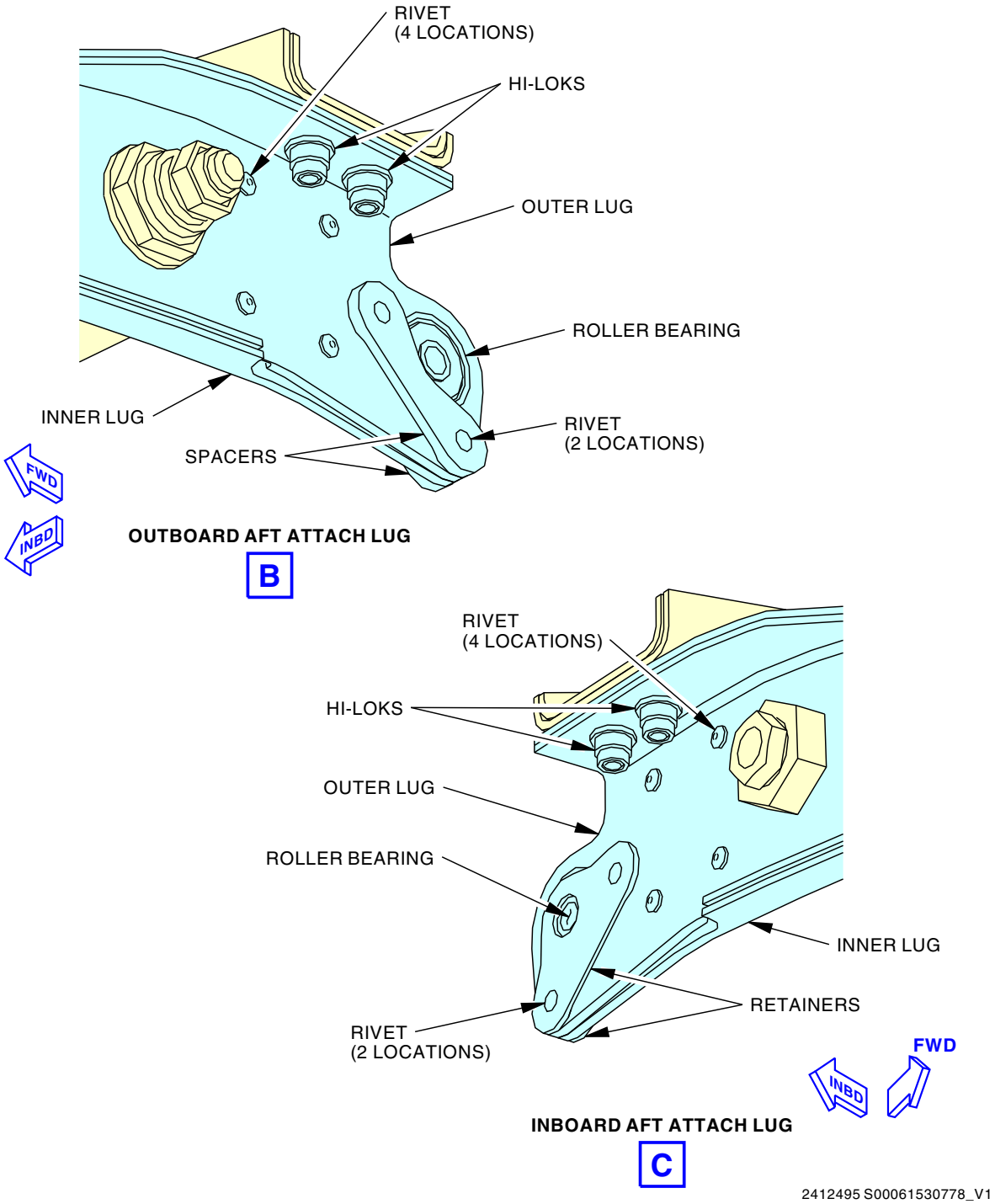
Elevator Hoisting Sling Installation
Figure 403/27-31-11-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



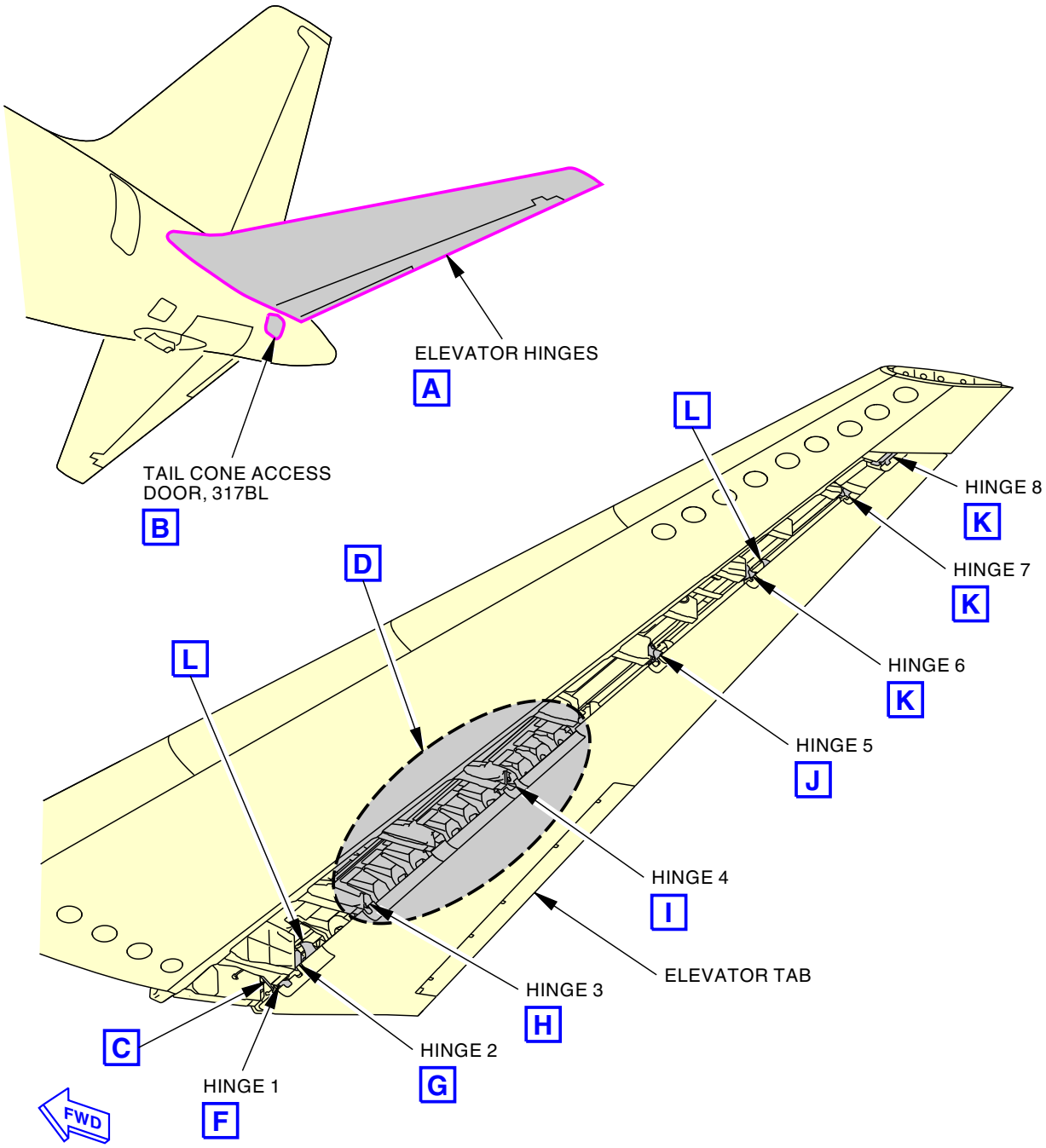
Elevator Tab Mechanism Installation
Figure 404/27-31-11-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Mechanism Installation
Figure 404/27-31-11-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

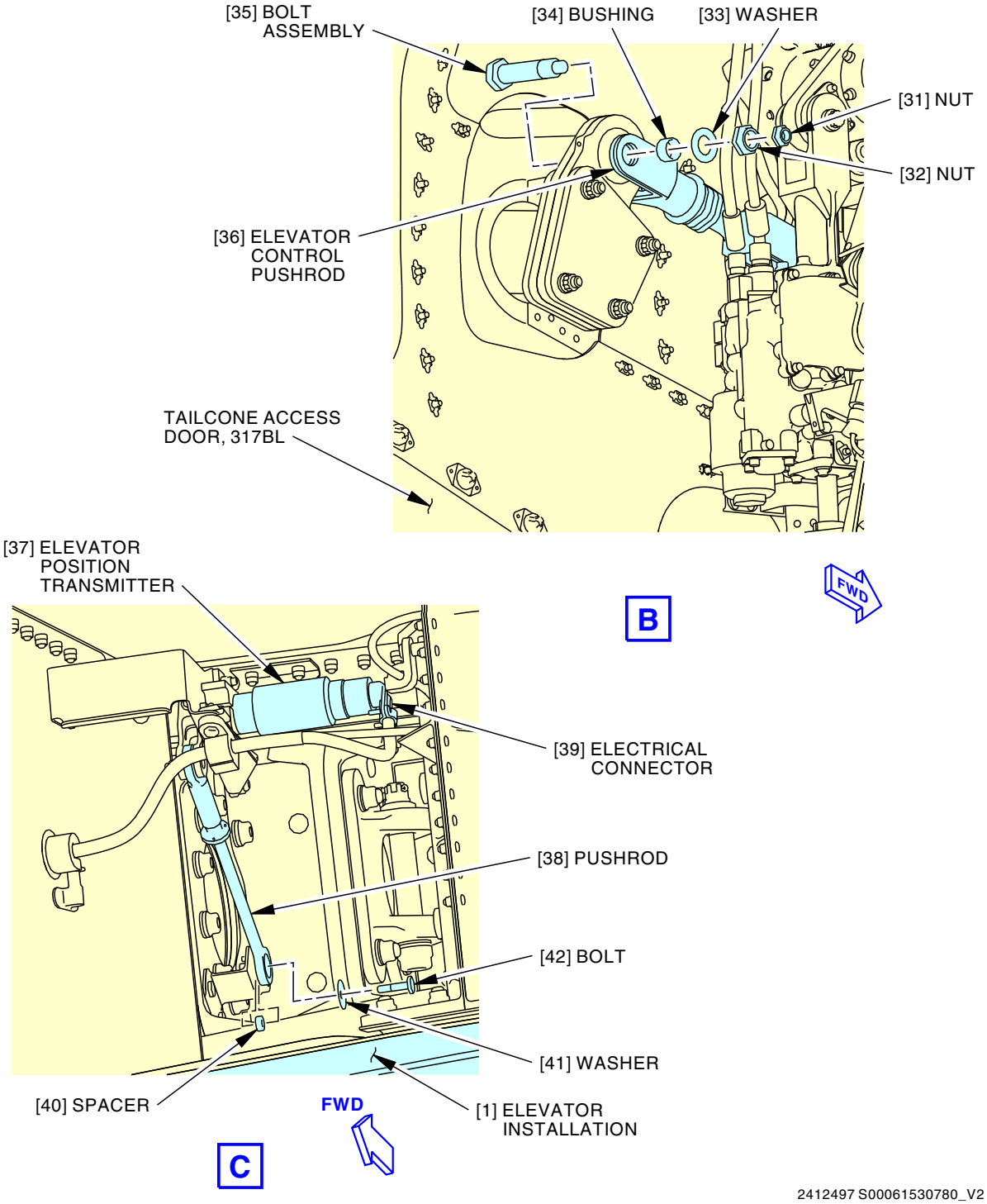


ELEVATOR HINGES
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)
A

2412496 S00061530779_V2

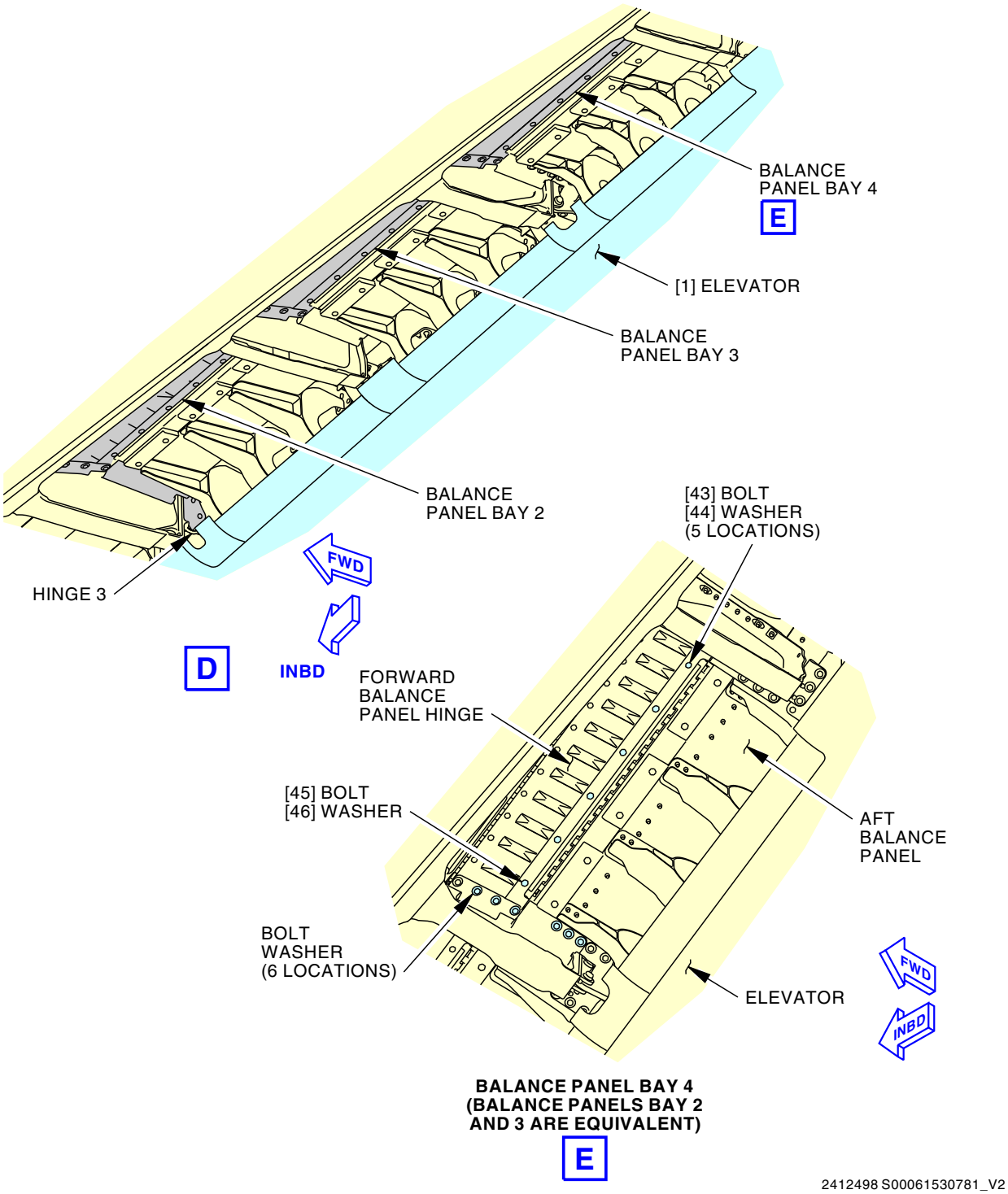
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



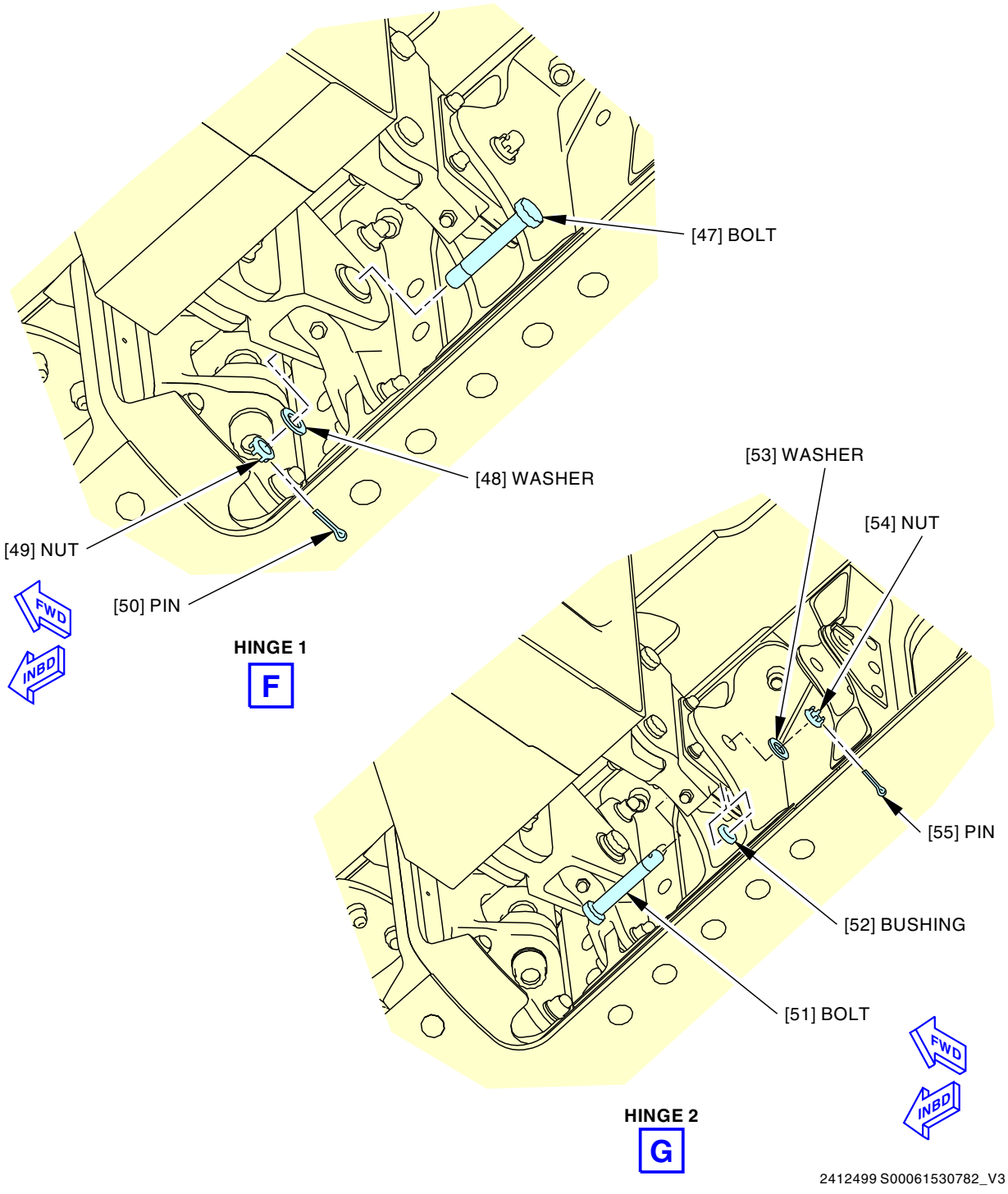
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



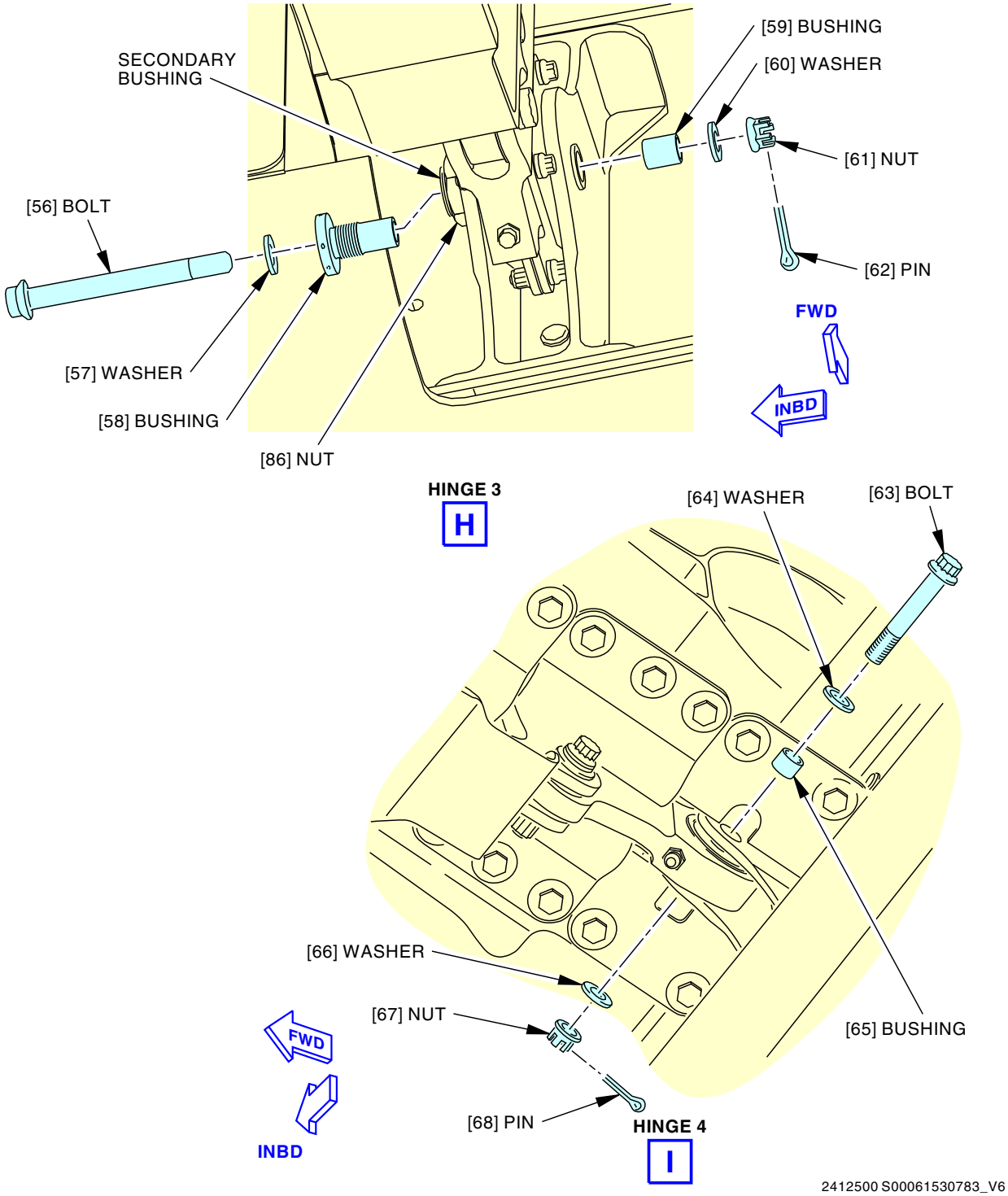
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



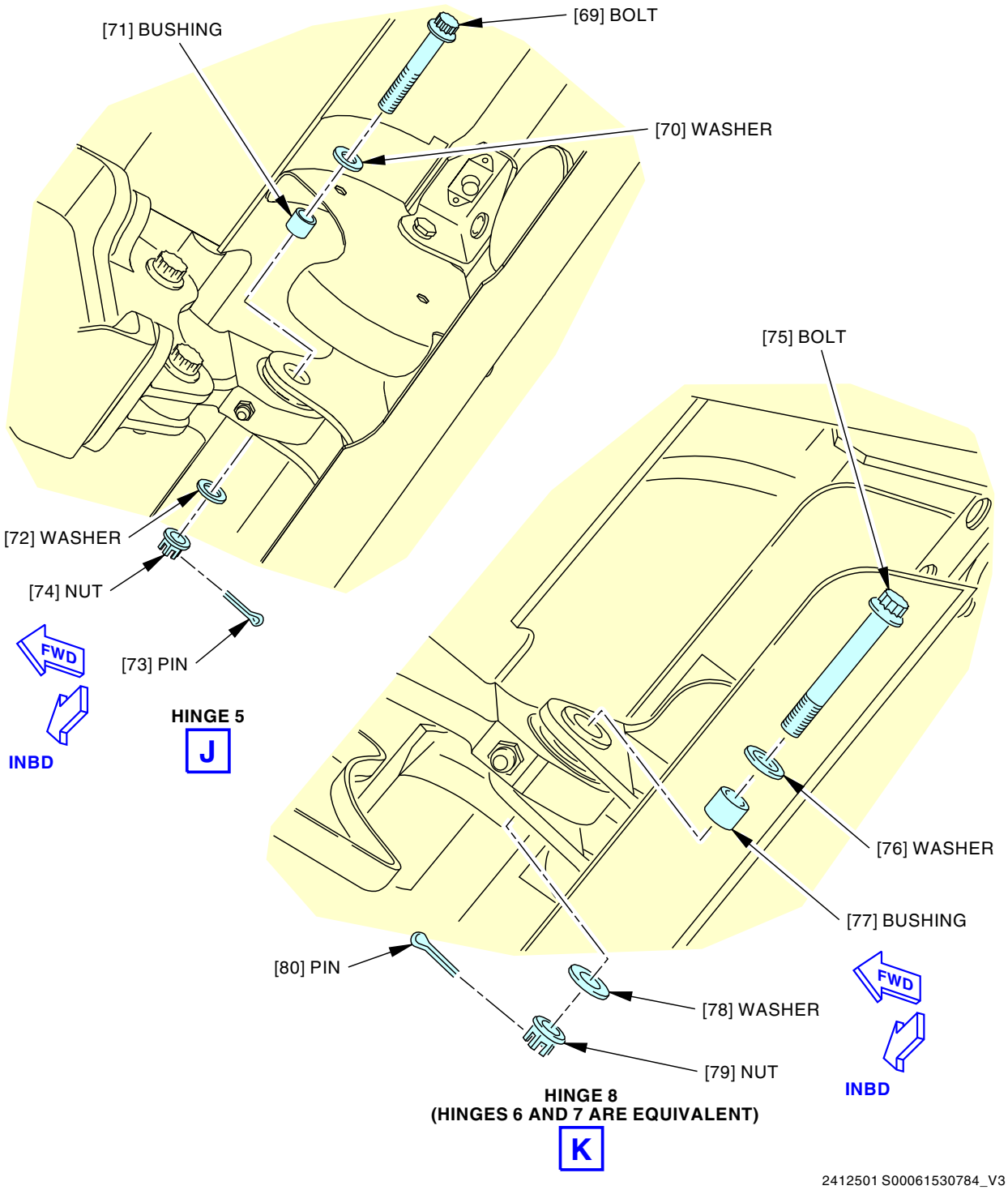
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



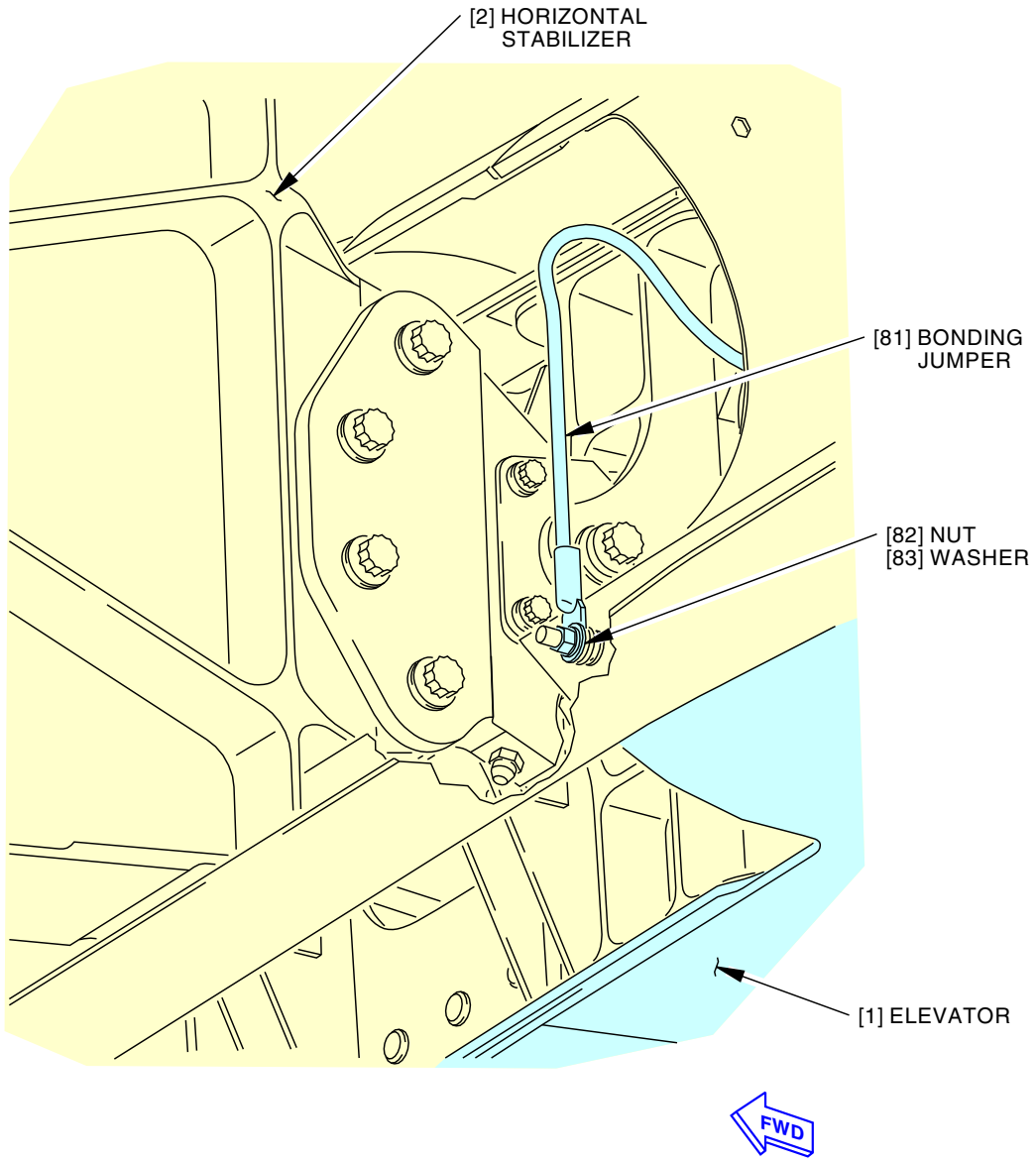
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



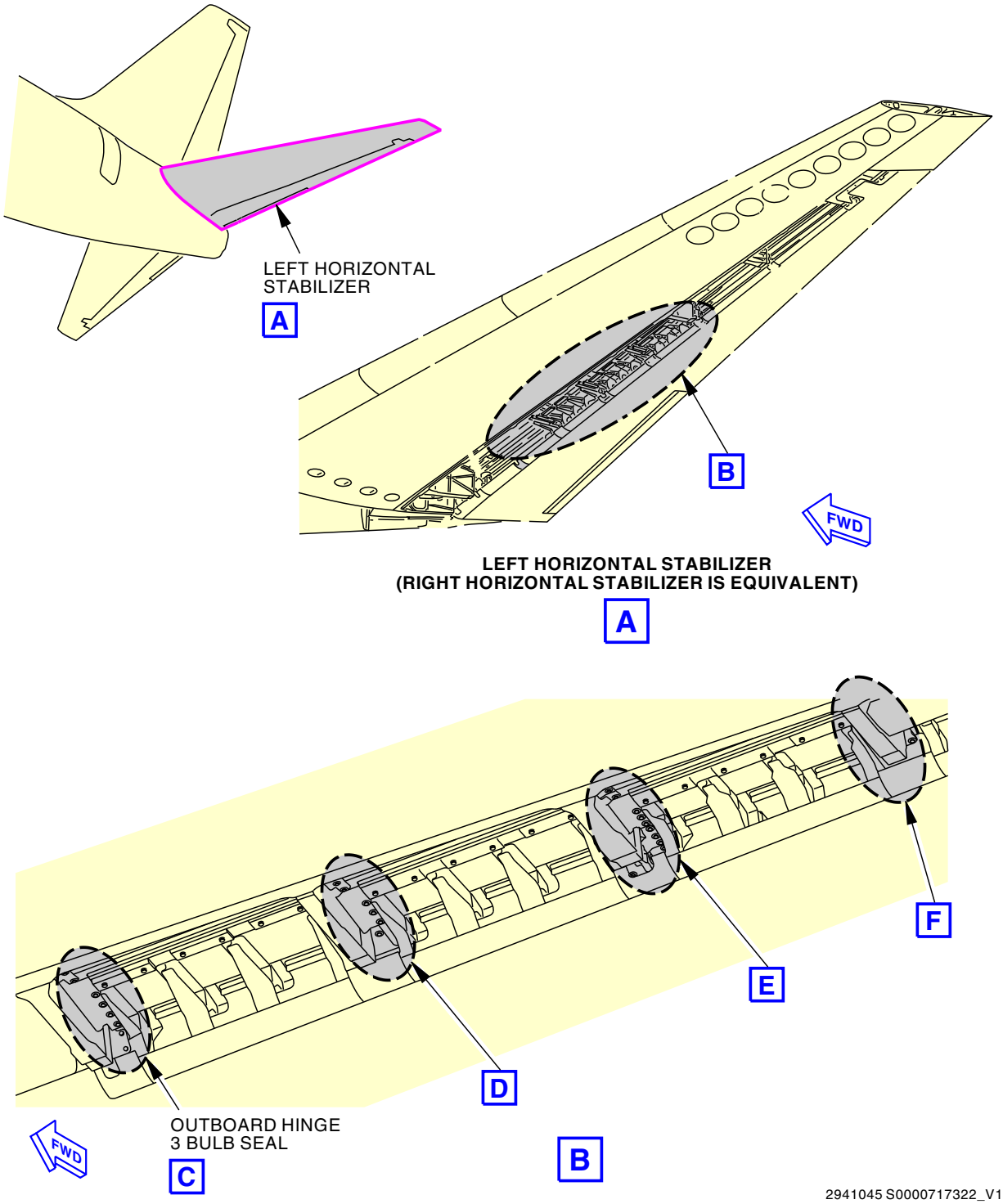
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



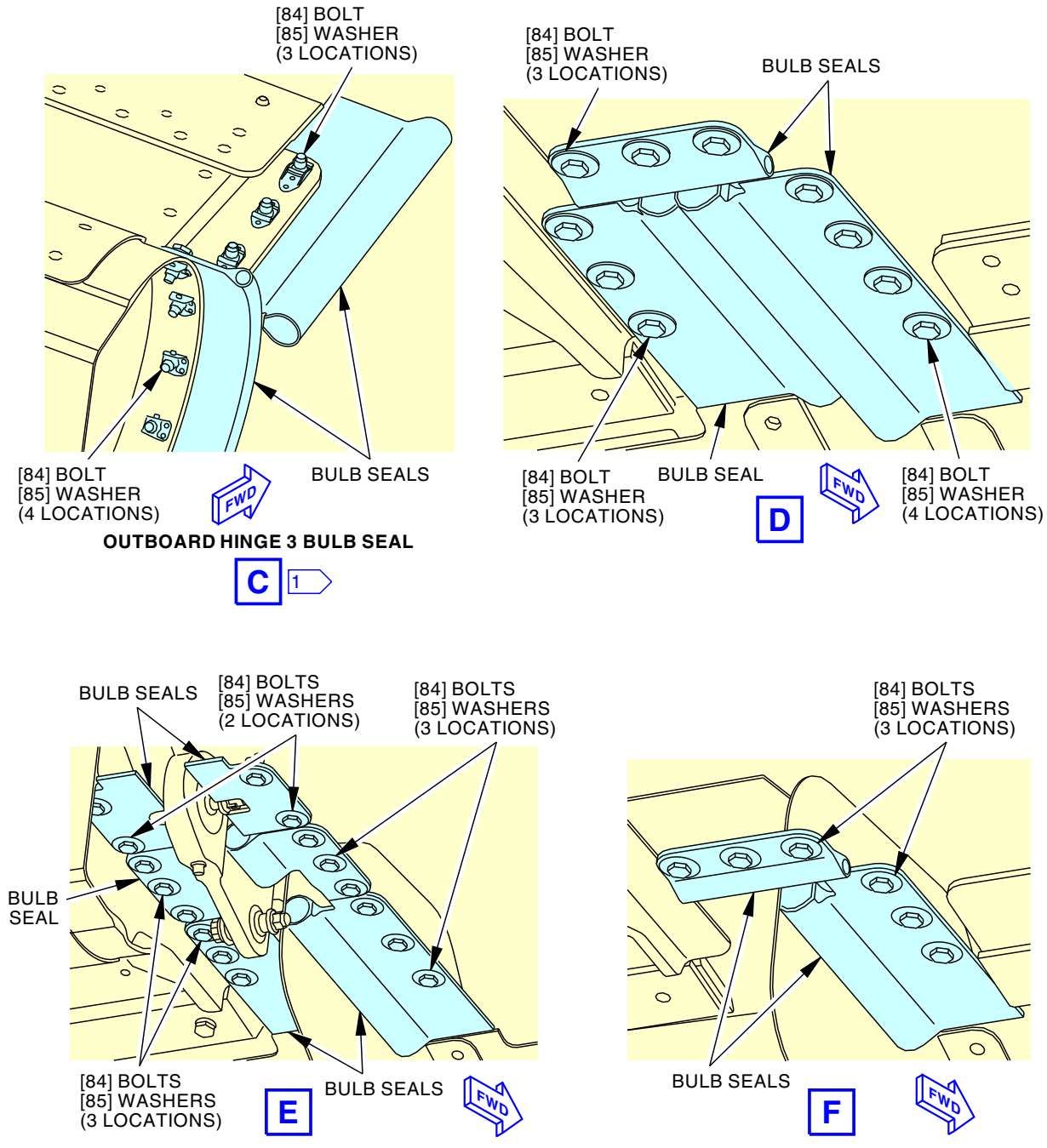
Elevator Installation
Figure 405/27-31-11-990-805 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Bulb Seal Installation
Figure 406/27-31-11-990-810 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

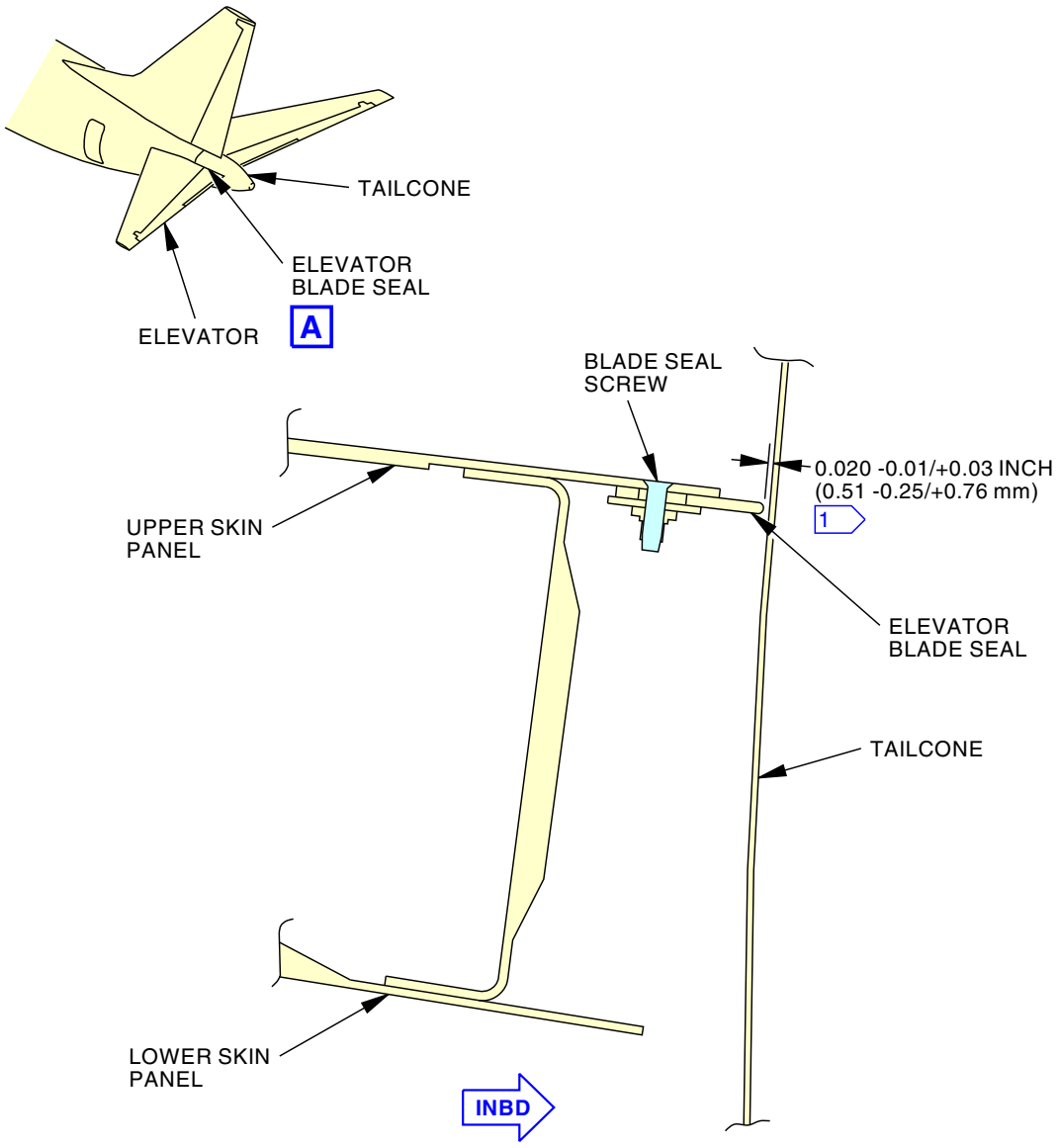


1 YOU NEED TO MOVE THE TRAILING EDGE OF THE FORWARD BALANCE PANEL UP (WHEN IT HAS BEEN DISCONNECTED) AND MOVE THE TRAILING EDGE OF THE ELEVATOR UP TO GET ACCESS TO THE UPPER TWO BOLTS AND WASHERS ON THE OUTBOARD HINGE 3 BULB SEAL.

2941047 S0000717323_V1

Bulb Seal Installation
Figure 406/27-31-11-990-810 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT ELEVATOR BLADE SEAL
(RIGHT ELEVATOR BLADE SEAL IS OPPOSITE)
(VIEW IN THE FORWARD DIRECTION)

A

1 THE ELEVATOR BLADE SEAL GAP ADJUSTMENT NEEDS TO BE MADE WITHIN THE STABILIZER AND THE ELEVATOR AT THE NEUTRAL POSITIONS

2412503 S00061530787_V1

Elevator Blade Seal Gap Adjustment
Figure 407/27-31-11-990-811

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-11-400-801

3. Elevator - Installation

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406, Figure 407)

A. References

Reference	Title
12-22-31-600-801	Elevator Buss Crank and Master Arm Fitting - Lubrication (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-31-00-700-803	Elevator Surface Friction and Balance - Test (P/B 501)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-806	Elevator Output Torque Tube Buss Linkage Test (P/B 501)
27-31-00-700-807	Elevator Tab Linkage - Test (P/B 501)
27-31-00-700-808	Manual Mode - Test (P/B 501)
27-31-00-700-809	Control Column Travel and Centering - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-803	Input Rods of the Elevator Power Control Unit - Adjustment (P/B 501)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
27-31-00-990-813	Figure: Elevator Tab Adjustment (P/B 501)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)
31-31-51-700-801	Elevator Position Transmitter Installation Test (P/B 401)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
53-53-00-400-801	Tailcone Installation (P/B 401)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS
SRM 51-60-04-0G-0	Elevator Balance Procedure
SWPM 20-20-00, Paragraph 2	CLEANING OF FAY SURFACES
SWPM 20-20-10	Replacement of Ground Studs and Bonding Jumper Installation

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
SPL-2034	Sling - Elevator Hoisting Part #: C27034-31 Supplier: 81205
STD-1232	Protractor - Digital

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00308	Compound - Corrosion Preventive, Petrolatum Hot Application	MIL-C-11796
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator	55-20-00-01-120	SIA ALL
		55-20-00-01-125	SIA ALL
16	Nut	27-31-34-01-085	SIA ALL
50	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999
55	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999
62	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999
68	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999
73	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999
80	Pin	55-20-00-01-008	SIA 001, 002
		55-20-00-01-010	SIA 003-999

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
335	Left Horizontal Stabilizer - Tip
344	Right Horizontal Stabilizer - Elevator
345	Right Horizontal Stabilizer - Tip

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334LB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344LB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 213.32
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

G. Elevator Installation

SUBTASK 27-31-11-820-006

(1) Balance and stamp the elevator assembly with the new static balance hinge moment if you install a reworked, repaired, repainted, or new elevator assembly (SRM PROCEDURE 51-60-04-0G-0).

SUBTASK 27-31-11-640-001

(2) Lubricate the bolts, bushings with grease, D00633.

SUBTASK 27-31-11-420-001

(3) Install the elevator [1] in the order as shown (Figure 405):

(a) Put the elevator [1] at the stabilizer trailing edge using the sling, SPL-2034.

1) If you do not use the sling, SPL-2034, to install the elevator, you must properly support the elevator while installing the hinge bolts.

(b) At elevator hinge 3, do these steps:

1) If necessary, install the secondary bushing at hinge 3.

2) Loosely install the bushing [58]. Do not tighten the bushing [58] until it seats against the horizontal stabilizer bearing.

3) Install the washer [57] and bolt [56] with the bolt head inboard.

4) Loosely install the bushing [59], washer [60], and nut [61].

a) Make sure that the clearance between the washer [60] and the flanged bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).

(c) At elevator hinge 1, do these steps:

1) Install the bolt [47] with the bolt head outboard.

a) Do not install the washer [48], nut [49], or pin [50] at this time.

(d) At elevator hinge 2, do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Install the bolt [51] and bushing [52] with the bolt head inboard.
   a) Do not install the washer [53], nut [54], or new pin [55] at this time.

(e) At elevator hinges 8, 7, and 6, do the following steps starting at hinge 8, then hinge 7, and then hinge 6:
1) Install the bushings [77], washers [76], and bolts [75] with the bolt head outboard.
   a) Make sure that the clearance between the washer [76] and the bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).
2) Install the washers [78] and nuts [79].
   a) Tighten the nuts [79] to 50 in-lb (5.6 N·m) - 75 in-lb (8.5 N·m).
3) Install the new pins [80].

(f) At elevator hinge 4, do these steps:
1) Install the bushing [65], washer [64], and bolt [63] with the bolt heads outboard.
   a) Make sure that the clearance between the washer [64] and the bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).
2) Install washer [66] and nut [67].
   a) Tighten the nut [67] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).
3) Install the new pin [68].

(g) At elevator hinge 5, do these steps:
1) Install the bushing [71], washer [70], and bolt [69] with the bolt head outboard.
   a) Make sure the clearance between the washer [70] and the bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).
2) Install the washer [72] and nut [74].
   a) Tighten the nut [74] to 90 in-lb (10.2 N·m) – 125 in-lb (14.1 N·m).
3) Install the new pin [73].

(h) Connect the bonding jumpers [81] to the horizontal stabilizer [2]:
1) Clean the fay surfaces of the elevator [1], horizontal stabilizer [2], and bonding jumpers [81] (SWPM 20-20-00, Paragraph 2)
2) Install the washers [83] and nuts [82] to attach the bonding jumpers [81] to the horizontal stabilizer [2].
3) Use the intrinsically safe approved bonding meter, COM-1550 to make sure there is a maximum of 0.010 ohm (10 milliohms) between the horizontal stabilizer [2] and elevator [1] (SWPM 20-20-10, Paragraph 5).
   a) Make sure that the bonding resistance is 0.010 ohm (10 milliohms) or less.
   b) Make sure that the measured resistance is less than the maximum bonding resistance as specified in SWPM 20-20-10, Paragraph 5.
4) Seal the bonding jumper ends and fasteners with sealant, A00247.

SUBTASK 27-31-11-080-001

(4) If the sling, SPL-2034 was used for installation of the elevator, do the following to remove it from the elevator [1] (Figure 403):
(a) Remove the fasteners to disconnect the forward sling fittings from the elevator [1].
(b) Remove the forward sling fittings from the elevator [1].
(c) Install the bolts [3] on the elevator [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Remove the aft sling fitting from the elevator [1].

SUBTASK 27-31-11-080-002

(5) Remove the rig pin E-5 of the rigging pin kit, SPL-1585, from the elevator aft quadrant.

SUBTASK 27-31-11-710-001

(6) Do an initial check of the elevator full travel by turning the elevator [1] full up and full down by hand.

(a) Make sure that the elevator [1] moves a minimum of 25.87 degrees trailing edge up from the neutral index mark and a minimum of 19.53 degrees trailing edge down from the neutral index mark. Use the digital protractor, STD-1232, to measure the angle.

1) If you do not get one or both of the required angles, disconnect the elevator control pushrod [36] from the mast arm fitting (Figure 405), and measure the angles again.

SUBTASK 27-31-11-400-002

(7) If removed, install the applicable bulb seal (Figure 406).

(a) Apply Cor-Ban 27L Compound, G50237, (preferred) or corrosion preventive compound, C00308, (alternate) to all areas of the holes for the bolts [84].

(b) Install the bolts [84] and washers [85].

(c) Tighten the bolts [84] to 25 in-lb (3 N·m).

SUBTASK 27-31-11-480-003

(8) Install the rig pin E-5 of the rigging pin kit, SPL-1585, to the elevator aft quadrant.

SUBTASK 27-31-11-420-002

CAUTION

MAKE SURE THAT THE IDLER HINGE MOVES DOWN FROM THE STABILIZER SUPPORT BEAM WHEN YOU ATTACH THE BALANCE PANELS TO THE ELEVATOR. IF YOU DO NOT INSTALL THE BALANCE PANELS CORRECTLY, IT CAN CAUSE DAMAGE TO EQUIPMENT.

(9) Connect the balance panels to the elevator [1] (Figure 405):

(a) Install the washers [46] and bolts [45].

(b) Install the washer [44] and bolt [43].

(c) Check the elevator balance panel seal gap Elevator Balance Panel - Installation, TASK 27-31-41-400-801.

(d) Make sure that you install the hinge seals correctly before you tighten the bolts [45] and bolt [43].

SUBTASK 27-31-11-020-006

(10) Connect the elevator tab control mechanism [22] to the elevator [1] and tab pushrods [14] (Figure 404):

(a) Install the bushings [21], pin assemblies [26], washers [20], and nuts [19] that attach the outboard aft attach lug to the elevator [1].

(b) Install the nut [24], washers [23], and pin assembly [11] that attach the inboard aft attach lug to the elevator [1].

(c) Tighten the mechanism nuts [19] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

(d) Install the spacers [13], bolts [12], washers [15], and new nuts [16] to attach the tab pushrods [14] to the elevator tab control mechanism [22].

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1) If you loosened or removed the nuts [16], they need to be replaced with new nuts. Using new nuts will ensure that they have the required run-on torque. Make sure that new nuts are installed.

(e) Tighten the nuts [16] to 70 in-lb (7.9 N·m) - 80 in-lb (9.0 N·m).

(f) Install the pin retainers [18] with the washers [25] and screws [17].

(g) Remove the clamps that prevent movement of the elevator tab control mechanism [22].

SUBTASK 27-31-11-420-008

(11) At elevator hinge 1, do these steps:

(a) Install washer [48] and nut [49].

1) Tighten the hinge 1 nut [49] to 95 in-lb (10.7 N·m) - 160 in-lb (18.1 N·m).

(b) Install the new pin [50].

SUBTASK 27-31-11-420-003

(12) At elevator hinge 2, do these steps:

(a) Install washer [53] and nut [54].

1) Tighten the hinge 2 nut [54] to 95 in-lb (10.7 N·m) - 160 in-lb (18.1 N·m).

(b) Install the new pin [55].

SIA 001-006

SUBTASK 27-31-11-420-004

(13) At elevator hinge 3, do one of the following steps:

(a) Safety the hinge 3 bushing and nut (Method 1):

1) Tighten the hinge 3 bushing [58] using only hand pressure until it seats against the horizontal stabilizer bearing.

2) Tighten the hinge 3 nut [61] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

3) Install the new pin [62].

NOTE: It is recommended to install the cotter pin part number BACP18BC02A06P at the elevator hinge 3 location. Operators whose expendable/parts AIPC references cotter pin part number BACP18BC02A06P for the elevator hinge 3 location may disregard this note.

4) Install the MS20995C32 lockwire, G01048, from the bushing [58] to the elevator [1] hinge 3 fitting to the nut [86] to prevent clockwise and counterclockwise rotation (TASK 20-10-44-400-801).

5) Apply sealant, A00247, to the lockwire hole on the hinge 3 fitting of the elevator [1].

(b) Safety the hinge 3 bushing and nut (Method 2):

1) Tighten the hinge 3 bushing [58] using only hand pressure until it seats against the horizontal stabilizer bearing.

2) Align the lockwire holes of the hinge 3 bushing [58] with the hinge 3 nut [86] by loosening or tightening the bushing [58] no more than a quarter turn.

3) Make sure that the clearance between the washer [60] and the flanged bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).

4) Tighten the hinge 3 nut [61] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

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SIA 001-006 (Continued)

5) Install the new pin [62].

NOTE: It is recommended to install the cotter pin part number BACP18BC02A06P at the elevator hinge 3 location. Operators whose expendable/parts AIPC references cotter pin part number BACP18BC02A06P for the elevator hinge 3 location may disregard this note.

6) Install the MS20995C32 lockwire, G01048, from the nut [86] to the elevator [1] hinge 3 fitting (TASK 20-10-44-400-801).

7) Install the MS20995C32 lockwire, G01048, from the bushing [58] to the nut [86] (TASK 20-10-44-400-801).

8) Apply Cor-Ban 27L Compound, G50237, to the lockwire hole on the hinge 3 of the elevator [1].

SIA 007-999

SUBTASK 27-31-11-420-009

(14) At elevator hinge 3, do the following steps:

(a) Tighten the hinge 3 bushing [58] using only hand pressure until it seats against the horizontal stabilizer bearing.

(b) Align the lockwire holes of the hinge 3 bushing [58] with the hinge 3 nut [86] by loosening or tightening the bushing [58] no more than a quarter turn.

(c) Make sure that the clearance between the washer [60] and the flanged bushing on the elevator hinge is not less than 0.015 in. (0.381 mm).

(d) Tighten the hinge 3 nut [61] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

(e) Install the new pin [62].

NOTE: It is recommended to install the cotter pin part number BACP18BC02A06P at the elevator hinge 3 location. Operators whose expendable/parts AIPC references cotter pin part number BACP18BC02A06P for the elevator hinge 3 location may disregard this note.

(f) Install the MS20995C32 lockwire, G01048, from the nut [86] to the elevator [1] hinge 3 fitting (TASK 20-10-44-400-801).

(g) Install the MS20995C32 lockwire, G01048, from the bushing [58] to the nut [86] (TASK 20-10-44-400-801).

(h) Apply Cor-Ban 27L Compound, G50237, to the lockwire hole on the hinge 3 of the elevator [1].

SIA ALL

SUBTASK 27-31-11-710-002

(15) Do a final check of the elevator full travel by turning the elevator [1] full up and full down by hand.

(a) Make sure that the elevator [1] moves a minimum of 25.87 degrees trailing edge up from the neutral index mark and a minimum of 19.53 degrees trailing edge down from the neutral index mark. Use the digital protractor, STD-1232, to measure the angle.

1) If you do not get one or both of the required angles, disconnect the elevator control pushrod [36] from the mast arm fitting (Figure 405), and measure the angles again.

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SUBTASK 27-31-11-420-005

(16) Connect the pushrod [38] of the elevator position transmitter [37] to the elevator [1] (Figure 405):

(a) Install the bolt [42], washer [41], and spacer [40] to the pushrod [38].

(b) Connect the electrical connector [39] to the elevator position transmitter [37].

SUBTASK 27-31-11-420-006

(17) Connect the elevator control pushrod [36] to the elevator [1] (Figure 405):

(a) Move the elevator [1] to the neutral position.

(b) Install the bolt assembly [35] (with the pin head outboard), bushing [34], washer [33], and nut [32].

1) Tighten the nut [32] to 600 in-lb (67.8 N·m) - 700 in-lb (79.1 N·m).

CAUTION

DO NOT TIGHTEN NUT [32] AFTER YOU TIGHTEN NUT [31]. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Install the nut [31].

1) Tighten the nut [31] to 170 in-lb (19.2 N·m) - 240 in-lb (27.1 N·m).

SUBTASK 27-31-11-080-003

(18) Remove the rig pin E-5 of the rigging pin kit, SPL-1585 from the elevator aft quadrant.

SUBTASK 27-31-11-700-001

(19) Check the adjustment of the elevator blade seal gaps:

(a) Make sure that the stabilizer and elevator are at their neutral positions.

(b) Make sure that the elevator blade seal gap is within the tolerance of 0.020 +0.030 / -0.010 in. (0.51 +0.76 / -0.26 mm) (Figure 407).

SUBTASK 27-31-11-640-002

(20) Do this task: Elevator Buss Crank and Master Arm Fitting - Lubrication, TASK 12-22-31-600-801.

SUBTASK 27-31-11-860-004

(21) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

SUBTASK 27-31-11-860-005

(22) Adjust and test the elevator system by doing the following:

NOTE: If you install the same elevator that you removed from the airplane, and no repairs or modifications to the elevator or adjustments to the elevator system have been made, then it is not necessary to do the adjustment steps of the elevator system below. Continue to the elevator tab pushrod adjustment section of this procedure.

(a) Do this task: Elevator Control Pushrods - Adjustment, TASK 27-31-00-820-802.

(b) Do this task: Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803.

(c) Do the following test for elevator centering:

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1) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the OFF position.
2) Make sure that the FLT CONTROL A switch on the forward overhead panel, P5, is in the ON position.
3) Make sure that the captain's control column is at the neutral position.
   a) Make sure that the right elevator aligns with the index mark in ± 0.06 in. (1.5 mm) (Figure 27-31-00-990-813).
4) Set the FLT CONTROL B switch to the ON position.
   a) Make sure that the right elevator aligns with the index mark in ± 0.06 in. (1.5 mm).
5) Set the FLT CONTROL A switch to the OFF position.
6) Make sure that the FLT CONTROL B switch is in the ON position.
7) Set the FLT CONTROL A switch to the ON then to the OFF position.
   a) Make sure that there is less than 0.02 in. (0.5 mm) movement at the right elevator trailing edge.
8) Set the FLT CONTROL B switch to the OFF then to the ON then to the OFF position.
   a) Make sure that there is less than 0.02 in. (0.5 mm) movement at the right elevator trailing edge.
9) Set the FLT CONTROL A and B switches to the ON position.
10) Make sure that the captain's control column is at the neutral position.
    a) Make sure that the right elevator aligns with the index mark in ± 0.06 in. (1.5 mm).
11) Move the captain's control column forward approximately 2 degrees and release.
    a) Make sure that the right elevator trailing edge aligns with the index mark in 0.00 ±0.12 in. (0.0 ±3.0 mm).
12) Move the captain's control column aft approximately 2 degrees and release.
    a) Make sure that the right elevator trailing edge aligns with the index mark in 0.00 ±0.12 in. (0.0 ±3.0 mm).

SUBTASK 27-31-11-820-002

(23) Adjust the elevator tab pushrods by doing the following:

NOTE: If the elevator tabs, tab control mechanism, or tab rods have not been replaced, repaired or modified, and no adjustments to the tab pushrods have been made, then it is not necessary to do the adjustment of the elevator tab pushrods in the following step. Do the elevator position transmitter installation test.

(a) Do this task: Elevator Tab Pushrods - Adjustment, TASK 27-31-00-820-805.

NOTE: If the elevator tab position measurements were recorded in the elevator removal steps, then adjust the elevator and tab control system to the position measured prior to removal.

(b) Do this task: Elevator Position Transmitter Installation Test, TASK 31-31-51-700-801.

(c) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

(d) Do this task: Elevator Surface Friction and Balance - Test, TASK 27-31-00-700-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) For the left elevator, install this access panel: (Elevator Balance Panel - Installation, TASK 27-31-41-400-801)

Left elevator:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge

(f) For the left elevator, install these access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334HB	Horizontal Stabilizer, Elevator Hinge Cover
334JB	Horizontal Stabilizer, Elevator Hinge Cover
334KB	Horizontal Stabilizer, Elevator Hinge Cover
334LB	Horizontal Stabilizer, Elevator Hinge Cover
334MB	Horizontal Stabilizer, Elevator Hinge Cover
334NB	Horizontal Stabilizer, Elevator Hinge Cover

(g) For the right elevator, install this access panel: (Elevator Balance Panel - Installation, TASK 27-31-41-400-801)

Right elevator:

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

(h) For the right elevator, install these access panels:

Number	Name/Location
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344HB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 66.54
344JB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 121.59
344KB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 176.64
344LB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 213.32
344MB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 250.04
344NB	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 265.45

(i) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

1) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

(j) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

(k) Do this task: Elevator Output Torque Tube Buss Linkage Test, TASK 27-31-00-700-806.

(l) Do this task: Elevator Tab Linkage - Test, TASK 27-31-00-700-807.

(m) Do this task: Control Column Travel and Centering - Test, TASK 27-31-00-700-809.

(n) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-11-400-001

(1) Do this task: Tailcone Installation, TASK 53-53-00-400-801.

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SUBTASK 27-31-11-410-002

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-11-710-003

(3) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

NOTE: Depending on which systems have been disturbed, you may not have to do a power-off flight test. To see if you need to do a power-off flight test, check the requirements in the “General” section at the beginning of the power-off flight test task.

——— END OF TASK ———

TASK 27-31-11-000-802

4. Elevator Control Pushrod - Removal

(Figure 403, Figure 408 and Figure 409)

A. General

(1) This task is for the removal of an elevator control pushrod.

B. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-2034	Sling - Elevator Hoisting Part #: C27034-31 Supplier: 81205

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator

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(Continued)

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

F. Prepare for the Removal

SUBTASK 27-31-11-970-001

(1) Measure and record the elevator tab trailing edge position.

SUBTASK 27-31-11-860-006

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-11-010-013

(3) Gain access to the bolt assembly [35] as follows:

(a) For the left horizontal stabilizer, open these access panels:

Number	Name/Location
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover

(b) For the right horizontal stabilizer, open these access panels:

Number	Name/Location
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

(c) Remove the bolts [100], washers [101], and the front sliding seal rail [102].

(d) Remove the bolts [103], washers [104], and the aft sliding seal rail [105].

(e) Remove the bolts [106], washers [107], and nuts [108] that hold the sliding seal [109] to the bracket [110].

(f) Remove the sliding seal [109] to gain access to the bolt assembly [35].

SUBTASK 27-31-11-010-007

(4) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-11-860-007

(5) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

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SUBTASK 27-31-11-860-008

CAUTION: MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

(6) Use the bar, SPL-1677 to set “B” dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)). (Figure 401)

SUBTASK 27-31-11-820-003

(7) Install the rig pin E-5 from rigging pin kit, SPL-1585 in the elevator aft quadrant (Figure 402).

SUBTASK 27-31-11-480-004

(8) If the sling, SPL-2034 is used to support the elevator assembly while the elevator control pushrod [36] is removed, do the following (Figure 403):

(a) Find the bolts [3] on the elevator [1] to attach the sling, SPL-2034 (Figure 405).

NOTE: The bolts [3] are on the upper panel next to elevator hinge 3 and hinge 5.

(b) Remove the bolts [3] from the elevator [1].

(c) Install the forward sling fittings on the elevator [1].

1) Install the fasteners to attach each sling fitting to the elevator [1].

(d) Install the aft sling fitting on the elevator [1].

(e) Attach the straps from the forward sling fittings to the aft sling fitting.

(f) Attach the sling, SPL-2034 to the forward sling fittings and aft sling fitting.

(g) Connect an overhead crane to the primary support sling on the sling, SPL-2034.

(h) Connect a tether line to the aft sling fitting.

(i) Use the sling, SPL-2034 to hold the elevator [1].

G. Pushrod Removal

(Figure 408)

SUBTASK 27-31-11-020-007

(1) Remove the nut [31], nut [32], washer [33], bushing [34], and bolt assembly [35] to disconnect the elevator control pushrod [36] from the elevator mast arm [91].

SIA 015

(a) If installed, remove the washer, BACW10EG24CK, under the head of the bolt assembly [35].

SIA ALL

SUBTASK 27-31-11-020-008

(2) Remove thenut [92], nut [93], washer [94], bushing [95], and bolt assembly [96] to disconnect the elevator control pushrod [36] from the elevator buss crank [97].

SIA 015

(a) If installed, remove the washer, BACW10EG24CK, under the head of the bolt assembly [96].

SIA ALL

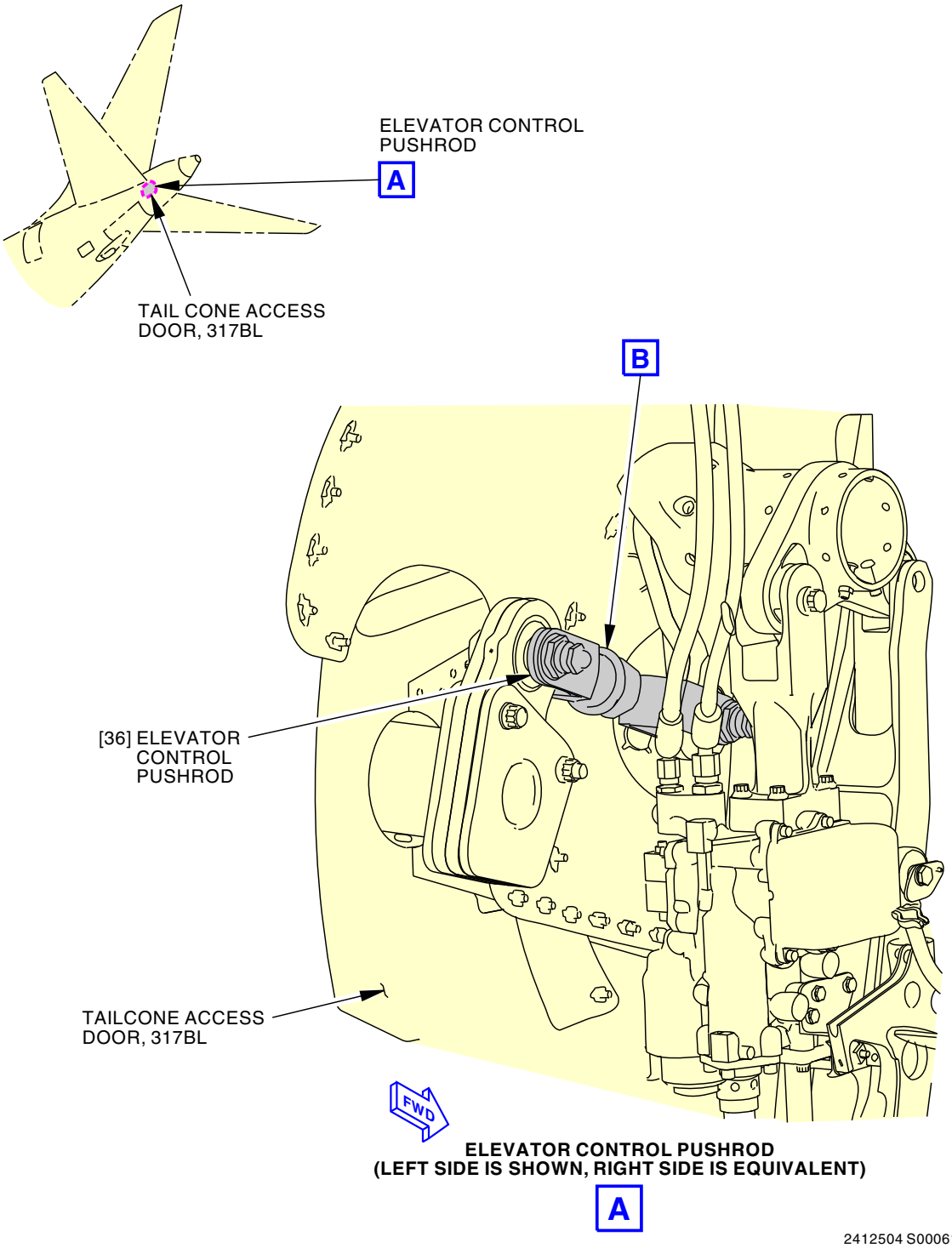
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-11-020-009

(3) Remove the elevator control pushrod [36].

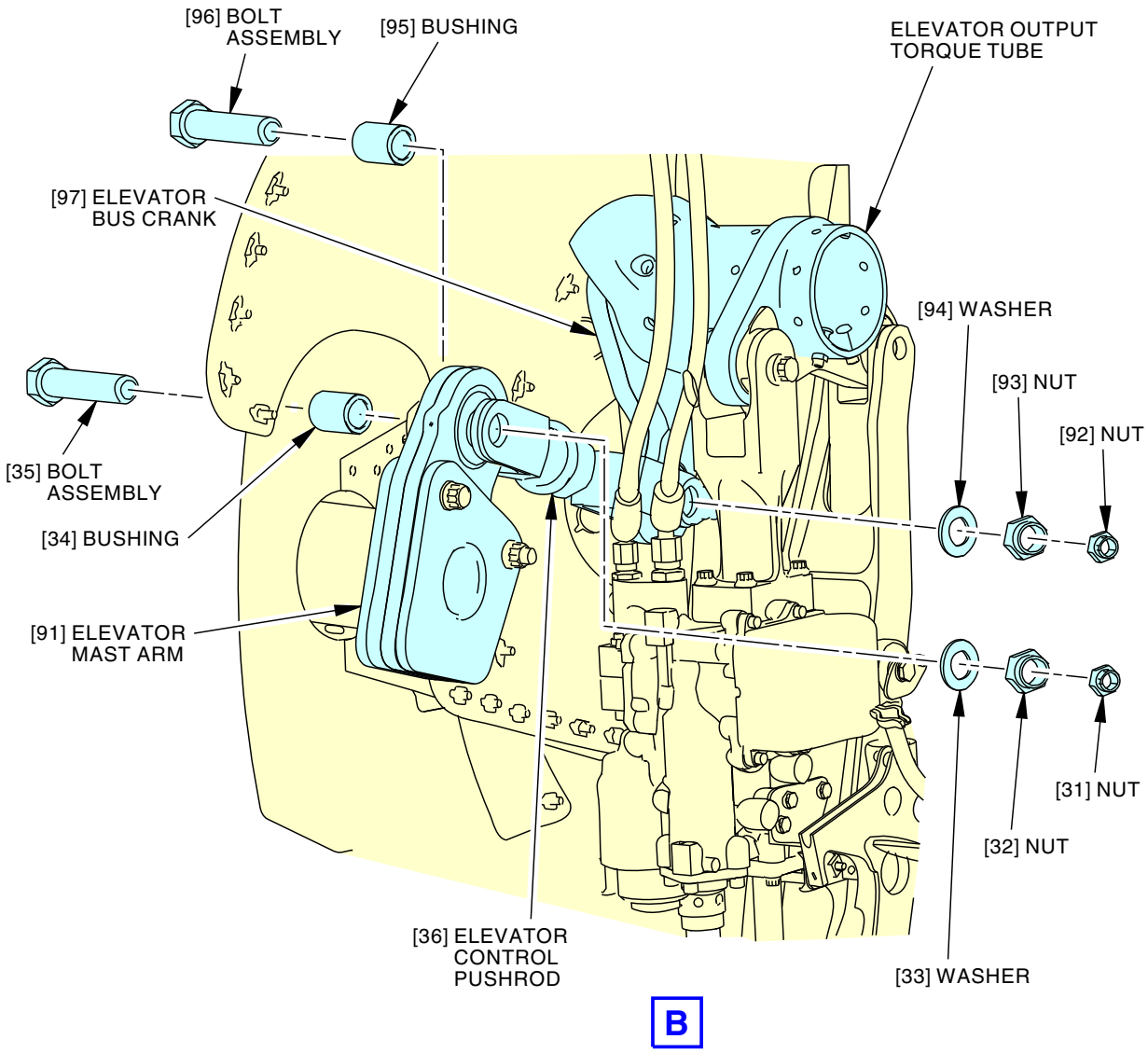
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Control Pushrod Installation
Figure 408/27-31-11-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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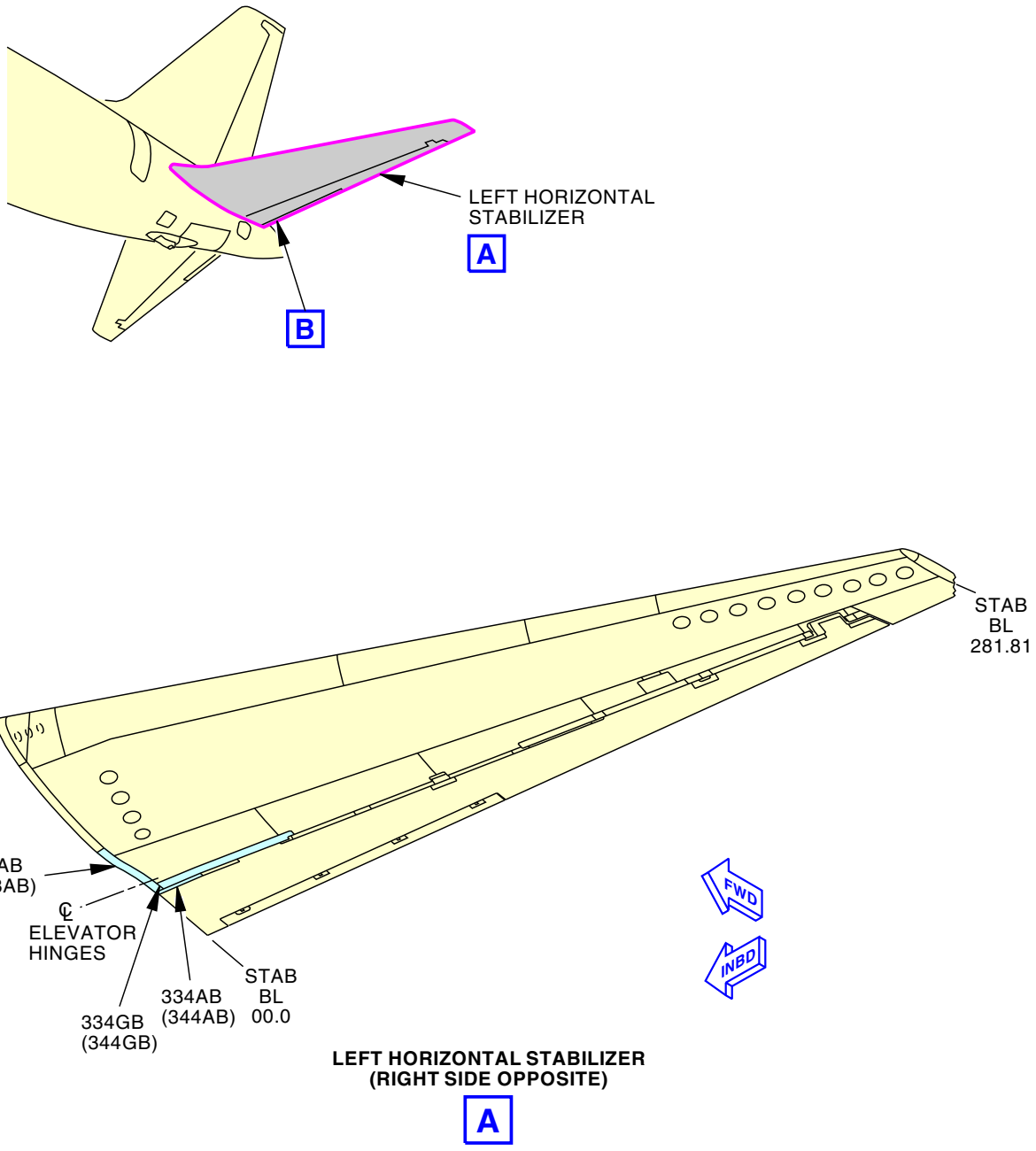
Elevator Control Pushrod Installation
Figure 408/27-31-11-990-807 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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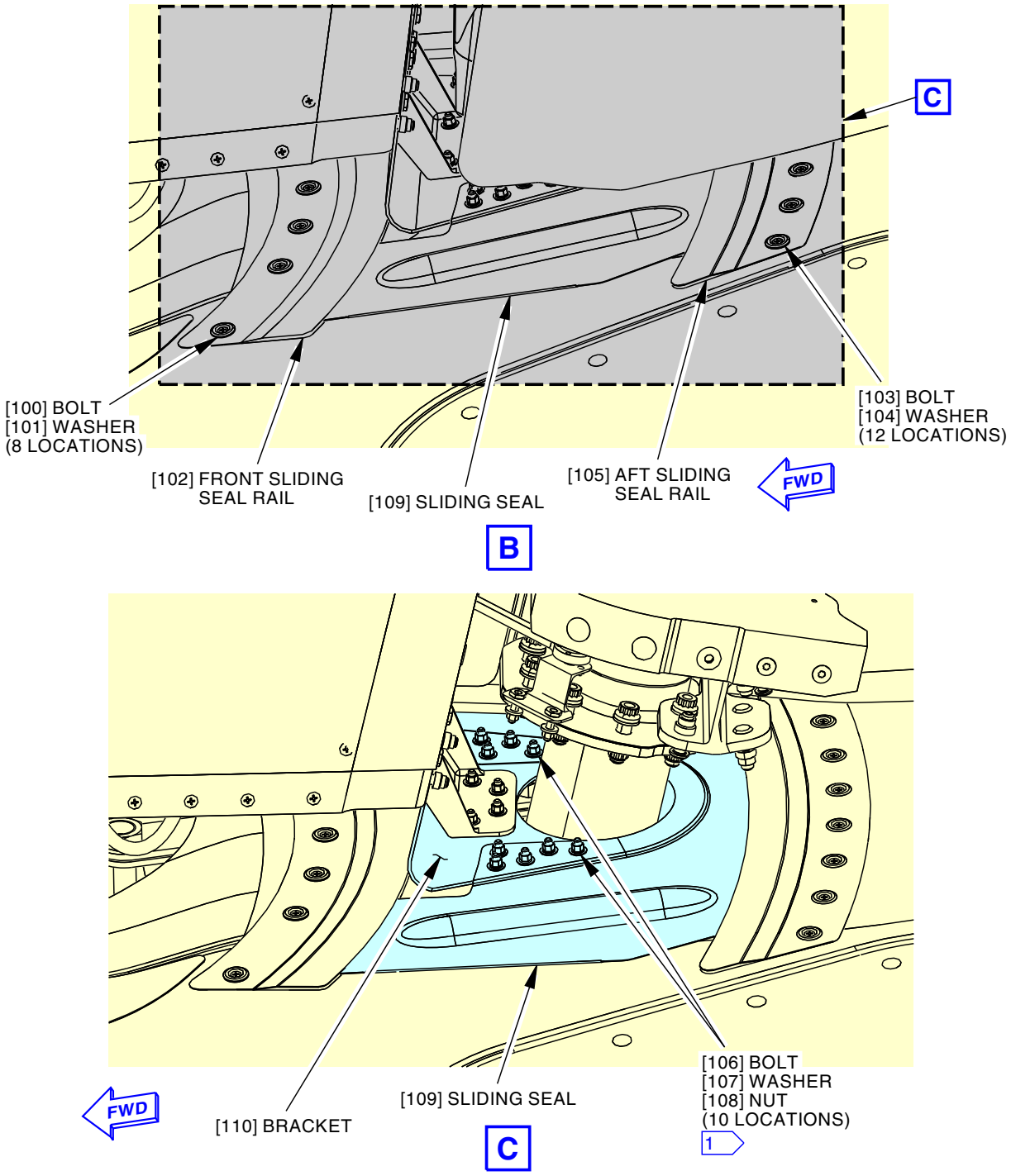
Sliding Seal Installation
Figure 409/27-31-11-990-809 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Sliding Seal Installation
Figure 409/27-31-11-990-809 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-11-400-802

5. Elevator Control Pushrod - Installation

(Figure 403, Figure 408 and Figure 409)

A. General

(1) This task gives the steps on how to install an elevator control pushrod.

(2) The elevator power-off flight test procedure is required after replacement of an elevator control pushrod.

B. References

Reference	Title
27-31-00-700-803	Elevator Surface Friction and Balance - Test (P/B 501)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-806	Elevator Output Torque Tube Buss Linkage Test (P/B 501)
27-31-00-700-807	Elevator Tab Linkage - Test (P/B 501)
27-31-00-700-808	Manual Mode - Test (P/B 501)
27-31-00-700-809	Control Column Travel and Centering - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-803	Input Rods of the Elevator Power Control Unit - Adjustment (P/B 501)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
31-31-51-700-801	Elevator Position Transmitter Installation Test (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2034	Sling - Elevator Hoisting Part #: C27034-31 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A50473	Sealant - Brush (See BAC5000 8.5.3b(1) for instructions to prepare BMS5-95 Type I Class A-2)	BAC5000 Section 8.5.3
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
36	Elevator control pushrod	27-31-00-32-040	SIA ALL

F. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
334	Left Horizontal Stabilizer - Elevator

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(Continued)

Zone	Area
344	Right Horizontal Stabilizer - Elevator

G. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

H. Elevator Control Pushrod Installation

SUBTASK 27-31-11-640-003

(1) Lubricate the bolts and bushings with grease, D00633.

SUBTASK 27-31-11-420-007

(2) Install the bolt assembly [96]:

(a) Make sure that the elevator [1] is in the neutral position.

(b) Connect the end of the elevator control pushrod [36] labeled FWD to the elevator buss crank [97] (Figure 408)

1) Install the bolt assembly [96] (with the bolt head outboard) bushing [95], washer [94], and nut [93].

SIA 015

a) If removed, install the washer, BACW10EG24CK, under the head of the bolt assembly [96].

SIA ALL

2) Tighten the nut [93] to 600 in-lb (67.8 N·m) – 700 in-lb (79.1 N·m).

CAUTION

DO NOT TIGHTEN NUT [93] AFTER YOU TIGHTEN NUT [92]. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

3) Install the nut [92].

4) Tighten the nut [92] to 170 in-lb (19.2 N·m) – 240 in-lb (27.1 N·m).

(c) Connect the elevator control pushrod [36] to the elevator mast arm [91]:

1) Install the bolt assembly [35] (with the bolt head outboard), bushing [34], washer [33], and nut [32].

SIA 015

a) If removed, install the washer, BACW10EG24CK, under the head of the bolt assembly [35].

SIA ALL

2) Tighten the nut [32] to 600 in-lb (67.8 N·m) – 700 in-lb (79.1 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT TIGHTEN NUT [32] AFTER YOU TIGHTEN NUT [31]. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

3) Install the nut [31].

4) Tighten the nut [31] to 170 in-lb (19.2 N·m) – 240 in-lb (27.1 N·m).

SUBTASK 27-31-11-080-004

(3) If you used the sling, SPL-2034 to support the elevator assembly, do these steps to remove the sling, SPL-2034 from the elevator [1]:

(a) Remove the fasteners to disconnect the forward sling fittings from the elevator [1].

(b) Remove the forward sling fittings from the elevator [1].

(c) Install the bolts [3] on the elevator [1].

(d) Remove the aft sling fitting from the elevator [1].

SUBTASK 27-31-11-860-009

(4) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

SUBTASK 27-31-11-820-004

(5) Do this task: Elevator Control Pushrods - Adjustment, TASK 27-31-00-820-802.

SUBTASK 27-31-11-700-002

(6) Do this task: Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803.

SUBTASK 27-31-11-700-003

(7) Do this task: Elevator Tab Pushrods - Adjustment, TASK 27-31-00-820-805.

SUBTASK 27-31-11-820-005

(8) Do this task: Elevator Position Transmitter Installation Test, TASK 31-31-51-700-801.

SUBTASK 27-31-11-710-004

(9) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

NOTE: Keep the hydraulic system pressurized after the test.

SUBTASK 27-31-11-790-001

(10) Do a check of the hydraulic connection on the elevator tab mechanism actuator for hydraulic fluid leaks.

SUBTASK 27-31-11-710-005

(11) Do this task: Elevator Surface Friction and Balance - Test, TASK 27-31-00-700-803.

SUBTASK 27-31-11-710-006

(12) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

SUBTASK 27-31-11-710-007

(13) Do this task: Elevator Output Torque Tube Buss Linkage Test, TASK 27-31-00-700-806.

SUBTASK 27-31-11-710-008

(14) Do this task: Elevator Tab Linkage - Test, TASK 27-31-00-700-807.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-11-710-009

(15) Do this task: Control Column Travel and Centering - Test, TASK 27-31-00-700-809.

SUBTASK 27-31-11-700-004

(16) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

SUBTASK 27-31-11-700-005

(17) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-11-410-008

(1) Install the sliding seal [109] as follows:

(a) Move the sliding seal [109] back to its usual position.

(b) Install the bolts [106], washers [107], and nuts [108] that hold the sliding seal [109] to the bracket [110].

1) Install the bolts [106] with the bolt heads facing inboard.

2) Fay seal entire mating surface with polysulfide sealant, A50473.

(c) Install the bolts [103], washers [104] and the aft sliding seal rail [105].

1) Install the bolts [103] with polysulfide sealant, A50473.

(d) Install the bolts [100], washer [101] and the front sliding seal rail [102].

1) Install the bolts [100] with polysulfide sealant, A50473.

(e) For the left horizontal stabilizer, close these access panels:

Number	Name/Location
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover

(f) For the right horizontal stabilizer, close these access panels:

Number	Name/Location
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

SUBTASK 27-31-11-410-004

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-11-710-010

(3) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR POWER CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of an elevator power control unit (PCU)

(2) An installation of an elevator PCU.

B. This procedure is applicable for the left and right elevator PCUs.

TASK 27-31-14-000-801

2. Elevator Power Control Unit - Removal

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1683	Fixture - Elevator Rigging and Restraining Part #: F80063-501 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-14-010-001

(1) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-14-860-001

(2) Use the bar, SPL-1677 to set the B dimension at 39.16 in. (994.66 mm) - 39.18 in. (995.17 mm) (Figure 401).

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677 can cause chafing or damage to the wires.

SUBTASK 27-31-14-860-002

(3) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

F. Elevator PCU Removal

(Figure 402)

SUBTASK 27-31-14-020-001

(1) Remove the nuts [22], washers [21], washer [20], and bolts [19] to disconnect the four input rods [23] from the four input cranks [18] (two on each elevator Power Control Unit (PCU)).

NOTE: Move the control column to move the quadrant out of the way when there are clearance problems with the lower input rod attach bolt.

SUBTASK 27-31-14-020-002

(2) Move the four input cranks [18] forward.

SUBTASK 27-31-14-480-001

(3) Install the rig pin E-5 from the rigging pin kit, SPL-1585 in the elevator aft control quadrant (Figure 402).

NOTE: To easily get access to the lower connection, set the input cranks on the rig pin E-5.

(a) If necessary, disconnect the vernier control rod [30] and vernier control rod [31] so that the torque tube can be rotated to gain access to the PCU attach bolt (Fig. 402).

SUBTASK 27-31-14-020-003

(4) Remove the elevator PCU [6]:

(a) Remove the nut [17], washer [16], nut [15], washer [14], bolt [12], and bushing [13] that attach the elevator PCU [6] to the mounting brackets.

NOTE: If necessary, move the control quadrant to rotate the input cranks out of the way of the PCU attachment bolt head.

WARNING

RELEASE THE HYDRAULIC CONNECTION SLOWLY AND LET THE PRESSURE DECREASE BEFORE YOU FULLY REMOVE THE HYDRAULIC LINES. IF YOU DISCONNECT THE HYDRAULIC LINE WHEN IT HAS PRESSURE, A SPRAY OF HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(b) Disconnect the hydraulic line [3] an hydraulic line [24] from the applicable elevator PCU [6].

1) Install caps and plugs on the hydraulic lines and ports.

(c) Remove the nut [11], washer [10], washer [9], and bolt [8] that attach the elevator PCU [6] to the output torque tube [7].

(d) Remove the elevator PCU [6] from the airplane.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-14-480-002

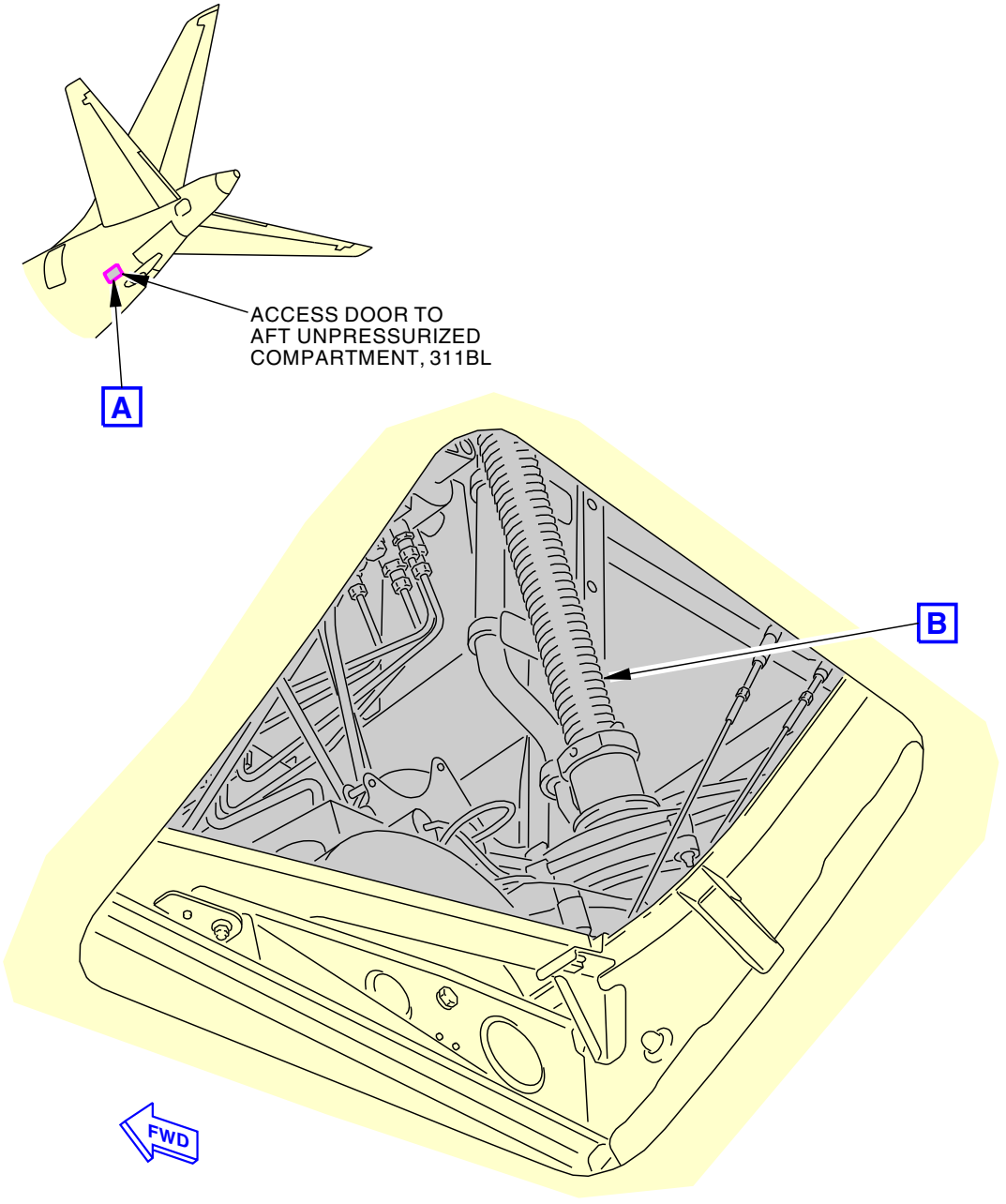
(5) If you remove the two elevator PCUs at the same time, then install the fixture, SPL-1683 in the position of the right elevator PCU [6] (Figure 403).

(a) Put the fixture, SPL-1683 between the output torque tube and input crank.

(b) Install the pins of fixture, SPL-1683 to hold the fixture, SPL-1683 in position.

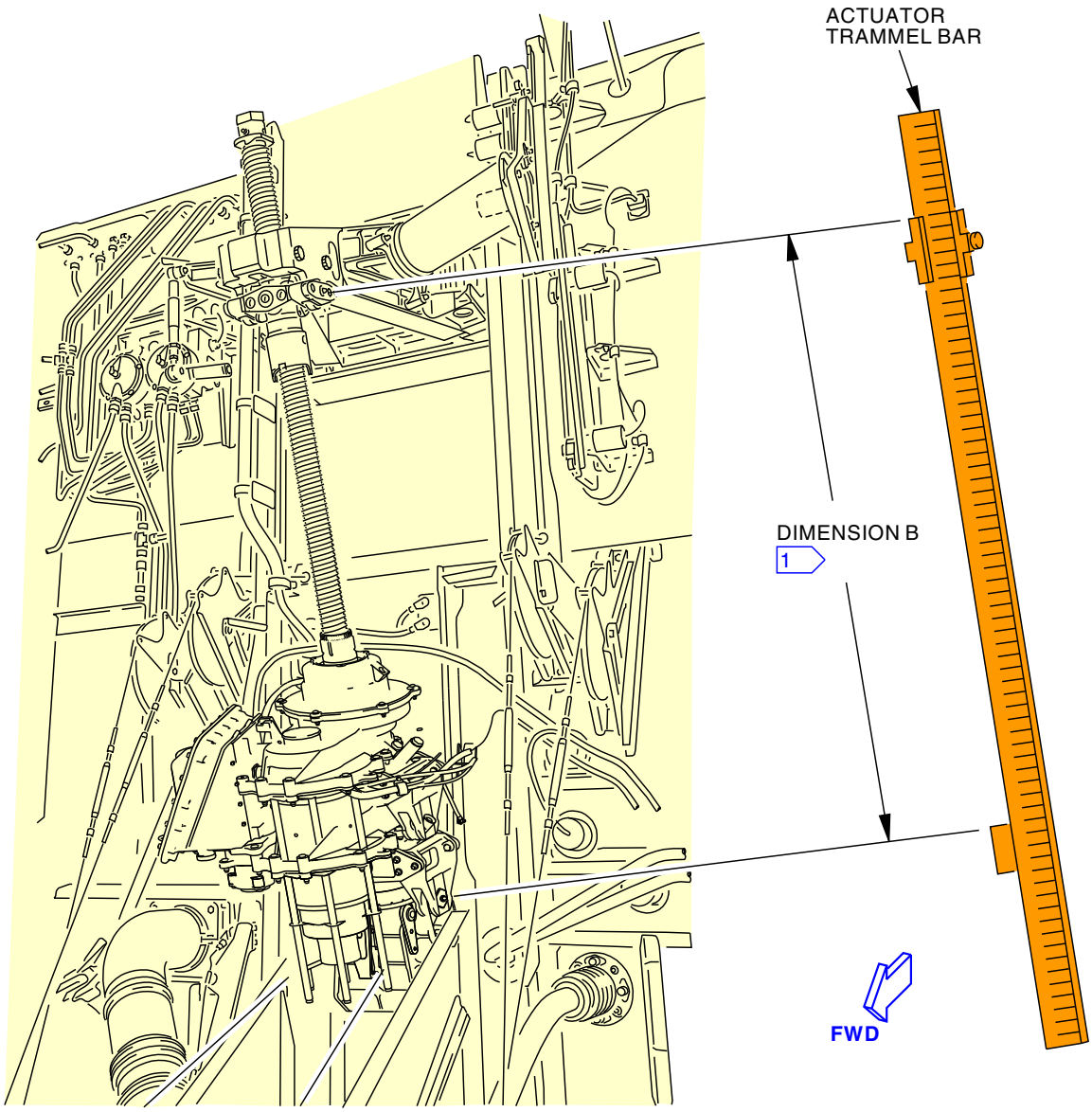
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Jackscrew Adjustment
Figure 401/27-31-14-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

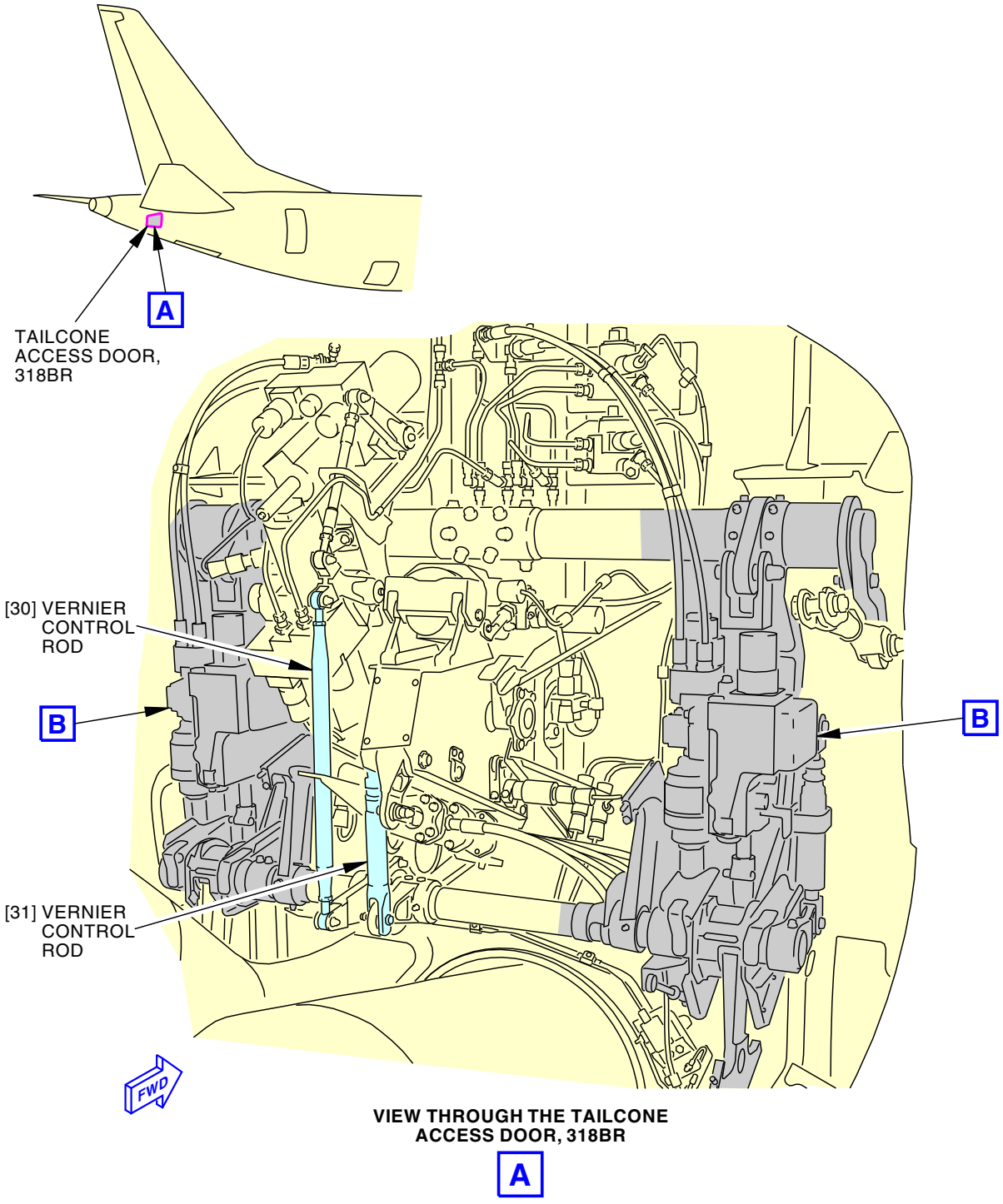
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412507 S00061530796_V1

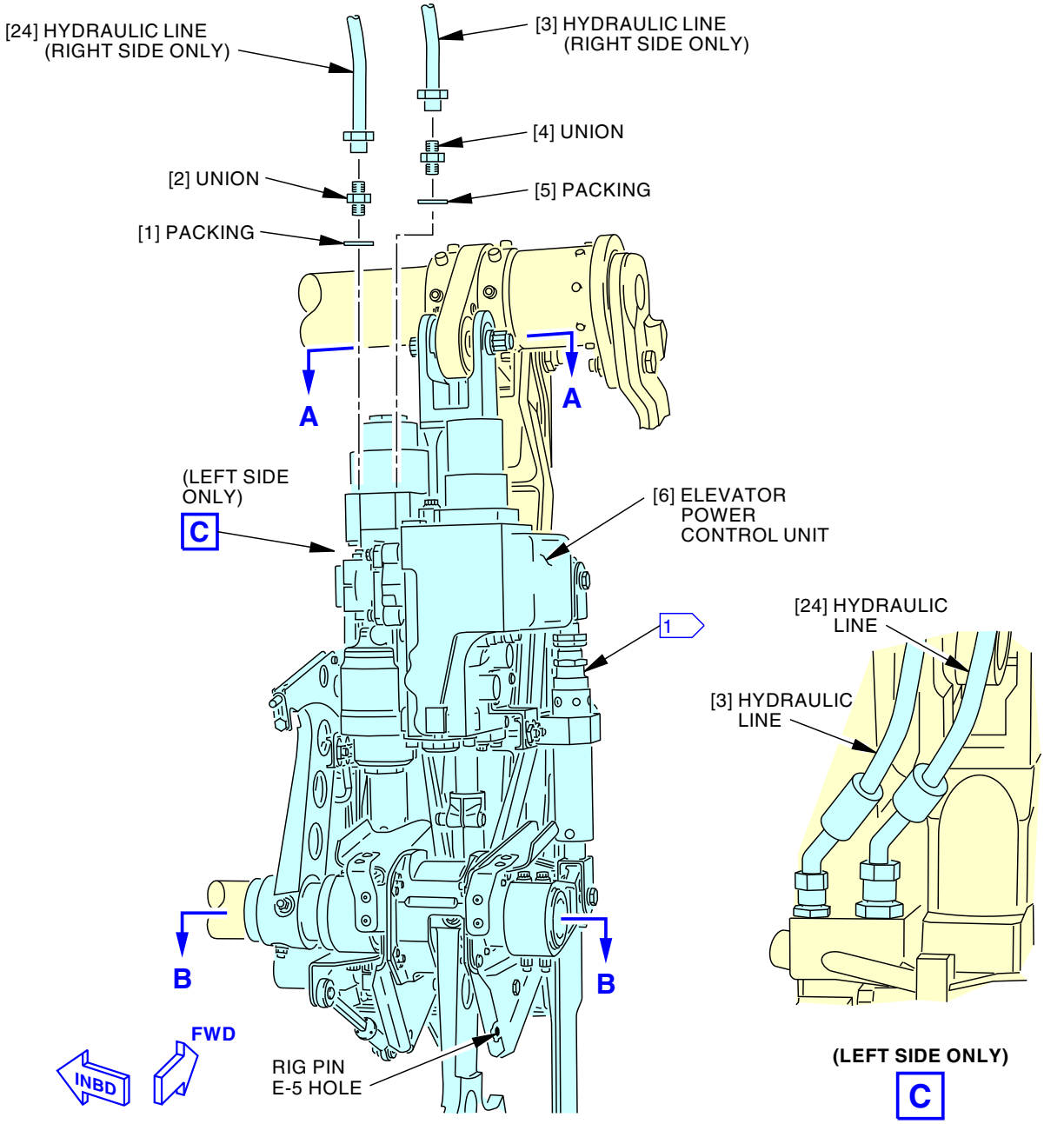
Stabilizer Trim Jackscrew Adjustment
Figure 401/27-31-14-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Power Control Unit Installation
Figure 402/27-31-14-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RIGHT POWER CONTROL UNIT
(LEFT POWER CONTROL UNIT IS EQUIVALENT)

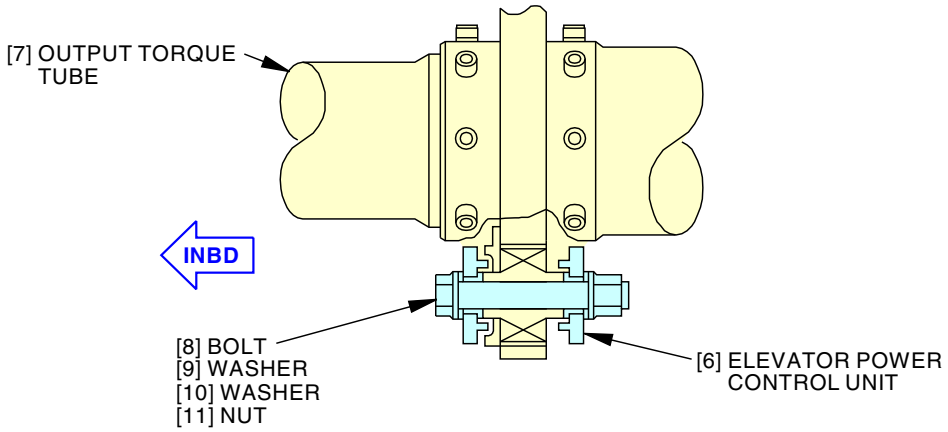
B

1 THE ADJUSTABLE END CAN BE INSTALLED IN THE UP OR DOWN POSITION

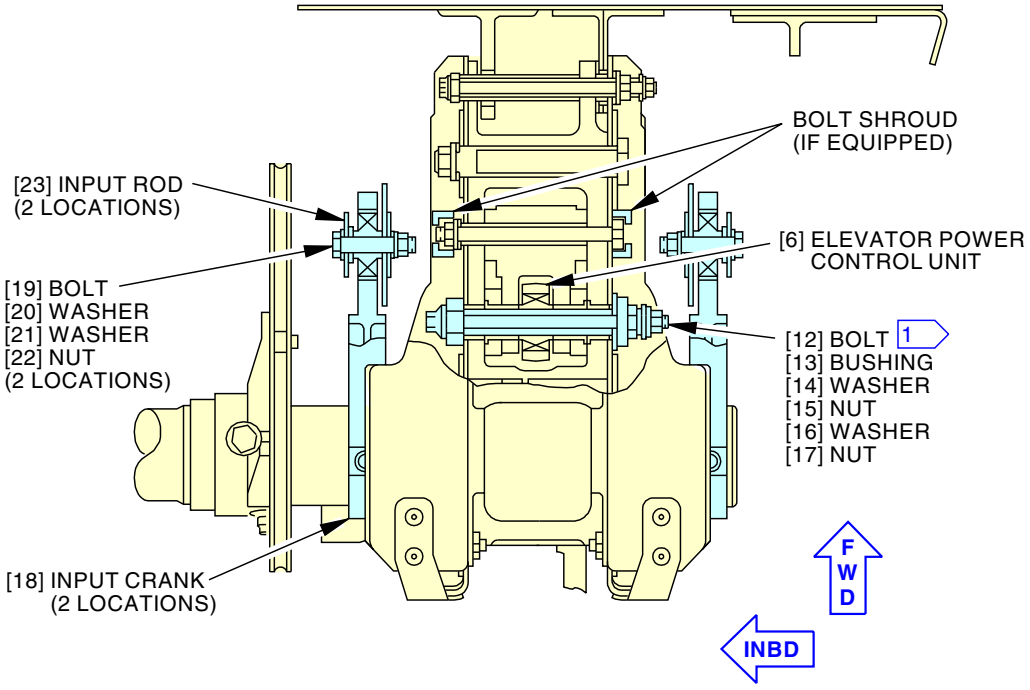
2412509 S00061530798_V2

Elevator Power Control Unit Installation
Figure 402/27-31-14-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



(RIGHT SIDE SHOWN)

B-B

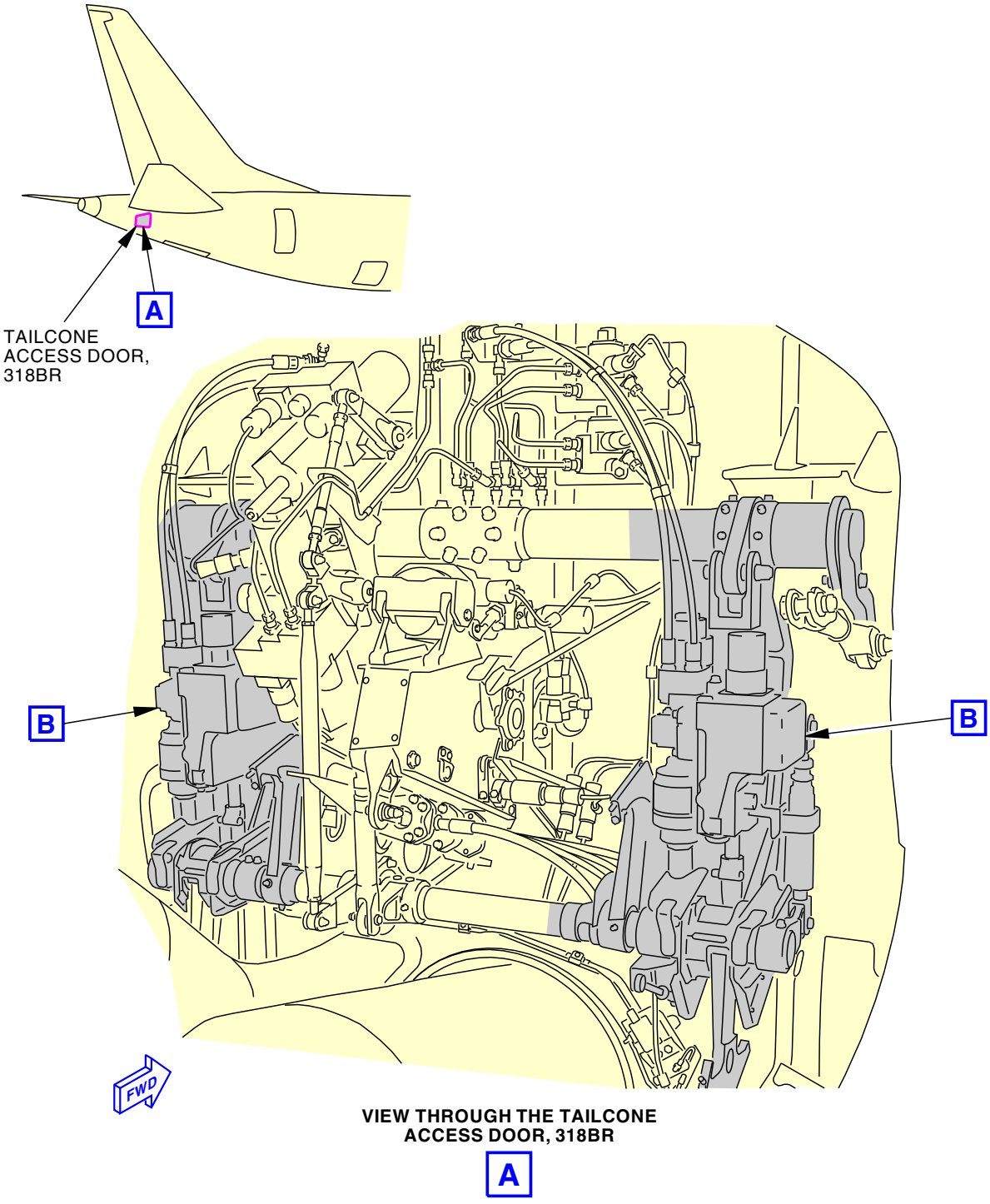
NOTE:

1 INSTALL THE BOLT WITH THE BOLT HEAD INBOARD FOR THE LEFT ELEVATOR PCU AND THE RIGHT ELEVATOR PCU (SHOWN).

2412510 S00061530799_V2

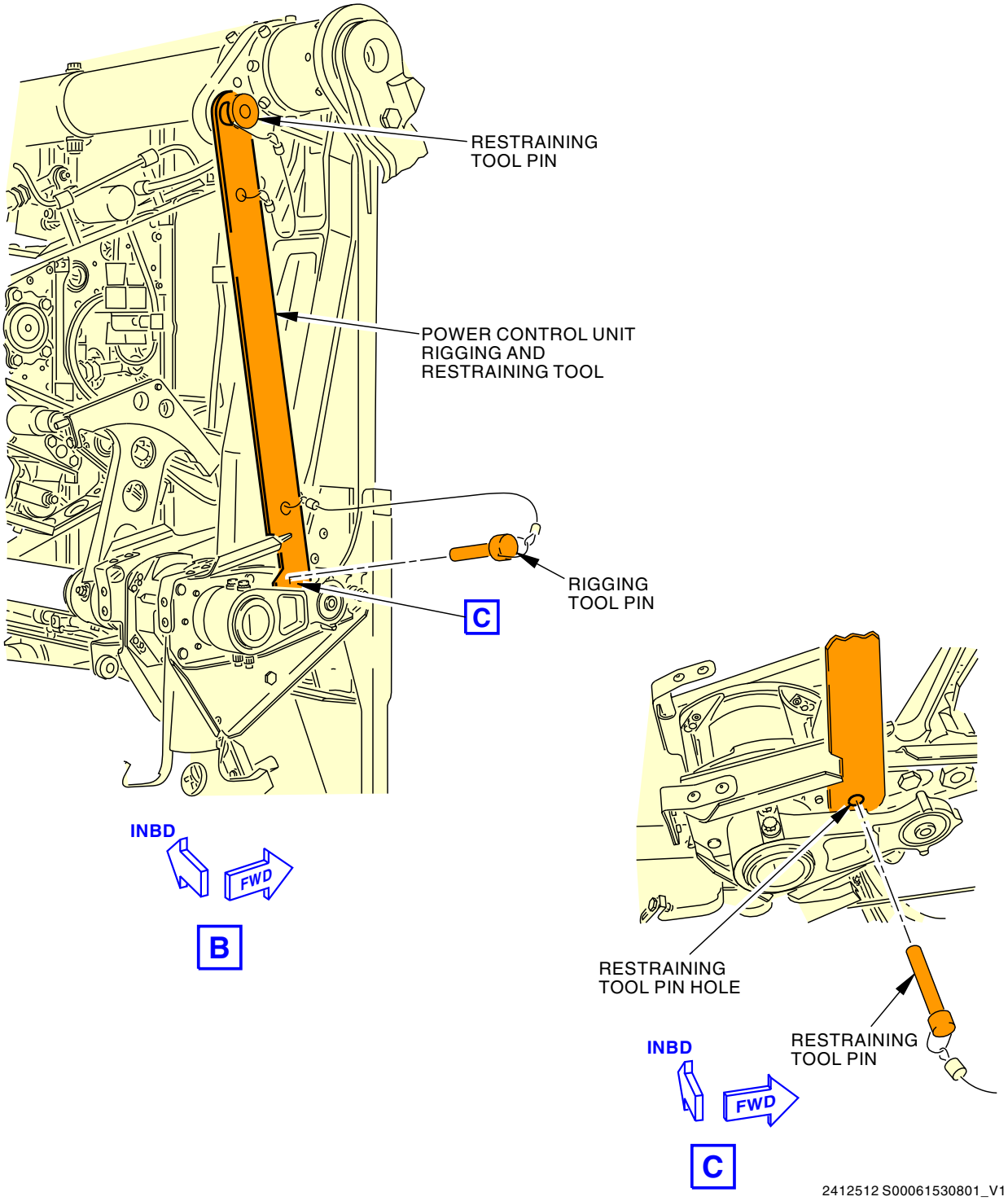
Elevator Power Control Unit Installation
Figure 402/27-31-14-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Power Control Unit Rigging and Restraining Tool Installation
Figure 403/27-31-14-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Power Control Unit Rigging and Restraining Tool Installation
Figure 403/27-31-14-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-14-400-801

3. Elevator Power Control Unit Installation

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
27-31-00-700-803	Elevator Surface Friction and Balance - Test (P/B 501)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-808	Manual Mode - Test (P/B 501)
27-31-00-700-809	Control Column Travel and Centering - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-820-803	Input Rods of the Elevator Power Control Unit - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1683	Fixture - Elevator Rigging and Restraining Part #: F80063-501 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Packing	27-31-14-02-500	SIA ALL
5	Packing	27-31-14-02-505	SIA ALL
6	Elevator PCU	27-31-14-03A-285	SIA ALL

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
315	APU Compartment - Left
316	APU Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

G. Prepare for the Installation

SUBTASK 27-31-14-860-003

(1) Make sure that the pressure to the elevator hydraulic systems A and B is removed (TASK 27-31-00-800-802).

SUBTASK 27-31-14-080-001

(2) Remove the fixture, SPL-1683 if it is applicable.

H. Elevator PCU Installation

SUBTASK 27-31-14-420-001

(1) If the packings and unions are not installed in the elevator PCU [6], then do these steps:

(a) Lubricate the new packing [1] and the new packing [5] with hydraulic fluid, D00153.

(b) Install the packing [1], union [2], packing [5], and union [4] in the elevator PCU [6].

SUBTASK 27-31-14-420-002

(2) Install the elevator PCU [6]:

(a) Apply grease, D00633 to the bolt [8] and bolt [12].

(b) Put the elevator PCU [6] in its position.

(c) Install the bolt [8] with the bolt head inboard, washer [9], washer [10], and nut [11] to attach the elevator PCU [6] to the output torque tube [7].

1) Tighten the nut [11] to 558 in-lb (63.05 N·m) - 592 in-lb (66.89 N·m).

(d) Install the bushing [13], bolt [12], washer [14], and nut [15] to attach the elevator PCU [6] to the mounting bracket.

NOTE: For the right elevator Power Control Unit (PCU), install the bolt [12] with the bolt head inboard. For the left elevator PCU, install the bolt [12] with the bolt head inboard.

1) Tighten the nut [15] to 550 in-lb (62.1 N·m) - 600 in-lb (67.8 N·m).

CAUTION

DO NOT TIGHTEN THE NUT [15] AGAIN AFTER YOU TIGHTEN THE NUT [17]. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(e) Install the washer [16] and nut [17].

1) Tighten the nut [17] to 225 in-lb (25.4 N·m) - 250 in-lb (28.2 N·m).

SUBTASK 27-31-14-080-002

(3) Remove the rig pin E-5 of the rigging pin kit, SPL-1585 from the elevator aft control quadrant.

(a) If necessary, connect the vernier control rod [30] and vernier control rod [31] if they were disconnected to give access to the PCU attach bolt.

SUBTASK 27-31-14-860-004

(4) Move the elevator PCU [6] to the fully retracted position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-14-420-003

(5) Connect the four input rods [23] to the four input cranks [18] (two on each PCU):

NOTE: Move the control column to move the quadrant out of the way when there are clearance problems with the lower input rod attach bolt.

(a) Apply grease, D00633 to the bolts [19].

(b) Install the bolts [19], washers [20], washers [21], and nuts [22].

NOTE: For the outboard bolt, install the bolt [19] with the bolt head outboard. For the inboard bolt, install the bolt [19] with the bolt head inboard.

SUBTASK 27-31-14-420-004

(6) Remove the caps and the plugs from the and hydraulic lines and ports.

(a) Remove hydraulic fluid that falls on the floor.

SUBTASK 27-31-14-420-005

(7) For the right elevator PCU [6], do these steps:

(a) Connect the hydraulic line [3] and hydraulic line [24] to the right elevator PCU [6].

(b) Tighten the B-nut on the RETURN port hydraulic line [3] to 161 in-lb (18.2 N·m) - 179 in-lb (20.2 N·m).

(c) Tighten the B-nut on the PRESSURE port hydraulic line [24] to 104 in-lb (11.8 N·m) - 116 in-lb (13.1 N·m).

SUBTASK 27-31-14-420-006

(8) For the left elevator PCU [6], do these steps:

(a) Connect the hydraulic line [3] and hydraulic line [24] to the right elevator PCU [6].

(b) Tighten the B-nut on the RETURN port hydraulic line [3] to 161 in-lb (18.2 N·m) - 179 in-lb (20.2 N·m).

(c) Tighten the B-nut on the PRESSURE port hydraulic line [24] to 104 in-lb (11.8 N·m) - 116 in-lb (13.1 N·m).

SUBTASK 27-31-14-860-005

(9) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-14-820-001

(10) Do this task: Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803.

SUBTASK 27-31-14-820-002

(11) Do this task: Elevator Surface Friction and Balance - Test, TASK 27-31-00-700-803.

SUBTASK 27-31-14-820-003

(12) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

SUBTASK 27-31-14-820-004

(13) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

SUBTASK 27-31-14-820-005

(14) Do this task: Control Column Travel and Centering - Test, TASK 27-31-00-700-809.

SUBTASK 27-31-14-820-006

(15) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-14-410-001

(1) Close these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR POWER CONTROL UNIT - INSPECTION/CHECK

1. General

A. This procedure has these inspection tasks:

(1) Elevator Power Control Unit (PCU) Visual Inspection

(2) Elevator PCU Inspection.

(a) This task supplies the data for a dimensional inspection of the elevator PCU.

(b) This task does not remove or install the elevator PCU, refer to the Elevator Power Control Unit - Removal/Installation procedures to remove and install the elevator PCU.

TASK 27-31-14-210-801

2. Elevator Power Control Unit Visual Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Elevator Power Control Unit Visual Inspection

SUBTASK 27-31-14-860-006

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS AND THE THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-31-14-010-004

(2) Remove this access panel to get access to the elevator Power Control Units (PCUs):

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-14-210-001

(3) Do a general visual inspection of the elevator PCU.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-14-210-002

(4) Do a general visual inspection to make sure that there are no hydraulic leaks from the elevator PCU.

SUBTASK 27-31-14-860-007

(5) To remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

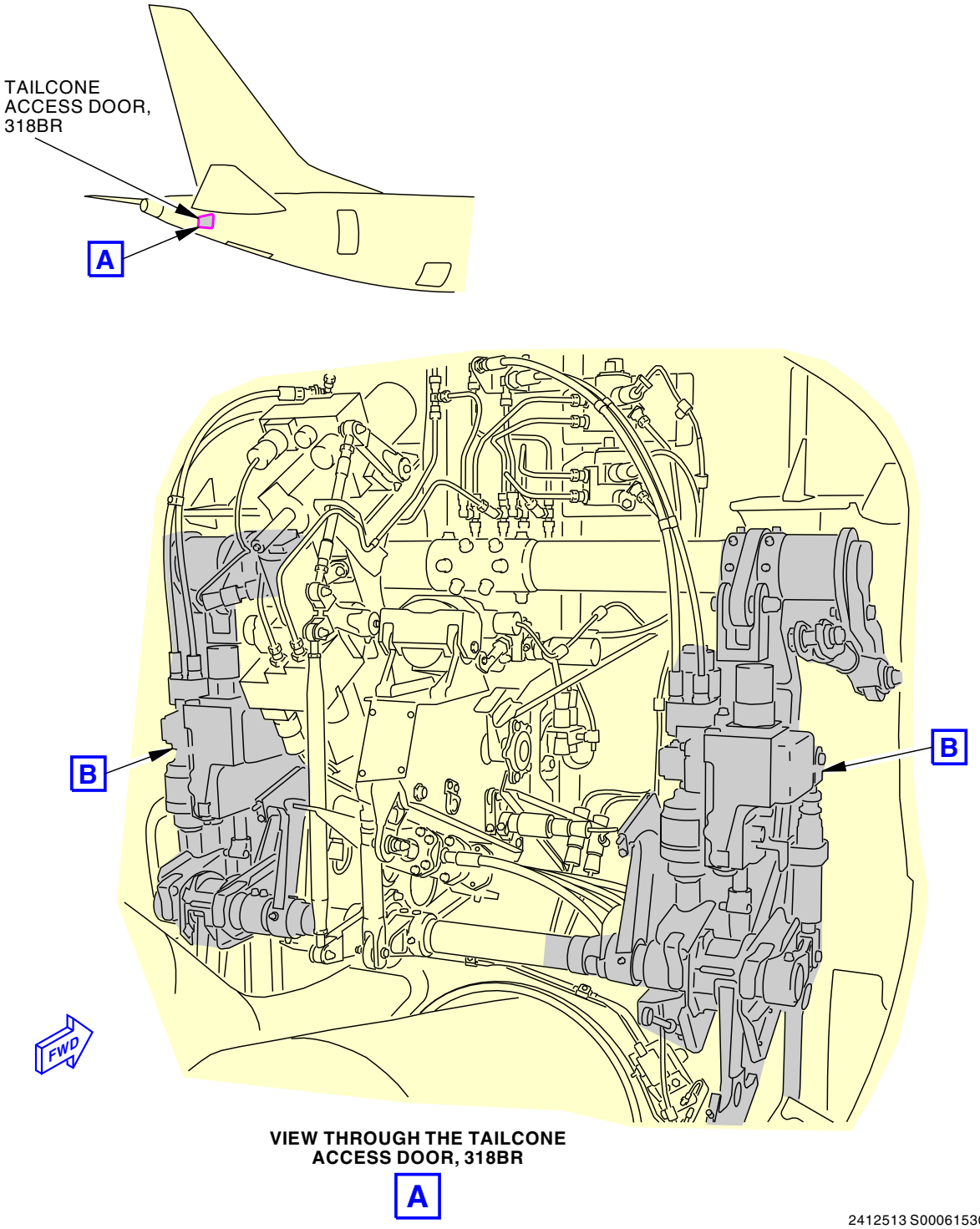
SUBTASK 27-31-14-410-004

(6) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

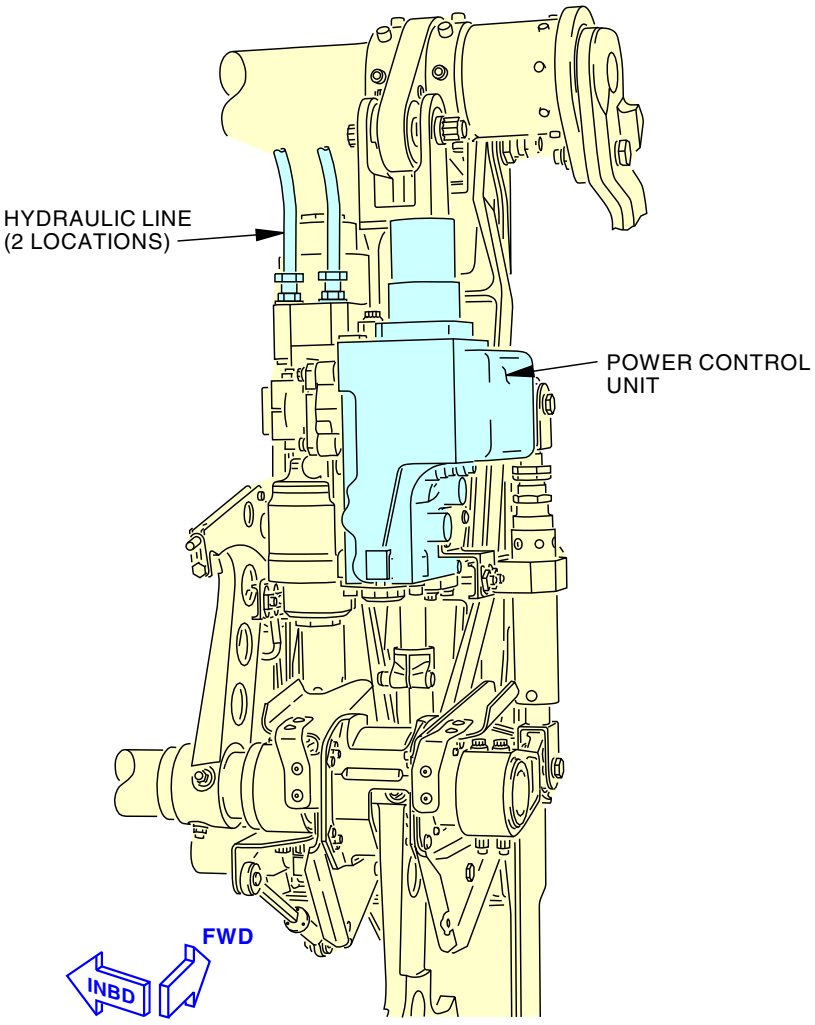
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Power Control Unit Location
Figure 601/27-31-14-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RIGHT POWER CONTROL UNIT
(LEFT POWER CONTROL UNIT IS OPPOSITE)

B

2412514 S00061530806_V1

Elevator Power Control Unit Location
Figure 601/27-31-14-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-14-200-801

3. Elevator Power Control Unit - Inspection

(Figure 602)

A. General

(1) This procedure gives wear limits and repair data for the elevator power control unit (PCU).

B. References

Reference	Title
27-31-14-000-801	Elevator Power Control Unit - Removal (P/B 401)
27-31-14-400-801	Elevator Power Control Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Elevator Power Control Unit Inspection

SUBTASK 27-31-14-020-004

(1) Remove the elevator power control unit (PCU). To remove it, do this task: Elevator Power Control Unit - Removal, TASK 27-31-14-000-801.

SUBTASK 27-31-14-020-005

(2) Use these tools to check for wear on the parts of the elevator PCU connections:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-31-14-020-006

(3) Examine the parts of the elevator PCU connections for worn areas:

(a) Remove the parts to be checked.

(b) Measure the parts as necessary with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions that follow.

(d) If the parts are not in the tolerance, replace or repair the part as required.

Table 601/27-31-14-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BEARING	I.D.	0.4995 in 12.687 mm	0.5000 in 12.700 mm	0.5030 in 12.776 mm	0.0035 in

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Table 601/27-31-14-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BOLT	O.D.	0.4985 in 12.662 mm	0.4995 in 12.687 mm	0.4981 in 12.652 mm	0.089 mm
#2 PCU END FITTING BUSHING	I.D.	0.4995 in 12.687 mm	0.5000 in 12.700 mm	0.5030 in 12.776 mm	0.0035 in 0.089 mm
#2 BOLT	O.D.	0.4985 in 12.662 mm	0.4995 in 12.687 mm	0.4981 in 12.652 mm	
#3 BUSHING	I.D.	0.6245 in 15.862 mm	0.6250 in 15.875 mm	0.6275 in 15.938 mm	0.0033 in 0.084 mm
#3 BOLT ASSEMBLY	O.D.	0.6237 in 15.842 mm	0.6242 in 15.855 mm	0.6212 in 15.778 mm	
#4 BUSHING	I.D.	0.6245 in 15.862 mm	0.6250 in 15.875 mm	0.6265 in 15.913 mm	0.0033 in 0.084 mm
#4 BOLT ASSEMBLY	O.D.	0.6237 in 15.842 mm	0.6242 in 15.855 mm	0.6212 in 15.778 mm	
#5 BEARING	I.D.	0.6245 in 15.862 mm	0.6250 in 15.875 mm	0.6275 in 15.938 mm	0.0033 in 0.084 mm
#5 BOLT ASSEMBLY	O.D.	0.6237 in 15.842 mm	0.6242 in 15.855 mm	0.6212 in 15.778 mm	
#6 SUPPORT LINK	I.D.	0.7500 in 19.050 mm	0.7507 in 19.068 mm	0.7522 in 19.106 mm	0.0022 in 0.056 mm
#6 BUSHING	O.D.	0.7495 in 19.037 mm	0.7500 in 19.050 mm	0.7491 in 19.027 mm	
#7 BUSHING	I.D.	0.6245 in 15.862 mm	0.6250 in 15.875 mm	0.6265 in 15.913 mm	0.0023 in 0.058 mm
#7 BOLT	O.D.	0.6237 in 15.842 mm	0.6242 in 15.855 mm	0.6212 in 15.778 mm	

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Table 601/27-31-14-993-801 (Continued)

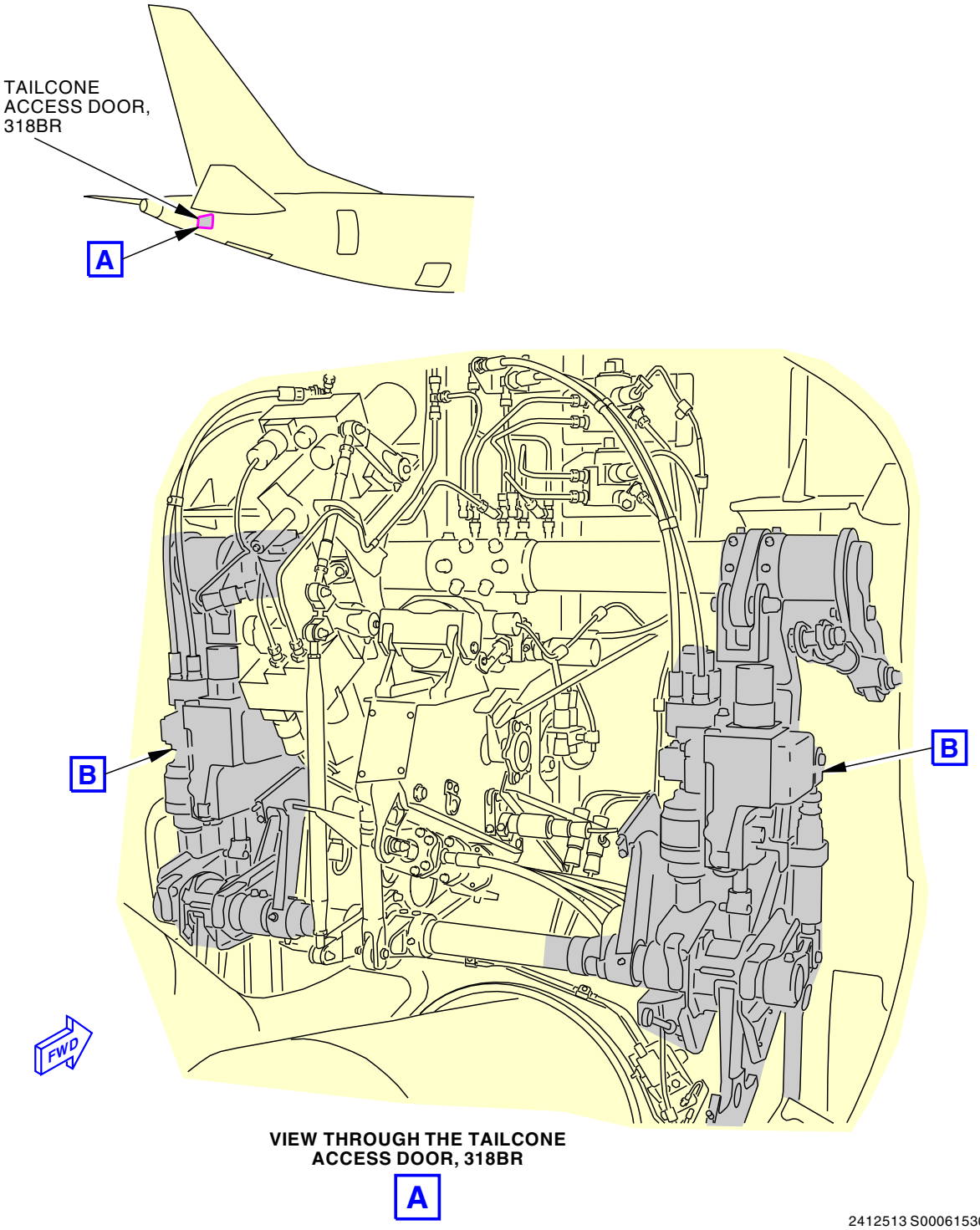
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#8 BEARING	I.D.	0.3122 in 7.930 mm	0.3125 in 7.937 mm	0.3155 in 8.014 mm	0.0035 in 0.089 mm
#8 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.925 mm	0.3106 in 7.889 mm	
#9 INPUT ROD	I.D.	0.3120 in 7.925 mm	0.3130 in 7.950 mm	0.3160 in 8.026 mm	0.0040 in 0.102 mm
#9 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.925 mm	0.3106 in 7.889 mm	

SUBTASK 27-31-14-020-007

(4) Install the elevator PCU. To install it, do this task: Elevator Power Control Unit Installation, TASK 27-31-14-400-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



VIEW THROUGH THE TAILCONE ACCESS DOOR, 318BR

A

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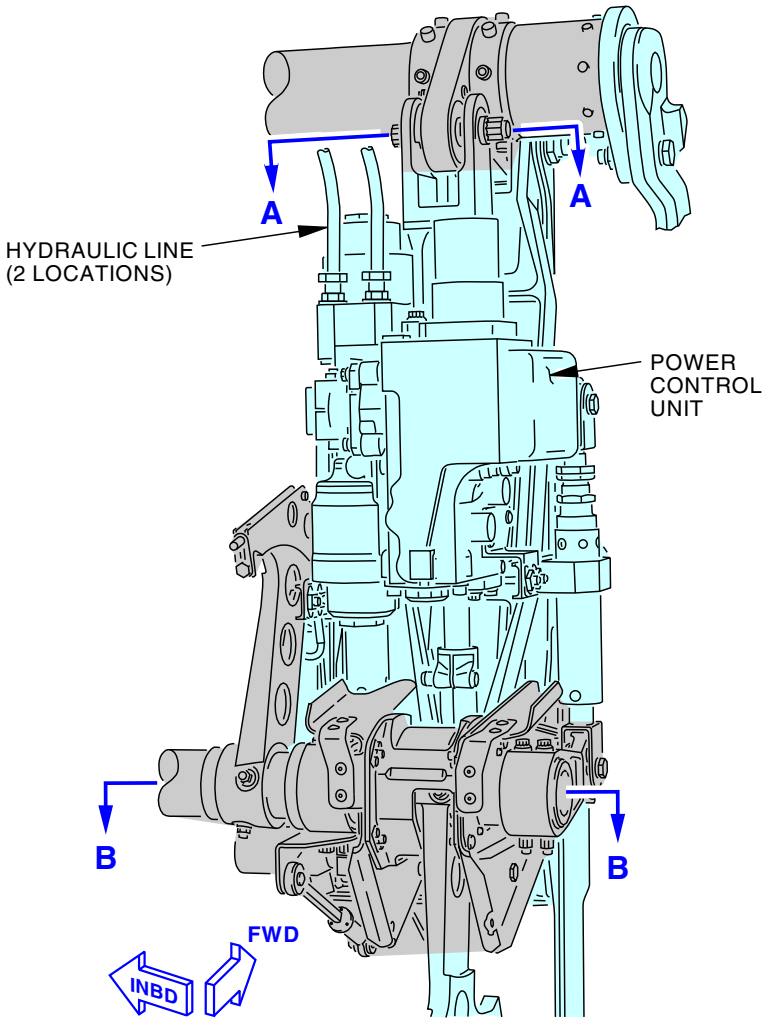
Elevator Power Control Unit Wear Limits
Figure 602/27-31-14-990-805 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



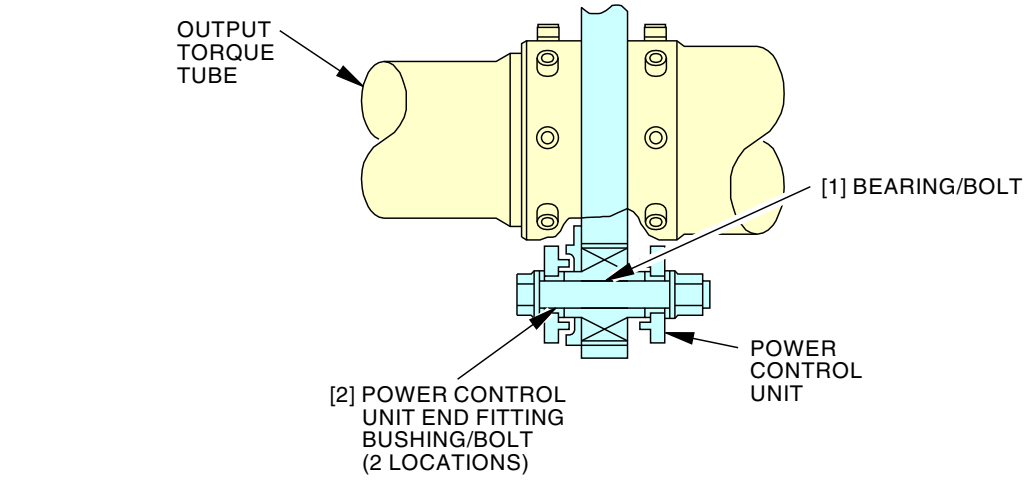
RIGHT POWER CONTROL UNIT
(LEFT POWER CONTROL UNIT IS OPPOSITE)

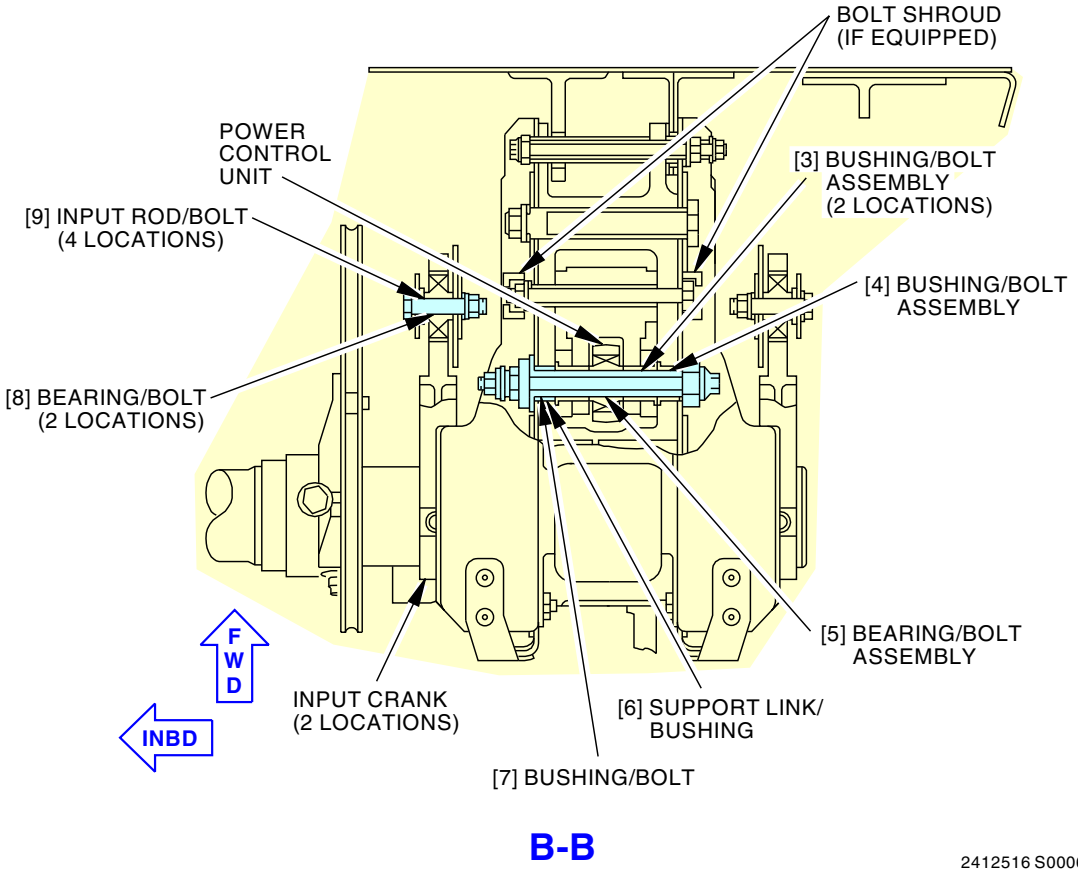
B

2412515 S00061530808_V1

Elevator Power Control Unit Wear Limits
Figure 602/27-31-14-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Elevator Power Control Unit Wear Limits
Figure 602/27-31-14-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR PITOT-STATIC SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Elevator Pitot-Static System Flushing

(2) Elevator Pitot-Static System Drainage Inspection

(3) Elevator Pitot Probe Inspection

(4) Elevator Pitot System Leak Test

(5) Elevator Pitot System Pressurization.

TASK 27-31-17-170-801

2. Elevator Pitot-Static System Flushing

(Figure 201)

A. General

(1) Air Pressure in PSIG/kPa will simulate knots of computed airspeed (kcas).

B. References

Reference	Title
27-31-94-000-801	Feel System Pitot Probe Removal (P/B 401)
27-31-94-400-801	Feel System Pitot Probe Installation (P/B 401)
34-11-01-100-801	Pitot Probe Cleaning (P/B 701)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: CSA75700HT-3 Supplier: 3BSK6 Part #: P75701-4 Supplier: 38002 Part #: P75701M2-3 Supplier: 38002
COM-16577	Plug - Pitot Part #: BACP20AU6D Supplier: 81205
STD-1154	Container - 5 Gallon (19 Liter)
STD-1280	Source - Air, Regulated, Dry Filtered, 0-30 PSIG

D. Consumable Materials

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B50126	Solvent - Degreasing, General Purpose	MIL-PRF-680

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
323	Vertical Fin - Front Spar To Rear Spar

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Prepare for the Flushing

SUBTASK 27-31-17-010-001

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-17-860-001

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

H. Elevator Pitot-Static System Flushing

SUBTASK 27-31-17-170-001

(1) Flush the pitot system:

(a) Inspect the pitot probes, do this task: Elevator Pitot Probe - Inspection, TASK 27-31-17-200-802.

1) If debris is visually detected or visual inspection can not be completed, do these steps:

a) Remove the elevator pitot probe, do this task: Feel System Pitot Probe Removal, TASK 27-31-94-000-801.

b) Clean the elevator pitot probe, refer to task: Pitot Probe Cleaning, TASK 34-11-01-100-801.

c) Install the elevator pitot probe, do this task: Feel System Pitot Probe Installation, TASK 27-31-94-400-801.

CAUTION MAKE SURE THAT YOU DISCONNECT THE FEEL COMPUTER LINES BEFORE YOU FLUSH THE LINES WITH A DRY FILTERED AIR SOURCE OF 20-30 PSIG, STD-1280. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(b) Disconnect the left and right pitot lines [4] from the elevator feel computer [5].

(c) Install plugs on the elevator feel computer [5] ports.

(d) Remove the left and right restrictor valves [3] from the pitot lines [4].

(e) Clean the restrictor valves [3] with degreasing solvent, B50126, or solvent, B00062 (TASK 27-31-17-200-801).

(f) Put a 5 gallon (19 liter) container, STD-1154, below the pitot lines to catch any debris.

(g) Install the pitot plug, COM-16577, on the pitot line [4] for the left elevator feel computer [5].

(h) Install the pitot test adapter, COM-1916, on the left pitot probe.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) From the left pitot probe, flush the left pitot line [4] with 20 psig (137.9 kPa) - 30 psig (206.8 kPa) of air constantly for 3 minutes and no unwanted material comes out from the tubes using a 0-30 psig dry filtered regulated air source, STD-1280.

1) Make sure that the pitot line [4] is not blocked and air flows out of the other open end.

2) If air does not flow out of the other end from the left pitot system, do the following steps:

a) Remove the elevator pitot probe, do this task: Feel System Pitot Probe Removal, TASK 27-31-94-000-801.

b) Clean the elevator pitot probe, refer to task: Pitot Probe Cleaning, TASK 34-11-01-100-801.

c) Install the elevator pitot probe, do this task: Feel System Pitot Probe Installation, TASK 27-31-94-400-801.

(j) Remove the pitot plug, COM-16577, from the pitot line [4] for the left elevator feel computer [5].

(k) Install the pitot plug, COM-16577, on the pitot line [4] for the left restrictor valve [3].

(l) From the left pitot probe, flush the left pitot line [4] with 20 psig (137.9 kPa) - 30 psig (206.8 kPa) of air constantly for 3 minutes and no unwanted material comes out from the tubes using a 0-30 psig dry filtered regulated air source, STD-1280.

1) Make sure that the pitot line [4] is not blocked and air flows out of the other open end.

(m) Remove the pitot plug, COM-16577, from the pitot line [4] for the left restrictor valve [3].

(n) Remove the pitot test adapter, COM-1916, from the left pitot probe.

(o) Install the pitot test adapter, COM-1916, on the right pitot probe.

(p) Install the pitot plug, COM-16577, on the pitot line [4] for the right elevator feel computer [5].

(q) From the right pitot probe, flush the right pitot line [4] with 20 psig (137.9 kPa) - 30 psig (206.8 kPa) of air constantly for 3 minutes and no unwanted material comes out from the tubes using a 0-30 psig dry filtered regulated air source, STD-1280.

1) Make sure that the pitot line [4] is not blocked and air flows out of the other open end.

2) If air does not flow out of the other end from the right pitot system, do the following steps:

a) Remove the elevator pitot probe, do this task: Feel System Pitot Probe Removal, TASK 27-31-94-000-801.

b) Clean the elevator pitot probe, refer to task: Pitot Probe Cleaning, TASK 34-11-01-100-801.

c) Install the elevator pitot probe, do this task: Feel System Pitot Probe Installation, TASK 27-31-94-400-801.

(r) Remove the pitot plug, COM-16577, from the pitot line [4] for the right elevator feel computer [5].

(s) Install the pitot plug, COM-16577, on the pitot line [4] for the restrictor valve [3].

(t) From the right pitot probe, flush the right pitot line [4] with 20 psig (137.9 kPa) - 30 psig (206.8 kPa) of air constantly for 3 minutes and no unwanted material comes out from the tubes using a 0-30 psig dry filtered regulated air source, STD-1280.

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1) Make sure that the pitot line [4] is not blocked and air flows out of the other open end.

(u) Remove the pitot test adapter, COM-1916, from the right pitot probe.

(v) Remove the pitot plug, COM-16577, from the pitot line [4] for the right restrictor valve [3].

(w) Check the 5 gallon (19 liter) container, STD-1154, for unwanted material from the pitot lines.

1) If unwanted material is found in the container, examine the pitot lines.

(x) Remove the plugs from the elevator feel computer [5] ports.

(y) Connect the pitot lines [4] to the elevator feel computer [5].

(z) Install the restrictor valves [3] on the pitot lines [4].

SUBTASK 27-31-17-170-002

(2) Flush the static system:

(a) Disconnect the static lines [2] from the elevator feel computer [5].

(b) Install plugs on the elevator feel computer [5] ports.

(c) Flush the static lines [2] from each end with 20 psig (137.9 kPa) - 30 psig (206.8 kPa) of air for 3 minutes and no unwanted material comes out from the tubes using a 0-30 psig dry filtered regulated air source, STD-1280.

1) Make sure that the static lines [2] are not blocked and air flows out of the other open end.

(d) Remove the plugs from the elevator feel computer [5] ports.

(e) Connect the static lines [2] to the elevator feel computer [5].

SUBTASK 27-31-17-210-001

(3) Make sure that there is no unwanted material in the ports of the pitot-static system.

SUBTASK 27-31-17-210-002

(4) Do this task: Elevator Pitot-Static System Drainage - Inspection, TASK 27-31-17-200-801.

SUBTASK 27-31-17-790-001

(5) Do this task: Elevator Pitot System Leak - Test, TASK 27-31-17-790-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-17-860-002

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

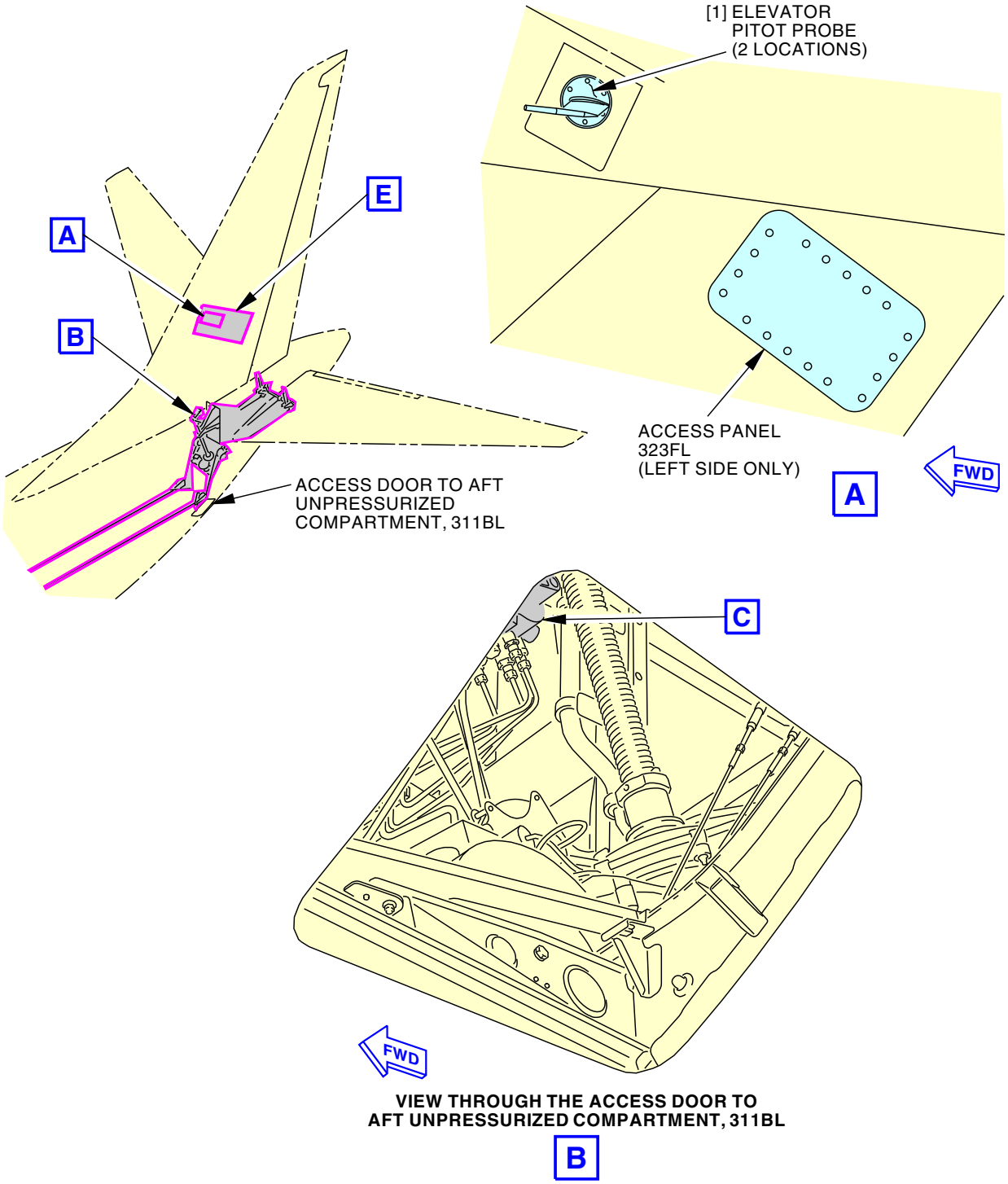
SUBTASK 27-31-17-410-001

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

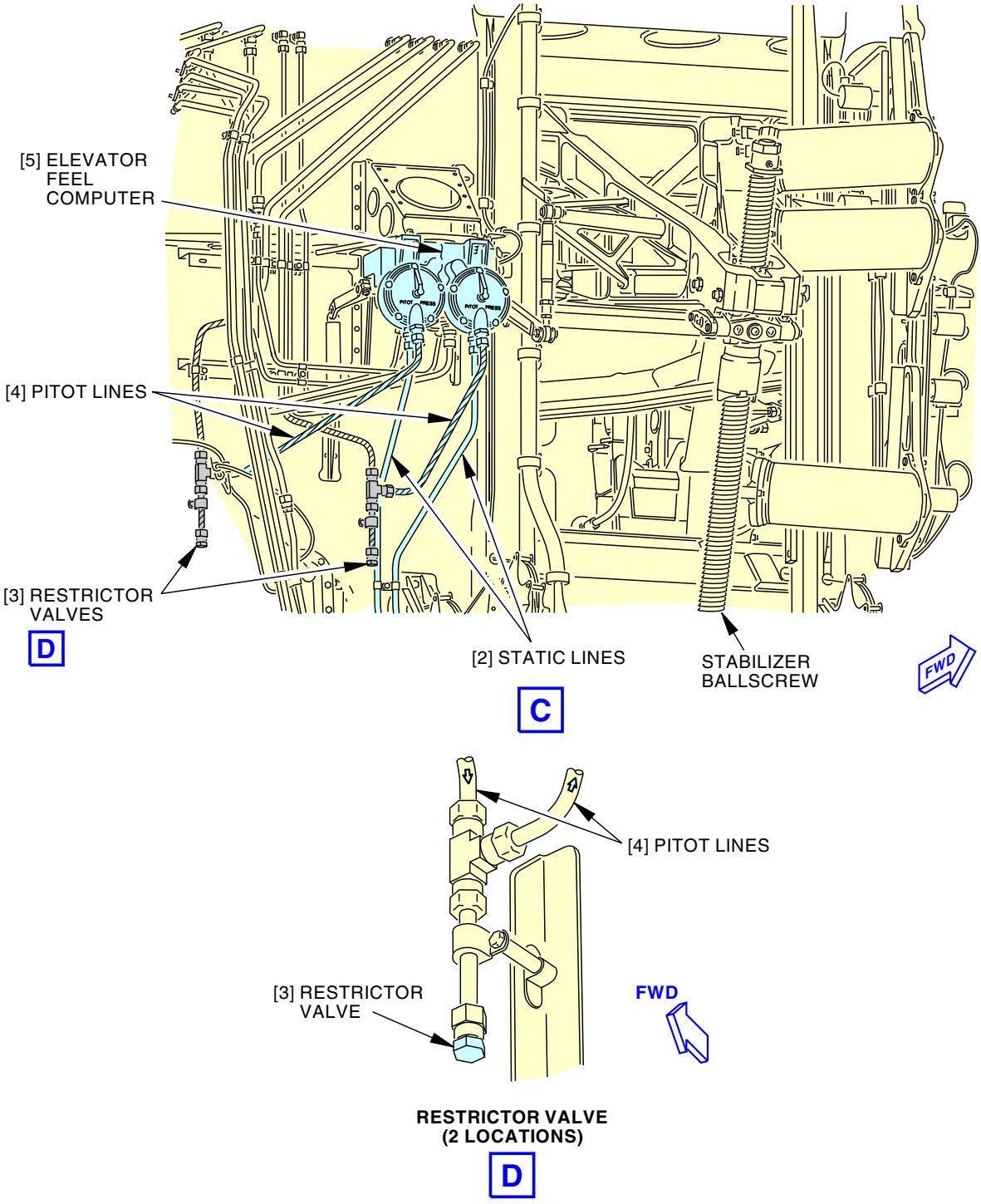
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



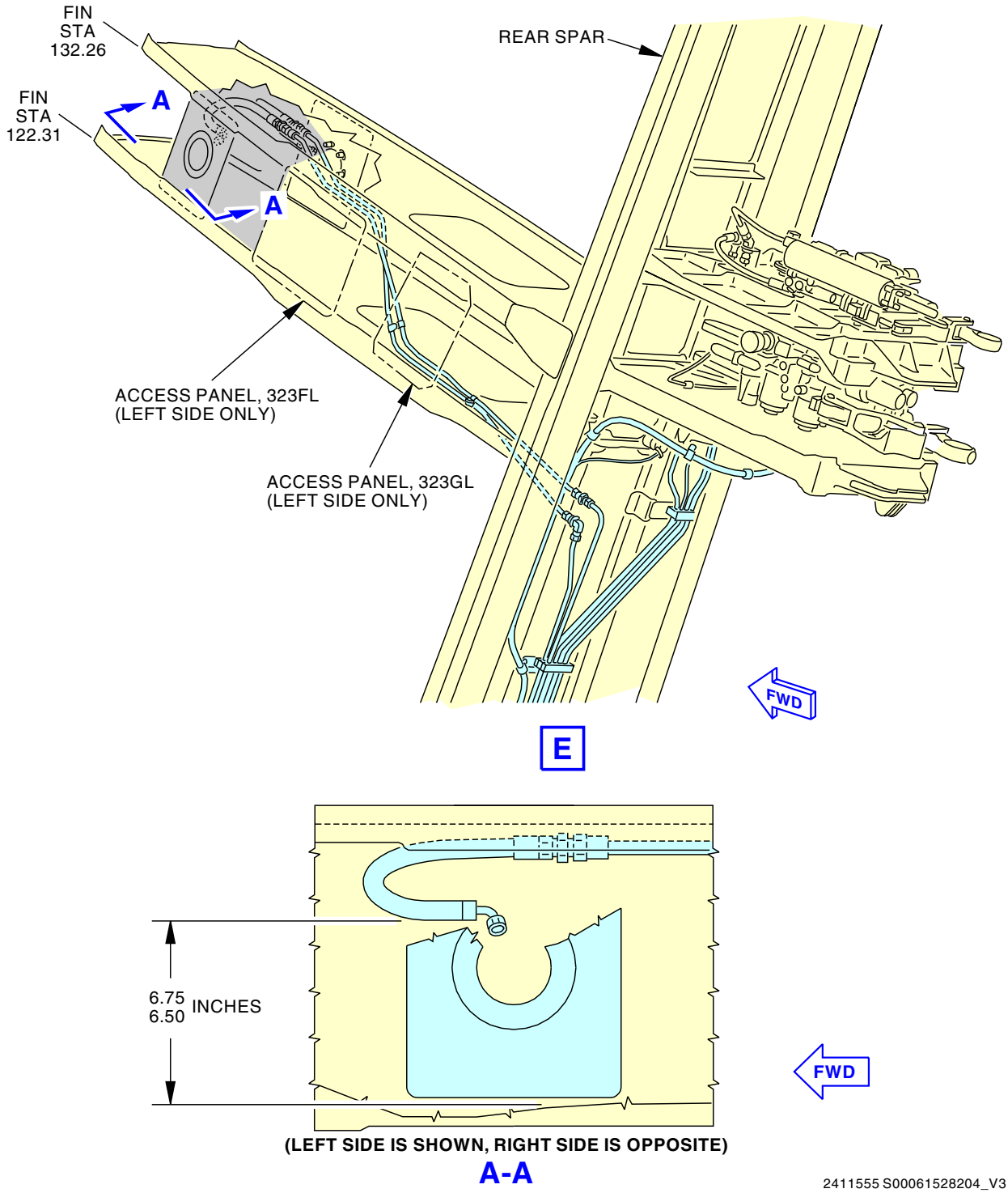
Elevator Pitot-Static System Installation
Figure 201/27-31-17-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Pitot-Static System Installation
Figure 201/27-31-17-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Pitot-Static System Installation
Figure 201/27-31-17-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-17-200-801

3. Elevator Pitot-Static System Drainage - Inspection

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
B00065	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002 (Supersedes O-A-396)
B00068	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002, MIL-E-51454 Type II
B00130	Alcohol - Isopropyl	TT-I-735

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
323	Vertical Fin - Front Spar To Rear Spar

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access

E. Prepare for the Inspection

SUBTASK 27-31-17-010-003

(1) Open these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access

SUBTASK 27-31-17-860-003

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

F. Elevator Pitot-Static System Drainage Inspection

SUBTASK 27-31-17-170-003

(1) Drain the pitot system:

(a) Remove the restrictor valves [3] from the pitot lines [4].

(b) Make sure that the pitot lines [4] drain correctly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that the hoses between the pitot-static probes and the rigid metal tubing loop up and do not trap water (Figure 201).

(d) If necessary, flush the pitot system (Elevator Pitot-Static System Flushing, TASK 27-31-17-170-801).

(e) Clean the restrictor valves [3] with alcohol, B00130, alcohol, B00065, or alcohol, B00068.

(f) Install the restrictor valves [3].

SUBTASK 27-31-17-170-004

(2) Examine the static system:

(a) Disconnect the static lines [2] from elevator feel computer [5].

(b) Make sure that the static lines [2] drain correctly.

1) If it is necessary, flush the static system (Elevator Pitot-Static System Flushing, TASK 27-31-17-170-801).

(c) Connect the static lines [2].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-17-860-004

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-17-410-003

(2) Close these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access

SUBTASK 27-31-17-390-002

(3) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

END OF TASK

TASK 27-31-17-200-802

4. Elevator Pitot Probe - Inspection

(Figure 201)

A. General

(1) The tasks that follow give more data on how to examine the elevator pitot probes [1].

(a) See Pitot Probe Special Detailed Inspection, TASK 34-11-01-200-802.

(b) See Pitot Probe Detailed Inspection, TASK 34-11-01-200-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-31-94-000-801	Feel System Pitot Probe Removal (P/B 401)
27-31-94-400-801	Feel System Pitot Probe Installation (P/B 401)
34-11-01-200-801	Pitot Probe Detailed Inspection (P/B 601)
34-11-01-200-802	Pitot Probe Special Detailed Inspection (P/B 601)

C. Location Zones

Zone	Area
323	Vertical Fin - Front Spar To Rear Spar

D. Elevator Pitot Probe Inspection

SUBTASK 27-31-17-170-005

(1) Examine the pitot probe for damage.

(a) Make sure that the maximum tip bluntness of the elevator pitot probe [1] is not more than 0.04 in. (1.0 mm).

(b) Make sure that the elevator pitot probe [1] is not bent or the electrical heater is damaged.

(c) If it is necessary, replace the elevator pitot probe [1]. These are the tasks:

- Feel System Pitot Probe Removal, TASK 27-31-94-000-801
- Feel System Pitot Probe Installation, TASK 27-31-94-400-801.

——— END OF TASK ———

TASK 27-31-17-790-801

5. Elevator Pitot System Leak - Test

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Air Pressure in PSIG/kPa will simulate knots of computed airspeed (kcas).

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: CSA75700HT-3 Supplier: 3BSK6 Part #: P75701-4 Supplier: 38002 Part #: P75701M2-3 Supplier: 38002
COM-16577	Plug - Pitot Part #: BACP20AU6D Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
323	Vertical Fin - Front Spar To Rear Spar

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Test

SUBTASK 27-31-17-010-005

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-17-860-005

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

F. Elevator Pitot System Leak Test

SUBTASK 27-31-17-390-001

WARNING

WHEN THE PITOT PROBES HAVE COVERS ON THEM, MAKE SURE THAT A PERSON ON THE GROUND CAN SEE THE COVERS. ALSO MAKE SURE YOU ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT AS A REMINDER THAT THE PITOT PROBES HAVE COVERS ON THEM. IF THE COVERS ARE NOT REMOVED FROM THE PITOT PROBES, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

CAUTION

MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(1) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent, with the pitot test adapter, COM-1916, to the elevator pitot probes [1].

SUBTASK 27-31-17-020-001

(2) In the aft unpressurized compartment, below the elevator feel computer [5], do these steps:

(a) Remove the restrictor valves [3] from the bottom of the pitot lines [4] (Figure 201).

(b) If you are using the regulator, SPL-1742, or equivalent, for the leak test, do these steps:

NOTE: The DPS 400 Test Set can be used as an alternative tool to the DPS 500.

1) Connect the pressure gage lines from the regulator, SPL-1742, or equivalent, to the drain holes of the pitot lines [4].

(c) If you are using the air data model test set, COM-1914, for the leak test, do these steps:

1) Install the pitot plugs, COM-16577, on the ends of the pitot lines [4].

2) Install a streamer on the opening of the aft unpressurized compartment.

a) Make sure that you can easily see the streamer from the ground.

NOTE: This is to remind you to remove the plugs and install the restrictor valves again when the test is completed.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-17-790-002

(3) Do the pitot system leak test:

NOTE: The pitot drain lines must be sealed to hold pressure during the test.

CAUTION

DO NOT INCREASE THE PRESSURE TO MORE THAN 5 PSIG (34.5 KPA) (437 KNOTS OF COMPUTED AIRSPEED (KCAS)), DURING THE TEST. IF THE PRESSURE IS MORE THAN 5 PSIG (34.5 KPA) (437 KCAS), IT CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(a) Operate the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent, to apply pressure of 0.90 +0.07 / -0.00 psig (6.21 +0.48 / -0.00 kPa) to simulate 194 to 201 kcas.

(b) Set the shutoff valve in the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent to the OFF position.

(c) Make sure that the pressure does not decrease more than 0.2 psig (1.4 kPa) (8 kcas) during a 2-minute time.

NOTE: The low pressure pressurization steps above make sure that there is no system leak before you apply full pressure in the following steps.

1) If it is necessary, repair the pitot system or pressurization equipment leak.

(d) Operate the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent, to apply pressure of 4.8 ±0.1 psig (33.1 ±0.7 kPa) to simulate 425 to 433 kcas.

(e) Set the shutoff valve in the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent to the OFF position.

(f) Make sure that the pressure does not decrease more than 0.3 psig (2.1 kPa) (12 kcas) during a 2-minute time.

(g) Operate the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent to decrease the pitot pressure to zero.

SUBTASK 27-31-17-160-001

(4) At the elevator pitot probes [1] on the vertical fin, do these steps:

(a) Remove the pressure lines with the pitot test adapter, COM-1916, from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent.

(b) Remove the pitot test adapter, COM-1916, from the elevator pitot probes [1].

SUBTASK 27-31-17-080-001

(5) In the aft unpressurized compartment, below the elevator feel computer [5], do these steps:

(a) If you used the regulator, SPL-1742, or equivalent, for the leak test, do these steps:

1) Disconnect the pressure gage lines of the regulator, SPL-1742, or equivalent from the drain holes of the pitot lines [4].

(b) If you used the air data model test set, COM-1914, for the leak test, do these steps:

1) Remove the pitot plugs, COM-16577, that were installed on the ends of the pitot lines [4].

2) Remove the streamer on the opening of the aft unpressurized compartment.

(c) Install the restrictor valves [3] on the bottom of the pitot lines [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-17-860-006

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-17-410-005

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

TASK 27-31-17-780-801

6. Elevator Pitot System - Pressurization

(Figure 201)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

B. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

C. Prepare for the Pressurization

SUBTASK 27-31-17-010-006

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-17-860-007

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

D. Elevator Pitot System Pressurization

SUBTASK 27-31-17-480-001

(1) Prepare the elevator pitot system for pressurization:

NOTE: The next two steps are not necessary if you are using the air data model test set, COM-1914.

(a) Remove the restrictor valves [3] from the pitot lines [4].

(b) Connect the pressure gage lines from the regulator, SPL-1742, or equivalent to the drain holes of the pitot line [4].

NOTE: The DPS 400 Test Set can be used as an alternative tool to the DPS 500.

WARNING

WHEN THE PITOT PROBES HAVE COVERS ON THEM, MAKE SURE THAT A PERSON ON THE GROUND CAN SEE THE COVERS. ALSO MAKE SURE YOU ATTACH A TAG TO THE LEFT CONTROL WHEEL IN THE FLIGHT COMPARTMENT AS A REMINDER THAT THE PITOT PROBES HAVE COVERS ON THEM. IF THE COVERS ARE NOT REMOVED FROM THE PITOT PROBES, INCORRECT AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS CAN OCCUR. THIS CAN CAUSE DANGEROUS FLIGHT CONDITIONS.

(c) Seal the drain hole in each elevator pitot probe [1].

CAUTION

MAKE SURE THAT THE WEIGHT OF THE TEST HOSE IS NOT ON THE PITOT PROBE. THE WEIGHT OF THE HOSE CAN BEND OR TWIST THE PROBE UNTIL IT IS NOT IN TOLERANCE.

(d) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent to the two elevator pitot probes [1].

SUBTASK 27-31-17-480-002

CAUTION

DO NOT LET THE PRESSURE BECOME MORE THAN 5 PSIG (34.5 KPA). DAMAGE TO THE COMPONENT COULD OCCUR.

(2) Pressurize the elevator pitot system:

(a) Operate the air data model test set, COM-1914, or regulator, SPL-1742, to pressurize the system, as necessary, to get the system test data.

(b) Slowly operate the air data model test set, COM-1914, or regulator, SPL-1742, to remove pressure from the system until it is at zero.

SUBTASK 27-31-17-010-007

(3) Remove the pressurization equipment from the airplane:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the pressure gage lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent to the drain holes.

(b) Install the restrictor valves [3] in each of the pitot lines [4].

(c) Remove the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent from the elevator pitot probes [1].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-17-860-008

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-17-410-006

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL SHIFT MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of an elevator feel shift module.

(2) An installation of an elevator feel shift module.

TASK 27-31-20-000-801

2. Elevator Feel Shift Module Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

C. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

D. Prepare for the Removal

SUBTASK 27-31-20-010-001

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-20-860-001

(2) Put the SYSTEM A FLIGHT CONTROL SHUTOFF and the SYSTEM B FLIGHT CONTROL SHUTOFF switches on the P5 forward overhead panel to the OFF position.

SUBTASK 27-31-20-860-002

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC

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(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2

SUBTASK 27-31-20-860-003

(4) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

E. Elevator Feel Shift Module Removal

(Figure 402)

SUBTASK 27-31-20-020-001

WARNING RELEASE THE CONNECTION SLOWLY AND LET THE PRESSURE DECREASE BEFORE YOU COMPLETELY REMOVE THE HYDRAULIC LINE. IF YOU DISCONNECT THE HYDRAULIC LINE WHEN IT HAS PRESSURE, A SPRAY OF HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the hydraulic lines [4] and hydraulic line [6] from the elevator feel shift module [1].

(a) Install the caps and plugs on the open ports and hydraulic lines.

(b) Discard the packings [7].

SUBTASK 27-31-20-480-001

(2) Disconnect the electrical connector [5] from the elevator feel shift module [1].

SUBTASK 27-31-20-020-002

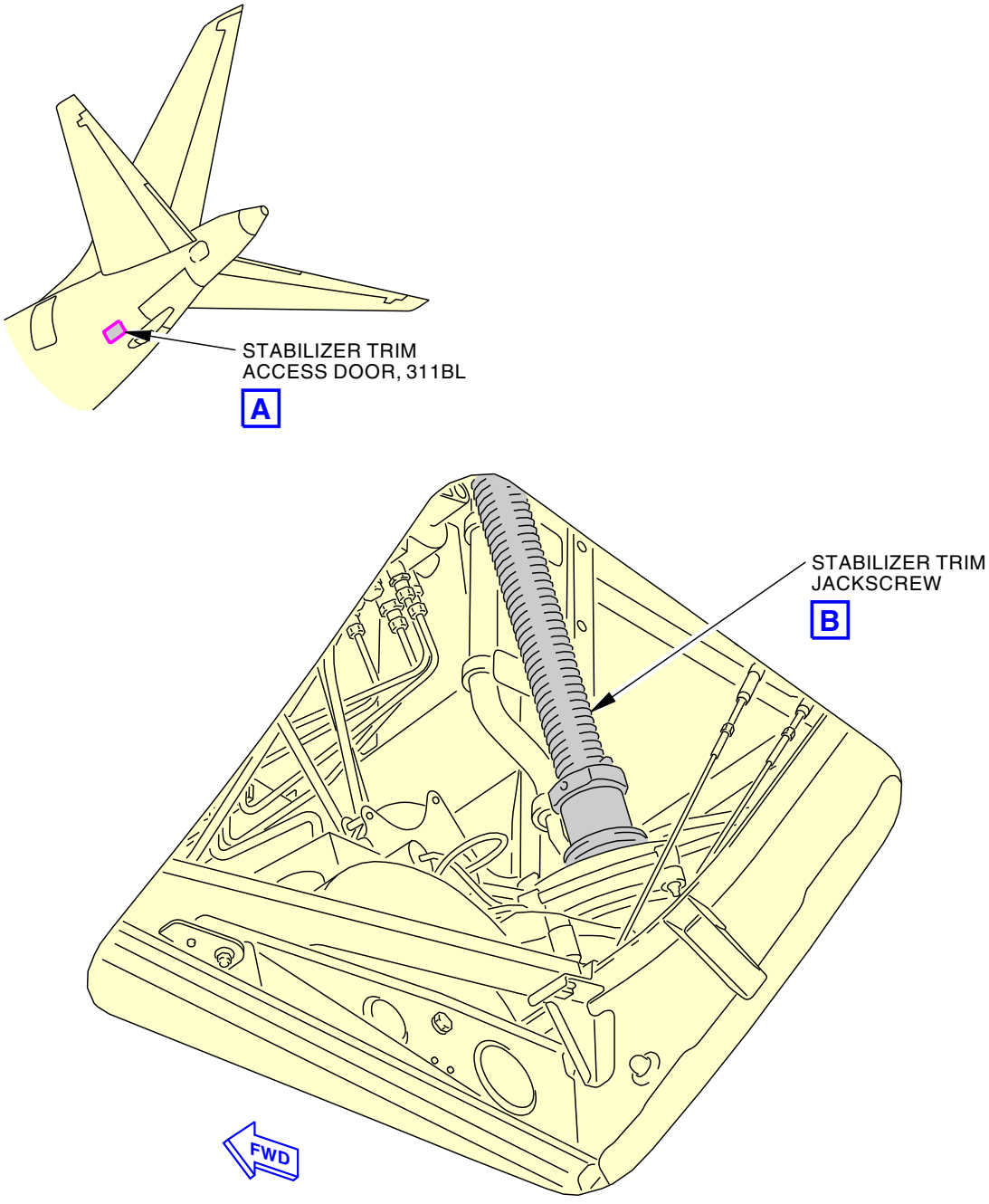
(3) Hold the elevator feel shift module [1] and remove the bolts [2] and washers [3] that connect the elevator feel shift module [1] to the bracket.

SUBTASK 27-31-20-480-002

(4) Remove the elevator feel shift module [1].

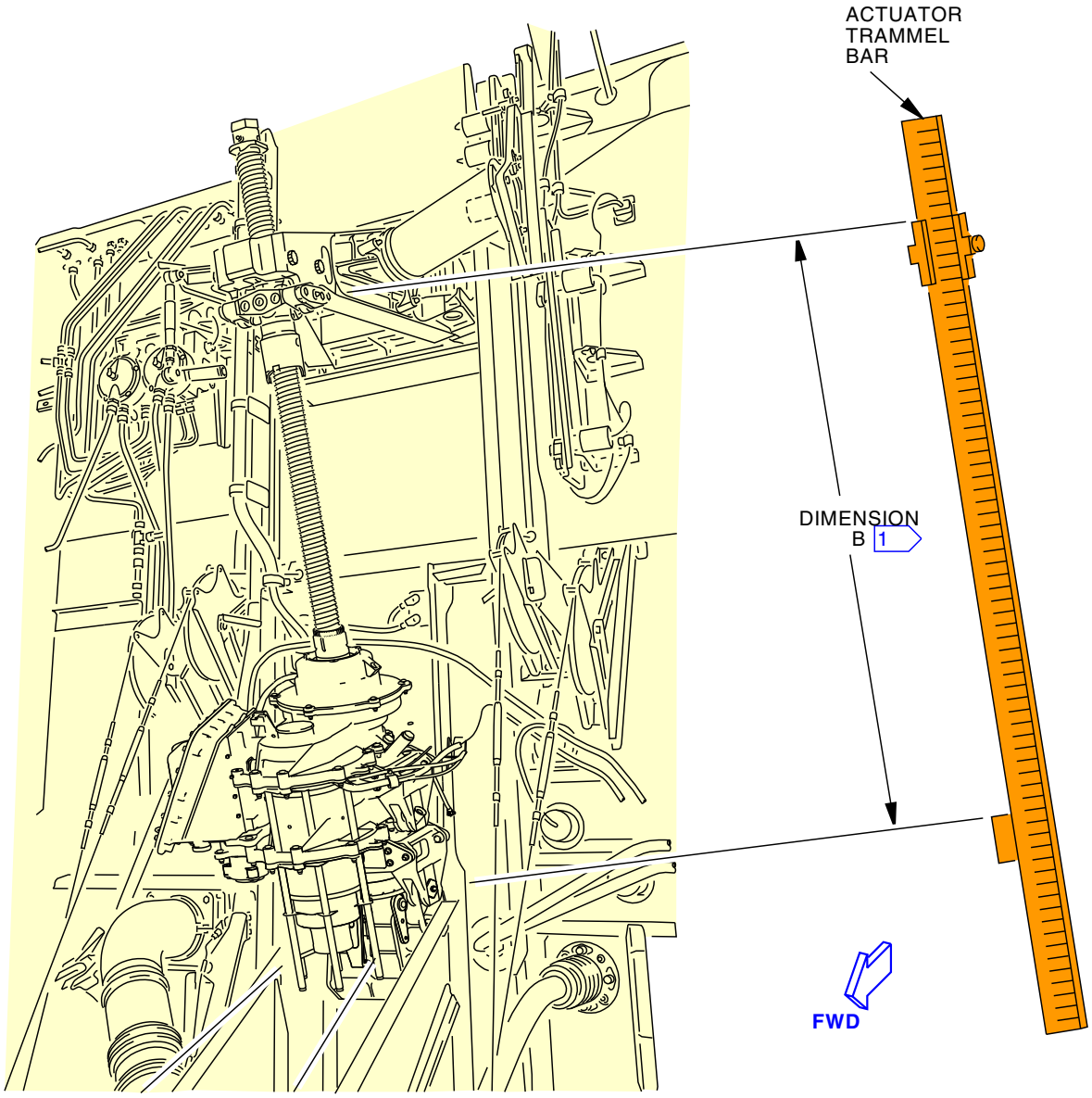
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Jackscrew Adjustment
Figure 401/27-31-20-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

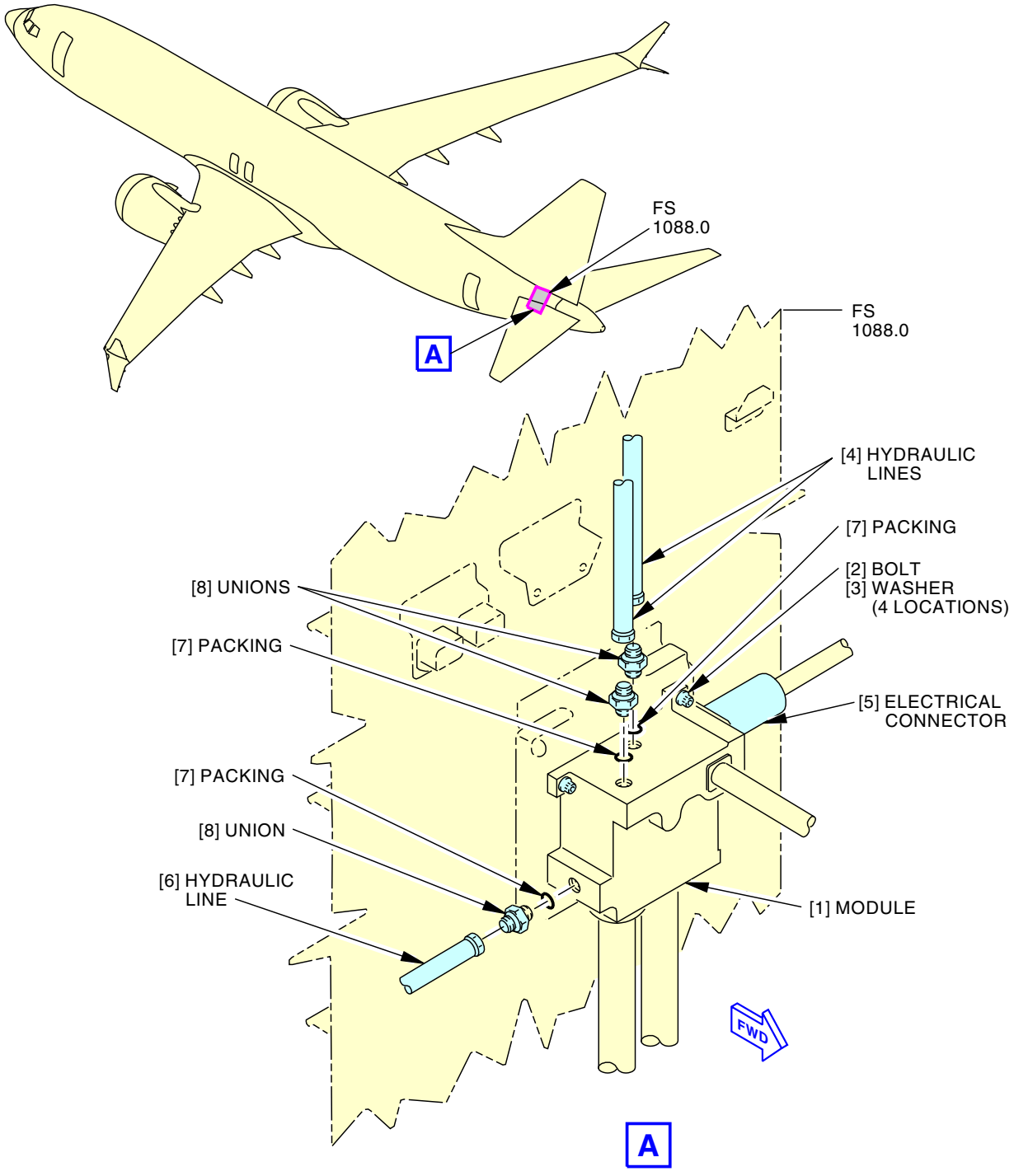
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412518 S00061530821_V1

Stabilizer Trim Jackscrew Adjustment
Figure 401/27-31-20-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel Shift Module - Installation
Figure 402/27-31-20-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-20-400-801

3. Elevator Feel Shift Module - Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-700-813	Feel Force System - Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-20-740-801	Elevator Feel Shift Module - Test (P/B 501)
51-22-00-390-806	Fillet Seal Application (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator feel shift module	27-31-20-01-015	SIA ALL

E. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Installation

SUBTASK 27-31-20-860-004

(1) Make sure that the pressure to the elevator hydraulic systems A and B is removed (TASK 27-31-00-800-802).

H. Elevator Feel Shift Module Installation

SUBTASK 27-31-20-420-001

(1) Install the elevator feel shift module [1]:

(a) Install the washers [3] and bolts [2] to attach the elevator feel shift module [1] to the bracket.

1) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the electrical resistance between the elevator feel shift module [1] and the bracket, that it is attached to, is 0.005 ohms or less.

2) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the electrical resistance between the elevator feel shift module [1] and the airplane structure is 0.005 ohms or less.

3) If the electrical resistance at the two locations is more than 0.005 ohms, then remove the elevator feel shift module [1] and prepare the electrical faying surfaces.

(b) Apply a fillet seal of sealant, A00247 along the joint edges (TASK 51-22-00-390-806).

SUBTASK 27-31-20-420-002

(2) Connect electrical electrical connector [5] to the elevator feel shift module [1].

SUBTASK 27-31-20-420-003

(3) Remove the caps and plugs from the open ports, hydraulic lines [4] and hydraulic line [6].

SUBTASK 27-31-20-420-006

(4) If the packings [7] and unions [8] are not installed on the elevator feel shift module [1], then do these steps:

(a) Lightly apply hydraulic fluid, D00153 to the new packings [7].

(b) Install the packings [7] and unions [8] on the elevator feel shift module [1].

SUBTASK 27-31-20-420-004

(5) Connect the hydraulic lines [4] and hydraulic line [6] to the elevator feel shift module [1].

NOTE: Apply a layer of hydraulic fluid to the hydraulic fittings before you install the hydraulic lines.

SUBTASK 27-31-20-420-007

(6) Tighten the B-nuts on the hydraulic lines [4] to 270 ±14 in-lb (31 ±2 N·m).

SUBTASK 27-31-20-420-008

(7) Tighten the B-nut on the hydraulic line [6] to 170 ±9 in-lb (19 ±1 N·m).

SUBTASK 27-31-20-720-001

(8) Do this task: Elevator Feel Shift Module - Test, TASK 27-31-20-740-801.

SUBTASK 27-31-20-720-002

(9) Do this task: Feel Force System - Test, TASK 27-31-00-700-813.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-20-860-005

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2

SUBTASK 27-31-20-860-006

(2) Put the SYSTEM A FLIGHT CONTROL SHUTOFF and the SYSTEM B FLIGHT CONTROL SHUTOFF switches on the P5 forward overhead panel to the ON position.

SUBTASK 27-31-20-860-007

(3) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the NORMAL position.

SUBTASK 27-31-20-410-001

(4) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL SHIFT MODULE - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) A test of the elevator feel shift module

TASK 27-31-20-740-801

2. Elevator Feel Shift Module - Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Make sure that the two Stall Management Yaw Damper (SMYD) computers are installed for this test.

NOTE: The Stall Management Yaw Damper Computer P/N 285A1010-4 or subsequent is necessary for this test.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-31-20-760-005

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT
C	10	C01676	ELEVATOR FEEL LIMIT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	13	C00311	INDICATOR MASTER DIM BUS 1
E	14	C00316	INDICATOR MASTER DIM SECT 4

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SUBTASK 27-31-20-420-005

WARNING	MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-31-20-410-002

(3) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Elevator Feel Shift Module Test

SUBTASK 27-31-20-700-001

(1) Do a test of the Elevator Feel Shift Module (EFSM) with the SMYD number 1 energized:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

(b) Push the ON/OFF button on the BITE panel on the front of SMYD number 1.

1) Make sure that EXISTING FAULTS? shows on the display.

(c) Push the down arrow button until OTHER FUNCTIONS? shows on the display.

(d) Push the YES button on the BITE panel on the front of SMYD number 1.

1) Make sure that SYSTEM CONFIG? shows on the display.

(e) Push the down arrow button until SET OUTPUTS? shows on the display.

(f) Push the YES button on the BITE panel on the front of SMYD number 1.

1) Make sure that SS CMD? shows on the display.

(g) Push the YES button on the BITE panel on the front of SMYD number 1.

NOTE: SS ACTIVATE will show on the display, and then REMOVE CMD? will show on the display.

1) Make sure that the Captain's control column shakes.

2) After a minimum of 60 seconds, make sure that the FEEL DIFF PRESS light on the P5 forward overhead panel does not come on.

3) Make sure that CMD REMOVED shows on the display after the Captain's control column stops shaking.

(h) Push the MENU button on the BITE panel on the front of SMYD number 1.

1) Make sure that SS CMD? shows on the display.

(i) Push the NO button on the BITE panel on the front of SMYD number 1.

1) Make sure that SS CMD & EFS CMD? shows on the display.

(j) Push the YES button on the BITE panel on the front of SMYD number 1.

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1) Make sure that SS & EFS ACTIVATE shows on the display before REMOVE CMD shows on the display.
2) Make sure that the Captain's control column shakes.
3) Make sure that these lights come on and stay on after a minimum of 20 to 60 seconds:
   a) Left and right MASTER CAUTION lights on the P7 glareshield panel
   b) FEEL DIFF PRESS light on the P5 forward overhead panel.
4) Make sure that CMD REMOVED shows on the display after the Captain's control column stops shaking.

   NOTE: The FEEL DIFF PRESS light must go off.

(k) Push the master caution PUSH TO RESET on the P7 glareshield panel.
   1) Make sure that these lights go off:
      a) Left MASTER CAUTION light on the P7 glareshield panel
      b) Right MASTER CAUTION light on the P7 glareshield panel.

(l) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

(m) Push the ON/OFF button on the BITE panel on the front of SMYD number 1.

SUBTASK 27-31-20-700-002

(2) Do a test of the Elevator Feel Shift Module (EFSM) with the SMYD number 2 energized:

(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

(b) Push the ON/OFF button on the BITE panel on the front of SMYD number 2.
   1) Make sure that EXISTING FAULTS? shows on the display.

(c) Push the down arrow button until OTHER FUNCTIONS? shows on the display.

(d) Push the YES button on the BITE panel on the front of SMYD number 2.
   1) Make sure that SYSTEM CONFIG? shows on the display.

(e) Push the down arrow button until SET OUTPUTS? shows on the display.

(f) Push the YES button on the BITE panel on the front of SMYD number 2.
   1) Make sure that SS CMD? shows on the display.

(g) Push the YES button on the BITE panel on the front of SMYD number 2.

   NOTE: SS ACTIVATE will show on the display, and then REMOVE CMD? will show on the display.

   1) Make sure that the First Officer's control column shakes.
   2) After a minimum of 60 seconds, make sure that the FEEL DIFF PRESS light on the P5 forward overhead does not come on.
   3) Make sure that CMD REMOVED shows on the display after the First Officer's control column stops shaking.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Push the MENU button on the BITE panel on the front of SMYD number 2.

1) Make sure that SS CMD? shows on the display.

(i) Push the NO button on the BITE panel on the front of SMYD number 2.

1) Make sure that SS CMD & EFS CMD? shows on the display.

(j) Push the YES button on the BITE panel on the front of SMYD number 2.

1) Make sure that SS & EFS ACTIVATE shows on the display before REMOVE CMD shows on the display.

2) Make sure that the First Officer's control column shakes.

3) Make sure that these lights come on and stay on after a minimum of 20 to 60 seconds:

a) Left and right MASTER CAUTION lights on the P7 glareshield panel

b) FEEL DIFF PRESS light on the P5-3 forward overhead panel.

4) Make sure that CMD REMOVED shows on the display after the First Officer's control column stops shaking.

NOTE: The FEEL DIFF PRESS light must go off.

(k) Push the master caution PUSH TO RESET on the P7 glareshield panel.

1) Make sure that these lights go off:

a) Left MASTER CAUTION light on the P7 glareshield panel

b) Right MASTER CAUTION light on the P7 glareshield panel.

(l) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

(m) Push the ON/OFF button on the BITE panel on the front of SMYD number 2.

SUBTASK 27-31-20-700-003

(3) Do a test of the Elevator Feel Shift Module (EFSM) with the SMYD number 1 and the SMYD number 2 energized:

(a) Do the steps to SMYD number 1 and SMYD number 2 at the same time.

(b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

(c) Push the ON/OFF button on the BITE panel that is on the front of each SMYD.

1) Make sure that EXISTING FAULTS? shows on each of the two displays.

(d) Push the down arrow button on each SMYD until OTHER FUNCTIONS? shows on each of the two displays.

(e) Push the YES button on the BITE panel that is on the front of each SMYD.

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1) Make sure that SYSTEM CONFIG? shows on each of the two displays.

(f) Push the down arrow button on each SMYD until SET OUTPUTS? shows on each of the two displays.

(g) Push the YES button on the BITE panel that is on the front of each SMYD.

1) Make sure that SS CMD? shows on each of the two displays.

(h) Push the YES button on the BITE panel that is on the front of each SMYD.

NOTE: SS ACTIVATE will show on the two displays, and then REMOVE CMD? will show on the two displays.

1) Make sure that the Captain's and First Officer's control columns shake.

2) After a minimum of 60 seconds, make sure that the FEEL DIFF PRESS light on the P5 forward overhead panel does not come on.

3) Make sure that CMD REMOVED shows on each of the two displays after the two control columns stop shaking.

(i) Push the MENU button on the BITE panel that is on the front of each SMYD.

1) Make sure that SS CMD? shows on each of the two displays.

(j) Push the NO button on the BITE panel that is on the front of each SMYD.

1) Make sure that SS CMD & EFS CMD? shows on each of the two displays.

(k) Push the YES button on the BITE panel that is on the front of each SMYD.

1) Make sure that SS & EFS ACTIVATE shows on each of the two displays before REMOVE CMD shows on each of the two displays.

2) Make sure that the Captain's and First Officer's control columns shake.

3) Make sure that these lights come on and stay on after a minimum of 20 to 60 seconds:

a) Left and right MASTER CAUTION lights on the P7 glareshield panel

b) FEEL DIFF PRESS light on the P5-3 forward overhead panel.

4) Make sure that CMD REMOVED shows on each of the two displays after the two control columns stop shaking.

NOTE: The FEEL DIFF PRESS light should go off.

(l) Push the master caution PUSH TO RESET on the P7 glareshield panel.

1) Make sure that these lights go off:

a) Left MASTER CAUTION light on the P7 glareshield panel

b) Right MASTER CAUTION light on the P7 glareshield panel.

(m) Push the ON/OFF button on the BITE panel that is on the front of each SMYD.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-20-860-008

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-20-410-003

(2) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

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END OF TASK

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ELEVATOR TAB - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator tab

(2) An installation of the elevator tab.

B. This procedure is applicable to the left and right elevator tabs.

TASK 27-31-31-000-801

2. Elevator Tab Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-000-801	Elevator and Tab Control System - Deactivation (P/B 201)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-990-810	Figure: Stabilizer Trim Jackscrew Setting (P/B 501)
27-31-00-990-813	Figure: Elevator Tab Adjustment (P/B 501)
27-31-00-990-818	Figure: Elevator Tab Fixture Bar Installation (P/B 501)
27-31-32-200-802	Elevator Tab Freeplay - Check (P/B 601)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205

C. Location Zones

Zone	Area
316	APU Compartment - Right
334	Left Horizontal Stabilizer - Elevator
335	Left Horizontal Stabilizer - Tip
344	Right Horizontal Stabilizer - Elevator
345	Right Horizontal Stabilizer - Tip

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-31-31-860-006

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-31-040-001

(2) Do this task: Elevator and Tab Control System - Deactivation, TASK 27-31-00-000-801.

SUBTASK 27-31-31-820-001

(3) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-31-010-001

(4) Remove these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-31-010-002

(5) For the left elevator tab pushrods, remove this access panel:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

SUBTASK 27-31-31-010-003

(6) For the right elevator tab pushrods, remove this access panel:

Number	Name/Location
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-31-480-001

(7) Use the bar, SPL-1677, to set the “B” dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (Figure 27-31-00-990-810).

(a) Make sure to protect wire bundles when the bar, SPL-1677, is used.

SUBTASK 27-31-31-220-001

(8) Measure and record the elevator tab [22] position (Figure 27-31-00-990-818):

NOTE: Measuring and recording the elevator tab position before the elevator tab removal may improve the manual reversion success rate, if the elevator tab needs to be adjusted after installation. The elevator tab position can be measured with the elevator tab rigging bar, SPL-10345, installed on the third elevator tab hinge (from inboard).

(a) If the same elevator tab [22] will be re-installed, do these steps before the elevator tab [22] removal:

1) Make sure that the elevator tab [22] meets the freeplay limits.

a) To do a check of the freeplay limits, do this task: Elevator Tab Freeplay - Check, TASK 27-31-32-200-802.

(b) Push the elevator trailing edge up by hand (Figure 27-31-00-990-813).

(c) While the elevator trailing edge is moved down, align the projected center of the elevator trailing edge with the index mark within ± 0.04 in. (1.0 mm), or less.

1) Measure and record the elevator tab [22] position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the distance between the left elevator tab [22] and elevator tab rigging bar, SPL-10345, is within 0.25 in. (6.35 mm) - 0.47 in. (11.94 mm).

3) Make sure that the distance between the right elevator tab [22] and elevator tab rigging bar, SPL-10345, is within 0.25 in. (6.35 mm) - 0.47 in. (11.94 mm).

SUBTASK 27-31-31-480-002

(9) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the aft control quadrant (Figure 401).

F. Elevator Tab Removal

SUBTASK 27-31-31-020-001

(1) Remove the bolts [24] from the access panel [23] to get access to the elevator tab pushrods [25].

SUBTASK 27-31-31-020-002

(2) Remove the elevator tab [22]:

(a) Remove the pins [48], nuts [30], washers [31], bushings [32], and bolts [33] from the elevator tab [22] and elevator tab pushrods [25].

1) Discard the pins [48].

(b) Hold the elevator tab [22] while the elevator tab [22] is disconnected from the elevator [21].

1) For the hinge 1 (inboard hinge), remove the pin [44], nut [45], washers [43], bushing [42], washer [41], and bolt [40].

a) Discard the pin [44].

2) For the hinge 2 (inboard hinge), remove pin [44], nut [45], washers [47], bushings [42], washer [41], and bolt [46].

3) For the hinges 3, 4, 5, and 6 (outboard hinges), remove the pins [44], nuts [45], washers [47], bushings [42], washers [41], and bolts [46].

a) Discard the pins [44].

CAUTION DO NOT LET THE BONDING JUMPERS HOLD THE WEIGHT OF THE ELEVATOR TAB ASSEMBLY. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE BONDING JUMPERS.

4) Remove the nut [26], washers [27], and bolt [29] to disconnect the bonding jumper [28] from the elevator [21].

5) Remove the nut [34], washers [35], and bolt [37] to disconnect the bonding jumper [36] from the elevator [21].

(c) Remove the elevator tab [22].

SUBTASK 27-31-31-020-004

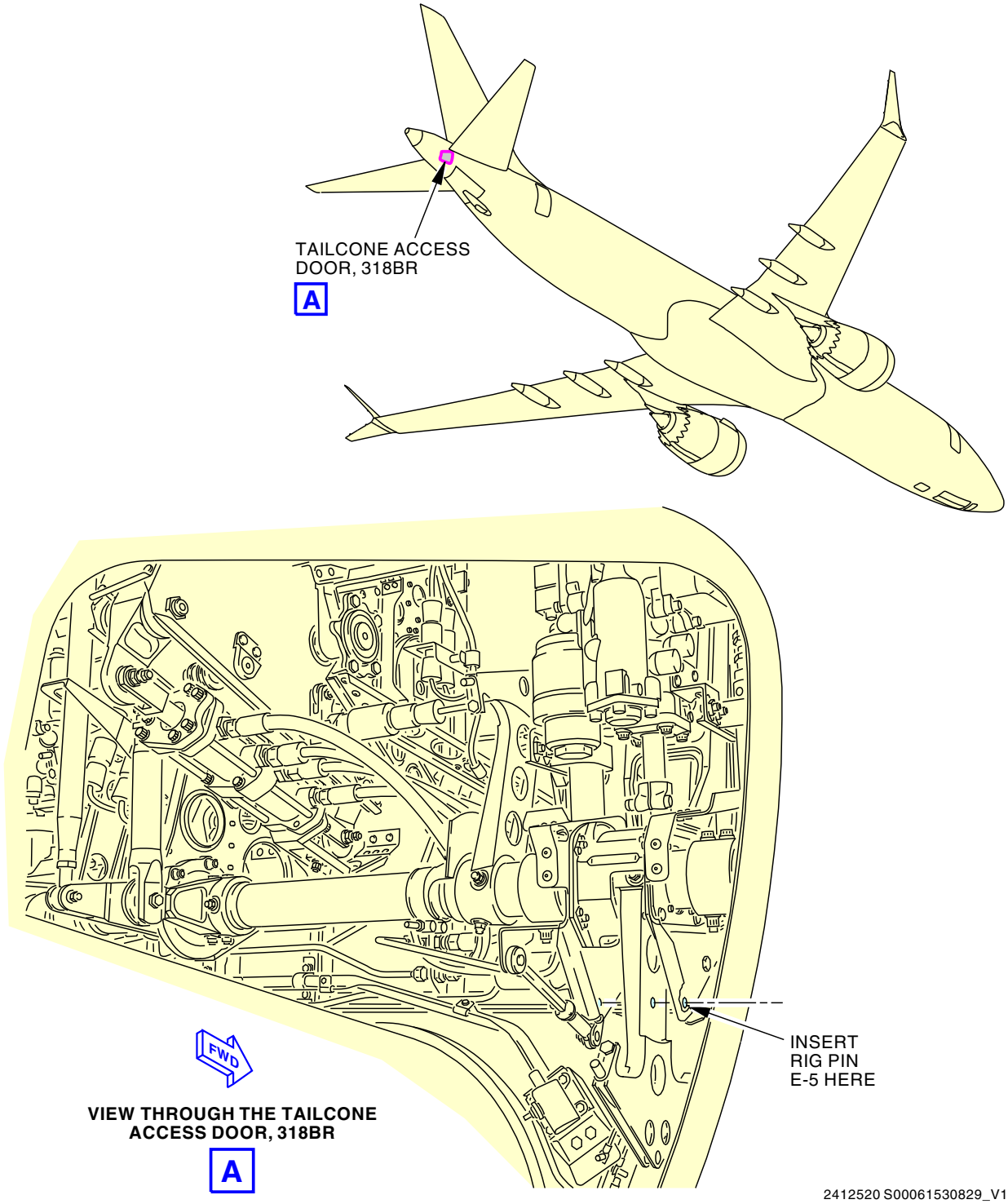
(3) If it is necessary to remove the bonding jumper [28] or bonding jumper [36] from the elevator tab [22], do these steps:

(a) Remove the nut [49], washers [50], bolt [51] to disconnect the bonding jumper [36] from the elevator tab [22].

(b) Remove the nut [52], washers [53], and bolt [54] to disconnect the bonding jumper [28] from the elevator tab [22].

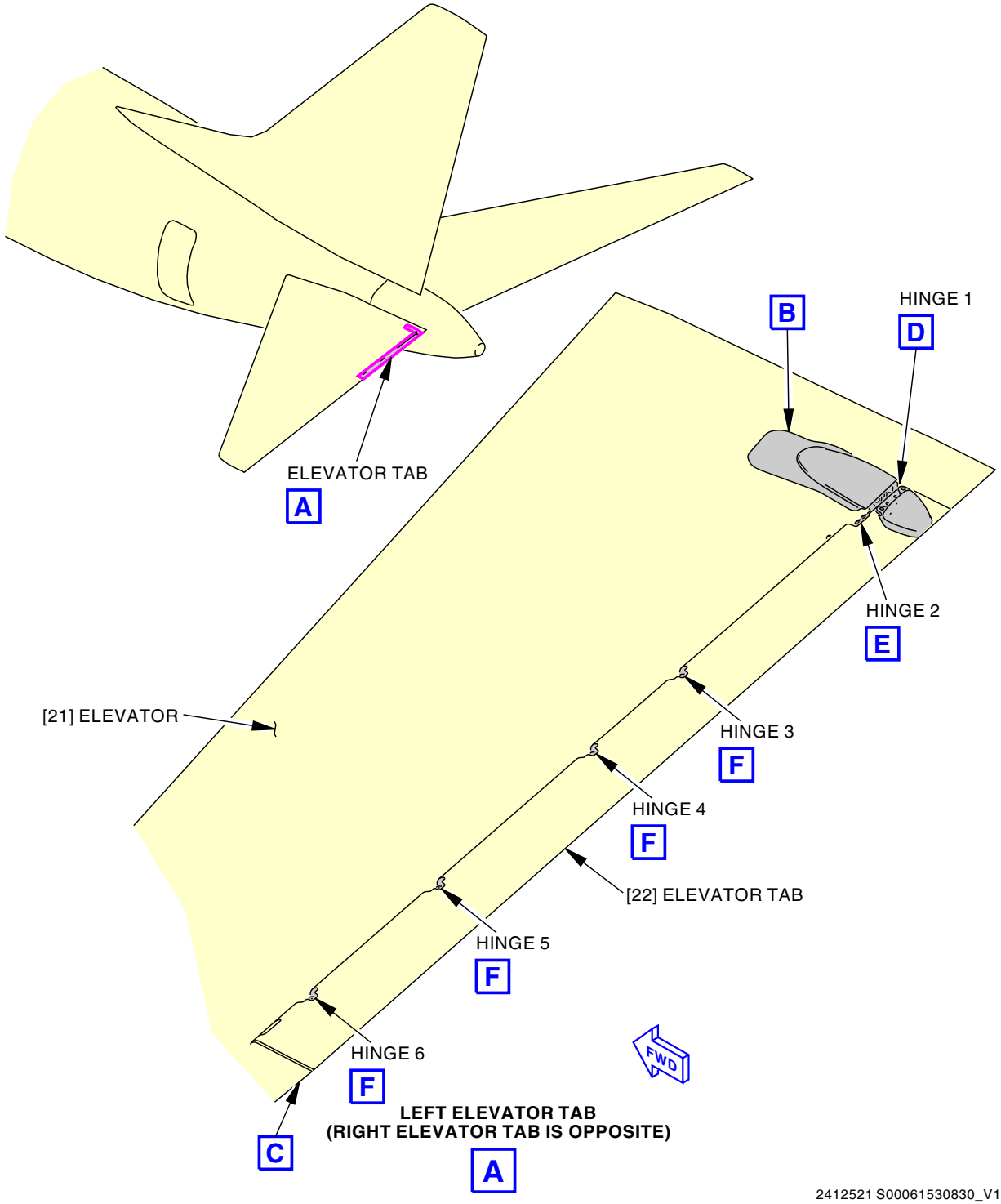
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



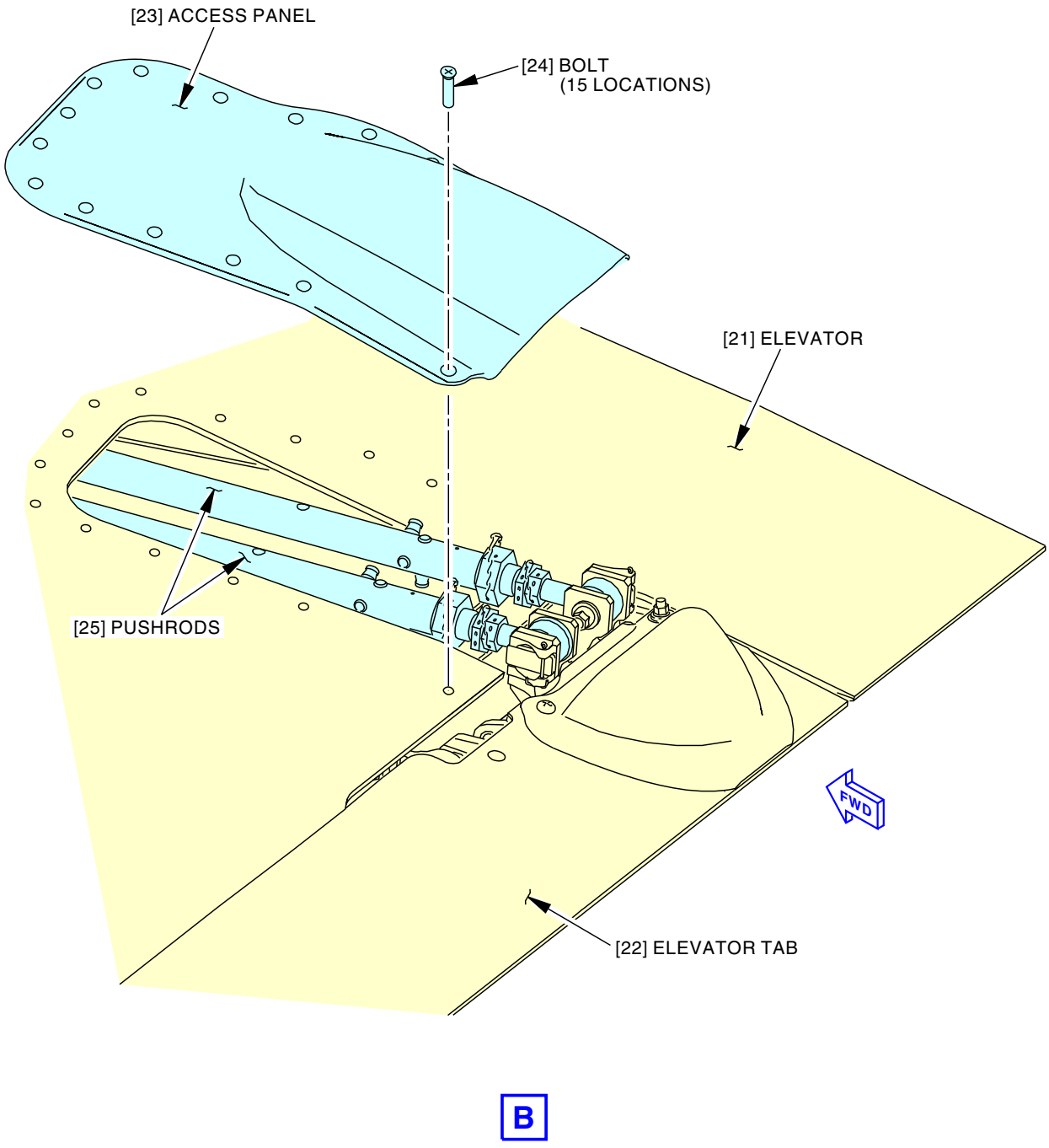
Elevator Rig Pin Installation
Figure 401/27-31-31-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Installation
Figure 402/27-31-31-990-802 (Sheet 1 of 5)

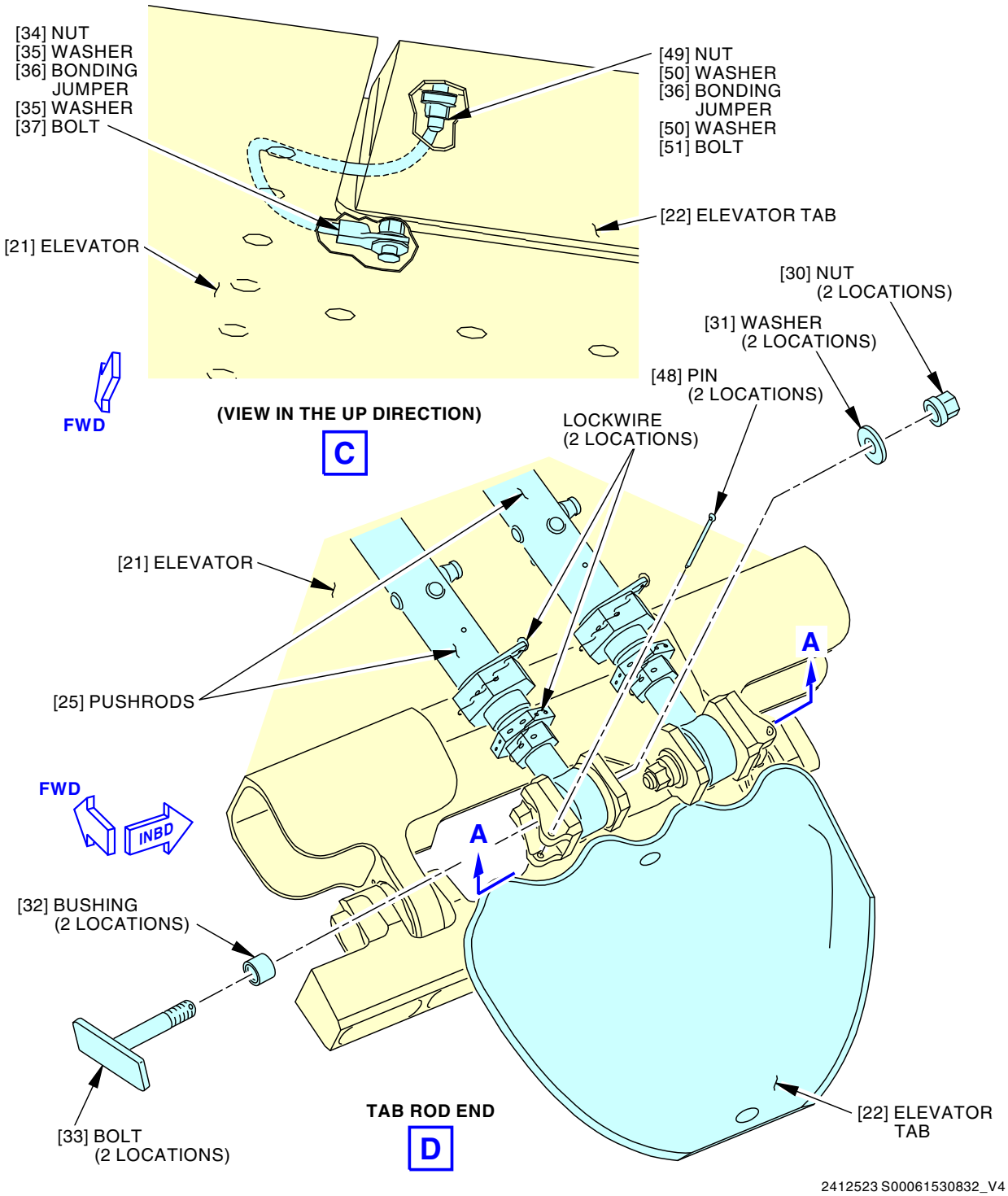
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412522 S00061530831_V2

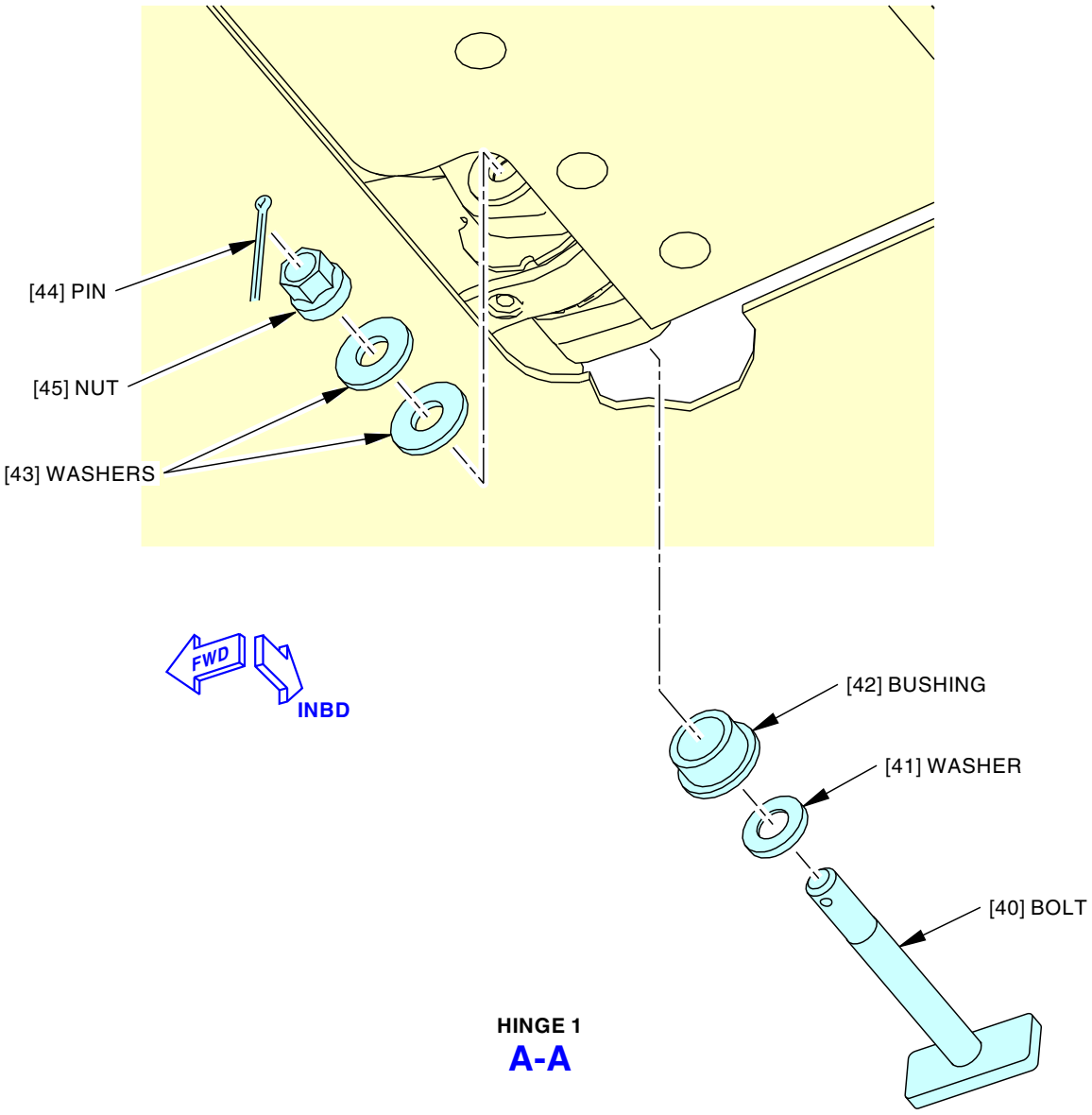
Elevator Tab Installation
Figure 402/27-31-31-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



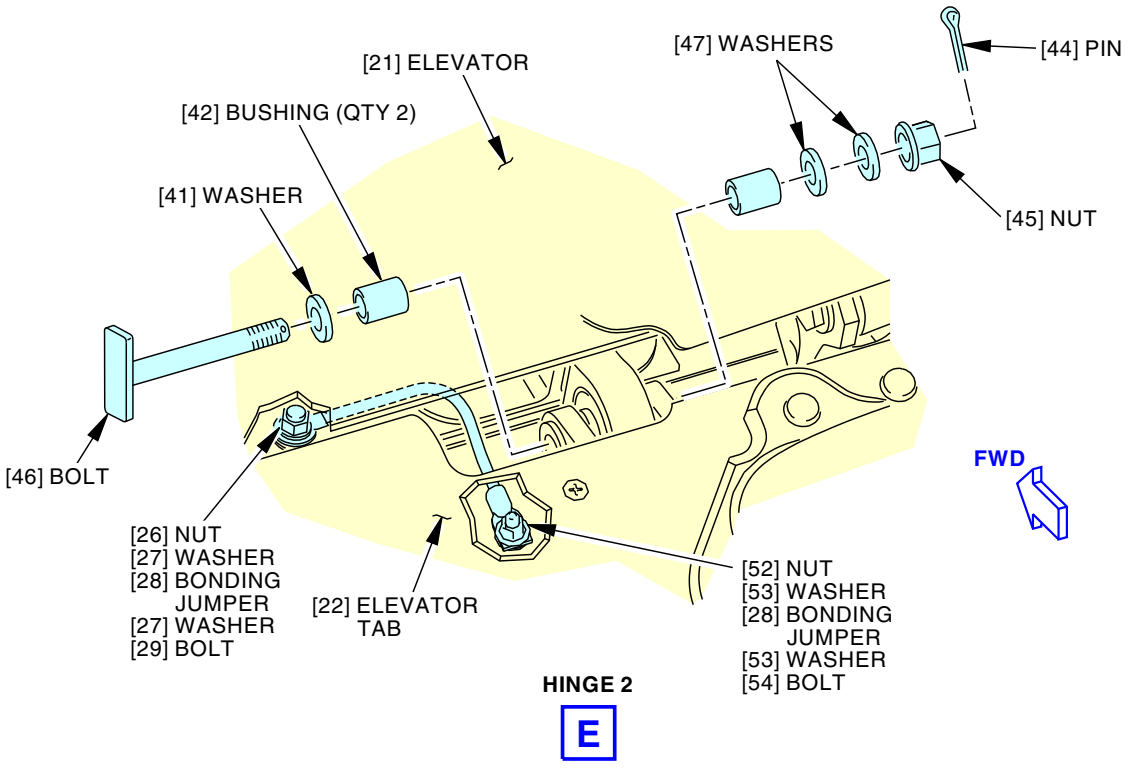
Elevator Tab Installation
Figure 402/27-31-31-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



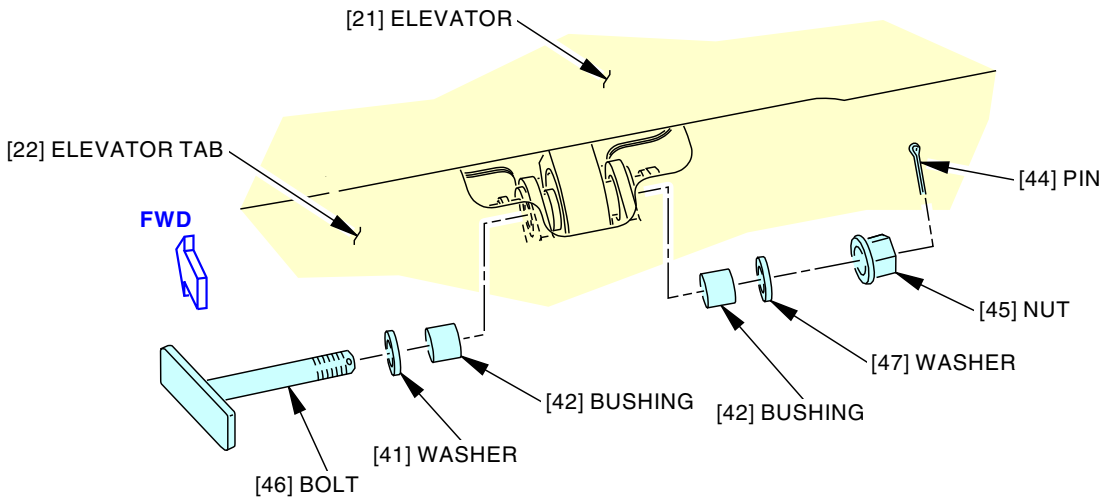
Elevator Tab Installation
Figure 402/27-31-31-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HINGE 2

E



HINGE 3
(HINGES 4, 5, AND 6 ARE EQUIVALENT)

F

2412524 S00061530833_V2

Elevator Tab Installation
Figure 402/27-31-31-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-31-400-801

3. Elevator Tab Installation

(Figure 401, Figure 402)

A. References

Reference	Title
12-22-31-640-802	Elevator Tab Hinge Lubrication (P/B 301)
27-31-00-400-801	Elevator and Tab Control System - Activation (P/B 201)
27-31-00-700-803	Elevator Surface Friction and Balance - Test (P/B 501)
27-31-00-700-807	Elevator Tab Linkage - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS
SRM 51-60-06	ELEVATOR TAB BALANCE PROCEDURE
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES
SWPM 20-20-10 Paragraph 4.C	Category 1 Unsealed and Category 6 Fillet Sealed Pre-Installed Ground Stud Assembly

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00767	Sealant - Fuel Tank	BMS5-45
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
D50004	Compound - Antiseize	BMS3-28

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Elevator tab	27-31-31-01-070	SIA ALL
30	Nut	27-31-34-01-085	SIA ALL
		27-31-34-02-085	SIA ALL
44	Pin	27-31-31-01-025	SIA ALL
45	Nut	27-31-31-01-055	SIA ALL
48	Pin	27-31-34-01-035	SIA ALL
		27-31-34-02-035	SIA ALL

E. Location Zones

Zone	Area
316	APU Compartment - Right
334	Left Horizontal Stabilizer - Elevator
335	Left Horizontal Stabilizer - Tip
344	Right Horizontal Stabilizer - Elevator
345	Right Horizontal Stabilizer - Tip

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

G. Prepare for the Installation

SUBTASK 27-31-31-860-003

(1) Examine the data plate on the elevator tab [22] for the necessary number of the tab adjust weights (SRM SUBJECT 51-60-06).

SUBTASK 27-31-31-860-004

(2) Make sure that the elevator [21] has the correct number of the tab adjust weights.

(a) Add or remove weights on the elevator balance panels as applicable.

H. Elevator Tab Installation

SUBTASK 27-31-31-020-003

(1) Install the elevator tab [22] (Figure 402):

(a) If the bonding jumper [36] was removed from the elevator tab [22], do these steps:

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the elevator tab [22], nut [49], washers [50], bonding jumper [36], and bolt [51].

2) Install the bolt [51], washers [50], bonding jumper [36], and nut [49].

3) Tighten the nut [49] to 33 in-lb (3.7 N·m) - 40 in-lb (4.5 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Measure the electrical resistance between the bonding jumper [36] and bolt [51] (SWPM 20-20-00).
   a) Use a non-intrinsically safe bonding meter, COM-614.
   b) Make sure that the electrical bonding resistance is 0.0015 ohm (1.5 milliohm) or less.
5) Apply a fillet seal with sealant, A00247, or sealant, A00767, to cover the nut [49], washers [50], and bonding jumper [36] (SWPM 20-20-10 Paragraph 4.C).
   a) Do not apply sealant, A00247, or sealant, A00767, to the head side of the bolt.

(b) If the bonding jumper [28] was removed from the elevator tab [22], do these steps:
1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the elevator tab [22], nut [52], washers [53], bonding jumper [28], and bolt [54].
2) Install the bolt [54], washers [53], bonding jumper [28], and nut [52].
3) Tighten the nut [52] to 26 in-lb (2.9 N·m) - 30 in-lb (3.4 N·m).
4) Measure the electrical resistance between the bonding jumper [28] and bolt [54] (SWPM 20-20-00).
   a) Use a non-intrinsically safe bonding meter, COM-614.
   b) Make sure that the electrical bonding resistance is 0.0015 ohm (1.5 milliohm) or less.
5) Apply a fillet seal with sealant, A00247, or sealant, A00767, to cover the nut [52], washers [53], and bonding jumper [28] (SWPM 20-20-10 Paragraph 4.C).
   a) Do not apply sealant, A00247, or sealant, A00767, to the head side of the bolt.

(c) Put the elevator tab [22] near its position behind the elevator [21].

CAUTION DO NOT LET THE BONDING JUMPERS HOLD THE WEIGHT OF THE ELEVATOR TAB ASSEMBLY. IF YOU DO, YOU CAN CAUSE DAMAGE TO THE BONDING JUMPERS.

(d) Connect the bonding jumper [28] to the elevator [21]:
1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the elevator [21], nut [26], washers [27], bonding jumper [28], and bolt [29].
2) Install the bolt [29], washers [27], and nut [26] to attach the bonding jumper [28] to the elevator [21].
   a) Install the head of the bolt [29] on outside surface.
   b) Tighten the nut [26] to a torque tool setpoint of 30 in-lb (3.4 N·m).
3) Measure the electrical resistance between the bonding jumper [28] and bolt [29] (SWPM 20-20-00).
   a) Use a non-intrinsically safe bonding meter, COM-614.
   b) Make sure that the electrical bonding resistance is 0.015 ohm (15.0 milliohm) or less.
4) Apply a fillet seal with sealant, A00247, to the cover the nut [26], washers [27], bonding jumper [28], and end of the bolt [29] (SWPM 20-20-10 Paragraph 4.C).
   a) Do not apply sealant, A00247, to the head side of the bolt.

(e) Connect the bonding jumper [36] to the elevator [21]:

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1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the elevator [21], nut [34], washers [35], bonding jumper [36], and bolt [37].
2) Install the bolt [37], washers [35], and nut [34] to attach the bonding jumper [36] to the elevator [21].
   a) Install the head of the bolt [37] on outside surface.
   b) Tighten the nut [34] to a torque tool setpoint of 30 in-lb (3.4 N·m).
3) Measure the electrical resistance between terminal of the bonding jumper [36] and bolt [37] (SWPM 20-20-00).
   a) Use a non-intrinsically safe bonding meter, COM-614.
   b) Make sure that the electrical bonding resistance is 0.015 ohm (15.0 milliohm) or less.
4) Apply a fillet seal with sealant, A00247, to the nut [34], washers [35], bonding jumper [28], and end of the bolt [37] (SWPM 20-20-10 Paragraph 4.C).
   a) Do not apply sealant, A00247, to the head side of the bolt.

SUBTASK 27-31-31-420-001

(2) Connect the elevator tab [22] to the elevator [21]:
   (a) If the nuts [30] or nuts [45] were loosened or removed, they need to be replaced with new nuts.

   NOTE: Use of new nuts [30] or new nuts [45] will make sure that they have the necessary run-on torque.

   (b) Apply compound, D50004, to the threads of the bolts [40] and bolts [46].
      1) Do not apply compound, D50004, to the unthreaded part of the bolts.
   (c) For the hinges 3, 4, 5 and 6 (outboard hinges), install the bolts [46], washers [41], bushings [42], washers [47], and new nuts [45].
      1) Tighten the nuts [45] to 95 ±5 in-lb (10.7 ±0.6 N·m).
      2) Install the new pin [44] in the end of the bolts [46].
   (d) For hinge 2 (inboard hinge), install the bolt [46], washer [41], bushings [42], washers [47], and new nut [45].
      1) Tighten the new nuts [45] to 95 ±5 in-lb (10.7 ±0.6 N·m).
      2) Install new pin [44] in the end of the bolt [46].
         a) If it is necessary, you can remove the washer [47] under the nut [45] to install pin [44].
   (e) For hinge 1 (inboard hinge), install the bolt [40], washer [41], bushing [42], washers [43], and new nut [45].
      1) Tighten the new nuts [45] to 95 ±5 in-lb (10.7 ±0.6 N·m).
      2) Install new pin [44] in the end of the bolt [40].
         a) If it is necessary, you can remove the washer [43] under the nut [45] to install the pin [44].
   (f) Apply a coating of compound, D50004, on the outside diameter of bolts [33].
   (g) Install the bolts [33], bushings [32], washers [31], and new nuts [30] to connect the tab pushrods [25] to the elevator tab [22].

   NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard.

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CAUTION TIGHTEN THE NEW NUTS CORRECTLY. IF YOU TIGHTEN THEM INCORRECTLY, THE PUSHRODS CAN BECOME DISCONNECTED. THIS CAN CAUSE DAMAGE TO THE ELEVATOR AND STABILIZER.

1) Tighten the new nuts [30] to 75 ±5 in-lb (8.5 ±0.6 N·m).
2) Install the new pins [48] in the anti-rotation boss at the head of the bolts [33].

SUBTASK 27-31-31-420-002

(3) Install the bolts [24] to connect the access panel [23] to the elevator [21].

SUBTASK 27-31-31-610-001

(4) Do this task: Elevator Tab Hinge Lubrication, TASK 12-22-31-640-802.

SUBTASK 27-31-31-080-001

(5) Remove rig pin E-5 of the rigging pin kit, SPL-1585, from the aft control quadrant.

SUBTASK 27-31-31-860-007

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-31-860-008

(7) Do this task: Elevator and Tab Control System - Activation, TASK 27-31-00-400-801.

SUBTASK 27-31-31-820-002

(8) Adjust the tab pushrods until you get the same elevator tab [22] that was measured before the elevator tab [22] removal (TASK 27-31-00-820-805).

I. Elevator Tab Installation Test

SUBTASK 27-31-31-710-001

(1) Do this task: Elevator Surface Friction and Balance - Test, TASK 27-31-00-700-803.

SUBTASK 27-31-31-710-002

(2) Do this task: Elevator Tab Linkage - Test, TASK 27-31-00-700-807.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-31-410-001

(1) Install these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-31-410-002

(2) For the left elevator tab pushrods, install this access panel:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

SUBTASK 27-31-31-410-003

(3) For the right elevator tab pushrods, install this access panel:

Number	Name/Location
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

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SUBTASK 27-31-31-390-001

(4) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-31-710-003

(5) If it is necessary, do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

——— END OF TASK ———

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ELEVATOR AND ELEVATOR TAB FREEPLAY - INSPECTION/CHECK

1. General

A. This procedure contains tasks to inspect the following for freeplay:

(1) The elevator output torque tube buss linkage.

(2) The elevator tab.

TASK 27-31-32-200-801

2. Elevator Output Torque Tube Buss Linkage Freeplay - Check

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to do a check of the elevator output torque tube buss linkage freeplay.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
STD-1278	Block - Loading, 1/8 Inch Thick, 3 Inch by 3 Inch Wood or Fiberglass Block with Pad to Prevent Damage to the Skin.

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D. Consumable Materials

Reference	Description	Specification
G50393	Tape - Adhesive, Label	BAC5307 Type III Polyester (Mylar)

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Prepare for the Check

SUBTASK 27-31-32-860-001

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Pressurize the elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-32-860-002

(2) Make sure the flaps are in the full up position (TASK 27-51-00-860-801).

SUBTASK 27-31-32-010-001

(3) Remove this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-32-860-003

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 39.17 ±0.01 in. (994.92 ±0.26 mm) or use the trim system to move the stabilizer to 4 units of trim (Figure 601).

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SUBTASK 27-31-32-860-004

(5) Operate the elevator in the full travel 6 times.

SUBTASK 27-31-32-860-005

(6) Make sure the control column is in the neutral position.

H. Elevator Output Torque Tube Buss Linkage Freeplay Check

SUBTASK 27-31-32-220-001

CAUTION DO NOT PUT A LOAD OF MORE THAN 65 POUNDS (290 NEWTONS) ON THE ELEVATORS AT ONE TIME. IF THE LOAD IS TOO HEAVY, IT CAN CAUSE DAMAGE TO THE ELEVATORS.

(1) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the OFF position.

(2) Make sure the FLT CONTROL B switch on the forward overhead panel, P5, is in the ON position.

(3) Put a piece of adhesive tape, G50393, over the right elevator index plate [1].

(4) Use a block, STD-1278, and force gauge, COM-1557, to apply a force of 15 ±1 lbf (67 ±5 N) to the right elevator trailing edge in the down direction and release slowly.

(a) Apply the force approximately 0.5 in. (12.7 mm) forward of the trailing edge and 1 in. (25 mm) outboard of the inboard edge of the elevator (next to the tailcone).

(b) Slowly remove the force from the elevator.

(c) Make a mark of the right elevator position on the tape.

(5) Use a block, STD-1278, and force gauge, COM-1557, to apply a force of 10 ±1 lbf (44 ±5 N) to right elevator trailing edge in the up direction.

(a) Apply the force approximately 0.5 in. (12.7 mm) forward of the trailing edge and 1 in. (25 mm) outboard of the inboard edge of the elevator (next to the tailcone).

(b) Hold the force of 10 ±1 lbf (44 ±5 N) on the elevator.

(c) Make a mark of the right elevator position on the tape.

(d) Slowly remove the force from the elevator.

(6) Make sure that the total up and down freeplay of the right elevator is 0.21 in. (5.33 mm) or less.

(a) If the total up and down freeplay is more than 0.21 in. (5.33 mm), do a check of the torque tube and the torque tube crank arm bearing for excessive wear.

(7) Remove the tape.

(8) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the ON position.

(9) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the OFF position.

(10) Put a piece of tape over the left elevator index plate [1].

(11) Use a block, STD-1278, and force gauge, COM-1557, to apply a force of 15 ±1 lbf (67 ±5 N) to left elevator trailing edge in the down direction and release slowly.

(a) Apply the force approximately 0.5 in. (12.7 mm) forward of the trailing edge and 1 in. (25 mm) outboard of the inboard edge of the elevator (next to the tailcone).

(b) Slowly remove the force from the elevator.

(c) Make a mark of the left elevator position on the tape.

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(12) Use a block, STD-1278, and force gauge, COM-1557, to apply a force of10 ±1 lbf (44 ±5 N) to left elevator trailing edge in the up direction.

(a) Apply the force approximately 0.5 in. (12.7 mm) forward of the elevator trailing edge and 1 in. (25 mm) outboard of the inboard edge of the elevator (next to the tailcone).

(b) Hold the force of 10 ±1 lbf (44 ±5 N) on the elevator.

(c) Make a mark of the left elevator position on the tape.

(d) Slowly remove the force from the elevator.

(13) Make sure that the total up and down freeplay of the left elevator is 0.21 in. (5.33 mm) or less.

(a) If the total up and down freeplay is more than 0.21 in. (5.33 mm), do a check of the torque tube and the torque tube crank arm bearing for excessive wear.

(14) Remove the tape.

(15) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the ON position.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-32-860-006

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

SUBTASK 27-31-32-410-001

(2) Install this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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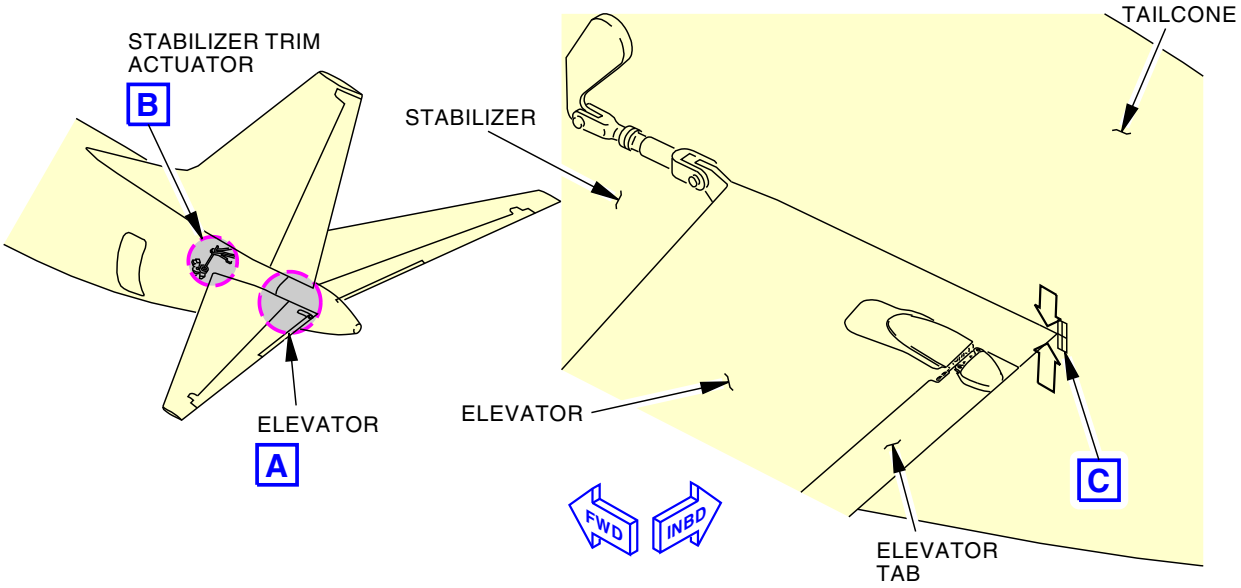
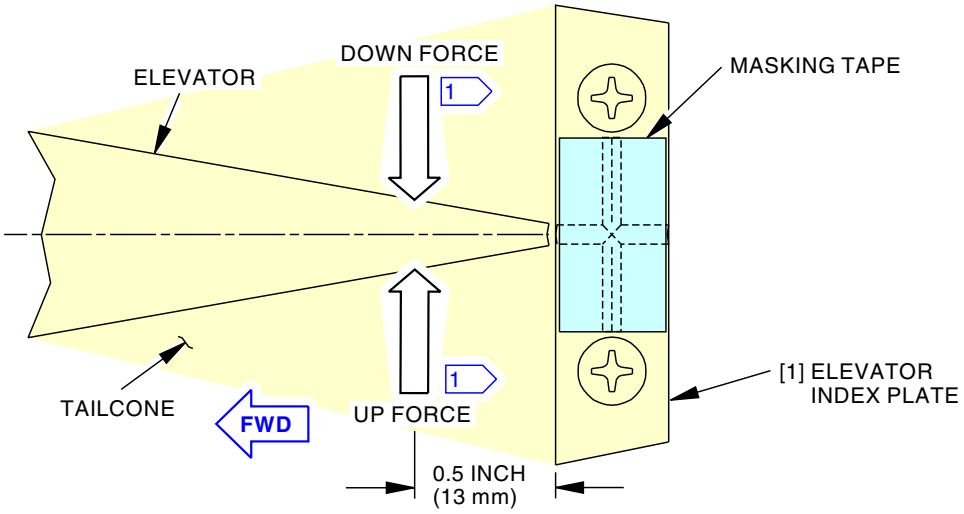


LEFT ELEVATOR
(RIGHT ELEVATOR IS OPPOSITE)

A



BUSS LINKAGE FREEPLAY

C

1 APPLY UP FORCE AND DOWN FORCE APPROXIMATELY 0.5 INCH (13 mm) FORWARD OF THE TRAILING EDGE AND 1 INCH (25 mm) OUTBOARD OF THE INBOARD EDGE OF THE ELEVATOR (NEXT TO THE TAILCONE).

2412526 S00061530839_V1

Elevator Output Torque Tube Buss Linkage Freeplay Inspection
Figure 601/27-31-32-990-801 (Sheet 1 of 2)

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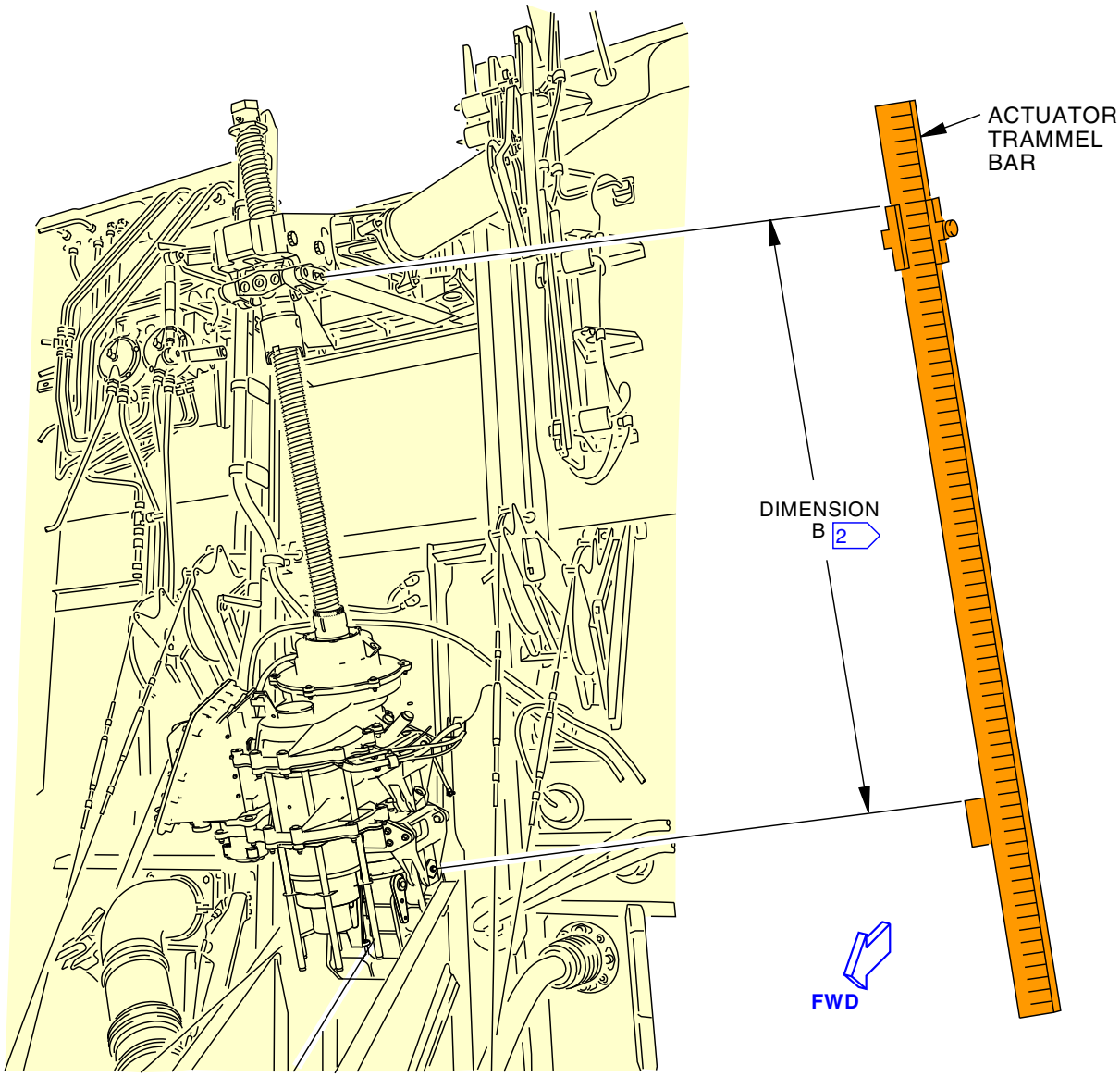

STABILIZER TRIM ACTUATOR

B

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES (4.0 PILOT UNITS).

1 THE DIMENSIONS B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS (CENTER OF GREASE FITTINGS).

2412525 S00061530838_V1

Elevator Output Torque Tube Buss Linkage Freeplay Inspection
Figure 601/27-31-32-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-CMR-02

TASK 27-31-32-200-802

3. Elevator Tab Freeplay - Check

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to do a check of the elevator tab trailing edge freeplay, the elevator tab hinge line axial freeplay, and the elevator tab hinge line radial freeplay.

(2) This check is applicable to the left and right side elevator tabs.

B. References

Reference	Title
12-22-31-640-802	Elevator Tab Hinge Lubrication (P/B 301)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
STD-1107	Gauge - Feeler, 0.0 - 0.5 Inch, Readable to 1/1000th
STD-1238	Indicator - Dial
STD-1279	Mount - Device, Mounting, Holds the Dial Indicator
STD-1303	Caliper - Dial

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D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Check

SUBTASK 27-31-32-860-007

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize the elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-32-860-008

(2) Make sure that the flaps are in the full up position (TASK 27-51-00-860-801).

SUBTASK 27-31-32-010-002

(3) Remove this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-32-860-009

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(4) Use the bar, SPL-1677, to set the "B" dimension at 39.17 ±0.01 in. (994.92 ±0.26 mm) or use the trim system to move the stabilizer to 4 units of trim (Figure 602).

SUBTASK 27-31-32-860-010

(5) Operate the elevator in the full travel 6 times.

SUBTASK 27-31-32-860-011

(6) Make sure that the control column is in the neutral position.

G. Elevator Tab Trailing Edge Freeplay Check

SUBTASK 27-31-32-220-002

(1) Do a check of the elevator tab trailing edge freeplay (Figure 602):

(a) Remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

(b) Make sure that the flaps are retracted to the full up position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that the stabilizer is set to 4.0 ± 0.5 units of trim.

CAUTION DO NOT USE MORE THAN HAND PRESSURE WHEN YOU INSTALL THE WOOD BLOCK. IF YOU USE MORE THAN HAND PRESSURE, YOU CAN CAUSE DAMAGE TO THE ELEVATOR OR TAIL CONE.

(d) Install a wood block between the inboard edge of the elevator and the tail cone to keep the elevator from moving (Figure 602).

1) Make sure that you cover the wood block with duct tape or equivalent so that you do not damage the paint of the elevator or tail cone.

WARNING DO NOT MOVE THE CONTROL COLUMNS WHILE THE MOUNTING PLATE IS IN ITS POSITION. MOVEMENT OF THE CONTROL COLUMNS CAN CAUSE INJURY TO PERSONNEL OR DAMAGE TO THE ELEVATOR.

CAUTION MAKE SURE THAT YOU INSTALL THE MOUNTING PLATE CORRECTLY. THE MOUNTING PLATE CAN CAUSE DAMAGE TO THE ELEVATOR IF YOU DO NOT INSTALL IT CORRECTLY.

(e) Attach a mounting plate to the elevator trailing edge forward of the elevator tab hinge 2.

1) If double-back tape is used to attach the mounting plate, make sure that it is not made of compressible foam.

2) Attach the mount, STD-1279, and the dial indicator, STD-1238, plunger on the top of the elevator tab, approximately 0.1 in. (3 mm) forward of the trailing edge of the elevator tab and within 0.5 in. (13 mm) of the inboard side of the hinge 2 centerline.

3) Adjust the dial indicator, STD-1238, to zero.

(f) Use a block and a force gauge, COM-1557, to push down on the top of the elevator tab with a force of 10.0 ±0.2 lbf (44.5 ±0.9 N).

1) Apply the force on the elevator tab at the trailing edge, as close as possible to the tab hinge 2 centerline.

2) Make a record of the travel shown on the dial indicator, STD-1238.

3) Slowly remove the force.

(g) Do not adjust the dial indicator, STD-1238.

(h) Push up on the bottom surface of the elevator tab with a force of 10.0 ±0.2 lbf (44.5 ±0.9 N), directly below the force applied before.

1) Make a record of the travel shown on the dial indicator, STD-1238.

2) Slowly remove the force.

(i) Make sure that the sum of the two travel records is 0.03 in. (0.76 mm) or less.

1) If the sum of the two travel records is more than 0.03 in. (0.76 mm), do a check of the hinges for excessive wear and replace if it is necessary.

(j) Remove the mount, STD-1279, and the dial indicator, STD-1238.

(k) Remove the mounting plate.

(l) If no other checks are necessary, remove the wood block from between the inboard edge of the elevator and the tail cone.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Elevator Tab Hinge Axial Freeplay Check

SUBTASK 27-31-32-220-003

(1) Do a check of the elevator tab hinge axial freeplay (Figure 602):

(a) Remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

(b) Make sure that the flaps are retracted to the full up position.

(c) Make sure that the stabilizer is set at 4.0 ± 0.5 units of trim.

CAUTION DO NOT USE MORE THAN HAND PRESSURE WHEN YOU INSTALL THE WOOD BLOCK. IF YOU USE MORE THAN HAND PRESSURE, YOU CAN CAUSE DAMAGE TO THE ELEVATOR OR TAIL CONE.

(d) Install a wood block between the inboard edge of the elevator and the tail cone to keep the elevator from moving (Figure 602).

1) Make sure that you cover the wood block with duct tape or equivalent so that you do not damage the paint of the elevator or tail cone.

(e) Do these steps to make sure that the axial play (inboard - outboard direction) of the tab is 0.036 in. (0.91 mm) or less.

1) Hold the elevator tab at the trailing edge and move it outboard with hand pressure.

2) Use a 0.0 - 0.5 Inch feeler gauge, STD-1107, or a dial caliper, STD-1303, to measure the clearance between the elevator and the outboard end of the elevator tab.

a) If it is necessary, insert a flat metal filler block between the elevator and the elevator tab to help in this measurement.

b) Make a record of the clearance dimension.

3) Hold the elevator tab at the trailing edge and move it inboard with hand pressure.

4) Measure the clearance between the elevator and the outboard end of the elevator tab.

a) Make a record of the clearance dimension.

5) Make sure that the difference between the two measured clearances, or the axial freeplay, is less than 0.036 in. (0.91 mm).

(f) If no other checks are necessary, remove the wood block from between the inboard edge of the elevator and the tail cone.

I. Elevator Tab Hinge Line Freeplay Check

SUBTASK 27-31-32-220-004

(1) Do a check of the elevator tab hinge line freeplay (Figure 602):

(a) If it is necessary, remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

(b) Make sure that the stabilizer is set at 4.0 ± 0.5 units of trim.

(c) Make sure that the flaps are retracted to the full up position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION DO NOT USE MORE THAN HAND PRESSURE WHEN YOU INSTALL THE WOOD BLOCK. IF YOU USE MORE THAN HAND PRESSURE, YOU CAN CAUSE DAMAGE TO THE ELEVATOR OR TAIL CONE.

(d) Install a wood block between the inboard edge of the elevator and the tail cone to keep the elevator from moving (Figure 602).

1) Make sure that you cover the wood block with duct tape or equivalent so that you do not damage the paint of the elevator or tail cone.

CAUTION MAKE SURE THAT YOU INSTALL THE MOUNTING PLATE CORRECTLY. THE MOUNTING PLATE CAN CAUSE DAMAGE TO THE ELEVATOR IF YOU DO NOT INSTALL IT CORRECTLY.

(e) Attach a mounting plate to the elevator trailing edge, forward of elevator tab hinge 3.

1) If double-back tape is used to attach the mounting plate, make sure that it is not made of compressible foam.

(f) Attach the mount, STD-1279, and the dial indicator, STD-1238, plunger on the elevator tab leading edge directly over the top of the tab hinge centerline (Figure 602).

(g) Adjust the dial indicator, STD-1238, to zero once there is contact with the elevator tab leading edge.

(h) Use a block and a force scale to apply a 10.0 ±0.5 lbf (44.5 ±2.2 N) in the up direction.

NOTE: The force is to be applied in line with the plunger on the bottom side of the tab leading edge.

(i) Make a record of the travel shown on the dial indicator, STD-1238.

(j) Slowly remove the force.

(k) Do not adjust the dial indicator, STD-1238.

(l) Use a block and a force scale to apply 10.0 ±0.5 lbf (44.5 ±2.2 N) in the down direction.

NOTE: The force is to be applied to the top side of the tab leading edge.

(m) Make a record of the travel shown on the dial indicator, STD-1238.

(n) Slowly remove the force.

(o) Make sure that the sum of the two travel records is 0.03 in. (0.76 mm) or less.

1) If the sum of the two travel records is more than 0.03 in. (0.76 mm), do a check of the hinges for excessive wear and replace if it is necessary.

(p) Move the mount, STD-1279, the dial indicator, STD-1238, and the mounting plate to the next hinge centerline.

(q) Repeat the above steps for the other three outboard tab hinges (hinges 4, 5, and 6).

(r) Remove the mount, STD-1279, and the dial indicator, STD-1238.

(s) Remove the mounting plate.

(t) Remove the wood block from between the inboard edge of the elevator and the tail cone.

SUBTASK 27-31-32-640-001

(2) Lubricate the elevator tab hinges (TASK 12-22-31-640-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-32-860-012

(1) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

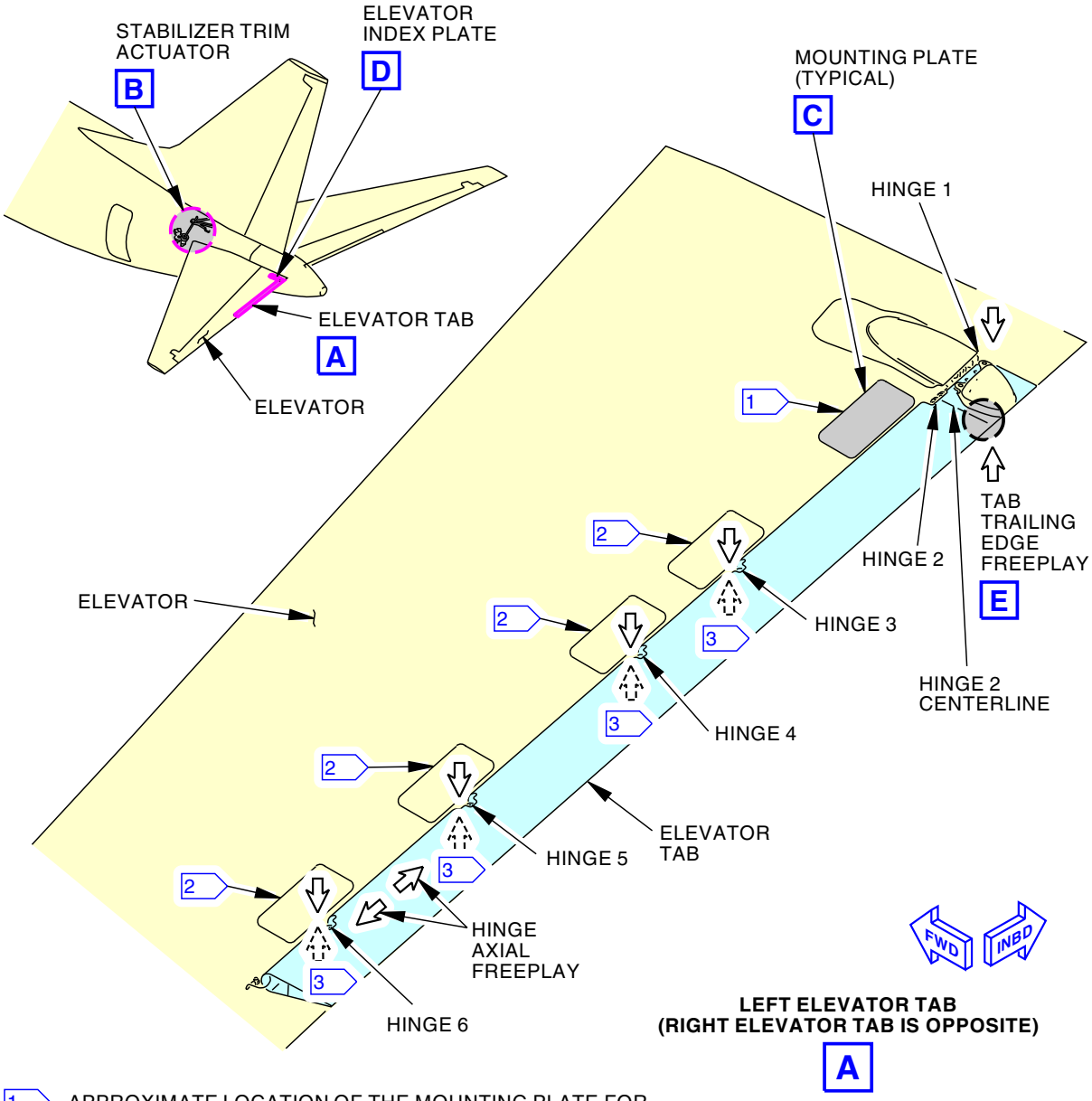
SUBTASK 27-31-32-410-002

(2) Install this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 APPROXIMATE LOCATION OF THE MOUNTING PLATE FOR THE ELEVATOR TAB TRAILING EDGE FREEPLAY.

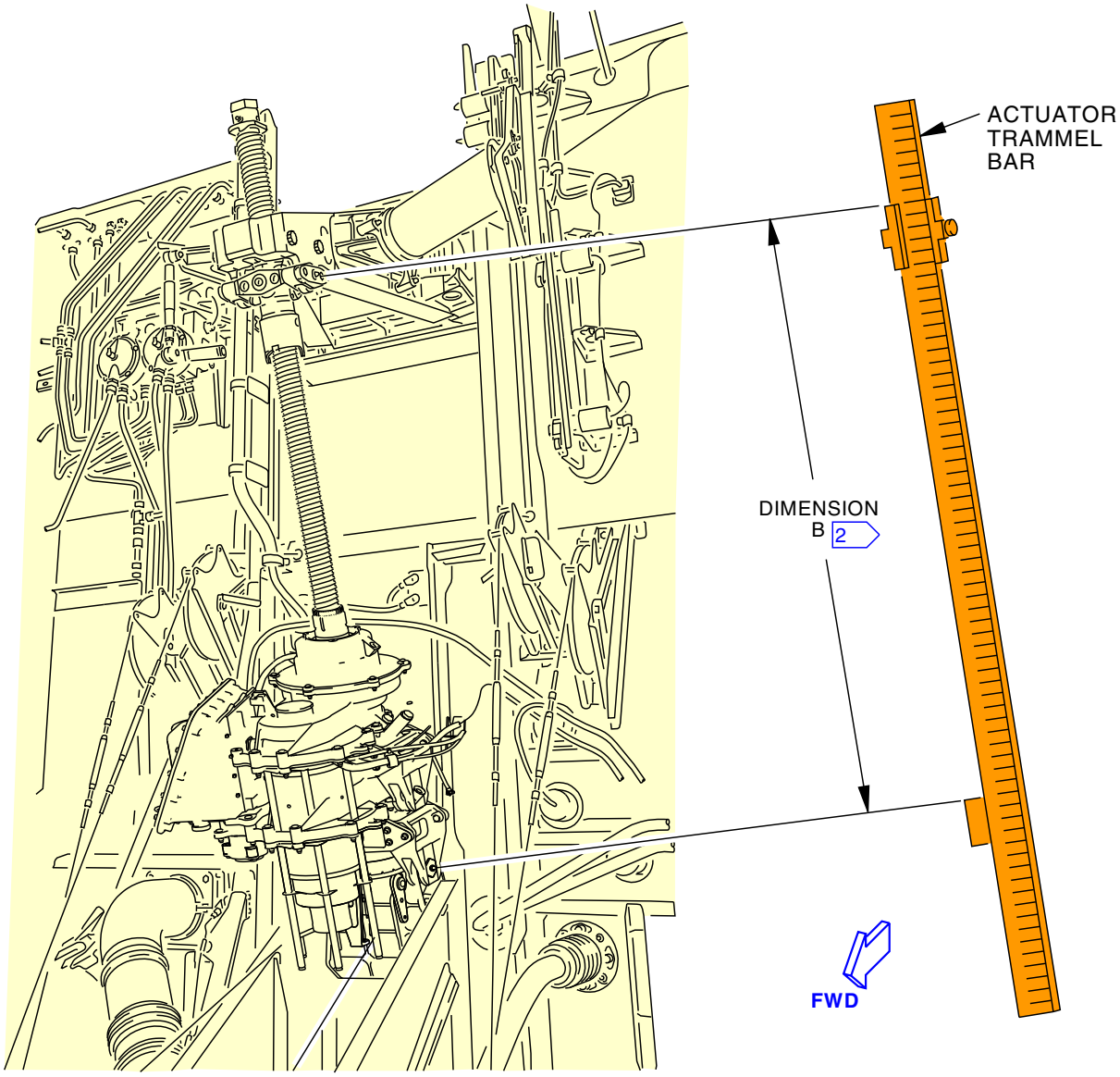
2 APPROXIMATE LOCATION OF THE MOUNTING PLATE FOR THE ELEVATOR TAB HINGE LINE FREEPLAY.

3 APPLY FORCE FOR TAB HINGE LINE FREEPLAY AT HINGES 3, 4, 5 AND 6, AS CLOSE TO THE HINGE LUG CENTERLINE, AS POSSIBLE.

2412527 S00061530841_V1

Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

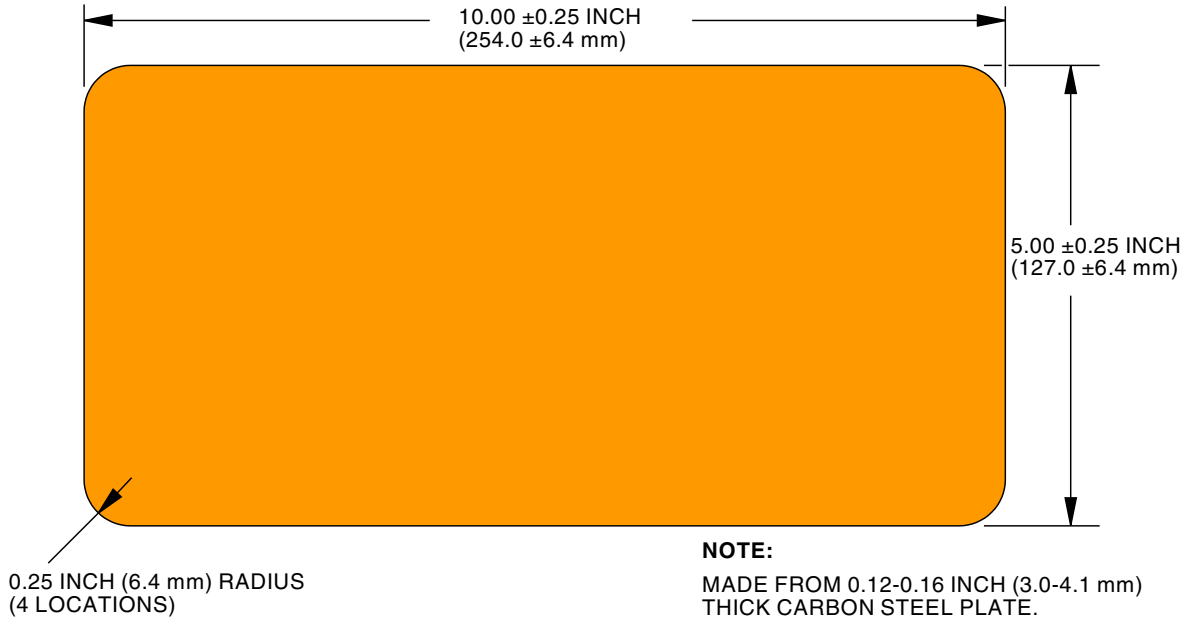
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES (4.0 PILOT UNITS).

4 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS (CENTER OF GREASE FITTINGS).

2412528 S00061530842_V1

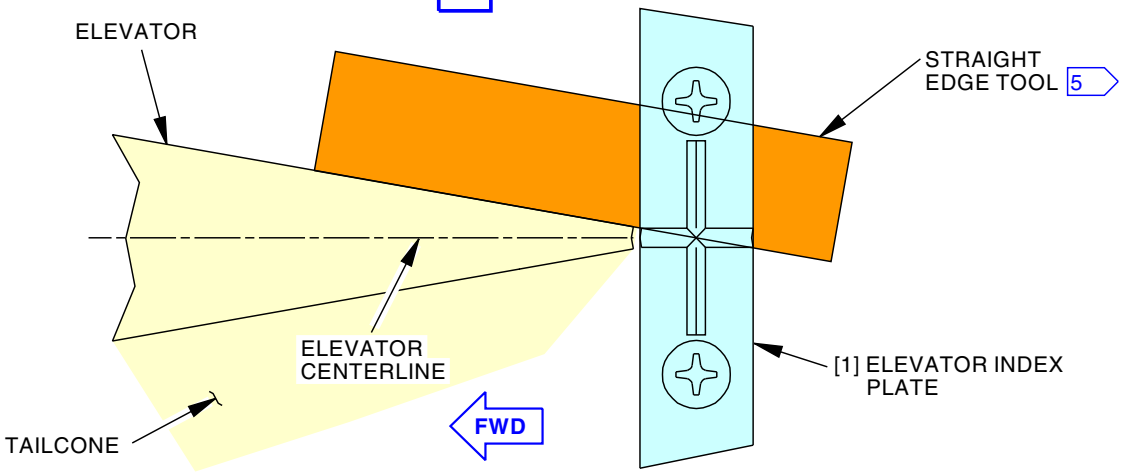
Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MOUNTING PLATE (TYPICAL)

C



ELEVATOR INDEX PLATE

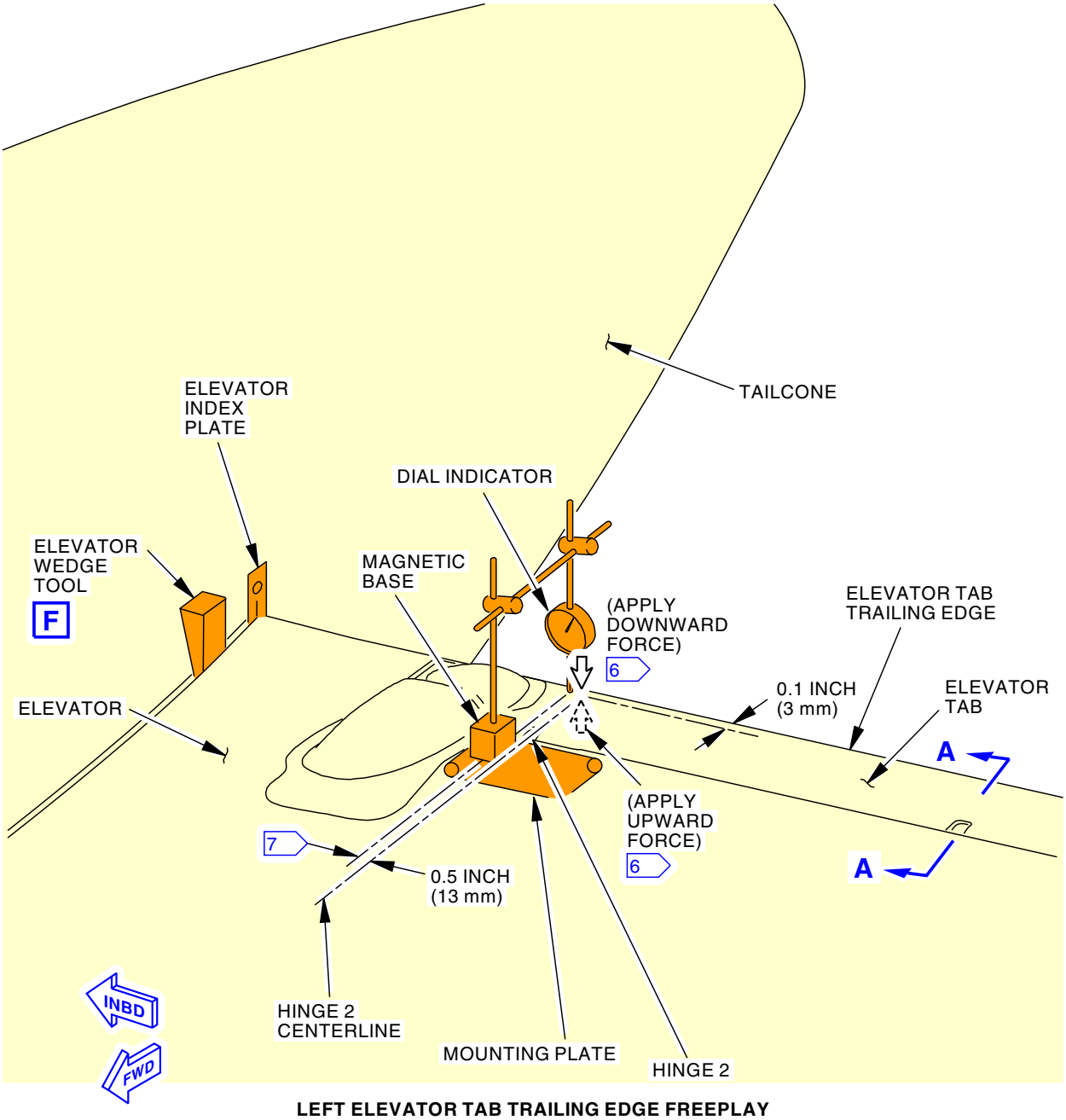
A

5 ELEVATOR IS AT THE NEUTRAL POSITION WHEN THE BOTTOM EDGE OF A STRAIGHT EDGE TOOL PLACED ON THE UPPER ELEVATOR SURFACE PASSES THROUGH THE MIDDLE OF THE ELEVATOR INDEX PLATE, AS SHOWN.

2412529 S00061530843_V1

Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT ELEVATOR TAB TRAILING EDGE FREEPLAY
(RIGHT ELEVATOR TAB IS OPPOSITE)

E

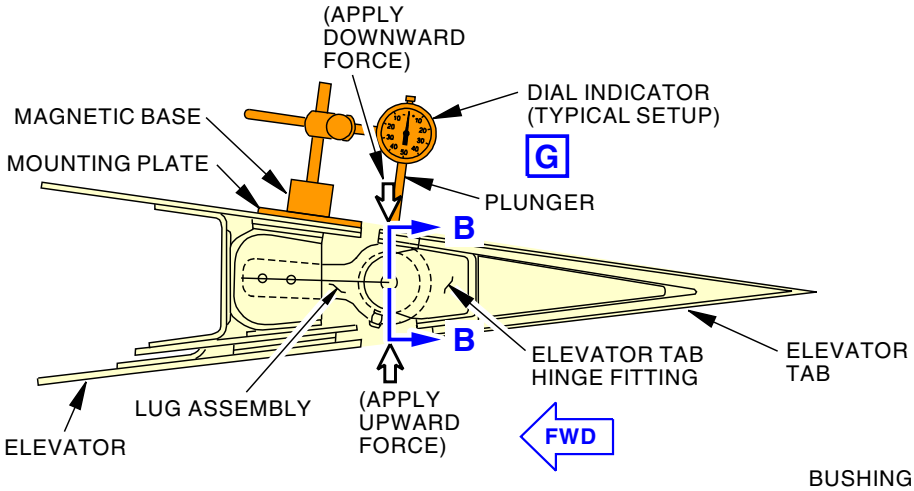
6 APPLY FORCE TO TAB WITHIN 0.1 INCH (3 mm) OF THE TRAILING EDGE OF THE TAB AND AS CLOSE AS POSSIBLE TO THE HINGE 2 CENTERLINE.

7 DIAL INDICATOR PLUNGER CENTERLINE WITHIN 0.5 INCH (13 mm) OF THE HINGE 2 CENTERLINE.

2412530 S00061530844_V1

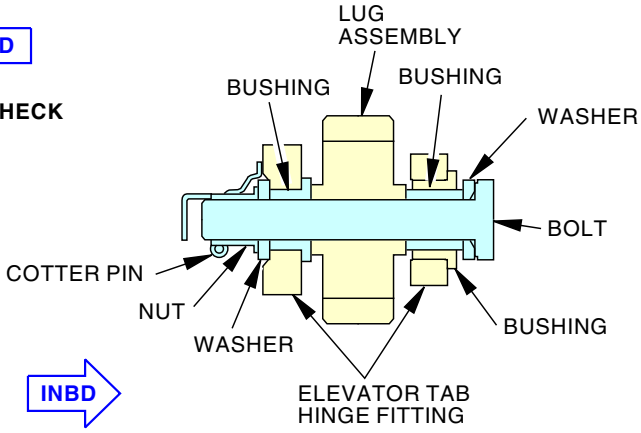
Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



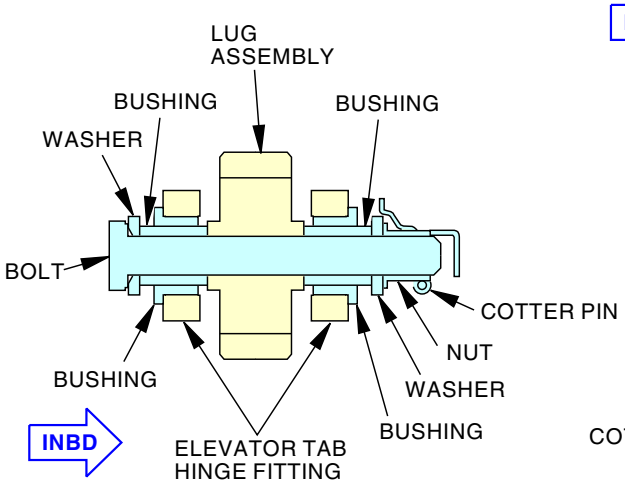
ELEVATOR TAB HINGE LINE FREEPLAY CHECK (TYPICAL ALL HINGES)

A-A



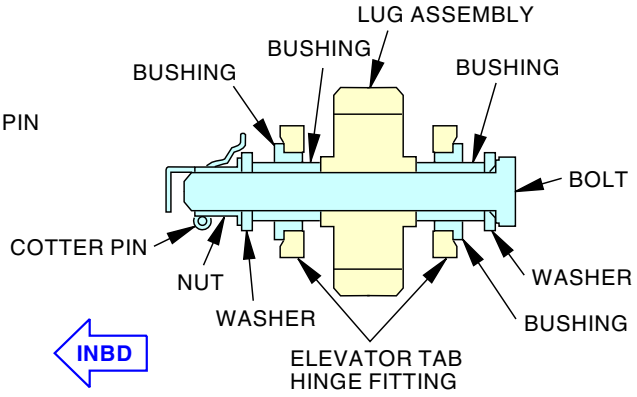
ELEVATOR TAB HINGE 1 ONLY (CLAMPED)

B-B



ELEVATOR TAB HINGE 2 ONLY

B-B



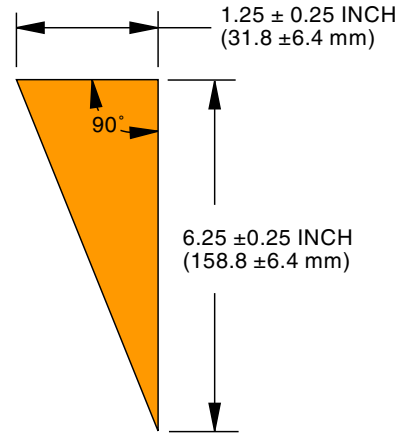
ELEVATOR TAB HINGES 3, 4, 5 AND 6

B-B

2412531 S00061530845_V2

Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



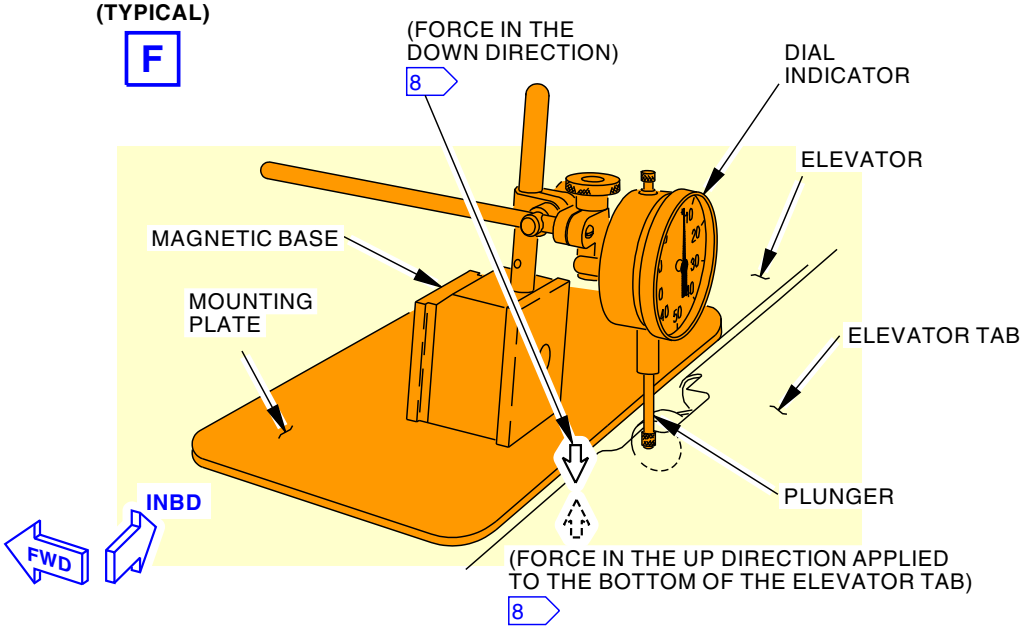
NOTE:

USE WOOD TO MAKE THE WEDGE TO THE APPROXIMATE DIMENSIONS SHOWN. COVER THE WEDGE WITH DUCT TAPE OR EQUIVALENT TO KEEP IT FROM DAMAGING THE PAINT.

APPLY WEDGE WITH HAND PRESSURE ONLY. IF YOU FORCE THE WEDGE, DAMAGE TO THE AIRPLANE STRUCTURE MAY OCCUR.

ELEVATOR WEDGE TOOL (TYPICAL)

F



ELEVATOR TAB HINGE LINE FREEPLAY CHECK (HINGES 3, 4, 5 AND 6) (FORCE IN THE UP AND DOWN DIRECTION)

G

8 APPLY THE UP AND DOWN FORCES AS CLOSE AS POSSIBLE TO THE AXIS OF THE DIAL INDICATOR PLUNGER.

2412532 S00061530846_V1

Elevator Tab Freeplay Check
Figure 602/27-31-32-990-802 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR TAB CONTROL MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator tab control mechanism

(2) An installation of the elevator tab control mechanism

(3) A removal of the tab pushrod

(4) An installation of the tab pushrod

(5) A removal of the elevator tab lock actuator

(6) An installation of the elevator tab lock actuator

(7) A removal of the elevator tab control mechanism springs

(8) An installation of the elevator tab control mechanism springs.

B. The elevator tab control mechanism is referred to as the "tab mechanism" in this procedure.

C. The tab mechanism includes the crank assembly and two tab pushrods.

D. This procedure is applicable to the left and right tab mechanisms.

TASK 27-31-34-000-801

2. Elevator Tab Control Mechanism - Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
27-31-41-000-801	Elevator Balance Panel - Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205
SPL-12558	Removal / Installation Equipment - Elevator Tab Mechanism Assy Part #: C27085-1 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Location Zones

Zone	Area
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

E. Prepare for the Removal

SUBTASK 27-31-34-860-001

(1) Remove pressure from the elevator hydraulic systems A and B, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-34-730-001

(2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-34-410-001

(3) Open this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-34-410-022

(4) Open the applicable access panels:

Number	Name/Location
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-34-860-002

CAUTION MAKE SURE THAT YOU ARE CAREFUL WITH THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE SHARP EDGES ON THE TRAMMEL BAR, SPL-1677 CAN CAUSE CHAFING OR DAMAGE TO THE WIRES.

(5) Use the trammel bar, SPL-1677, to set the “B” dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (TASK 27-31-00-820-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-34-700-001

(6) Measure and record the elevator tab [22] position in relation to the elevator [21].

NOTE: Measure and record the elevator tab position before you remove the tab to improve the manual reversion success rate, if the tab needs to be adjusted after installation. The elevator tab position can be measured with the elevator tab rigging bar, SPL-10345. It is installed on the third elevator tab hinge (from inboard).

(a) Manually push the elevator trailing edge up.

(b) While you move the elevator trailing edge down, align the projected center of the elevator trailing edge with the index mark within 0.00 ±0.04 in. (0.0 ±1.0 mm) (TASK 27-31-00-820-802).

1) Install the elevator tab rigging bar, SPL-10345 (TASK 27-31-00-820-805).

a) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge (from inboard).

<1> Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

b) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

c) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

d) Slide step gage FWD under elevator tab to obtain reading.

2) Measure and record the elevator tab [22] position.

3) Make sure that the distance between the left elevator tab [22] and elevator tab rigging bar, SPL-10345, is within 0.25 in. (6.35 mm) - 0.47 in. (11.94 mm).

4) Make sure that the distance between the right elevator tab [22] and elevator tab rigging bar, SPL-10345, is within 0.25 in. (6.35 mm) - 0.47 in. (11.94 mm).

SUBTASK 27-31-34-010-001

(7) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-34-010-020

(8) Open the applicable access panels:

(TASK 27-31-41-000-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-010-002

(9) Open the applicable access panels:

Number	Name/Location
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Elevator Tab Control Mechanism Removal

SUBTASK 27-31-34-020-001

(1) Disconnect the hydraulic line [31] from the elevator tab control mechanism [32].

SUBTASK 27-31-34-020-002

(2) Disconnect the electrical line clamp [30] from the elevator tab control mechanism [32].

SUBTASK 27-31-34-020-003

(3) Remove the elevator tab control mechanism [32], do these steps:

(a) Remove the screws [48] and washers [55] from the pin retainers [49].

1) Rotate the pin retainer [49] arms up.

(b) Remove the nut [52], washer [51], bushing [95], and pin assembly [40] that attach the elevator tab control mechanism [32] to the elevator [21].

(c) Remove the nuts [47], washers [46], spacers [54], and bolts [41] that attach the tab pushrods [29] to the elevator tab control mechanism [32].

(d) Remove the nut [45], washer [43], washer [94], and pin assembly [42] that attach the elevator tab control mechanism [32] to the elevator [21].

SIA 001-006

(e) Remove the nut [37], washer [36], nut [35], washer [34], bushing [60], bushing [38], bolt assembly [39], and pin [61] that attach the elevator tab control mechanism [32] to the horizontal stabilizer [33].

NOTE: For ease of removal of bushing [38] use the removal / installation equipment, SPL-12558.

(f) Discard the pin [61].

SIA 007-999

(g) Remove the nut [37], washer [36], nut [35], washer [34], bushing [60], bushing [38], bolt assembly [39], and safety cable that attach the elevator tab control mechanism [32] to the horizontal stabilizer [33].

NOTE: For ease of removal of bushing [38] use the removal / installation equipment, SPL-12558.

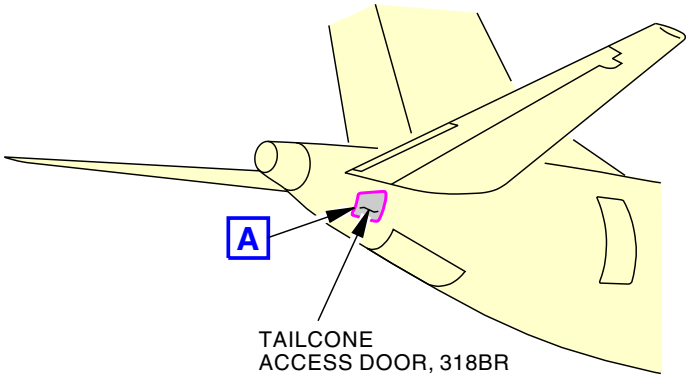
(h) Discard the safety cable.

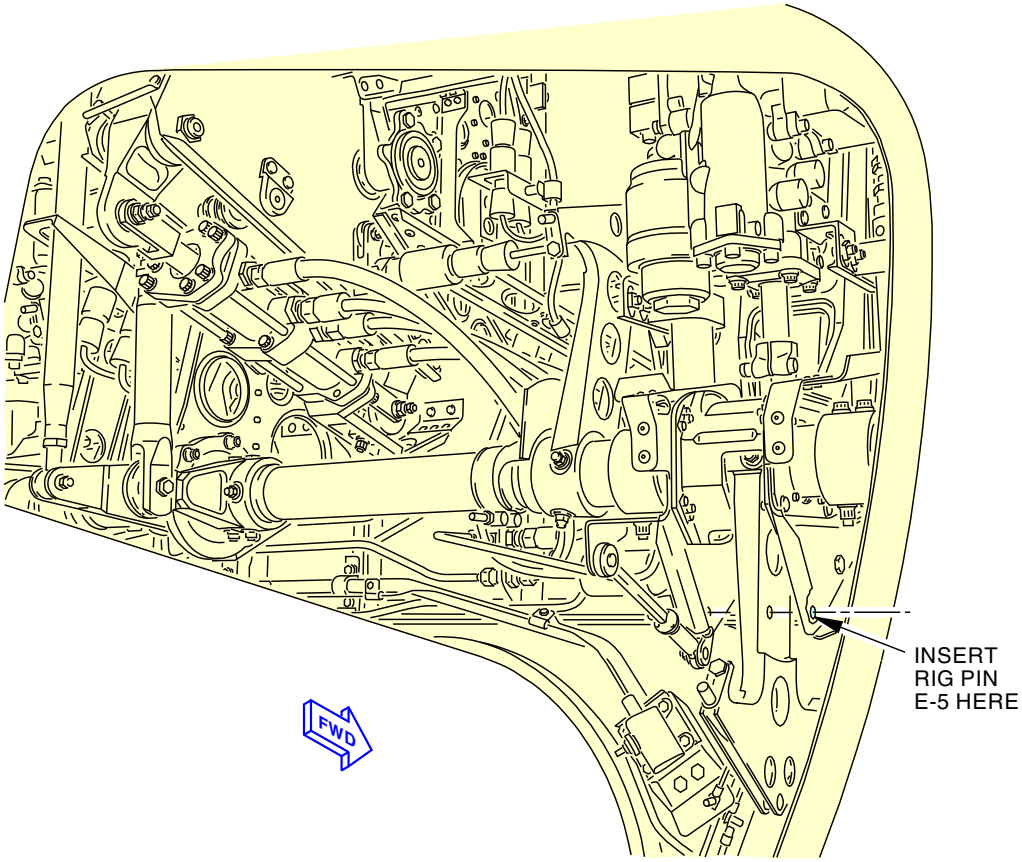
SIA ALL

(i) Remove the elevator tab control mechanism [32] from the airplane.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





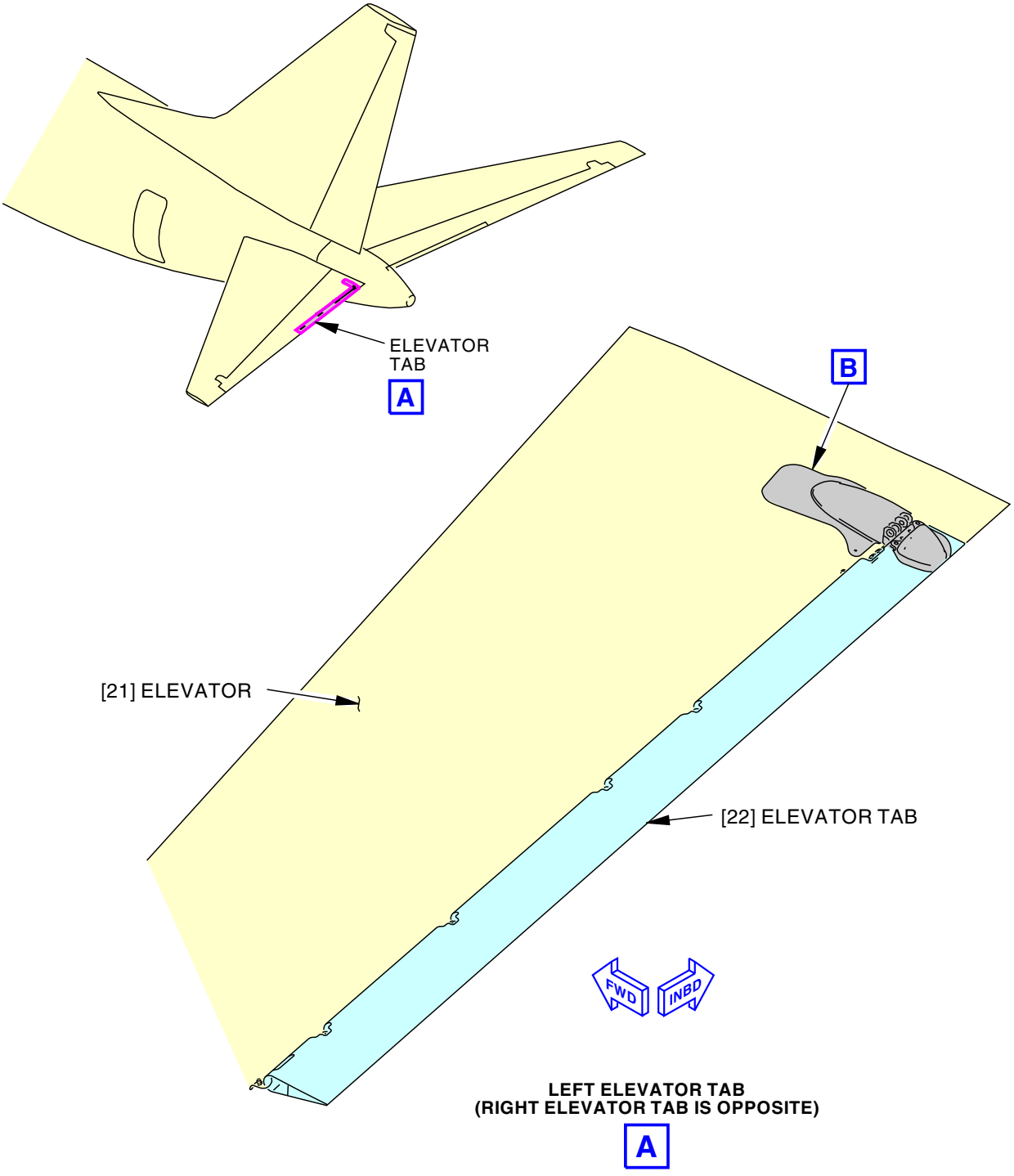
VIEW THROUGH THE TAILCONE ACCESS DOOR, 318BR

A

2412533 S00061530851_V3

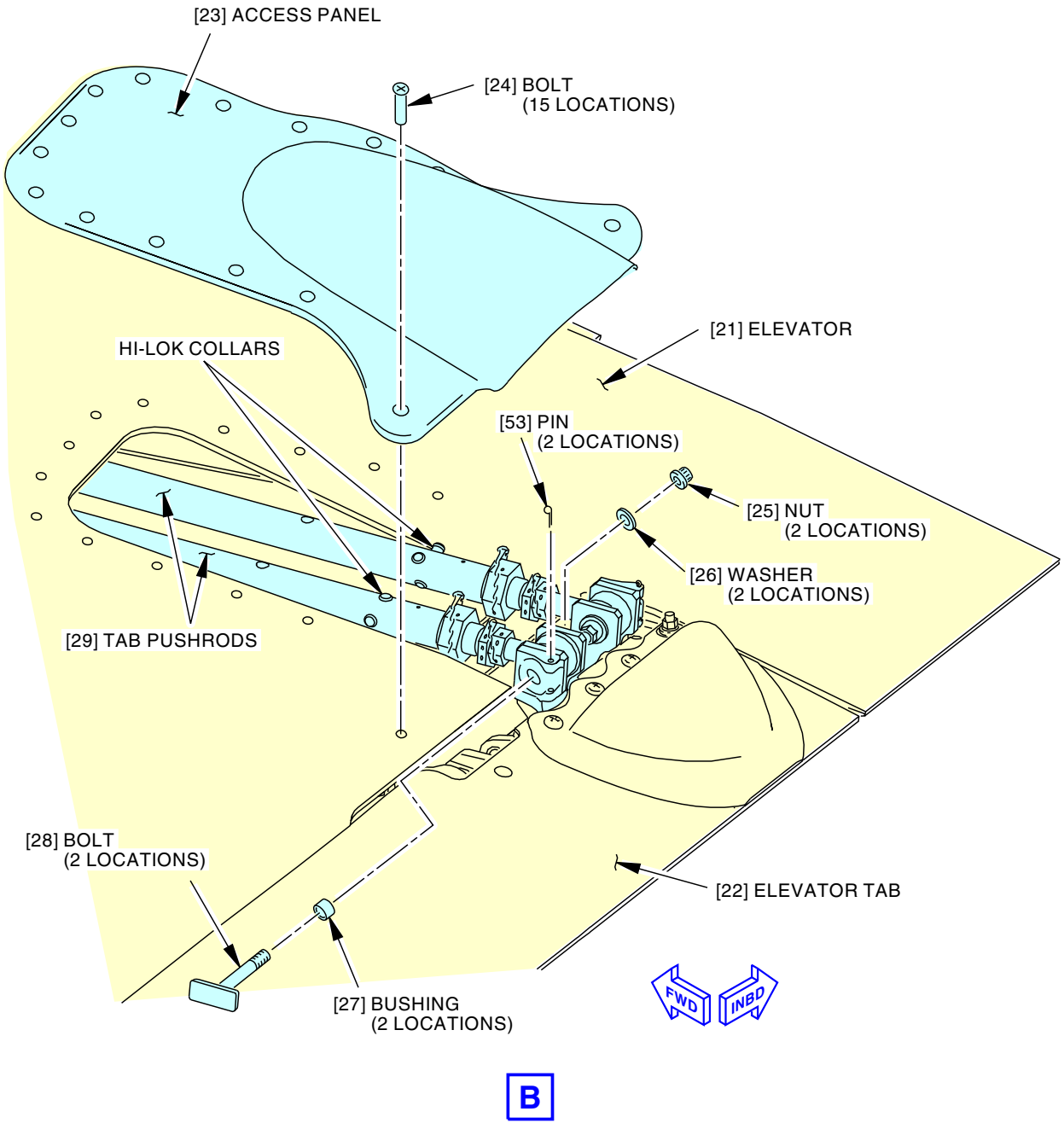
Elevator Aft Quadrant Rig Pin Installation
Figure 401/27-31-34-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



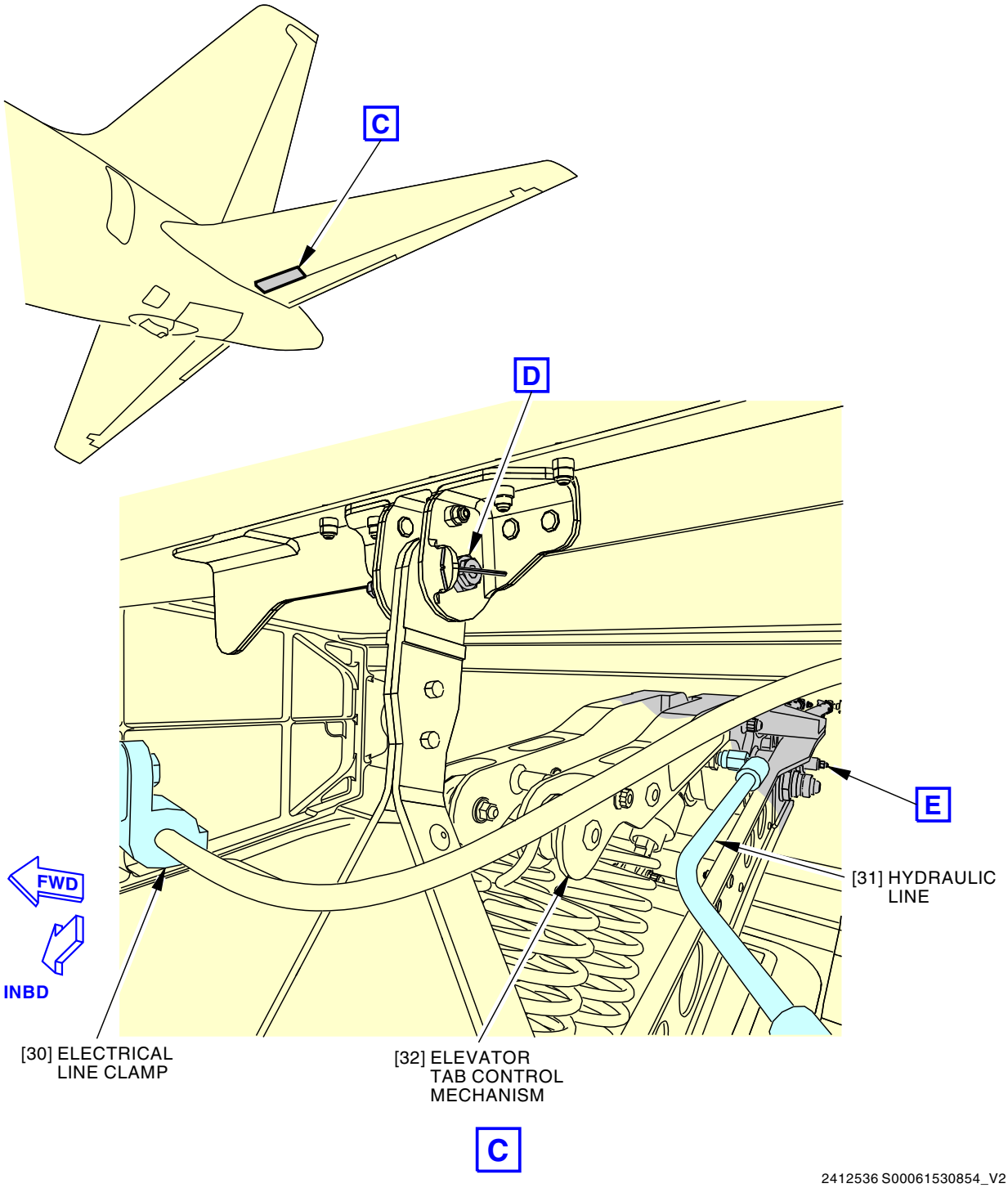
Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



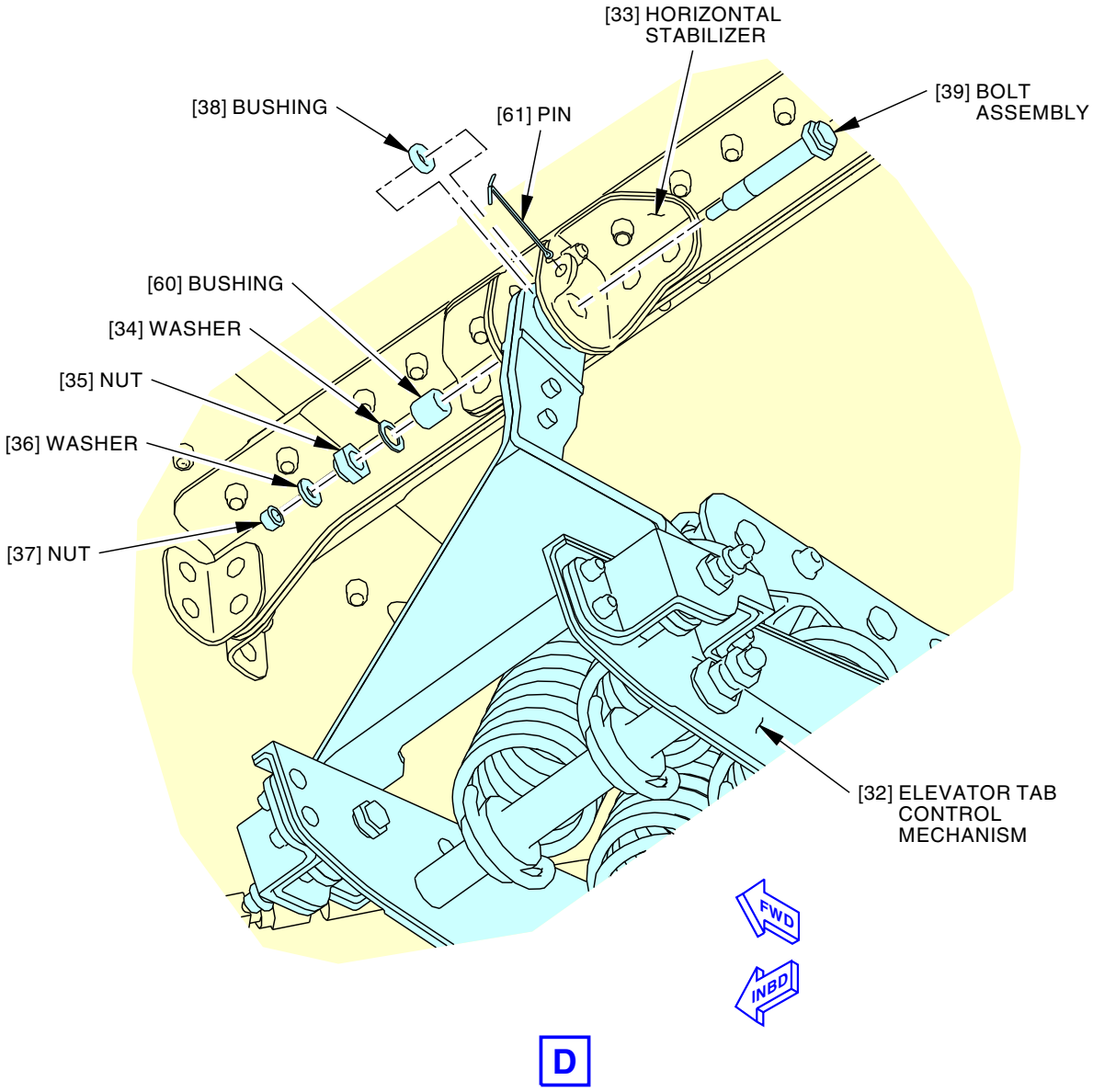
Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 3 of 9)

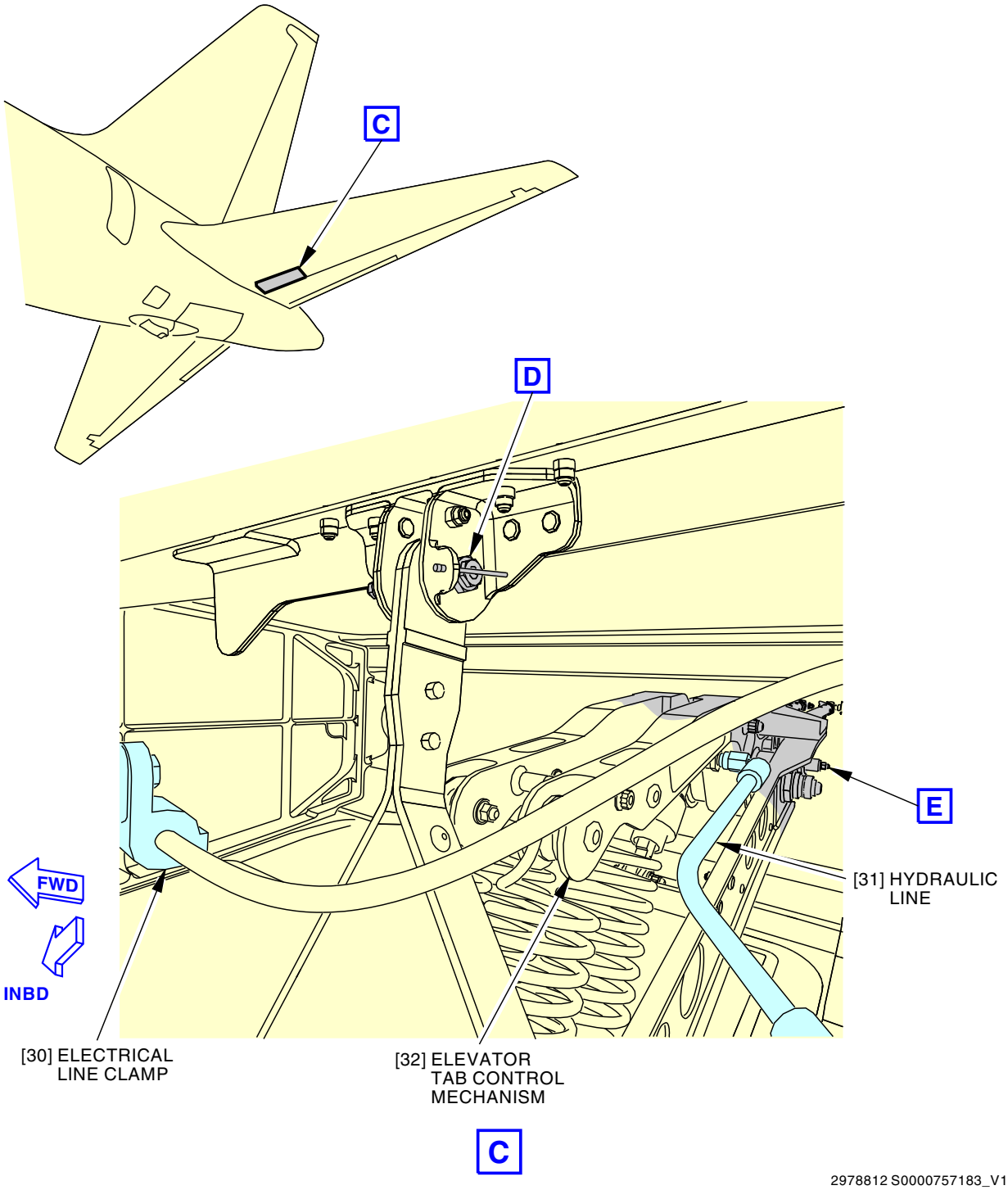
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412537 S00061530855_V2

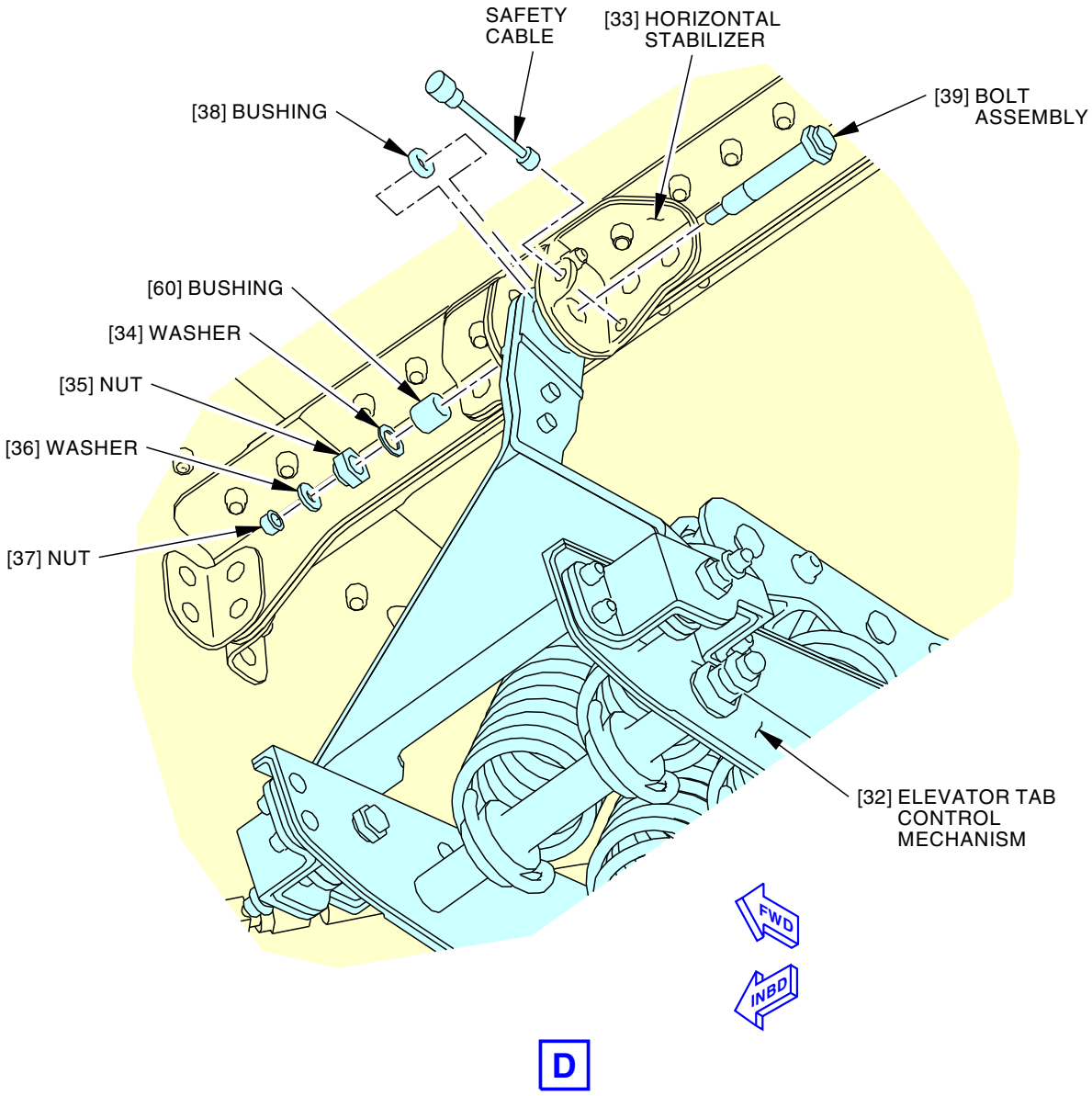
Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 5 of 9)

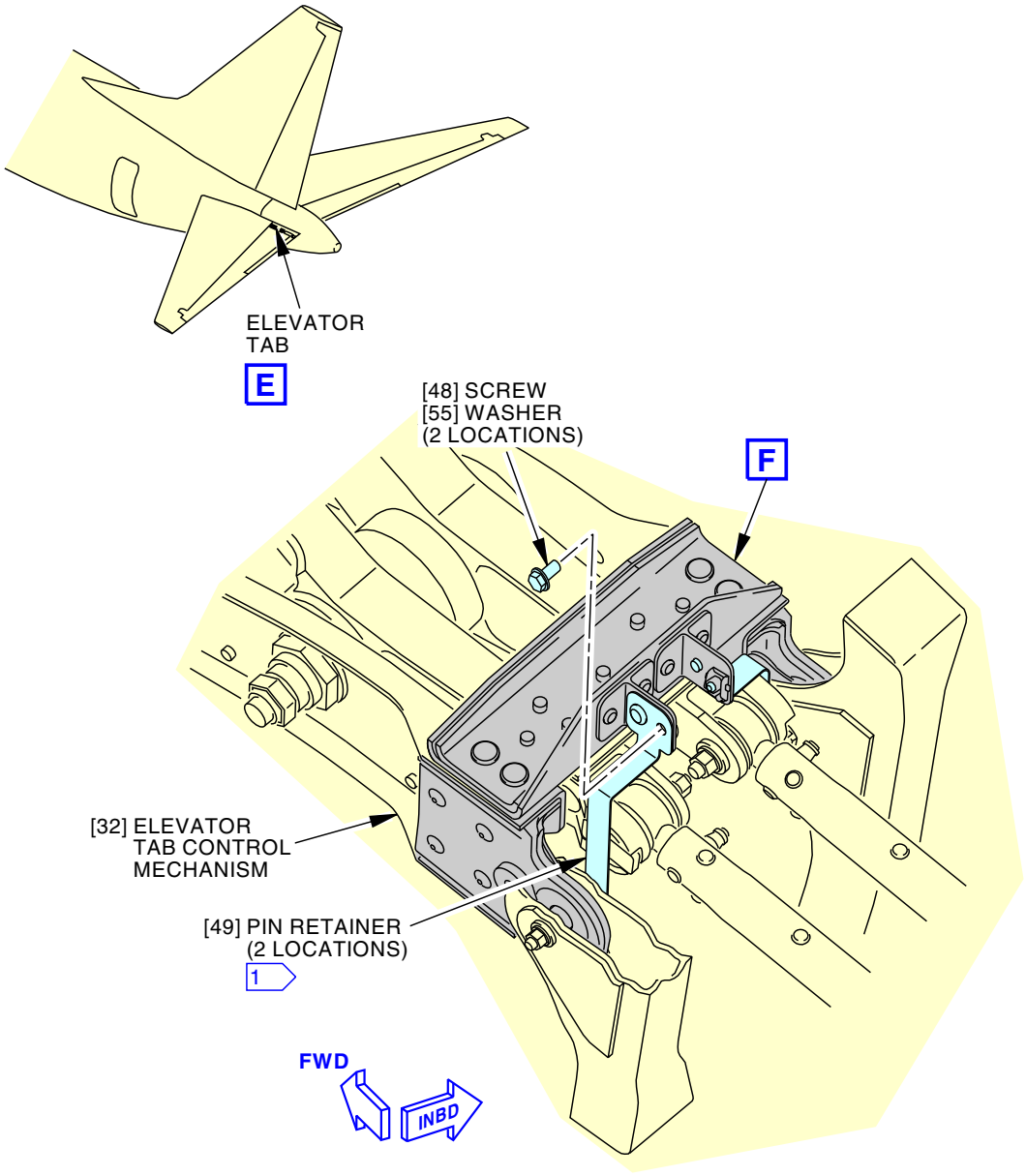
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2978841 S0000757184_V1

Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT ELEVATOR TAB
(RIGHT ELEVATOR TAB IS EQUIVALENT)
(EXAMPLE)

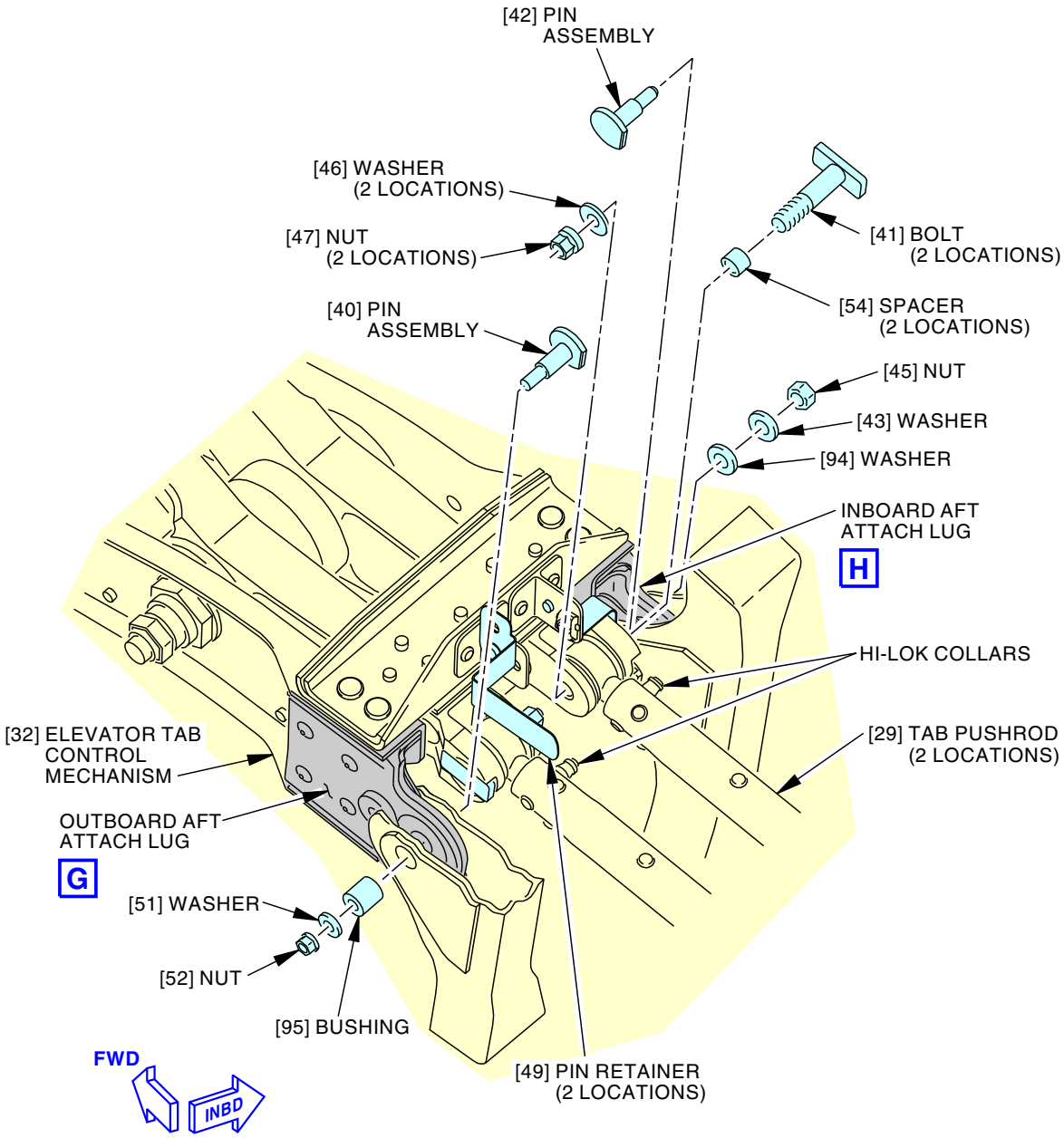
E

1 SCREWS AND WASHERS CAN BE INSTALLED IN DIFFERENT PLACES DEPENDING ON THE PIN RETAINER CONFIGURATIONS.

3016390 S0000789554_V1

Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



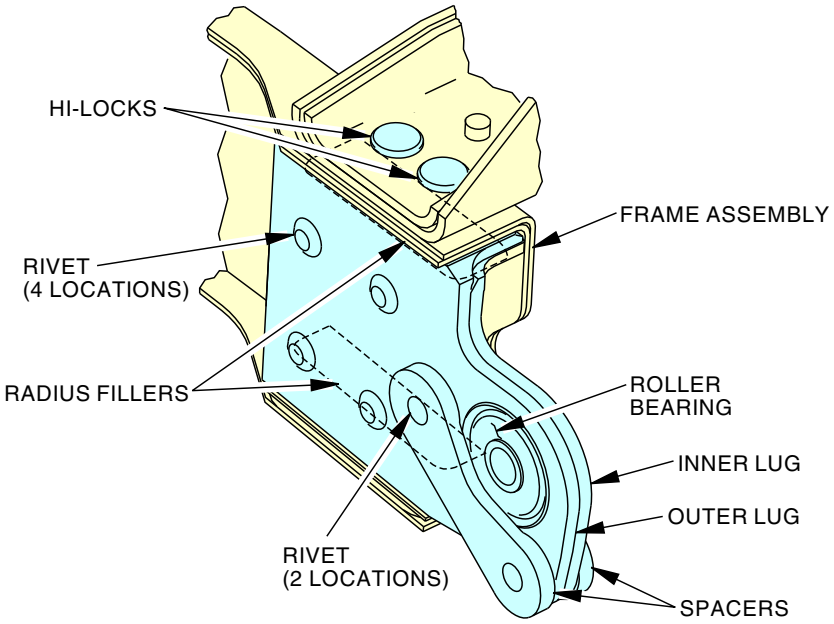
LEFT ELEVATOR TAB
(RIGHT ELEVATOR TAB IS EQUIVALENT)
(EXAMPLE)

F

2412539 S00061530857_V3

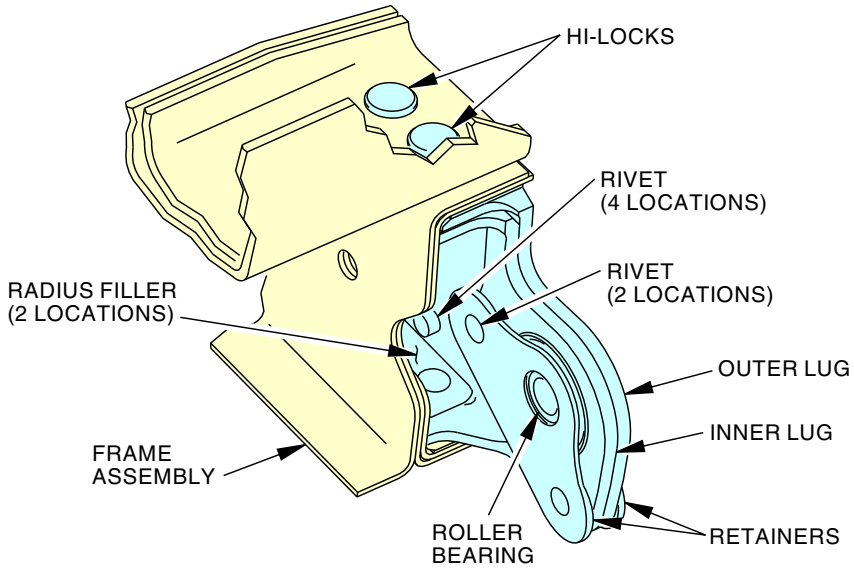
Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD AFT ATTACH LUG

G



INBOARD AFT ATTACH LUG

H

2412541 S00061530859_V2

Elevator Tab Control Mechanism Installation
Figure 402/27-31-34-990-802 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-34-400-801

3. Elevator Tab Control Mechanism - Installation

(Figure 401, Figure 402)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-31-00-220-801	Elevator Tab and Tab Mechanism - Detailed Visual Inspection (P/B 201)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-807	Elevator Tab Linkage - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Tools/Equipment

Reference	Description
STD-7502	Screwdriver

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D50004	Compound - Antiseize	BMS3-28
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38
G51674	Kit - Safety Cable, 321 CRES - 0.032 Inch (0.81 mm) Diameter, (Contains both Cable and Ferrule), 12 Inches Long	BACC13AT3K12

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
32	Elevator tab control mechanism	27-31-34-01-170	SIA ALL
		27-31-34-02-170	SIA ALL
47	Nut	27-31-34-01-085	SIA ALL
		27-31-34-02-085	SIA ALL
61	Pin	27-31-34-01-040	SIA 001-006
		27-31-34-02-040	SIA 001-006

E. Location Zones

Zone	Area
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
344	Right Horizontal Stabilizer - Elevator

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

G. Elevator Tab Control Mechanism Installation

SUBTASK 27-31-34-860-003

(1) Make sure that the hydraulic power is removed from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-34-420-001

(2) Install the elevator tab control mechanism [32], do these steps (Figure 402):

(a) Install the retention clips on the aft attach lugs.

1) Make sure that the retention clips lock into their positions.

(b) Put the elevator tab control mechanism [32] in its position.

(c) Connect the tab pushrods [29] to the elevator tab control mechanism [32], do these steps:

1) Apply compound, D50004, to the threads of the bolts [41] and outer surface of the spacers [54].

2) Install the bolts [41], washers [46], spacers [54], and new nuts [47] to connect the tab pushrods [29] to the elevator tab control mechanism [32].

NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard.

a) Tighten the nuts [47] to 70 in-lb (8 N·m) - 80 in-lb (9 N·m).

NOTE: If you loosened or removed the nuts, they need to be replaced and not re-installed. Using new nuts will ensure that they have the required run-on torque of 3.5 in-lb (0.4 N·m).

(d) Apply compound, D50004, to the threads of the pin assembly [40].

(e) Install the pin assembly [40] with the head at the inside of the elevator tab control mechanism [32], bushing [95], washer [51], and nut [52] to connect the elevator tab control mechanism [32] to elevator [21].

1) Use a Phillips screwdriver, STD-7502, set-up to hold the heads of the pin assembly [40] while tightening the nut [52].

2) Tighten the nut [52] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

(f) Apply compound, D50004, to the threads of the pin assembly [42].

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(g) Install the pin assembly [42] with the head at the inside of the elevator tab control mechanism [32], washer [94], washer [43], and nut [45] to connect the elevator tab control mechanism [32] to the elevator [21].

1) Tighten the nut [45] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

(h) Turn the pin retainer [49] arms down and install the screws [48] and washers [55] to attach the pin retainers [49] to the elevator tab control mechanism [32].

(i) Apply compound, D50004, to the threads of the bolt assemblies [39] and the outer surface of the bushings [60].

(j) Install the bushing [38], bolt assembly [39], bushing [60], washer [34], and nut [35] to connect the elevator tab control mechanism [32] to the horizontal stabilizer [33].

NOTE: The bolts are installed with the heads at the outside of the tab mechanism.

1) Tighten the nut [35] to 50 in-lb (6 N·m) - 60 in-lb (7 N·m).

CAUTION

DO NOT TIGHTEN THE NUTS [35] AGAIN AFTER YOU TIGHTEN THE NUT [37]. YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(k) Install the washer [36] and nut [37].

1) Tighten the nut [37] to 12 in-lb (1 N·m) - 15 in-lb (2 N·m).

SIA 001-006

(l) Install a new pin [61].

SIA 007-999

(m) Install the safety cable kit, G51674.

1) Apply corrosion inhibiting material, G50136, to both sides of the clevis assembly of the horizontal stabilizer [33] and to the cable holes.

NOTE: It is not required to completely fill the inside of the cable holes with corrosion inhibiting material, G50136.

2) Install the safety cable through the cable holes (TASK 20-10-44-400-801).

SIA ALL

(n) Connect the hydraulic line [31] to the elevator tab control mechanism [32].

(o) Tighten the B-nut on the hydraulic line [31] to 140 ±7 in-lb (16 ±1 N·m).

(p) Connect the electrical line and the electrical line clamp [30] to the elevator tab control mechanism [32].

SUBTASK 27-31-34-211-001

(3) Do a detailed inspection of the inboard and outboard aft attach lugs of the elevator tab control mechanism after installation (TASK 27-31-00-220-801).

SUBTASK 27-31-34-700-002

(4) Adjust the tab rods to the position that you measured before removing the mechanism, do this task: Elevator Tab Pushrods - Adjustment, TASK 27-31-00-820-805.

SUBTASK 27-31-34-730-002

(5) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

SUBTASK 27-31-34-730-003

(6) Do this task: Elevator Tab Linkage - Test, TASK 27-31-00-700-807.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-34-730-004

(7) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-34-410-002

(1) Close these access doors:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-34-410-020

(2) Close the applicable access panels:

(TASK 27-31-41-400-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-410-003

(3) Close the applicable access panels:

Number	Name/Location
334GB	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344GB	Horizontal Stabilizer, Hinge Cover, Elevator Station 24.09
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-34-410-021

CAUTION

TORQUE FASTENERS AFTER SEAL ADJUSTMENT AS HIGH AS POSSIBLE WITHIN A 10-15 IN-LB RANGE. TOO MUCH TORQUE CAN CAUSE DAMAGE TO THE SEAL PANELS.

(4) Close the applicable access panels:

Number	Name/Location
334AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344AB	Horizontal Stabilizer, Seal, Trailing Edge to Elevator

SUBTASK 27-31-34-390-001

(5) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-34-730-005

(6) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

END OF TASK

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TASK 27-31-34-000-802

4. Elevator Tab Pushrod - Removal

(Figure 401, Figure 402)

A. General

(1) This task is applicable for the two left elevator tab and two right elevator tab pushrods.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
27-31-41-000-801	Elevator Balance Panel - Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10345	Rigging Bar - Elevator Tab Part #: C27083-18 Supplier: 81205
SPL-11021	Fixture Eqpt - Pushrod Length Adjustment, Elevator Tab & Aileron Part #: C27082-1 Supplier: 81205
SPL-12558	Removal / Installation Equipment - Elevator Tab Mechanism Assy Part #: C27085-1 Supplier: 81205

D. Location Zones

Zone	Area
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GT	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

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(Continued)

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GT	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 39.02
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

F. Prepare for the Removal

SUBTASK 27-31-34-860-004

(1) Remove pressure from the elevator hydraulic systems A and B, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-34-010-004

(2) Open these access doors:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-34-010-005

(3) Open the applicable access panels:

(TASK 27-31-41-000-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-010-007

(4) Open the applicable access panels:

Number	Name/Location
334AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GT	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GT	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 39.02
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-34-860-005

(5) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-34-860-006

CAUTION MAKE SURE THAT YOU ARE CAREFUL WITH THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE SHARP EDGES ON THE TRAMMEL BAR, SPL-1677 CAN CAUSE CHAFING OR DAMAGE TO THE WIRES.

(6) Use the bar, SPL-1677, to set the "B" dimension at 4 units of trim (39.17 ±0.01 in. (994.92 ±0.26 mm)) (TASK 27-31-00-820-801).

SUBTASK 27-31-34-860-007

(7) Manually push the elevator trailing edge full up.

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SUBTASK 27-31-34-860-008

(8) While you move the elevator trailing edge down, align the center of the elevator trailing edge with the index mark to 0.00 ±0.04 in. (0.0 ±1.0 mm), or less (TASK 27-31-00-820-802).

NOTE: Keep the elevators at this position while you measure and adjust the tab pushrods. If the elevator position is changed, you must put the elevator trailing edge at the full up position and do this step again before you continue.

SUBTASK 27-31-34-480-001

(9) Install the elevator tab rigging bar, SPL-10345 (TASK 27-31-00-820-805).

(a) Install the elevator tab rigging bar, SPL-10345, below the elevator and elevator tab at the third elevator tab hinge (from inboard).

1) Make sure that the stand offs for the elevator tab rigging bar, SPL-10345, rest on the skin fastener heads to prevent skin variation.

(b) Make sure that the cross bar on the elevator tab rigging bar, SPL-10345, touches the lower surface of the elevator trailing edge.

(c) Push the elevator tab rigging bar, SPL-10345, FWD until elevator stop indexes on the AFT edge of elevator near elevator rear spar.

(d) Slide step gage FWD under elevator tab to obtain reading.

(e) Record the elevator tab dimension measured from the elevator tab faired/neutral position to the rigged up position.

NOTE: Adjusting the elevator tab back to this recorded position may reduce the need for a second flight test.

G. Tab Pushrod Removal

SUBTASK 27-31-34-020-004

(1) Remove the bolts [24] that attach the access panel [23] to the elevator [21].

SUBTASK 27-31-34-020-005

(2) Remove the tab pushrod [29], do these steps:

(a) Remove the screws [48] and washers [55] from the pin retainer [49].

(b) Remove the pin [53], nut [25], washer [26], bushing [27], and bolt [28] from the tab pushrod [29] and elevator tab [22].

1) Discard the pin [53].

(c) Remove the upper access panels to disconnect the elevator tab control mechanism [32] from the elevator [21], do these steps:

1) Remove the nut [52], washer [51], bushing [95], and pin assembly [40] that attach the elevator tab control mechanism [32] to the elevator [21].

NOTE: For ease of removal of pin assembly use removal / installation equipment, SPL-12558.

2) Remove the nut [45], washer [43], washer [94], and pin assembly [42] that attach the elevator tab control mechanism [32] to the elevator [21].

NOTE: For ease of removal of pin assembly use removal / installation equipment, SPL-12558.

(d) Remove the nut [47], washer [46], spacer [54], and bolt [41] from the elevator tab control mechanism [32] and tab pushrod [29].

(e) Disconnect the tab pushrod [29] from the elevator tab control mechanism [32].

(f) Remove the tab pushrod [29] from the airplane.

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SUBTASK 27-31-34-420-002

(3) Use the fixture, SPL-11021, to assist in measuring and replacing the new or replacement tab pushrods [29] to match the removed old tab pushrods [29] (TASK 27-31-00-820-805).

NOTE: Measuring the new or replacement tab pushrod using fixture, SPL-11021 is optional. The tool is used to adjust the new or replacement tab rods off the airplane to the same length as the removed tab rods. This adjustment will reduce the chance that a second flight test will be required.

NOTE: Use the previously recorded elevator tab dimension obtained using (TASK 27-31-00-820-805).

(a) Make sure that no changes to the recorded elevator tab dimensions are made after removal.

(b) Install the old removed tab pushrods [29] onto the fixture, SPL-11021.

(c) Set the digital scales to zero.

(d) Remove the old tab pushrods [29].

(e) Install the new or replacement tab pushrods [29] onto the fixture, SPL-11021.

NOTE: The inboard and outboard pushrod must be identified prior to adjustment. The slot in the retainer that attaches the pushrod is on the inboard for the RH elevator and outboard for the LH elevator.

(f) Record readings from the scale.

(g) Adjust the new or replacement tab pushrods [29] by coarse or fine method until scale is back to 0.0 ± 0.0005 inches (TASK 27-31-00-820-805).

NOTE: The fine adjustments may be made with the pushrod installed on the tool. The coarse adjustments must be made with the pushrods removed from the tool.

(h) Tighten the checknut to prevent movement of the rod end prior to installation.

NOTE: Do not lockwire the checknuts until final adjustment is done on the airplane.

(i) Remove the new or replacement tab pushrods [29] from fixture, SPL-11021.

(j) Using the information from the previously recorded old elevator tab dimension, tag the new tab pushrods [29] with the same information.

(k) Install the new or replacement tab pushrods [29] onto the fixture, SPL-11021.

(l) Make sure that the scales reads 0.0 ± 0.0005 inches.

(m) Remove the tab pushrods [29].

1) Make sure that no adjustment is made to tab pushrods [29] when removing from fixture, SPL-11021.

(n) Tighten the checknuts on the tab pushrods [29] (TASK 27-31-00-820-805).

(o) Install the new or replacement tab pushrods [29] onto the airplane (TASK 27-31-34-400-802).

(p) Make sure that the tab position is the same as the tab dimension first obtained from the old tab pushrods elevator tab rigging bar, SPL-10345, readings within ± 0.01 inches.

NOTE: If required, adjust the tab pushrods on the airplane.

END OF TASK

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TASK 27-31-34-400-802

5. Elevator Tab Pushrod - Installation

(Figure 401, Figure 403)

A. References

Reference	Title
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-820-805	Elevator Tab Pushrods - Adjustment (P/B 501)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Tools/Equipment

Reference	Description
STD-7502	Screwdriver

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D50004	Compound - Antiseize	BMS3-28

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
25	Nut	27-31-34-01-085	SIA ALL
		27-31-34-02-085	SIA ALL
29	Tab pushrod	27-31-34-01-120	SIA ALL
		27-31-34-02-120	SIA ALL
47	Nut	27-31-34-01-085	SIA ALL
		27-31-34-02-085	SIA ALL
53	Pin	27-31-34-01-035	SIA ALL
		27-31-34-02-035	SIA ALL

E. Location Zones

Zone	Area
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GT	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
344GT	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 39.02
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

G. Tab Pushrod Installation

SUBTASK 27-31-34-860-009

(1) Make sure that the hydraulic power is removed from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-34-420-003

(2) Install the tab pushrods [29], do these steps (Figure 402):

(a) Put the tab pushrods [29] in its position.

1) Make sure that the orientation of the tab pushrods [29] is correct.

a) For the left tab pushrod [29], the HI-LOK collars must be in the 3 o'clock and 6 o'clock positions at each end. For the right tab pushrod [29], the HI-LOK collars must be in the 2 o'clock and 5 o'clock positions at each end. This orientation is applicable to the left and right elevator tab mechanisms.

2) If you loosened or removed the nuts [47] or nuts [25], replace them with new nuts [47] or nuts [25].

NOTE: New nuts will make sure that they have the required run-on torque.

(b) Install the elevator tab control mechanism [32] to the elevator [21], do these steps:

1) Apply compound, D50004, to the threads of the pin assembly [40].

2) Install the pin assembly [40] with the head at the inside of the elevator tab control mechanism [32], bushing [95], washer [51], and nut [52] to connect the elevator tab control mechanism [32] to elevator [21].

a) Use a Phillips screwdriver, STD-7502, set-up to hold the heads of the pin assembly [40] while tightening the nut [52].

b) Tighten the nut [52] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

3) Apply compound, D50004, to the threads of the pin assembly [42].

4) Install the pin assembly [42] with the head at the inside of the elevator tab control mechanism [32], washer [94], washer [43], and nut [45] to connect the elevator tab control mechanism [32] to the elevator [21].

a) Make sure that the longer tab mechanism pin assembly [42] installs inboard (View F, Figure 402).

b) Tighten the nut [45] to 30 in-lb (3.4 N·m) - 40 in-lb (4.5 N·m).

(c) Apply compound, D50004, to the threads of the bolts [41] and outer surface of the spacers [54].

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(d) Install the bolts [41], spacers [54], washers [46], and new nuts [47] to connect the tab pushrods [29] to the elevator tab control mechanism [32].

NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard.

CAUTION

IF THE NEW NUTS [47] ARE NOT TIGHTENED CORRECTLY, THEN THE PUSHRODS CAN BECOME DISCONNECTED AND CAUSE DAMAGE TO THE ELEVATOR AND STABILIZER.

(e) Tighten the nuts [47] to 70 in-lb (7.9 N·m) - 80 in-lb (9.0 N·m).

(f) Install the screws [48] and washers [55] to attach the pin retainers [49] to the elevator tab control mechanism [32].

(g) Apply compound, D50004, to the threads of the bolts [28] and outer surface of the bushings [27].

(h) Install the bolts [28], bushings [27], washers [26], and new nuts [25] to connect the tab pushrods [29] to the elevator tab [22].

NOTE: The inboard bolt is installed with the head inboard and the outboard bolt is installed with the head outboard.

CAUTION

IF THE NEW NUTS [25] ARE NOT TIGHTENED CORRECTLY, THEN THE PUSHRODS CAN BECOME DISCONNECTED AND CAUSE DAMAGE TO THE ELEVATOR AND STABILIZER.

(i) Tighten the nuts [25] to 70 in-lb (7.9 N·m) - 80 in-lb (9.0 N·m).

1) Install a new pins [53] in the anti-rotation boss at the head of the bolt [28].

SUBTASK 27-31-34-820-001

(3) Adjust the tab pushrods [29] until you get the same tab position that you measured before you removed the elevator tab pushrods [29], do this task: Elevator Tab Pushrods - Adjustment, TASK 27-31-00-820-805.

SUBTASK 27-31-34-420-004

(4) Install the bolts [24] to attach the access panel [23] to the elevator [21].

SUBTASK 27-31-34-730-006

(5) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

SUBTASK 27-31-34-730-007

(6) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

SUBTASK 27-31-34-730-008

(7) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-34-410-008

(1) Close the applicable access panels:

Number	Name/Location
334AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator
334GT	Horizontal Stabilizer, Elevator Hinge Cover
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
344AT	Horizontal Stabilizer, Seal, Trailing Edge to Elevator

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(Continued)

Number	Name/Location
344GT	Horizontal Stabilizer, Elevator Hinge Cover, Elevator Sta 39.02
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-34-410-011

(2) Close the applicable access panels:

(TASK 27-31-41-400-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-410-013

(3) Close these access doors:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-34-390-002

(4) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-31-34-730-009

(5) Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

——— END OF TASK ———

TASK 27-31-34-000-803

6. Elevator Tab Lock Actuator - Removal

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Location Zones

Zone	Area
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

E. Prepare for the Removal

SUBTASK 27-31-34-860-010

(1) Remove pressure from the elevator hydraulic systems A and B. To remove it, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-34-010-010

(2) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-34-010-011

(3) Open the applicable access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-480-002

(4) Install the rig pin E-5 from rigging pin kit, SPL-1585 in the aft control quadrant (Figure 401).

SUBTASK 27-31-34-220-001

(5) Measure the elevator tab position.

(a) Keep a record of the elevator tab position.

(b) If you will change the adjustment of the two elevator tab pushrods, then you need to do an elevator power-off flight test. Do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

F. Tab Lock Actuator Removal

SUBTASK 27-31-34-020-006

(1) Disconnect the hydraulic line [31] from the actuator [78] and install caps and plugs on the hydraulic line and port (Figure 402).

NOTE: The spring must be at the neutral position when the hydraulic line is disconnected.

SUBTASK 27-31-34-020-007

(2) Remove the actuator [78]:

(a) Remove the nut [80], washer [79], bushing [93], bushing [77], and bolt [76] from the actuator [78].

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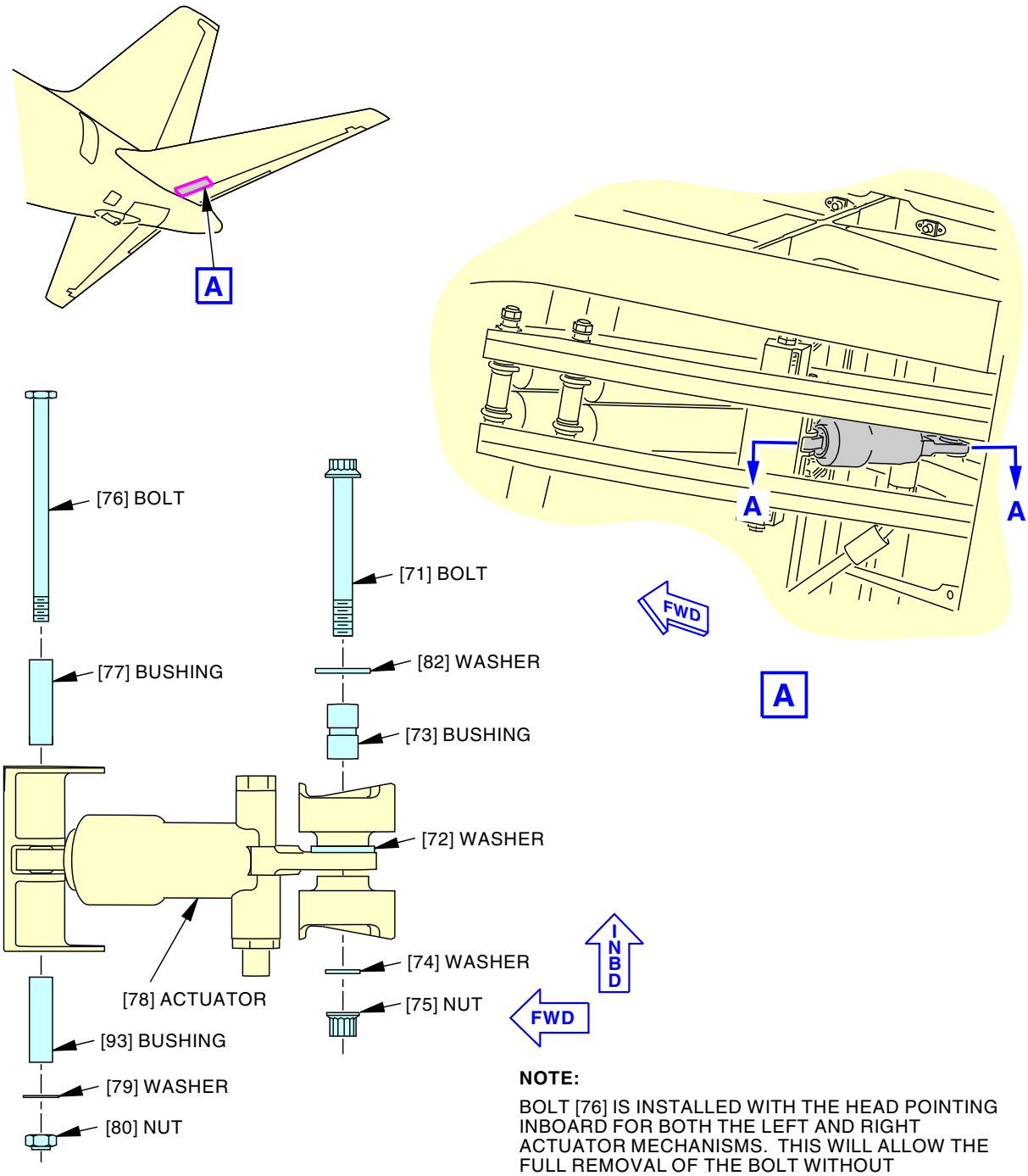
(b) Remove the nut [75], washer [74], washer [72], bushing [73], washer [82] and bolt [71] from the actuator [78].

(c) Remove the actuator [78] from the airplane.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

A-A

NOTE:

BOLT [76] IS INSTALLED WITH THE HEAD POINTING INBOARD FOR BOTH THE LEFT AND RIGHT ACTUATOR MECHANISMS. THIS WILL ALLOW THE FULL REMOVAL OF THE BOLT WITHOUT CONTACTING ADJACENT STRUCTURE.

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Elevator Tab Lock Actuator Installation
Figure 403/27-31-34-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-34-400-803

7. Elevator Tab Lock Actuator - Installation

(Figure 401, Figure 402, Figure 403)

A. References

Reference	Title
27-31-00-700-802	Elevator Tab Control System - Operational Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
78	Actuator	27-31-34-03-065	SIA ALL

D. Location Zones

Zone	Area
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

F. Tab Mechanism Installation

SUBTASK 27-31-34-860-011

(1) Make sure that the hydraulic power is removed from the elevator hydraulic systems A and B (Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802).

SUBTASK 27-31-34-420-005

(2) Install the actuator [78]:

(a) Install the bolt [71], washer [82], bushing [73], washer [72], washer [74], and nut [75].

(b) Install the bolt [76], bushing [77], bushing [93], washer [79], and nut [80].

NOTE: The bolt [76] is installed with the head pointing inboard on both the left and right actuator mechanisms. This will allow the full removal of the bolt from the actuator mechanism without it contacting the adjacent structure.

SUBTASK 27-31-34-420-006

(3) Connect the hydraulic line:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the caps and plugs from the hydraulic and electrical lines.

(b) Connect hydraulic line [31] from the elevator tab control mechanism [32].

(c) Tighten the B-nut on the hydraulic line [31] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-31-34-080-001

(4) Remove rig pin E-5 of the rigging pin kit, SPL-1585 from the aft control quadrant (Figure 401).

SUBTASK 27-31-34-730-010

(5) Do this task: Elevator Tab Control System - Operational Test, TASK 27-31-00-700-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-34-410-014

(1) Close the applicable access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-410-016

(2) Close this access door:

Number	Name/Location
318BR	Tailcone Access Door

——— END OF TASK ———

TASK 27-31-34-000-804

8. Elevator Tab Control Mechanism Springs - Removal

Figure 404

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-41-000-801	Elevator Balance Panel - Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-6048	Wrench - Socket
SPL-13742	Spring Rem/Instl Equipment - Elevator Tab Mechanism Assy Part #: C27086-27 Supplier: 81205

C. Location Zones

Zone	Area
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Access Panels

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

E. Prepare for the Removal

SUBTASK 27-31-34-860-012

(1) Remove pressure from the elevator hydraulic systems A and B. To remove it, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-34-010-013

(2) Open the applicable access panels:

(TASK 27-31-41-000-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

F. Elevator Tab Control Mechanism Spring Removal

SUBTASK 27-31-34-020-008

(1) Do these steps to remove one or both of the aft springs [83]: (Figure 404)

(a) Install the hook assembly and the tool handle from the spring rem/instl equipment, SPL-13742 on the short fitting assembly from the spring rem/instl equipment, SPL-13742 in the correct position for the aft springs [83] to be removed.

1) If both aft springs [83] are installed, attach the hook assembly on the center of the aft bushing [85].

2) If one of the aft springs [83] is missing or broken, attach the hook assembly on the aft bushing [85] around the remaining aft spring [83].

(b) Install the spring rem/instl equipment, SPL-13742 on the elevator control tab mechanism assembly.

(c) Put a socket wrench, COM-6048 or equivalent on the bolt [87].

WARNING DO NOT TIGHTEN THE TOOL HANDLE TOOL MUCH. THIS CAN CAUSE DAMAGE TO THE TOOL, AIRPLANE STRUCTURE OR INJURY TO PERSONNEL.

(d) At the same time, slowly turn the tool handle and the socket wrench, COM-6048 until the bolt [87] starts to come loose.

1) Make sure that you do not tighten the tool handle too much, it should take approximately 1/4 turn to loosen the bolt [87].

(e) After the bolt [87] is loose, remove the nut [92], washer [91], bolt [87], nut [90], washer [89], and bolt [88].

(f) Loosen the tool handle.

(g) Remove one or both of the aft springs [83] as necessary.

SUBTASK 27-31-34-020-009

(2) Do these steps to remove one or both of the forward springs [84]: (Figure 404)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the hook assembly and the tool handle from the spring rem/instl equipment, SPL-13742 on the long fitting assembly from the spring rem/instl equipment, SPL-13742 in the correct position for the forward springs [84] to be removed.

1) If both forward springs [84] are installed, attach the hook assembly on the center of the foward bushing [86].

2) If one of the forward springs [84] is missing or broken, attach the hook assembly on the foward bushing [86] around the remaining forward spring [84].

(b) Install the spring rem/instl equipment, SPL-13742 on the elevator control tab mechanism assembly.

(c) Put a socket wrench, COM-6048 or equivalent on the bolt [87].

WARNING DO NOT TIGHTEN THE TOOL HANDLE TOOL MUCH. THIS CAN CAUSE DAMAGE TO THE TOOL, AIRPLANE STRUCTURE OR INJURY TO PERSONNEL.

(d) At the same time, slowly turn the tool handle and the socket wrench, COM-6048 until the bolt [87] starts to come loose.

1) Make sure you do not tighten the tool handle too much, it should take approximately 1/4 turn to loosen the bolt [87].

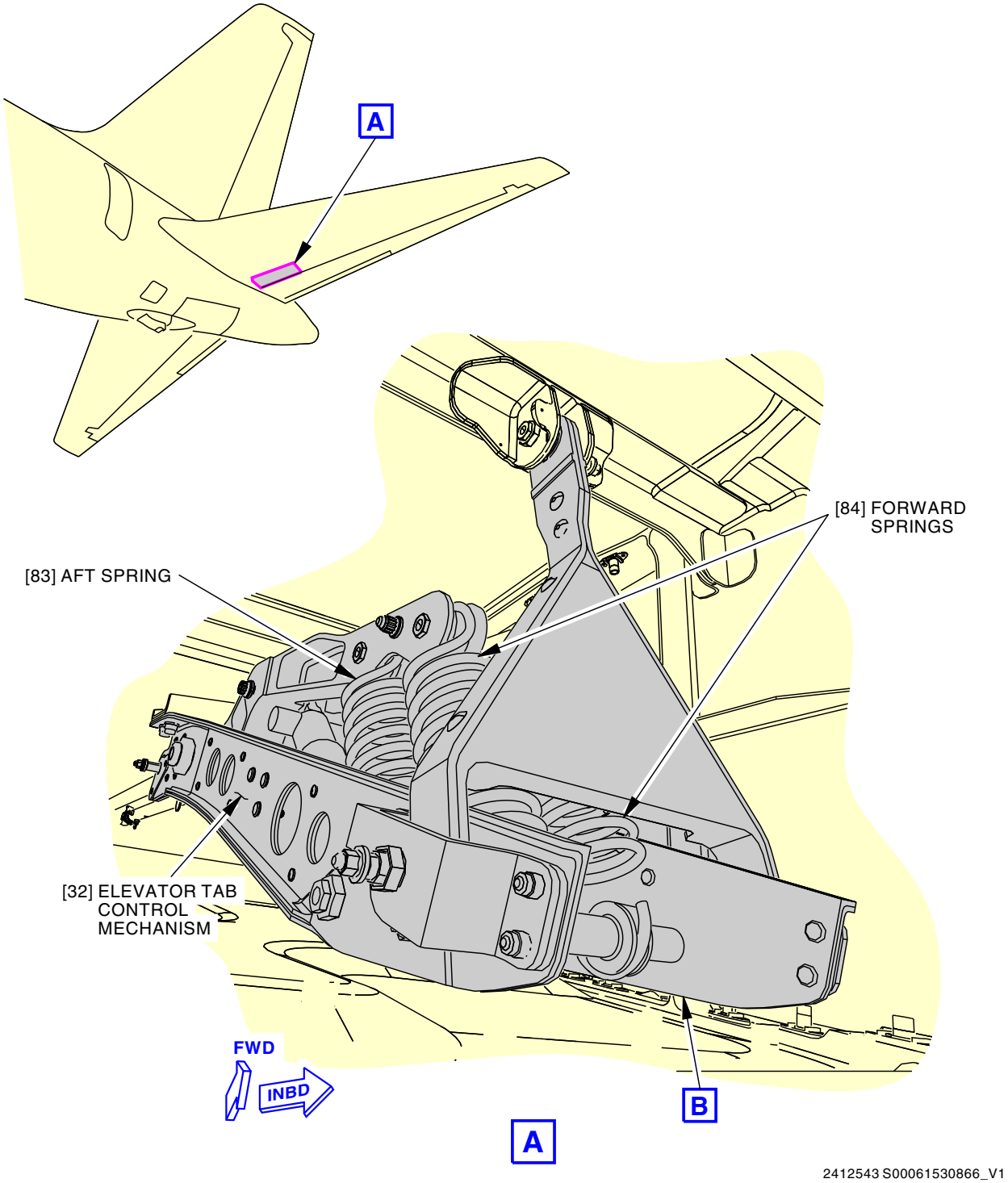
(e) After the bolt [87] is loose, remove the nut [92], washer [91], bolt [87], nut [90], washer [89], and bolt [88].

(f) Loosen the tool handle.

(g) Remove one or both of the forward springs [84] as necessary.

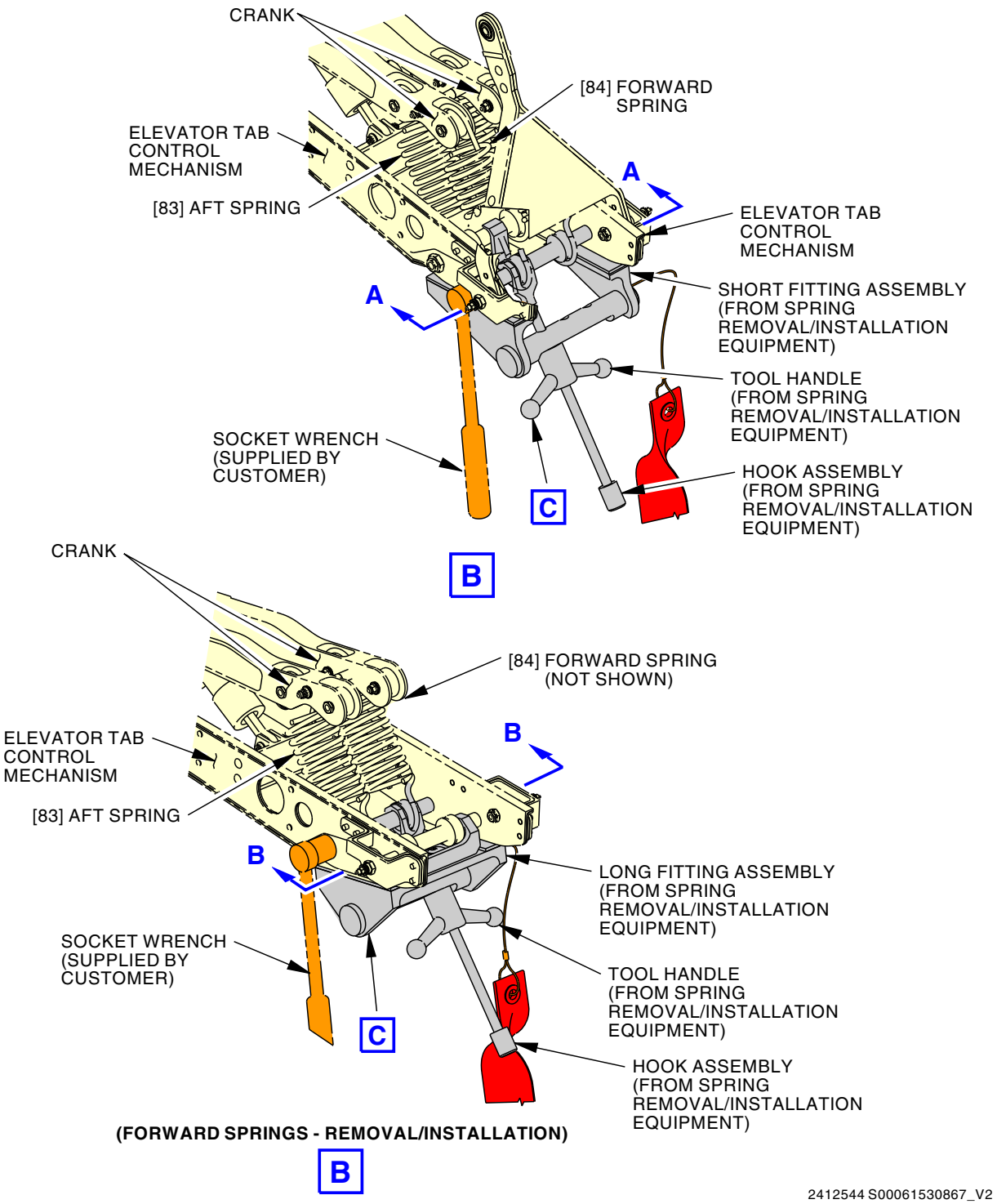
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



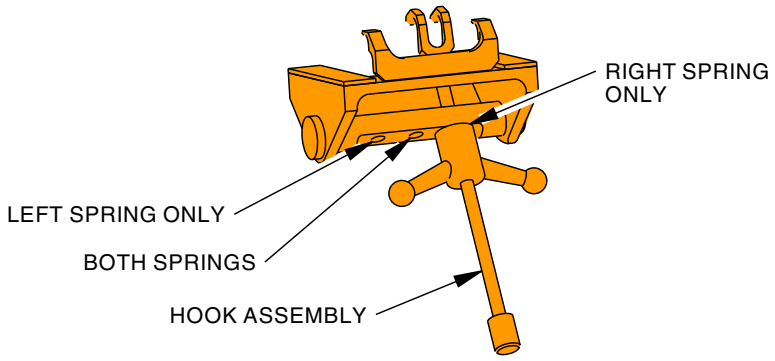
Elevator Tab Control Mechanism Spring - Removal/Installation
Figure 404/27-31-34-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



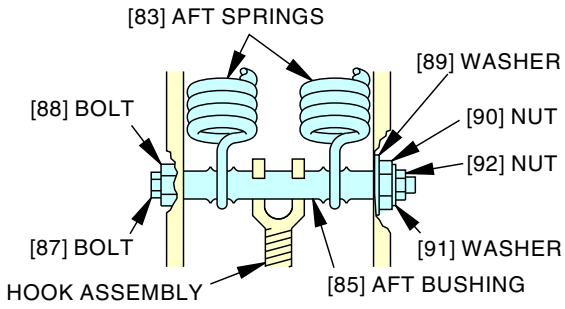
Elevator Tab Control Mechanism Spring - Removal/Installation
Figure 404/27-31-34-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



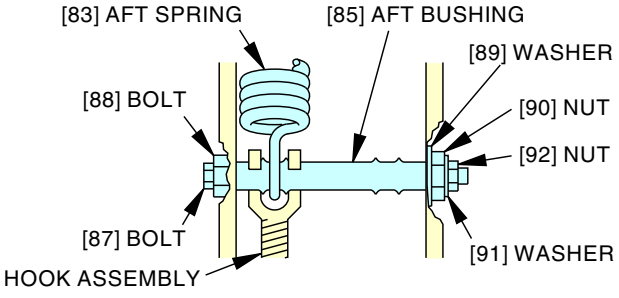
**(SHORT FITTING ASSEMBLY IS SHOWN,
LONG FITTING ASSEMBLY IS ALMOST THE SAME)**

C 1



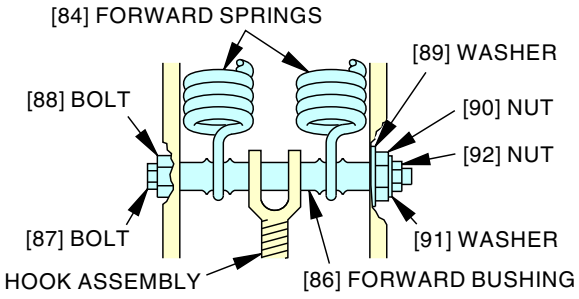
**(ATTACH AS SHOWN IF BOTH SPRINGS
ARE INSTALLED)**

A-A



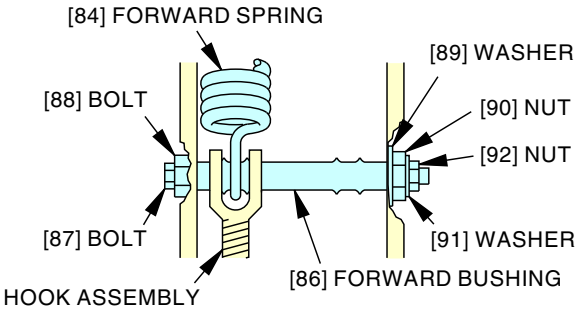
**(ATTACH AS SHOWN IF THERE IS A BROKEN
OR MISSING SPRING)**

A-A



**(ATTACH AS SHOWN IF BOTH SPRINGS
ARE INSTALLED)**

B-B



**(ATTACH AS SHOWN IF THERE IS A BROKEN
OR MISSING SPRING)**

B-B

NOTE:

1 INSTALL HOOK ASSEMBLY AT LOCATION SHOWN DEPENDING ON THE INSTALLATION OR REMOVAL OF ONE OR BOTH SPRINGS.

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**Elevator Tab Control Mechanism Spring - Removal/Installation
Figure 404/27-31-34-990-804 (Sheet 3 of 3)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-34-400-804

9. Elevator Tab Control Mechanism Springs - Installation

Figure 404

A. References

Reference	Title
27-31-00-700-802	Elevator Tab Control System - Operational Test (P/B 501)
27-31-00-710-801	Elevator and Elevator Trim Control System - Operational Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-41-000-801	Elevator Balance Panel - Removal (P/B 401)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-13742	Spring Rem/Instl Equipment - Elevator Tab Mechanism Assy Part #: C27086-27 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
83	Aft spring	27-31-34-03-390	SIA ALL
84	Forward spring	27-31-34-03-390	SIA ALL

D. Location Zones

Zone	Area
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
334	Left Horizontal Stabilizer - Elevator
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge
344	Right Horizontal Stabilizer - Elevator

E. Access Panels

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

F. Prepare for the Installation

SUBTASK 27-31-34-860-013

(1) Make sure the pressure is removed from the elevator hydraulic systems A and B. To remove it, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-34-010-015

(2) Open the applicable access panels:

(TASK 27-31-41-000-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

G. Elevator Tab Control Mechanism Spring Installation

SUBTASK 27-31-34-420-007

(1) Do these steps to install the aft springs [83]: (Figure 404)

NOTE: The direction of the coil wind (twist) and the number of coils differ by the manufacture. It is acceptable to install the appropriate springs from different suppliers on the same elevator tab control mechanism.

(a) Install the hook assembly and the tool handle from the spring rem/instl equipment, SPL-13742 on the short fitting assembly from the spring rem/instl equipment, SPL-13742.

(b) Install the spring rem/instl equipment, SPL-13742 on the elevator control tab mechanism assembly.

(c) Install one end of the aft springs [83] in the correct holes in the crank.

(d) Put the other end of the aft springs [83] in the correct groove on the aft bushing [85].

(e) Attach the hook assembly from the spring rem/instl equipment, SPL-13742 to the aft bushing [85].

(f) Slowly turn the tool handle until the bolt [88] can be installed through the aft bushing [85].

(g) Install the bolt [88], bolt [87], washer [89], nut [90], washer [91], and nut [92].

1) Tighten the nut [90] to 115 ±15 in-lb (13 ±2 N·m).

2) Tighten the nut [92] to 90 ±15 in-lb (10 ±2 N·m).

(h) Remove the spring rem/instl equipment, SPL-13742.

SUBTASK 27-31-34-420-008

(2) Do these steps to install the forward springs [84]: (Figure 404)

NOTE: The direction of the coil wind (twist) and the number of coils differ by the manufacture. It is acceptable to install the appropriate springs from different suppliers on the same elevator tab control mechanism.

(a) Install the hook assembly and the tool handle from the spring rem/instl equipment, SPL-13742 on the long fitting assembly from the spring rem/instl equipment, SPL-13742.

(b) Install the spring rem/instl equipment, SPL-13742 on the elevator control tab mechanism assembly.

(c) Install one end of the forward springs [84] in the correct holes in the crank.

(d) Put the other end of the forward springs [84] in the correct groove on the foward bushing [86].

(e) Attach the hook assembly from the spring rem/instl equipment, SPL-13742 to the foward bushing [86].

(f) Slowly turn the tool handle until the bolt [88] can be installed through the foward bushing [86].

(g) Install the bolt [88], bolt [87], washer [89], nut [90], washer [91], and nut [92].

(h) Remove the spring rem/instl equipment, SPL-13742.

SUBTASK 27-31-34-730-011

(3) Do this task: Elevator and Elevator Trim Control System - Operational Test, TASK 27-31-00-710-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-34-730-012

(4) Do this task: Elevator Tab Control System - Operational Test, TASK 27-31-00-700-802.

H. Put the Airplane Back to its Usual Condition

SUBTASK 27-31-34-410-017

(1) Close the applicable access panels:

(TASK 27-31-41-400-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR TAB CONTROL MECHANISM - INSPECTION/CHECK

1. General

A. This procedure has this inspection task:

(1) Elevator Balance Weight Installation and Elevator Tab Control Mechanism General Visual Inspection

TASK 27-31-34-210-801

2. Elevator Balance Weight Installation and Elevator Tab Control Mechanism - General Visual Inspection

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
55-10-11-000-801	Balance Bay Panels - Removal (P/B 401)
55-10-11-400-801	Balance Bay Panels - Installation (P/B 401)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

C. Location Zones

Zone	Area
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

D. Access Panels

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
334PT	Horizontal Stabilizer, Tab Control Rod Fairing
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

E. Elevator Balance Weight Installation and Elevator Tab Control Mechanism General Visual Inspection

SUBTASK 27-31-34-010-022

(1) Remove these access panels to get access to the applicable balance bays. Do this task: Balance Bay Panels - Removal, TASK 55-10-11-000-801.

(a) For the left elevator, remove these access panels:

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge

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(b) For the right elevator, remove these access panels:

Number	Name/Location
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-010-023

(2) Remove these access panels to get access to the applicable elevator tab control mechanism.

(a) For the left elevator, remove these access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

(b) For the right elevator, remove these access panels:

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

SUBTASK 27-31-34-210-001

(3) Do a general visual inspection of the left or right elevator balance weight installations and the left or right elevator tab control mechanisms (Figure 601 or Figure 602).

SUBTASK 27-31-34-410-023

(4) Install these access panels to remove access to the applicable balance bays. Do this task: Balance Bay Panels - Installation, TASK 55-10-11-400-801.

(a) For the left elevator, install these access panels:

Number	Name/Location
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge

(b) For the right elevator, install these access panels:

Number	Name/Location
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-34-410-024

(5) Install these access panels to remove access to the applicable elevator tab control mechanism.

(a) For the left elevator, install these access panels:

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
334PT	Horizontal Stabilizer, Tab Control Rod Fairing

(b) For the right elevator, install these access panels:

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
344PT	Horizontal Stabilizer, Tab Control Rod Fairing, Elevator Sta 34.0

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SUBTASK 27-31-34-390-003

(6) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

——— END OF TASK ———

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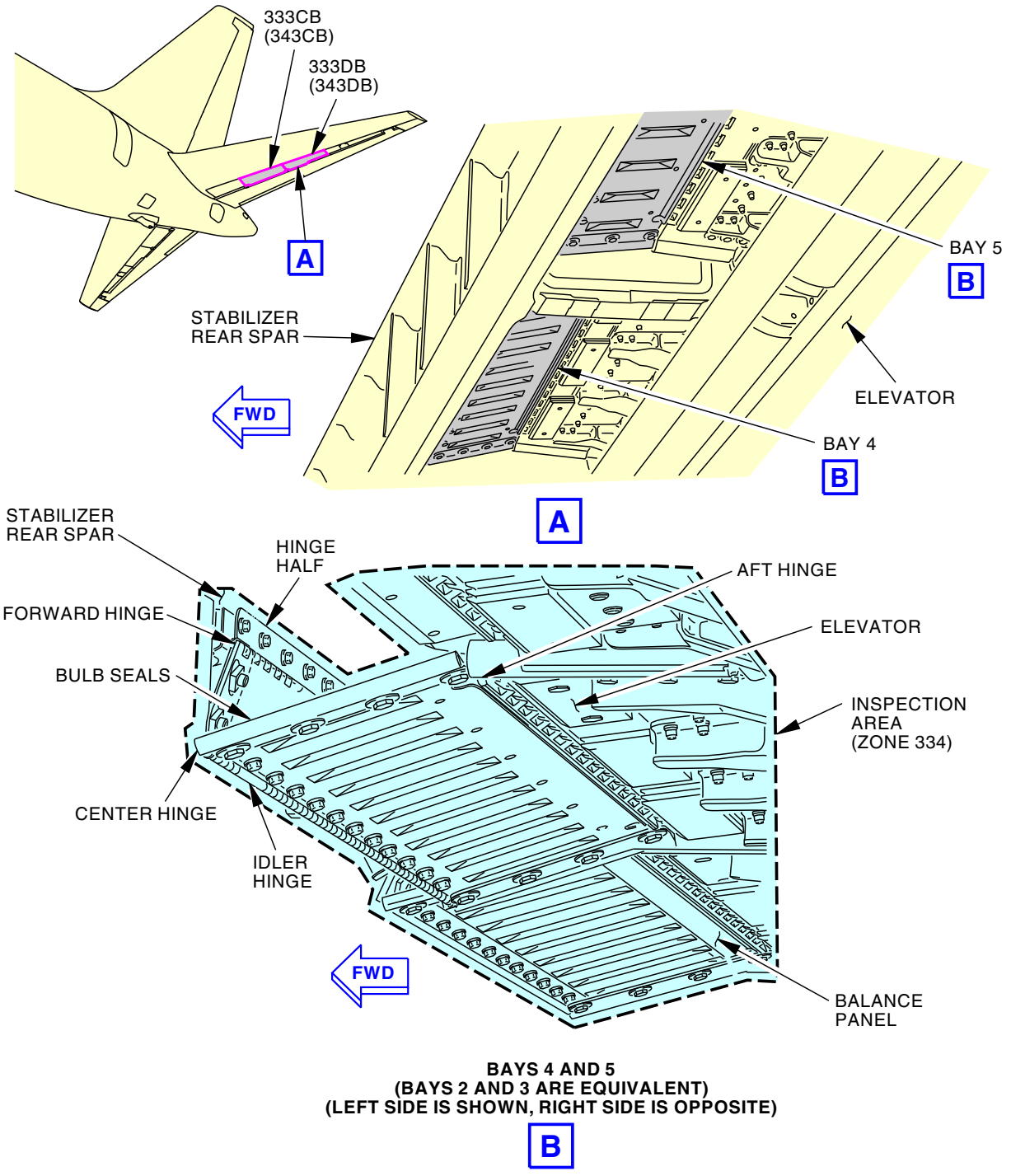

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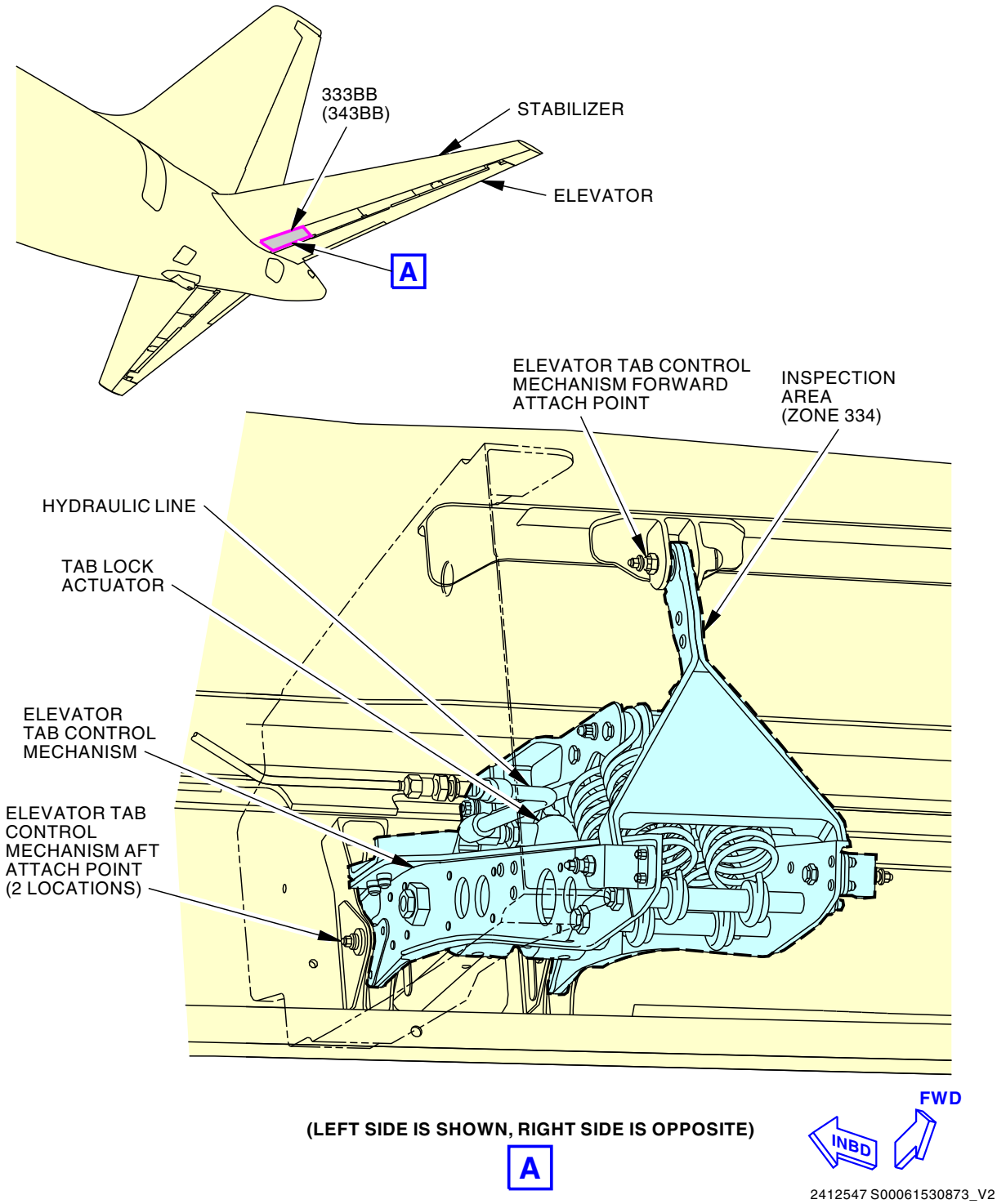
Elevator Balance Weight Installation - General Visual Inspection
Figure 601/27-31-34-990-805

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Mechanism - General Visual Inspection
Figure 602/27-31-34-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR TAB CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator tab control valve

(2) An installation of the elevator tab control valve

B. The elevator tab control valve is referred to as the "control valve" in this procedure.

C. This procedure is applicable to the control valves for the left and right elevator tab control mechanisms. The upper control valve is for the left elevator tab control mechanism and the lower control valve is for the right elevator tab control mechanism.

TASK 27-31-35-000-801

2. Elevator Tab Control Valve - Removal

(Figure 401)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Location Zones

Zone	Area
318	Tail Cone Compartment - Right

C. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

D. Prepare for the Removal

SUBTASK 27-31-35-860-001

(1) Remove pressure from the elevator hydraulic systems A and B (TASK 27-31-00-800-802).

SUBTASK 27-31-35-860-005

(2) For the left elevator tab control valve, open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC

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(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 27-31-35-860-004

(3) For the right elevator tab control valve, open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

SUBTASK 27-31-35-010-001

(4) To get access to the control valve, open this access panel:

Number	Name/Location
318BR	Tailcone Access Door

E. Control Valve Removal

SUBTASK 27-31-35-020-001

(1) Disconnect hydraulic lines [10] from the control valve [11].

(a) Discard the packings [9].

(b) Install the caps and plugs on the control valve [11] ports and hydraulic lines [10].

SUBTASK 27-31-35-020-002

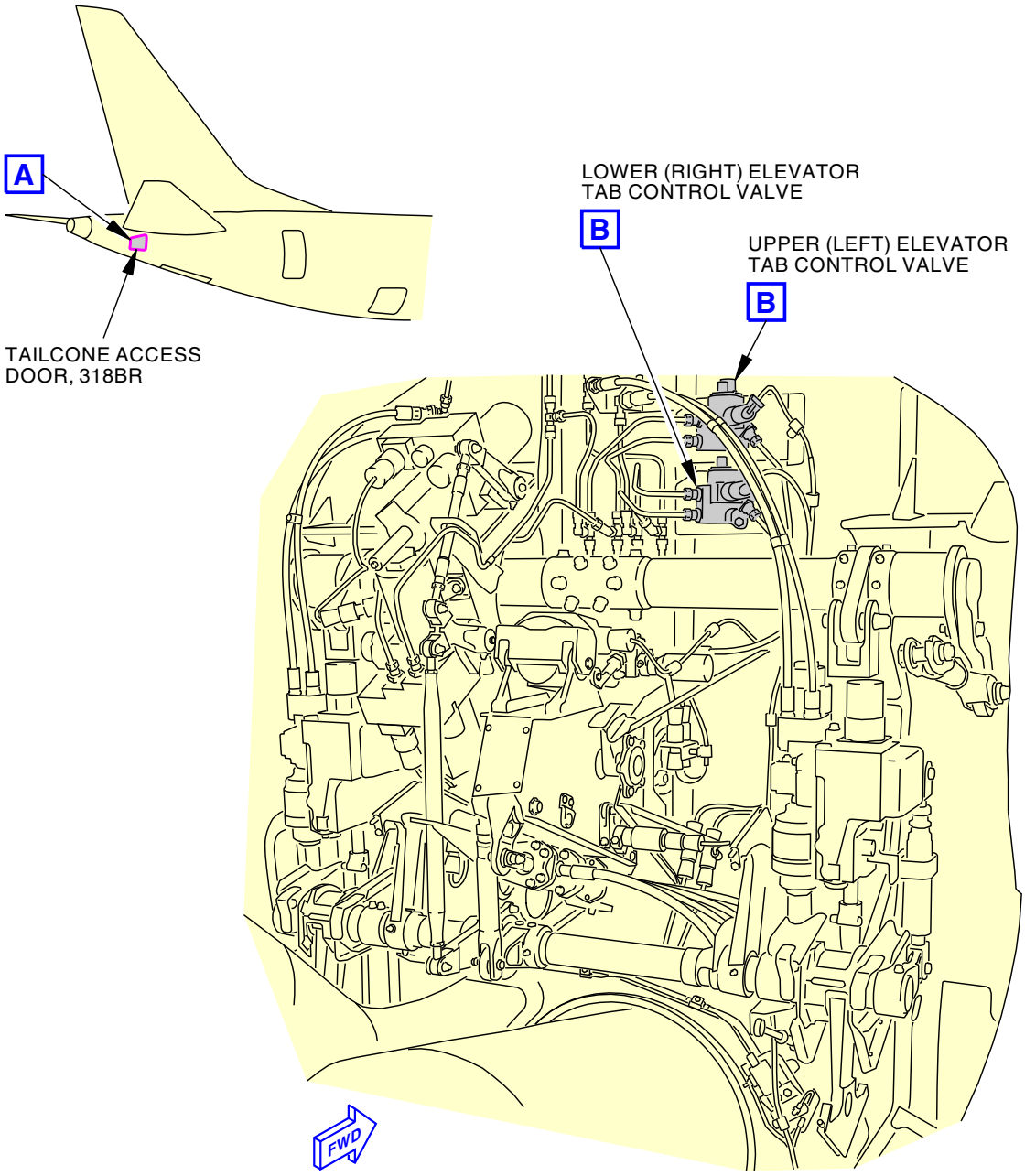
(2) Disconnect the electrical line [5] from the control valve [11].

SUBTASK 27-31-35-020-003

(3) Remove the bolts [6] and washers [7] that attach the control valve [11] to the airplane structure.

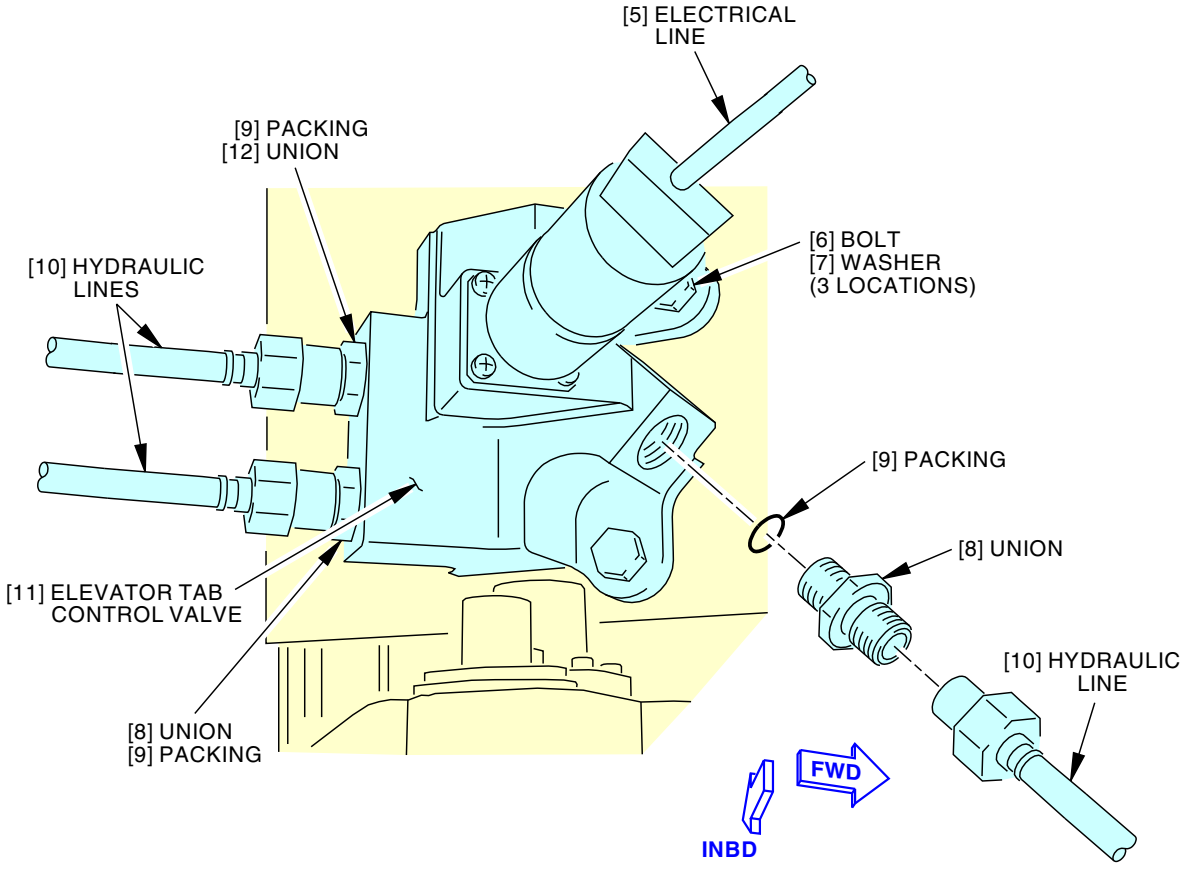
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Tab Control Valve Installation
Figure 401/27-31-35-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR TAB CONTROL VALVE
(UPPER (OR LEFT TAB) IS SHOWN,
LOWER (OR RIGHT TAB) IS EQUIVALENT)

B

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Elevator Tab Control Valve Installation
Figure 401/27-31-35-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-35-400-801

3. Elevator Tab Control Valve - Installation

(Figure 401)

A. References

Reference	Title
27-31-00-700-802	Elevator Tab Control System - Operational Test (P/B 501)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Packing	27-31-35-01-075	SIA 001-014
		27-31-35-05-060	SIA 015-999
11	Control valve	27-31-35-01-015	SIA 001-014
		27-31-35-05-010	SIA 015-999
		29-11-52-17-315	SIA 015-999
		29-11-52-17-415	SIA 015-999

D. Location Zones

Zone	Area
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

F. Control Valve Installation

SUBTASK 27-31-35-860-002

(1) Make sure hydraulic power is removed from the elevator hydraulic systems A and B (TASK 27-31-00-800-801).

SUBTASK 27-31-35-420-001

(2) If the unions [8] and packings [9] are not installed in the control valve [11], then do these steps:

(a) Lubricate the unions [8], union [12] and new packings [9] with hydraulic fluid, D00153.

(b) Install the new packings [9], unions [8], and union [12] to the control valve [11].

SUBTASK 27-31-35-420-002

(3) Install the control valve [11] to the airplane structure.

(a) Install the bolts [6] and washers [7] in the control valve [11].

(b) Remove the caps and plugs from the hydraulic lines [10] and electrical line [5].

(c) Connect the hydraulic lines [10] to the control valve [11].

(d) Tighten the B-nuts on the hydraulic lines [10] for unions [8] 140 ±14 in-lb (16 ±2 N·m).

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(e) Tighten the B-nut on the hydraulic line [10] for union [12] 110 ±6 in-lb (12 ±1 N·m).

(f) Connect the electrical line [5] to the control valve [11].

SUBTASK 27-31-35-860-003

(4) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-35-730-001

(5) Do this task: Elevator Tab Control System - Operational Test, TASK 27-31-00-700-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-35-410-001

(1) Close this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-35-860-006

(2) For the left elevator tab control valve, close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

SUBTASK 27-31-35-860-007

(3) For the right elevator tab control valve, close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL COMPUTER - MAINTENANCE PRACTICES

1. General

A. This procedure has two tasks:

(1) The removal of the Elevator Feel Computer Solenoid Valve.

(2) The installation of the Elevator Feel Computer Solenoid Valve.

TASK 27-31-37-000-802

2. Elevator Feel Computer Solenoid Valve - Removal

(Figure 201)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1673	Pin - Safety, Elevator Feel Computer Part #: F80153-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-31-37-010-002

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-37-860-011

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-37-010-003

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2

SUBTASK 27-31-37-820-001

CAUTION

YOU MUST INSTALL THE RIG PIN IN THE RIG PIN FITTING OF THE ELEVATOR-FEEL-COMPUTER. IF YOU DO NOT ATTACH THE ELEVATOR-FEEL-COMPUTER TO THE INPUT ARM, IT CAN CAUSE DAMAGE WHEN YOU REMOVE IT.

(4) Install the pin, SPL-1673, through the input arm [3] and into the rig pin fitting [9] on the elevator feel computer [1].

F. Removal

SUBTASK 27-31-37-020-003

(1) Remove MS20995C20 lockwire, G50225, from the four bolts [4].

NOTE: Use care to prevent scoring or damage to finished surfaces.

SUBTASK 27-31-37-020-004

(2) Remove the bolts [4] and washers [5] from the solenoid valve [2].

SUBTASK 27-31-37-020-005

(3) Remove the solenoid valve [2] from the plug assembly [6] and manifold [10].

NOTE: Use care to prevent damage to the electrical connector.

SUBTASK 27-31-37-020-008

(4) Remove and discard the cup seal [7].

SUBTASK 27-31-37-020-006

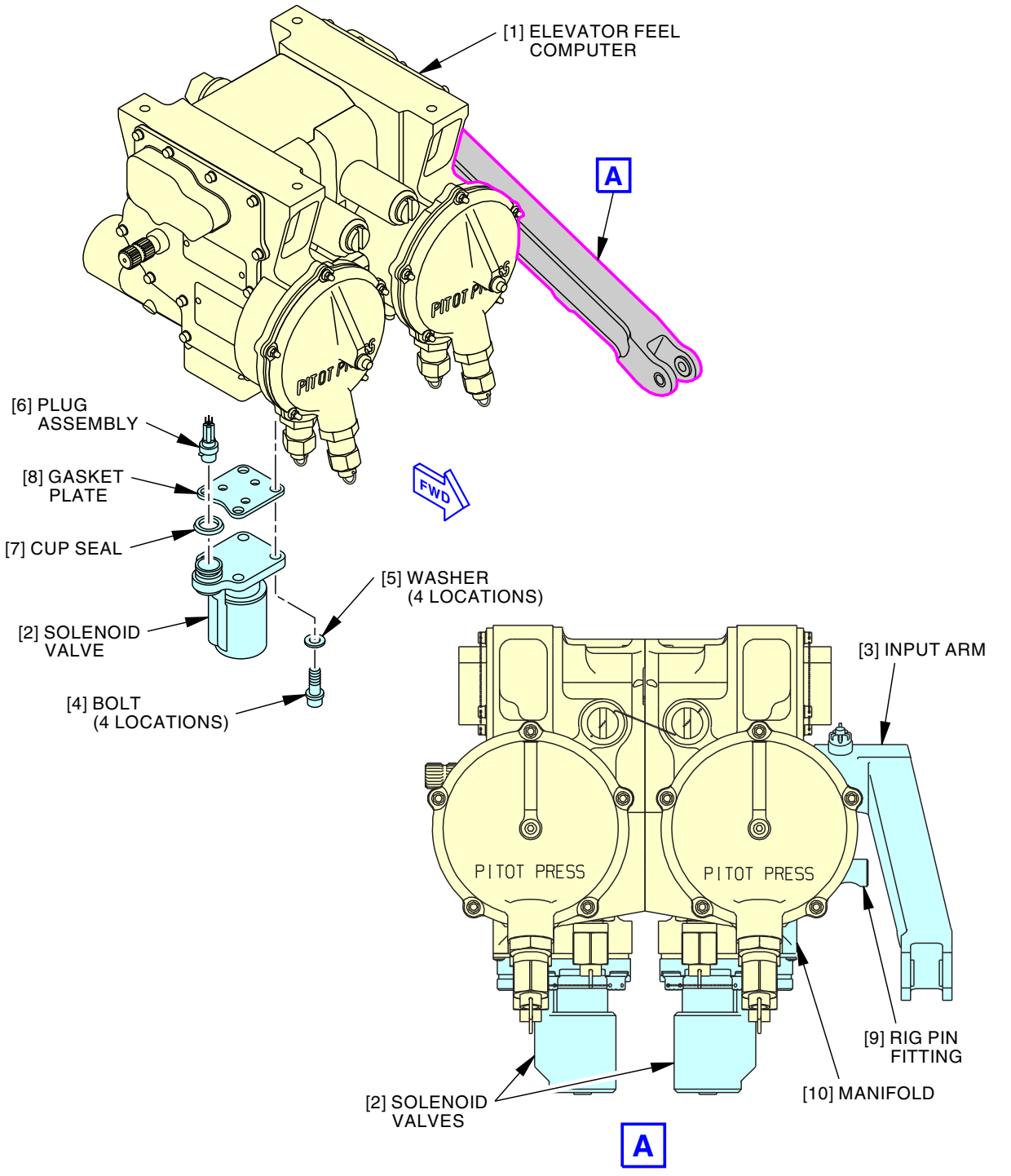
(5) Remove and discard the gasket plate [8].

SUBTASK 27-31-37-020-007

(6) Repeat the above steps for the opposite system.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel Computer Solenoid Valve Installation
Figure 201/27-31-37-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-37-400-802

3. Elevator Feel Computer Solenoid Valve - Installation

(Figure 201)

A. References

Reference	Title
27-31-37-200-801	Elevator Feel Computer Leakage Check (P/B 601)
29-11-00-860-802	Hydraulic System A or B Pressurization with a Portable Hydraulic Cart (P/B 201)
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
29-11-00-860-804	Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP) (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
SPL-1673	Pin - Safety, Elevator Feel Computer Part #: F80153-1 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50225	Lockwire - MS20995C20, Corrosion Resistant Steel - 0.020 Inch (0.508 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Solenoid valve	27-31-37-01-370	SIA ALL
7	Cup seal	27-31-37-01-390	SIA ALL
8	Gasket plate	27-31-37-01-385	SIA ALL

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Elevator Feel Computer Solenoid Valve Installation

SUBTASK 27-31-37-420-003

(1) Install the new gasket plate [8] on the manifold [10].

SUBTASK 27-31-37-420-004

(2) Install the new cup seal [7] on the solenoid valve [2].

SUBTASK 27-31-37-420-005

(3) Attach the solenoid valve [2] to the plug assembly [6].

SUBTASK 27-31-37-420-006

(4) Install the solenoid valve [2] to the manifold [10] with the washers [5] and bolts [4].

(a) Tighten the bolts [4] to 50 in-lb (6 N·m) - 70 in-lb (8 N·m).

SUBTASK 27-31-37-420-007

(5) Safety wire the bolts [4] with MS20995C20 lockwire, G50225.

SUBTASK 27-31-37-420-008

(6) Make sure that there is no leakage of hydraulic fluid, D00153, at the hydraulic components.

SUBTASK 27-31-37-420-009

(7) Repeat the above steps for the opposite system.

SUBTASK 27-31-37-000-001

(8) Remove the pin, SPL-1673, from the rig pin fitting [9] of the elevator feel computer [1].

SUBTASK 27-31-37-870-002

(9) Bleed the elevator control system.

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(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2

(b) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits).

NOTE: This can be done with the control wheel STAB TRIM switches or the stabilizer trim control wheel.

1) Make sure that the ballnut is against the jackscrew upstop.

(c) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

CAUTION

MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(d) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, to the two pitot probes on the vertical fin.

(e) Use the regulator, SPL-1742, or air data model test set, COM-1914, to raise the airspeed to 2.46 psig (300 knots).

NOTE: When pressure to the pitot system is applied or removed, the rate must not be more than 2.46 psig (300 knots) for each minute.

WARNING

KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Pressurize Hydraulic System A and B, with one of the following steps:

1) If a Portable Hydraulic Cart is used, do this task: Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, TASK 29-11-00-860-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) If a Portable Hydraulic Cart is not used, do these tasks:

NOTE: Both the Electric Motor-Driven Pump (EMDP) and Engine Driven Pump (EDP) should be run at the same time.

- Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), TASK 29-11-00-860-803
- Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), TASK 29-11-00-860-804.

(g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(h) Wait for 10 seconds.

(i) Do these steps to cycle the power between Hydraulic Systems A and B:

1) Set the flight controls hydraulic power switches as follows:

a) Set the FLT CONTROL B switch to OFF position.

b) Set the FLT CONTROL A switch to A ON position.

c) Wait for 2 seconds.

d) Set the FLT CONTROL A switch to OFF position.

e) Set the FLT CONTROL B switch to B ON position.

f) Wait for 2 seconds.

2) Repeat the cycle 10 times.

(j) Slowly, do control column sweeps with pitot pressure applied.

(k) Do these steps to cycle pitot pressure:

1) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to lower the airspeed to 0 psig (0 knots).

2) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to increase the airspeed to 2.46 psig (300 knots).

3) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to lower the airspeed to 0 psig (0 knots).

(l) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(m) Wait for 10 seconds.

(n) Remove the pressure from the Hydraulic Systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-31-37-710-001

(10) Do this task: Elevator Feel Computer Leakage Check, TASK 27-31-37-200-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-37-860-019

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-37-020-009

(2) At the two pitot probes on the vertical fin, remove the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent from the pitot probes.

SUBTASK 27-31-37-410-003

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL COMPUTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator feel computer

(2) An installation of the elevator feel computer.

TASK 27-31-37-000-801

2. Elevator Feel Computer Removal

(Figure 401)

A. References

Reference	Title
20-10-51-000-801	Flareless Tubing Assembly Removal (P/B 401)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1673	Pin - Safety, Elevator Feel Computer Part #: F80153-1 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-31-37-010-001

(1) Open this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-37-860-001

(2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-37-860-002

(3) Do these steps to set the B Dimension (Figure 401):

NOTE: The B Dimension is measured between the center of the upper and lower Gimbal pins on the stabilizer trim jackscrew. This requires two persons: one person will be in the flight compartment, the second person will be in the tail of the airplane with a headset.

(a) Turn the stabilizer trim wheel on the control stand to set the B Dimension.

(b) Use the bar, SPL-1677, to measure the B Dimension at 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 401).

CAUTION

MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAFE OR CAN CAUSE DAMAGE THE WIRES OR BUNDLE INSULATION.

1) Make sure that the bar, SPL-1677, does not cause damage to the wire bundles.

SUBTASK 27-31-37-860-003

(4) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-37-860-004

(5) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-37-480-001

CAUTION

YOU MUST INSTALL THE SAFETY PIN, F80153-1 IN THE RIG PIN HOLE OF THE ELEVATOR FEEL COMPUTER. IF THE ELEVATOR FEEL COMPUTER IS NOT ATTACHED TO THE INPUT ARM, IT CAN BE DAMAGED WHEN IT IS REMOVED.

(6) Install the pin, SPL-1673, in the input arm [8] and elevator feel computer assembly [1].

F. Elevator Feel Computer Removal

SUBTASK 27-31-37-020-001

CAUTION

DO NOT LIFT THE ELEVATOR FEEL COMPUTER BY THE INPUT ARM, OR APPLY A TORQUE OF MORE THAN 300 POUND-INCHES (33.9 NEWTON-METERS) TO THE INPUT ARM. THE ELEVATOR FEEL COMPUTER IS VERY SENSITIVE AND IT CAN BE DAMAGED.

(1) Remove the elevator feel computer assembly [1]:

(a) Disconnect the spring [16A] from the crank [25].

(b) Remove the nut [26], washer [31], washer [27], and bolt [28] to disconnect the crank [25] from the elevator feel computer assembly [1].

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(c) Remove the nut [23], washer [22], and bolt [21] to disconnect the stabilizer pushrod [2] from the input arm [8].

(d) Disconnect the electrical connectors [7] from the elevator feel computer assembly [1].

WARNING

RELEASE THE CONNECTION SLOWLY AND LET THE PRESSURE DECREASE BEFORE YOU COMPLETELY REMOVE THE HYDRAULIC LINE. IF YOU DISCONNECT THE HYDRAULIC LINE WHEN IT HAS PRESSURE, A SPRAY OF HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(e) Disconnect the return hydraulic lines [29], pressure hydraulic lines [30], pitot lines, and static lines from the elevator feel computer assembly [1].

1) Install tags on lines and port fittings to clearly show the correct connection location (TASK 20-10-51-000-801).

(f) Install caps to the hydraulic lines, pitot lines, and static lines.

(g) Install plugs to all ports.

(h) Remove the nuts [6], washers [5], washers [4], and bolts [3] that attach the elevator feel computer assembly [1] to the airplane structure.

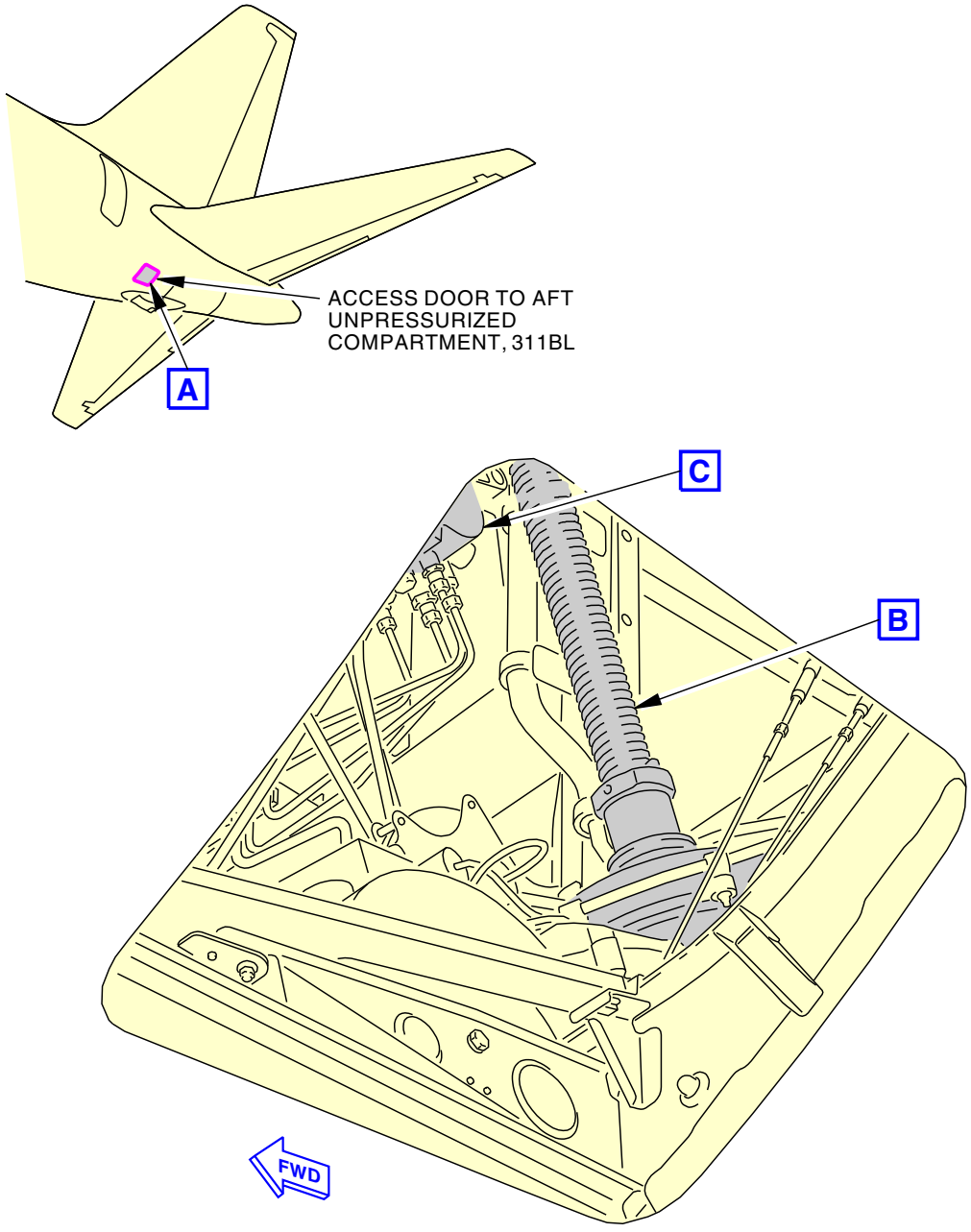
(i) Remove the elevator feel computer assembly [1] from the airplane.

SUBTASK 27-31-37-540-001

(2) Discard the packings [9], packings [12], packings [14], packings [17], and packings [19].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



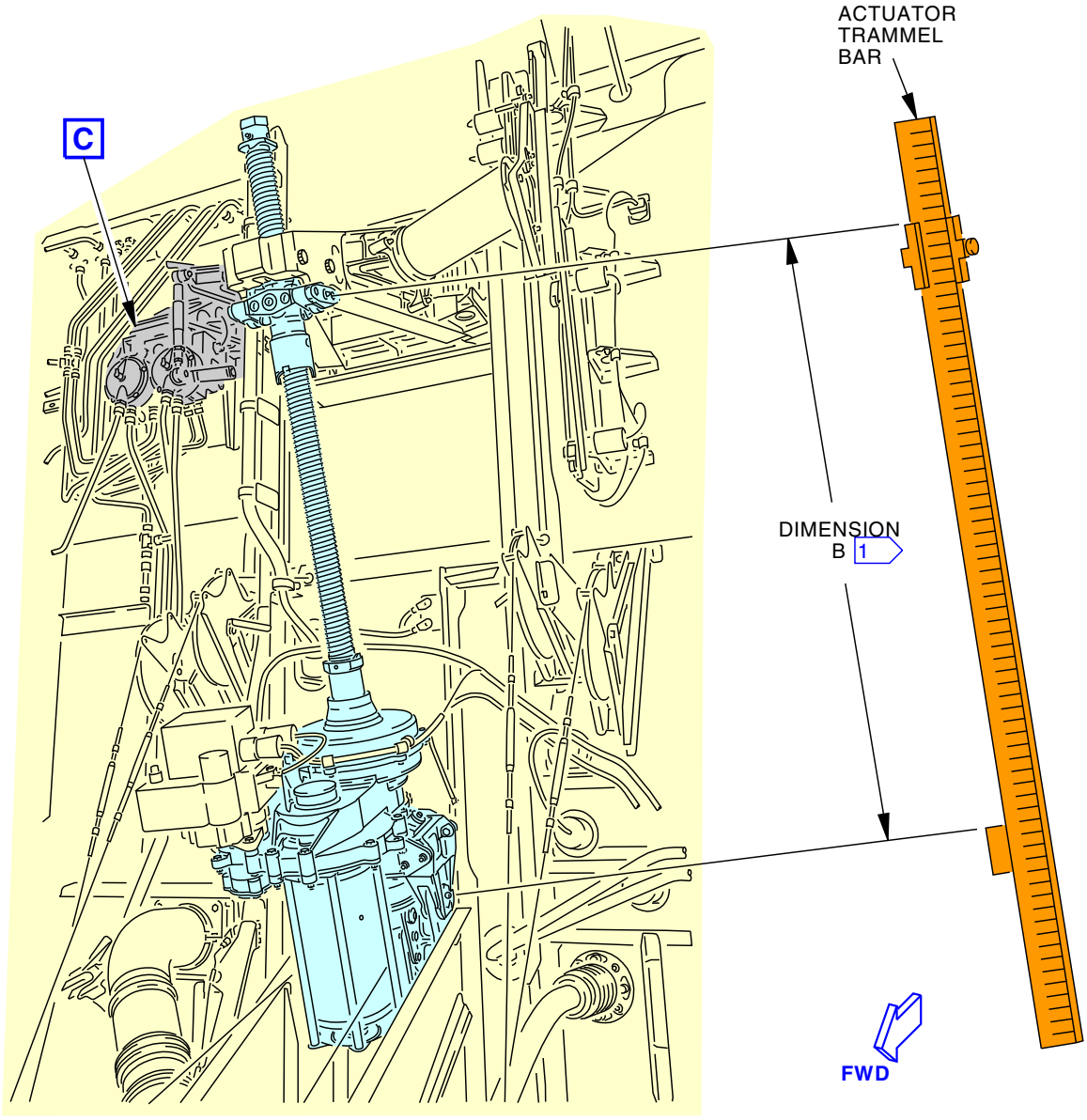
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412550 S00061530883_V1

**Elevator Feel Computer Installation
Figure 401/27-31-37-990-801 (Sheet 1 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

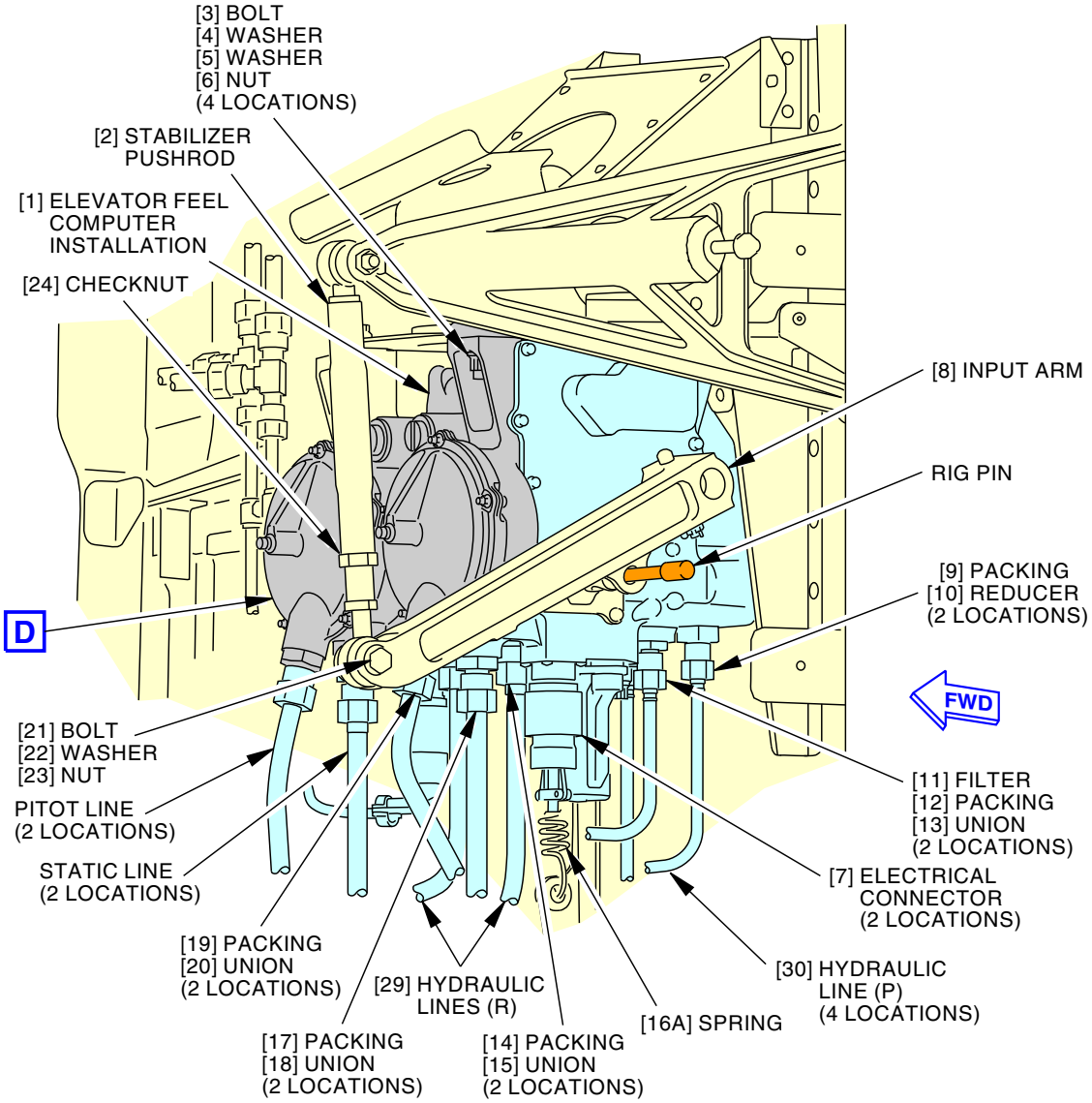
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412551 S00061530884_V1

Elevator Feel Computer Installation
Figure 401/27-31-37-990-801 (Sheet 2 of 4)

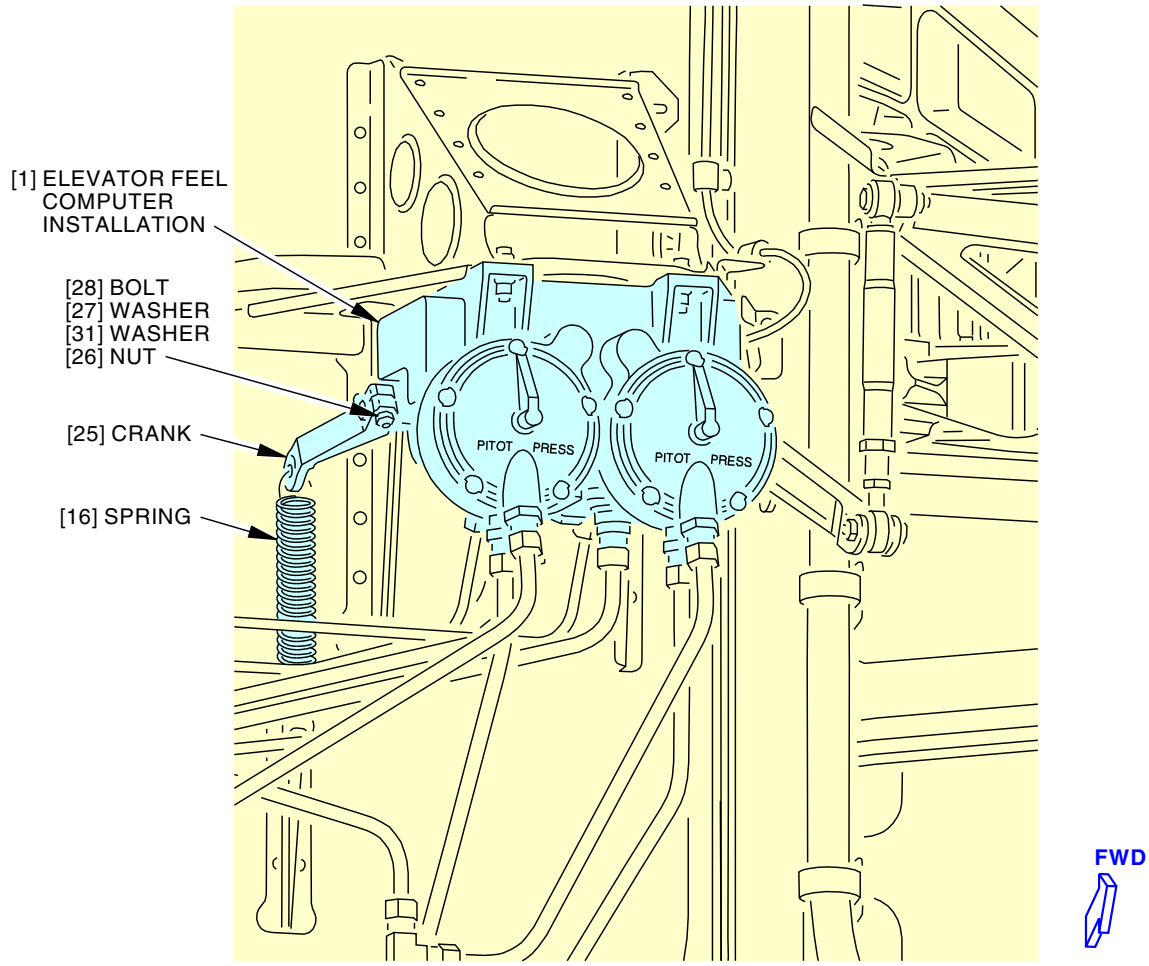
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412552 S00061530885_V2

Elevator Feel Computer Installation
Figure 401/27-31-37-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR FEEL COMPUTER (EXAMPLE)

D

2571383 S0000616626_V2

Elevator Feel Computer Installation
Figure 401/27-31-37-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-37-400-801

3. Elevator Feel Computer Installation

(Figure 401)

A. References

Reference	Title
20-10-51-400-801	Flareless Tubing Assembly Installation (P/B 401)
27-31-00-700-812	Feel Differential Pressure Light - Test (P/B 501)
27-31-00-700-813	Feel Force System - Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
27-31-17-790-801	Elevator Pitot System Leak - Test (P/B 201)
27-31-37-200-801	Elevator Feel Computer Leakage Check (P/B 601)
29-11-00-860-802	Hydraulic System A or B Pressurization with a Portable Hydraulic Cart (P/B 201)
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
29-11-00-860-804	Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP) (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1673	Pin - Safety, Elevator Feel Computer Part #: F80153-1 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator feel computer assembly	27-31-37-01-265	SIA ALL
9	Packing	27-31-37-01-345	SIA ALL
12	Packing	27-31-37-01-340	SIA ALL
14	Packing	27-31-37-01-335	SIA ALL
17	Packing	27-31-37-01-345	SIA ALL
19	Packing	27-31-37-01-345	SIA ALL

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Elevator Feel Computer Installation

SUBTASK 27-31-37-860-005

(1) Make sure that pressure is removed from the elevator hydraulic systems A and B.

(a) If it is necessary, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-37-860-006

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(2) Use the bar, SPL-1677, to make sure that the B Dimension is at 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 401).

SUBTASK 27-31-37-420-001

(3) If the packings [9], packings [12], packings [14], packings [17], packings [19], filters [11], unions [13], unions [15], unions [18], unions [20], and reducers [10] are not installed in the elevator feel computer assembly [1], do these steps:

(a) Lightly lubricate the new packings [9], new packings [12], new packings [14], new packings [17], and new packings [19] with hydraulic fluid, D00153.

(b) Install these items in the elevator feel computer assembly [1]:

1) The packings [9] and reducers [10] to the fittings for the computer pressure lines

2) The filters [11], packings [12], and unions [13] to the fittings for the hydraulic lines

3) The packings [14] and unions [15] to the fittings for the return lines

4) The packings [17] and unions [18] to the fittings for the static lines

5) The packings [19] and unions [20] to the fittings for the pitot lines.

SUBTASK 27-31-37-080-001

(4) Remove the pin, SPL-1673, from the input arm [8] and elevator feel computer assembly [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-37-480-002

(5) Install the rig pin E-4 from the test set rigging pin kit, SPL-1585, in the input arm [8] and elevator feel computer assembly [1].

SUBTASK 27-31-37-420-002

(6) Install the elevator feel computer assembly [1].

(a) Put the elevator feel computer assembly [1] in its position.

(b) Install the bolts [3], washers [4] (under the bolt), washers [5] (under the nut), and nuts [6] to attach the elevator feel computer assembly [1] to the airplane structure.

(c) Connect the stabilizer pushrod [2] to the input arm [8].

1) If the bolt [21] cannot be installed, do these steps to adjust the length of the stabilizer pushrod [2]:

a) Loosen the checknut [24] on the stabilizer pushrod [2].

b) Turn the rod end fitting of the stabilizer pushrod [2] until the bolt [21] can be installed easily by hand.

c) Make sure that the rod end extends more than half of the distance across the inspection hole in the stabilizer pushrod [2].

d) Tighten the checknut [24].

2) Install the washer [22] and nut [23] to the bolt [21].

(d) Connect the spring [16A] to the elevator feel computer assembly [1].

(e) Connect the crank [25] to the elevator feel computer assembly [1].

(f) Install the bolt [28], washer [27], washer [31], and nut [26].

(g) Connect the spring [16] to the crank [25].

CAUTION MAKE SURE THAT YOU CONNECT THE HYDRAULIC LINES TO THE CORRECT PORTS. IF YOU INSTALL THE HYDRAULIC LINES TO INCORRECT PORTS, YOU CAN CAUSE DAMAGE TO THE ELEVATOR FEEL COMPUTER.

(h) Connect the hydraulic lines to the elevator feel computer assembly [1] (TASK 20-10-51-400-801).

1) Remove the caps and plugs.

2) Connect the return hydraulic lines [29] to the elevator feel computer assembly [1].

a) Tighten the B-nuts on the return hydraulic lines [29] to 170 ±9 in-lb (19 ±1 N·m).

3) Connect the pressure hydraulic lines [30] to the elevator feel computer assembly [1].

a) Tighten the B-nuts on the pressure hydraulic lines [30] to 140 ±7 in-lb (16 ±1 N·m).

(i) Remove the caps and plugs from pitot lines and static lines.

(j) Connect the pitot lines and static lines to the fittings on the elevator feel computer assembly [1].

(k) Connect the electrical connectors [7] to the elevator feel computer assembly [1].

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SUBTASK 27-31-37-080-002

(7) Remove the rig pin E-4 of the rigging pin kit, SPL-1585, from the input arm [8] and elevator feel computer assembly [1].

SUBTASK 27-31-37-860-007

(8) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-37-860-021

(9) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-37-860-022

(10) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

SUBTASK 27-31-37-870-001

(11) Bleed the elevator control system.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(b) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits).

NOTE: This can be done with the control wheel STAB TRIM switches or the stabilizer trim control wheel.

1) Make sure that the ballnut is against the jackscrew upstop.

(c) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(d) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, to the two pitot probes on the vertical fin.

(e) Use the regulator, SPL-1742, or air data model test set, COM-1914, to raise the airspeed to 2.46 psig (300 knots).

NOTE: When pressure to the pitot system is applied or removed, the rate must not be more than 2.46 psig (300 knots) for each minute.

WARNING KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Pressurize Hydraulic System A and B, with one of the following steps:

1) If a Portable Hydraulic Cart is used, do this task: Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, TASK 29-11-00-860-802.

2) If a Portable Hydraulic Cart is not used, do these tasks:

NOTE: Both the Electric Motor-Driven Pump (EMDP) and Engine Driven Pump (EDP) should be run at the same time.

- Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), TASK 29-11-00-860-803
- Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), TASK 29-11-00-860-804.

(g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(h) Wait for 10 seconds.

(i) Do these steps to cycle the power between Hydraulic Systems A and B:

1) Set the flight controls hydraulic power switches as follows:

- A ON, B OFF - Hold for 2 seconds
- B ON, A OFF - Hold for 2 seconds.

2) Repeat the cycle 10 times.

(j) Slowly, do control column sweeps with pitot pressure applied.

(k) Do these steps to cycle pitot pressure:

1) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to lower the airspeed to 0 psig (0 knots).

2) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to increase the airspeed to 2.46 psig (300 knots).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Use the regulator, SPL-1742, or air data model test set, COM-1914, connected at the elevator pitot probes on the vertical stabilizer, to lower the airspeed to 0 psig (0 knots).

(l) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(m) Wait for 10 seconds.

SUBTASK 27-31-37-860-008

(12) Remove the pressure from the Hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-31-37-210-001

(13) Make sure that there is no hydraulic leakage from the elevator feel computer (TASK 27-31-37-200-801).

SUBTASK 27-31-37-860-009

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(14) Move the horizontal stabilizer to the neutral stabilizer position (zero degrees or 4 units of trim).

NOTE: This can be done with the control wheel STAB TRIM switches or the stabilizer trim wheel.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-37-860-023

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-37-860-018

(2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-37-020-002

(3) At the two pitot probes on the vertical fin, remove the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, or equivalent from the pitot probes.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-37-730-001

(4) Do this task: Elevator Pitot System Leak - Test, TASK 27-31-17-790-801.

SUBTASK 27-31-37-730-002

(5) Do this task: Feel Differential Pressure Light - Test, TASK 27-31-00-700-812.

SUBTASK 27-31-37-730-003

(6) Do this task: Feel Force System - Test, TASK 27-31-00-700-813.

SUBTASK 27-31-37-410-001

(7) Close this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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ELEVATOR FEEL COMPUTER - INSPECTION/CHECK

1. General

A. This procedure contains this task:

(1) Elevator Feel Computer Leakage Check

(2) Elevator Feel Computer Solenoid Valve Inspection

TASK 27-31-37-200-801

2. Elevator Feel Computer Leakage Check

(Figure 27-31-37-990-801)

A. General

(1) Use this task to do a check for leakage at the elevator feel computer.

B. References

Reference	Title
20-10-51-400-801	Flareless Tubing Assembly Installation (P/B 401)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-37 P/B 401	ELEVATOR FEEL COMPUTER - REMOVAL/INSTALLATION
27-31-37-400-801	Elevator Feel Computer Installation (P/B 401)
27-31-37-990-801	Figure: Elevator Feel Computer Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
G01043	Cloth - Lint-free	
G50641	Swab - ITW Texwipe TX762 Absorbond Swab With Long Handle	

D. Elevator Feel Computer Leakage Check

SUBTASK 27-31-37-200-001

(1) Do these steps to do a check for leakage:

(a) Clean any residual hydraulic fluid from the elevator feel computer with a lint-free cloth, G01043.

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Pressurize the elevator hydraulic system A and B for one minute and make sure that there is no leakage (TASK 27-31-00-800-801).

(c) Move the Captain's or First Officer's yoke forward then aft then center (neutral).

(d) Visually examine the external surface of the elevator feel computer static tubes for signs of hydraulic fluid.

(e) Visually examine the supply, return and feel pressure tubing B-nuts connection to the elevator feel computer.

(f) Remove pressure from elevator hydraulic system A and B (TASK 27-31-00-800-802).

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(g) If there is no sign of hydraulic fluid at these locations, then continue.

(h) If there is a sign of hydraulic fluid at these locations, the B-nuts may not be correctly installed or may have become loose.

1) Make sure that the B-nut is seated and tightened (TASK 20-10-51-400-801).

(i) Use a lint-free cloth, G01043, to clean off the ends of the static lines of hydraulic fluid.

(j) From the open end of the static lines, carefully put a Texwipe TX762 swab, G50641 (Q-tip), approximately 1 in. (25 mm) or more into the static lines.

1) Wipe the inside surface in the static lines.

2) Remove the Texwipe TX762 swab, G50641 (Q-tip), and visually examine it for signs of hydraulic fluid.

NOTE: Small quantities of hydraulic fluid leakage into the elevator feel computer static line is considered normal. Each seal is allowed 1 drop for every 100 cycles. Every 200 flight hours equals 100 MEFC cycles. Based on this ratio, a definition of normal leakage would be the approximate accumulation of 2.5 drops of hydraulic fluid after 100 hours of in service flight operation in the right side cavity. The in service duty cycle of the MEFC is approximately 0.5 cycle for every 1 hour of flight.

a) If the leakage rate exceeds 1 drop per hour, replace the elevator feel computer. Do this task: ELEVATOR FEEL COMPUTER - REMOVAL/INSTALLATION, PAGEBLOCK 27-31-37/401.

(k) Do these steps to check the static cavity of the elevator feel computer:

1) Disconnect the static lines from the feel computer.

2) Clean the external surfaces of the static line B-nuts and static cavity tube union fittings of hydraulic fluid.

3) Carefully put a Texwipe TX762 swab, G50641 (Q-tip), in the static cavity tube union fittings.

a) Wipe the inside surface of the static cavity tube union fittings.

b) Remove the Texwipe TX762 swab, G50641 (Q-tip), and visually examine it for signs of hydraulic fluid.

4) Carefully put a Texwipe TX762 swab, G50641 (Q-tip), in the static line ends that connect to the static cavity tube union fittings.

a) Wipe the inside surface of the static lines.

b) Remove the Texwipe TX762 swab, G50641 (Q-tip), and visually examine it for signs of hydraulic fluid.

(l) If there is no sign of hydraulic fluid at these locations, reinstall the static tubes (TASK 27-31-37-400-801).

NOTE: The elevator feel computer is not the source of the leakage.

(m) If any hydraulic fluid is found at the elevator feel computer static line or static cavity, let the static cavity drain.

1) Wait until any hydraulic fluid stops dripping from the static ports before testing for leakage.

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WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

2) Pressurize the elevator hydraulic system A and B (TASK 27-31-00-800-801).
3) Move the Captain's or First Officer's yoke forward then aft then center (neutral).
4) Make sure that no hydraulic fluid leaks from the static line after one minute.

   NOTE: Formation of a drop is not to be considered as leakage.
5) Remove pressure from elevator hydraulic system A and B (TASK 27-31-00-800-802).
6) If there is any leakage from the static line, replace the elevator feel computer (PAGEBLOCK 27-31-37/401).
7) Reinstall the static tubes (TASK 27-31-37-400-801).
8) Tighten the B-nut to the installation torque value (TASK 20-10-51-400-801).

SUBTASK 27-31-37-840-001

(2) Put the airplane back to its usual condition.

END OF TASK

TASK 27-31-37-200-802

3. Elevator Feel Computer Solenoid Valve Inspection

A. General

(1) This procedure contains steps to inspect the elevator feel computer solenoid valve.

(2) The elevator feel computer solenoid valve is referred to as the solenoid valve in this procedure.

B. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-31-37 P/B 201	ELEVATOR FEEL COMPUTER - MAINTENANCE PRACTICES

C. Tools/Equipment

Reference	Description
STD-6151	Gaussmeter

D. Procedure

SUBTASK 27-31-37-860-014

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 27-31-37-860-012

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

SUBTASK 27-31-37-240-001

(3) Put the gaussmeter, STD-6151, below the A-side solenoid valve to measure its magnetic field.

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(a) Make sure that there is no magnetic field.

NOTE: The gauss meter must show 0.

SUBTASK 27-31-37-240-002

(4) Put the gaussmeter, STD-6151, below the B-side solenoid valve to measure its magnetic field.

(a) Make sure that there is no magnetic field.

NOTE: The gauss meter must show 0.

SUBTASK 27-31-37-860-013

(5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

SUBTASK 27-31-37-240-003

(6) Put the gaussmeter, STD-6151, below the A-side solenoid valve to measure its magnetic field.

(a) Record the value of the A-side solenoid valve magnitude.

SUBTASK 27-31-37-240-004

(7) Put the gaussmeter, STD-6151, below the B-side solenoid valve to measure its magnetic field.

(a) Record the value of the B-side solenoid valve magnitude.

SUBTASK 27-31-37-240-005

(8) Compare the A-side and B-side solenoid valve magnitude values.

(a) If one of the solenoid valves shows a much less magnitude or if it shows 0, then replace this solenoid valve (PAGEBLOCK 27-31-37/201).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR BALANCE PANEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator balance panel

(2) An installation of the elevator balance panel.

B. The elevator balance panel is referred to as the "balance panel" in this procedure.

TASK 27-31-41-000-801

2. Elevator Balance Panel - Removal

(Figure 401, Figure 402)

A. General

(1) This task includes the steps to remove elevator balance panel.

B. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
55-10-11-000-801	Balance Bay Panels - Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
316	APU Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

E. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
333EB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
343EB	Horizontal Stabilizer, Access Panel - T.E. Area

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F. Prepare for the Removal

SUBTASK 27-31-41-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-41-010-001

(2) Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-41-010-002

(3) For the left elevator, open these access panels:

(TASK 55-10-11-000-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
333EB	Horizontal Stabilizer, Access Panel, Trailing Edge

SUBTASK 27-31-41-010-003

(4) For the right elevator, open these access panels:

(TASK 55-10-11-000-801)

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
343EB	Horizontal Stabilizer, Access Panel - T.E. Area

SUBTASK 27-31-41-480-001

(5) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the aft control quadrant (Figure 401).

G. Elevator Balance Panel Removal

SUBTASK 27-31-41-020-001

CAUTION

DO NOT MIX THE ELEVATOR BALANCE PANELS. IF YOU MIX THE ELEVATOR BALANCE PANELS, DAMAGE TO THE AIRCRAFT CAN OCCUR.

(1) Remove the balance panel [10] (bays 2, 3, and 4).

(a) Remove the bolts [15], bolts [22], and washers [16] that attach the bulb seals [17] to the balance panel [10].

(b) Remove the washers [14] and bolts [13] that attach the balance panel [10] to the idler hinge [18].

(c) Remove the washers [11] and bolts [12] that attach the balance panel [10] to the elevator [6].

(d) Remove the washer [20] and bolt [21] that attach the balance panel [10] to the elevator [6].

(e) Remove the balance panel [10] from the airplane.

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SUBTASK 27-31-41-020-002

(2) Remove the idler hinge [18] (bays 2, 3, and 4).

(a) Remove the washers [8] and bolts [7] that attach the flat seals [5] to the idler hinge [18].

(b) Remove the flat seals [5] from the airplane.

(c) Remove the washers [4] and bolts [3] that attach the hinge half [2] to the balance panel support [1].

(d) Remove the idler hinge [18] and seal cloth [19] from the airplane.

——— END OF TASK ———

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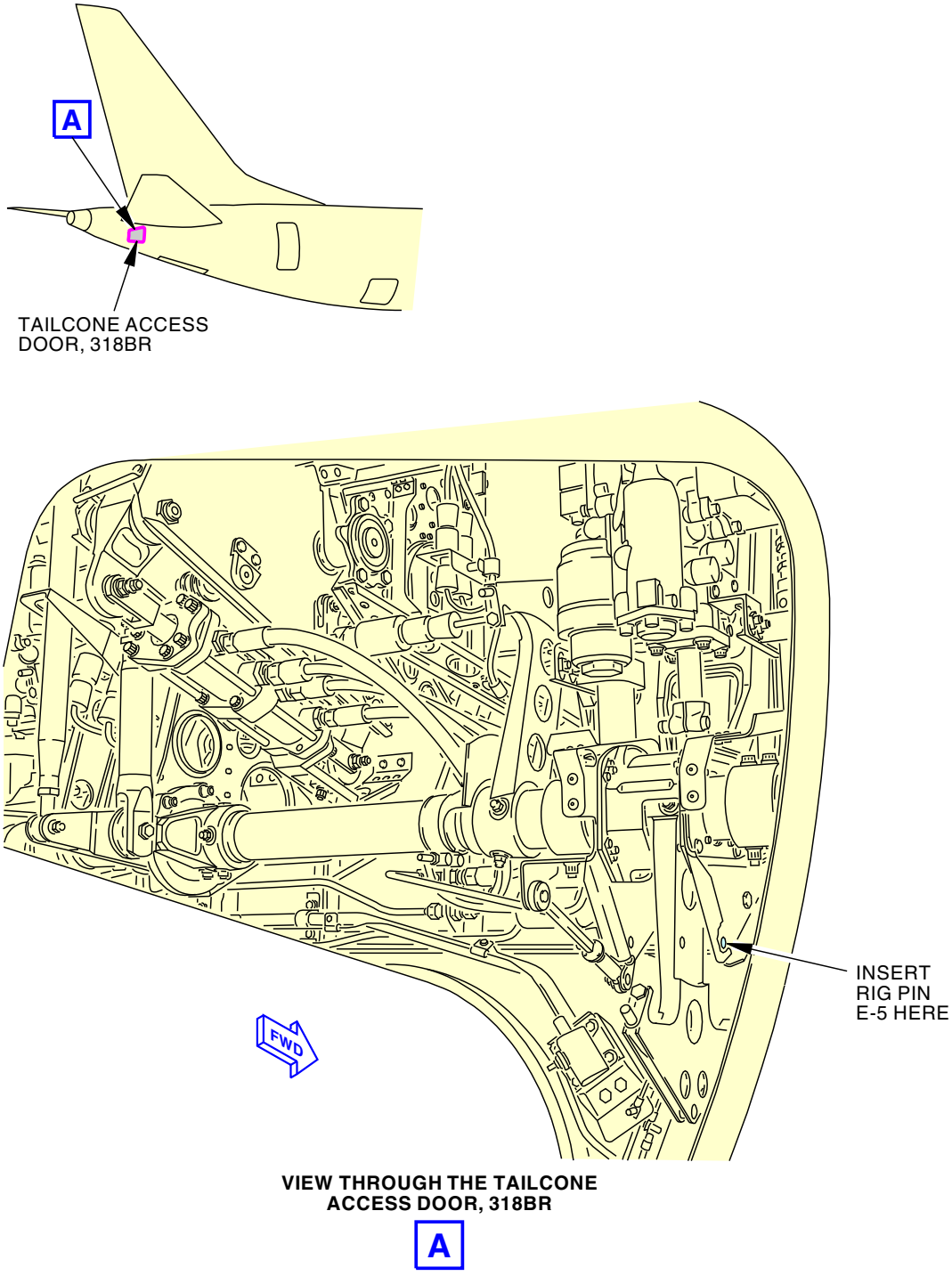
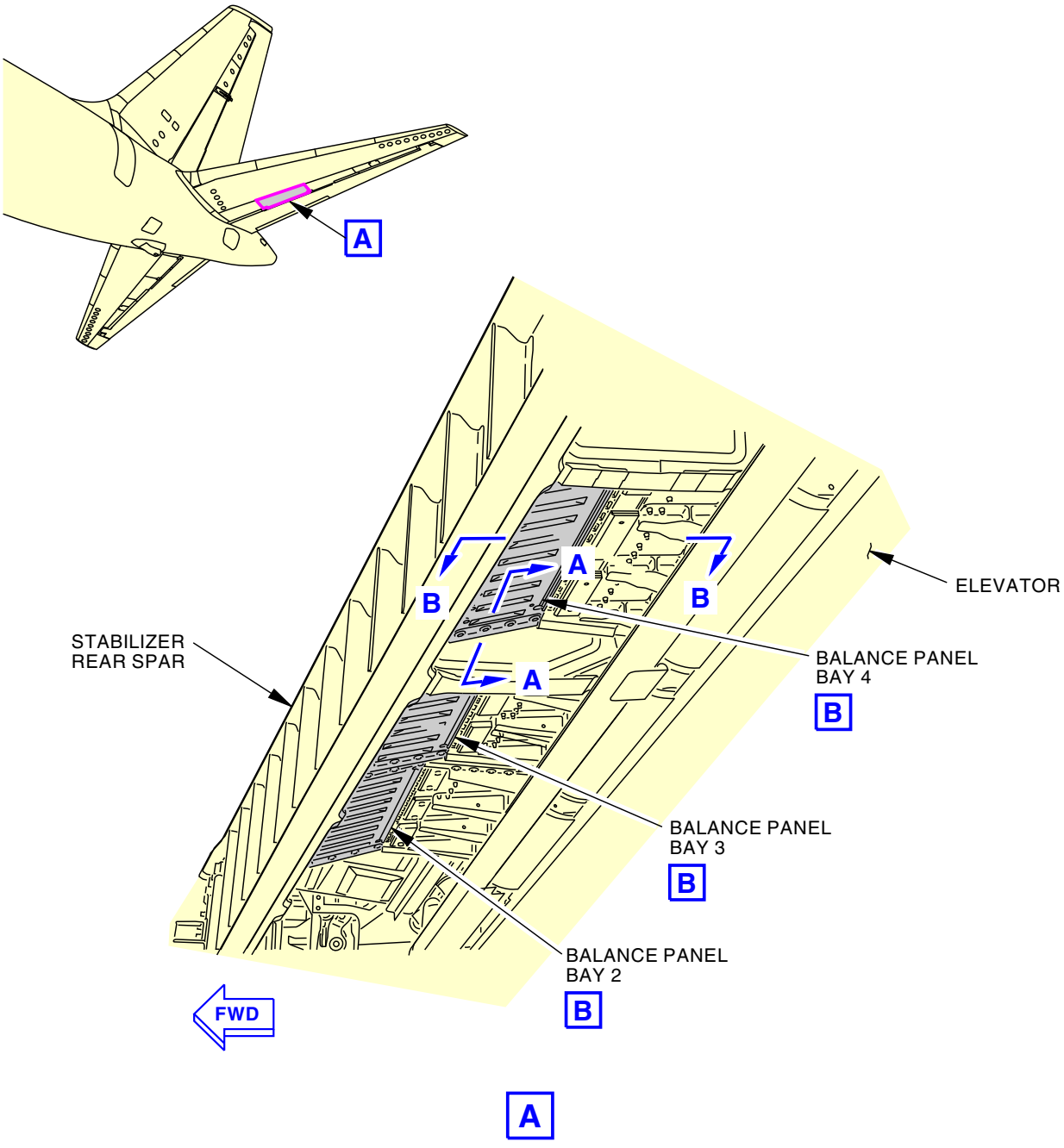


Elevator Rig Pin Installation
Figure 401/27-31-41-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

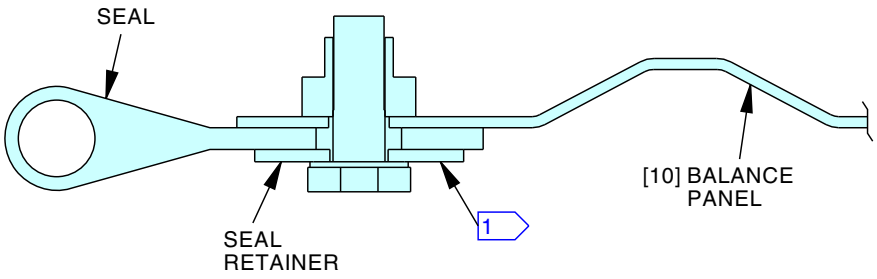


NOTE:
LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE.

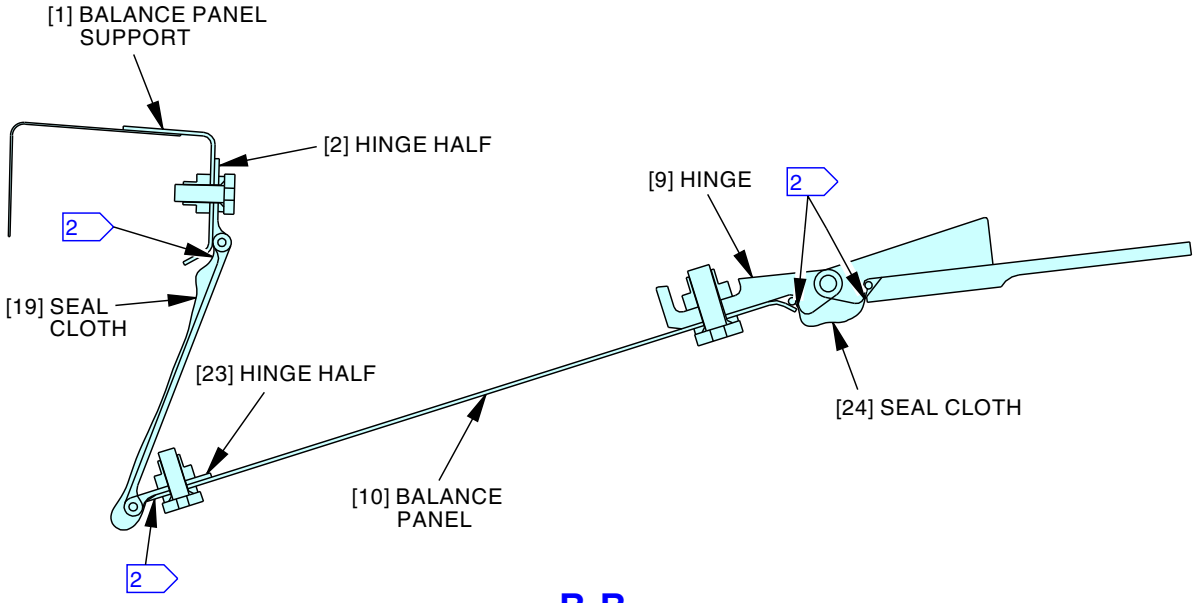
2412554 S00061530893_V2

Elevator Balance Panel Installation
Figure 402/27-31-41-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



B-B

1 APPLY BMS 3-23 BY BRUSH ONLY TO ALL EDGES OF THE SEAL RETAINER AND INTERFACE BETWEEN THE SEAL RETAINER AND THE SEAL. THIS ONLY NEEDS TO BE APPLIED WHEN NEW COMPONENTS ARE INSTALLED.

2 APPLY BMS 3-23 BY BRUSH ONLY TO ALL SURFACES WHERE THE BALANCE PANEL SURFACES CONTACT THE SEAL CLOTH. THIS ONLY NEEDS TO BE APPLIED WHEN NEW COMPONENTS ARE BEING INSTALLED. IF YOU INSTALL THE SAME PART THAT WAS REMOVED, YOU DO NOT NEED TO APPLY THE BMS 3-23.

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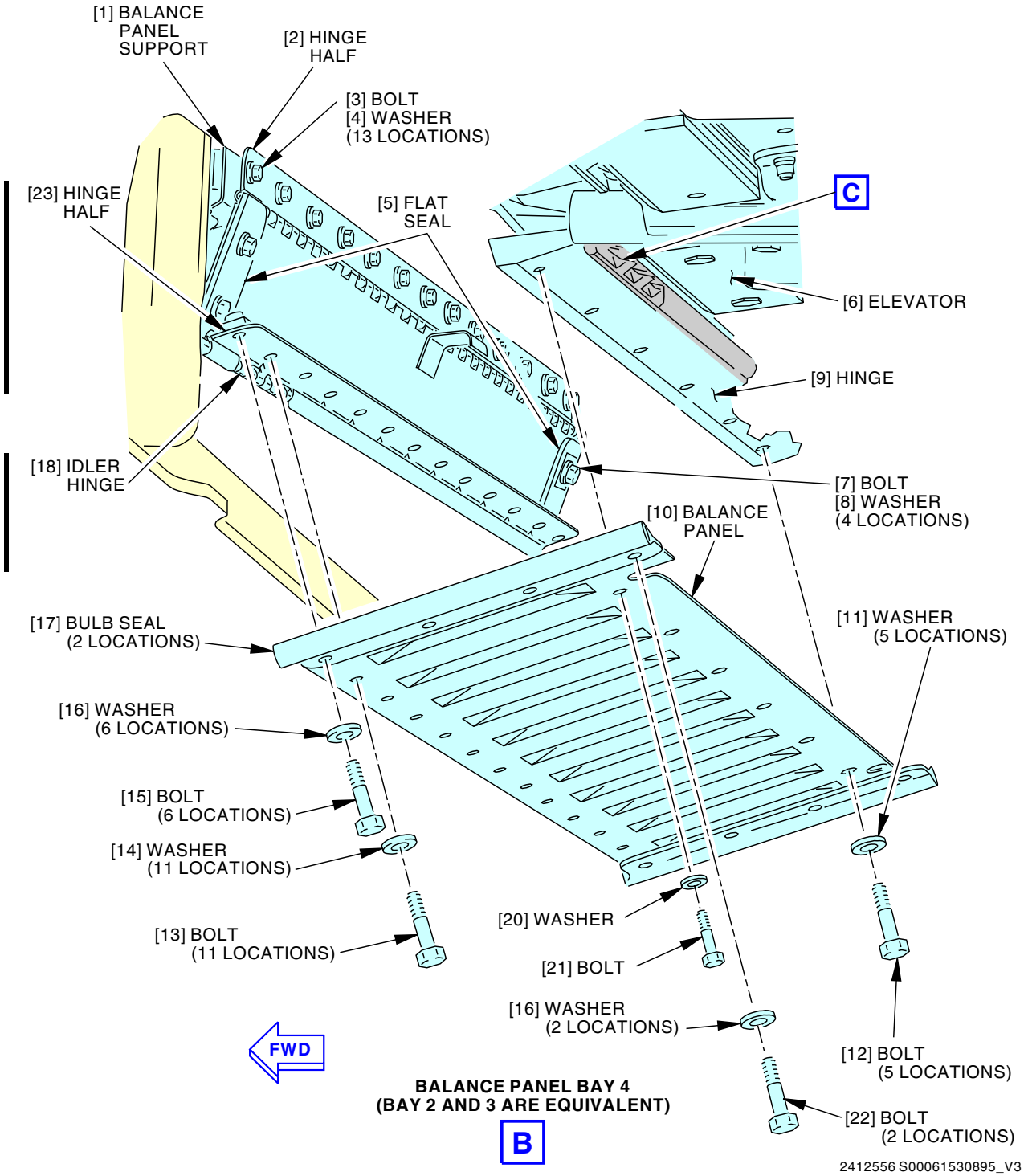
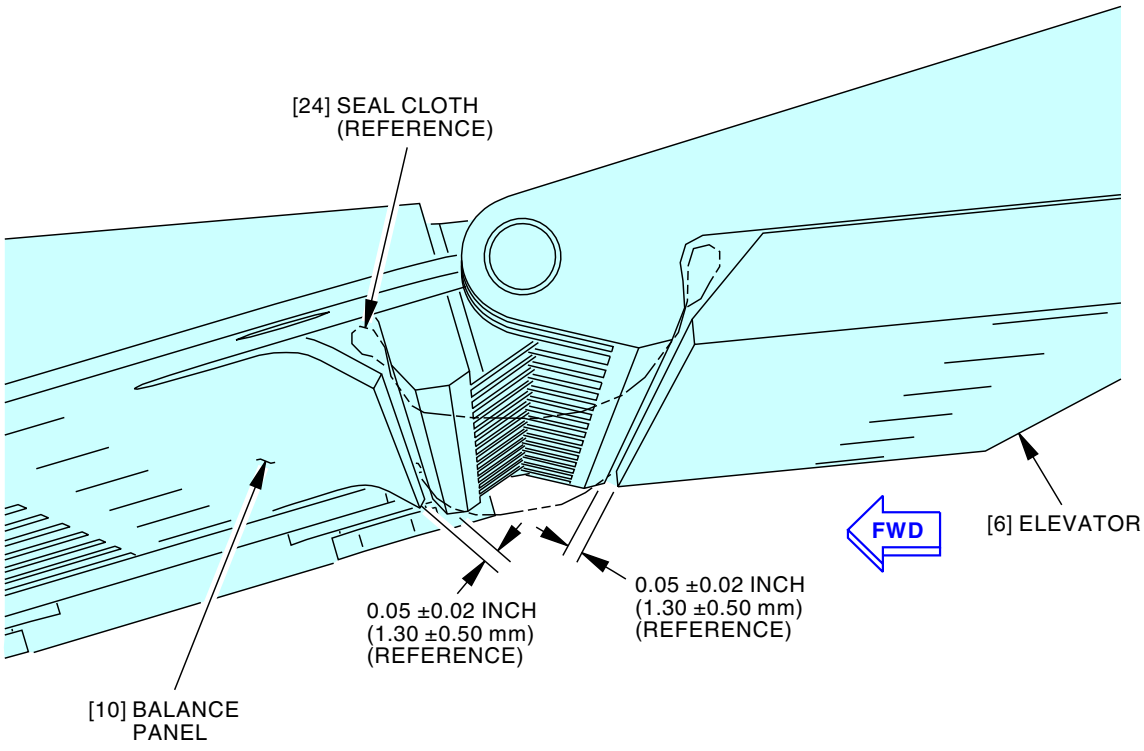
Elevator Balance Panel Installation
Figure 402/27-31-41-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Balance Panel Installation
Figure 402/27-31-41-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



C

2412557 S00061530896_V2

Elevator Balance Panel Installation
Figure 402/27-31-41-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-41-400-801

3. Elevator Balance Panel - Installation

(Figure 401, Figure 402)

A. General

(1) This task includes the steps to install the elevator balance panel.

B. References

Reference	Title
20-50-11-910-801	Standard Torque Values (P/B 201)
27-31-00-700-804	Elevator Balance Panels - Test (P/B 501)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
55-10-11-400-801	Balance Bay Panels - Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G00009	Compound - Organic Corrosion Inhibiting	BMS3-23

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Balance panel	27-31-41-01-010	SIA ALL
		27-31-41-01-015	SIA ALL
		27-31-41-01-170	SIA ALL
		27-31-41-01-175	SIA ALL
		27-31-41-01-330	SIA ALL
		27-31-41-01-335	SIA ALL
18	Idler hinge	27-31-41-01-140	SIA ALL
		27-31-41-01-145	SIA ALL
		27-31-41-01-300	SIA ALL
		27-31-41-01-305	SIA ALL
		27-31-41-01-460	SIA ALL
		27-31-41-01-465	SIA ALL

F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
316	APU Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

G. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
333EB	Horizontal Stabilizer, Access Panel, Trailing Edge
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
343EB	Horizontal Stabilizer, Access Panel - T.E. Area

H. Elevator Balance Panel Installation

SUBTASK 27-31-41-860-002

(1) Make sure that you remove the pressure from the elevator hydraulic system A and B.

(a) If it is necessary, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-41-420-001

(2) Install the idler hinge [18] (bays 2, 3, and 4).

(a) If you install new balance panel assemblies or seals, apply corrosion inhibiting compound, G00009, as necessary (Figure 402).

NOTE: If you use the same parts that you removed, it is not necessary to apply the corrosion inhibiting compound, G00009.

(b) Position one loose end of the seal cloth [19] between the hinge half [2] and balance panel support [1].

(c) Install the bolts [3] and washers [4] that attach the hinge half [2] to the balance panel support [1].

(d) Tighten the bolt [3] to 23 in-lb (3 N·m) - 27 in-lb (3 N·m).

(e) Install the bolts [7] and washers [8] to attach the flat seals [5] to the idler hinge [18].

1) Do not tighten the bolts [7] until the clearance between the flat seals [5] and the stabilizer trailing edge rib is adjusted.

(f) Make sure that the clearance between the flat seals [5] and stabilizer trailing edge rib is 0.01 +0.06 / -0.00 in. (0.25 +1.53 / -0.00 mm).

(g) Tighten the bolts [7] (TASK 20-50-11-910-801).

SUBTASK 27-31-41-420-002

CAUTION MAKE SURE THAT YOU INSTALL THE CORRECT BALANCE PANEL IN THE CORRECT BAY. BALANCE PANELS IN BAYS 2, 3, AND 4 ARE NOT INTERCHANGEABLE. IF YOU DO NOT FOLLOW THIS CAUTION, DAMAGE TO THE AIRCRAFT CAN OCCUR.

(3) Install the balance panel [10].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) If you install new balance panel assemblies or seals, apply corrosion inhibiting compound, G00009, as necessary (Figure 402).

NOTE: If you use the same parts that you removed, it is not necessary to apply corrosion inhibiting compound, G00009.

(b) Put and hold the balance panel [10] in its position.

(c) Position the loose end of the seal cloth [24] between the balance panel [10] and hinge [9].

(d) Install the bolt [21] and washer [20] to attach the balance panel [10] and hinge [9] to the elevator [6].

(e) Install the bolts [12] and washers [11] to attach the balance panel [10] and hinge [9] to the elevator [6].

1) Do not tighten the bolts [12] and bolt [21] until the gap between the balance panel [10] and hinge [9] is adjusted.

2) Carefully install the seal cloth [24] between the hinge [9] and balance panel [10].

3) Make sure that the gap between the balance panel [10] and hinge [9] for the seal cloth [24] does not allow either of the following conditions:

a) Pinching of the seal material.

b) Movement of the seal inboard or outboard.

NOTE: The nominal design dimension for the gap between the balance panel and hinge for the seal cloth that meets this condition is 0.05 ±0.02 in. (1.3 ±0.5 mm).

(f) Tighten the bolts [12] to 68 in-lb (8 N·m) - 82 in-lb (9 N·m).

(g) Tighten the bolt [21] to 23 in-lb (3 N·m) - 27 in-lb (3 N·m).

(h) Make sure that the idler hinge [18] is turned down from the balance panel support [1].

(i) Position the loose end of the seal cloth [19] between the hinge half [23] and balance panel [10].

(j) Install the bolts [13] and washers [14] to attach the balance panel [10] to the hinge half [23].

1) Do not tighten the bolts [13] until the elevator has moved through the full range of travel.

(k) Manually move the elevator through the full range of travel.

1) Make sure that the seal cloth [19] is not tight for all elevator positions.

(l) Tighten the bolts [13] to 23 in-lb (3 N·m) - 27 in-lb (3 N·m).

(m) Install the bolts [15], bolts [22], and washers [16] that attach the bulb seals [17] to the balance panel [10].

1) Do not tighten the bolts [15] and bolts [22] until the clearance between the flat seals [5] and stabilizer trailing edge rib is adjusted.

CAUTION

MAKE SURE THAT YOU ADJUST THE BULB SEALS CORRECTLY. IF YOU DO NOT ADJUST THE BULB SEALS CORRECTLY, DAMAGE TO THE TRAILING EDGE RIBS CAN OCCUR.

(n) Make sure that the clearance between the bulb seals [17] and stabilizer rib is 0.02 ±0.01 in. (0.51 ±0.26 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(o) Make sure that the clearance between the bulb seals [17] and aft end of the flat seals [5] is 0.02 in. (0.51 mm).

1) If it is necessary, loosen the bolts [7] and adjust the flat seals [5] to get the necessary clearance.

(p) Tighten the bolts [15] and bolts [22] to 23 in-lb (3 N·m) - 27 in-lb (3 N·m).

SUBTASK 27-31-41-080-001

(4) Remove the rig pin E-5 of the rigging pin kit, SPL-1585, from the aft control quadrant (Figure 401).

SUBTASK 27-31-41-710-001

(5) Do this task: Elevator Balance Panels - Test, TASK 27-31-00-700-804.

SUBTASK 27-31-41-010-004

(6) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-41-410-001

(7) For the left elevator, close these access panels:

(TASK 55-10-11-400-801)

Number	Name/Location
333BB	Horizontal Stabilizer, Access Panel, Trailing Edge
333CB	Horizontal Stabilizer, Access Panel, Trailing Edge
333DB	Horizontal Stabilizer, Access Panel, Trailing Edge
333EB	Horizontal Stabilizer, Access Panel, Trailing Edge

SUBTASK 27-31-41-410-002

(8) For the right elevator, close these access panels:

(TASK 55-10-11-400-801)

Number	Name/Location
343BB	Horizontal Stabilizer, Access Panel - T.E. Area
343CB	Horizontal Stabilizer, Access Panel - T.E. Area
343DB	Horizontal Stabilizer, Access Panel - T.E. Area
343EB	Horizontal Stabilizer, Access Panel - T.E. Area

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR BALANCE PANEL - INSPECTION/CHECK

1. General

A. This task supplies the data for a dimensional inspection of the elevator balance panel.

B. This task does not remove or install the elevator balance panel. Refer to the Elevator Balance Panel - Removal/Installation for procedures to remove and install the elevator balance panel.

TASK 27-31-41-200-801

2. Elevator Balance Panel - Inspection

(Figure 601)

A. General

(1) This task gives the wear limits and the repair data for the elevator balance panel.

(2) This task also examines the elevator balance panel for loose or missing attached fasteners.

B. References

Reference	Title
27-31-41-000-801	Elevator Balance Panel - Removal (P/B 401)
27-31-41-400-801	Elevator Balance Panel - Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
334	Left Horizontal Stabilizer - Elevator
344	Right Horizontal Stabilizer - Elevator

E. Procedure

SUBTASK 27-31-41-211-001

(1) Examine the elevator balance panel for missing or loose fasteners.

(a) If a fastener is loose or missing, then replace it with a new fastener.

SUBTASK 27-31-41-020-003

(2) Remove the elevator balance panel. Do this task: Elevator Balance Panel - Removal, TASK 27-31-41-000-801.

SUBTASK 27-31-41-020-004

(3) Use these tools to do a check for worn areas on the parts of the elevator balance panel connections:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-31-41-020-005

(4) Examine the parts of the elevator balance panel connections for worn areas. Do these steps:

(a) Remove the parts that you will examine.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Compare the dimensions that you measured with the permitted wear dimensions that are shown in Table 601.

(d) If a part is out of tolerance, then replace or repair the part.

Table 601/27-31-41-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS inches (mm)		WEAR LIMITS inches (mm)	
		MINIMUM	MAXIMUM	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 FORWARD HINGE HALF	I.D.	0.0930 (2.362)	0.0980 (2.489)	0.1040 (2.642)	0.0175 (0.445) *[1]
#1 FORWARD HINGE PIN	O.D.	0.0880 (2.235)	0.0900 (2.286)	0.0865 (2.197)	
#2 AFT HINGE HALF	I.D.	0.1830 (4.648)	0.1880 (4.775)	0.1940 (4.928)	0.0175 (0.445) *[1]
#2 AFT HINGE PIN	O.D.	0.1780 (4.521)	0.1800 (4.572)	0.1765 (4.483)	

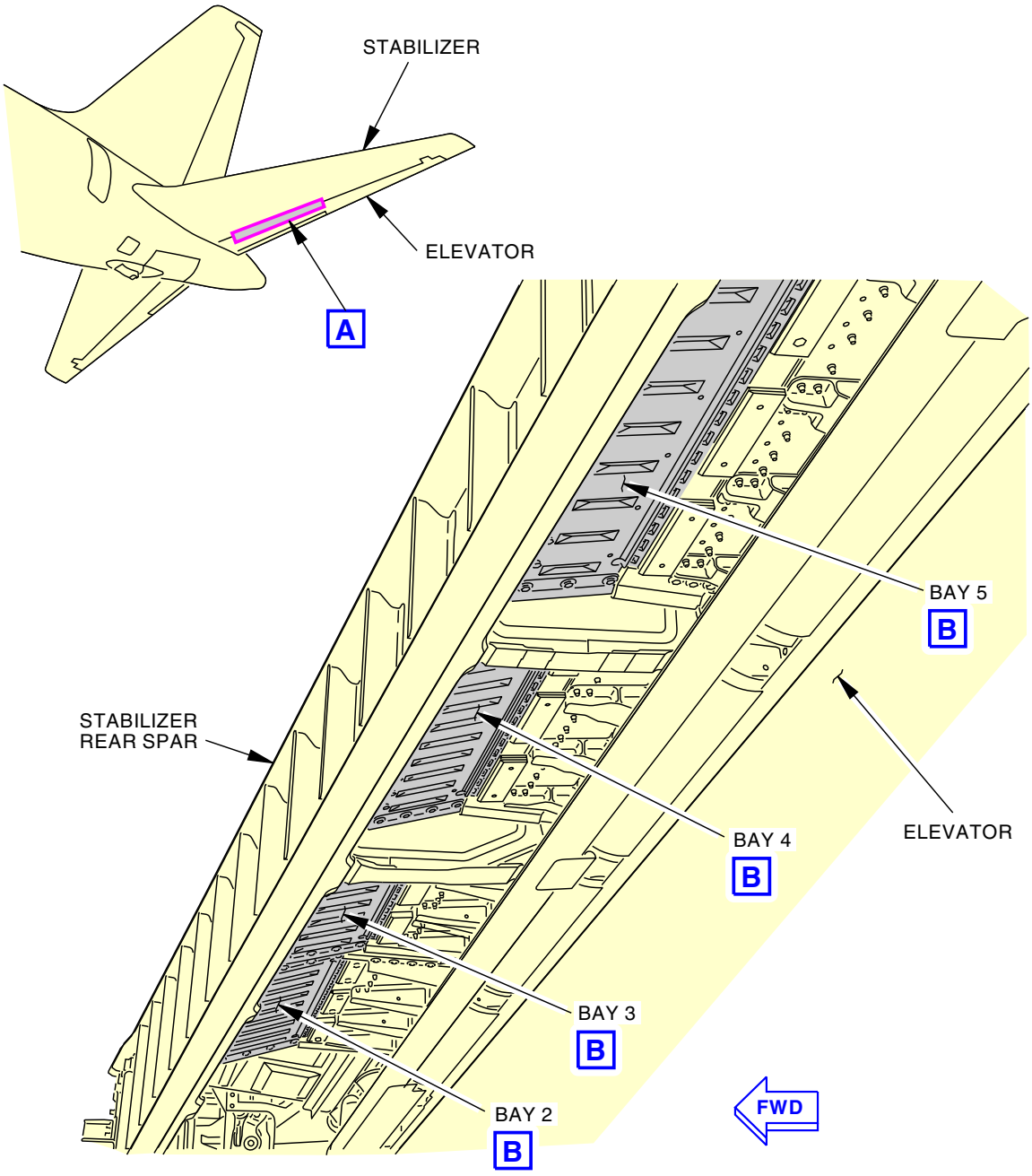
*[1] TOTAL PLAY IN THE JOINT = 0.0350 INCH (0.889 MILLIMETER)

SUBTASK 27-31-41-020-006

(5) Install the elevator balance panel. Do this task: Elevator Balance Panel - Installation, TASK 27-31-41-400-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



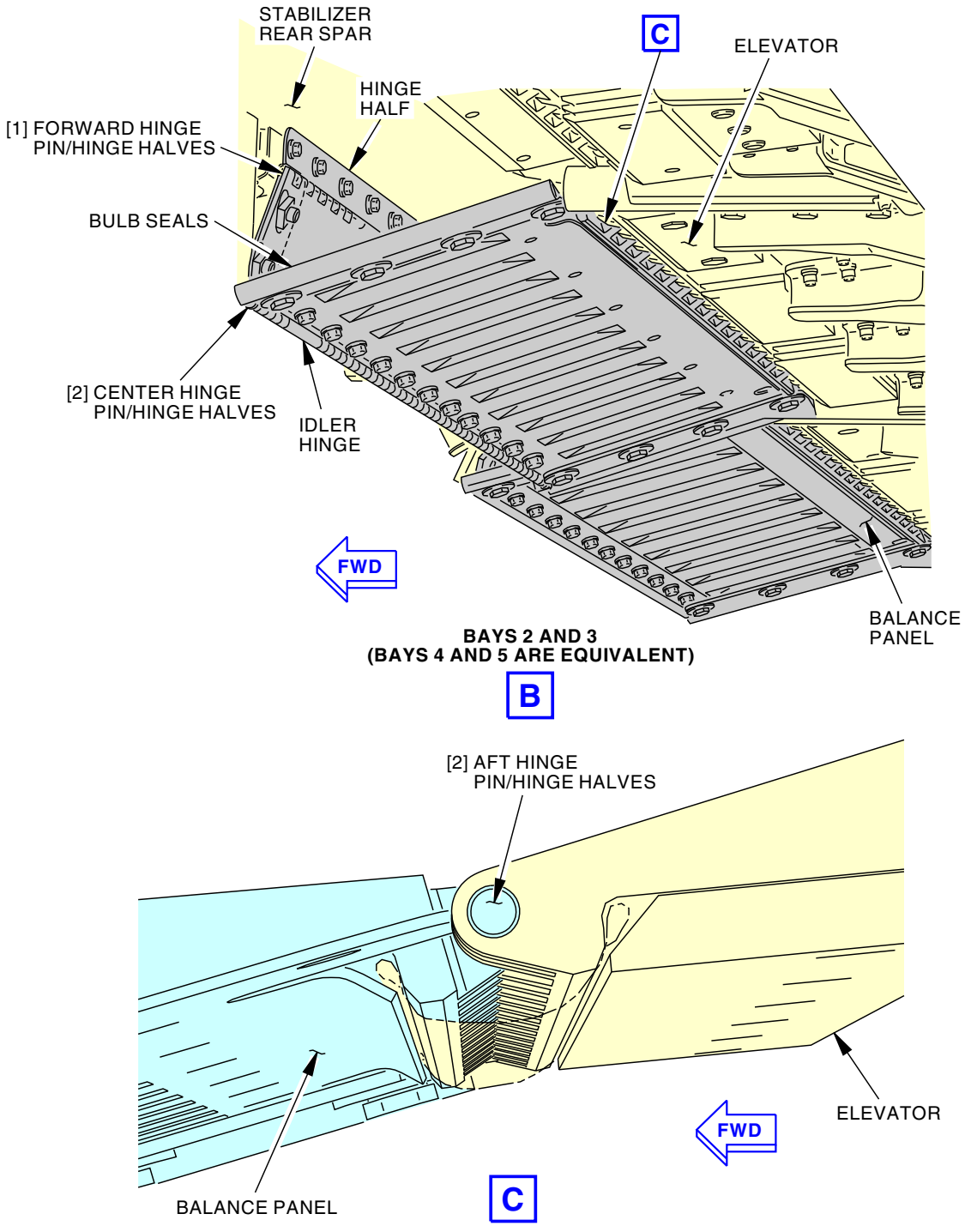
NOTE:

LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT.

2412558 S00061530900_V1

Elevator Balance Panel Wear Limits
Figure 601/27-31-41-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Balance Panel Wear Limits
Figure 601/27-31-41-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONTROL COLUMN - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a control column

(2) An installation of a control column.

B. This procedure is applicable for the captain's and first officer's control column.

TASK 27-31-51-000-801

2. Control Column - Removal

(Figure 401)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Removal

SUBTASK 27-31-51-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-51-860-002

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-51-010-001

(3) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-51-480-001

(4) Install the rig pin E-1 from the rigging pin kit, SPL-1585 in the left forward quadrant.

F. Control Column Removal

SUBTASK 27-31-51-020-001

(1) Disconnect the electrical wire [11] for the control column shaker [13] from the terminal strip in the lower nose compartment.

SUBTASK 27-31-51-020-002

(2) Disconnect the electrical wire [5] to the control column [1] from the terminal strip in the lower nose compartment.

SUBTASK 27-31-51-020-003

(3) Remove the ring assemblies and dust seals:

(a) Remove the screws [15] and washers [16] from the forward ring assembly [14] and aft ring assembly [17].

(b) Remove the forward ring assembly [14] and aft ring assembly [17].

(c) Remove the aft dust seal [18] and forward dust seal [19].

SUBTASK 27-31-51-020-004

(4) Remove the control column [1]:

CAUTION HOLD THE CONTROL COLUMN WHEN YOU REMOVE THE COUPLINGS. THE CONTROL COLUMN CAN FALL AND CAUSE DAMAGE TO EQUIPMENT.

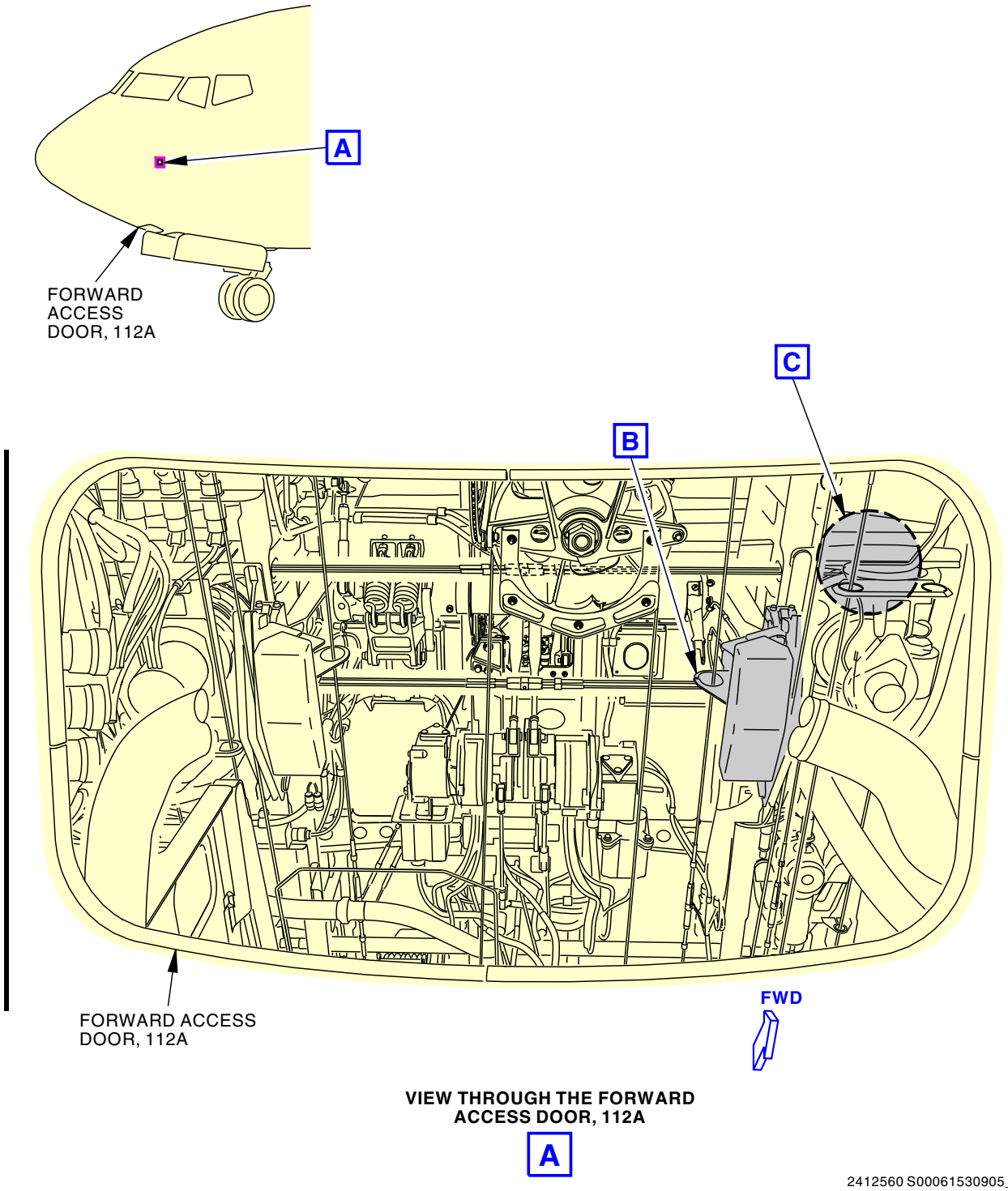
(a) Hold the control column while you remove the nuts [7], washers [8], and bolts [12] from the outboard couplings [9].

(b) Remove the outboard couplings [9].

(c) Lift and remove the control column [1] from the forward quadrant assembly.

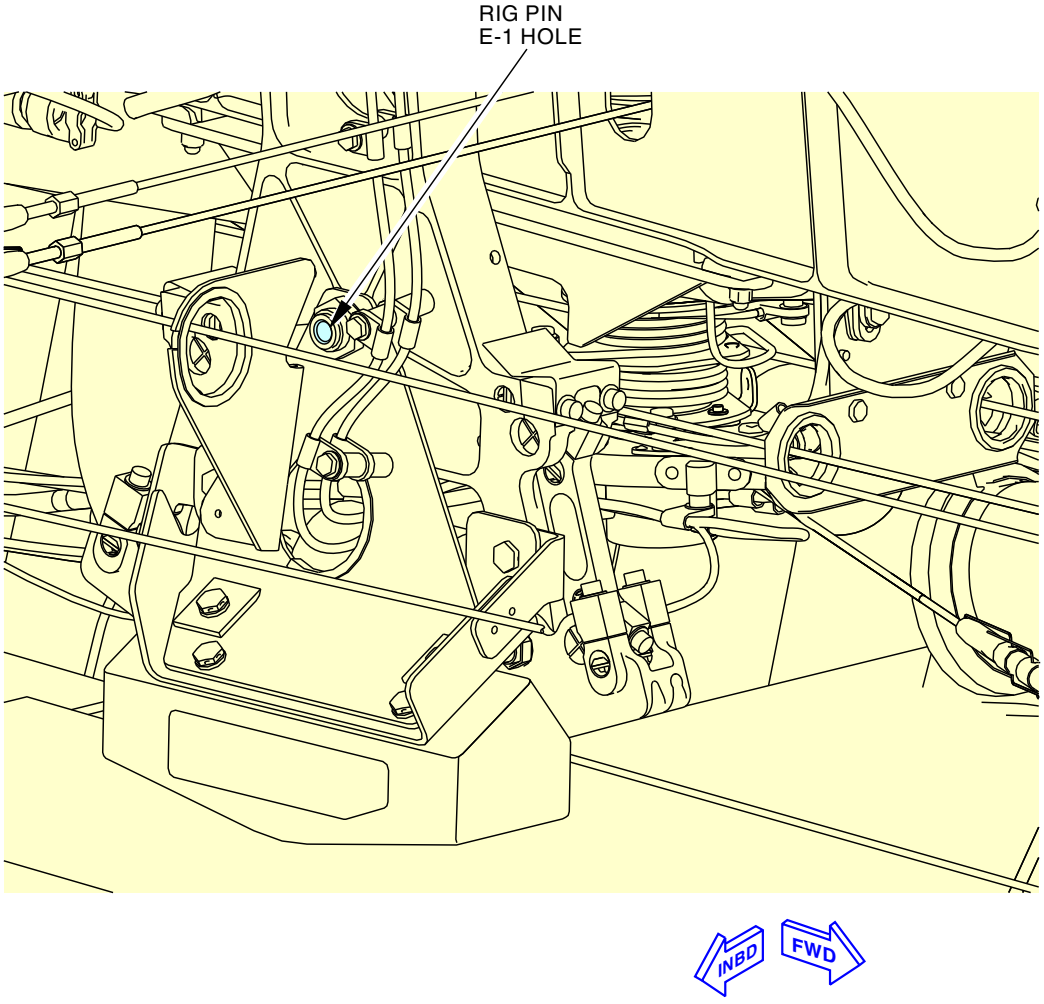
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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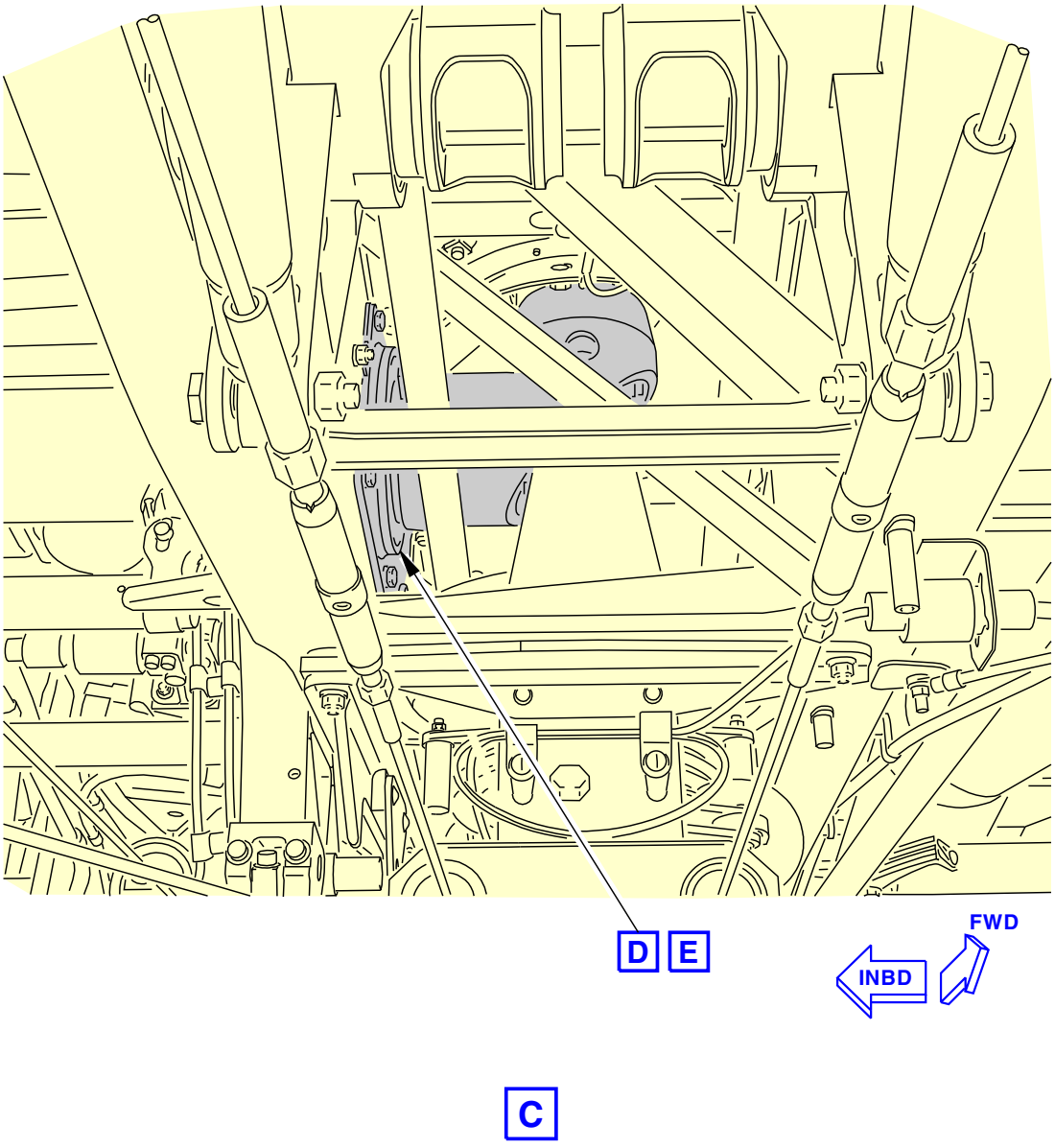
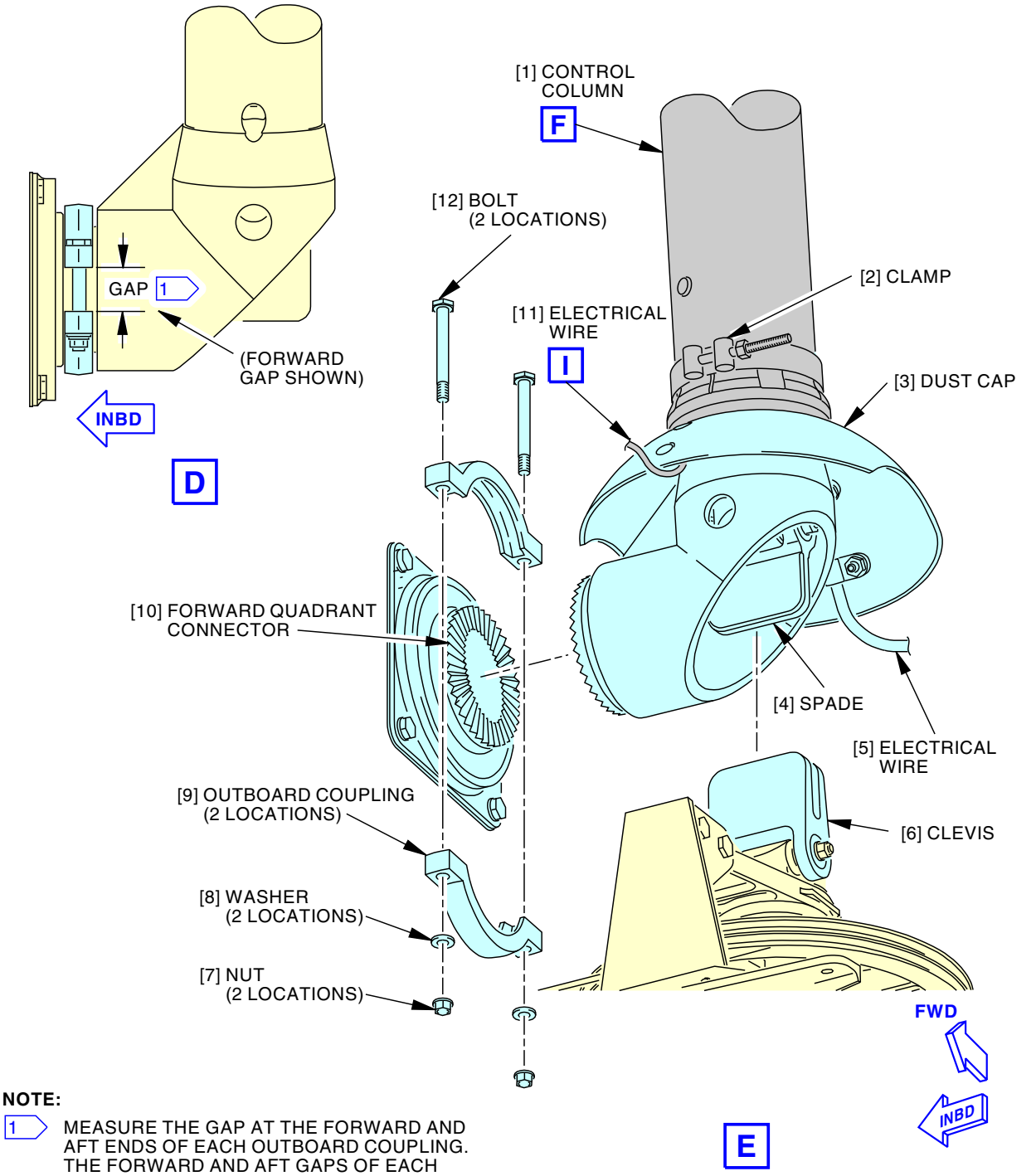
Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



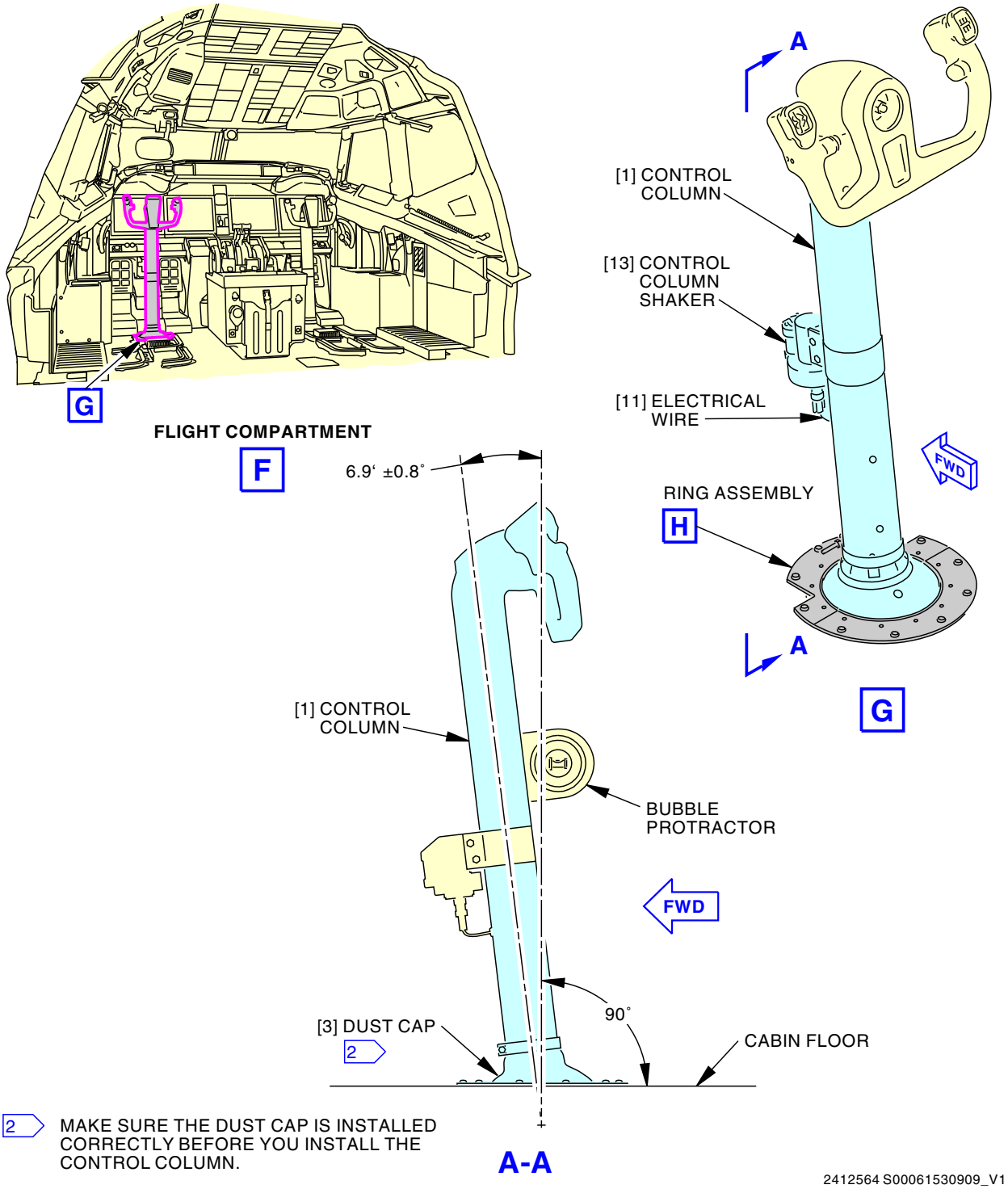
NOTE:

1 MEASURE THE GAP AT THE FORWARD AND AFT ENDS OF EACH OUTBOARD COUPLING. THE FORWARD AND AFT GAPS OF EACH OUTBOARD COUPLING SHOULD BE WITHIN 0.03 INCH (0.8 mm) OF EACH OTHER.

2412563 S00061530908_V2

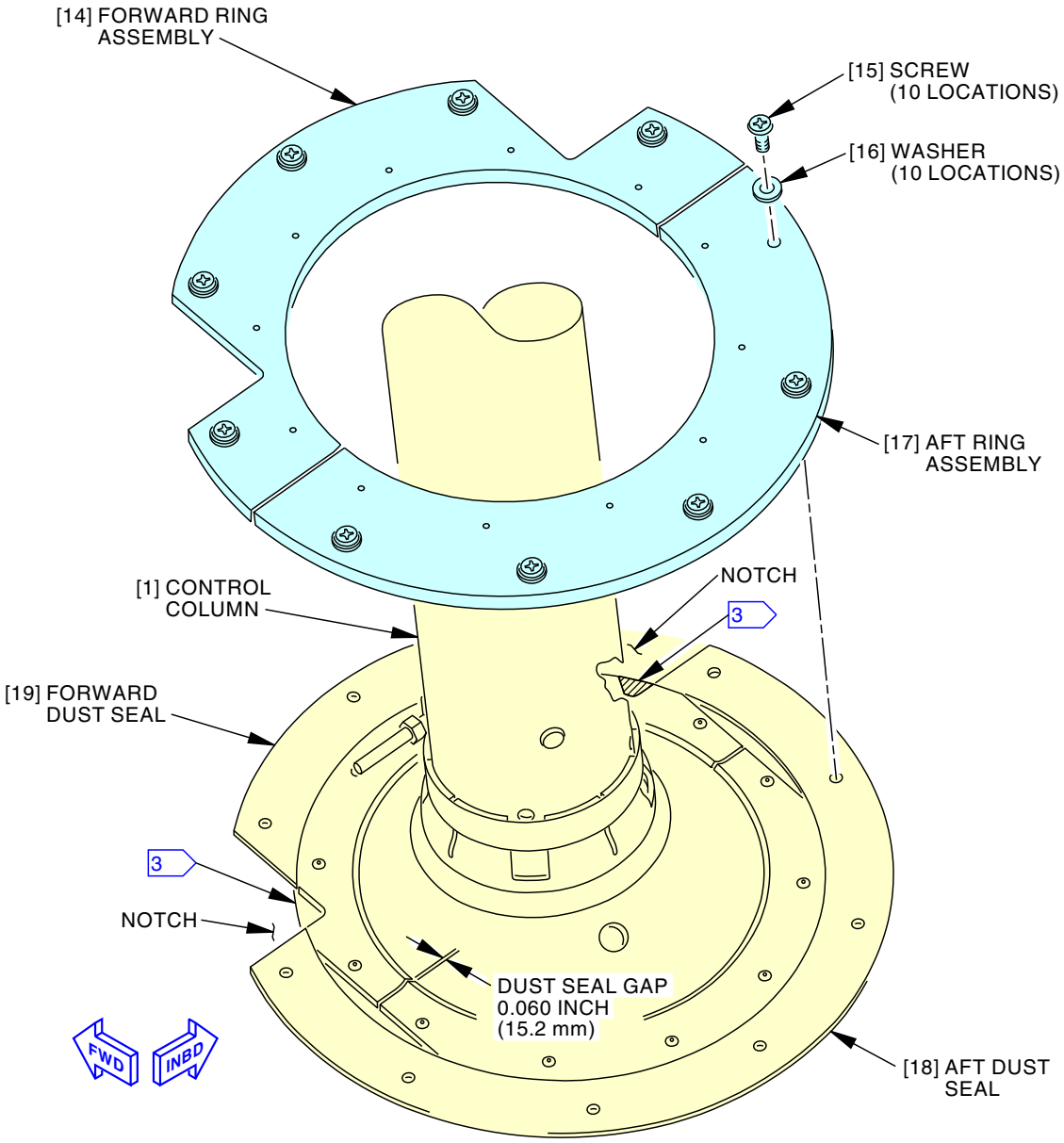
Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RING ASSEMBLY

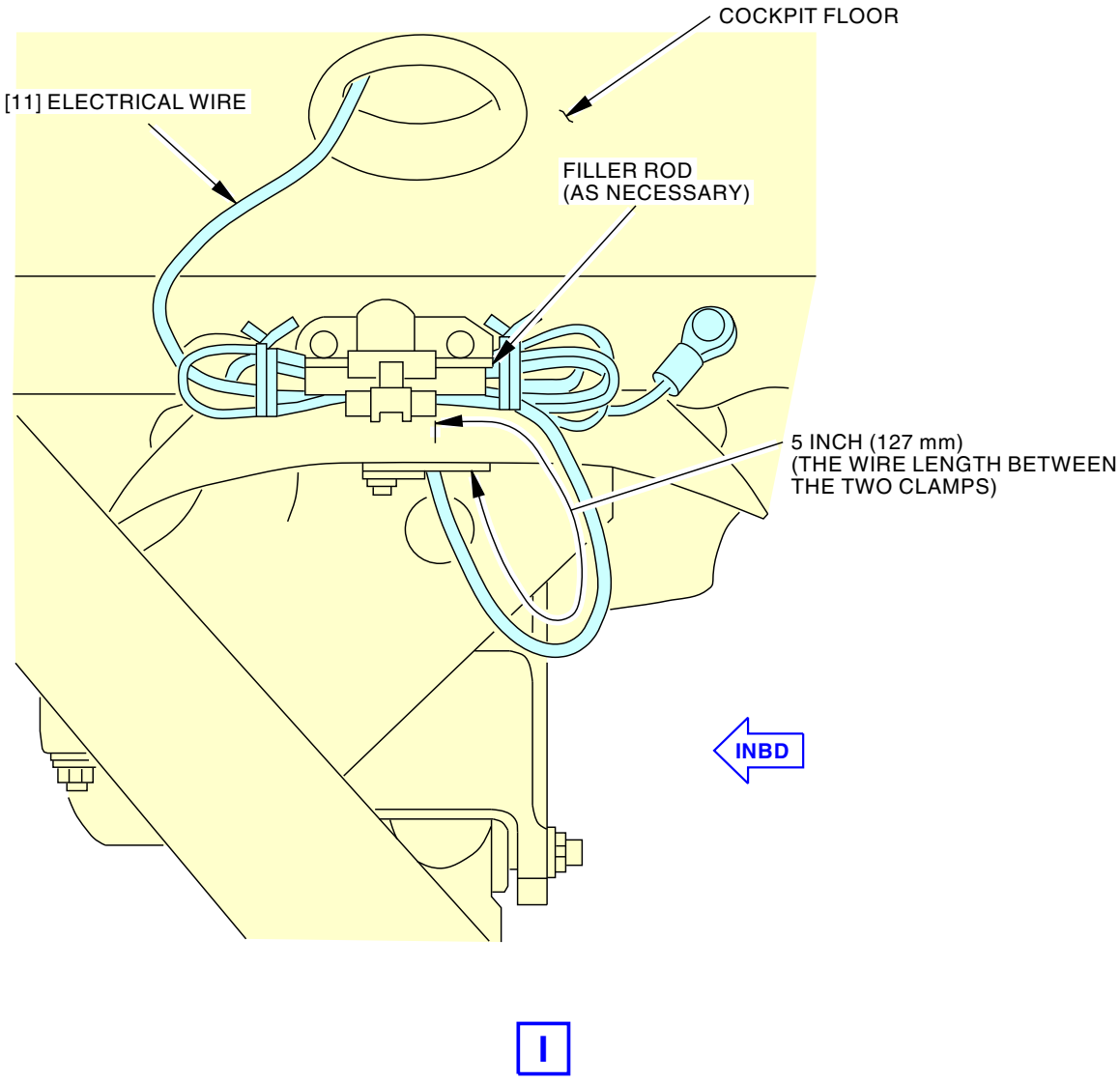
H

3 APPLY SEALANT TO THE HOLE BETWEEN THE NOTCH IN THE DUST SEALS AND THE CUTOUT IN THE FLOOR.

2412565 S00061530910_V1

Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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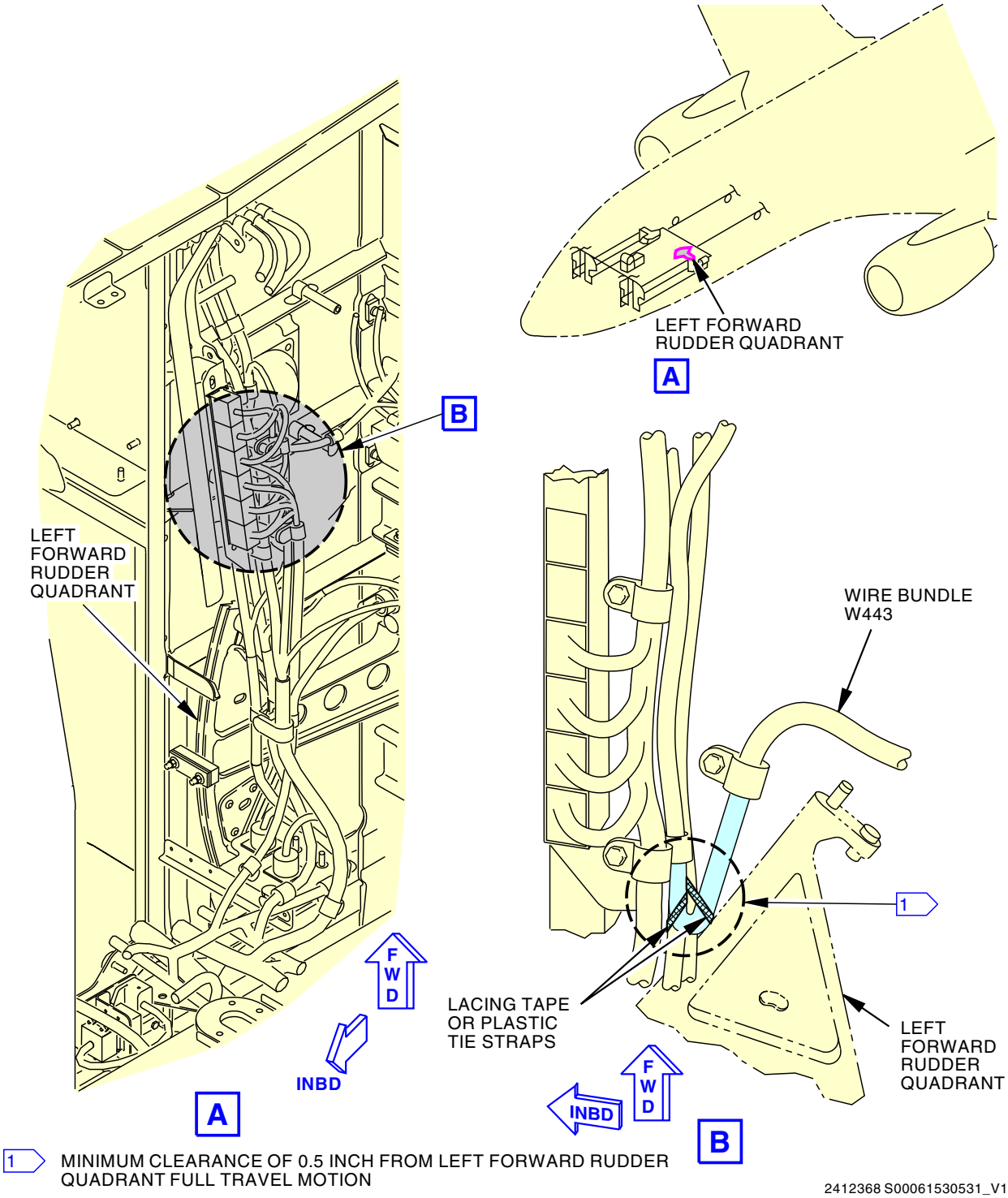
Control Column Installation
Figure 401/27-31-51-990-801 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Wire Bundle W443 Clearance
Figure 402/27-31-51-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-51-400-801

3. Control Column - Installation

(Figure 401)

A. References

Reference	Title
23-51-04-400-801	Push To Talk (PTT) Control Wheel Switch Installation (P/B 401)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-700-808	Manual Mode - Test (P/B 501)
27-31-00-700-809	Control Column Travel and Centering - Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Control column	27-31-51-01-185	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

G. Control Column Installation

SUBTASK 27-31-51-420-001

(1) Put the control column [1] in its position.

(a) Set the control wheel to the neutral position to engage the spade [4] with the clevis [6].

SUBTASK 27-31-51-480-002

(2) Use the protractor, COM-1691 to set the control column to 6.9 +/- 0.8 degrees forward of a vertical line from the floor (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-51-420-002

(3) Install the control column [1]:

(a) Engage the face splines on the control column [1] with the splines on the forward quadrant connector [10].

(b) Install the outboard couplings [9]:

1) Install the bolts [12], washers [8], and nuts [7] on the outboard couplings [9].

NOTE: Make sure that you use the correct bolts.

(c) Do these steps to make the clearances equal at each end of each outboard coupling:

1) Tighten the bolts [12] to 50 in-lb (5.65 N·m) of torque.

2) Tighten the one bolt and then the other to 50 +30 / -0 in-lb (5.6 +3.4 / -0.0 N·m) in approximately 10 in-lb (1.1 N·m) increments until you get the clearances equal to +/- 0.03 in. (0.8 mm) of each other.

(d) Make sure that the control column angle is 6.9 +/- 0.8 degrees forward of the vertical line from the floor.

(e) Connect the electrical wire [5] and electrical wire [11] to the terminal strip in the lower nose compartment.

1) Make sure there is a 5.0 in. (12.7 cm) length of the electrical wire [11] between the two clamps.

SUBTASK 27-31-51-420-003

(4) Install the ring assemblies and dust seals:

(a) Install the forward dust seal [19], aft dust seal [18], forward ring assembly [14], and aft ring assembly [17] with the screws [15] and washers [16].

CAUTION

DO NOT HOLD THE DUST CAP TOO TIGHTLY AGAINST THE WIRE BUNDLE. IT CAN CAUSE DAMAGE TO THE ELECTRICAL WIRES.

(b) If it is necessary, adjust the dust cap [3] to set the edge of the dust seals lightly up against the dust cap [3].

1) Loosen the clamp [2] to adjust the dust cap [3].

(c) Make sure the gap between the two dust seals is 0.060 in. (1.52 mm).

(d) Fill the hole between the notch in the dust seals and the cutout in the floor with sealant, A00247.

SUBTASK 27-31-51-080-001

(5) Remove the rig pin E-1 from the left forward quadrant.

(a) Move the control column [1] full forward then full aft.

1) Make sure the electrical wire [5] and electrical wire [11] are free of any interference.

SUBTASK 27-31-51-410-001

(6) Close this access panel:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Control Column Installation Test

SUBTASK 27-31-51-860-003

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-51-710-001

(2) Do a check of the control column:

(a) Move the control column full forward then full aft.

1) Make sure the control column operates correctly and smoothly.

(b) Turn the control wheel through full travel.

1) Make sure the control wheel operates correctly and smoothly.

SUBTASK 27-31-51-710-002

(3) Do this task: Control Column Travel and Centering - Test, TASK 27-31-00-700-809.

SUBTASK 27-31-51-710-003

(4) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

SUBTASK 27-31-51-710-004

(5) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

SUBTASK 27-31-51-710-005

(6) Do the operational test of the PTT switch in this task: Push To Talk (PTT) Control Wheel Switch Installation, TASK 23-51-04-400-801.

SUBTASK 27-31-51-710-006

(7) Do a test of the stabilizer trim control switch on the control wheel:

(a) Make sure that the STAB TRIM PRI switch, S272, on the aft of the control stand is in the NORMAL position.

(b) Move the STAB TRIM switches to APL NOSE UP and then to APL NOSE DOWN.

1) Make sure the stabilizer moves correctly.

SUBTASK 27-31-51-740-001

(8) Do a test of the autopilot disengage switch on the control wheel:

(a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.

1) Make sure that the CMD A or CMD B autopilot engage switch light comes on.

(b) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.

1) Make sure that the A/P warning lights flash.

2) Make sure that the A/P disengage warning sound comes on.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Push the captain or first officer autopilot disengage switch again.
   a) Make sure that the A/P warning lights go off.
   b) Make sure that there is no A/P disengage warning sound.

SUBTASK 27-31-51-750-001

(9) Make sure that the wire bundle W443 has a minimum clearance of 0.5 in. (12.700 mm) from left forward rudder quadrant full travel motion, while operating the rudder pedals. (Figure 402)

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONTROL COLUMN SUPPORT BEARING - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a control column support bearing

(2) An installation of a control column support bearing.

B. The control column support bearing is referred to as "support bearing" in this procedure.

C. the support bearing includes the forward quadrant connector, bearing housing, shim, and bearing.

D. This procedure is applicable for the support bearings on the captain's and first officer's control column.

TASK 27-31-54-000-801

2. Control Column Support Bearing Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-51-000-801	Control Column - Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1747	Set - Support, Forward Elevator Control Quadrant Part #: C27036-1 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-54-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-54-010-001

(2) Get access to the elevator forward quadrant.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Open this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-54-010-002

(3) Get access to the elevator aft quadrant.

(a) Remove this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-54-480-001

(4) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the elevator aft quadrant (Figure 401).

SUBTASK 27-31-54-480-002

(5) Install the rig pin E-1 from the rigging pin kit, SPL-1585, in the left forward quadrant (Figure 402).

SUBTASK 27-31-54-020-001

(6) Remove the applicable control column (TASK 27-31-51-000-801).

F. Control Column Support Bearing Removal

(Figure 402)

SUBTASK 27-31-54-020-002

(1) Turn the cable turnbuckles [1] to release the tension in the elevator control cables.

NOTE: Do not disconnect the cable turnbuckles.

SUBTASK 27-31-54-480-003

CAUTION

MAKE SURE THAT YOU INSTALL A SUPPORT FOR THE FORWARD QUADRANT ASSEMBLY BEFORE YOU REMOVE THE COUPLINGS. KEEP THE SUPPORT UNTIL YOU REMOVE THE COUPLINGS. IF YOU DO NOT HOLD THE FORWARD QUADRANT ASSEMBLY CORRECTLY, YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Install the set, SPL-1747, to support the forward quadrant assembly.

SUBTASK 27-31-54-020-003

(3) Remove the nuts [5], washers [4], and bolts [3] from the inboard couplings [6].

SUBTASK 27-31-54-020-004

(4) Remove the forward quadrant connector [11].

SUBTASK 27-31-54-020-005

(5) Remove the bearing housing [15]:

(a) Remove the nuts [7], washers [9], upper bolts [10] from the bearing housing [15].

(b) Remove the nuts [17], washers [16], washers [14], and lower bolts [13] from the bearing housing [15].

(c) Remove the bearing housing [15] and shim [8] from the airplane.

SUBTASK 27-31-54-020-006

(6) Remove the bearing [12] from the bearing housing [15]:

(a) Turn the bearing [12] at the right angles to the bearing housing [15].

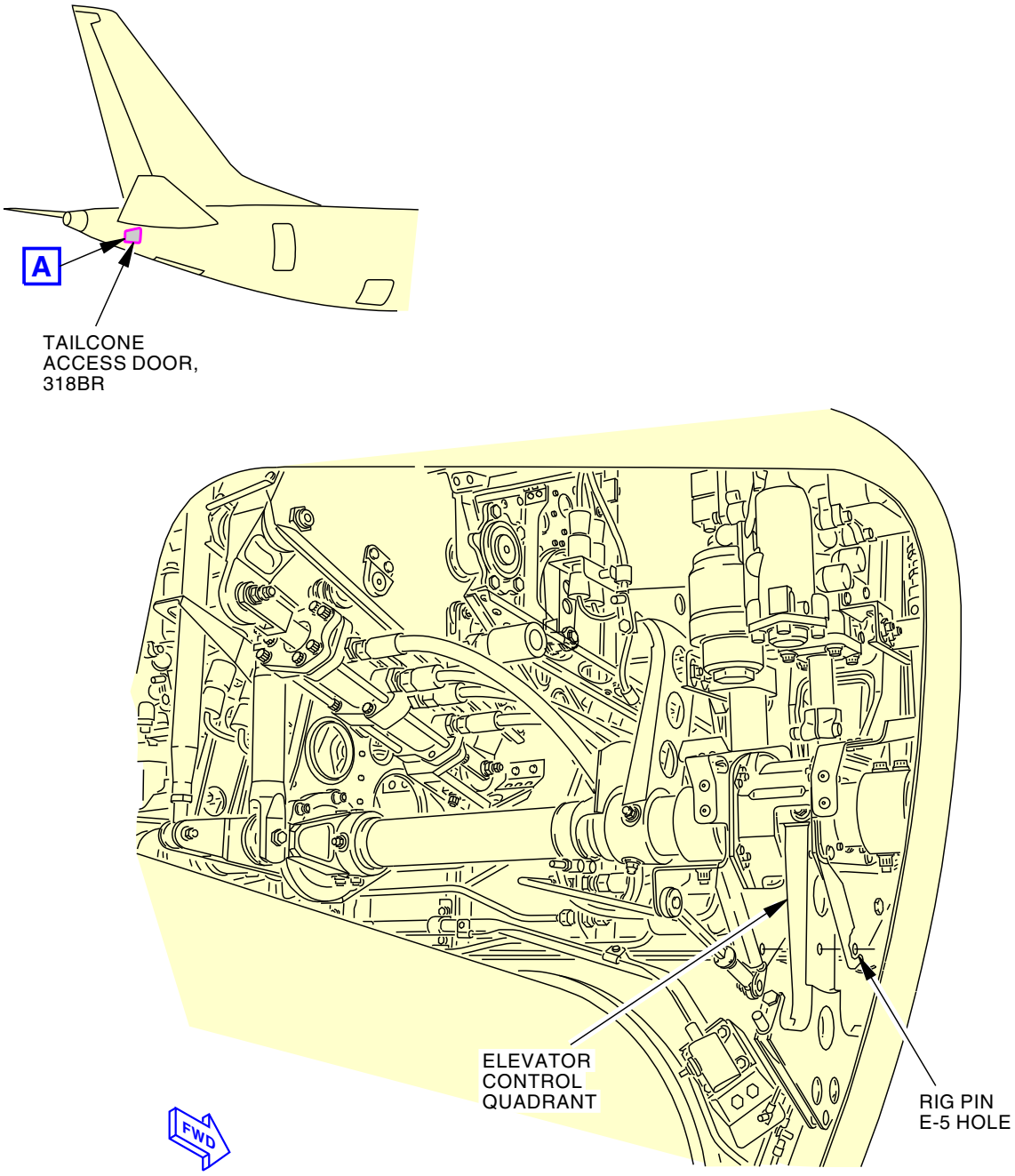
(b) Align the bearing [12] with the slots in the bearing housing [15].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Remove the bearing [12] from the bearing housing [15].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



VIEW THROUGH THE TAILCONE ACCESS DOOR, 318BR

A

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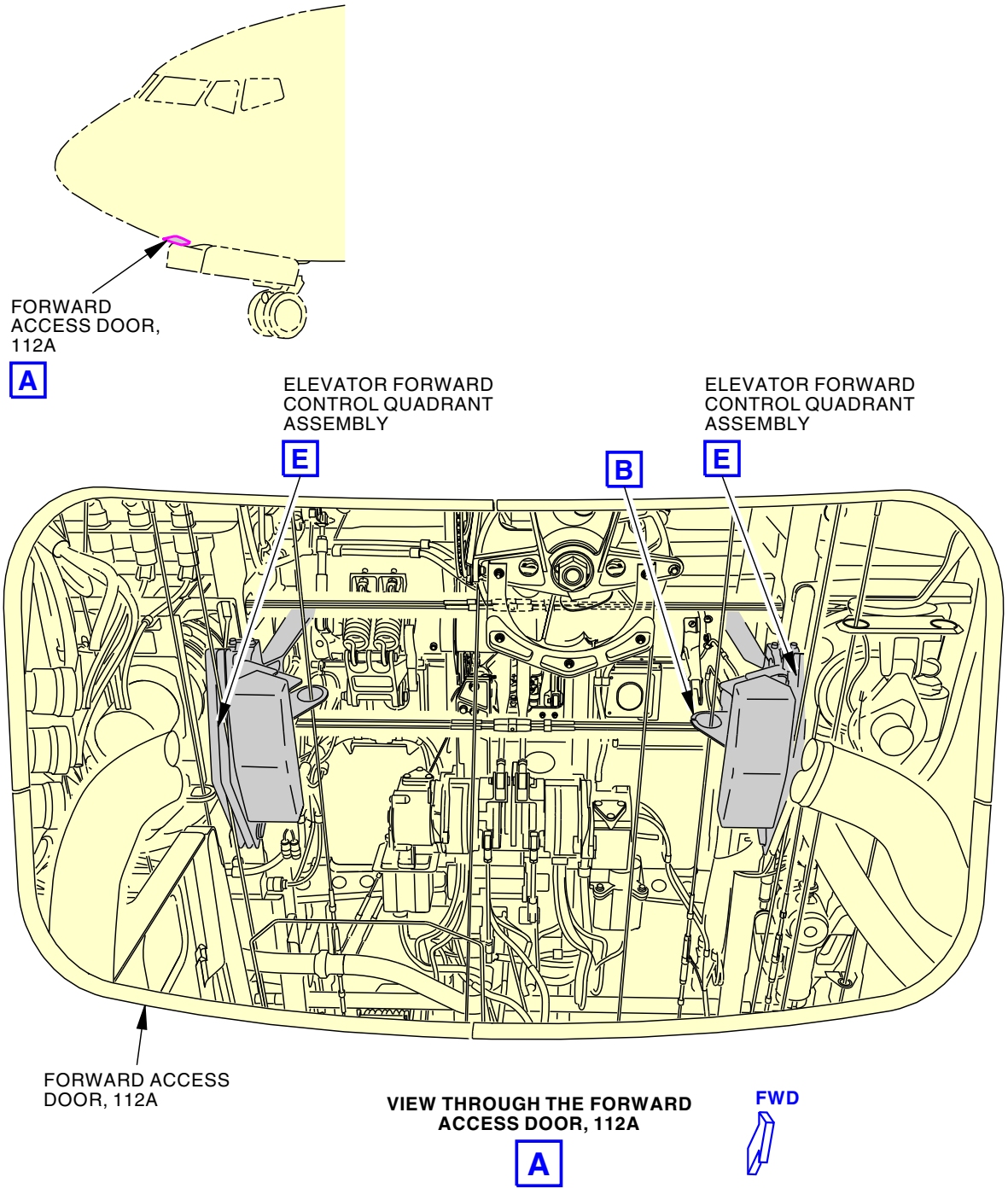
Elevator Rig Pin Installation
Figure 401/27-31-54-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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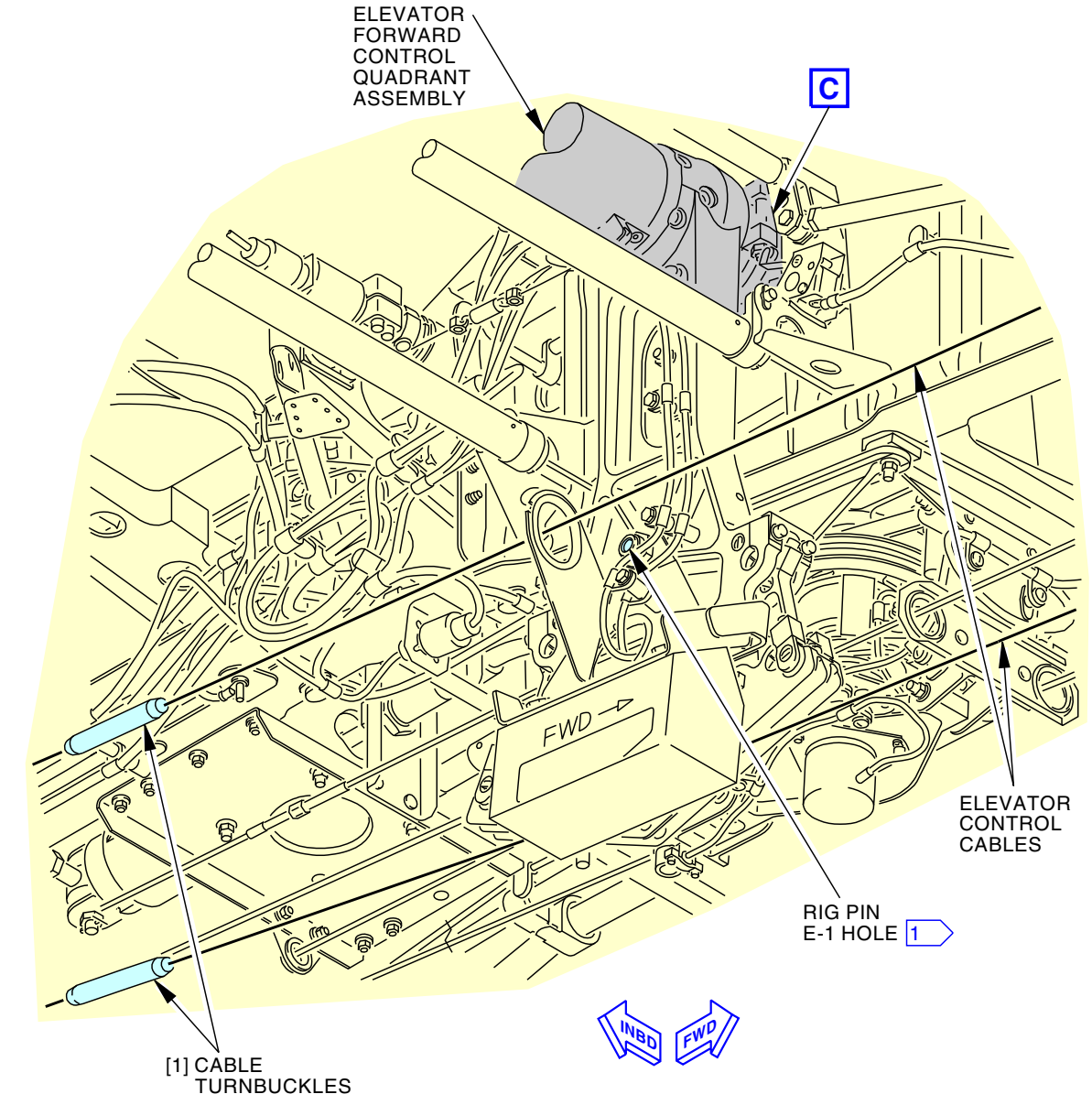
Control Column Support Bearing Installation
Figure 402/27-31-54-990-802 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

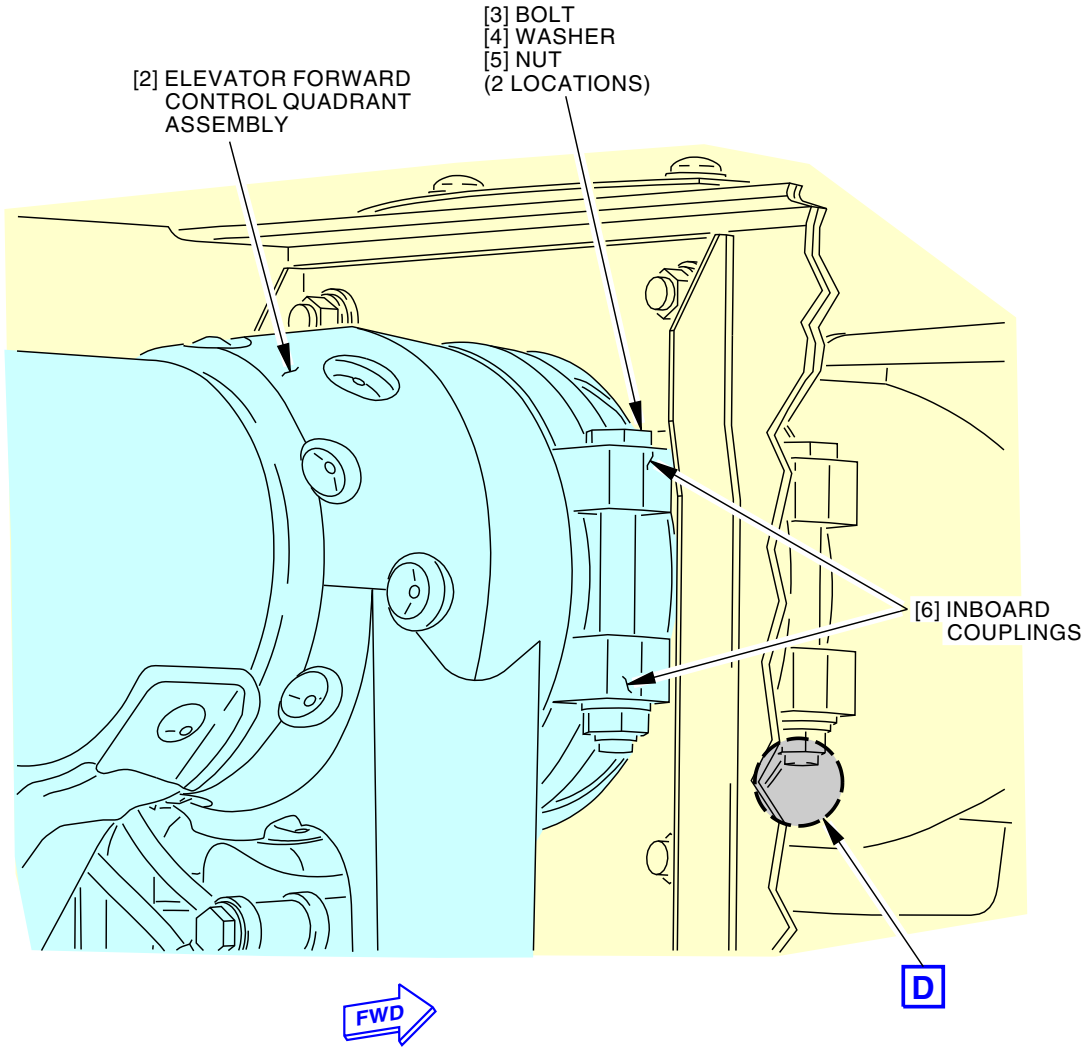


1 LEFT FORWARD CONTROL QUADRANT ONLY

2412569 S00061530918_V1

Control Column Support Bearing Installation
Figure 402/27-31-54-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



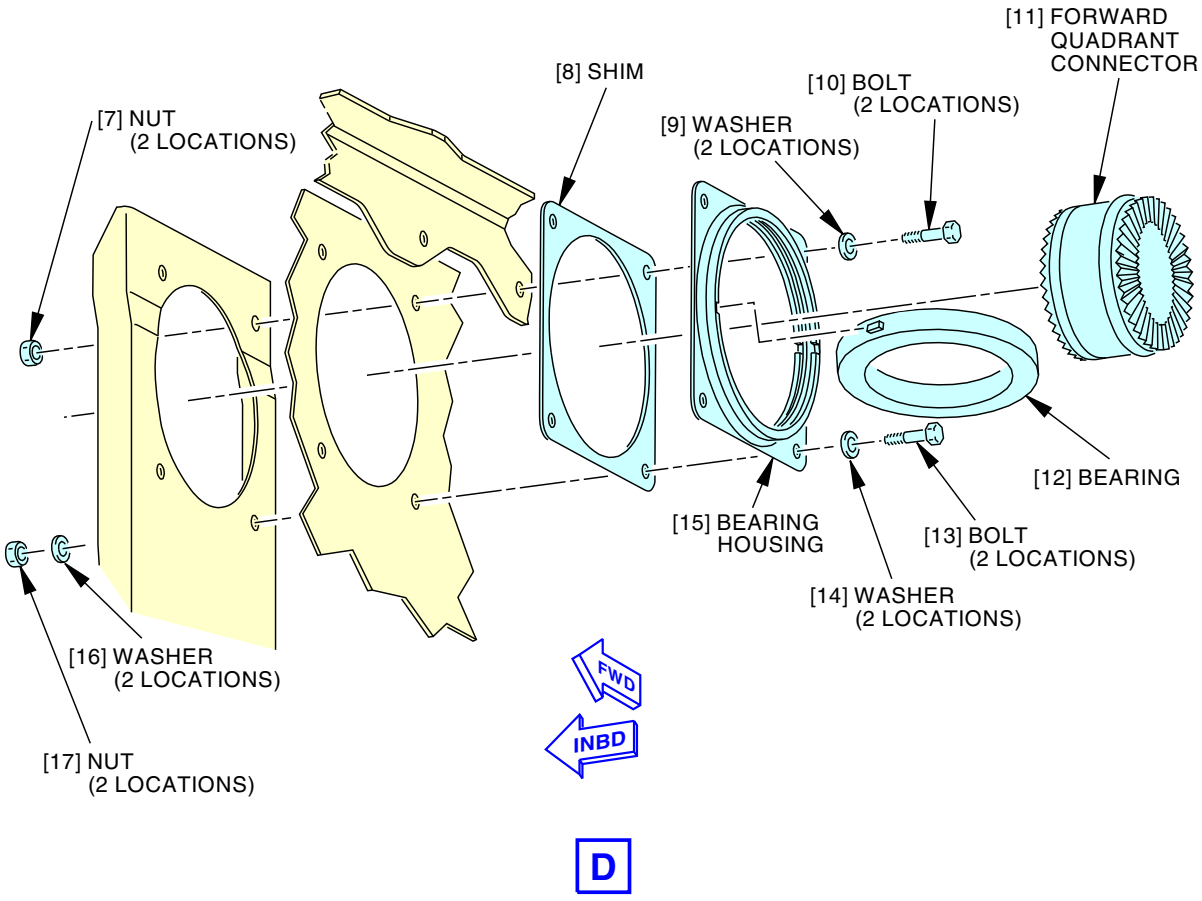
ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY

C

2412570 S00061530919_V1

Control Column Support Bearing Installation
Figure 402/27-31-54-990-802 (Sheet 3 of 5)

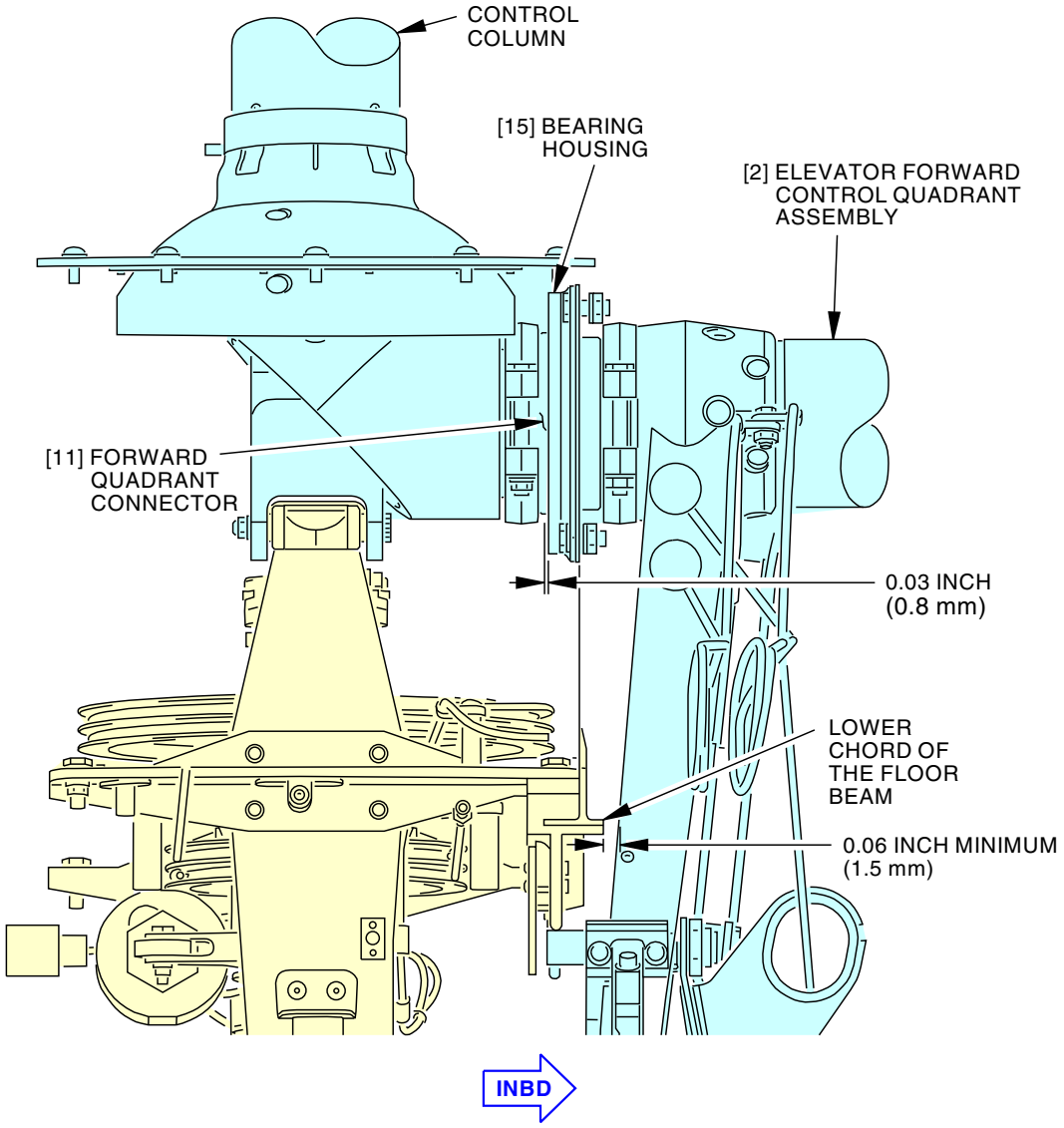
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412571 S00061530920_V1

Control Column Support Bearing Installation
Figure 402/27-31-54-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

E

2412572 S00061530921_V1

Control Column Support Bearing Installation
Figure 402/27-31-54-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-54-400-801

3. Control Column Support Bearing Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
27-31-51-400-801	Control Column - Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1747	Set - Support, Forward Elevator Control Quadrant Part #: C27036-1 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Bearing	27-31-54-01-035	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
318BR	Tailcone Access Door

F. Control Column Support Bearing Installation

SUBTASK 27-31-54-420-001

(1) Install the bearing [12] in the bearing housing [15]:

(a) Put the bearing [12] at the right angle of the bearing housing [15].

(b) Move the bearing [12] in the bearing housing [15] slots.

1) Turn the bearing [12] to the correct position.

SUBTASK 27-31-54-420-002

(2) Install the bearing housing [15]:

(a) Put the bearing housing [15] and the shim [8] against the structure.

(b) Install the upper bolts [10], washers [9], and nuts [7] that attach the bearing housing [15] to the structure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the lower bolts [13], washers [14], washers [16], and nuts [17] on the bearing housing [15].

SUBTASK 27-31-54-420-003

(3) Install the elevator forward control quadrant assembly [2] to the support bearing:

(a) Install the forward quadrant connector [11] in the bearing housing [15].

(b) Align the spines of the elevator elevator forward control quadrant assembly [2] with the forward quadrant connector [11].

(c) Install inboard couplings [6] with the bolts [3], washers [4], and nuts [5].

(d) Do these steps to make the clearances equal at each end of each inboard coupling [6]:

1) Tighten the bolts [3] to 50 in-lb (5.6 N·m).

2) Tighten the bolt [3] and then the other to 50 in-lb (5.6 N·m) - 70 in-lb (7.9 N·m) in approximately 10 in-lb (1.1 N·m) increments until you get the clearances equal to ± 0.03 in. (0.76 mm) of each other.

(e) Adjust the shim [8] below the bearing housing [15]:

1) Make sure the clearance between the forward quadrant connector [11] and inner race of the bearing [12] is 0.01 in. (0.25 mm) - 0.03 in. (0.76 mm).

2) Make sure the clearance between lower chord of the floor beam and each side of the elevator forward control quadrant assembly [2] is 0.06 in. (1.5 mm) minimum through the full travel.

3) If it is necessary, add or remove shims [8] under the bearing housing [15].

SUBTASK 27-31-54-480-004

(4) Remove the set, SPL-1747, from the elevator forward control quadrant assembly [2].

SUBTASK 27-31-54-420-004

(5) Install the applicable control column (TASK 27-31-51-400-801).

SUBTASK 27-31-54-080-001

(6) Remove the rig pin E-1 of rigging pin kit, SPL-1585, from the left forward quadrant.

SUBTASK 27-31-54-080-002

(7) Remove the rig pin E-5 of the rigging pin kit, SPL-1585, from the aft control quadrant.

SUBTASK 27-31-54-710-001

(8) Do a check of the control column:

(a) Move the control column full forward then full aft.

1) Make sure the control column operates correctly and smoothly.

SUBTASK 27-31-54-820-001

(9) Adjust the elevator control cables EA and EB (TASK 27-31-00-820-801).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-54-410-001

(1) Install this access door:

Number	Name/Location
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-54-410-002

(2) Close this access door:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-54-860-002

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator forward control quadrant assembly

(2) An installation of the elevator forward control quadrant assembly.

B. The elevator forward control quadrant assembly is referred to as "forward quadrant assembly" in this procedure.

TASK 27-31-61-000-801

2. Elevator Forward Control Quadrant Assembly Removal

(Figure 401, Figure 402)

A. References

Reference	Title
22-11-92-000-801	Pitch Force Transducer Removal (P/B 401)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-61-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-61-010-001

(2) To get access to the elevator forward quadrant, do this task:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-61-010-002

(3) To get access to the elevator aft quadrant, do this task:

Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-61-480-001

(4) Install the rig pin E-5 from the test set rigging pin kit, SPL-1585 in the elevator aft quadrant (Figure 401).

SUBTASK 27-31-61-480-002

(5) Install the rig pin E-1 from the rigging pin kit, SPL-1585 in the left side of forward quadrant assembly (Figure 402).

SUBTASK 27-31-61-020-001

(6) Remove the pitch control wheel steering force transducers from the forward quadrant assembly. To remove them, do this task: Pitch Force Transducer Removal, TASK 22-11-92-000-801.

F. Forward Quadrant Assembly Removal

(Figure 402)

SUBTASK 27-31-61-020-002

(1) Turn the cable turnbuckles to release the tension in the EA cables [2] and EB cables [3].

NOTE: Do not disconnect the cable turnbuckles.

(a) If it is necessary, install control cable clamp, SPL-1569 on the EA cables [2] and EB cables [3].

SUBTASK 27-31-61-020-003

(2) Remove the cables EA cables [2] and EB cables [3] from the forward quadrant assembly [1]:

(a) Remove the screws [10] and retainers [4] from the EA cables [2] and EB cables [3].

(b) Put identification tags on the cables.

(c) Remove the bolts [6], washers [7], and nuts [8] that attach the fairleads [9] to the forward quadrant assembly [1].

SUBTASK 27-31-61-020-004

(3) Remove the bolts [11] and washers [12] that attach the mass balance weight [5] to the forward quadrant assembly [1].

SUBTASK 27-31-61-020-005

(4) Remove the ring assemblies and dust seals from the control column [15]:

(a) Remove the screws [22] and washers [23] from the forward ring assembly [21] and aft ring assembly [24].

(b) Remove the forward ring assembly [21] and aft ring assembly [24].

(c) Remove the aft dust seals [25] and forward dust seals [26].

SUBTASK 27-31-61-080-001

(5) Remove the rig pin E-1 from the left side of the forward quadrant assembly [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-61-020-006

CAUTION

HOLD THE CONTROL COLUMNS AND THE FORWARD QUADRANT ASSEMBLY WHEN YOU REMOVE THEM. THEY CAN FALL AND CAUSE DAMAGE TO EQUIPMENT.

(6) Remove the forward quadrant assembly [1]:

(a) Remove the nuts [18], washers [17], and bolts [13] from the inboard couplings [16].

(b) Remove the inboard couplings [16].

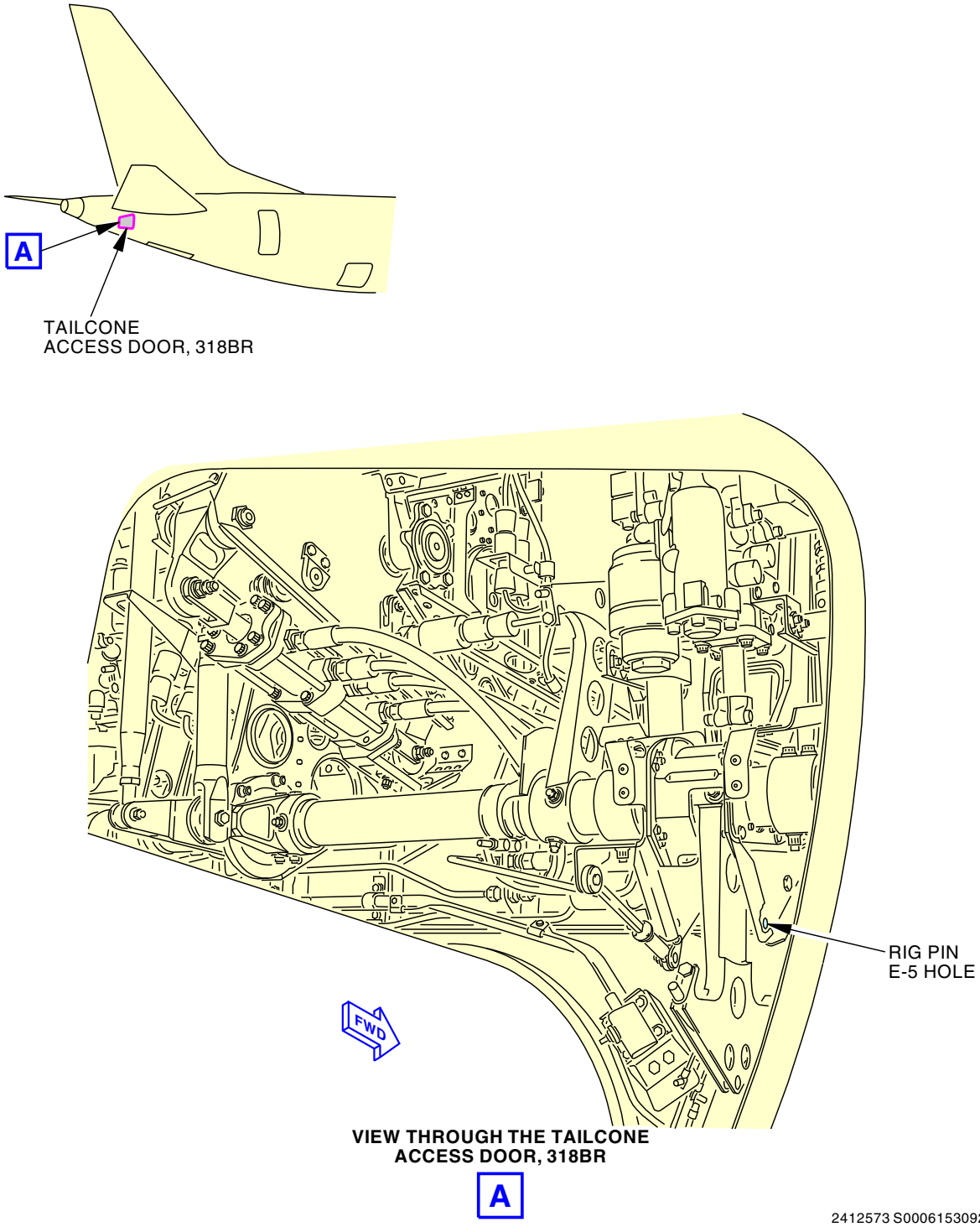
(c) Move the control columns [15] outboard until you can disengage the forward quadrant connector [14] from the forward quadrant assembly [1].

NOTE: Use a marker or a pen to make marks on the forward quadrant connector [14] and the forward quadrant assembly [1] to align the control column during the forward quadrant assembly [1] installation.

(d) Remove the forward quadrant assembly [1].

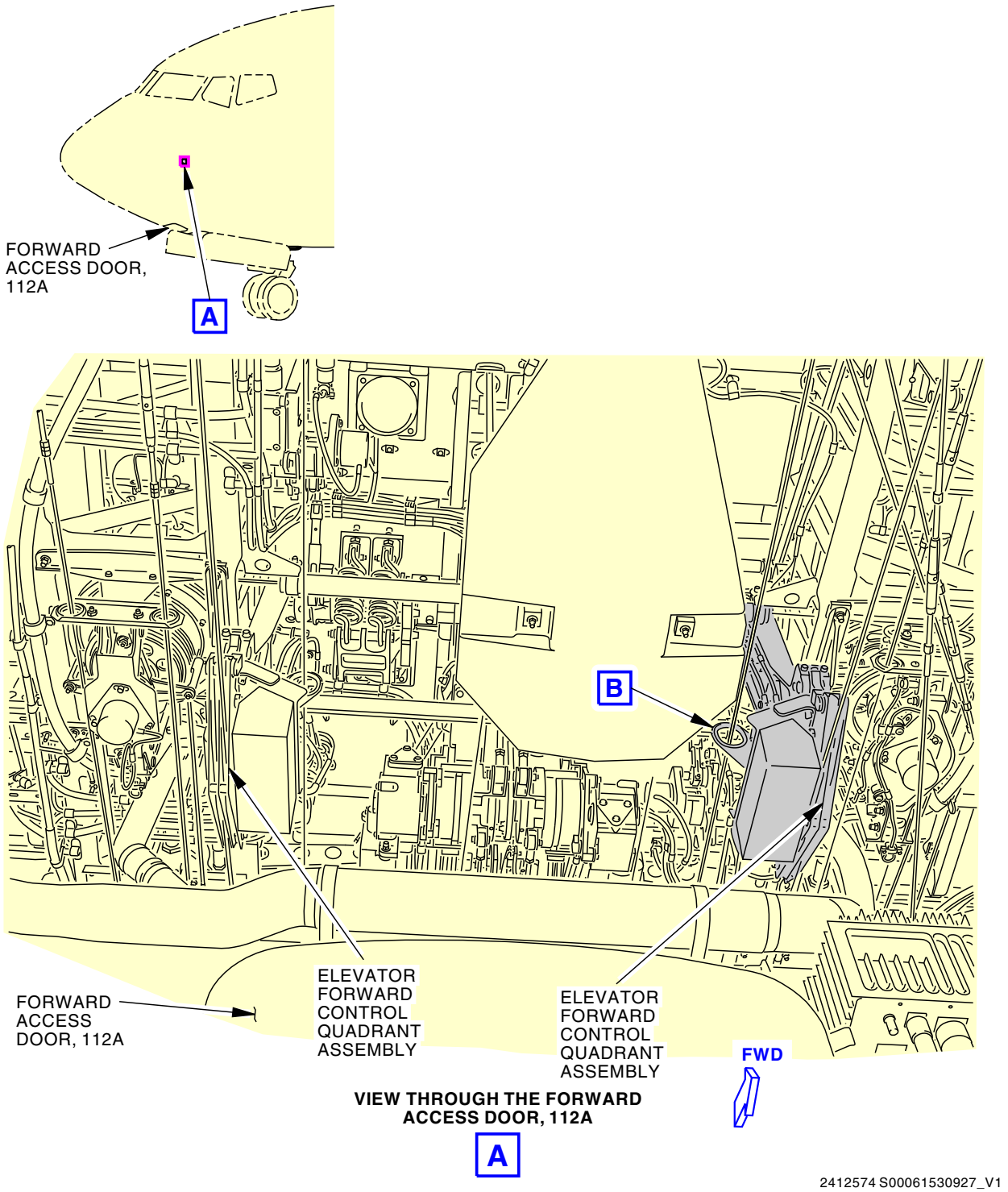
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



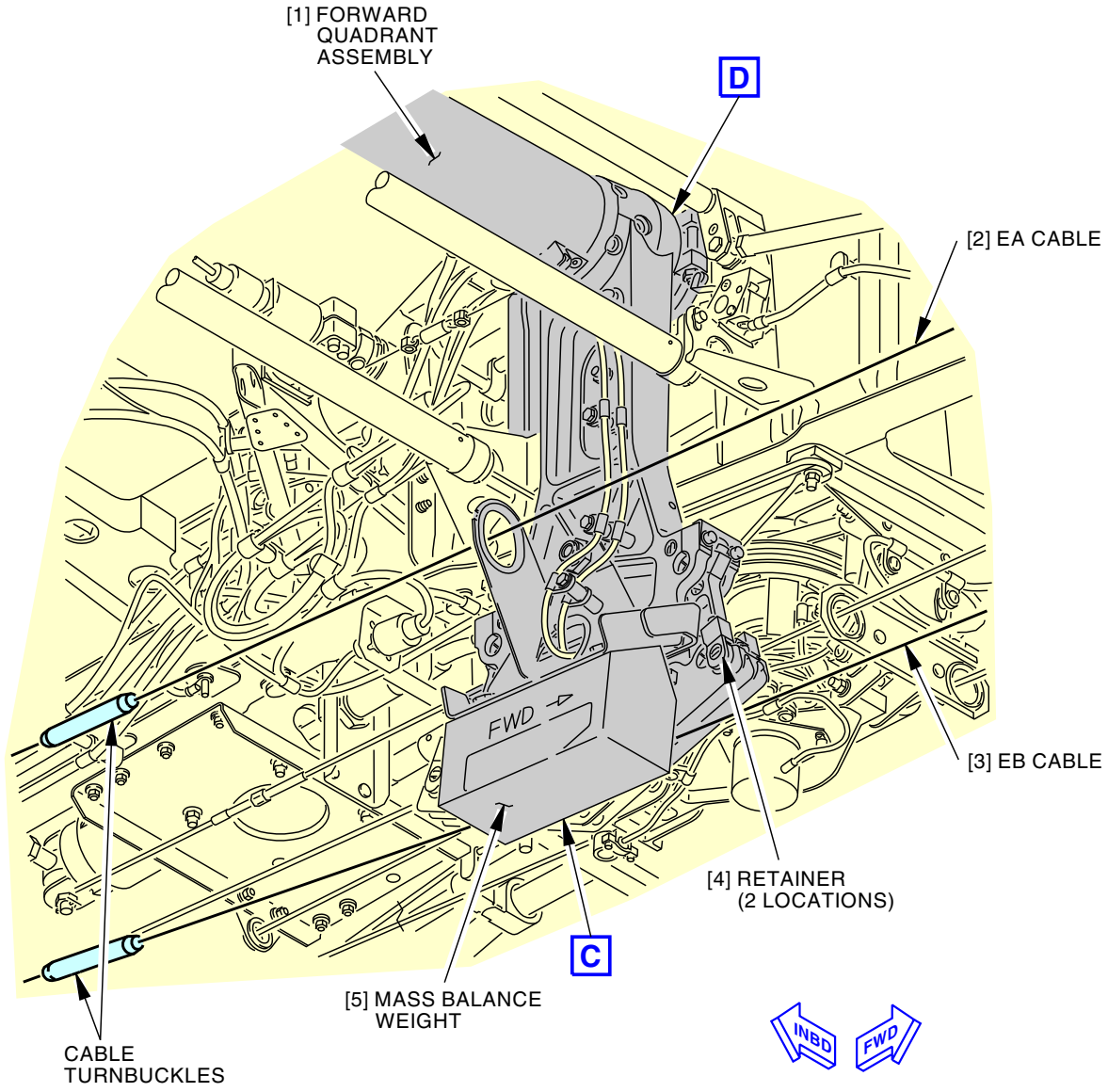
Elevator Rig Pin Installation
Figure 401/27-31-61-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



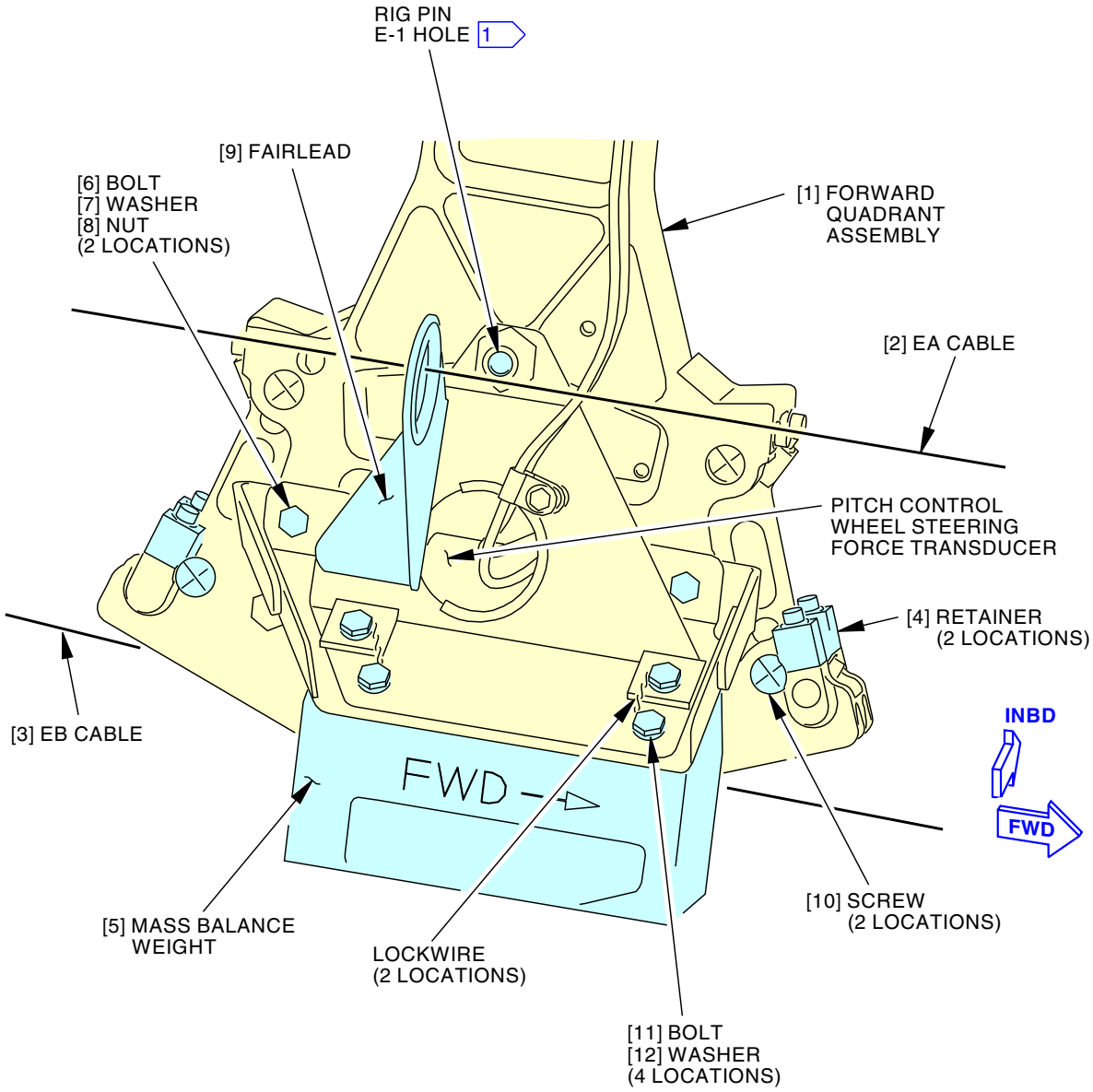
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

B

2412575 S00061530928_V2

Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MASS BALANCE WEIGHT

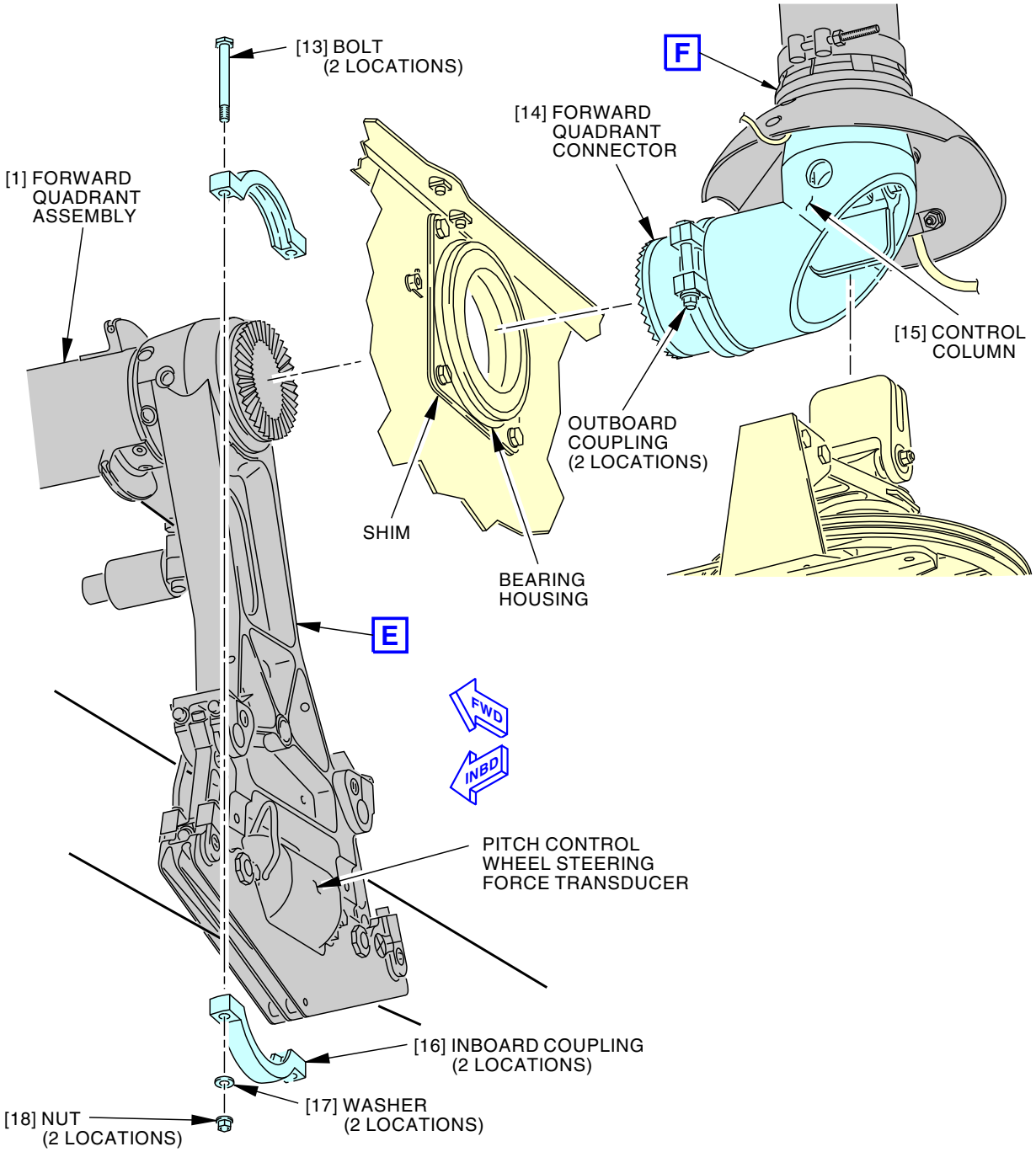
C

1 LEFT SIDE OF FORWARD QUADRANT ASSEMBLY ONLY

2412576 S00061530929_V2

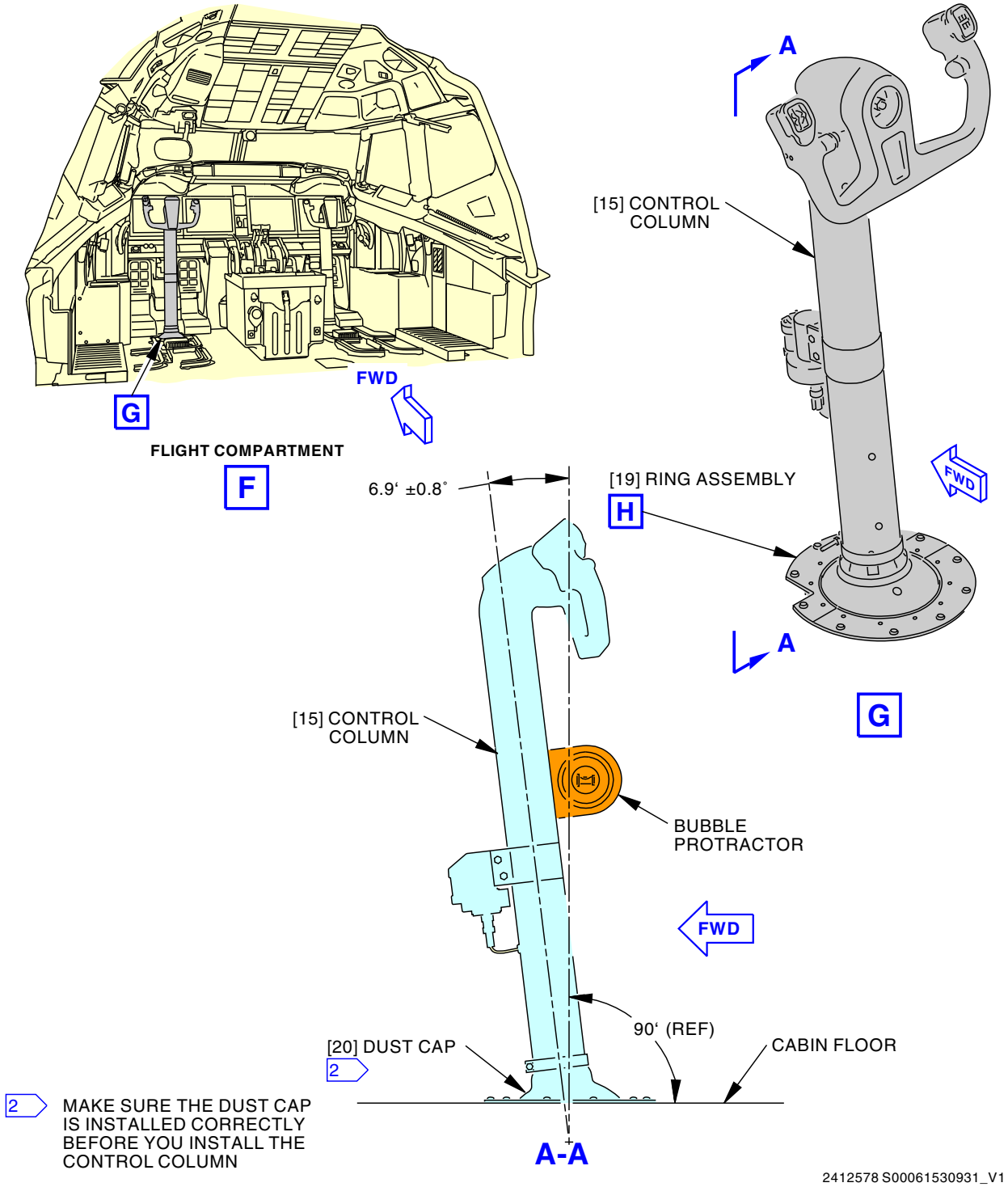
Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



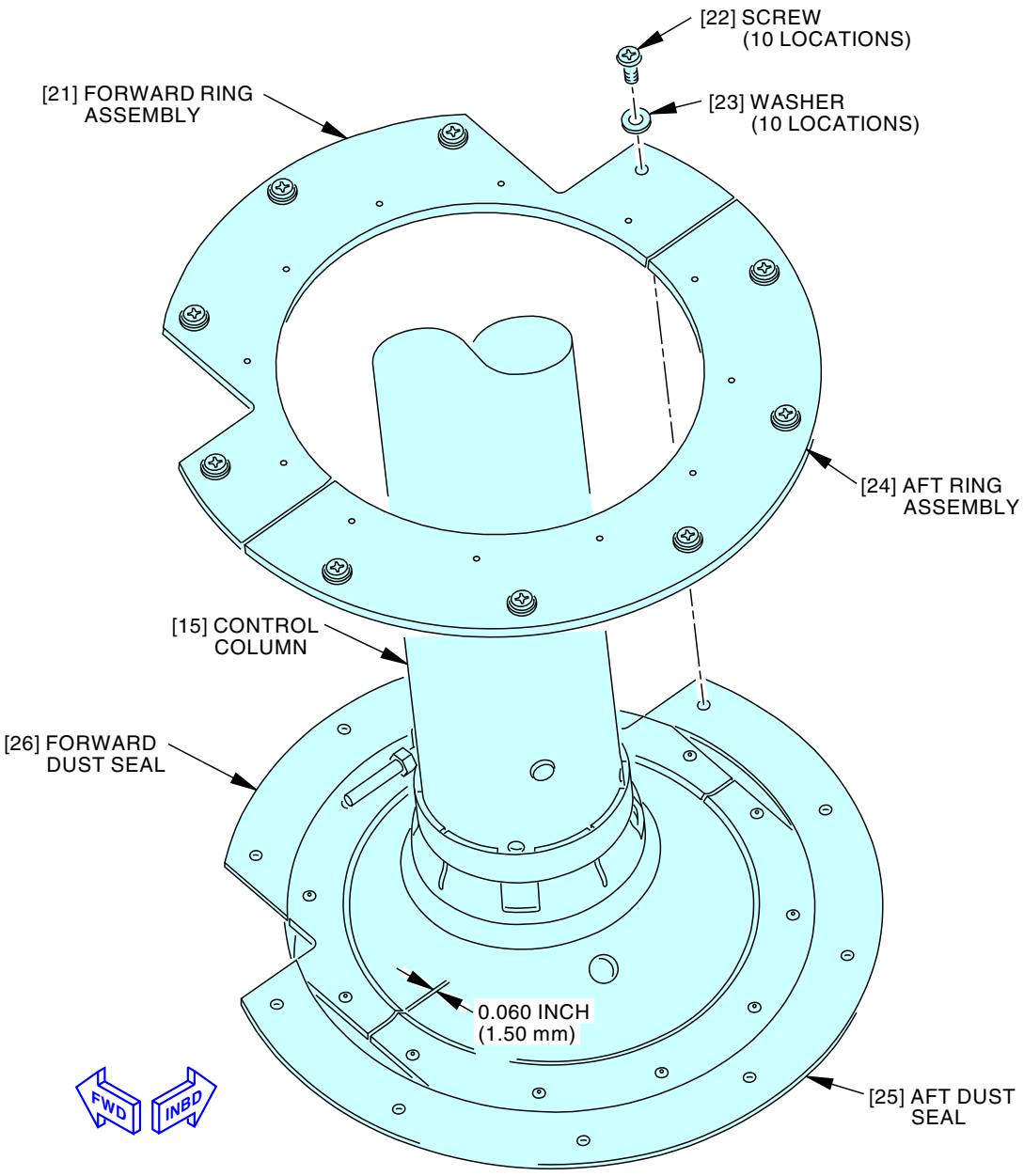
Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



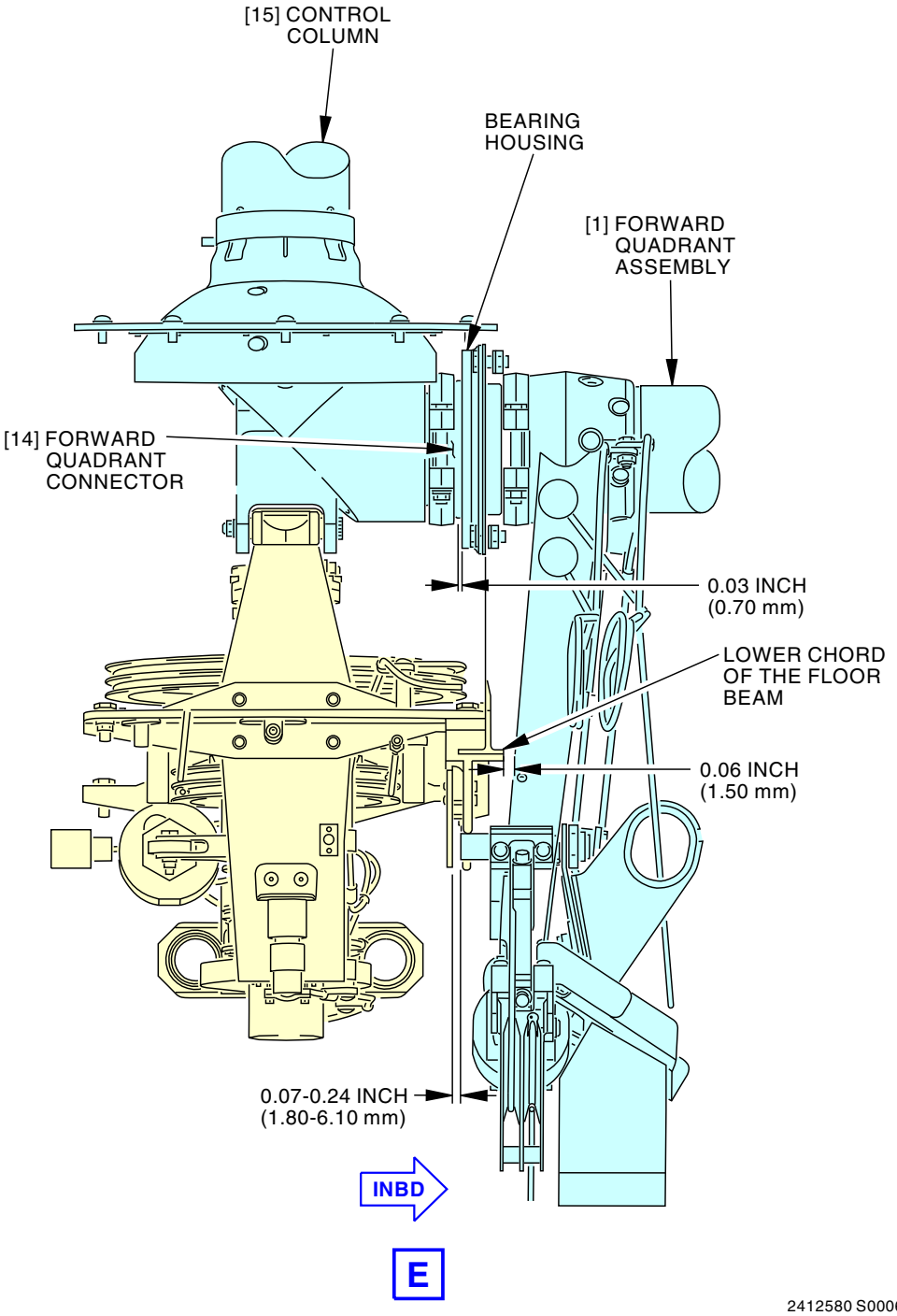
RING ASSEMBLY

H

2412579 S00061530932_V1

Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Forward Control Quadrant Assembly Installation
Figure 402/27-31-61-990-802 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-61-400-801

3. Elevator Forward Control Quadrant Assembly Installation

(Figure 401, Figure 402)

A. References

Reference	Title
22-11-92-400-801	Pitch Force Transducer Installation (P/B 401)
27-31-00-700-808	Manual Mode - Test (P/B 501)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00225	Compound - Two Part Hole Filling, Polysulfide	BMS5-16
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Forward quadrant assembly	27-31-61-03-080	SIA ALL
		27-31-61-03-085	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
318	Tail Cone Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
318BR	Tailcone Access Door

G. Forward Control Quadrant Installation

(Figure 402)

SUBTASK 27-31-61-480-003

(1) Use the protractor, SPL-1680, to set the control column [15] to 6.9 ± 0.8 degrees forward of a vertical line from the floor (Figure 402, View A-A).

SUBTASK 27-31-61-420-001

(2) Install the mass balance weight [5] to the forward quadrant assembly [1]:

(a) Put the mass balance weight [5] in its position.

(b) Install the bolts [11] and washers [12]].

(c) Install the MS20995NC32 lockwire, G01912.

SUBTASK 27-31-61-480-004

(3) Install the rig pin E-1 in the left side of the forward quadrant assembly [1].

SUBTASK 27-31-61-420-002

(4) Install the forward quadrant assembly [1]:

(a) Set the control wheels to the neutral position.

(b) Put the forward quadrant assembly [1] in its position.

(c) Move the control columns inboard and at the same time align the spines of the elevator forward quadrant assembly [1] with the forward quadrant connector [14].

(d) Install inboard couplings [16] with the bolts [13], washers [17], and nuts [18].

NOTE: Make sure that you use the correct bolts.

(e) Do these steps to make the clearances equal at each end of each inboard coupling:

1) Tighten the bolts [13] to 50 in-lb (5.6 N·m) of torque.

2) Tighten the bolt [13] and then the other to 50 in-lb (5.6 N·m)-70 in-lb (7.9 N·m) in approximately 10 in-lb (1.1 N·m) increments until you get the clearances equal to ± 0.03 in. (0.76 mm) of each other.

SUBTASK 27-31-61-820-001

(5) Adjust the shim below the bearing housings:

(a) Make sure the clearance between lower chord of the floor beam and each side of the forward quadrant assembly [1] is 0.06 in. (1.5 mm) minimum through the full travel.

(b) Make sure the total clearance (sum of the clearances of the two side of forward quadrant assembly) between the bearing and forward quadrant connector is 0.01 in. (0.25 mm)-0.02 in. (0.51 mm).

(c) Make sure the total side play of the control column assembly is 0.01 in. (0.25 mm) - 0.03 in. (0.76 mm).

(d) Make sure the outboard end of the stop on the left side of the forward quadrant assembly [1] is clear of the inboard face of the bracket by 0.07 in. (1.8 mm) - 0.24 in. (6.1 mm).

(e) If it is necessary, add or remove shim(s) below the bearing housing.

SUBTASK 27-31-61-420-003

(6) Install the ring assemblies and dust seals:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the forward dust seals [26], aft dust seals [25], forward ring assemblies [21], and aft ring assemblies [24] with the screws [22] and washers [23].

CAUTION

DO NOT HOLD THE DUST CAP TOO TIGHTLY AGAINST THE WIRE BUNDLE. IT CAN CAUSE DAMAGE TO THE ELECTRICAL WIRES.

(b) If it is necessary, adjust the dust cap [20] to set the edge of the dust seals lightly against the dust caps [20].

1) Loosen the clamps to adjust the dust caps [20].

(c) Make sure the gap between the two dust seals is 0.6 in. (15.2 mm).

(d) Fill the gap between the two dust seals with compound, A00225.

(e) Fill the hole between the notch in the dust seals and the cutout in the floor with compound, A00225.

SUBTASK 27-31-61-080-002

(7) Remove the rig pin E-1 from the rigging pin kit, SPL-1585, from the left side of the forward quadrant assembly [1].

SUBTASK 27-31-61-710-001

(8) Do a check of the control column [15]:

(a) Move the control column [15] full forward then full aft.

1) Make sure the control column [15] operates correctly and smoothly.

SUBTASK 27-31-61-420-004

(9) Connect the EA cables [2] and EB cables [3] to the forward quadrant assembly [1]:

(a) Install the bolts [6], washers [7], and nuts [8] that attach the fairleads [9] to the forward quadrant assembly [1].

(b) Remove the identification tags from the EA cable [2] and EB cable [3].

(c) Install the EA cables [2] and EB cables [3] to the forward quadrant assembly [1].

(d) Install the retainers [4] and screws [10] to the EA cables [2] and EB cables [3].

(e) Remove the control cable clamp, SPL-1569, if it is installed.

SUBTASK 27-31-61-080-003

(10) Remove the rig pin E-5 from the rigging pin kit, SPL-1585, from the aft control quadrant (Figure 401).

SUBTASK 27-31-61-420-005

(11) Install the pitch control wheel steering force transducers to the forward quadrant assembly (TASK 22-11-92-400-801).

SUBTASK 27-31-61-860-002

(12) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-61-820-002

(13) Adjust the elevator control cables EA and EB (TASK 27-31-00-820-801).

SUBTASK 27-31-61-710-002

(14) Do this task: Manual Mode - Test, TASK 27-31-00-700-808.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-61-410-001

(1) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-61-410-002

(2) Close this access panel:

Number	Name/Location
112A	Forward Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FORWARD CONTROL QUADRANT ASSEMBLY - INSPECTION/CHECK

1. General

A. This procedure has this inspection task:

(1) Elevator Mechanical Control Path.

TASK 27-31-61-210-801

2. Elevator Mechanical Control Path - Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

B. Access Panels

Number	Name/Location
112A	Forward Access Door
318BR	Tailcone Access Door

C. Elevator Mechanical Control Path Inspection

SUBTASK 27-31-61-010-003

(1) To get access to the elevator mechanical control path, do this task:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-61-210-001

(2) Do a general visual inspection of the forward elevator mechanical control path.

SUBTASK 27-31-61-410-003

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-31-61-010-004

(4) To get access to the elevator mechanical control path, do this task:

Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-61-210-002

(5) Do a general visual inspection of the aft elevator mechanical control path.

SUBTASK 27-31-61-410-004

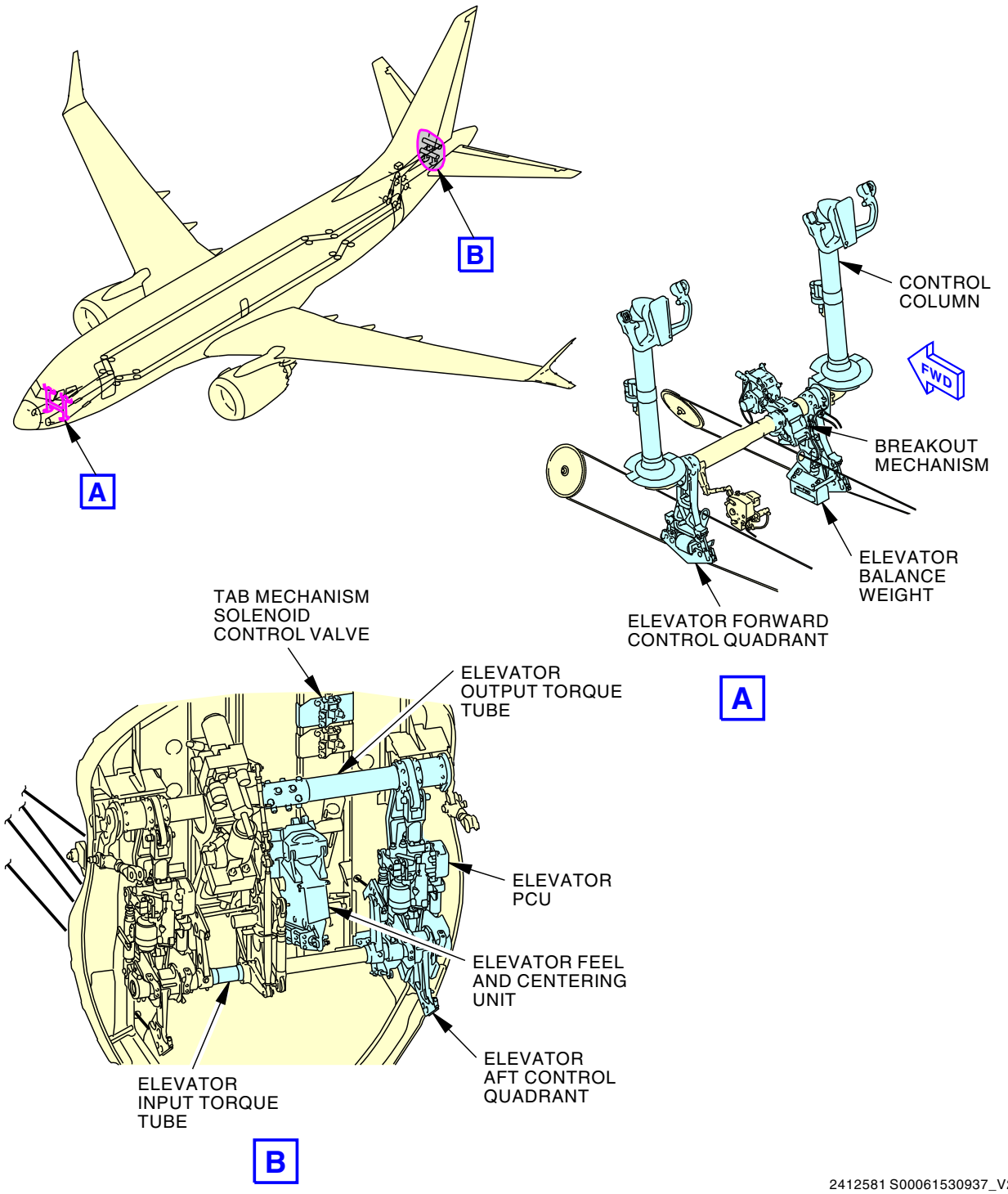
(6) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Mechanical Control Path Inspection
Figure 601/27-31-61-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL AND CENTERING UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator feel and centering unit

(2) An installation of elevator feel and centering unit.

(3) A removal of the elevator feel and centering unit spring.

(4) An installation of the elevator feel and centering unit spring.

TASK 27-31-64-000-801

2. Elevator Feel and Centering Unit Removal

(Figure 401)

A. References

Reference	Title
22-11-24-000-801	Mach Trim Actuator Removal (P/B 401)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-67-000-801	Elevator Feel Actuator Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator feel and centering unit	27-31-64-01-180	SIA ALL

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Prepare for the Removal

SUBTASK 27-31-64-010-001

(1) Remove these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-64-860-001

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-64-480-001

(3) Install rig pin E-5 from the rigging pin kit, SPL-1585, in the elevator aft control quadrant.

SUBTASK 27-31-64-480-002

(4) Attach DO NOT OPERATE tags, STD-858, on the control columns.

SUBTASK 27-31-64-020-001

(5) Do this task: Mach Trim Actuator Removal, TASK 22-11-24-000-801.

SUBTASK 27-31-64-020-002

(6) Do this task: Elevator Feel Actuator Removal, TASK 27-31-67-000-801.

G. Elevator Feel and Centering Unit Removal

SUBTASK 27-31-64-020-003

(1) Remove the elevator feel and centering unit [1]:

(a) Remove the nut [7], washer [6], nut [18], washer [5], outer bolt [3], and bolt [4] to disconnect the output rod [8] from the crank [2].

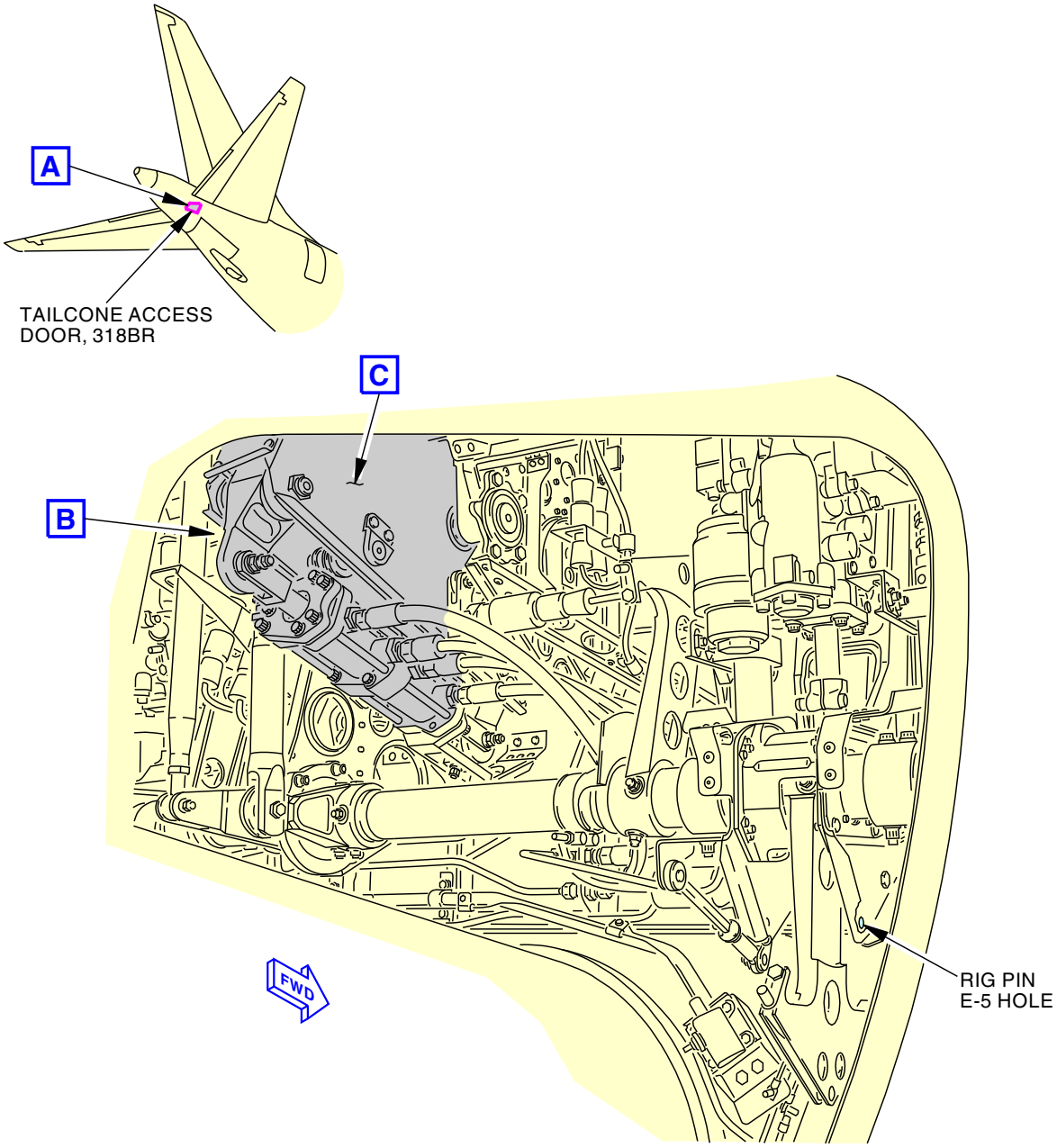
(b) Remove the nut [12], washer [11], washer [10], and bolt [9] to disconnect the micro-adjustment rod [13] from the elevator feel and centering unit [1].

(c) Hold the elevator feel and centering unit [1] and remove the bolts [16] and washers [17] from the bearing assemblies [14].

(d) Remove the elevator feel and centering unit [1] from the support brackets [15].

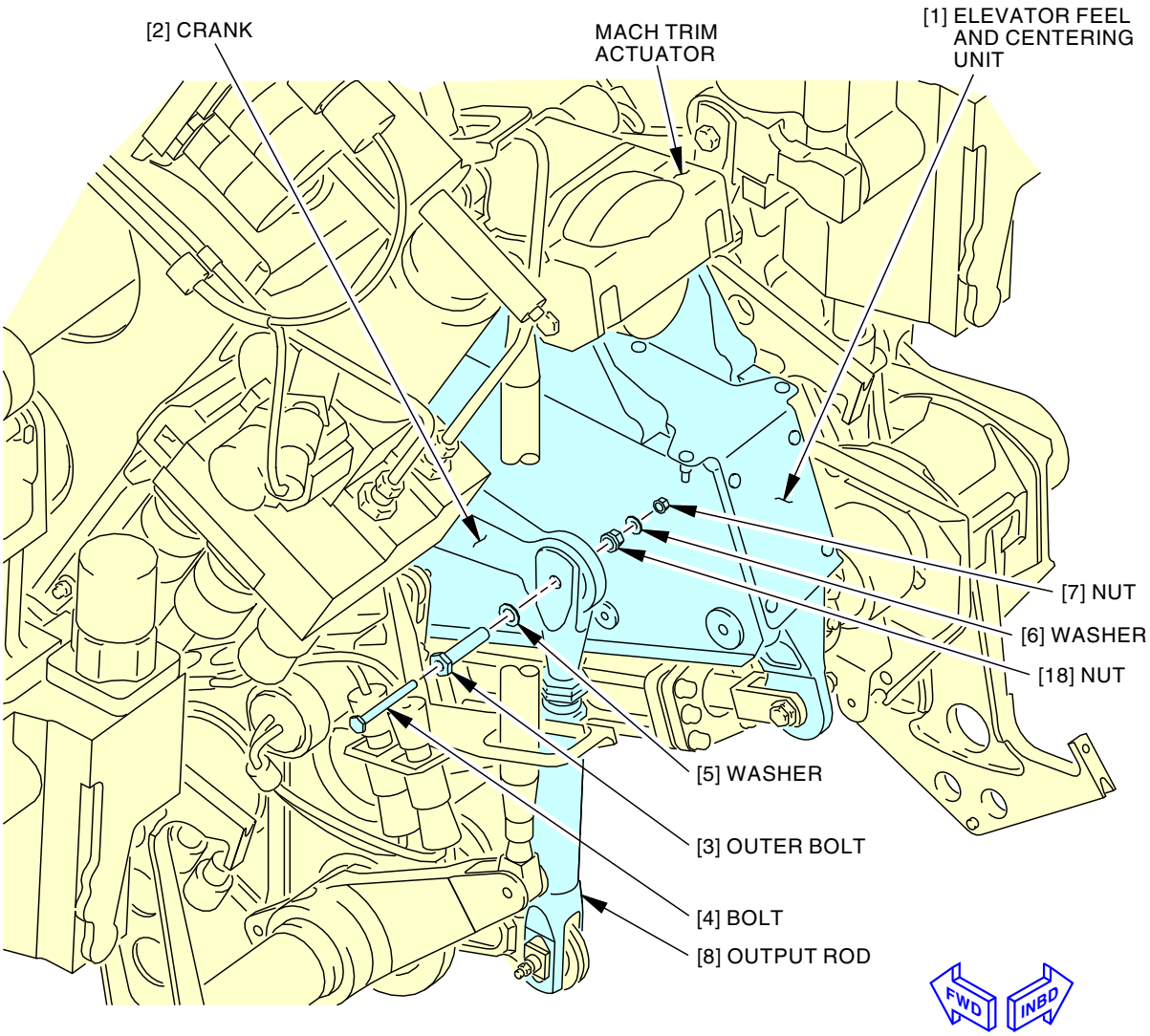
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



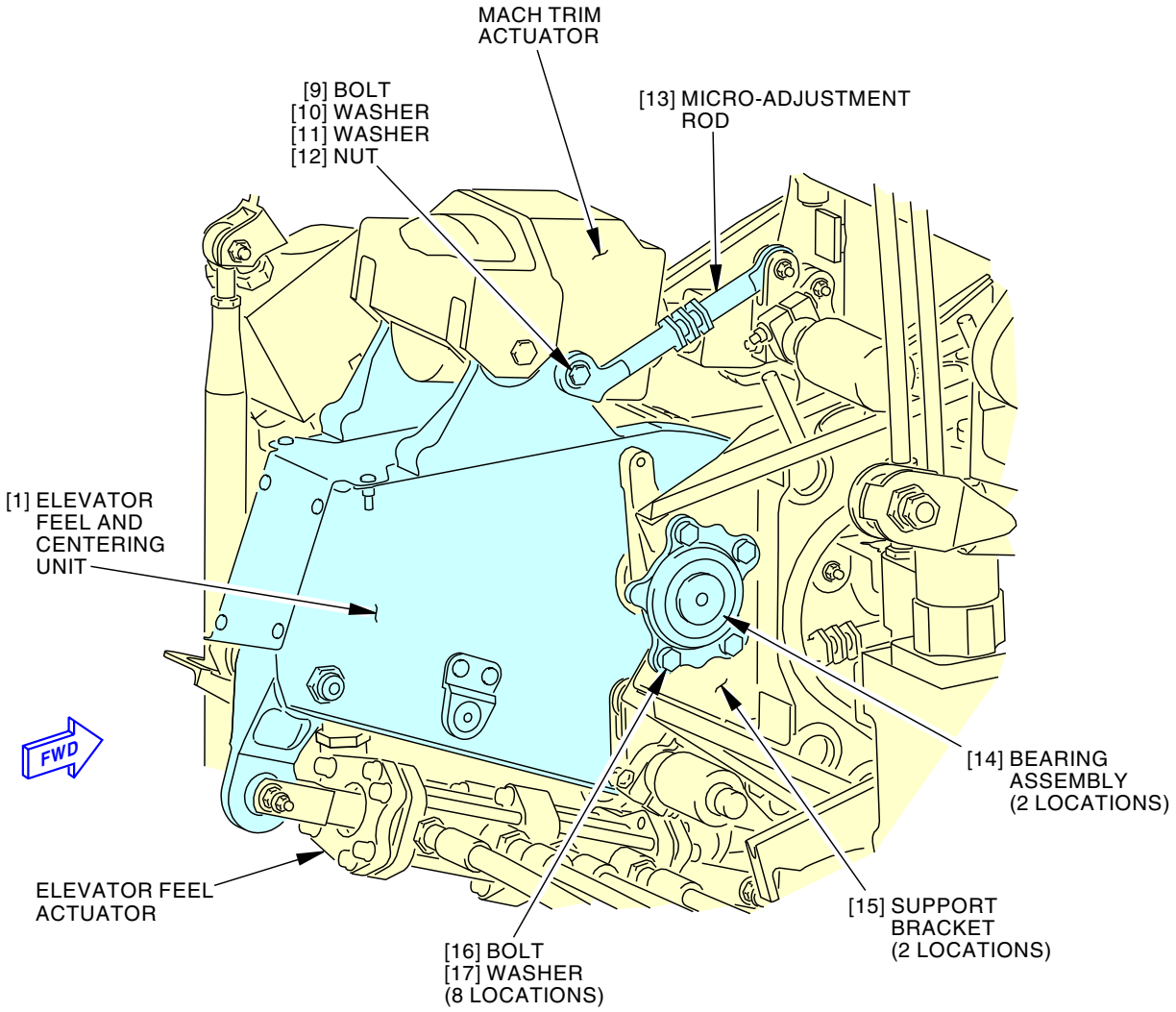
Elevator Feel and Centering Unit Installation
Figure 401/27-31-64-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel and Centering Unit Installation
Figure 401/27-31-64-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel and Centering Unit Installation
Figure 401/27-31-64-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-64-400-801

3. Elevator Feel and Centering Unit Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
22-11-14-820-801	Elevator Neutral Shift Sensor Adjustment and Test (P/B 501)
22-11-24-400-801	Mach Trim Actuator Installation (P/B 401)
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-700-813	Feel Force System - Test (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
27-31-67-400-801	Elevator Feel Actuator Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator feel and centering unit	27-31-64-01-180	SIA ALL

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Elevator Feel and Centering Unit Installation

SUBTASK 27-31-64-420-001

(1) Install the elevator feel and centering unit [1]:

(a) Put the elevator feel and centering unit [1] in its position.

(b) Align the bolt installation holes in the bearing assemblies [14] with support brackets [15].

(c) Install the bolts [16] and washers [17] to attach the bearing assemblies [14] to the support brackets [15].

(d) Install the bolt [9], washer [10], washer [11], and nut [12] to connect the micro-adjustment rod [13] to the elevator feel and centering unit [1].

SUBTASK 27-31-64-420-002

(2) Do this task: Elevator Feel Actuator Installation, TASK 27-31-67-400-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-64-420-003

(3) Do this task: Mach Trim Actuator Installation, TASK 22-11-24-400-801.

SUBTASK 27-31-64-860-002

(4) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-64-820-001

(5) Adjust the output rod [8]:

(a) Align the bolt hole of the output rod [8] and bolt hole of the crank [2].

(b) If the alignment difference is more that 0.06 in. (1.52 mm), then do these steps:

1) Turn the sleeve on the output rod [8] until you can install the bolt [4] easily.

NOTE: Always turn the clevis and the sleeve in the same direction and number of threads are equal in the two parts.

SUBTASK 27-31-64-420-004

(6) Install the bolt [4], outer bolt [3], washer [5] (under the outer bolt [3]), nut [18], washer [6] and nut [7] to connect the output rod [8] to the crank [2].

(a) Tighten the outer bolt [3] to 75 in-lb (8.5 N·m) - 85 in-lb (9.6 N·m).

CAUTION

DO NOT TIGHTEN THE OUTER BOLT AGAIN AFTER YOU TIGHTEN THE LAST NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(b) Tighten the nut [7] to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).

SUBTASK 27-31-64-080-001

(7) Remove the rig pin E-5 of the rigging pin kit, SPL-1585, from the elevator aft control quadrant.

SUBTASK 27-31-64-820-002

(8) Do this task: Elevator Neutral Shift Sensor Adjustment and Test, TASK 22-11-14-820-801.

SUBTASK 27-31-64-860-003

(9) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-64-080-002

(10) Remove the DO NOT OPERATE tags, STD-858, from the control columns.

SUBTASK 27-31-64-710-001

(11) Move the control column full forward and full aft.

(a) Make sure the control column moves freely and smoothly.

SUBTASK 27-31-64-710-002

(12) Do this task: Feel Force System - Test, TASK 27-31-00-700-813.

SUBTASK 27-31-64-790-001

(13) Make sure that there is no hydraulic leakage at the elevator feel actuator.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-64-410-001

(1) Install these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-64-610-001

(2) If it is necessary, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

END OF TASK

TASK 27-31-64-000-802

4. Elevator Feel and Centering Unit Spring Removal

(Figure 402)

A. References

Reference	Title
27-31-00-000-801	Elevator and Tab Control System - Deactivation (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-64-010-002

(1) Open these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-64-040-001

(2) Do this task: Elevator and Tab Control System - Deactivation, TASK 27-31-00-000-801.

SUBTASK 27-31-64-860-004

(3) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-64-400-005

(4) Install the rig pin E-5 from the rigging pin kit, SPL-1585 in the rig pin E-5 hole.

SUBTASK 27-31-64-040-002

(5) Attach a DO NOT OPERATE tag, STD-858 to the control columns.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Elevator Feel and Centering Unit Spring Removal

SUBTASK 27-31-64-020-009

(1) Disconnect the output rod [8] from the crank [2].

(a) Remove the nut [7], washer [6], nut [18], washer [5], outer bolt [3], and bolt [4] to disconnect the output rod [8] from the crank [2].

(b) Move the output rod [8] out of the way.

SUBTASK 27-31-64-000-002

(2) Remove the elevator feel actuator [20] from the elevator feel and centering unit [1].

NOTE: Do not disconnect the hydraulic lines from the elevator feel actuator [20].

(a) Remove the nut [37], washer [38], nut [39], washer [40], and bolt assembly [41] from the aft connection of the elevator feel actuator [20].

(b) Remove the nut [27], washer [26], nut [25], washer [24], antirotation fitting [23], spacer [22], and bolt assembly [21] from the elevator feel actuator [20].

(c) Remove the elevator feel actuator [20].

(d) Set the elevator feel actuator [20] carefully on a piece of soft fabric to prevent damage of the elevator feel actuator [20] or adjacent components.

1) Be careful not to strain the hydraulic lines.

SUBTASK 27-31-64-000-003

(3) Remove the elevator feel and centering cover [19] from the elevator feel and centering unit [1].

NOTE: Removal of the cover is done only to increase visibility of the springs and is not mandatory for this procedure.

SUBTASK 27-31-64-000-004

(4) Remove the inner spring [43] and outer spring [42]:

(a) Remove the bolts [34] to loosen the retainer [47].

(b) Turn the spring post adjustment wrench flats [33] to loosen the springs.

(c) Remove the aft hook of the outer spring [42] from the spring post assembly [44].

1) Use a non-metallic tie-wrap or strap to pull the spring in the aft direction until the outer spring [42] hook is completely removed from the eccentric groove of the spring post assembly [44].

NOTE: Use a protective thin plastic to prevent rubbing the housing surface of the springs.

(d) Remove the aft hook of the inner spring [43] from the spring spring post assembly [44].

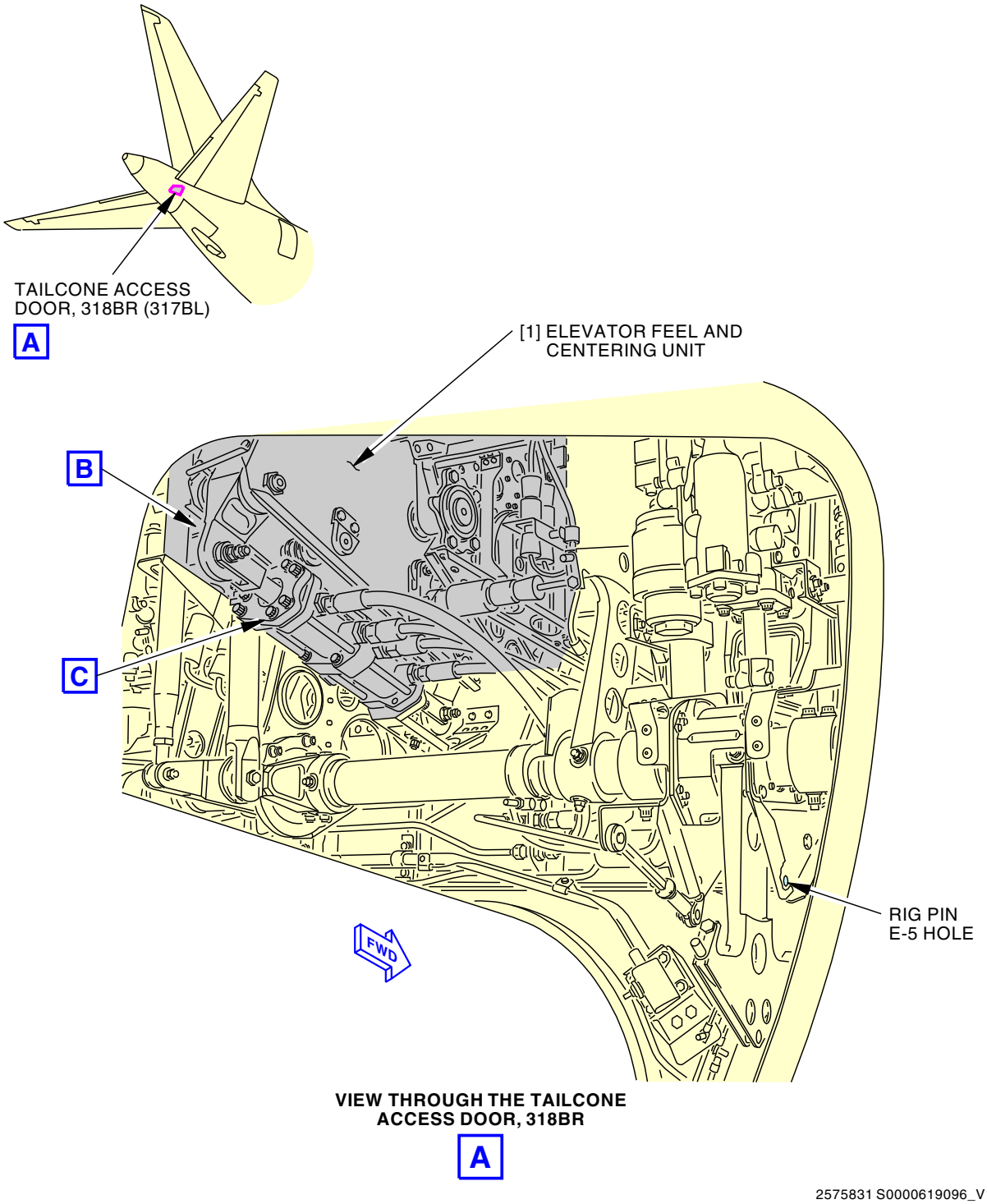
1) Use a non-metallic tie-wrap or strap to pull the spring in the aft direction until the inner spring [43] hook is completely removed from the eccentric groove of the spring post assembly [44].

NOTE: Use a protective thin plastic to prevent rubbing the housing surface of the springs.

(e) Remove the forward hooks of the outer spring [42] and inner spring [43] from the cam follower assembly [45].

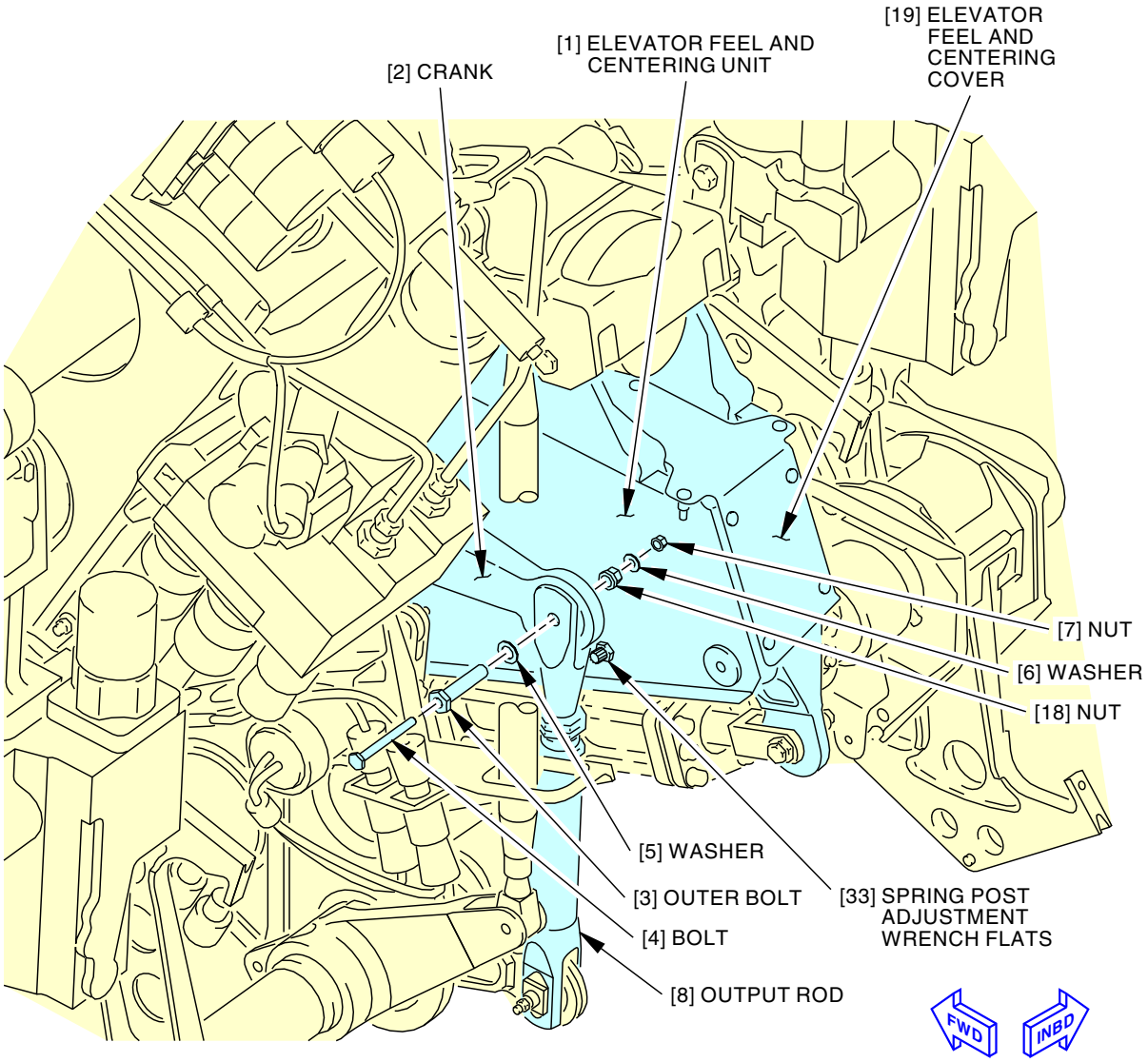
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



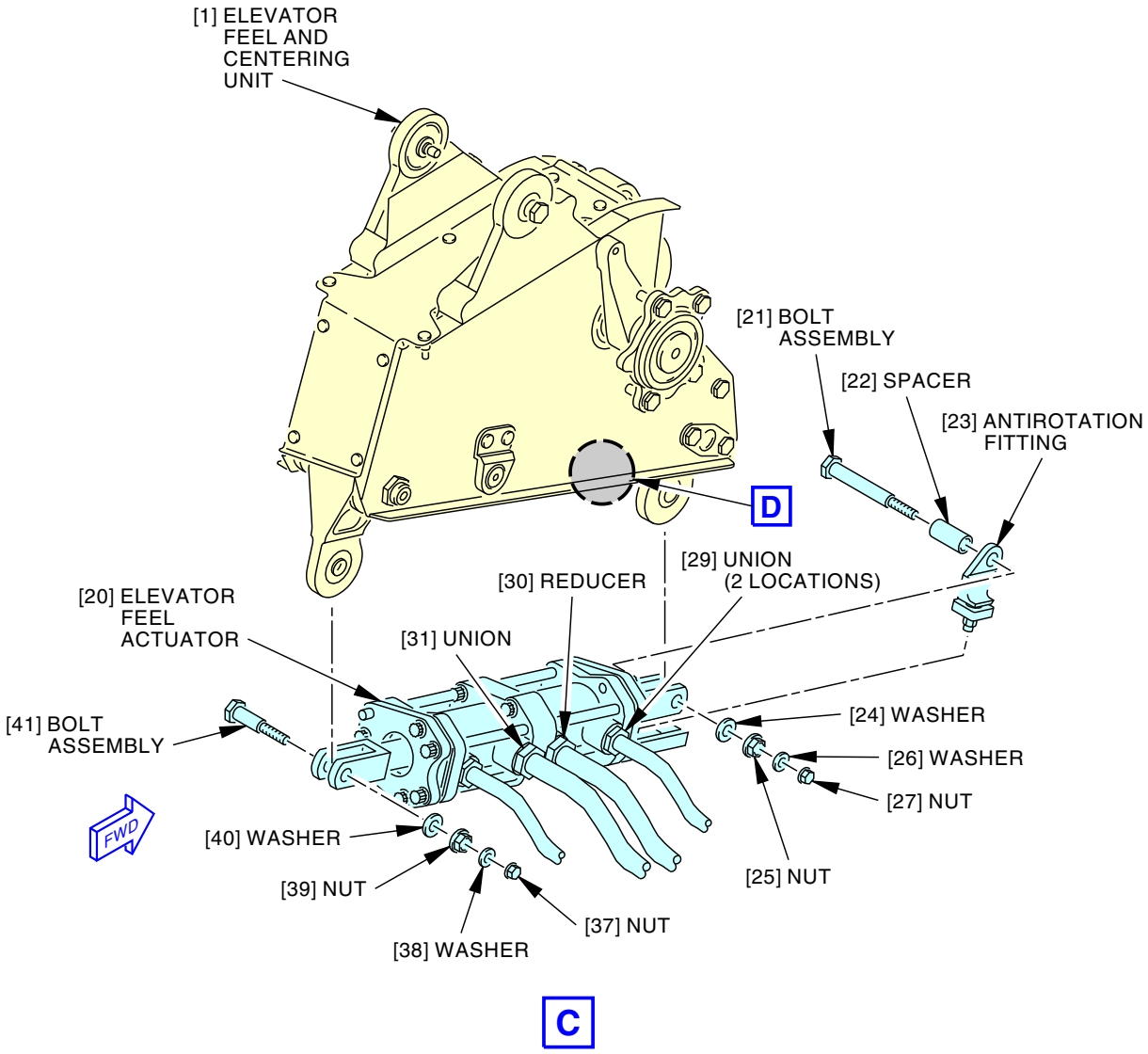
Elevator Feel and Centering Unit Spring Installation
Figure 402/27-31-64-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel and Centering Unit Spring Installation
Figure 402/27-31-64-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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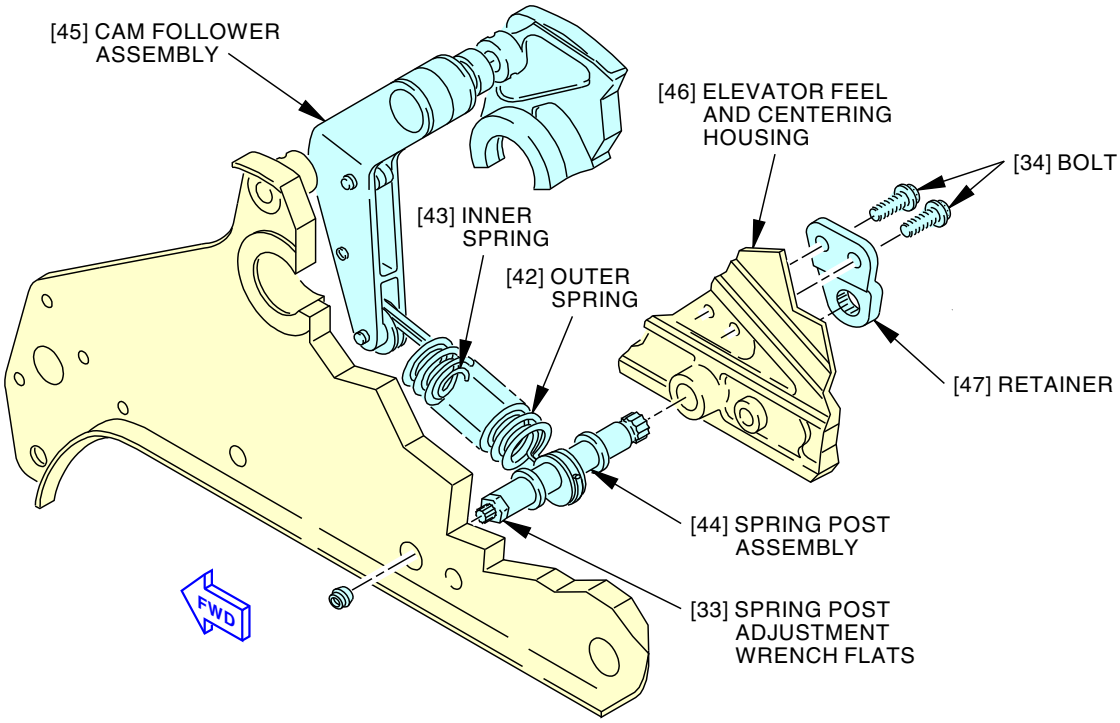
Elevator Feel and Centering Unit Spring Installation
Figure 402/27-31-64-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Elevator Feel and Centering Unit Spring Installation
Figure 402/27-31-64-990-803 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-64-400-802

5. Elevator Feel and Centering Unit Spring Installation

(Figure 402)

A. References

Reference	Title
27-31-00-400-801	Elevator and Tab Control System - Activation (P/B 201)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1452	Gauge - Mechanical Force, 0-100 lbs. (0.5 lbs. Resolution) Part #: LG-100 Supplier: 92456
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-11969	Dial Indicator - 0.001 inch graduations

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
42	Outer spring	27-31-64-02-400	SIA ALL
43	Inner spring	27-31-64-02-405	SIA ALL

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Elevator Feel and Centering Unit Spring Installation

SUBTASK 27-31-64-400-001

(1) Replace the inner spring [43] and outer spring [42]:

(a) Install the forward spring hooks on the cam follower assembly [45].

1) Make sure that the hooks are put in the eccentric groove correctly.

(b) Use a non-metallic tie-wrap or strap to install the aft spring hooks.

1) Install the inner spring [43] on the spring post assembly [44] by pulling the inner spring coil aft and bending it slightly.

a) Make sure that the hook is put in the eccentric groove correctly.

2) Install the outer spring [42] on the spring post assembly [44] by pulling the outer spring coil aft and bending it slightly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that the hook is put in the eccentric groove correctly.

3) Make sure that the forward spring hooks stay on the cam follower assembly [45].

(c) Install the bolts [34] and retainer [47].

(d) Do a detailed visual inspection of the inner spring [43] and outer spring [42] to make sure the spring hooks are in the eccentric groove correctly.

(e) Turn the spring post adjustment wrench flat [33] to tighten the springs.

SUBTASK 27-31-64-700-001

(2) Do a breakout test of the crank [2].

(a) Use a non-metallic tie-wrap or strap to cycle the crank [2] a minimum of 3 times:

1) Use the 0-100 lbs. (0.5 lbs. resolution) mechanical force gauge, COM-1452 to pull down on a non-metallic tie-wrap or strap attached to the crank and note the force when the dial indicator, STD-11969 shows 0.025 in. (0.64 mm).

a) Force must measure 13.0 lbf (57.8 N).

2) Relax the tension on the strap and note the force when the crank starts to move upward.

a) Force must measure 12.0 lbf (53.4 N).

3) Use the 0-100 lbs. (0.5 lbs. resolution) mechanical force gauge, COM-1452 to pull up on a non-metallic tie-wrap or strap attached to the crank and note the force when the dial indicator, STD-11969 shows 0.025 in. (0.64 mm).

a) Force must measure 11.5 lbf (51.2 N).

4) Relax the tension on the strap and note the force when the crank starts to move downward.

a) Force must measure 10.5 lbf (46.7 N).

(b) If the force values exceed these limits, loosen the retainer [47] and rotate the spring post adjustment wrench flat [33] if necessary.

1) Repeat the breakout test until the force values are in the specified limits.

SUBTASK 27-31-64-400-002

(3) Install the elevator feel actuator [20].

(a) Put the elevator feel actuator [20] in its position and hold it in place.

(b) Install the bolt assembly [41], washer [40], and nut [39] to attach the aft connection of the washer [40] to the elevator feel and centering unit [1].

1) Tighten the nut [39] to 85 in-lb (9.6 N·m) - 100 in-lb (11.3 N·m).

(c) Install the washer [38] and nut [37].

CAUTION

DO NOT TIGHTEN THE FIRST NUT AGAIN AFTER YOU TIGHTEN THE LAST NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

1) Tighten the nut [27] to 30 in-lb (3.4 N·m) - 35 in-lb (4.0 N·m).

(d) Install the bolt assembly [21], nut [12], antirotation fitting [23], washer [24], and the nut [25] to attach the forward connection of the elevator feel actuator [20] to the elevator feel and centering unit [1].

1) Tighten the nut [25] to 85 in-lb (9.6 N·m) - 100 in-lb (11.3 N·m).

(e) Install the washer [26] and nut [27].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT TIGHTEN THE FIRST NUT AGAIN AFTER YOU TIGHTEN THE LAST NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

1) Tighten the nut [27] to 30 in-lb (3.4 N·m) - 35 in-lb (4.0 N·m).

SUBTASK 27-31-64-400-003

(4) Install the elevator feel and centering cover [19] if removed.

SUBTASK 27-31-64-400-004

(5) Install the elevator feel and centering unit output rod [8].

(a) Install the bolt [4], outer bolt [3], washer [5] (under the outer bolt [3]), and nut [18] to connect the output rod [8] to the crank [2].

1) Tighten the outer bolt [3] to 75 in-lb (8.5 N·m) - 85 in-lb (9.6 N·m).

(b) Install washer [6] and nut [7].

CAUTION

DO NOT TIGHTEN THE OUTER BOLT AGAIN AFTER YOU TIGHTEN THE LAST NUT. YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

1) Tighten the nut [7] to 25 in-lb (2.8 N·m) - 35 in-lb (4.0 N·m).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-64-000-001

(1) Remove the rig pin E-5 of the rigging pin kit, SPL-1585 from the rig pin E-5 hole.

SUBTASK 27-31-64-410-002

(2) Close these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-64-440-001

(3) Do this task: Elevator and Tab Control System - Activation, TASK 27-31-00-400-801.

SUBTASK 27-31-64-860-005

(4) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-64-440-002

(5) Remove the DO NOT OPERATE tag, STD-858 from the control columns.

SUBTASK 27-31-64-700-002

(6) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR FEEL AND CENTERING UNIT - INSPECTION/CHECK

1. General

A. This procedure contains this task:

(1) Elevator Feel and Centering Unit Inspection

(a) This task supplies the data for a dimensional inspection of the elevator feel and centering unit.

(b) This task does not remove or install the elevator feel and centering unit. Refer to the Elevator Feel and Centering Unit - Removal/Installation for procedures to remove and install the elevator feel and centering unit.

TASK 27-31-64-200-801

2. Elevator Feel and Centering Unit Inspection

(Figure 601)

A. General

(1) This procedure gives the wear limits and the repair data for the elevator feel and centering unit.

B. References

Reference	Title
27-31-64-000-801	Elevator Feel and Centering Unit Removal (P/B 401)
27-31-64-400-801	Elevator Feel and Centering Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 27-31-64-020-004

(1) Remove the elevator feel and centering unit. Do this task: Elevator Feel and Centering Unit Removal, TASK 27-31-64-000-801.

SUBTASK 27-31-64-020-005

(2) Use these tools to do a check for worn areas on the parts of the elevator feel and centering unit connections:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-31-64-020-006

(3) Examine the parts of the elevator feel and centering unit connections for worn areas. Do these steps:

(a) Remove the parts that you will examine.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Compare the dimensions that you measured with the permitted wear dimensions that are shown in Table 601.

(d) If a part is out of tolerance, then replace or repair the part.

Table 601/27-31-64-993-801 Wear Limits

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BEARING	I.D.	0.3120 in 7.925 mm	0.3125 in 7.938 mm	0.3155 in 8.014 mm	0.0035 in 0.089 mm
#1 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.925 mm	0.3106 in 7.889 mm	
#2 OUTPUT ROD	I.D.	0.3120 in 7.925 mm	0.3130 in 7.950 mm	0.3160 in 8.026 mm	0.0040 in 0.102 mm
#2 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.925 mm	0.3106 in 7.889 mm	

SUBTASK 27-31-64-020-007

(4) Examine the spring of the elevator feel and centering unit. Refer to Figure 601 (Sheet 3).

(a) If the spring is broken, then replace the elevator feel and centering unit. Do these tasks:

1) Elevator Feel and Centering Unit Removal, TASK 27-31-64-000-801

2) Elevator Feel and Centering Unit Installation, TASK 27-31-64-400-801

SUBTASK 27-31-64-020-008

(5) Install the elevator feel and centering unit. Do this task: Elevator Feel and Centering Unit Installation, TASK 27-31-64-400-801.

——— END OF TASK ———

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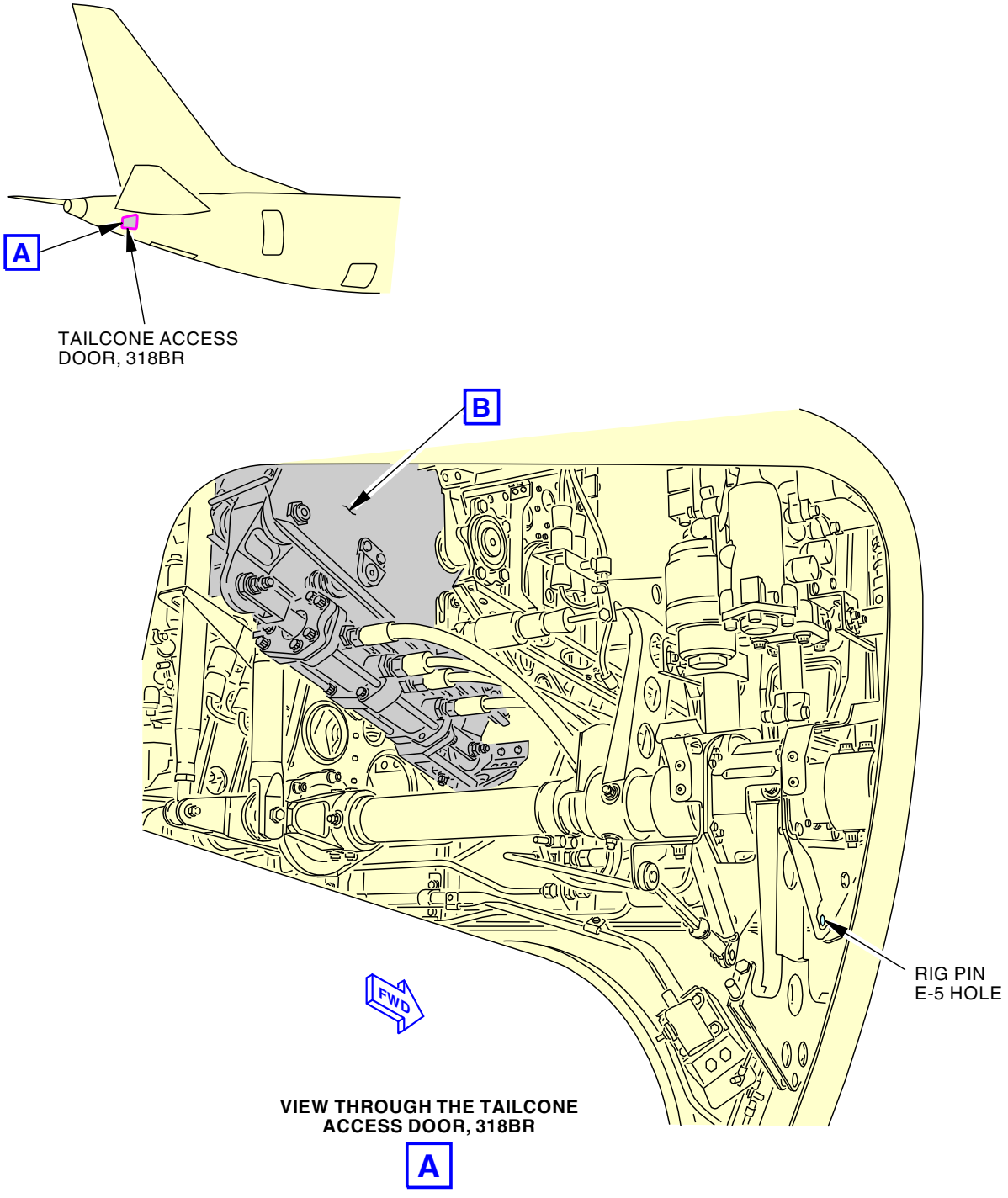
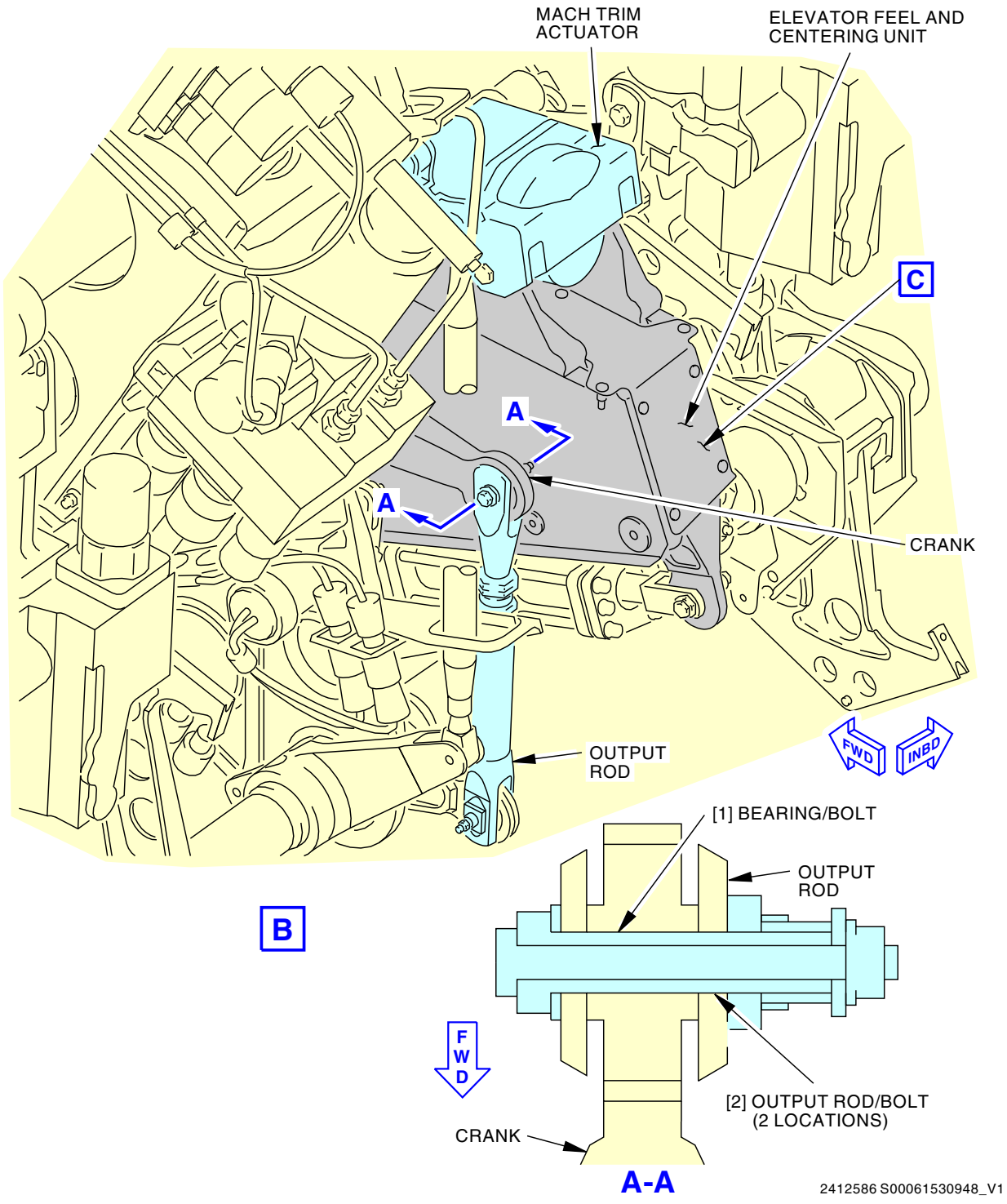


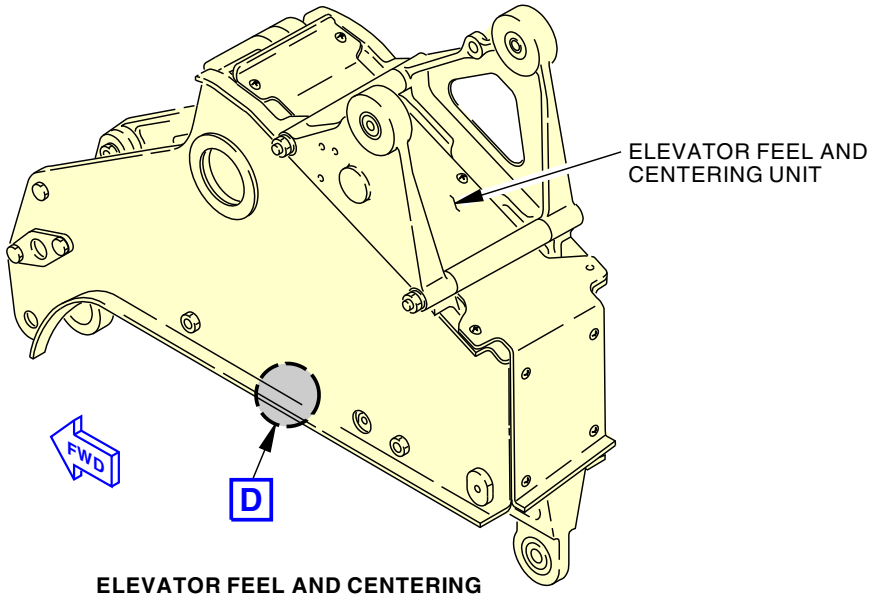
Elevator Feel and Centering Unit Wear Limits
Figure 601/27-31-64-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



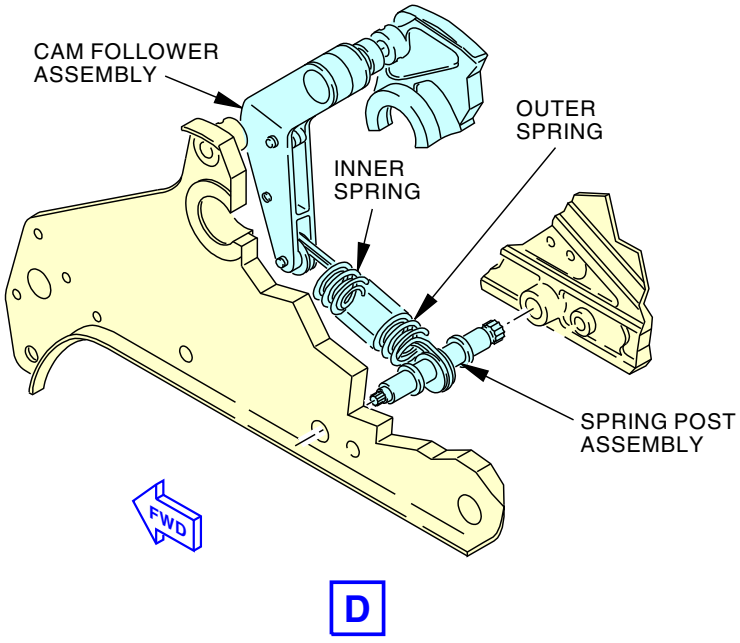
Elevator Feel and Centering Unit Wear Limits
Figure 601/27-31-64-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR FEEL AND CENTERING UNIT

C



D

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Elevator Feel and Centering Unit Wear Limits
Figure 601/27-31-64-990-802 (Sheet 3 of 3)

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ELEVATOR FEEL ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator feel actuator

(2) An installation of the elevator feel actuator.

B. The elevator feel actuator is installed below the elevator feel and centering unit.

TASK 27-31-67-000-801

2. Elevator Feel Actuator Removal

(Figure 401)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-67-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-67-010-001

(2) Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-67-480-001

(3) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the elevator aft control quadrant (View A, Figure 401).

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F. Elevator Feel Actuator Removal

SUBTASK 27-31-67-020-001

WARNING RELEASE THE CONNECTION SLOWLY AND LET THE PRESSURE DECREASE BEFORE YOU COMPLETELY REMOVE THE HYDRAULIC LINE. IF YOU DISCONNECT THE HYDRAULIC LINE WHEN IT HAS PRESSURE, A SPRAY OF HYDRAULIC FLUID CAN CAUSE INJURY TO PERSONS.

(1) Disconnect the hydraulic line [2], hydraulic line [25], hydraulic line [26], and hydraulic line [27] from the elevator feel actuator [3] (Figure 401).

(a) Remove the unions [12], reducer [13], and union [14].

(b) Discard the packings [11] and packings [15].

(c) Install the caps and plugs on the open ports and hydraulic line [2], hydraulic line [25], hydraulic line [26], hydraulic line [27].

SUBTASK 27-31-67-020-002

(2) Remove the elevator feel actuator [3] from the elevator feel and centering unit [1]:

(a) Remove the nut [20], washer [21], nut [22], washer [23], and bolt assembly [24] from the aft connection of the elevator feel actuator [3].

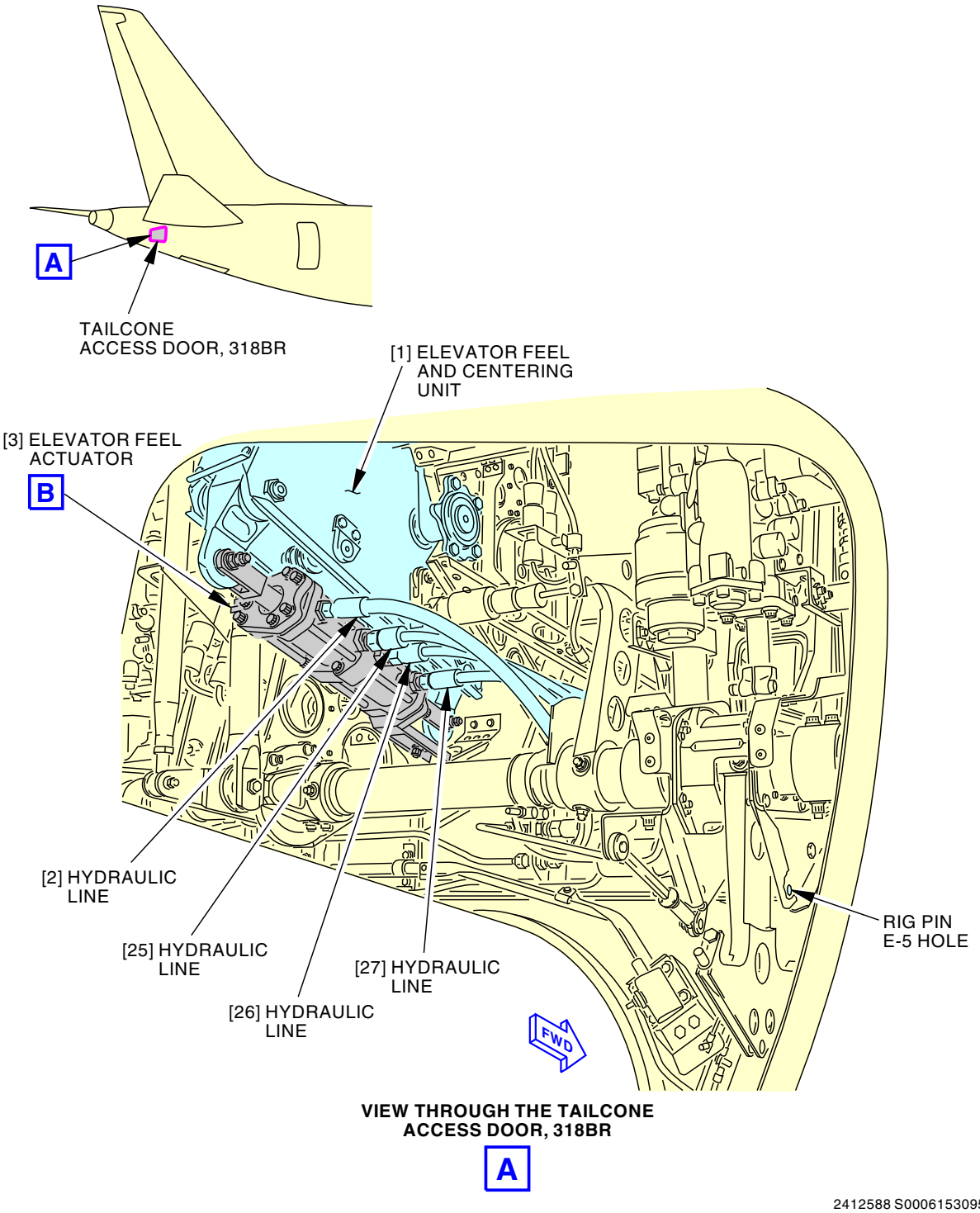
(b) Remove the nut [17], washer [18], bushing [19], and slide block [16] from the anti-rotation fitting [6].

(c) Remove the nut [10], washer [9], nut [8], washer [7], spacer [5], anti-rotation fitting [6], and bolt assembly [4] from the forward connection of the elevator feel actuator [3].

(d) Remove the elevator feel actuator [3].

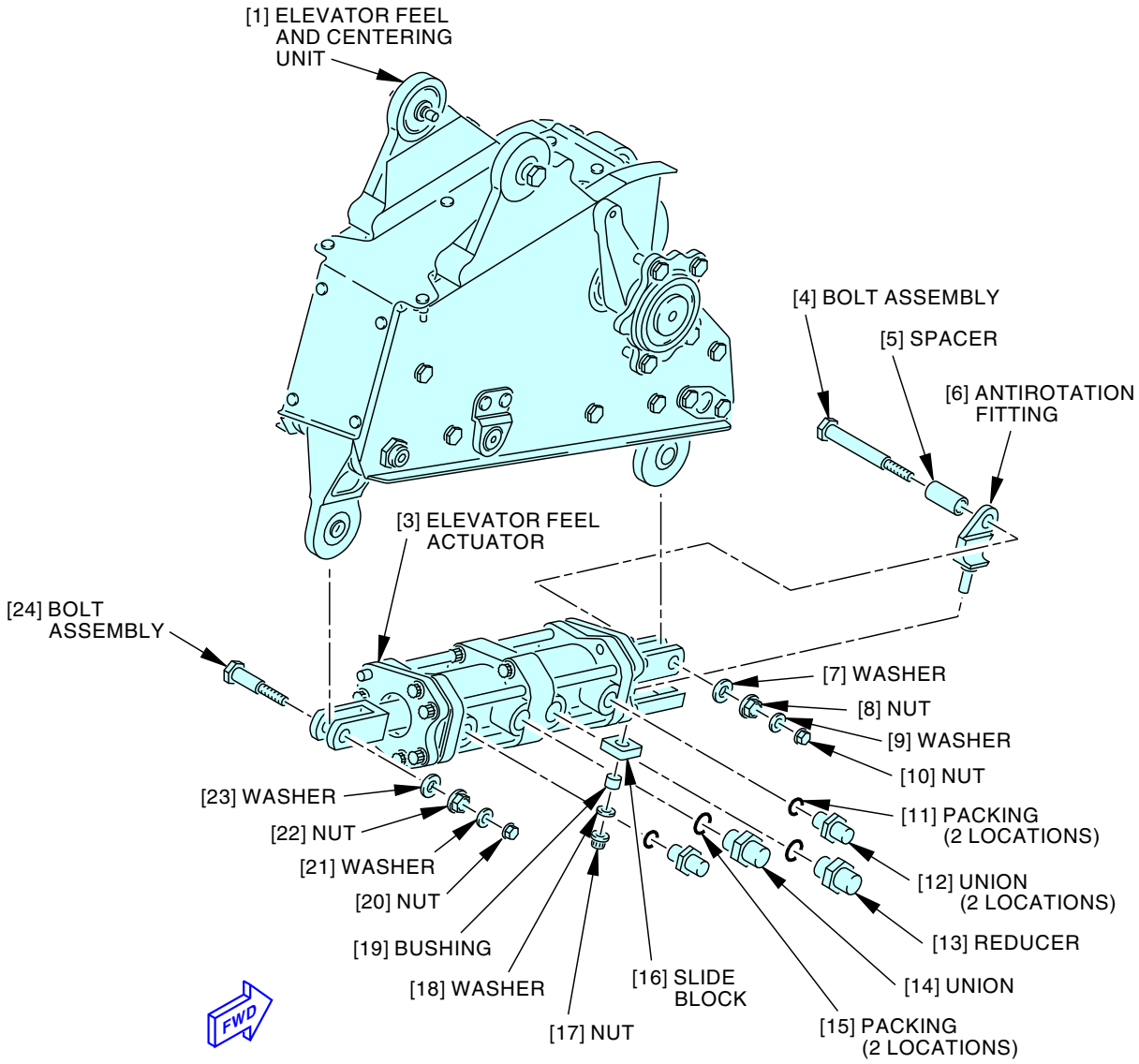
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Feel Actuator Installation
Figure 401/27-31-67-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR FEEL ACTUATOR

B

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Elevator Feel Actuator Installation
Figure 401/27-31-67-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-67-400-801

3. Elevator Feel Actuator Installation

(Figure 401)

A. References

Reference	Title
27-31-00-700-813	Feel Force System - Test (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
29-11-00 P/B 201	HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES
29-11-00-860-802	Hydraulic System A or B Pressurization with a Portable Hydraulic Cart (P/B 201)
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
29-11-00-860-804	Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP) (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1742	Regulator - Air Pressure, Elevator Feel Computer Part #: F72928-109 Supplier: 81205 Part #: F72928-110 Supplier: 81205 Part #: F72928-111 Supplier: 81205 Opt Part #: F72928-58 Supplier: 81205 Opt Part #: F72928-62 Supplier: 81205 Opt Part #: F72928-63 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Elevator feel actuator	27-31-67-01-090	SIA ALL
11	Packing	27-31-67-01-070	SIA ALL
15	Packing	27-31-67-01-085	SIA ALL

E. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

F. Access Panels

Number	Name/Location
318BR	Tailcone Access Door

G. Elevator Feel Actuator Installation

SUBTASK 27-31-67-420-001

(1) Install the new packings [11], new packings [15], unions [12], union [14], and reducer [13], do these steps:

(a) Lubricate the packings [11], packings [15], unions [12], union [14], and reducer [13] with hydraulic fluid, D00153.

(b) Install the packings [11], packings [15], unions [12], union [14], and reducer [13] to the elevator feel actuator [3].

SUBTASK 27-31-67-420-002

(2) Install the elevator feel actuator [3], do these steps:

(a) Put and hold the elevator feel actuator [3] in its position.

(b) Install the bolt assembly [24], washer [23], and nut [22] to attach the aft connection of the elevator feel actuator [3] to the elevator feel and centering unit [1].

1) Tighten the nut [22] to 85 in-lb (9.6 N·m) - 100 in-lb (11.3 N·m).

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CAUTION

DO NOT TIGHTEN THE NUT [22] AGAIN AFTER YOU TIGHTEN THE NUT [20]. YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Install the washer [21] and nut [20].

1) Tighten the nut [20] to 30 in-lb (3.4 N·m) - 35 in-lb (4 N·m).

(d) Install the bolt assembly [4], spacer [5], anti-rotation fitting [6], washer [7], and nut [8] to attach the forward connection of the elevator feel actuator [3] to the elevator feel and centering unit [1].

1) Tighten the nut [8] to 85 in-lb (9.6 N·m) - 100 in-lb (11.3 N·m).

CAUTION

DO NOT TIGHTEN THE NUT [8] AGAIN AFTER YOU TIGHTEN THE NUT [10]. YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(e) Install the washer [9] and nut [10].

1) Tighten the nut [10] to 30 in-lb (3.4 N·m) - 35 in-lb (4 N·m).

(f) Install the slide block [16], bushing [19], washer [18], and nut [17] to anti-rotation fitting [6].

1) Tighten the nut [17] to 100 in-lb (11.3 N·m) - 125 in-lb (14.1 N·m).

SUBTASK 27-31-67-420-003

(3) Connect the hydraulic line [2], hydraulic line [25], hydraulic line [26], and hydraulic line [27] to the elevator feel actuator [3], do these steps:

(a) Remove the caps and plugs from the open ports, hydraulic line [2], hydraulic line [25], hydraulic line [26], and hydraulic line [27].

(b) Connect hydraulic line [2], hydraulic line [25], hydraulic line [26], and hydraulic line [27].

(c) Tighten the B-nuts on hydraulic line [2] and hydraulic line [27] to 140 ±7 in-lb (16 ±1 N·m).

(d) Tighten the B-nut on hydraulic line [25] to 170 ±9 in-lb (19 ±1 N·m).

(e) Tighten the B-nut on hydraulic line [26] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-31-67-080-001

(4) Remove the rig pin E-5 of the rigging pin kit, SPL-1585, from the elevator aft control quadrant.

SUBTASK 27-31-67-860-002

(5) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-67-870-001

(6) Bleed the elevator control system, do these steps:

WARNING

MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(a) Move the horizontal stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits).

NOTE: The horizontal stabilizer can be moved with the control wheel STAB TRIM switches or the stabilizer trim control wheel.

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1) Make sure that the ballnut is against the jackscrew upstop.

(b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

(c) Connect the pressure lines from the air data model test set, COM-1914, or regulator, SPL-1742, to the two pitot probes on the vertical fin.

(d) Use the regulator, SPL-1742, or air data model test set, COM-1914, to raise the airspeed to 2.46 psig (300 knots).

1) Make sure that the rate is 2.46 psig (300 knots) or less for each minute.

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(e) Pressurize Hydraulic System A and B, do one of these steps:

1) If you will use a Portable Hydraulic Cart, do this task: Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, TASK 29-11-00-860-802.

2) If not using a Portable Hydraulic Cart, do these tasks:

NOTE: Both the EMDP and EDP should be run at the same time.

- Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), TASK 29-11-00-860-803
- Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), TASK 29-11-00-860-804.

(f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(g) Wait for 10 seconds.

(h) Do these steps to cycle the power between Hydraulic Systems A and B:

1) Set the flight controls hydraulic power switches as follows:

a) Set the FLT CONTROL B switch to the OFF position.

b) Set the FLT CONTROL A switch to the A ON position.

c) Wait for 2 seconds.

d) Set the FLT CONTROL A switch to the OFF position.

e) Set the FLT CONTROL B switch to the B ON position.

f) Wait for 2 seconds.

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2) Repeat the cycle 10 times.

(i) Slowly, do control column sweeps with pitot pressure applied.

(j) Do these steps to cycle pitot pressure:

1) Use the regulator, SPL-1742, or air data model test set, COM-1914, to lower the airspeed to 0 psig (0 knots).

2) Use the regulator, SPL-1742, or air data model test set, COM-1914, to increase the airspeed to 2.46 psig (300 knots).

3) Use the regulator, SPL-1742, or air data model test set, COM-1914, to lower the airspeed to 0 psig (0 knots).

(k) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

(l) Wait for 10 seconds.

SUBTASK 27-31-67-860-003

(7) Remove the pressure from the Hydraulic Systems A and B (HYDRAULIC SYSTEMS A AND B - MAINTENANCE PRACTICES, PAGEBLOCK 29-11-00/201).

SUBTASK 27-31-67-790-001

(8) Make sure that there is no hydraulic leakage at the elevator feel actuator [3].

SUBTASK 27-31-67-020-003

(9) Remove the pressure lines that connect the air data model test set, COM-1914, or regulator, SPL-1742, to the two pitot probes on the vertical fin.

SUBTASK 27-31-67-020-004

(10) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-67-860-004

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(11) Move the horizontal stabilizer to the neutral stabilizer position (zero degrees or 4 units of trim).

NOTE: The horizontal stabilizer can be moved with the control wheel STAB TRIM switches or the stabilizer trim control wheel.

SUBTASK 27-31-67-720-001

(12) Do this task: Feel Force System - Test, TASK 27-31-00-700-813.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-67-410-001

(1) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

——— END OF TASK ———

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ELEVATOR FEEL ACTUATOR - DIFFERENTIAL PRESSURE TEST

1. General

A. This task gives instructions on how to diagnose an Elevator Feel System differential pressure issue, and how to use the elevator feel computer test box, SPL-23206.

TASK 27-31-67-700-801

2. Elevator Feel Actuator - Differential Pressure Test

(Figure 501)

A. General

This task gives instructions on how to diagnose an Elevator Feel System differential pressure issue, and how to use the elevator feel computer test box, SPL-23206.

B. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-67-400-801	Elevator Feel Actuator Installation (P/B 401)
29-11-00-860-803	Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP) (P/B 201)
29-11-00-860-804	Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP) (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-23206	Test Kit - Elevator Feel System Differential Pressure Part #: EFCTB-000 Supplier: 3BSK6

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

F. Prepare for Troubleshooting

SUBTASK 27-31-67-780-001

(1) Do this task: TASK 27-31-00-800-802

SUBTASK 27-31-67-860-007

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

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(Continued)

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

G. Elevator Feel System Troubleshooting

SUBTASK 27-31-67-480-002

(1) Place the test box in the aft galley and connect the power plug.

SUBTASK 27-31-67-480-003

(2) Install Elevator Pitot System test equipment:

(a) Install the pitot adaptors on each of the elevator pitot probes.

(b) Using the Y hose, connect a hose to each pitot adaptor.

(c) Install the remaining end of the Y hose to the REGULATED AIR connection on the test box.

SUBTASK 27-31-67-480-004

(3) Install the pressure return hose:

(a) Install one return line on the system A visco drain.

(b) Install one return line on the system B visco drain.

(c) Install the system A return line onto the PITOT A connection on the test box.

(d) Install the system B return line onto the PITOT B connection on the test box.

SUBTASK 27-31-67-410-002

(4) Install the pressure transducers:

(a) Access the DUAL FEEL ACTUATOR in the tail cone compartment.

(b) Remove the SYSTEM B METERED PRESSURE line from the DUAL FEEL ACTUATOR.

(c) Install a cap on the DUAL FEEL ACTUATOR where the SYSTEM B METERED PRESSURE line was removed.

(d) Install one of the pressure transducers from the kit on the SYSTEM B METERED PRESSURE line.

(e) Remove the SYSTEM A METERED PRESSURE line from the DUAL FEEL ACTUATOR.

(f) Install a cap on the DUAL FEEL ACTUATOR where the SYSTEM A METERED PRESSURE line was removed.

(g) Install the remaining pressure transducer from the kit on the SYSTEM A METERED PRESSURE line.

(h) Connect a wire harness to each of the pressure transducers.

(i) Connect the SYSTEM A METERED PRESSURE transducer wire harness to the TRANSMITTER A port on the test box.

(j) Connect the SYSTEM B METERED PRESSURE transducer wire harness to the TRANSMITTER B port on the test box.

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SUBTASK 27-31-67-700-001

(5) Test Procedure:

(a) Pressurize the hydraulic systems, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), TASK 29-11-00-860-803 or Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), TASK 29-11-00-860-804

(b) Loosen the PRESSURE REGULATOR knob until it can spin freely.

(c) Push the SHUT OFF VALVE knob in.

(d) Turn on the test box with the POWER SUPPLY switch.

(e) Turn on the pitot pump with the PUMP switch.

(f) Monitor the PITOT PRESSURE A and B gages.

(g) Slowly tighten the PRESSURE REGULATOR knob until the PITOT PRESSURE gages read 2.5 psig (2.5 psi).

NOTE: The pitot pressure gauges will increase in pressure at an identical rate. If either gauge (A or B) lags behind, that is an indication of a restriction or blockage in that pitot system.

(h) Observe the TRANSMITTER A and B HYDRAULIC PRESSURE gage.

1) Both values need to be within 20% of each other.

NOTE: If one of the TRANSMITTER pressures (A or B) is lower by at least 20%, that is the system that has a restriction or blockage.

(i) Loosen the PRESSURE REGULATOR knob until the gages read 0.09 +0.07 / -0.00 psig (0.09 +0.07 / -0.00 psi), and let the pressure stabilize.

(j) Pull the SHUTOFF VALVE knob.

(k) Make sure that the PITOT PRESSURE does not decrease more than 0.2 psig (0.2 psi) during a 2-minute time.

NOTE: If the pressure in either gage A or B decreases more than the limit in that time period, that system has a leak.

H. Return the Aircraft to its Usual Condition

SUBTASK 27-31-67-700-002

(1) Release the pressure in the pitot system

(a) Push in the SHUTOFF Valve knob.

(b) Loosen the PRESSURE REGULATOR knob until it can spin freely.

(c) Once the pitot pressure gauges read 0 psig (0 psi), turn off the PUMP switch.

NOTE: Do not remove the pitot equipment at this time.

SUBTASK 27-31-67-020-005

(2) Remove the pressure transducers.

(a) Remove hydraulic power from the aircraft, do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802

(b) Remove the pressure transducers from the SYSTEM B METERED PRESSURE line and the SYSTEM A METERED PRESSURE line.

(c) Remove the caps from the DUAL FEEL ACTUATOR.

(d) Install the SYSTEM B METERED PRESSURE line and the SYSTEM A METERED PRESSURE line on to the corresponding ports of the DUAL FEEL ACTUATOR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-67-410-003

(3) Bleed the Elevator Control System

(a) Do this task: Elevator Feel Actuator Installation, TASK 27-31-67-400-801

SUBTASK 27-31-67-020-006

(4) Remove the Pitot Static Equipment

(a) Remove the pitot adaptors from each of the elevator pitot probes.

(b) Disconnect the Y hose from the pressure adaptors.

(c) Remove the pressure return hoses from the visco drains.

SUBTASK 27-31-67-410-004

(5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT
D	4	C00237	HEATERS ELEV PITOT RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	10	C01676	ELEVATOR FEEL LIMIT

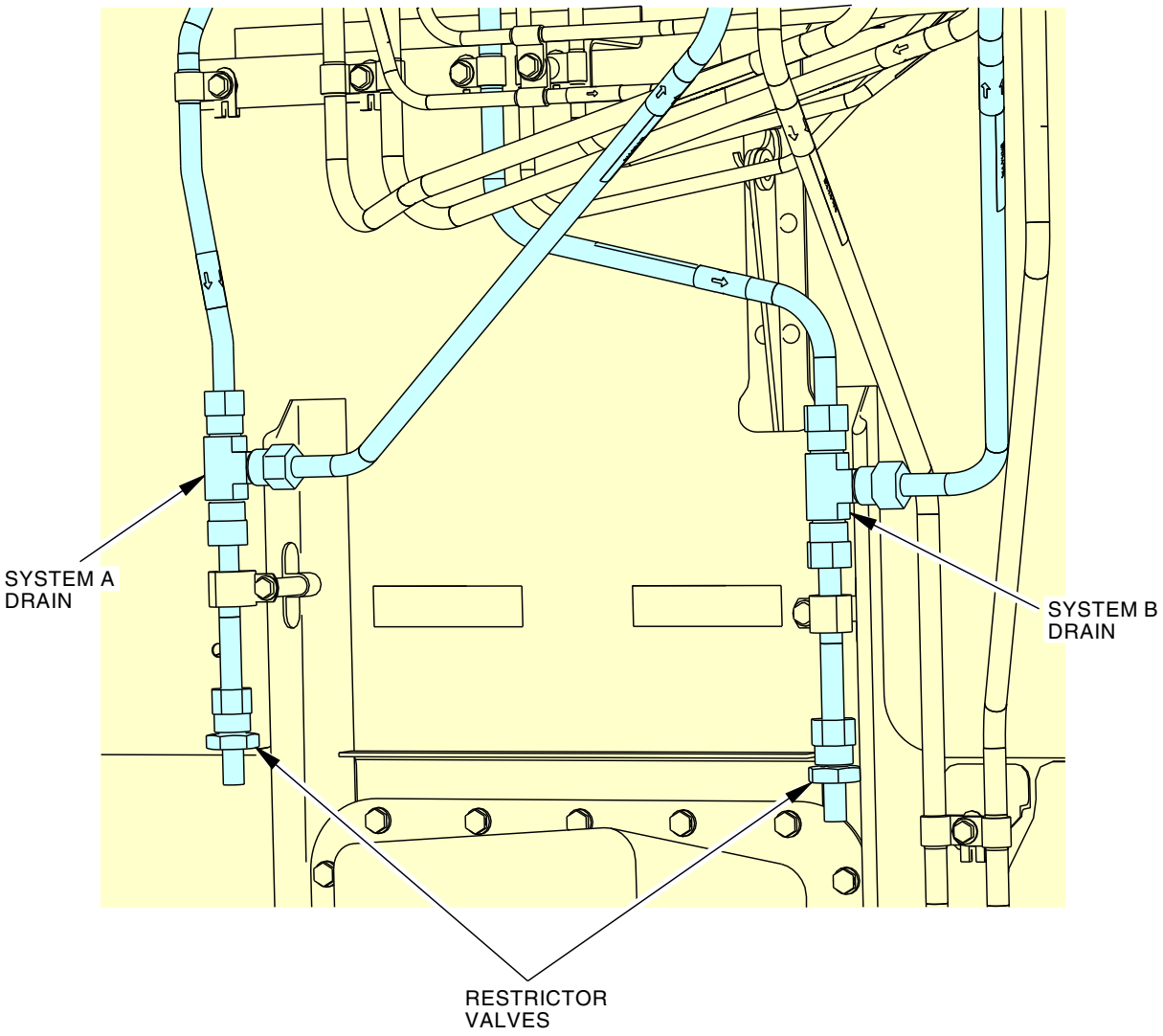
SUBTASK 27-31-67-410-005

(6) Close these access panels:

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

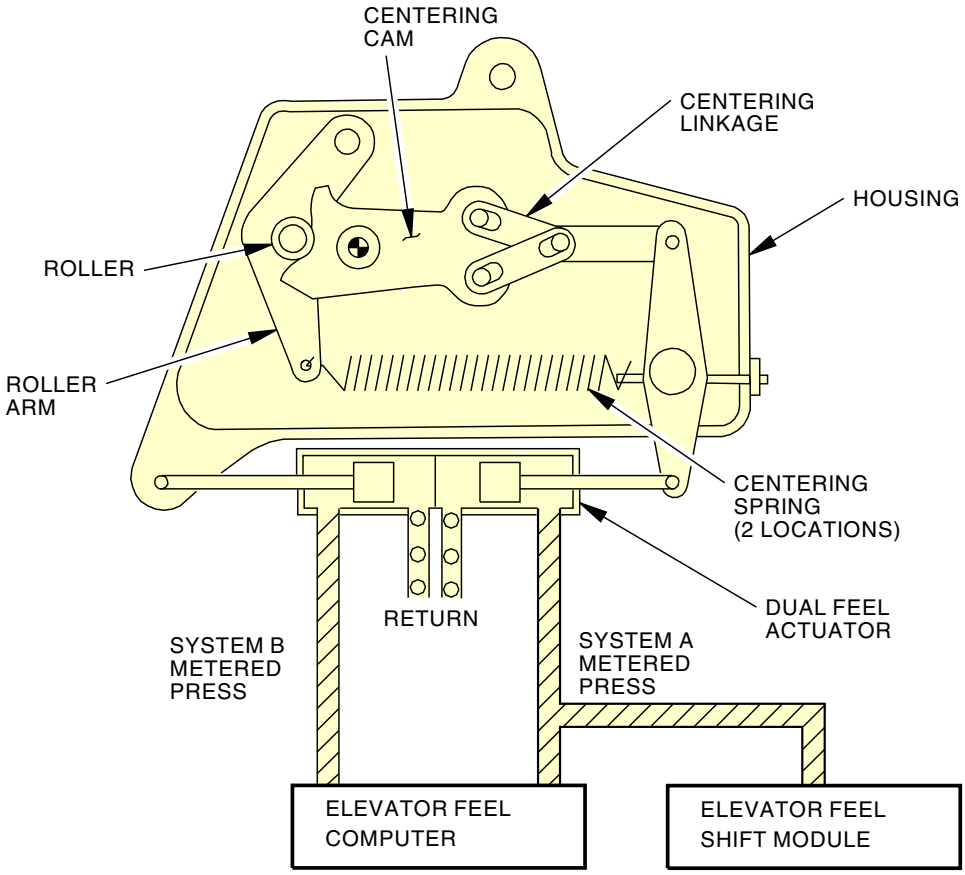


(VIEW IN THE AFT DIRECTION)

3043061 S0000801044_V1

Elevator Feel System Differential Pressure Test
Figure 501/27-31-67-990-802 (Sheet 1 of 4)

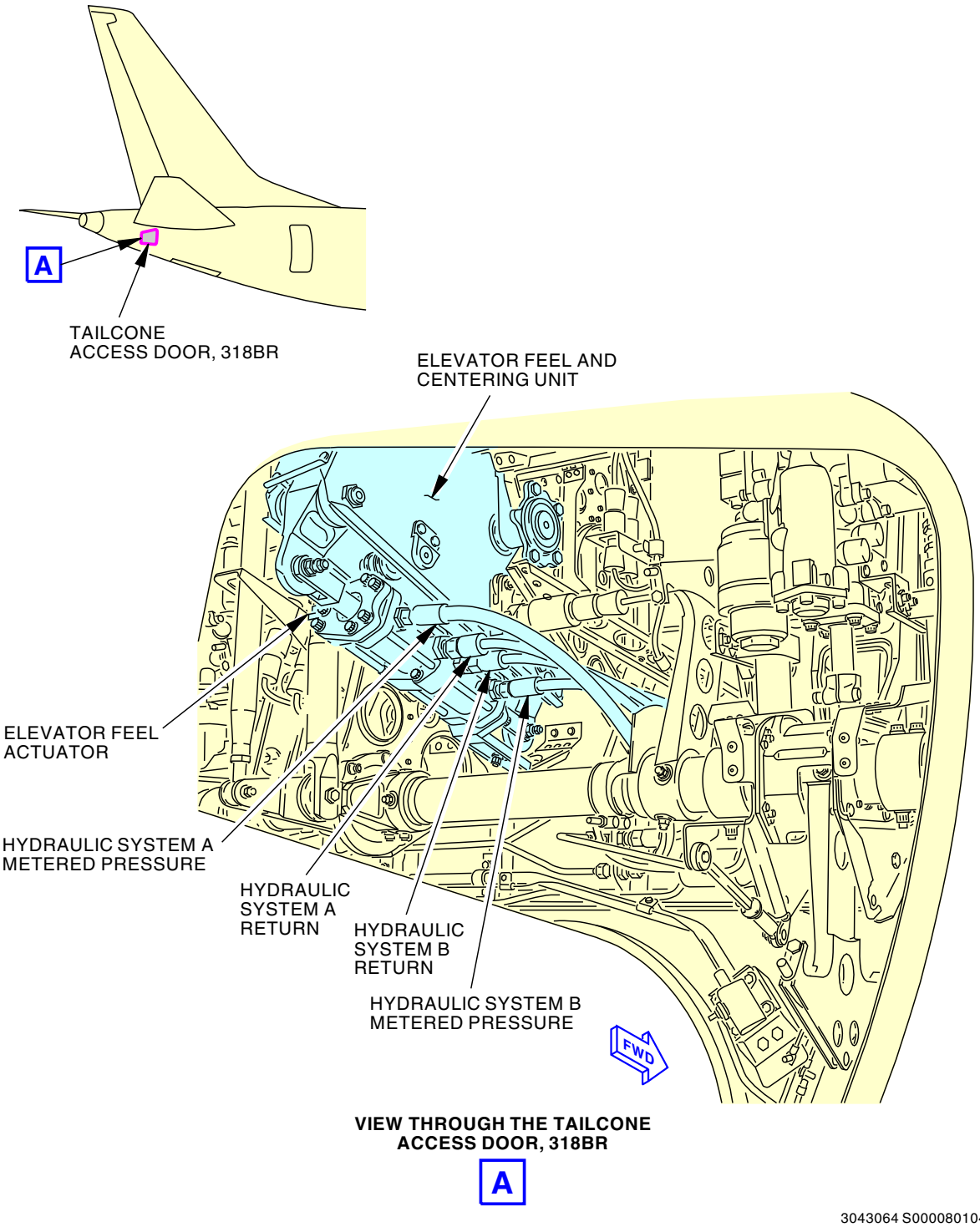
ECCN 9E991 BOEING PROPRIETARY - See title page for details



3043062 S0000801046_V1

Elevator Feel System Differential Pressure Test
Figure 501/27-31-67-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



3043064 S0000801045_V1

Elevator Feel System Differential Pressure Test
Figure 501/27-31-67-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3043065 S0000801047_V1

Elevator Feel System Differential Pressure Test
Figure 501/27-31-67-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR INPUT TORQUE TUBE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator input torque tube.

(2) An installation of the elevator input torque tube.

B. The elevator input torque tube is referred to as the "torque tube" in this procedure.

C. The torque tube includes four quadrants and six input cranks.

TASK 27-31-71-000-801

2. Elevator Input Torque Tube Removal

(Figure 401 or Figure 402)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
53-53-00-000-801	Tailcone Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-71-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-71-020-001

(2) If it is necessary, remove the tail cone to get access to the torque tube [18]:

(a) Use marking pens or masking tape to make marks on the airplane to show the tail cone locations for correct installation of the tail cone.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Do this task: Tailcone Removal, TASK 53-53-00-000-801.

SUBTASK 27-31-71-010-002

(3) If the tail cone was not removed, do this step to gain access to the torque tube [18]:

(a) Open these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-71-860-002

(4) Use the bar, SPL-1677, to set the horizontal stabilizer to 4 units of trim.

(a) Make sure to protect wire bundles when using the trammel bar, SPL-1677.

NOTE: The sharp edges on the trammel bar, SPL-1677, can cause chafing or damage to the wires.

SUBTASK 27-31-71-080-001

(5) Install the rig pin E-5 from the rigging pin kit, SPL-1585, on the elevator aft quadrant.

SUBTASK 27-31-71-010-001

(6) To get access to the turnbuckles, do this step:

(a) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Elevator Input Torque Tube Removal

SUBTASK 27-31-71-020-002

(1) Remove the cables EAL, EBL, EAR, and EBR from the quadrants [5]:

(a) Install the clamps on the cables so the cables will not go through the aft pressure bulkhead.

(b) Remove the turnbuckles locking clips.

(c) Loosen the turnbuckles for the elevator cables EAL, EBL, EAR, and EBR.

(d) Remove the nuts [4], washers [3], washers [55] (if applicable), bolts [1], and cable retainers [2] from the four quadrants [5].

(e) Remove the cables from the quadrants [5].

SUBTASK 27-31-71-020-003

(2) Remove the torque tube [18] (Figure 402):

(a) Remove the nut [16], washer [15], and bolt [14] to disconnect the elevator position sensor rod [13] from the torque tube [18].

(b) Remove the nut [29], washer [28], washer [27], and bolt [26] to disconnect the autopilot actuator rod [19] from the input crank [30].

(c) Remove the nuts [11], washers [10], washers [9], and bolts [8] to disconnect the four input rods [7] of the elevator power control units [6] from the four input cranks [12].

(d) Remove the nut [24], washer [23], washer [22], and bolt [21] to disconnect the feel and centering rod [20] from the input crank [25].

(e) Use the drill bit 0.247 +0.003 / -0.000 in. (6.27 +0.08 / -0.00 mm) and the drill centering guide to drill out the lockbolts [32] and collars [33] from the center bearing retainer [31].

1) Make sure that the holes are not out of tolerance.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Remove the rig pin E-5 from the elevator aft quadrant.

(g) Remove the nuts [43], washers [42], nuts [41], washers [40], bolt assemblies [38], and bushings [39] to disconnect the two elevator power control units [6] from the torque tube [18].

(h) Remove the bolt shrouds [54] from the left and right assemblies.

NOTE: There is a bolt shroud [54] on the bolt heads and the nut ends of the bolts [44].

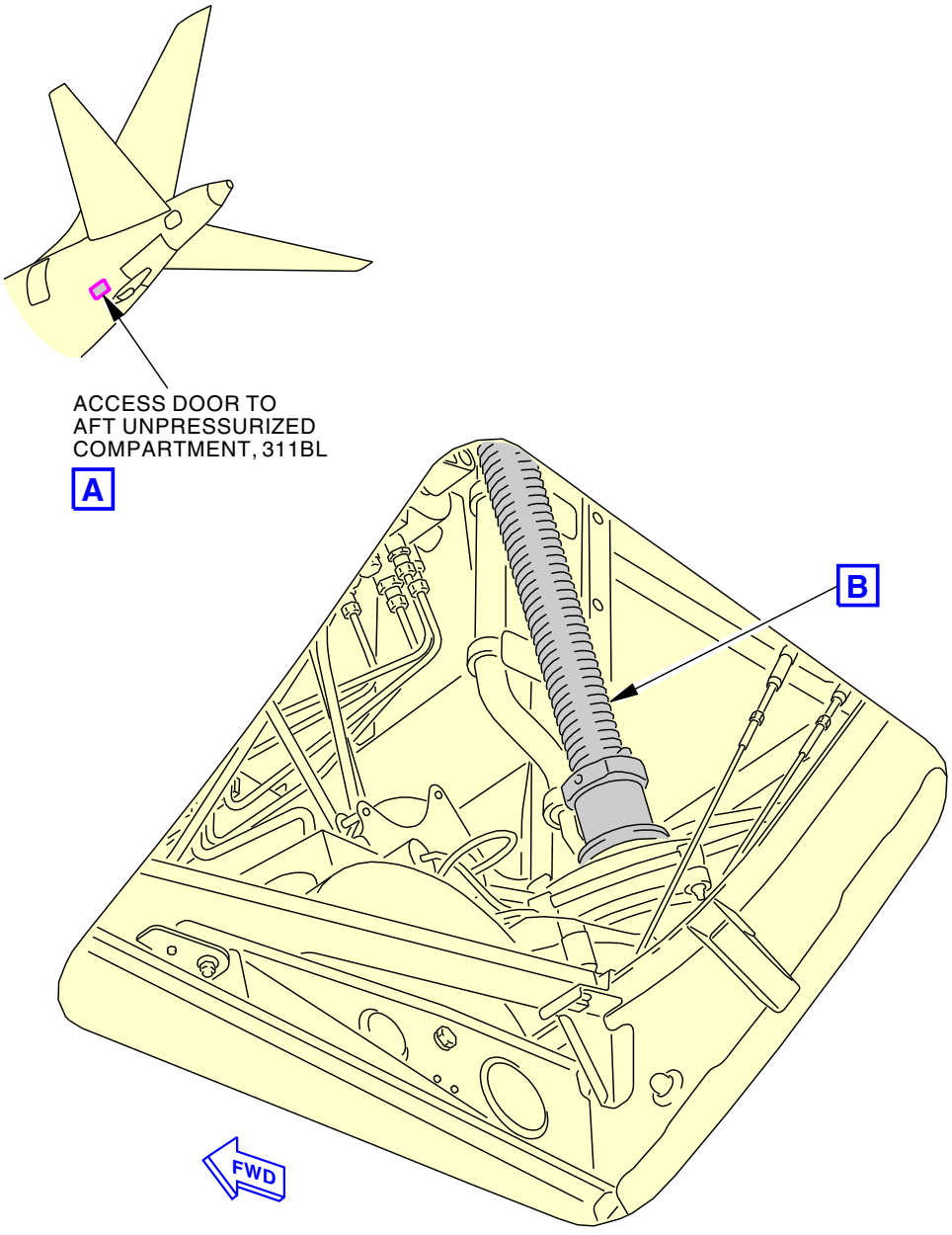
(i) Remove the nuts [47], washers [46], bolts [44], and bushings [45] to disconnect the two reaction links [37] from the torque tube [18].

(j) Remove the nuts [48], washers [49], nuts [50], washers [52], washers [51], washers [34], bolt assemblies [35], and bushings [53] to disconnect the torque tube [18] from the support structure.

(k) Remove the torque tube [18] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



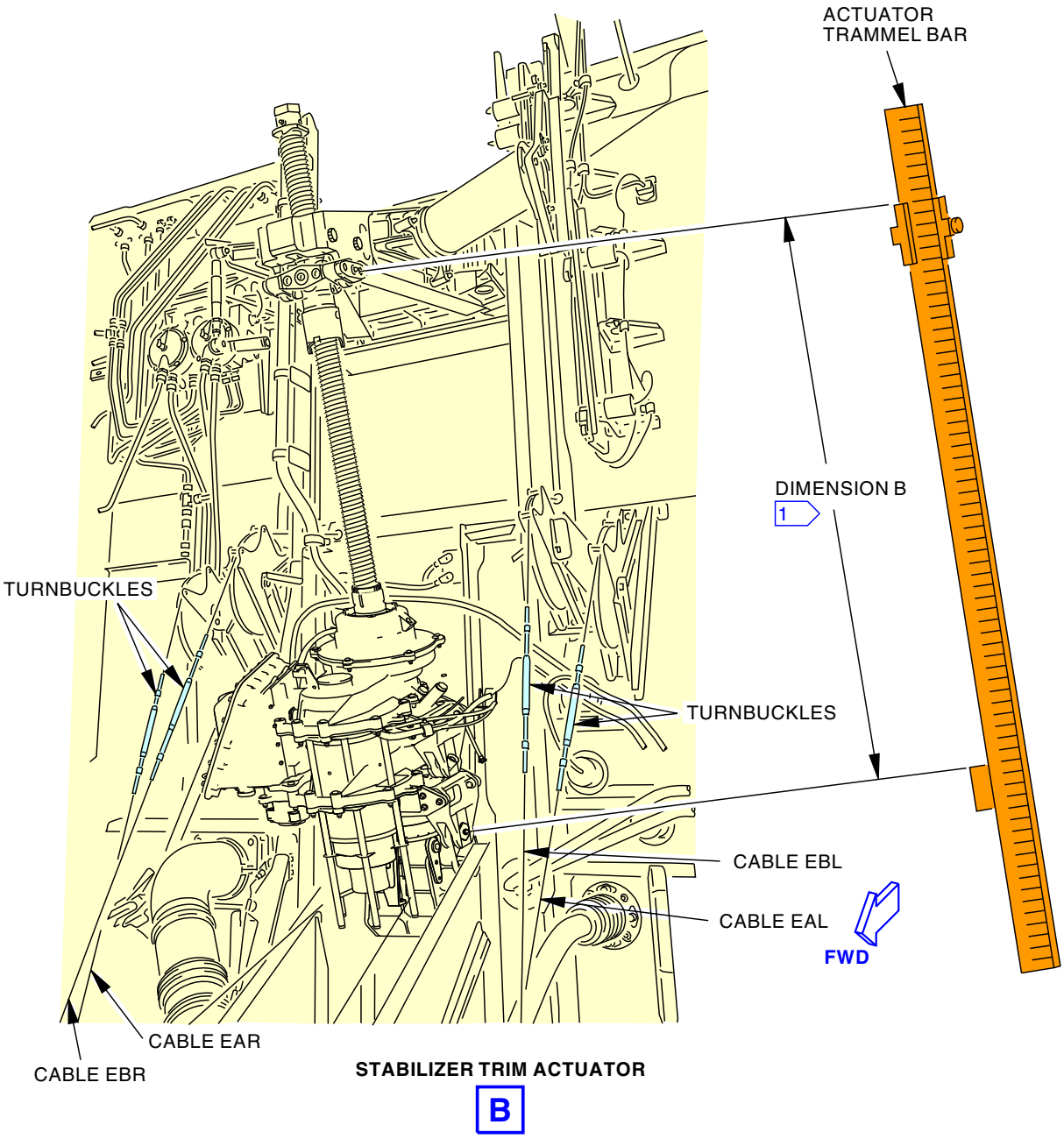
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412590 S00061530959_V1

**Elevator Cable and Turnbuckle Locations
Figure 401/27-31-71-990-801 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

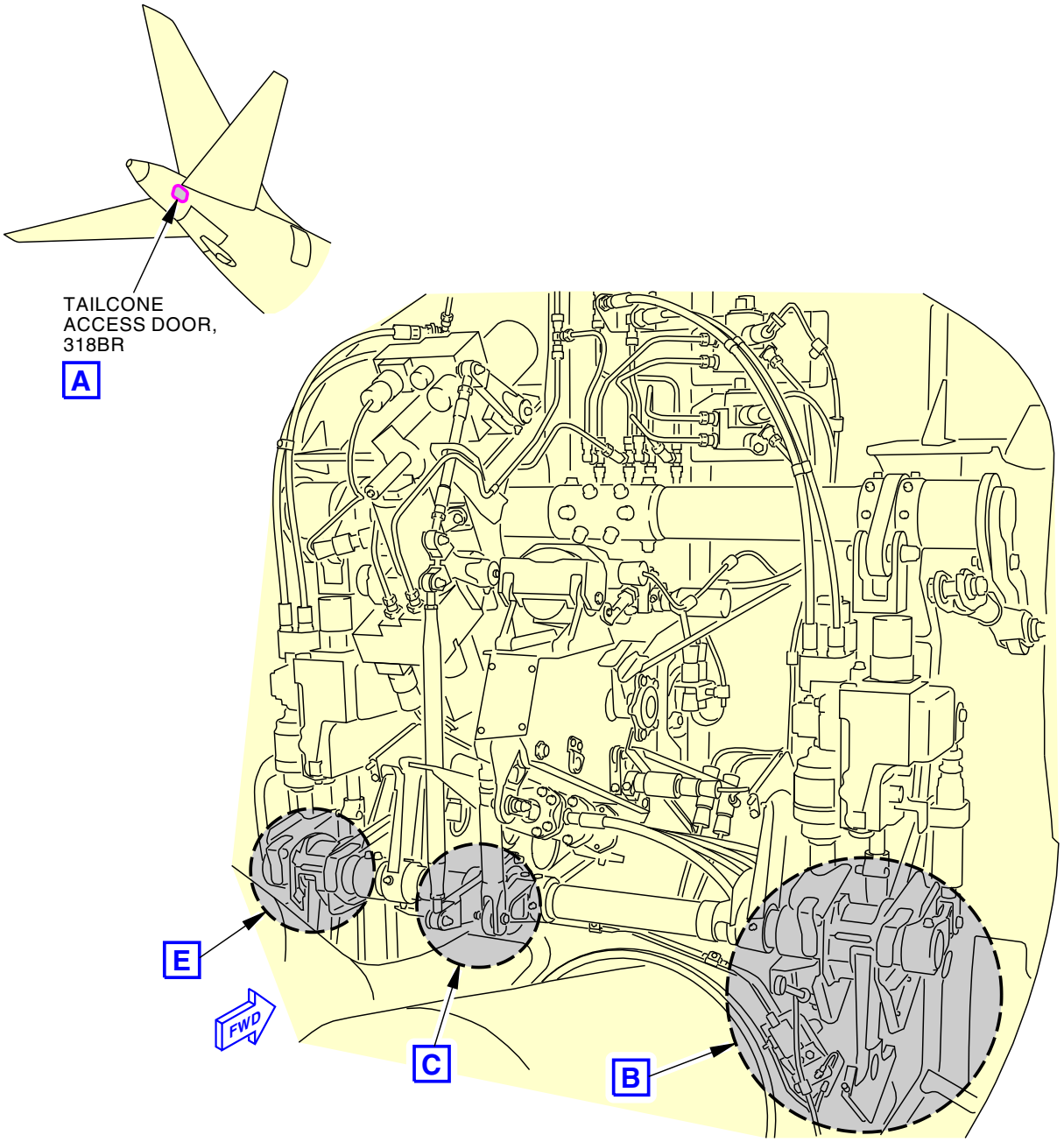
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412591 S00061530960_V2

Elevator Cable and Turnbuckle Locations
Figure 401/27-31-71-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



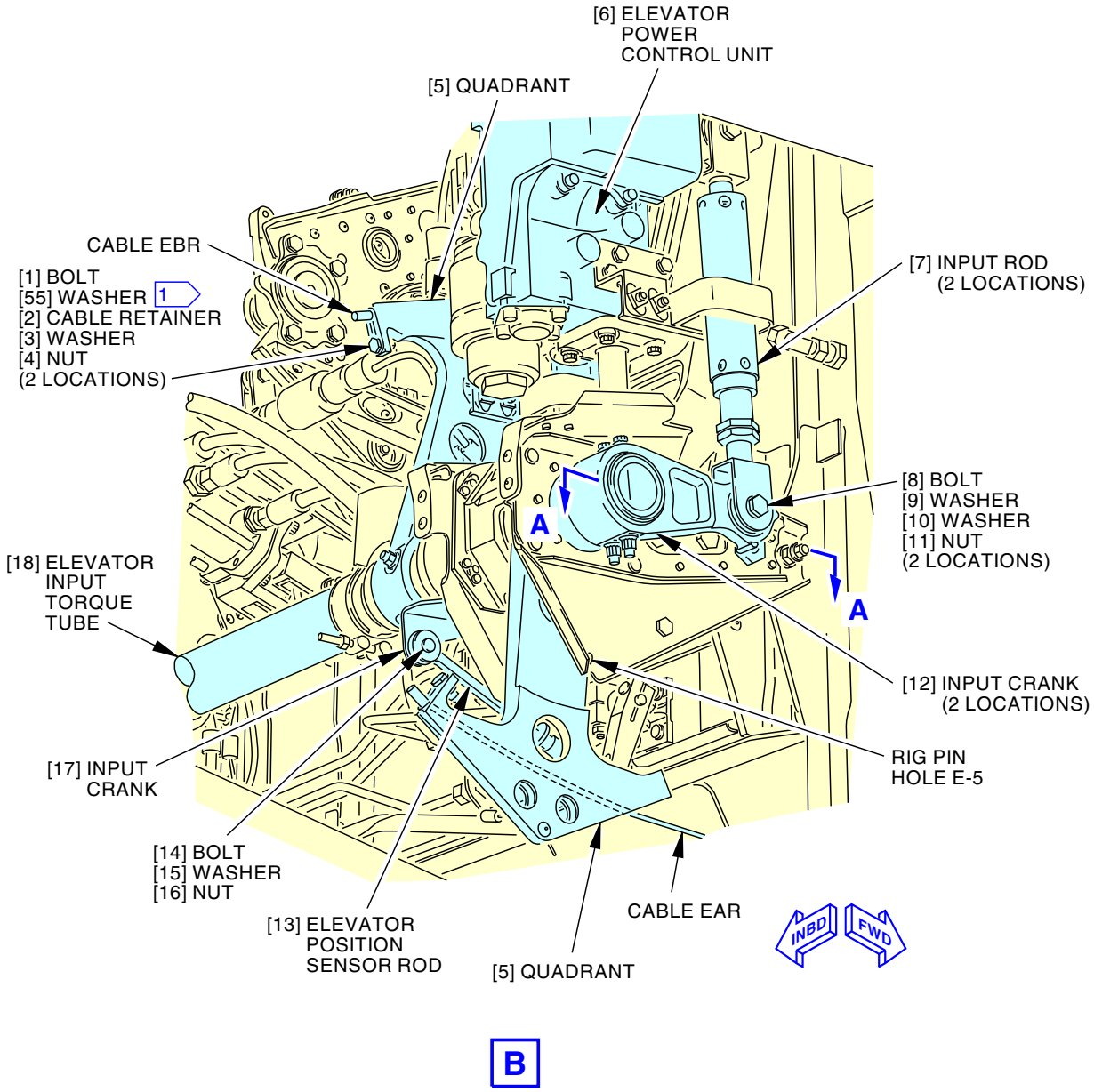
VIEW THROUGH THE TAILCONE ACCESS DOOR, 318BR

A

2412592 S00061530961_V1

Elevator Input Torque Tube Installation
Figure 402/27-31-71-990-802 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

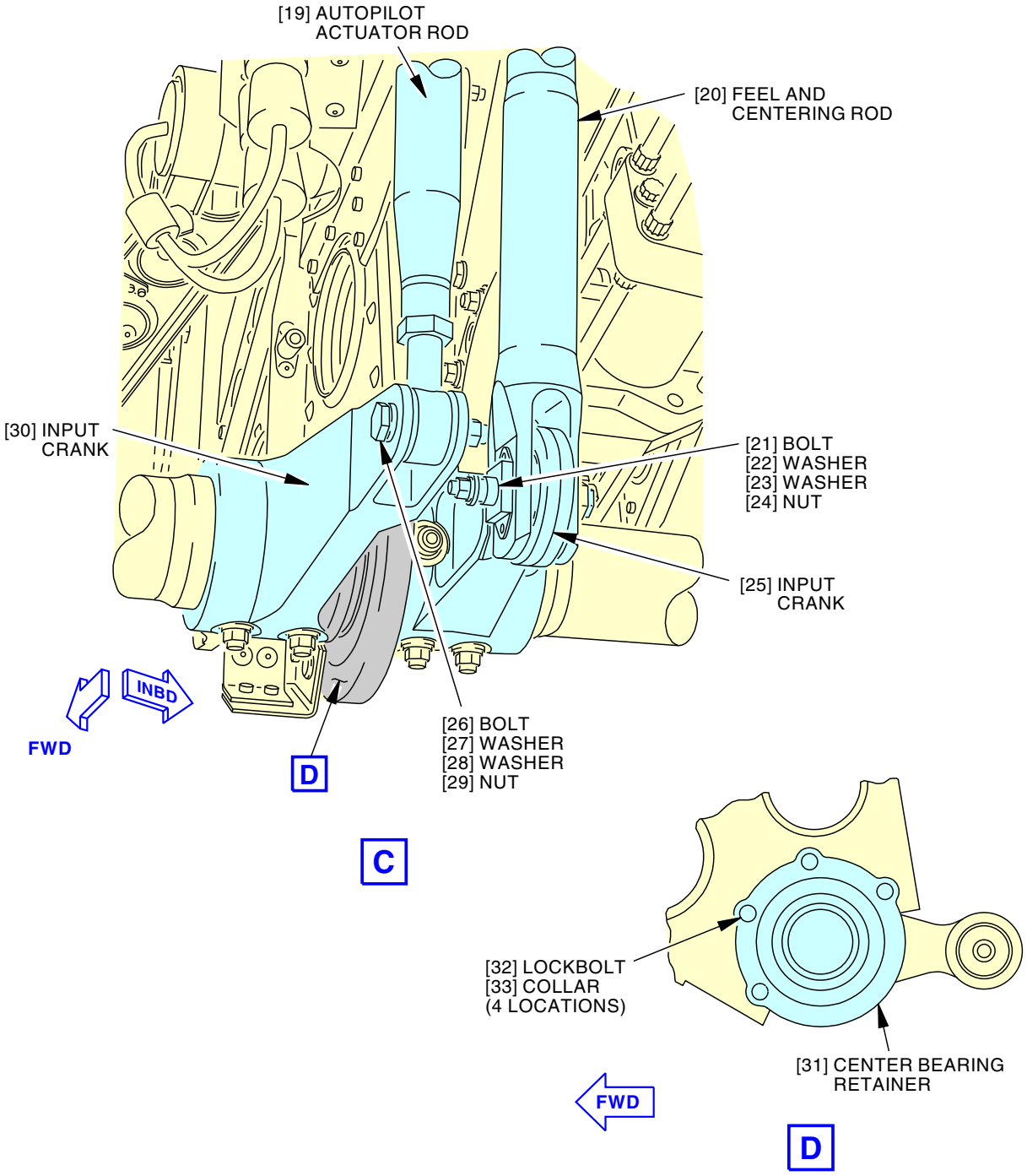


1 IF APPLICABLE

2412593 S00061530962_V3

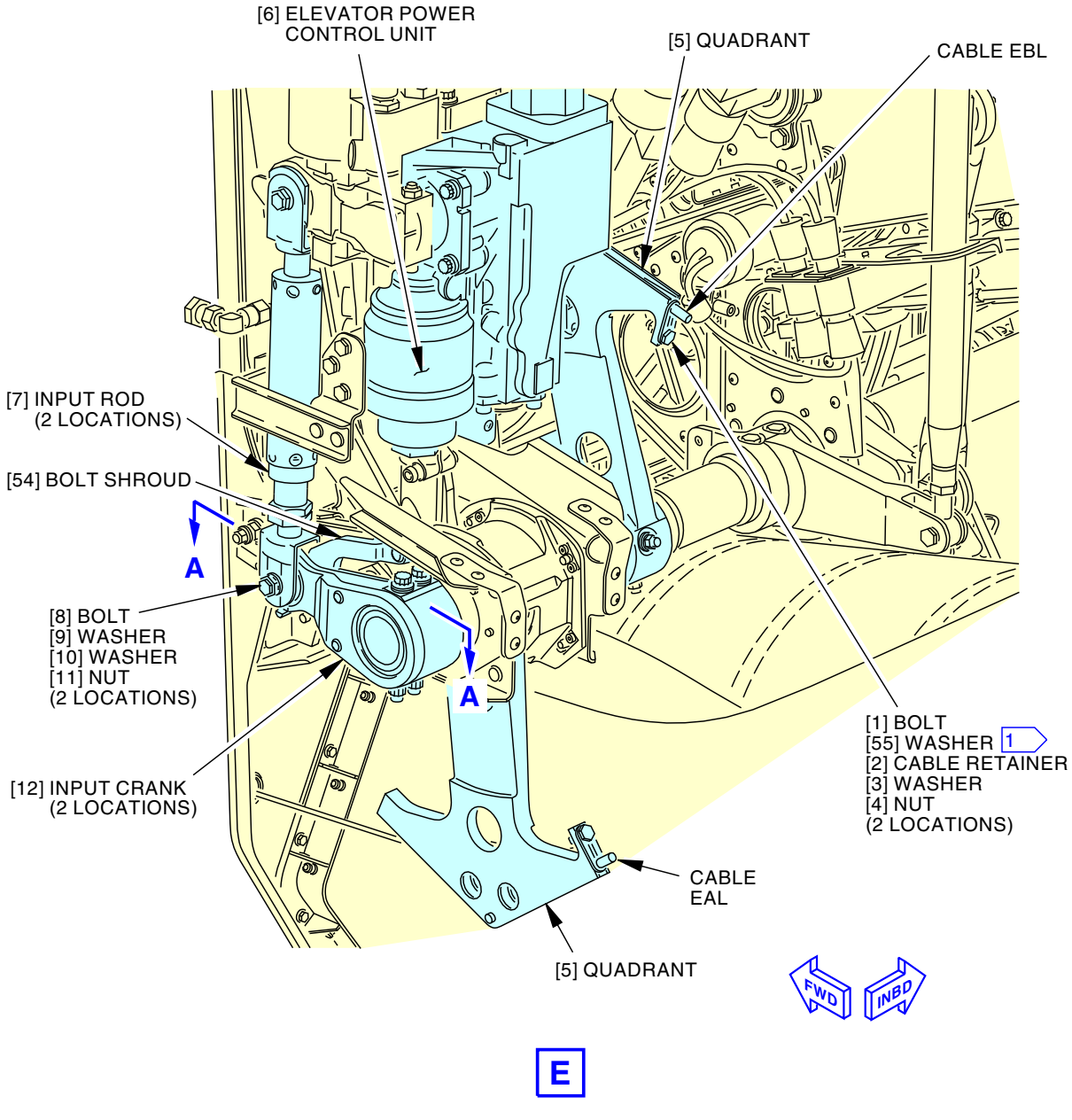
Elevator Input Torque Tube Installation
Figure 402/27-31-71-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



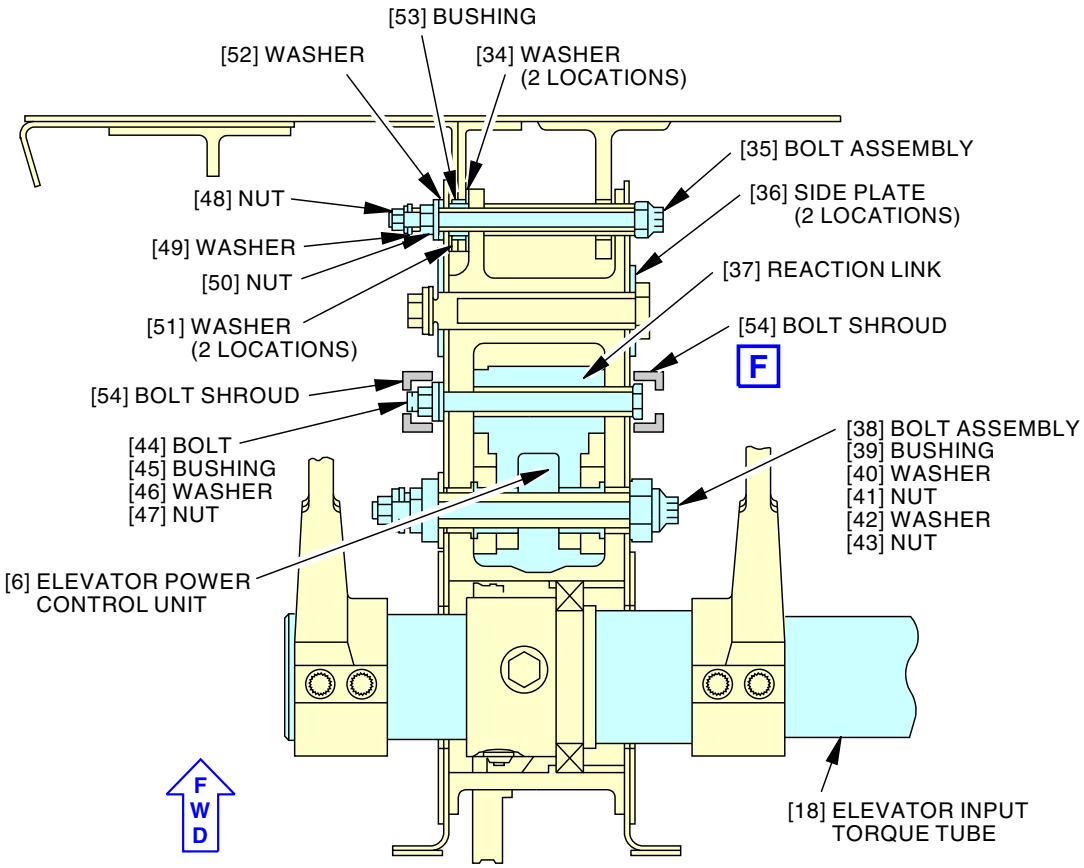
Elevator Input Torque Tube Installation
Figure 402/27-31-71-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



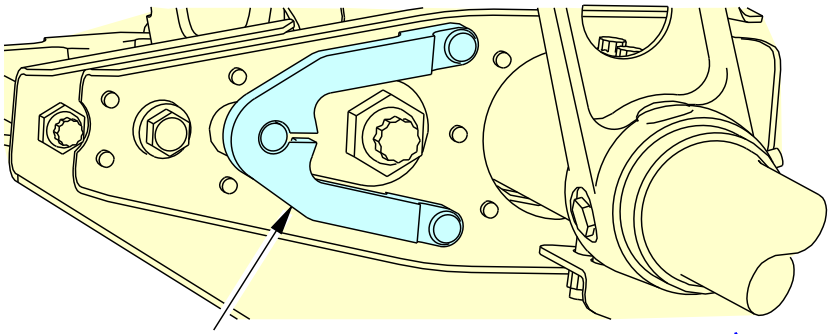
Elevator Input Torque Tube Installation
Figure 402/27-31-71-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

A-A



BOLT SHROUD
(INBOARD SHOWN, TYPICAL)

F

2412596 S00061530965_V1

Elevator Input Torque Tube Installation
Figure 402/27-31-71-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-71-400-801

3. Elevator Input Torque Tube Installation

(Figure 401 or Figure 402)

A. References

Reference	Title
20-10-93-400-801	Control Cable End Retaining Plate - Installation (P/B 401)
27-31-00-700-810	Control Column Power Force - Test (P/B 501)
27-31-00-700-813	Feel Force System - Test (P/B 501)
27-31-00-820-801	Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment (P/B 501)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-803	Input Rods of the Elevator Power Control Unit - Adjustment (P/B 501)
27-31-00-820-804	Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
53-53-00-400-801	Tailcone Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
18	Torque tube	27-31-34-04-095	SIA ALL

D. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
317BL	Tailcone Access Door
318BR	Tailcone Access Door

F. Elevator Input Torque Tube Installation

SUBTASK 27-31-71-420-001

(1) Install the torque tube [18] (Figure 402):

(a) Lubricate the bushings, bolts, and bearings with grease, D00013.

(b) Hold the torque tube [18] in its position.

(c) Attach the torque tube [18] to the support structure:

1) Install the bushings [53], bolt assemblies [35], washers [34], washers [51], washers [52], and nuts [50].

a) Tighten the nuts [50] to 90 in-lb (10.2 N·m) - 105 in-lb (11.9 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE THAT YOU DO NOT TIGHTEN THE INNER NUT AGAIN AFTER YOU TIGHTEN THE OUTER NUT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

2) Install the washers [49] and nuts [48].

a) Tighten the nuts [48] to 30 in-lb (3.4 N·m) - 35 in-lb (4.0 N·m).

CAUTION

EXAMINE FOR DAMAGE THE INNER/OUTER OF THE RODS/BOLTS BEFORE YOU INSTALL THE ROD END BOLTS. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(d) Connect the torque tube [18] to the two reaction links [37]:

1) Install the bushings [45], bolts [44], washers [46], and nuts [47].

a) Install the left bolt [44] (on the left assembly) with the bolt head inboard and the right bolt [44] (on the right assembly) with the bolt head outboard.

(e) Install the bolt shrouds [54] on the left and right assemblies.

NOTE: There is a bolt shroud [54] on the bolt heads and the nut ends of the bolts [44].

(f) Install the two elevator power control units [6] to the torque tube [18]:

1) Install the bushings [39], bolt assemblies [38], washers [40], and nuts [41].

a) Tighten the nuts [41] to 550 in-lb (62.1 N·m) - 600 in-lb (67.8 N·m).

CAUTION

MAKE SURE THAT YOU DO NOT TIGHTEN THE INNER NUT AGAIN AFTER YOU TIGHTEN THE OUTER NUT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

2) Install the washers [42] and nuts [43].

a) Tighten the nuts [43] to 225 in-lb (25.4 N·m) - 250 in-lb (28.2 N·m).

(g) If it is necessary, drill the diameter of the 0.247 +0.003 / -0.000 in. (6.27 +0.08 / -0.00 mm) holes in the center bearing retainer [31].

(h) Use the drill centering guide adapter to make sure that the holes are not out of tolerance.

(i) Install the lockbolts [32] and collars [33] to attach the center bearing retainer [31] to the bracket.

(j) Connect the feel and centering rod [20] to the input crank [25]:

1) Install the bolt [21], washer [22] (under the bolt [21]), washer [23] (under the nut [24]), and nut [24].

(k) Connect the four input rods [7] of the two elevator power control units [6] to the input cranks [12]:

1) Install the bolts [8], washers [9], washers [10], nuts [11].

(l) Install the bolt [26], washer [27], washer [28], and nut [29] to connect the autopilot actuator rod [19] to the input crank [30].

(m) Install the bolt [14], washer [15], and nut [16] to connect the elevator position sensor rod [13] to the torque tube [18].

SUBTASK 27-31-71-420-002

(2) Install the cables EAL, EBL, EAR, and EBR to the quadrants [5]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the bolts [1], washers [55] (if applicable), washers [3], nuts [4], and cable retainers [2] to attach the cables to the four quadrants [5] (TASK 20-10-93-400-801).

(b) Remove the clamps from the cables.

(c) Install the turnbuckles locking clips.

SUBTASK 27-31-71-420-003

(3) If the tail cone was removed, do this task: Tailcone Installation, TASK 53-53-00-400-801.

G. Elevator Input Torque Tube Installation Test

SUBTASK 27-31-71-820-001

(1) Adjust the tension of the EAL, EBL, EAR, and EBR control cables (Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, TASK 27-31-00-820-801).

SUBTASK 27-31-71-820-002

(2) Adjust the elevator pushrod (Elevator Control Pushrods - Adjustment, TASK 27-31-00-820-802).

SUBTASK 27-31-71-820-003

(3) Adjust the output rod of the elevator feel and centering unit (Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment, TASK 27-31-00-820-804).

SUBTASK 27-31-71-710-001

(4) Move the elevator slowly by hand through the full travel up and down.

(a) Make sure that the elevator moves freely.

SUBTASK 27-31-71-860-003

(5) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-71-710-002

(6) Do this check of the synchronized operation of the elevator power control units:

(a) Put the FLT CONTROL A switch to OFF and the FLT CONTROL B switch to ON.

1) Make sure that the elevator trailing edge move more than 0.02 in. (0.5 mm).

2) If it is necessary, adjust the input rods of the power control units (Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803).

(b) Put the FLT CONTROL A switch to ON and the FLT CONTROL B switch to OFF.

1) Make sure that the elevator trailing edge moves more than 0.02 in. (0.5 mm).

2) If it is necessary, adjust the input rods of the power control units (Input Rods of the Elevator Power Control Unit - Adjustment, TASK 27-31-00-820-803).

SUBTASK 27-31-71-710-003

(7) Do this task: Control Column Power Force - Test, TASK 27-31-00-700-810.

SUBTASK 27-31-71-710-004

(8) Do this task: Feel Force System - Test, TASK 27-31-00-700-813.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-71-410-002

(1) If the tail cone was not removed, do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Close these access panels:

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door

SUBTASK 27-31-71-410-001

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR OUTPUT TORQUE TUBE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the elevator output torque tube.

(2) An installation of the elevator output torque tube.

B. The elevator output torque tube is referred to as the "output torque tube" in this procedure.

TASK 27-31-74-000-801

2. Elevator Output Torque Tube Removal

(Figure 401)

A. References

Reference	Title
22-11-26-000-801	Autopilot Elevator Actuator - Removal (P/B 401)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
53-53-00-000-801	Tailcone Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Prepare for the Removal

SUBTASK 27-31-74-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-74-020-001

(2) Do this task: Tailcone Removal, TASK 53-53-00-000-801.

SUBTASK 27-31-74-860-002

(3) Use the bar, SPL-1677, to set the horizontal stabilizer to 4 units of trim.

(a) Make sure to protect wire bundles when using the trammel bar, SPL-1677.

NOTE: The sharp edges on the trammel bar, SPL-1677, can cause chafing or damage to the wires.

SUBTASK 27-31-74-020-002

(4) Do this task: Autopilot Elevator Actuator - Removal, TASK 22-11-26-000-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Elevator Output Torque Tube Removal

CAUTION

YOU MUST BE CAREFUL WITH THE ELEVATOR AFTER YOU REMOVE THE TORQUE TUBES. IT IS POSSIBLE THAT THE ELEVATOR CAN HIT THE HORIZONTAL STABILIZER TRAILING EDGE LOWER BEAM AND ELEVATOR MAST ARM FITTING. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

SUBTASK 27-31-74-020-003

(1) Remove the mounting bracket [31] of the elevator autopilot actuators:

(a) Remove the bolts [27] and washers [28] from the mounting bracket [31].

(b) Remove the bolts [29] and washers [30] from the mounting bracket [31].

(c) Remove the nuts [35], washers [34], washers [33], and bolts [32] from the mounting bracket [31].

(d) Remove the nuts [39], washers [38], washers [37], and bolts [36] from the mounting bracket [31].

(e) Remove the mounting bracket [31] from the airplane.

SUBTASK 27-31-74-480-001

(2) Install the rig pin E-5 from the rigging pin kit, SPL-1585, in the elevator aft control quadrant.

SUBTASK 27-31-74-020-004

(3) Remove the output torque tube [1]:

(a) Remove the nuts [25], nuts [23], washers [22], bushings [24], and bolt assemblies [26] to disconnect the two elevator control pushrods [4] from the output torque tube [1].

(b) Remove the nuts [9], washers [8], washers [7], and bolts [6] to disconnect the two elevator PCUs [5] from the output torque tube [1].

(c) Move the elevator PCUs [5] away from the aft bulkhead until the input cranks are in the bottom.

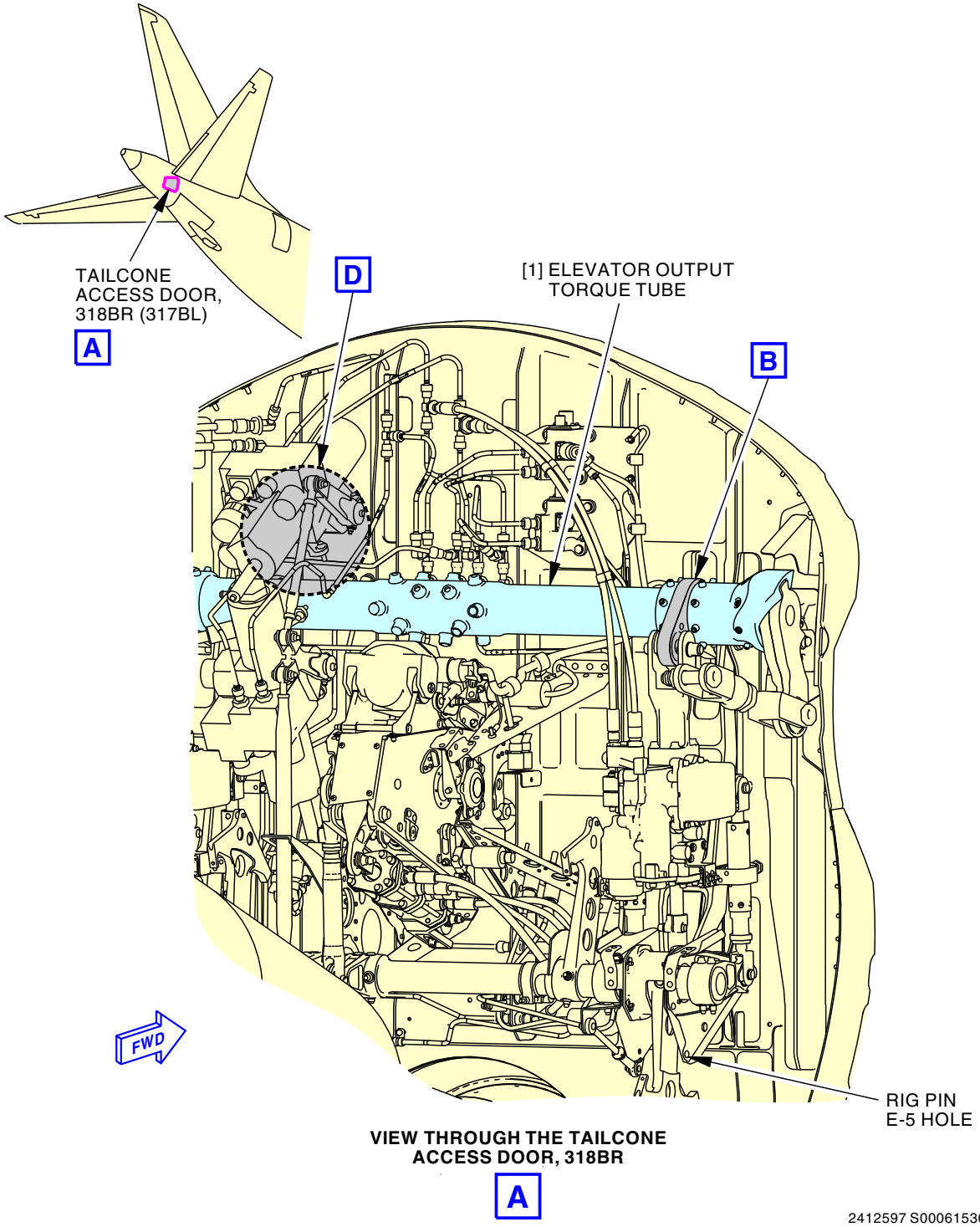
(d) At each end of the output torque tube [1], remove the nuts [20], washers [21], nuts [15], washers [14], bolts [11], bushing [12] (different on right and left sides), and bushings [13] to disconnect the output torque tube [1] from the inboard pivot brackets [2] and reaction links [10].

(e) At each end of the output torque tube [1], remove the nuts [17], washers [18], washers [19], and bolts [16] to disconnect the output torque tube [1] from the outboard pivot brackets [3].

(f) Remove the output torque tube [1] from the airplane.

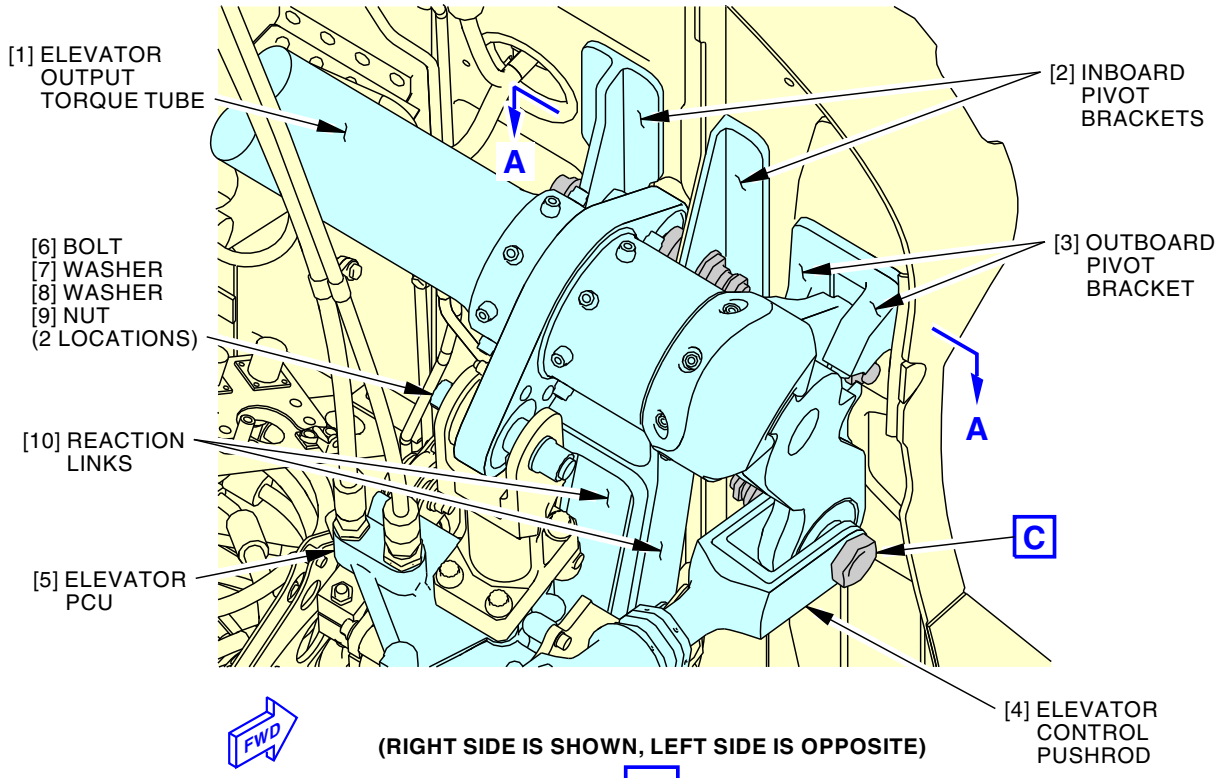
——— END OF TASK ———

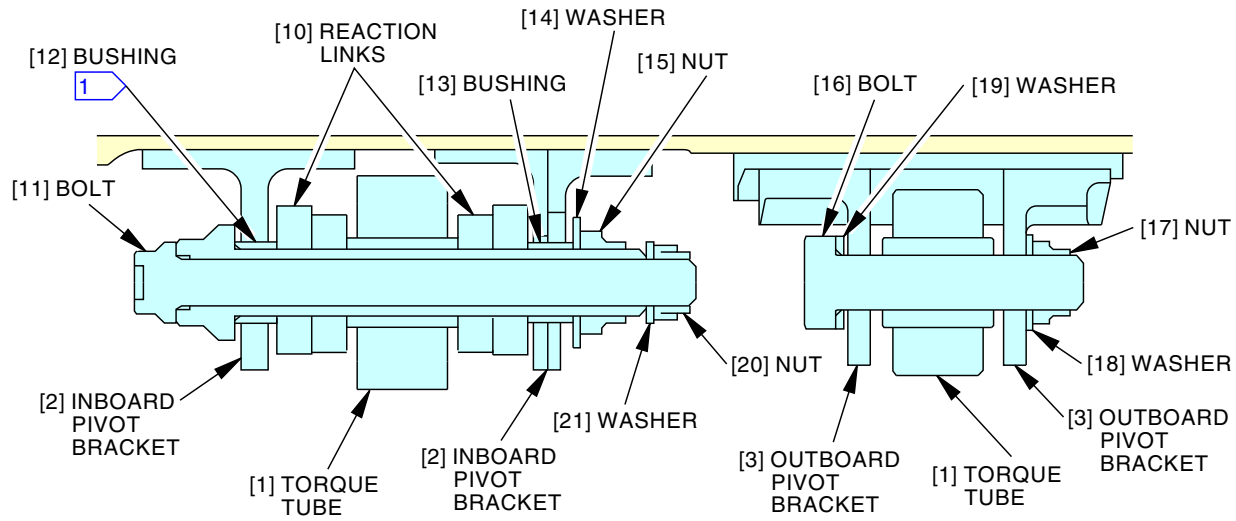
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Output Torque Tube Installation
Figure 401/27-31-74-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





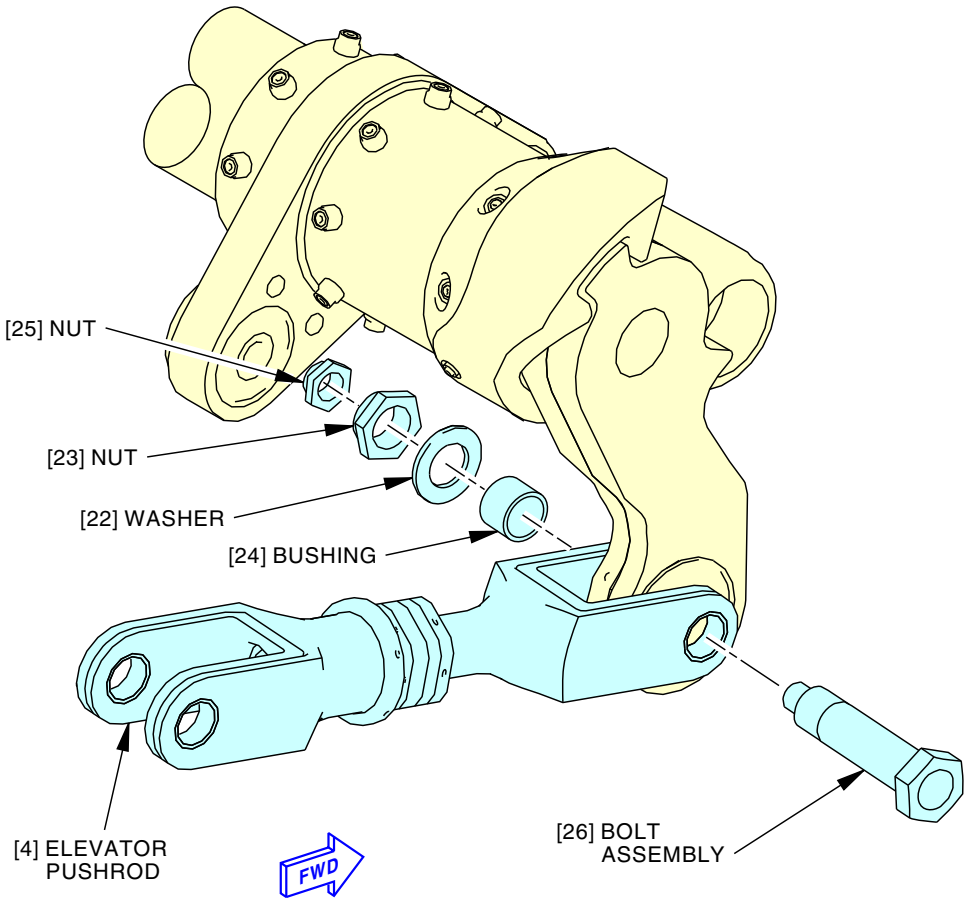
1 RIGHT SIDE HAS A STRAIGHT BUSHING, LEFT SIDE HAS A FLANGED BUSHING.

A-A

2412598 S00061530971_V4

Elevator Output Torque Tube Installation
Figure 401/27-31-74-990-801 (Sheet 2 of 4)

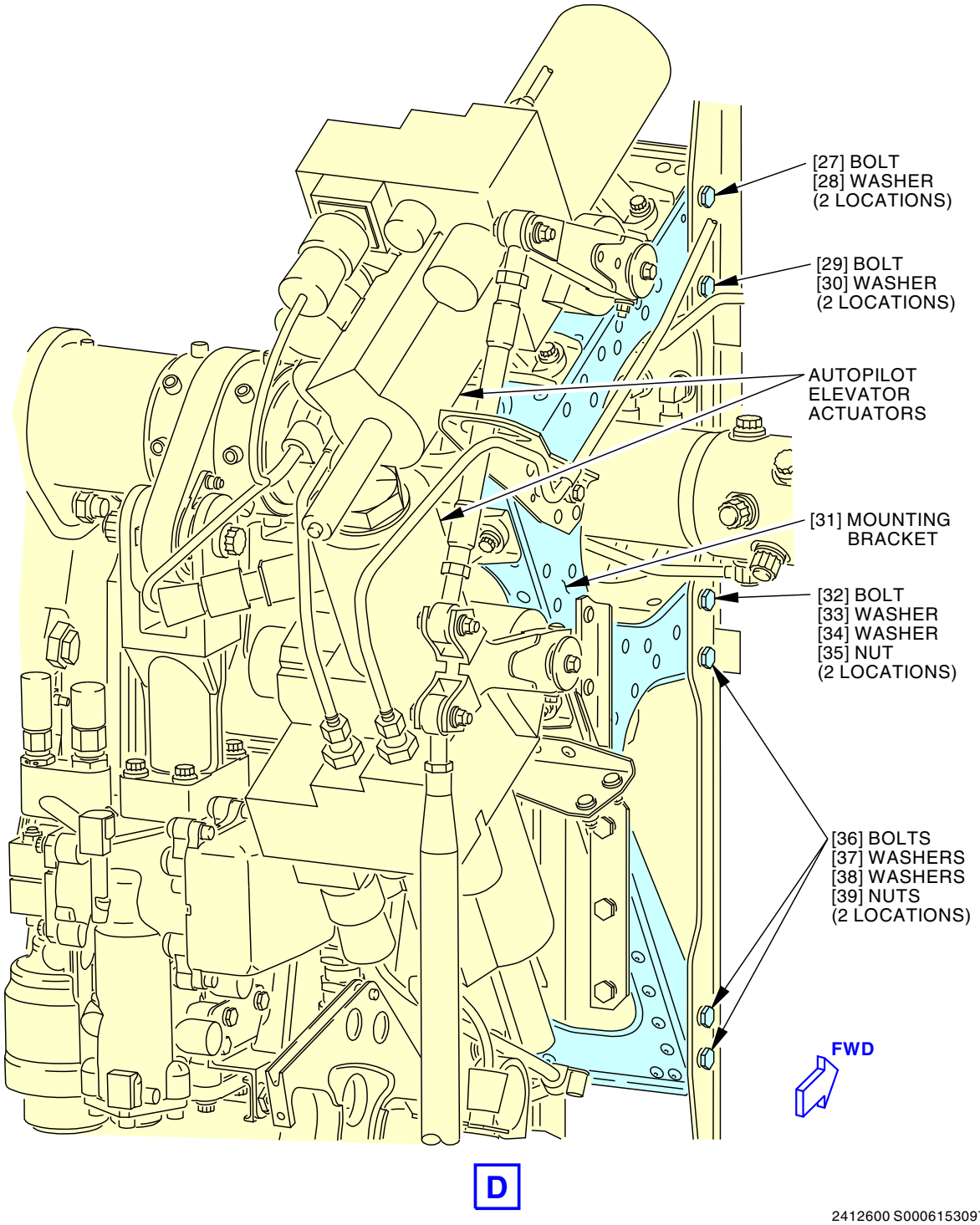
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412599 S00061530972_V4

Elevator Output Torque Tube Installation
Figure 401/27-31-74-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Output Torque Tube Installation
Figure 401/27-31-74-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-74-400-801

3. Elevator Output Torque Tube Installation

(Figure 401)

A. References

Reference	Title
22-11-26-400-801	Autopilot Elevator Actuator - Installation (P/B 401)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)
53-53-00-400-801	Tailcone Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Output torque tube	27-31-00-17-110	SIA ALL

E. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

F. Elevator Output Torque Tube Installation

SUBTASK 27-31-74-420-001

(1) Install the output torque tube [1]:

(a) Lubricate the bushings, bolts, and bearings with grease, D00013.

(b) Put the output torque tube [1] in its position.

(c) Install the alignment pins to keep the bearing components in the inboard pivot clevis fittings of the output torque tube [1].

(d) Connect the output torque tube [1] to the outboard pivot brackets [3]:

1) At each of the output torque tube [1], install the bolts [16] with the bolt head inboard, washers [19], washers [18], and nuts [17].

a) Tighten the nuts [17] to 480 in-lb (54.2 N·m) - 790 in-lb (89.3 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

BE CAREFUL WHEN YOU INSTALL THE BOLTS [11]. YOU CAN CAUSE DAMAGE TO THE BEARING COMPONENTS IF YOU HIT THE BOLTS [11] DURING THE INSTALLATION.

(e) Connect the output torque tube [1] to the inboard pivot brackets [2] and reaction links [10]:

1) At each end of the output torque tube [1], install the bushing [12] (different on right and left sides), bushings [13], bolts [11], washers [14], and nuts [15].

a) Tighten the nuts [15] to 500 in-lb (56.5 N·m) - 600 in-lb (67.8 N·m).

CAUTION

DO NOT TIGHTEN THE NUT [15] AGAIN AFTER YOU TIGHTEN THE NUT [20], YOU CAN CAUSE DAMAGE TO EQUIPMENT.

2) Install the washers [21] and nuts [20].

a) Tighten the nuts [20] to 150 in-lb (16.9 N·m) - 220 in-lb (24.9 N·m).

SUBTASK 27-31-74-420-007

(2) Install the elevator control pushrods [4] to the output torque tube [1]:

(a) Install the bolt assemblies [26] with the bolt heads facing outboard, bushings [24], washers [22], nuts [23], and nuts [25].

1) Do not tighten the nuts [23] and nuts [25].

NOTE: The nuts [23] and nuts [25] will be tightened after the adjustment.

SUBTASK 27-31-74-420-008

(3) Install the elevator PCU [5] to the output torque tube [1]:

(a) Install the bolts [6], washers [7] (under the bolt), washers [8] (under the nut), and nuts [9].

SUBTASK 27-31-74-420-002

(4) Install the mounting bracket [31] for the autopilot elevator actuators:

(a) Put the mounting bracket [31] in position.

(b) Install bolts [27] and washers [28].

(c) Install bolts [29] and washers [30].

(d) Install the bolts [32], washers [33] (under the bolt), washers [34] (under the nut), and nuts [35].

(e) Install the bolts [36], washers [37] (under the bolt), washers [38] (under the nut), and nuts [39].

SUBTASK 27-31-74-420-003

(5) Install the autopilot elevator actuators on the mounting bracket [31] (TASK 22-11-26-400-801).

SUBTASK 27-31-74-080-001

(6) Remove rig pin E-5 of the rigging pin kit, SPL-1585, from the elevator aft quadrant.

SUBTASK 27-31-74-420-009

(7) Do this task: Tailcone Installation, TASK 53-53-00-400-801.

SUBTASK 27-31-74-820-001

(8) Adjust the elevator control pushrods (TASK 27-31-00-820-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-74-860-003

(1) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR INDEX PLATE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of an elevator index plate

(2) An installation of an elevator index plate.

B. This procedure is applicable for the left and right elevator index plates.

C. You must do this procedure when the tail cone is removed and a new or different tail cone is installed.

TASK 27-31-81-000-801

2. Elevator Index Plate Removal

(Figure 401)

A. General

(1) This task includes the steps to remove the elevator index plate [1] from a removed tail cone.

B. Location Zones

Zone	Area
315	APU Compartment - Left
316	APU Compartment - Right

C. Elevator Index Plate Removal

SUBTASK 27-31-81-020-001

(1) Do these steps to remove the elevator index plate [1]:

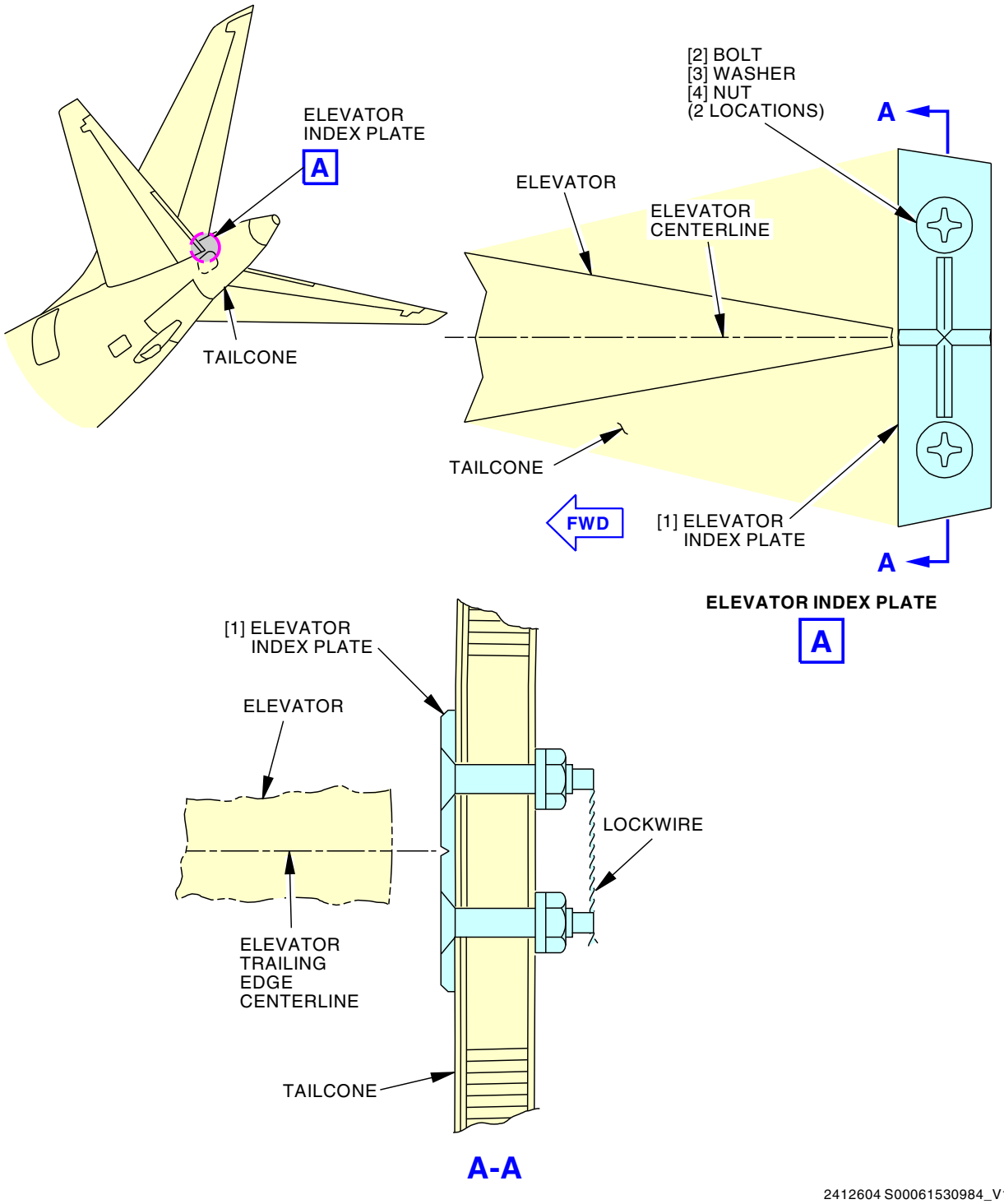
(a) Remove the lockwire.

(b) Remove the nuts [4], washers [3], and bolts [2] from the elevator index plate [1].

(c) Remove the elevator index plate [1] from the tail cone.

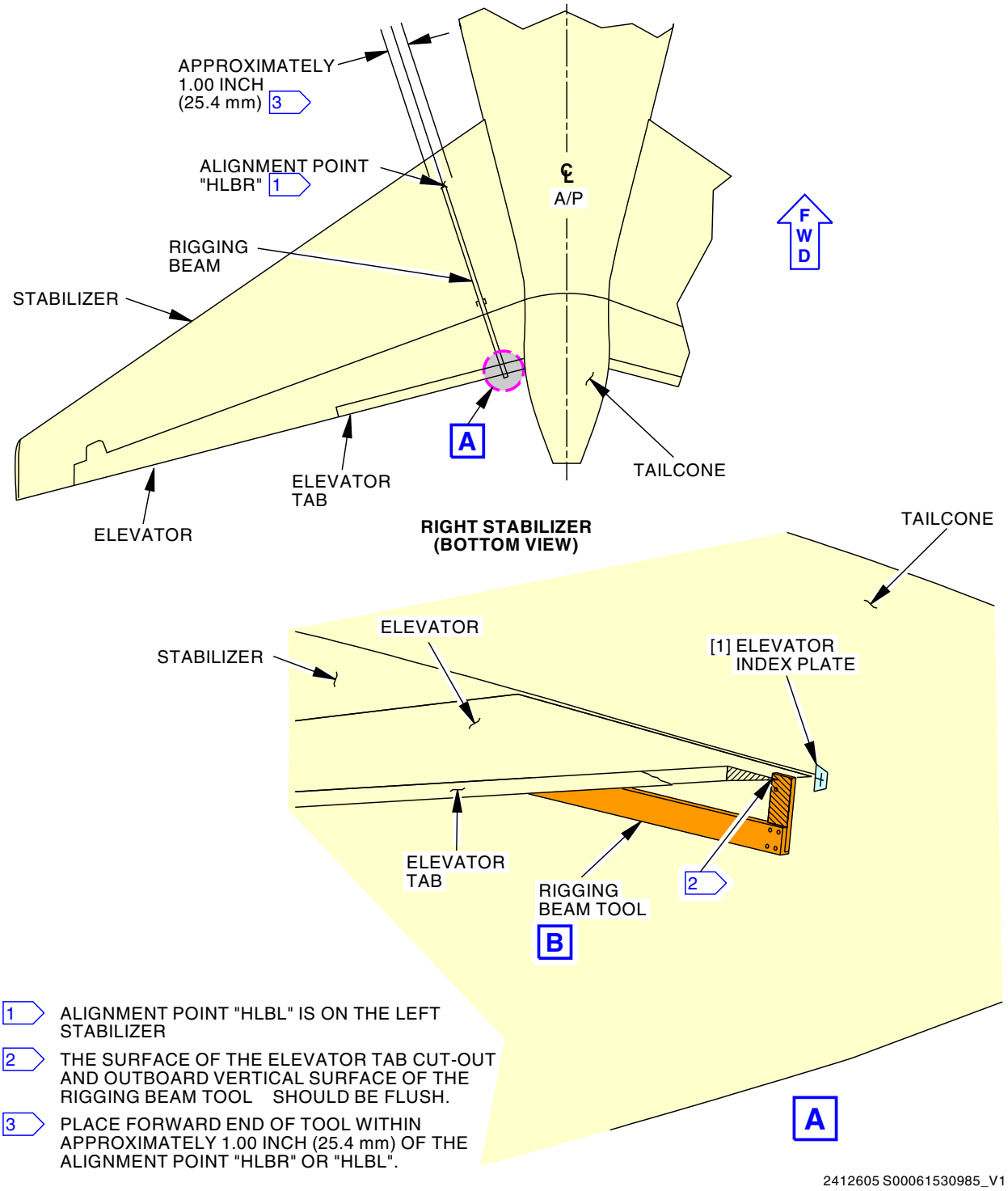
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Index Plate Installation
Figure 401/27-31-81-990-805

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 ALIGNMENT POINT "HLBL" IS ON THE LEFT STABILIZER

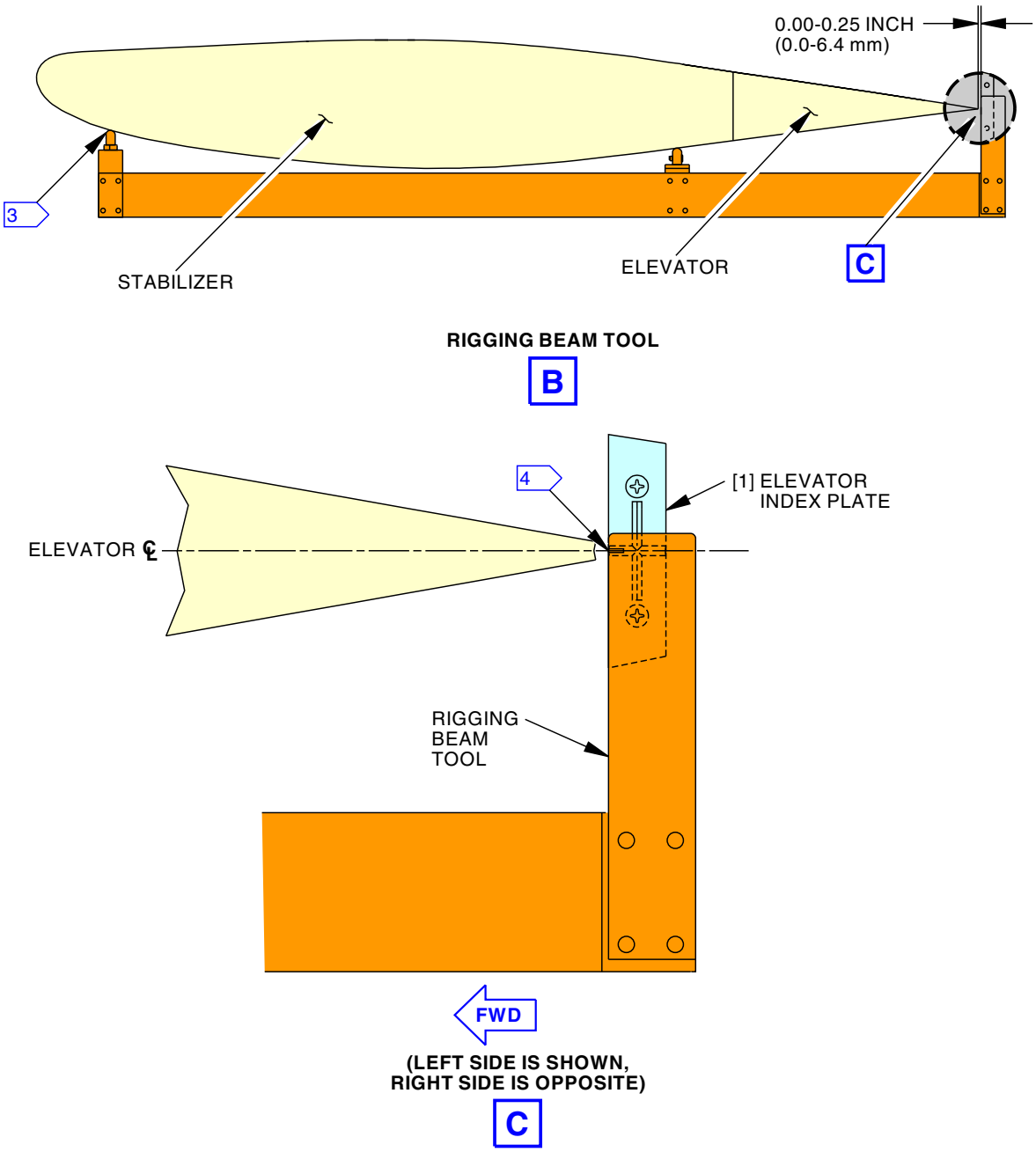
2 THE SURFACE OF THE ELEVATOR TAB CUT-OUT AND OUTBOARD VERTICAL SURFACE OF THE RIGGING BEAM TOOL SHOULD BE FLUSH.

3 PLACE FORWARD END OF TOOL WITHIN APPROXIMATELY 1.00 INCH (25.4 mm) OF THE ALIGNMENT POINT "HLBR" OR "HLBL".

2412605 S00061530985_V1

Rigging Beam Installation
Figure 402/27-31-81-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

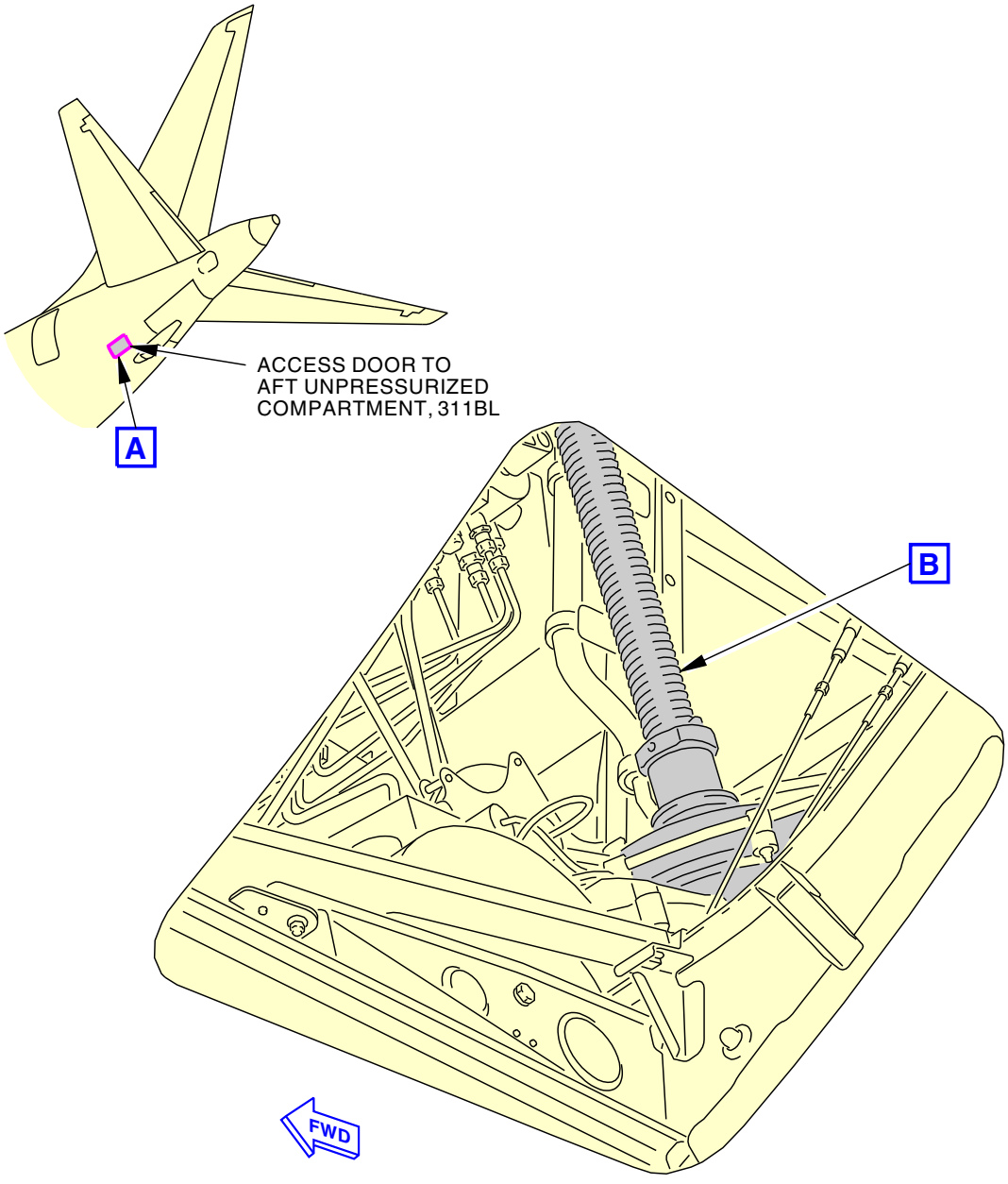


4 THE ELEVATOR CENTER LINE, THE RIGGING BEAM INDEX MARK, AND THE CENTER OF THE ELEVATOR INDEX PLATE GROOVE SHOULD ALL BE IN THE SAME PLANE FOR PERFECT ALIGNMENT OF THE ELEVATOR INDEX PLATE.

2412606 S00061530986_V1

Rigging Beam Installation
Figure 402/27-31-81-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



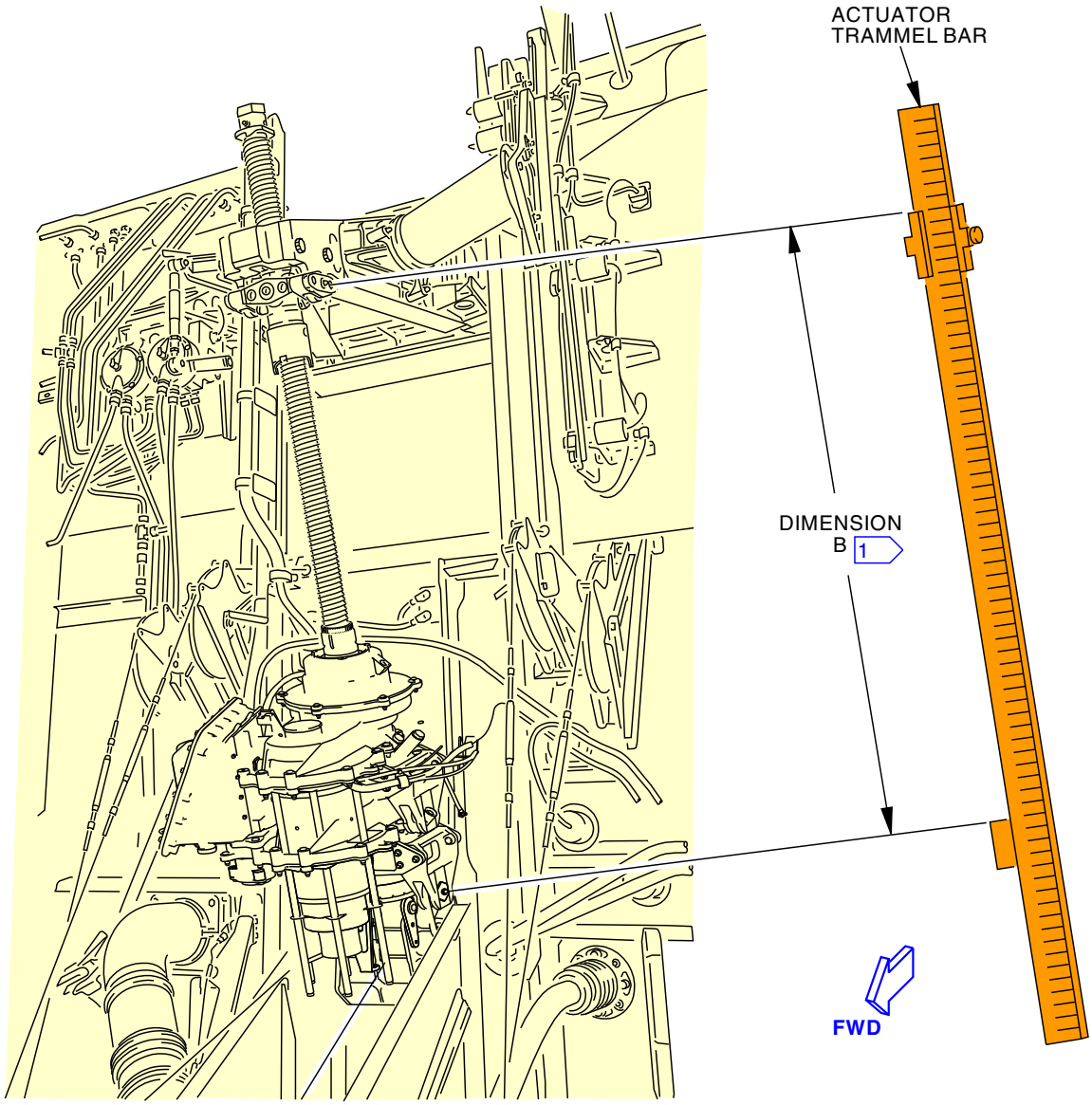
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412602 S00061530981_V1

**Stabilizer Trim Jackscrew Adjustment
Figure 403/27-31-81-990-801 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412603 S00061530982_V1

Stabilizer Trim Jackscrew Adjustment
Figure 403/27-31-81-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-81-400-801

3. Elevator Index Plate Installation

(Figure 401, Figure 402, Figure 403)

A. General

(1) This task includes the steps to install the elevator index plate [1] to a new or different installed tail cone.

B. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-1730	Beam - Rigging, Elevator Index Plate Installation Part #: C27092-1 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator index plate	27-31-81-01-005	SIA ALL

F. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
315	APU Compartment - Left
316	APU Compartment - Right

G. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Prepare for the Installation

SUBTASK 27-31-81-010-001

(1) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-81-010-002

(2) Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-81-480-001

CAUTION MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

(3) Use the bar, SPL-1677, to set the B dimension at 39.17 ±0.01 in. (994.92 ±0.26 mm). (Figure 403).

SUBTASK 27-31-81-860-001

(4) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-31-81-860-002

(5) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-31-81-480-002

(6) Attach DO NOT OPERATE tags, STD-858, to the control columns.

SUBTASK 27-31-81-480-003

(7) Use the beam, SPL-1730, to adjust the elevator trailing edge (Figure 402):

(a) Set the beam, SPL-1730, on the stabilizer lower surface.

(b) Set the elevator trailing edge to the index mark on the beam, SPL-1730.

(c) Remove the beam, SPL-1730.

I. Elevator Index Plate Installation

(Figure 401)

SUBTASK 27-31-81-420-001

(1) Do these steps to install the elevator index plate [1]:

(a) Align the center mark of the elevator index plate [1] with the elevator trailing edge.

(b) Drill two 0.190 +0.004 / -0.000 in. (4.826 +0.102 / -0.000 mm) diameter holes through the tail cone and the elevator index plate [1].

(c) Install the bolts [2], washers [3], and nuts [4] to attach the elevator index plate [1] to the tail cone.

(d) Install the MS20995NC32 lockwire, G01912.

SUBTASK 27-31-81-080-001

(2) Remove the DO NOT OPERATE tags, STD-858, from the control columns.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-81-210-001

(3) Make sure that the elevator trailing edge aligns with the center mark of the elevator index plate [1].

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-81-410-001

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-81-410-002

(2) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-81-860-003

(3) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR NEUTRAL SHIFT MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Elevator Neutral Shift Mechanism Removal

(2) Elevator Neutral Shift Mechanism Installation

TASK 27-31-91-000-801

2. Elevator Neutral Shift Mechanism Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

E. Prepare for the Removal

SUBTASK 27-31-91-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-91-010-001

(2) Remove this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-31-91-010-002

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-31-91-480-001

(4) Use the bar, SPL-1677 to set B dimension at 39.17 ±0.01 in. (994.92 ±0.26 mm). (Figure 401 (Sheet 2))

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677 can cause chafing or damage to the wires.

SUBTASK 27-31-91-860-002

(5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-91-480-002

(6) Install the lock, SPL-1672 on the stabilizer trim wheel at the control stand (Figure 402):

(a) Turn the stabilizer trim wheel to put the handle at the top of the wheel.

(b) Adjust the height of the lock, SPL-1672 until the yoke is under the handle.

(c) Install the pin through the yoke.

(d) Install the safety pin.

SUBTASK 27-31-91-480-003

(7) Install the rig pin E-5 from the rigging pin kit, SPL-1585 in the aft control quadrant, (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Neutral Shift Mechanism Removal

(Figure 401)

SUBTASK 27-31-91-020-001

(1) Do these steps to remove the elevator neutral shift mechanism [1]:

(a) Remove the nut [8], washer [9], nut [10], washers [7], and bolt [6] to disconnect the elevator neutral shift mechanism [1] from the mach trim actuator [5].

(b) Remove the nuts [28], washers [26], washers [24], and bolts [25] to disconnect control rod [23] and control rod [27] from the elevator neutral shift mechanism [1].

(c) Remove the nuts [4], washers [3], and bolts [2] that attach the elevator neutral shift mechanism [1] to the support brackets [29].

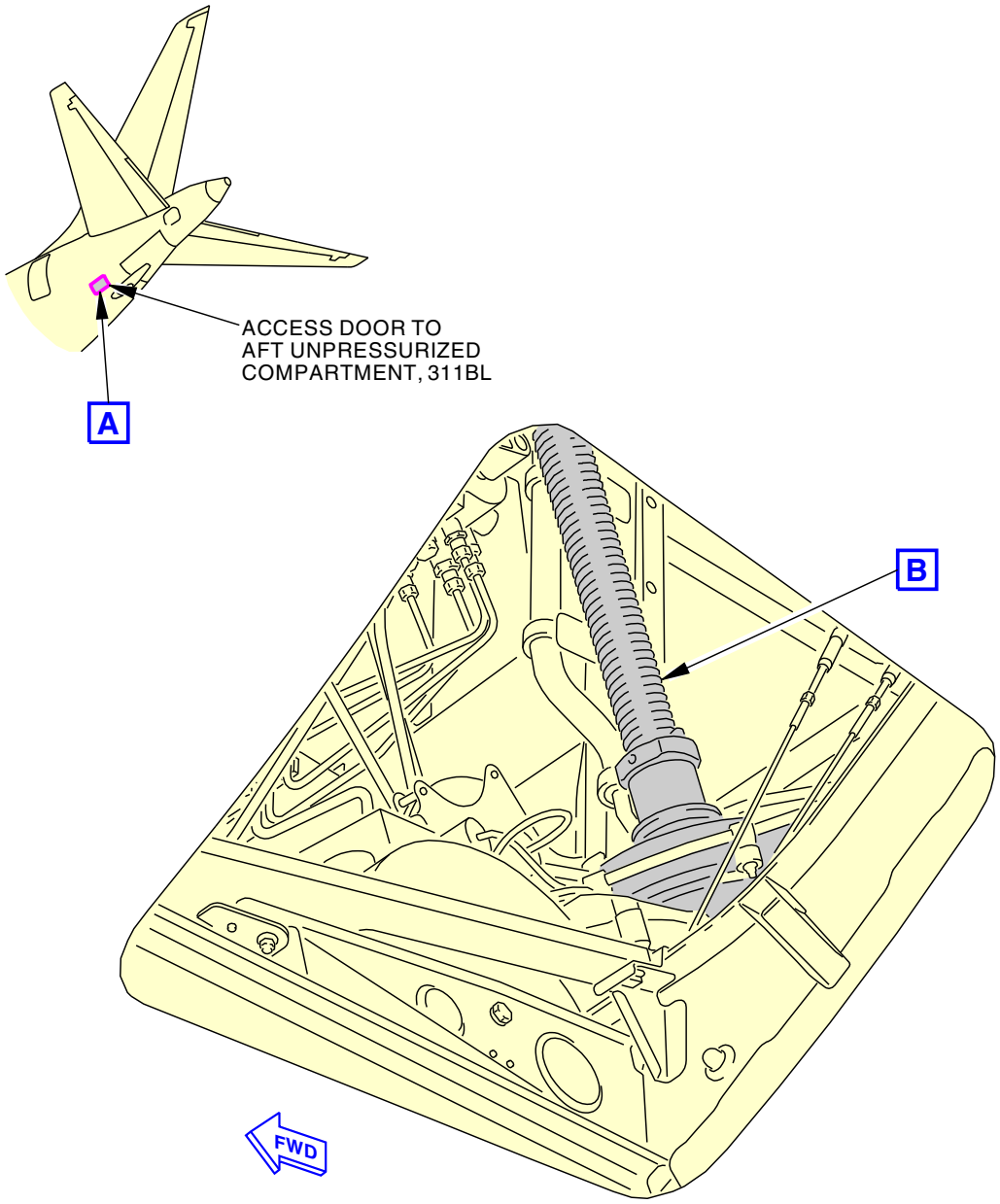
(d) Remove the nuts [13], washers [12], and bolts [11] that attach the elevator neutral shift mechanism [1] to the support brackets [29].

(e) Remove the elevator neutral shift mechanism [1] and spacers [17] from the airplane.

NOTE: Note the quantity, orientation, and location of the spacers [17] before you remove them from the elevator neutral shift mechanism [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

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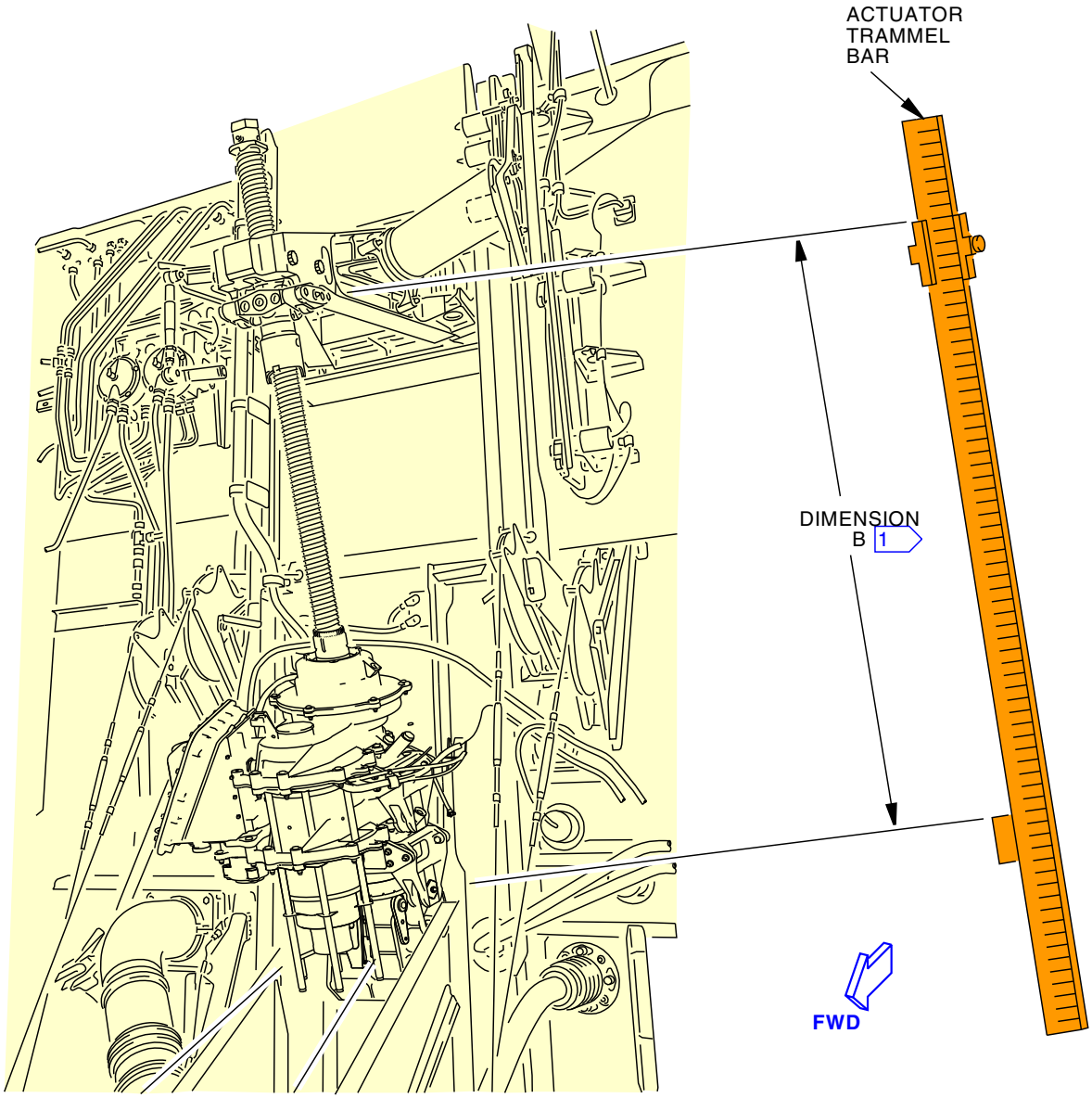
2412607 S00061530990_V1

**Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 1 of 6)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

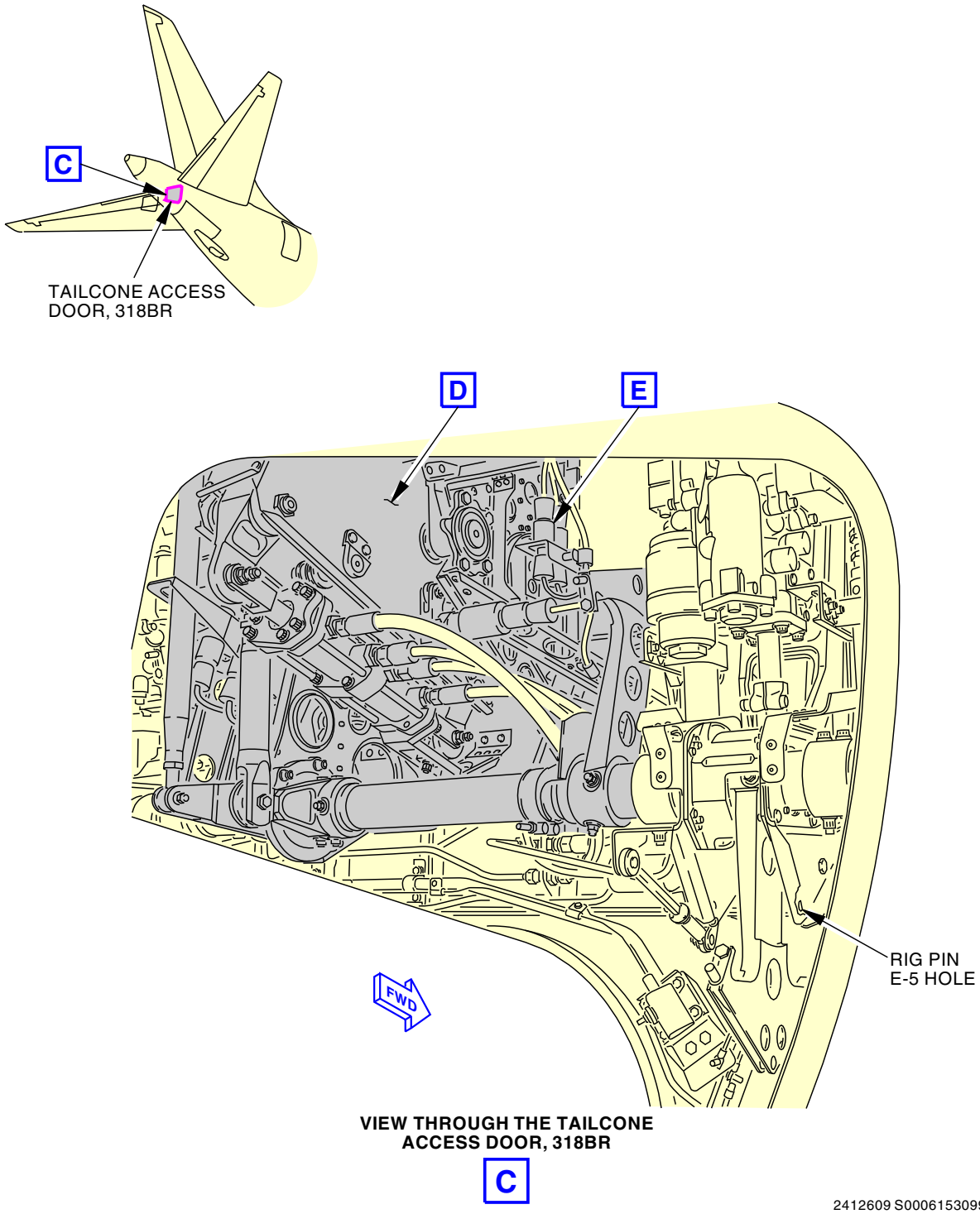
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES (NEUTRAL POSITION).

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412608 S00061530991_V1

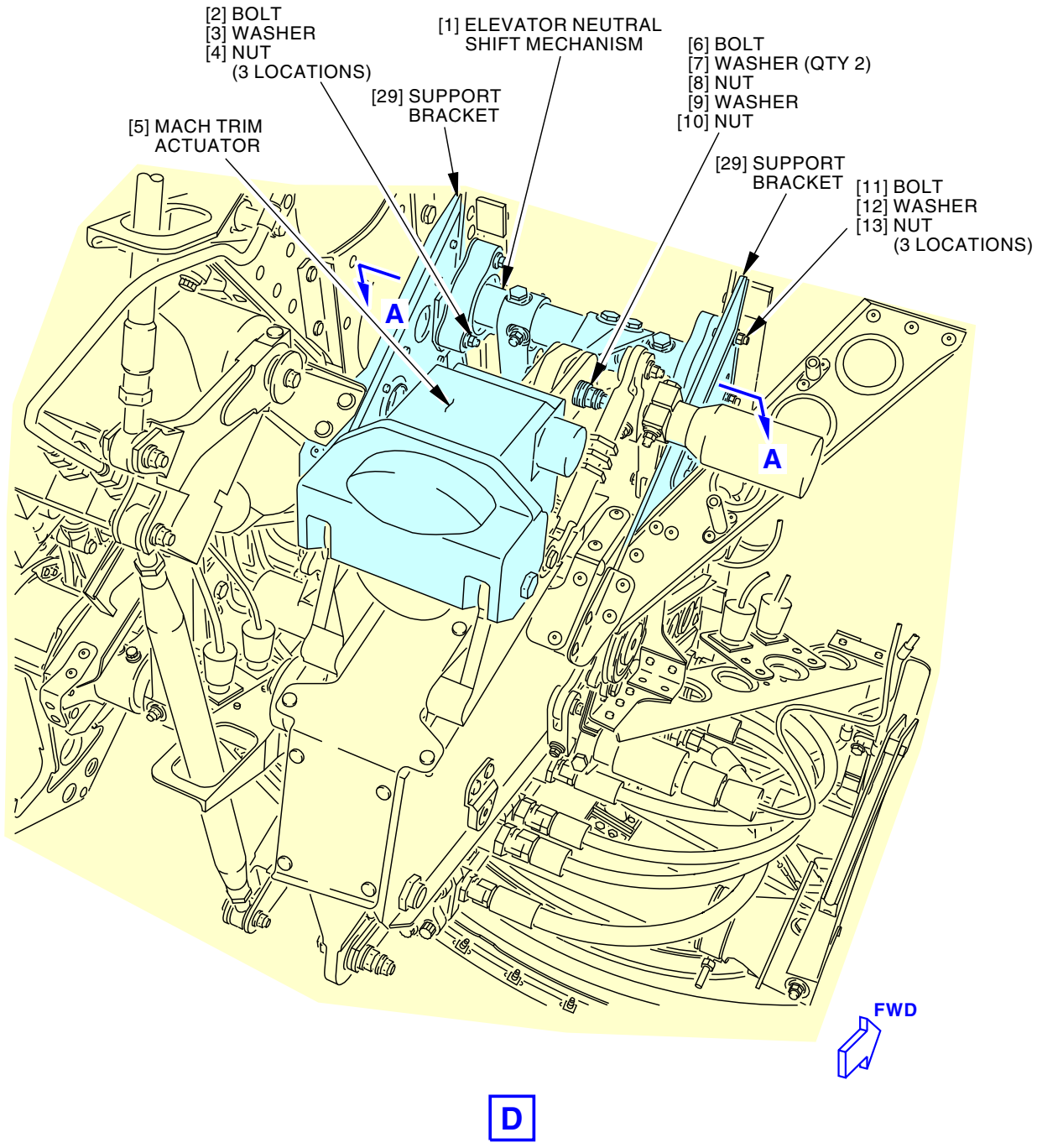
Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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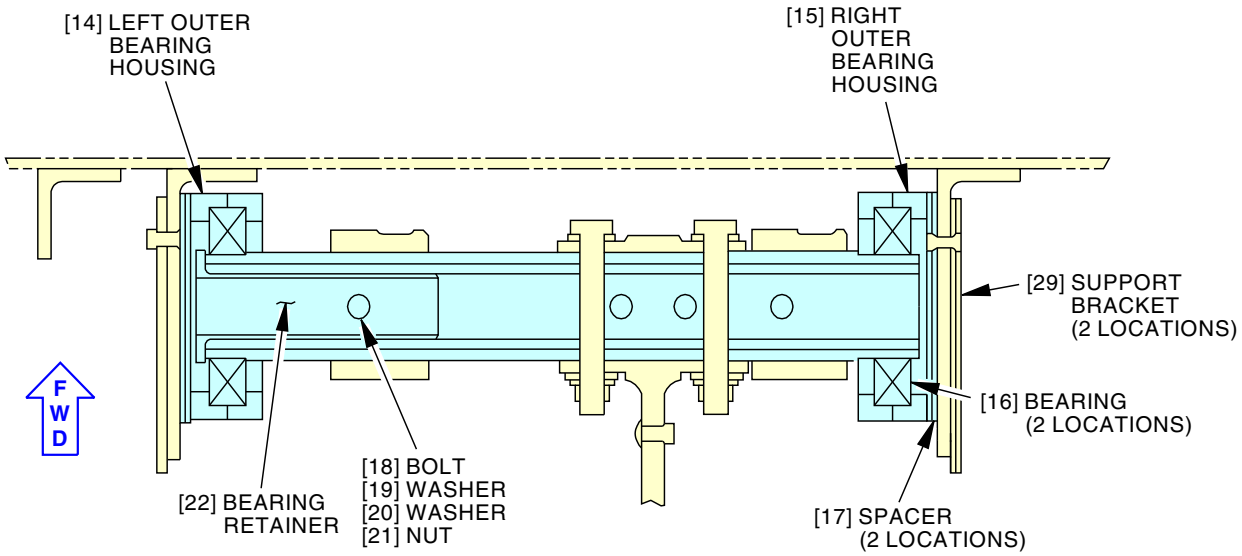
Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

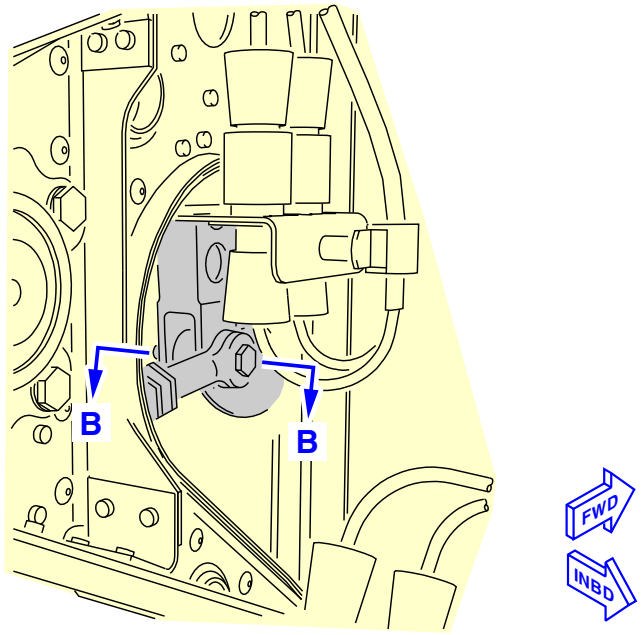


A-A

2412611 S00061530994_V1

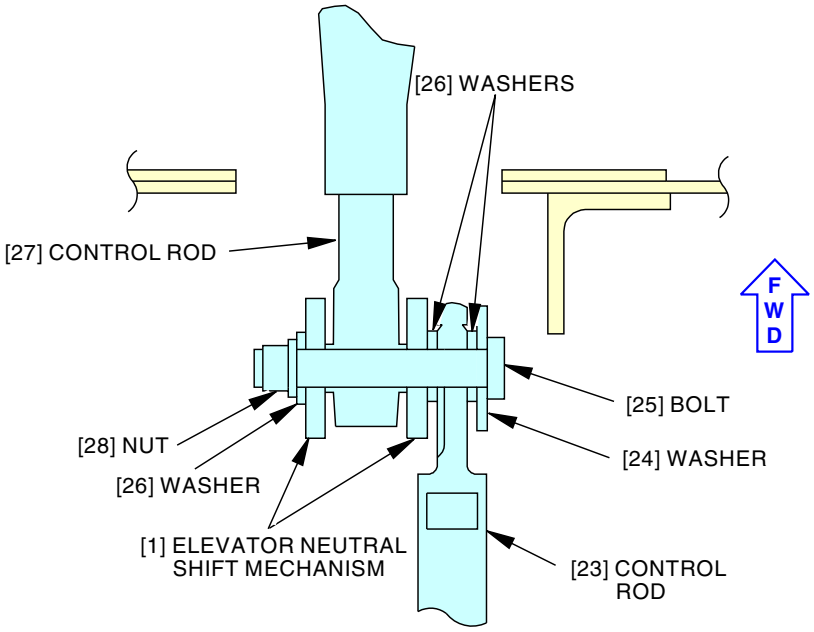
Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR NEUTRAL SHIFT MECHANISM
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

E



(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

B-B

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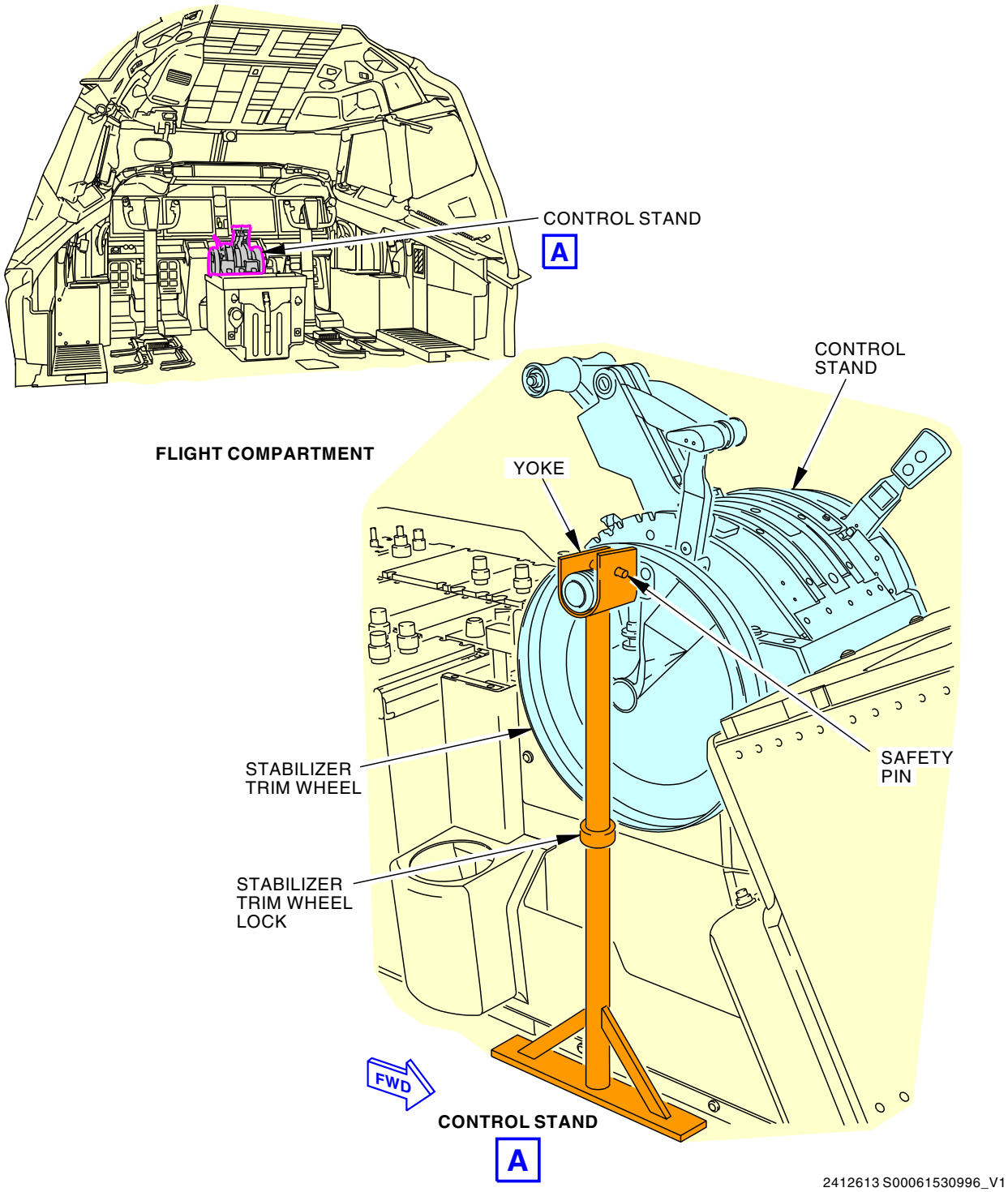
Elevator Neutral Shift Mechanism Installation
Figure 401/27-31-91-990-801 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Wheel Lock Installation
Figure 402/27-31-91-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-91-400-801

3. Elevator Neutral Shift Mechanism Installation

(Figure 401)

A. References

Reference	Title
27-31-00-700-811	Neutral Shift - Test (P/B 501)
27-31-00-820-804	Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment (P/B 501)
27-31-00-840-802	Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Elevator neutral shift mechanism	27-31-91-01-065	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door
318BR	Tailcone Access Door

G. Neutral Shift Mechanism Installation

(Figure 401)

SUBTASK 27-31-91-640-001

(1) Do these steps to replace the bearings [16] of the elevator neutral shift mechanism [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the right outer bearing housing [15] from the short end of the elevator neutral shift mechanism [1].

(b) Remove the bearing [16] from the short end of the elevator neutral shift mechanism [1].

(c) Remove the left outer bearing housing [14] from the long end of the elevator neutral shift mechanism [1].

(d) Remove the nut [21], washer [20], washer [19], and bolt [18] from the long end of the elevator neutral shift mechanism [1].

(e) Remove the bearing retainer [22] and bearing [16] from the elevator neutral shift mechanism [1].

(f) Apply sealant, A00247 between each new bearing [16], their bearing housings and bearing retainer [22].

(g) Install the bearings [16], left outer bearing housing [14], right outer bearing housing [15], and bearing retainer [22] back on the elevator neutral shift mechanism [1].

(h) Turn the bearing retainer [22] until you can install the bolt [18], washer [19] (under the bolt head), washer [20] (under the nut), and the nut [21].

SUBTASK 27-31-91-420-001

(2) Do these steps to install the elevator neutral shift mechanism [1]:

(a) Put the elevator neutral shift mechanism [1] between the support brackets [29].

1) Align the elevator neutral shift mechanism [1] with the mach trim actuator [5].

2) Install the spacers [17] between the elevator neutral shift mechanism [1] and support brackets [29].

a) Add or remove spacers [17], if necessary.

(b) Install the bolts [2], washers [3] (under the nuts), and nuts [4] to attach the left side of the elevator neutral shift mechanism [1] to the left support bracket [29].

(c) Install the bolts [11], washers [12] (under the nuts), and nuts [13] to attach the right side of the elevator neutral shift mechanism [1] to the right support bracket [29].

WARNING MAKE SURE THAT YOU TURN THE NEUTRAL SHIFT CRANK IN THE UP DIRECTION. IF YOU INSTALL THE NEUTRAL SHIFT CRANK INCORRECTLY, THE STABILIZER CAN MOVE QUICKLY WHEN YOU ENGAGE THE AUTOPILOT. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Make sure the crank of the elevator neutral shift mechanism [1] is in the up direction and connected to the mach trim actuator [5].

1) Install the bolt [6] from the left to the right side (bolt head on the left side).

2) Install the washers [7] (under the nut) and nut [8].

a) Tighten the nut [8] to 85 in-lb (10 N·m)–100 in-lb (11 N·m).

CAUTION DO NOT TIGHTEN THE NUT [10] AGAIN AFTER YOU TIGHTEN THE NUT [8]. YOU CAN CAUSE DAMAGE TO THE BOLT ASSEMBLY.

3) Install the washer [9] and nut [10].

a) Tighten the nut [10] to 30 in-lb (3 N·m)–35 in-lb (4 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Connect the control rods [27] and control rods [23]to the elevator neutral shift mechanism [1].

1) Install the bolts [25], washers [24], washers [26], and nuts [28].

SUBTASK 27-31-91-080-001

(3) Remove the rig pin E-5 of the rigging pin kit, SPL-1585 from the aft control quadrant.

SUBTASK 27-31-91-860-003

(4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	4	C00456	AFCS SYS A MACH TRIM AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-31-91-080-002

(5) Remove the lock, SPL-1672 from the stabilizer trim wheel (Figure 402).

SUBTASK 27-31-91-860-004

(6) Do this task: Putting the Elevator Systems A and B Back to the Condition Before the Pressure Removal, TASK 27-31-00-840-802.

SUBTASK 27-31-91-820-001

(7) Do this task to adjust the elevator neutral shift mechanism [1]: Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment, TASK 27-31-00-820-804.

SUBTASK 27-31-91-730-001

(8) Do this task: Neutral Shift - Test, TASK 27-31-00-700-811.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-31-91-410-001

(1) Install this access panel:

Number	Name/Location
318BR	Tailcone Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-91-410-002

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELEVATOR NEUTRAL SHIFT MECHANISM - INSPECTION/CHECK

1. General

A. This procedure contains this task:

(1) Elevator Neutral Shift Mechanism Inspection

(a) This task supplies the data for a dimensional inspection of the elevator neutral shift mechanism [1].

(b) This task does not remove or install the elevator neutral shift mechanism [1], refer to the Elevator Neutral Shift Mechanism - Removal/Installation for procedures to remove and install the elevator neutral shift mechanism [1].

TASK 27-31-91-200-801

2. Elevator Neutral Shift Mechanism - Inspection

(Figure 601)

A. General

(1) This procedure gives wear limits and repair data for the elevator neutral shift mechanism [1].

B. References

Reference	Title
27-31-91-000-801	Elevator Neutral Shift Mechanism Removal (P/B 401)
27-31-91-400-801	Elevator Neutral Shift Mechanism Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right

E. Procedure

SUBTASK 27-31-91-020-002

(1) Do this task to remove the elevator neutral shift mechanism [1]: Elevator Neutral Shift Mechanism Removal, TASK 27-31-91-000-801.

SUBTASK 27-31-91-020-003

(2) Use these tools to check for wear on the parts of the elevator neutral shift mechanism [1] connections:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-31-91-020-004

(3) Do these steps to examine the parts of the elevator neutral shift mechanism [1] connections for worn areas:

(a) Remove the parts to be checked.

(b) Measure the parts as necessary with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Compare the dimensions you measured with the permitted wear dimensions that follow.

(d) If the parts are not in the tolerance, replace or repair the part as required.

Table 601/27-31-91-993-801

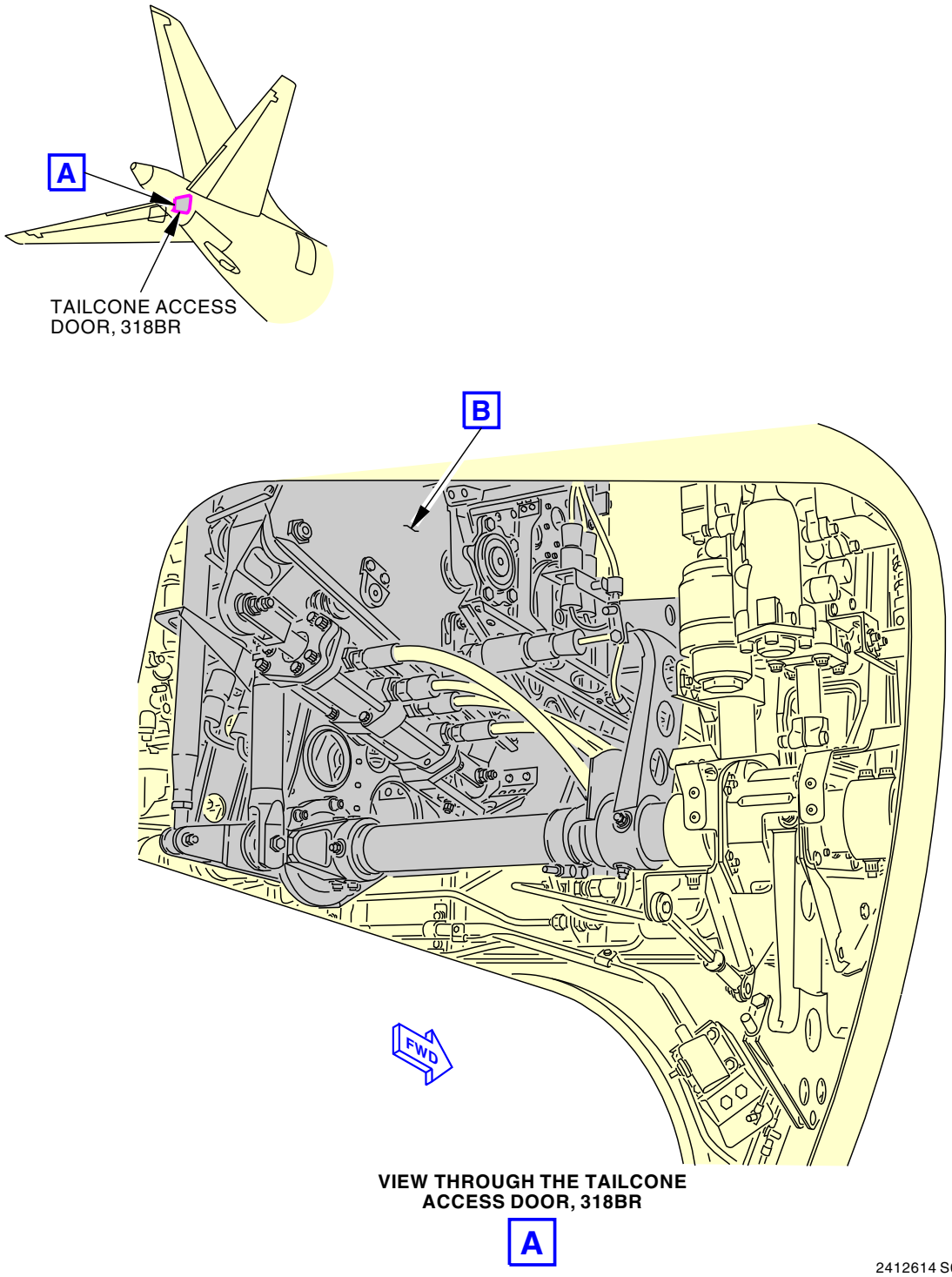
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 outer bearing housing [3]	I.D.	1.9375 in 49.212 mm	1.9385 in 49.238 mm	1.9415 in 49.314 mm	0.004 in 0.102 mm
#1 bearing [4]	O.D.	1.9365 in 49.187 mm	1.9375 in 49.212 mm	1.9360 in 49.174 mm	
#2 bearing [5]	I.D.	0.9995 in 25.387 mm	1.0000 in 25.400 mm	1.0025 in 25.463 mm	0.0035 in 0.089 mm
#2 elevator neutral shift mechanism [1]	O.D.	0.9985 in 25.362 mm	0.9990 in 25.375 mm	0.9965 in 25.311 mm	

SUBTASK 27-31-91-020-005

(4) Do this task to install the elevator neutral shift mechanism [1]: Elevator Neutral Shift Mechanism Installation, TASK 27-31-91-400-801.

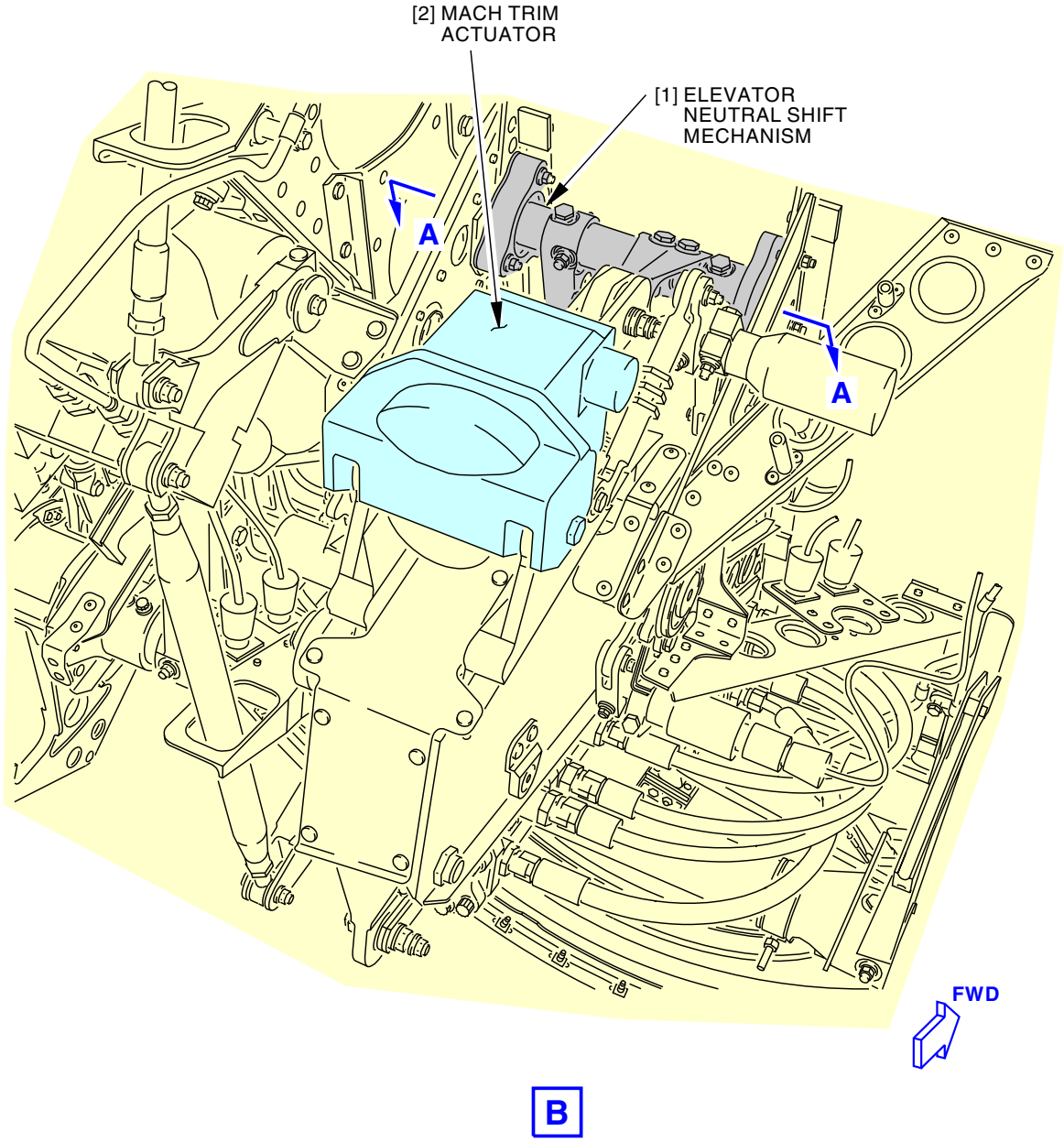
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Elevator Neutral Shift Mechanism Wear Limits
Figure 601/27-31-91-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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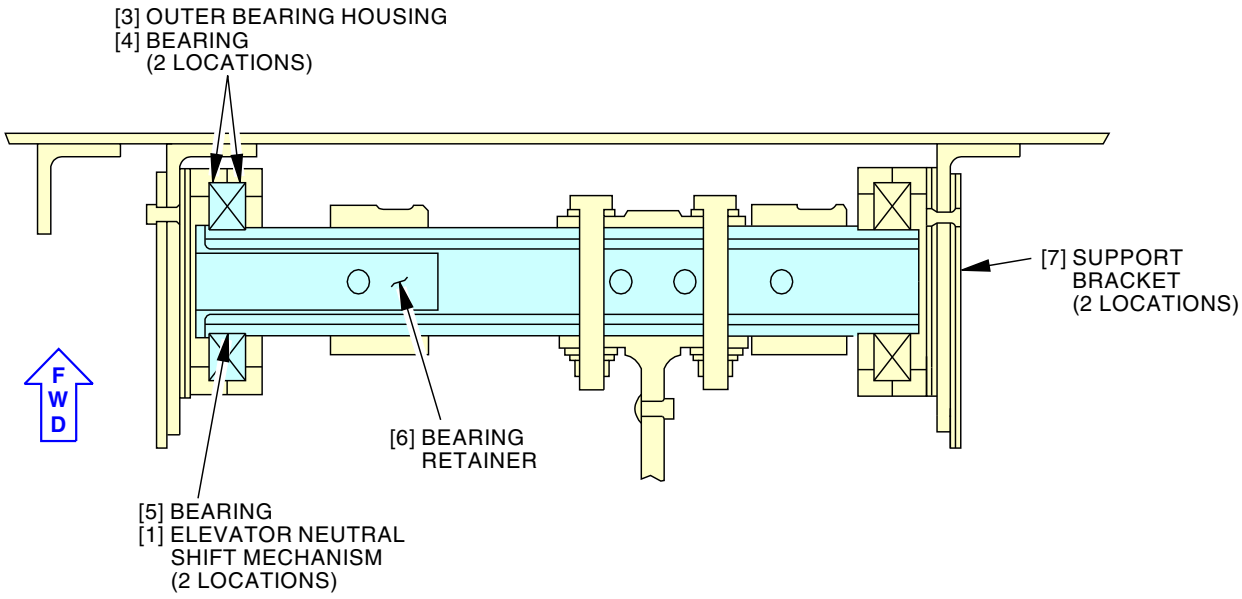
Elevator Neutral Shift Mechanism Wear Limits
Figure 601/27-31-91-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Elevator Neutral Shift Mechanism Wear Limits
Figure 601/27-31-91-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FEEL SYSTEM PITOT PROBE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Feel System Pitot Probe Removal

(2) Feel System Pitot Probe Installation

B. The Feel System Pitot Probe is referred to as the "pitot probe [8]" in this procedure.

C. A pitot probe [8] is installed on each side of the vertical fin. This procedure is applicable for the left and right pitot probes [8].

TASK 27-31-94-000-801

2. Feel System Pitot Probe Removal

(Figure 401 and Figure 402)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-2481	Sealant Removal Tool (meets BSS7384 requirements) Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: $0855 Part #: 10811 Supplier: $0855 Part #: 10812 Supplier: $0855 Part #: 234350 Supplier: 5HCF1 Part #: 235072 Supplier: 5HCF1 Part #: 235073 Supplier: 5HCF1 Part #: 235074 Supplier: 5HCF1 Part #: 235075 Supplier: 5HCF1 Part #: 235076 Supplier: 5HCF1 Part #: 311/03 Supplier: F6892 Part #: 311/14 Supplier: F6892 Part #: 311/25 Supplier: F6892 Part #: 311/37 Supplier: F6892 Part #: AS1 Supplier: $1351 Part #: AS2 Supplier: $1351 Part #: AS3 Supplier: $1351 Part #: DAD5013 Supplier: 7RKH2 Part #: DFD5019 Supplier: 7RKH2 Part #: JNT411B60 Supplier: 3DN12 Part #: JNT411B90 Supplier: 3DN12 Part #: SCD5019 Supplier: 7RKH2 Part #: ST982LF-9 Supplier: 81205 Part #: TS1275-4 Supplier: 22975

B. Location Zones

Zone	Area
323	Vertical Fin - Front Spar To Rear Spar

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Feel System Pitot Probe Removal

SUBTASK 27-31-94-860-001

(1) For the left pitot probe [8], open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

SUBTASK 27-31-94-860-002

(2) For the right pitot probe [8], open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

SUBTASK 27-31-94-140-001

WARNING MAKE SURE THAT THE PITOT PROBE HEAT IS OFF. A HOT PROBE CAN CAUSE INJURIES TO PERSONNEL.

CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO ADDED WEIGHT ON IT FROM THE TEST HOSE. THE WEIGHT OF THE TEST HOSE CAN BEND OR TWIST THE PITOT PROBE OUT OF TOLERANCE.

CAUTION MAKE SURE THAT THE AREA AROUND THE PITOT PROBE IS CLEAR OF UNWANTED MATERIAL. CONTAMINATION OF THE PITOT SYSTEM CAN OCCUR.

(3) Use the sealant removal tool, COM-2481, to remove the sealant from around the baseplate [5] of the pitot probe [8].

SUBTASK 27-31-94-020-001

(4) Remove the bolts [9] from the baseplate [5] of the pitot probe [8].

SUBTASK 27-31-94-020-002

CAUTION MAKE SURE THAT THE PITOT PROBE HAS NO WEIGHT ON IT. THE PITOT PROBE CAN BEND OR TWIST OUT OF TOLERANCE.

(5) Do these steps to loosen the pitot probe [8] from the airplane skin:

(a) Hold the probe strut [7].

(b) Pull the pitot probe [8] out from the airplane skin until you can get access to the pitot hose fitting [10] and electrical connector [1] on the base of the pitot probe [8].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-31-94-020-003

CAUTION USE TWO WRENCHES TO APPLY COUNTER PRESSURE ON THE FITTING DURING DISASSEMBLE. USE ONE WRENCH ON EACH SIDE OF THE FITTING. IF YOU DO NOT OBEY THIS INSTRUCTION DAMAGE TO THE TUBE OR FITTING CAN OCCUR.

(6) Disconnect the elbow [11] from the baseplate [5].

SUBTASK 27-31-94-020-004

(7) Remove the long screw [6] from the pitot probe side of the electrical connector [1].

SUBTASK 27-31-94-020-005

(8) Disconnect the electrical connector [1].

SUBTASK 27-31-94-420-001

(9) Install the long screw [6] in the electrical connector [1].

SUBTASK 27-31-94-020-007

(10) Temporarily attach the electrical connector [1] and pitot hose fitting [10] to the airplane structure with tape so they do not fall inside vertical fin.

SUBTASK 27-31-94-020-008

(11) Put a cap on the elbow [11] to keep out unwanted material.

NOTE: This step is not necessary if you will replace the pitot probe immediately.

SUBTASK 27-31-94-020-009

(12) Disconnect the bonding jumper [24] from the baseplate [5].

(a) Remove the bolt [19], washer [20], and bonding jumper [24].

SUBTASK 27-31-94-020-014

(13) Remove the pitot probe [8] with the baseplate [5] as whole assembly.

(a) If the gasket [2] is damaged, discard it.

NOTE: The gasket can be reused if tit is not damaged.

SUBTASK 27-31-94-020-010

(14) If it is necessary, remove the baseplate [5] from the pitot probe [8].

(a) Remove the lockwire, and discard it.

(b) Remove the bolts [3] and washers [4] from the baseplate [5].

NOTE: Hardened sealant can be softened with heat for easier removal. The baseplate and probe may be heated in an oven, 150°F (65.6°C) for 20 minutes to soften the sealant.

(c) Remove the baseplate [5].

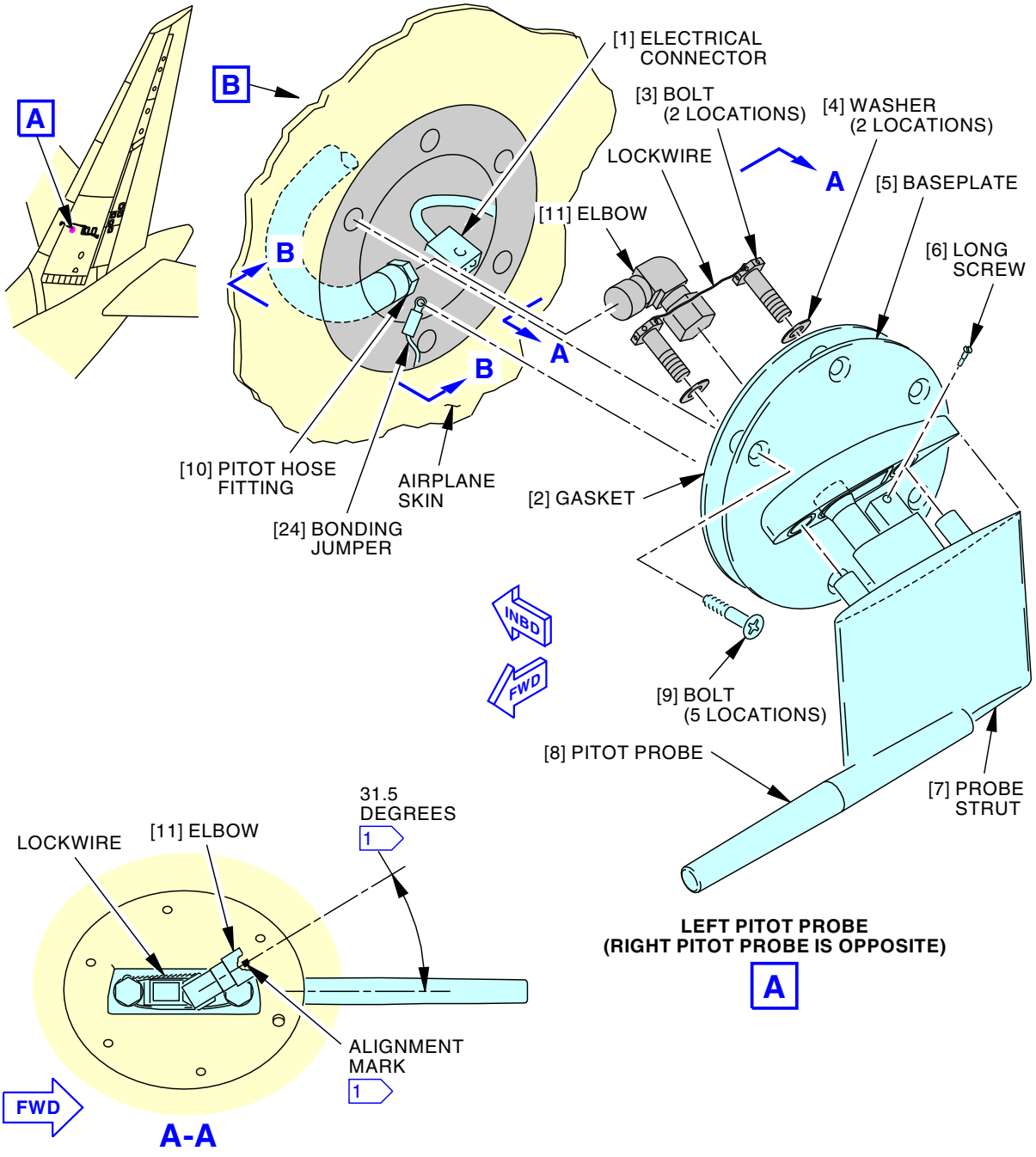
SUBTASK 27-31-94-020-011

(15) Keep the baseplate [5] for another installation.

NOTE: The baseplates are not interchangeable between positions.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

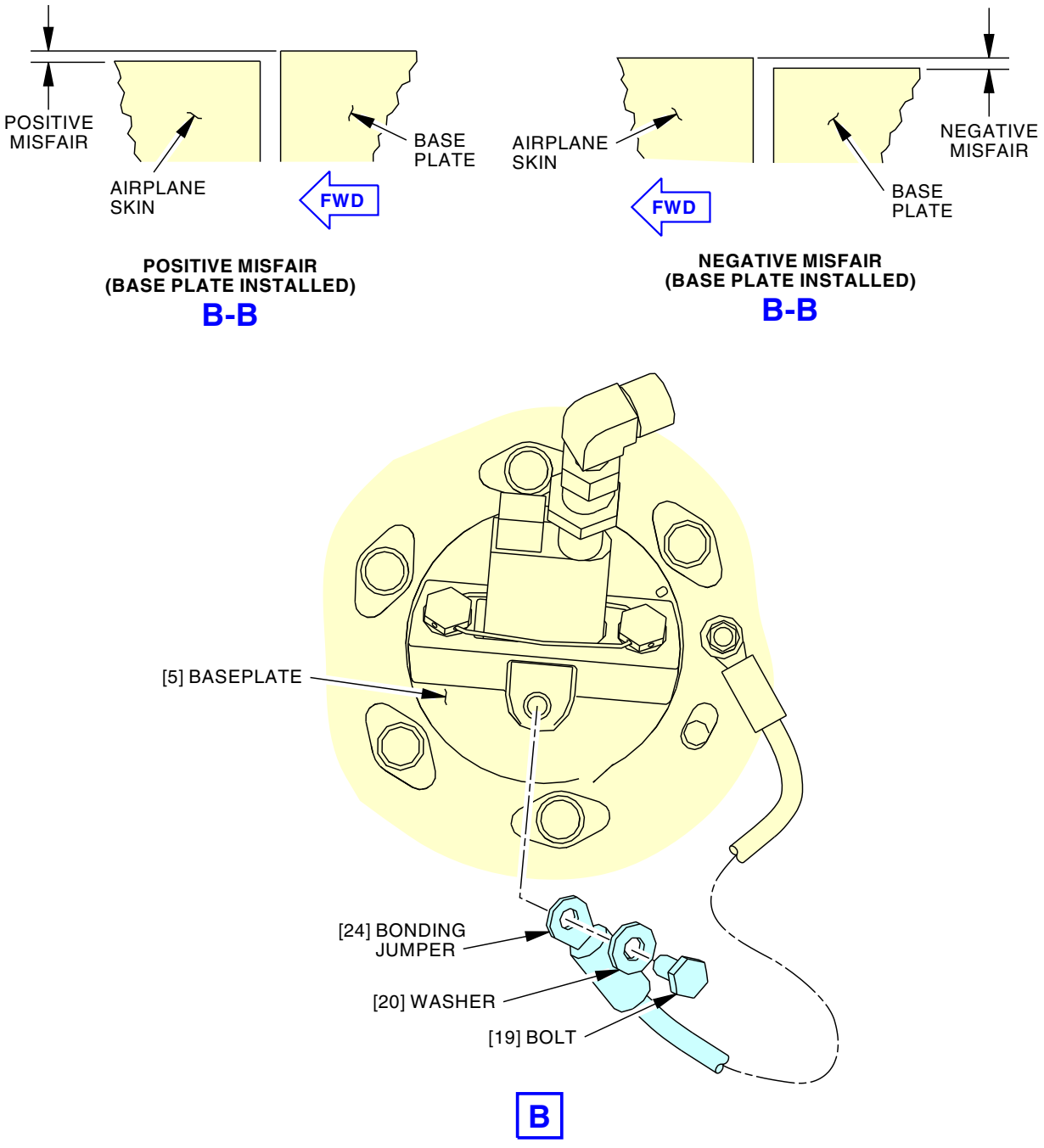


1 THE CENTER OF THE 90-DEGREE ELBOW SHOULD ALIGN 31.5 DEGREES ABOVE THE CENTER OF THE PITOT PROBE (OR ALIGNMENT MARK SHOWN). THIS WILL PREVENT MOISTURE FROM COLLECTING IN LOW SPOTS OF THE PITOT ASSEMBLY AND PITOT HOSE.

2412617 S00061531006_V2

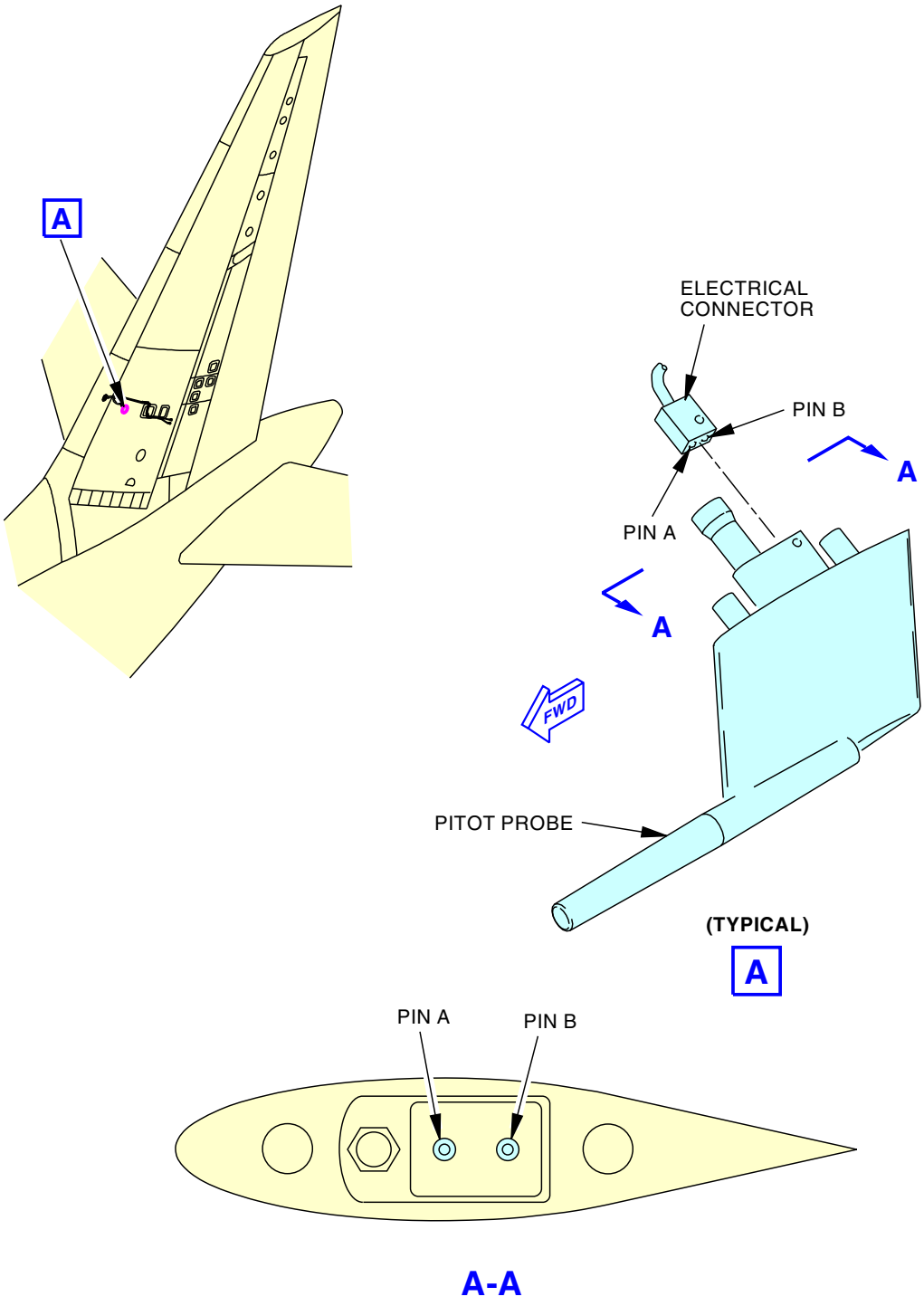
Feel System Pitot Probe Installation
Figure 401/27-31-94-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Feel System Pitot Probe Installation
Figure 401/27-31-94-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Feel System Pitot Probe Electrical Connector Polarity
Figure 402/27-31-94-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-31-94-400-801

3. Feel System Pitot Probe Installation

(Figure 401 and Figure 402)

A. References

Reference	Title
20-10-34-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
27-31-17-790-801	Elevator Pitot System Leak - Test (P/B 201)
30-31-00-730-801	Pitot Probe, AOA Sensor, and TAT Probe Heater - System Test (P/B 501)
51-22-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SRM 51-40-02-0G-0	Fastener Installation and Removal
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00708	Sealant - Fast Curing, 2-Part - PR-1828	AMS 3277
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Pitot probe	27-31-94-01-060	SIA ALL

E. Location Zones

Zone	Area
323	Vertical Fin - Front Spar To Rear Spar

F. Feel System Pitot Probe Installation

SUBTASK 27-31-94-110-001

(1) For the surface of the baseplate [5], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-34-110-802.

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SUBTASK 27-31-94-420-002

(2) If removed, do these steps to install the pitot probe [8] on the baseplate [5]:

(a) Put the pitot probe [8] on the baseplate [5].

(b) Install the bolts [3] and washers [4] in the baseplate [5].

(c) Install the MS20995NC32 lockwire, G01912 on the bolts [3].

(d) Apply sealant, A00247, around the head of the two bolts [3].

SUBTASK 27-31-94-420-015

(3) Put the gasket [2] into position on the baseplate [5].

SUBTASK 27-31-94-420-005

(4) Connect the bolt [19], washer [20], and bonding jumper [24] to the baseplate [5].

(a) Measure the resistance between the terminal of the bonding jumper [24] and airplane skin with a intrinsically safe approved bonding meter, COM-1550.

(b) Make sure that the resistance is not more than 2.5 milliohms (0.0025 ohm).

SUBTASK 27-31-94-420-007

(5) Make sure that the torque of the pitot hose fitting [10] is 161 in-lb (18 N·m) - 179 in-lb (20 N·m).

SUBTASK 27-31-94-420-013

(6) Do these steps to install the elbow [11] to the pitot probe [8]:

(a) If installed, remove the cap.

(b) Make sure that there is not a loop or downward oriented dip in the flexible pitot hose.

NOTE: A loop or downward oriented dip in the flexible pitot hose can cause water accumulation. Water accumulation can cause an erratic airspeed indication, resulting in an Indicated Airspeed (IAS) disagree message.

(c) Make sure that the center of the elbow [11] is aligned with the alignment mark on the inboard side of the pitot probe [8] base (Figure 401).

NOTE: The lowest point of the flexible hose must be the connection with the pitot probe.

(d) Install the elbow [11] to the pitot probe [8].

SUBTASK 27-31-94-420-006

(7) Tighten the elbow [11] to the base of the pitot probe [8] to 126 in-lb (14 N·m) - 154 in-lb (17 N·m).

SUBTASK 27-31-94-420-014

(8) Do these steps to connect the electrical connector [1] to the pitot probe [8]:

(a) Examine the electrical connector [1] for loose, bent, or broken pins.

(b) Remove the long screw [6] from the electrical connector [1].

(c) Connect the electrical connector [1].

1) Make sure that the pins are connected correctly (Figure 402).

NOTE: Pin B is the pin on the side closest to the offset screw hole.

(d) Install the long screw [6] in the electrical connector [1].

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SUBTASK 27-31-94-390-001

(9) Apply a thin layer of sealant, A00247, or PR-1828 sealant, A00708 (quick curing), on the mating surfaces of the baseplate [5] and pitot probe [8].

NOTE: You can use the PR-1828 sealant, A00708, quick curing sealant, in applications where the aircraft needs to go quickly back into service. The two part sealant should be mixed and then applied per SEALS AND SEALING - MAINTENANCE PRACTICES, PAGEBLOCK 51-22-00/201.

NOTE: If the aircraft needs to go quickly back into service, and you do not use the quick curing sealant, it is not necessary to apply either sealant immediately if the cure time of either of the two sealants will cause a flight delay. To prevent moisture damage to the airplane, sealant must be applied as soon as it is convenient for the operator.

SUBTASK 27-31-94-420-010

CAUTION

DO NOT LET DUST, DIRT, OR OTHER UNWANTED MATERIAL GET IN THE PROBES. CONTAMINATION CAN CAUSE DAMAGE TO THE SYSTEM.

(10) Do these steps to install the pitot probe [8]:

(a) Hold the probe strut [7].

(b) Put the pitot hose fitting [10] and electrical connector [1] in the installation hole.

(c) Install the bolts [9] in the baseplate [5] of the pitot probe [8].

1) Apply compound, C00528, to the bolts [9] and baseplate [5] hole.

2) Tighten the bolts [9] to 32 in-lb (3.6 N·m) - 39 in-lb (4.4 N·m).

(d) Put the pitot probe [8] into position on the airplane skin.

1) Measure the baseplate [5] to skin misfair at the forward and aft edges of the baseplate [5] to be within +/-0.040 in. (1.0 mm).

SUBTASK 27-31-94-390-002

(11) Fill the gap between the baseplate [5] and the airplane skin with sealant, A00247, or PR-1828 sealant, A00708 (quick curing).

NOTE: It is not necessary to apply the sealant immediately if the cure time of the sealant will cause a flight delay. To prevent moisture damage to the airplane, sealant must be applied as quickly as possible.

(a) Make sure that the baseplate [5] and sealant are flat with the airplane skin.

SUBTASK 27-31-94-760-001

(12) Measure the resistance between the strut of the pitot probe [8] and the airplane skin with a intrinsically safe approved bonding meter, COM-1550.

(a) If the resistance is more than 0.010 ohms, do these steps:

1) Remove the pitot probe [8].

2) Clean the bonding surfaces, including the countersunk holes in the pitot probe [8] (SWPM 20-20-00).

3) Replace the bolts with new bolts.

4) Re-install the pitot probe [8].

5) Measure the resistance between the strut of the pitot probe [8] and the airplane skin with a intrinsically safe approved bonding meter, COM-1550.

6) If the resistance is more than 0.010 ohms, do these steps:

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a) Remove the pitot probe [8].

b) Replace the nutplates and rivets that attach the pitot probe [8] (SRM PROCEDURE 51-40-02-0G-0).

c) Reinstall the pitot probe [8] and make sure that the bonding resistance is not more than 0.010 ohm.

SUBTASK 27-31-94-860-005

(13) For the left pitot probe [8], remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

SUBTASK 27-31-94-860-006

(14) For the right pitot probe [8], remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

G. Feel System Pitot Probe Installation Test

SUBTASK 27-31-94-710-001

(1) Do this task: Elevator Pitot System Leak - Test, TASK 27-31-17-790-801.

SUBTASK 27-31-94-710-002

(2) Do this task: Pitot Probe, AOA Sensor, and TAT Probe Heater - System Test, TASK 30-31-00-730-801.

——— END OF TASK ———

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STALL WARNING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Stall Warning System - Operational Test

(2) Stall Management Yaw Damper BITE Test - Existing Faults

(3) Stall Management Yaw Damper BITE Test - Fault History

(4) Stall Management Yaw Damper BITE Test

TASK 27-32-00-710-801

2. Stall Warning System - Operational Test

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Stall Warning System Operational Test

SUBTASK 27-32-00-710-001

(1) Do a test of the No. 1 Stall Warning System:

(a) Push and hold the STALL WARNING TEST NO. 1 switch on the P5-18 panel.

1) Make sure that the captain's control column shaker operates for more than five seconds.

(b) Release the STALL WARNING TEST NO. 1 switch.

1) Make sure that the captain's control column shaker stops.

SUBTASK 27-32-00-710-002

(2) Do a test of the No. 2 Stall Warning System:

NOTE: SPEED BRAKE DO NOT ARM light may momentarily turn on and off for SMYD 285A1010-110.

(a) Push and hold the STALL WARNING TEST NO. 2 switch on the P5-18 panel.

1) Make sure that the first officer's control column shaker operates for more than five seconds.

(b) Release the STALL WARNING TEST NO. 2 switch.

1) Make sure that the first officer's control column shaker stops.

——— END OF TASK ———

TASK 27-32-00-740-801

3. Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults

(Figure 501)

A. General

(1) This procedure does the EXISTING FAULTS portion of the Stall Management Yaw Damper (SMYD) BITE.

(2) This procedure does an exchange of SMYD 1 and 2 if a maintenance message is present, and NO FAULT is found.

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(3) Do this BITE test for SMYD 1 and 2 to make sure all the faults are found.

(4) For EXISTING FAULTS, the SMYD does internal tests, discrete output checks, sensor interface checks, and checks of inputs to the SMYD. All faults that are found during the EXISTING FAULTS are active. A maintenance message identifies a specific failure which is found by the SMYD.

B. References

Reference	Title
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults

SUBTASK 27-32-00-010-001

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-32-00-860-020

(2) To align the Inertial Reference Unit (IRU), do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

SUBTASK 27-32-00-200-001

(3) To make sure that the Flight Management Computer (FMC) is powered and has good weight data entered, do these steps:

NOTE: Zero Fuel Weight (ZFW) is calculated by subtracting the total fuel weight from the combined total weight of the airplane and contents. For the BITE test, any number between 70 and 150 (normal ZFW in thousands of pounds) will verify a check pass.

(a) Push the INIT REF button on the Control Display Unit (CDU).

(b) On the PERF INIT page, enter the following:

1) 3L: ZFW prompt, enter 94 for lbs or 43 for kg.

NOTE: GW/CRZ CG in 1L will auto calculate after ZFW is entered.

2) 4L: RES prompt, enter 4.0

3) 5L: CI prompt, enter 30.

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SUBTASK 27-32-00-740-001

(4) Do the EXISTING FAULTS test on the SMYD BITE:

(a) Push the ON/OFF switch.

NOTE: The display will show EXISTING FAULTS? If a fault occurs, make sure that all FMC and ADIRU values are good.

(b) Push the YES switch and make sure the display shows:

1) Either a message corresponding the first fault in the list.

2) Or the display shows NO FAULTS.

(c) If there are existing faults, go to the IFIM and do the applicable procedure(s).

(d) If the display shows NO FAULTS, push the MENU switch to return to the EXISTING FAULTS? display.

(e) Do these steps to unlatch existing faults:

1) Push the down arrow until RESET LATCHES? shows.

2) Push the YES switch to reset the latches.

NOTE: END OF LIST will display when done.

(f) If a maintenance message is present and the SMYD shows NO FAULTS:

1) Do an exchange check of the SMYD 1 and 2 to find if a SMYD is damaged (IFIM and do the applicable procedure(s)).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-32-00-860-004

(1) Push the ON/OFF switch to turn the SMYD display off.

SUBTASK 27-32-00-410-001

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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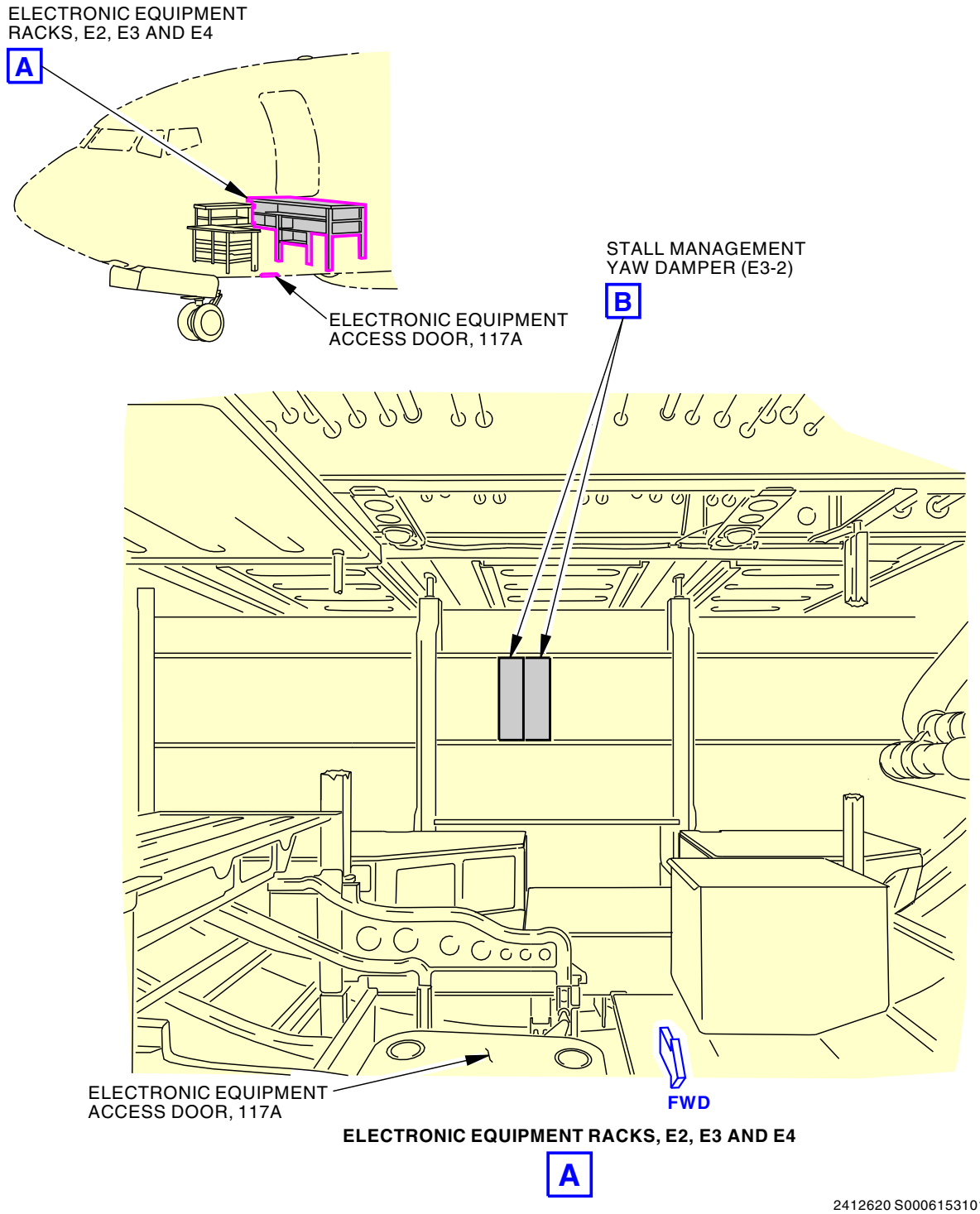

Stall Management Yaw Damper Test
Figure 501/27-32-00-990-802 (Sheet 1 of 2)

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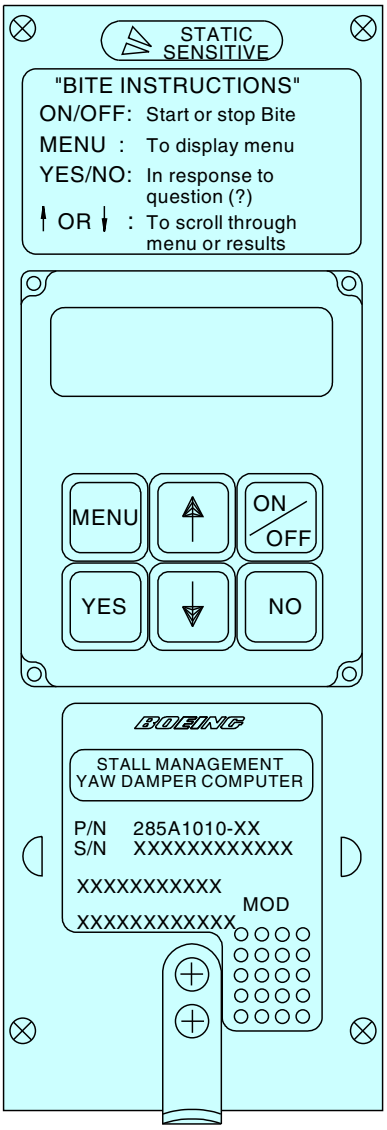

STALL MANAGEMENT YAW DAMPER (EXAMPLE)

B

2412621 S00061531016_V1

Stall Management Yaw Damper Test
Figure 501/27-32-00-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-32-00-740-802

4. Stall Management Yaw Damper (SMYD) BITE Test - Fault History

(Figure 501)

A. General

(1) This procedure does the FAULT HISTORY? portion of the Stall Management Yaw Damper (SMYD) BITE.

(2) The SMYD keeps a record of faults in FAULT HISTORY. The faults are grouped by flight leg. Flight leg 0 (LEG 0) is the most recent flight and includes faults that occurred on the ground after the most recent flight. Only flight legs with faults will be displayed.

B. References

Reference	Title
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-32-00-010-002

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Stall Management Yaw Damper (SMYD) BITE Test - Fault History

SUBTASK 27-32-00-740-002

(1) Do the FAULT HISTORY test on the SMYD BITE.

(a) Push the ON/OFF switch on the SMYD BITE display to turn the BITE display on.

NOTE: EXISTING FAULTS? will be shown.

(b) Push the down arrow until the display shows FAULT HISTORY?.

1) Push the YES switch.

a) If there are faults in history, the display will show FLIGHT LEG -n, where n is the most recent flight with faults recorded.

b) If there are no faults, the message NO FAULT HISTORY will show.

2) Push the up arrow or down arrow to go through the flight legs.

3) If you push YES at any flight leg display the message corresponding to the first fault in the list will show.

4) To show the faults for the flight leg use the up arrow and down arrow.

NOTE: To return to the FLIGHT LEG N display, push the MENU switch.

5) To return to the FAULT HISTORY display, push the MENU switch.

6) Go to the IFIM and do the applicable procedure(s).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-32-00-860-007

(1) Push the ON/OFF switch to turn the SMYD display off.

SUBTASK 27-32-00-410-002

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-32-00-740-803

5. Stall Management Yaw Damper (SMYD) BITE Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does the GROUND TEST? portion of the Stall Management Yaw Damper (SMYD) BITE.

(2) For GROUND TEST, the SMYD has several menus:

(a) SELF TEST? - This does a self test sequence of the SMYD.

(b) DISCRETE INPUTS? - This monitors the status of each displayed discrete inputs to the SMYD.

(c) ARINC429 INPUTS? - This monitors the status of each ARINC429 input to the SMYD.

(d) ANALOG INPUTS? - This shows the status of these sensors:

1) AOA SENSOR?

2) FLAP SENSOR?

(e) SERVO TEST? - This does a test of the integrity of the interface between the SMYD and rudder power control unit.

1) YD LVDT?

NOTE: This is only for the SMYD in the number 2 position.

(f) DISPLAY TEST? This does a test of the SMYD display.

(3) This task has a procedure for each of these menu items.

(4) This task also contains the INPUT SIGNAL INTEGRITY TEST procedure from the OTHER FUNCTION? menu.

B. References

Reference	Title
29-00-00-800-802	Hydraulic Power System - Activation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)

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(Continued)

Reference	Title
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)
34-61-00-860-801	Setting Zero Fuel Weight (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual
WDM 27-32-11	Wiring Diagram Manual
WDM 27-32-21	Wiring Diagram Manual

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1690	Actuators/Deactuators Set - Proximity Sensor Part #: 8-758-01 Supplier: 08748 Part #: A27092-139 Supplier: 81205 Opt Part #: A27092-106 Supplier: 81205
SPL-1917	Fixture - Test, Angle of Attack Sensor, ROSEMOUNT AOA's Part #: J34002-19 Supplier: 81205 Opt Part #: A34012-19 Supplier: 81205 Opt Part #: A34012-24 Supplier: 81205 Opt Part #: J34002-18 Supplier: 81205

D. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Prepare for the Test

SUBTASK 27-32-00-860-010

(1) To align the Inertial Reference Unit (IRU), do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

SUBTASK 27-32-00-860-019

(2) To make sure that the Flight Management Computer (FMC) is powered and has good weight data entered, do these steps:

NOTE: Zero Fuel Weight (ZFW) is calculated by subtracting the total fuel weight from the combined total weight of the airplane and contents. For the BITE test, any number between 70 and 150 (normal ZFW in thousands of pounds) will verify a check pass.

(a) Push the INIT REF button on the Control Display Unit (CDU).

(b) On the PERF INIT page, enter the following:

1) 3L: ZFW prompt, enter 94 for lbs or 43 for kg.

NOTE: GW/CRZ CG in 1L will auto calculate after ZFW is entered.

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2) 4L: RES prompt, enter 4.0

3) 5L: CI prompt, enter 30.

SUBTASK 27-32-00-010-003

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

NOTE: Do the steps that follow on both SMYD #1 and SMYD #2.

SUBTASK 27-32-00-860-011

(4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	9	C00109	FLIGHT RECORDER AC
C	10	C00468	FLIGHT RECORDER DC

SUBTASK 27-32-00-860-015

(5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

G. SELF TEST

SUBTASK 27-32-00-740-021

(1) Self Test using the Onboard Maintenance Function (OMF) (Recommended Method):

(a) Set the GND TESTS switch, on the P61-4 panel, to the ENABLE position.

(b) Push the SYS button in the Multi Function Display (MFD) section of the on the P9-82 multi function panel.

(c) Use the SELECTOR, on the P9-82 multi function panel, to make these selections:

- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Flight Controls Stall Management yaw Damper System
- System Test.

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

(e) Use the SELECTOR, on the P9-82 multi function panel, to make this selection:

- START TEST.

(f) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to the IFIM and do the applicable procedure(s).

2) If you do additional tests on the P9-82 multi function panel, select the NEW TEST button.

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SUBTASK 27-32-00-740-022

(2) Self Test using SMYD box in Electronic Equipment Bay (Alternate Method):

(a) Push the ON/OFF switch to turn on the BITE display.

(b) Push the down arrow to show GROUND TESTS?

(c) Push the YES switch.

1) Make sure that SELF TEST? shows.

(d) Push the YES switch to start the self test.

1) TEST IN PROGRESS will show while the test is run.

2) When the self test is complete either:

a) A message corresponding to the first fault will show.

b) Or SMYD LRU OK will show.

3) If faults are detected, go to the IFIM and do the applicable procedure(s).

4) Push the MENU switch to go back to the SELF TEST? display.

H. DISCRETE INPUTS

SUBTASK 27-32-00-740-016

(1) If running tests out of sequence, make sure that the BITE setup conditions have selected GROUND TESTS? and SELF TEST?.

(a) Push the YES switch to start the discrete inputs test.

(b) Push the MENU button.

(c) Make sure that the display shows: SELF TEST?

(d) Push down arrow button.

(e) Make sure that display shows: DISCRETE INPUTS?

(f) Push the YES button.

1) For the SMYD 1 Discrete Input Test:

a) Make sure that the program pin inputs are correct (WDM 27-32-11).

NOTE: For each pin, the display will show OPEN or GND. Some pins are not applicable because of the SMYD model and configuration.

2) For the SMYD 2 Discrete Input Test:

a) Make sure that the program pin inputs are correct (WDM 27-32-21).

NOTE: For each pin, the display will show OPEN or GND. Some pins are not applicable because of the SMYD model and configuration.

(g) Push down arrow button.

(h) Make sure that the display shows: asym en = gnd.

(i) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

(j) Make sure that the display shows: asym en = open.

(k) Push down arrow button.

(l) Make sure that the display shows: asymetry = open.

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(m) Push down arrow button.

(n) Make sure that the display shows: LE UCM = open.

(o) Push down arrow button.

(p) Make sure that the display shows: TOGA = open.

(q) Push and hold the TOGA switch on the number 1 or number 2 throttle lever.

(r) Make sure that the display shows: TOGA = gnd.

(s) Release the TOGA switch.

(t) Make sure that the display shows: TOGA = open.

(u) Push down arrow button.

(v) Make sure that the display shows: nlg = gnd.

WARNING

MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES AND LANDING GEAR DOOR AREAS BEFORE YOU SIMULATE THE AIRPLANE TO THE AIR MODE. THE SIMULATED AIR MODE CAN CAUSE MOVEMENT TO CONTROL SURFACES, LANDING GEAR, AND LANDING GEAR DOORS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(w) Put a proximity sensor test set, SPL-1690, between S1014 and S1015 nose gear air/ground sensor face and its steel target.

NOTE: The sensors are located in the aft lower nose wheel well.

(x) Make sure that the display shows: nlg = air.

(y) Remove the proximity sensor test set, SPL-1690, from S1014 and S1015.

(z) Make sure that the display shows: nlg = gnd.

(aa) Push down arrow button.

(ab) Make sure that the display shows: air/gnd = gnd.

(ac) Set the GND TESTS Switch, on the P61-4 panel, to the ENABLE position.

(ad) Select the SYS button in the MFD section of the on the P9-82 multi function panel.

(ae) Make the following selections on the MAX Display System (MDS):

- MAINT
- ONBD MAINT
- OTHER FUNCTIONS
- SPECIAL FUNCTIONS
- 32 - Proximity Switch Electronic Unit
- PSEU - Air/Ground Override
- CONTINUE
- Select CONTINUE under the PRECONDITIONS screen
- START FUNCTION
- Select SYS 1 and 2 IN AIR.

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WARNING MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES AND LANDING GEAR DOOR AREAS BEFORE YOU SIMULATE THE AIRPLANE TO THE AIR MODE. THE SIMULATED AIR MODE CAN CAUSE MOVEMENT TO CONTROL SURFACES, LANDING GEAR, AND LANDING GEAR DOORS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(af) =

Select CONTINUE by pushing on the center selector button SEL.

1) Make sure that these condition are seen on the MDS:
   - Air/Gnd Override is ACTIVE
   - System 1: AIR
   - System 2: AIR.

(ag) Make sure that the display shows: air/gnd = air.

(ah) Select Set SYS 1 and 2 ON GND.

WARNING MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES AND LANDING GEAR DOOR AREAS BEFORE YOU SIMULATE THE AIRPLANE TO THE AIR MODE. THE SIMULATED AIR MODE CAN CAUSE MOVEMENT TO CONTROL SURFACES, LANDING GEAR, AND LANDING GEAR DOORS. IF YOU DO NOT OBEY THIS INSTRUCTION, INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(ai) Select CONTINUE by pushing on the center selector button SEL.

1) Make sure that these conditions are seen on the MDS:
   - Air/Gnd Override is NOT ACTIVE
   - System 1: GND
   - System 2: GND.

(aj) Make sure that the display shows: air/gnd = gnd.

(ak) Push down arrow button.

(al) Make sure that the display shows: MLG = gnd.

(am) Open these circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

(an) Make sure that the display shows: MLG = open.

(ao) Close these circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

(ap) Make sure that the display shows: MLG = gnd.

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(aq) Push down arrow button.

(ar) Make sure that the display shows: A/S pwr present.

(as) Do this step to disable the FC Autoslat DC 1 power to SMYD 1:

1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(at) Do this step to disable the FC Autoslat DC 2 power to SMYD 2:

1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

(au) Make sure that the SMYD 1 and SMYD 2 displays show: A/S pwr missing.

(av) For SMYD 1, do this step:

1) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(aw) For SMYD 2, do this step:

1) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

(ax) Make sure that the SMYD 1 and SMYD 2 displays show: A/S pwr present.

(ay) Push down arrow button.

(az) Make sure that the display shows: S/S pwr present.

(ba) For SMYD 1, do this step to disable the stick shaker L power:

1) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

I (bb) For SMYD 2, do this step to disable the stick shaker R power:

1) Open this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

(bc) Make sure that SMYD 1 and SMYD 2 displays show: S/S pwr missing.

(bd) For SMYD 1, do this step:

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1) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

(be) For SMYD 2, do this step:

1) Close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

(bf) Make sure that SMYD 1 and SMYD 2 displays show: S/S pwr present.

(bg) Push down arrow button.

(bh) Make sure that the display shows: YD pwr present.

(bi) For SMYD 1, do this step to disable the Yaw Damper 1 DC power:

1) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	7	C00286	YAW DAMPER 1 DC

(bj) For SMYD 2, do this step to disable the Yaw Damper 2 DC power:

1) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC

(bk) Make sure that SMYD 1 and SMYD 2 displays show: YD pwr missing.

(bl) For SMYD 1, do this step:

1) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	7	C00286	YAW DAMPER 1 DC

(bm) For SMYD 2, do this step:

1) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC

(bn) Make sure that SMYD 1 and SMYD 2 displays show: YD pwr present.

(bo) Push down arrow button.

(bp) Make sure that the display shows: FC B sw = on.

(bq) Put the Flight Control B switch, on the P5-3 overhead panel, to the OFF position.

(br) Make sure that the display shows: FC B sw = off.

(bs) Put the Flight Control B switch, on the P5-3 overhead panel, to the ON position.

(bt) Make sure that the display shows: FC B sw = on.

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(bu) Push down arrow button.

(bv) Make sure that the display shows: eng rqst = false.

(bw) Put and HOLD the Yaw Damper Engage switch, on P5-3 overhead panel, to the ON position.

(bx) Make sure that the display shows: eng rqst = true.

(by) Put the Yaw Damper Engage switch, on P5-3 overhead panel, to the OFF position.

(bz) Push down arrow button.

(ca) Make sure that the display shows: flap up = up.

WARNING KEEP PERSONS AND EQUIPMENT AWAY FROM ALL CONTROL SURFACES AND THE NOSE GEAR WHEN HYDRAULIC POWER IS SUPPLIED. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, AND THE NOSE GEAR ARE SUPPLIED WITH POWER BY THE HYDRAULIC SYSTEMS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR WHEN HYDRAULIC POWER IS SUPPLIED.

(cb) Supply system B hydraulic power (TASK 29-11-00-860-801).

(cc) Put the flaps to 1 detent.

(cd) Make sure that the display shows: flap up = not up.

(ce) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

(cf) Put the flaps to 0 detent.

(cg) Remove the system B hydraulic power (TASK 29-11-00-860-805).

I. ARINC429 TEST

SUBTASK 27-32-00-740-009

(1) If you the tests out of sequence, make sure that the BITE setup conditions have selected GROUND TEST? and DISCRETE INPUTS?.

(a) Push the MENU button.

(b) Make sure that the display shows: DISCRETE INPUTS?

(c) Push the NO switch.

(d) Make sure that the display shows: ARINC429 INPUTS?.

(e) Push the YES switch to start the ARINC429 test.

(f) Make sure that the display shows: ON SIDE IR BUS?.

(g) Push the YES switch.

(h) Make sure that the display shows: BUS ACTIVE.

(i) Disable the SMYD 1 ONSIDE IR BUS:

1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC

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(Continued)

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	7	C01007	ADIRU LEFT AC

(j) Disable the SMYD 2 ONSIDE IR BUS:

Open these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

(k) Make sure that both SMYD1 and SMYD 2 displays show: BUS INACTIVE.

(l) Enable the SMYD 1 ONSIDE IR BUS:

1) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

(m) Enable the SMYD 2 ONSIDE IR BUS:

Close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

(n) Make sure that both SMYD1 and SMYD 2 displays show: BUS ACTIVE.

(o) Push down arrow button.

(p) Make sure that the display shows: OFF SIDE IR BUS?.

(q) Push the YES switch.

(r) Make sure that the display shows: BUS ACTIVE.

(s) Disable the SMYD 1 OFFSIDE IR BUS:

1) Open these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

(t) Disable the SMYD 2 OFFSIDE IR BUS:

Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

(u) Make sure that both SMYD1 and SMYD 2 displays show: BUS INACTIVE.

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(v) Enable the SMYD 1 OFFSIDE IR BUS:

1) Close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

(w) Enable the SMYD 2 OFFSIDE IR BUS:

Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

(x) Push down arrow button.

(y) Make sure that the display shows: ON SIDE ADR BUS?.

(z) Push the YES switch.

(aa) Make sure that the display shows: BUS ACTIVE.

(ab) Disable the SMYD 1 AD BUS:

1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

(ac) Disable the SMYD 2 AD BUS:

Open these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

(ad) Make sure that both SMYD 1 and SMYD 2 displays show: BUS INACTIVE.

(ae) Enable the SMYD 1 AD BUS:

1) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

(af) Enable the SMYD 2 AD BUS:

Close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

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(ag) Make sure that both SMYD 1 and SMYD 2 displays show: BUS ACTIVE.

(ah) Push down arrow button.

(ai) Make sure that the display shows: CDS DEU BUS?.

(aj) Push the YES button.

(ak) Make sure that the display shows: BUS ACTIVE.

(al) Disable the SMYD 1 MDS-GP BUS:

1) Open these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	5	C04023	DISPLAY DPC 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C04022	DISPLAY DPC 1 HOLDUP

(am) Disable the SMYD 2 MDS-GP BUS:

1) Open these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C04024	DISPLAY DPC 2 HOLDUP
D	11	C04025	DISPLAY DPC 2 PRI

(an) Make sure that both SMYD 1 and SMYD 2 displays show: BUS INACTIVE.

(ao) Enable the SMYD 1 MDS-GP BUS:

1) Close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	5	C04023	DISPLAY DPC 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C04022	DISPLAY DPC 1 HOLDUP

(ap) Enable the SMYD 2 MDS-GP BUS:

1) Close these circuit breakers:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C04024	DISPLAY DPC 2 HOLDUP
D	11	C04025	DISPLAY DPC 2 PRI

(aq) Make sure that both SMYD 1 and SMYD 2 displays show: BUS ACTIVE.

(ar) Push down arrow button.

(as) Make sure that the display shows: FMC BUS?.

(at) Push the NO button.

(au) Make sure that the display shows: DFCS MCP BUS?.

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(av) Push the YES button.

(aw) Make sure that the display shows: BUS ACTIVE.

(ax) Disable the AFCS MCP BUS to both SMYD 1 and SMYD 2:

1) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	3	C01047	AFCS MCP DC 2

(ay) Make sure that both SMYD 1 and SMYD 2 displays show: BUS INACTIVE.

(az) Enable the AFCS MCP BUS to both SMYD 1 and SMYD 2:

1) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	3	C01047	AFCS MCP DC 2

(ba) Push down arrow button.

(bb) Make sure that the display shows: CROSS CHANNEL?.

(bc) Push the YES button.

(bd) Make sure that the display shows: BUS ACTIVE.

(be) Disable the SMYD 2 DC Power:

1) Open this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

(bf) Make sure that the display on the SMYD 1 shows: BUS INACTIVE.

(bg) Enable the SMYD 2 DC Power:

1) Close this circuit breaker:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

(bh) Make sure that the display shows: BUS ACTIVE.

(bi) Push the MENU button.

(bj) Make sure that the display shows: “ARINC429 INPUTS?.

(bk) Push the MENU button.

(bl) Make sure that the display shows: GROUND TESTS?.

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(bm) Push down arrow button.

(bn) Make sure that the display shows: OTHER FUNCTNS?.

(bo) Push the YES button.

(bp) Make sure that the display shows: SYSTEM CONFIG?.

(bq) Push down arrow button.

(br) Make sure that the display shows: I/O MONITOR?.

(bs) Push the YES button.

(bt) Make sure that the display shows: ARINC429 INPUTS?.

(bu) Push the YES button.

(bv) Make sure that the display shows: ON SIDE IR BUS?.

(bw) Push down arrow button repeatedly until the display shows: FMC BUS?.

(bx) Push the YES button.

(by) Push down arrow button repeatedly until the FMC label 075 shows.

(bz) Push the YES button.

(ca) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

(cb) Make sure that the display shows: NO DATA.

(cc) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

(cd) Enter the value 43 for kg or 94 for lbs in Line Select Key (LSK) 3L for ZFW (TASK 34-61-00-860-801).

NOTE: After ZFW is entered in LSK 3L, the calculated gross weight will show at LSK 1L.

(ce) Make sure that the value of label 075 is equal to the Gross Weight value displayed at LSK 1L ± 2%.

NOTE: The FMC CDU LSK 1L shows the value in thousands of kg or thousands of pounds, while the SMYD shows the value in pounds. Convert accordingly (1 kg = 2.2 lb).

(cf) Push the MENU button repeatedly until the display shows: OTHER FUNCTIONS?.

(cg) Push the up arrow button.

(ch) Make sure that the display shows: GROUND TESTS?.

(ci) Push the YES button.

(cj) Make sure that the display shows: SELF TEST?.

(ck) Push the down arrow button repeatedly until the display shows: ARINC429 INPUTS?.

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J. SENSOR TEST

SUBTASK 27-32-00-480-001

WARNING MAKE SURE THAT THE AOA SENSORS ARE COOL BEFORE YOU TOUCH THEM. THE AOA SENSORS CAN BE SUFFICIENTLY HOT TO BURN YOU.

(1) Install the angle of attack probe test fixture, SPL-1917, on the left alpha vane.

SUBTASK 27-32-00-740-017

(2) Do this sensor test for SMYD 1:

(a) From the ARINC 429 INPUTS?, push the down arrow button.

NOTE: If running out of sequence, make sure the BITE setup conditions have selected GROUND TESTS? and scrolled down to ARINC 429 INPUTS?.

(b) Make sure that the display shows: ANALOG INPUTS?.

(c) Push the YES button.

(d) Make sure that the display shows: AOA SENSOR?.

(e) Push the YES button.

NOTE: The display will show AOA and a value. Positive angles correspond to the AOA sensor trailing edge above test fixture zero point. Negative angles correspond to the AOA sensor trailing edge below test fixture zero point. The Aerodynamic Offset of each sensor is noted on its trailing edge.

(f) Move the left AOA sensor to minus 35 degrees.

(g) Make sure that the display shows: -35 - Aerodynamic Offset, ± 1 degree.

(h) Move the left AOA sensor to minus 14 degrees.

(i) Make sure that the display shows: -14 - Aerodynamic Offset, ± 1 degree.

(j) Move the left AOA sensor to 0 degrees.

(k) Make sure that the display shows: 0 - Aerodynamic Offset, ± 1 degree.

(l) Move the left AOA sensor to plus 14 degrees.

(m) Make sure that the display shows: 14 - Aerodynamic Offset, ± 1 degree.

(n) Move the left AOA sensor to plus 35 degrees.

(o) Make sure that the display shows: 35 - Aerodynamic Offset, ± 1 degree.

(p) Move the left AOA sensor to 0 degrees.

(q) Push the MENU button.

(r) Make sure that the display shows: AOA SENSOR?.

(s) Push the down arrow button.

(t) Make sure that the display shows: FLAP SENSOR?.

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(u) Pressurize the System B Hydraulic power (TASK 29-00-00-800-802).

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(v) Push the YES button.
(w) Make sure that the display shows: FLAP DET 0.
(x) Move the flaps to the detent 1 position.
(y) Make sure that the display shows: FLAP DET 1.
(z) Move the flaps to the detent 2 position.
(aa) Make sure that the display shows: FLAP DET 2.
(ab) Move the flaps to the detent 5 position.
(ac) Make sure that the display shows: FLAP DET 5.
(ad) Move the flaps to the detent 10 position.
(ae) Make sure that the display shows: FLAP DET 10.
(af) Move the flaps to the detent 15 position.
(ag) Make sure that the display shows: FLAP DET 15.
(ah) Move the flaps to the detent 25 position.
(ai) Make sure that the display shows: FLAP DET 25.
(aj) Move the flaps to the detent 30 position.
(ak) Make sure that the display shows: FLAP DET 30.
(al) Move the flaps to the detent 40 position.
(am) Make sure that the display shows: FLAP DET 40.
(an) Move the flaps to 0 detent.
(ao) Make sure that the display shows: FLAP DET 0.
(ap) Push the MENU button.
(aq) Make sure that the display shows: FLAP SENSOR?.
(ar) Push the MENU button.
(as) Make sure that the display shows: ANALOG INPUTS?.
(at) Push the MENU button.
(au) Make sure that the display shows: ANALOG INPUTS?.
(av) Remove the system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-32-00-080-001

(3) Remove the angle of attack probe test fixture, SPL-1917, from the left alpha vane.

SUBTASK 27-32-00-480-002

WARNING MAKE SURE THAT THE AOA SENSORS ARE COOL BEFORE YOU TOUCH THEM. THE AOA SENSORS CAN BE SUFFICIENTLY HOT TO BURN YOU.

(4) Install the angle of attack probe test fixture, SPL-1917, on the right alpha vane.

SUBTASK 27-32-00-740-018

(5) Do this sensor test for SMYD 2:

(a) From the ARINC 429 INPUTS?, push the down arrow button.

NOTE: If done out of sequence, make sure the BITE setup conditions have selected GROUND TESTS? and scrolled down to ARINC 429 INPUTS?.

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(b) Make sure that the display shows: ANALOG INPUTS?.

(c) Push the YES button.

(d) Make sure that the display shows: AOA SENSOR?.

(e) Push the YES button.

NOTE: The display will show AOA and a value. Positive angles correspond to the AOA sensor trailing edge above test fixture zero point. Negative angles correspond to the AOA sensor trailing edge below test fixture zero point. The Aerodynamic Offset of each sensor is noted on its trailing edge.

(f) Move the right AOA sensor to minus 35 degrees.

(g) Make sure that the display shows: -35 + Aerodynamic Offset, ± 1 degree.

(h) Move the right AOA sensor to minus 14 degrees.

(i) Make sure that the display shows: -14 + Aerodynamic Offset, ± 1 degree.

(j) Move the right AOA sensor to 0 degrees.

(k) Make sure that the display shows: 0 + Aerodynamic Offset, ± 1 degree.

(l) Move the right AOA sensor to plus 14 degrees.

(m) Make sure that the display shows: 14 + Aerodynamic Offset, ± 1 degree.

(n) Move the right AOA sensor to plus 35 degrees.

(o) Make sure that the display shows: 35 + Aerodynamic Offset, ± 1 degree.

(p) Move the right AOA sensor to 0 degrees.

(q) Push the MENU button.

(r) Make sure that the display shows: AOA SENSOR?.

(s) Push the down arrow button.

(t) Make sure that the display shows: FLAP SENSOR?.

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(u) Pressurize the System B Hydraulic power (TASK 29-00-00-800-802).

(v) Push the YES button.

(w) Make sure that the display shows: FLAP DET 0.

(x) Move the flaps to the detent 1 position.

(y) Make sure that the display shows: FLAP DET 1.

(z) Move the flaps to the detent 2 position.

(aa) Make sure that the display shows: FLAP DET 2.

(ab) Move the flaps to the detent 5 position.

(ac) Make sure that the display shows: FLAP DET 5.

(ad) Move the flaps to the detent 10 position.

(ae) Make sure that the display shows: FLAP DET 10.

(af) Move the flaps to the detent 15 position.

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(ag) Make sure that the display shows: FLAP DET 15.

(ah) Move the flaps to the detent 25 position.

(ai) Make sure that the display shows: FLAP DET 25.

(aj) Move the flaps to the detent 30 position.

(ak) Make sure that the display shows: FLAP DET 30.

(al) Move the flaps to the detent 40 position.

(am) Make sure that the display shows: FLAP DET 40.

(an) Move the flaps to the detent 0 position.

(ao) Make sure that the display shows: FLAP DET 0.

(ap) Push the MENU button.

(aq) Make sure that the display shows: FLAP SENSOR?.

(ar) Remove the system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-32-00-080-002

(6) Remove the angle of attack probe test fixture, SPL-1917, from the right alpha vane.

SUBTASK 27-32-00-860-016

(7) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

K. SERVO TEST

NOTE: The SERVO TEST can be run from SMYD 1 and SMYD 2. Do the steps below for either SMYD.

SUBTASK 27-32-00-740-019

(1) Do this servo test for SMYD 1:

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the System B Hydraulic power (TASK 29-00-00-800-802).

1) Make sure that the FLT CONTROL A and FLT CONTROL B switches, on the flight controls panel, are both in the ON position before continuing.

2) Make sure that the SPOILER A and SPOILER B switches are both in the ON position before continuing.

(b) Make sure that the display shows: GROUND TEST?.

(c) Push the YES button.

(d) Push the down arrow button until SERVO TEST? is shown on the display.

NOTE: A series of warning message will show.

(e) Push the YES button.

(f) Make sure that the display shows these messages in this sequence:

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- WARNING! WARNING!
- RUDDER MOVEMENT
- RUDDER CLEARED?

(g) Push the YES button.

(h) Make sure that the display shows: SYS B HYD ON?.

(i) Make sure that the Hydraulic B is on.

(j) Push the YES button.

NOTE: If NO is pushed, then TURN ON HYD B will show on the display.

(k) Make sure that the display shows: FLT CTRL B ON.

(l) Make sure that the Flight Control B switch is set to the ON position.

(m) Push the YES button.

NOTE: If NO is pushed, then FLT CTRL B TO ON will show on the display.

(n) Make sure that the display shows: YAW DMPR ENGAGED?.

(o) Put the Yaw Damper engage switch to the ON position.

(p) Push the YES button.

NOTE: If NO is pushed, the display will show ENGAGE YAW DMPR.

(q) Make sure that the display shows: ZERO COMMAND?.

NOTE: During this test the SMYD will initiate a zero rudder command.

(r) Push the YES button.

(s) Make sure that the display shows these messages in this sequence:

NOTE: There will be approximately a 10 second delay between messages.

- RUDDER MOVING
- YD cmd value (where the value is 0.0 ± 0.2)
- YD LVDT value (where the value is 0.0 ± 0.2)
- END ZERO COMMAND?

(t) Push the YES button.

(u) Make sure that the display shows these messages in this sequence:

- RUDDER MOVING
- TEST EXITING
- ZERO COMMAND?

(v) Push the down arrow button.

(w) Make sure that the display shows: SWEEP TEST?.

(x) Push the ON/OFF button on the BITE panel of the SMYD 2.

(y) Push the down arrow button repeatedly until the display shows: OTHER FUNCTNS? on the SMYD 2.

(z) Push the YES button on the SMYD 2.

(aa) Push the down arrow button repeatedly until the display shows: I/O MONITOR on the SMYD 2.

(ab) Push the YES button on the SMYD 2.

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(ac) Push the down arrow button repeatedly until the display shows: OTHER DATA on the SMYD 2.

(ad) Push the YES button on the SMYD 2.

(ae) Push the down arrow button repeatedly until the display shows: WORD 151? on the SMYD 2.

(af) Push the YES button on the SMYD 2.

(ag) Make sure that the display shows: (value) degree (where the value is a number that can be disregarded).

(ah) Push the YES button on the SMYD 1.

(ai) Make sure that the display shows these messages in this sequence:

NOTE: There will be approximately a 2 second or a 10 second delay between messages.

NOTE: During this test the SMYD will initiate a left rudder command, then right rudder command and then zero rudder command. If test passes, the message TEST PASSED will show.

1) Monitor the SMYD 2 display during the test.

NOTE: The value shown on the SMYD 2 will change to a number similar to the LVDT value on the SMYD 1.

- RUD CMD LEFT
- YD LVDT value (where the value is a number that can be disregarded)
- RUD CMD RIGHT
- YD LVDT value (where the value is a number that can be disregarded)
- RUD CMD ZERO
- YD LVDT value (where the value is a number that can be disregarded)
- TEST PASSED.

(aj) Put the Flight Control B switch to the OFF position.

(ak) Make sure that the Yaw Damper engage switch disengages.

(al) Make sure that the YAW DAMPER light, on the P5-3 overhead panel, comes on.

(am) Put the Flight Control A switch to the ON position.

(an) Put the Flight Control A switch to the Standby Rudder position.

(ao) Put the Yaw Damper engage switch to the ON position.

(ap) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

(aq) Make sure that the Yaw Damper engage switch disengages.

(ar) Push the ON/OFF button on BITE panel on the face of SMYD 2 and SMYD 1.

(as) Make sure that the display shows: TURN OFF DISPLAY?.

(at) Push the YES button on the two panels.

(au) If the test failed, TEST FAILED will show followed by a message for the first fault.

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1) To isolate the fault, go to the IFIM and do the applicable procedure(s).

(av) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

(aw) Remove the system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-32-00-740-020

(2) Do this servo test for SMYD 2:

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the System B Hydraulic power (TASK 29-00-00-800-802).

(b) Make sure that the display shows: GROUND TESTS?.

(c) Push the YES button.

(d) Push the down arrow button until SERVO TEST? is shown on the display.

NOTE: A series of warning message will show.

(e) Push the YES button.

(f) Make sure that the display shows these messages in this sequence:

- WARNING! WARNING!
- RUDDER MOVEMENT
- RUDDER CLEARED?

(g) Push the YES button.

(h) Make sure that the display shows: FLT CTRL A STBY?.

(i) Make sure that the Flight Control A switch is set to the Standby position.

(j) Push the YES button.

NOTE: If NO is pushed, then FLT CTRL A TO STBY will show on the display.

(k) Make sure that the display shows: FLT CTRL B STBY?.

(l) Make sure that the Flight Control B switch is set to the Standby position.

(m) Push the YES button.

NOTE: If NO is pushed, then FLT CTRL B TO STBY will show on the display.

(n) Make sure that the display shows: YAW DMPR ENGAGED?.

(o) Put the Yaw DMPR engage switch to on.

(p) Push the YES button.

NOTE: If NO is pushed, then ENGAGE YAW DMPR will show on the display.

(q) Make sure that the display shows: ZERO COMMAND?.

NOTE: During this test the SMYD will initiate a zero rudder command.

(r) Push the YES button.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(s) Make sure that the display shows these messages in this sequence:

NOTE: There will be approximately a 10 second delay between messages.

- RUDDER MOVING
- YD cmd value (where the value is 0.0 ± 0.2)
- YD LVDT value" (where the value is 0.0 ± 0.2)
- END ZERO COMMAND?

(t) Push the YES button.

(u) Make sure that the display shows these messages in this sequence:

- RUDDER MOVING
- TEST EXITING
- ZERO COMMAND?

(v) Push the down arrow button.

(w) Make sure that the display shows: SWEEP TEST?.

(x) Push the ON/OFF button on the BITE panel of SMYD 1.

(y) Push the down arrow button repeatedly until the display shows: OTHER FUNCTNS? on the SMYD 1.

(z) Push the YES button on the SMYD 1.

(aa) Push the down arrow button repeatedly until the display shows: I/O MONITOR on the SMYD 1.

(ab) Push the YES button on the SMYD 1.

(ac) Push the down arrow button repeatedly until the display shows: OTHER DATA on the SMYD 1.

(ad) Push the YES button on the SMYD 1.

(ae) Push the down arrow button repeatedly until the display shows: WORD 151? on the SMYD 1.

(af) Push the YES button on the SMYD 1.

(ag) Make sure the display shows: (value) degree (where the value is a number that can be disregarded).

(ah) Push the YES button on the SMYD 2.

(ai) Make sure that the display shows these messages in this sequence:

NOTE: There will be approximately a 2 second or a 10 second delay between messages.

NOTE: During this test the SMYD will initiate a left rudder command, then right rudder command and then zero rudder command. If test passes, the message TEST PASSED will show.

1) Monitor the SMYD 1 display during the test.

NOTE: The value shown on SMYD 1 will change to a number similar to the LVDT value on SMYD 2.

- RUD CMD LEFT
- YD LVDT value (where the value is a number that can be disregarded)
- RUD CMD RIGHT

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- YD LVDT value (where the value is a number that can be disregarded)
- RUD CMD ZERO
- YD LVDT value (where the value is a number that can be disregarded)
- TEST PASSED.

(aj) Put the Flight Control A switch to the ON position.

(ak) Make sure that the Yaw Damper engage switch disengages.

(al) Make sure that the YAW DAMPER light, on the P5-3 overhead panel, comes on.

(am) Put the Flight Control A switch to the Standby Rudder position.

(an) Put the Yaw Damper engage switch to the ON position.

(ao) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

(ap) Make sure that the Yaw Damper engage switch disengages.

(aq) Push the ON/OFF button on BITE panel on the face of SMYD 2 and SMYD 1.

(ar) Make sure that the display shows: TURN OFF DISPLAY?.

(as) Push the YES button on the two panels.

(at) If the test failed, TEST FAILED shows followed by a message for the first fault.

1) To isolate the fault, go to the IFIM and do the applicable procedure(s).

(au) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

(av) Remove the system B hydraulic power (TASK 29-11-00-860-805).

L. DISPLAY TEST

SUBTASK 27-32-00-740-023

(1) Push the ON/OFF switch to turn on the BITE display.

SUBTASK 27-32-00-740-024

(2) Push the down arrow until GROUND TESTS? shows on the display.

SUBTASK 27-32-00-740-025

(3) Push the YES button to select GROUND TESTS? on the SMYD.

SUBTASK 27-32-00-740-026

(4) Push the down arrow until DISPLAY TEST? shows on the display.

SUBTASK 27-32-00-740-027

(5) Push the YES button to select DISPLAY TEST? on the SMYD.

SUBTASK 27-32-00-740-028

(6) It is necessary to watch the SMYD display during this test.

SUBTASK 27-32-00-740-029

(7) Make sure that all pixels on the display come on during the test.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

M. INPUT SIGNAL INTEGRITY TEST

SUBTASK 27-32-00-740-015

(1) Push the MENU switch to show GROUND TESTS?

(a) Push the down arrow to display OTHER FUNCTNS?

(b) Push the YES switch.

(c) Push the down arrow to display I/O MONITOR?

(d) Push the YES switch to display ARINC429 INPUTS?

(e) Push the YES switch.

(f) Push the down arrow until CDS DEU BUS? shows.

(g) Push the YES switch to show WORD 017?

NOTE: Skip the next three steps if WORD 017? does not show.

(h) Push the YES switch.

(i) Make sure that these SMYD BITE readout values show:

1) Between -39 and -29 when the speedbrake lever is in the FLIGHT DETENT position.

2) Between -3 and +3 when the speedbrake lever is in the DOWN position.

(j) Push the MENU switch.

(k) Push the down arrow until WORD 352? shows.

(l) Push the YES switch until BIT 27 shows.

(m) Make sure that the SMYD BITE readout values show:

1) 1, when the WING ANTI-ICE switch, on the P5 forward overhead panel, is in the ON position.

2) 0, when the WING ANTI-ICE switch, on the P5 forward overhead panel, is in the OFF position.

N. Put the Airplane Back to Its Usual Condition

SUBTASK 27-32-00-860-012

(1) Push the ON/OFF switch to turn the SMYD BITE display off.

SUBTASK 27-32-00-410-003

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-32-00-860-014

(3) Set the GND TESTS switch, on the P61-4 panel, to the NORM position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STALL WARNING TEST MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the stall warning test module

(2) Installation of the stall warning test module.

TASK 27-32-21-000-801

2. Stall Warning Test Module Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-32-21-860-001

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

C. Stall Warning Test Module Removal

SUBTASK 27-32-21-020-001

(1) Remove the stall warning test module [1]:

(a) Hold the stall warning test module [1].

(b) Release the quarter turn fasteners [2] which attach the stall warning test module [1] to the aft overhead panel.

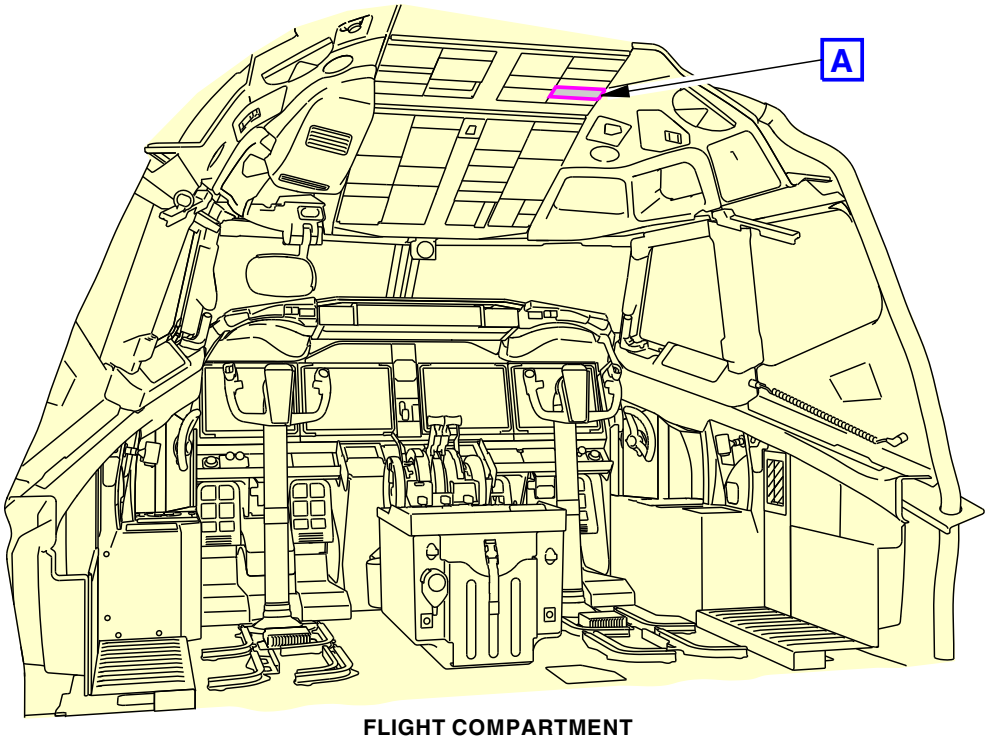
(c) Lower the stall warning test module [1] from the aft overhead panel.

(d) Disconnect the electrical connectors [3] from the back of the stall warning test module [1].

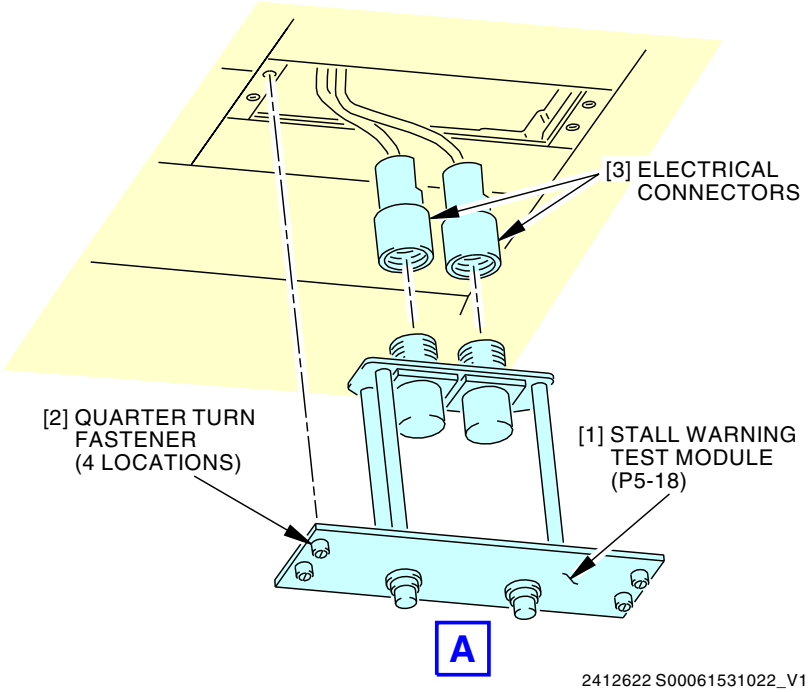
(e) Remove the stall warning test module [1].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



Stall Warning Test Module Installation
Figure 401/27-32-21-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-32-21-400-801

3. Stall Warning Test Module Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-803	Supply External Power (P/B 201)

B. Stall Warning Test Module Installation

SUBTASK 27-32-21-420-001

(1) Connect the electrical connectors [3] to the stall warning test module [1].

SUBTASK 27-32-21-420-002

(2) Install the stall warning test module [1] in the aft overhead panel.

SUBTASK 27-32-21-410-001

(3) Tighten the quarter turn fasteners [2].

SUBTASK 27-32-21-860-002

(4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

C. Stall Warning Test Module Installation Test

SUBTASK 27-32-21-860-003

(1) Do this task: Supply External Power, TASK 24-22-00-860-803.

SUBTASK 27-32-21-860-004

(2) Push and hold the STALL WARNING TEST NO. 1 switch on the module.

NOTE: The amber SPD LIM light on the on-side Primary Flight Display will come on. A YAW DAMPER light on the P5-3 panel with a related MASTER CAUTION light is possible. A SPD LIM annunciation that stays on more than 5 seconds after the stick shaker operates could be a problem.

(a) Make sure that the captain's control column shaker operates.

SUBTASK 27-32-21-860-005

(3) Release the STALL WARNING TEST NO. 1 switch.

(a) Make sure that the shaker stops.

SUBTASK 27-32-21-860-006

(4) Push and hold the STALL WARNING TEST NO. 2 switch on the module.

(a) Make sure that the first officer's control column shaker operates.

SUBTASK 27-32-21-860-007

(5) Release the STALL WARNING TEST NO. 2 switch.

(a) Make sure that the shaker stops.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONTROL COLUMN SHAKER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the control column shaker

(2) Installation of the control column shaker.

B. There are two Control Column Shakers.

C. The procedure for the removal and installation of the two Control Column Shakers are the same.

TASK 27-32-31-000-801

2. Control Column Shaker Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-32-31-860-001

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

C. Control Column Shaker Removal

SUBTASK 27-32-31-020-001

(1) Disconnect the electrical connector from the stick shaker [1].

SUBTASK 27-32-31-020-002

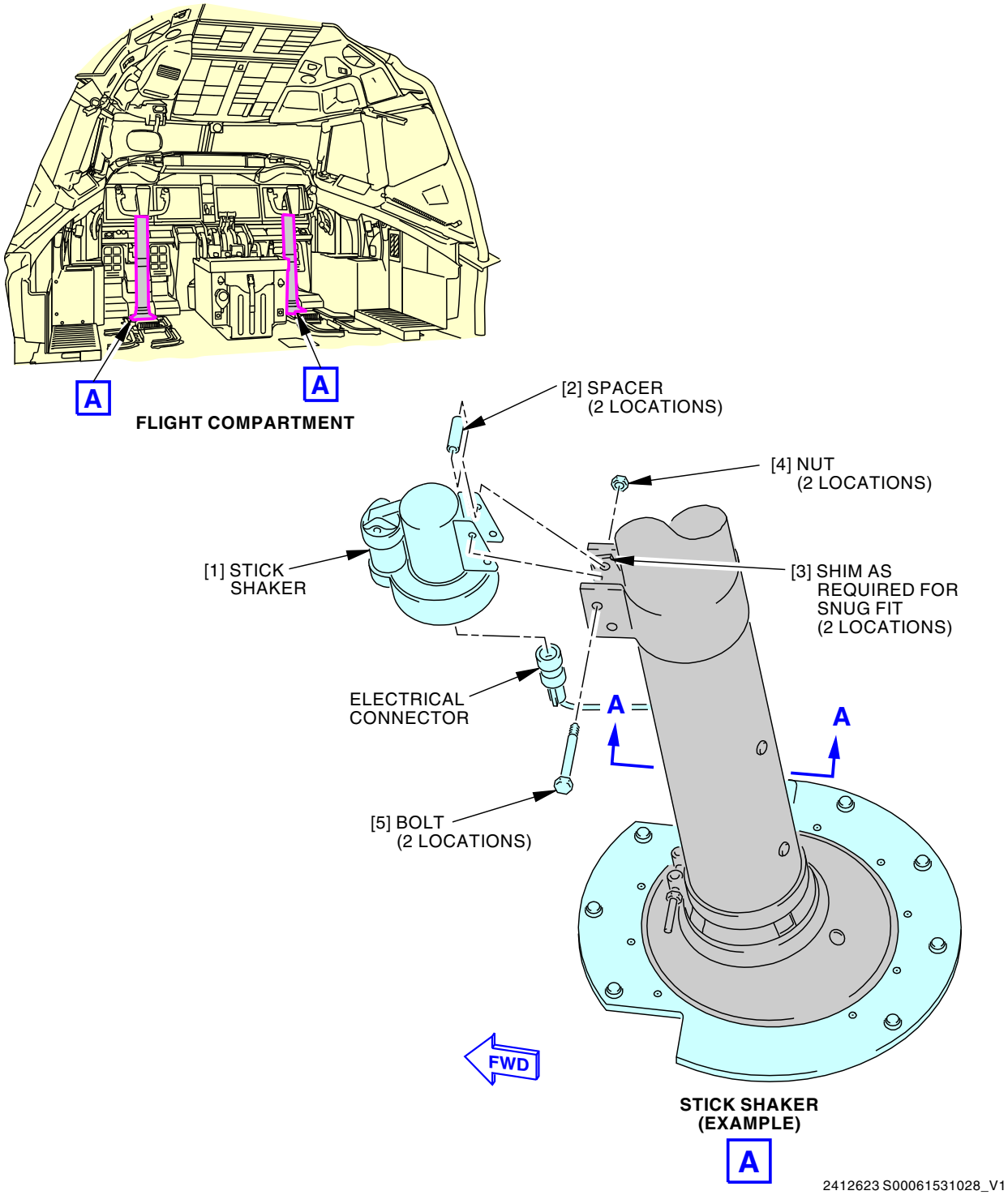
(2) Remove the two nuts [4], two bolts [5], two shims [3], and two spacers [2] which attach the stick shaker [1] to the strap on the control column.

SUBTASK 27-32-31-020-003

(3) Remove the stick shaker [1] from the control column.

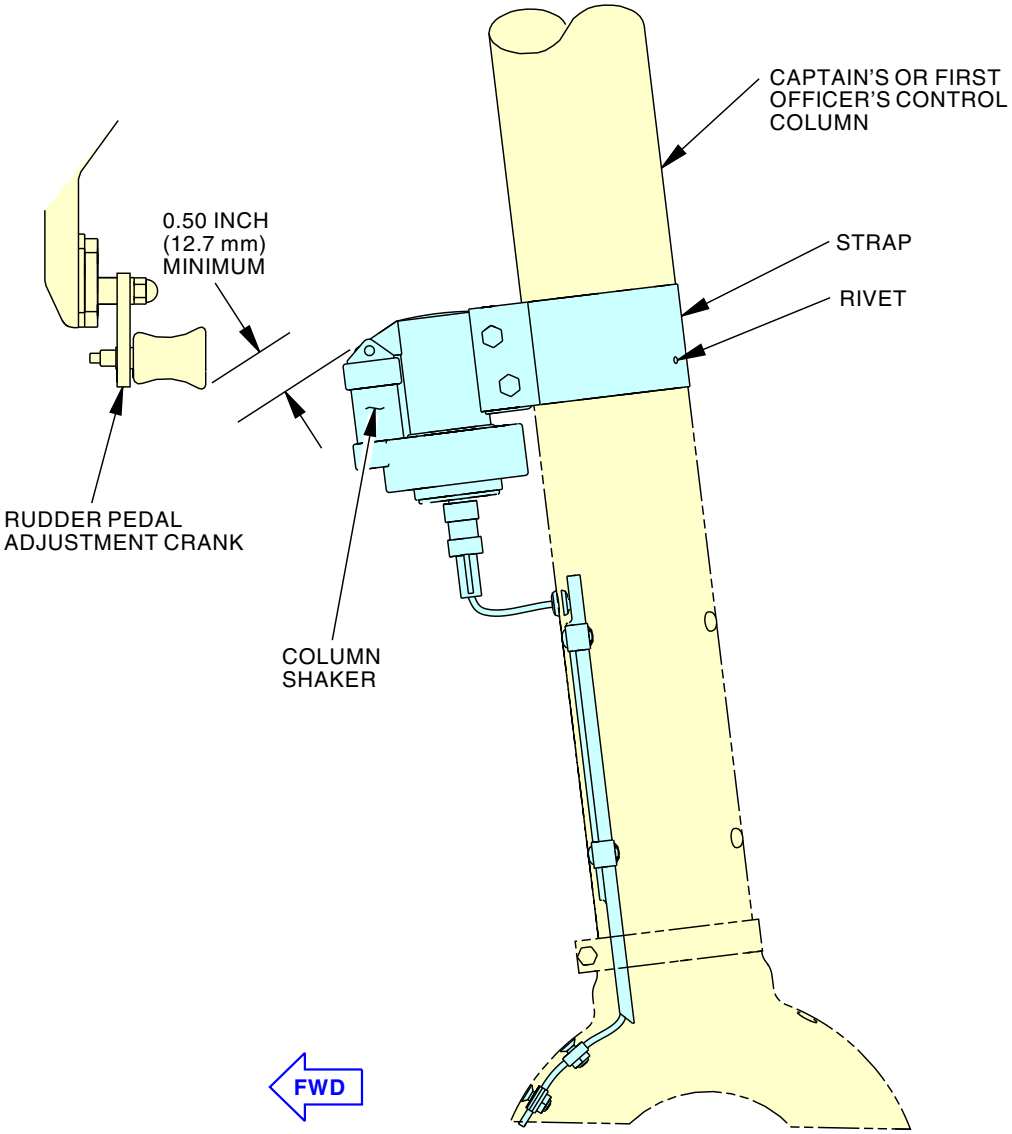
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Column Shaker Installation
Figure 401/27-32-31-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A

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Control Column Shaker Installation
Figure 401/27-32-31-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-32-31-400-801

3. Control Column Shaker Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Stick shaker	27-32-31-01-065	SIA ALL

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Control Column Shaker Installation

SUBTASK 27-32-31-420-001

(1) Attach the stick shaker [1] to the strap on the control column with the bolts [5], nuts [4], shims [3], and spacers [2].

(a) Make sure that the strap is attached to the control column with the rivet.

1) If necessary, slide the strap up and down along the control column to make sure that the strap rivet is aligned into the column hole.

(b) Make sure that there is a minimum of 0.50 inch clearance between the shaker and the rudder pedal adjustment crank.

SUBTASK 27-32-31-420-002

(2) Tighten the bolts [5] to 20 in-lb (2.3 N·m) - 25 in-lb (2.8 N·m).

SUBTASK 27-32-31-420-003

(3) Add or remove shims [3] as necessary between the stick shaker [1] and strap to get a snug fit.

SUBTASK 27-32-31-420-004

(4) Connect the electrical connector to the stick shaker [1]..

SUBTASK 27-32-31-860-002

(5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

D. Control Column Shaker Installation Test

SUBTASK 27-32-31-710-001

(1) Do a check of the stick shaker [1]:

(a) Push and hold the STALL WARNING TEST NO. 1 switch (for the Captain's shaker) on the P5-18 panel.

(b) Make sure that the Captain's stick shaker [1] operates.

(c) Release the STALL WARNING TEST NO. 1 switch.

(d) Make sure that the Captain's stick shaker [1] stops.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Push and hold the STALL WARNING TEST NO. 2 switch (for the First Officer's shaker) on the P5-18 panel.

(f) Make sure that the First Officer's stick shaker [1] operates.

(g) Release the STALL WARNING TEST NO. 2 switch.

(h) Make sure that the First Officer's stick shaker [1] stops.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STALL MANAGEMENT YAW DAMPER (SMYD) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the Stall Management Yaw Damper (SMYD)

(2) Installation of the Stall Management Yaw Damper (SMYD).

B. There are two Stall Management Yaw Damper (SMYD).

C. The two SMYD are located in the Electrical and Electronics Compartment.

D. The procedure for the removal and installation of the two SMYDs are the same.

TASK 27-32-42-000-801

2. Stall Management Yaw Damper (SMYD) Removal

(Figure 401)

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 401)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Removal

SUBTASK 27-32-42-860-001

(1) To remove the No. 1 Stall Management Yaw Damper (SMYD), do this step:

(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	7	C00286	YAW DAMPER 1 DC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-32-42-860-002

(2) To remove the No. 2 SMYD, do this step:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	6	C01354	YAW DAMPER 2 DC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

SUBTASK 27-32-42-010-001

(3) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Stall Management Yaw Damper (SMYD) Removal

SUBTASK 27-32-42-910-001

CAUTION DO NOT TOUCH THE SMYD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE SMYD.

(1) Do the necessary steps to protect the SMYD from electrostatic discharge (TASK 20-40-12-000-802).

SUBTASK 27-32-42-020-001

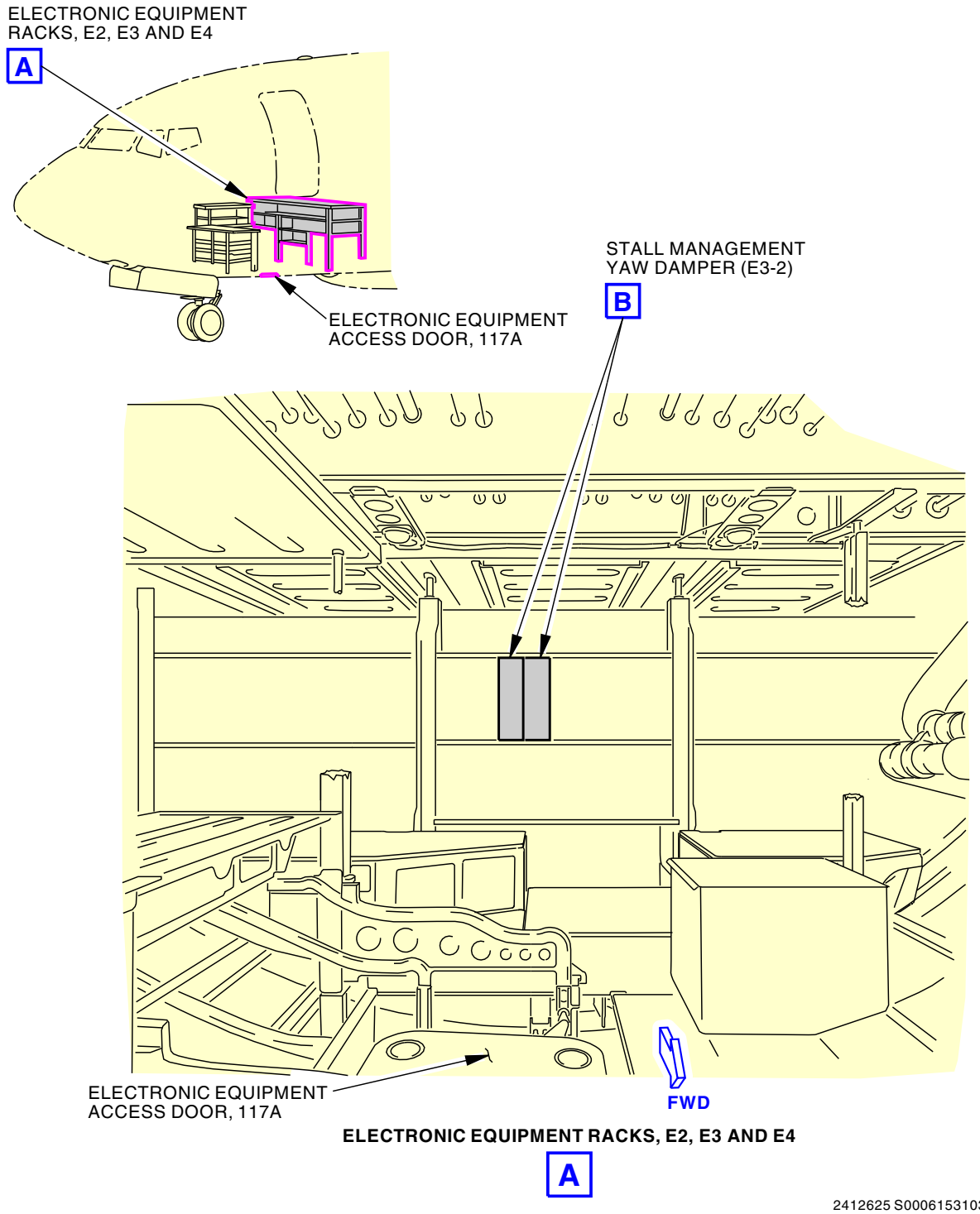
(2) Remove the SMYD (TASK 20-10-07-000-801).

SUBTASK 27-32-42-420-004

(3) Install conductive or antistatic caps on the connectors.

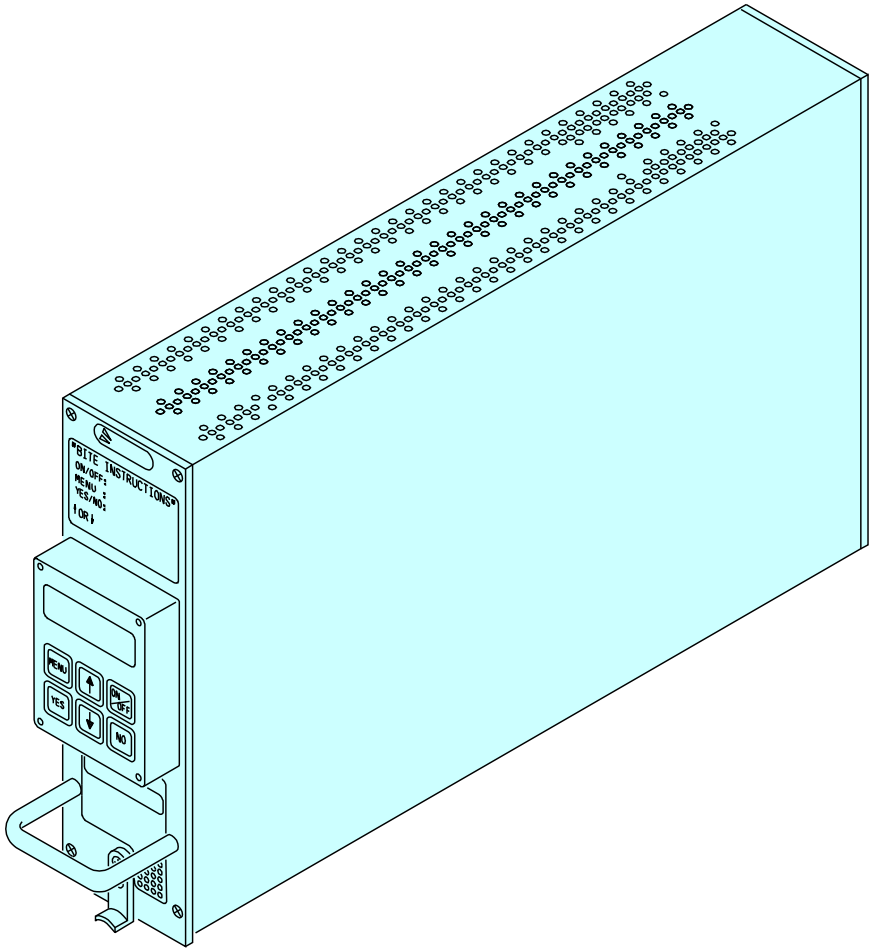
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stall Management Yaw Damper Installation
Figure 401/27-32-42-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STALL MANAGEMENT YAW DAMPER (EXAMPLE)

B

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Stall Management Yaw Damper Installation
Figure 401/27-32-42-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-32-42-400-801

3. Stall Management Yaw Damper (SMYD) Installation

(Figure 401)

A. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 401)
27-32-00-740-803	Stall Management Yaw Damper (SMYD) BITE Test (P/B 501)
34-21-03-400-801	IRS Mode Select Unit Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Stall management yaw damper (SMYD)	27-32-42-01-010	SIA 001-007
		27-32-42-01-050	SIA 008-999

C. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Stall Management Yaw Damper (SMYD) Installation

SUBTASK 27-32-42-910-002

CAUTION

DO NOT TOUCH THE SMYD BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE SMYD.

(1) Do the necessary steps to protect the stall management yaw damper (SMYD) [1] from electrostatic discharge.

SUBTASK 27-32-42-420-003

(2) Install the stall management yaw damper (SMYD) [1] (TASK 20-10-07-400-801).

F. Stall Management Yaw Damper Module Installation Test

SUBTASK 27-32-42-860-009

(1) Make sure that the Inertial Reference Unit (IRU) is operating (TASK 34-21-03-400-801).

SUBTASK 27-32-42-860-010

(2) For the applicable SMYD, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

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CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-32-42-740-016

(3) Do the BITE test for the stall management yaw damper (SMYD) [1], do the applicable steps in this task: Stall Management Yaw Damper (SMYD) BITE Test, TASK 27-32-00-740-803.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-32-42-410-001

(1) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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HORIZONTAL STABILIZER TRIM CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Horizontal Stabilizer Trim Control System - Deactivation

(2) Horizontal Stabilizer Trim Control System - Activation

TASK 27-41-00-800-801

2. Horizontal Stabilizer Trim Control System - Deactivation

A. General

(1) This task will deactivate the Horizontal Stabilizer Trim Control System.

B. References

Reference	Title
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

E. Procedure

SUBTASK 27-41-00-860-001

(1) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-41-00-860-002

(2) Set the STAB TRIM PRI switch, S272, on the aft of the control stand to the CUTOUT position.

SUBTASK 27-41-00-860-003

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

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F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-860-004

(4) Open the following circuit breaker (if installed):

(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	15	C00644	EXTERIOR LIGHTING LOGO ILLUM

SUBTASK 27-41-00-860-005

(5) If necessary, use the stabilizer trim wheel on the control stand to set the horizontal stabilizer at zero degrees (4 units of trim).

SUBTASK 27-41-00-480-001

(6) Install the lock, SPL-1672 on the stabilizer trim wheel at the control stand (Figure 201):

(a) Turn the trim wheel to put the handle at the top of the wheel.

(b) Adjust the height of the trim lock to put the trim wheel handle correctly on the yoke.

(c) Install the pin through the yoke.

(d) Install the safety pin.

F. Horizontal Stabilizer Trim Control System - Tryout

NOTE: This tryout is to make sure that the Horizontal Stabilizer Trim Control System is in zero state.

SUBTASK 27-41-00-210-001

(1) Make sure that the lock, SPL-1672 is installed on the stabilizer trim wheel at the control stand (Figure 201).

SUBTASK 27-41-00-210-002

(2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-210-003

(3) Open the following circuit breaker (if installed):

(a) Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	15	C00644	EXTERIOR LIGHTING LOGO ILLUM

END OF TASK

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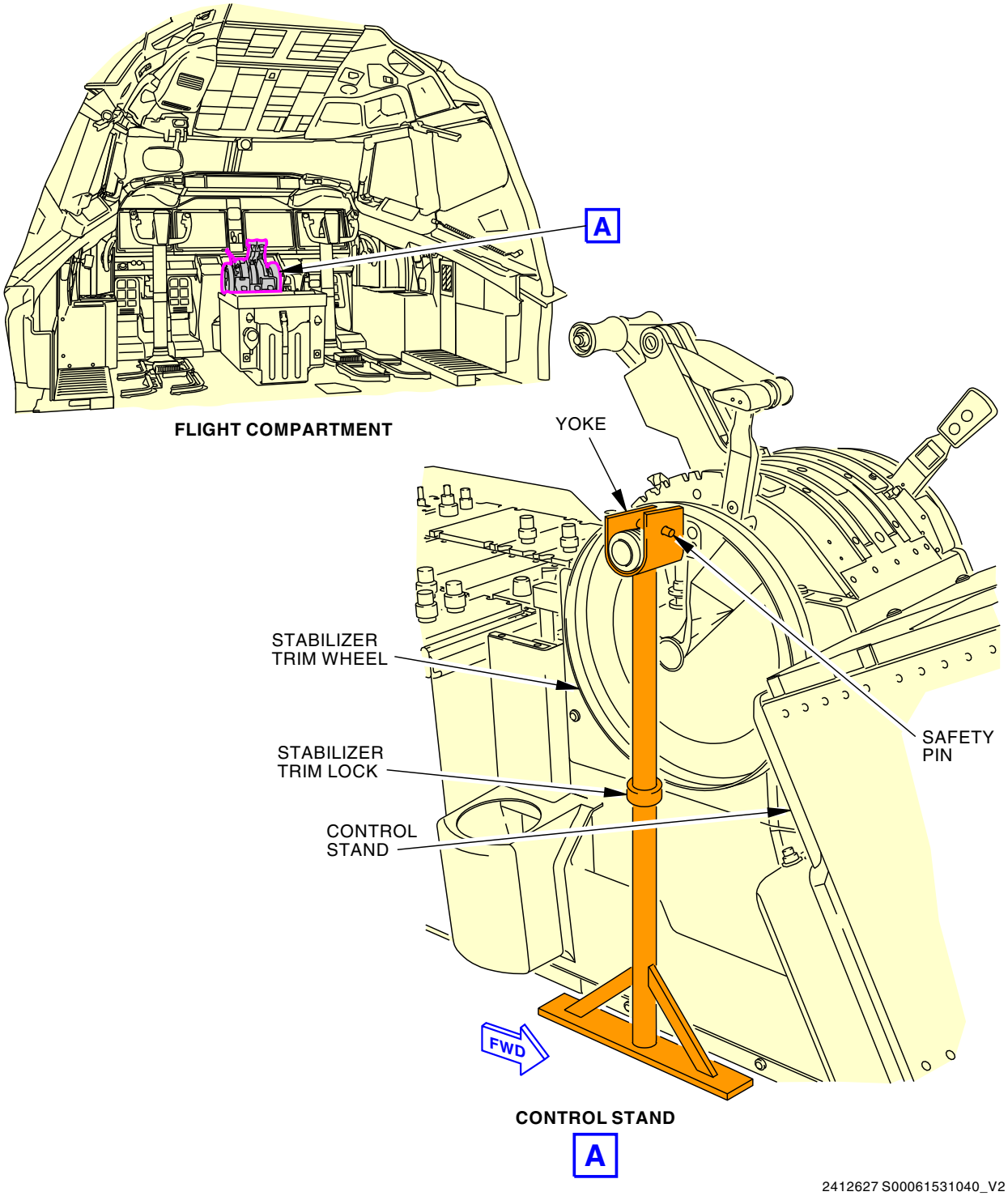

Stabilizer Trim Lock Installation
Figure 201/27-41-00-990-801

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TASK 27-41-00-800-802

3. Horizontal Stabilizer Trim Control System - Activation

A. General

(1) This task will activate the Horizontal Stabilizer Trim Control System.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

E. Procedure

SUBTASK 27-41-00-080-001

(1) Remove the lock, SPL-1672 from the stabilizer trim wheel at the control stand (Figure 201).

SUBTASK 27-41-00-860-006

(2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-41-00-860-007

(3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-860-008

(4) Close the following circuit breaker (if installed):

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(a) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	15	C00644	EXTERIOR LIGHTING LOGO ILLUM

SUBTASK 27-41-00-860-009

(5) Set the STAB TRIM PRI switch, S272, on the aft of the control stand to the NORMAL position.

SUBTASK 27-41-00-210-004

(6) Use the stabilizer trim wheel to make sure that the horizontal stabilizer operates through full travel between the stops.

——— END OF TASK ———

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HORIZONTAL STABILIZER TRIM CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Stabilizer Control Cable and Chain Adjustment - Use this task to adjust the horizontal stabilizer control cables and chain.

(2) Stabilizer Manual Trim and Trim Indicator Test - Use this test to make sure the horizontal stabilizer moves to the correct position when it is operated from the stabilizer trim wheel. This test also makes sure that the stabilizer trim indicator operates correctly.

(3) Horizontal Stabilizer Trim Control System Friction Test - Use this test to check the force to operate the horizontal stabilizer.

(4) Stabilizer Electric Trim System Test - Use this test to make sure the horizontal stabilizer moves at the correct speed when it is operated from the STAB TRIM switches.

(5) Stabilizer Trim Wheel Free Movement Test - Use this test to test the amount of horizontal stabilizer movement after the STAB TRIM switches are released.

(6) Stabilizer Trim Limit Switches Test - Use this test to make sure the stabilizer trim limit switches operate correctly.

(7) Stabilizer Clutch Friction System Test - Use this test to make sure that the correct force will disconnect the manual clutch.

(8) Column Actuated Stabilizer Trim Cutout Switch Override Test - Use this test to make sure the horizontal stabilizer follows the commands from the STAB TRIM switches, even though the column actuated STAB TRIM cutout switches give the opposite command.

(9) Stabilizer Trim Secondary Brake System Test - Use this test to make sure the stabilizer secondary brake can prevent movement of the horizontal stabilizer.

(10) Stabilizer Trim Cutout Test - Use this procedure to make sure the stabilizer trim cutout switch operates correctly. The stabilizer trim cutout switch stops the horizontal stabilizer when the control column command is opposite from the STAB TRIM switches.

(11) Column Cutout Switches Test - Use this test to make sure the captain's and first officer's column cutout switches operate correctly.

TASK 27-41-00-820-801

2. Stabilizer Control Cable and Chain - Adjustment

(Figure 501)

A. General

(1) Use this task to adjust the horizontal stabilizer control cables and chain.

(2) Before the cable adjustment is done, permit a minimum of one hour at a constant ambient temperature of ± 5°F (± 2.8°C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

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(d) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to: Control Cable Grades and Diameters/Table 27-11-00-993-802.

(e) It is recommended that cable assemblies on each side of a cable loop be replaced at the same time using the same cable grade material in order to minimize asymmetric relaxation.

(3) Before the cable adjustment is done, allow the tensiometer to stabilize to the same temperature as the airplane.

(4) If the cables need to be replaced, do this task: Stabilizer Control Cable Removal, TASK 27-41-82-000-801.

B. References

Reference	Title
27-11-00-993-802	Table: Control Cable Grades and Diameters (P/B 501)
27-41-82-000-801	Stabilizer Control Cable Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-10319	Wrench - Pinion Gear (Rotate) Part #: F71252 Supplier: 81205 Part #: F71267 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

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E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

G. Prepare for the Adjustment

SUBTASK 27-41-00-010-001

(1) Open these access panels:

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-00-020-001

WARNING

DO NOT OPERATE THE STABILIZER ELECTRICALLY UNTIL YOU ADJUST THE STABILIZER TRIM LIMIT SWITCHES, CABLES, AND CHAIN. THE HORIZONTAL STABILIZER CAN MOVE QUICKLY WHEN YOU OPERATE THE STABILIZER TRIM LIMIT SWITCHES. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Disconnect the flexible shaft [8] from the stabilizer forward control mechanism.

SUBTASK 27-41-00-020-002

(3) Remove the pins [14] from the connector link [13] to disconnect the chain [10].

SUBTASK 27-41-00-020-003

(4) To remove the upper turnbuckle [2], do these steps:

(a) Remove the lockwire from the upper turnbuckle [2].

(b) Remove the nut [6], washer [5], washer [4], and bolt [3].

(c) Remove the nut [17], washer [19], bushing [21], washer [22], washer [23], washer [24], and bolt [25].

(d) Remove the upper turnbuckle [2].

SUBTASK 27-41-00-820-001

(5) If the new cables are installed, adjust the lower turnbuckle [9] on the stabilizer forward mechanism to its maximum length 0.50 in. (12.7 mm) minimum thread engagement on each rod end.

NOTE: This will move the forward drum aft.

H. Stabilizer Control Cable and Chain Adjustment

SUBTASK 27-41-00-710-001

(1) Adjust the tension of the cable STA and cable STB.

NOTE: It is necessary to use the pinion gear wrench, SPL-10319, to operate the stabilizer system.

NOTE: You will need to use the control wheel switches to move the stabilizer since the stab trim control wheel chain has been disconnected.

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(a) If the new cables are installed, do these steps to stretch the cables:

NOTE: If the tension is adjusted on existing cables (cables that were already on the aircraft), do not need to do these steps. Go to the steps to adjust the cable STA and cable STB to their correct rigging tension.

1) Adjust the lower turnbuckle [9] to get the cable tension of 350 ±50 lbf (1557 ±223 N).
   a) Operate the stabilizer system through a full cycle.
   b) Put the cables at the center of the forward cable drum.
   c) Tighten the lower turnbuckle [9].
   d) Use the high tension cable tensiometer, COM-1554, to make sure that the cable tension is at 350 ±50 lbf (1557 ±223 N).
   e) Operate the stabilizer system through a full cycle.
   f) Put the cables at the center of the forward cable drum.
   g) Make sure that the cable tension stays at 350 ±50 lbf (1557 ±223 N).
   h) Operate the stabilizer system through 5 full cycles.
   i) Make sure that the cable tension stays at 350 ±50 lbf (1557 ±223 N).

(b) Do these steps to adjust cable STA and cable STB to the correct rigging tension:

1) Operate the stabilizer system through a full cycle.
2) Put the cables at the center of the forward cable drum.
3) Adjust the lower turnbuckle [9] to get the cable rigging tension (Table 501).

NOTE: Adjust the tensions close to the maximum values in the table. The cables will stretch over a period of time.

The minimum (low) cable tension listed in the table below applies only during maintenance action and should not be construed as an in-service operational limit for cable tension.

Table 501/27-41-00-993-818 Cable Rigging Tension Values

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
110 (43.3)	137 (609)	187 (832)
109 (42.8)	136 (605)	186 (827)
108 (42.2)	136 (605)	186 (827)
107 (41.7)	136 (605)	186 (827)
106 (41.1)	135 (601)	185 (823)
105 (40.5)	135 (601)	185 (823)
104 (40.0)	134 (596)	184 (818)
103 (39.4)	134 (596)	184 (818)
102 (38.9)	134 (596)	184 (818)
101 (38.3)	133 (592)	183 (814)
100 (37.8)	133 (592)	183 (814)
99 (37.2)	132 (587)	182 (810)

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Table 501/27-41-00-993-818 Cable Rigging Tension Values (Continued)

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
98 (36.7)	132 (587)	182 (810)
97 (36.1)	131 (583)	181 (805)
96 (35.5)	131 (583)	181 (805)
95 (35.0)	131 (583)	181 (805)
94 (34.4)	130 (578)	180 (801)
93 (33.9)	130 (578)	180 (801)
92 (33.3)	129 (574)	179 (796)
91 (32.8)	129 (574)	179 (796)
90 (32.2)	128 (569)	178 (792)
89 (31.7)	128 (569)	178 (792)
88 (31.1)	128 (569)	178 (792)
87 (30.5)	127 (565)	177 (787)
86 (30.0)	127 (565)	177 (787)
85 (29.4)	126 (560)	176 (783)
84 (28.9)	126 (560)	176 (783)
83 (28.3)	126 (560)	176 (783)
82 (27.8)	125 (556)	175 (778)
81 (27.2)	125 (556)	175 (778)
80 (26.7)	124 (552)	174 (774)
79 (26.1)	124 (552)	174 (774)
78 (25.5)	123 (547)	173 (770)
77 (25.0)	123 (547)	173 (770)
76 (24.4)	123 (547)	173 (770)
75 (23.9)	122 (543)	172 (765)
74 (23.3)	122 (543)	172 (765)
73 (22.8)	121 (538)	171 (761)
72 (22.2)	121 (538)	171 (761)
71 (21.7)	120 (534)	170 (756)
70 (21.1)	120 (534)	170 (756)
69 (20.5)	120 (534)	170 (756)
68 (20.0)	119 (529)	169 (752)
67 (19.4)	119 (529)	169 (752)
66 (18.9)	118 (525)	168 (747)
65 (18.3)	118 (525)	168 (747)

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Table 501/27-41-00-993-818 Cable Rigging Tension Values (Continued)

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
64 (17.8)	118 (525)	168 (747)
63 (17.2)	117 (520)	167 (743)
62 (16.7)	117 (520)	167 (743)
61 (16.1)	116 (516)	166 (738)
60 (15.5)	116 (516)	166 (738)
59 (15.0)	115 (512)	165 (734)
58 (14.4)	115 (512)	165 (734)
57 (13.9)	115 (512)	165 (734)
56 (13.3)	114 (507)	164 (730)
55 (12.8)	114 (507)	164 (730)
54 (12.2)	113 (503)	163 (725)
53 (11.7)	113 (503)	163 (725)
52 (11.1)	112 (498)	162 (721)
51 (10.5)	112 (498)	162 (721)
50 (10.0)	112 (498)	162 (721)
49 (9.4)	111 (494)	161 (716)
48 (8.9)	111 (494)	161 (716)
47 (8.3)	110 (489)	160 (712)
46 (7.8)	110 (489)	160 (712)
45 (7.2)	109 (485)	159 (707)
44 (6.7)	109 (485)	159 (707)
43 (6.1)	109 (485)	159 (707)
42 (5.5)	108 (480)	158 (703)
41 (5.0)	108 (480)	158 (703)
40 (4.4)	107 (476)	157 (698)
39 (3.9)	107 (476)	157 (698)
38 (3.3)	107 (476)	157 (698)
37 (2.8)	106 (472)	156 (694)
36 (2.2)	106 (472)	156 (694)
35 (1.7)	105 (467)	155 (689)
34 (1.1)	105 (467)	155 (689)
33 (0.5)	104 (463)	154 (685)
32 (0.0)	104 (463)	154 (685)
31 (-0.5)	104 (463)	154 (685)

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Table 501/27-41-00-993-818 Cable Rigging Tension Values (Continued)

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
30 (-1.1)	103 (458)	153 (681)
29 (-1.7)	103 (458)	153 (681)
28 (-2.2)	102 (454)	152 (676)
27 (-2.8)	102 (454)	152 (676)
26 (-3.3)	101 (449)	151 (672)
25 (-3.9)	101 (449)	151 (672)
24 (-4.4)	101 (449)	151 (672)
23 (-5.0)	100 (445)	150 (667)
22 (-5.5)	100 (445)	150 (667)
21 (-6.1)	99 (440)	149 (663)
20 (-6.7)	99 (440)	149 (663)
19 (-7.2)	99 (440)	149 (663)
18 (-7.8)	98 (436)	148 (658)
17 (-8.3)	98 (436)	148 (658)
16 (-8.9)	97 (431)	147 (654)
15 (-9.4)	97 (431)	147 (654)
14 (-10.0)	96 (427)	146 (649)
13 (-10.5)	96 (427)	146 (649)
12 (-11.1)	96 (427)	146 (649)
11 (-11.7)	95 (423)	145 (645)
10 (-12.2)	95 (423)	145 (645)
09 (-12.8)	94 (418)	144 (641)
08 (-13.3)	94 (418)	144 (641)
07 (-13.9)	93 (414)	143 (636)
06 (-14.4)	93 (414)	143 (636)
05 (-15.0)	93 (414)	143 (636)
04 (-15.5)	92 (409)	142 (632)
03 (-16.1)	92 (409)	142 (632)
02 (-16.7)	91 (405)	141 (627)
01 (-17.2)	91 (405)	141 (627)
00 (-17.8)	91 (405)	141 (627)
-01 (-18.3)	90 (400)	140 (623)
-02 (-18.9)	90 (400)	140 (623)
-03 (-19.4)	89 (396)	139 (618)

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Table 501/27-41-00-993-818 Cable Rigging Tension Values (Continued)

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
-04 (-20.0)	89 (396)	139 (618)
-05 (-20.5)	88 (391)	138 (614)
-06 (-21.1)	88 (391)	138 (614)
-07 (-21.7)	88 (391)	138 (614)
-08 (-22.2)	87 (387)	137 (609)
-09 (-22.8)	87 (387)	137 (609)
-10 (-23.3)	86 (383)	136 (605)
-11 (-23.9)	86 (383)	136 (605)
-12 (-24.4)	85 (378)	135 (601)
-13 (-25.0)	85 (378)	135 (601)
-14 (-25.5)	85 (378)	135 (601)
-15 (-26.1)	84 (378)	134 (601)
-16 (-26.7)	84 (378)	134 (601)
-17 (-27.2)	83 (369)	133 (592)
-18 (-27.8)	83 (369)	133 (592)
-19 (-28.3)	82 (365)	132 (587)
-20 (-28.9)	82 (365)	132 (587)
-21 (-29.4)	82 (365)	132 (587)
-22 (-30.0)	81 (360)	131 (583)
-23 (-30.5)	81 (360)	131 (583)
-24 (-31.1)	80 (356)	130 (578)
-25 (-31.7)	80 (356)	130 (578)
-26 (-32.2)	80 (356)	130 (578)
-27 (-32.8)	79 (351)	129 (574)
-28 (-33.3)	79 (351)	129 (574)
-29 (-33.9)	78 (347)	128 (569)
-30 (-34.4)	78 (347)	128 (569)
-31 (-35.0)	77 (343)	127 (565)
-32 (-35.5)	77 (343)	127 (565)
-33 (-36.1)	77 (343)	127 (565)
-34 (-36.7)	76 (338)	126 (560)
-35 (-37.2)	76 (338)	126 (560)
-36 (-37.8)	75 (334)	125 (556)
-37 (-38.3)	75 (334)	125 (556)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 501/27-41-00-993-818 Cable Rigging Tension Values (Continued)

Temp Deg F (C)	Low Tolerance Lbs (newtons)	High Tolerance Lbs (newtons)
-38 (-39.4)	74 (329)	124 (552)
-39 (-38.9)	74 (329)	124 (552)
-40 (-40.0)	74 (329)	124 (552)

4) Operate the stabilizer system through 5 full cycles.

5) Put the cables at the center of the forward cable drum.

6) Do the following steps to make sure that the stabilizer trim cable tension is correct:

a) Use the high tension cable tensiometer, COM-1554, or low tension cable tensiometer, COM-1553, to make sure that the cable tension is the same as the tension in the Table 501.

b) If the cable tension is not correct, adjust the lower turnbuckle [9] to get the correct cable rigging tension (Table 501).

7) Make sure that the lower turnbuckle [9] length is 11.00 in. (279.4 mm) - 15.25 in. (387.3 mm) after the adjustment.

8) Make sure that the horizontal stabilizer moves freely through the full travel to the airplane nose down limit.

SUBTASK 27-41-00-020-005

(2) Connect the chain [10].

(a) Install the chain [10] over the two idler sprockets [11] and forward mechanism sprocket [12].

(b) Connect the chain [10] at the connector link [13].

(c) Install the pins [14] on the outboard side of the chain [10].

SUBTASK 27-41-00-820-002

(3) Adjust the chain [10] tension.

(a) Apply a 5 lbf (22 N) force at approximately 4.5 ±1.0 in. (114.3 ±25.4 mm) from where the chain [10] touches the forward mechanism sprocket [12].

(b) Make sure that the movement of the chain [10] is 0.25 ±0.07 in. (6.35 ±1.78 mm).

(c) Do a check of the chain [10] tension.

1) Turn the stabilizer trim wheel approximately 8 turns in the airplane nose up direction.

a) Measure the chain [10] tension.

b) If necessary, adjust the chain [10] tension again.

2) Turn the stabilizer trim wheel approximately 8 turns in the airplane nose down direction.

a) Measure the chain [10] tension.

b) If necessary, adjust the chain [10] tension again.

3) Repeat this check until the chain rigging tension is maintained.

(d) If it is necessary, do these steps to get the correct chain movement:

1) Adjust the upper adjusting nuts [15] and upper adjusting nuts [18].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that all three “A” dimensions equal ± 0.06 in. (1.52 mm) from each other.
   a) Measure the “A” dimensions of left and right aft support link [7].
      NOTE: The “A” dimension is the distance of the aft support link between the center of the two connection bolts.
   b) Measure the “A” dimension of the forward support link [1].
      NOTE: The “A” dimension is the distance of the forward support link between the center of the two connection bolts.
   c) Make sure that all three “A” dimensions are ± 0.06 in. (1.52 mm) from each other.
   d) Install MS20995NC32 lockwire, G01912.

SUBTASK 27-41-00-420-001

(4) Connect the flexible shaft [8] to the forward mechanism.

CAUTION MAKE SURE THAT YOU ARE CAREFUL WITH THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE SHARP EDGES ON THE TRAMMEL BAR, SPL-1677 CAN CAUSE CHAFING OR DAMAGE TO THE WIRES.

(a) Use the bar, SPL-1677, to set the "B" dimension to the 39.17 ±0.03 in. (994.9 ±0.8 mm).
(b) Turn the flexible shaft [8] until the stabilizer position indicator is at 4 units of trim.
(c) Connect the flexible shaft [8] to the forward mechanism.

SUBTASK 27-41-00-420-002

(5) Install the upper turnbuckle [2] to the forward mechanism.
   (a) Install the bolt [25], washer [24], washer [23], washer [22], bushing [21], washer [19], and nut [17].
   (b) Adjust the upper turnbuckle [2] until you can install the bolt [3] freely through the rod end at the forward mechanism.
   (c) Install the washer [4], washer [5], nut [6], and bolt [3].

SUBTASK 27-41-00-710-014

(6) Operate the stabilizer system to the NOSE DOWN stop (stabilizer leading edge moves up) and do a check for the conditions that follow:
   (a) The clearance between the cables and cable guard is not less than 0.25 in. (6.35 mm) for the upper position.
      NOTE: The cable guard is installed at station 237 in the bulkhead.
      1) If it is necessary, adjust the cable guard.
   (b) The clearance between the cables and wire raceway on top of the nose wheel well is not less than 0.35 in. (8.9 mm).
   (c) The cables do not touch the pulley flanges.
   (d) The cables are in ±2 degrees of the plane of the pulleys.
   (e) The clearance between the aileron control cable and the chain at the forward mechanism sprocket [12] is not less than 0.75 in. (19.0 mm).
   (f) The pulleys turn freely with no interference from the cable guards.
   (g) The cables are installed through the grommets and the air pressure seals.
   (h) The cables do not touch the cable guards, rub strips, or grommets.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) The clearance between the cables and adjacent structure is not less than 0.20 in. (5.1 mm).

SUBTASK 27-41-00-710-002

(7) Operate the stabilizer system to the NOSE UP stop (stabilizer leading edge moves down) and do a check for the conditions that follow:

(a) Make sure that the two STAB TRIM indicators on the control stand show 14±0.5 units of trim.

(b) Make sure that the difference between the two STAB TRIM indicators is less than 0.5 units of trim.

(c) The clearance between the cables and cable guard is not less than 0.25 in. (6.4 mm) for the lower position.

NOTE: The cable guard is installed at station 237 in the bulkhead.

1) If it is necessary, adjust the cable guard.

(d) The clearance between the cables and wire raceway on top of the nose wheel well is not less than 0.35 in. (8.9 mm).

(e) The cables do not touch the pulley flanges.

(f) The cables are in ±2 degrees of the plane of the pulleys.

(g) The clearance between the aileron control cable and the chain at the forward mechanism sprocket [12] is not less than 0.75 in. (19.0 mm).

(h) The pulleys turn freely with no interference from the cable guards.

(i) The cables are installed through the grommets and the air pressure seals.

(j) The cables do not touch the cable guards, rub strips, or grommets.

(k) The clearance between the cables and adjacent structure is not less than 0.20 in. (5.1 mm).

SUBTASK 27-41-00-420-003

(8) Install MS20995NC32 lockwires, G01912, to the upper turnbuckle [2] and lower turnbuckle [9] with the double twist method.

NOTE: The lockwire must be attached the tab of the washer of the upper turnbuckle.

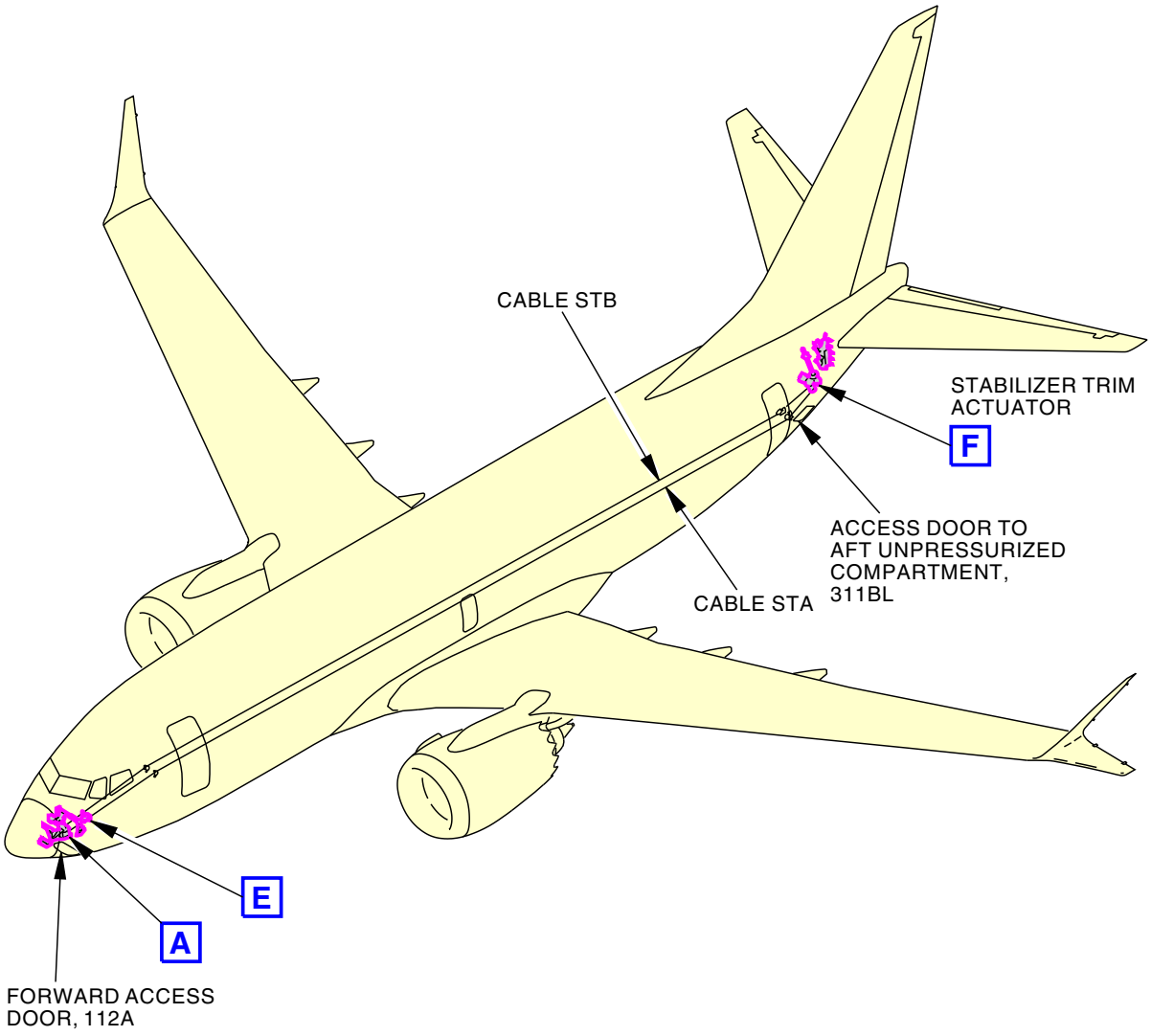
SUBTASK 27-41-00-410-001

(9) Close these access panels:

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

END OF TASK

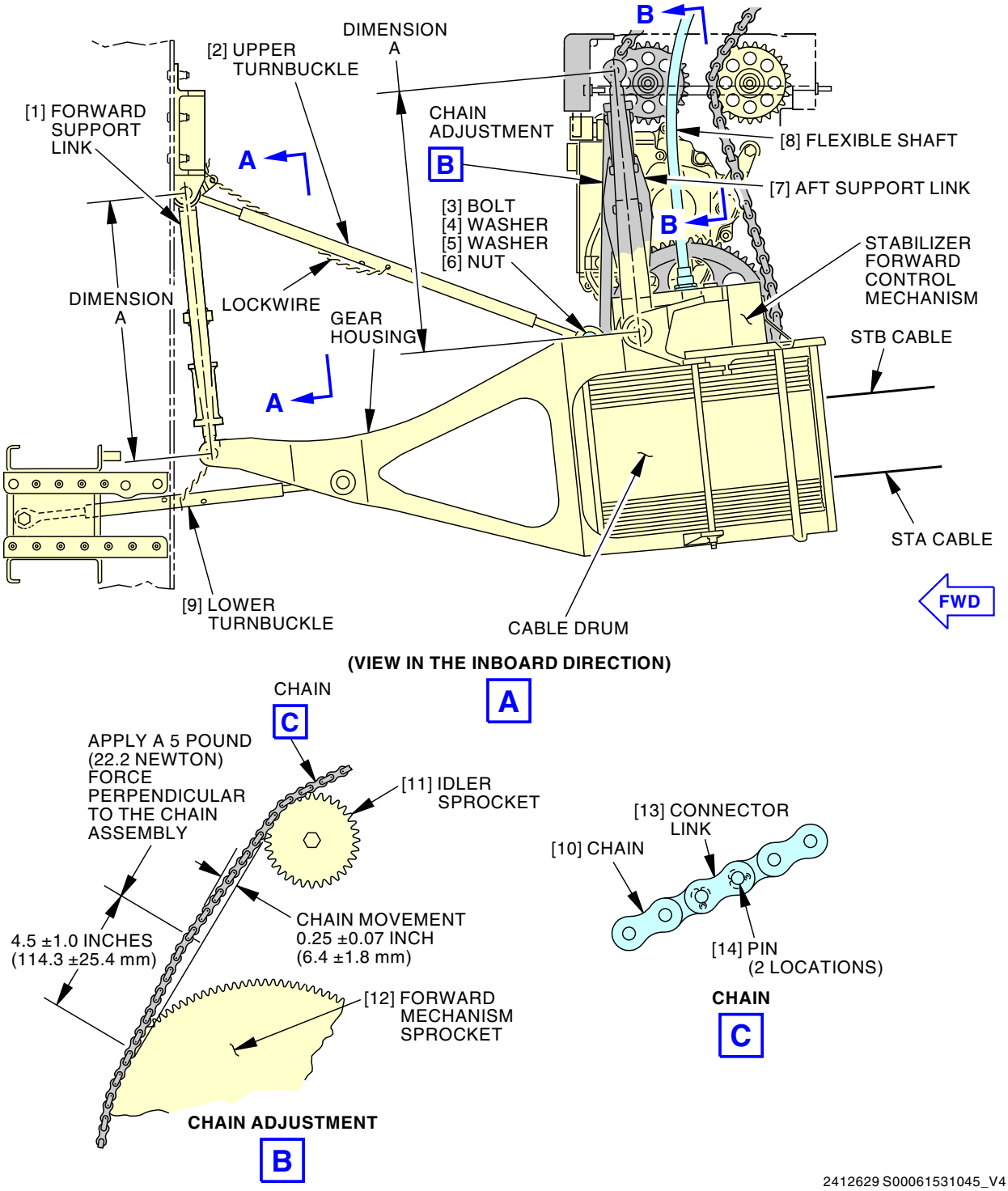
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412628 S00061531044_V2

Stabilizer Control Cable and Chain Adjustment
Figure 501/27-41-00-990-802 (Sheet 1 of 5)

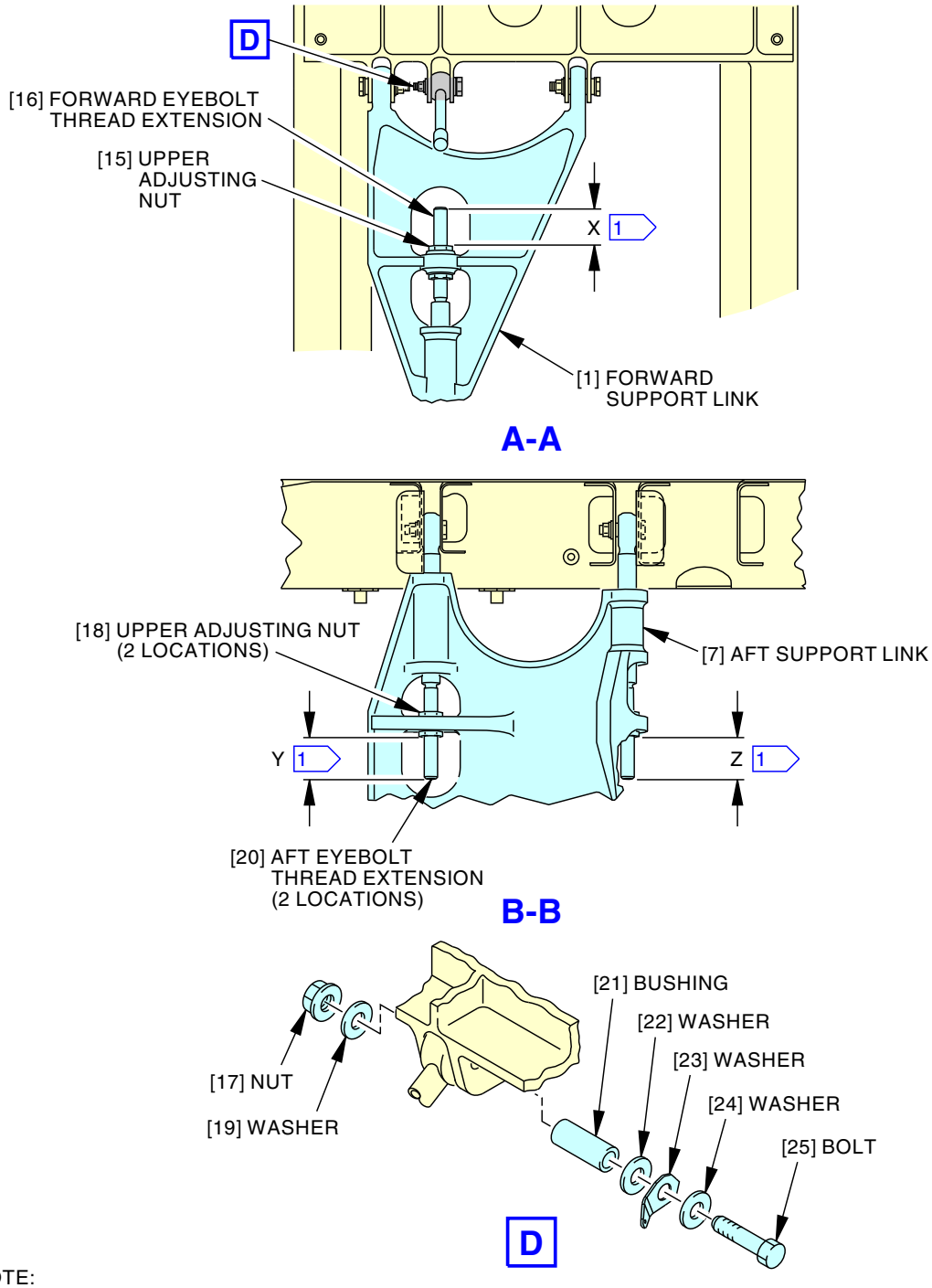
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412629 S00061531045_V4

Stabilizer Control Cable and Chain Adjustment
Figure 501/27-41-00-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



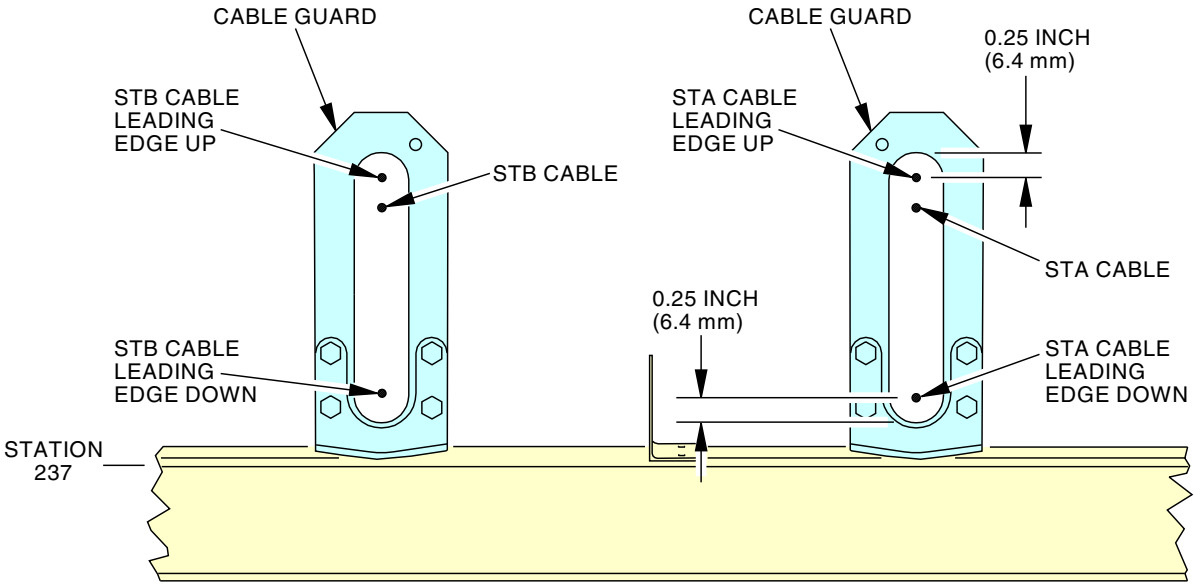
NOTE:

1 DIMENSIONS X, Y AND Z MUST BE WITHIN ±0.12 INCH (±3.1 mm) OF EACH OTHER.

2412630 S00061531046_V2

Stabilizer Control Cable and Chain Adjustment
Figure 501/27-41-00-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



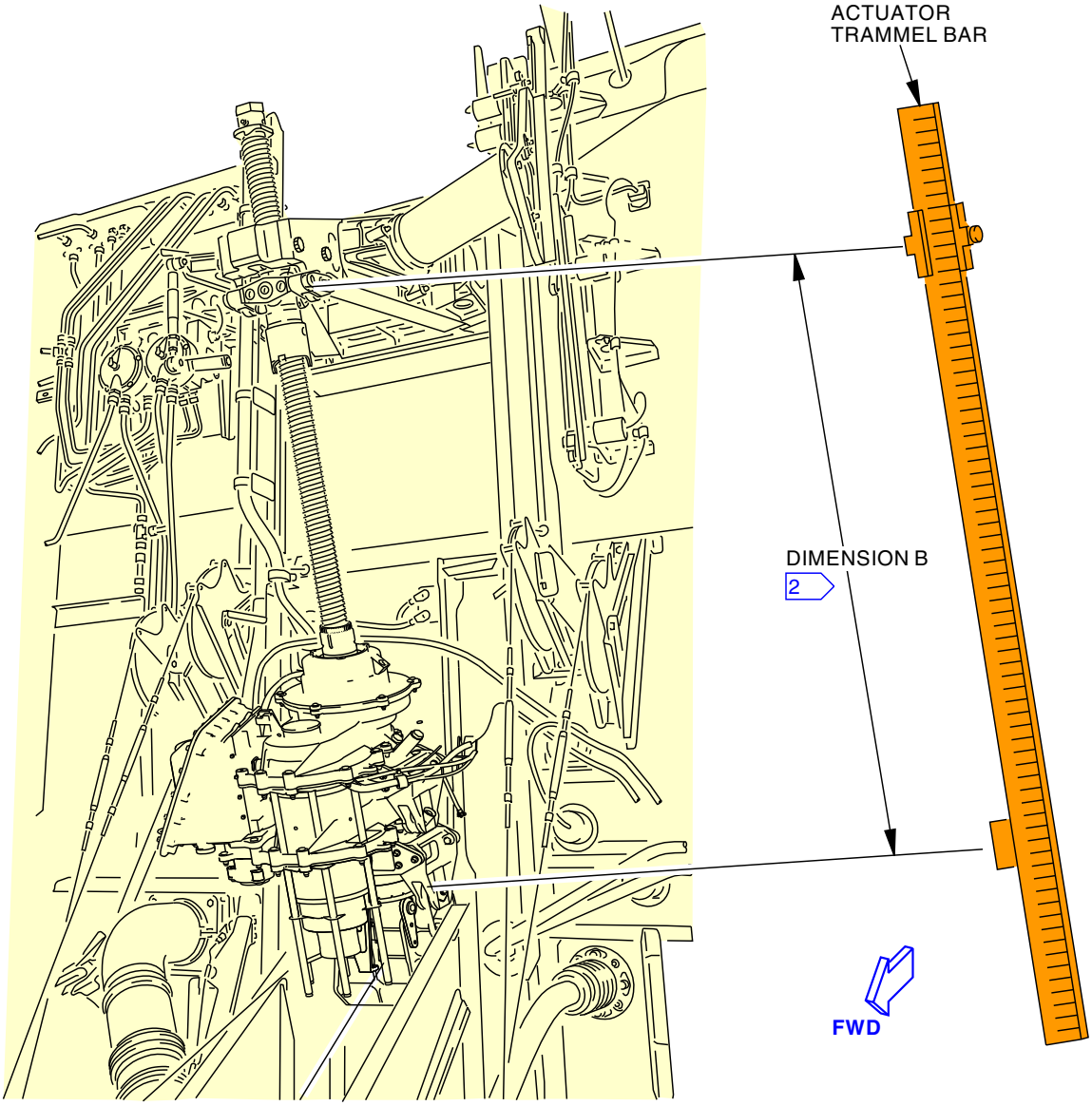
(VIEW IN THE AFT DIRECTION)

E

2412631 S00061531047_V2

Stabilizer Control Cable and Chain Adjustment
Figure 501/27-41-00-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

F

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

2 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS)

2412632 S00061531048_V4

Stabilizer Control Cable and Chain Adjustment
Figure 501/27-41-00-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-00-700-801

3. Stabilizer Manual Trim and Trim Indicator - Test

(Figure 502, Figure 503)

A. General

(1) Use this test to make sure the horizontal stabilizer moves to the correct position when it is operated from the stabilizer trim wheel. It also make sure that the stabilizer trim indicator operates correctly.

(2) If this test is performed as part of stabilizer control cable STA/STB replacement or removal/installation procedures, make sure that the forward and aft stabilizer cable drum wraps of the control cables when the stabilizer is in the full airplane nose UP and airplane nose DOWN positions.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Test

SUBTASK 27-41-00-010-002

(1) To get access to the stabilizer trim actuator, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Stabilizer Manual Trim and Trim Indicator Test

SUBTASK 27-41-00-710-003

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Do the test of the stabilizer manual trim and trim indicator test.

(a) Turn the captain's control trim wheel counterclockwise (full APL NOSE DOWN) until it touches the stops.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

1) Use the bar, SPL-1677, to make sure that the "B" dimension is 45.84 ±0.10 in. (1164.3 ±2.5 mm).
2) Make sure that the two STAB TRIM indicators on the control stand show -0.7 ±0.5 units of trim.
3) Make sure that the difference between the two STAB TRIM indicators is less than 0.5 units of trim.
4) Make sure that the STB cable is a minimum of 0.75 full wraps on the forward drum.
5) Make sure that the STA cable is a minimum of 0.75 full wraps on the aft drum.

(b) Turn the captain's control trim wheel clockwise (full APL NOSE UP) until it touches the stops.

1) Make sure that the horizontal stabilizer moves down freely through the full travel.

CAUTION

MAKE SURE TO PREVENT DAMAGE TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CHAF OR CAN CAUSE DAMAGE TO THE WIRES OR BUNDLE INSULATION.

2) Use the bar, SPL-1677, to make sure that the "B" dimension is 21.32 ±0.10 in. (541.5 ±2.6 mm).
3) Make sure that the two STAB TRIM indicators on the control stand show 16.4 ±0.5 unit of trim.
4) Make sure that the difference between the two STAB TRIM indicators is less than 0.5 units of trim.
5) Make sure that the STA cable is a minimum of 0.75 full wraps on the forward drum.
6) Make sure that the STB cable is a minimum of 0.75 full wraps on the aft drum.

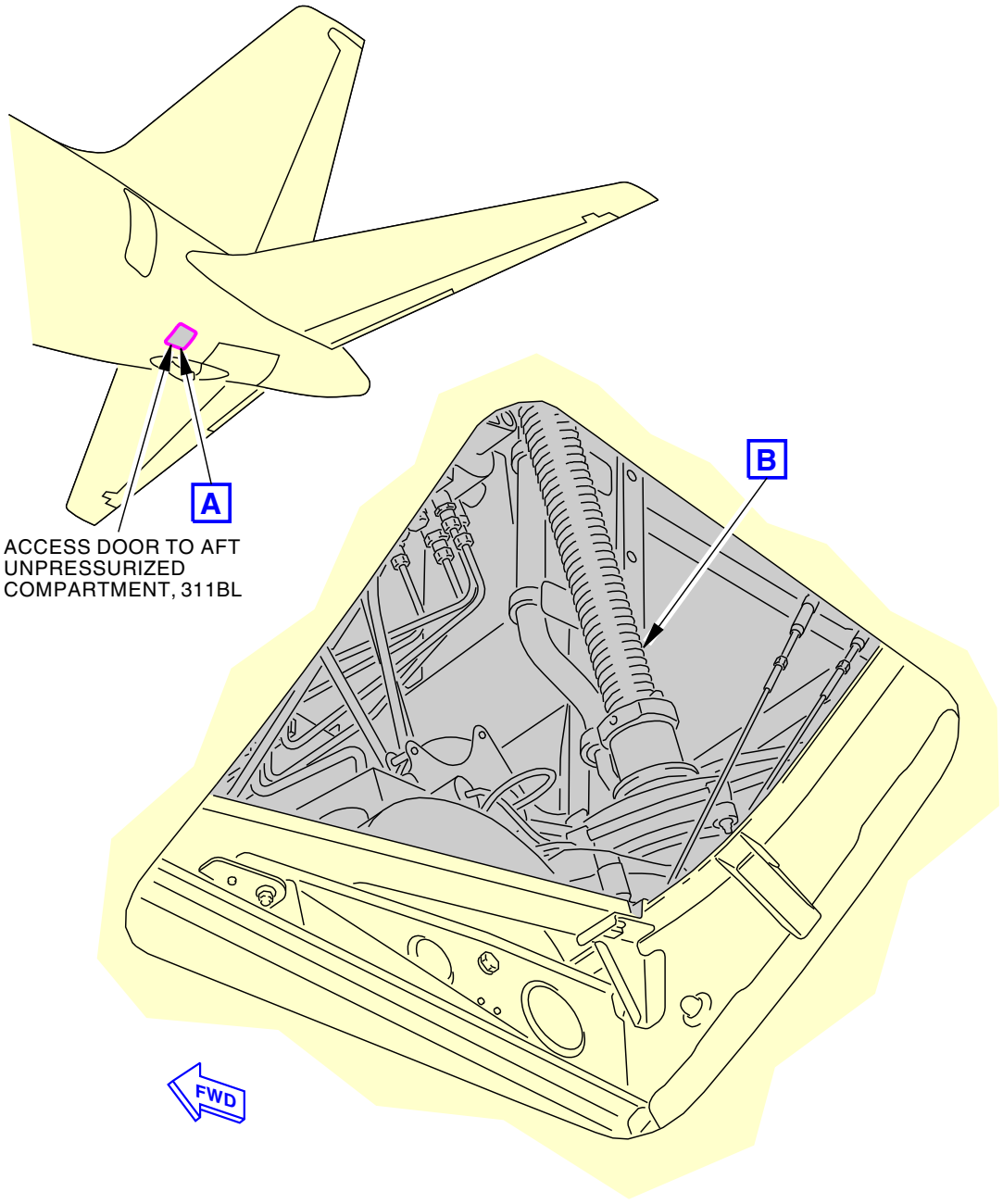
SUBTASK 27-41-00-410-002

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



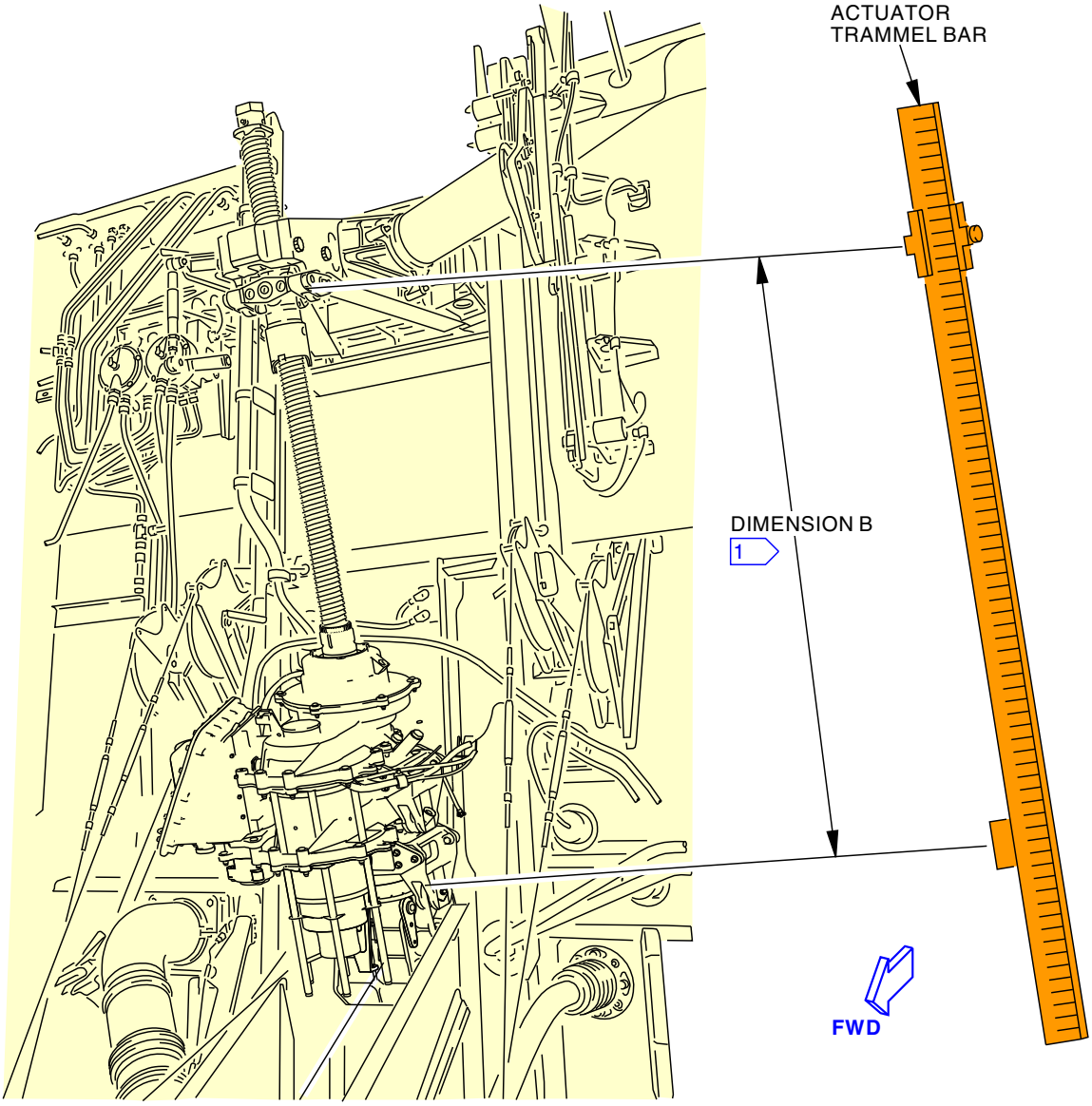
VIEW THROUGH THE ACCESS DOOR TO AFT UNPRESSURIZED COMPARTMENT, 311BL

A

2412633 S00061531050_V1

Stabilizer Trim Jackscrew Adjustment
Figure 502/27-41-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

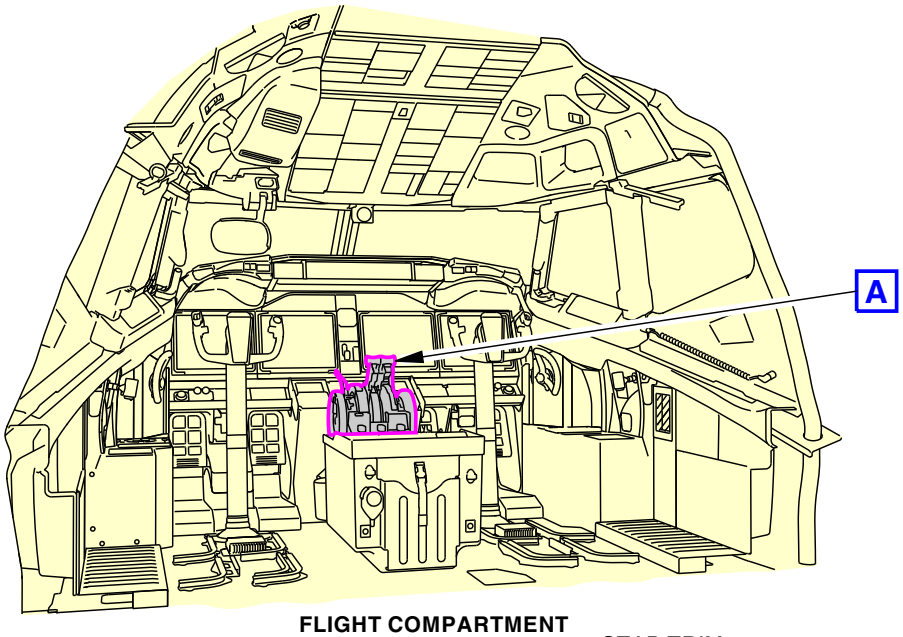
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS)

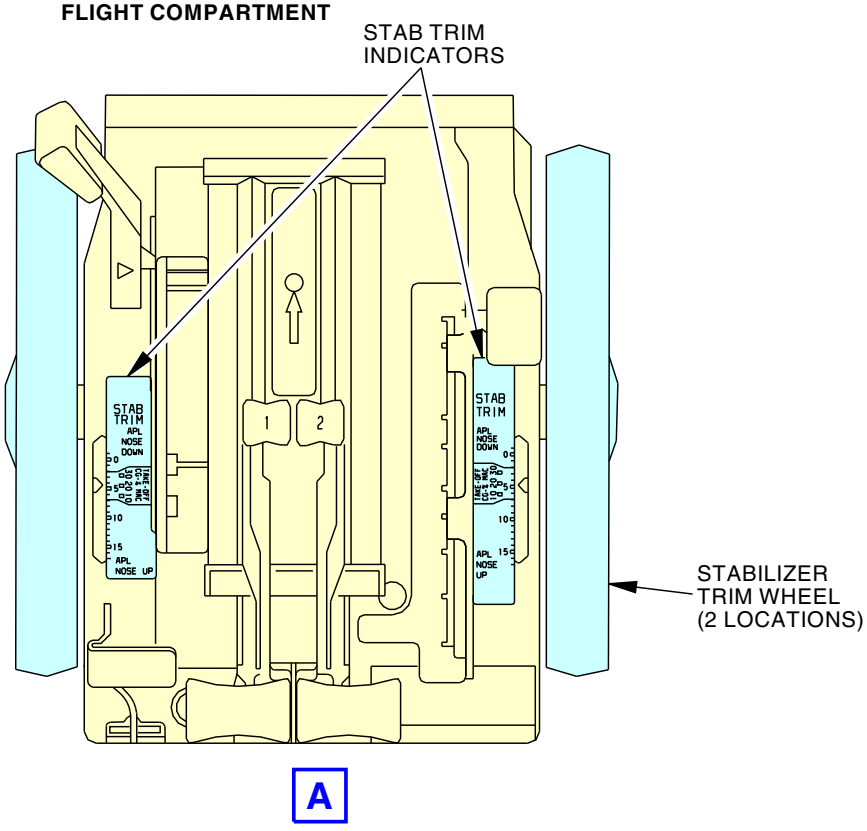
2412634 S00061531051_V4

Stabilizer Trim Jackscrew Adjustment
Figure 502/27-41-00-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



2412635 S00061531052_V2

Stabilizer Trim Wheel and Stabilizer Trim Indicator Locations
Figure 503/27-41-00-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-00-700-802

4. Horizontal Stabilizer Trim Control System Friction Test

(Figure 502)

A. General

(1) Use this procedure to make sure the system operates smoothly.

B. References

Reference	Title
27-41-61-010-801	Stabilizer Trim Control Wheel Removal (P/B 401)
27-41-61-410-801	Stabilizer Trim Control Wheel Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1748	Adapter - Torque Wrench, Manual, Stabilizer Trim Wheel Part #: C27064-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Prepare for the Test

SUBTASK 27-41-00-860-011

(1) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the CUTOUT position.

SUBTASK 27-41-00-480-002

(2) Install the adapter, SPL-1748, on the captain's control trim wheel (Figure 504).

(a) Remove the fasteners that attach the stabilizer trim wheel to the shaft (TASK 27-41-61-010-801).

F. Procedure

SUBTASK 27-41-00-710-004

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Do the friction test of the horizontal stabilizer trim control:

(a) Turn the captain's control trim wheel counterclockwise (full APL NOSE DOWN) until it touches the stops.

(b) Turn the captain's control trim wheel clockwise (full APL NOSE UP) until it touches the stops.

1) Make sure the torque necessary to operate the control trim wheel is not more than 62 in-lb (7.0 N·m) or not less than 22 in-lb (2.5 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure the system operates smoothly.

(c) Turn the control trim wheel counterclockwise (full APL NOSE DOWN) until it touches the stops.

1) Make sure the torque necessary to operate the control trim wheel is not more than 62 in-lb (7.0 N·m) or not less than 22 in-lb (2.5 N·m).

2) Make sure the system operates smoothly.

SUBTASK 27-41-00-080-002

(2) Remove the adapter, SPL-1748, from the captain's control trim wheel.

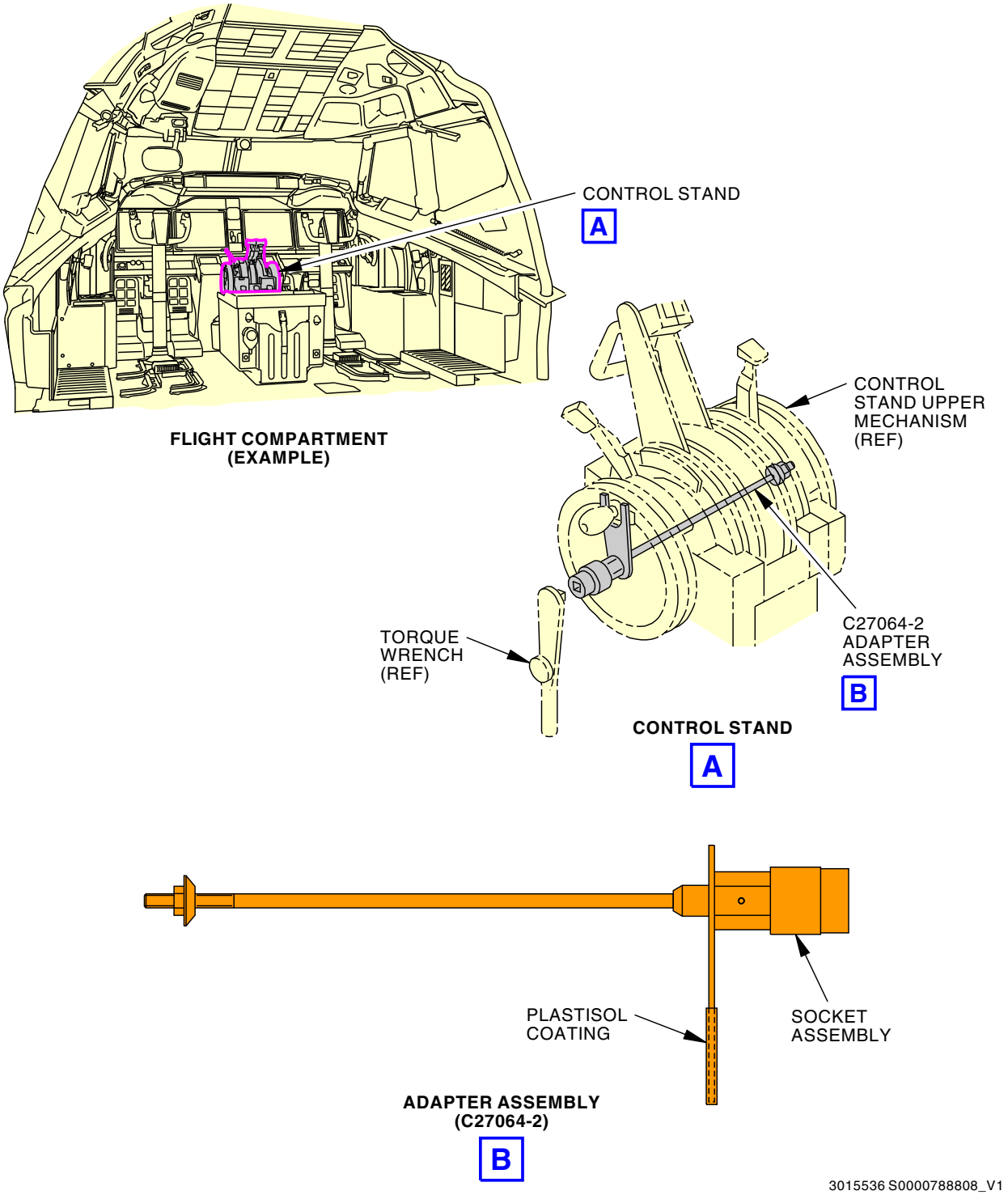
(a) Install the fasteners that attach the stabilizer trim wheel to the shaft (TASK 27-41-61-410-801).

SUBTASK 27-41-00-860-032

(3) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the NORMAL position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Manual Stabilizer Trim Wheel Torque Wrench Adapter Installation
Figure 504/27-41-00-990-808

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-00-700-803

5. Stabilizer Electric Trim System Test

A. General

(1) Use this test to make sure the horizontal stabilizer moves at the correct speed when it is operated from the STAB TRIM switches.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

D. Prepare for the Test

SUBTASK 27-41-00-860-013

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-860-014

(2) Make sure that the STAB TRIM PRI switch, S272, on the aft area of the control stand is in the NORMAL position.

SUBTASK 27-41-00-860-015

(3) Make sure that the STAB TRIM override switch on the P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

SUBTASK 27-41-00-860-033

(4) Supply hydraulic power for systems A and B (TASK 29-11-00-860-801).

E. Procedure

SUBTASK 27-41-00-710-005

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Do the test of the electrical trim system test:

(a) Set the flaps to any position from 1-40 units, Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.
   a) Make sure the stabilizer leading edge moves up.
   b) Release the stabilizer trim switches.
2) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.
   a) Make sure the stabilizer leading edge moves down.
   b) Release the stabilizer trim switches.
3) Push and hold the stabilizer trim switches on the first officer's control wheel to the NOSE DOWN position.
   a) Make sure the stabilizer leading edge moves up.
   b) Release the stabilizer trim switches.
4) Push and hold the stabilizer trim switches on the first officer's control wheel to the NOSE UP position.
   a) Make sure the stabilizer leading edge moves down.
   b) Release the stabilizer trim switches.
5) Push the stabilizer trim switches on the captain's control wheel to the NOSE UP position until it stops and then to the NOSE DOWN position until it stops.
   a) Make sure the time for the stabilizer to move from its lower limit of travel to its upper limit of travel is between 31-39 seconds.
   b) Make sure that the operation is smooth and there is no unusual noise.
6) Use the stabilizer trim switches on the captain's control wheel to move the stabilizer many times in the two directions one after the other for 3 seconds each.
   a) Make sure that the operation is smooth and there is no unusual noise.
7) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the system comes to the full trim speed.
   a) Move the stabilizer trim switches momentarily to OFF and then to the NOSE DOWN position.
   b) Make sure the stabilizer leading edge moves up immediately after you move the stabilizer trim switches to the NOSE DOWN position.
8) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the system comes to the full trim speed.
   a) Move the stabilizer trim switches momentarily to OFF and then to the NOSE UP position.
   b) Make sure the stabilizer leading edge moves down immediately after you move the stabilizer trim switches to the NOSE UP position.

(b) Set the flaps to the full up position, Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.
   1) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.
      a) Make sure the stabilizer leading edge moves up.
      b) Release the stabilizer trim switches.

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2) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.
   a) Make sure the stabilizer leading edge moves down.
   b) Release the stabilizer trim switches.
3) Push and hold the stabilizer trim switches on the first officer's control wheel to the NOSE DOWN position.
   a) Make sure the stabilizer leading edge moves up.
   b) Release the stabilizer trim switches.
4) Push and hold the stabilizer trim switches on the first officer's control wheel to the NOSE UP position.
   a) Make sure the stabilizer leading edge moves down.
   b) Release the stabilizer trim switches.
5) Push the stabilizer trim switches on the captain's control wheel to the NOSE UP position until it stops and then to the NOSE DOWN position until it stops.
   a) Make sure the time for the stabilizer to move from its lower limit of travel to its upper limit of travel is 47-58 seconds.
   b) Make sure that the operation is smooth and there is no unusual noise.
6) Use the stabilizer trim switches on the captain's control wheel to move the stabilizer many times in the two directions, one after the other, for 3 seconds each.
   a) Make sure that the operation is smooth and there is no unusual noise.
7) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the system comes to the full trim speed.
   a) Move the stabilizer trim switches momentarily to OFF and then to the NOSE DOWN position.
   b) Make sure the stabilizer leading edge moves up immediately after you move the stabilizer trim switches to the NOSE DOWN position.
8) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the system comes to the full trim speed.
   a) Move the stabilizer trim switches momentarily to OFF and then to the NOSE UP position.
   b) Make sure the stabilizer leading edge moves down immediately after you move the stabilizer trim switches to the NOSE UP position.
9) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.
   a) Make sure the stabilizer leading edge moves down.
   b) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the CUTOUT position.
   c) Make sure that the movement of the stabilizer stops immediately.
   d) Set the STAB TRIM PRI switch, S272, to the NORMAL position.
   e) Make sure the stabilizer continues to move.
   f) Release the stabilizer trim switches.

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SUBTASK 27-41-00-860-034

(2) Do the test of the Stabilizer Trim Primary and Backup (Cutout) Switches (S272 and S149):

NOTE: This test specifies the use of the captain's control wheel to complete the test. If necessary, use of the first officer's control wheel instead of the captain's control wheel is acceptable, provided that this substitution is maintained throughout the test.

(a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

(b) Make sure that the STAB TRIM PRIMARY and BACKUP (Cutout) Switches (S272 and S149) are in the NORMAL (guarded) position.

(c) Make sure that the Column Actuated Stabilizer Trim (Override) Switch (S847 OR S1 OF P8-47 Module) is set to the NORM (guarded) position.

WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT GO MORE THAN THE DUTY CYCLE OF THE STABILIZER TRIM (MAIN ELECTRIC) MOTOR OF 2 MINUTES ON AND 13 MINUTES OFF DURING THE TEST. IF YOU DO NOT OBEY INSTRUCTIONS, DAMAGE TO THE STABILIZER TRIM MOTOR CAN OCCUR.

(d) Position the stabilizer to an intermediate position.

NOTE: Approximately 8 units of trim is satisfactory for an intermediate position.

(e) Set the STAB TRIM PRIMARY (S272) and BACKUP (S149) (Cutout) Switches to the CUTOUT (unguarded) position.

(f) Move the STAB TRIM switches on the captain's control wheel to the NOSE UP position, and hold them in this position.

(g) Make sure that the stabilizer does not move.

(h) Move the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position, and hold them in this position.

(i) Make sure that the stabilizer does not move.

(j) Set the STAB TRIM PRIMARY and BACKUP (Cutout) Switches (S272 and S149) to the NORMAL (guarded) position.

(k) Make sure that the stabilizer trims in both the NOSE UP and NOSE DOWN directions using the STAB TRIM switches on the captain's control wheel.

(l) Set the STAB TRIM PRIMARY (Cutout) Switch (S272) to the CUTOUT (unguarded) position.

NOTE: The STAB TRIM BACKUP (Cutout) Switch (S149) should still be in the NORMAL (guarded) position.

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(m) Move the STAB TRIM switches on the captain's control wheel to the NOSE UP position, and hold them in this position.

(n) Make sure that the stabilizer does not move.

(o) Move the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position, and hold them in this position.

(p) Make sure that the stabilizer does not move.

(q) Set the STAB TRIM PRIMARY (Cutout) Switch (S272) to the NORMAL (guarded) position.

NOTE: The STAB TRIM BACKUP (Cutout) Switch (S149) should still be in the NORMAL (guarded) position.

(r) Make sure that the stabilizer trims in both the NOSE UP and NOSE DOWN directions using the STAB TRIM switches on the captain's control wheel.

(s) Set the STAB TRIM BACKUP (Cutout) Switch (S149) to the CUTOUT (unguarded) position.

NOTE: The STAB TRIM PRIMARY (Cutout) Switch (S272) should still be in the NORMAL (guarded) position.

(t) Move the STAB TRIM switches on the captain's control wheel to the NOSE UP position, and hold them in this position.

(u) Make sure that the stabilizer does not move.

(v) Move the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position, and hold them in this position.

(w) Make sure that the stabilizer does not move.

(x) Set the STAB TRIM BACKUP (Cutout) Switch (S149) to the NORMAL (guarded) position.

NOTE: The STAB TRIM PRIMARY (Cutout) Switch (S272) should still be in the NORMAL (guarded) position.

(y) Make sure that the stabilizer trims in both the NOSE UP and NOSE DOWN directions using the STAB TRIM switches on the captain's control wheel.

SUBTASK 27-41-00-710-013

(3) Remove hydraulic power from systems A and B (TASK 29-11-00-860-805).

——— END OF TASK ———

TASK 27-41-00-700-804

6. Stabilizer Trim Wheel Free Movement Test

A. General

(1) Use this test to check the freeplay between the horizontal stabilizer trim motor and the ballscrew.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-41-00-860-017

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-860-018

(2) Make sure that the STAB TRIM PRI switch, S272, on the aft area of the control stand is in the NORMAL position.

SUBTASK 27-41-00-860-019

(3) Make sure that the STAB TRIM override switch on the P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

E. Procedure

SUBTASK 27-41-00-710-006

(1) Do the test of the stabilizer trim wheel free movement:

(a) Set the flaps to the 5-unit position (TASK 27-51-00-860-803).

1) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the system comes to full trim speed.

a) Release the stabilizer trim switches.

<1> Make sure that the stabilizer trim wheel continues to move not more than 2.5 turns (900 degrees).

b) Make sure that the reverse travel (APL NOSE DOWN) is not more than 27 degrees.

2) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the system comes to full trim speed.

a) Release the stabilizer trim switches.

<1> Make sure that the stabilizer trim wheel continues to move not more than 2.5 turns (900 degrees).

b) Make sure that the reverse travel (APL NOSE UP) is not more than 100 degrees.

(b) Set the flaps to the full up position (TASK 27-51-00-860-804).

1) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the system comes to full trim speed.

a) Release the stabilizer trim switches.

<1> Make sure that the stabilizer trim wheel continues to move not more than 0.5 turns (180 degrees).

b) Make sure that the reverse travel (APL NOSE UP) is not more than 65 degrees.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the system comes to full trim speed.

a) Release the stabilizer trim switches.

<1> Make sure that the stabilizer trim wheel continues to move not more than 0.5 turns (180 degrees).

b) Make sure that the reverse travel (APL NOSE DOWN) is not more than 65 degrees.

——— END OF TASK ———

TASK 27-41-00-700-805

7. Stabilizer Trim Limit Switches Test

(Figure 505)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure that the stabilizer trim limit switches operate correctly.

(2) The trim system can move the stabilizer to a position more than the limits that were set during the adjustment of the limit switches. This condition is usual. Thus the "B" dimension tolerances for the test are larger than the tolerance for the adjustment.

(3) This test is applicable only for limit switches S145, S844, S144.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Prepare for the Test

SUBTASK 27-41-00-860-021

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-860-022

(2) Make sure that the STAB TRIM PRI switch, S272, on the aft area of the control stand is in the NORMAL position.

SUBTASK 27-41-00-860-023

(3) Make sure that the STAB TRIM override switch on the P8 is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

SUBTASK 27-41-00-860-024

(4) Make sure that the flaps are in the full up position.

SUBTASK 27-41-00-010-003

(5) To get access to the limit switches, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Procedure

SUBTASK 27-41-00-710-007

(1) Do the test of the limit switch S844:

(a) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (the mechanical limits). This can be done using the STAB TRIM switches and then the stabilizer trim wheel.

(b) Turn the captain's stabilizer trim wheel clockwise approximately 3 turns.

(c) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge does not move.

2) Release the stabilizer trim switches.

(d) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge moves down (APL NOSE UP).

2) Release the stabilizer trim switches.

(e) Move the stabilizer to approximately 5 units of trim.

(f) Move the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the stabilizer stops automatically.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

1) Use the bar, SPL-1677 to measure the "B" dimension.

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677 can cause chafing or damage to the wires.

2) Make sure the "B" dimension is 39.39 ±0.10 in. (1000.5 ±2.5 mm).

NOTE: The STAB TRIM indicator gives approximate indications. Do not use the STAB TRIM indicator indications to adjust the stabilizer trim switches ("B" dimension).

a) Make sure that the STAB TRIM indicator on the control stand reads 3.85 units of trim.

SUBTASK 27-41-00-710-008

(2) Do the test of the limit switch, S145:

(a) If you use the standby hydraulic pump motor to move the flaps, then do these steps:

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

1) Put the ALTERNATE FLAP arm switch in the ARM position.

NOTE: The standby hydraulic pump motor will operate when the ALTERNATE FLAP arm switch is in the ARM position.

2) Move the alternate flap drive control switch to extend the flaps to the 5-unit position.

(b) If you use the system B hydraulic power to move the flaps, then do these steps:

1) Pressurize hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

2) Move the flap control lever to extend the flaps to the 5-unit position.

(c) Move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position (mechanical limits).

NOTE: This can be done with the stabilizer trim switches and then the stabilizer trim wheel.

(d) Turn the captain's stabilizer trim wheel clockwise approximately 2.00 ±0.25 turns.

(e) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge does not move.

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2) Release the stabilizer trim switches.

(f) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that stabilizer leading edge moves down (APL NOSE UP).

2) Release the stabilizer trim switches.

(g) Move the stabilizer to approximately 1 unit of trim.

(h) Move the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the stabilizer stops automatically.

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

1) Use the bar, SPL-1677 to measure the "B" dimension.

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677 can cause chafing or damage to the wires.

2) Make sure that the "B" dimension is 45.48 ±0.10 in. (1155.2 ±2.5 mm).

a) Make sure that that the STAB TRIM indicator on the control stand reads -0.45 units of trim.

NOTE: The STAB TRIM indicator gives approximate indications. Do not use the STAB TRIM indicator indications to adjust the stabilizer trim switches ("B" dimension).

(i) Move the flap control lever or the alternate flap drive control switch to retract the flaps.

(j) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-41-00-710-009

(3) Do the test of the limit switch S144:

(a) Move the stabilizer to the maximum leading edge down (APL NOSE UP) position (mechanical limits).

NOTE: This can be done with the stabilizer trim switches and then the stabilizer trim wheel.

(b) Turn the captain's stabilizer trim wheel counterclockwise approximately 3 turns.

(c) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge does not move.

2) Release the stabilizer trim switches.

(d) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that stabilizer leading edge moves up (APL NOSE DOWN).

2) Release the stabilizer trim switches.

(e) Move the stabilizer to approximately 12 units of trim.

(f) Move the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the stabilizer stops automatically.

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1) Use the bar, SPL-1677 to measure the "B" dimension.

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677 can cause chafing or damage to the wires.

2) Make sure that the "B" dimension is 24.80 ±0.10 in. (629.9 ±2.6 mm).

a) Make sure that the STAB TRIM indicator on the control stand reads 14.0 units of trim.

NOTE: The STAB TRIM indicator gives approximate indications. Do not use the STAB TRIM indicator indications to adjust the stabilizer trim switches ("B" dimension).

SUBTASK 27-41-00-410-003

(4) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

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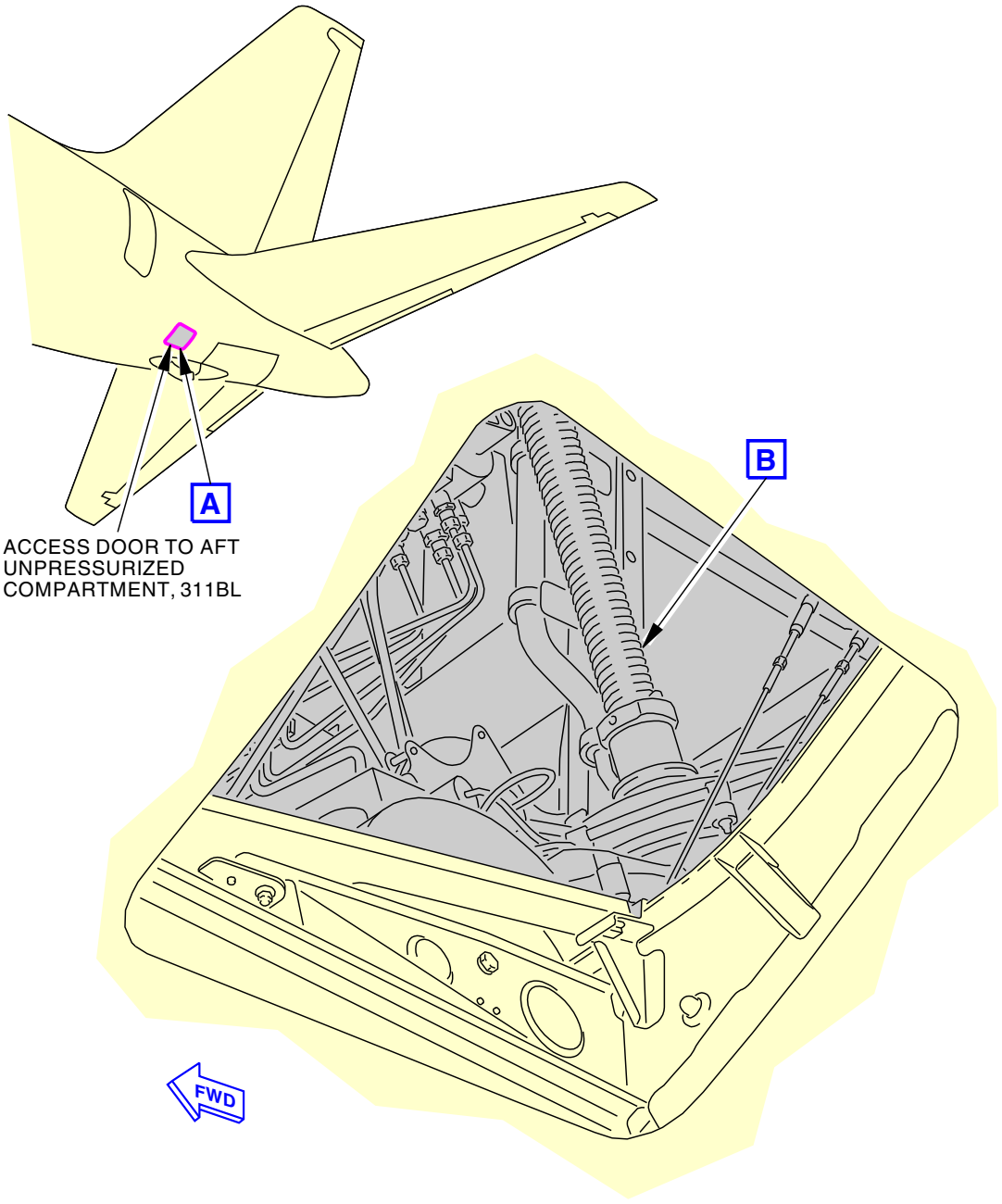


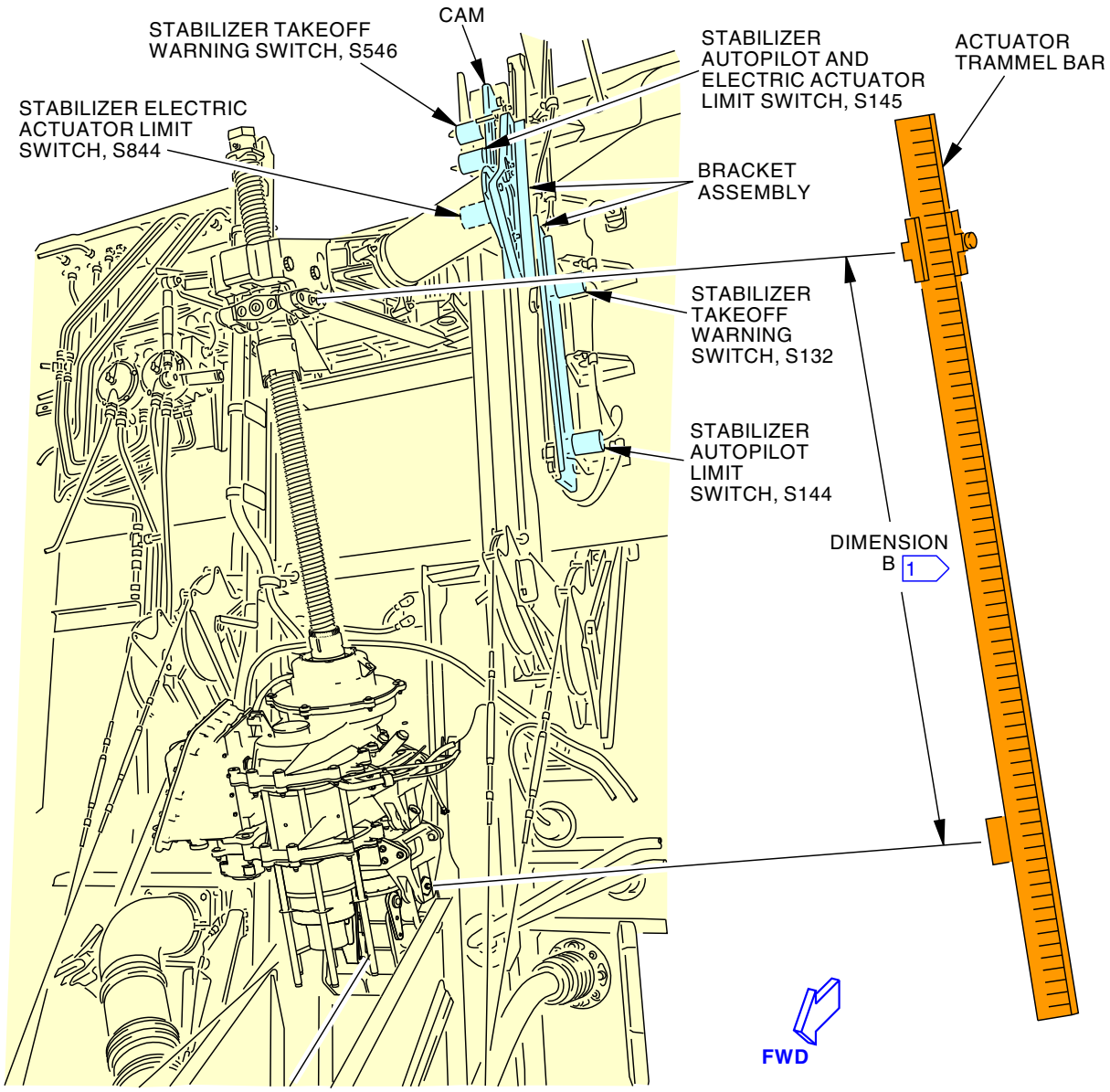
VIEW THROUGH THE ACCESS DOOR TO AFT UNPRESSURIZED COMPARTMENT, 311BL

A

2412636 S00061531057_V1

Stabilizer Trim Limit Switches Test
Figure 505/27-41-00-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

1 **T**HE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS)

2412637 S00061531058_V3

Stabilizer Trim Limit Switches Test
Figure 505/27-41-00-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-00-700-806

8. Stabilizer Clutch Friction System Test

A. General

(1) Use this test to make sure that the correct force disconnects the manual clutch.

B. References

Reference	Title
27-41-61-010-801	Stabilizer Trim Control Wheel Removal (P/B 401)
27-41-61-410-801	Stabilizer Trim Control Wheel Installation (P/B 401)
27-41-71-000-801	Stabilizer Trim Motor Removal (P/B 401)
27-41-71-400-801	Stabilizer Trim Motor Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1684	Wrench Assy, Pinion Gear, Stabilizer Trim Actuator (Lock) Part #: F71267 Supplier: 81205
SPL-1748	Adapter - Torque Wrench, Manual, Stabilizer Trim Wheel Part #: C27064-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Prepare for the Test

SUBTASK 27-41-00-020-006

(1) Do this task: Stabilizer Trim Motor Removal, TASK 27-41-71-000-801.

SUBTASK 27-41-00-480-003

(2) Install the wrench, SPL-1684, on the internal spline on the stabilizer gearbox.

(a) Make sure the wrench does not turn.

SUBTASK 27-41-00-480-004

(3) Install the adapter, SPL-1748, on the captain's stabilizer trim wheel (Figure 504).

(a) Remove the fasteners that attach the stabilizer trim wheel to the shaft (TASK 27-41-61-010-801).

F. Procedure

SUBTASK 27-41-00-710-010

(1) Do a check of the manual clutch disconnect:

(a) Turn the captain's stabilizer trim wheel 3 turns or more counterclockwise.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure the torque necessary to operate the stabilizer trim wheel is not more than 163 in-lb (18.42 N·m).

NOTE: 163 in-lb (18.42 N·m) is equal to a tangential force at the handle of the trim wheel of approximately 46 lbf (205 N).

(c) Turn the captain's stabilizer trim wheel 3 turns or more clockwise.

(d) Make sure the torque necessary to operate the stabilizer trim wheel is not more than 163 in-lb (18.42 N·m).

NOTE: 163 in-lb (18.42 N·m) is equal to a tangential force at the handle of the trim wheel of approximately 46 lbf (205 N).

SUBTASK 27-41-00-480-005

(2) Remove the wrench, SPL-1684 and the adapter, SPL-1748.

(a) Install the fasteners that attach the stabilizer trim wheel to the shaft (TASK 27-41-61-410-801).

SUBTASK 27-41-00-420-005

(3) Do this task: Stabilizer Trim Motor Installation, TASK 27-41-71-400-801.

——— END OF TASK ———

TASK 27-41-00-700-807

9. Column Actuated Stabilizer Trim Cutout Switch Override Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure that the horizontal stabilizer follows the commands from the STAB TRIM switches, even though the column actuated STAB TRIM cutout switches give the opposite command.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

D. Prepare for the Test

SUBTASK 27-41-00-860-026

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-00-780-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

E. Procedure

SUBTASK 27-41-00-710-011

(1) Do the column actuated stabilizer trim cutout switch override test:

(a) Make sure that the STAB TRIM PRI switch, S272 on the aft area of the control stand is in the NORMAL position.

(b) Set the STAB TRIM override switch on the P8 panel to the OVRD position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

(c) Turn the stabilizer trim wheel to set the stabilizer to approximately 8 units of trim.

(d) Pull the captain's control column full aft.

(e) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge moves up (STAB TRIM indicator movement in the APL NOSE DOWN direction).

2) Release the stabilizer trim switches.

(f) Put the captain's control column to the neutral detent.

(g) Set the STAB TRIM override switch on the P8 panel to the NORM position.

(h) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge moves up (STAB TRIM indicator movement in the APL NOSE DOWN direction).

2) Pull the captain's control column full aft.

3) Make sure that the movement of the stabilizer stops.

4) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

5) Make sure that the stabilizer leading edge moves down (STAB TRIM indicator movement in the APL NOSE UP direction).

6) Release the stabilizer trim switches.

(i) Put the captain's control column to the neutral detent.

(j) Set the STAB TRIM override switch on the P8 panel, to the OVRD position.

(k) Push the captain's control column full forward.

(l) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge moves down (STAB TRIM indicator movement in the APL NOSE UP direction).

2) Release the stabilizer trim switches.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(m) Put the captain's control column to the neutral detent.

(n) Set the STAB TRIM override switch on the P8 panel, to the NORM position.

(o) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge moves down (STAB TRIM indicator movement in the APL NOSE UP direction).

2) Push the captain's control column full forward.

3) Make sure that the movement of the stabilizer stops.

4) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

5) Make sure that the stabilizer leading edge moves up (STAB TRIM indicator movement in the APL NOSE DOWN direction).

6) Release the stabilizer trim switches.

(p) Put the captain's control column to the neutral detent.

SUBTASK 27-41-00-780-002

(2) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

——— END OF TASK ———

TASK 27-41-00-700-808

10. Stabilizer Trim Secondary Brake System Test

(Figure 506)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test is to make sure that the stabilizer secondary brake can prevent movement of the horizontal stabilizer.

B. References

Reference	Title
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-13949	Torque Socket - Upper Stop, Stabilizer Trim Jack Screw Part #: C27090-1 Supplier: 81205
STD-14434	Tape Measure - Flexible Steel

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left

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(Continued)

Zone	Area
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-41-00-860-027

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-00-010-004

(2) To get access to the stabilizer trim actuator, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Stabilizer Trim Secondary Brake System Test

SUBTASK 27-41-00-700-001

(1) Do the stabilizer trim secondary brake system test:

WARNING MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE CONTROL SURFACES AND LANDING GEAR DOOR AREAS. THE CONTROL SURFACES, THE LANDING GEAR, AND THE LANDING GEAR DOORS CAN MOVE WHEN YOU DO THE AIR MODE SIMULATION. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Turn the captain's stabilizer trim wheel several turns counterclockwise (2-3 turns is satisfactory).

NOTE: If necessary, use of the first officer's control wheel instead of the captain's control wheel is acceptable, provided that this substitution is maintained throughout the test.

(b) Install the torque socket, SPL-13949, onto the upstop of the jackscrew.

CAUTION IF MORE THAN 800 IN-LB (90.4 N•M) OF TORQUE IS APPLIED TO BALLSCREW ACTUATOR ASSEMBLIES, DAMAGE TO THE BALLSCREW ACTUATOR ASSEMBLY MAY OCCUR.

(c) Apply a 500 ±20 in-lb (56.5 ±2.3 N·m) counterclockwise torque to the upstop of the jackscrew and hold.

1) Make sure that the torque is not put on the safety rod nut.

2) While maintaining torque on the jackscrew, use a marker to make a line on the jackscrew shield and the retainer - seal (View A-A, Figure 506).

NOTE: The arc distance should be measured on the outside radius of the jackscrew shield.

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3) Release the torque.

CAUTION

IF MORE THAN 800 IN-LB (90.4 N•M) OF TORQUE IS APPLIED TO BALLSCREW ACTUATOR ASSEMBLIES, DAMAGE TO THE BALLSCREW ACTUATOR ASSEMBLY MAY OCCUR.

(d) Apply a 500 ±20 in-lb (56.5 ±2.3 N·m) clockwise torque to the upstop of the jackscrew and hold.

1) Make sure that the torque is not put on the safety rod nut.

2) While maintaining torque on the jackscrew, use a marker to make a line on the jackscrew shield and retainer - seal (View A-A, Figure 506).

NOTE: The arc distance should be measured on the outside radius of the jackscrew shield.

3) Release the torque.

(e) Use a tape measure, STD-14434, to measure the arc distance between the lines.

1) Make sure that the arc distance dimension is not more than 1.06 in. (26.9 mm) (36.0 degrees).

a) If the arc distance dimension is more than 1.06 in. (26.9 mm) (36.0 degrees), replace the horizontal stabilizer trim actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

(f) Remove the torque socket, SPL-13949, from the upstop of the jackscrew.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-00-410-004

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-00-860-028

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

END OF TASK

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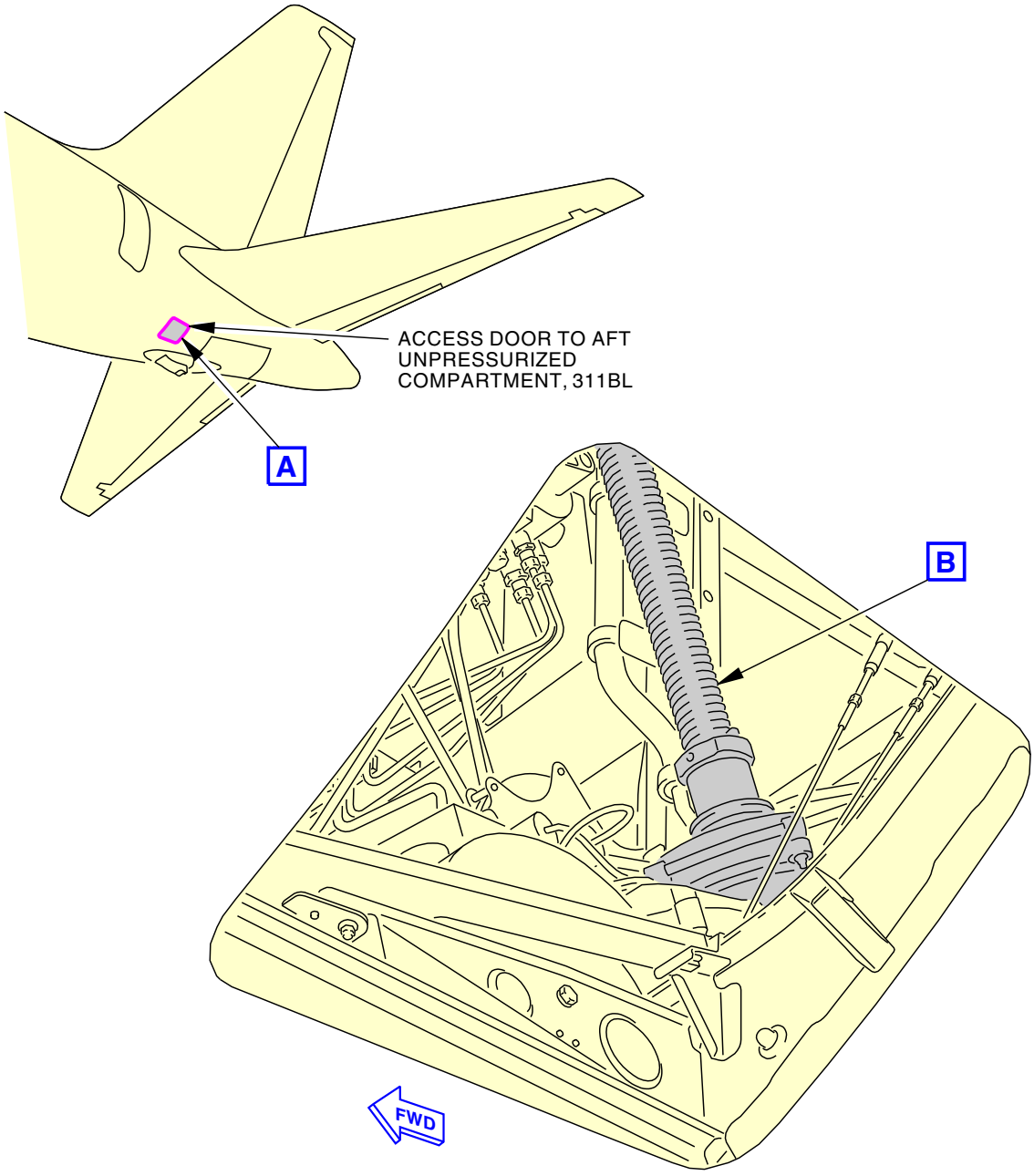

**VIEW THROUGH THE ACCESS DOOR TO AFT
UNPRESSURIZED COMPARTMENT, 311BL**

A

2412638 S00061531062_V1

**Stabilizer Trim Secondary Brake System Test
Figure 506/27-41-00-990-806 (Sheet 1 of 2)**

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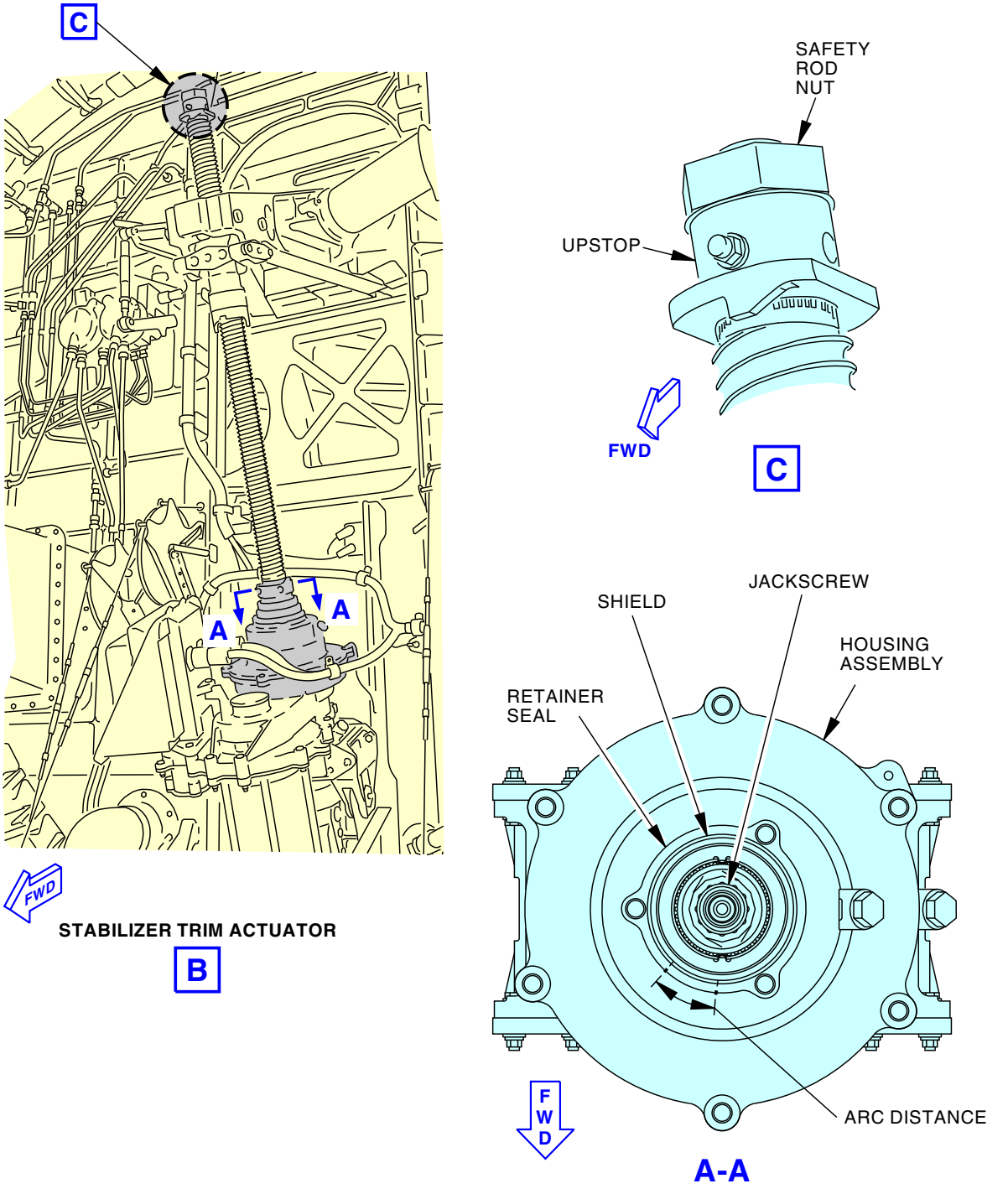

Stabilizer Trim Secondary Brake System Test
Figure 506/27-41-00-990-806 (Sheet 2 of 2)

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TASK 27-41-00-700-809

11. Stabilizer Trim Cutout Test

A. General

(1) Use this procedure to make sure the stabilizer trim cutout switch operates correctly. It stops the horizontal stabilizer when the control column command is opposite from the stabilizer trim switches.

B. References

Reference	Title
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-840-801	Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

E. Prepare for the Test

SUBTASK 27-41-00-860-029

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-41-00-860-030

(2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Procedure

SUBTASK 27-41-00-710-012

(1) Do the stabilizer trim cutout test:

(a) Make sure that the STAB TRIM PRI switch, S272 and BACKUP switch, S149 on the aft area of the control stand is in the NORMAL position.

(b) Make sure that the STAB TRIM override switch on the P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

(c) Position the stabilizer to an intermediate position (Approximately 8 units of trim is satisfactory).

(d) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge moves down (APL NOSE UP).

2) While the stabilizer moves, push the captain's control column forward until the column cutout switch stops the stabilizer.

3) Immediately release the control column to the neutral position with the two stabilizer trim switches still held in the nose up position.

4) With the control column in the neutral position, make sure the stabilizer leading edge continues to move down.

5) Release the stabilizer trim switches.

(e) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge moves up (APL NOSE DOWN).

2) While the stabilizer moves, pull the captain's control column aft until the column cutout switch stops the stabilizer.

3) Immediately release the control column to the neutral position with the two stab trim switches still held in the nose down position.

4) With the control column in the neutral position, make sure the stabilizer leading edge continues to move up.

5) Release the stabilizer trim switches.

(f) Position the stabilizer to an intermediate position (Approximately 8 units of trim is satisfactory).

(g) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer leading edge moves down (APL NOSE UP).

2) While the stabilizer moves, push the captain's control column forward until the column cutout switch stops the stabilizer.

3) Hold the captain's control column in this position and immediately release the stabilizer trim switches.

4) Use a protractor, COM-1691 to make sure the captain's control column is between 2.90° and 3.70° forward from the neutral position.

5) Put the captain's control column back to the neutral position.

(h) Position the stabilizer to an intermediate position (Approximately 8 units of trim is satisfactory).

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(i) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

1) Make sure that the stabilizer leading edge moves up (APL NOSE DOWN).

2) While the stabilizer moves, pull the captain's control column aft until the column cutout switch stops the stabilizer.

3) Hold the captain's control column in this position and immediately release the stabilizer trim switches.

4) Use a protractor, COM-1691 to make sure the captain's control column is between 3.20° and 4.21° aft from the neutral position.

5) Put the captain's control column back to the neutral position.

SUBTASK 27-41-00-860-031

(2) Do this task: Put the Elevator Hydraulic Systems A and B Back to the Condition Before the Pressurization, TASK 27-31-00-840-801.

——— END OF TASK ———

TASK 27-41-00-710-801

12. Column Cutout Switches Test

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) Use this test to make sure that the captain's and first officer's column cutout switches operate correctly.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

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D. Column Cutout Switches Test

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL FLIGHT CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR. THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS AND THE LANDING GEAR CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

SUBTASK 27-41-00-730-001

(1) Do the test of the captain's column cutout switch:

(a) Do one of the steps that follow:

1) Install the protractor, COM-1691, on the captain's control column.

NOTE: The neutral position of the control column is 6.9 degrees forward of the vertical position.

2) Use the MAX Display System (MDS) to view the control column position throughout this test:

a) Select MAINT.

b) Select MAINT DATA PGS.

c) Select 27 FLIGHT CONTROL - DISPLAY.

d) Make sure that COLUMN POSN shows.

NOTE: The neutral position of the control column is 0 degrees.

(b) Make sure that the STAB TRIM PRI switch is set to the NORMAL position.

(c) Make sure that the STAB TRIM override switch is set to the NORM position.

(d) Set the stabilizer to 8 units of trim.

(e) Move and hold the STAB TRIM switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer moves to the nose up position.

(f) Move the captain's control column forward to the maximum travel distance.

1) Make sure that the stabilizer movement stops.

(g) Move the captain's control column to the neutral position.

1) Make sure that the stabilizer moves to the nose up position.

(h) Move and hold the STAB TRIM switches on the captain's control wheel to the NOSE DN position.

1) Make sure that the stabilizer moves to the nose down position.

(i) Move the captain's control column rearward to the maximum travel distance.

1) Make sure that the stabilizer movement stops.

(j) Move the captain's control column to the neutral position.

1) Make sure that the stabilizer moves to the nose down position.

(k) Move the captain's control column rearward slowly until the stabilizer movement stops.

(l) Make sure that the captain's control column position is 3.20 to 4.21 degrees rearward from the neutral position.

(m) Release the STAB TRIM switches on the captain's control wheel.

(n) Move the captain's control column to the neutral position.

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(o) Move and hold the STAB TRIM switches on the captain's control wheel to the NOSE UP position.

1) Make sure that the stabilizer moves to the nose up position.

(p) Move the captain's control column forward slowly until the stabilizer movement stops.

(q) Make sure that the captain's control column position is 2.90 to 3.70 degrees forward from the neutral position.

(r) Release the STAB TRIM switches on the captain's control wheel.

(s) Move the captain's control column to the neutral position.

(t) If installed, remove the protractor, COM-1691, from the captain's control column.

SUBTASK 27-41-00-730-002

(2) Do the test of the first officer's column cutout switch:

(a) Do one of the steps that follow:

1) Install the protractor, COM-1691, on the first officer's control column.

NOTE: The neutral position of the control column is 6.9 degrees forward of the vertical position.

2) Use the MDS to view the control column position throughout this test:

a) Select MAINT.

b) Select MAINT DATA PGS.

c) Select 27 FLIGHT CONTROL - DISPLAY.

d) Make sure that COLUMN POSN shows.

NOTE: The neutral position of the control column is 0 degrees.

(b) Make sure that the STAB TRIM PRI switch is set to the NORMAL position.

(c) Make sure that the STAB TRIM override switch is set to the NORM position.

(d) Set the stabilizer to 8 units of trim.

(e) Move and hold the STAB TRIM switches on the first officer's control wheel to the NOSE UP position.

1) Make sure that the stabilizer moves to the nose up position.

(f) Move the first officer's control column forward to the maximum travel distance.

1) Make sure that the stabilizer movement stops.

(g) Move the first officer's control column to the neutral position.

1) Make sure that the stabilizer moves to the nose up position.

(h) Move and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DN position.

1) Make sure that the stabilizer moves to the nose down position.

(i) Move the first officer's control column rearward to the maximum travel distance.

1) Make sure that the stabilizer movement stops.

(j) Move the first officer's control column to the neutral position.

1) Make sure that the stabilizer moves to the nose down position.

(k) Move and hold the STAB TRIM switches on the first officer's control wheel to the NOSE UP position.

1) Make sure that the stabilizer moves to the nose up position.

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(l) Move the first officer's control column forward slowly until the stabilizer movement stops.

(m) Make sure that the first officer's control column position is 2.90 to 3.70 degrees forward from the neutral position.

(n) Release the STAB TRIM switches on the first officer's control wheel.

(o) Move the first officer's control column to the neutral position.

(p) Move and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DN position.

1) Make sure that the stabilizer moves to the nose down position.

(q) Move the first officer's control column rearward slowly until the stabilizer movement stops.

(r) Make sure that the first officer's control column position is 3.20 to 4.21 degrees rearward from the neutral position.

(s) Release the STAB TRIM switches on the first officer's control wheel.

(t) Move the first officer's control column to the neutral position.

(u) If installed, remove the protractor, COM-1691, from the first officer's control column.

——— END OF TASK ———

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HORIZONTAL STABILIZER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a horizontal stabilizer

(2) An installation of a horizontal stabilizer.

B. You can remove and install the horizontal stabilizer with or without the elevator and elevator tab.

C. This procedure is applicable for the left and right horizontal stabilizers.

TASK 27-41-11-000-801

2. Horizontal Stabilizer Removal

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405)

A. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-800-802	Pressure from the Elevator Hydraulic Systems A and B Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-2030	Pin Removal Equipment - Horizontal Stabilizer Part #: C55005-19 Supplier: 81205
SPL-2035	Sling Equipment - Horizontal Stabilizer Part #: C55014-1 Supplier: 81205
STD-12395	Load Cell Equipment

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

D. Access Panels

Number	Name/Location
317BL	Tailcone Access Door

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(Continued)

Number	Name/Location
318BR	Tailcone Access Door
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

E. Prepare for the Removal

NOTE: If the horizontal stabilizer [1] is being removed and the same stabilizer, elevator, and elevator tab is going to be re-installed (without elevator or elevator tab rework or adjustment), then the following procedure will determine if a flight test is necessary.

NOTE: If the tailcone is removed or it's position is adjusted during the elevator or stabilizer removal procedure, the left and right elevator index plate [4] positions will be in a different position when the tailcone is re-installed. The elevator position cannot be properly measured with the elevator index plate [4] in a different location, therefore, you must do a power-off flight test.

SUBTASK 27-41-11-700-001

(1) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

SUBTASK 27-41-11-860-001

(2) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

SUBTASK 27-41-11-860-002

CAUTION

MAKE SURE THAT YOU ARE CAREFUL WITH THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE SHARP EDGES ON THE TRAMMEL BAR, SPL-1677 CAN CAUSE CHAFING OR DAMAGE TO THE WIRES.

(3) Use the trammel bar, SPL-1677, to set the B dimension of the horizontal stabilizer [1] at 39.17 ±0.01 in. (994.92 ±0.26 mm) (Figure 401).

NOTE: This is the neutral stabilizer setting of zero degrees or 4 units of trim.

(a) Make sure that you protect wire bundles when using the trammel bar, SPL-1677.

SUBTASK 27-41-11-860-003

(4) Move the control column forward and aft several times and then let it go at the neutral position.

SUBTASK 27-41-11-860-004

(5) Measure the elevator position.

(a) Measure the left elevator position on the elevator index plate [4] (Figure 403).

1) Make sure to note if the elevator is above or below the neutral mark.

(b) Measure the right elevator position on the elevator index plate [4] (Figure 403).

1) Make sure to note if the elevator is above or below the neutral mark.

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SUBTASK 27-41-11-860-005

(6) Do this task: Pressure from the Elevator Hydraulic Systems A and B Removal, TASK 27-31-00-800-802.

SUBTASK 27-41-11-860-006

(7) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the CUTOUT position.

SUBTASK 27-41-11-860-007

(8) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-11-860-008

(9) Open this circuit breaker (if installed) and install safety tag:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	15	C00644	EXTERIOR LIGHTING LOGO ILLUM

SUBTASK 27-41-11-860-009

(10) If it is necessary, use the stabilizer trim wheel on the control stand to set the horizontal stabilizer [1] at zero degrees (4 units of trim).

SUBTASK 27-41-11-480-001

(11) Install the lock, SPL-1672, on the stabilizer trim wheel at the control stand (Figure 402).

(a) Turn the trim wheel to put the handle at the top of the wheel.

(b) Adjust the height of the trim lock to put the trim wheel handle correctly on the yoke.

(c) Install the pin through the yoke.

(d) Install the safety pin.

SUBTASK 27-41-11-410-001

(12) Open this access panel:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-41-11-010-001

(13) To access the left horizontal stabilizer, do this step:

Open these access panels:

Number	Name/Location
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-11-010-002

(14) To access the right horizontal stabilizer, do this step:

Open these access panels:

Number	Name/Location
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

F. Horizontal Stabilizer Removal

SUBTASK 27-41-11-480-002

(1) Install the sling equipment, SPL-2035 (Figure 404).

(a) Remove the bolts [2] and bolts [3] from the horizontal stabilizer [1] top surface.

CAUTION

MAKE SURE YOU INSTALL THE HOISTING SLING CORRECTLY WHEN YOU REMOVE THE HORIZONTAL STABILIZER WITH OR WITHOUT THE ELEVATOR INSTALLED. IF YOU DO NOT INSTALL THE HOISTING SLING CORRECTLY FOR THE REMOVAL OF THE HORIZONTAL STABILIZER, YOU CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Attach the sling equipment, SPL-2035, to the horizontal stabilizer [1] with fasteners.

NOTE: Low clearance sling is used only with elevator removed.

(c) Attach the load cell, STD-12395, to the sling equipment, SPL-2035.

(d) Attach a hoist to the load cell, STD-12395.

CAUTION

YOU MUST CAREFULLY LIFT THE HOISTING SLING. A SUDDEN MOVEMENT OF THE HOISTING SLING CAN CAUSE DAMAGE TO THE HORIZONTAL STABILIZER.

(e) Lift the weight of the horizontal stabilizer [1].

1) Use the load cell, STD-12395, on the sling to make sure that the force used when lifting horizontal stabilizer [1] is not more than:

- 888 lb (403 kg) (830 lb (376 kg) airplane part + 58 lb (26 kg) tool) with elevator attached
- 688 lb (312 kg) (630 lb (286 kg) airplane part + 58 lb (26 kg) tool) without elevator attached.

SUBTASK 27-41-11-020-001

WARNING

DECREASE THE PRESSURE BEFORE YOU DISCONNECT THE HYDRAULIC LINE. PRESSURIZED FLUID CAN CAUSE INJURIES TO PERSONNEL.

(2) Disconnect the hydraulic line [25] of the elevator tab installed aft of the stabilizer rear spar.

SUBTASK 27-41-11-020-002

(3) Disconnect these electrical connectors:

(a) Flight recorder position sensor

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Exterior logo light (if installed).

SUBTASK 27-41-11-020-003

(4) If the elevator is attached to the horizontal stabilizer, do this step:

(a) Open this access panel:

Number	Name/Location
318BR	Tailcone Access Door

or

Open this access panel:

Number	Name/Location
317BL	Tailcone Access Door

(b) Remove the nut [23], nut [24], and bolt [21] to disconnect the elevator control pushrod [5] from the elevator.

SUBTASK 27-41-11-020-004

(5) Remove the horizontal stabilizer [1] (Figure 405).

NOTE: If the bolts are frozen, use pin removal equipment, SPL-2030, to assist in removal.

(a) At the horizontal stabilizer rear spar, do these steps:

1) Remove the nut [32] and washer [34] from the bolt [28].

2) Remove the nuts [35] and washers [34] from the bolts [38].

3) Remove the bolt [28], washer [29], and washer [27].

a) If it is necessary, remove the seal support structure before you remove this bolt.

b) Keep a record of the bolt length and location for the installation.

4) Remove the bolts [38], washers [37], and washers [27].

a) If it is necessary, remove the seal support structure before you remove these bolts.

b) Keep a record of each bolt length and location for the installation.

5) Remove the washer [30], washers [39], pin [33], pins [36], and antirotation lock [31].

a) If it is necessary, adjust the tension of the sling to help remove the pins.

6) Remove and inspect each bolt or pin.

NOTE: If an existing bolt or pin has missing plating, cracked, or flaking, prior to further flight replace with new parts or repair in accordance with a method approved by an Authorized Representative for the Boeing Commercial Airplanes (BCA) Organization Designation Authorization who has been authorized to make those findings.

a) If the bolts or pins show signs of damage: pitting, corrosion, no plating (pins only), galling (bolts only) or wear beyond drawing tolerances, replace them with the improved bolts or pins.

b) If the pins or bolts show no sign of damage, they can be reinstalled or replaced with an improved front spar bolts or rear spar pins designed to resist wear, galling, or corrosion.

(b) At the horizontal stabilizer front spar, do these steps:

1) Remove the pins [44], nuts [43], washers [42], shims [45], washers [46], washers [40], and bolts [41].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Lift the horizontal stabilizer [1] out horizontally, then lower to the support stand.

(d) Remove and inspect each bolt or pin.

1) If the bolts or pins show signs of damage: pitting, corrosion, no plating (pins only), galling (bolts only) or wear beyond drawing tolerances, replace them with the improved bolts or pins.

2) If the pins or bolts show no sign of damage, they can be reinstalled or replaced with an improved front spar bolts or rear spar pins designed to resist wear, galling, or corrosion.

(e) If there is an indication of hydraulic fluid contamination on the lugs or clevises, examine the components in the vertical fin for external leakage:

- Main and standby rudder Power Control Unit (PCU).
- Hydraulic hoses and tubing.

NOTE: An example of hydraulic fluid contamination is cracked, peeled, or blistered paint.

SUBTASK 27-41-11-080-003

(6) If it is necessary, remove the sling equipment, SPL-2035.

(a) Release tension applied to the sling equipment, SPL-2035.

(b) Remove the hoist from the load cell, STD-12395.

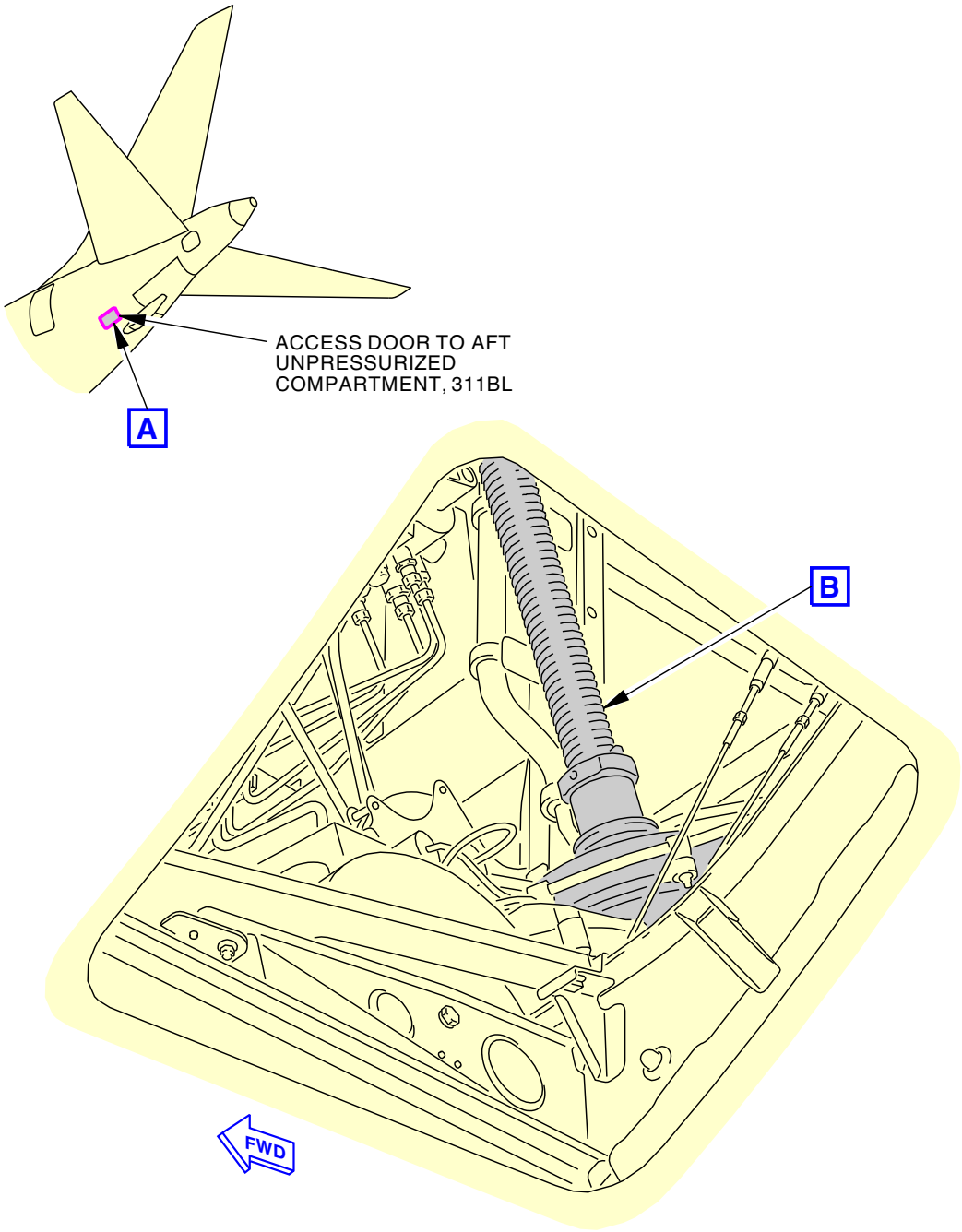
(c) Remove the load cell, STD-12395 from the sling equipment, SPL-2035.

(d) Remove the fasteners that attach the sling equipment, SPL-2035.

(e) Install the bolts [2] and bolts [3] at the horizontal stabilizer [1] top surface.

——— END OF TASK ———

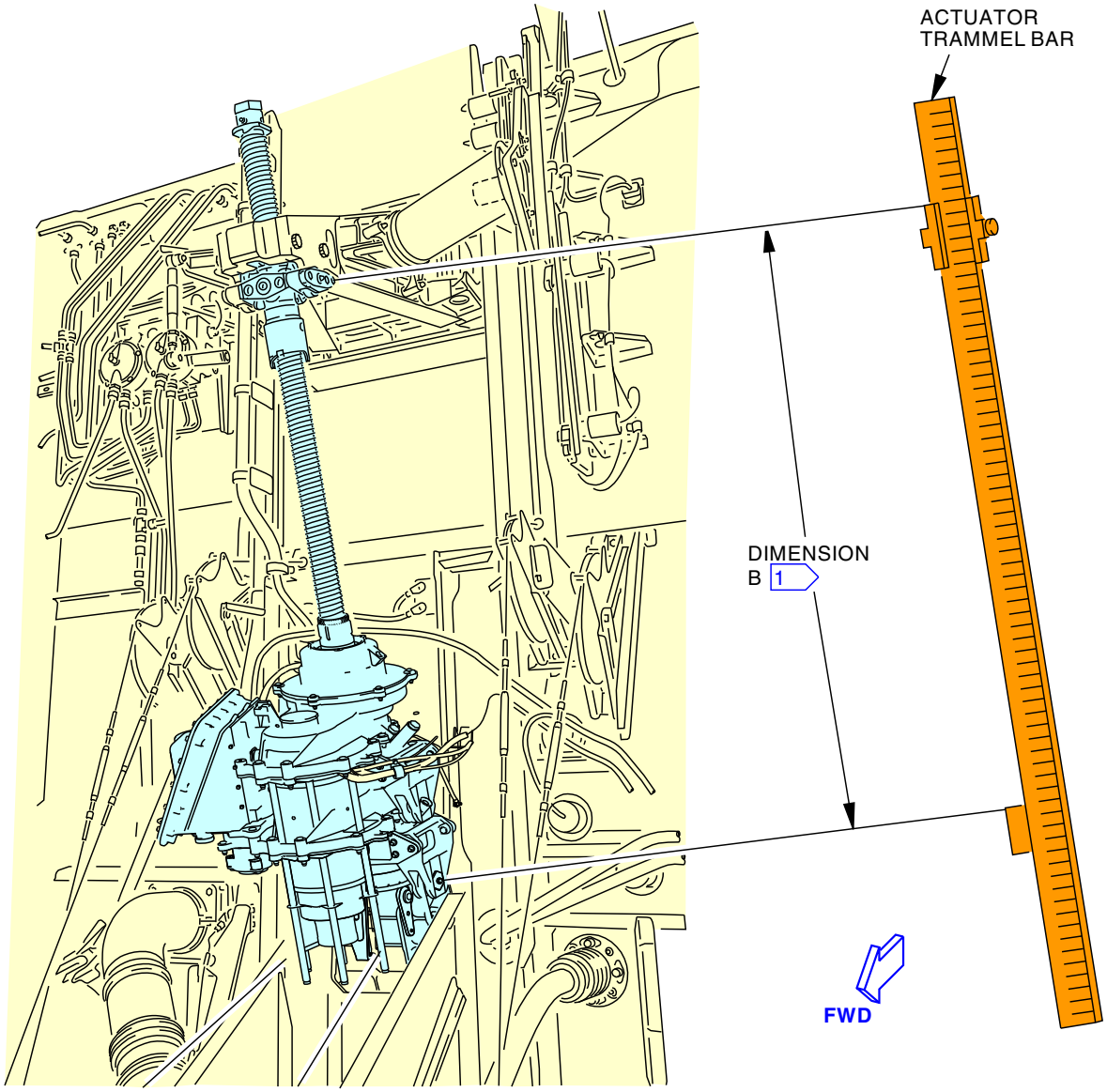
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412643 S00061531072_V1

Stabilizer B Dimension Setting
Figure 401/27-41-11-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

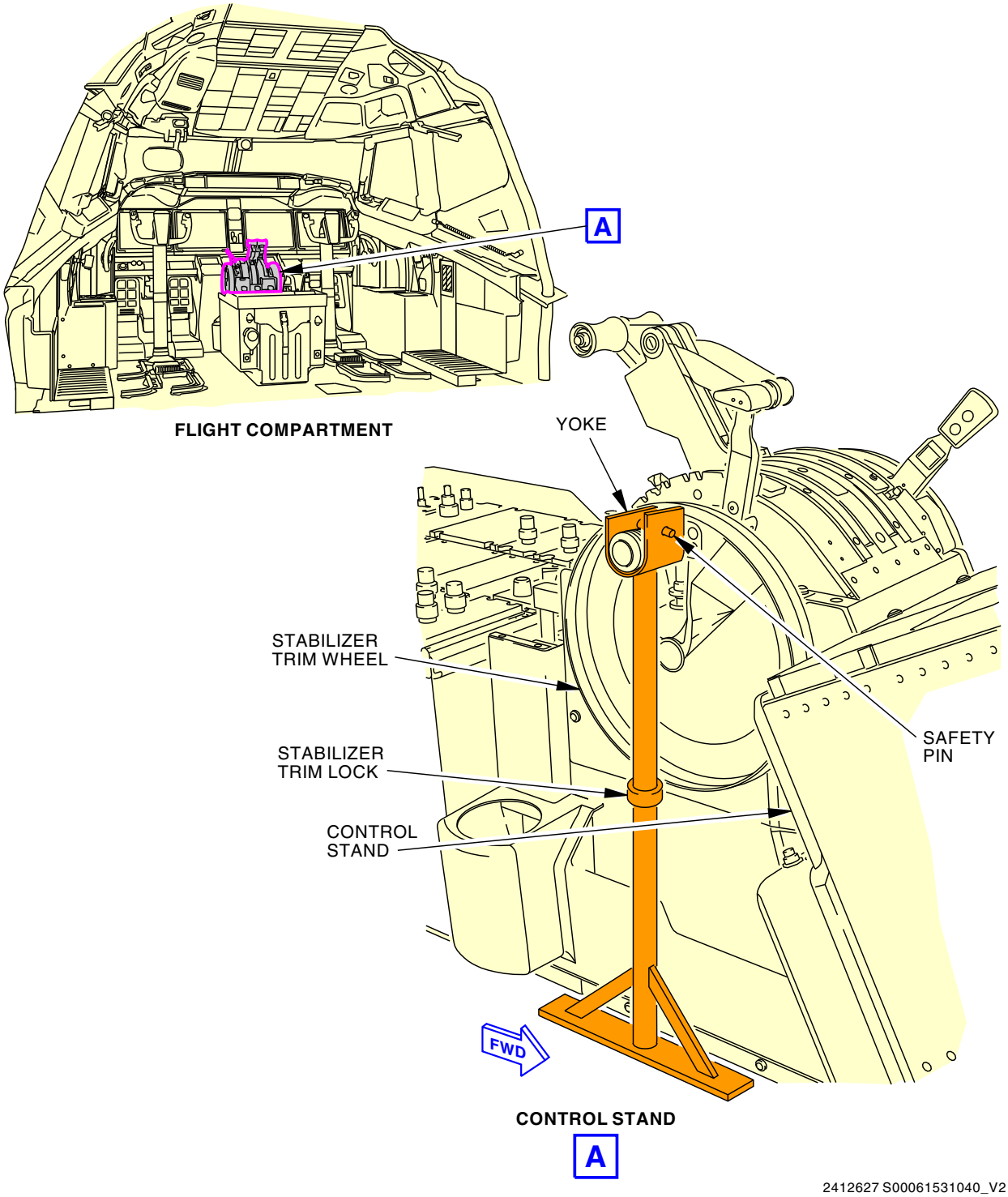
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412644 S00061531073_V2

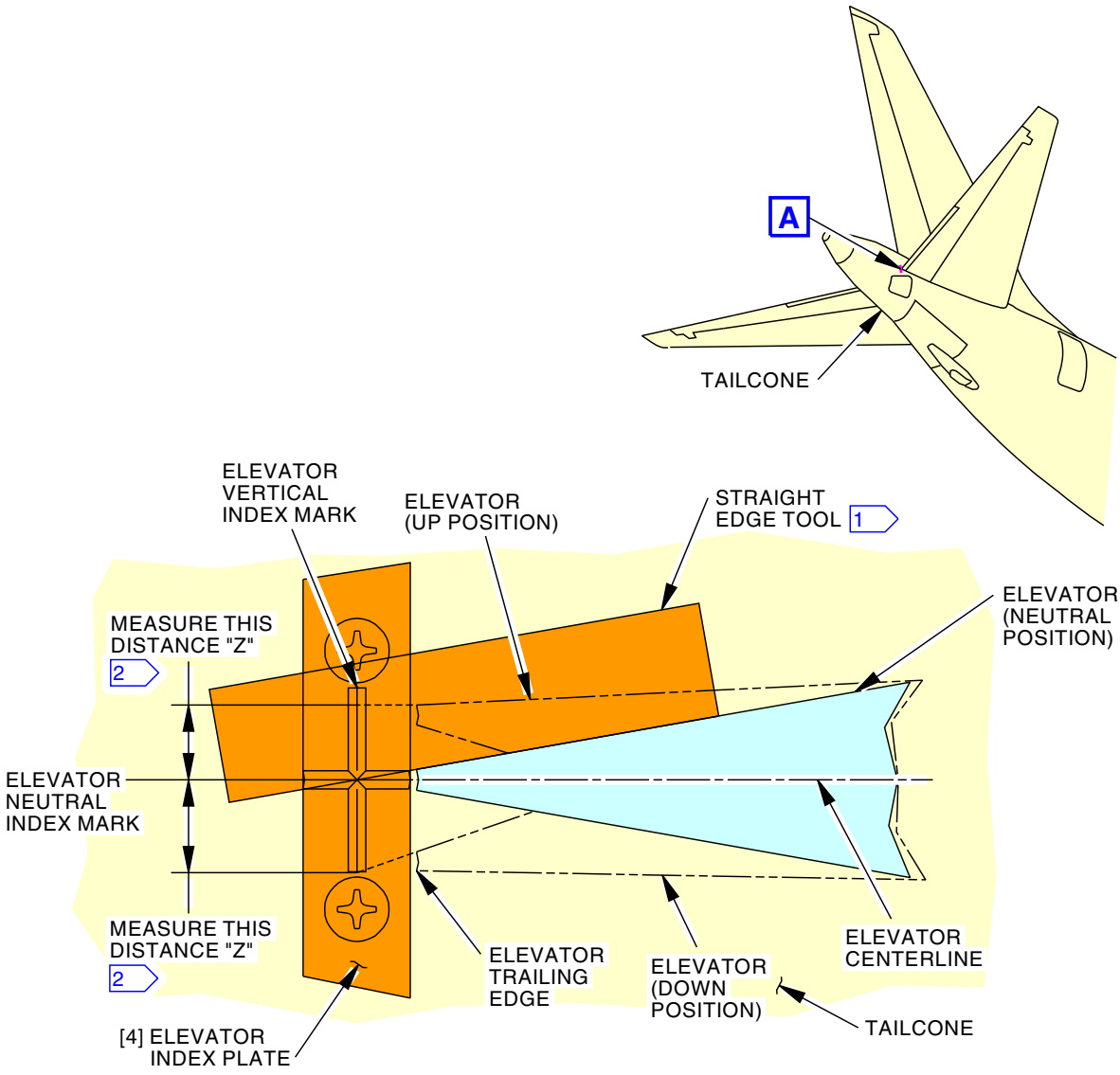
Stabilizer B Dimension Setting
Figure 401/27-41-11-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Lock Installation
Figure 402/27-41-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR POSITION ADJUSTMENT MEASUREMENTS (RIGHT SIDE)

A

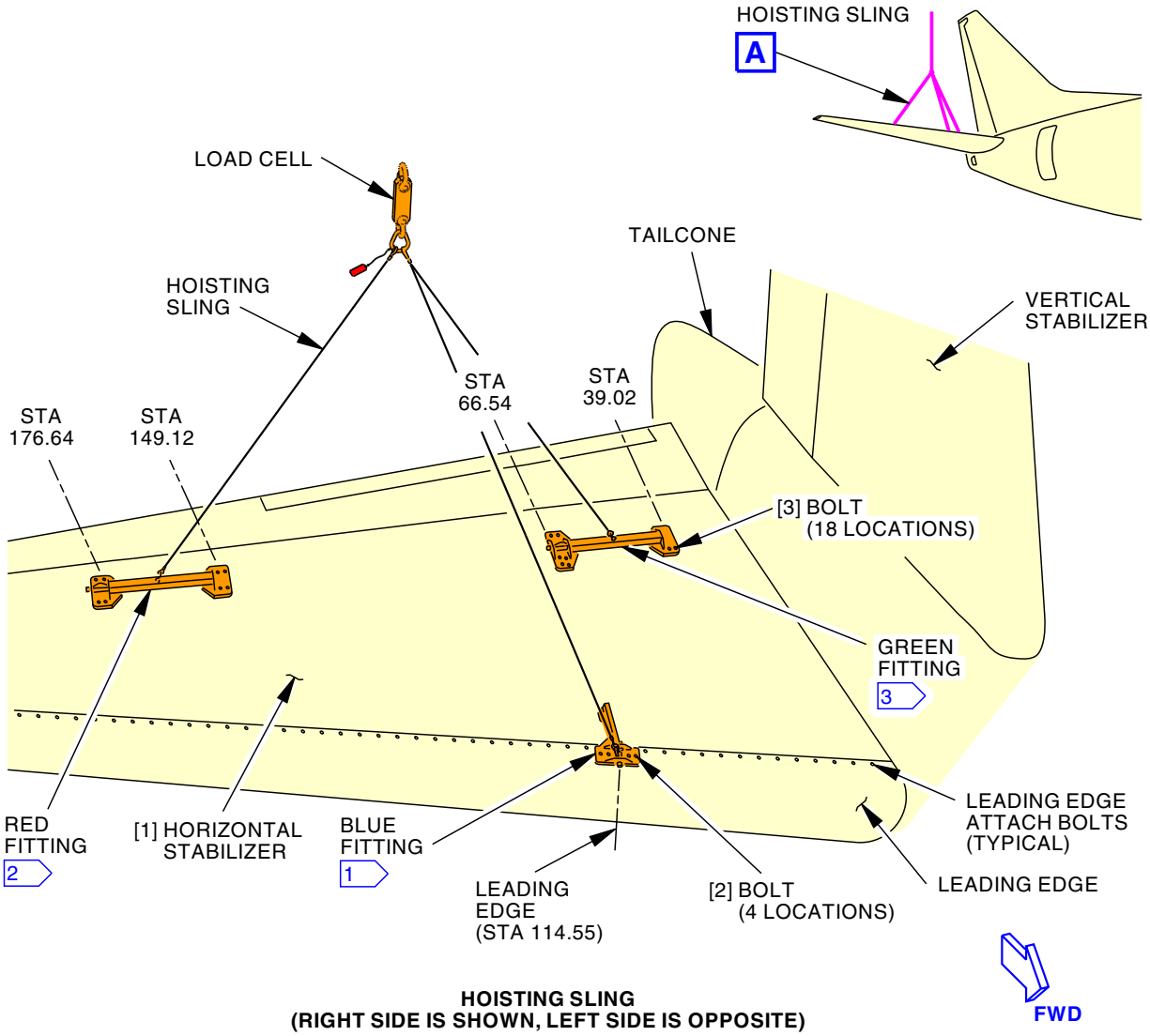
1 ELEVATOR IS AT NEUTRAL WHEN THE BOTTOM EDGE OF A STRAIGHT EDGE TOOL PLACED ON THE UPPER ELEVATOR SURFACE PASSES THROUGH THE MIDDLE OF THE ELEVATOR INDEX PLATE, AS SHOWN.

2 THE DISTANCE "Z" IS MEASURED USING A STRAIGHT EDGE TOOL ON THE UPPER SURFACE OF THE ELEVATOR TO INTERSECT WITH THE ELEVATOR VERTICAL INDEX MARK AT THE ELEVATOR NEUTRAL INDEX MARK.

2412645 S00061531074_V1

Elevator Position Measurement
Figure 403/27-41-11-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HOISTING SLING
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

A

1 THE FORWARD ATTACH (BLUE) FITTING IS ATTACHED TO THE STABILIZER FRONT SPAR (LEADING EDGE ATTACH BOLTS).

TWO BOLTS ARE USED ON THE INBOARD SIDE OF THE LEADING EDGE RIB (STA 114.55) AND TWO BOLTS ARE USED ON THE OUTBOARD SIDE OF THE LEADING EDGE RIB (STA 114.55).

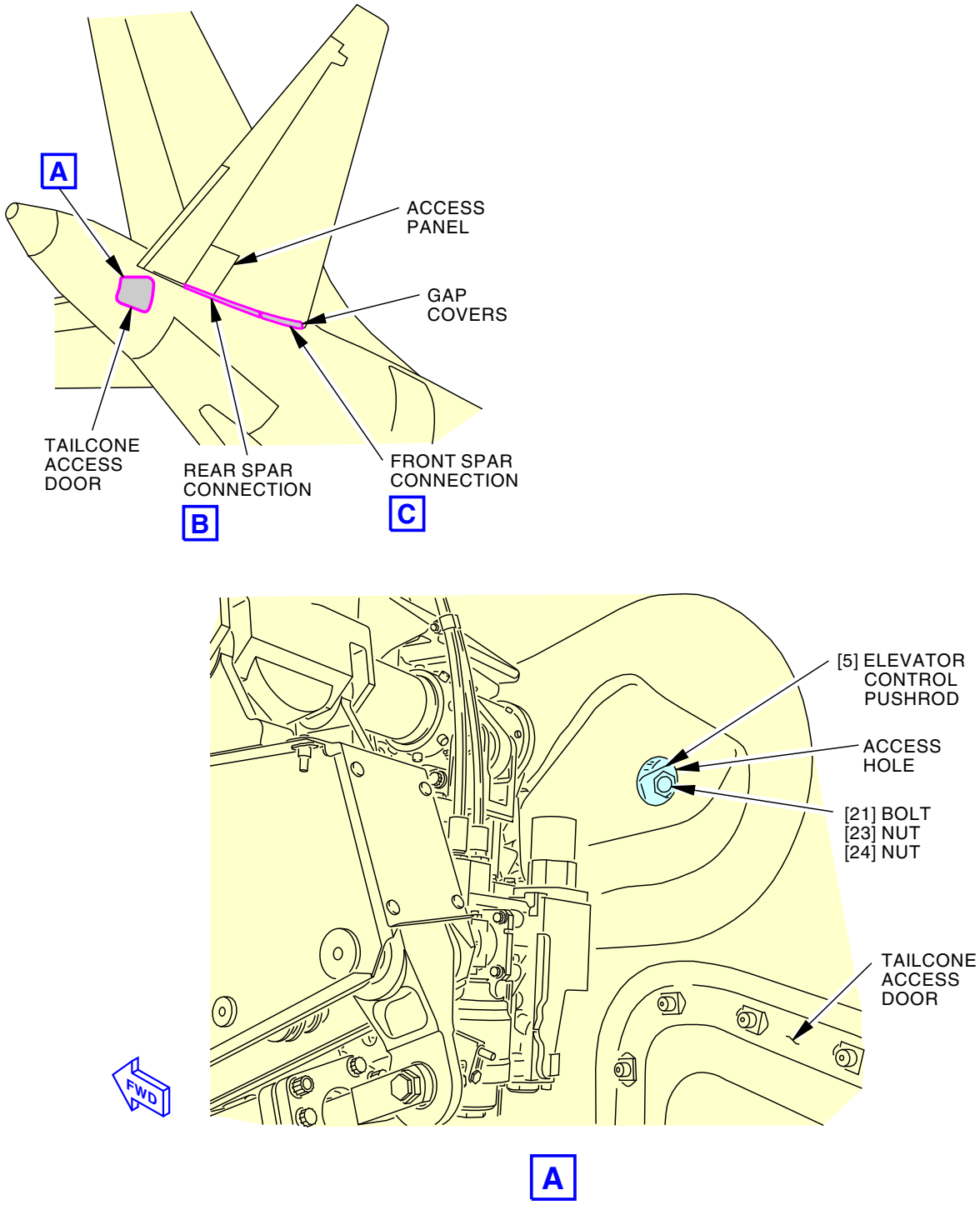
2 THE AFT OUTBOARD ATTACH (RED) FITTING IS ATTACHED TO THE ELEVATOR HINGE SUPPORT RIBS, FOUR BOLTS ARE USED AT STA 176.64 AND FOUR BOLTS ARE USED AT STA 149.12.

3 THE AFT INBOARD ATTACH (GREEN) FITTING IS ATTACHED TO THE ELEVATOR HINGE SUPPORT RIBS, SIX BOLTS ARE USED AT STA 66.54 AND FOUR BOLTS ARE USED AT STA 39.02.

2412646 S00061531075_V3

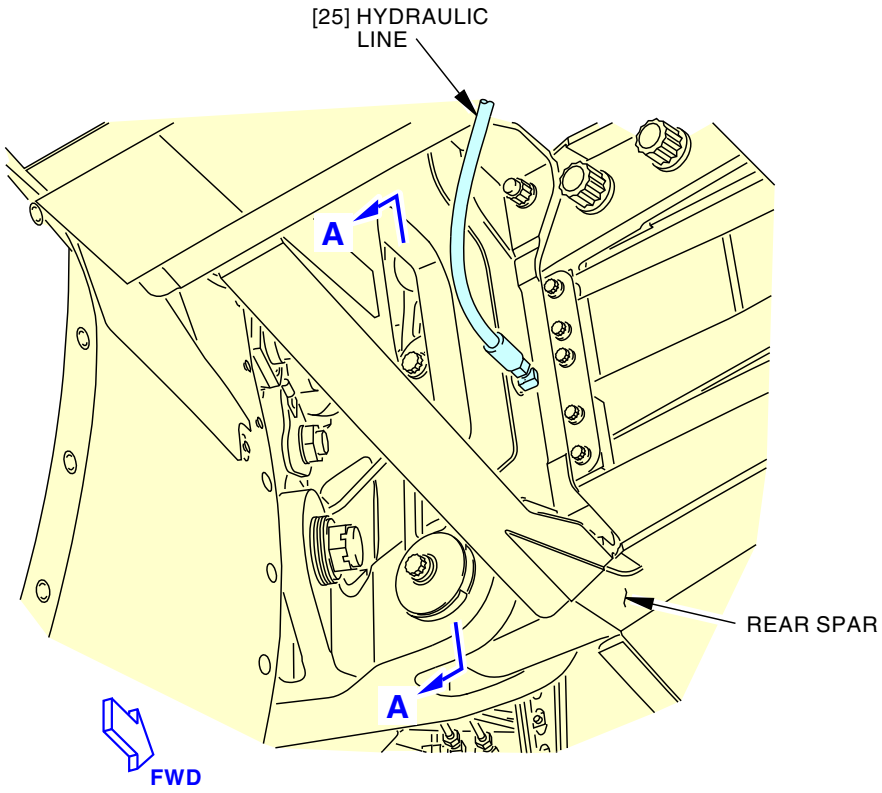
Horizontal Stabilizer Hoisting Sling Installation
Figure 404/27-41-11-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



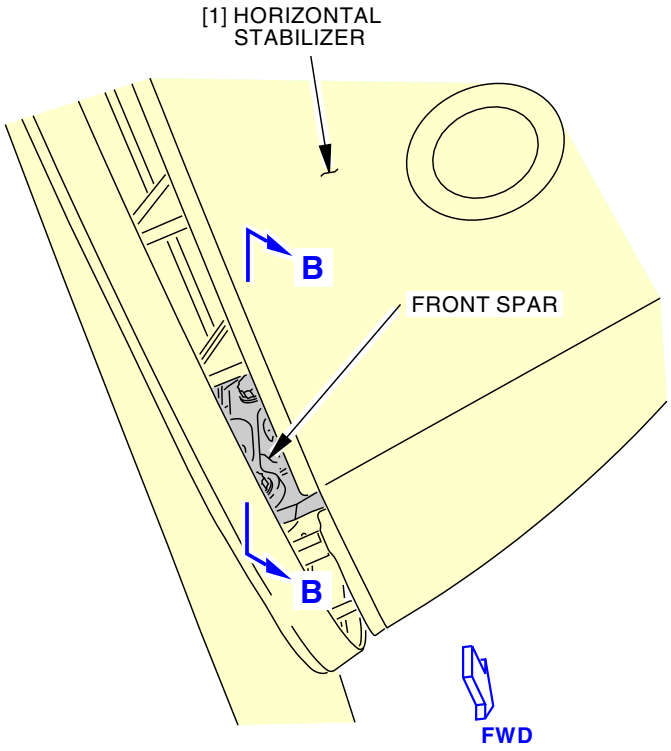
REAR SPAR CONNECTION
(ACCESS PANELS AND GAP COVERS IS REMOVED)
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)

B

2412648 S00061531077_V1

Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



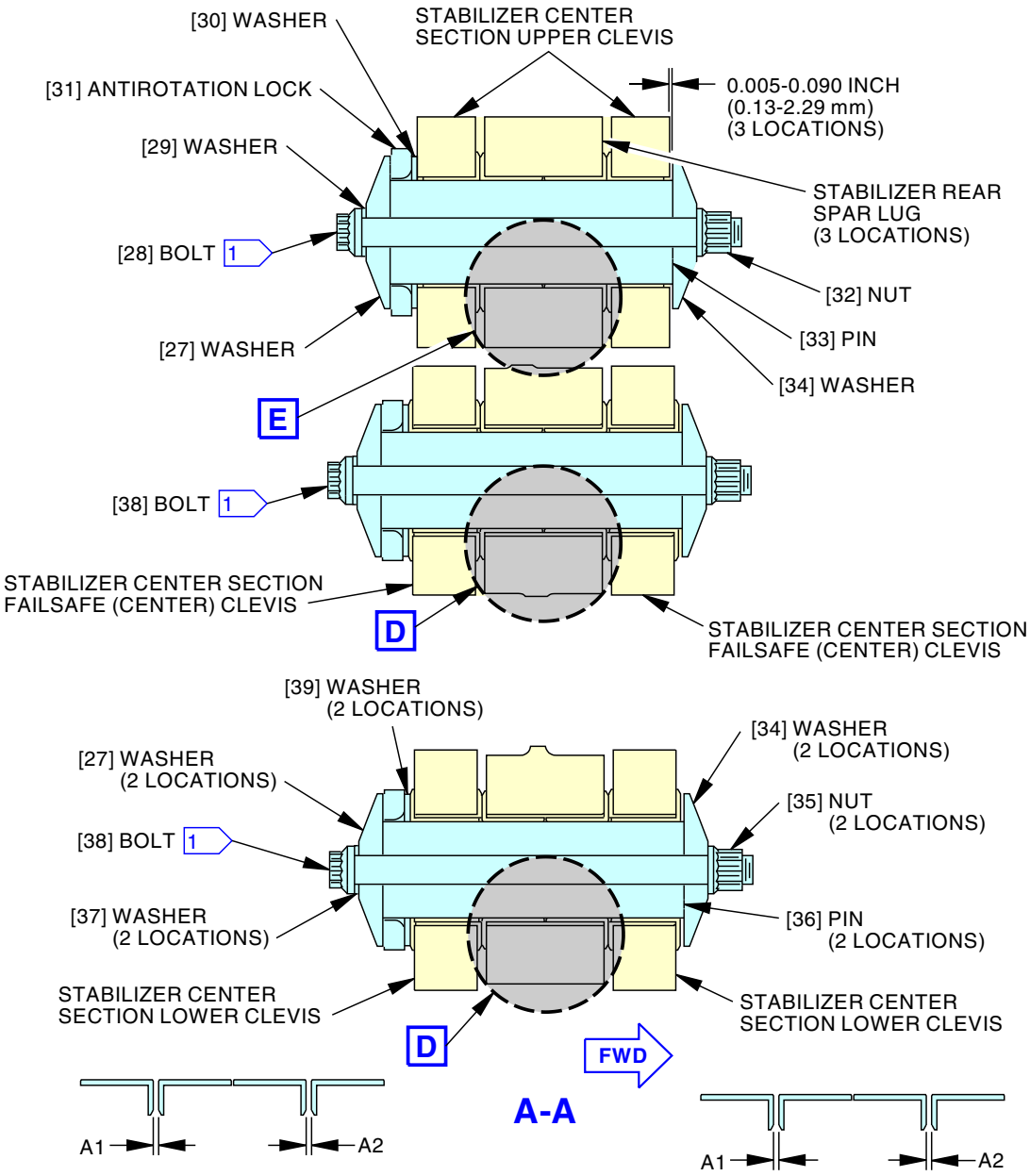
**FRONT SPAR CONNECTION
(GAP COVERS IS REMOVED)
(RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE)**

C

2412649 S00061531078_V1

**Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 3 of 6)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

COMBINED GAPS BETWEEN BUSHINGS AT A1 AND A2 SHOULD BE 0.032 INCH (0.81 mm), OR LESS.

D

NOTE:

COMBINED GAPS BETWEEN BUSHINGS AT A1 AND A2 SHOULD BE 0.046 INCH (1.17 mm), OR LESS.

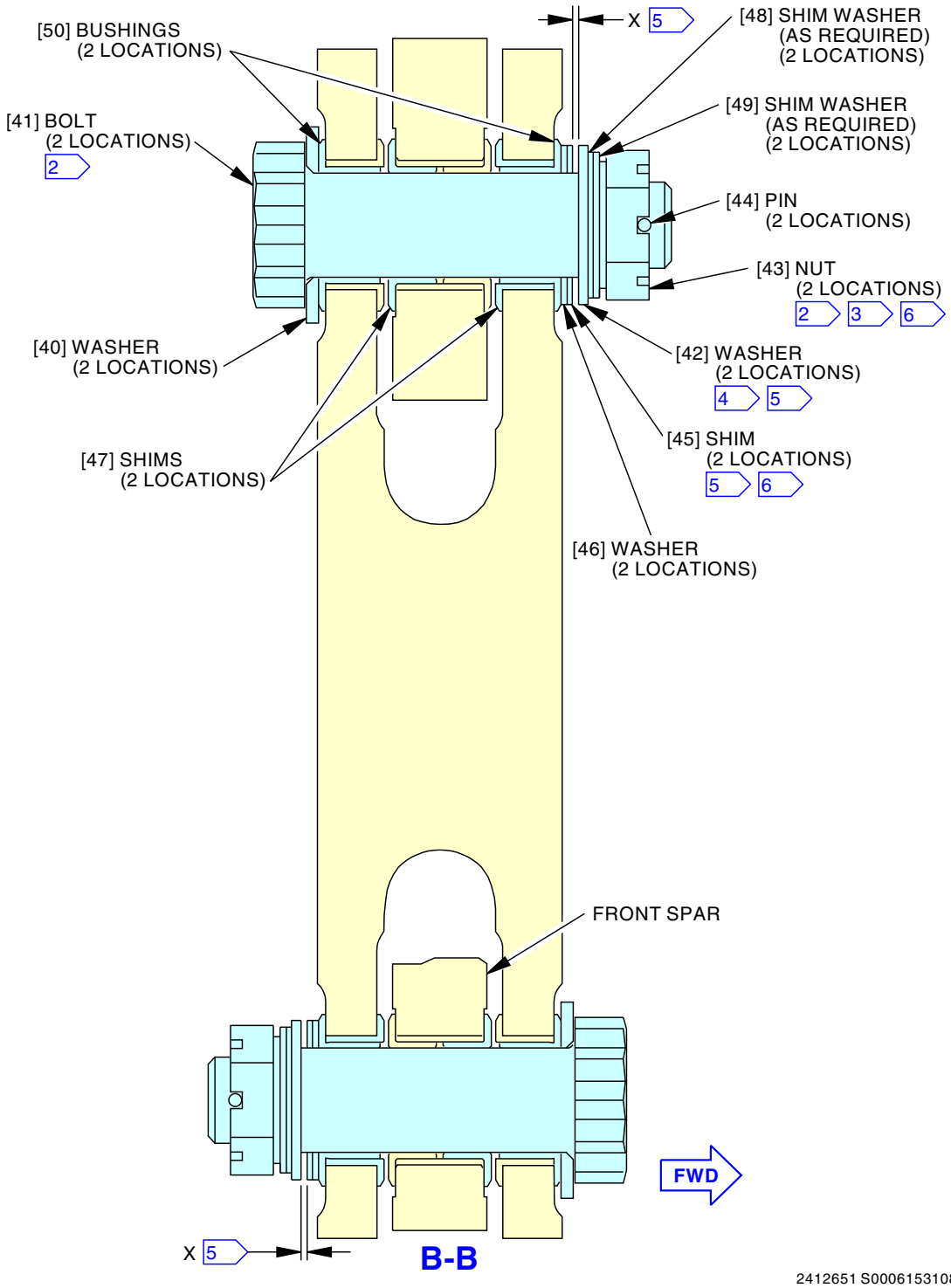
E

1 BOLT HEAD DIRECTION OPTIONAL (WASHER NEEDS TO BE INSTALLED AT BOLT HEAD LOCATION).

2412650 S00061531079_V1

Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2 BEFORE INSTALLING NUT, COAT THREADS OF BOLT AND NUT WITH BMS 3-28 ANTI-SEIZE COMPOUND.

3 TORQUE NUT TO AN INITIAL TORQUE OF 50 POUND-INCHES (5.6 NEWTON-METERS).

4 AFTER INITIAL TORQUE, WASHER [42] OR SHIM WASHER [48]/[49] MUST TOUCH STEPPED PART OF BOLT [41]. IF THE WASHER [42] OR SHIM WASHER [48]/[49] DOES NOT CONTACT STEPPED PART OF BOLT [41], REMOVE LAMINATED SHIMS [45] UNTIL IT DOES.

5 THE GAP "X" BETWEEN THE SHIMS [45] AND WASHER [42] IS MORE THAN 0.002 INCH (0.05 mm), ADD SHIMS [45] UNTIL THE GAP "X" IS BETWEEN 0.002-0.000 INCH (0.05-0.00 mm).

6 WHEN SHIM [45] ADJUSTMENTS ARE COMPLETE, TORQUE NUT TO 950-1400 POUND-INCHES (107.4-158.2 NEWTON-METERS).

2412652 S00061531081_V1

Horizontal Stabilizer Installation
Figure 405/27-41-11-990-805 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-11-400-801

3. Horizontal Stabilizer Installation

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, and Figure 406)

A. References

Reference	Title
27-31-00-700-801	Null Procedure - Mach Trim Actuator (P/B 201)
27-31-00-700-802	Elevator Tab Control System - Operational Test (P/B 501)
27-31-00-700-805	Elevator Travel Limit - Test (P/B 501)
27-31-00-710-803	Elevator Power-Off Flight Test (P/B 501)
27-31-00-800-801	Elevator Hydraulic System A and B - Pressurization (P/B 201)
27-31-00-820-802	Elevator Control Pushrods - Adjustment (P/B 501)
27-31-00-820-803	Input Rods of the Elevator Power Control Unit - Adjustment (P/B 501)
27-31-11-400-801	Elevator - Installation (P/B 401)
31-31-51-700-801	Elevator Position Transmitter Installation Test (P/B 401)
33-49-00-960-802	Logo Light - Light Assembly Replacement (P/B 201)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205
SPL-2035	Sling Equipment - Horizontal Stabilizer Part #: C55014-1 Supplier: 81205
SPL-13581	Alignment Eqpt - Horizontal Stab Installation Part #: C55008-18 Supplier: 81205
STD-12395	Load Cell Equipment

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D50004	Compound - Antiseize	BMS3-28
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
317	Tail Cone Compartment - Left
318	Tail Cone Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

E. Access Panels

Number	Name/Location
317BL	Tailcone Access Door
318BR	Tailcone Access Door
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

F. Horizontal Stabilizer Installation

NOTE: Do an inspection of the area near the horizontal stabilizer identification plate for a stenciled note or placard which restricts the horizontal stabilizer to an individual airplane because of a matched set approval.

SUBTASK 27-41-11-480-003

(1) Install the sling equipment, SPL-2035 (Figure 404):

(a) Remove the bolts [2] and bolts [3] from the horizontal stabilizer [1] top surface.

(b) Attach the sling equipment, SPL-2035, to the horizontal stabilizer [1] with fasteners.

(c) Attach the load cell, STD-12395, to the sling equipment, SPL-2035.

NOTE: Low clearance sling is used only with elevator removed.

(d) Attach a hoist to the load cell, STD-12395.

SUBTASK 27-41-11-640-001

(2) Lubricate the bolts, washers, bushings in the front and rear spar fittings, and pins with corrosion inhibiting material, G50136.

(a) Do not put the corrosion inhibiting material, G50136, on the threaded portion of the bolts.

SUBTASK 27-41-11-640-002

(3) Lubricate the bolt threads and nut threads with compound, D50004.

NOTE: This anti-sieze compound prevents galling of the threads.

SUBTASK 27-41-11-420-001

(4) Install the horizontal stabilizer [1] (Figure 405).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION YOU MUST CAREFULLY LIFT THE HOISTING SLING. A SUDDEN MOVEMENT OF THE HOISTING SLING CAN CAUSE DAMAGE TO THE HORIZONTAL STABILIZER.

(a) Lift and put the horizontal stabilizer [1] in its position.

1) Use the load cell, STD-12395, on the sling to make sure that the force used when lifting horizontal stabilizer [1] is not more than:

- 888 lb (403 kg) (830 lb (376 kg) airplane part + 58 lb (26 kg) tool) with elevator attached
- 688 lb (312 kg) (630 lb (286 kg) airplane part + 58 lb (26 kg) tool) without elevator attached.

(b) Align the horizontal stabilizer [1] with the rear and front fittings on the airplane.

(c) Temporarily install the bolts [41] on the front spar of the horizontal stabilizer [1].

NOTE: You can use the stabilizer alignment tool, alignment equipment, SPL-13581, to align the stabilizer in place of using the bolts [41].

(d) At the rear spar of the horizontal stabilizer [1], do these steps:

1) Install the antirotation lock [31], pin [33], washer [30], washer [27], washer [29], bolt [28] with the bolt heads either forward or aft, washer [34], and nut [32].

2) Install the pins [36], washers [39], washers [27], washers [37], bolts [38] with the bolt heads either forward or aft, washers [34], and nuts [35].

3) Measure the clearance between the bushing faces of the external and internal lugs (Figure 405).

NOTE: This clearance measurement is for the sum of the two clearances (A1 and A2) at each of the three rear spar clevises.

a) Make sure that the maximum allowable clearance for each clevis at the center (failsafe) and lower lugs (sum of the two clearances, A1 and A2, at each lug) is 0.032 in. (0.81 mm).

b) Make sure that the maximum allowable clearance for the upper clevis (sum of the two clearances, A1 and A2) is 0.046 in. (1.17 mm).

4) Tighten the nut [32] to 575 ±75 in-lb (65 ±9 N·m) and nuts [35] to 575 ±75 in-lb (65 ±9 N·m) but keep a clearance of 0.005 in. (0.13 mm) – 0.090 in. (2.29 mm) after the nut is tightened.

NOTE: The clearance of 0.005 in. (0.13 mm) – 0.090 in. (2.29 mm) after the nut [32], and nut [35] are tightened, is taken between the Stabilizer Center Section Clevis and washer [34].

(e) At the front spar of the horizontal stabilizer [1], do these steps:

1) Remove the bolts [41].

2) Measure the clearance between the bushing faces of the lugs and clevises.

3) Install the shim [47] to get a maximum clearance of 0.005 in. (0.13 mm) for each side of the lugs (maximum of 0.010 in. (0.25 mm) total allowable clearance for each clevis).

4) Install the washers [40], bolts [41], washers [46], washers [42], shims [45], and nuts [43].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If it is necessary, add the shim washers [48] and/or shim washers [49] between the nut [43] and washer [42] to align the pin hole of the bolt [41] and nut [43].

b) Tighten the nuts [43] to an initial torque of 50 in-lb (5.6 N·m).

c) Make sure that the stepped portion of the bolts [41] touch the washers [42], or shim washers [48] and/or shim washers [49], if used.

<1> If it is necessary, remove the shims [45] until the stepped portion of the bolts [41] touch the washers [42] or shim washers [48] and/or shim washers [49], if used.

d) Make sure that the gap "X" between the shims [45] and washers [42] is 0.002 in. (0.05 mm) or less.

<1> If it is necessary, add shims [45] until the gap "X" is between 0.002 in. (0.05 mm) - 0.000 in. (0.00 mm).

e) Tighten the nuts [43] to 950 in-lb (107.3 N·m) – 1400 in-lb (158.2 N·m).

f) Install the new pins [44].

<1> If it is necessary, tighten or loosen the nuts [43], to get the pin hole alignment.

SUBTASK 27-41-11-080-001

(5) Remove the sling equipment, SPL-2035, from the horizontal stabilizer [1].

(a) Release tension applied to the sling equipment, SPL-2035.

(b) Remove the hoist from the load cell, STD-12395.

(c) Remove the load cell, STD-12395 from the sling equipment, SPL-2035.

(d) Remove the fasteners that attach the sling equipment, SPL-2035.

(e) Install the bolts [2] and bolts [3] at the horizontal stabilizer [1] top surface.

SUBTASK 27-41-11-420-002

(6) If the elevator is not attached to the horizontal stabilizer [1], do this task: Elevator - Installation, TASK 27-31-11-400-801.

SUBTASK 27-41-11-420-003

(7) If the elevator is attached to the horizontal stabilizer [1], connect the elevator control pushrod [5] to the elevator:

(a) Move the elevator by hand to the neutral position.

(b) Install the bolt [21] with the bolt head inboard and nuts [23], nuts [24] to connect the elevator control pushrod [5] to the elevator.

(c) Close this access door:

Number	Name/Location
318BR	Tailcone Access Door

or

Close this access door:

Number	Name/Location
317BL	Tailcone Access Door

SUBTASK 27-41-11-420-004

(8) Connect the hydraulic line [25] (that is installed just aft of the stabilizer rear spar) of the elevator tab mechanism actuator.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Tighten the B-nut on hydraulic line [25] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-41-11-420-005

(9) Connect these electrical connectors:

(a) Flight recorder position sensor

(b) Exterior logo light (if it is installed).

SUBTASK 27-41-11-410-002

(10) For the left horizontal stabilizer, do this step:

(a) Close these access panels:

Number	Name/Location
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib

SUBTASK 27-41-11-410-003

(11) For the right horizontal stabilizer, do this step:

(a) Close these access panels:

Number	Name/Location
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

SUBTASK 27-41-11-390-001

(12) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-41-11-080-002

(13) Remove the lock, SPL-1672, from the stabilizer trim wheel at the control stand.

SUBTASK 27-41-11-820-001

(14) Adjust the stabilizer-to-body seals (Figure 406):

(a) Set the horizontal stabilizer [1] to a zero degree trim (four units of trim).

(b) Make sure that the clearance between the stabilizer-to-body blade seals and the airplane body surface along the upper and lower horizontal edge is 0.00 in. (0.00 mm) - 0.04 in. (1.02 mm).

1) If it is necessary to adjust the stabilizer-to-body blade seals, you must first set the horizontal stabilizer [1] to 5 units of trim.

2) Adjust the stabilizer-to-body blade seals in or out, if it is necessary.

(c) Make sure that the stabilizer-to-body bulb seals touch and push against the airplane body surface.

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(d) Move the stabilizer leading edge to the full down position (the ball nut is against the downstop).

(e) Make sure that the clearance is 0.00 in. (0.00 mm) - 0.04 in. (1.02 mm) between the airplane body surface and the stabilizer-to-body blade seals at these locations:

1) The blade seals adjacent to the gap cover of the lower spar.

a) If it is necessary to adjust the stabilizer-to-body blade seals, you must first set the horizontal stabilizer [1] to 5 units of trim.

b) Adjust the stabilizer-to-body blade seals in or out, as necessary.

2) The blade seal adjacent to the gap cover of the upper spar.

a) If it is necessary to adjust the stabilizer-to-body blade seals, you must first set the horizontal stabilizer [1] to 5 units of trim.

b) Adjust the stabilizer-to-body blade seals in or out, if it is necessary.

SUBTASK 27-41-11-860-010

(15) Set the STAB TRIM PRI switch, S272, to the NORMAL position.

SUBTASK 27-41-11-820-002

(16) If the same stabilizer, elevator, and elevator tab that was removed was re-installed (without elevator or elevator tab rework or adjustment - and the tailcone was not removed), do this check to find if a flight test is necessary:

NOTE: If the tailcone was removed, or its position adjusted during the stabilizer or elevator removal procedure, the left and right elevator index plate [4] positions will be in a different position when the tailcone is re-installed. The elevator cannot be properly measured with the elevator index plate [4] in a different location, therefore, you must do a power-off flight test.

(a) Do this task: Elevator Hydraulic System A and B - Pressurization, TASK 27-31-00-800-801.

(b) Do this task: Null Procedure - Mach Trim Actuator, TASK 27-31-00-700-801.

CAUTION MAKE SURE THAT YOU ARE CAREFUL WITH THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE SHARP EDGES ON THE TRAMMEL BAR, SPL-1677 CAN CAUSE CHAFING OR DAMAGE TO THE WIRES.

(c) Use the trammel bar, SPL-1677, to set the B dimension of the horizontal stabilizer [1] to 39.17 ±0.01 in. (994.92 ±0.26 mm) Figure 401.

NOTE: This is the neutral stabilizer setting of zero degrees or 4 units of trim.

1) Make sure that you protect wire bundles when you use the trammel bar, SPL-1677.

(d) Move the control column forward and aft several times and then let it go at the neutral position.

(e) Make sure that the right elevator position, “Z”, is within ± 0.06 in. (1.5 mm) of the neutral mark on the right elevator index plate [4] (Figure 403).

1) If it is necessary, adjust the PCU input rods to achieve the ± 0.06 in. (1.5 mm) measurement on the right elevator index plate [4] (TASK 27-31-00-820-803).

(f) Make sure that the stabilizer geometry is correct:

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1) Make sure that the left elevator is within 0.12 in. (3.0 mm) of the initial left elevator position.

NOTE: The initial left elevator position is the position, “Z”, measured before the removal of the stabilizer.

2) Make sure that the right elevator is within 0.12 in. (3.0 mm) of the initial right elevator position.

NOTE: The initial right elevator position is the position, “Z”, measured before the removal of the stabilizer.

3) Make sure that the left elevator is within 0.12 in. (3.0 mm) of the right elevator position.

NOTE: This measurement compares the left and right stabilizer half positions after the installation of the two sides of the stabilizer. It makes sure that the left and right elevators are within 0.12 in. (3.0 mm) of their original positions. The 0.12 in. (3.0 mm) difference is calculated to have a negligible effect on manual reversion.

(g) If the measurements in the above step are not within limits, the elevator system should be adjusted and test flown for manual reversion.

NOTE: You cannot adjust the elevator control pushrod [5] to make sure that the elevator is within the limits. Adjustment of the elevator control pushrod [5] is too coarse to get the minimum tolerance of 0.12 in. (3.0 mm). One half turn of the elevator control pushrod [5] moves the trailing edge of the elevator up or down 0.20 in. (5.1 mm).

SUBTASK 27-41-11-860-011

(17) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-11-860-012

(18) Remove the safety tag and close this circuit breaker (if installed):

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	15	C00644	EXTERIOR LIGHTING LOGO ILLUM

SUBTASK 27-41-11-820-003

(19) Do these system tests (if it is necessary):

NOTE: If the tailcone has not been removed and the same stabilizer, elevator, or elevator tab has been re-installed (without elevator or elevator tab rework or adjustment) and the elevator position “Z” measurements (done previously in this procedure) are within the specified limits, a flight test is not necessary.

If the tailcone has been removed, or either the stabilizer, elevator, or elevator tab have been replaced (with elevator or elevator tab adjustment), a flight test is necessary.

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If the tailcone was not removed or adjusted, or the same stabilizer, elevator, or elevator tab was re-installed (without elevator tab rework or adjustment), but the elevator position “Z” measurements (done previously in this procedure) are NOT within the specified limits, a flight test is necessary.

(a) Do this task: Elevator Travel Limit - Test, TASK 27-31-00-700-805.

(b) Make sure that the elevator pushrods are correctly adjusted (TASK 27-31-00-820-802).

NOTE: If the elevator pushrods are adjusted, a flight test is necessary.

(c) Do this task: Elevator Tab Control System - Operational Test, TASK 27-31-00-700-802.

(d) Use the stabilizer trim wheel to make sure that the horizontal stabilizer [1] operates through full travel between the stops.

(e) Do this task: Elevator Position Transmitter Installation Test, TASK 31-31-51-700-801.

(f) To test the logo lights, do the test portion of this task: Logo Light - Light Assembly Replacement, TASK 33-49-00-960-802.

(g) If it is necessary, do this task: Elevator Power-Off Flight Test, TASK 27-31-00-710-803.

SUBTASK 27-41-11-410-004

(20) Close this access door:

Number	Name/Location
318BR	Tailcone Access Door

——— END OF TASK ———

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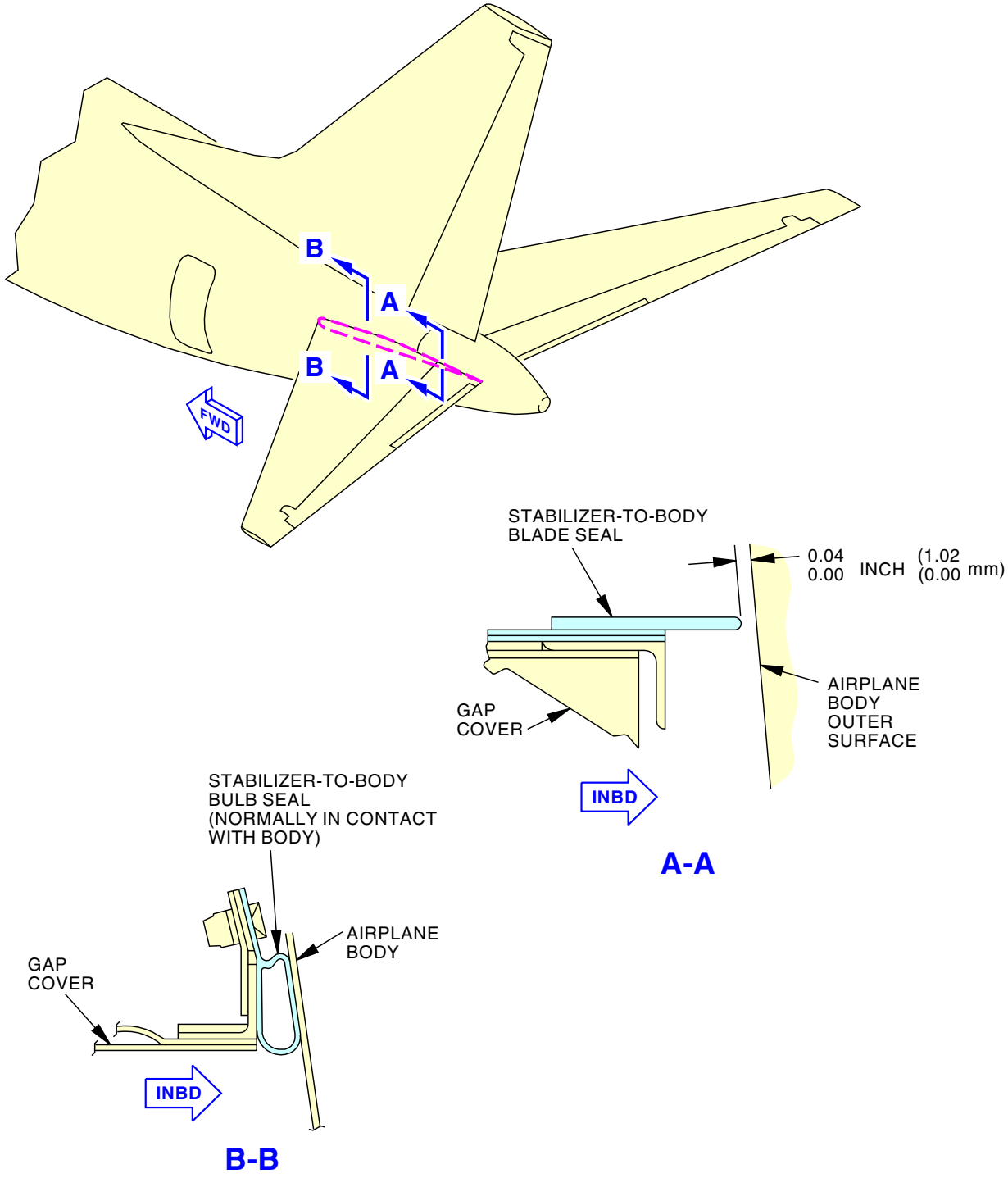


Stabilizer-to-Body Seal Adjustment
Figure 406/27-41-11-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details

HORIZONTAL STABILIZER LEADING EDGE - REMOVAL/INSTALLATION

1. General

A. This procedure contains these tasks:

(1) Horizontal stabilizer leading edge removal

(2) Horizontal stabilizer leading edge installation.

B. The horizontal stabilizer leading edge is referred to as the "leading edge" in this procedure.

C. This procedure is applicable for the left and right leading edges.

TASK 27-41-21-000-801

2. Horizontal Stabilizer Leading Edge Removal

(Figure 401)

A. Location Zones

Zone	Area
331	Left Horizontal Stabilizer - Removable Leading Edge
341	Right Horizontal Stabilizer - Removable Leading Edge

B. Procedure

SUBTASK 27-41-21-020-001

(1) Remove the leading edge [3] of the horizontal stabilizer [1]:

(a) Using non-metallic tools, remove sealant from leading edge [3] and tip cap assembly [4].

(b) Remove the bolts from the tip cap assembly [4] and slightly move it out enough so the leading edge [3] can be remove.

(c) Remove the bolts [2] that attach the lower surface and the inboard of the leading edge [3] to the front spar.

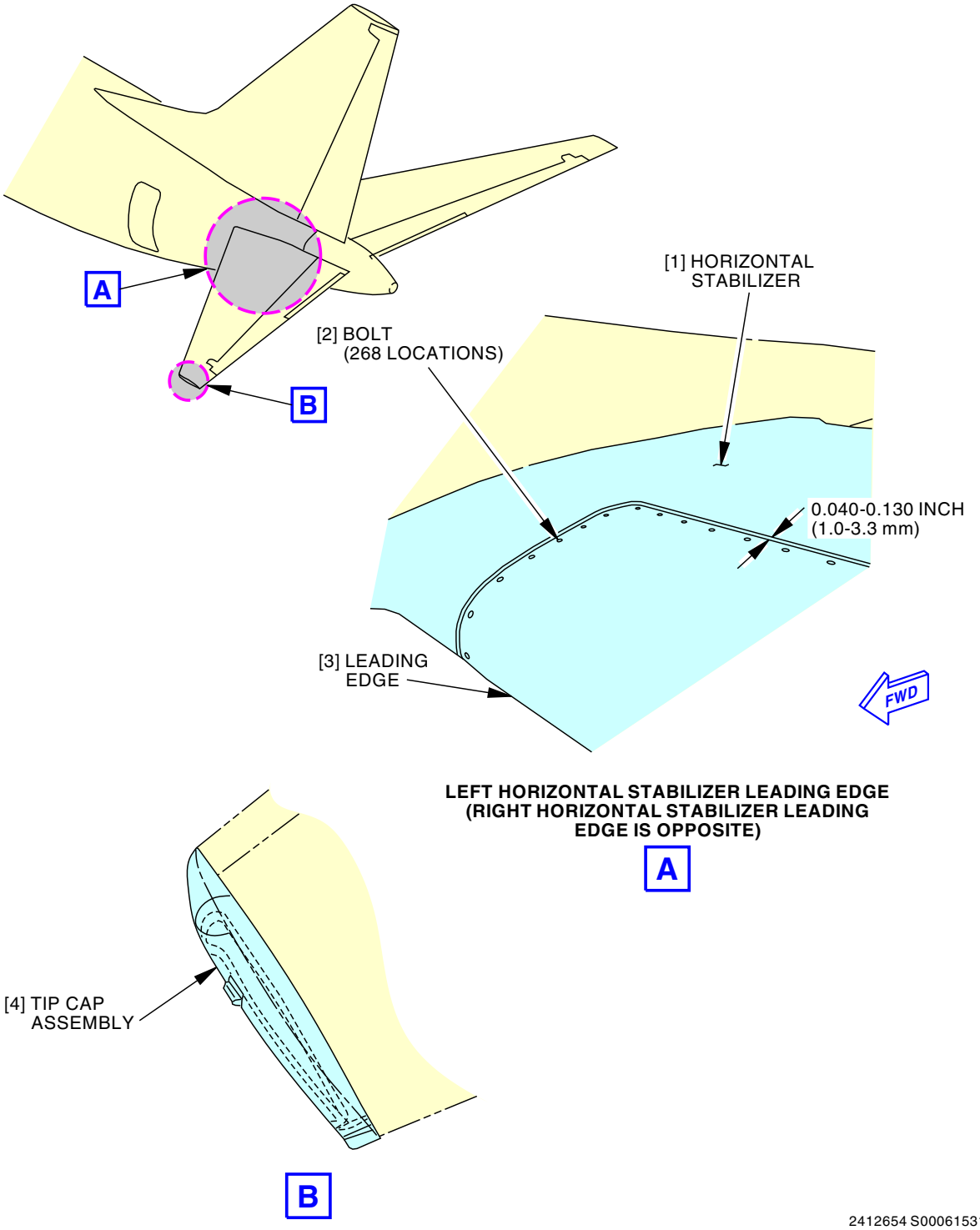
(d) Hold the leading edge [3] and remove the bolts [2] that attach the top surface of the leading edge [3] to the front spar.

(e) Hold each end of the leading edge [3].

(f) Remove the leading edge [3] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Horizontal Stabilizer Leading Edge Installation
Figure 401/27-41-21-990-801

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TASK 27-41-21-400-801

3. Horizontal Stabilizer Leading Edge Installation

(Figure 401)

A. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00900	Sealant - Silicone, RTV - Dow Corning 93-006-1RF (Formerly 93-006-1. Use until Stock depleted)	BMS5-175 Type I Class B-1/2

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Leading edge	55-10-52-04A-190	SIA ALL
		55-10-52-04A-195	SIA ALL
		55-10-52-04A-200	SIA ALL
		55-10-52-04A-205	SIA ALL
		55-10-52-04A-210	SIA ALL
		55-10-52-04A-215	SIA ALL
		55-10-52-04A-220	SIA ALL
		55-10-52-04A-225	SIA ALL

C. Location Zones

Zone	Area
331	Left Horizontal Stabilizer - Removable Leading Edge
341	Right Horizontal Stabilizer - Removable Leading Edge

D. Procedure

SUBTASK 27-41-21-420-001

(1) Install the leading edge [3]:

(a) Lift and put the leading edge [3] in its position.

(b) Make sure that the clearance between the leading edge [3] and the horizontal stabilizer [1] is 0.040 in. (1.02 mm) - 0.130 in. (3.30 mm).

CAUTION

ALIGN THE LEADING EDGE ASSEMBLY ALONG THE FULL LENGTH OF THE EDGE BEFORE YOU INSTALL THE FASTENERS. IF YOU PUSH THE ASSEMBLY INTO ITS POSITION AND INSTALL THE FASTENERS, DAMAGE CAN OCCUR TO THE RIB CHORDS.

1) Make sure that you check the alignment of the leading edge assembly along the full length prior to installing the fasteners.

NOTE: If the leading edge assembly is not aligned or forced into position during installation, then the induced strains can cause tension cracks in the rib chords.

(c) Install the bolts [2] that attach the top surface of the leading edge [3] to the front spar.

(d) Install the bolts [2] that attach the lower surface and inboard of the leading edge [3] to the front spar.

(e) Install the tip cap assembly [4].

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(f) Fill the clearance between the leading edge [3] and the horizontal stabilizer [1] with Dow Corning 93-006-1 RF sealant, A00900 or sealant, A00247.

——— END OF TASK ———

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HORIZONTAL STABILIZER CENTER SECTION HINGE FITTING - REMOVAL/INSTALLATION

1. General

A. This procedure contains these tasks:

(1) Horizontal stabilizer center section hinge fitting removal

(2) Horizontal stabilizer center section hinge fitting installation.

B. The horizontal stabilizer center section hinge fitting is referred to as the "hinge fitting".

C. This procedure is applicable for the left and right hinge fittings.

TASK 27-41-31-000-801

2. Horizontal Stabilizer Center Section Hinge Fitting Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-41-11-000-801	Horizontal Stabilizer Removal (P/B 401)
53-31-31-000-801	Stabilizer-to-Body Upper Front Spar Sliding Seal Removal (P/B 401)
53-31-31-000-802	Stabilizer-to-Body Lower Front Spar Sliding Seal Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
SPL-2026	Set - Punch, Horizontal Stabilizer Center Section Part #: C55002-1 Supplier: 81205
STD-9463	Beam - Wood, 4 Inch, by 4 Inch, by 60 inch

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

D. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body

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(Continued)

Number	Name/Location
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

E. Prepare for the Removal

SUBTASK 27-41-31-020-001

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Remove the horizontal stabilizers (TASK 27-41-11-000-801).

SUBTASK 27-41-31-020-002

(2) Remove the stabilizer to body front spar sliding seals and pedestals (TASK 53-31-31-000-801, TASK 53-31-31-000-802).

NOTE: This will give additional space for the stabilizer center section to move forward.

SUBTASK 27-41-31-860-001

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-31-860-002

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) Make sure the horizontal stabilizer is in the neutral position, if not, do these steps:

(a) If it is installed, remove the lock, SPL-1672 (Figure 401).

(b) On the control stand, set the stabilizer trim wheel to put the horizontal stabilizer at zero degrees (4 units of trim).

SUBTASK 27-41-31-480-001

(5) Install the lock, SPL-1672, on the stabilizer trim wheel at the control stand (Figure 401):

(a) Turn the trim wheel to put the handle at the top of the wheel.

(b) Adjust the height of the trim lock to put the trim wheel handle correctly on the yoke.

(c) Install the pin through the yoke.

(d) Install the safety pin.

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SUBTASK 27-41-31-010-001

(6) Open this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-41-31-010-002

(7) For the left hinge fitting, do this step:

(a) Open these access panels:

Number	Name/Location
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib

SUBTASK 27-41-31-010-003

(8) For the right hinge fitting, do this step:

(a) Open these access panels:

Number	Name/Location
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

F. Hinge Fitting Removal

(Figure 402)

SUBTASK 27-41-31-010-004

(1) Remove bracket [57], bracket [58], bracket [59], bracket [61], bracket [62] and wire bundle [60].

SUBTASK 27-41-31-480-002

(2) Use wood beam, STD-9463, or wood beams that are approximately 4 in. (10 cm) by 4 in. (10 cm) cross-section to hold the horizontal stabilizer center section (Figure 402).

(a) Use as many wood beams, STD-9463, or wood beams as necessary to make sure that the horizontal stabilizer center section is level and supported before the hinge pin [26] is removed.

SUBTASK 27-41-31-020-003

(3) Remove the hinge fittings [24] from the bulkhead support structure:

NOTE: Both hinge fittings [24] are to be removed.

(a) Remove the pin [20], nut [19], and washer [21].

1) Discard the pin [20].

(b) Remove the pin [22], nut [18], bushing spacer [23].

1) Discard the pin [22].

(c) Remove the bolts [2] and washers [3] from the bushing retainer [1].

(d) Remove the bushing retainer [1].

(e) Use the set, SPL-2026, and push out these parts:

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1) The hinge insert pin [27]
2) The bushing retainer [25]
3) The hinge pin [26].

(f) To remove the adjustable hinge bushing [28], bushing spacer [16], and hinge bushing [17], do these steps:

1) Turn the adjustable hinge bushing [28] to remove it.

NOTE: The adjustable hinge bushing [28] has threads and must be turned for removal or installation.

2) Remove the bushing spacer [16] and hinge bushing [17].

NOTE: The bushing spacer [16] will come off when you remove the adjustable hinge bushing [28].

SUBTASK 27-41-31-020-004

(4) Remove the upper thrust brace [38] and lower thrust brace [39]:

(a) Remove the pin [32], nut [31], washer [30], and bolt [29] that attach the upper thrust brace [38] and lower thrust brace [39] to the thrust brace fitting [51].

1) Use a marker or a pin to make marks on the upper thrust brace [38] and lower thrust brace [39] to help make the installation easier.

a) Do not use sharp objects to make marks.

(b) Remove the pin [37], nut [36], washer [35], and bolt [45].

SUBTASK 27-41-31-020-005

(5) Remove the thrust brace fitting [51] from the hinge fitting [24]:

(a) Remove the nuts [50], washers [49], washers [48], and bolts [47] that attach the thrust brace fitting [51] to the hinge fitting [24].

1) Use a marker or pen to make marks on the thrust brace fitting [51] to help make the installation easier.

a) Do not use sharp objects to make marks.

(b) Remove the thrust brace fitting [51] and shim [46].

SUBTASK 27-41-31-020-006

(6) Remove the fail safe link [10] from the hinge fitting [24]:

(a) Remove the nuts [7], washers [5], washers [6], bolt [4], and bolt [9].

(b) Remove the bonding jumper [8].

(c) Remove the pin [56], nut [15], washer [14], washer [13], and bolt [12].

1) Discard the pin [56].

(d) Remove the fail safe link [10] and filler [11].

SUBTASK 27-41-31-020-007

(7) Remove the hinge fitting [24]:

(a) Remove the hi-locs [52] from the bracket [53].

(b) Remove the hi-locs [54] from the bracket [55].

(c) Remove the pin [44], nut [43], washer [42], and bolt [40] from the hinge fitting [24].

1) Discard the pin [32].

(d) Remove the pin [37], nut [36], washer [35], washer [34] and bolt [33] from the hinge fitting [24].

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1) Discard the pin [37].

(e) With the boards in place, carefully move the horizontal stabilizer center section forward as much as the cutout in the fuselage structure will let you.

NOTE: Use as many maintenance personnel as necessary on the left and right sides of the rear spar connection to lift and move forward.

NOTE: With the boards in position, the Center Section will be able to move approximately 1.5 in. (3.8 cm) forward.

1) Make sure that the horizontal stabilizer center section does not hit the neutral shift input rods.

NOTE: The neutral shift input rods can be damaged if they are hit by the horizontal stabilizer center section.

(f) Move the hinge fitting [24] in a clockwise or counterclockwise direction while you move it back and forth until it is removed.

1) If moved in either the clockwise or counterclockwise direction, alternate back and forth until the hinge fitting comes out.

(g) Remove the hinge fitting [24] from the airplane.

END OF TASK

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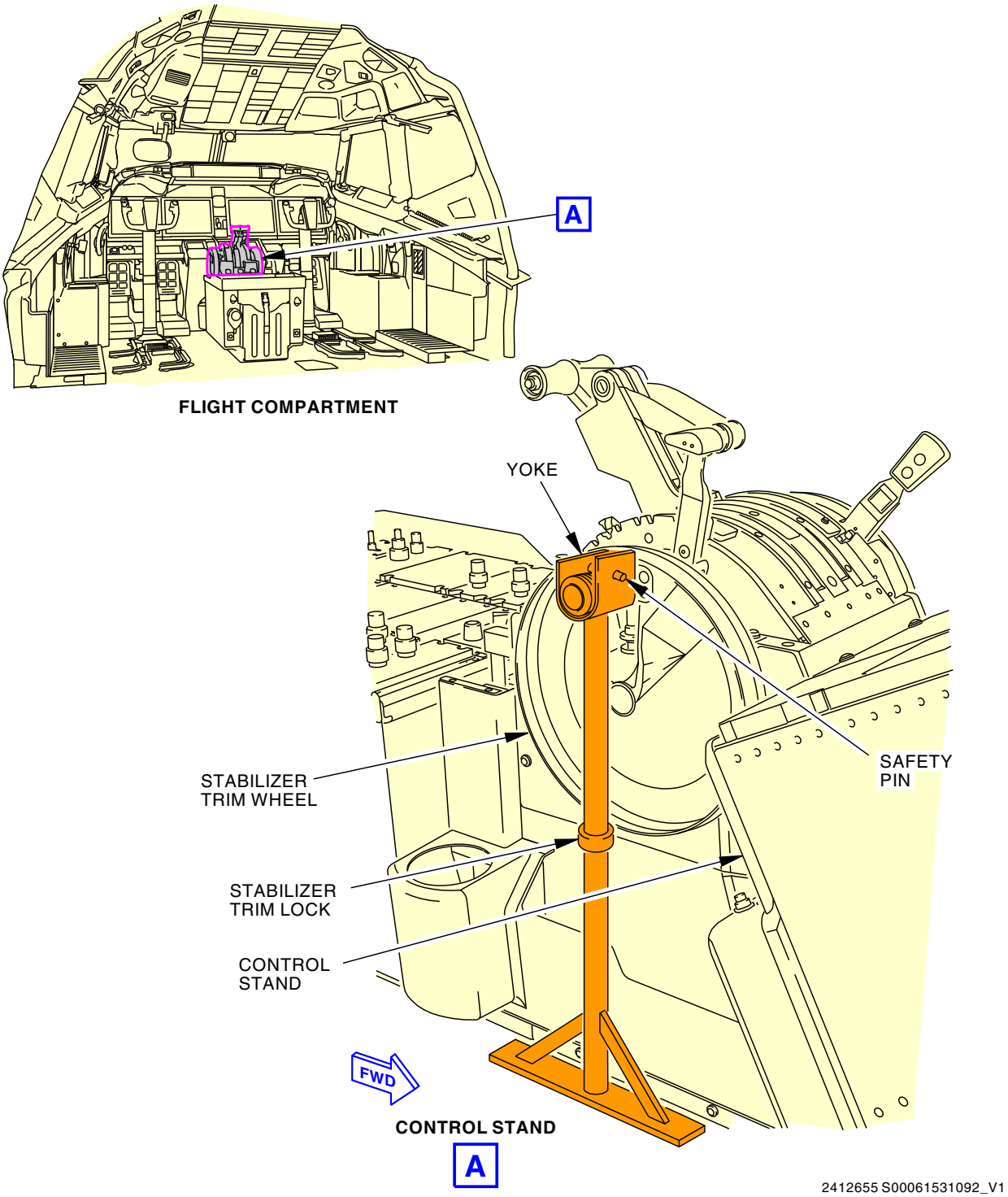
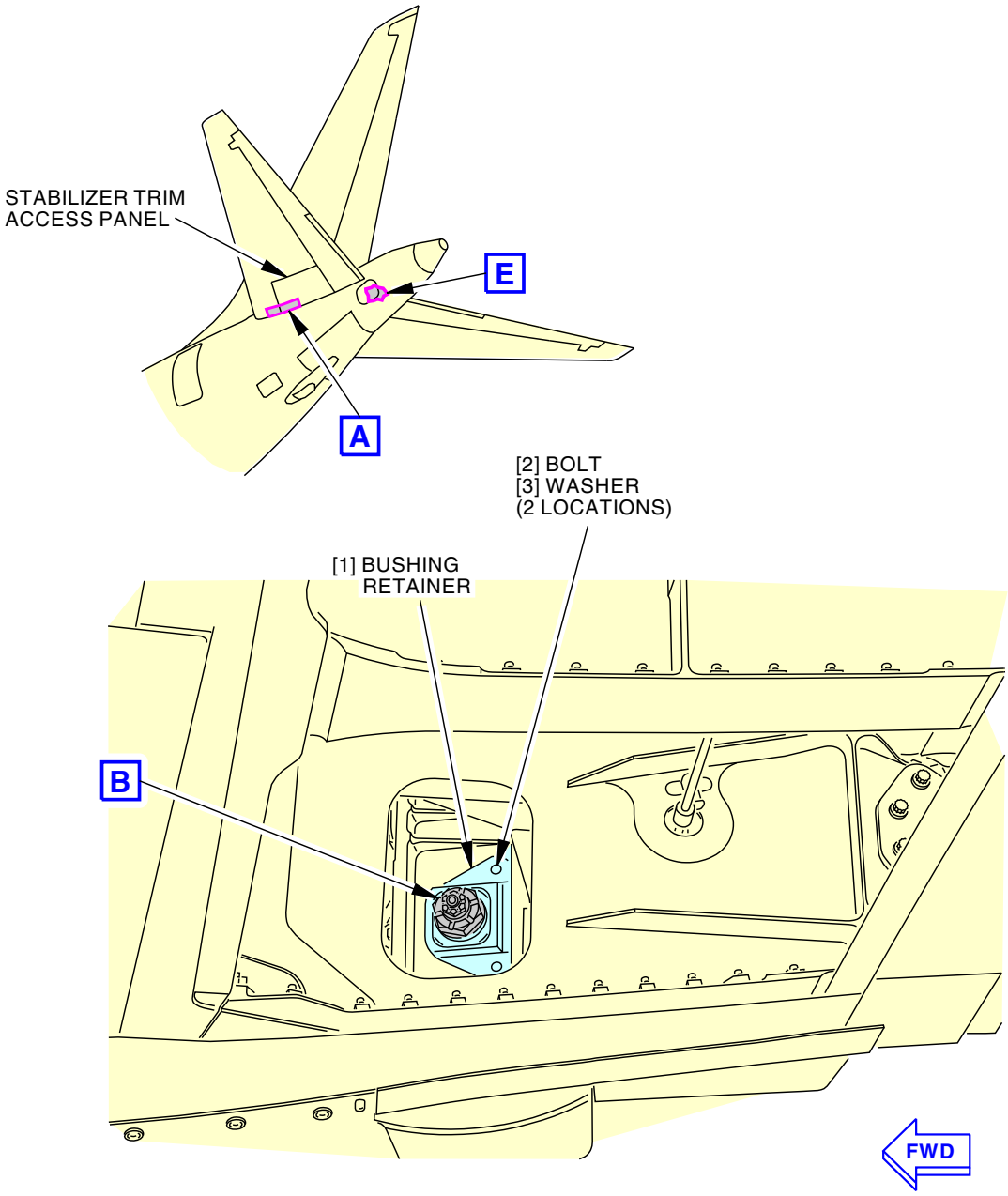


Stabilizer Trim Lock Installation
Figure 401/27-41-31-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**VIEW THROUGH ACCESS PANEL
(PANEL SHOWN REMOVED)**

A

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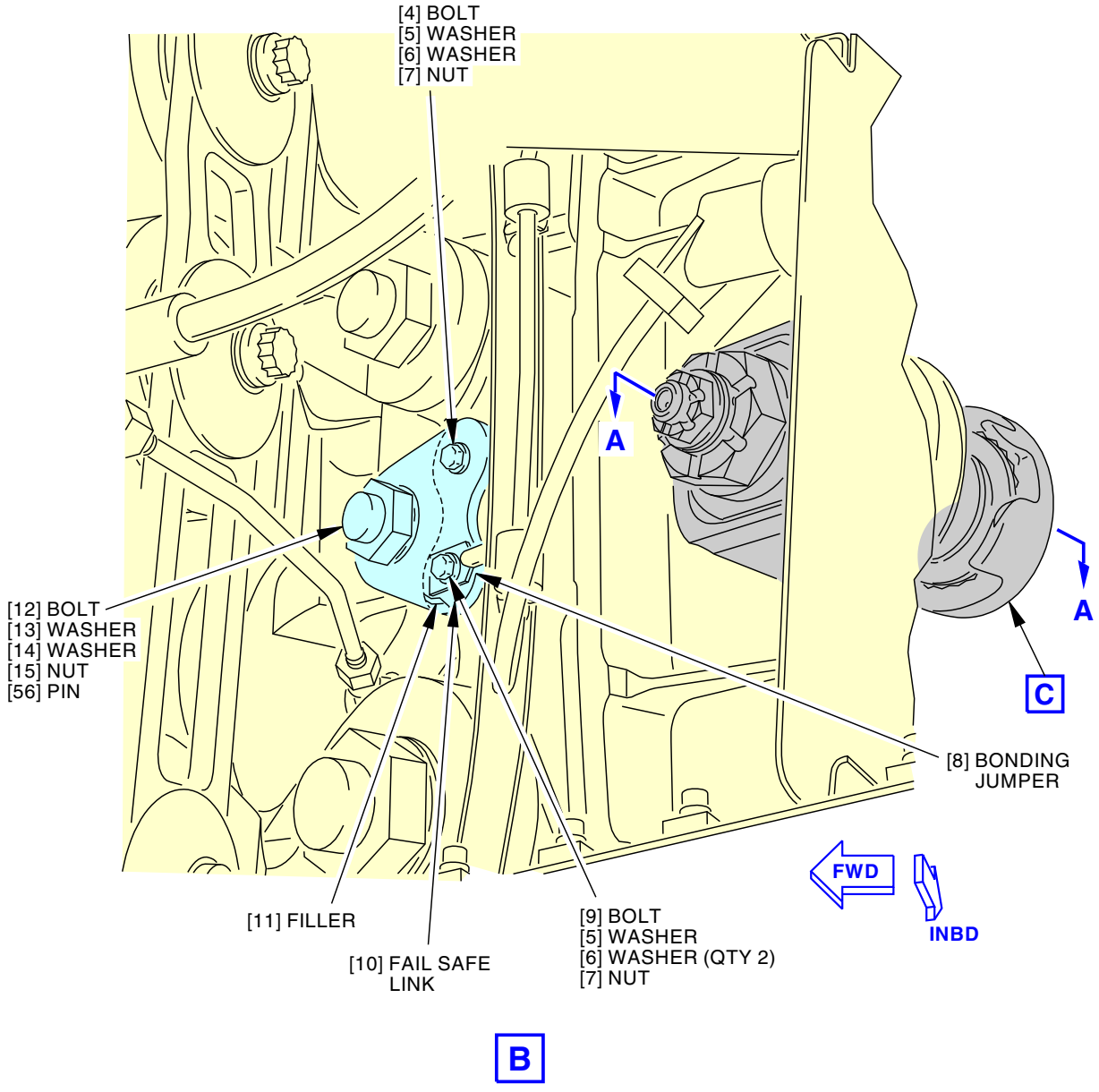
**Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 1 of 12)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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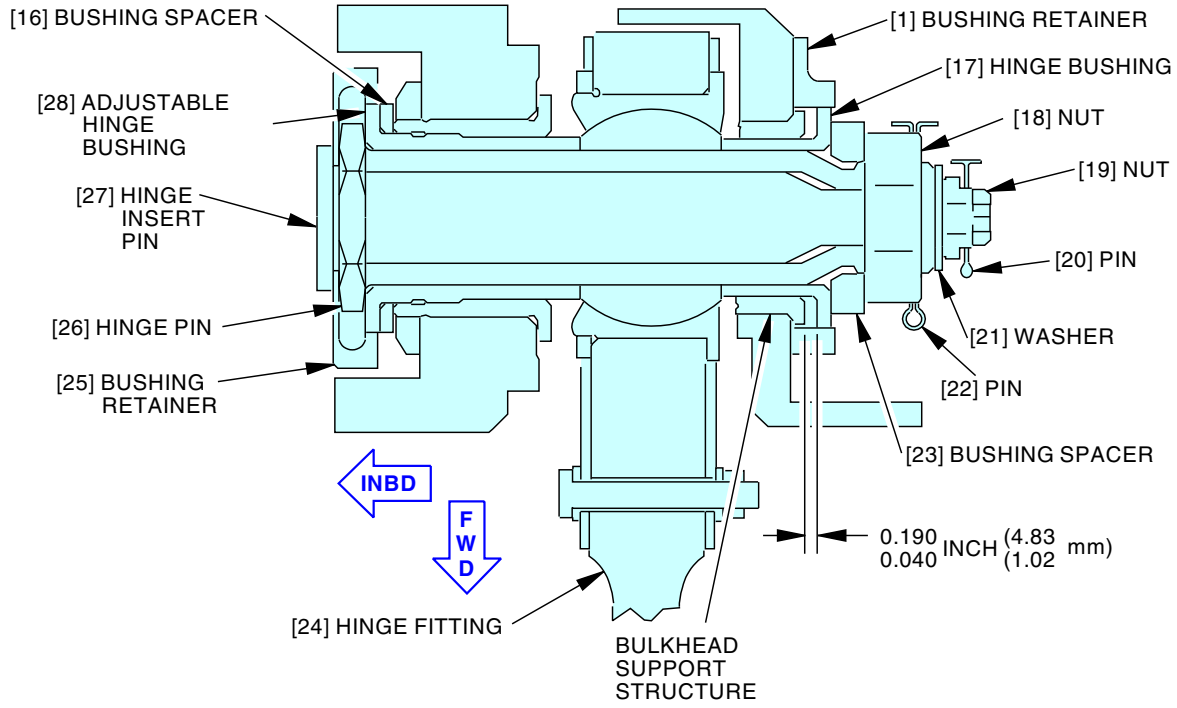
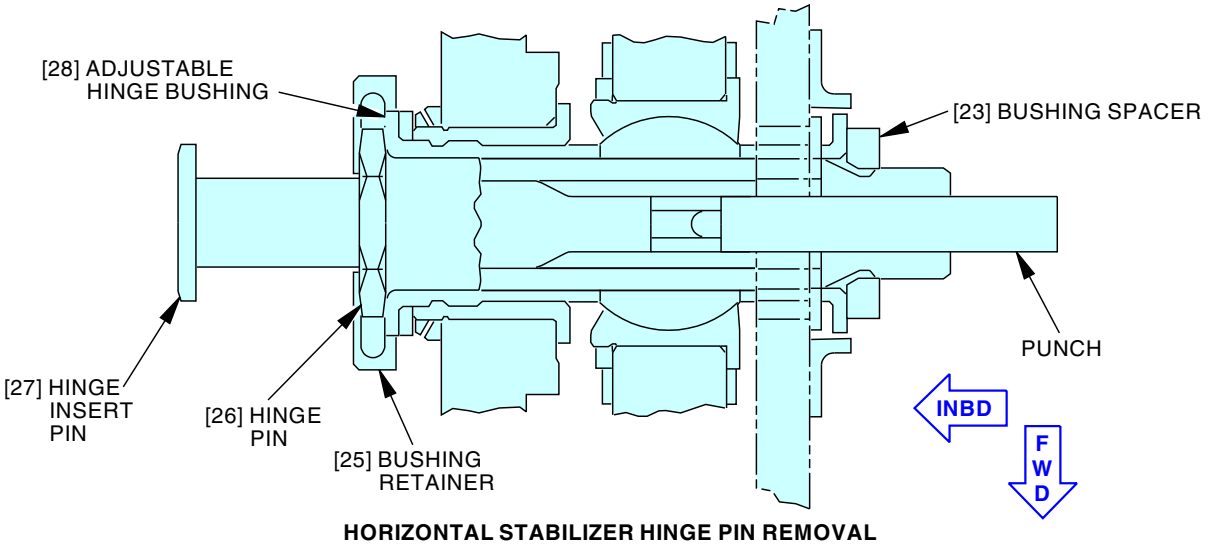
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 2 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HORIZONTAL STABILIZER HINGE PIN REMOVAL (STEP 1)

A-A



HORIZONTAL STABILIZER HINGE PIN REMOVAL (STEP 2)

A-A

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Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 3 of 12)

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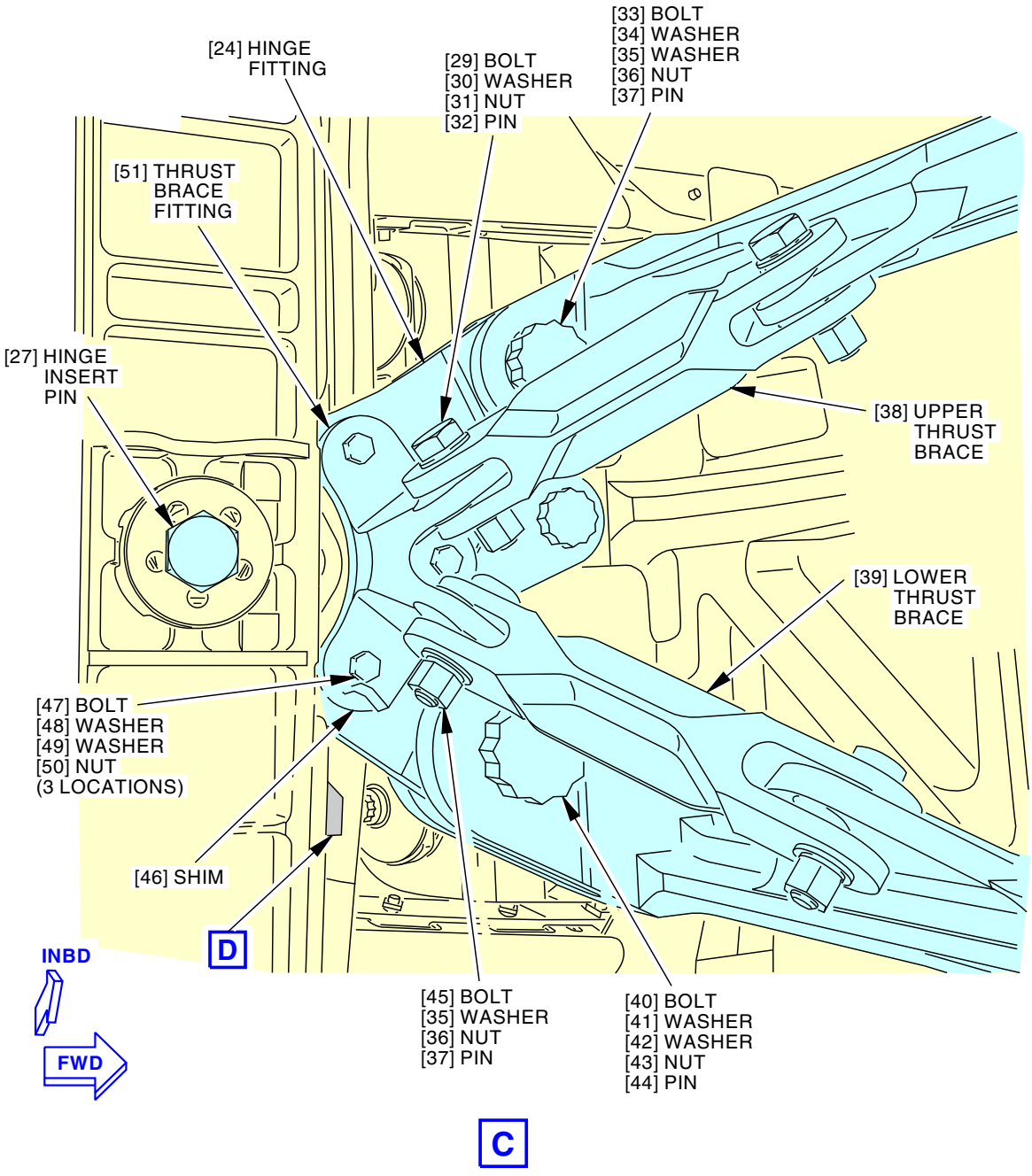

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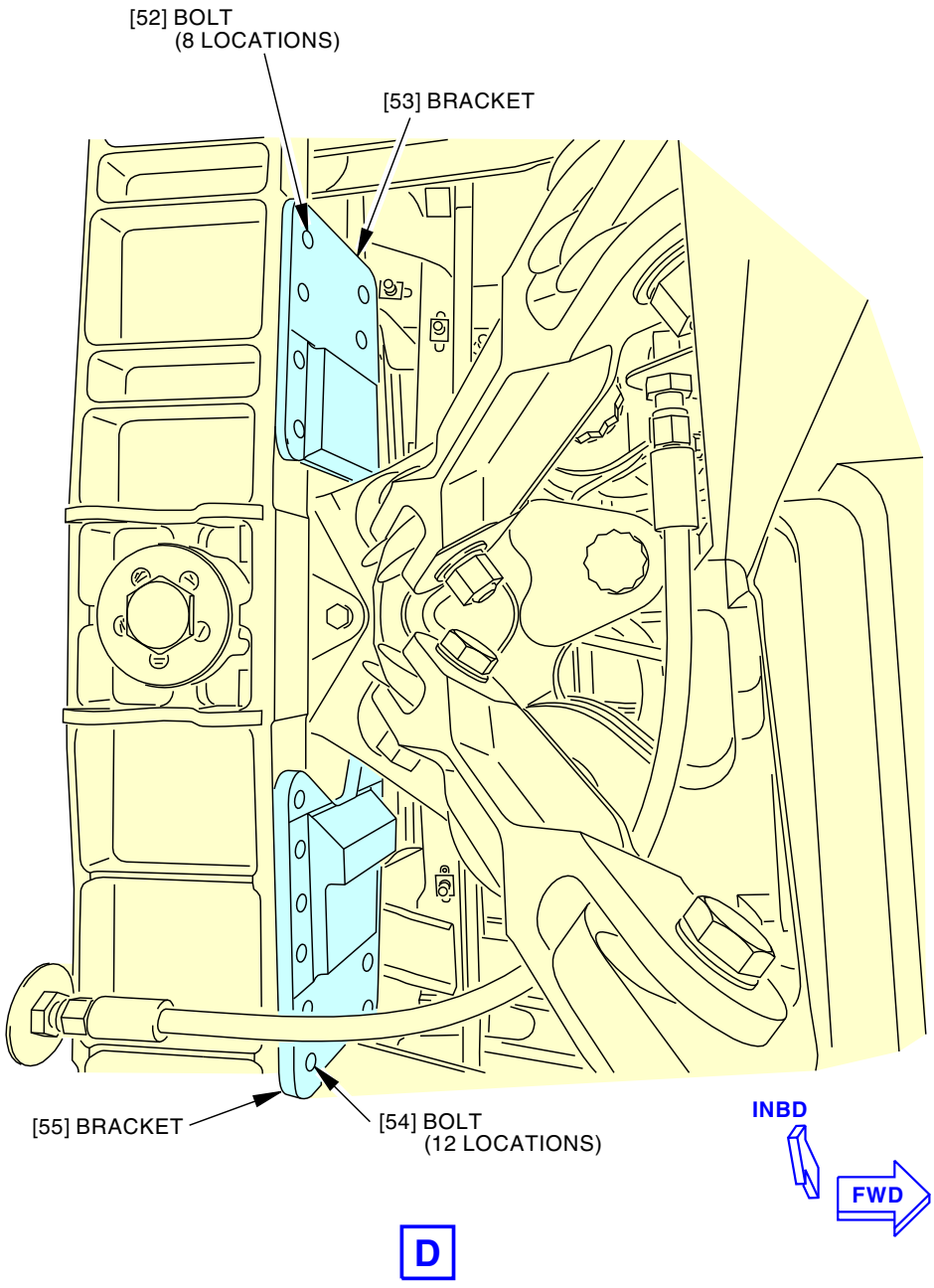
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 4 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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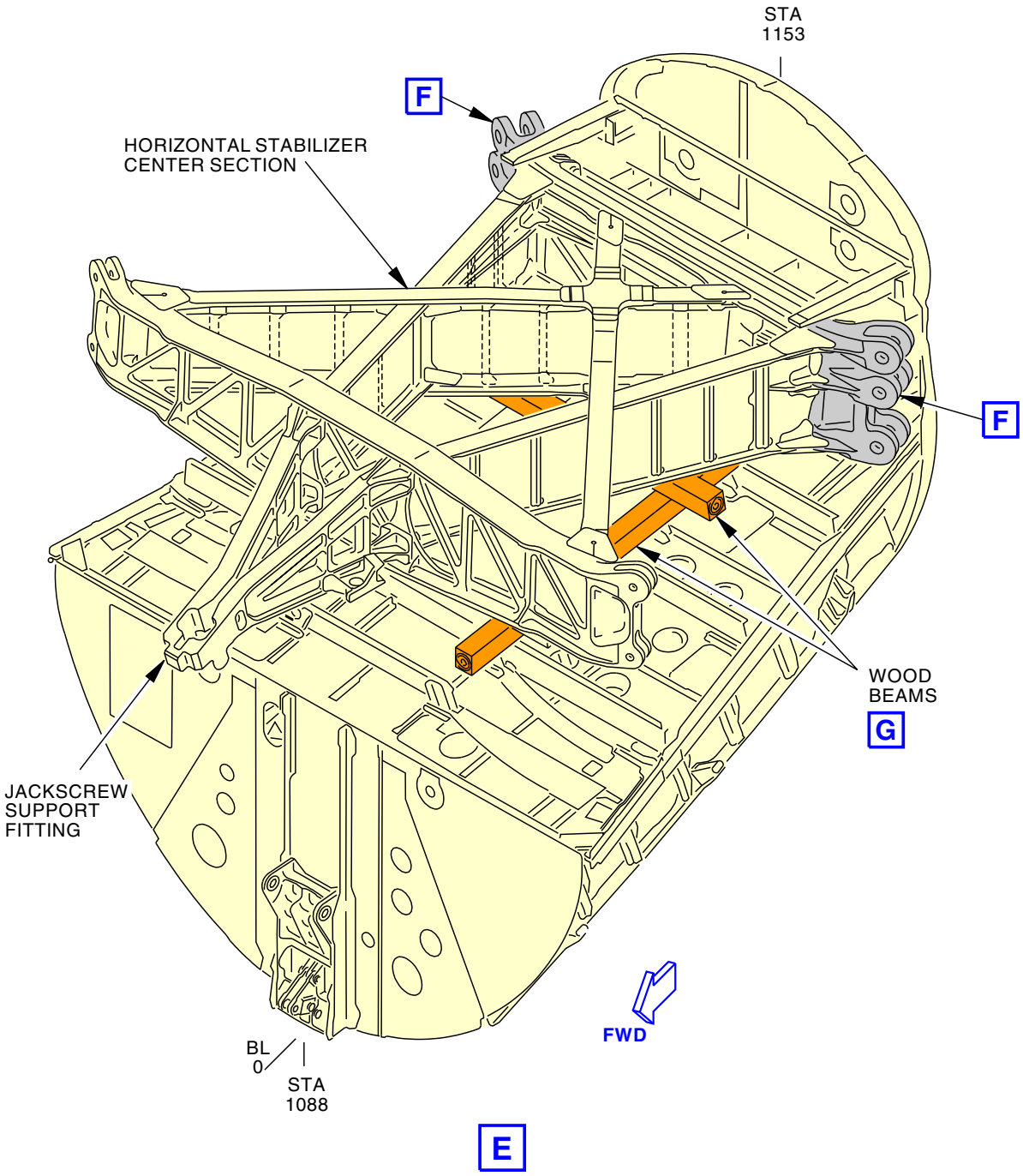
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 5 of 12)

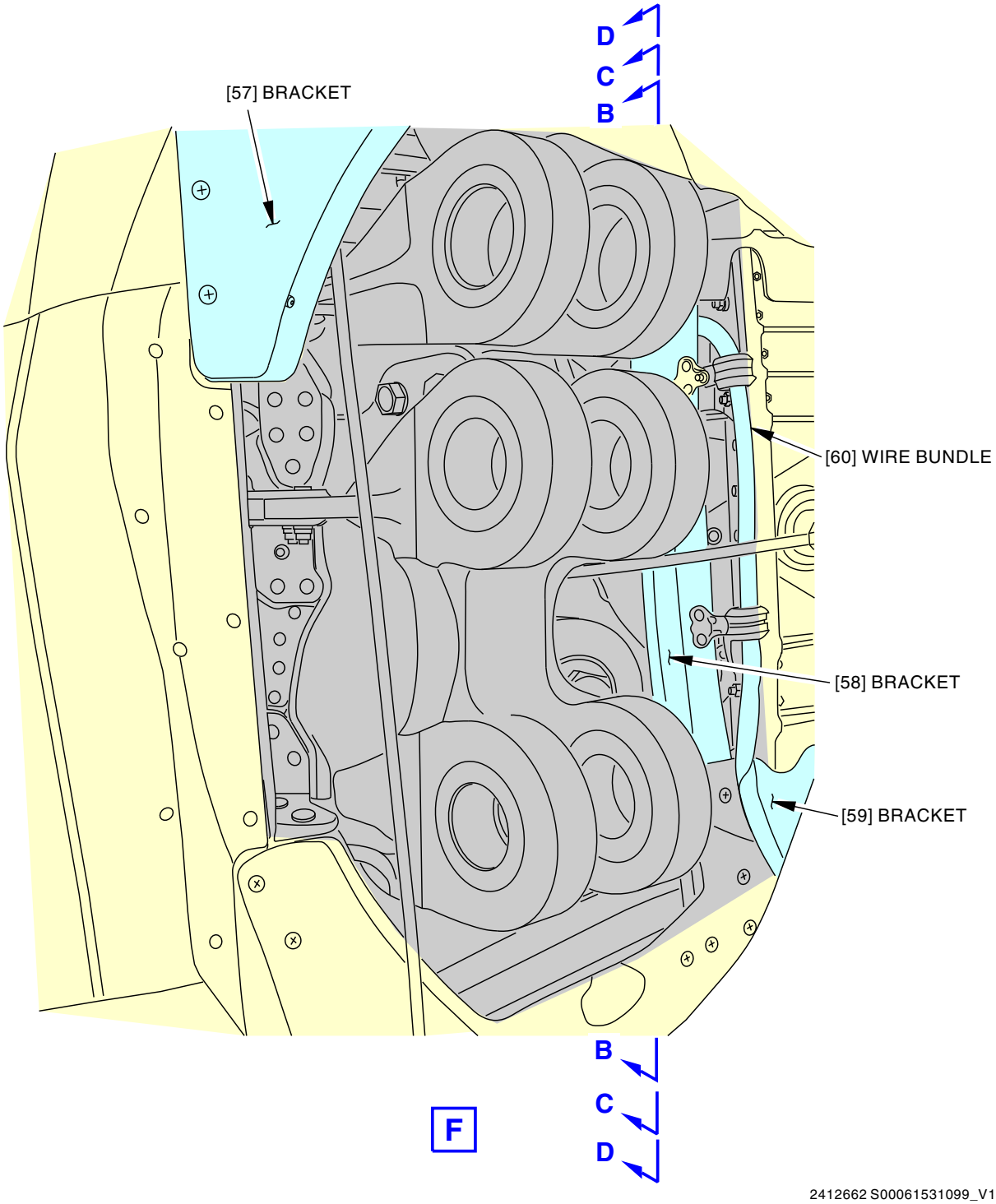
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412661 S00061531098_V1

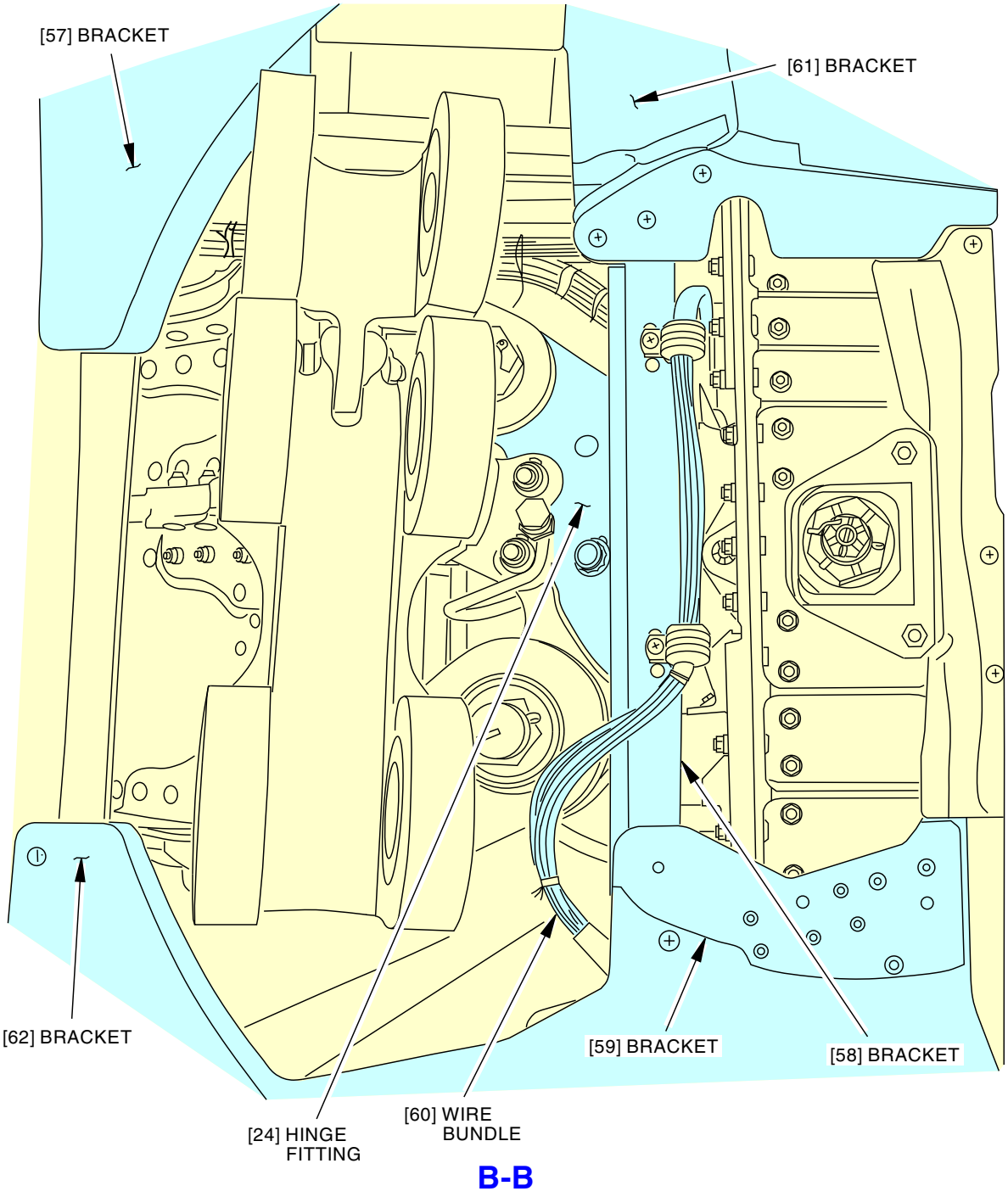
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 6 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



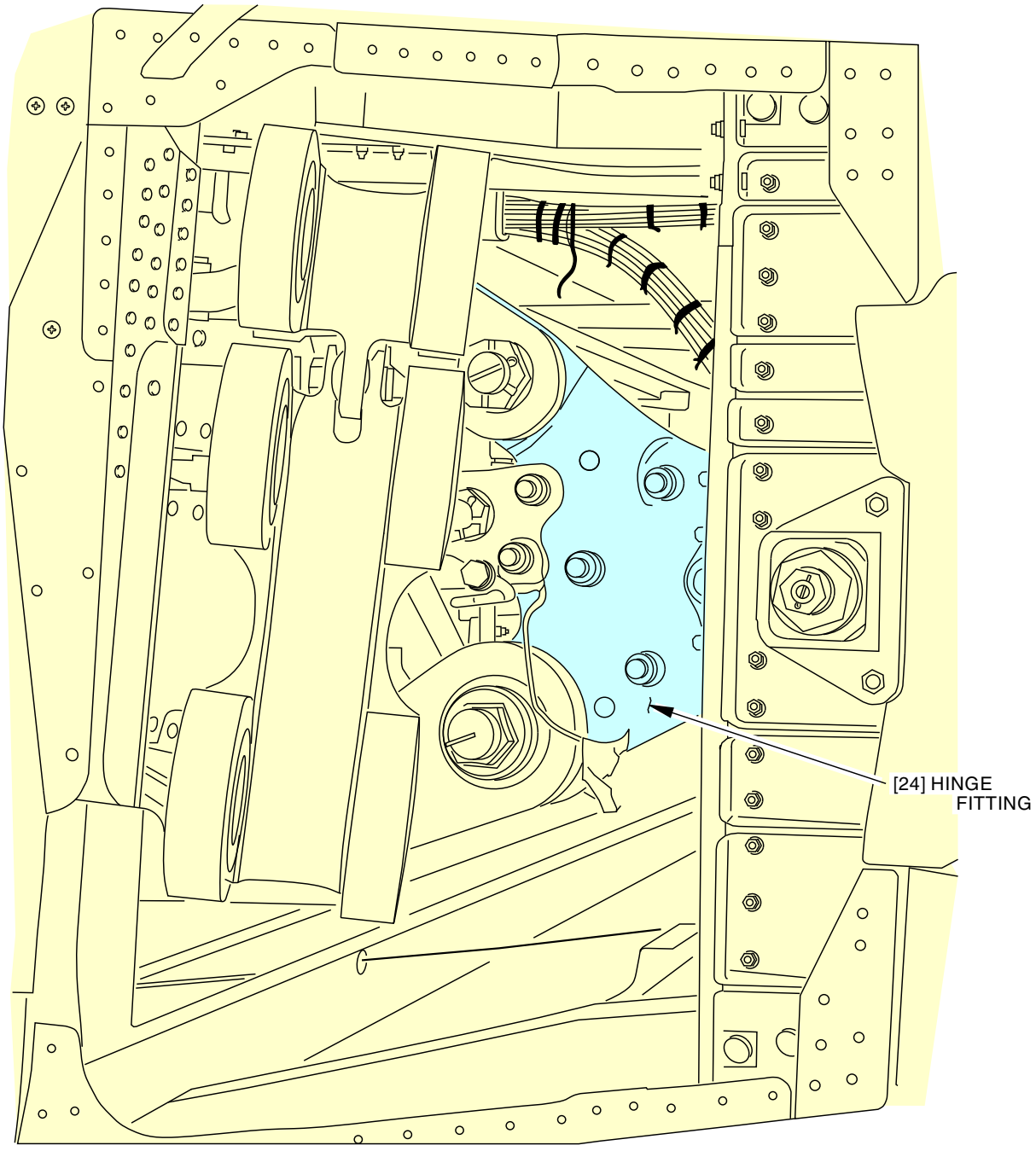
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 7 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



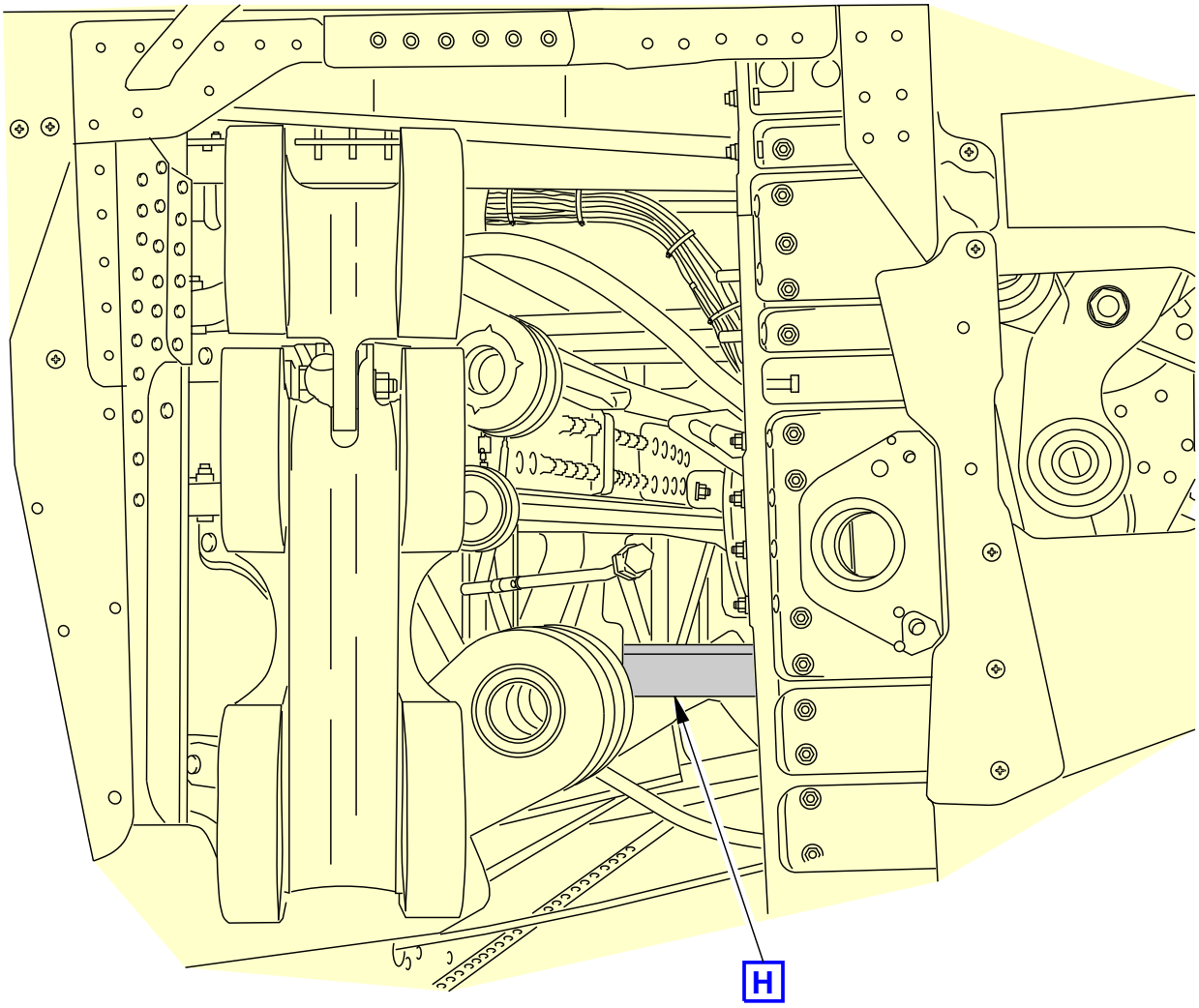
Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 8 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 9 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

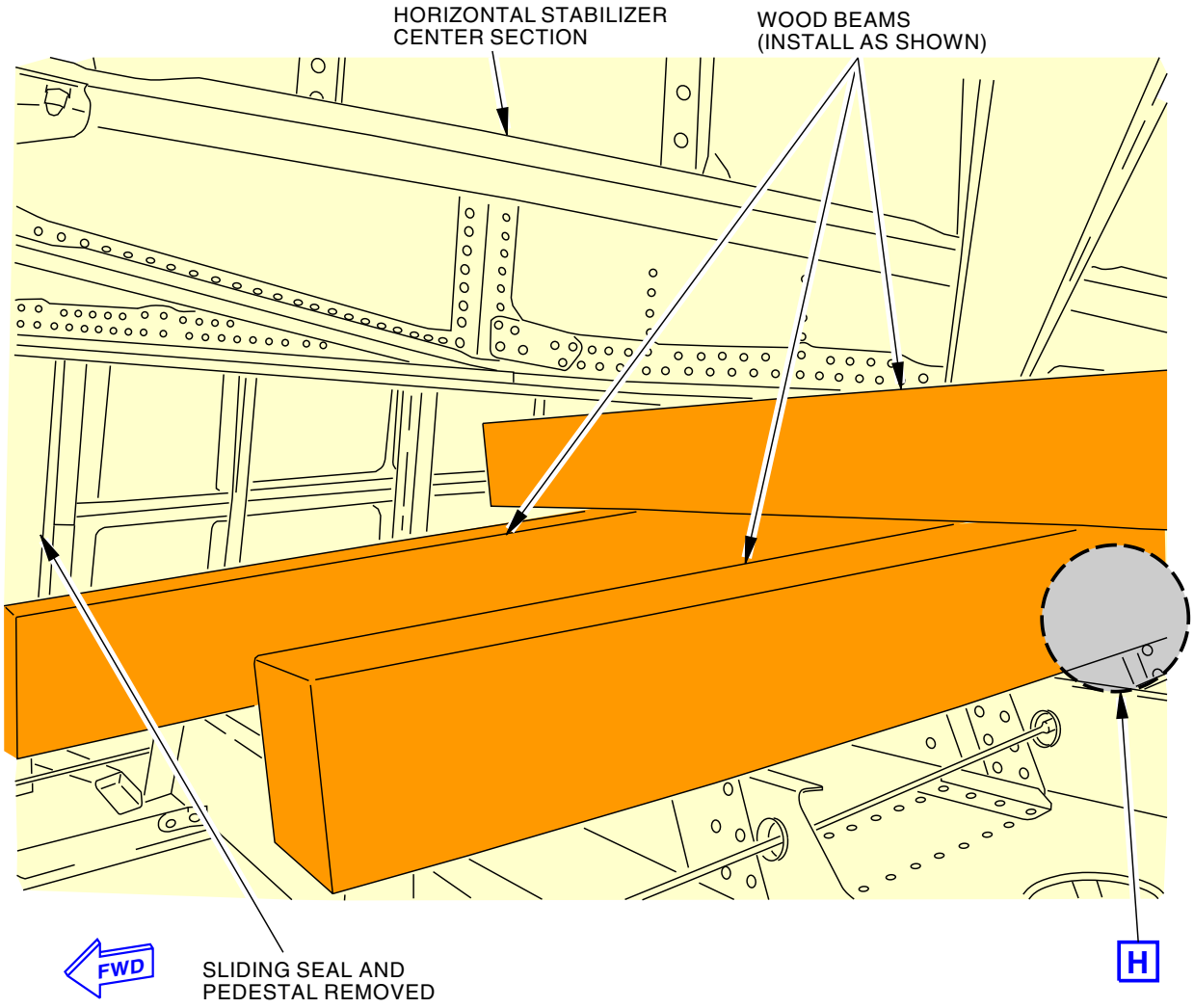


2 THIS VIEW SHOWS THE BRACKETS, WIRE BUNDLE AND HINGE FITTING REMOVED.

2412665 S00061531102_V1

Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 10 of 12)

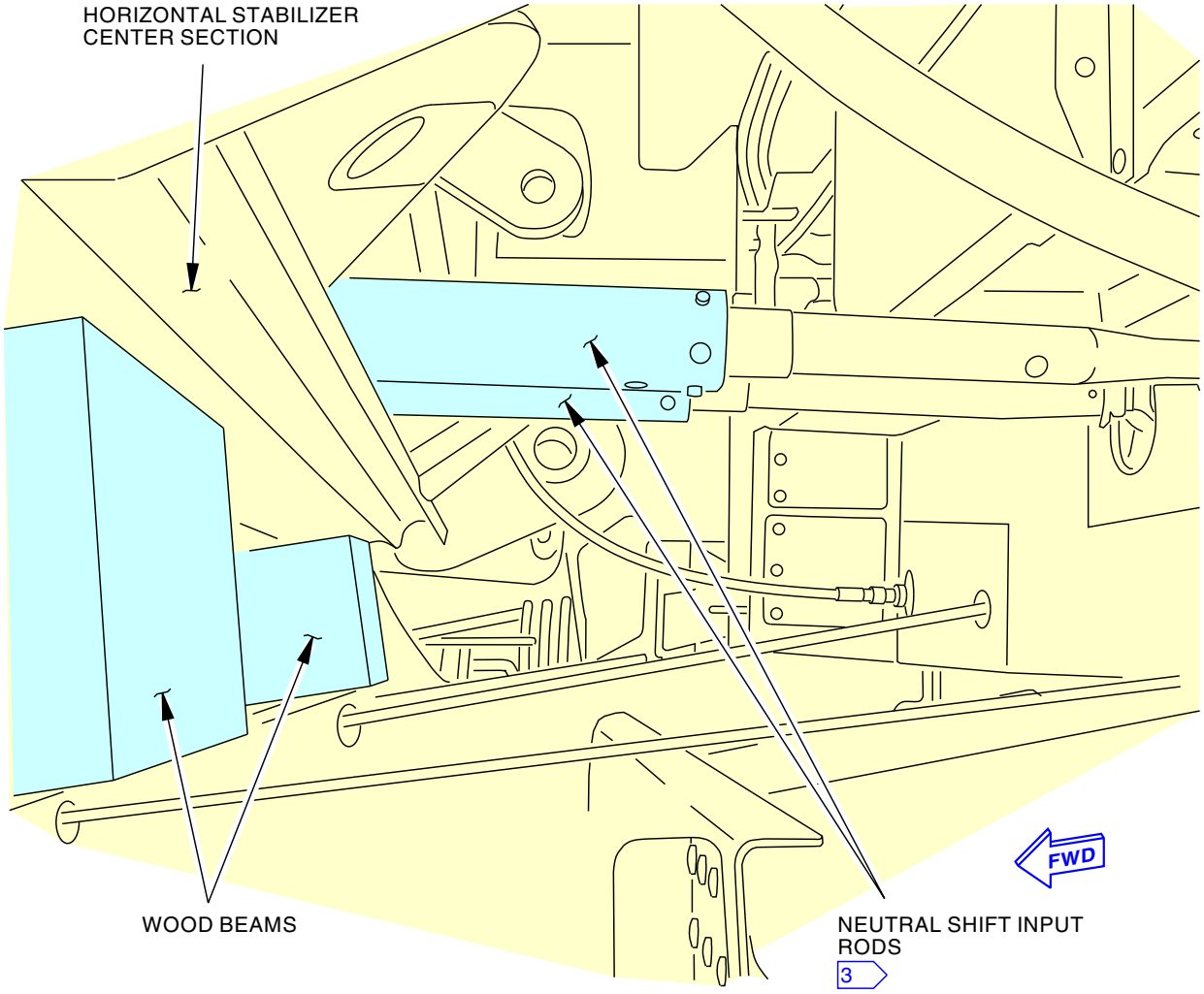
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412666 S00061531103_V1

Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 11 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



H

3 BE CAREFUL NOT TO DAMAGE THE NEUTRAL SHIFT INPUT RODS WHEN MOVING THE HORIZONTAL STABILIZER CENTER SECTION.

2412667 S00061531104_V1

Horizontal Stabilizer Center Section Hinge Fitting Installation
Figure 402/27-41-31-990-802 (Sheet 12 of 12)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-31-400-801

3. Horizontal Stabilizer Center Section Hinge Fitting Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-41-11-400-801	Horizontal Stabilizer Installation (P/B 401)
51-22-00-390-809	Aerodynamic Smoother Application (P/B 201)
53-31-31-400-801	Stabilizer-to-Body Upper Front Spar Sliding Seal Installation (P/B 401)
53-31-31-400-802	Stabilizer-to-Body Lower Front Spar Sliding Seal Installation (P/B 401)
SRM 51-10-01	AERODYNAMIC SMOOTHNESS

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-1672	Assembly - Lock, Stabilizer Trim Part #: F71336-501 Supplier: 81205
SPL-2036	Protector - Horizontal Stabilizer Hinge Pin Thread Part #: C27054-1 Supplier: 81205
STD-1238	Indicator - Dial
STD-9463	Beam - Wood, 4 Inch, by 4 Inch, by 60 inch

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
D50004	Compound - Antiseize	BMS3-28

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
20	Pin	55-10-51-14-005	SIA ALL
24	Hinge fitting	55-10-52-01Q-170	SIA ALL
		55-10-52-01Q-175	SIA ALL
32	Pin	55-10-52-01Q-045	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
37	Pin	55-10-52-01Q-015	SIA 001-003
		55-10-52-01Q-045	SIA ALL
56	Pin	55-10-52-01Q-005	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
333	Left Horizontal Stabilizer - Rear Spar to Trailing Edge
343	Right Horizontal Stabilizer - Rear Spar to Trailing Edge

F. Access Panels

Number	Name/Location
318BR	Tailcone Access Door
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

G. Hinge Fitting Installation

(Figure 402)

SUBTASK 27-41-31-420-001

(1) Install each hinge fitting [24]:

(a) Lubricate the bolt threads of bolt [33] and bolt [40] with grease, D00633.

(b) Put the hinge fittings [24] in their positions.

(c) Install the bolt [33], washer [34], washer [35], and nut [36].

1) Tighten the nut [36] to 2750 ±550 in-lb (310.7 ±62.1 N·m).

2) Carefully move the horizontal stabilizer center section into its position.

3) Install the new pin [37].

a) Tighten nut [36] if it is necessary to get the pin hole alignment but do not exceed 5300 in-lb (598.8 N·m).

(d) Install the bolt [40], washer [41], washer [42], and nut [43].

1) Tighten the nut [43] to 5925 ±525 in-lb (669 ±60 N·m).

2) Install the new pin [44].

a) Tighten the nut [43] if it is necessary to get the pin hole alignment but do not exceed 8600 in-lb (971.7 N·m).

SUBTASK 27-41-31-420-002

(2) Install the fail safe link [10] for each hinge fitting [24]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Lubricate the bolt [12] and bolt threads with grease, D00633.

(b) Apply sealant, A00247, to the bolt [4] and bolt [9].

(c) Put the fail safe link [10] and filler [11] on the hinge fitting [24].

(d) Install the bolt [12], washer [13], washer [14], and nut [15].

1) Tighten the nut [15] to 1415 ±115 in-lb (159.9 ±13.0 N·m).

2) Install the new pin [56].

a) Tighten the nut [15] if it is necessary to get the pin hole alignment but do not exceed 2000 in-lb (226.0 N·m).

(e) Install the bolt [4], washers [5], washers [6], and nuts [7].

1) Tighten the nuts [7] to 530 ±160 in-lb (59.9 ±18.1 N·m).

(f) Install the bolt [9], washers [5], washers [6], bonding jumper [8] (between washers [6]), and nuts [7].

1) Tighten the nuts [7] to 530 ±160 in-lb (59.9 ±18.1 N·m).

2) Use an intrinsically safe approved bonding meter, COM-1550, to make sure that the resistance between the free end of the bonding jumper [8] and fail safe link [10] is 0.00216 ohm (2.16 milliohms) or less.

3) Apply sealant, A00247, at the end of the bonding jumper [8].

SUBTASK 27-41-31-420-003

(3) Install the thrust brace fitting [51] on each hinge fitting [24]:

(a) Lubricate the bolts [47] with sealant, A00247.

(b) Put the thrust brace fitting [51] and shim [46] on the hinge fitting [24].

1) Remove or add shim [46] until you can install the bolts [47] and nuts [50] easily.

(c) Install the bolts [47], washers [48], washers [49], and nuts [50].

1) Tighten the nuts [50] to 850 ±220 in-lb (96.0 ±24.9 N·m).

SUBTASK 27-41-31-420-004

(4) Connect the upper thrust brace [38] and lower thrust brace [39] to the thrust brace fitting:

(a) Lubricate the bolt [29], bolt [45], and bolt threads with grease, D00633.

(b) Put the lower thrust brace [39] and upper thrust brace [38] in their positions.

(c) Install the bolt [29], washer [30], and nuts [31].

1) Tighten the nuts [31] to 490 ±50 in-lb (55 ±6 N·m).

2) Install the new pin [32].

a) Tighten the nuts [31] if it is necessary to get the pin hole alignment, but do not exceed 650 in-lb (73.4 N·m).

(d) Install the bolt [45], washers [35], and nuts [36].

1) Tighten the nuts [36] to 490 ±50 in-lb (55 ±6 N·m).

2) Install the new pin [37].

NOTE:

a) Tighten the nuts [36] if it is necessary to get the pin hole alignment, but do not exceed 650 in-lb (73.4 N·m).

SUBTASK 27-41-31-220-001

(5) Do a check of the dimension between the hinge fittings [24] and bulkhead support structure:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Attach an L-angle shape to the forward side of the bulkhead flange to use as a reference plane.

(b) Install the dial indicator, STD-1238.

(c) Measure the dimension between the hinge fitting [24] and the bulkhead support structure.

SUBTASK 27-41-31-420-005

(6) Install the hinge fittings [24] to the bulkhead support structure:

(a) Install each adjustable hinge bushing [28]:

1) Install the adjustable hinge bushing [28] by hand until it touches the hinge fitting bearing.

2) Use the dial indicator, STD-1238, to measure the dimension between the hinge fitting [24] and the bulkhead support structure.

3) Make sure that this dimension is the same as you measured before.

4) If it is necessary, loosen or tighten the adjustable hinge bushing [28] until you get the correct dimension.

(b) Install the hinge bushing [17]:

1) Lubricate the hinge bushing [17] with compound, D50004.

2) Install the hinge bushing [17].

(c) Install the hinge pin [26]:

1) Lubricate hinge pin [26] and protector, SPL-2036, with grease, D00633.

NOTE: The protector, SPL-2036, is used to protect the head of the hinge pin [26].

2) Use the protector, SPL-2036, to install the hinge pin [26].

CAUTION

DO NOT USE TOO MUCH FORCE WHEN YOU INSTALL THE HINGE PIN. DAMAGE TO THE HINGE PIN CAN OCCUR.

a) Do not apply too much force to install the hinge pin [26].

(d) Install the bushing spacer [23] and nut [18].

1) Tighten the nut [18] by hand.

(e) Install the bolts [2] and washers [3] to attach the bushing retainer [1] to the hinge fitting [24].

(f) Tighten the bolts [2] to 62.5 ±12.5 in-lb (7.1 ±1.5 N·m).

(g) Install the bushing retainer [25] on the adjustable hinge bushing [28].

CAUTION

DO NOT APPLY TORQUE TO THE WRENCH FLATS ON THE HINGE PINS. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(h) Temporarily remove the bushing retainer [25].

(i) Tighten the nut [18] to 750 ±100 in-lb (84.7 ±11.3 N·m).

(j) If the pin holes do not align, tighten the nut [18] a maximum 30 degrees as necessary to align the nearest pin hole.

(k) Use the dial indicator, STD-1238, to measure the dimension between the hinge fitting [24] and bulkhead support structure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure that the dimension is the same as you measured before and after you installed the adjustable hinge bushing [28] in ± 0.005 in. (0.127 mm).

(l) Do a check of the clearance between the bulkhead support structure and hinge bushing [17].

1) Remove the bolts [2] and washers [3] to remove the bushing retainer [1].

2) Do a check of the clearance between the bulkhead support structure and hinge bushing [17].

3) Make sure that the clearance is 0.12 +0.07 / -0.08 in. (3.05 +1.78 / -2.03 mm).

4) Install the bolts [2] and washers [3] to attach the bushing retainer [1] to the hinge fitting [24].

(m) Install the bushing retainer [25] with the hinge insert pin [27].

1) Turn the hinge insert pin [27] until you align the pin holes.

CAUTION

DO NOT APPLY TORQUE TO THE WRENCH FLATS ON THE HINGE PINS. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(n) Install the washer [21] and nut [19].

1) Tighten the nut [19] to a maximum of 50 in-lb (5.6 N·m).

2) If the pin hole of the nut [19] does not align, loosen the nut [19] a maximum of 30 degrees as necessary to align the nearest pin hole of the nut [19].

3) Install the new pin [20].

(o) Install the hi-locs [52] to attach the bracket [53] to the bulkhead support structure.

(p) Install the hi-locs [54] to attach the bracket [55] to the bulkhead support structure.

(q) Remove the wood beams, STD-9463, that held the horizontal stabilizer center section (Figure 402).

SUBTASK 27-41-31-410-001

(7) Install the bracket [57], bracket [58], bracket [59], bracket [61], bracket [62] and wire bundle [60].

SUBTASK 27-41-31-080-001

(8) Remove the L-shape and the dial indicator, STD-1238.

SUBTASK 27-41-31-420-006

(9) Install the stabilizer to body front spar sliding seals and pedestal (TASK 53-31-31-400-801, TASK 53-31-31-400-802)..

SUBTASK 27-41-31-420-007

(10) Install the horizontal stabilizers (TASK 27-41-11-400-801).

SUBTASK 27-41-31-420-008

(11) Install the stabilizer to body front spar sliding seals and pedestals (TASK 53-31-31-400-801, TASK 53-31-31-400-802).

SUBTASK 27-41-31-080-002

(12) Make sure that the lock, SPL-1672, has been removed from the stabilizer trim wheel at the control stand (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-31-710-001

(13) Move the trim control wheel to make sure that the stabilizer operates smoothly through the full travel between the jackscrew stops.

SUBTASK 27-41-31-220-002

(14) Make sure that the clearance between the jackscrew support fitting and the fuselage structure is 0.030 ±0.020 in. (0.76 ±0.51 mm) on the two sides of the stabilizer.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-31-410-002

(1) For the left hinge fitting, do this step:

(a) Close these access panels:

Number	Name/Location
331A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
331AZ	Horizontal Stabilizer, Access Panel, Inboard L.E. Closure Rib
332AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AB	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer to Body
333AZ	Horizontal Stabilizer, Access Panel, Inboard T.E. Closure Rib

SUBTASK 27-41-31-410-003

(2) For the right hinge fitting, do this step:

(a) Close these access panels:

Number	Name/Location
341A	Horizontal Stabilizer, Gap Cover, Horizontal Stabilizer To Body
341AZ	Horizontal Stabilizer, Access Panel - Inbd L.E. Closure Rib
342AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AB	Horizontal Stabilizer, Gap Cover - H. Stab. to Body
343AZ	Horizontal Stabilizer, Access Panel - Inbd T.E. Closure Rib

SUBTASK 27-41-31-390-001

(3) Apply an aerodynamic smoother sealant, A02315, to all non-bonded structural components contacting exterior skins.

NOTE: Sealant does not need to be applied to gaps between panels that are used for regular access as long as they are less than limits given in the Structural Repair Manual (SRM SUBJECT 51-10-01).

(a) Do this task: Aerodynamic Smoother Application, TASK 51-22-00-390-809.

SUBTASK 27-41-31-410-004

(4) Close this access door:

Number	Name/Location
318BR	Tailcone Access Door

SUBTASK 27-41-31-860-003

(5) Make sure that the stabilizer trim cutout switches are set to the NORMAL position.

SUBTASK 27-41-31-860-004

(6) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

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F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER FORWARD CONTROL MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the stabilizer forward control mechanism

(2) An installation of the stabilizer forward control mechanism.

B. The stabilizer forward control mechanism is referred to as the "forward mechanism" in this procedure.

TASK 27-41-41-000-801

2. Stabilizer Forward Control Mechanism Removal

(Figure 401, Figure 402)

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

C. Prepare for the Removal

SUBTASK 27-41-41-860-003

(1) Move the stabilizer to the full APL NOSE UP position.

SUBTASK 27-41-41-860-004

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-41-010-001

(3) To get access to the forward stabilizer forward control mechanism [43], do this step:

(a) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-41-41-010-002

(4) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Forward Mechanism Removal

SUBTASK 27-41-41-820-001

CAUTION MAKE SURE THAT THE CHAIN IS LOOSE BEFORE YOU RELEASE THE CABLE TENSION. TOO MUCH CABLE TENSION CAN CAUSE DAMAGE TO THE CHAIN.

(1) Adjust the upper adjusting nuts [24] of the aft support link [22] to loosen the chain [8].

SUBTASK 27-41-41-020-014

(2) Remove the lockwire from the upper turnbuckle [35].

SUBTASK 27-41-41-020-013

(3) Remove the nut [34], washer [33], bushing [32], washer [31], washer [51], washer [50], and bolt [30] to disconnect the upper turnbuckle [35] from the bracket.

SUBTASK 27-41-41-020-002

(4) Loosen the lower turnbuckle [1] to release the cable tension.

SUBTASK 27-41-41-020-003

(5) Remove the nuts [42] and washers [41] to remove the cable guard [40] from the cable drum [39].

SUBTASK 27-41-41-020-004

(6) Remove the STA cable from the bottom of the cable drum [39].

(a) Put a 50 lbf (222.4 N) load on the trim control wheel to extend the STB cable and make the removal of the STA cable easier.

(b) Install a tag to the STA cable for easy installation.

SUBTASK 27-41-41-020-005

(7) Disconnect the flexible shaft [21] from the forward stabilizer forward control mechanism [43].

SUBTASK 27-41-41-020-006

(8) Turn the trim control wheel until the connector link [11] of the chain [8] is between the idler sprocket [9] and the forward mechanism sprocket [10].

SUBTASK 27-41-41-020-007

(9) Remove the pins [12] from the connector link [11].

SUBTASK 27-41-41-020-008

(10) Disconnect the chain [8] at the connector link [11].

(a) Make sure that the loose ends of the chain [8] are clear of the forward stabilizer forward control mechanism [43].

SUBTASK 27-41-41-020-009

(11) Remove the STB cable from the top of the cable drum [39].

(a) Install a tag to the STB cable for easy installation.

SUBTASK 27-41-41-020-010

(12) Remove the forward stabilizer forward control mechanism [43]:

(a) Remove the nut [7], washer [6], washers [5], bushing [4], washer [3], and bolt [2] to disconnect the lower turnbuckle [1] from the brackets.

(b) Hold the forward stabilizer forward control mechanism [43].

(c) Remove nut [29], washer [28], bushing [27], washer [26], and bolt [25] from the forward support link [37].

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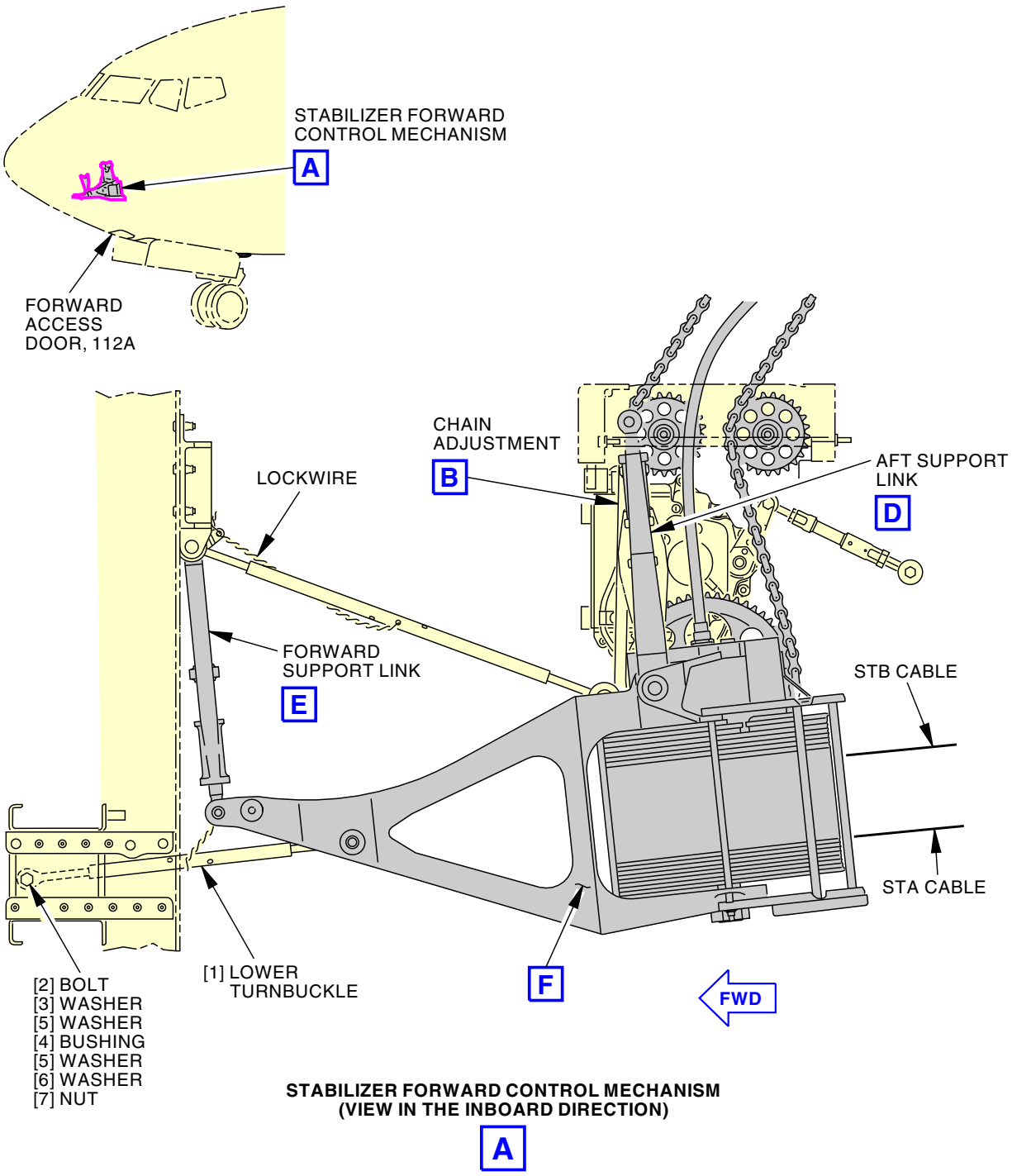
(d) Remove the nut [16], washer [15], bushing [14], washer [52], and bolt [13] from the aft support link [22].

(e) Remove the nut [20], washer [19], bushing [18], washer [53], and bolt [17] from the aft support link [22].

(f) Remove the forward stabilizer forward control mechanism [43] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER FORWARD CONTROL MECHANISM
(VIEW IN THE INBOARD DIRECTION)

A

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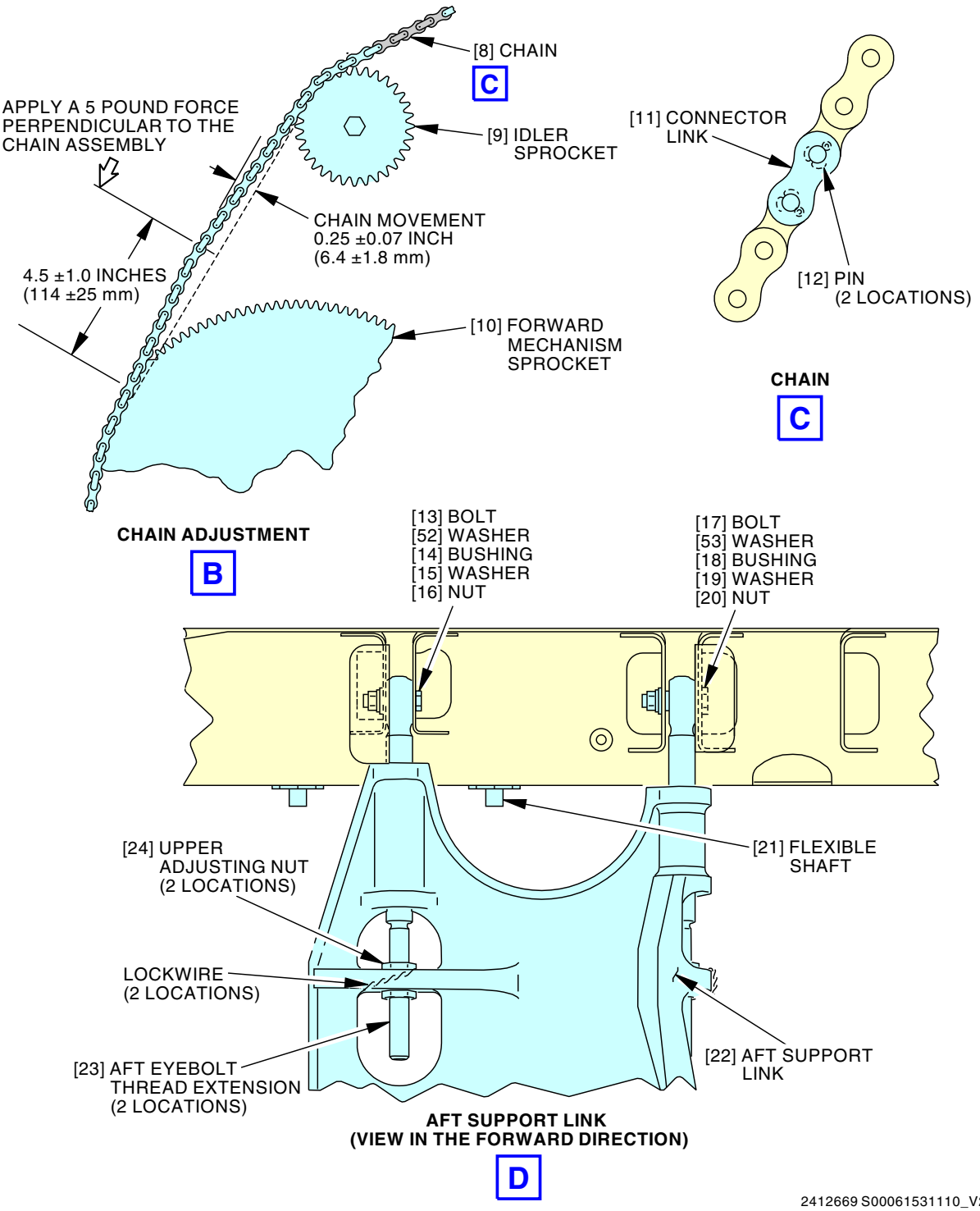
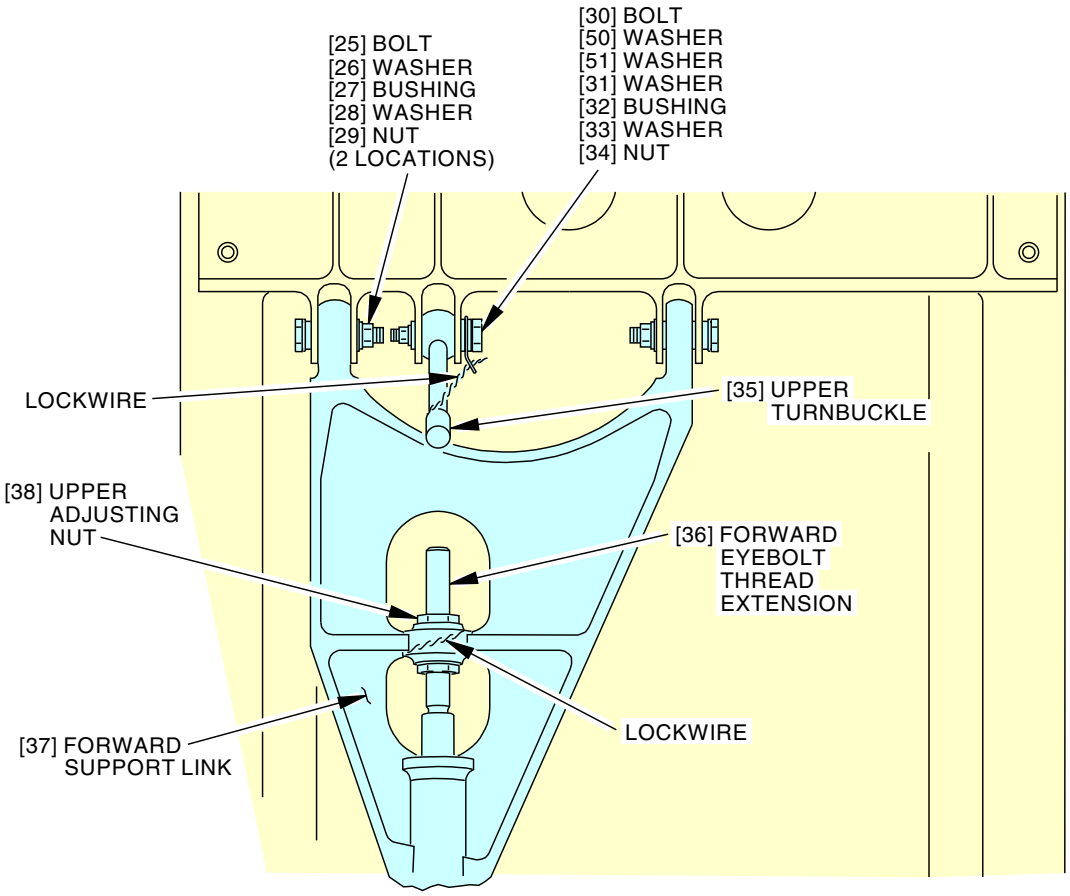
Stabilizer Forward Control Mechanism Installation
Figure 401/27-41-41-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Forward Control Mechanism Installation
Figure 401/27-41-41-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FORWARD SUPPORT LINK
(VIEW IN FORWARD DIRECTION)

E

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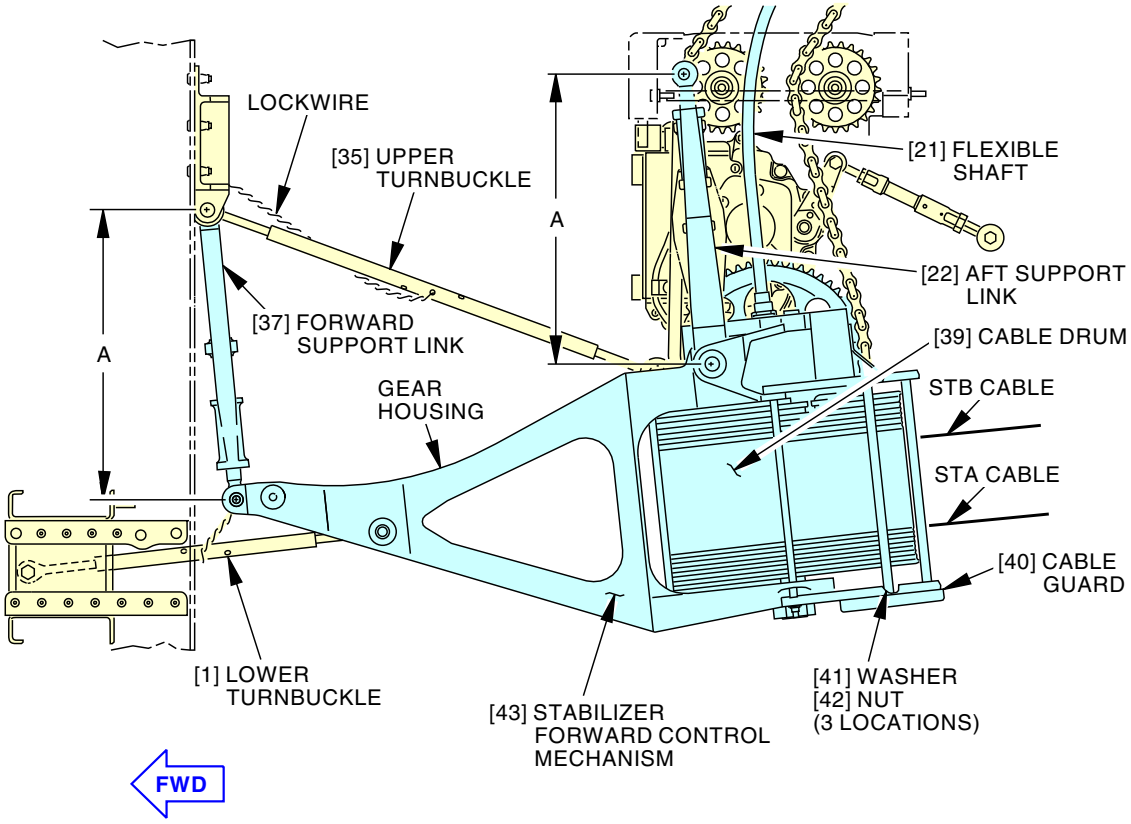
Stabilizer Forward Control Mechanism Installation
Figure 401/27-41-41-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER FORWARD CONTROL MECHANISM

F

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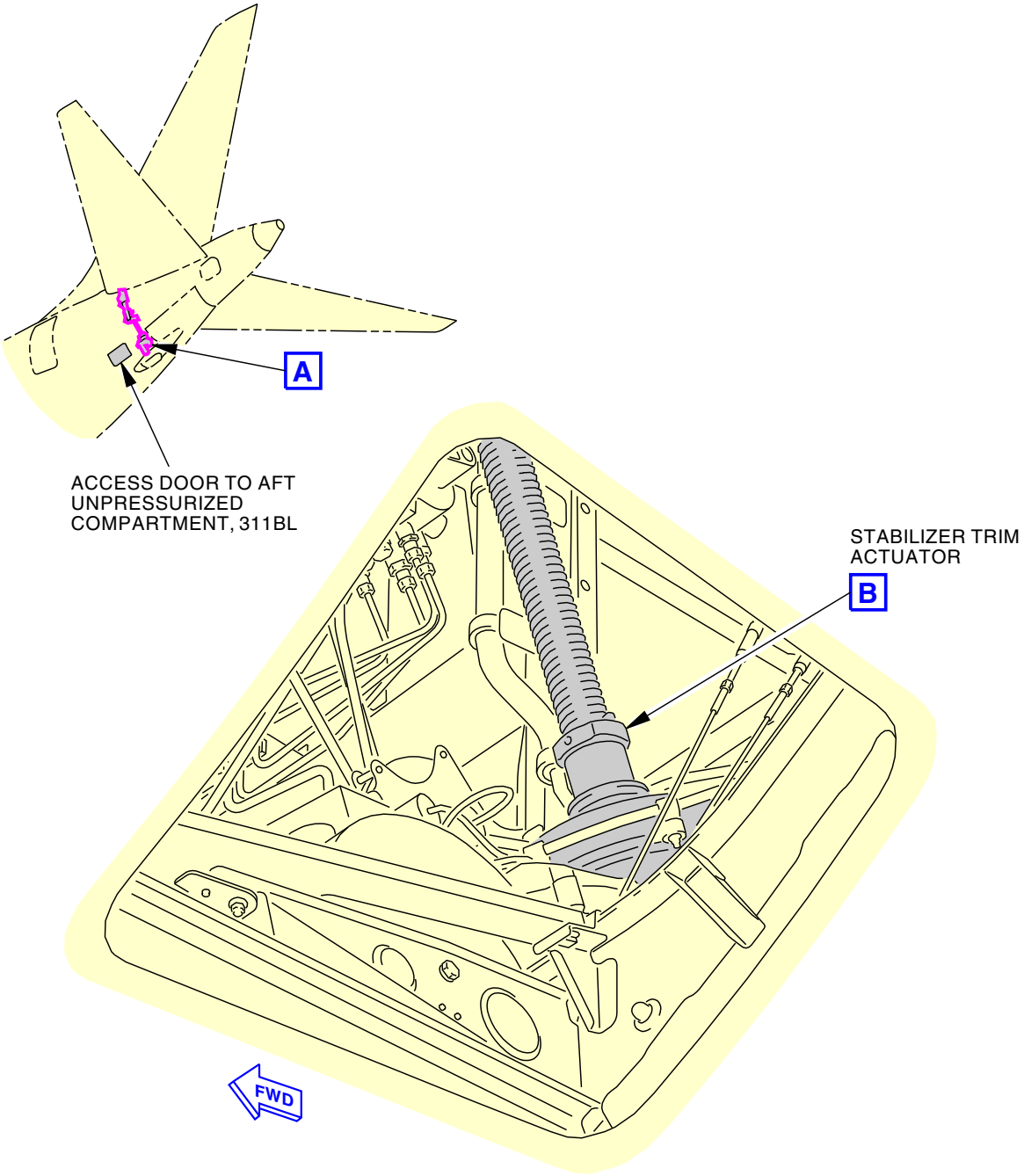
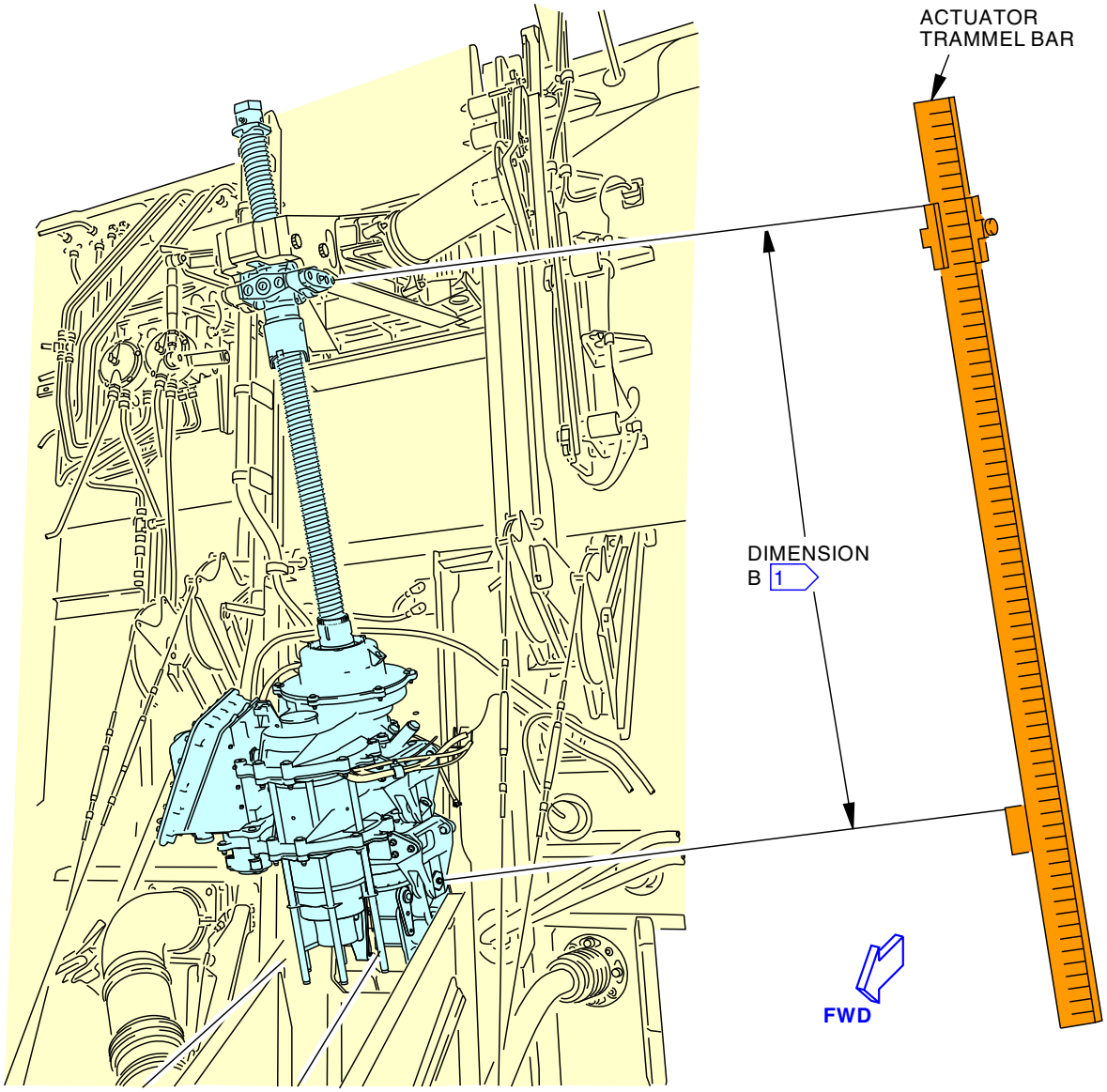
Stabilizer Forward Control Mechanism Installation
Figure 401/27-41-41-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Jackscrew Setting
Figure 402/27-41-41-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

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Stabilizer Trim Jackscrew Setting
Figure 402/27-41-41-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-41-400-801

3. Stabilizer Forward Control Mechanism - Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator - Test (P/B 501)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

C. Consumable Materials

Reference	Description	Specification
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
43	Stabilizer forward control mechanism	27-41-41-01-095	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Stabilizer Forward Control Mechanism Installation

SUBTASK 27-41-41-420-001

(1) Install the forward stabilizer forward control mechanism [43].

(a) Put the forward stabilizer forward control mechanism [43] in its position.

(b) Install the bolt [17], washer [53], bushing [18], washer [19], and nut [20] to attach the aft support link [22] to the structure.

1) Apply compound, C00528, to the washer [53].

(c) Install the bolt [13], washer [52], bushing [14], washer [15], and nut [16] to attach the aft support link [22] to the structure.

1) Apply compound, C00528, to the washer [52].

(d) Install the bolts [25], washers [26], bushings [27], washers [28], and nuts [29] to attach the forward support link [37] to the structure.

1) Apply compound, C00528, to the bushings [27].

(e) Install the bolt [2], washer [3], bushing [4], washers [5], washer [6], and nut [7] to connect the lower turnbuckle [1] to the brackets.

SUBTASK 27-41-41-420-002

(2) Adjust the lower turnbuckle [1] to get approximately 12.43 in. (315.7 mm) between the connections.

(a) Make sure that there is approximately equal extension of the screws on each side of the sleeve.

SUBTASK 27-41-41-020-011

(3) Connect the chain [8].

(a) Put the chain [8] on the idler sprocket [9] and the forward mechanism sprocket [10].

(b) If it is necessary to correct the length of the chain [8], remove the links from the chain [8].

1) Install the cotter pins.

(c) Connect the chain [8] at the connector link [11].

(d) Install the pins [12] on the outboard side of the chain [8].

SUBTASK 27-41-41-820-002

(4) Adjust the chain [8] tension.

(a) Apply a 5 lbf (22.2 N) force at approximately 4.5 ±1.0 in. (114 ±26 mm) from where the chain [8] touches the forward mechanism sprocket [10].

(b) Make sure that the movement of the chain [8] is 0.25 ±0.07 in. (6.4 ±1.8 mm).

(c) If it is necessary, do these steps to get the correct chain movement:

1) Adjust the upper adjusting nuts [24] and upper adjusting nut [38].

2) Make sure that all three A dimensions equal ± 0.06 in. (1.52 mm) from each other:

a) Measure the A dimensions of left and right aft support link [22].

NOTE: The A dimension is the distance of the aft support link between the center of the two connection bolts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Measure the A dimension of the forward support link [37].

NOTE: The A dimension is the distance of the forward support link between the center of the two connection bolts.

c) Make sure that all three A dimensions are ± 0.06 in. (1.52 mm) from each other.

d) Install MS20995NC32 lockwire, G01912.

SUBTASK 27-41-41-420-003

(5) Connect the STB cable.

(a) Attach the eye of the STB cable in the slot in the top of the cable drum [39].

(b) Turn the trim control wheel to wind the STB cable 28-1/2 turns on the front of the cable drum [39].

SUBTASK 27-41-41-420-004

(6) Connect the STA cable.

(a) Attach the STA cable to the cable drum [39].

1) Use a force gauge, COM-1557, to put a 50 lbf (222 N) load on the trim control wheel to pull on the STB cable and make installation of the cable STA easier.

(b) Wind the STA cable approximately 4-1/2 turns on the front of the cable drum [39].

SUBTASK 27-41-41-420-005

(7) Install the washers [41] and nuts [42] to attach the cable guard [40] to the forward stabilizer forward control mechanism [43].

SUBTASK 27-41-41-860-005

(8) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-41-820-003

(9) Adjust the cables STA and STB (TASK 27-41-00-820-801).

SUBTASK 27-41-41-420-006

(10) Connect the flexible shaft [21] to the stabilizer forward control mechanism [43].

(a) Make sure that the splines engage before you tighten the union.

SUBTASK 27-41-41-420-010

(11) Install the bolt [30], washer [50], washer [51], washer [31], bushing [32], washer [33], and nut [34] to connect the upper turnbuckle [35] to the brackets.

(a) Install MS20995NC32 lockwire, G01912.

NOTE: The lockwire must be attached to the tab of the washer of the upper turnbuckle.

SUBTASK 27-41-41-710-001

(12) Do this task: Stabilizer Manual Trim and Trim Indicator - Test, TASK 27-41-00-700-801.

SUBTASK 27-41-41-410-001

(13) Close this access door:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-41-410-002

(14) Close this access door:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER FORWARD CONTROL MECHANISM - INSPECTION/CHECK

1. General

A. This procedure has the following tasks:

(1) Stabilizer forward control mechanism inspection.

(2) Stabilizer Trim Forward Mechanism Retention Turnbuckles and Turnbuckle Attachment Points Inspection.

(3) Stabilizer Forward Trim Control Mechanism General Visual Inspection.

TASK 27-41-41-210-801

2. Stabilizer Control Mechanism Detail Visual Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Stabilizer Control Mechanism Detail Visual Inspection

SUBTASK 27-41-41-010-003

(1) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-41-41-210-001

(2) Do a detail visual inspection of the stabilizer forward control mechanism:

(a) Examine all attachment points for security and damage.

(b) Examine upper and lower turnbuckles for damage or binding.

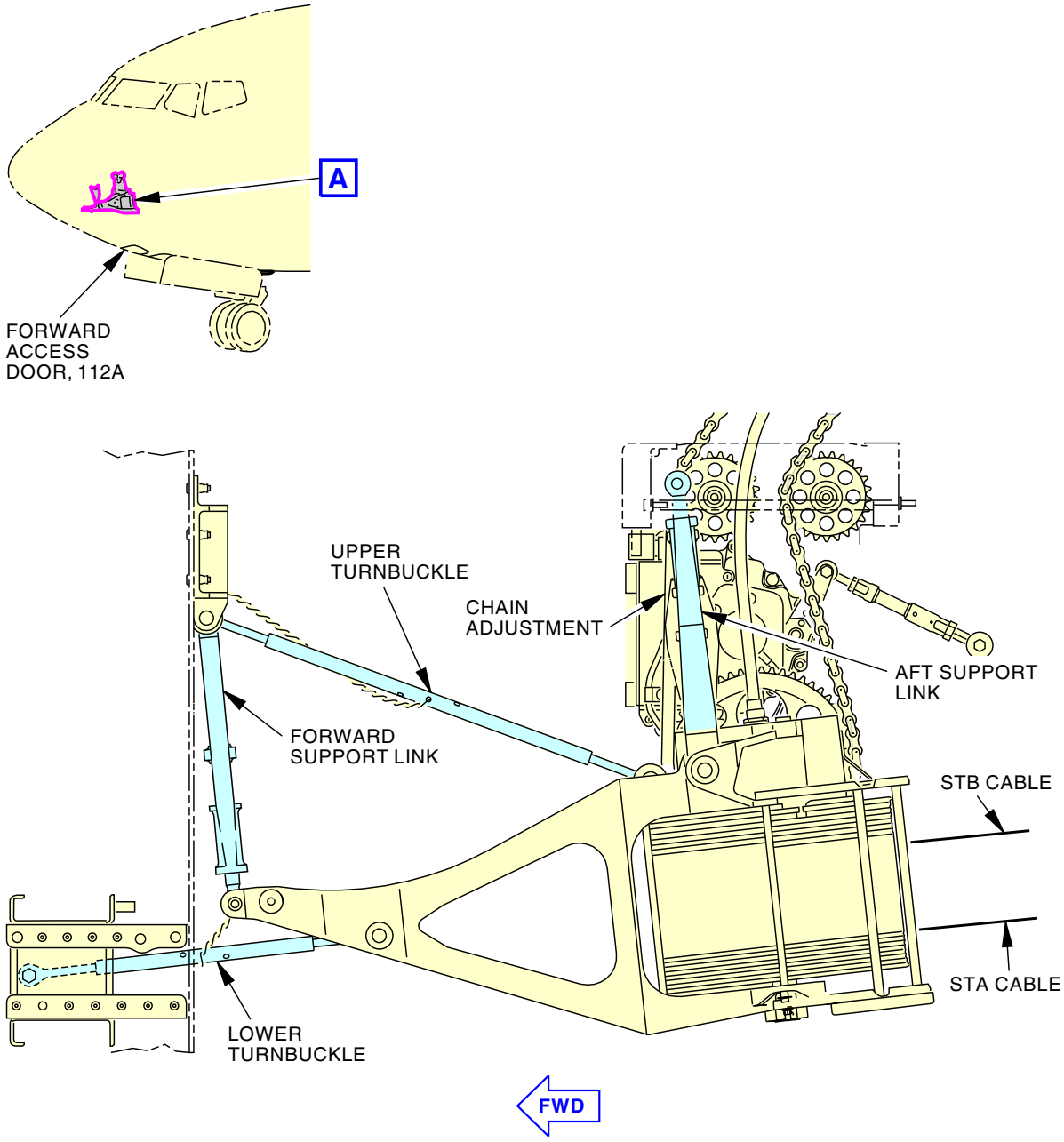
SUBTASK 27-41-41-410-003

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER FORWARD CONTROL MECHANISM
(VIEW IN THE INBOARD DIRECTION)

A

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Stabilizer Forward Control Mechanism
Figure 601/27-41-41-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-41-210-802

3. Upper and Lower Stabilizer Trim Forward Mechanism Retention Turnbuckles and Turnbuckle Attachment Points Detail Visual Inspection

(Figure 601)

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Procedure

SUBTASK 27-41-41-020-012

(1) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-41-41-211-001

(2) Do a detail visual inspection of the upper and lower stabilizer trim forward mechanism retention turnbuckles and turnbuckle attachment points: (Figure 601)

(a) Examine upper and lower turnbuckles and turnbuckle attachment points for security, damage or binding.

SUBTASK 27-41-41-410-004

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

TASK 27-41-41-210-803

4. Stabilizer Forward Trim Control Mechanism Inspection

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Procedure

SUBTASK 27-41-41-010-004

(1) To get access to the stabilizer forward trim control mechanism,

Open this access panel:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-41-210-002

(2) Do a general visual inspection of the stabilizer forward trim control mechanism.

SUBTASK 27-41-41-410-005

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

COLUMN CUTOUT SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Column cutout switch removal.

(2) Column cutout switch installation.

B. This procedure is applicable for the captain's and first officer's column cutout switches.

(1) Electrical connectors D12156 and D817 are located on the captain's column cutout switch, M1983.

(2) Electrical connectors D10553, D2257 and D3124 are located on the first officer's column cutout switch, M1201.

TASK 27-41-51-000-801

2. Column Cutout Switch Removal

(Figure 401)

A. References

Reference	Title
31-31-52-000-801	Control Column Position Sensor Removal (P/B 401)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

D. Prepare for the Removal

SUBTASK 27-41-51-860-001

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-51-010-001

(2) Open this access door:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-51-010-002

(3) Remove this access panel for the captain's cutout switch (TASK 53-14-01-020-801).

(a) Remove this access panel:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-41-51-010-003

(4) Remove this access panel for the first officer's cutout switch (TASK 53-14-01-020-801).

(a) Remove this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

E. Column Cutout Switch Removal

SUBTASK 27-41-51-020-001

(1) Disconnect the electrical connectors for the column cutout switches.

SUBTASK 27-41-51-020-002

(2) Do these steps before the removal of the captain's column cutout switch [9]:

(a) Remove the nut [6], washer [5], and bolt [4] to disconnect the rod assembly [8] from the column cutout switch arm [3].

(b) Remove the screw [13] from the standoffs on the column cutout switches.

SUBTASK 27-41-51-020-003

(3) Do these steps to remove the captain's column cutout switch [9]:

(a) Remove the bolts [1] and washers [2] that attach the captain's column cutout switch [9] to the beam assembly.

(b) Remove the captain's column cutout switch [9].

SUBTASK 27-41-51-020-006

(4) Do these steps before the removal of the first officer's column cutout switch [12]:

(a) Remove the nut [6], washer [5], and bolt [4] to disconnect the rod assembly [8] from the column cutout switch arm [3].

(b) Remove the screw [13] from the standoffs on the column cutout switches.

SUBTASK 27-41-51-020-004

(5) Do these steps to remove the first officer's column cutout switch [12]:

(a) Remove the bolts [10] and washers [11] that attach the first officer's column cutout switch [12] to the beam assembly.

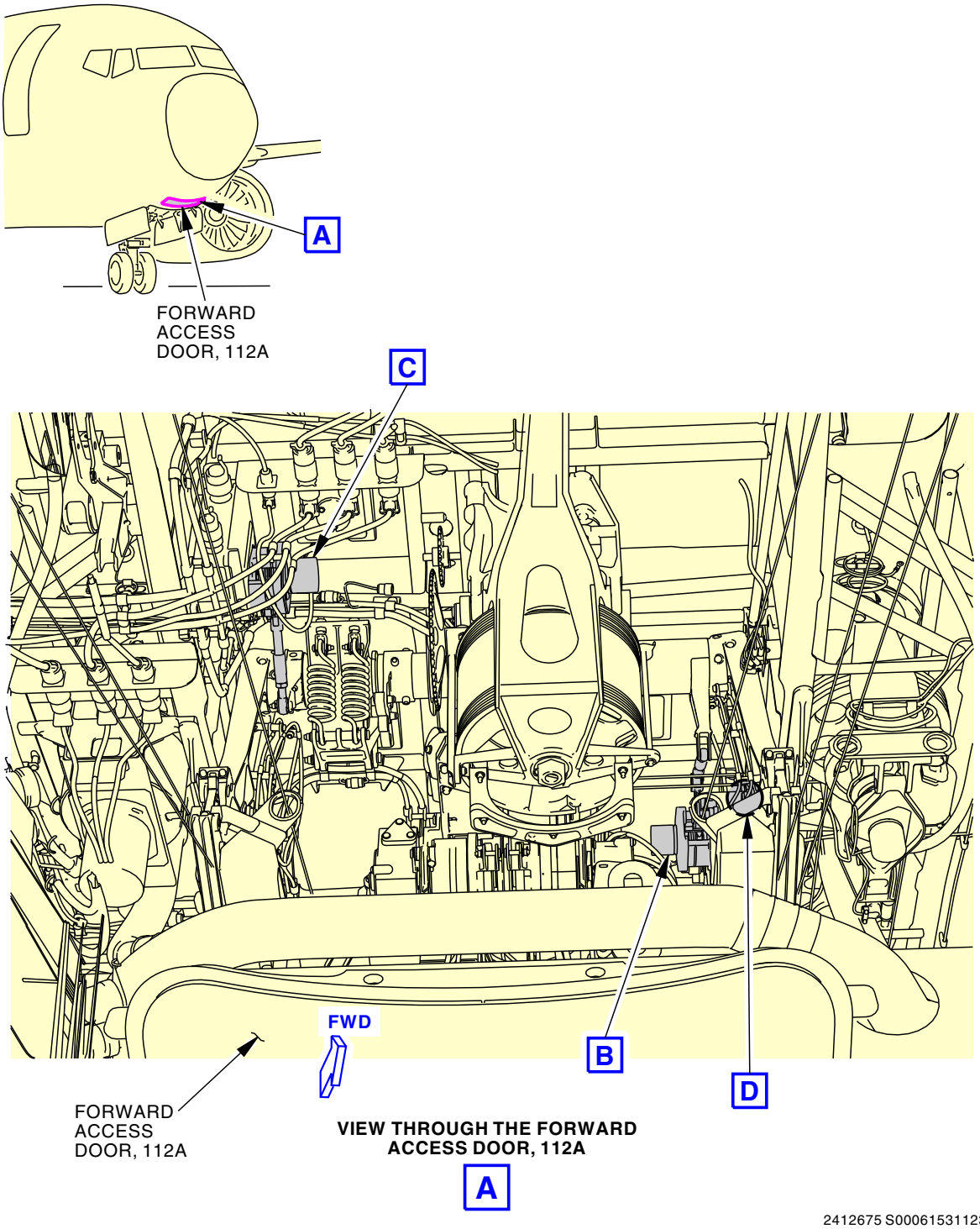
(b) Remove the first officer's column cutout switch [12].

SUBTASK 27-41-51-020-005

(6) If it is necessary, remove the control column position sensor from the column cutout switch. To remove it, do this task: Control Column Position Sensor Removal, TASK 31-31-52-000-801.

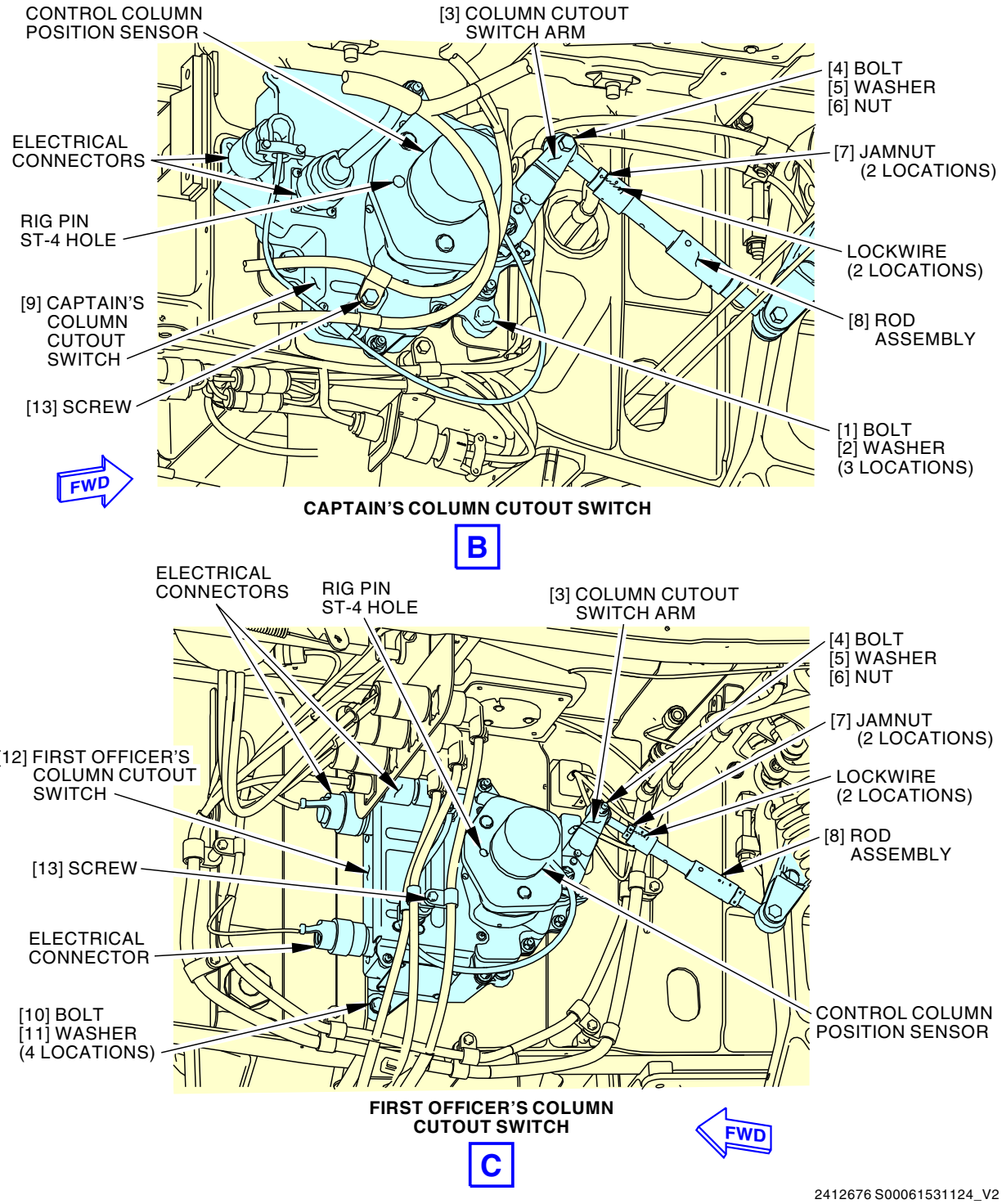
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



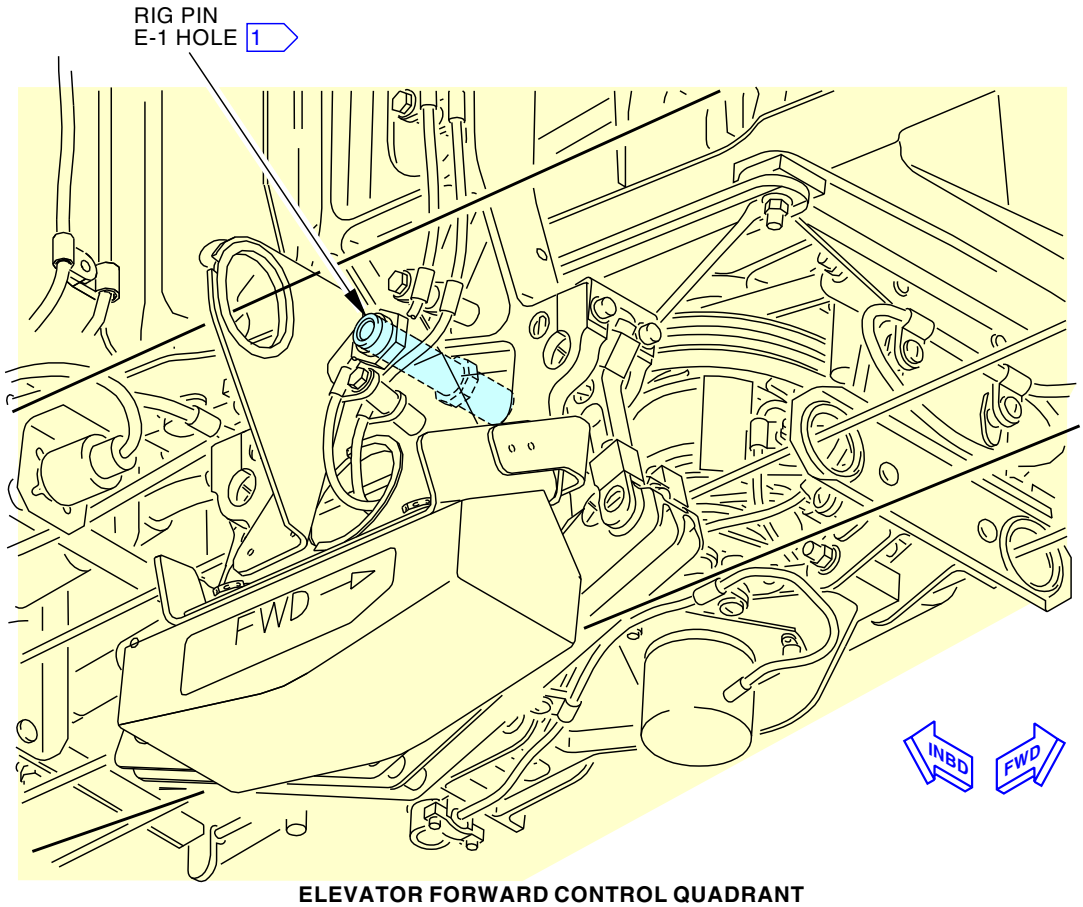
Column Cutout Switch Installation
Figure 401/27-41-51-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Column Cutout Switch Installation
Figure 401/27-41-51-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ELEVATOR FORWARD CONTROL QUADRANT

D

1 CAPTAIN'S SIDE ONLY

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Column Cutout Switch Installation
Figure 401/27-41-51-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-51-400-801

3. Column Cutout Switch Installation

(Figure 401)

A. References

Reference	Title
27-41-00-710-801	Column Cutout Switches Test (P/B 501)
31-31-52-400-801	Control Column Position Sensor Installation (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Captain's column cutout switch	27-41-51-01-055	SIA ALL
12	First officer's column cutout switch	27-41-51-02-055	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

F. Access Panels

Number	Name/Location
112A	Forward Access Door
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

G. Column Cutout Switch Installation

SUBTASK 27-41-51-420-001

(1) If it is necessary, install the control column position sensor to the column cutout switch. To install it, do this task: Control Column Position Sensor Installation, TASK 31-31-52-400-801.

SUBTASK 27-41-51-420-002

(2) Do these steps to install the captain's column cutout switch [9]:

(a) Put the captain's column cutout switch [9] in its position.

(b) Install the bolts [1] and washers [2] to attach the captain's column cutout switch [9] to the beam assembly.

(c) Connect the electrical connectors.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-51-420-003

(3) Do these steps to install the first officer's column cutout switch [12]:

(a) Put the first officer's column cutout switch [12] in its position.

(b) Install the bolts [10] and washers [11] to attach the first officer's column cutout switch [12] to the beam assembly.

(c) Connect the electrical connectors.

SUBTASK 27-41-51-420-004

(4) Install the screw [13] to the standoffs on the column cutout switches.

SUBTASK 27-41-51-420-005

(5) Connect the rod assembly [8] to the column cutout switch arm [3]:

(a) Install the rig pin E-1 from the rigging pin kit, SPL-1585 through the left elevator forward control quadrant.

(b) Install the rig pin ST-4 from the rigging pin kit, SPL-1585 in the column cutout switch.

(c) Remove the lockwires from the rod assembly [8].

(d) Turn the jamnuts [7] until you can easily install the bolt [4] that connect the rod assembly [8] to the column cutout switch arm [3].

(e) Install the bolt [4], washer [5], and nut [6] to connect the rod assembly [8] to the column cutout switch arm [3].

(f) Tighten the jamnuts [7].

(g) Install the MS20995C32 lockwires, G01048.

(h) Remove the rig pin E-1 from the left elevator forward control quadrant.

(i) Remove the rig pin ST-4 from the control column switch.

SUBTASK 27-41-51-710-001

(6) Do this task: Column Cutout Switches Test, TASK 27-41-00-710-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-51-860-002

(1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-51-410-002

(2) Install this access panel for the captain's column cutout switch (TASK 53-14-01-420-801).

(a) Install this access panel:

Number	Name/Location
113AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-41-51-410-004

(3) Install this access panel for the first officer's column cutout switch (TASK 53-14-01-420-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-41-51-410-005

(4) Close this access door:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

HORIZONTAL STABILIZER TRIM CONTROL WHEEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Stabilizer Trim Control Wheel Removal.

(2) Stabilizer Trim Control Wheel Installation.

TASK 27-41-61-010-801

2. Stabilizer Trim Control Wheel Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-41-61-860-001

(1) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the CUTOUT position.

SUBTASK 27-41-61-860-002

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

C. Stabilizer Trim Control Wheel Removal

SUBTASK 27-41-61-010-001

(1) Remove the stabilizer trim wheel [1] from the control stand [7]:

(a) Remove the bolt [9] and spacer [8] that attaches the stabilizer trim wheel [1] to the shaft.

(b) Remove the stabilizer trim wheel [1] from the shaft.

SUBTASK 27-41-61-010-002

(2) As necessary, remove the upper side cover [3] and lower side cover [5] from the right side of the control stand [7]:

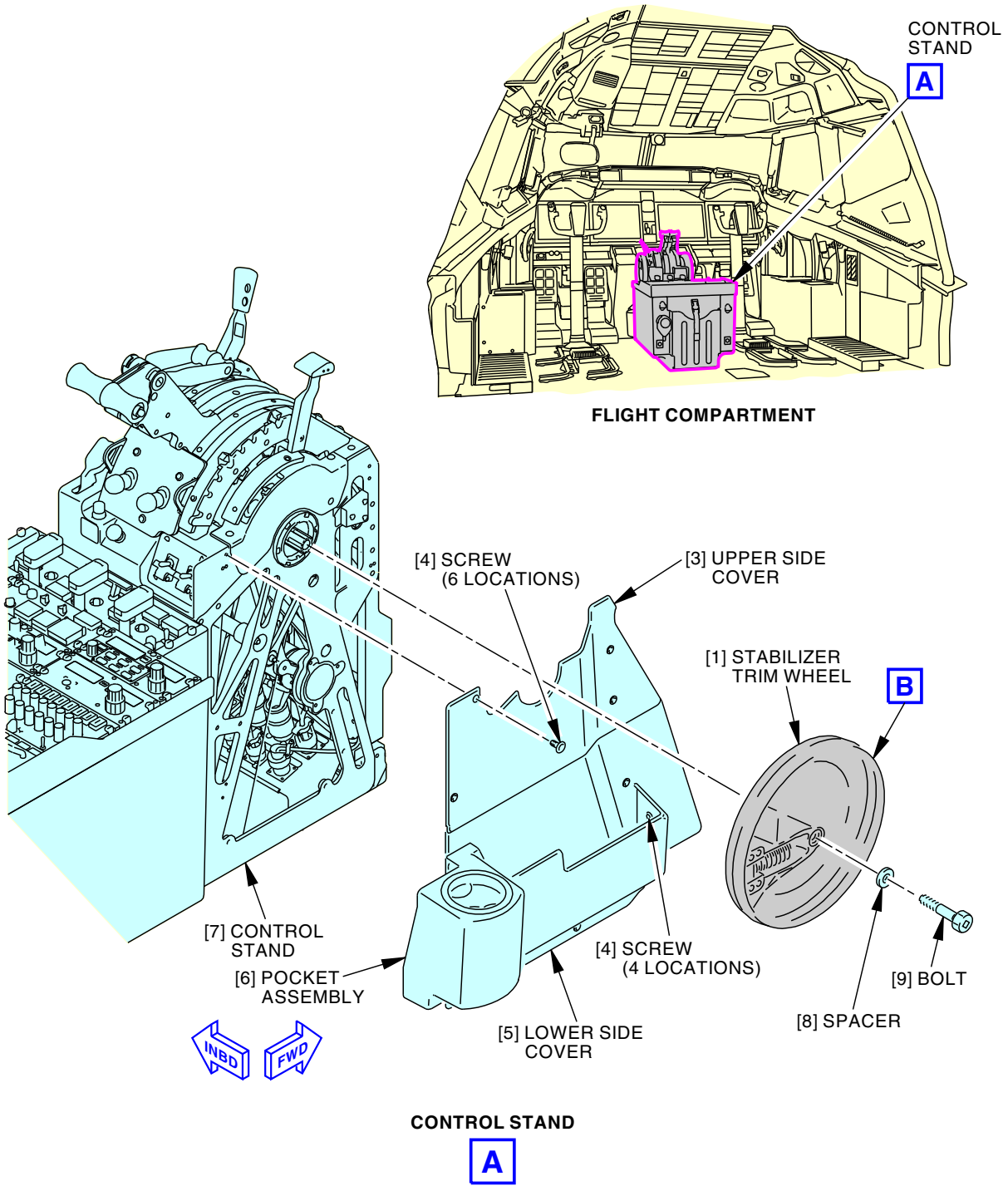
(a) Remove the screws [4] and the pocket assembly [6] from the lower side cover [5].

(b) Remove the screws [4] that attach the upper side cover [3] and the lower side cover [5] to the control stand [7].

(c) Remove the upper side cover [3] and the lower side cover [5] from the control stand [7].

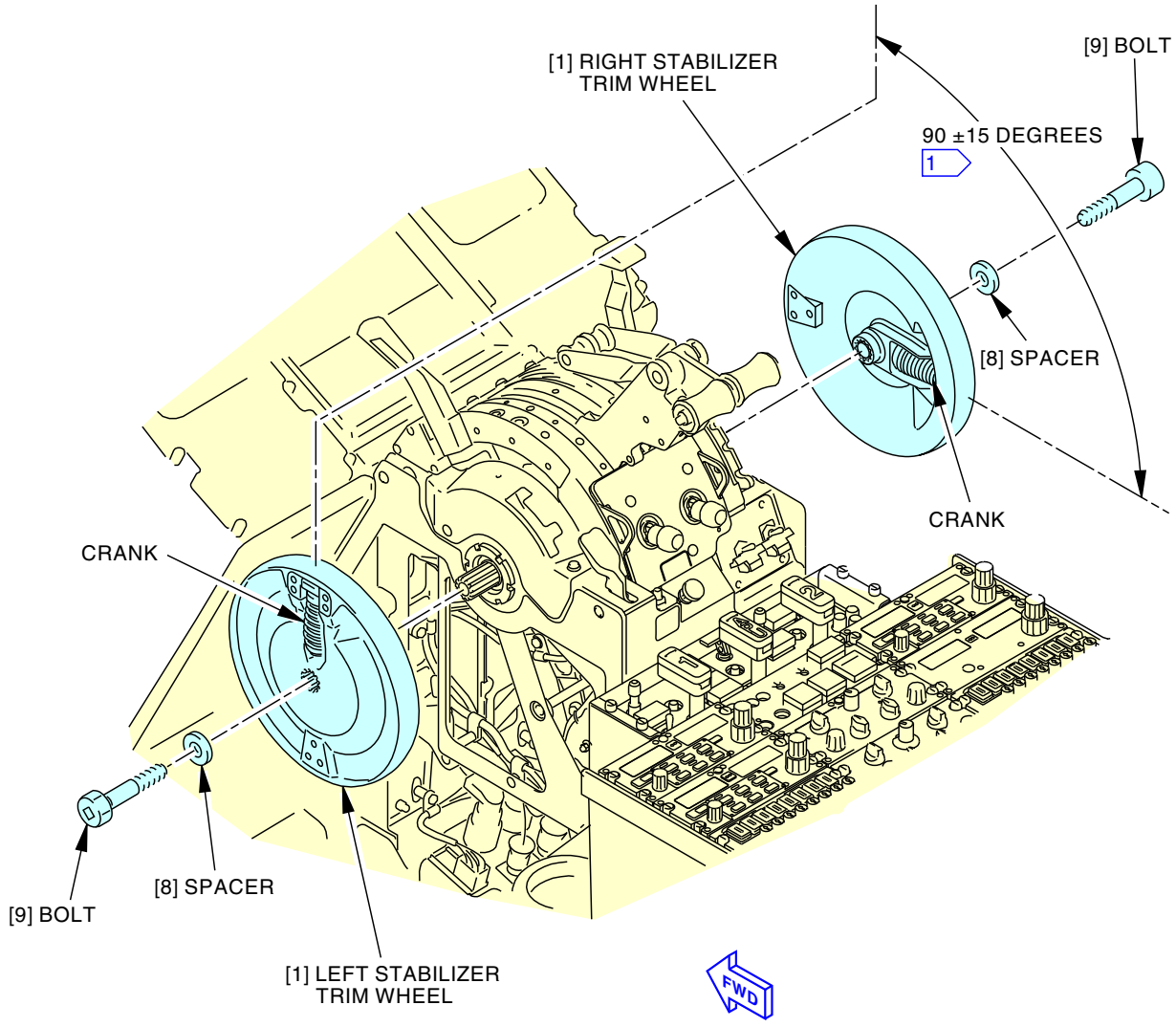
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Control Wheel Installation
Figure 401/27-41-61-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



B

1 INSTALL THE LEFT AND RIGHT TRIM ON THE SHAFT WITH THE CRANKS 90°±15 DEGREES APART.

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Stabilizer Trim Control Wheel Installation
Figure 401/27-41-61-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-61-410-801

3. Stabilizer Trim Control Wheel Installation

(Figure 401)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Stabilizer trim wheel	27-41-00-19-095	SIA ALL

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Stabilizer Trim Control Wheel Installation

SUBTASK 27-41-61-410-001

(1) As necessary, install the upper side cover [3] and lower side cover [5] on the control stand [7]:

(a) Install the upper side cover [3] and the lower side cover [5] on the control stand [7].

(b) Install the screws [4] that attach the upper side cover [3] and the lower side cover [5] to the control stand [7].

(c) Install the screws [4] in the pocket assembly [6] and the lower side cover [5].

SUBTASK 27-41-61-410-002

(2) Install the stabilizer trim wheel [1] on the control stand [7]:

(a) Install the stabilizer trim wheel [1] on the shaft with the handle 90 +/- 15 degrees apart from the handle on the other stabilizer trim wheel [1].

NOTE: Make sure an equal amount of the shaft is visible on both sides of the pedestal.

(b) Install the bolt [9] and spacer [8] that attaches the stabilizer trim wheel [1] to the shaft.

(c) Tighten the bolt to 150 in-lb (17 N·m) - 160 in-lb (18 N·m) plus the run-on torque.

SUBTASK 27-41-61-860-004

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-61-860-006

(4) Set the STAB TRIM PRI switch, S272, on the aft area of the control stand to the NORMAL position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM MOTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the stabilizer trim motor

(2) An installation of the stabilizer trim motor.

TASK 27-41-71-000-801

2. Stabilizer Trim Motor Removal

(Figure 401)

A. References

Reference	Title
SWPM 20-60-01	CLEANING OF ELECTRICAL CONNECTORS

B. Consumable Materials

Reference	Description	Specification
B50124	Cleaner - Thermoplastic	

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-41-71-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-71-010-001

(2) To get access to the stabilizer trim motor [1], do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Stabilizer Trim Motor Removal

SUBTASK 27-41-71-020-001

(1) Remove the stabilizer trim motor [1]:

(a) Clean the electrical connectors [2] using thermoplastic cleaner, B50124, (isopropyl alcohol) (SWPM 20-60-01).

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(b) Disconnect the electrical connectors [2] from the stabilizer trim motor [1].

NOTE: A blue filter seal can be found in the connector. The filter is for Electro-Magnetic Interference (EMI) protection and must stay in the connector.

(c) Install protective caps on the electrical connectors [2].

(d) Remove the nuts [6], washers [5], washers [11] and bolts [4] that attaches the stabilizer trim motor [1] to the stabilizer trim actuator [3].

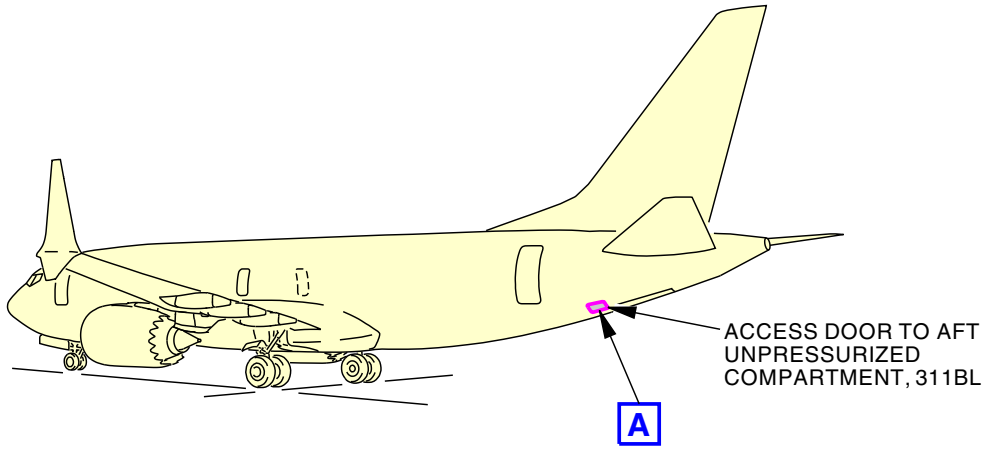
(e) Remove the nut [10], washer [9], washer [8] and bolt [7] that attaches the stabilizer trim motor [1] to the stabilizer trim actuator [3].

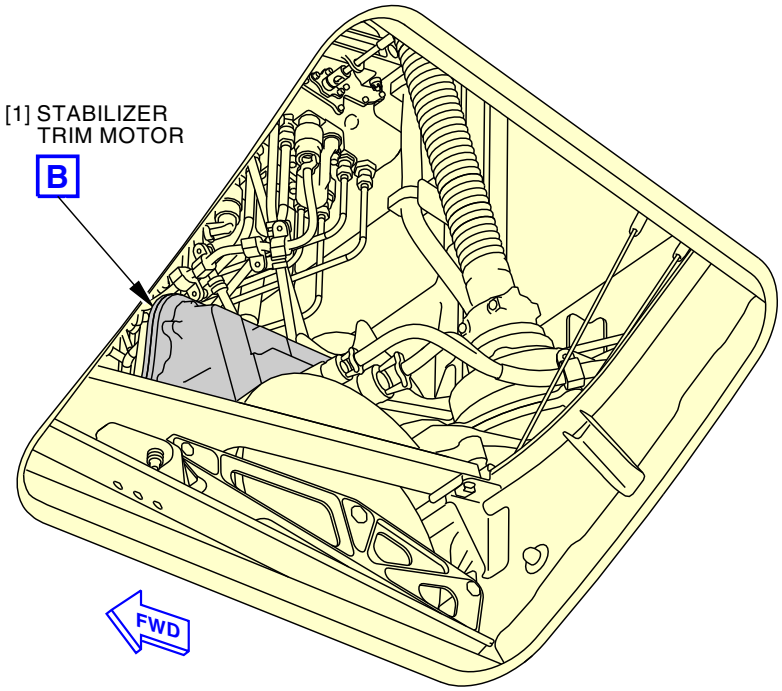
(f) Remove the stabilizer trim motor [1].

(g) Put a cover on the mounting pad to keep unwanted materials out of the stabilizer trim actuator [3].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





**VIEW THROUGH THE ACCESS DOOR TO AFT
UNPRESSURIZED COMPARTMENT, 311BL**

A

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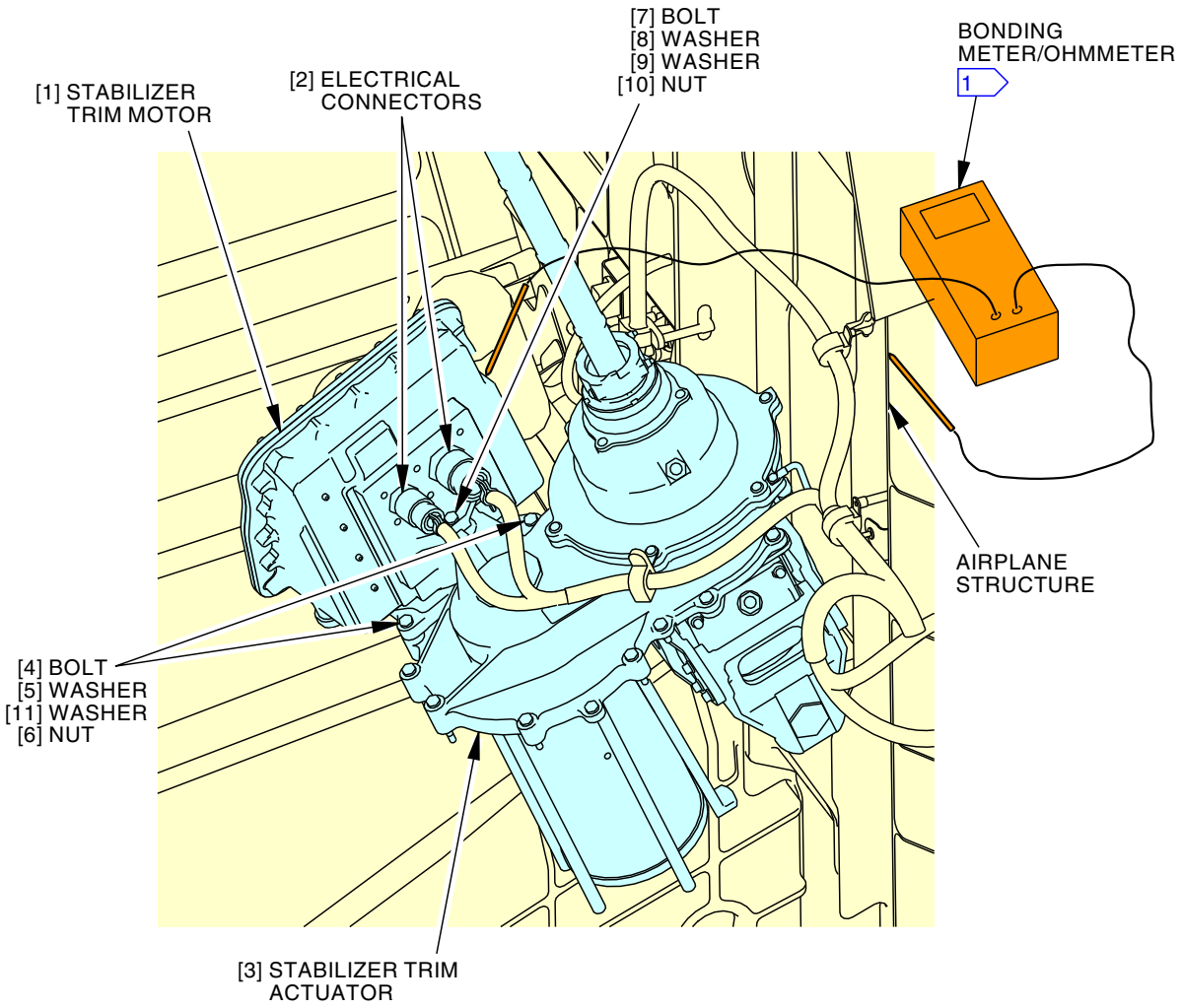
**Stabilizer Trim Motor Installation
Figure 401/27-41-71-990-801 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM MOTOR

1 PLACE THE PROBES FROM THE BONDING METER/OHMMETER AS SHOWN TO MEASURE THE RESISTANCE BETWEEN THE STABILIZER TRIM MOTOR AND THE AIRPLANE STRUCTURE. THE RESISTANCE SHOULD BE 0.0025 OHM OR LESS.

2412683 S00061531139_V3

Stabilizer Trim Motor Installation
Figure 401/27-41-71-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-71-400-801

3. Stabilizer Trim Motor Installation

(Figure 401)

A. References

Reference	Title
27-41-71-700-801	Stabilizer Trim Motor Test (P/B 501)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A50337	Sealant - Fuel Tank	BMS5-45 Class B
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Stabilizer trim motor	27-41-71-01-035	SIA ALL

E. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Stabilizer Trim Motor Installation

SUBTASK 27-41-71-020-002

(1) Remove the cover from the mounting pad.

SUBTASK 27-41-71-160-001

(2) Make sure that the mating surfaces of the stabilizer trim motor [1] and stabilizer trim actuator [3] are clean and free of paint.

SUBTASK 27-41-71-640-001

(3) Fill the internal spline of the stabilizer trim actuator [3] with grease, D00633.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-71-420-001

(4) Install the stabilizer trim motor [1].

(a) Engage the splined shaft of the stabilizer trim motor [1] with the internal spline of the stabilizer trim actuator [3].

(b) Install the bolts [4], washer [5], washers [11], and nuts [6].

(c) Install the bolt [7], washer [8], washer [9], and nut [10].

(d) Connect the electrical connectors [2].

NOTE: A blue filter seal can be found in the connector. The filter is for Electro-Magnetic Interference (EMI) protection and must stay in the connector.

SUBTASK 27-41-71-220-001

(5) Measure the electrical bonding resistance between the stabilizer trim motor [1] and airplane structure (SWPM 20-20-00) (Figure 401).

(a) Use an intrinsically safe approved bonding meter, COM-1550.

(b) Make sure that the electrical bonding resistance is 0.0025 ohms (2.5 milliohms) or less.

SUBTASK 27-41-71-390-001

(6) Apply sealant, A50337, to fully cover the bolt [7], washer [8], washer [9], and nut [10].

SUBTASK 27-41-71-860-002

(7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-71-820-001

(8) Do this task: Stabilizer Trim Motor Test, TASK 27-41-71-700-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-71-410-001

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM MOTOR - ADJUSTMENT/TEST

1. General

A. This procedure has one task. The task is the test of the stabilizer trim motor.

TASK 27-41-71-700-801

2. Stabilizer Trim Motor Test

A. References

Reference	Title
22-11-81-710-801	Stabilizer Trim Motor Autopilot Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
330	Subzone - Left Horizontal Stabilizer and Elevator
340	Subzone - Right Horizontal Stabilizer and Elevator

C. Prepare for the Test

SUBTASK 27-41-71-860-004

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-71-860-005

(2) Make sure that the STAB TRIM PRI (S272) and B/U (S149) switches on the aft area of the control stand are in the NORMAL position.

SUBTASK 27-41-71-860-006

(3) Make sure that the STAB TRIM override switch, on the P8 panel, is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

D. Stabilizer Trim Motor Test

SUBTASK 27-41-71-710-001

(1) Do the test of the stabilizer trim motor:

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Supply system B hydraulic power (TASK 29-11-00-860-801).

(b) Set the flaps to a position from 1-40 units.

1) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position.

a) Make sure that the stabilizer leading edge moves up.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Release the stabilizer trim control switches.

2) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position.
   a) Make sure that the stabilizer leading edge moves down.
   b) Release the stabilizer trim control switches.
3) Push and hold the stabilizer trim control switches on the first officer's control wheel to the NOSE DOWN position.
   a) Make sure that the stabilizer leading edge moves up.
   b) Release the stabilizer trim control switches.
4) Push and hold the stabilizer trim control switches on the first officer's control wheel to the NOSE UP position.
   a) Make sure that the stabilizer leading edge moves down.
   b) Release the stabilizer trim control switches.
5) Check the travel time for the stabilizer leading edge to move from the NOSE UP position to the NOSE DOWN position:
   a) Push the stabilizer trim control switches on the captain's control wheel to the NOSE UP position and hold until the stabilizer reaches it's lower limit of travel.
   b) Push the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position and hold until the stabilizer reaches it's upper limit of travel.
      <1> Make sure that the time for the stabilizer leading edge to move from its lower limit of travel to its upper limit of travel is between 31-39 seconds.
      <2> Make sure that the operation is smooth and there is no unusual noise.
6) Use the stabilizer trim control switches on the captain's control wheel to move the stabilizer many times in the two directions, one after the other for 3 seconds each.
   a) Make sure that the operation is smooth and there is no unusual noise.
7) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position until the system comes to the full trim speed.
   a) Move the stabilizer trim control switches momentarily to OFF and then to the NOSE DOWN position.
   b) Make sure that the stabilizer leading edge moves up immediately after you move the stabilizer trim control switches to the NOSE DOWN position.
   c) Release the stabilizer trim control switches after confirming that the leading edge moves up.
8) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position until the system comes to the full trim speed.
   a) Move the stabilizer trim control switches momentarily to OFF and then to the NOSE UP position.
   b) Make sure that the stabilizer leading edge moves down immediately after you move the stabilizer trim control switches to the NOSE UP position.
   c) Release the stabilizer trim control switches after confirming that the leading edge moves down.
9) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position until the system comes to full trim speed.

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a) Release the stabilizer trim control switches.

b) Make sure that the stabilizer trim wheel moves no more than 2.5 turns (900 degrees).

10) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position until the system comes to full trim speed.

a) Release the stabilizer trim control switches.

b) Make sure that the stabilizer trim wheel moves no more than 2.5 turns (900 degrees).

(c) Set the flaps to the full up position.

1) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position.

a) Make sure that the stabilizer leading edge moves up.

b) Release the stabilizer trim control switches.

2) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position.

a) Make sure that the stabilizer leading edge moves down.

b) Release the stabilizer trim control switches.

3) Check the travel time for the stabilizer leading edge to move from the NOSE UP position to the NOSE DOWN position:

a) Push the stabilizer trim control switches on the captain's control wheel to the NOSE UP position and hold until the stabilizer reaches it's lower limit of travel.

b) Push the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position and hold until the stabilizer reaches it's upper limit of travel.

<1> Make sure that the time for the stabilizer leading edge to move from its lower limit of travel to its upper limit of travel is between 47–58 seconds.

<2> Make sure that the operation is smooth and there is no unusual noise.

4) Use the stabilizer trim control switches on the captain's control wheel to move the stabilizer many time in the two directions one after the other for 3 seconds each.

a) Make sure that the operation is smooth and there is no unusual noise.

5) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position until the system comes to the full trim speed.

a) Move the stabilizer trim control switches momentarily to OFF and then to the NOSE DOWN position.

b) Make sure that the stabilizer leading edge moves up immediately after you move the stabilizer trim control switches to the NOSE DOWN position.

c) Release the stabilizer trim control switches.

6) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position until the system comes to the full trim speed.

a) Move the stabilizer trim control switches momentarily to OFF and then to the NOSE UP position.

b) Make sure that the stabilizer leading edge moves down immediately after you move the stabilizer trim control switches to the NOSE UP position.

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c) Release the stabilizer trim control switches.

7) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE UP position until the system comes to full trim speed.

a) Release the stabilizer trim control switches.

b) Make sure that the stabilizer trim wheel moves no more than 0.5 turns (180 degrees).

8) Push and hold the stabilizer trim control switches on the captain's control wheel to the NOSE DOWN position until the system comes to full trim speed.

a) Release the stabilizer trim control switches.

b) Make sure that the stabilizer trim wheel moves no more than 0.5 turns (180 degrees).

(d) Remove system B hydraulic power (TASK 29-11-00-860-805).

(e) Do this task: Stabilizer Trim Motor Autopilot Test, TASK 22-11-81-710-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER BALL NUT AND JACKSCREW GEARBOX - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the primary stabilizer ball nut and jackscrew gearbox

(2) An installation of the stabilizer ball nut and jackscrew gearbox.

B. The stabilizer ball nut and jackscrew gearbox is referred to as the stabilizer trim actuator in this procedure.

C. The stabilizer trim actuator includes the ballnut, jackscrew, and jackscrew gearbox.

27-CMR-08

TASK 27-41-81-000-801

2. Stabilizer Ball Nut and Jackscrew Gearbox Removal

(Figure 401, Figure 402, Figure 403)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-41-71-000-801	Stabilizer Trim Motor Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-1678	Assembly - Lock, Horizontal Stabilizer Part #: F80027-44 Supplier: 81205 Opt Part #: F80027-41 Supplier: 81205
SPL-1728	Equipment - Handling, Stabilizer Jackscrew (Dome Pressure Bulkhead) Part #: C27050-82 Supplier: 81205

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(Continued)

Reference	Description
SPL-10319	Wrench - Pinion Gear (Rotate) Part #: F71252 Supplier: 81205 Part #: F71267 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-22106	Cable Spool (Minium Spool Diameter 5", Capacity 200 ft, Cable Diameter 0.125")

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-41-81-860-001

(1) Set the stabilizer leading edge to the full down (airplane nose up) position.

SUBTASK 27-41-81-860-002

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-81-010-001

(3) To get access to the stabilizer forward control mechanism, do this step:

(a) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-41-81-010-002

(4) To get access to the stabilizer trim actuator, do this step:

(a) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-81-820-001

CAUTION

MAKE SURE THAT THE CHAIN IS LOOSE BEFORE YOU RELEASE THE CABLE TENSION. TOO MUCH CABLE TENSION CAN CAUSE DAMAGE TO THE CHAIN.

(5) Adjust the upper adjusting nuts [5] of the aft support link [6] to loosen the chain (Figure 401).

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SUBTASK 27-41-81-020-002

(6) Disconnect the upper turnbuckle [4].

SUBTASK 27-41-81-020-003

(7) Loosen the lower turnbuckle [3] to release the tension of the STA cable [66] and STB cable [65] (Figure 401).

SUBTASK 27-41-81-020-004

(8) Do this task: Stabilizer Trim Motor Removal, TASK 27-41-71-000-801.

F. Stabilizer Trim Actuator Removal

SUBTASK 27-41-81-020-005

(1) Remove the clamps [44] for the electrical connectors [47] from the jackscrew gearbox [24].

(a) Remove the nuts [46], washers [45], and bolts [43] to remove the clamps [44] from the jackscrew gearbox [24].

(b) Remove the electrical connectors [47] from the jackscrew gearbox [24].

(c) Install the bolt [43], washers [45], and nuts [46] back to the jackscrew gearbox [24].

SUBTASK 27-41-81-020-006

(2) Remove the cable drum guard [67] and spacers [26] from the cable drum [27].

(a) Remove the pin [83] and castellated nut [82] from the support plate [62] that is attached to the cable drum [27].

1) Discard the pin [83].

(b) Remove the nut [60], washer [59], bolt [57], and washer [58], that attach the cable drum guard [67] to the support plate [62].

(c) Remove the bolts [63], washers [64], support plate [62], spacers [26], and washer [84] from the cable drum [27].

NOTE: Because work space is small, keep the bolts [63] in the support plate [62] and in spacers [26] to aid with the removal procedure.

(d) Remove the bolts [48] and washers [49] that attach the cable drum guard [67] to the cable drum [27].

(e) Remove the cable drum guard [67] and spacers [26].

SUBTASK 27-41-81-020-007

CAUTION

KEEP TENSION ON THE CABLE AT ALL TIMES. WHEN THE CABLE IS DISCONNECTED FROM THE CABLE DRUM, TENSION NEEDS TO BE KEPT ON THE CABLE SO THAT THE CABLE DOES NOT BECOME CAUGHT IN THE CABLE GUARDS ON THE OTHER CABLE DRUM. THIS CAN CAUSE DAMAGE TO THE CABLE AND THE CABLE MAY NEED TO BE REPLACED.

(3) Disconnect the STB cable [65] from the cable drum [27].

(a) Use the force gauge, COM-1557, on the stabilizer trim wheel handle to put a 50 lb (22.7 kg) load on the STA cable [66].

NOTE: This will keep the STA cable on the drum, which will make the removal of the STB cable easier.

SUBTASK 27-41-81-480-001

(4) Install the pinion gear wrench, SPL-10319, on the internal spline of the jackscrew gearbox [24].

SUBTASK 27-41-81-020-008

(5) Move the jackscrew [23] to put the stabilizer leading edge to the full up position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT DAMAGE OR KINK THE CABLE WHILE YOU UNWIND IT FROM THE FORWARD CABLE DRUM. THE CABLE CAN KINK BETWEEN THE CABLE GUARD AND THE FORWARD CABLE DRUM WHEN YOU REMOVE THE LAST WRAP OF CABLE. IF YOU REMOVE THE CABLE TOO QUICKLY, YOU CAN CAUSE DAMAGE THE END OF THE CABLE.

CAUTION

KEEP TENSION ON THE CABLE AT ALL TIMES. WHEN THE CABLE IS DISCONNECTED FROM THE CABLE DRUM, TENSION NEEDS TO BE KEPT ON THE CABLE SO THAT THE CABLE DOES NOT BECOME CAUGHT IN THE CABLE GUARDS ON THE OTHER CABLE DRUM. THIS CAN CAUSE DAMAGE TO THE CABLE AND THE CABLE MAY NEED TO BE REPLACED.

(a) When the stabilizer starts to move, pull the STB cable [65] into the tail compartment and wind it on a cable spool, STD-22106.

NOTE: It is necessary to use the cable spool, STD-22106, to prevent damage and maintain tension on the cable.

NOTE: It is recommended that a mechanic watch the cable unwind from the forward cable drum to make sure that no damage occurs to the cable as the last three wraps of cable are slowly unwound from the cable drum.

(b) When the ballnut [28] touches the stops, keep a record of the number of turns of the STA cable [66] on the cable drum [27].

CAUTION

KEEP TENSION ON THE CABLE AT ALL TIMES. WHEN THE CABLE IS DISCONNECTED FROM THE CABLE DRUM, TENSION NEEDS TO BE KEPT ON THE CABLE SO THAT THE CABLE DOES NOT BECOME CAUGHT IN THE CABLE GUARDS ON THE OTHER CABLE DRUM. THIS CAN CAUSE DAMAGE TO THE CABLE AND THE CABLE MAY NEED TO BE REPLACED.

(c) Disconnect the STA cable [66] from the cable drum [27].

SUBTASK 27-41-81-480-002

(6) Install the control cable clamp, SPL-1569, to the cables.

(a) Attach the DO NOT OPERATE tags, STD-858, to the stabilizer trim wheels.

SUBTASK 27-41-81-480-003

WARNING

INSTALL THE HORIZONTAL STABILIZER LOCKS. THE STABILIZER LEADING EDGE CAN MOVE UP QUICKLY WHEN YOU DISCONNECT THE JACKSCREW. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(7) Install the lock, SPL-1678, on the jackscrew fitting [21] (Figure 403).

(a) Install the lower horizontal stabilizer lock.

NOTE: The maximum torque for the lower lock assembly bolts is 12 in-lb (1 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT MOVE THE JACKSCREW FITTING INTO THE HORIZONTAL STABILIZER LOCKS. THIS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(b) Turn the motor shaft or cable drum by hand to move the stabilizer leading edge down until the stabilizer truss touches the horizontal stabilizer lock.

(c) Install the upper horizontal stabilizer lock.

NOTE: The maximum torque for the upper lock assembly bolts is 12 in-lb (1 N·m).

1) Make sure that the adjustable leveling feet are adjusted so that they contact the jackscrew fittings [21].

SUBTASK 27-41-81-480-004

(8) Install the equipment, SPL-1728, to the jackscrew gearbox [24] (Figure 403).

(a) Install the hoist adapter to the sleeve of the jackscrew gearbox [24].

(b) Install the hoist bar between the frames at the top of the stabilizer trim compartment.

(c) Attach the hoist to the hoist bar and connect it to the hoist adapter.

SUBTASK 27-41-81-020-009

(9) Remove the stabilizer trim actuator [53] from the airplane (Figure 402).

(a) Remove the nut [42], washers [40], and bolt [39] to disconnect the bonding jumper [41] from the jackscrew gearbox [24].

1) Install the bolt [39], washers [40], and nut [42] back in the jackscrew gearbox [24].

(b) Remove the bolts [72], washer [73], washer [74], and nuts [75] from the safety strap [56].

(c) Remove the bolts [68], washers [69], washers [70], and nuts [71] from the safety strap [56].

(d) Remove the bolts [54] and washers [55] from the safety strap [56].

(e) Remove the pins [38], nuts [37], washers [36], spacers [35], washers [34], and bolts [33] that attaches the ballnut [28] to the jackscrew fitting [21].

1) Discard the pins [38].

(f) Remove the bolts [29] and washers [30] to remove the upper gimbal pins [31] from the upper gimbal fittings [22].

(g) Move the ballnut [28] down and adjust the jackscrew [23] until it is clear from the jackscrew fitting [21].

(h) Install the washers [30] and bolts [29] to attach the upper gimbal pins [31] back in the upper gimbal fittings [22].

(i) Remove the pins [52], nuts [51], washers [50], and lower gimbal pins [25] from the stabilizer trim actuator [53].

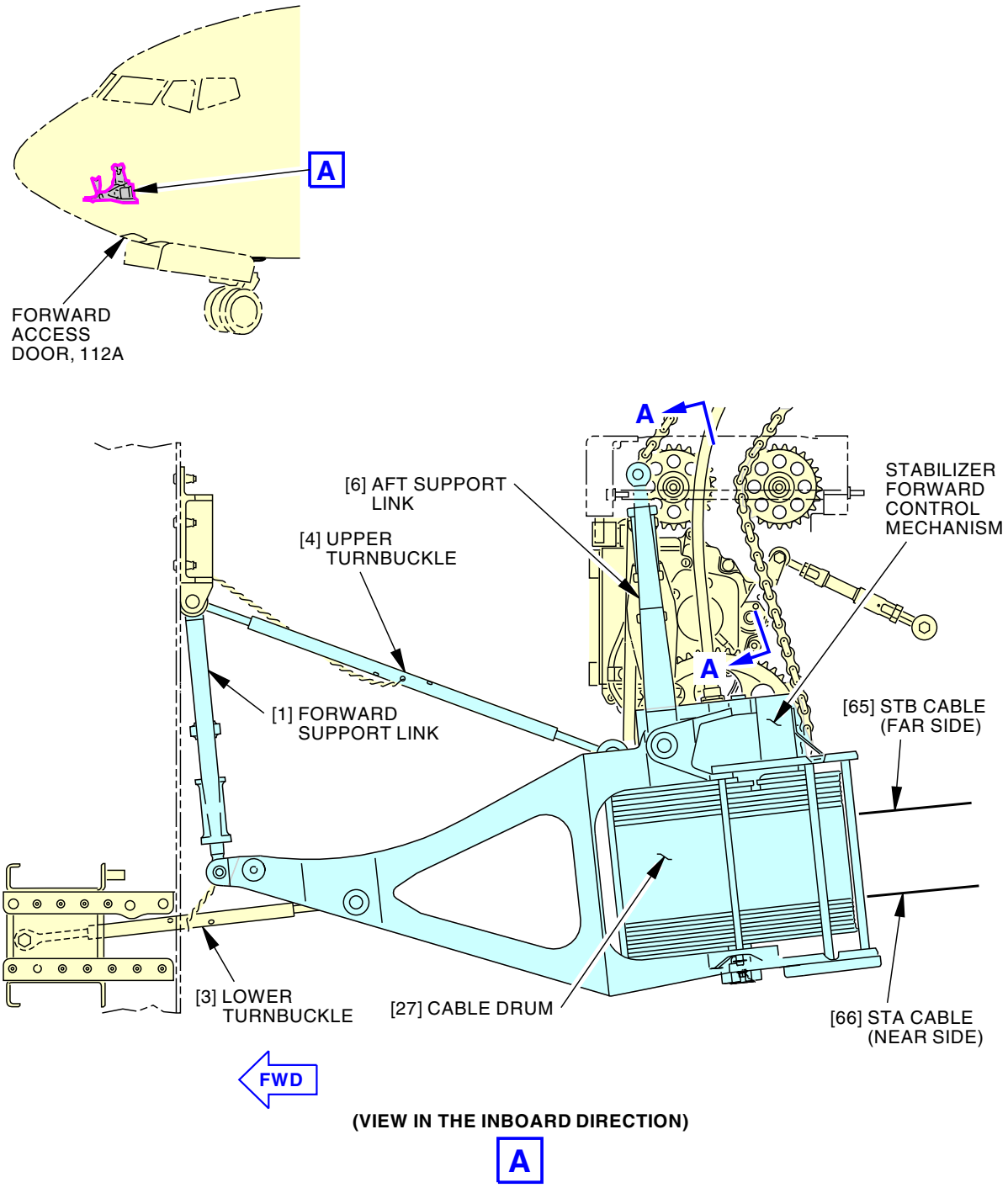
1) Discard the pins [52].

(j) Lower the jackscrew [23] until it is clear of the stabilizer truss.

(k) Lower the stabilizer trim actuator [53] from the airplane.

END OF TASK

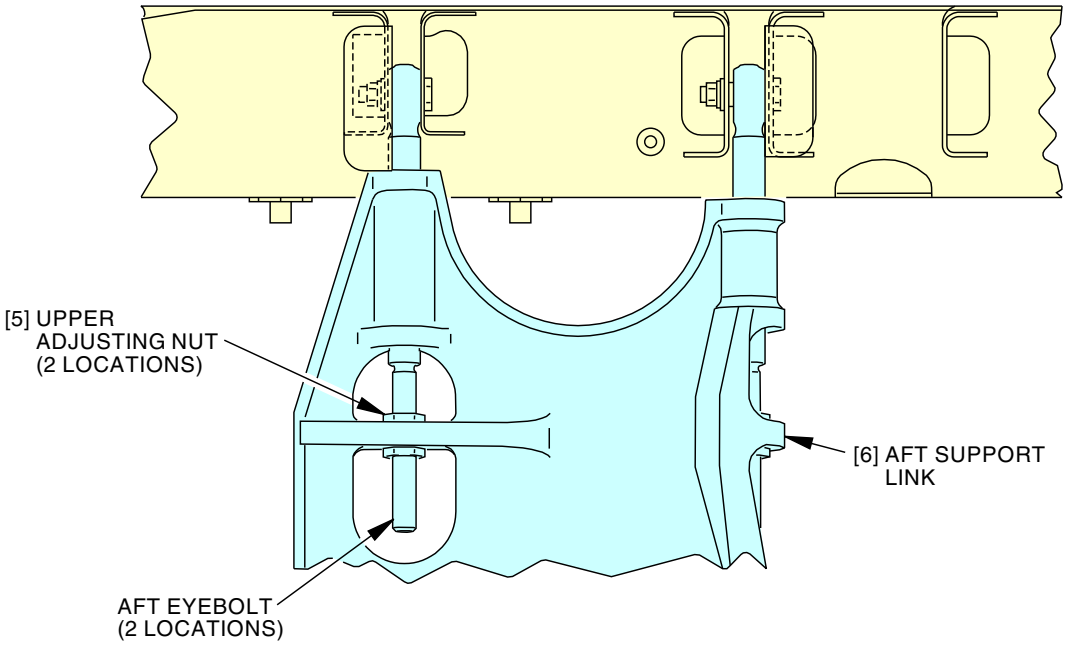
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412684 S00061531146_V3

Stabilizer Forward Control Mechanism Adjustment
Figure 401/27-41-81-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



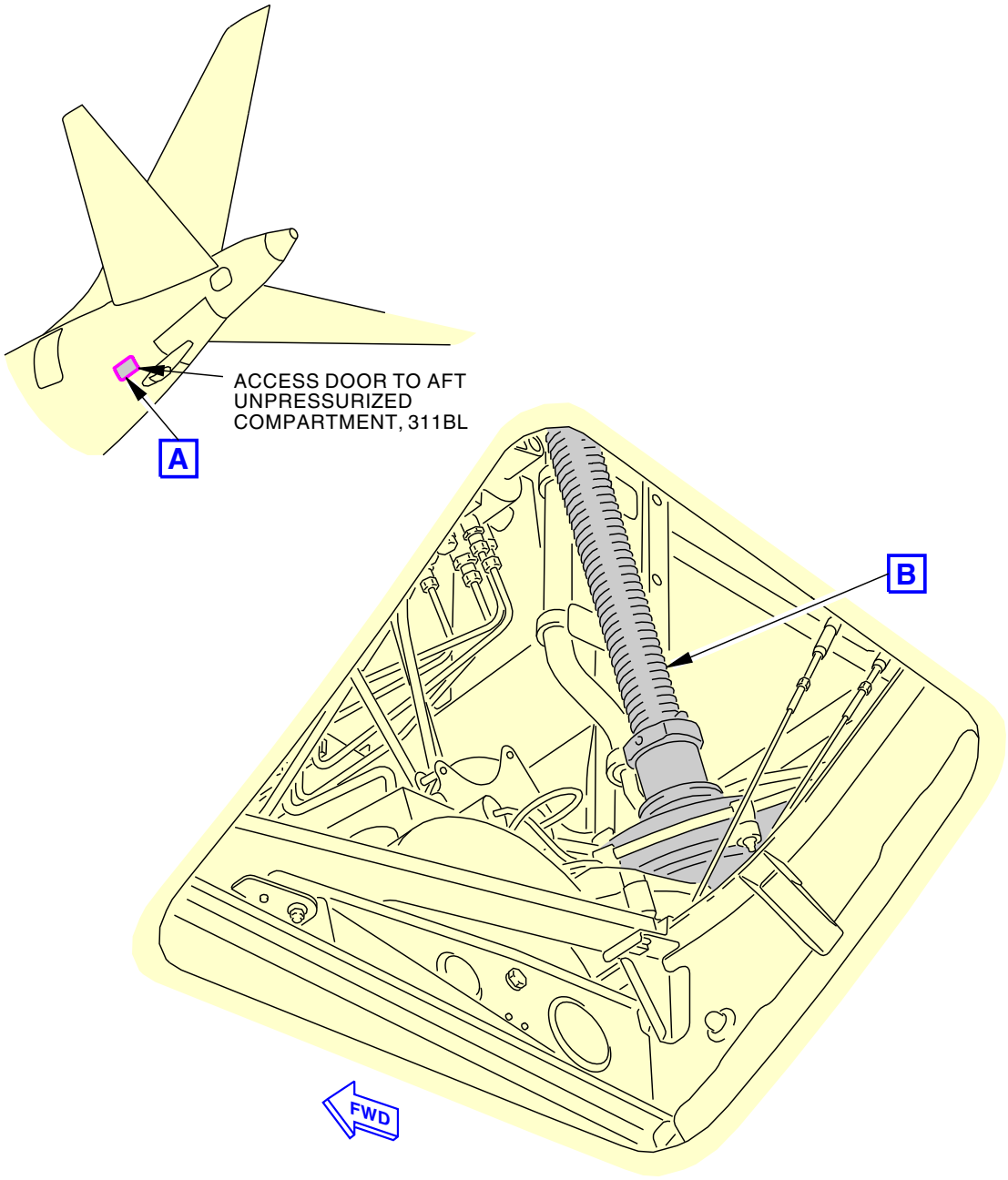
(VIEW IN THE FORWARD DIRECTION)

A-A

2412685 S00061531147_V1

Stabilizer Forward Control Mechanism Adjustment
Figure 401/27-41-81-990-801 (Sheet 2 of 2)

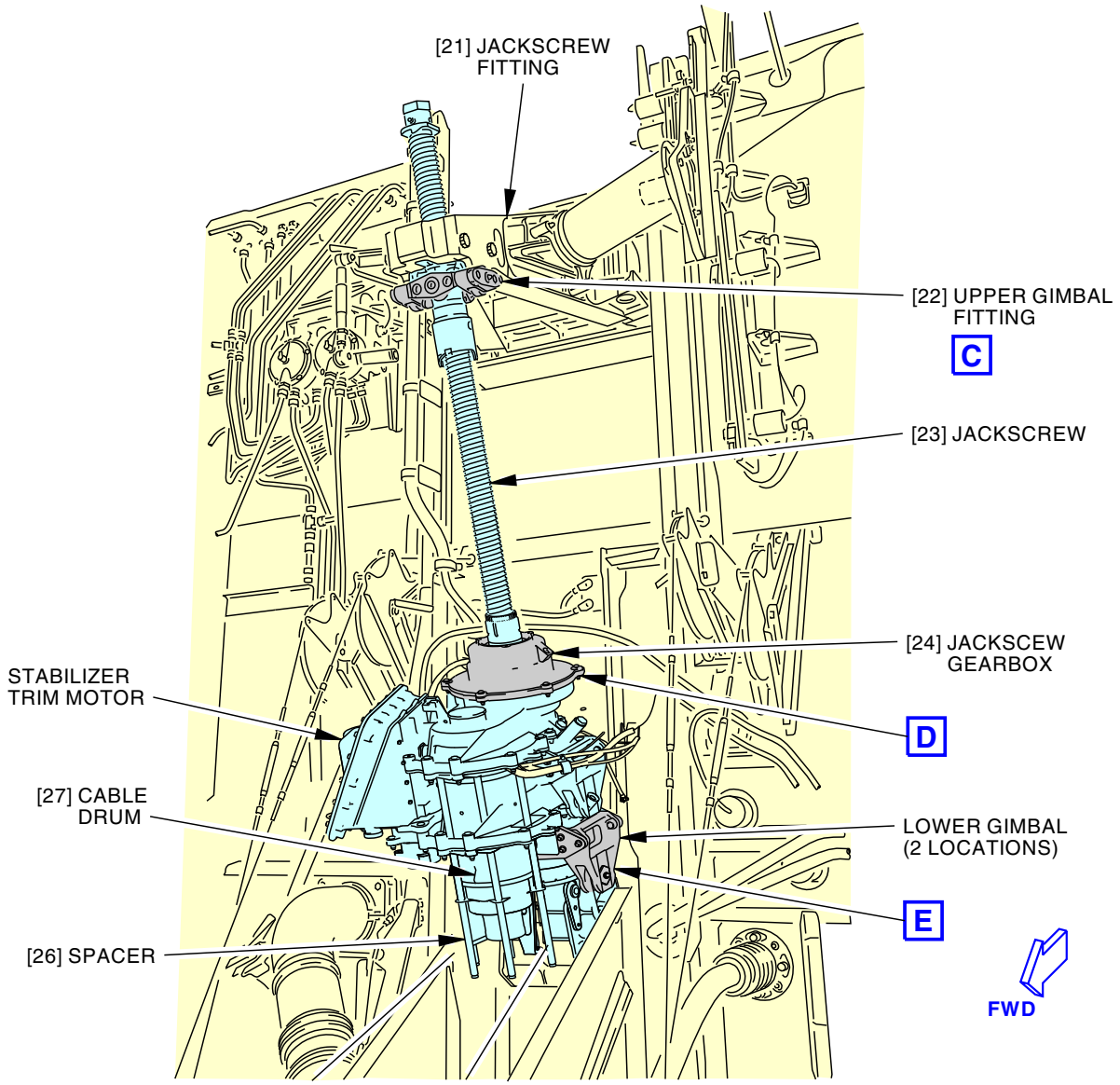
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412687 S00061531149_V1

Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



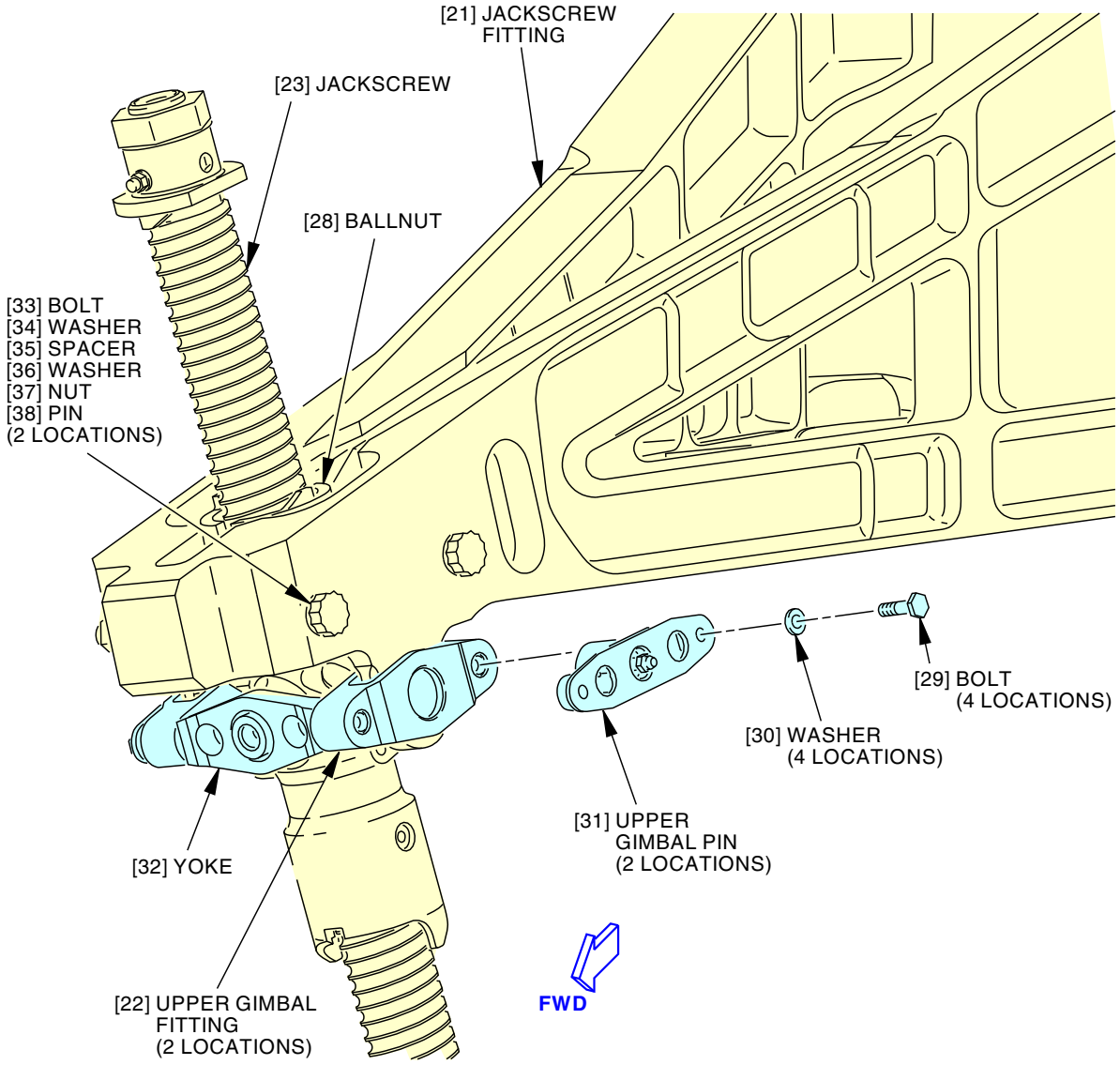
STABILIZER TRIM ACTUATOR

B

2412688 S00061531150_V3

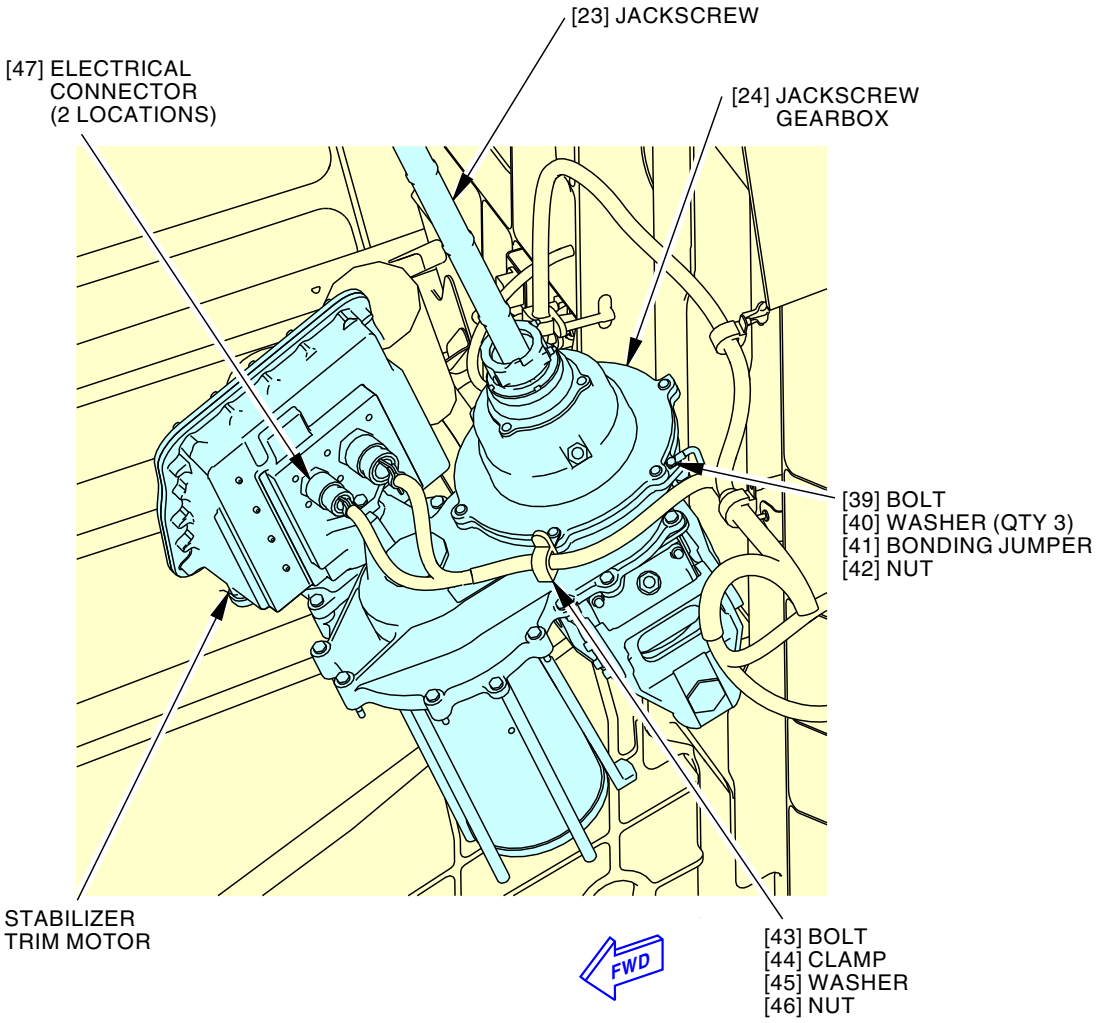
Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 3 of 7)

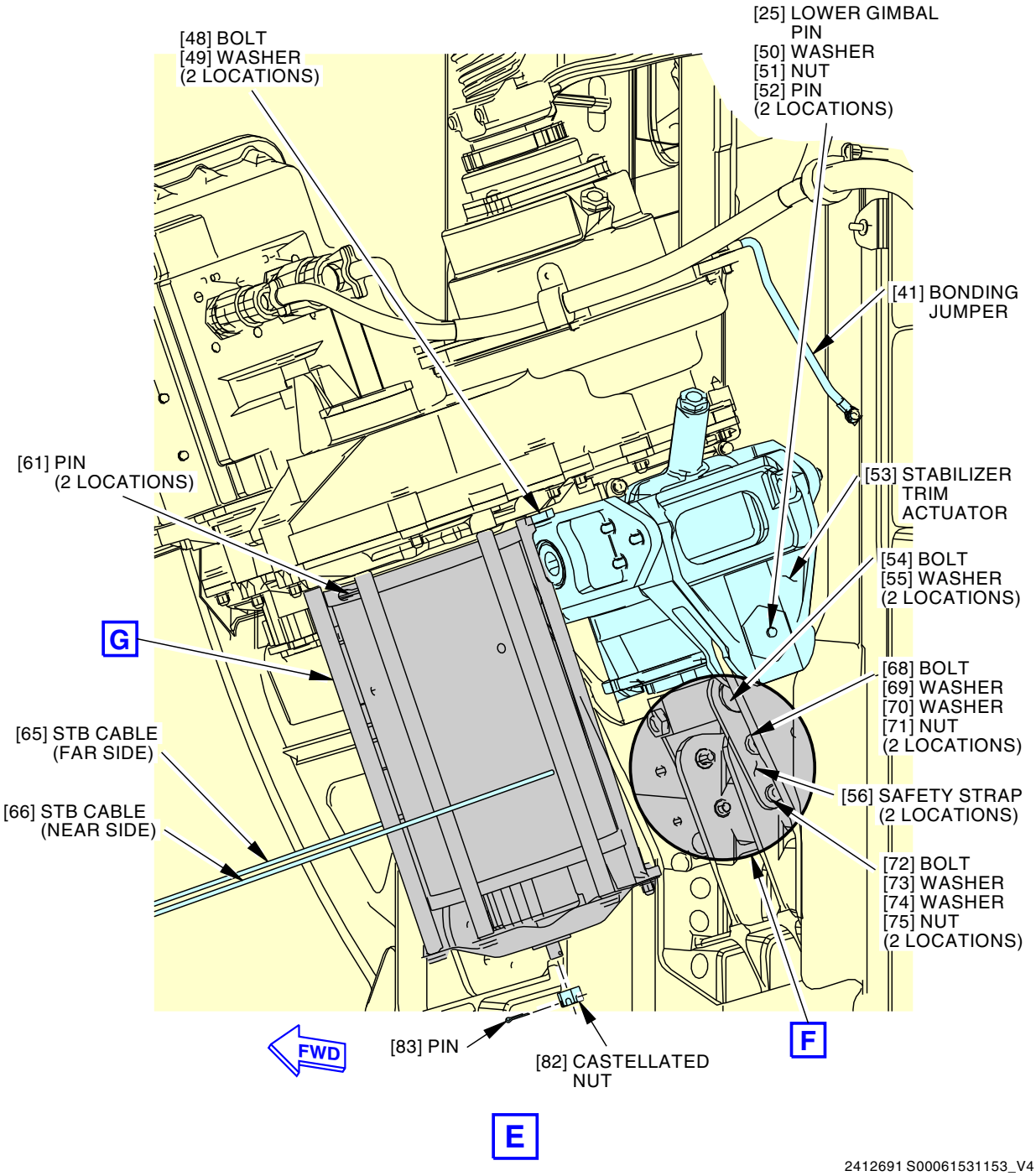
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412690 S00061531152_V2

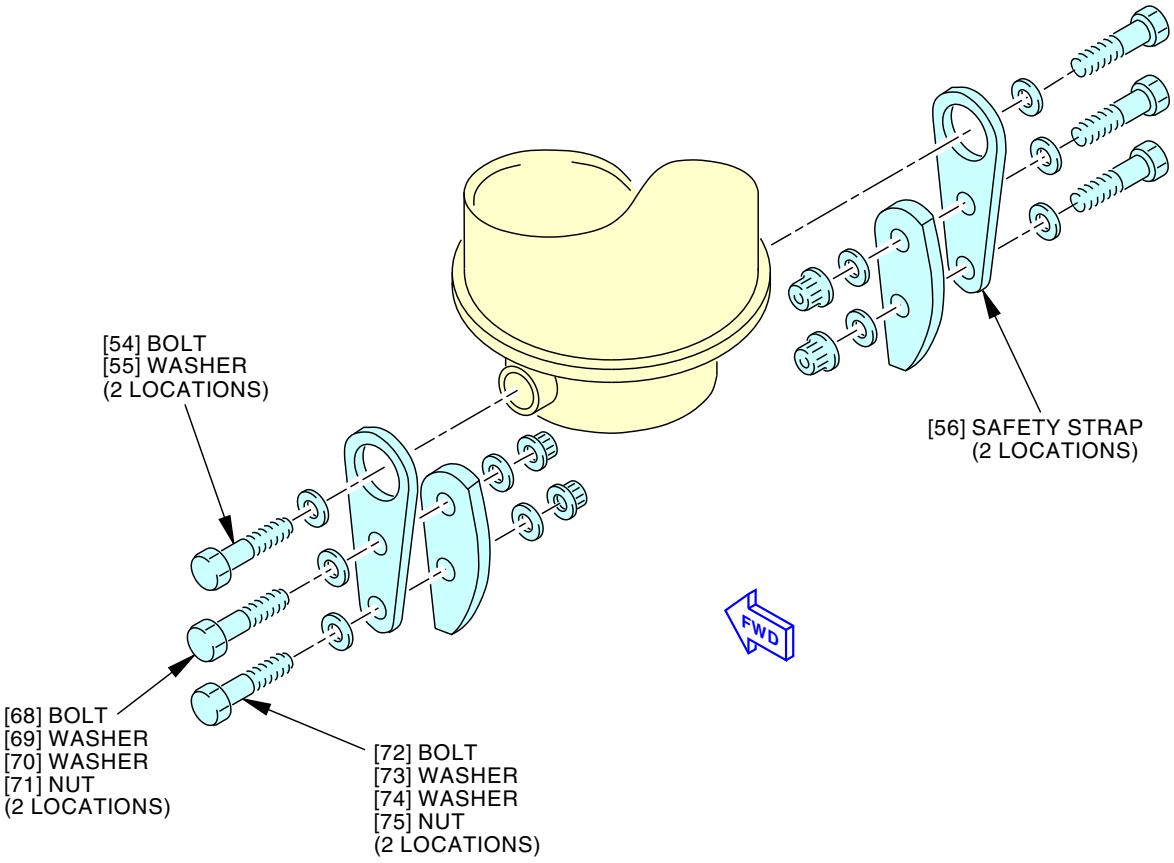
Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



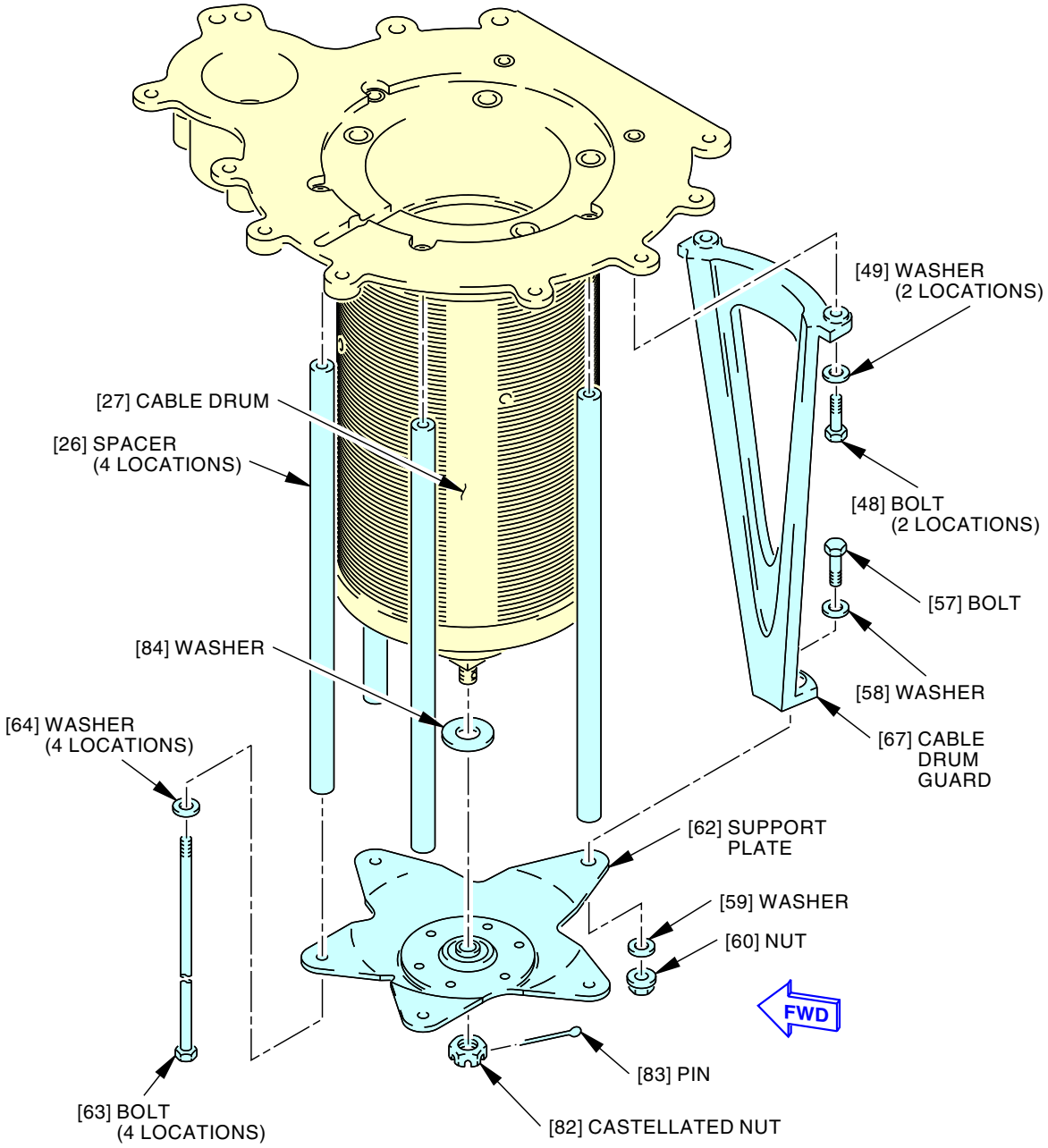
Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 6 of 7)

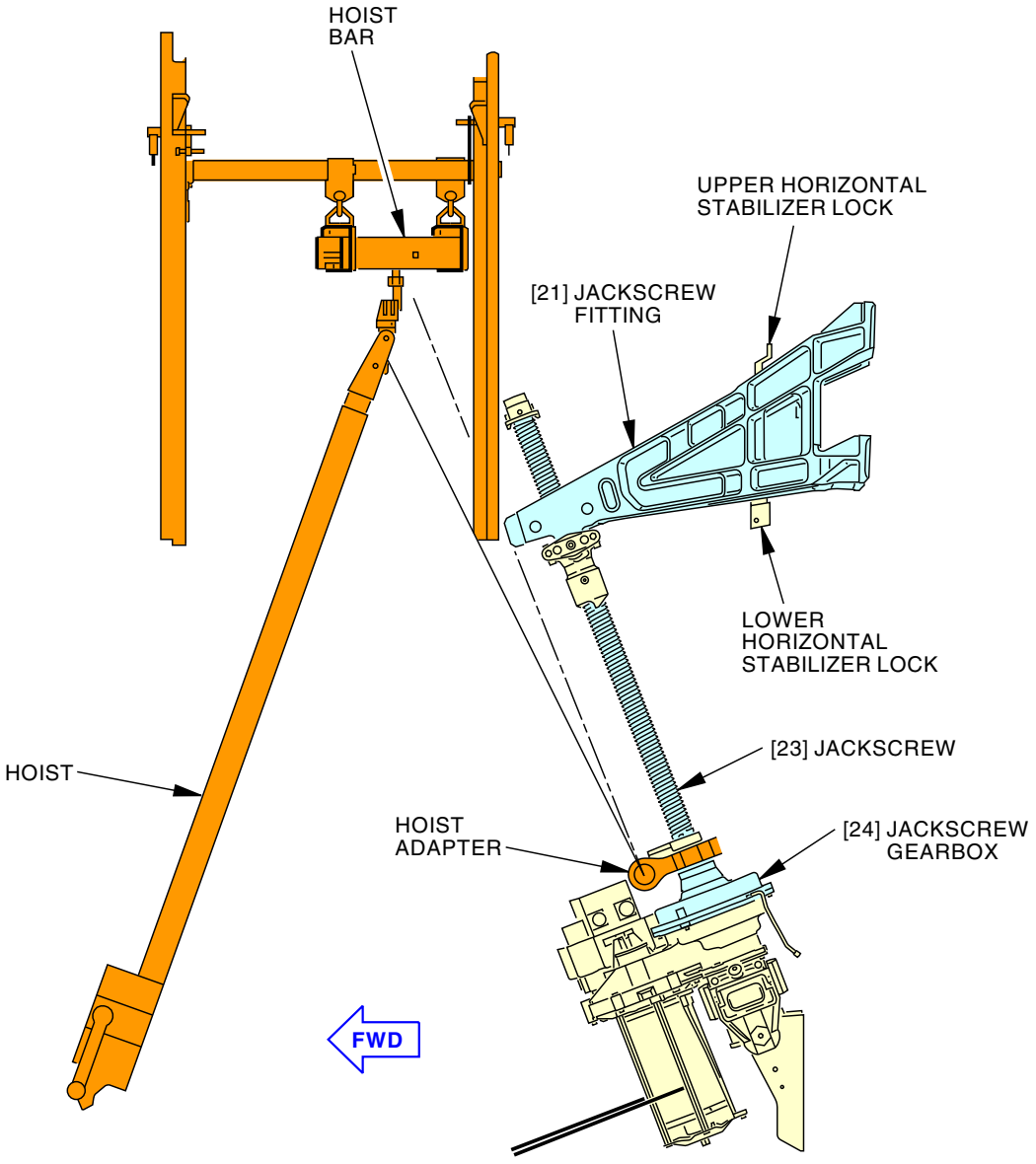
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2923975 S0000705342_V2

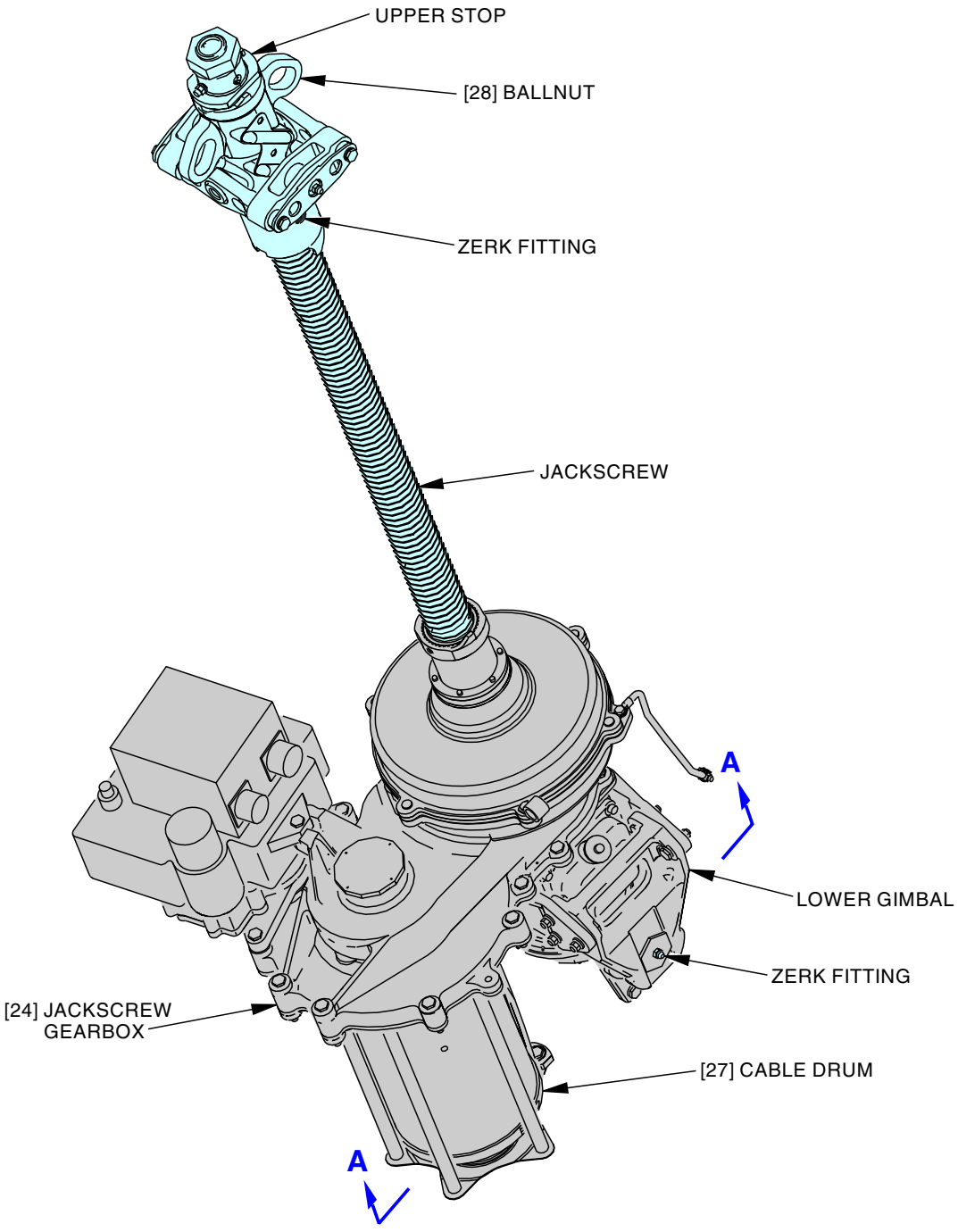
Stabilizer Ball Nut and Jackscrew Gearbox Installation
Figure 402/27-41-81-990-802 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Lock and Jackscrew Handling Equipment Installation
Figure 403/27-41-81-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

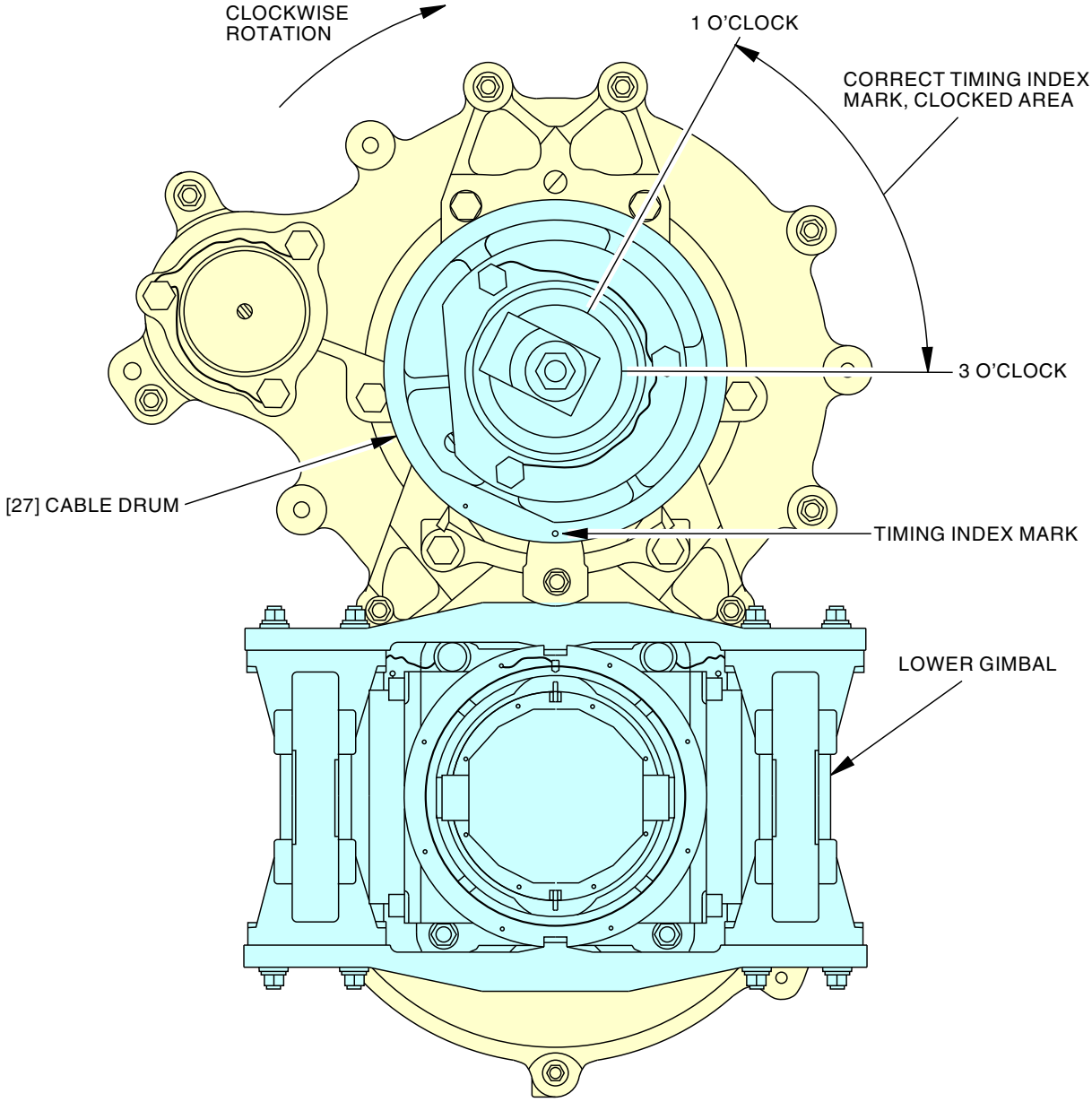


STABILIZER TRIM ACTUATOR

2796375 S0000637844_V1

Jackscrew Gearbox Clocking
Figure 404/27-41-81-990-808 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(BOTTOM VIEW)

A-A

2794125 S0000636291_V1

Jackscrew Gearbox Clocking
Figure 404/27-41-81-990-808 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-CMR-08

TASK 27-41-81-400-801

3. Stabilizer Ball Nut and Jackscrew Gearbox Installation

(Figure 401, Figure 402, Figure 403, Figure 404)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
12-22-41-600-801	Stabilizer Jackscrew, Ballnut and Gimbal - Lubrication (P/B 301)
12-22-41-610-801	Horizontal Stabilizer Actuator Brake - Servicing (P/B 301)
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator - Test (P/B 501)
27-41-00-700-802	Horizontal Stabilizer Trim Control System Friction Test (P/B 501)
27-41-00-700-803	Stabilizer Electric Trim System Test (P/B 501)
27-41-00-700-804	Stabilizer Trim Wheel Free Movement Test (P/B 501)
27-41-00-700-806	Stabilizer Clutch Friction System Test (P/B 501)
27-41-00-700-808	Stabilizer Trim Secondary Brake System Test (P/B 501)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-41-71-400-801	Stabilizer Trim Motor Installation (P/B 401)
27-41-81-200-801	Upper and Lower Gimbal Wear Limits Inspection (P/B 601)
27-41-81-210-801	Stabilizer Trim Ball Nut and Jackscrew Gearbox Detail Visual Inspection (P/B 601)
27-41-81-210-802	Stabilizer Jackscrew Gearbox Backlash Inspection (P/B 601)
51-22-00-390-806	Fillet Seal Application (P/B 201)
SWPM 20-20-10	REPLACEMENT OF GROUND STUDS AND BONDING JUMPER INSTALLATION

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-1678	Assembly - Lock, Horizontal Stabilizer Part #: F80027-44 Supplier: 81205 Opt Part #: F80027-41 Supplier: 81205
SPL-1728	Equipment - Handling, Stabilizer Jackscrew (Dome Pressure Bulkhead) Part #: C27050-82 Supplier: 81205
SPL-10319	Wrench - Pinion Gear (Rotate) Part #: F71252 Supplier: 81205 Part #: F71267 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50337	Sealant - Fuel Tank	BMS5-45 Class B
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
38	Pin	27-41-71-01-005	SIA ALL
52	Pin	27-41-71-01-090	SIA ALL
53	Stabilizer trim actuator	27-41-71-01-175	SIA ALL
61	Pin	27-41-82-01-007	SIA ALL
83	Pin	27-41-81-01-601	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door
311BL	Stabilizer Trim Access Door

G. Stabilizer Trim Actuator Installation

SUBTASK 27-41-81-220-001

(1) Do the subsequent inspections only if you replaced a stabilizer trim actuator with a serviceable stabilizer trim actuator that is not new or not overhauled, before further flight:

(a) Detailed Visual Inspection of the Stabilizer Trim Actuator for metal particles, corrosion, cracks, damage, and worn areas (TASK 27-41-81-210-801).

(b) Horizontal Stabilizer Trim Actuator Gearbox Backlash Inspection (TASK 27-41-81-210-802).

(c) Upper and Lower Gimbal Wear Limits Inspection (TASK 27-41-81-200-801).

(d) Stabilizer Jackscrew, Ballnut and Gimbal Lubrication (TASK 12-22-41-600-801).

SUBTASK 27-41-81-820-003

(2) Do the jackscrew gearbox clocking for a new stabilizer trim actuator [53] as follows (Figure 404):

(a) Put the new stabilizer trim actuator [53] on a table with the lower gimbal on the table.

1) Make sure that the cable drum [27] points up.

CAUTION

HOLD THE JACKSCREW. THIS WILL PREVENT THE MOVEMENT OF THE JACKSCREW AND DAMAGE TO THE EQUIPMENT.

(b) Put a support on the jackscrew [23] with foam or equivalent.

(c) Move the ballnut [28] to the upper stop.

(d) Look through the cable drum [27] bottom and turn the cable drum [27] clockwise until the zerk fitting points to the 3 o'clock position.

1) Make sure that the timing index mark is between the 1 o'clock and 3 o'clock position.

(e) If the zerk fitting does not face the 3 o'clock position and timing index mark is not between the 1 o'clock and 3 o'clock position, do this step:

1) Turn the cable drum [27] clockwise until the timing index mark and zerk fitting is in these positions at the same time.

(f) When the timing index mark and zerk fitting are in the correct position, the actuator is clocked correctly.

SUBTASK 27-41-81-020-010

(3) If the cable drum guard [67] and spacers [26] are installed on the cable drum [27], do these steps (Figure 402):

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(a) Remove the castellated nut [82] and pin [83].

1) Discard the pin [83].

(b) Remove the bolts [63] and washers [64] from the support plate [62].

(c) Remove the bolts [48] and washers [49] that attach the cable drum guard [67] to the cable drum [27].

(d) Remove the nut [60], washer [59], washer [58], and bolt [57] that attach the cable drum guard [67] to the support plate [62].

(e) Remove the cable drum guard [67] and spacers [26].

SUBTASK 27-41-81-480-005

(4) Install the hoist adapter and hoist to the jackscrew gearbox [24] (Figure 403).

SUBTASK 27-41-81-480-006

(5) Lift the stabilizer trim actuator [53] into the airplane (Figure 402).

SUBTASK 27-41-81-420-001

(6) Install the stabilizer trim actuator [53].

(a) Loosely install bolts [33], washers [34], spacers [35], washers [36], and nuts [37].

(b) Install the jackscrew [23] through the jackscrew fitting [21].

(c) Align the stabilizer trim actuator [53] with structure.

(d) Apply grease, D00633, to the lower gimbal pins [25].

(e) Install the lower gimbal pins [25] with the grease fitting outboard, washers [50], nuts [51] to connect the stabilizer trim actuator [53] to the structure.

1) Tighten the nuts [51] by hand and then tighten them to nearest pin hole.

(f) Install the new pins [52].

(g) Install the bolts [54] and washers [55] with bolt head outboard to connect the stabilizer trim actuator [53] to the safety strap [56].

(h) Install the bolts [68], washers [69], washers [70], and nuts [71] with bolt head outboard to connect the stabilizer trim actuator [53] to the safety strap [56].

(i) Install the bolts [72], washers [73], washers [74], and nuts [75] with bolt head outboard to connect the stabilizer trim actuator [53] to the safety strap [56].

(j) If it is removed, install the washers [55] and bolts [54] with bolt head outboard to connect the stabilizer trim actuator [53] to the safety strap [56].

(k) Connect the ballnut [28] to the jackscrew fitting [21].

1) Make sure that the ballnut [28] is installed with the grease fitting toward the access door.

a) If it is necessary, rotate the ballnut [28] half a turn.

2) Remove the bolts [29] and washers [30] from the upper gimbal pins [31].

3) Remove the upper gimbal fittings [22] and yokes [32] from the ballnut [28].

4) Lubricate the upper gimbal fittings [22] and yokes [32] with grease, D00633.

5) Install the yokes [32] on the ballnut [28].

6) Engage the upper gimbal fittings [22] on the yokes [32].

7) Turn the jackscrew [23] to engage the upper gimbal fittings [22] with the jackscrew fitting [21].

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8) Install the upper gimbal pins [31] to connect the ballnut [28] to the jackscrew fitting [21].

9) Install the bolts [29] and washers [30] to the upper gimbal pins [31].

10) Install MS20995NC32 lockwire, G01912, to attach the two bolt heads together on each upper gimbal pin.

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

11) Apply Cor-Ban 27L Compound, G50237, to all the bolt holes on the jackscrew fitting [21].

12) Tighten the nuts [37] by hand and then loosen the nuts [37] to the nearest pin hole.

13) Install the new pins [38].

SUBTASK 27-41-81-420-002

(7) Install the bonding jumper [41] to the jackscrew gearbox [24].

(a) Remove the nut [42], washers [40], and bolt [39] from the jackscrew gearbox [24].

(b) Clean the area around the bolt for electrical bonding.

(c) Install the bolt [39], bonding jumper [41] (below the bolt head), washers [40], and nut [42].

SUBTASK 27-41-81-760-001

(8) Measure the electrical bonding resistance between the jackscrew gearbox [24] and aluminum structure (SWPM 20-20-10).

(a) Use an intrinsically safe approved bonding meter, COM-1550.

(b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

SUBTASK 27-41-81-390-001

(9) Apply a fillet seal of sealant, A50337, or sealant, A50231, around the bolt [39] and nut [42] (TASK 51-22-00-390-806).

SUBTASK 27-41-81-080-001

(10) Remove equipment, SPL-1728, from the jackscrew gearbox [24] (Figure 403).

(a) Remove the hoist adapter from the jackscrew [23].

(b) Remove the hoist bar and hoist from the airplane.

SUBTASK 27-41-81-080-002

(11) Remove the lock, SPL-1678.

(a) If it is necessary, install the wire bundle clamps.

SUBTASK 27-41-81-420-003

(12) Connect the STA cable [66] to the cable drum [27] (Figure 402).

(a) With the ballnut [28] against the upper stop, wind the STA cable [66] on the cable drum [27] approximately 1.8 turns.

(b) Install the cable terminal in the lower terminal slot of the cable drum [27].

(c) Install the new pin [61] to connect the cable terminal to the cable drum [27].

1) Install the ends of the pin [61] in the terminal slot.

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(d) Remove the control cable clamp, SPL-1569.

CAUTION

MAKE SURE THAT THE CABLE WINDS ONTO THE DRUM GROOVES CORRECTLY WITH EACH TURN OF THE DRUM. IF YOU JAM THE CABLE BETWEEN THE CABLE AND THE CABLE DRUM GUARD, DAMAGE TO THE CABLE WILL OCCUR.

(e) Operate the jackscrew to move the stabilizer leading edge to full down position to wind the cable on the cable drum approximately 50.3 turns.

NOTE: Operate the jackscrew until it stops.

NOTE: It is necessary to use the pinion gear wrench, SPL-10319, or equivalent when you operate the jackscrew to move the stabilizer leading edge.

SUBTASK 27-41-81-420-004

CAUTION

KEEP TENSION ON THE CABLE AT ALL TIMES. WHEN THE CABLE IS DISCONNECTED FROM THE CABLE DRUM, TENSION NEEDS TO BE KEPT ON THE CABLE SO THAT THE CABLE DOES NOT BECOME CAUGHT IN THE CABLE GUARDS ON THE OTHER CABLE DRUM. THIS CAN CAUSE DAMAGE TO THE CABLE AND THE CABLE MAY NEED TO BE REPLACED.

(13) Connect the STB cable [65] to the cable drum [27].

(a) Use the force gauge, COM-1557, on the stabilizer trim wheel handle to put a 50 lb (22.7 kg) load on the STA cable [66].

NOTE: This will keep the STA cable on the drum, which will make the installation of the STB cable easier.

NOTE: All the grooves of the cable drum will be filled with cable except for 1/2 turn between the STA and STB cable.

(b) Install the cable terminal in the top terminal slot of the cable drum [27].

(c) Install the new pin [61] to connect the cable terminal to the cable drum [27].

1) Install the ends of the pin [61] in the terminal slot.

SUBTASK 27-41-81-420-005

(14) Install the spacers [26] and cable drum guard [67] to the cable drum [27].

(a) Apply Cor-Ban 27L Compound, G50237, to the bolts [48], bolt [57], nut [60], and bolts [63].

(b) Install the bolts [48] and washers [49] to attach the cable drum guard [67] to the cable drum [27].

1) Tighten the bolts [48].

CAUTION

MAKE SURE THAT YOU INSTALL THE WASHER BETWEEN THE SUPPORT PLATE AND THE CABLE DRUM. IF YOU DO NOT OBEY, THE CABLE DRUM WILL NOT TURN CORRECTLY DURING OPERATION.

(c) Install the washer [84] to the cable drum [27].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE THAT YOU INSTALL THE SUPPORT PLATE CORRECTLY. IF YOU DO NOT INSTALL THE SUPPORT PLATE, THE AMOUNT OF TORQUE NECESSARY TO DISENGAGE THE MANUAL CLUTCH CAN BE MORE THAN THE LIMITS.

(d) Install the bolts [63], washers [64], support plate [62], and spacers [26] to the cable drum [27].

1) Install the bolts [63] to the washers [64], support plate [62], and spacers [26].

NOTE: The bearing assembly of the support plate [62] must be on the same side as the cable drum [27].

2) Install the bolts [63] to the cable drum [27].

3) Tighten the bolts [63].

(e) Install the bolt [57], washer [58], nut [60], and washer [59] to attach the cable drum guard [67] to the support plate [62].

1) Tighten the bolt [57].

(f) Install the castellated nut [82] to the cable drum [27].

1) Install the castellated nut [82] to the thread of the cable drum [27].

2) Hand tighten the castellated nut [82] against the support plate [62].

3) Align the castellated nut [82] to the nearest pin hole.

(g) Install the new pin [83] to the castellated nut [82].

SUBTASK 27-41-81-080-003

(15) Remove the pinion gear wrench, SPL-10319, from the jackscrew gearbox [24].

SUBTASK 27-41-81-730-001

(16) Do this task: Stabilizer Clutch Friction System Test, TASK 27-41-00-700-806.

SUBTASK 27-41-81-420-006

(17) Do this task: Stabilizer Trim Motor Installation, TASK 27-41-71-400-801.

SUBTASK 27-41-81-820-002

(18) Adjust the STA cable [66], STB cable [65] and then reconnect the upper turnbuckle [4] (TASK 27-41-00-820-801).

SUBTASK 27-41-81-640-001

(19) Lubricate the upper gimbal and lower gimbal at the grease fittings and jackscrew (TASK 12-22-41-600-801).

SUBTASK 27-41-81-420-008

(20) Install the electrical connectors [47] to the jackscrew gearbox [24].

(a) Remove the nuts [46], washers [45], and bolts [43] from the jackscrew gearbox [24].

(b) Put the clamps [44] for the electrical connectors [47] on the jackscrew gearbox [24].

(c) Install the bolts [43], washers [45], and nuts [46] to install the clamps [44] to the jackscrew gearbox [24].

SUBTASK 27-41-81-860-003

(21) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-81-730-002

(22) Do this task: Stabilizer Manual Trim and Trim Indicator - Test, TASK 27-41-00-700-801.

SUBTASK 27-41-81-730-003

(23) Do this task: Horizontal Stabilizer Trim Control System Friction Test, TASK 27-41-00-700-802.

SUBTASK 27-41-81-610-001

(24) Do this task: Horizontal Stabilizer Actuator Brake - Servicing, TASK 12-22-41-610-801.

NOTE: This lubrication procedure must be performed after the installation of any new stabilizer trim actuator.

SUBTASK 27-41-81-730-004

(25) Do this task: Stabilizer Trim Secondary Brake System Test, TASK 27-41-00-700-808.

SUBTASK 27-41-81-730-005

(26) Do this task: Stabilizer Trim Wheel Free Movement Test, TASK 27-41-00-700-804.

SUBTASK 27-41-81-730-006

(27) Do this task: Stabilizer Electric Trim System Test, TASK 27-41-00-700-803.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-81-410-001

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-41-81-410-002

(2) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-81-480-007

(3) Remove the DO NOT OPERATE tags from the stabilizer trim control wheels.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER BALL NUT AND JACKSCREW GEARBOX - INSPECTION/CHECK

1. General

A. This procedure contains these tasks:

(1) A detail visual inspection of the stabilizer trim ball nut and jackscrew gearbox

(2) An inspection of the stabilizer jackscrew gearbox backlash

(3) An inspection of the upper and lower gimbal wear limits.

27-CMR-07

TASK 27-41-81-210-801

2. Stabilizer Trim Ball Nut and Jackscrew Gearbox Detail Visual Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is for the visual inspection of the stabilizer trim ball nut and jackscrew gearbox in detail.

B. References

Reference	Title
12-22-41-600-801	Stabilizer Jackscrew, Ballnut and Gimbal - Lubrication (P/B 301)
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G50316	Cloth - Clean, Dry, Lint-free, White, Cotton	

E. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left

F. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Prepare for the Inspection

SUBTASK 27-41-81-040-001

(1) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the CUTOUT position.

SUBTASK 27-41-81-480-009

(2) Attach a DO NOT OPERATE tag, STD-858, to the STAB TRIM PRI switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-81-010-003

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

H. Stabilizer Trim Ball Nut and Jackscrew Gearbox Detail Visual Inspection

SUBTASK 27-41-81-210-001

(1) Do these stabilizer trim actuator inspections:

NOTE: If a stabilizer trim actuator is replaced with a serviceable actuator that is not new or not overhauled, do a detailed inspection of the replacement actuator and horizontal stabilizer gearbox backlash inspection.

(a) Do a detailed inspection of all attachment points to make sure that they are secure and do not have damage as follows:

1) Make sure that the stabilizer trim actuator is correctly attached to the airplane structure.

2) If damage parts are found, remove, examine, repair or replace them.

(b) Do a general visual inspection of the area under, on, and around the stabilizer trim actuator to see if grease is escaping from ballnut.

NOTE: Large amounts of grease present around the stabilizer trim actuator, can indicate that grease is escaping from the ballnut due to a faulty seal or raised/leaking return tube.

1) If a faulty seal or a raised/return tube that have leakage are suspected, do a detailed inspection of the ballnut tube retainers for deformation, corrosion, or lifted return tubes.

2) If the ballnut tube retainers have deformation, corrosion, or the raised/return tube have leakage, remove and replace the actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

(c) Examine cable drum and cables for damage or binding.

(d) Examine the electrical connectors of the stabilizer trim motor for damage.

(e) Examine the grease on and around the jackscrew and ballnut for metallic particles, other solid particles, and corrosion products in the grease.

NOTE: Metallic particles in the grease can be an indication of degradation of the balls in the ball nut. If metallic particles are found in the grease, remove for repair and replace the stabilizer trim actuator.

(f) If metallic particles, or other solid particles, or corrosion products are found in the grease, do this step:

1) Remove for repair and replace the stabilizer trim actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

(g) Examine the vicinity of the ballnut, on the jackscrew, or directly below the stabilizer trim actuator for the bearing balls that fall out of the ball bearing.

NOTE: The bearing ball dimension is 0.21875 in. (5.55625 mm) diameter.

(h) If the bearing balls are found, remove for repair and replace the stabilizer trim actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

(i) Wipe the grease and dirt from the jackscrew threads with a clean, dry, non-abrasive cotton cloth, G50316.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Do a detailed visual inspection of the upper and lower gimbals for cracks or damage (View B, Figure 601).

1) Examine the areas around the holes and bushings.

2) If parts with damage are found, remove, repair or replace them.

a) Do this task: Upper and Lower Gimbal Wear Limits Inspection, TASK 27-41-81-200-801.

(k) Do a detailed inspection of the jackscrew as follows:

1) Examine the jackscrew threads for cross-threading, distortion, or stripping.

2) Do a check for metallic particles, pitting, gouging, corrosion, spalling, or brinelling in the jackscrew threads.

NOTE: If metallic particles are observed in the grease, there can be damage in the jackscrew/ball nut assembly. Normal wear of the jackscrew actuator can occur but this will not release visible metallic particles in the grease.

NOTE: Phosphate coating on the horizontal stabilizer trim actuator ballscrew can be normal.

3) Do check the jackscrew for obvious differences in thread shape between thread grooves in the lower, middle, and upper portions of the jackscrew.

4) Do a check the jackscrew for damage or cracking.

5) Remove the DO NOT OPERATE tag, STD-858, from the STAB TRIM PRI switch.

6) Make sure that the STAB TRIM switch, on the stab trim and cabin door panel, P8-47 module, is in the NORM position.

7) Set the STAB TRIM PRI switch, S272, located on the aft area of the control stand, to the NORMAL position.

WARNING MAKE SURE THAT ALL PERSONNEL, AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

8) Push and hold the stabilizer trim control switches on the Captain's Control Wheel (NOSE UP or NOSE DOWN) to move the jackscrew to a different position.

9) Set the STAB TRIM PRI switch, S272, to the CUTOUT position.

10) Attach the DO NOT OPERATE tag, STD-858, to the STAB TRIM PRI switch.

11) Wipe the grease and dirt from the jackscrew threads with a clean, dry, non-abrasive cotton cloth, G50316.

12) Examine the jackscrew as follows:

a) Examine the jackscrew threads for cross-threading, distortion, or stripping.

b) Examine the jackscrew threads for metallic particles, pitting, gouging, corrosion, spalling, or brinelling.

NOTE: If metallic particles are observed in the grease, there can be damage in the jackscrew/ball nut assembly. Normal wear of the jackscrew actuator can happen but this will not release visible metallic particles in the grease.

c) Examine the jackscrew for obvious differences in thread shape between thread grooves in the lower, middle, and upper portions.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

13) If damage is found, replace the stabilizer jackscrew actuator (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

SUBTASK 27-41-81-640-002

(2) Lubricate the stabilizer trim jackscrew (TASK 12-22-41-600-801).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-81-410-003

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-81-080-005

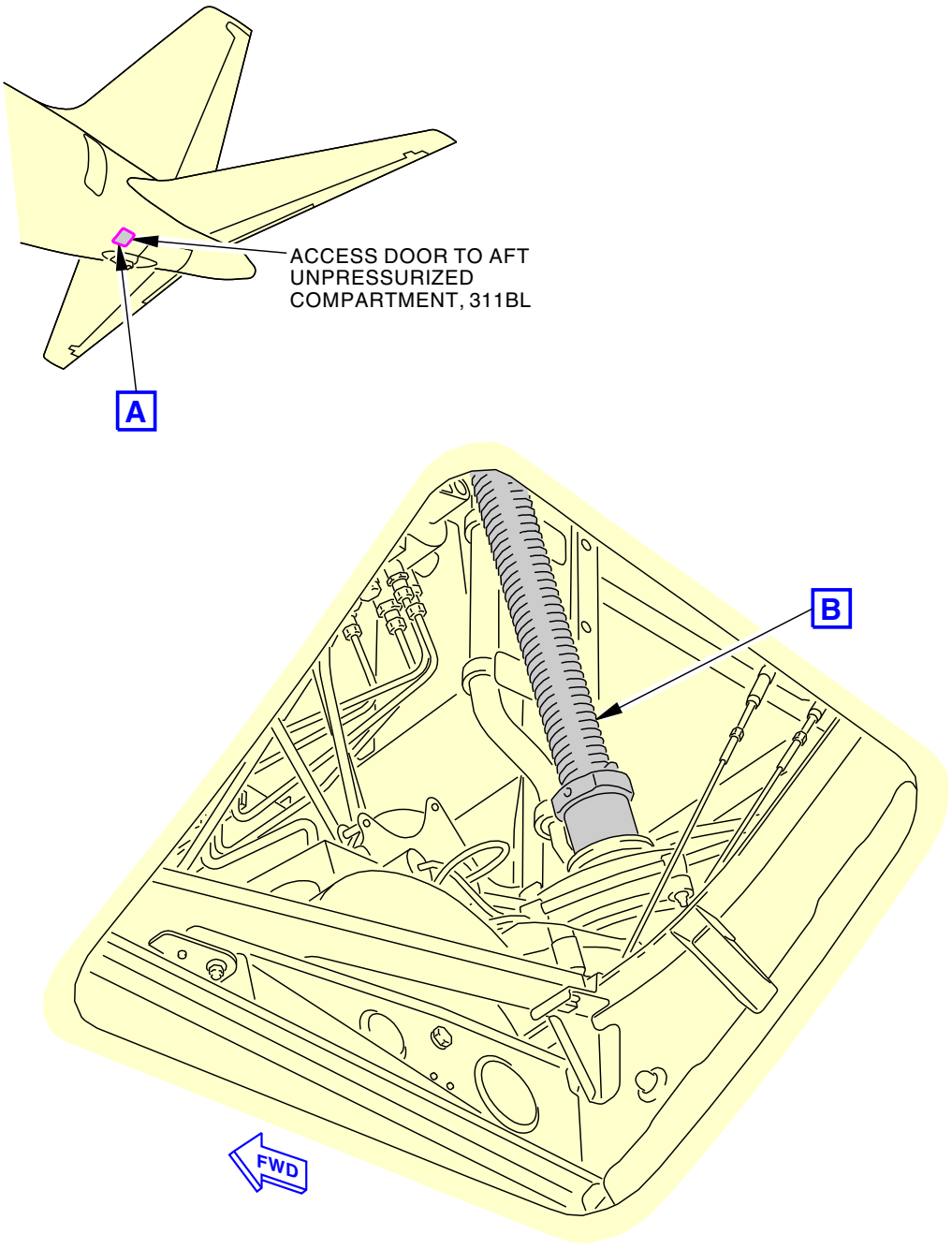
(2) Remove the DO NOT OPERATE tag, STD-858, from the STAB TRIM PRI switch, S272.

SUBTASK 27-41-81-860-010

(3) Set the STAB TRIM PRI switch, S272, to the NORMAL position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**VIEW THROUGH THE ACCESS DOOR TO AFT
UNPRESSURIZED COMPARTMENT, 311BL**

A

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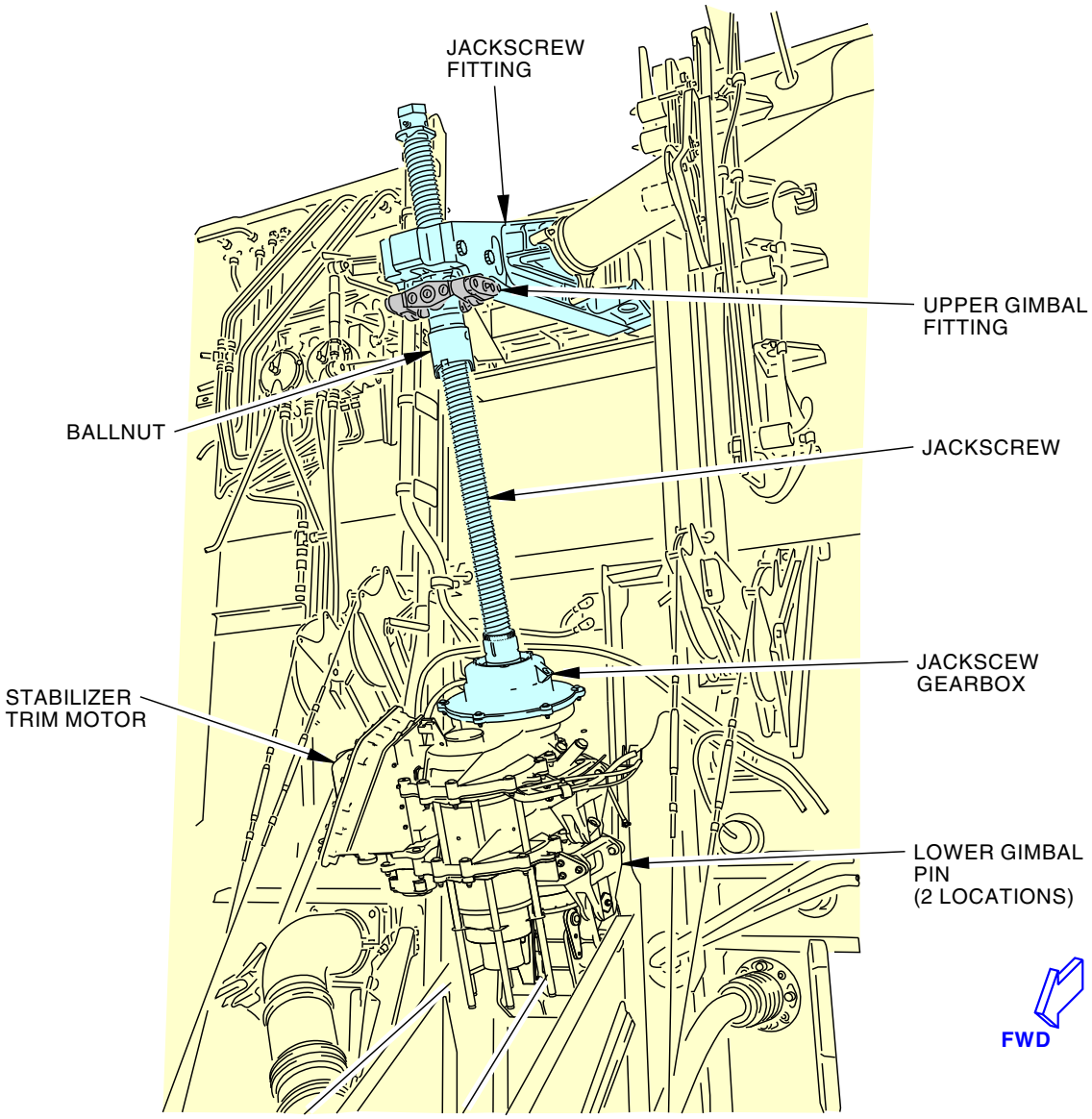
**Stabilizer Ball Nut and Jackscrew Gearbox Visual Inspection
Figure 601/27-41-81-990-804 (Sheet 1 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

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Stabilizer Ball Nut and Jackscrew Gearbox Visual Inspection
Figure 601/27-41-81-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-81-210-802

3. Stabilizer Jackscrew Gearbox Backlash Inspection

(Figure 602)

A. General

(1) This task contains the instructions for the backlash inspection of stabilizer jackscrew gearbox.

B. References

Reference	Title
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1752	Equipment - Check, Jackscrew Backlash, Horizontal Stabilizer Part #: C27065-20 Supplier: 81205 Opt Part #: C27065-1 Supplier: 81205
STD-1238	Indicator - Dial

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Inspection

SUBTASK 27-41-81-860-006

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

SUBTASK 27-41-81-860-011

(2) Set the STAB TRIM PRI switch, S272, on the control stand, to the CUTOUT position.

SUBTASK 27-41-81-010-004

(3) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Stabilizer Jackscrew Gearbox Backlash Inspection

SUBTASK 27-41-81-860-004

(1) Move the stabilizer to 8.5 units of trim.

SUBTASK 27-41-81-480-008

(2) Install the equipment, SPL-1752, and the dial indicator, STD-1238, on the jackscrew as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the plate assembly of the equipment, SPL-1752, on the jackscrew fitting with the screws.

(b) Install the left and right bulkhead plate assembly of the equipment, SPL-1752, to the bulkhead stiffeners with the screws.

(c) Install the C-channel and hydraulic cylinder assembly of the equipment, SPL-1752, to the left and right bulkhead plate assembly of the equipment, SPL-1752, with the pins.

NOTE: The flat side of the C-channel assembly of the equipment, SPL-1752, should point forward.

(d) Hold the upper end of the jackscrew with both hands and turn clockwise and counter-clockwise to ensure the brake ratchet pawls are engaged.

NOTE: This will lock the jackscrew in place so that the jackscrew will not turn when the load is applied.

(e) Connect the clevis eye of the hydraulic cylinder of the equipment, SPL-1752, to the clevis on the plate assembly of the equipment, SPL-1752, with the pin and lock pin.

(f) Connect the hydraulic assembly hose of the equipment, SPL-1752, to the hydraulic cylinder coupling of the equipment, SPL-1752.

(g) Install the magnetic holder of the equipment, SPL-1752, and dial indicator, STD-1238, on the jackscrew.

SUBTASK 27-41-81-700-001

(3) Pressurize the equipment, SPL-1752, to 900 psi (6205 kPa) – 950 psi (6550 kPa) with the hand hydraulic pump of the equipment, SPL-1752.

SUBTASK 27-41-81-700-002

(4) If the dial indicator, STD-1238, shows more than 0.025 in. (0.64 mm), replace the stabilizer ball nut and jackscrew gearbox (TASK 27-41-81-000-801 and TASK 27-41-81-400-801).

SUBTASK 27-41-81-080-004

(5) Remove the equipment, SPL-1752, and dial indicator, STD-1238, from the jackscrew:

(a) Remove the magnetic holder of the equipment, SPL-1752, and dial indicator, STD-1238, from the jackscrew.

(b) Disconnect the clevis eye of the hydraulic assembly of the equipment, SPL-1752, from the hydraulic cylinder coupling, of the equipment, SPL-1752, and remove the hydraulic assembly.

(c) Remove the pin and lock pin to disconnect the hydraulic cylinder of the equipment, SPL-1752, from the clevis on the plate assembly of the equipment, SPL-1752.

(d) Unlock the jackscrew.

(e) Remove the pins that attach the C-channel and hydraulic cylinder assembly of the equipment, SPL-1752, to the left and right bulkhead plate assembly of the equipment, SPL-1752.

(f) Remove the C-channel and hydraulic cylinder assembly of the equipment, SPL-1752, from the left and right bulkhead plate assembly of the equipment, SPL-1752.

(g) Remove the screws that attach the left and right bulkhead plate assembly of the equipment, SPL-1752, to the bulkhead stiffeners.

(h) Remove the left and right bulkhead plate assembly of the equipment, SPL-1752, from the bulkhead stiffeners.

(i) Remove the screws that attach the plate assembly of the equipment, SPL-1752, to the jackscrew fitting.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Remove the plate assembly of the equipment, SPL-1752, from the jackscrew fitting.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-81-410-004

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-81-860-007

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

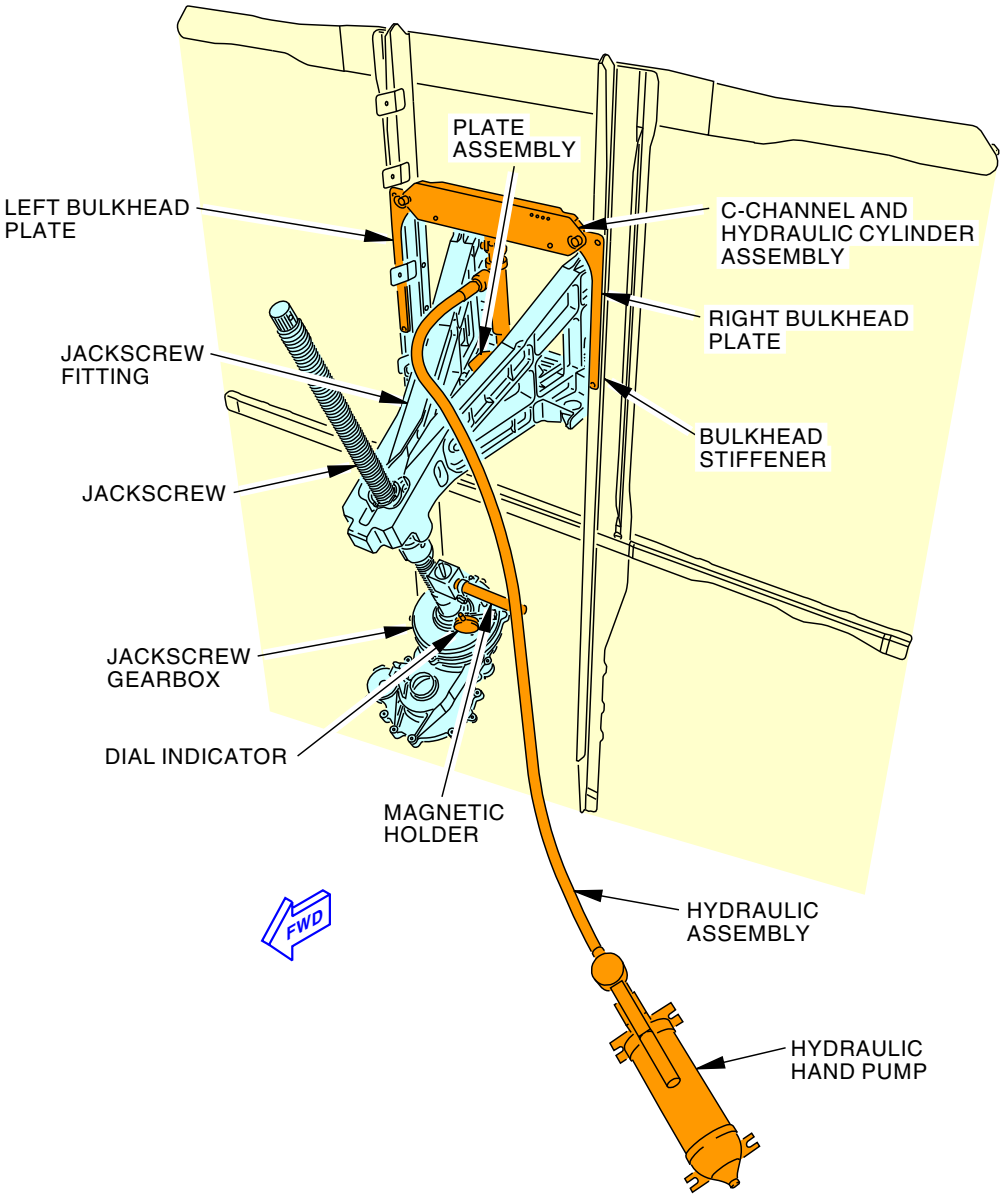
Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

SUBTASK 27-41-81-860-009

(3) Set the STAB TRIM PRI switch, S272, on the control stand, to the NORMAL position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Stabilizer Jackscrew Gearbox Backlash Inspection
Figure 602/27-41-81-990-805

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-81-200-801

4. Upper and Lower Gimbal Wear Limits Inspection

(Figure 603)

A. General

(1) This task gives the wear limits for the upper and lower gimbals.

(2) This task supplies the data for a dimensional inspection of the upper and lower gimbals.

B. References

Reference	Title
27-41-81-000-801	Stabilizer Ball Nut and Jackscrew Gearbox Removal (P/B 401)
27-41-81-400-801	Stabilizer Ball Nut and Jackscrew Gearbox Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left

E. Upper and Lower Gimbal Wear Limits Inspection

SUBTASK 27-41-81-020-011

(1) Remove the stabilizer ball nut and jackscrew gearbox (TASK 27-41-81-000-801).

SUBTASK 27-41-81-020-012

(2) Examine the parts of the lower and upper gimbals for worn areas as follows:

(a) Remove the parts that you will check.

(b) Measure the parts as necessary with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions from (Table 601).

(d) If the parts are not in the tolerance, replace or repair the parts.

Table 601/27-41-81-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	QTY	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
			MINIMUM inches / mm	MAXIMUM inches / mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 YOKE	2	I.D.	1.0000 in. (25.40 mm)	1.0010 in. (25.43 mm)	1.0020 in. (25.45 mm)	0.0050 in. (0.127 mm)
#1 BALLNUT TRUNNION BUSHING	2	O.D.	0.9980 in. (25.35 mm)	0.9990 in. (25.37 mm)	0.9960 in. (25.30 mm)	0.0050 in. (0.127 mm)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-41-81-993-801 (Continued)

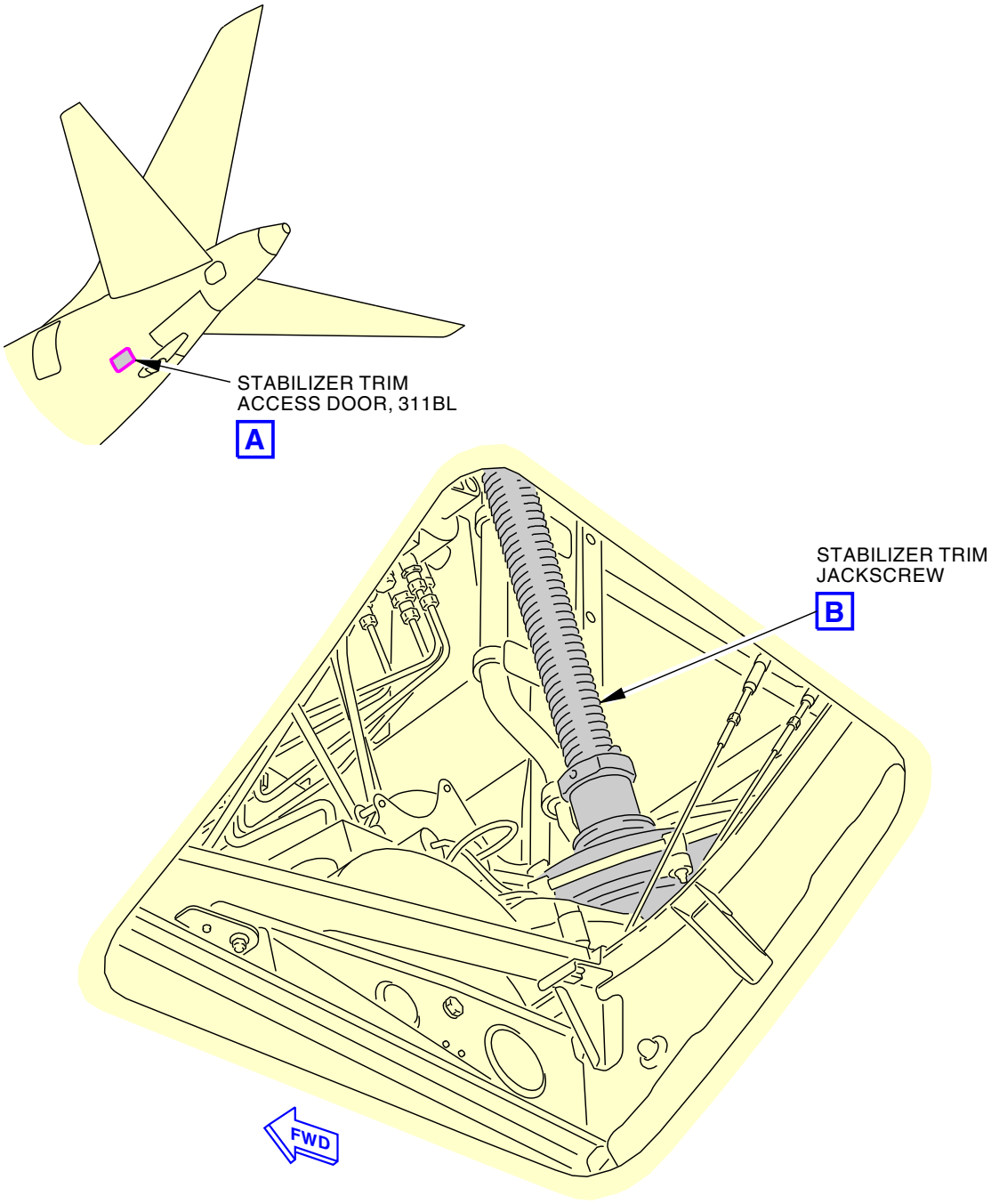
NAME OF THE PARTS THAT ARE IN CONTACT	QTY	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
			MINIMUM inches / mm	MAXIMUM inches / mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#2 JACKSCREW FITTING BUSHING	4	I.D.	1.0000 in. (25.40 mm)	1.0010 in. (25.43 mm)	1.0030 in. (25.48 mm)	0.0050 in. (0.127 mm)
#2 UPPER GIMBAL PIN	2	O.D.	0.9980 in. (25.35 mm)	0.9990 in. (25.37 mm)	0.9970 in. (25.32 mm)	0.0050 in. (0.127 mm)
#3 UPPER GIMBAL FITTING	2	I.D.	1.0000 in. (25.40 mm)	1.0010 in. (25.43 mm)	1.0020 in. (25.45 mm)	0.0050 in. (0.127 mm)
#3 UPPER GIMBAL PIN	2	O.D.	0.9980 in. (25.35 mm)	0.9990 in. (25.37 mm)	0.9970 in. (25.32 mm)	0.0050 in. (0.127 mm)
#4 STRUCTURE FITTING BUSHING	4	I.D.	1.0000 in. (25.40 mm)	1.0010 in. (25.43 mm)	1.0030 in. (25.48 mm)	0.0060 in. (0.152 mm)
#4 LOWER GIMBAL PIN	2	O.D.	0.9980 in. (25.35 mm)	0.9990 in. (25.37 mm)	0.9940 in. (25.25 mm)	0.0060 in. (0.152 mm)
#5 INBOARD LOWER GIMBAL FORK BUSHING	2	I.D.	0.7500 in. (19.05 mm)	0.7510 in. (19.08 mm)	0.7550 in. (19.18 mm)	0.0060 in. (0.152 mm)
#5 LOWER GIMBAL PIN	2	O.D.	0.7480 in. (19.00 mm)	0.7490 in. (19.02 mm)	0.7440 in. (18.90 mm)	0.0060 in. (0.152 mm)
#6 OUTBOARD LOWER GIMBAL FORK BUSHING	2	I.D.	1.0000 in. (25.40 mm)	1.0010 in. (25.43 mm)	1.0050 in. (25.53 mm)	0.0060 in. (0.152 mm)
#6 LOWER GIMBAL PIN	2	O.D.	0.9980 in. (25.35 mm)	0.9990 in. (25.37 mm)	0.9940 in. (25.25 mm)	0.0060 in. (0.152 mm)
#7 LOWER GIMBAL YOKE BUSHING	2	I.D.	1.2400 in. (31.50 mm)	1.2410 in. (31.52 mm)	1.2440 in. (31.60 mm)	0.0050 in. (0.127 mm)
#7 PRIMARY BRAKE HOUSING SLEEVE	2	O.D.	1.2380 in. (31.45 mm)	1.2390 in. (31.47 mm)	1.2370 in. (31.42 mm)	0.0050 in. (0.127 mm)

SUBTASK 27-41-81-020-013

(3) Install the stabilizer ball nut and jackscrew gearbox (TASK 27-41-81-400-801).

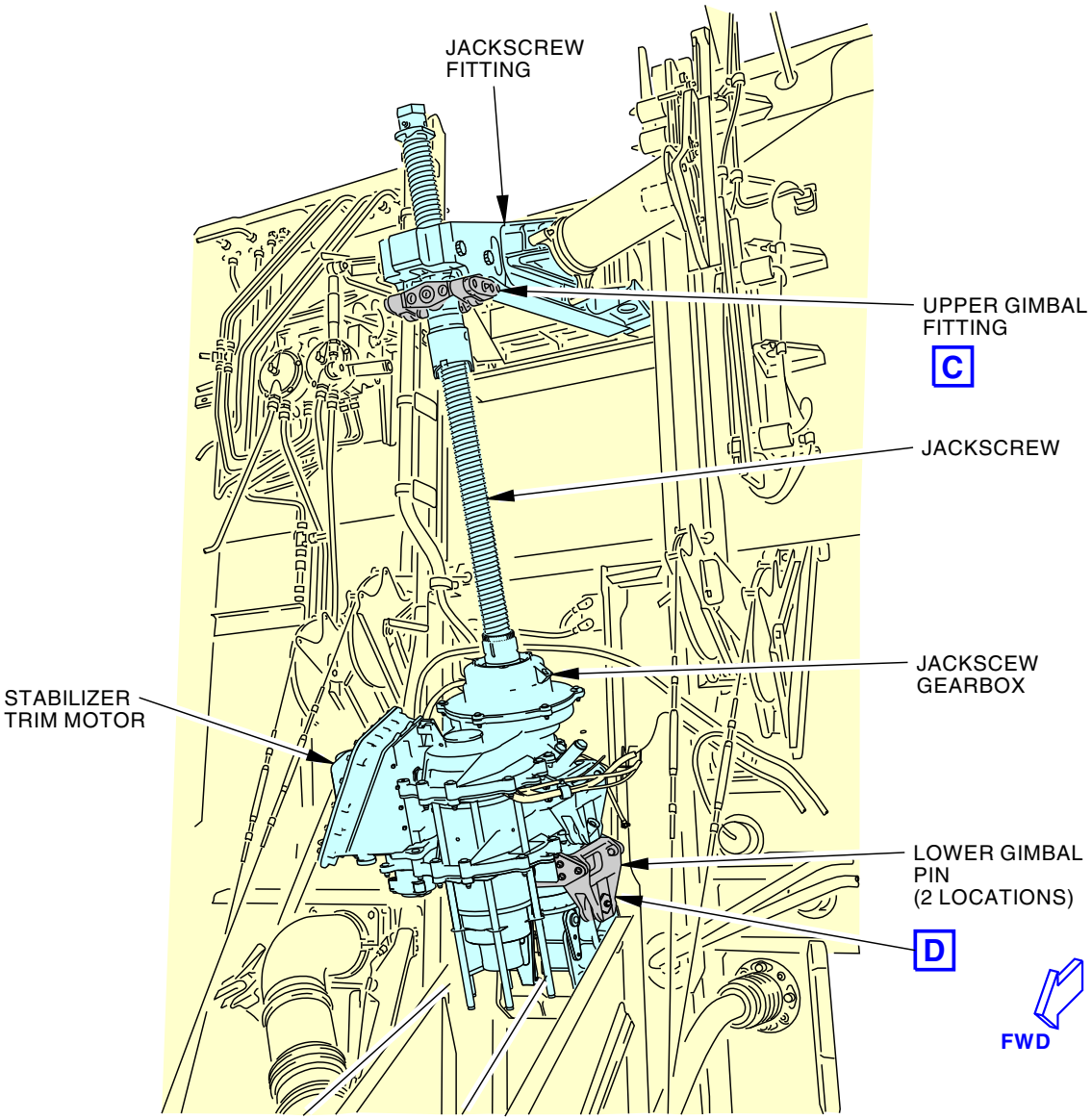
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

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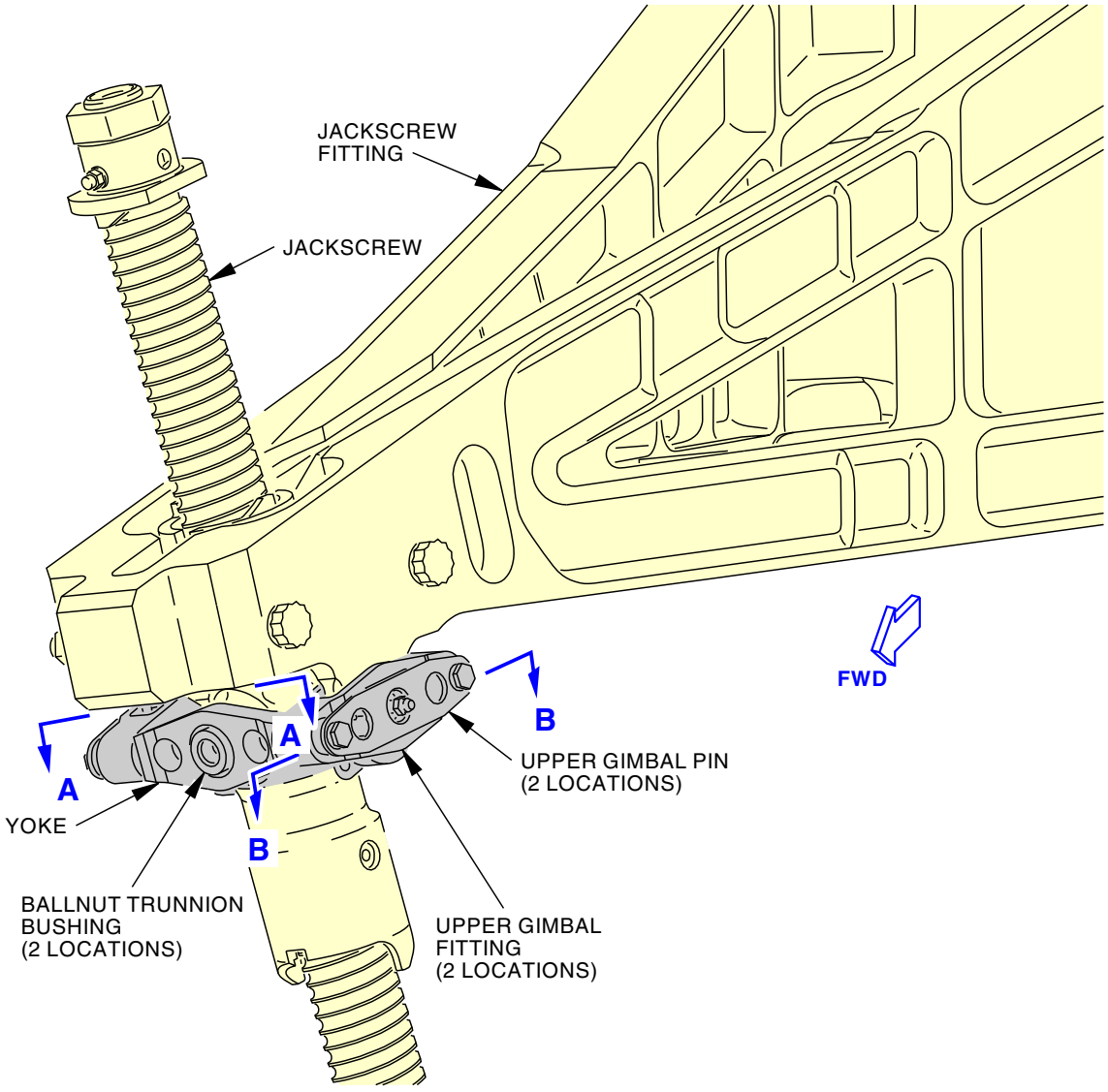
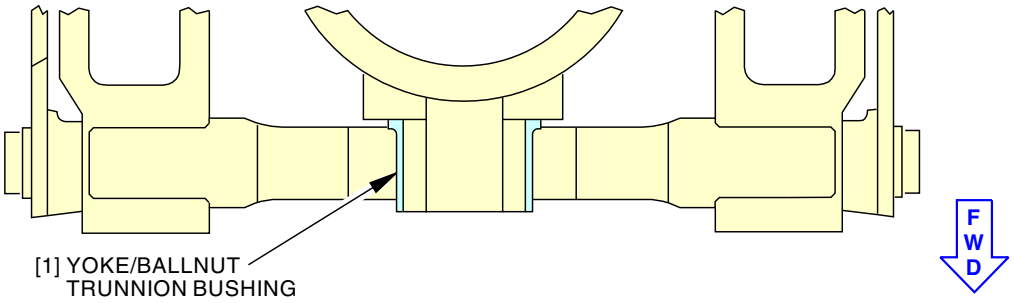
Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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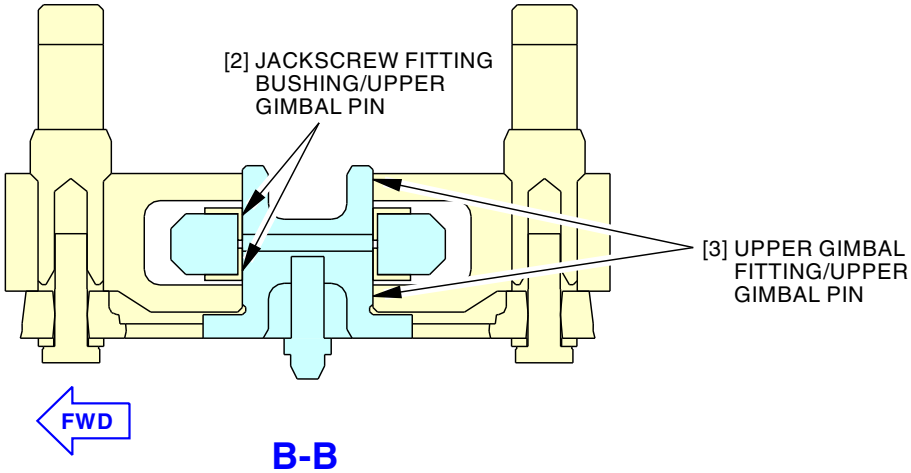
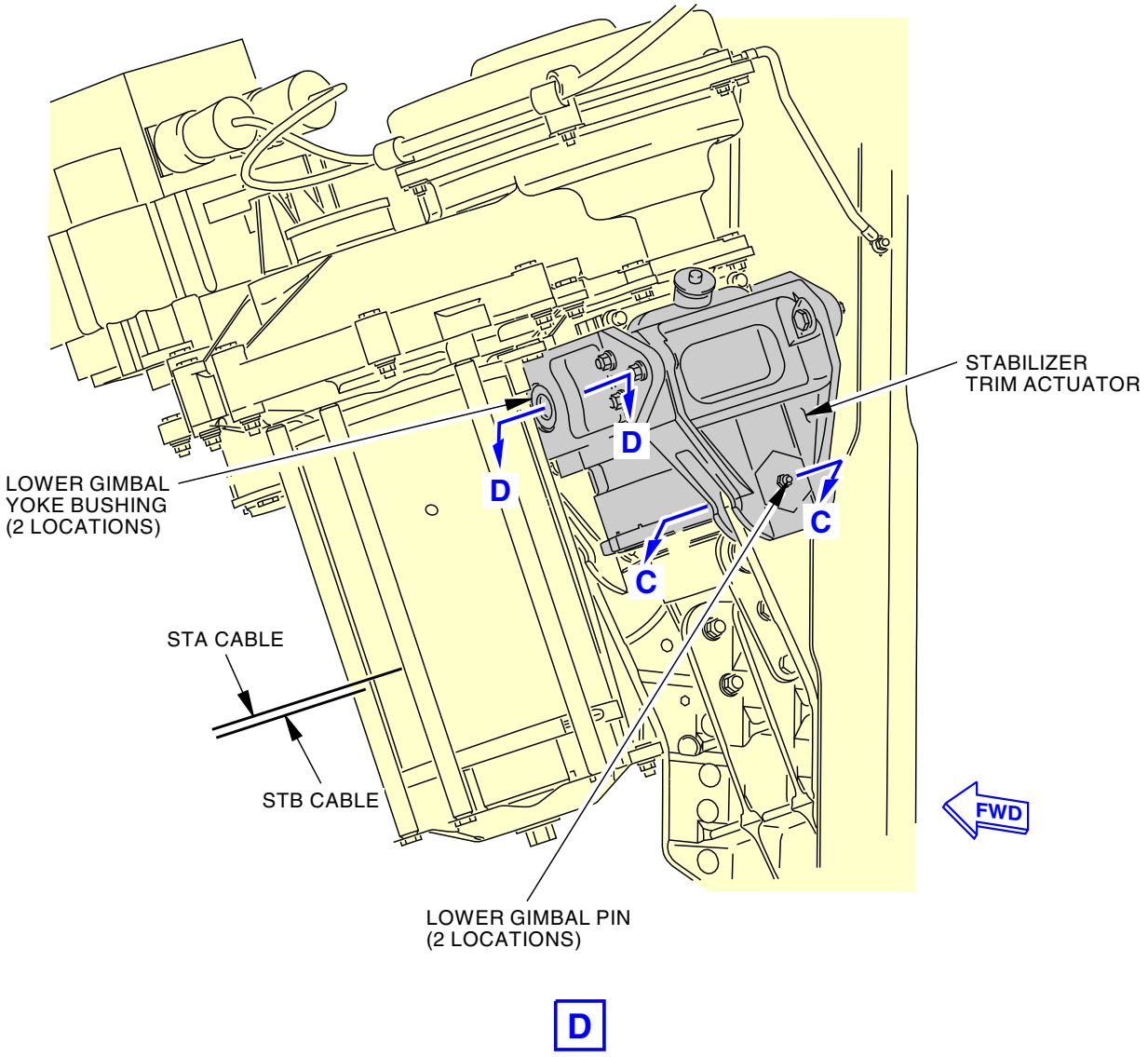


B-B

2412700 S00061531167_V2

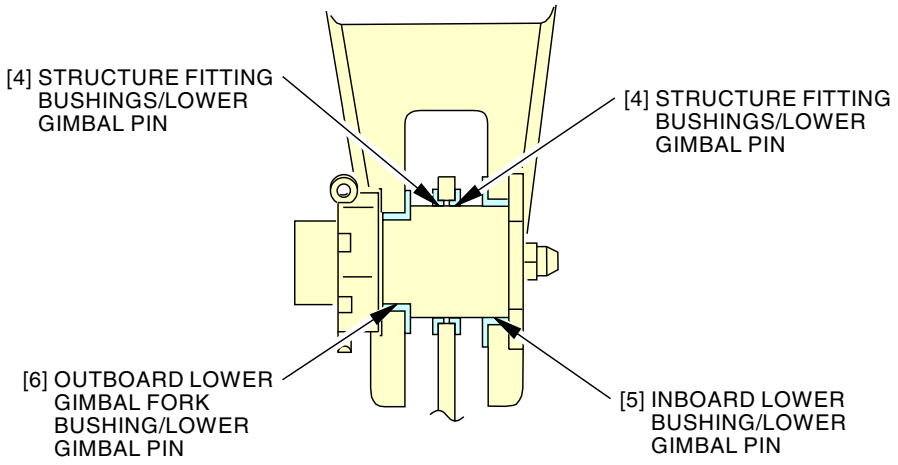
Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

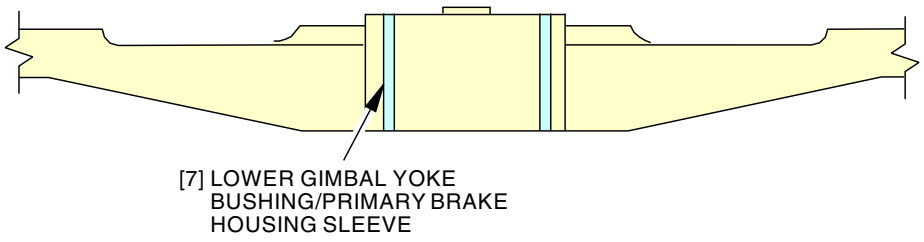


Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



C-C



D-D

2412702 S00061531169_V2

Stabilizer Ball Nut and Jackscrew Gearbox Wear Limits
Figure 603/27-41-81-990-806 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER CONTROL CABLE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the stabilizer trim control cables

(2) An installation of the stabilizer trim control cables.

B. The stabilizer trim control cables are referred to as the STA and STB cables in this procedure. The STA cable is located to the left of the STB cable.

C. The stabilizer trim control cable includes the cable with a swaged end connected to the aft cable drum and an end with an eyelet that connects it to the forward cable drum.

TASK 27-41-82-000-801

2. Stabilizer Control Cable Removal

(Figure 401, Figure 402)

A. References

Reference	Title
20-10-04-000-802	Control Cable Half Ball Pressure Seal Removal (P/B 401)
27-41-71-000-801	Stabilizer Trim Motor Removal (P/B 401)
50-10-03-000-801	Cargo Compartment Ceiling Liner Removal (P/B 401)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-10319	Wrench - Pinion Gear (Rotate) Part #: F71252 Supplier: 81205 Part #: F71267 Supplier: 81205

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door

E. Prepare for the Removal

SUBTASK 27-41-82-860-001

(1) Set the stabilizer leading edge to the full down (airplane nose up) position.

SUBTASK 27-41-82-860-002

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-82-010-001

(3) To get access to the stabilizer forward control mechanism and the forward pulleys, do this step:

(a) Open these access panels:

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door

SUBTASK 27-41-82-010-002

(4) To get access to the stabilizer trim actuator and the aft pulley, do this step:

(a) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-82-010-003

(5) Remove the cargo liners and floor panels (Figure 402).

(a) Do this task: Cargo Compartment Ceiling Liner Removal, TASK 50-10-03-000-801.

(b) Do this task: Passenger Cabin Floor Panel Removal, TASK 53-21-00-000-801.

SUBTASK 27-41-82-020-001

(6) Disconnect the upper turnbuckle [4].

SUBTASK 27-41-82-820-001

CAUTION

MAKE SURE THAT THE CHAIN IS LOOSE BEFORE YOU RELEASE THE CABLE TENSION. TOO MUCH CABLE TENSION CAN CAUSE DAMAGE TO THE CHAIN.

(7) Adjust the upper adjusting nuts [7] of the aft support link [8] to loosen the chain (Figure 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-82-020-002

(8) Loosen the lower turnbuckle [3] to release the tension of the STA cable [6] and STB cable [5].

SUBTASK 27-41-82-020-009

(9) Remove the half ball pressure seals, do this task: Control Cable Half Ball Pressure Seal Removal, TASK 20-10-04-000-802.

SUBTASK 27-41-82-020-003

(10) Do this task: Stabilizer Trim Motor Removal, TASK 27-41-71-000-801.

F. Stabilizer Control Cable Removal

SUBTASK 27-41-82-020-004

(1) Remove the cable drum guard [28] and spacers [14] from the cable drum [15]:

(a) Remove the pin [83] and castellated nut [82] from the support plate [25] that is attached to the cable drum [15].

1) Discard the pin [83].

(b) Remove the nut [23], washer [22], washer [21], and bolt [20] that attach the cable drum guard [28] to the support plate [25].

(c) Remove the bolts [26], washers [27], support plate [25], spacers [14], and washer [84] from the cable drum [15].

NOTE: Because work space is small, you must keep the bolts [26] in the support plate [25] and in the spacers [14] to help the removal procedure.

(d) Remove the bolts [16] and washers [17] that attach the cable drum guard [28] to the cable drum [15].

(e) Remove the cable drum guard [28] from the cable drum [15].

SUBTASK 27-41-82-020-005

(2) Do these steps to disconnect the STB cable [5] from the cable drum [15]:

(a) Install the pinion gear wrench, SPL-10319, on the internal spline of the jackscrew gearbox [12] (Figure 401).

NOTE: Insert the arm of the pinion gear wrench, SPL-10319, into the motor mount hole to keep the internal spline of the jackscrew gearbox [12] from turning.

(b) Use the force gauge, COM-1557, on the captain's or first officer's stabilizer trim wheel handle to put a 50 lb (22.7 kg) load on the handle to stretch the STA cable [6].

NOTE: This will keep the STA cable [6] on the drum and will make the removal of the STB cable [5] easier.

(c) Disconnect the STB cable [5] from the cable drum [15].

SUBTASK 27-41-82-020-006

(3) Remove the STB cable [5] from the cable run.

(a) Remove the arm of the pinion gear wrench, SPL-10319, from the stabilizer trim motor mount hole.

(b) Using the captain's or first officer's stabilizer trim control wheel, move the jackscrew [11] to put the stabilizer leading edge to the full up (airplane nose down) position.

CAUTION

MAKE SURE THAT YOU DO NOT DAMAGE OR KINK THE CABLE WHILE YOU WIND IT ONTO THE SPOOL OR REEL. DAMAGE TO THE CABLE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION IF YOU ARE TO USE THE CABLE AGAIN, DO NOT LET IT TOUCH THE DIRTY SURFACES. DIRT IN THE GREASE ON THE CABLES CAN CAUSE FAILURE OF THE CABLE OR CAN CAUSE PROBLEMS WHEN RE-RIGGING THE CABLE.

(c) When the stabilizer starts to move, pull the STB cable [5] into the tail compartment and wind it on a spool or a reel.

NOTE: Tension must always be kept on the STB cable [5] while pulling it into the tail compartment. The best way to keep steady tension on the STB cable [5] is to have a mechanic pulling the cable into the tail compartment while another winds it onto a spool or reel.

NOTE: To ensure the STB cable [5] is not damaged or kinked as it is unwound from the forward drum, it is best to have a mechanic in the forward compartment to watch the cable as it unwinds from the forward drum. This will ensure that the mechanic operating the stabilizer trim control wheel does not turn the forward drum too far and kink the cable on the right cable guard spacer (Figure 401).

(d) When the ballnut touches the upper stop, keep a record of the number of turns of the STA cable [6] on the cable drum [15].

(e) Disconnect the STA cable [6] from the cable drum [15].

NOTE: Use a control cable clamp, SPL-1569, to keep tension on the STA cable [6] to keep it from unwinding on the forward cable drum.

(f) Disconnect the STB cable [5] from the forward cable drum.

1) Remove the nut and washer from the clevis bolt.
2) Remove the clevis bolt from the STB cable [5] eyelet.

SUBTASK 27-41-82-480-001

(4) Remove the STB cable [5] from the aircraft.

(a) Attach lockstitch or some similar material to the aft end of the STB cable [5].

CAUTION MAKE SURE THAT YOU DO NOT DAMAGE OR KINK THE CABLE WHILE YOU WIND IT ONTO THE SPOOL OR REEL. DAMAGE TO THE CABLE CAN OCCUR.

CAUTION IF YOU ARE TO USE THE CABLE AGAIN, DO NOT LET IT TOUCH THE DIRTY SURFACES. DIRT IN THE GREASE ON THE CABLES CAN CAUSE FAILURE OF THE CABLE OR CAN CAUSE PROBLEMS WHEN RE-RIGGING THE CABLE.

(b) Using a spool or reel, wind the STB cable [5] up in the forward mechanism compartment.

1) Remove the idler pulleys to let the aft end of the cable through the pulley stations (Figure 402).
2) Remove the aft pulley as required to let the end of the cable through the pulley stations (Figure 402).

NOTE: The aft pulley must only be removed while the cable end passes through the bracket to decrease the cable rubbing.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-82-020-007

(5) Do the following steps to remove the STA cable [6] from the aircraft:

(a) Remove the cable clamp from the STA cable [6] at the aft cabin pressure bulkhead while maintaining force on the STA cable [6].

(b) Using the captain's or first officer's stabilizer trim control wheel, unwind the STA cable [6] from the forward drum.

CAUTION MAKE SURE THAT YOU DO NOT DAMAGE OR KINK THE CABLE WHILE YOU WIND IT ONTO THE SPOOL OR REEL. DAMAGE TO THE CABLE CAN OCCUR.

CAUTION IF YOU ARE TO USE THE CABLE AGAIN, DO NOT LET IT TOUCH THE DIRTY SURFACES. DIRT IN THE GREASE ON THE CABLES CAN CAUSE FAILURE OF THE CABLE OR CAN CAUSE PROBLEMS WHEN RE-RIGGING THE CABLE.

(c) Pull the STA cable [6] into the tail compartment and wind it on a spool or a reel.

NOTE: Tension must always be kept on the STA cable [6] while pulling it into the tail compartment. The best way to keep steady tension on the STA cable [6] is to have a mechanic pulling the cable into the tail compartment while another mechanic winds the cable onto a spool or reel.

NOTE: To ensure the STA cable [6] is not damaged or kinked as it is unwound from the forward drum, it is recommended to have a mechanic in the forward compartment to watch the cable as it slowly unwinds from the forward drum. This will ensure that the mechanic pulling the cable into the aft unpressurized compartment does not pull the cable too far and kink the cable on the left cable guard spacer (Figure 401).

(d) Disconnect the STA cable [6] from the forward cable drum.

1) Remove the cotter pin [18], the nut, the washer, and the washers from the clevis bolt.

a) Discard the cotter pin [18].

2) Remove the clevis bolt from the STA cable [6] eyelet.

SUBTASK 27-41-82-480-002

(6) Remove the STA cable [6] from the aircraft.

(a) Attach lockstitch or some similar material to the aft end of the STA cable [6].

CAUTION MAKE SURE THAT YOU DO NOT DAMAGE OR KINK THE CABLE WHILE YOU WIND IT ONTO THE SPOOL OR REEL. DAMAGE TO THE CABLE CAN OCCUR.

CAUTION IF YOU ARE TO USE THE CABLE AGAIN, DO NOT LET IT TOUCH THE DIRTY SURFACES. DIRT IN THE GREASE ON THE CABLES CAN CAUSE FAILURE OF THE CABLE OR CAN CAUSE PROBLEMS WHEN RE-RIGGING THE CABLE.

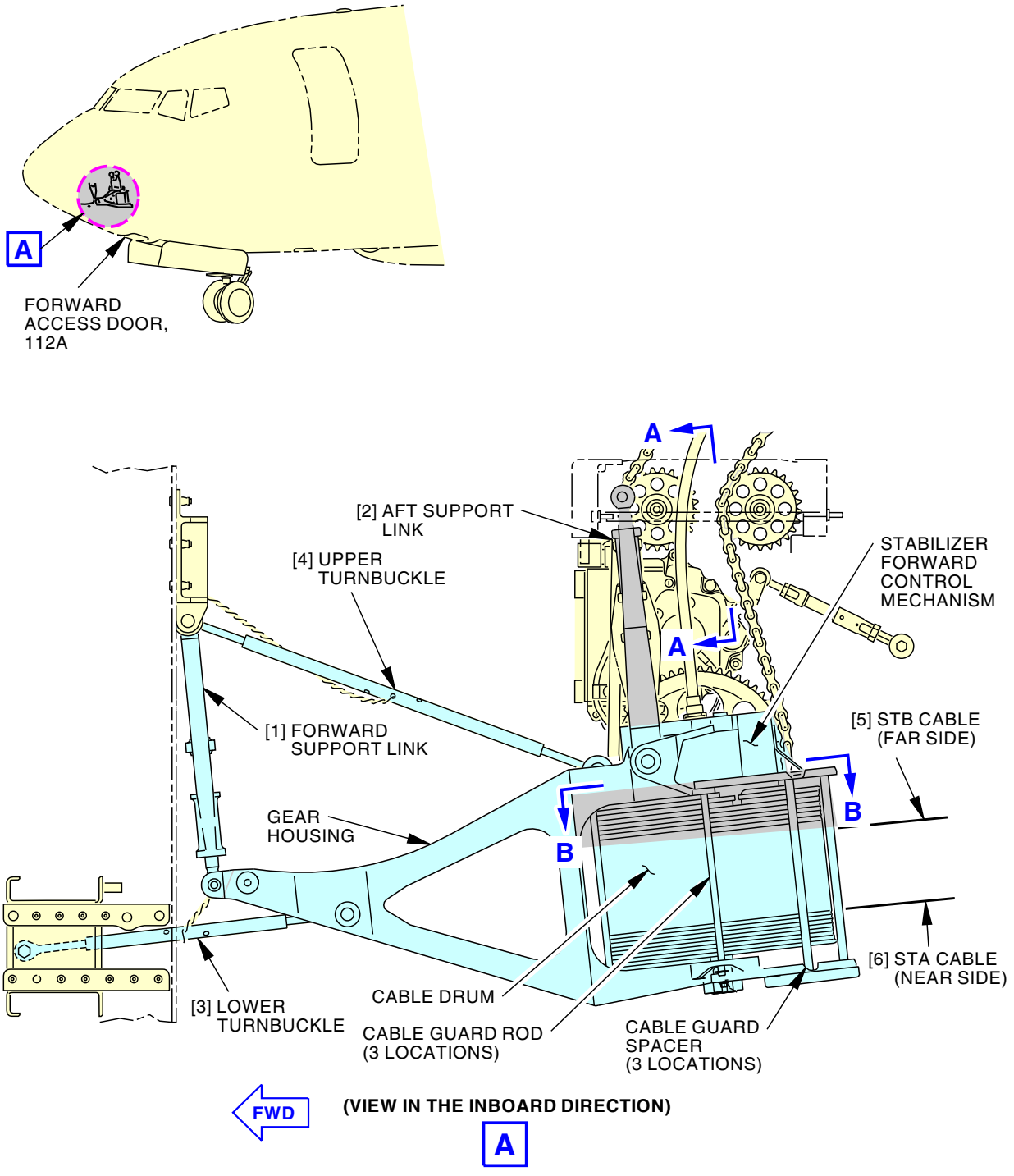
(b) Using a spool or reel, wind the STA cable [6] up in the forward mechanism compartment.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the idler pulleys to let the aft end of the cable through the pulley stations (Figure 402).

——— END OF TASK ———

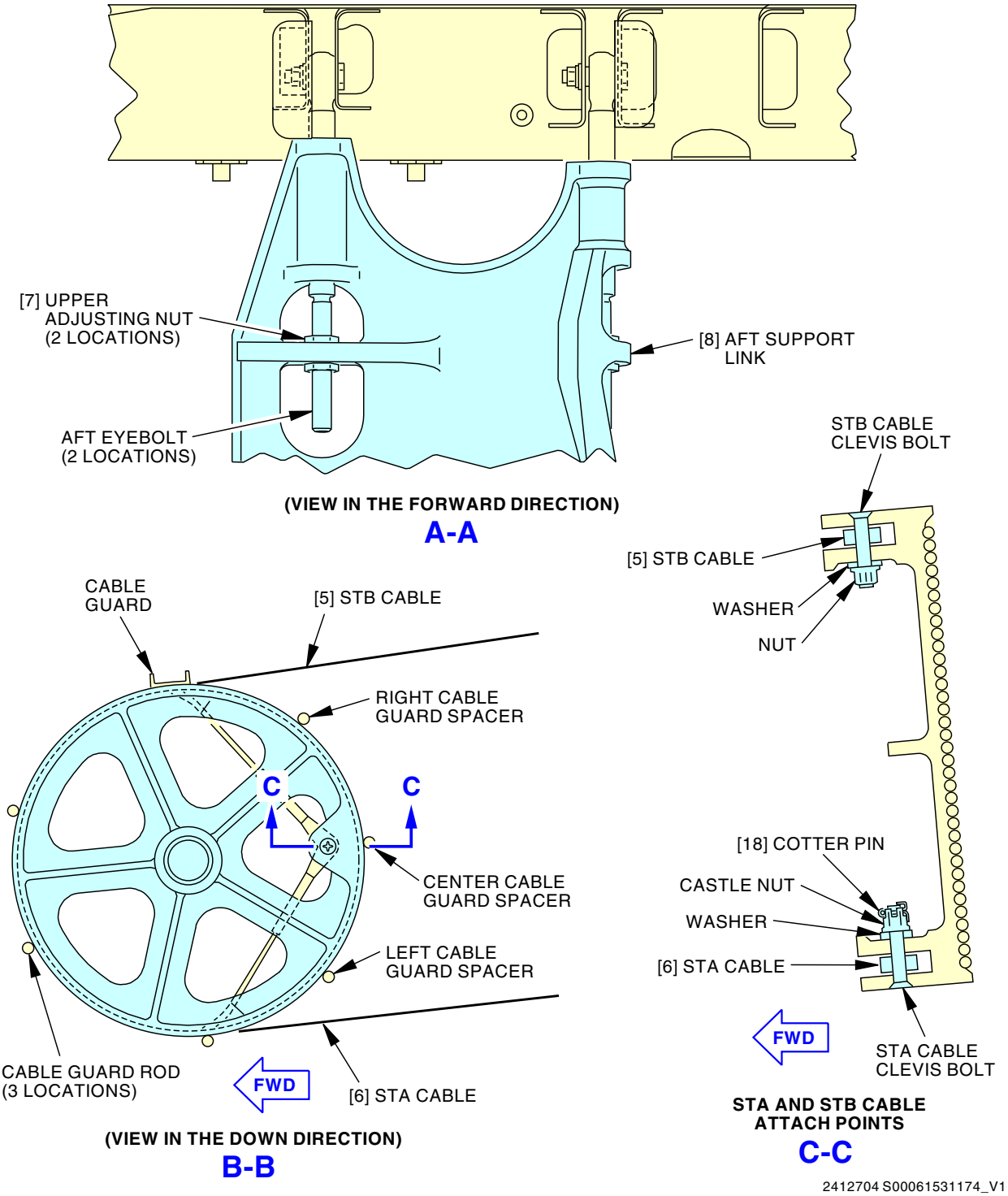
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412703 S00061531173_V2

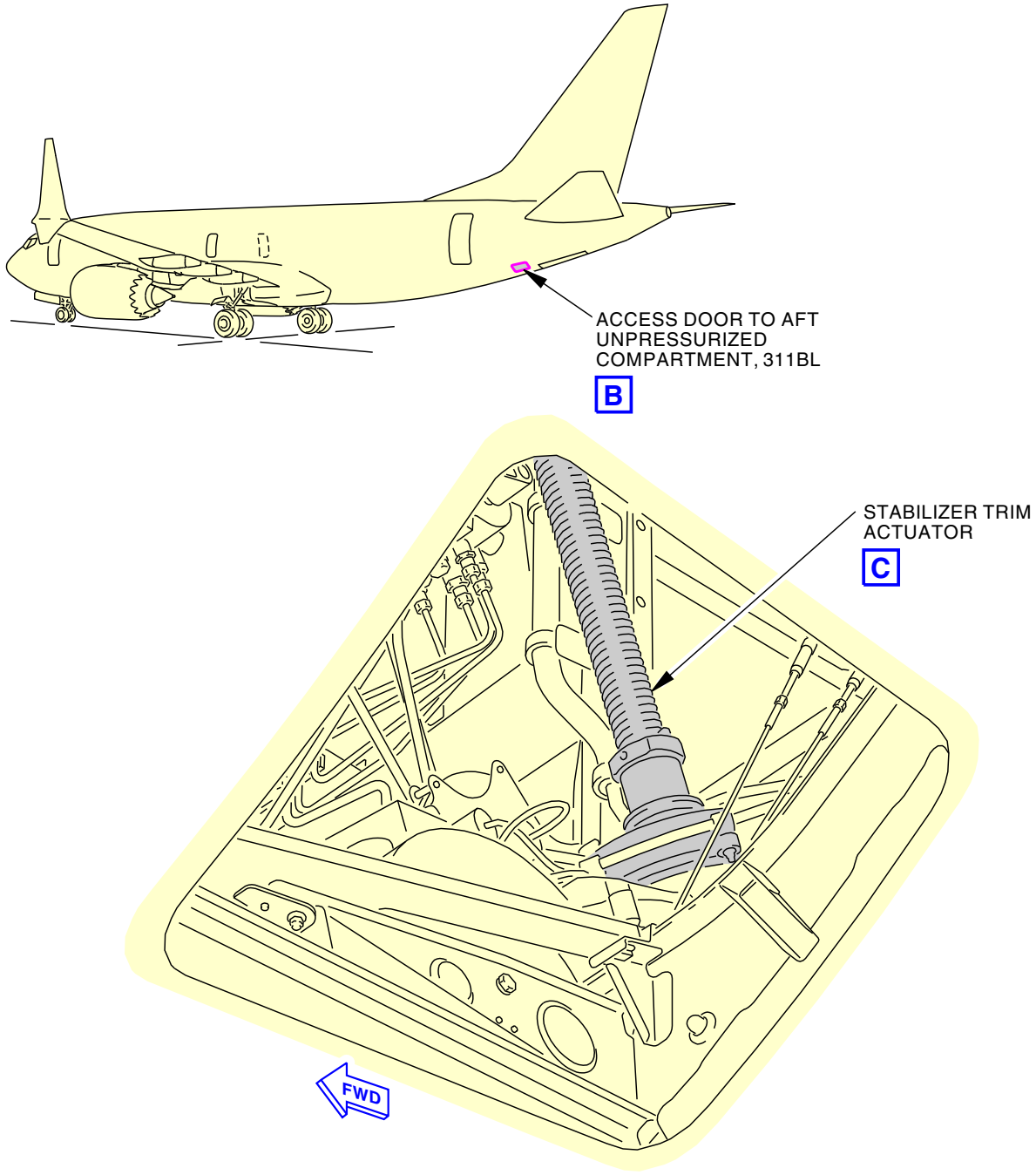
Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



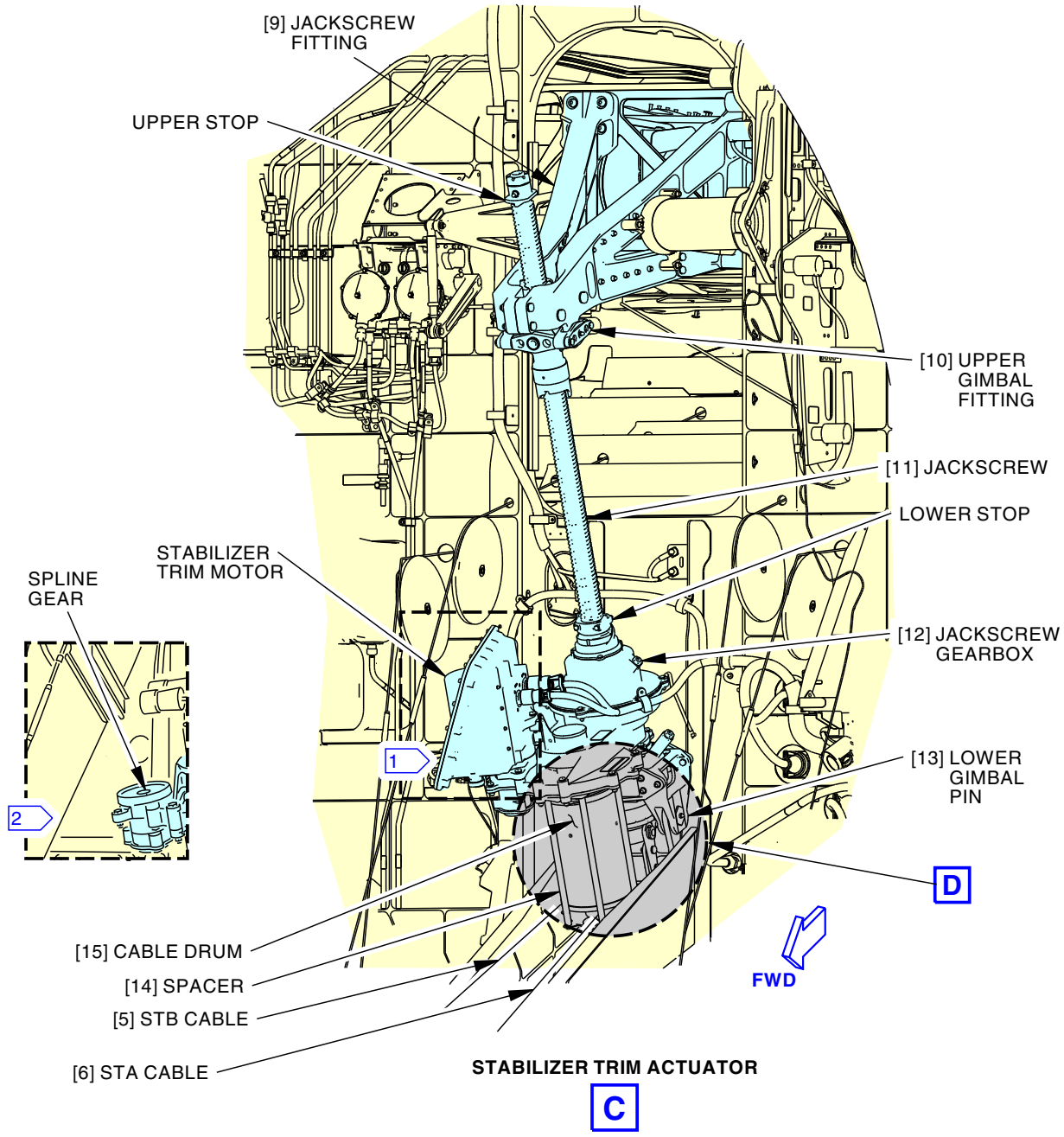
Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

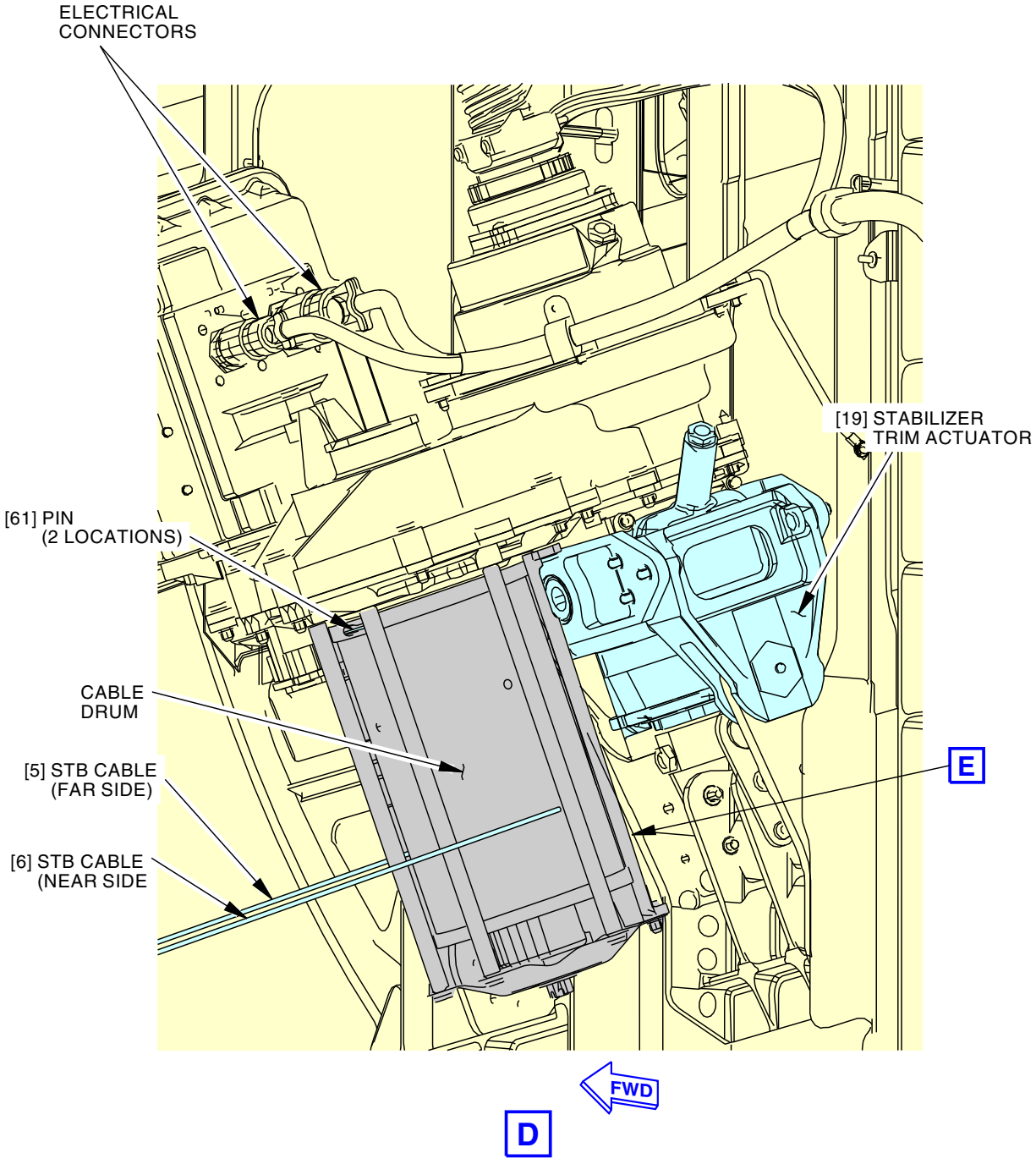


1 STABILIZER ACTUATOR ASSEMBLY WITH STABILIZER TRIM MOTOR (STM).
2 STABILIZER ACTUATOR ASSEMBLY WITHOUT STABILIZER TRIM MOTOR (STM).

2412706 S00061531176_V4

Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 4 of 6)

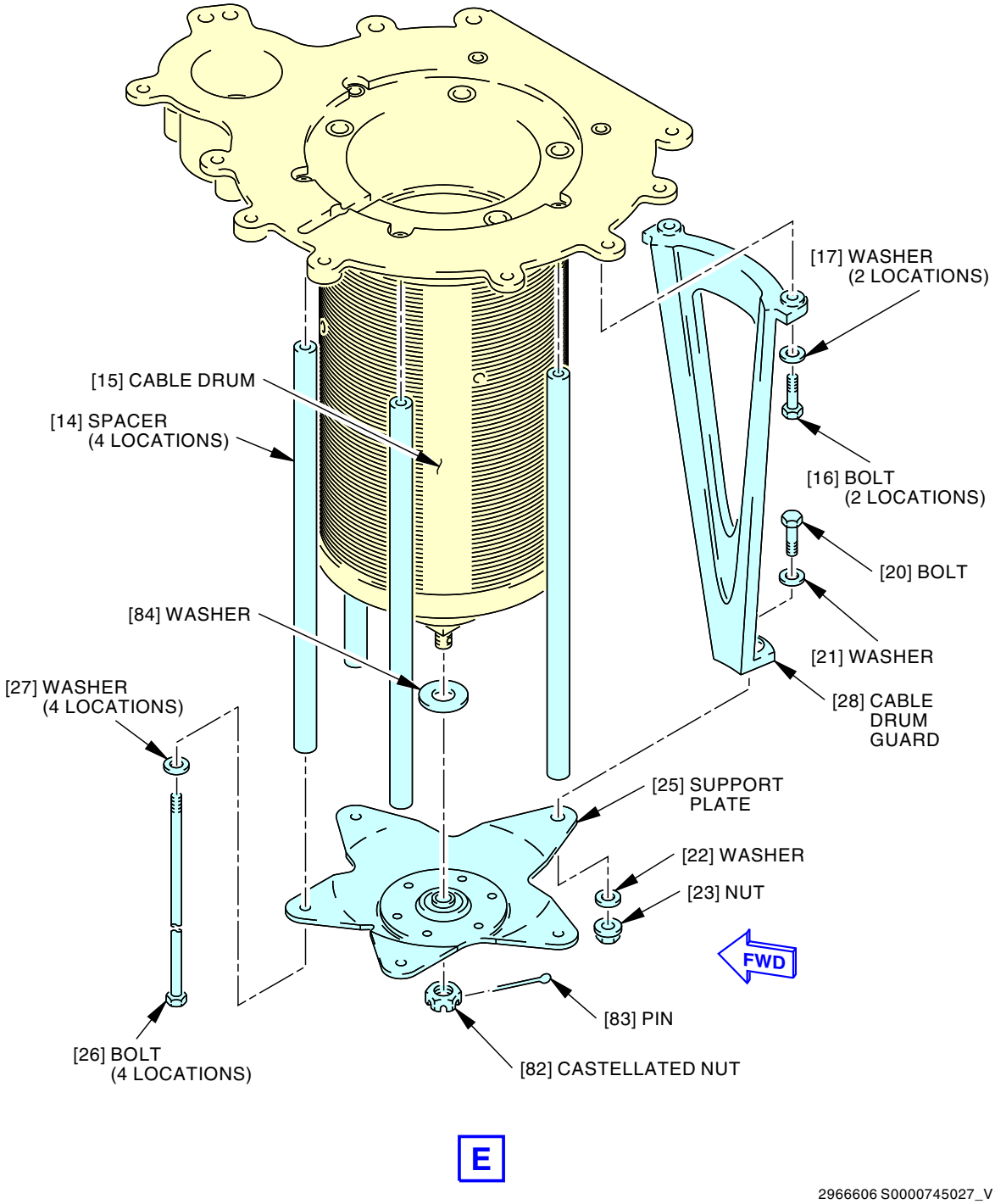
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412707 S00061531177_V3

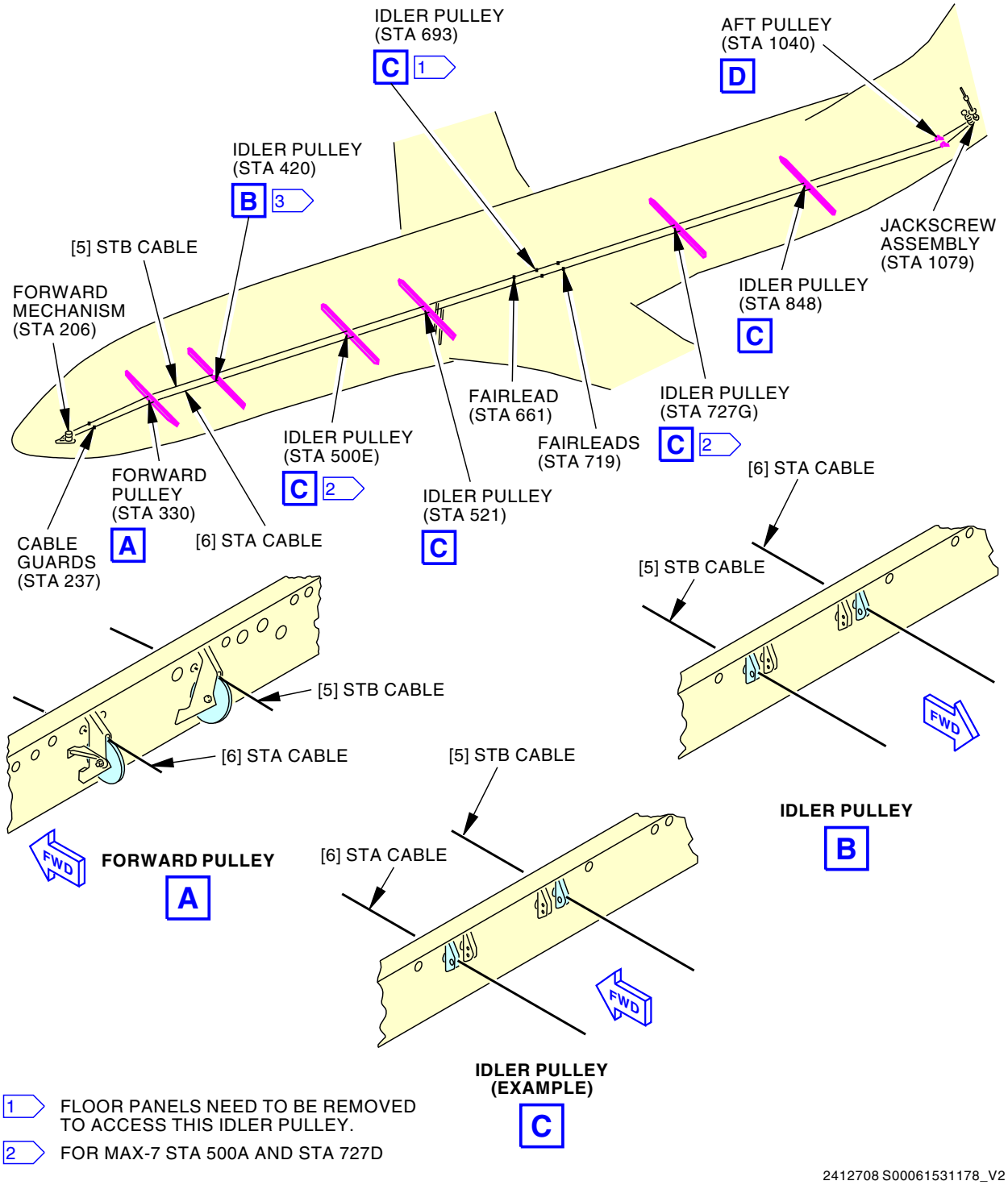
Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Control Cable Replacement
Figure 401/27-41-82-990-801 (Sheet 6 of 6)

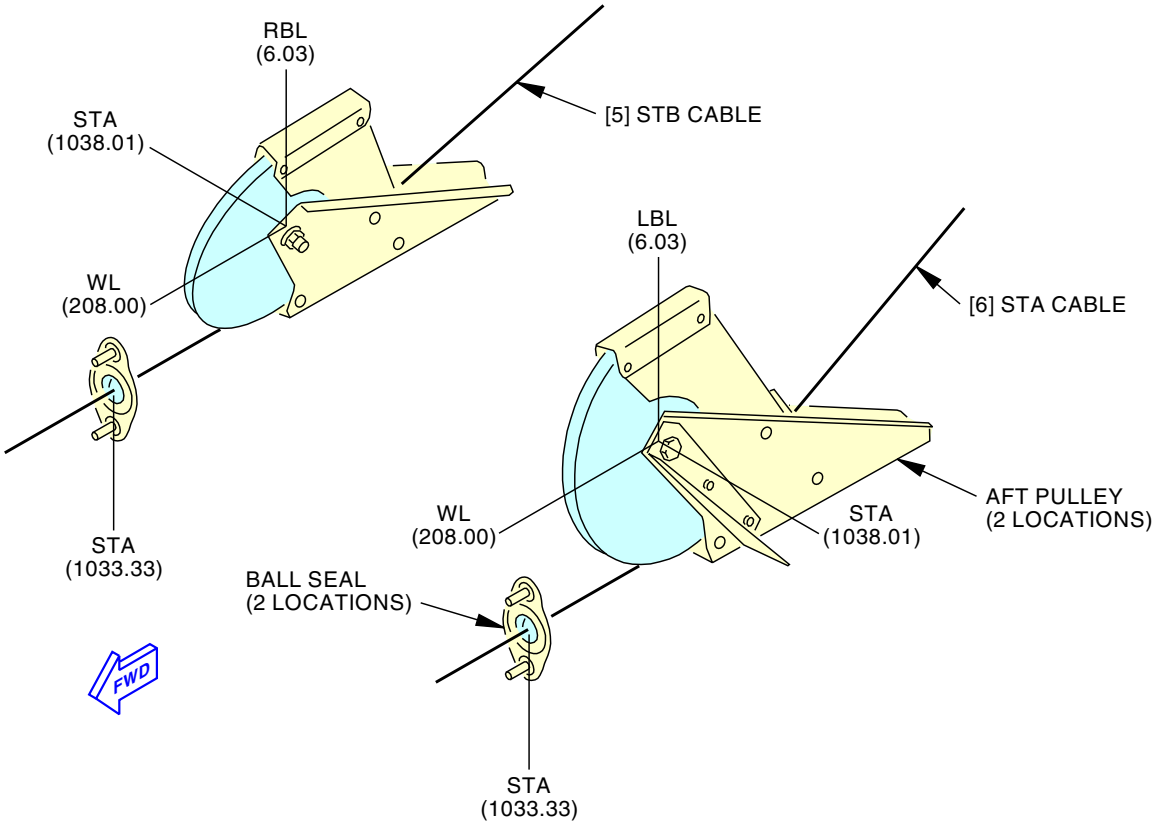
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412708 S00061531178_V2

Stabilizer Control Cable Installation
Figure 402/27-41-82-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AFT PULLEY AND BALL SEAL

D

2905860 S0000695857_V1

Stabilizer Control Cable Installation
Figure 402/27-41-82-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-82-400-801

3. Stabilizer Control Cable Installation

(Figure 401, Figure 402)

A. General

(1) It is recommended that cable assemblies on each side of a cable loop be replaced at the same time using the same grade material in order to minimize asymmetric relaxation.

(2) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to: Control Cable Grades and Diameters/Table 27-11-00-993-802.

B. References

Reference	Title
12-22-41-610-801	Horizontal Stabilizer Actuator Brake - Servicing (P/B 301)
20-10-04-400-802	Control Cable Half Ball Pressure Seal Installation (P/B 401)
27-11-00-993-802	Table: Control Cable Grades and Diameters (P/B 501)
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator - Test (P/B 501)
27-41-00-700-802	Horizontal Stabilizer Trim Control System Friction Test (P/B 501)
27-41-00-700-803	Stabilizer Electric Trim System Test (P/B 501)
27-41-00-700-804	Stabilizer Trim Wheel Free Movement Test (P/B 501)
27-41-00-700-806	Stabilizer Clutch Friction System Test (P/B 501)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-41-71-400-801	Stabilizer Trim Motor Installation (P/B 401)
50-10-03-400-801	Cargo Compartment Ceiling Liner Installation (P/B 401)
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1569	Clamp - Control Cable Part #: A20005-9 Supplier: 81205
SPL-10319	Wrench - Pinion Gear (Rotate) Part #: F71252 Supplier: 81205 Part #: F71267 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	STB cable	27-41-82-01-100	SIA ALL
6	STA cable	27-41-82-01-095	SIA ALL
18	Pin	27-41-82-01-005	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
61	Pin	27-41-82-01-007	SIA ALL
83	Pin	27-41-81-01-601	SIA ALL

F. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

G. Access Panels

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door
311BL	Stabilizer Trim Access Door

H. Prepare for the Installation

SUBTASK 27-41-82-860-003

(1) Use the pinion gear wrench, SPL-10319 to set the stabilizer leading edge to the full down (airplane nose up) position.

SUBTASK 27-41-82-100-001

(2) Use a clean cloth to clean the grease and dirt from the forward and aft cable drums.

SUBTASK 27-41-82-420-001

(3) Install the STA cable [6] and the STB cable [5] into the cable runs (Figure 402).

(a) Put the new, or used, cables in the forward mechanism compartment.

(b) Attach the lockstitch to the aft end of STA cable [6] and STB cable [5].

(c) Pull the lockstitch from the aft unpressurized compartment and guide the stabilizer control cables through the cable runs of the airplane.

1) Make sure that the idler pulleys are removed.

2) Remove the aft pulley as required to let the end of the cable through the pulley stations (Figure 402).

NOTE: The aft pulley must only be removed while the cable end passes through the bracket to decrease the cable rubbing.

SUBTASK 27-41-82-420-002

(4) Wind STA cable [6] and STB cable [5] onto a spool or reel in the aft unpressurized compartment.

SUBTASK 27-41-82-420-003

(5) Install the idler pulleys in the idler pulley brackets at the locations shown in (Figure 402).

(a) Make sure that the STA cable [6] and STB cable [5] are in the groove above each idler pulley.

I. Stabilizer Control Cable Installation

(Figure 401, Figure 402)

SUBTASK 27-41-82-420-004

(1) Connect the STA cable [6] to the bottom slot of the forward cable drum (Figure 401):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Using the captain's or first officer's stabilizer control wheel, rotate the forward drum so that the lower cable connection point is on the left side of the airplane.

1) Install the eyelet bolt through the STA cable [6] eyelet, the washers on the eyelet bolt, the castle nut on the eyelet bolt, and a new cotter pin [18] through the eyelet bolt (Figure 401).

CAUTION

MAKE SURE THAT THE CABLE WINDS ONTO THE DRUM GROOVES CORRECTLY WITH EACH TURN OF THE DRUM. IF YOU JAM THE CABLE BETWEEN THE CABLE AND THE CABLE DRUM GUARD, DAMAGE TO THE CABLE WILL OCCUR.

(b) Use the captain's or first officer's stabilizer trim control wheel to wind the STA cable [6] "completely" onto the forward cable drum (Approximately 33 1/2 turns).

NOTE: Tension must always be kept on the STA cable [6] while winding it onto the forward cable drum. The best way to keep steady tension on the STA cable [6] is to have a mechanic applying tension to the cable in the aft unpressurized compartment while another mechanic keeps the cable in position in the forward mechanism compartment.

NOTE: To ensure the STA cable [6] is not damaged or kinked as it is wound onto the forward drum, it is recommended to have a mechanic in the forward mechanism compartment to watch the cable as it slowly winds onto the forward cable drum. This will ensure that the mechanic that is turning the stabilizer trim control wheel, does not turn the forward drum too much and damage or kink the cable.

SUBTASK 27-41-82-420-005

(2) Connect the STB cable [5] to the top slot of the forward cable drum (Figure 401):

(a) While keeping tension on the STA cable [6], use the captain's or first officer's stabilizer control wheel to rotate the forward drum so that the upper cable connection point is on the right side of the airplane.

1) Install the STB cable [5] eyelet in the location on the upper right side of the forward cable drum.

a) Install the eyelet bolt through the STB cable [5] eyelet and the washer and nut on the eyelet bolt.

CAUTION

MAKE SURE THAT THE CABLE WINDS ONTO THE DRUM GROOVES CORRECTLY WITH EACH TURN OF THE DRUM. IF YOU JAM THE CABLE BETWEEN THE CABLE AND THE CABLE DRUM GUARD, DAMAGE TO THE CABLE WILL OCCUR.

(b) Use the captain's or first officer's stabilizer trim control wheel to wind the STB cable [5] onto the forward cable drum approximately 2 turns.

NOTE: Tension must always be kept on STA cable [6] and STB cable [5] while winding them onto the forward cable drum. The best way to keep steady tension on the cables is to have a mechanic applying tension to the cable in the aft unpressurized compartment while another mechanic keeps the cable in position at the forward cable drum.

(c) Install non-metallic wedges between STA cable [6], STB cable [5] and the cable guards on the left and right sides of the forward cable drum.

NOTE: The wedges are used to keep tension on STA cable [6] and STB cable [5] while the cables are rigged to the rear cable drum [15].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-82-420-006

(3) Install the STB cable [5] on the cable drum [15]:

(a) Install the cable terminal in the top terminal slot of the cable drum [15].

(b) Install a new pin [61] to connect the cable terminal to the cable drum [15].

1) Install the ends of the pin [61] in the terminal slot.

(c) Place approximately 1.7 wraps of STB cable [5] on the cable drum [15].

CAUTION MAKE SURE THAT THE STB CABLE IS IN THE GROOVE OF THE FORWARD PULLEY AND AFT PULLEY BEFORE YOU TIGHTEN THE CABLE. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(d) Using the pinion gear wrench, SPL-10319, wind the STB cable [5] onto the cable drum [15] until the ballscrew reaches the upper stops. Use the pinion gear wrench, SPL-10319 to keep tension on the STB cable [5].

1) Make sure that the STB cable [5] is in the groove of the forward (STA 330) and the aft (STA 1038) pulley (Figure 402).

SUBTASK 27-41-82-420-007

(4) Install the STA cable [6] on the cable drum [15]:

(a) Place approximately 1.8 wraps of cable around the aft cable drum and install the cable terminal in the bottom terminal slot of the cable drum [15].

(b) Install the new pin [61] to connect the cable terminal to the cable drum [15].

1) Install the ends of the pin [61] in the terminal slot.

(c) Remove the non-metallic wedges from the forward cable drum while keeping tension on the STA cable [6] at the aft cable drum.

(d) Attach a control cable clamp, SPL-1569 to the STA cable [6], forward of the aft cable drum.

WARNING MAKE SURE THAT YOU DO NOT GET FINGERS OR HANDS CAUGHT BETWEEN THE CABLE AND THE DRUM OR INTO A LOOP OF CABLE. IF THE CABLE MOVES SUDDENLY, DANGEROUS INJURY TO PERSONNEL CAN OCCUR.

CAUTION MAKE SURE THAT THE STA CABLE IS IN THE GROOVE OF THE FORWARD PULLEY AND AFT PULLEY BEFORE YOU TIGHTEN THE CABLE. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(e) Apply tension to the STA cable [6] with the control cable clamp, SPL-1569 until there is sufficient cable to complete the last wrapping around the aft cable drum [15].

1) If necessary, loosen the lower turnbuckle [3], on the forward mechanism, to get sufficient play in the cable.

2) Make sure that the STA cable [6] is in the groove of the forward (STA 330) and the aft (STA 1038) pulley (Figure 402).

SUBTASK 27-41-82-080-001

(5) Remove the control cable clamp, SPL-1569.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-82-420-008

(6) Install the spacers [14] and cable drum guard [28] to the cable drum [15]:

(a) Apply grease, D00633, to bolts [16], bolt [20], and bolts [26].

(b) Install the bolts [16] and washers [17] to attach the cable drum guard [28] to the cable drum [15].

1) Tighten the bolts [16] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

CAUTION MAKE SURE THAT YOU INSTALL THE WASHER BETWEEN THE SUPPORT PLATE AND THE CABLE DRUM. IF YOU DO NOT OBEY, THE CABLE DRUM WILL NOT TURN CORRECTLY DURING OPERATION.

(c) Install the washer [84] to the cable drum [15].

CAUTION MAKE SURE THAT YOU INSTALL THE SUPPORT PLATE CORRECTLY. THE SUM OF TORQUE TO DISENGAGE THE MANUAL CLUTCH CAN BE MORE THAN THE LIMITS. IF YOU DO NOT OBEY, DAMAGE CAN OCCUR.

(d) Install the bolts [26], washers [27], support plate [25] and the spacers [14] to the cable drum [15].

1) Install the bolts [26] to the washers [27], support plate [25] and the spacers [14].

NOTE: The bearing assembly of the support plate [25] must be on the same side as the cable drum [15].

2) Install the bolts [26] to the cable drum [15].

3) Tighten the bolts [26] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

(e) Install the bolt [20], washer [21], washer [22], and nut [23] to attach the cable drum guard [28] to the support plate [25].

1) Tighten the bolt [20] to 63 in-lb (7.1 N·m) - 67 in-lb (7.6 N·m).

(f) Install the castellated nut [82] to the cable drum [15].

1) Install the castellated nut [82] to the thread of the cable drum [15].

2) Hand tighten the castellated nut [82] against the support plate [25].

3) Align the castellated nut [82] back to the nearest pin hole.

(g) Install the new pin [83] to the castellated nut [82].

SUBTASK 27-41-82-820-002

CAUTION MAKE SURE THAT THE ROUTING OF STABILIZER CABLES STA AND STB ARE CORRECT ON ALL PULLEYS AND FLOOR BEAM FAIRLEADS. IF YOU DO NOT OBEY, DAMAGE TO THE AIRPLANE CAN OCCUR.

(7) Adjust the STA cable [6] and STB cable [5]. To adjust them, do this task: Stabilizer Control Cable and Chain - Adjustment, TASK 27-41-00-820-801.

SUBTASK 27-41-82-020-008

(8) Reconnect the upper turnbuckle [4] after the STA and STB cables are completely rigged.

SUBTASK 27-41-82-080-002

(9) Remove the pinion gear wrench, SPL-10319 from the jackscrew gearbox [12].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-82-730-001

(10) Do this task: Stabilizer Clutch Friction System Test, TASK 27-41-00-700-806.

SUBTASK 27-41-82-420-009

(11) Do this task: Stabilizer Trim Motor Installation, TASK 27-41-71-400-801.

SUBTASK 27-41-82-860-004

(12) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-82-730-002

(13) Do this task: Stabilizer Manual Trim and Trim Indicator - Test, TASK 27-41-00-700-801.

SUBTASK 27-41-82-730-003

(14) Do this task: Horizontal Stabilizer Trim Control System Friction Test, TASK 27-41-00-700-802.

SUBTASK 27-41-82-610-001

(15) Do this task: Horizontal Stabilizer Actuator Brake - Servicing, TASK 12-22-41-610-801.

NOTE: This lubrication procedure must be performed after the installation of any new stabilizer trim actuator.

SUBTASK 27-41-82-730-004

(16) Do this task: Stabilizer Trim Wheel Free Movement Test, TASK 27-41-00-700-804.

SUBTASK 27-41-82-730-005

(17) Do this task: Stabilizer Electric Trim System Test, TASK 27-41-00-700-803.

SUBTASK 27-41-82-420-010

(18) Install the half ball pressure seals. Do this task: Control Cable Half Ball Pressure Seal Installation, TASK 20-10-04-400-802.

SUBTASK 27-41-82-700-001

(19) Do a cycle check for the flight control system along the cable runs STA cable [6] and STB cable [5]:

(a) If necessary, use a video camera on areas that are not visible.

(b) Make sure that the cable routing is correct.

(c) Operate the system along the full range of travel.

(d) Make sure that there is free movement in all directions of travel.

(e) Make sure that the flight control surfaces align correctly.

(f) Make sure that the flight control surfaces have the correct routing and clearances.

(g) Make sure that the bellcranks and control rods move correctly.

(h) Make sure that the detents align correctly for the full range of the cable control mechanism.

(i) Make sure that the controls have the correct cushion for the full range of the cable control mechanism.

(j) Make a note of usual sounds from closed areas while the system is in operation.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

J. Put the Airplane Back To Its Usual Condition

SUBTASK 27-41-82-410-001

(1) Install the cargo liners and floor panels that were removed for access to the idler pulleys (TASK 50-10-03-400-801, TASK 53-21-00-400-801).

SUBTASK 27-41-82-410-002

(2) Close these access panels:

Number	Name/Location
112A	Forward Access Door
117A	Electronic Equipment Access Door

SUBTASK 27-41-82-410-003

(3) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM CUTOUT SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Stabilizer trim cutout switch removal

(2) Stabilizer trim cutout switch installation.

B. This procedure is applicable to the primary cutout switch (S272) and back up cutout switch (S149).

TASK 27-41-91-000-801

2. Stabilizer Trim Cutout Switch Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-41-91-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

C. Cutout Switch Removal

SUBTASK 27-41-91-010-001

(1) Remove the screws [6] and pull the panel out from the control stand.

SUBTASK 27-41-91-020-001

(2) Disconnect the electrical terminal [7] from the back of the cutout switch [1].

SUBTASK 27-41-91-020-002

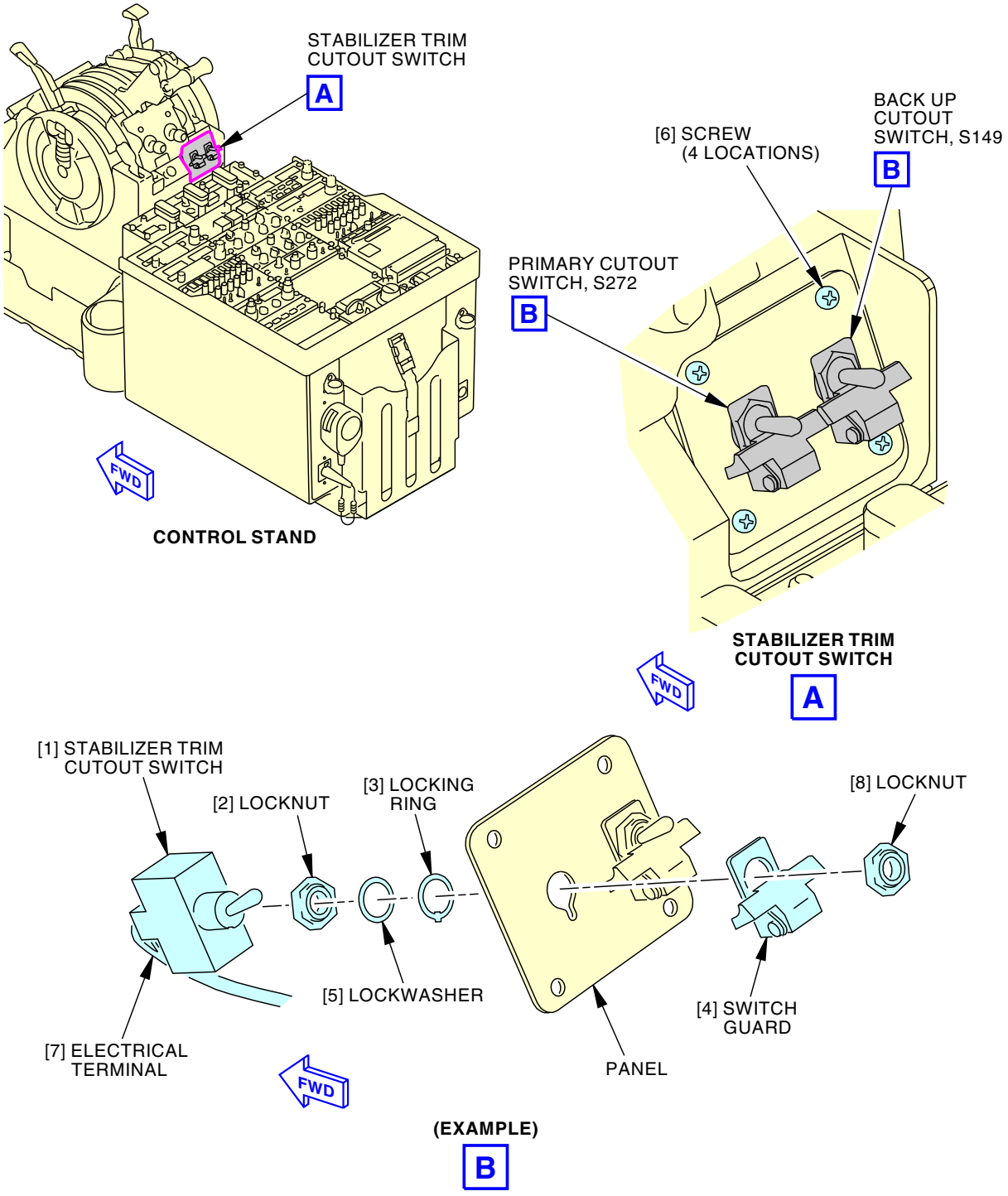
(3) Remove the cutout switch [1] from the panel:

(a) Remove the locknut [8], switch guard [4], locking ring [3], lockwasher [5], and locknut [2] from the cutout switch [1].

(b) Remove the cutout switch [1] from the back side of the panel.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Stabilizer Trim Cutout Switch Installation
Figure 401/27-41-91-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-91-400-801

3. Stabilizer Trim Cutout Switch Installation

(Figure 401)

A. References

Reference	Title
27-41-91-700-801	Primary Stabilizer Trim Cutout Switch Test (P/B 501)
27-41-91-700-802	Back Up Stabilizer Trim Cutout Switch Test (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cutout switch	27-41-91-01-120	SIA ALL

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-41-91-420-001

(1) Install the cutout switch [1] on the panel:

(a) Install the cutout switch [1], locknut [2], lockwasher [5], and locking ring [3] on the back side of the panel.

(b) Install the switch guard [4] and locknut [8] on the front side of the panel.

NOTE: The cutout switch [1], locking ring [3], and switch guard [4] have keys to ensure correct installation.

SUBTASK 27-41-91-420-002

(2) Connect the electrical terminal [7] to the back of the cutout switch [1].

SUBTASK 27-41-91-420-003

(3) Install the panel on the control stand:

(a) Put the panel in its position on the control stand.

(b) Install the screws [6].

SUBTASK 27-41-91-860-002

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-91-820-001

(5) Do this task: Primary Stabilizer Trim Cutout Switch Test, TASK 27-41-91-700-801.

SUBTASK 27-41-91-820-002

(6) Do this task: Back Up Stabilizer Trim Cutout Switch Test, TASK 27-41-91-700-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM CUTOUT SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Primary stabilizer trim cutout switch test

(2) Back up stabilizer trim cutout switch test.

27-CMR-09

TASK 27-41-91-700-801

2. Primary Stabilizer Trim Cutout Switch Test

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Test

SUBTASK 27-41-91-860-004

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-91-860-005

(2) Make sure that the STAB TRIM override switch on the P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

C. Primary Stabilizer Trim Cutout Switch Test

SUBTASK 27-41-91-710-001

WARNING MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE AWAY FROM THE HORIZONTAL STABILIZER. THE MOVEMENT OF THE HORIZONTAL STABILIZER DURING MAINTENANCE CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Do the test of the STAB TRIM PRI switch, S272, on the aft area of the control stand as follows:

(a) Make sure that the STAB TRIM PRI switch is in the NORMAL position.

(b) Push and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

(c) Make sure that the stabilizer leading edge start to move down.

(d) Set the STAB TRIM PRI switch to the CUTOUT position.

(e) Make sure that the movement of the stabilizer stops immediately.

(f) Release the stabilizer trim switches.

(g) Set the STAB TRIM PRI switch to the NORMAL position.

(h) Push and hold the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position.

(i) Make sure that the stabilizer leading edge moves up.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Set the STAB TRIM PRI switch to the CUTOUT position.

(k) Make sure that the movement of the stabilizer stops immediately.

(l) Release the stabilizer trim switches.

(m) Set the STAB TRIM PRI switch back to the NORMAL position.

——— END OF TASK ———

27-CMR-09

TASK 27-41-91-700-802

3. Back Up Stabilizer Trim Cutout Switch Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-41-91-860-007

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-91-860-008

(2) Make sure that the STAB TRIM override switch, on P8 panel is in the NORM position.

SUBTASK 27-41-91-860-009

(3) Make sure that the VHF NAV and IRS switches, on the P5 Forward Overhead Panel, are in the NORMAL positions.

SUBTASK 27-41-91-860-010

(4) Do this task: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-91-860-011

WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(5) Supply hydraulic power to hydraulic systems A and B (Hydraulic System A or B Pressurization, TASK 29-11-00-860-801).

SUBTASK 27-41-91-860-012

(6) Make sure that the trailing edge flaps are in the UP position.

SUBTASK 27-41-91-860-015

(7) Make sure that the PRI cutout switch is in the NORMAL position.

SUBTASK 27-41-91-860-016

(8) Make sure that the B/U cutout switch is in the NORMAL position.

SUBTASK 27-41-91-860-017

(9) Make sure that both flight director switches are OFF.

SUBTASK 27-41-91-860-018

(10) Make sure that the autopilot is not engaged.

SUBTASK 27-41-91-860-019

(11) Set the altitude on the Mode Control Panel (MCP) to a minimum of 10,000 ft (3048 m) above the current field elevation.

D. Back Up Stabilizer Trim Cutout Switch Test

SUBTASK 27-41-91-710-002

(1) Do the test of the B/U (back up) stabilizer trim cutout switch, S149, on the aft area of the control stand as follows:

(a) Push the CMD A or CMD B autopilot engage switch, on the P7 panel, to engage the autopilot.

(b) Make sure that the CMD A or CMD B autopilot engage switch light comes on.

NOTE: A flashing yellow box will momentarily appear around the CWS P and/or CWS R on the Primary Flight Display (PFD) flight mode annunciator.

(c) Move the control column forward approximately 2 in. (5 cm), then release the control column.

NOTE: If still present, the flashing yellow box around the CWS P and/or CWS R will disappear when the control column is released.

1) Do not apply forces to the control column or stabilizer trim wheel.

NOTE: This is to prevent an accidental autopilot disengagement and failure of the test.

(d) Make sure that the stabilizer trim wheel is rotating in the nose-down direction.

(e) While the stabilizer trim wheel is rotating, move the B/U cutout switch to the CUTOUT position.

(f) Make sure that the autopilot disengages and that the CMD A or CMD B autopilot engage switch light turns off.

(g) Make sure that the stabilizer trim wheel stops moving.

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(h) Push the captain's or first officer's autopilot disengage switch on the control wheel to reset the autopilot disengage warnings.

(i) Set the B/U cutout switch to the NORMAL position.

(j) Push the CMD A or CMD B autopilot engage switch, on the P7 panel, to engage the autopilot.

(k) Make sure that the CMD A or CMD B autopilot engage switch light comes on.

NOTE: A flashing yellow box will momentarily appear around the CWS P and/or CWS R on the PFD flight mode annunciator.

(l) Move the control column aft approximately 2 in. (5 cm), then release the control column.

NOTE: If still present, the flashing yellow box around the CWS P and/or CWS R will disappear when the control column is released.

1) Do not apply forces to the control column or stabilizer trim wheel.

NOTE: This is to prevent an accidental autopilot disengagement and failure of the test.

(m) Make sure that the stabilizer trim wheel is rotating in the nose up direction.

(n) While the stabilizer trim wheel is rotating, move the B/U cutout switch to the CUTOUT position.

(o) Make sure that the autopilot disengages and that the CMD A or CMD B autopilot engage switch light turns off.

(p) Make sure that the stabilizer trim wheel stops moving.

(q) Push the captain's or first officer's autopilot disengage switch on the control wheel to reset the autopilot disengage warnings.

(r) Set the B/U cutout switch to the NORMAL position.

E. Put the Airplane Back to its Usual Condition

SUBTASK 27-41-91-860-013

(1) Remove hydraulic power from Hydraulic Systems A and B (Hydraulic System A or B Power Removal, TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM LIMIT SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of a stabilizer trim limit switch

(2) An installation of a stabilizer trim limit switch.

B. The stabilizer trim limit switch is referred to as the "limit switch" in this procedure.

C. There are three limit switches (S144, S145, and S844) and four stabilizer takeoff warning switches (S132, S1184, S546 and S1183) on the brackets along the stabilizer jackscrew.

D. This procedure is applicable to all three limit switches.

TASK 27-41-94-000-801

2. Stabilizer Trim Limit Switch Removal

(Figure 401)

A. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

B. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

C. Prepare for the Removal

SUBTASK 27-41-94-860-001

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

SUBTASK 27-41-94-010-001

(2) To get access to the limit switch, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

SUBTASK 27-41-94-860-002

(3) Move the stabilizer until the cam is not in contact with the limit switch.

D. Limit Switch Removal

SUBTASK 27-41-94-020-001

(1) Remove the limit switch [1]:

(a) Disconnect the limit switch [1] wire from the wire connection.

(b) Remove the locknut [4] and washer [3] which attach the limit switch arm [5] to the limit switch [1].

(c) Remove the lockwasher [6] and retainer nut [7] which attach the limit switch [1] to the bracket assembly [2].

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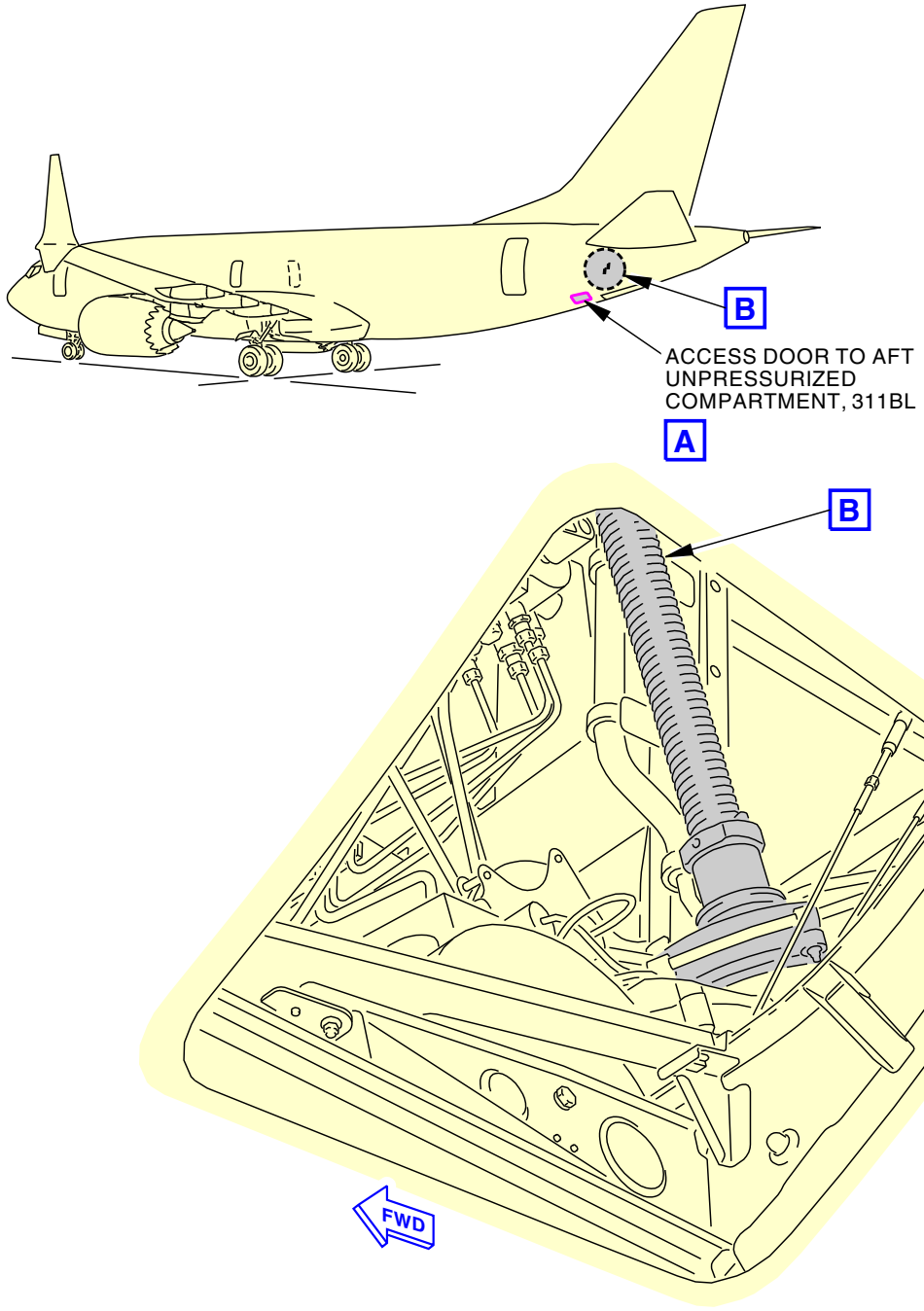
(d) Remove the limit switch [1] from the bracket assembly [2].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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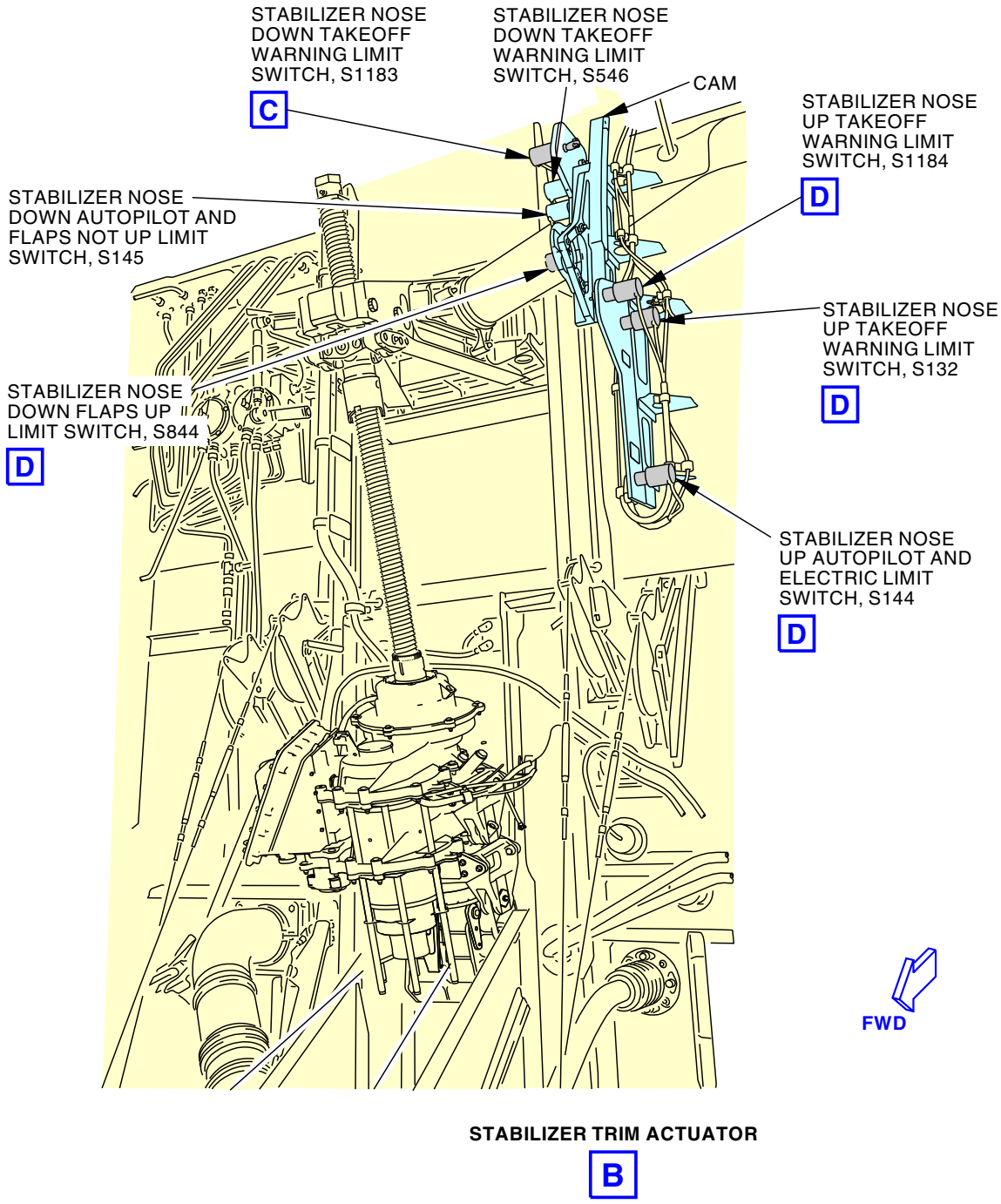
Stabilizer Trim Limit Switches Installation
Figure 401/27-41-94-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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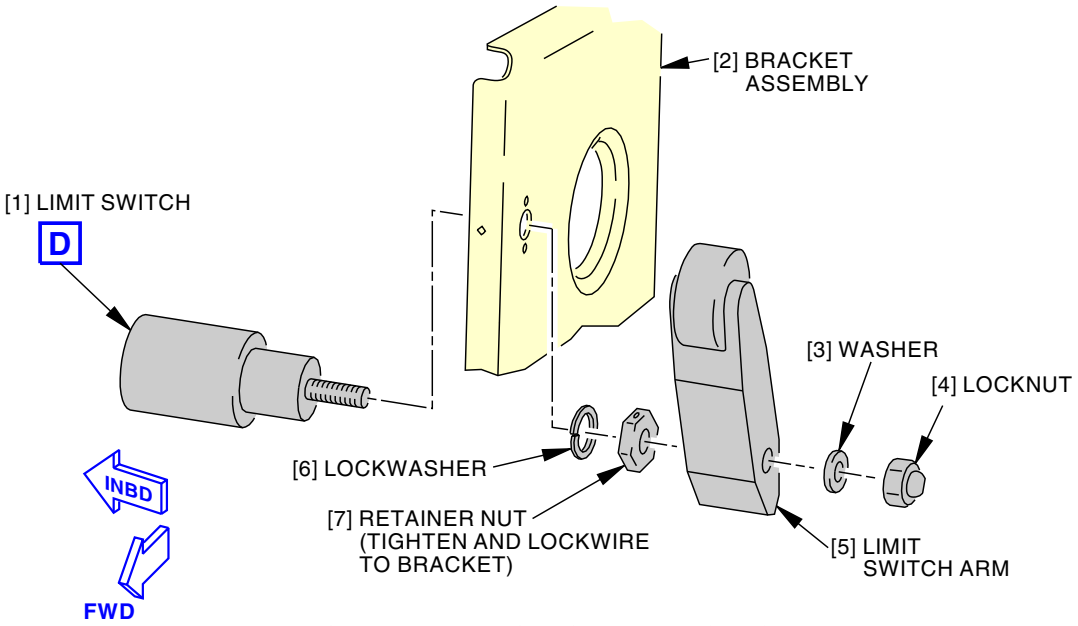
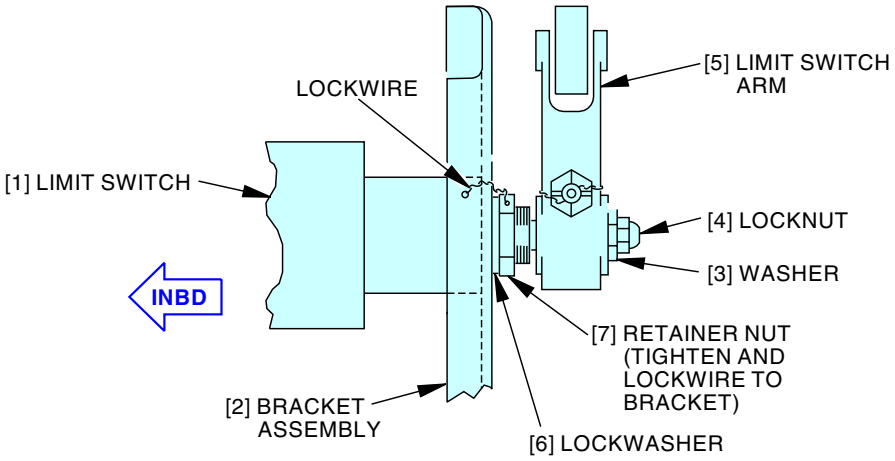
Stabilizer Trim Limit Switches Installation
Figure 401/27-41-94-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER AUTOPILOT AND ELECTRIC ACTUATOR LIMIT SWITCHES (EXAMPLE)

C



STABILIZER AUTOPILOT AND ELECTRIC ACTUATOR LIMIT SWITCHES (EXAMPLE)

D

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Stabilizer Trim Limit Switches Installation
Figure 401/27-41-94-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-94-400-801

3. Stabilizer Trim Limit Switch Installation

(Figure 401)

A. References

Reference	Title
27-41-94-700-801	Stabilizer Trim Limit Switches Test (P/B 501)
27-41-94-820-801	Stabilizer Trim Limit Switches Adjustment (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Limit switch	27-41-94-01-010	SIA ALL
		31-51-02-01-010	SIA ALL
		31-51-02-01-015	SIA ALL

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

D. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

E. Limit Switch Installation

SUBTASK 27-41-94-420-001

(1) Install the limit switch [1] as follows:

(a) Install the limit switch [1] through the bracket assembly [2].

(b) Install the retainer nut [7] and lockwasher [6] to attach the limit switch [1] to the bracket assembly [2].

(c) Tighten the retainer nut [7] to 15 in-lb (2 N·m) - 25 in-lb (3 N·m).

(d) Install lockwire on retainer nut [7].

(e) Turn the limit switch arm [5] to the approximate position for installation but make sure that it does not touch the cam.

(f) Put the limit switch arm [5] on the limit switch [1] to engage the serrations.

(g) Install the washer [3] and locknut [4].

1) Tighten the locknut [4] by hand.

NOTE: You will tighten the locknut [4] after you adjust the limit switch [1].

(h) Connect the limit switch [1] wire at the wire connection.

SUBTASK 27-41-94-860-003

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

SUBTASK 27-41-94-820-001

(3) Do this task: Stabilizer Trim Limit Switches Adjustment, TASK 27-41-94-820-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-94-710-001

(4) Do this task: Stabilizer Trim Limit Switches Test, TASK 27-41-94-700-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-94-410-001

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM LIMIT SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) An adjustment of the stabilizer trim limit switches

(2) A test of the stabilizer trim limit switches.

B. The stabilizer trim limit switch is referred to as the "limit switch" in this procedure.

C. There are three limit switches (S144, S145, and S844) and two stabilizer takeoff warning switches (S132, S1184, S546 and S1183) on the brackets along the stabilizer jackscrew.

D. This procedure is applicable for all three limit switches.

TASK 27-41-94-820-801

2. Stabilizer Trim Limit Switches Adjustment

(Figure 501)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1587	Wrench - Torque, 30 in-lbs (4 N-m) Part #: TE3FUA Supplier: 55719
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01505	Lockwire - Safety And Lock	NASM20995

D. Location Zones

Zone	Area
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-41-94-010-002

(1) To get access to the limit switches, do this step:

Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-94-860-004

(2) Use the bar, SPL-1677, to set the applicable "B" dimensions as follows:

NOTE: Make sure to protect wire bundles when using the trammel bar, SPL-1677. The sharp edges on the trammel bar, SPL-1677, can cause chafing or damage to the wires.

(a) With the stabilizer autopilot and electric actuator nose down (flaps not up), make sure the switch S145 "B" dimension at -0.45 units of trim is 45.48 ±0.05 in. (1155.2 ±1.3 mm).

(b) With the stabilizer electric actuator nose down (flaps up), make sure the switch S844 "B" dimension at 3.85 units of trim is 39.39 ±0.05 in. (1000.5 ±1.3 mm).

(c) With the stabilizer autopilot and electric actuator nose up, make sure the switch S144 "B" dimension at 14.00 units of trim is 24.80 ±0.05 in. (629.9 ±1.3 mm).

G. Stabilizer Trim Limit Switches Adjustment

SUBTASK 27-41-94-820-002

(1) Adjust the Type 2 style stabilizer trim limit switch, Figure 501 (Sheet 4):

(a) Remove the lockwire from the lockscrews [3].

(b) Loosen the locknut [4].

(c) Loosen the two lockscrews [3].

(d) Use a 3/32 inch (2.4 millimeters) HEX torque wrench (30 in-lbs), COM-1587 to turn the worm gear with no more than 6 in-lb (0.7 N·m) until the limit switch [1] starts to operate (when you hear a click).

(e) If you cannot turn the worm gear with 6 in-lb (0.7 N·m) of torque, then do these steps:

1) Move the stabilizer until the limit switch [1] does not touch the cam.

2) Adjust the limit switch arm [2].

CAUTION

DO NOT MOVE THE LIMIT SWITCH ARM MORE THAN ITS RANGE OF MOVEMENT. IT CAN CAUSE DAMAGE TO THE LIMIT SWITCH

3) Move the stabilizer by hand until the limit switch [1] clicks.

4) Make sure the "B" dimension is the same as follows:

a) With the stabilizer autopilot and electric actuator nose down (flaps not up), make sure the switch S145 "B" dimension at -0.45 units of trim is 45.48 ±0.05 in. (1155.2 ±1.3 mm).

b) With the stabilizer electric actuator nose down (flaps up), make sure the switch S844 "B" dimension at 3.85 units of trim is 39.39 ±0.05 in. (1000.5 ±1.3 mm).

c) With the stabilizer autopilot and electric actuator nose up, make sure the switch S144 "B" dimension at 14.00 units of trim is 24.80 ±0.05 in. (629.9 ±1.3 mm).

(f) Tighten the lockscrews [3].

(g) Tighten the locknut [4] to 20 in-lb (2 N·m) - 25 in-lb (3 N·m).

(h) Install the lockwire, G01505, on the lockscrews [3], Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 27-41-94-820-003

(2) Adjust the Type 1 style stabilizer trim limit switch, Figure 501 (Sheet 5):

(a) Remove the lockwire from the lockscrew [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Loosen the locknut [4].

(c) Loosen the lockscrew [3].

(d) Using a slot-head screwdriver, turn the lockscrew [3] worm gear until the switch is in the desired position.

(e) If you can not turn the worm gear with 6 in-lb (0.7 N·m) of torque, then do these steps:

1) Move the stabilizer until the limit switch [1] does not touch the cam.

2) Adjust the limit switch arm [2].

3) Move the stabilizer by hand until the limit switch [1] clicks.

4) Make sure the "B" dimension is the same as follows:

a) With the stabilizer autopilot and electric actuator nose down (flaps not up), make sure the switch S145 "B" dimension at -0.45 units of trim is 45.48 ±0.05 in. (1155.2 ±1.3 mm).

b) With the stabilizer electric actuator nose down (flaps up), make sure the switch S844 "B" dimension at 3.85 units of trim is 39.39 ±0.05 in. (1000.5 ±1.3 mm).

c) With the stabilizer autopilot and electric actuator nose up, make sure the switch S144 "B" dimension at 14.00 units of trim is 24.80 ±0.05 in. (629.9 ±1.3 mm).

(f) Tighten the lockscrew [3].

(g) Tighten the locknut [4] to 20 in-lb (2 N·m) - 25 in-lb (3 N·m).

(h) Install the lockwire, G01505, on the lockscrews [3], Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 27-41-94-820-004

(3) Make sure that the limit switch arm [2] overtravel is sufficient:

(a) With the stabilizer leading edge in the full down position (airplane nose up), make sure that the switch S144 can be rotated away from the cam surface by a minimum of 0.05 in. (1.27 mm) with finger pressure only.

(b) With the stabilizer leading edge in the full up position (airplane nose down), make sure that the switches S145 and S844 can be rotated away from the cam surface by a minimum of 0.05 in. (1.27 mm) with finger pressure only.

SUBTASK 27-41-94-710-002

(4) Do this task: Stabilizer Trim Limit Switches Test, TASK 27-41-94-700-801.

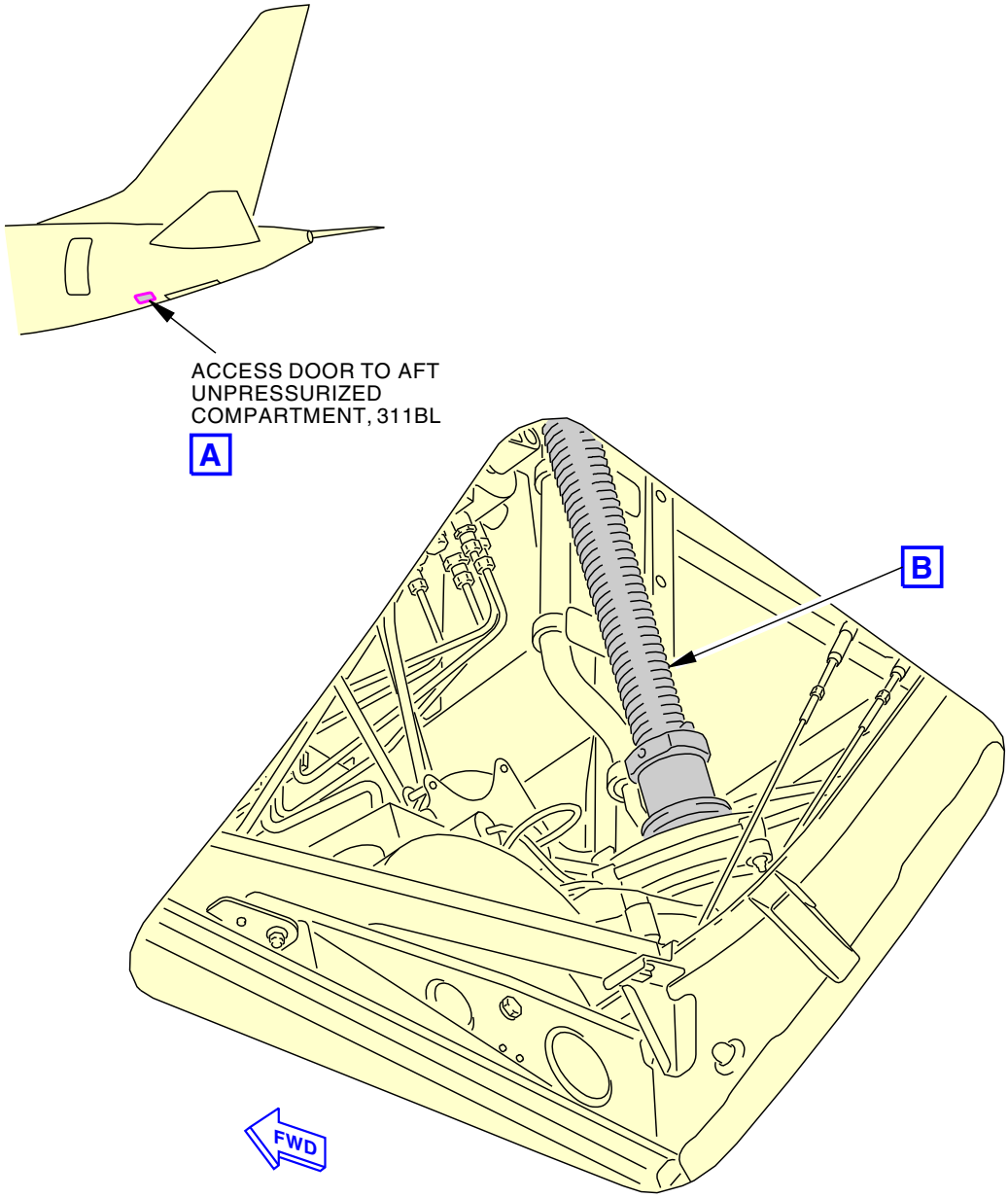
SUBTASK 27-41-94-410-002

(5) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



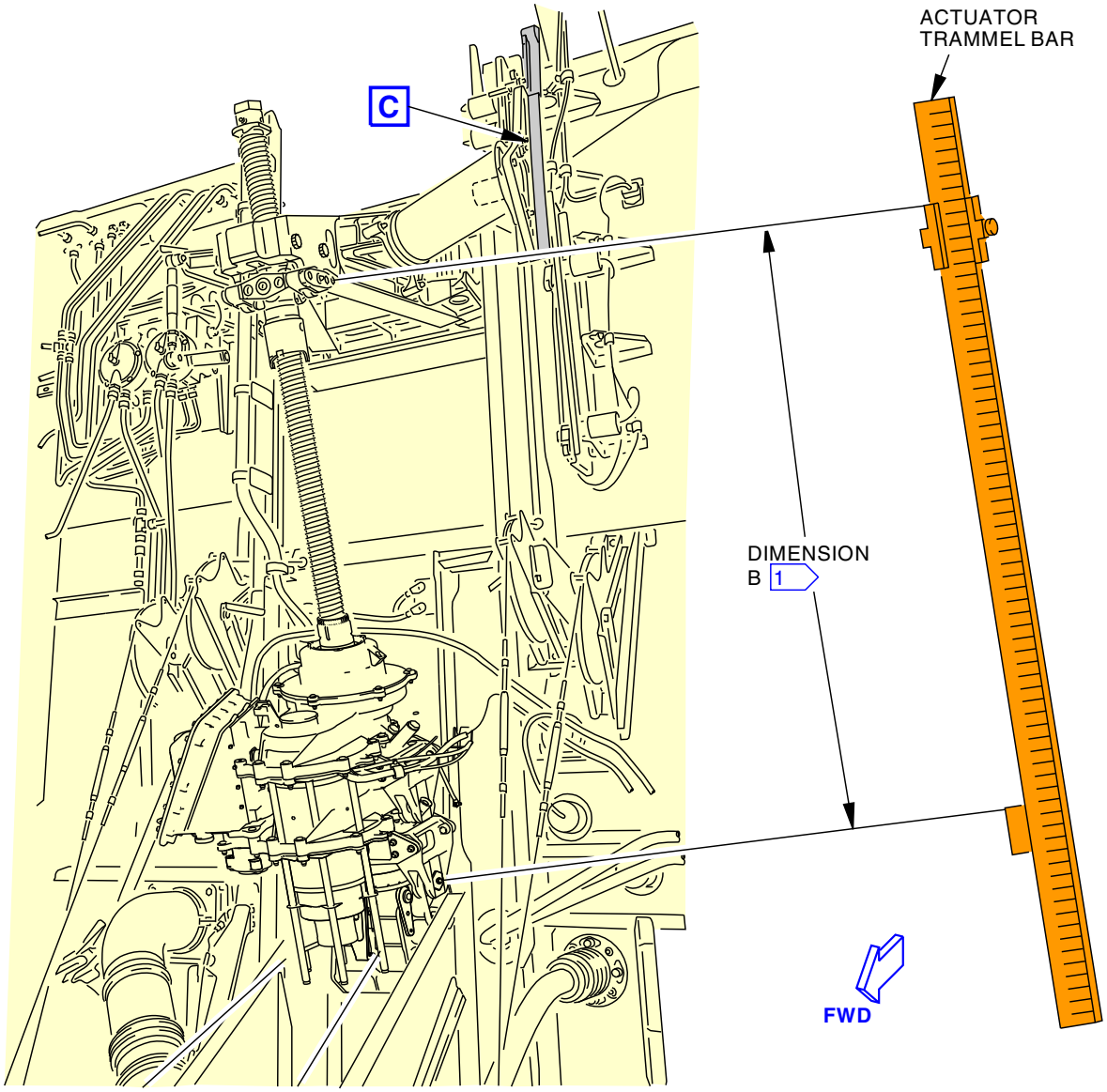
**VIEW THROUGH THE ACCESS DOOR TO
AFT UNPRESSURIZED COMPARTMENT, 311BL**

A

2412713 S00061531197_V1

**Stabilizer Trim Limit Switches Adjustment
Figure 501/27-41-94-990-802 (Sheet 1 of 5)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER TRIM ACTUATOR

B

NOTE:

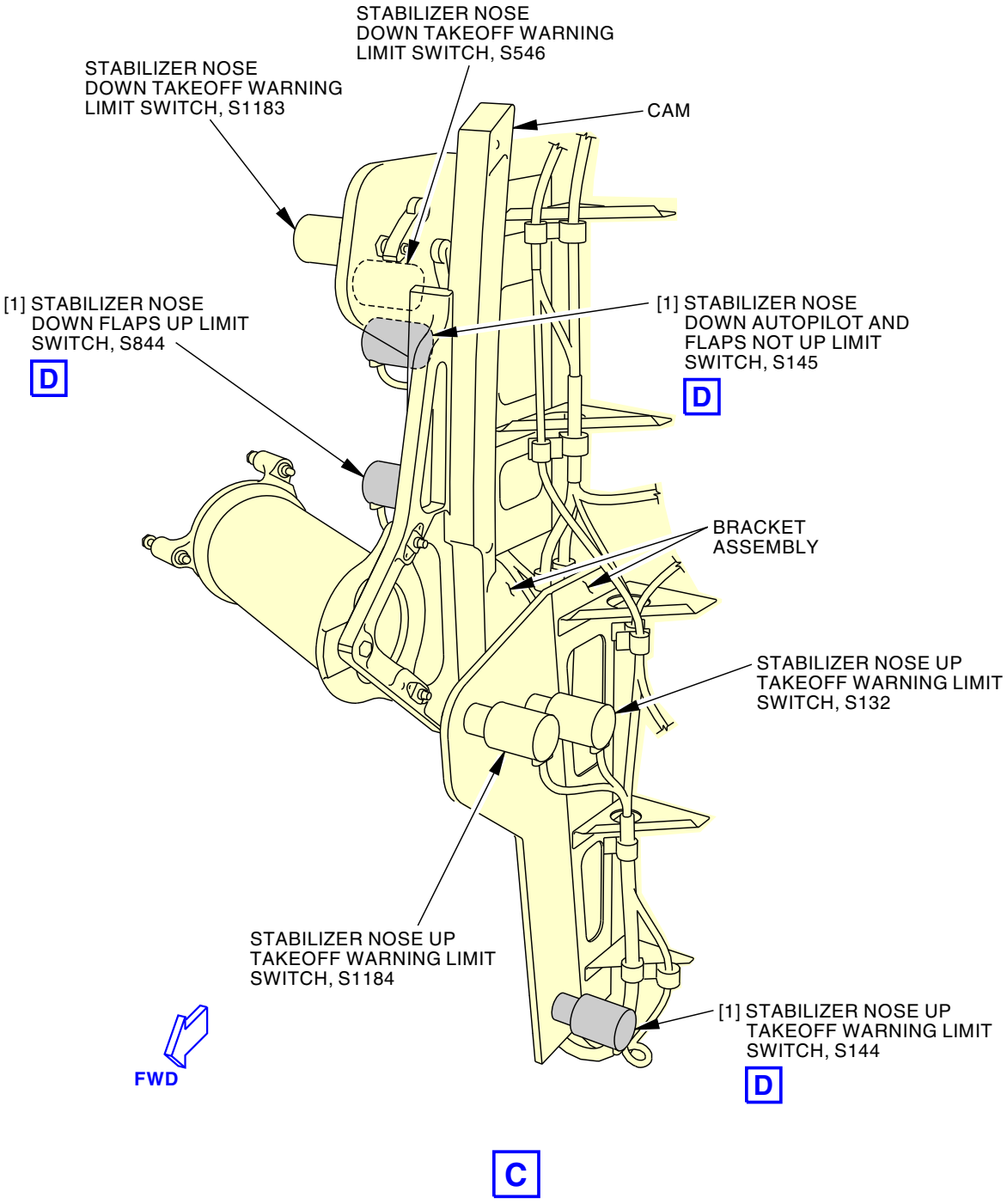
THE STABILIZER TRIM JACKSCREW IS SHOWN WITH THE STABILIZER LEADING EDGE AT ZERO DEGREES.

1 THE DIMENSION B IS MEASURED BETWEEN THE CENTER OF THE UPPER AND LOWER GIMBAL PINS, (CENTER OF GREASE FITTINGS).

2412714 S00061531198_V2

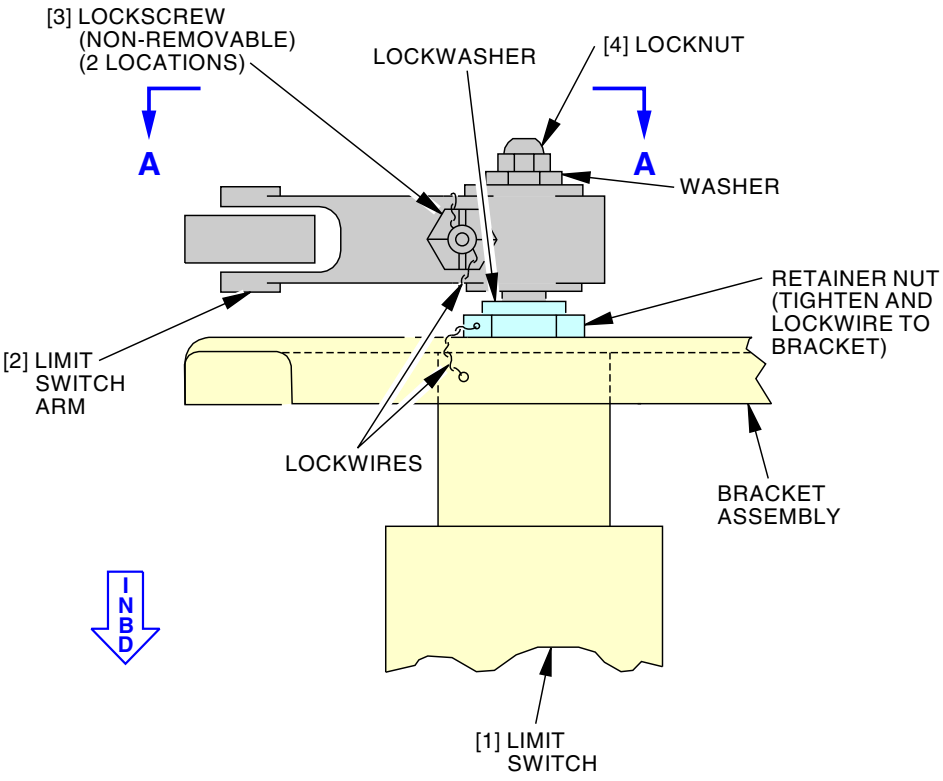
Stabilizer Trim Limit Switches Adjustment
Figure 501/27-41-94-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



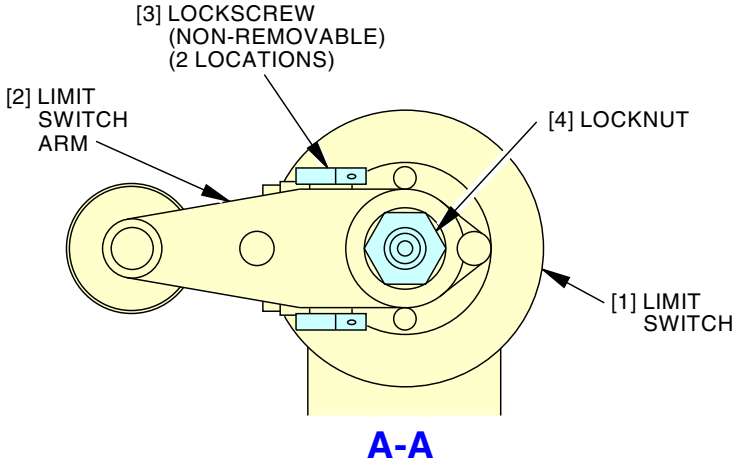
Stabilizer Trim Limit Switches Adjustment
Figure 501/27-41-94-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER AUTOPILOT AND ELECTRIC ACTUATOR LIMIT SWITCH (TYPE 2)

D

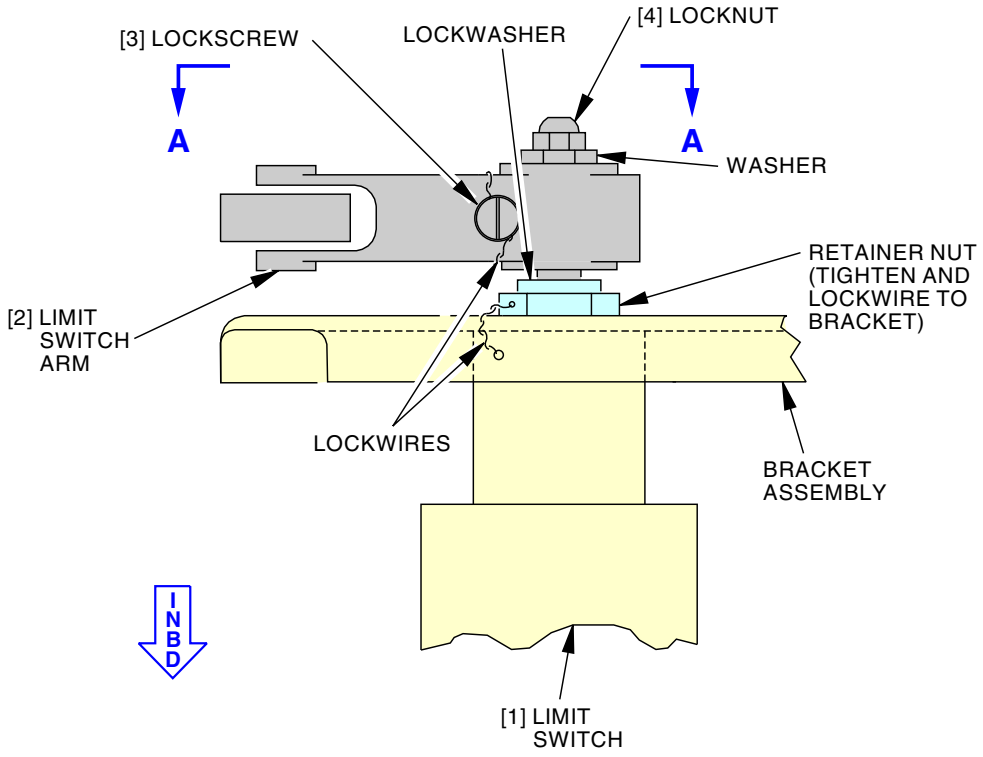


A-A

2412716 S00061531200_V2

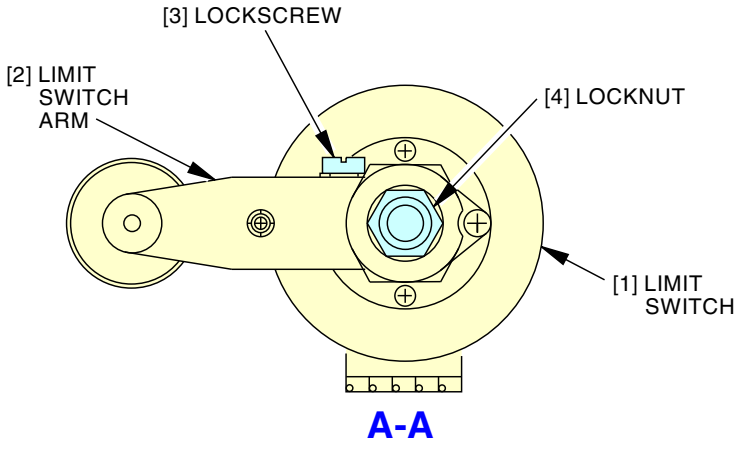
Stabilizer Trim Limit Switches Adjustment
Figure 501/27-41-94-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



STABILIZER AUTOPILOT AND ELECTRIC ACTUATOR LIMIT SWITCH (TYPE 1)

D



2412717 S00061531201_V2

Stabilizer Trim Limit Switches Adjustment
Figure 501/27-41-94-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-94-700-801

3. Stabilizer Trim Limit Switches Test

A. General

(1) The trim system can move the stabilizer to a position more than the limits that were set during the adjustment of the limit switches because of the coasting. This occurs when power has been removed from the stab trim actuator but the ballscrew continues to move as it comes to a stop. This condition is normal. This makes the "B" dimension tolerances for the test are larger than the tolerance for the adjustment.

(2) This test is applicable only for limit switches S145, S844, and S144.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1677	Assembly - Trammel Bar, Stabilizer Trim Actuator Part #: F80055-36 Supplier: 81205 Opt Part #: F80055-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left
311	Area Aft of Pressure Bulkhead - Left
312	Area Aft of Pressure Bulkhead - Right

E. Access Panels

Number	Name/Location
311BL	Stabilizer Trim Access Door

F. Prepare for the Test

SUBTASK 27-41-94-860-006

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-94-860-007

(2) Make sure that the STAB TRIM PRI switch, S272, on the aft area of the control stand is in the NORMAL position.

SUBTASK 27-41-94-860-008

(3) Make sure that the STAB TRIM override switch on the P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

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SUBTASK 27-41-94-860-009

(4) Make sure that the flaps are in the full up position.

SUBTASK 27-41-94-010-003

(5) Open this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

G. Stabilizer Trim Limit Switches Test

SUBTASK 27-41-94-710-003

(1) Do the test of the limit switch S844:

(a) Set the STAB TRIM PRI switch, S272, in the CUTOUT position.

(b) Use the stabilizer trim wheel to move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position.

(c) Set the STAB TRIM PRI switch in the NORMAL position.

(d) Turn the captain's stabilizer trim wheel clockwise approximately 3 turns.

(e) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

(f) Make sure that the stabilizer leading edge does not move.

(g) Release the stabilizer trim switches.

(h) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

(i) Make sure that the stabilizer leading edge moves down (APL NOSE UP).

(j) Release the stabilizer trim switches.

(k) Move the stabilizer to approximately 3.85 units of trim

(l) Move the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the stabilizer stops automatically.

CAUTION MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(m) Use the bar, SPL-1677, to measure the "B" dimension.

(n) Make sure that the "B" dimension is 39.39 ±0.10 in. (1000.5 ±2.5 mm).

SUBTASK 27-41-94-710-004

(2) Do the test of the limit switch, S145, as follows:

(a) If you will use the standby hydraulic pump motor to move the flaps, then do these steps:

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

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(WARNING PRECEDES)

CAUTION DO NOT OPERATE THE TRAILING EDGE FLAPS WITH ELECTRICAL POWER MORE THAN ONE FULL EXTEND/RETRACT CYCLE IN 25 MINUTES. YOU CAN CAUSE DAMAGE TO THE FLAP ELECTRIC MOTORS IF YOU OPERATE THEM TOO FREQUENTLY.

1) Put the ALTERNATE FLAP arm switch in the ARM position.

   NOTE: The standby hydraulic pump motor will operate when the ALTERNATE FLAP arm switch is in the ARM position.

2) Move the alternate flap drive control switch to extend the flaps to the 5-unit position.

(b) If you use the system B hydraulic power to move the flap, then do these steps:

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

1) Pressurize hydraulic system B (TASK 29-11-00-860-801).

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

2) Move the flap control lever to extend the flaps to the 5-unit position.

(c) Set the STAB TRIM PRI switch in the CUTOUT position.

(d) Use the stabilizer trim wheel to move the stabilizer to the maximum leading edge up (APL NOSE DOWN) position.

(e) Set the STAB TRIM PRI switch in the NORMAL position.

(f) Turn the captain's stabilizer trim wheel clockwise approximately 2 +/- 0.25 turns.

(g) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

(h) Make sure that the stabilizer leading edge does not move.

(i) Release the stabilizer trim switches.

(j) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

(k) Make sure that stabilizer leading edge moves down (APL NOSE UP).

(l) Release the stabilizer trim switches.

(m) Move the stabilizer to approximately 1 units of trim.

(n) Move the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position until the stabilizer stops automatically.

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CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(o) Use the bar, SPL-1677, to measure the "B" dimension.

(p) Make sure that the "B" dimension is 45.48 ±0.10 in. (1155.2 ±2.5 mm).

(q) Move the flap control lever or the alternate flap drive control switch to retract the flaps.

(r) Remove the pressure from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-41-94-710-005

(3) Do the test of the limit switch S144 as follows:

(a) Move the stabilizer to the maximum leading edge down (APL NOSE UP) position.

(b) Turn the captain's stabilizer trim wheel counterclockwise approximately 3 turns.

(c) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE UP position.

(d) Make sure that the stabilizer leading edge does not move.

(e) Release the stabilizer trim switches.

(f) Move and hold the stabilizer trim switches on the captain's control wheel to the NOSE DOWN position.

(g) Make sure that stabilizer leading edge moves up (APL NOSE DOWN).

(h) Release the stabilizer trim switches.

(i) Move the stabilizer to approximately 12 units of trim.

(j) Move the stabilizer trim switches on the captain's control wheel to the NOSE UP position until the stabilizer stops automatically.

CAUTION

MAKE SURE TO GIVE PROTECTION TO THE WIRE BUNDLES WHEN YOU USE THE TRAMMEL BAR, SPL-1677. THE TRAMMEL BAR HAS SHARP EDGES THAT CAN CAUSE DAMAGE TO THE WIRE BUNDLE INSULATION.

(k) Use the bar, SPL-1677, to measure the "B" dimension.

(l) Make sure that the "B" dimension is 24.80 ±0.10 in. (629.9 ±2.5 mm).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-41-94-410-003

(1) Close this access panel:

Number	Name/Location
311BL	Stabilizer Trim Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM CONTROL SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Stabilizer trim control switch removal

(2) Stabilizer trim control switch installation.

B. The stabilizer trim control switch is referred to as the "switch assembly" in this procedure.

C. The switch assembly has an electrical cable which connects to the terminal block in the control wheel. If a switch becomes defective, the switch and electrical cable are replaced as an assembly.

D. This procedure is applicable for the captain's and first officer's switch assembly.

TASK 27-41-97-000-801

2. Stabilizer Trim Control Switch Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-41-97-860-001

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

C. Switch Assembly Removal

SUBTASK 27-41-97-020-001

(1) Remove the medallion [2] from the control wheel.

(a) Remove the screws [3].

(b) Remove the pad [4].

SUBTASK 27-41-97-020-002

(2) Remove the screws [6] from the terminal block cover [5].

(a) Remove the terminal block cover [5].

SUBTASK 27-41-97-020-003

(3) Remove the stabilizer trim control switch [1]:

(a) Remove the screws [11], washers [10], and washers [12] to disconnect the switch wires from the terminal block [9].

(b) Remove the terminals from the switch wires to help the removal.

(c) Attach a threading wire to the switch electrical cable.

NOTE: This threading wire that is attached to the electrical cable is to help with the installation of the switch assembly.

(d) Remove the screws [7] which attach the stabilizer trim control switch [1] to the control wheel handle.

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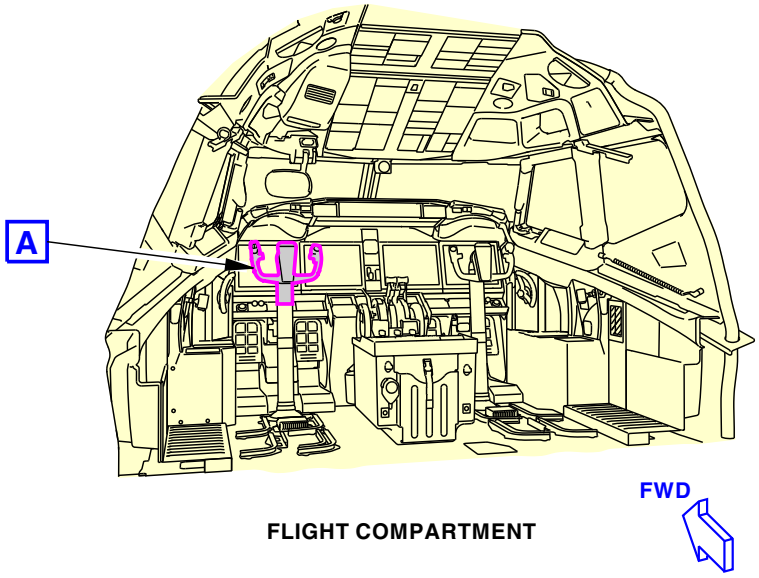
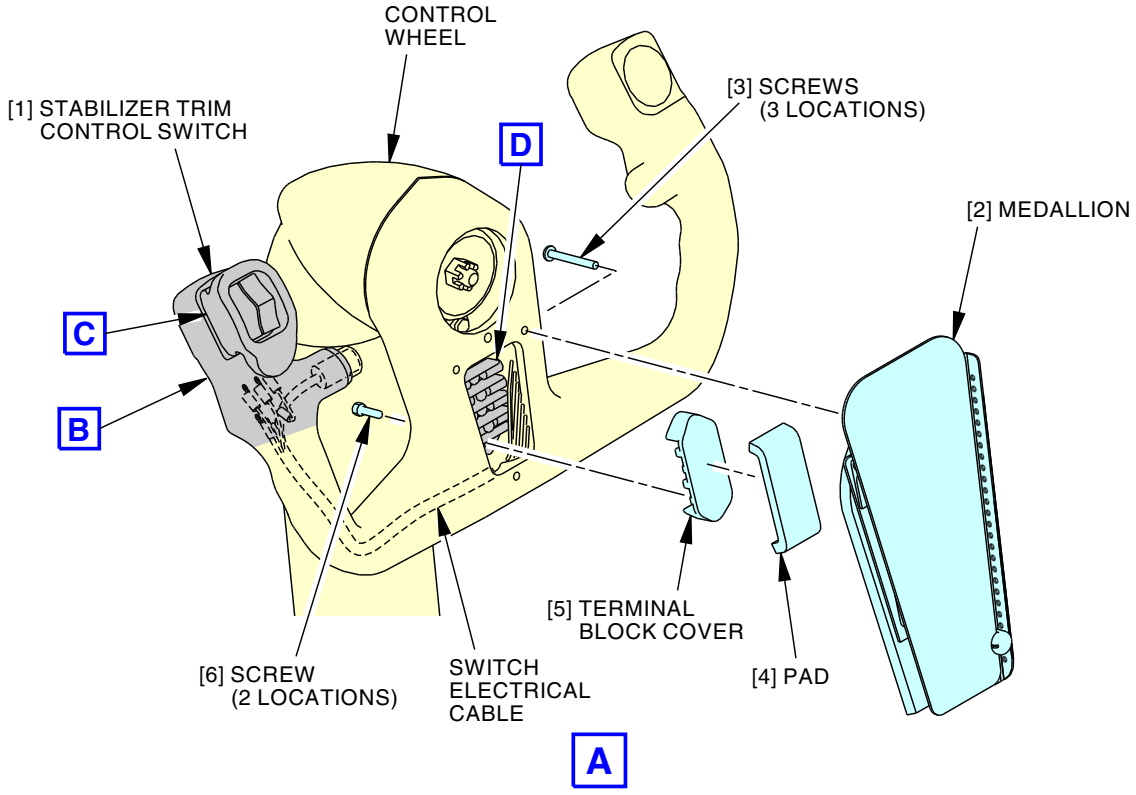
(e) Slowly pull the stabilizer trim control switch [1] from the horn of the control wheel until the switch wires show.

NOTE: Pull until approximately 3 in. (76 mm) of the threaded wire comes out of the control wheel handle. Do not remove the threaded wire from the control wheel. It is necessary to use this threaded wire for installation.

——— END OF TASK ———

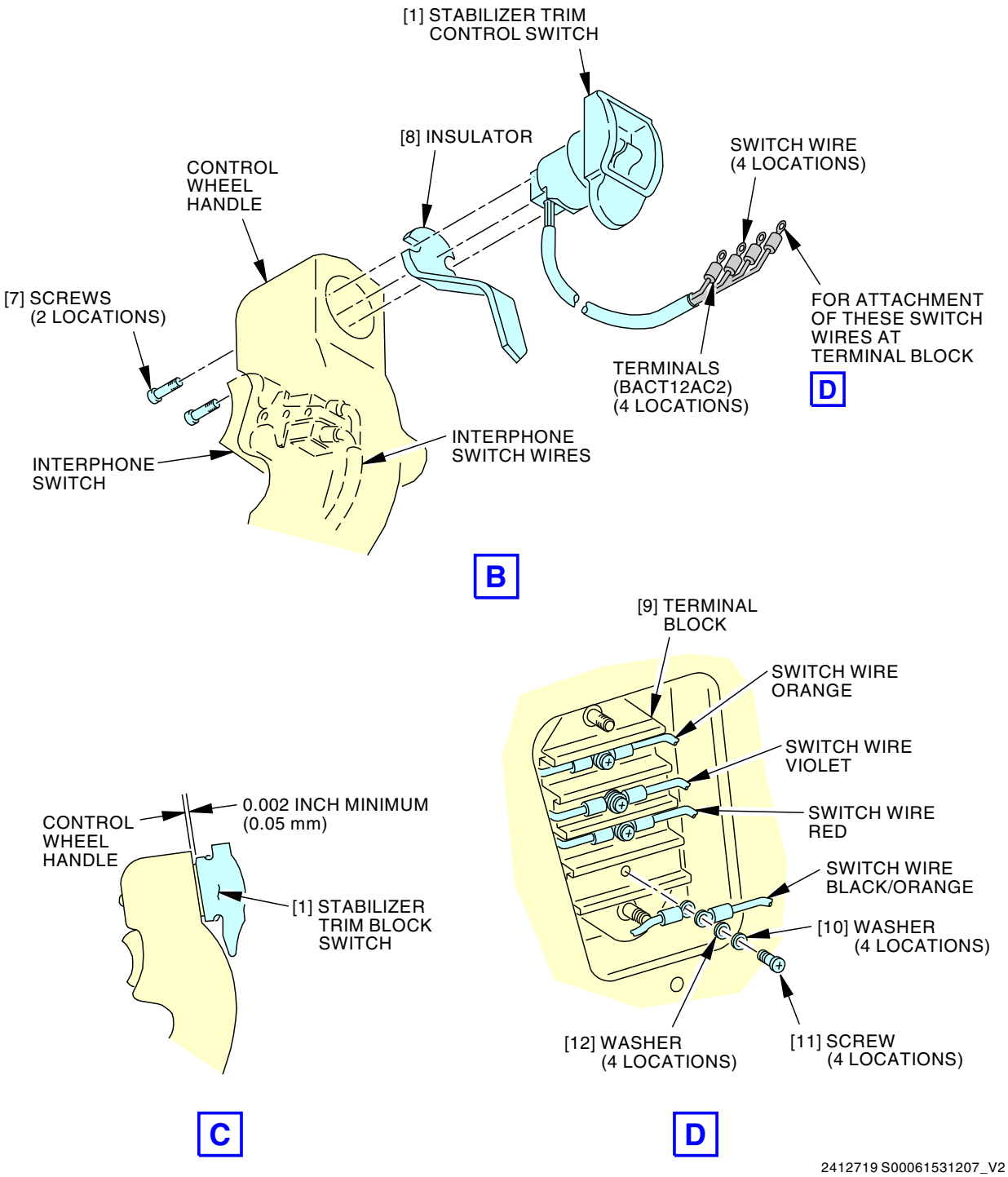
ECCN 9E991 BOEING PROPRIETARY - See title page for details





Stabilizer Trim Control Switch Installation
Figure 401/27-41-97-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Stabilizer Trim Control Switch Installation
Figure 401/27-41-97-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-41-97-400-801

3. Stabilizer Trim Control Switch Installation

(Figure 401)

A. References

Reference	Title
27-41-97-700-801	Stabilizer Trim Control Switch Test (P/B 501)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Switch Assembly Installation

SUBTASK 27-41-97-420-001

(1) Install the stabilizer trim control switch [1]:

NOTE: A threaded wire is attached to the switch electrical cable.

(a) Slowly pull the switch electrical cable through the control wheel handle with the other end of the threaded wire.

(b) Install the insulator [8] between the stabilizer trim control switch [1] and the interphone switch wires.

(c) Put the stabilizer trim control switch [1] in its position.

(d) Install the screws [7] to hold the stabilizer trim control switch [1] to the control wheel.

1) Tighten the screw [7] to 4.0 ±0.5 in-lb (0.45 ±0.06 N·m).

2) Make sure there is 0.002 in. (0.05 mm) clearance between the control wheel handle and stabilizer trim control switch [1].

(e) Remove the threaded wire from the switch electrical cable.

(f) Install the terminals on the switch wires.

(g) Install the screws [11], washers [10], and washers [12] to connect the terminals of the switch wire to the terminal block [9].

1) Make sure that the terminals are installed correctly according to the color code identification (Figure 401).

SUBTASK 27-41-97-420-002

(2) Install the screws [6] to attach the terminal block cover [5] to the control wheel.

SUBTASK 27-41-97-420-003

(3) Install the medallion [2] on the control wheel.

(a) Install the pad [4].

(b) Install the screws [3].

SUBTASK 27-41-97-860-002

(4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-41-97-710-001

(5) Do this task: Stabilizer Trim Control Switch Test, TASK 27-41-97-700-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STABILIZER TRIM CONTROL SWITCH - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) Stabilizer Trim Control Switch Test - Use this test to make sure that the stabilizer trim control switches operate correctly.

B. The stabilizer trim control switches are installed on the control wheels. Each control wheel has two stabilizer trim control switches.

C. This procedure is applicable for the stabilizer trim control switches on the captain's and first officer's control wheels.

TASK 27-41-97-700-801

2. Stabilizer Trim Control Switch Test

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Test

SUBTASK 27-41-97-860-004

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-41-97-860-005

(2) Make sure that the STAB TRIM PRI switch, S272 on the control stand is in the NORMAL position.

SUBTASK 27-41-97-860-006

(3) Make sure that the STAB TRIM override switch on P8 panel is in the NORM position.

NOTE: The override switch is on the same control panel for the FLT DK DOOR.

C. Stabilizer Trim Control Switch Test

SUBTASK 27-41-97-710-002

(1) Do a test of the stabilizer trim control switches on the applicable control wheel:

(a) Push and hold the two stabilizer trim control switches on the applicable control wheel to the NOSE DOWN position.

(b) Make sure that the stabilizer leading edge moves up.

(c) Make sure that the trim wheels turn in the nose down position.

(d) Make sure that the STAB TRIM indicator for the applicable control wheel moves in the NOSE DOWN position.

(e) Release the two stabilizer trim control switches.

(f) Push and hold the two stabilizer trim control switches on the applicable control wheel to the NOSE UP position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Make sure that the stabilizer leading edge moves down.

(h) Make sure that the trim wheels turn in the nose up position.

(i) Make sure that the STAB TRIM indicator for the applicable control wheel moves in the NOSE UP position.

(j) Release the two stabilizer trim control switches.

(k) Using either the captain's or first officer's trim control switch, move the stabilizer to 4 units of trim as indicated by the stabilizer position indicator.

(l) Push and hold the left stabilizer trim control switch on the applicable control wheel to the NOSE UP position.

(m) Make sure that the stabilizer leading edge does not move.

(n) Release the left stabilizer trim control switch.

(o) Push and hold the left stabilizer trim control switch on the applicable control wheel to the NOSE DOWN position.

(p) Make sure that the stabilizer leading edge does not move.

(q) Release the left stabilizer trim control switch.

(r) Push and hold the right stabilizer trim control switch on the applicable control wheel to the NOSE UP position.

(s) Make sure that the stabilizer leading edge does not move.

(t) Release the right stabilizer trim control switch.

(u) Push and hold the right stabilizer trim control switch on the applicable control wheel to the NOSE DOWN position.

(v) Make sure that the stabilizer leading edge does not move.

(w) Release the right stabilizer trim control switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks for the trailing edge flap system:

(1) A task to deactivate the trailing edge flap system

(2) A task to reactivate the trailing edge flap system

(3) A task to operate the trailing edge flaps with primary control

(4) A task to operate the trailing edge flaps with alternate control

(5) A task to manually operate the trailing edge flaps without airplane power

(6) A task to extend the trailing edge flaps

(7) A task to retract the trailing edge flaps

(8) A task to operate the trailing edge flaps with the leading edge flaps and slats retracted and disabled

(9) A task to install the flap control handle lockout assembly

(10) A task to remove the flap control handle lockout assembly.

TASK 27-51-00-040-801

2. Trailing Edge Flap System Deactivation

(Figure 201, Figure 202)

A. General

(1) Use this task to deactivate the trailing edge flap system.

NOTE: This task will also deactivate the leading edge system.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1676	Assembly - Lock, Flight Controls (used with valves p/n 10-60710-2 and 10-60710-6) Part #: F80049-66 Supplier: 81205 Opt Part #: F80049-17 Supplier: 81205 Opt Part #: F80049-31 Supplier: 81205 Opt Part #: F80049-46 Supplier: 81205

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Flap Deactivation

SUBTASK 27-51-00-210-001

(1) Make sure that the ALTERNATE FLAPS ARM switch on the P5 overhead panel is in the OFF position (Figure 201).

SUBTASK 27-51-00-860-001

(2) Open these circuit breakers and install safety locks:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-00-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-040-001

(4) Deactivate the trailing edge flap bypass valve (Figure 202):

(a) Disconnect the electrical connector from the bypass valve.

NOTE: If desired, inspect the connector for corrosion now. If there is corrosion, refer to the SWPM 20-60-03 to correct the problem. This step is also done in the installation task.

(b) Move the manual override lever on the bypass valve to position 2.

(c) Install the lock, SPL-1676 on the bypass valve.

1) Make sure that the detent pin is installed.

SUBTASK 27-51-00-210-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Trailing Edge Flap System - Tryout

NOTE: This tryout is to make sure that the trailing edge flap system is in zero energy state.

(a) Make sure that the trailing edge flaps do not move using primary flight controls:

1) Move the flap control lever to a minimum of one lever detent position away from the current position.

2) Make sure that the trailing edge flaps do not move.

3) Return the flap control lever to the detent position corresponding to the current flap position.

(b) Make sure that the trailing edge flaps do not move using the alternate flight controls:

1) Set the alternate flaps arm switch to the ARM position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If flaps are in retracted position, set the alternate flaps control switch to DOWN position.

b) If flaps are in the extended position, set the alternate flaps control switch to UP position.

2) Make sure that the trailing edge flaps do not move.

3) Return the alternate flaps control switch to OFF, and the alternate flaps arm switch to OFF.

SUBTASK 27-51-00-420-006

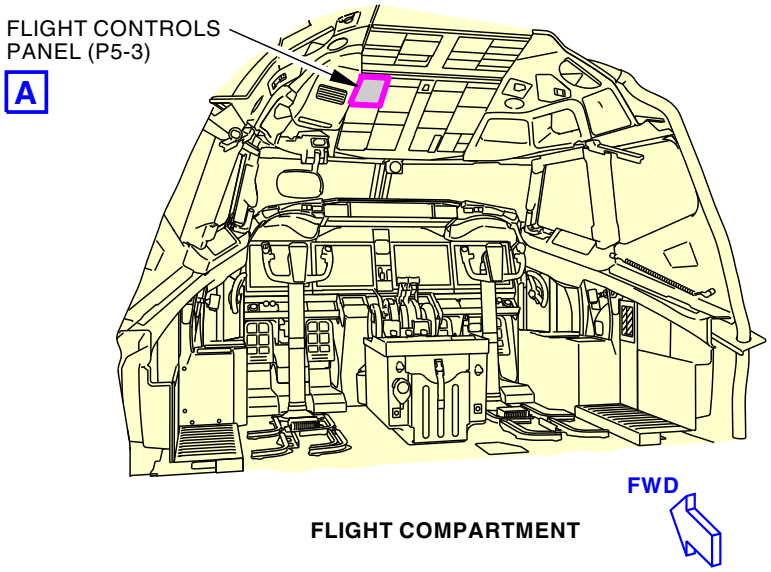
(6) If the flaps are in the retracted position, do this task to install the flap control handle lockout assembly: Flap Control Handle Lockout Assembly Installation, TASK 27-51-00-400-801.

SUBTASK 27-51-00-480-001

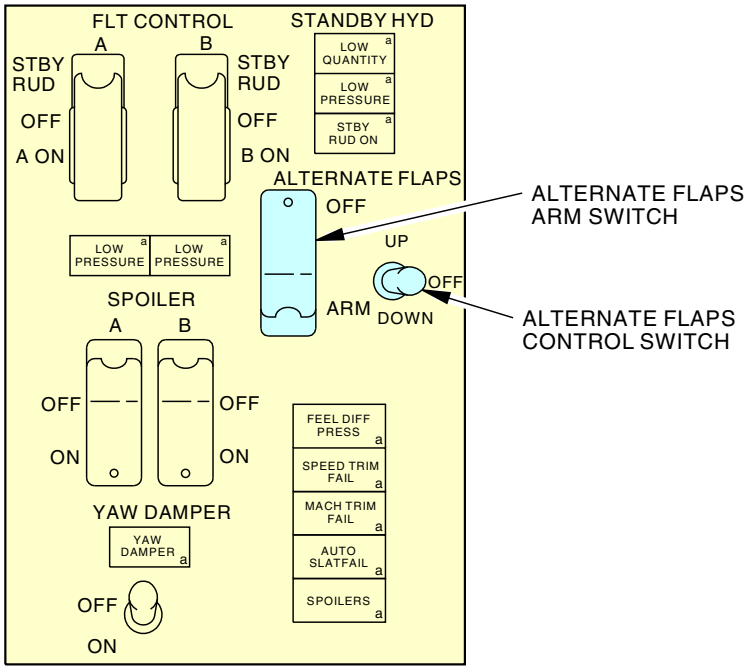
(7) Put DO-NOT-OPERATE tags on the ALTERNATE FLAPS switches.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



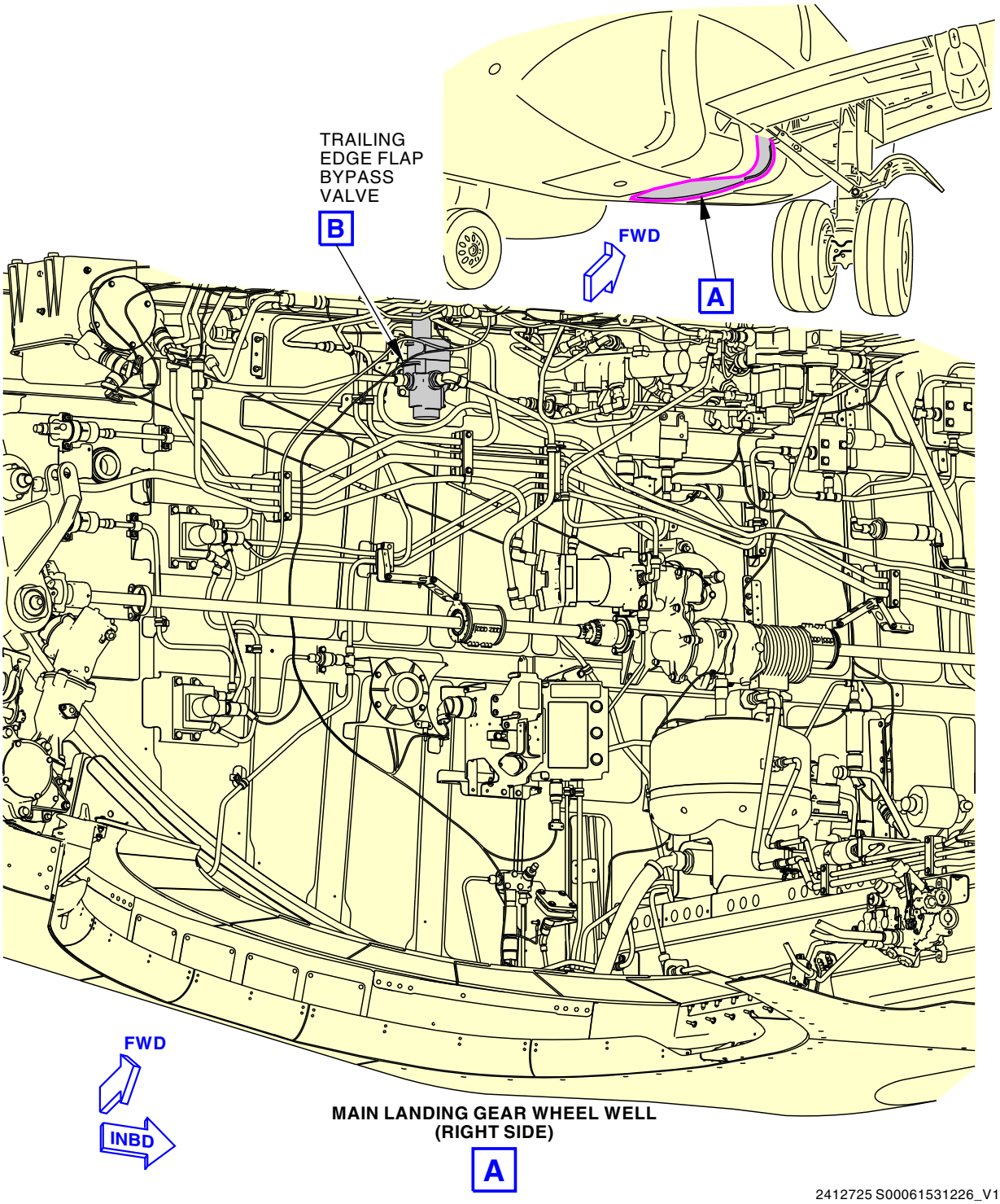
FLIGHT CONTROLS PANEL (P5-3)

A

2412724 S00061531225_V1

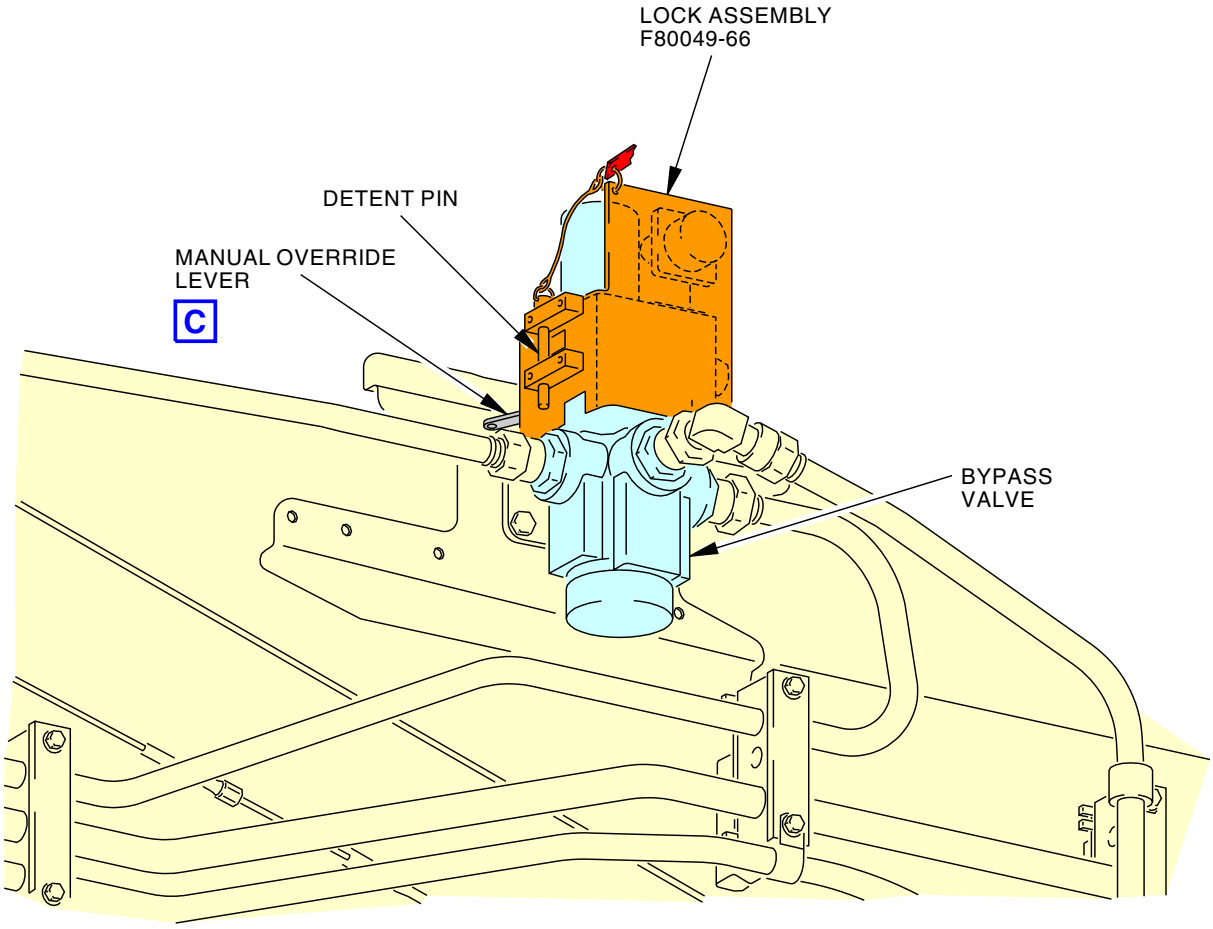
Trailing Edge Flap Controls
Figure 201/27-51-00-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Bypass Valve
Figure 202/27-51-00-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



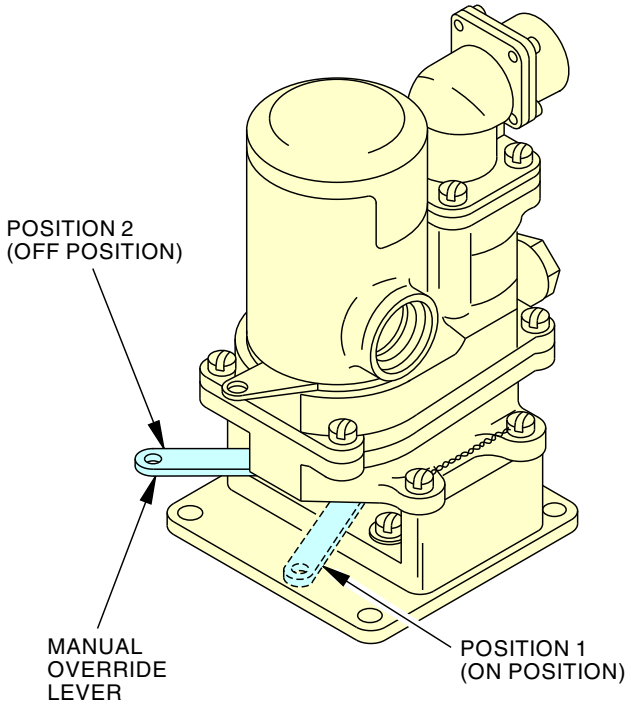
TRAILING EDGE FLAP BYPASS VALVE

B

2412726 S00061531227_V3

Trailing Edge Flap Bypass Valve
Figure 202/27-51-00-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

C

2849983 S0000666270_V1

**Trailing Edge Flap Bypass Valve
Figure 202/27-51-00-990-802 (Sheet 3 of 3)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-440-801

3. Trailing Edge Flap System Reactivation

(Figure 201, Figure 202)

A. General

(1) Use this procedure to reactivate the trailing edge flap system.

NOTE: This task will also reactivate the leading edge system.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1676	Assembly - Lock, Flight Controls (used with valves p/n 10-60710-2 and 10-60710-6) Part #: F80049-66 Supplier: 81205 Opt Part #: F80049-17 Supplier: 81205 Opt Part #: F80049-31 Supplier: 81205 Opt Part #: F80049-46 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Procedure

SUBTASK 27-51-00-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-440-001

(2) Reactivate the trailing edge flap bypass valve (Figure 202):

(a) Remove the lock, SPL-1676 from the bypass valve.

(b) Move the manual override lever on the bypass valve to position 1.

(c) Before you connect the electrical connector, examine the connector for corrosion.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS THAT USE DEICING FLUID WHICH CONTAINS POTASSIUM FORMATE. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(d) If there was corrosion, refer to SWPM 20-60-03 to correct the problem.

(e) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(f) Connect the electrical connector to the bypass valve.

SUBTASK 27-51-00-860-002

(3) Remove the safety locks and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-00-080-001

(4) Remove the DO-NOT-OPERATE tags from the ALTERNATE FLAPS switches (Figure 201).

SUBTASK 27-51-00-020-001

(5) Do this task to remove the lockout assembly if it is installed: Flap Control Handle Lockout Assembly Removal, TASK 27-51-00-000-801.

END OF TASK

TASK 27-51-00-860-801

4. Trailing Edge Flap System Operation With Primary Control

(Figure 203)

A. General

(1) The primary control system uses the hydraulic system B to move the flaps.

B. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Trailing Edge Flap System Operation With Primary Control Procedure

SUBTASK 27-51-00-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-860-004

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-00-860-005

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Move the flap control lever to the applicable detent position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-006

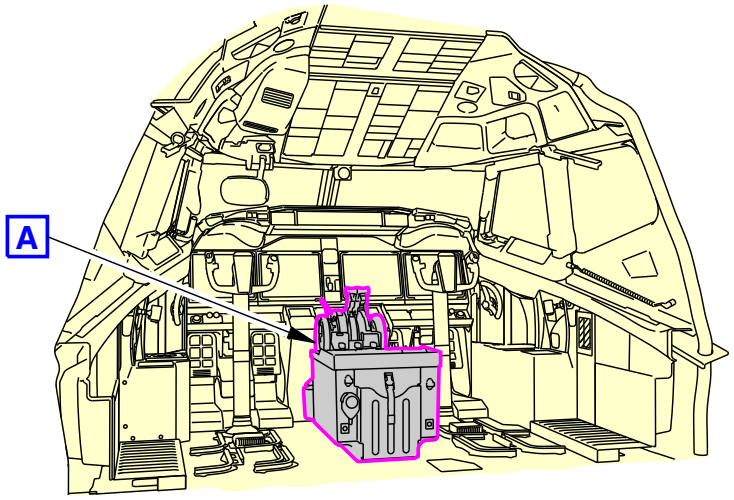
(1) Move the flap control lever to the UP position to retract the flaps and slats.

SUBTASK 27-51-00-860-007

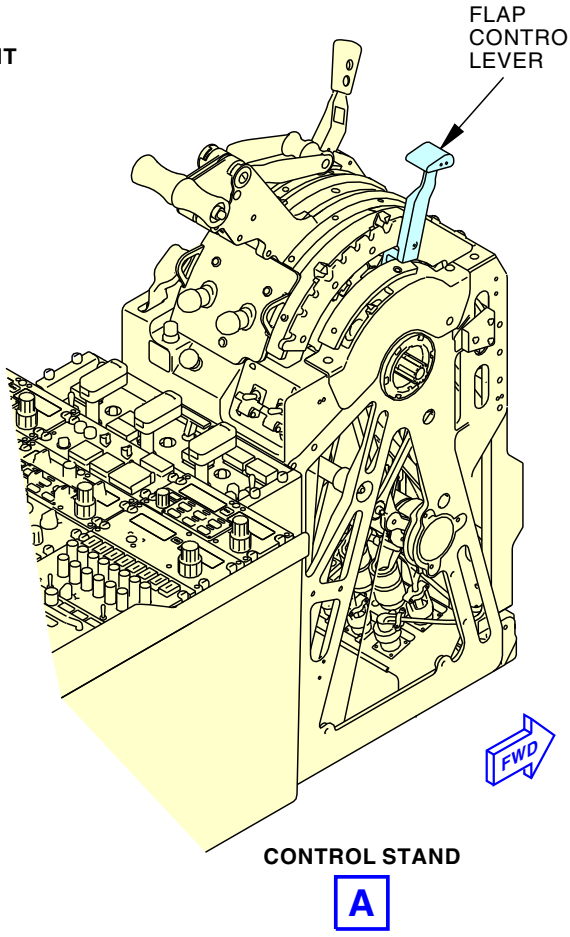
(2) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



CONTROL STAND

A

2482650 S0000583545_V1

Trailing Edge Flap System Operation With Primary Control
Figure 203/27-51-00-990-813

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-860-802

5. Trailing Edge Flap System Operation With Alternate Control

(Figure 201)

A. General

(1) The alternate control system uses electrical power to move the flaps.

B. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-51-00-860-008

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 27-51-00-860-009

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT OPERATE THE TRAILING EDGE FLAPS WITH ELECTRICAL POWER MORE THAN ONE FULL EXTEND/RETRACT CYCLE IN 25 MINUTES. YOU CAN CAUSE DAMAGE TO THE FLAP ELECTRIC MOTORS IF YOU OPERATE THEM TOO FREQUENTLY.

(2) Move the ALTERNATE FLAPS ARM switch on the P5 panel to arm the alternate control system.

NOTE: The Standby Hydraulic System activates when the ALTERNATE FLAPS ARM switch is set to arm. The Standby Hydraulic System also operates the rudder and thrust reversers.

SUBTASK 27-51-00-860-010

CAUTION

DO NOT OPERATE THE TRAILING EDGE FLAPS WITH ELECTRICAL POWER MORE THAN ONE FULL EXTEND/RETRACT CYCLE IN 25 MINUTES. YOU CAN CAUSE DAMAGE TO THE FLAP ELECTRIC MOTORS IF YOU OPERATE THEM TOO FREQUENTLY.

(3) Move the flap control lever to the 40-unit position.

NOTE: This will decrease the load on the flap electric (alternate) motor. You can move the lever past where you will move the flaps to.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-860-011

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION WAIT A MINIMUM OF 15 SECONDS AFTER THE FLAPS STOP BEFORE YOU USE THE ALTERNATE SYSTEM TO MOVE THE FLAPS AGAIN. YOU CAN CAUSE DAMAGE TO THE FLAP ALTERNATE MOTOR.

(4) Move the ALTERNATE FLAPS control switch to UP or DOWN to extend or retract the flaps as it is necessary.

NOTE: The leading edge flaps and slats will extend with alternate control.

(a) To deactivate the leading edge flaps and slats, do this task:Trailing Edge Flap System Operation With Leading Edge Flaps and Slats Disabled, TASK 27-51-00-860-805.

SUBTASK 27-51-00-860-012

(5) Move the ALTERNATE FLAPS control switch to the OFF position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-013

WARNING MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the ALTERNATE FLAPS control switch until the flaps are in the same position as the flap control lever or move the flap control lever to the position of the flaps.

SUBTASK 27-51-00-860-014

(2) Move the ALTERNATE FLAPS control switch to the OFF position.

SUBTASK 27-51-00-860-015

(3) Move the ALTERNATE FLAPS ARM switch to the OFF position to disarm the alternate control system.

END OF TASK

TASK 27-51-00-980-801

6. Trailing Edge Flap System Manual Operation

(Figure 204)

A. General

(1) Use this task to manually operate the trailing edge flap system without airplane power.

B. References

Reference	Title
27-51-51-960-801	Flap Power Drive Unit Manual Drive Shearout Replacement (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Procedure

SUBTASK 27-51-00-480-004

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-040-002

WARNING DO THE TRAILING EDGE FLAP DEACTIVATION PROCEDURE BEFORE YOU DO WORK ON THE FLAP SYSTEM. WITH THE FLAPS ACTIVATED, THE FLAPS CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-00-010-001

(3) Remove the cover [4] from the flap power drive unit [1]:

(a) Remove the bolts [3] and washers [2] that attach the cover [4] to the flap power drive unit [1].

(b) Remove the cover [4] from the flap power drive unit [1]

SUBTASK 27-51-00-980-001

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION DO NOT TURN THE MANUAL DRIVE WITH MORE THAN 350 POUND-INCHES (39.5 NEWTON-METERS) TORQUE OR FASTER THAN 1000 RPM. YOU CAN CAUSE DAMAGE TO THE POSITION SENSOR GEARBOX AND THE TORQUE TUBES.

(4) Use a 3/8 inch square drive to turn the manual drive on the PDU to extend or retract the trailing edge flaps to the applicable position.

NOTE: Refer to the cover [4] for the correct direction to turn the manual drive. Look at the number 4 or 5 ballscrew to find the position of the flaps.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) If the pin is sheared, do this task: Flap Power Drive Unit Manual Drive Shearout Replacement, TASK 27-51-51-960-801.

NOTE: The manual drive on the PDU has a shearout installed to prevent damage to the system from too much drive torque.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-980-002

WARNING

MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Turn the manual drive until the flaps are in a position which agrees with the flap control lever.

SUBTASK 27-51-00-410-001

(2) Install the cover [4] on the flap power drive unit [1]:

(a) Apply fluid, D00467 to the packing [5] on the cover [4].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the cover [4] and the flap power drive unit [1].

(c) Put the cover [4] in its position on the flap power drive unit [1].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [3].

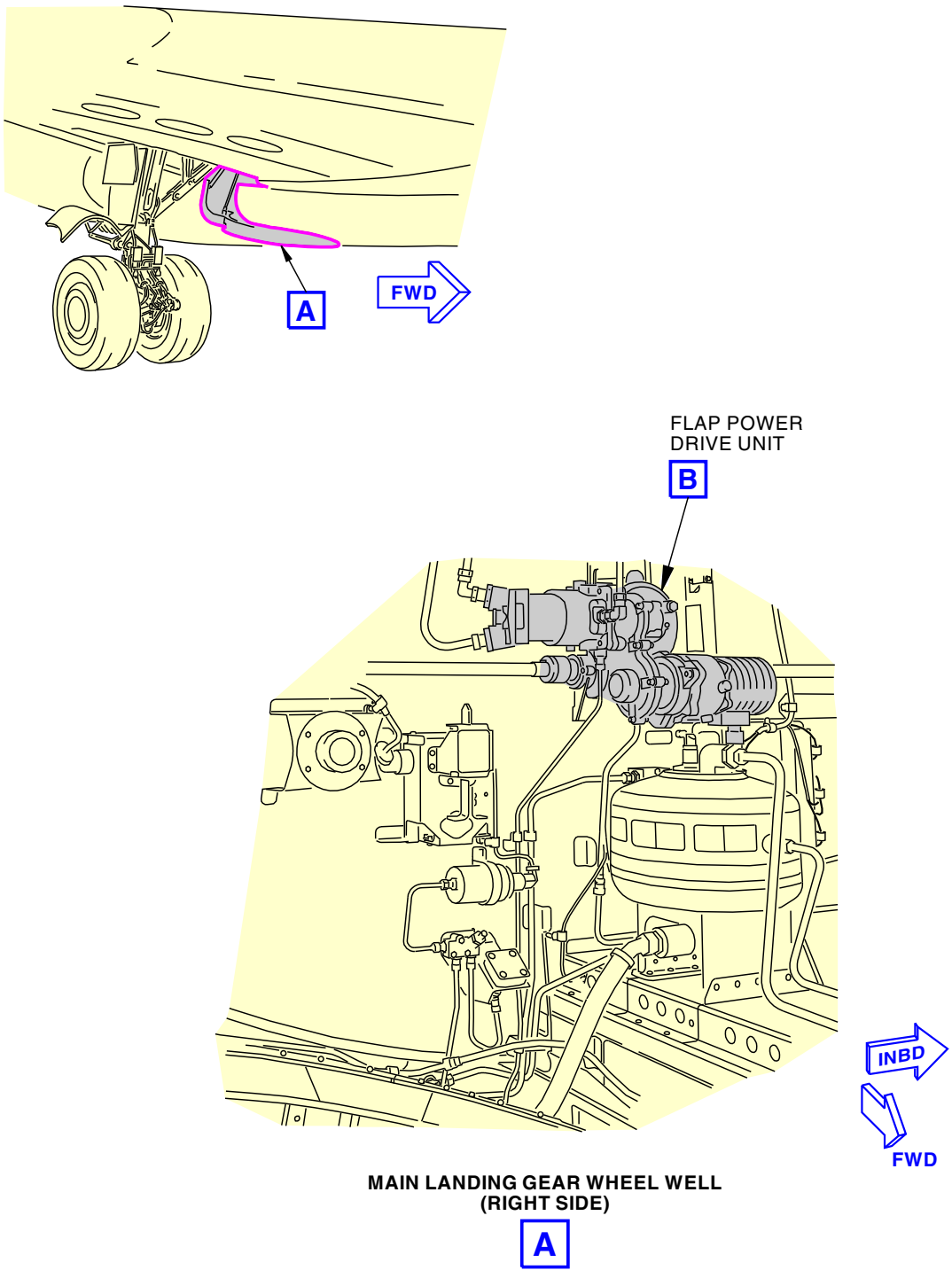
(e) Install the bolts [3] and washers [2] to attach the cover [4].

SUBTASK 27-51-00-440-002

(3) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

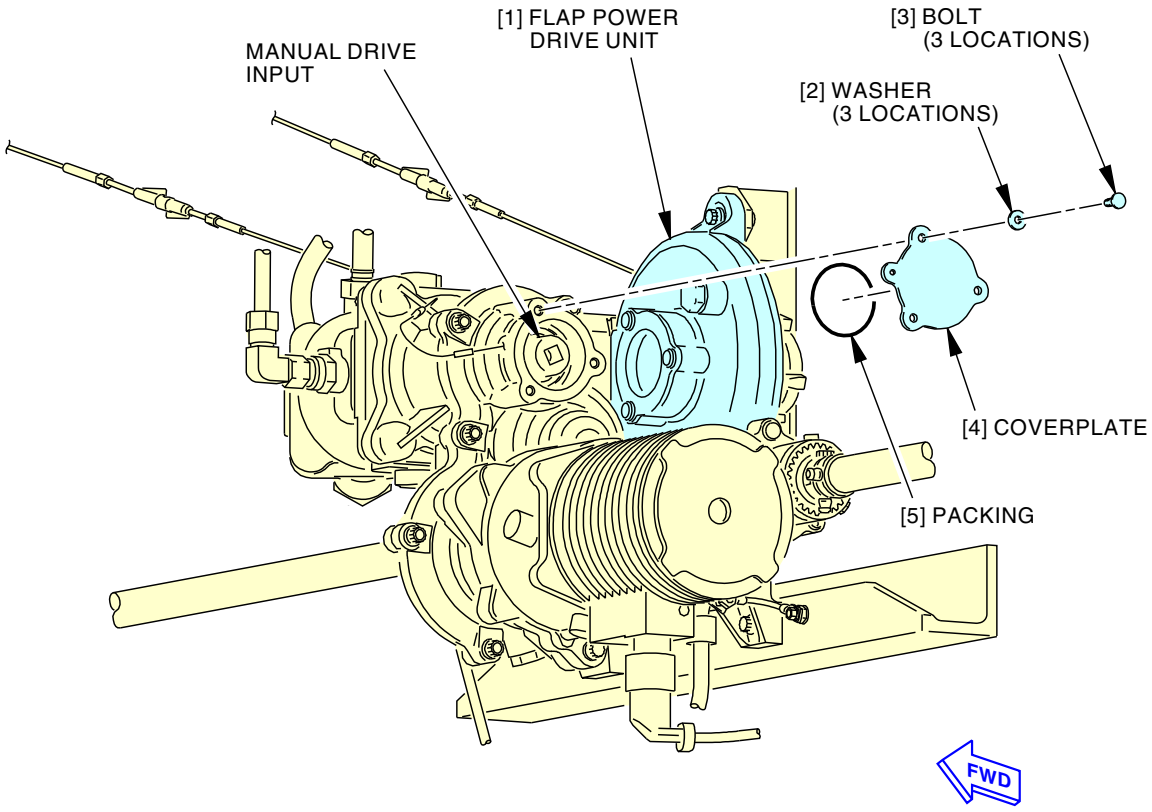
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Manual Operation
Figure 204/27-51-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP POWER DRIVE UNIT

B

2412728 S00061531233_V1

Trailing Edge Flap Manual Operation
Figure 204/27-51-00-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-860-803

7. Extend the Trailing Edge Flaps

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Procedure

SUBTASK 27-51-00-860-016

CAUTION DO NOT OPERATE TRAILING EDGE FLAPS WITH THE FAIRING PANELS LOOSE OR REMOVED FROM THE AIRPLANE. DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do one of these tasks to extend the trailing edge flaps:

(a) To extend the flaps with hydraulic power, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) To extend the flaps with electrical power in alternate mode, do this task: Trailing Edge Flap System Operation With Alternate Control, TASK 27-51-00-860-802.

(c) To manually extend the flaps, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

——— END OF TASK ———

TASK 27-51-00-860-804

8. Retract the Trailing Edge Flaps

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Procedure

SUBTASK 27-51-00-860-017

CAUTION DO NOT OPERATE TRAILING EDGE FLAPS WITH THE FAIRING PANELS LOOSE OR REMOVED FROM THE AIRPLANE. DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do one of these tasks to retract the trailing edge flaps:

(a) To retract the flaps with hydraulic power, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) To retract the flaps with electrical power in alternate mode, do this task: Trailing Edge Flap System Operation With Alternate Control, TASK 27-51-00-860-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) To manually retract the flaps, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

——— END OF TASK ———

TASK 27-51-00-860-805

9. Trailing Edge Flap System Operation With Leading Edge Flaps and Slats Disabled

A. General

(1) This task gives instructions to operate the trailing edge flap system with the leading edge flaps and slats retracted and disabled.

(2) You can operate the trailing edge flaps with primary or alternate control or manually after you do the Disable the Leading Edge Slats part of this task.

B. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
29-21-00-000-802	Standby Hydraulic System Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

G. Disable the Leading Edge Slats

SUBTASK 27-51-00-860-018

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 27-51-00-860-019

(2) Make sure the trailing edge flaps and the leading edge flaps and slats are in the retracted position. If they are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-00-860-020

(3) Remove the standby hydraulic system power, do this task: Standby Hydraulic System Power Removal, TASK 29-21-00-000-802.

SUBTASK 27-51-00-860-021

(4) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-51-00-480-005

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-860-022

(6) Move the LE cruise depressurization valve to the closed position (Figure 205):

NOTE: It will be necessary to use the FSEU to operate the LE cruise depressurization valve.

(a) To get access to the main equipment center, do this task.

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(b) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

(c) Push the NO button until OTHER FUNCTNS? shows on the display.

(d) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(e) Push the YES button to select SET OUTPUTS? from the OTHER FUNCTNS? menu.

(f) Push the YES button to select LE DEPR VALVE? from the SET OUTPUTS? menu.

(g) Push the YES button at the SET ON? display to change the position of the LE cruise depressurization valve.

NOTE: This will drive the valve to the closed position. The FSEU will automatically change the position of the valve back to the open position after approximately 75 seconds.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-980-003

(7) Move the manual override handle on the LE cruise depressurization valve to the OFF position (Figure 206):

(a) Do not force movement of the manual override handle with tools.

(b) Remove lockwire from the manual override handle on the LE cruise depressurization valve.

(c) Move the manual override handle to the OFF position.

(d) If you cannot move the manual override handle on the LE cruise depressurization valve, then make sure the leading edge and trailing edge surfaces are fully retracted. Then use the FSEU to operate the valve again.

CAUTION MAKE SURE YOU USE A 0.316 INCH (8.03 MM) RIG PIN IN THE CRUISE DEPRESSURIZATION VALVE HANDLE. A SMALLER RIG PIN CAN PERMIT THE LEADING EDGE FLAPS AND SLATS TO MOVE IF HYDRAULIC POWER IS SUPPLIED. THIS CAN CAUSE DAMAGE TO THE AIRPLANE.

(e) Install a 0.316 inch (8.03 mm) rig pin in the manual override handle to keep the handle in the OFF position.

(f) Attach a DO-NOT-REMOVE tag on the rig pin.

SUBTASK 27-51-00-480-006

(8) Install the lock, SPL-1675 to prevent the operation of the standby hydraulic system (Figure 206).

(a) Make sure the ALTERNATE FLAPS ARM switch is in the OFF position.

(b) Disconnect the electrical connector from the leading edge standby drive shutoff valve.

1) If desired, inspect the connector for corrosion now. If there is corrosion, refer to SWPM 20-60-03 to correct the problem.

NOTE: It is recommended that this step is also done when the connector is reconnected.

WARNING MAKE SURE THAT THE MANUAL OVERRIDE LEVER IS IN POSITION 1 TO PREVENT THE MOVEMENT OF THE LEADING EDGE SLATS. IF THE LEADING EDGE SLATS MOVE, DAMAGE TO AN OPEN THRUST REVERSER AND INJURIES TO PERSONNEL CAN OCCUR.

(c) Make sure the manual override lever at the leading edge standby drive shutoff valve is in position 1 (standby hydraulic power is OFF).

WARNING MAKE SURE TO INSTALL THE GROUND LOCK ON THE STANDBY HYDRAULIC MODULE TO PREVENT ACCIDENTAL STANDBY SYSTEM OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Install the lock, SPL-1675 on the standby hydraulic module.

(e) Install the lockpin.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Trailing Edge Flap Operation With Primary Control

SUBTASK 27-51-00-860-023

(1) Make sure you do the Disable the Leading Edge Slats part of this task before you operate the trailing edge flaps.

SUBTASK 27-51-00-860-024

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: The leading edge flaps and slats will move to the retracted position when you supply hydraulic power if they are not in the retracted position.

SUBTASK 27-51-00-860-025

WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Move the flap control lever to the applicable detent position.

SUBTASK 27-51-00-860-026

(4) To retract the trailing edge flaps, move the flap control lever to the UP position.

SUBTASK 27-51-00-860-027

(5) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

I. Trailing Edge Flap Operation With Alternate Control

SUBTASK 27-51-00-860-028

(1) Make sure you do the Disable the Leading Edge Slats part of this task before you operate the trailing edge flaps.

SUBTASK 27-51-00-860-029

WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(2) Move the ALTERNATE FLAPS ARM switch on the P5 panel to arm the alternate control system.

SUBTASK 27-51-00-860-030

CAUTION

WAIT A MINIMUM OF 15 SECONDS AFTER THE FLAPS STOP BEFORE YOU USE THE ALTERNATE SYSTEM TO MOVE THE FLAPS AGAIN. YOU CAN CAUSE DAMAGE TO THE FLAP ALTERNATE MOTOR.

(3) Move the ALTERNATE FLAPS control switch to DOWN to extend the trailing edge flaps as it is necessary.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-860-031

(4) Move the ALTERNATE FLAPS control switch to the OFF position.

SUBTASK 27-51-00-860-032

WARNING

MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) To retract the trailing edge flaps, move the ALTERNATE FLAPS control switch to UP until the flaps are in the same position as the flap control lever.

SUBTASK 27-51-00-860-033

(6) Move the ALTERNATE FLAPS control switch to the OFF position.

SUBTASK 27-51-00-860-034

(7) Move the ALTERNATE FLAPS ARM switch to the OFF position to disarm the alternate control system.

SUBTASK 27-51-00-080-002

(8) Remove the lock, SPL-1675 from the standby hydraulic module (Figure 206):

(a) Remove the detent pin.

(b) Remove the lock, SPL-1675 from the standby hydraulic module.

(c) Make sure the override lever at the leading edge standby drive shutoff valve is in position 1.

(d) Before you connect the electrical connector, examine the connector for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(e) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

(f) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(g) Connect the electrical connector to the leading edge standby drive shutoff valve.

J. Trailing Edge Flap Manual Operation

(Figure 204)

SUBTASK 27-51-00-860-035

(1) Make sure you do the Disable the Leading Edge Slats part of this task before you operate the trailing edge flaps.

SUBTASK 27-51-00-480-007

(2) Install DO-NOT-OPERATE tags on the flap control lever, the ALTERNATE FLAPS switches and the hydraulic control switches.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-040-003

WARNING DO THE TRAILING EDGE FLAP DEACTIVATION PROCEDURE BEFORE YOU DO WORK ON THE FLAP SYSTEM. WITH THE FLAPS ACTIVATED, THE FLAPS CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-00-010-002

(4) Remove the cover [4] from the flap power drive unit [1]:

(a) Remove the bolts [3] and washers [2] that attach the cover [4] to the flap power drive unit [1].

(b) Remove the cover [4] from the power drive unit [1].

SUBTASK 27-51-00-980-004

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT TURN THE MANUAL DRIVE WITH MORE THAN 350 POUND-INCHES (39.5 NEWTON-METERS) TORQUE OR FASTER THAN 1000 RPM. YOU CAN CAUSE DAMAGE TO THE POSITION SENSOR GEARBOX AND THE TORQUE TUBES.

(5) Use a 3/8 inch square drive to turn the manual drive on the PDU to extend the trailing edge flaps to the applicable position.

(a) Refer to the cover [4] for the correct direction to turn the manual drive.

(b) Look at the number 4 or 5 ballscrew to find the position of the flaps.

SUBTASK 27-51-00-980-005

WARNING MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) To retract the trailing edge flaps, turn the manual drive in the retract direction until the flaps are in a position which agrees with the flap control lever.

SUBTASK 27-51-00-410-002

(7) Install the cover [4] on the flap power drive unit [1]:

(a) Apply fluid, D00467 to the packing [5] on the cover [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the cover [4] and the flap power drive unit [1].

(c) Put the cover [4] in its position on the flap power drive unit [1].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [3].

(e) Install the bolts [3] and washers [2] to attach the cover [4].

SUBTASK 27-51-00-440-003

(8) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-480-008

(1) Remove the DO-NOT-OPERATE tags from the flap control lever, the ALTERNATE FLAPS switches and the hydraulic control switches if they are installed.

SUBTASK 27-51-00-020-002

(2) Remove the rig pin from the manual override lever on the LE cruise depressurization valve (Figure 206).

(a) Make sure the manual override lever moves from the OFF position to the ON position.

(b) Install lockwire on the manual override lever.

SUBTASK 27-51-00-410-003

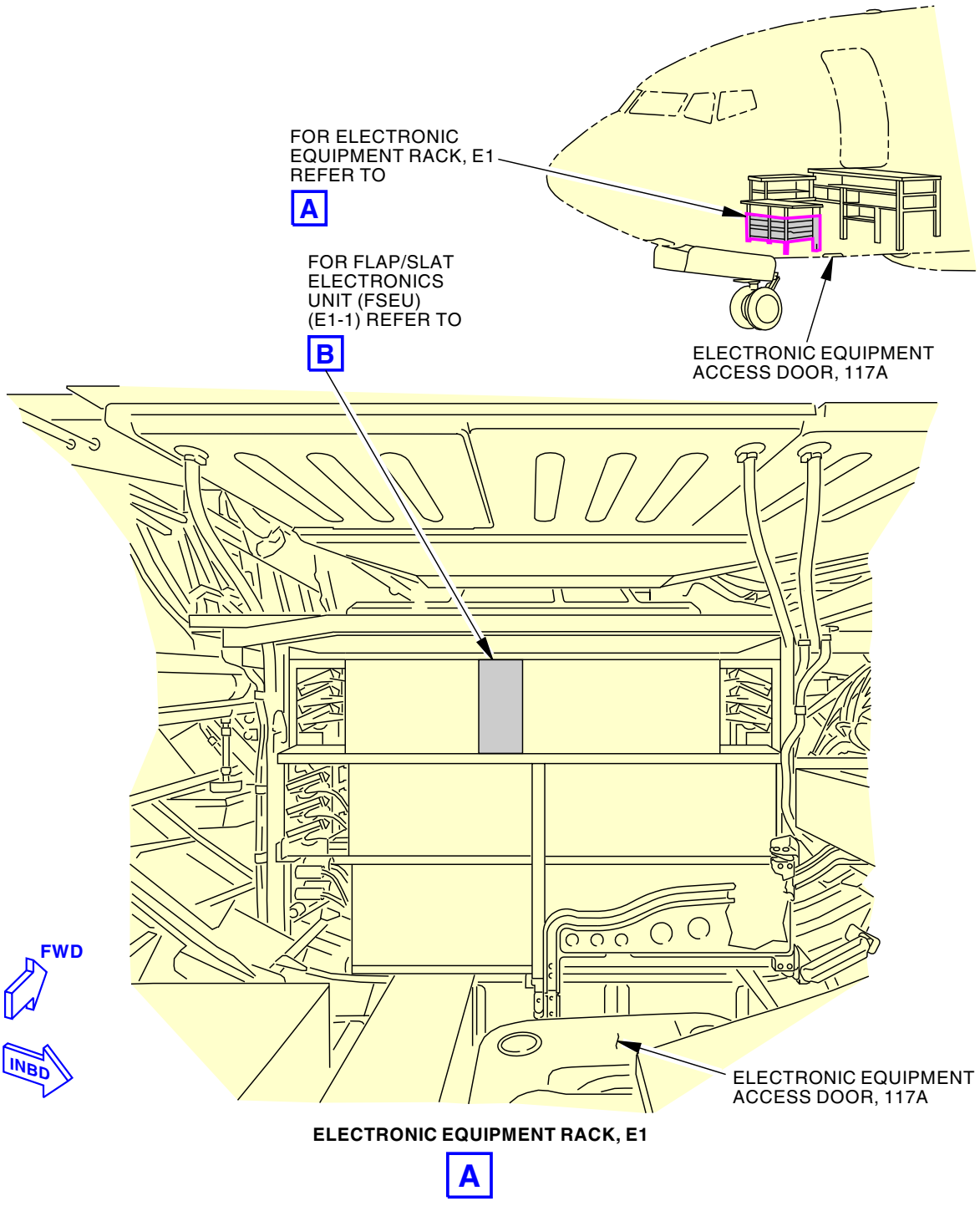
(3) Below the main equipment center, do this task.

Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

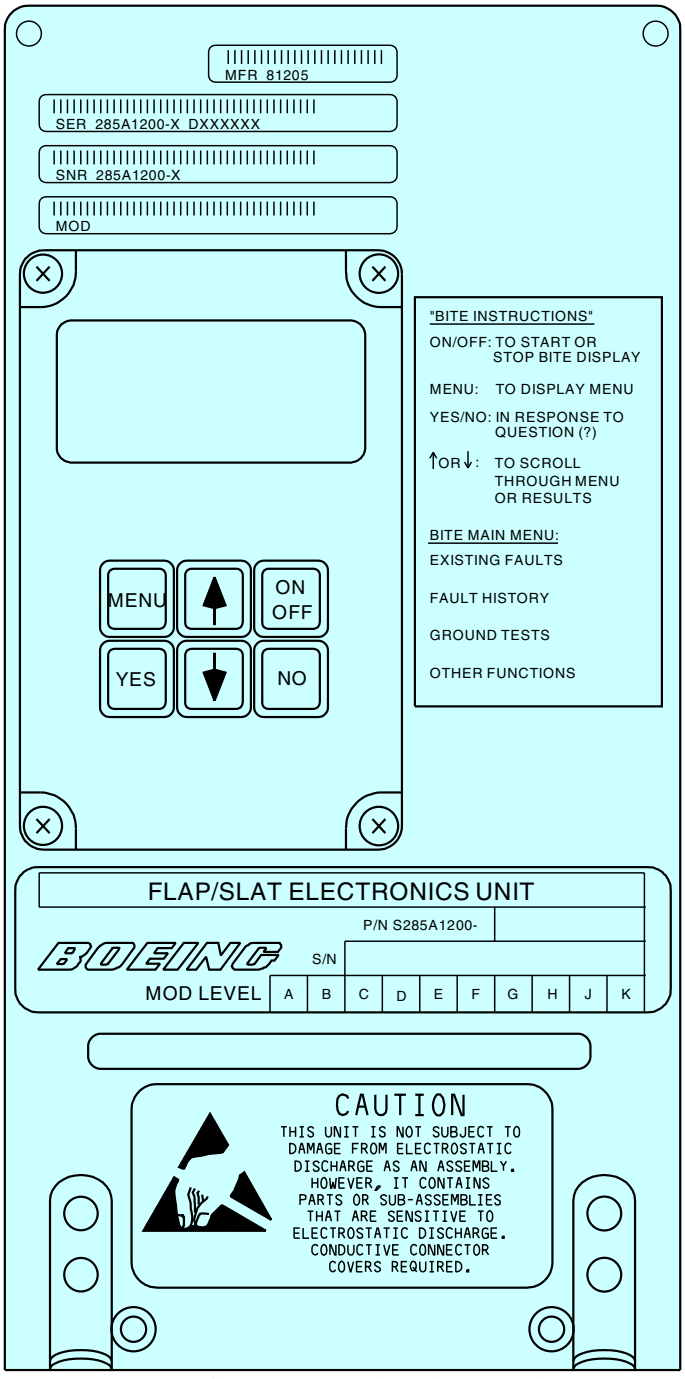
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap/Slat Electronics Unit
Figure 205/27-51-00-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

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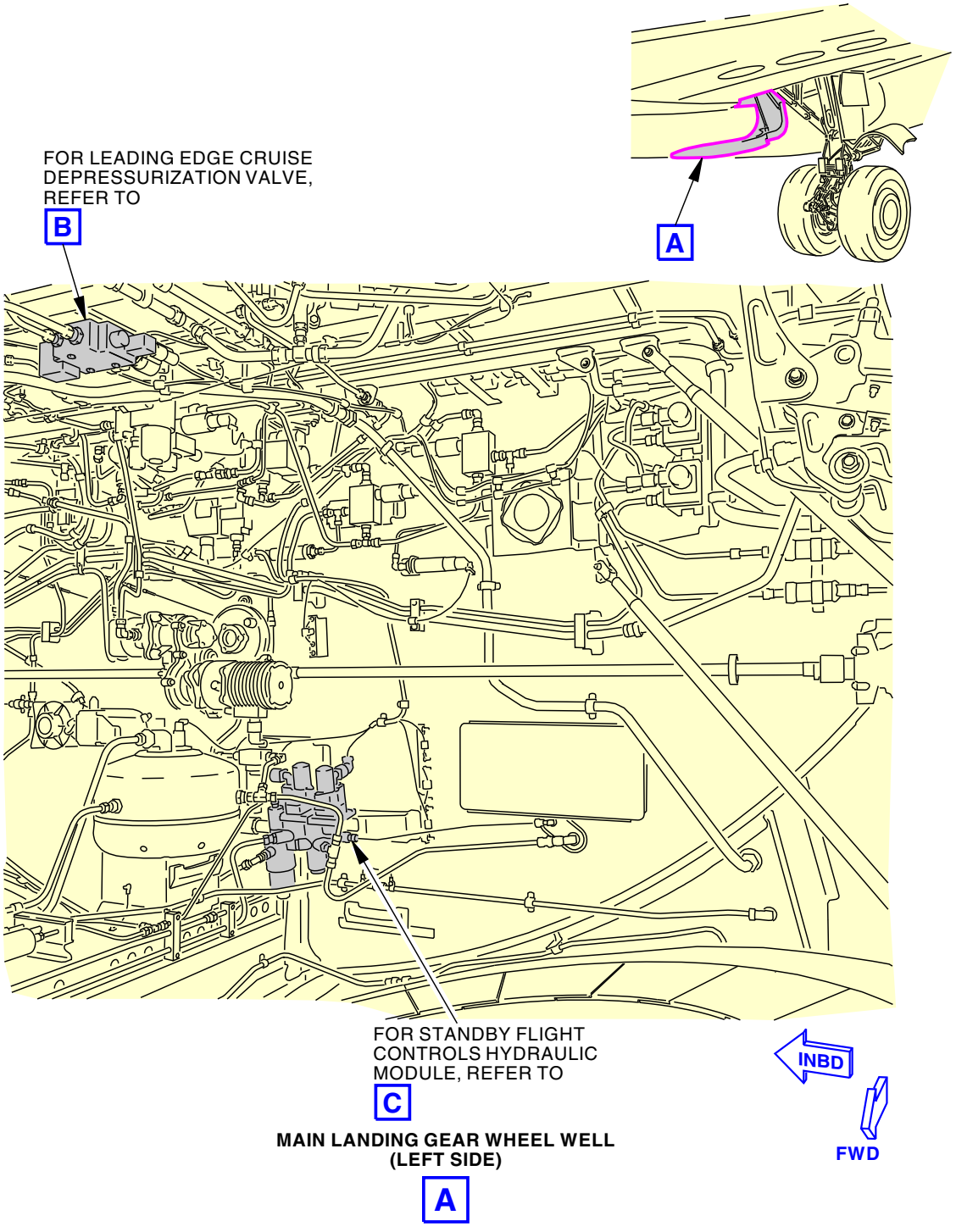
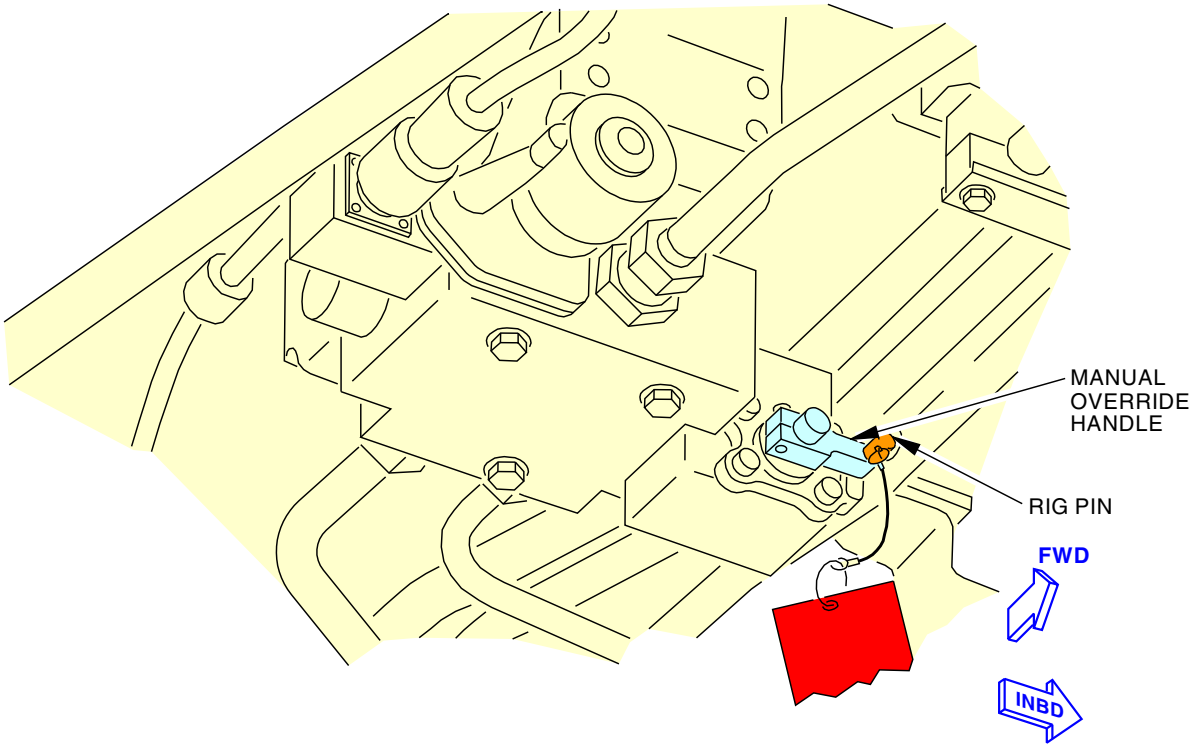
Flap/Slat Electronics Unit
Figure 205/27-51-00-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap and Slat Deactivation
Figure 206/27-51-00-990-805 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



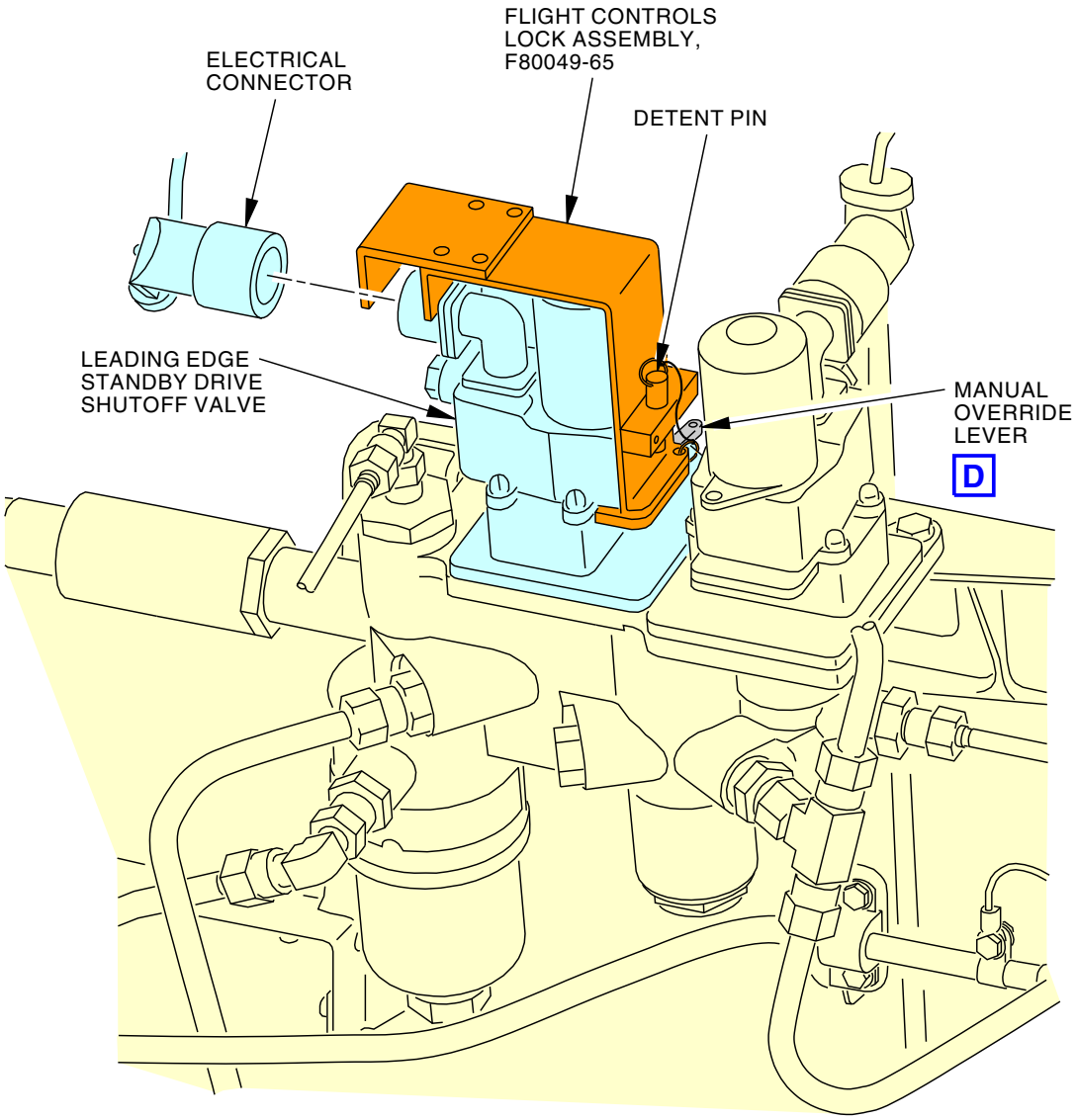
**LEADING EDGE CRUISE
DEPRESSURIZATION VALVE**

B

2412732 S00061531240_V1

**Leading Edge Flap and Slat Deactivation
Figure 206/27-51-00-990-805 (Sheet 2 of 4)**

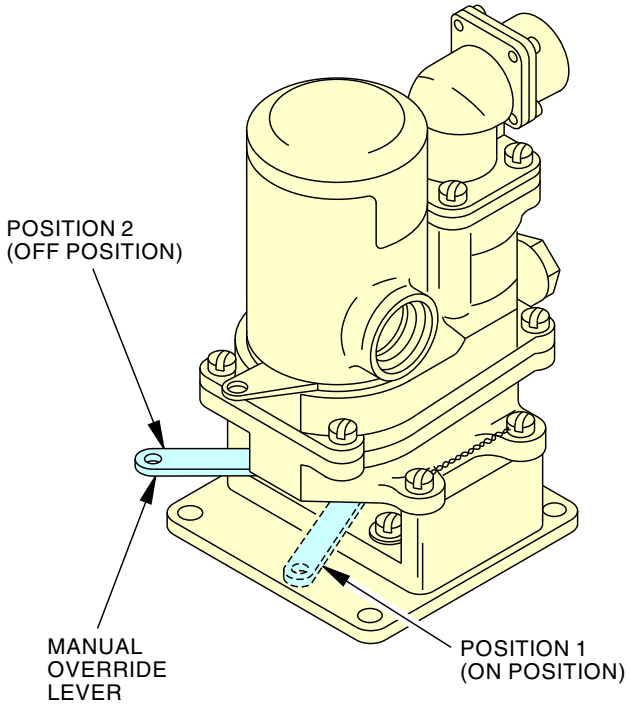
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412733 S00061531241_V3

Leading Edge Flap and Slat Deactivation
Figure 206/27-51-00-990-805 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

D

2844536 S0000662328_V3

**Leading Edge Flap and Slat Deactivation
Figure 206/27-51-00-990-805 (Sheet 4 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-000-801

10. Flap Control Handle Lockout Assembly Removal

(Figure 207)

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-13747	Control Handle Lockout Assy (C27008-14 Assembly Included in C27008-20 and -22 Equipment) Part #: C27008-22 Supplier: 81205

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Flap Control Handle Lockout Assembly Removal

SUBTASK 27-51-00-080-003

(1) Remove the control handle lockout assy (C27008-14 assembly), SPL-13747:

(a) Remove the t-pin from the control handle lockout assembly.

(b) Remove the control handle lockout assembly from the handle of the flap control lever.

(c) Stow the t-pin in the control handle lockout assembly.

——— END OF TASK ———

TASK 27-51-00-400-801

11. Flap Control Handle Lockout Assembly Installation

(Figure 207)

A. General

(1) The flap control handle lockout assembly prevents the accidental movement of the flap control lever. With electrical power on, the flaps will operate if you move the flap control lever.

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-13747	Control Handle Lockout Assy (C27008-14 Assembly Included in C27008-20 and -22 Equipment) Part #: C27008-22 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Flap Control Handle Lockout Assembly Installation

SUBTASK 27-51-00-480-009

(1) Install the control handle lockout assy (C27008-14 assembly), SPL-13747:

(a) Remove the t-pin from the control handle lockout assembly.

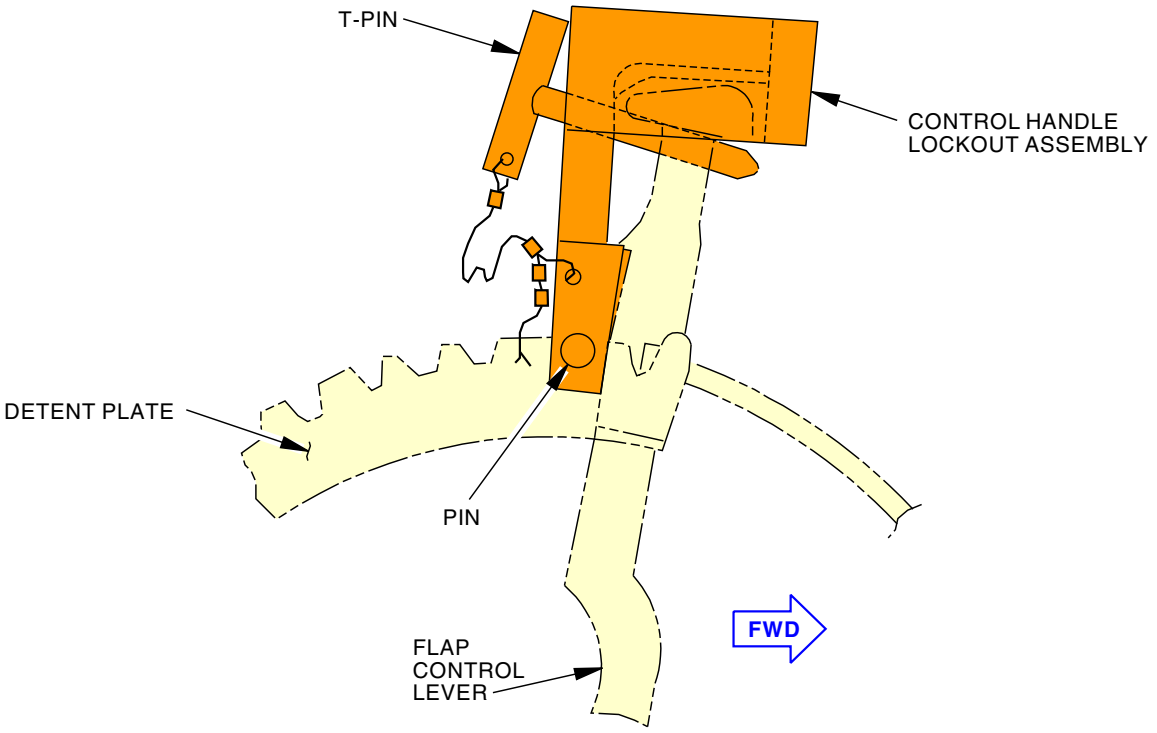
(b) Put the control handle lockout assembly on the handle of the flap control lever.

1) Make sure that the pin at the lower end of the control handle lockout assembly is in the detent on the detent plate.

(c) Install the t-pin to lock the control handle lockout assembly on the flap control lever handle.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CONTROL STAND

2412734 S00061531243_V1

Flap Control Handle Lockout Assembly Installation/Removal
Figure 207/27-51-00-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) An operational test of the trailing edge flap system

(2) An adjustment of the trailing edge flap control system

(3) An adjustment of the trailing edge flap drive system

(4) A functional test of the trailing edge flap system

(5) A BITE test of the FSEU display and existing faults

(6) A BITE test of the trailing edge flap asymmetry and skew systems

(7) A BITE test of the trailing edge flap load relief system

(8) A test of flap priority valve

(9) A test of flap control lever force

(10) An functional test of the alternate control system for the trailing edge flaps

(11) An operational test of the no-back brakes inside the transmissions

(12) A functional test of the trailing edge flap load relief system

TASK 27-51-00-710-801

2. Trailing Edge Flap System Operational Test

(Figure 501)

A. General

(1) During the operational test, you make sure the operation of the trailing edge flaps is satisfactory. This test does not make sure the flaps are adjusted correctly. You must not use this test as an alternate for the system test of the trailing edge flaps.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Operational Test

SUBTASK 27-51-00-860-038

WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: When operating the high lift devices on the ground with only the system B EMDP supplying power the pump low pressure light may momentarily illuminate. This illumination and associated pressure drop should be considered normal as long as the pressure recovers within 10 seconds of initiating movement of the high lift devices.

E. Primary Method for the Trailing Edge Flap System Operation Test

SUBTASK 27-51-00-710-001

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Do these steps for the primary method of the trailing edge flap operation test:

NOTE: Use the flap position indicator to find the position of the flaps.

(a) Do one of these methods to show the flap position sensor and skew sensor inputs to the FSEU:

1) On the FSEU BITE display (Method 1):

a) Push the ON/OFF button on the FSEU to display “EXISTING FAULTS?”.

b) Push the NO switch three times on the FSEU to display “OTHER FUNCTNS?”.

c) Push the YES switch on the FSEU to display “SET OUTPUTS?”.

d) Push the NO switch on the FSEU to display “I/O MONITOR?”.

e) Push the YES switch on the FSEU to display “PROX SENSORS?”.

f) Push the NO switch on the FSEU to display 'SYNCHRO INPUTS?”.

g) Push the YES switch on the FSEU to display 'LVR POS”.

2) On the MAX Display System (MDS) (Method 2):

a) Push the SYS button on the Multifunction Display Panel (MFP).

b) Select the Maint button on the MENU bar at the top right of the System Page..

c) Push the SEL button on the SELECTOR knob.

d) Turn the SELECTOR knob to select MAINT DATA PGS on the Maintenance menu.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

e) Move the cursor down and then select the ATA 27 FLIGHT CONTROL DISPLAY button below the REAL column on the MAINT DATA PGS menu.

(b) Move the flap control lever to the UP position and wait for the flaps to reach the UP position.

1) Make sure that the flap position indicator pointers are within the detent Up white band.

(c) Make sure that the position and skew sensor values displayed on the FSEU fall within the following range:

1) For Method 1, push the arrow keys on the FSEU to step through the position and skew sensor values at the UP position.

2) For Method 2, observe the skew sensor values on the MDS.

DISPLAY	FSEU SENSOR VALUE RANGE	MDS SENSOR VALUE RANGE
LVR POS	-2.8 to 2.8	-2.8 to 2.8
L FL POS	-3.7 to 1.8	-3.7 to 1.8
R FL POS	-3.7 to 1.8	-3.7 to 1.8
F1 SKEW	295.7 to 311.0	-64.3 to -49
F2 SKEW	330.5 to 346.0	-29.5 to -14
F3 SKEW	0.0 to 13.2	0.0 to 13.2
F4 SKEW	332.8 to 346.9	-27.2 to -13.1
F5 SKEW	13.1 to 27.2	-27.2 to -13.1
F6 SKEW	346.8 to 360.0	0.0 to 13.2
F7 SKEW	14.0 to 29.5	-29.5 to -14
F8 SKEW	49.0 to 64.3	-64.3 to -49

(d) Move the flap control lever to the 10-unit position and wait for the flaps to reach the 10 position.

1) Make sure that the pointers on the flap position indicator are in the 10-unit white band.

(e) Make sure that the position and skew sensor values displayed on the FSEU fall within the following range:

1) For Method 1, push the arrow keys on the FSEU to step through the position and skew sensor values at the 10 position.

2) For Method 2, observe the skew sensor values on the MDS at the 10 position.

DISPLAY	FSEU SENSOR VALUE RANGE	MDS SENSOR VALUE RANGE
LVR POS	50.6 to 54.6	50.6 to 54.6
L FL POS	146.2 to 154.9	146.2 to 154.9
R FL POS	146.2 to 154.9	146.2 to 154.9
F1 SKEW	95.9 to 113.6	95.9 to 113.6
F2 SKEW	149.1 to 166.7	149.1 to 166.7
F3 SKEW	164.7 to 181.5	164.7 to 181.5

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

DISPLAY	FSEU SENSOR VALUE RANGE	MDS SENSOR VALUE RANGE
F4 SKEW	121.0 to 138.5	121.0 to 138.5
F5 SKEW	221.5 to 239.0	121.0 to 138.5
F6 SKEW	178.5 to 195.3	164.7 to 181.5
F7 SKEW	193.3 to 210.9	149.1 to 166.7
F8 SKEW	246.4 to 264.1	95.9 to 113.6

(f) Move the flap control lever to the 40-unit position and wait for the flaps to reach the 40 position.

1) Make sure that the pointers on the flap position indicator are in the 40-unit white band.

(g) Make sure that the position and skew sensor values displayed on the FSEU fall within the following range:

1) For Method 1, push the arrow keys on the FSEU to step through the position and skew sensor values at the 40 position.

2) For Method 2, observe the skew sensor values on the MDS at the 40 position.

DISPLAY	FSEU SENSOR VALUE RANGE	MDS SENSOR VALUE RANGE
LVR POS	105.4 to 110.9	105.4 to 110.9
L FL POS	267.1 to 273.3	267.1 to 273.3
R FL POS	267.1 to 273.3	267.1 to 273.3
F1 SKEW	224.4 to 242.1	224.4 to 242.1
F2 SKEW	279.2 to 296.9	279.2 to 296.9
F3 SKEW	288.7 to 305.5	288.7 to 305.5
F4 SKEW	265.1 to 282.1	265.1 to 282.1
F5 SKEW	77.9 to 94.9	265.1 to 282.1
F6 SKEW	54.5 to 71.3	288.7 to 305.5
F7 SKEW	63.1 to 80.8	279.2 to 296.9
F8 SKEW	117.9 to 135.6	224.4 to 242.1

(h) For Method 1, push the ON/OFF button on the front panel of the FSEU to turn it off.

(i) For Method 2, push the SYS button on the MFP to put the displays back to normal.

(j) Move the flap control lever to the UP position and wait for the flaps to reach the UP position.

1) Make sure that the pointers on the flap position indicator are in the UP white band.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Alternate Method for the Trailing Edge Flap System Operation Test

SUBTASK 27-51-00-860-041

> **WARNING** MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-00-710-002

(2) Do these steps for the alternate method of the trailing edge flap operation test:

(a) Move the flap control lever to the UP detent and wait for the flaps to reach the UP position.

(b) Push the ON/OFF button on the FSEU to display “EXISTING FAULTS?”.

(c) Push the NO switch three times on the FSEU to display “OTHER FUNCTIONS?”.

(d) Push the YES switch on the FSEU to display “SET OUTPUTS?”.

(e) Push the NO switch on the FSEU to display “I/O MONITOR?”.

(f) Push the YES switch on the FSEU to display “PROX SENSORS?”.

(g) Push the NO switch twice on the FSEU to display “DISCRETE INPUTS?”.

(h) Push the YES switch on the FSEU to display “ALTN ARM?”.

(i) Make sure that the FSEU displays “ALTN ARM NOT ARM”.

(j) Put the Alternate Flaps Master Arming Switch, that is on the aft overhead panel, to the “Arm” position.

(k) Make sure that the FSEU displays “ALTN ARM ARMED”.

(l) Put the Alternate Flaps Master Arming Switch, that is on the aft overhead panel, to the “Off” position.

(m) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(n) Put the Alternate Flaps Master Arming Switch, that is on the aft overhead panel, to the “Arm” position.

(o) Move the flap control lever to the 1 detent and wait for the flaps to reach the 1 position.

(p) Make sure that the flap position indicator pointers lie within the detent 1 white band.

(q) Move the Alternate Flap Drive Control Switch to the “Down” position for 5 seconds, then release.

1) Make sure that the trailing edge flaps, leading edge flaps and slats do not move.

2) Make sure that the flap position indicator pointers remains within the detent 1 white band.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(r) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(s) Move the Alternate Flap Drive Control Switch to the “Up” and hold until the flaps stop moving.

(t) Make sure that the flap position indicator pointers lie within the detent Up white band.

(u) Make sure that the “LE FLAPS TRANSIT” and “LE EXTEND” master indication lights on the center panel are off.

(v) Make sure that all the LE flaps and slats indication lights on the aft overhead panel are off.

(w) Move the flap control lever to the 40 detent.

(x) Move the Alternate Flap Drive Control Switch to the “Down” position for 5 seconds, then release.

(y) Wait for the leading edge surfaces to fully extend.

(z) Make sure that the LE indication flaps “EXTEND” and slats “FULL EXTEND” lights on the aft overhead panel are now on.

(aa) Move the Alternate Flap Drive Control Switch to the “Down” position and hold until the flaps stop moving.

(ab) Make sure that the flap position indicator pointers lie within the detent 40 white band.

(ac) Make sure that the “LE FLAPS EXT” master indication light is on.

(ad) Put the Alternate Flaps Master Arming Switch, that is on the aft overhead panel, to the “Off” position.

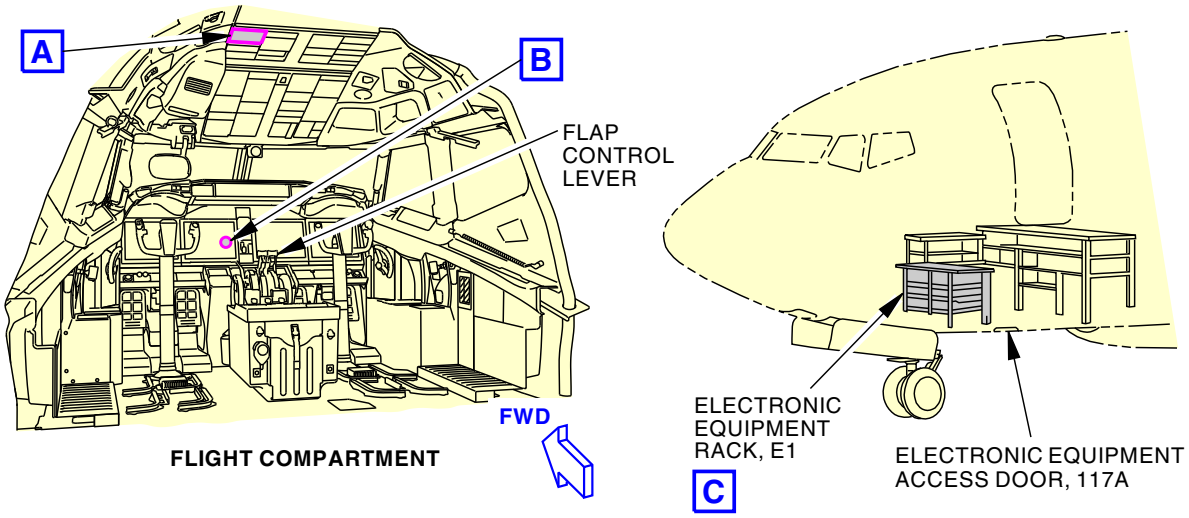
G. Put the Airplane Back to Its Usual Condition

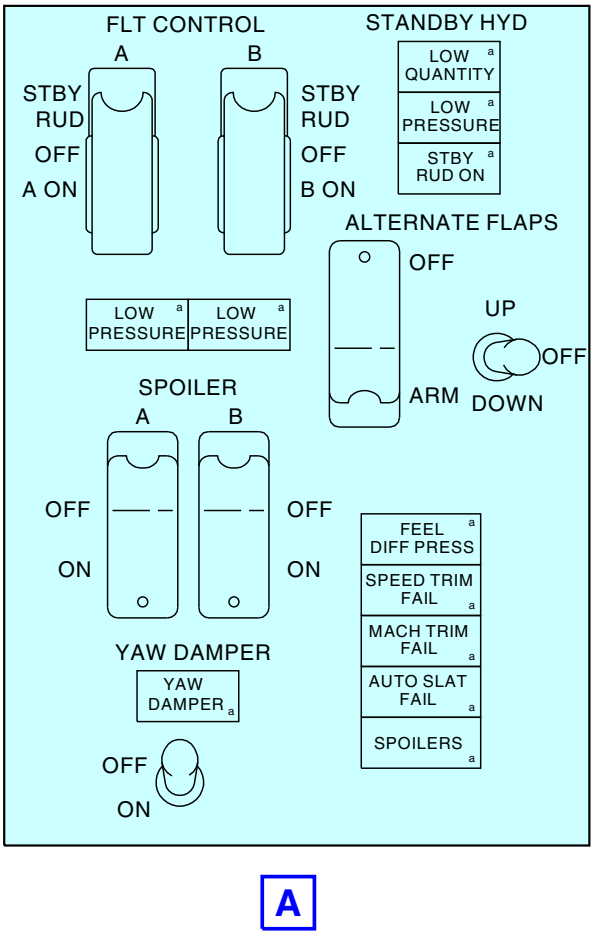
SUBTASK 27-51-00-860-043

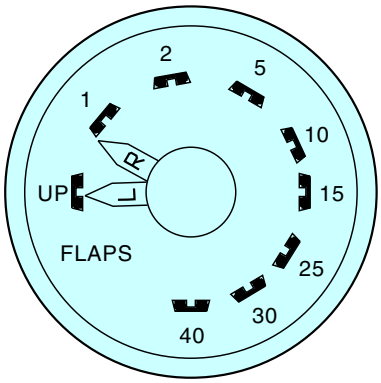
(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



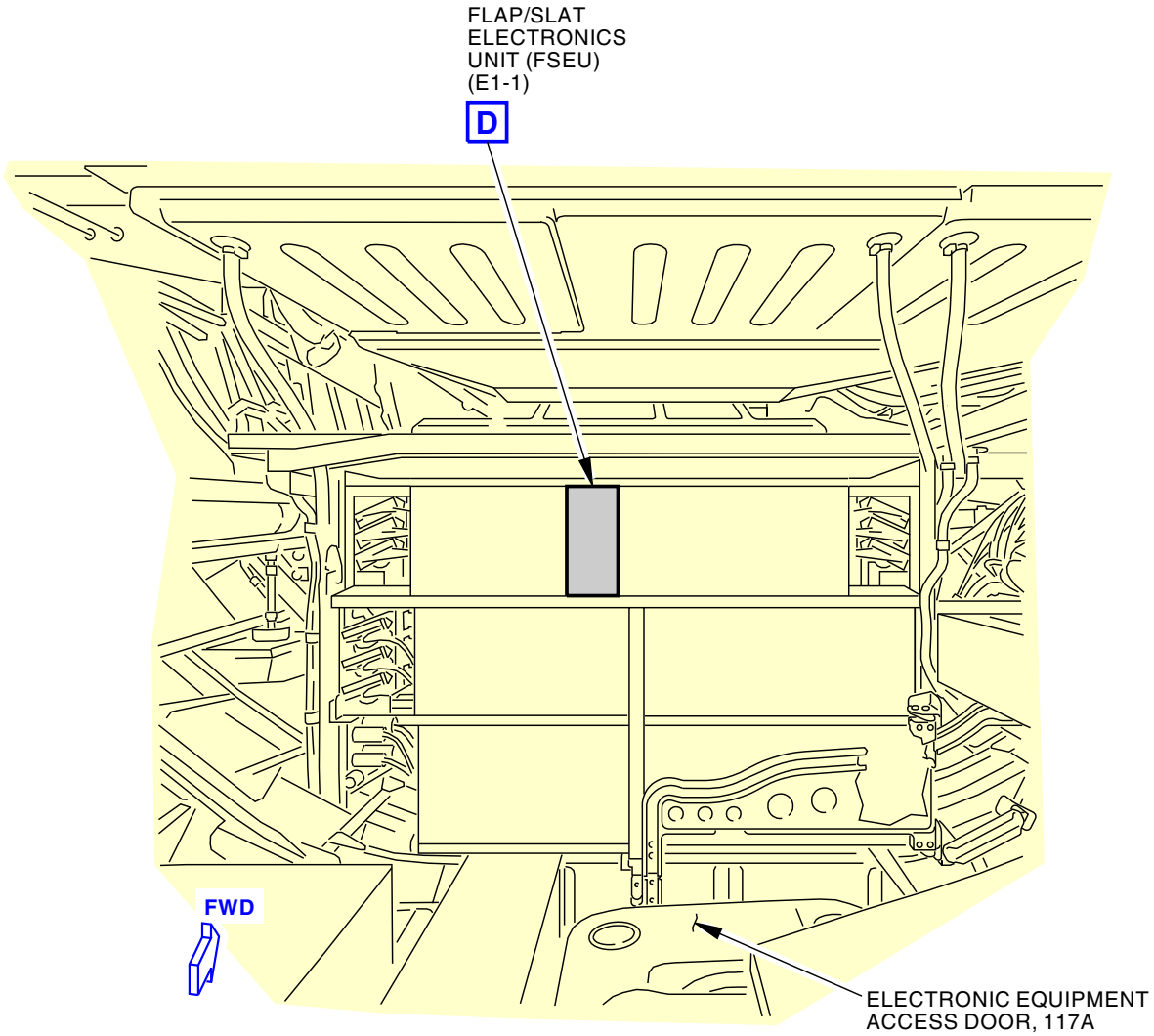




2412735 S00061531247_V1

Trailing Edge Flap System Controls
Figure 501/27-51-00-990-807 (Sheet 1 of 3)

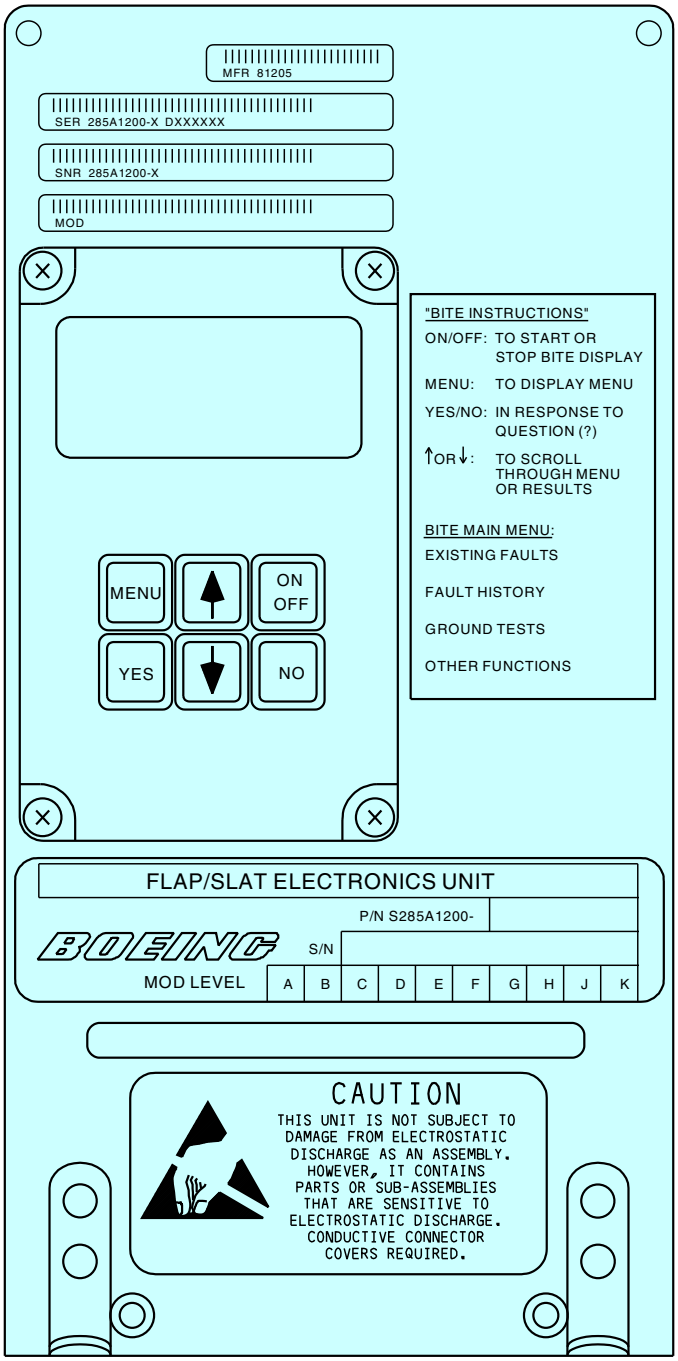
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412736 S00061531248_V1

Trailing Edge Flap System Controls
Figure 501/27-51-00-990-807 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP/SLAT ELECTRONICS UNIT (FSEU)

D

2412737 S00061531249_V1

Trailing Edge Flap System Controls
Figure 501/27-51-00-990-807 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-820-801

3. Trailing Edge Flap Control System Adjustment and Test

(Figure 502)

A. General

(1) This task does an adjustment of the trailing edge flap control system.

(a) The trailing edge flap control system includes the flap control lever, flap control unit, flap control valve, control cables WFA and WFB, and follow-up cables WFFA and WFFB.

(2) When you retract the trailing edge flaps with hydraulic power, it is necessary to stop for two minutes after you move the flaps. The flaps can move a small distance for 2 minutes after extension or retraction.

(3) The adjustment instructions included in this task are included in the Flap Actuation Rigging Instructions drawing 256A3001.

(4) Before you do cable adjustment, permit a minimum of one hour at a constant ambient temperature of ± 5 degrees F (± 2.8 degrees C) for the airframe temperature to become stable.

(a) It is recommended to do the cable adjustments in a controlled environment such as a hangar.

NOTE: Direct sunlight on the airframe will cause the cable readings to be inaccurate.

(b) All temperature readings will be taken as ambient outside but adjacent to the applicable area of the airframe.

(c) The cable tension values will not be correct when there are temperature differences along the cable run.

(d) It is recommended that airplanes supplied with the cables that contain higher zinc coating (Grade D or Grade K) be re-tensioned 3 to 4 months into service. This will bring the tension of the control cables within the desired range. After the cables are re-tensioned, the high zinc cables (Grade D or Grade K) will continue to relax at a rate that is equivalent to the Grade B cables. To identify the grade of the cable, refer to: Control Cable Grades and Diameters/Table 27-11-00-993-802.

(5) Before you do cable adjustment, allow the tensiometer to stabilize to the same temperature as the airplane.

B. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
27-11-00-993-802	Table: Control Cable Grades and Diameters (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-58-01-000-801	Flap Position Transmitter Removal (P/B 401)
27-58-01-400-801	Flap Position Transmitter Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Location Zones

Zone	Area
116	Nose Landing Gear Wheel Well - Right
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

G. Prepare for the Adjustment

SUBTASK 27-51-00-020-003

(1) For the flap position transmitters on the left and right wings, do this task: Flap Position Transmitter Removal, TASK 27-58-01-000-801.

NOTE: If you do not remove the flap position transmitters, they can become incorrectly adjusted.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-480-010

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-860-045

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION CAREFULLY MONITOR THE FLAP MOVEMENT AFTER YOU COMPLETE THE WORK ON THE FLAP CONTROL SYSTEM OR THE FLAP DRIVE SYSTEM. IF YOU DO NOT ADJUST THE COMPONENTS CORRECTLY, YOU CAN CAUSE DAMAGE TO THE TRAILING-EDGE FLAP SYSTEM.

(3) Use the alternate system or the manual drive to retract the trailing edge flaps to the UP position.

SUBTASK 27-51-00-040-005

(4) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

H. Trailing Edge Flap Control System Adjustment

SUBTASK 27-51-00-020-004

CAUTION DISCONNECT THE TORQUE TUBES FROM THE FLAP-POWER DRIVE UNIT BEFORE YOU ADJUST THE FLAP CONTROL SYSTEM. ADJUST THE FLAP DRIVE SYSTEM CORRECTLY. IF YOU DO NOT, IT CAN CAUSE DAMAGE TO THE FLAP SYSTEM.

(1) If the flap drive system is not adjusted correctly, disconnect the torque tubes [18] from the power drive unit [17].

(a) Install the clamp set, SPL-1726, on the torque tubes [18] on each side of the power drive unit [17].

(b) Remove the screws [14] that attach the coupling sleeves [15] to the splined couplings [16].

(c) Move the coupling sleeves [15] off the splined couplings [16].

(d) Move the torque tubes [18] away from the flap power drive unit [17].

SUBTASK 27-51-00-010-003

(2) Remove the floor panel to get access to the top of the flap control unit [4], do this task: Passenger Cabin Floor Panel Removal, TASK 53-21-00-000-801.

NOTE: The floor panel is located between stations 706 and 727B on the right side of the airplane.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-010-004

(3) Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-51-00-010-016

(4) To get access to the turnbuckles [3] for the cable assemblies [1] WFA and WFB, do this step:

Open this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

SUBTASK 27-51-00-820-001

(5) Do the adjustment of the flap control lever [7] and cable assemblies [1] WFA and WFB.

(a) Put the flap control lever [7] in the rigged position.

1) Move the flap control lever [7] aft until the detent pin is out of the UP detent.

2) Put a 0.19 in. (4.83 mm) thick rigging block between the detent pin on the flap control lever [7] and the upstop on the detent plate.

a) Make sure that the rigging block does not go into the flaps UP detent.

(b) Install a clamp to hold the quadrant [6] against the aft side of the stop [5] on the flap control unit [4].

(c) Remove the clips [2] from the turnbuckles [3] on the cable assemblies [1] WFA and WFB.

(d) If you installed a new cable assembly [1], do these steps:

1) Use the turnbuckles [3] to adjust the tension in the cable assemblies [1] to 275 ±15 lbf (1.22 ±0.07 kN).

2) Remove the clamp from the quadrant [6].

3) Remove the rigging block from the flap control lever [7].

4) Move the flap control lever [7] through its full travel 25 times.

5) Put the flap control lever [7] in the rigged position with the rigging block.

6) Install the clamp to hold the quadrant [6] against the aft side of the stop [5] on the flap control unit [4].

(e) Use the turnbuckles [3] to adjust the tension in the cable assemblies [1] WFA and WFB to the limit shown in (Table 501).

1) Adjust the tensions close to the maximum values in the table.

NOTE: The cables will stretch over a period of time.

2) During the adjustment, make sure that the tension in the cable assemblies [1] is never less than 50 lbf (0.22 kN).

NOTE: To make sure that the tension is correct, the temperature of the airframe must be constant in the limit of ±5 degrees for a minimum of one hour.

(f) Remove the clamp from the quadrant [6].

(g) Remove the rigging block from the flap control lever [7].

(h) Move the flap control lever [7] through its full travel a minimum of 5 times. Stop with the flap control lever [7] in the 1-unit position.

(i) Carefully move the flap control lever [7] forward until you feel resistance.

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(j) Measure the distance between the detent pin on the flap control lever [7] and the upstop on the detent plate.

(k) If the distance is not in the limit of 0.19 in. (4.83 mm), then adjust the cable assembly [1] and the flap control lever [7] again.

(l) Install the clips [2] on the turnbuckles [3].

Table 501/27-51-00-993-801

Temperature	Cable Tension Pounds (kilograms)			
Degrees F (Degrees C)	WFA/WFB Cables		WFFA/WFFB Cables	
	Minimum	Maximum	Minimum	Maximum
120 (48.9)	159 (72)	189 (86)	73 (33)	83 (37)
118 (47.8)	158 (72)	188 (85)	73 (33)	83 (37)
116 (46.6)	157 (71)	187 (85)	72 (33)	82 (37)
114 (45.5)	154 (70)	184 (83)	72 (33)	82 (37)
112 (44.4)	153 (69)	183 (83)	71 (32)	81 (37)
110 (43.3)	152 (69)	182 (83)	71 (32)	81 (37)
108 (42.2)	150 (68)	180 (82)	70 (32)	80 (36)
106 (41.1)	149 (68)	179 (81)	70 (32)	80 (36)
104 (40.0)	148 (67)	178 (81)	69 (31)	79 (36)
102 (38.9)	147 (67)	177 (80)	68 (31)	78 (35)
100 (37.8)	144 (65)	174 (79)	68 (31)	78 (35)
98 (36.7)	143 (65)	173 (78)	67 (30)	77 (35)
96 (35.5)	142 (64)	172 (78)	67 (30)	77 (35)
94 (34.4)	140 (64)	170 (77)	66 (30)	76 (34)
92 (33.3)	139 (63)	169 (77)	66 (30)	76 (34)
90 (32.2)	103 (47)	168 (76)	65 (30)	75 (34)
88 (31.1)	102 (46)	167 (76)	65 (30)	75 (34)
86 (30.5)	100 (45)	165 (75)	64 (29)	74 (34)
84 (28.9)	98 (44)	163 (74)	64 (29)	74 (34)
82 (27.8)	97 (44)	162 (73)	63 (29)	73 (33)
80 (26.7)	95 (43)	160 (72)	63 (29)	73 (33)
78 (25.5)	94 (43)	159 (72)	62 (28)	72 (33)
76 (24.4)	93 (42)	158 (72)	62 (28)	72 (33)
74 (23.3)	92 (42)	157 (71)	61 (28)	71 (32)
72 (22.2)	90 (41)	155 (70)	61 (28)	71 (32)
70 (21.1)	89 (40)	154 (70)	60 (27)	70 (32)
68 (20.0)	87 (39)	152 (69)	59 (27)	69 (31)
66 (18.9)	85 (39)	150 (68)	59 (27)	69 (31)

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Table 501/27-51-00-993-801 (Continued)

Temperature	Cable Tension Pounds (kilograms)			
Degrees F (Degrees C)	WFA/WFB Cables		WFFA/WFFB Cables	
	Minimum	Maximum	Minimum	Maximum
64 (17.8)	84 (38)	149 (68)	58 (26)	68 (31)
62 (16.7)	83 (37)	148 (67)	58 (26)	68 (31)
60 (15.5)	82 (37)	147 (67)	57 (26)	67 (30)
58 (14.4)	80 (36)	145 (66)	57 (26)	67 (30)
56 (13.3)	79 (36)	144 (65)	56 (25)	66 (30)
54 (12.2)	78 (35)	143 (65)	56 (25)	66 (30)
52 (11.1)	75 (34)	140 (64)	55 (25)	65 (30)
50 (10.0)	74 (34)	139 (63)	55 (25)	65 (30)
48 (8.9)	108 (49)	138 (63)	54 (24)	64 (29)
46 (7.8)	107 (49)	137 (62)	54 (24)	64 (29)
44 (6.7)	105 (48)	135 (61)	53 (24)	63 (29)
42 (5.5)	104 (47)	134 (61)	53 (24)	63 (29)
40 (4.4)	103 (47)	133 (60)	52 (24)	62 (28)
38 (3.3)	102 (46)	132 (60)	52 (24)	62 (28)
36 (2.2)	99 (45)	129 (59)	51 (23)	61 (28)
34 (1.1)	98 (44)	128 (58)	51 (23)	61 (28)
32 (0.0)	97 (44)	127 (58)	50 (23)	60 (27)
30 (-1.1)	95 (43)	125 (57)	50 (23)	60 (27)
28 (-2.2)	94 (43)	124 (56)	50 (23)	60 (27)
26 (-3.3)	93 (42)	123 (56)	49 (22)	59 (27)
24 (-4.4)	92 (42)	122 (55)	49 (22)	59 (27)
22 (-5.5)	89 (40)	119 (54)	48 (22)	58 (26)
20 (-6.6)	88 (40)	118 (54)	48 (22)	58 (26)
18 (-7.8)	87 (39)	117 (53)	47 (21)	57 (26)
16 (-8.9)	86 (39)	116 (53)	47 (21)	57 (26)
14 (-10.0)	84 (38)	114 (52)	46 (21)	56 (25)
12 (-11.1)	83 (37)	113 (51)	46 (21)	56 (25)
10 (-12.2)	82 (37)	112 (51)	45 (20)	55 (25)
8 (-13.3)	81 (37)	111 (50)	45 (20)	55 (25)
6 (-14.4)	80 (36)	110 (50)	44 (20)	54 (24)
4 (-15.5)	77 (35)	107 (49)	44 (20)	54 (24)
2 (-16.6)	76 (34)	106 (48)	43 (20)	53 (24)

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Table 501/27-51-00-993-801 (Continued)

Temperature	Cable Tension Pounds (kilograms)			
Degrees F (Degrees C)	WFA/WFB Cables		WFFA/WFFB Cables	
	Minimum	Maximum	Minimum	Maximum
0 (-17.8)	75 (34)	105 (48)	43 (20)	53 (24)
-2 (-18.9)	74 (34)	104 (47)	42 (19)	52 (24)
-4 (-20.0)	72 (33)	102 (46)	42 (19)	52 (24)
-6 (-21.1)	71 (32)	101 (46)	42 (19)	52 (24)
-8 (-22.2)	70 (32)	100 (45)	41 (19)	51 (23)
-10 (-23.3)	69 (31)	99 (45)	41 (19)	51 (23)
-12 (-24.4)	67 (30)	97 (44)	40 (18)	50 (23)
-14 (-25.5)	66 (30)	96 (44)	40 (18)	50 (23)
-16 (-26.6)	64 (29)	94 (43)	39 (18)	49 (22)
-18 (-27.7)	63 (29)	93 (42)	39 (18)	49 (22)
-20 (-28.8)	62 (28)	92 (42)	38 (17)	48 (22)
-22 (-30.0)	61 (28)	91 (41)	38 (17)	48 (22)
-24 (-31.1)	60 (27)	90 (41)	37 (17)	47 (21)
-26 (-32.2)	58 (26)	88 (40)	37 (17)	47 (21)
-28 (-33.3)	56 (25)	86 (39)	37 (17)	47 (21)
-30 (-34.4)	55 (25)	85 (39)	36 (16)	46 (21)
-32 (-35.5)	54 (24)	84 (38)	36 (16)	46 (21)
-34 (-36.7)	53 (24)	83 (37)	35 (16)	45 (20)
-36 (-37.8)	52 (24)	82 (37)	35 (16)	45 (20)
-38 (-38.9)	51 (23)	81 (37)	34 (15)	44 (20)
-40 (-40.0)	50 (23)	80 (36)	34 (15)	44 (20)

NOTE: The minimum (Low) cable tension listed in the table above maintenance action and should not be construed as an in-service operational limit for cable tension.

SUBTASK 27-51-00-820-002

(6) Make sure that the flap power drive unit [17] is in the rigged position.

(a) Make sure that the black rig mark on the cable drum [12] extends past the white cable guard [13] a minimum of 0.03 in. (0.76 mm) on each side.

WARNING DO NOT RETRACT THE POWER DRIVE UNIT PAST THE RIG MARK IN THE UP DIRECTION. YOU CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) If the power drive unit [17] is not in the rigged position, use the manual drive to move the power drive unit [17].

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SUBTASK 27-51-00-820-003

(7) Install the rig pin [27] from the rigging pin kit, SPL-1585, in the flap control unit [4].

NOTE: This will make sure the flap control unit [4] is in the adjusted position.

(a) Remove the screws [25], washers [32] and the lower pan [26] from the flap control unit [4].

(b) Install the rig pin [27] through the cam follower arm and the valve cam.

SUBTASK 27-51-00-820-004

(8) Adjust the tension in the follow-up cables WFFA and WFFB.

(a) Remove the clips [8] from the turnbuckles [10] on the cables [9] and cables [11].

(b) If you installed a new cable [9] or cable [11], use the turnbuckles to adjust the tension in the cables to 125 +10 / -0 lbf (0.56 +0.05 / -0.00 kN)).

1) Use the low tension cable tensiometer, COM-1553, to measure the tension of the cable.

(c) Use the turnbuckles [10] to adjust the tension in the cables WFFA and WFFB to the limit shown in (Table 501).

NOTE: If the temperature is 30°F (-1.11°C) or higher the minimum tension is 50 lbf (0.22 kN). If the temperature is less than 30°F (-1.11°C) the minimum tension is 30 +10 / -0 lbf (0.13 +0.05 / -0.00 kN).

NOTE: To make sure that the tension is correct, the temperature of the airframe must be constant in the limit of ±5 degrees for a minimum of one hour.

1) During the adjustment, make sure that the tension in the cables is never less than the minimum.

2) Use the low tension cable tensiometer, COM-1553, to measure the tension of the cable.

(d) Make sure you can easily remove and install the rig pin [27].

(e) Install the clips [8] on the turnbuckles [10].

SUBTASK 27-51-00-820-005

(9) Make a preliminary adjustment of the trailing edge flap control valve [19].

NOTE: This adjustment will make sure that the ballscrew nuts do not hit the upstops on the ballscrews when you retract the flaps. The final adjustment will be done after the flap drive system is adjusted.

(a) Measure the distance the valve slide [29] extends past the index surface [28] on the trailing edge flap control valve [19].

(b) If the valve slide [29] does not extend past the index surface [28] in the limit of 0.0 in. (0.00 mm) to 0.03 in. (0.76 mm), then adjust the trailing edge flap control valve [19]:

1) Loosen the nut [30] and nut [33] on the adjustable sleeve [31].

2) Turn the adjustable sleeve [31] to change the position of the rod end [24] until the valve slide [29] and the index surface [28] align in the limit.

3) Tighten the nut [30] and nut [33] on the adjustable sleeve [31].

4) Make sure that the distance between the center of the rod end [24] and the nut [33] is less than 0.94 in. (23.88 mm).

5) Make sure that the distance between the nut [30] and the hex on the adjustable sleeve [31] is less than 0.19 in. (4.83 mm).

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CAUTION

MAKE SURE THAT YOU REMOVE THE HYDRAULIC POWER BEFORE YOU DISCONNECT THE ROD END FROM THE SUMMING LEVER. IF YOU DISCONNECT THE ROD END WITH HYDRAULIC POWER ON, YOU CAN CAUSE DAMAGE TO THE FLAP CONTROL UNIT.

6) If it is necessary, disconnect the rod end [24] from the summing lever [20].

NOTE: It is necessary to disconnect the rod end [24] if you cannot align the valve slide [29] and index surface [28] while the adjustable sleeve [31] is in the limits.

a) Remove the nut [23], washer [22], and bolt [21] that attach the rod end [24] to the summing lever [20].

b) Change the position of the adjustable sleeve [31].

c) Install the bolt [21], washer [22] and nut [23] to attach the rod end [24] to the summing lever [20].

7) Tighten the nut [30] and nut [33].

NOTE: It is not necessary to install the lockwire on the nuts now. You will install lockwire after the final adjustment is complete.

SUBTASK 27-51-00-820-006

(10) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-00-420-002

(11) Connect the torque tubes [18] to the flap power drive unit [17].

(a) Remove the clamp set, SPL-1726, from the torque tubes [18].

(b) Make sure that the ballscrew nuts for transmission No. 4 and No. 5 are 1/2 turn ±10 degrees (±0.25 inch) (±6.3 millimeters) from the upstop on the ballscrew yoke.

(c) Apply grease, D00633, to the coupling sleeve [15].

(d) Put the splined couplings [16] in the coupling sleeve [15].

(e) Install the screws [14] to attach the torque tubes [18] to the power drive unit [17].

(f) Install MS20995C32 lockwire, G01048, on the screws [14].

SUBTASK 27-51-00-420-003

(12) For the flap position transmitters on the left and right wings, do this task: Flap Position Transmitter Installation, TASK 27-58-01-400-801.

SUBTASK 27-51-00-860-046

WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(13) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

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SUBTASK 27-51-00-860-047

(14) Use the primary system to extend the trailing edge flaps to the 40-unit position, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-00-860-048

(15) Use the primary system to retract the trailing edge flaps to the UP position, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

NOTE: Wait a minimum of 2 minutes before you remove the hydraulic power. The flaps can move a small distance during this time.

SUBTASK 27-51-00-860-049

(16) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-51-00-820-007

(17) Do these steps to do a check of the adjustment of the trailing edge flap control valve [19].

(a) Make sure that you can install the rig pin [27] in the flap control unit [4].

(b) Make sure that the ballscrew nuts for transmission No. 4 and No. 5 are 1/2 turn ±10 degrees (±0.25 inch) (±6.3 millimeters) from the upstop on the ballscrew yoke.

SUBTASK 27-51-00-820-008

(18) If you cannot install the rig pin [27] or if the ballscrew nuts are not in the correct position, then do a final adjustment of the trailing edge flap control valve [19].

NOTE: It can be necessary to adjust the trailing flap control valve more than once to get it to the correct position.

(a) Loosen the nut [30] and nut [33] on the adjustable sleeve [31].

CAUTION

ADJUST THE FLAP CONTROL VALVE A SMALL DISTANCE AT A TIME. IF YOU ADJUST THE FLAP CONTROL VALVE TOO FAR, THE BALLSCREW NUTS CAN HIT THE UPSTOPS. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Turn the adjustable sleeve [31] to change the position of the valve slide [29].

NOTE: If the flaps did not retract far enough, adjust the valve slide [29] to be further out of the trailing edge flap control valve [19]. If the flaps retracted too far, adjust the valve slide [29] to be further in the trailing edge flap control valve [19].

(c) Tighten the nut [30] and nut [33] on the adjustable sleeve [31].

NOTE: Make sure that the distance between the center of the rod end [24] and the nut [33] is less than 0.94 in. (23.88 mm). Make sure the distance between the nut [30] and the hex on the adjustable sleeve [31] is less than 0.19 in. (4.83 mm).

CAUTION

MAKE SURE THAT YOU REMOVE THE HYDRAULIC POWER BEFORE YOU DISCONNECT THE ROD END FROM THE SUMMING LEVER. IF YOU DISCONNECT THE ROD END WITH HYDRAULIC POWER ON, YOU CAN CAUSE DAMAGE TO THE FLAP CONTROL UNIT.

(d) If it is necessary, disconnect the rod end [24] from the summing lever [20].

NOTE: It is necessary to disconnect the rod end [24] if you cannot adjust the valve slide [29] enough to get the flaps in the correct position.

1) Remove the nut [23], washer [22] and bolt [21] that attach the rod end [24] to the summing lever [20].

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2) Change the position of the adjustable sleeve [31].

3) Install the bolt [21], washer [22] and nut [23] to attach the rod end [24] to the summing lever [20].

(e) Tighten the nut [30] and nut [33].

WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(g) Use the primary system to fully extend and retract the trailing edge flaps a minimum of five times, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(h) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

(i) Make sure that you can install the rig pin [27] in the flap control unit [4].

(j) Make sure that the ballscrew nuts for transmission No. 4 and No. 5 are 1/2 turn ±10 degrees (±0.25 inch) (±6.3 millimeters) from the upstop on the ballscrew yoke.

SUBTASK 27-51-00-420-004

(19) Install lockwire on the nut [30], nut [33] and the adjustable sleeve [31].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-410-004

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-51-00-410-014

(2) Close this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 27-51-00-410-005

(3) Install the floor panel above the flap control unit [4], do this task: Passenger Cabin Floor Panel Installation, TASK 53-21-00-400-801.

SUBTASK 27-51-00-410-006

(4) Install the lower pan [26] on the flap control unit [4].

(a) Remove the rig pin [27].

(b) Put the lower pan [26] in its location on the flap control unit [4].

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WARNING

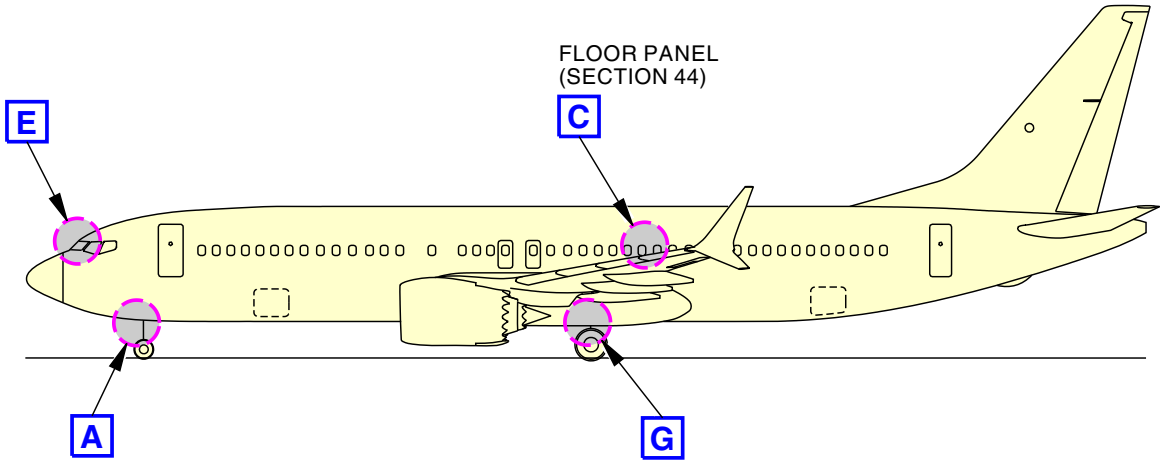
USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

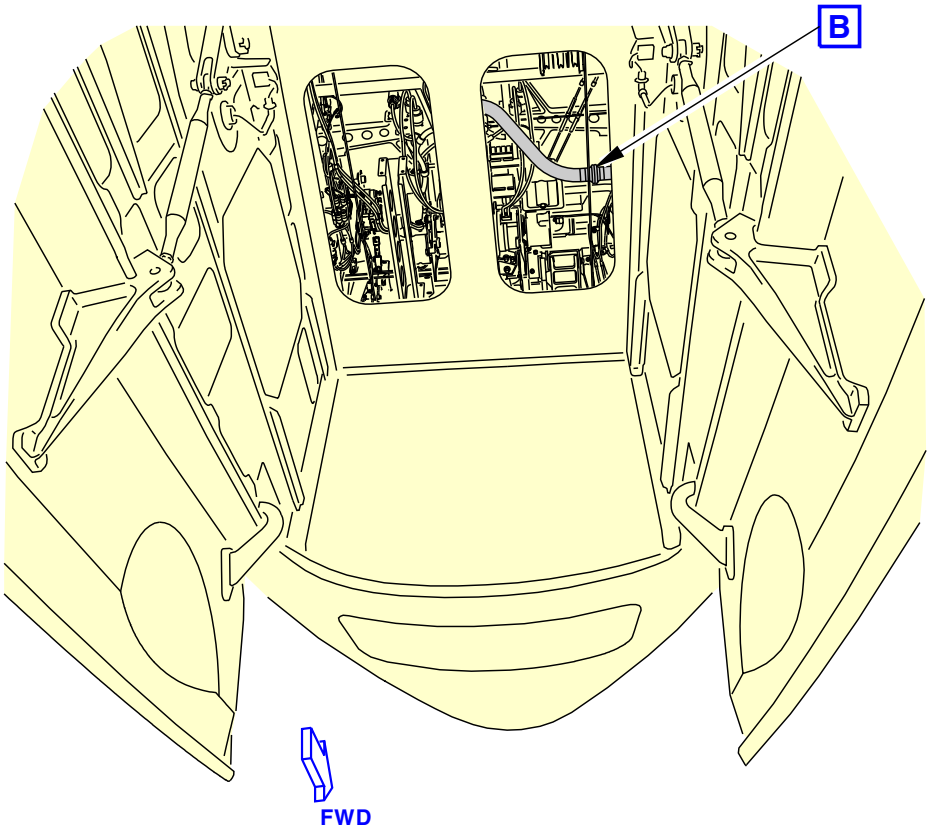
(c) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [25].

(d) Install the washers [32] and screw [25] to attach the lower pan [26].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





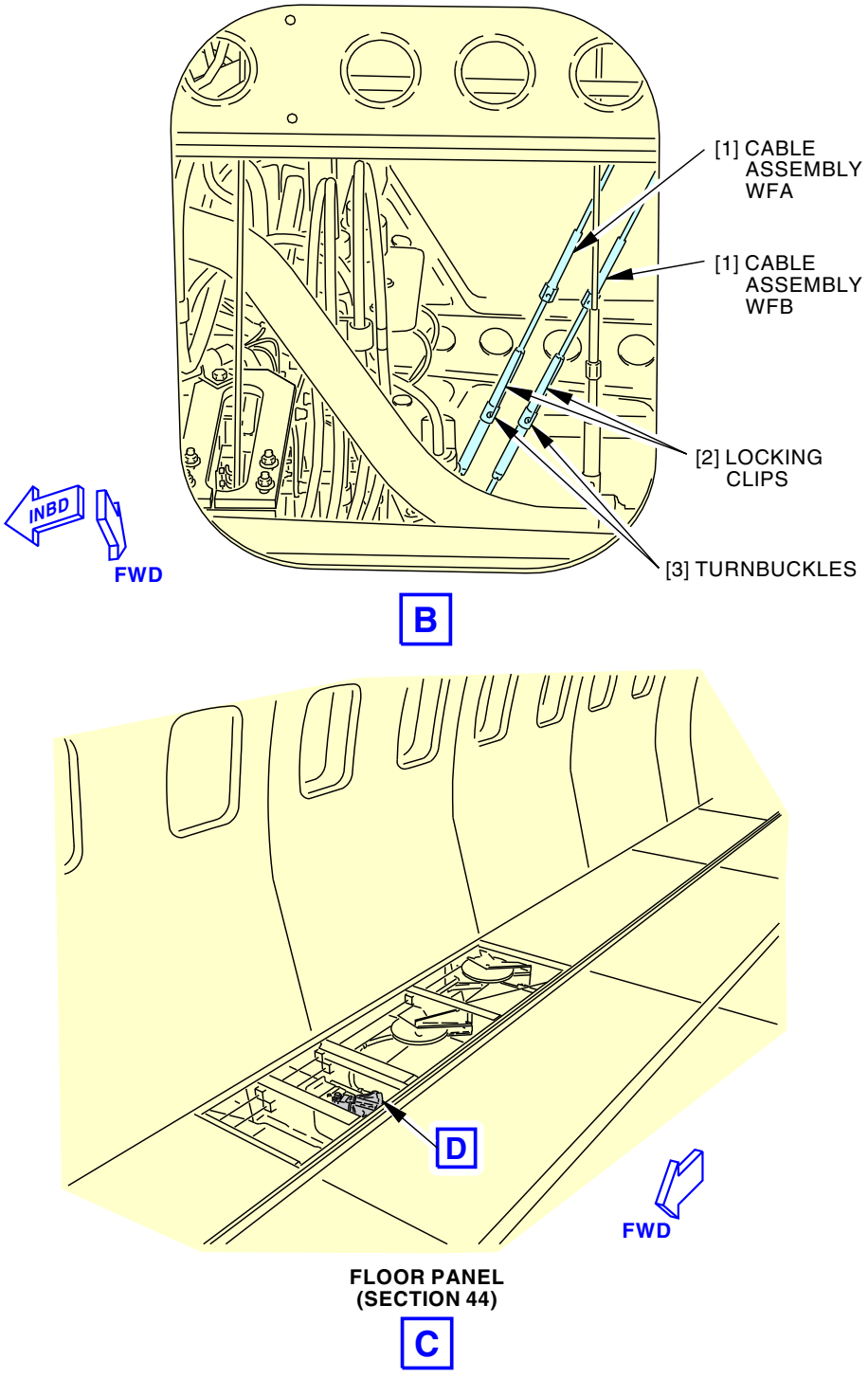
NOSE LANDING GEAR WHEEL WELL

A

2412738 S00061531251_V2

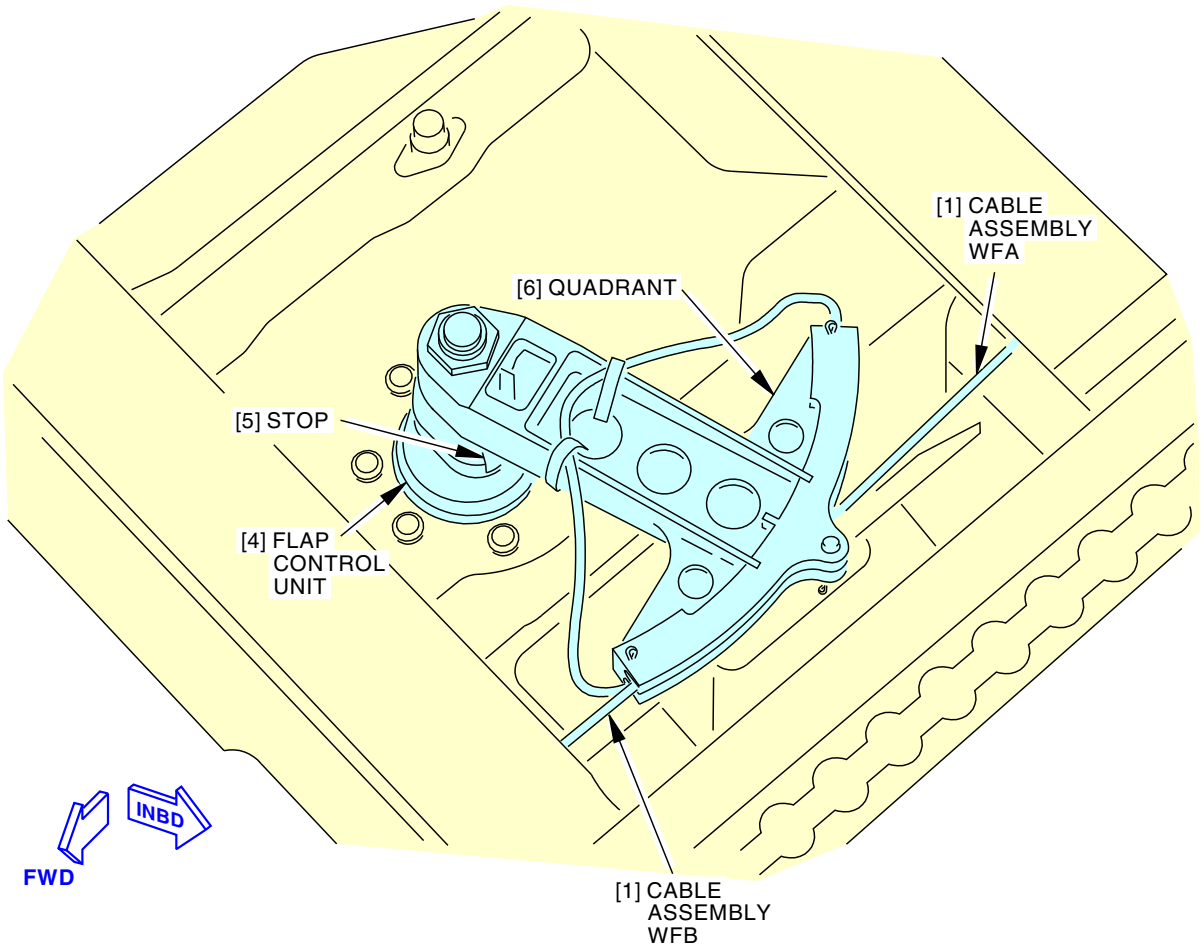
Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 2 of 9)

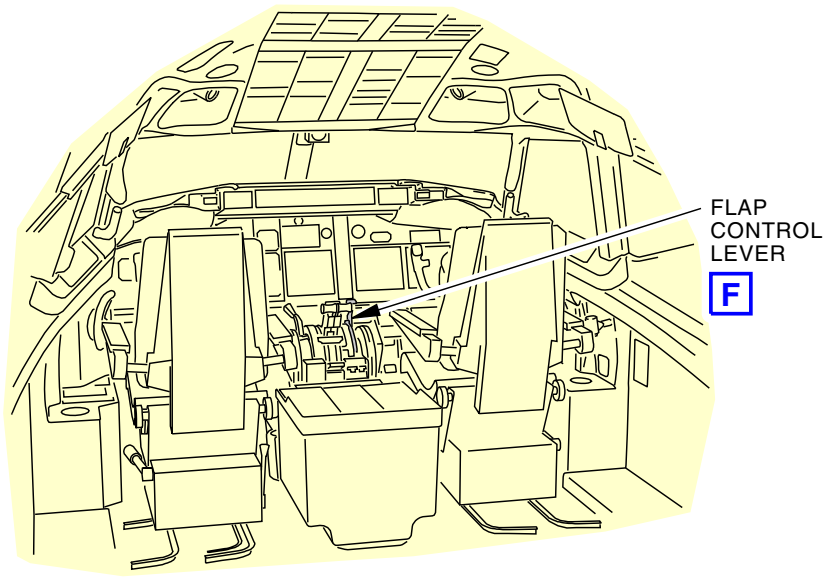
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412740 S00061531253_V1

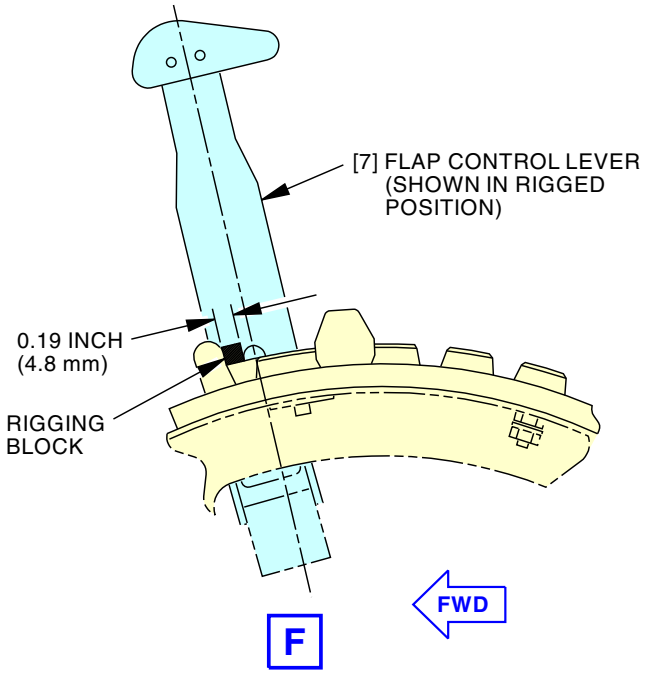
Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT

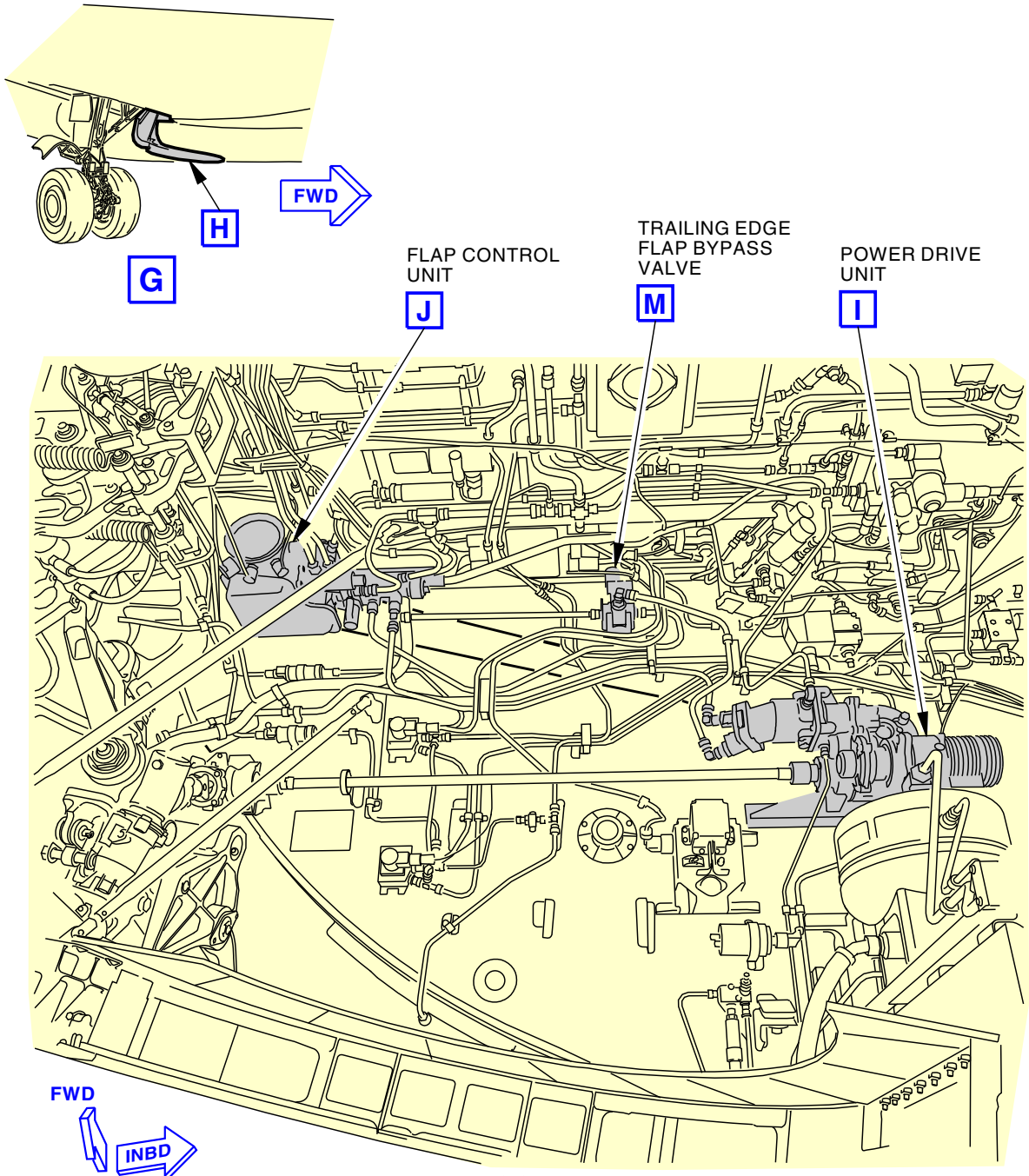
E



2412741 S00061531254_V1

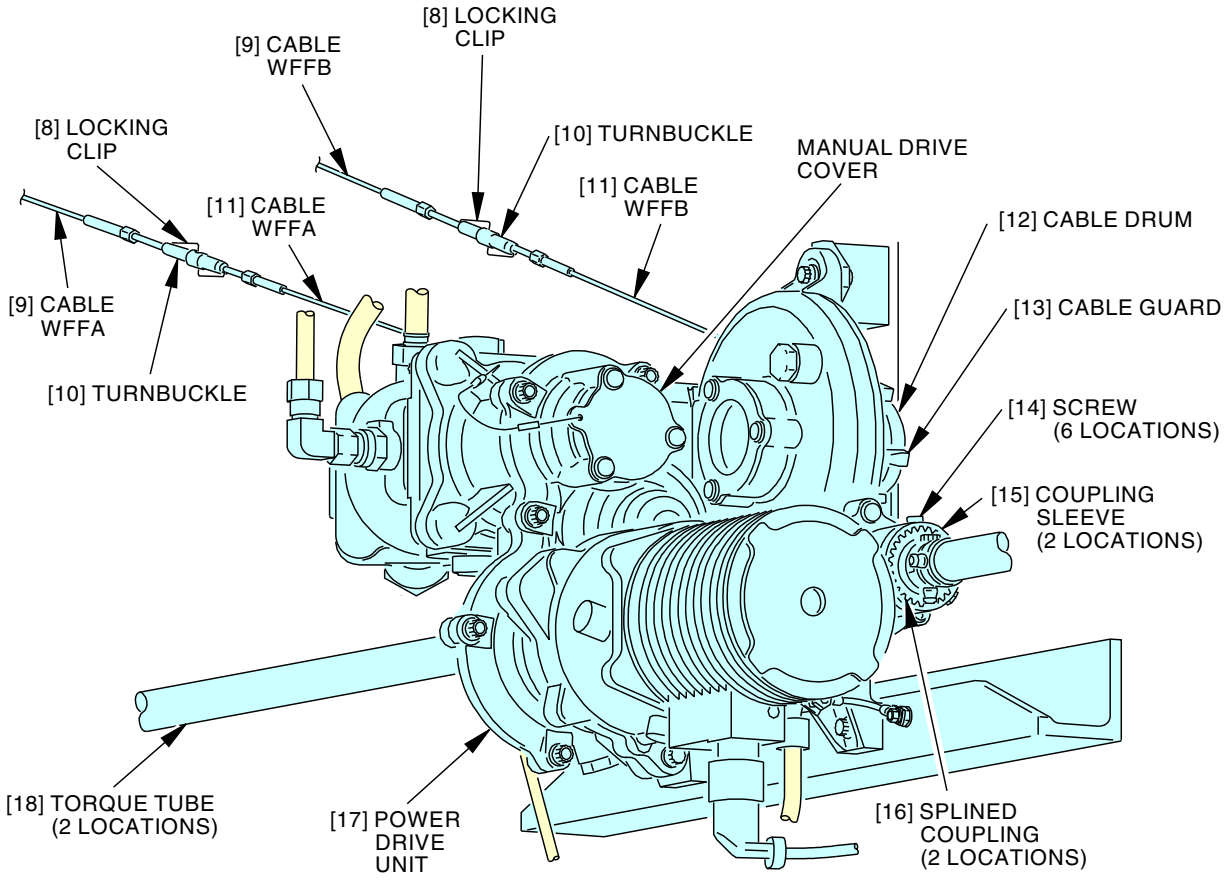
Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



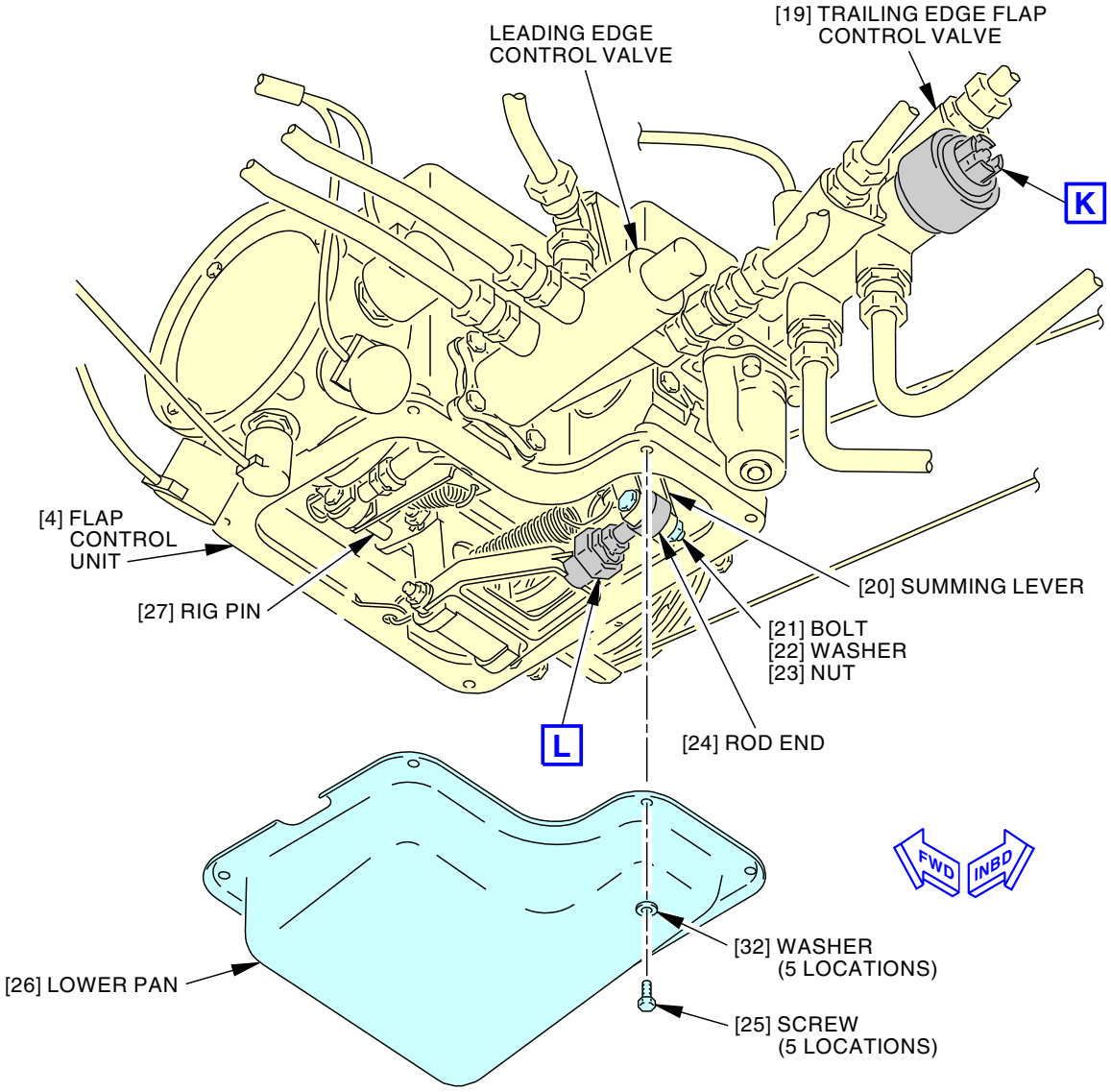
POWER DRIVE UNIT

I

2412743 S00061531256_V1

Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 6 of 9)

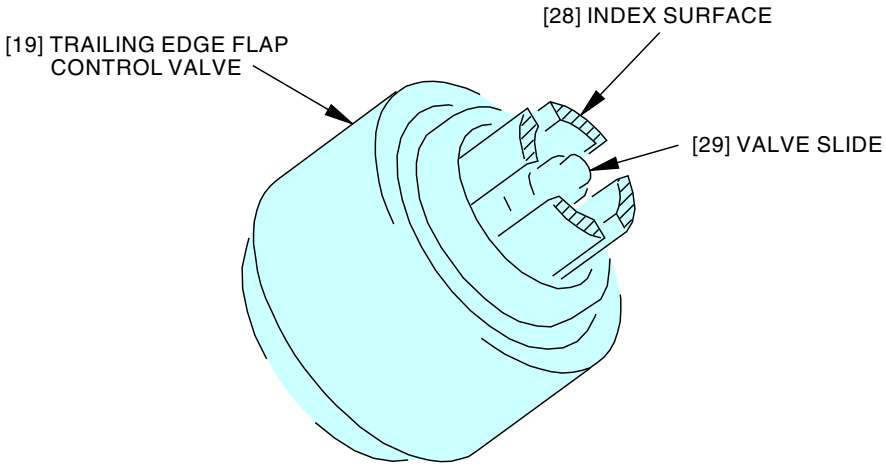
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412744 S00061531257_V1

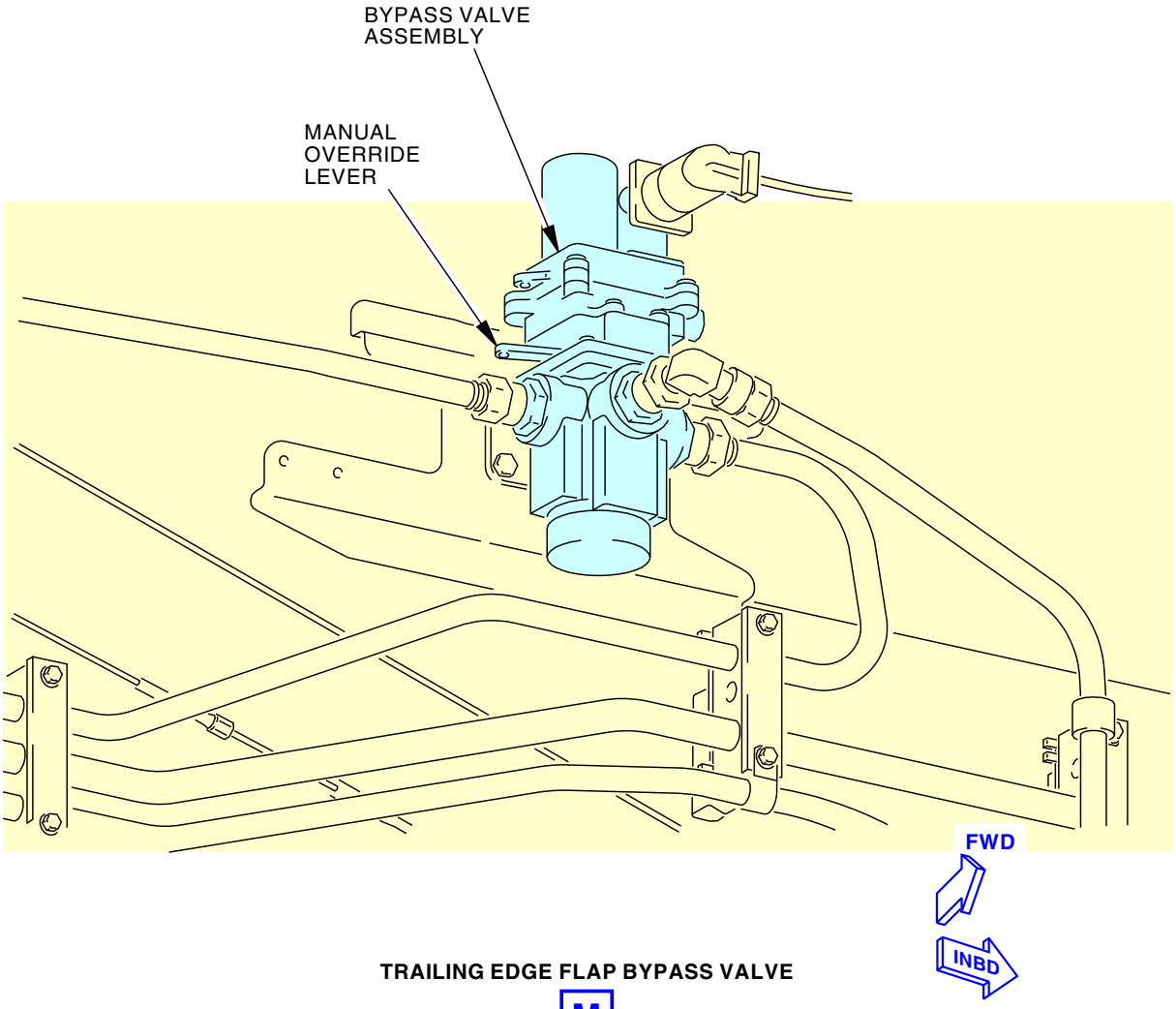
Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TRAILING EDGE FLAP BYPASS VALVE

M

2804321 S0000643010_V1

Trailing Edge Flap Control System Adjustment
Figure 502/27-51-00-990-808 (Sheet 9 of 9)

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TASK 27-51-00-820-802

4. Trailing Edge Flap Drive System Adjustment

(Figure 503)

A. General

(1) This task does a check of the adjustment and an adjustment of the trailing edge flap drive system. The procedure to adjust the inboard flaps is in (TASK 27-51-11-820-801). The procedure to adjust the outboard flaps is in (TASK 27-51-21-820-801).

(a) The trailing edge flap drive system includes the flap transmissions, angle gearboxes, torque tubes, and the flap power drive unit.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-11-820-801	Inboard Trailing Edge Flap Adjustment (P/B 501)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)
27-58-01-000-801	Flap Position Transmitter Removal (P/B 401)
27-58-01-400-801	Flap Position Transmitter Installation (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-5384	Wrench - Coupling Sleeve Flap Actuation Part #: C27041-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1

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(Continued)

Zone	Area
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
560	Subzone - Left Wing: Trailing Edge , Aft of Rear Spar, Outboard of Inbd Trailing Edge Flap, Inbd of Fixed Trailing Edge
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
660	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Outboard of Inboard Trailing Edge Flap, Inboard of Fixed Trailing Edge

F. Do a Check of the Trailing Edge Flap Drive System Adjustment

SUBTASK 27-51-00-040-006

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-00-480-011

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-980-006

(3) Manually extend the flaps until the ballscrew nuts touch the downstops on the ballscrews:

(a) If the torque tubes are not connected to the flap power drive unit, manually extend the flaps on each wing:

1) If all of the torque tubes on the wing are connected, use a coupling sleeve wrench, SPL-5384, on the torque tube couplings inboard of the tee-angle gearbox.

CAUTION DO NOT MOVE ONE END OF A FLAP MORE THAN 1.4 INCHES (35.5 MILLIMETERS) OF BALLSCREW TRAVEL MORE THAN THE OTHER END. YOU CAN CAUSE THE FLAP TO SKEW TO MUCH. THIS CAN CAUSE DAMAGE TO THE FLAP.

2) If all of the torque tubes on the wing are not connected, use a coupling sleeve wrench, SPL-5384, to drive each flap independently.

(b) If the torque tubes are connected to the flap power drive unit, and all of the torque tubes are connected on each wing, use the manual drive to extend the flaps. To use the manual drive, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

SUBTASK 27-51-00-220-001

(4) Do a check of the adjustment of the flap drive system on each wing:

NOTE: If all of the torque tubes on the wing are not connected, it is not necessary to do this check.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) At all of the transmissions, measure and record the dimension from the downstop on the ballscrew nut to the downstop on the ballscrew.

NOTE: This dimension is referred to as Dimension Y.

(b) Make sure the Dimension Y for the transmission No. 4 and transmission No. 5 are in these limits:

1) If the torque tubes are connected between the wings, Dimension Y must be 0.0 (the ballscrew nut touches the downstop) for one transmission and in the limit of 0.0 in. (0.00 mm) to 0.1 in. (2.54 mm) for the other transmission.

2) If the torque tubes are not connected between the wings, Dimension Y must be 0.0 (the ballscrew nut touches the downstop) for the two transmission.

(c) On the left wing flap drive system:

1) Make sure Dimension Y for transmissions No. 1 and No. 3 are in the limit of 0.0 in. (0.00 mm) to 0.2 in. (5.08 mm) more than Dimension Y at transmission No. 4.

2) Make sure Dimension Y for transmission No. 2 is in the limit of 0.0 in. (0.00 mm) to 0.22 in. (5.59 mm) more than Dimension Y at transmission No. 1.

(d) On the right wing flap drive system:

1) Make sure Dimension Y for transmissions No. 6 and No. 8 are in the limit of 0.0 in. (0.00 mm) to 0.2 in. (5.08 mm) more than Dimension Y at transmission No. 5.

2) Make sure Dimension Y for transmission No. 7 is in the limit of 0.0 in. (0.00 mm) to 0.22 in. (5.59 mm) more than Dimension Y at transmission No. 8.

SUBTASK 27-51-00-820-009

(5) If the flap drive system is not adjusted correctly on each wing, do the trailing edge flap drive system adjustment.

G. Trailing Edge Flap Drive System Adjustment

SUBTASK 27-51-00-020-005

(1) For the flap position transmitters on the left and right wings, do this task: Flap Position Transmitter Removal, TASK 27-58-01-000-801.

NOTE: If you do not remove the flap position transmitters before you disconnect the torque tubes, they will become incorrectly adjusted.

SUBTASK 27-51-00-020-006

(2) Disconnect the torque tubes [18] from the flap power drive unit [17] (Figure 502):

NOTE: This will disconnect the flap drive system for the left wing from the right wing. It is necessary to adjust the left and the right wings independently, then connect them together.

(a) Remove the screws [14] that attach the coupling sleeves [15] to the splined couplings [16].

(b) Move the coupling sleeves [15] off the splined couplings [16].

(c) Move the torque tubes [18] away from the flap power drive unit [17].

SUBTASK 27-51-00-020-007

(3) Disconnect the torque tube from the inboard side of transmission No. 2 or transmission No. 7 (Figure 503):

NOTE: This will disconnect the flap drive system for the outboard flaps from the inboard flaps.

(a) Remove the screws [14] that attach the coupling sleeves [15] to the splined couplings [16].

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(b) Move the coupling sleeves [15] off the splined couplings [16].

(c) Move the torque tubes away from the transmission.

SUBTASK 27-51-00-820-010

(4) Adjust the flap drive system for the outboard flap:

NOTE: This procedure is applicable to the drive system for the outboard flap on the left wing and the right wing.

CAUTION

DO NOT MOVE ONE END OF A FLAP MORE THAN 1.4 INCHES (35.5 MILLIMETERS) OF BALLSCREW TRAVEL MORE THAN THE OTHER END. YOU CAN CAUSE THE FLAP TO SKEW TO MUCH. THIS CAN CAUSE DAMAGE TO THE FLAP.

(a) Use a coupling sleeve wrench, SPL-5384, on the coupling on the inboard side of transmission No. 2 to extend the outboard flap until one of the ballscrew nuts touch the downstop on the ballscrew.

(b) Make sure the ballscrew nut at transmission No. 1 touches the downstop (Dimension Y = 0).

(c) Make sure the Dimension Y for transmission No. 2 is in the limit of 0.0 in. (0.00 mm) to 0.2 in. (5.08 mm).

(d) If the ballscrew nuts for transmissions No. 1 and No. 2 are not in the limits, adjust the drive system for the outboard flap:

1) Disconnect the torque tubes between transmissions No. 1 and No. 2:

a) Remove the screws [14] that attach the coupling sleeves [15] to the splined couplings [16].

b) Move the coupling sleeve [15] off the splined coupling [16].

c) Move the torque tube away from the transmission.

2) Manually extend the transmissions until the ballscrew nuts for transmissions No. 1 and transmission No. 2 touch the downstops.

3) Connect the torque tubes between the transmissions No. 1 and No. 2:

NOTE: To align the torque tube couplings, you can retract the transmission No. 2 a maximum of 1/3 of a torque tube turn.

a) Apply grease, D00633, to the coupling sleeve [15].

b) Put the splined coupling [16] in the coupling sleeve [15].

c) Install the screws [14] to attach the torque tube to the transmission.

d) Install MS20995NC32 lockwire, G50347, on the screw [14].

SUBTASK 27-51-00-820-011

(5) Adjust the flap drive system for the inboard flap:

NOTE: This procedure is applicable to the drive system for the inboard flap on the left wing and the right wing.

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CAUTION

DO NOT MOVE ONE END OF A FLAP MORE THAN 1.4 INCHES (35.5 MILLIMETERS) OF BALLSCREW TRAVEL MORE THAN THE OTHER END. YOU CAN CAUSE THE FLAP TO SKEW TO MUCH. THIS CAN CAUSE DAMAGE TO THE FLAP.

(a) Use a coupling sleeve wrench, SPL-5384, on the coupling on the inboard side of transmission No. 4 to extend the inboard flap until one of the ballscrew nuts touch the downstop on the ballscrew.

(b) Make sure the ballscrew nut at transmission No. 4 touches the downstop (Dimension Y = 0).

(c) Make sure the Dimension Y for transmission No. 3 is in the limit of 0.0 in. (0.00 mm) to 0.18 in. (4.57 mm).

(d) If the ballscrew nuts for transmissions No. 3 and No. 4 are not in the limits, adjust the drive system for the inboard flap:

1) Disconnect the torque tubes between transmissions No. 3 and No. 4:

a) Remove the screws [14] that attach the coupling sleeve [15] to the splined coupling [16].

b) Move the coupling sleeve [15] off the splined coupling [16].

c) Move the torque tube away from the transmission.

2) Manually extend the transmissions until the ballscrew nuts for transmissions No. 3 and transmission No. 4 touch the downstops.

3) Connect the torque tubes between the transmissions No. 3 and No. 4.

NOTE: To align the torque tube couplings, you can retract the transmission No. 3 a maximum of 1/3 of a torque tube turn.

a) Apply grease, D00633, to the coupling sleeve [15].

b) Put the splined coupling [16] in the coupling sleeve [15].

c) Install the screws [14] to attach the torque tube to the transmission.

d) Install MS20995NC32 lockwire, G50347, on the screws [14].

SUBTASK 27-51-00-820-012

(6) Connect the inboard and the outboard flaps:

NOTE: This procedure is applicable to the drive system for the inboard and outboard flaps on the left wing and the right wing.

(a) Make sure the ballscrew nuts at transmission No. 1 and transmission No. 4 touch the downstop (Dimension Y = 0).

(b) Make sure the Dimension Y for transmission No. 2 is in the limit of 0.0 in. (0.00 mm) to 0.2 in. (5.08 mm).

(c) Make sure the Dimension Y for transmission No. 3 is in the limit of 0.0 in. (0.00 mm) to 0.18 in. (4.57 mm).

(d) Connect the torque tubes between the transmissions No. 2 and No. 3.

NOTE: To align the torque tube couplings, you can retract the transmission No. 2 a maximum of 1/3 of a torque tube turn.

1) Apply grease, D00633, to the coupling sleeve [15].

2) Put the splined coupling [16] in the coupling sleeve [15].

3) Install the screws [14] to attach the torque tube to the transmission.

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4) Install MS20995NC32 lockwire, G50347, on the screws [14].

(e) Make sure that the Dimension Y for transmission No. 2 is in the limit of 0.0 in. (0.00 mm) to 0.4 in. (10.16 mm).

SUBTASK 27-51-00-820-013

(7) Move the flap drive system to the retracted position (Figure 502):

(a) Make sure that the Trailing Edge (TE) Flap Power Bypass Valve is in position 2.

WARNING DO NOT RETRACT THE POWER DRIVE UNIT PAST THE RIG MARK IN THE UP DIRECTION. YOU CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(b) Use the manual drive on the flap power drive unit [17] to retract it to the retracted position.

NOTE: The flap power drive unit is in the retracted position when the black rig mark on the cable drum [12] extends past the white cable guard [13] a minimum of 0.03 in. (0.76 mm) on each side.

(c) Make sure that the flap power drive unit is in the retracted position and install the rig pin [27] in the flap control unit using rig pin F70207-116 from rigging pin kit, SPL-1585.

(d) Use a coupling sleeve wrench, SPL-5384, on the torque tube couplings inboard of the tee-angle gearbox to retract the left and right wings to the retracted position.

NOTE: The flap drive systems for the wings are in the retracted position when the ballscrew nuts are 1/2 turn +/- 10 degrees (+/- 0.25 inch) from the upstop on the yoke.

1) Retract the flap drive systems until the ballscrew nuts for transmission No. 4 and transmission No. 5 are approximately 1/2 turn from the upstop on the yokes.

2) Make sure the distance from the upstop for transmission No. 4 and transmission No. 5 are the same in the limit of 0.25 in. (6.35 mm).

SUBTASK 27-51-00-820-014

(8) Connect the torque tubes [18] to the flap power drive unit [17]:

NOTE: This will connect the flap drive system for the left wing to the right wing.

(a) Do not rotate the torque tubes more than 5 spline teeth, in either direction, to the nearest position where the bolt holes align at the torque tube coupling connection.

1) Do not rotate the Power Drive Unit (PDU) at this step.

(b) Apply grease, D00633, to the coupling sleeve [15].

(c) Put the splined coupling [16] in the coupling sleeve [15].

(d) Install the screws [14] to attach the torque tube [18] to the power drive unit [17].

(e) Install MS20995NC32 lockwire, G50347, on the screws [14].

SUBTASK 27-51-00-210-003

(9) Make sure the torque trip indicators on the transmissions are set.

SUBTASK 27-51-00-020-008

(10) Remove the rig pin [27] from the flap power control unit.

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-420-005

(1) For the flap position transmitters on the left and the right wing, do this task: Flap Position Transmitter Installation, TASK 27-58-01-400-801.

SUBTASK 27-51-00-440-004

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

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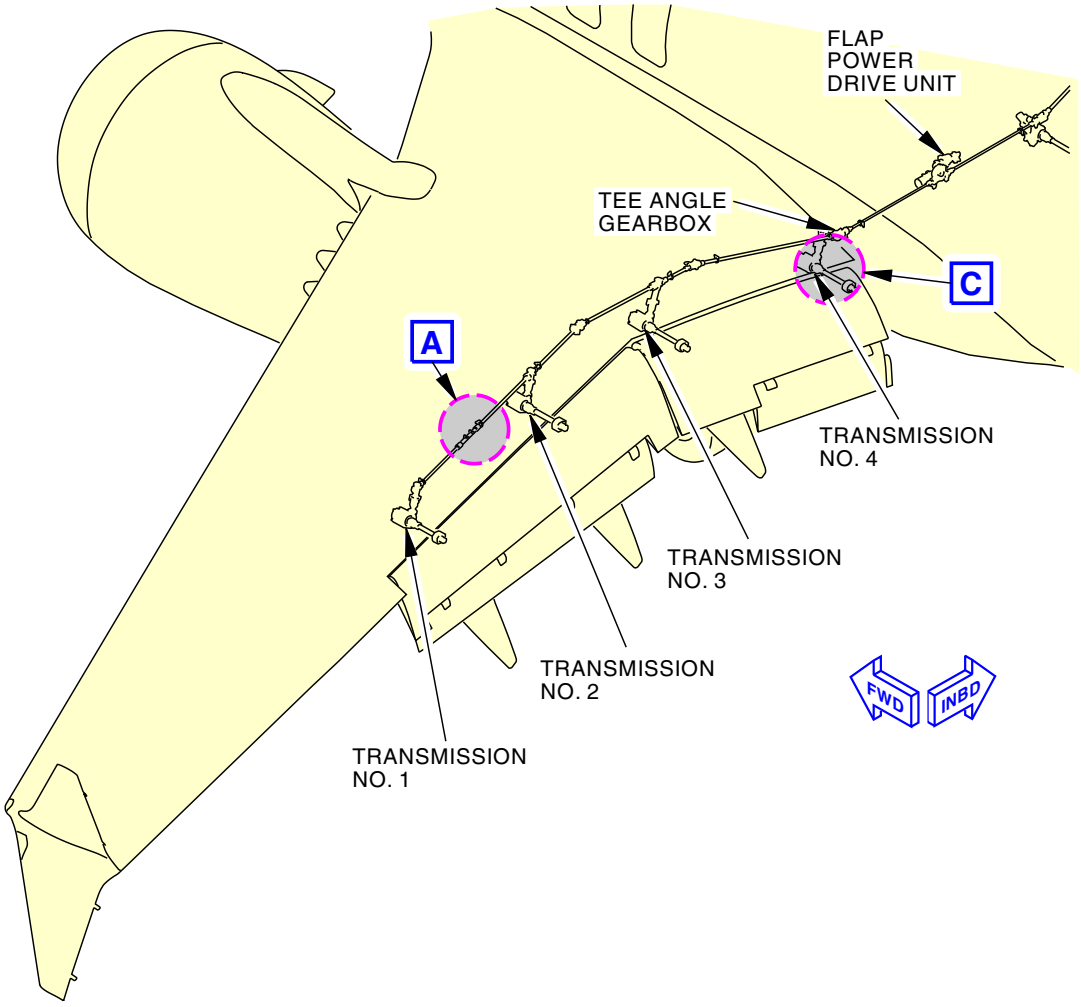

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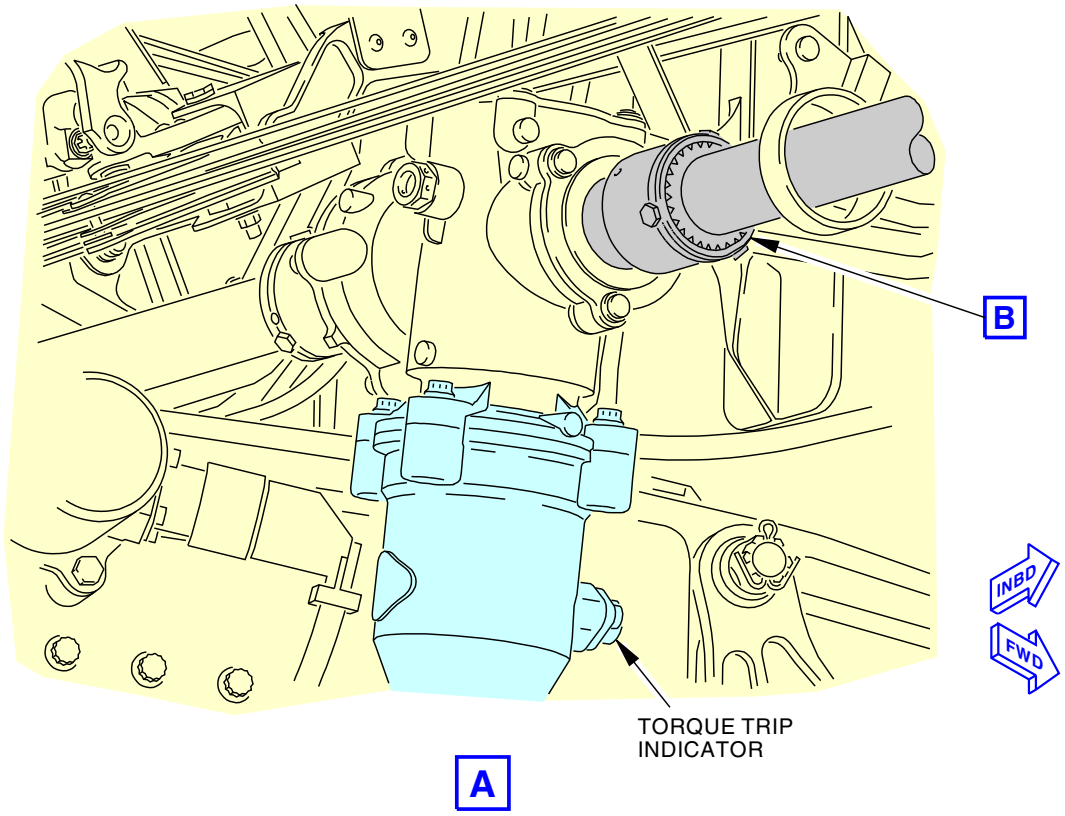
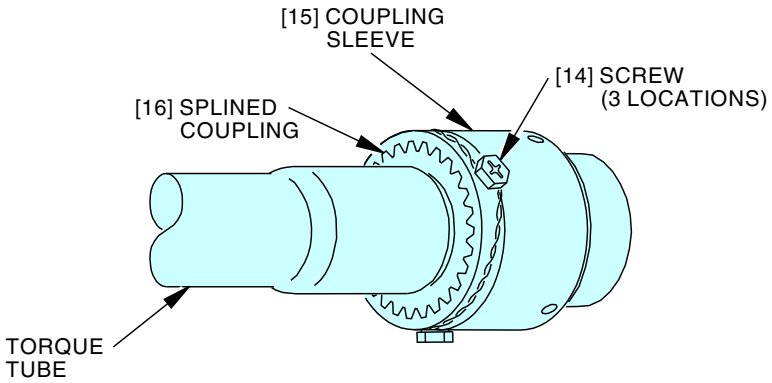
Trailing Edge Flap Drive System Adjustment
Figure 503/27-51-00-990-809 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





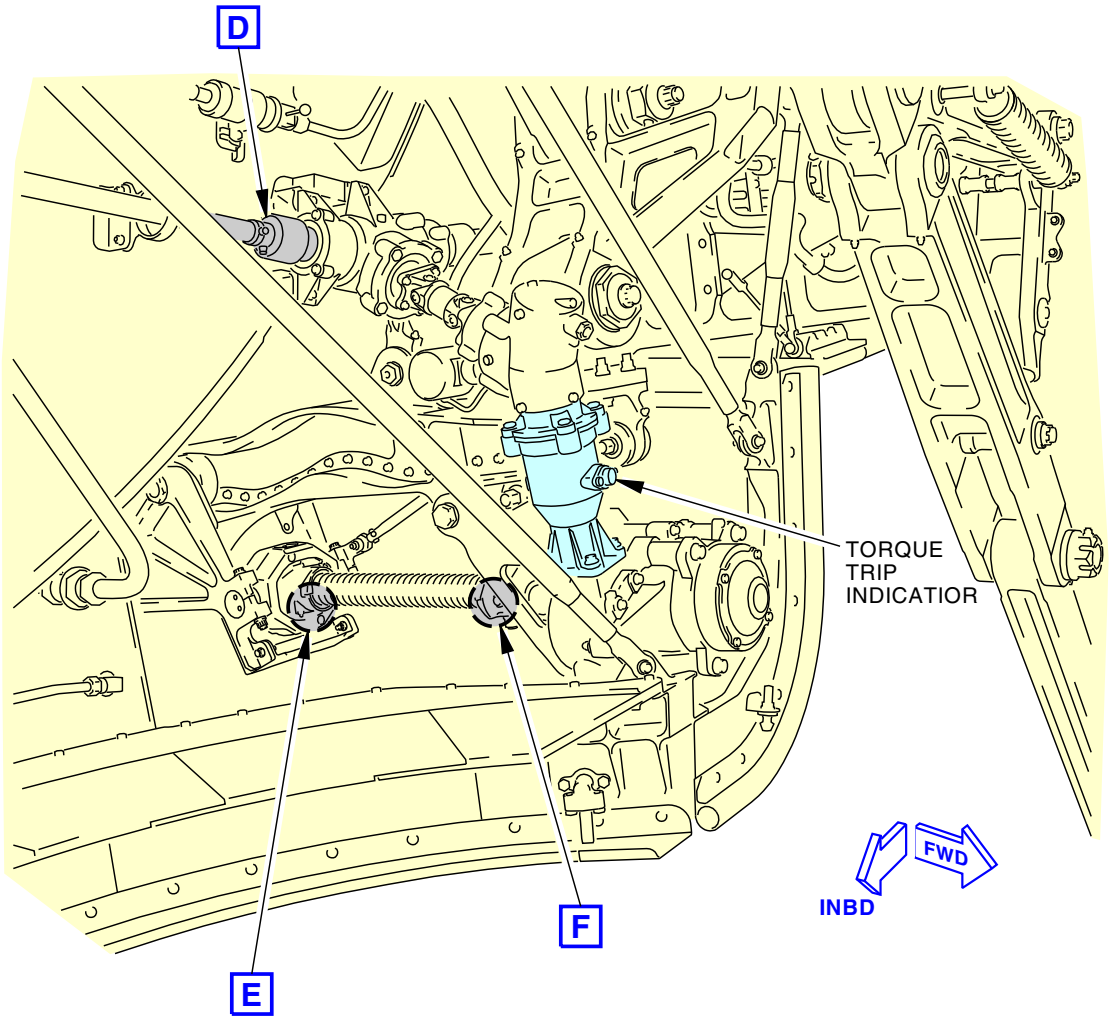
TORQUE TUBE COUPLING
(EXAMPLE)

B

2412748 S00061531262_V1

Trailing Edge Flap Drive System Adjustment
Figure 503/27-51-00-990-809 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



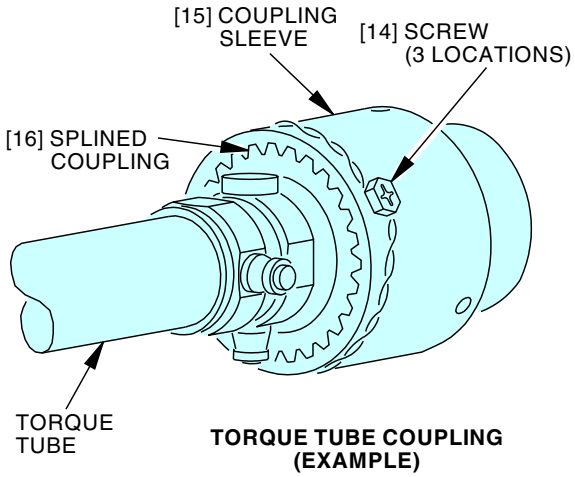
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

C

2412750 S00061531264_V1

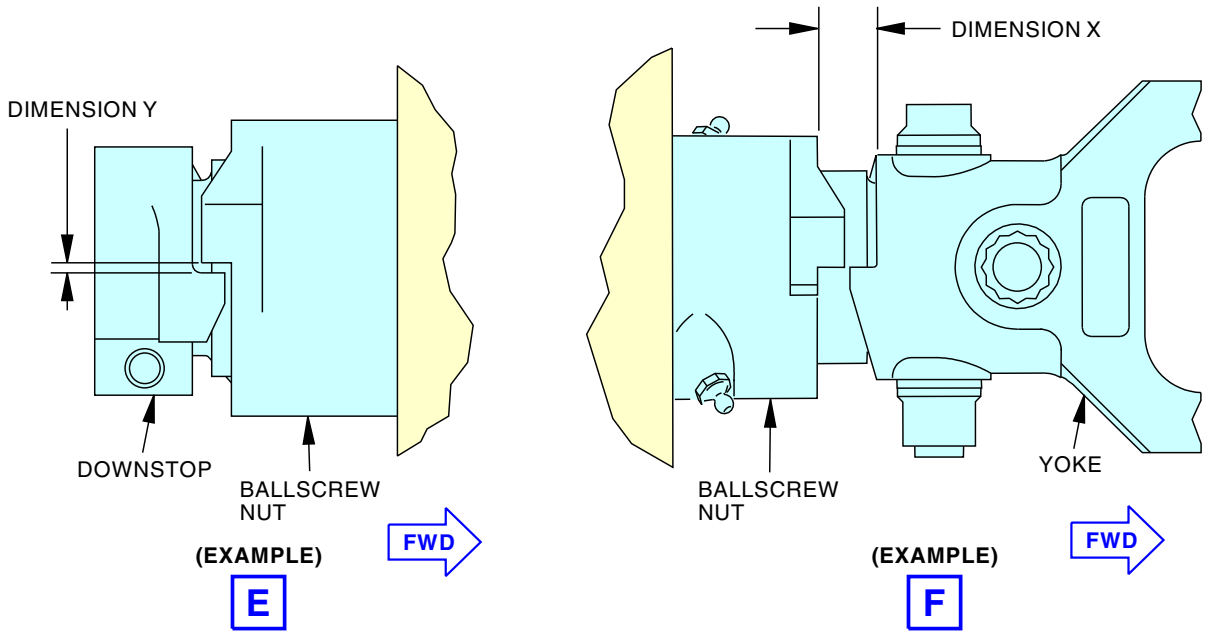
Trailing Edge Flap Drive System Adjustment
Figure 503/27-51-00-990-809 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TORQUE TUBE COUPLING (EXAMPLE)

D



(EXAMPLE)

E

(EXAMPLE)

F

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Trailing Edge Flap Drive System Adjustment
Figure 503/27-51-00-990-809 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-730-801

5. Trailing Edge Flap System Test

(Figure 501)

A. General

(1) This task does a functional test of the trailing edge flap system. This task includes these parts:

(a) A test of the Flap/Slat Electronics Unit (FSEU) display and a check of existing faults

(b) A test of the asymmetry and skew systems

(c) A test of the load relief system

(d) A test of the primary operation

(e) A test of the power supply for the ALTERNATE FLAPS switches and the bypass valve

(f) A test of the power supply for the flap electric motor

(g) A test of the UP limit switch

(h) A test of the DOWN limit switch

(i) A test of the flap priority valve

(j) A test of the force required to move the flap control lever.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Trailing Edge Flap System Test

SUBTASK 27-51-00-010-005

(1) To get access to the main equipment center, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Trailing Edge Flap System Test

SUBTASK 27-51-00-730-001

(1) Do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-51-00-730-002

(2) Do this task: Trailing Edge Flap Asymmetry Skew System BITE Test, TASK 27-51-00-740-802.

SUBTASK 27-51-00-730-006

(3) Do this task: Trailing Edge Flap Load Relief System BITE Test, TASK 27-51-00-740-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-860-052

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-00-730-004

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do a test of the primary operation of the trailing edge flaps:

(a) Move the flap control lever to the UP position.

(b) Make sure that the flaps reach the UP position.

(c) Do one of these methods to show the flap lever sensor, position sensors and skew sensor inputs to the FSEU:

1) On the FSEU Built-In-Test Equipment (BITE) display (Method 1):

a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

b) Push the NO button until OTHER FUNCTNS? shows on the display.

c) Push the YES button to show SET OUTPUTS? on the display.

d) Push the NO button until I/O MONITOR? shows on the display.

e) Push the YES button to select I/O MONITOR? on the menu.

f) Push the NO button until SYNCHRO INPUTS? shows on the display.

g) Push the YES button to select SYNCHRO INPUTS? from the menu.

2) On the MAX Display System (MDS) (Method 2):

a) Push the SYS button on the Multi Function Display (MFD).

b) Select the MAINT button on the MENU bar at the top right of the System Page.

c) Push the SEL button on the SELECTOR knob.

d) Turn the SELECTOR knob to select MAINT DATA PGS on the Maintenance menu.

e) Move the cursor down and then select the ATA 27 FLIGHT CONTROL DISPLAY button below the REAL column on the MAINT DATA PGS menu.

(d) Make sure the inputs for the sensors are in the limits shown in Table 502 or Table 503 for the UP position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

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Table 502/27-51-00-993-802

Display (Sensor)	FSEU Sensor Value Range (Flap Position)			
	UP	1-Unit	15-Units	40-Units
LVR POS	-2.8 to 2.8	13.8 to 21.4	61.4 to 68.3	105.4 to 110.9
L FL POS	-3.7 to 1.8	34.5 to 40.8	176.1 to 185.0	267.1 to 273.3
R FL POS	-3.7 to 1.8	34.5 to 40.8	176.1 to 185.0	267.1 to 273.3
F1 SKEW	295.7 to 311.0	12.2 to 29.1	117.8 to 135.6	224.4 to 242.1
F2 SKEW	330.5 to 346.0	60.9 to 78.1	171.0 to 188.6	279.2 to 296.9
F3 SKEW	0.0 to 13.2	82.9 to 99.2	185.2 to 201.8	288.7 to 305.5
F4 SKEW	332.8 to 346.9	24.3 to 40.0	147.3 to 164.6	265.1 to 282.1
F5 SKEW	13.1 to 27.2	320.0 to 335.7	195.4 to 212.7	77.9 to 94.9
F6 SKEW	346.8 to 360.0	260.8 to 277.1	158.2 to 174.8	54.5 to 71.3
F7 SKEW	14.0 to 29.5	281.9 to 299.1	171.4 to 189.0	63.1 to 80.8
F8 SKEW	49.0 to 64.3	330.9 to 347.8	224.4 to 242.2	117.9 to 135.6

2) For Method 2, observe the sensor values on the MDS.

Table 503/27-51-00-993-805

Display (Sensor)	MDS Sensor Value Range (Flap Position)			
	UP	1-Unit	15-Units	40-Units
LVR POS	-2.8 to 2.8	13.8 to 21.4	61.4 to 68.3	105.4 to 110.9
L FL POS	-3.7 to 1.8	34.5 to 40.8	176.1 to 185.0	267.1 to 273.3
R FL POS	-3.7 to 1.8	34.5 to 40.8	176.1 to 185.0	267.1 to 273.3
F1 SKEW	-64.3 to -49	12.2 to 29.1	117.8 to 135.6	224.4 to 242.1
F2 SKEW	-29.5 to -14	60.9 to 78.1	171.0 to 188.6	279.2 to 296.9
F3 SKEW	0.0 to 13.2	82.9 to 99.2	185.2 to 201.8	288.7 to 305.5
F4 SKEW	-27.2 to -13.1	24.3 to 40.0	147.3 to 164.6	265.1 to 282.1
F5 SKEW	-27.2 to -13.1	24.3 to 40.0	147.3 to 164.6	265.1 to 282.1
F6 SKEW	0.0 to 13.2	82.9 to 99.2	185.2 to 201.8	288.7 to 305.5
F7 SKEW	-29.5 to -14	60.9 to 78.1	171.0 to 188.6	279.2 to 296.9
F8 SKEW	-64.3 to -49	12.2 to 29.1	117.8 to 135.6	224.4 to 242.1

(e) Move the flap control lever to the 1-unit detent.

1) Measure the time it takes for the leading edge flaps and slats to extend from the UP to the extend position.

a) If a hydraulic cart is used to supply System B hydraulic power, it should take the leading edge flaps 5.5 to 7.5 seconds and the slats 7.5 to 9.5 seconds to extend.

b) If the Electric Motor-Driven Pump (EMDP) is used to supply System B hydraulic power, it should take the leading edge flaps 7.0 to 9.0 seconds and the slats 9.0 to 11.0 seconds to extend.

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(f) Make sure the inputs for the sensors are in the limits shown in (Table 502 or Table 503) for the 1-unit position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(g) Move the flap control lever to the 40-unit position to extend the flaps.

1) Measure the time it takes for the trailing edge flaps to extend from the 1-unit position to the 40-unit position.

a) If a hydraulic cart or Engine Driven Pump (EDP) was used to supply System B hydraulic power, it should take 22 to 27 seconds for the flaps to extend.

b) If the EMDP was used to supply System B hydraulic power, it should take 55 to 69 seconds for the flaps to extend.

(h) Make sure the inputs for the sensors are in the limits shown in Table 502 or Table 503 for the 40-unit position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(i) Move the flap control lever to the 1-unit position to retract the flaps.

1) Measure the time it takes for the trailing edge flaps to retract from the 40-unit position to the 1-unit position.

a) If a hydraulic cart was used to supply System B hydraulic power, it should take 22 to 27 seconds for the flaps to retract.

b) If the EMDP was used to supply System B hydraulic power, it should take 55 to 69 seconds for the flaps to retract.

(j) Move the flap control lever to the UP detent.

1) Measure the time it takes for the leading edge flaps and slats to retract.

a) If a hydraulic cart is used to supply System B hydraulic power, it should take the leading edge flaps 7.0 to 9.0 seconds and the slats 6.5 to 8.5 seconds to retract.

b) If the EMDP is used to supply System B hydraulic power, it should take the leading edge flaps 8.0 to 10.0 seconds and the slats 7.0 to 9.0 seconds to retract.

(k) Move the flap control lever to the 15-unit position to extend the flaps.

(l) Make sure the inputs for the sensors are in the limits shown in Table 502 or Table 503 for the 15-unit position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(m) For Method 1, push the ON/OFF button on the front panel of the FSEU to turn it off.

(n) For Method 2, push the SYS button on the Multi Function Panel (MFP) to put the displays back to normal.

(o) Move the flap control lever to the UP position to retract the flaps.

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SUBTASK 27-51-00-720-001

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Do a test of the power supply for the ALTERNATE FLAPS switches and the bypass valve:

(a) Move the flap control lever to the UP position.

(b) Make sure that the Leading Edge (LE) surfaces and Trailing Edge (TE) surfaces to reach their UP position.

(c) Push the ON/OFF button on the FSEU to display “EXISTING FAULTS?”.

(d) Push the NO button three times on the FSEU to display “OTHER FUNCTIONS?”.

(e) Push the YES button on the FSEU to display “SET OUTPUTS?”.

(f) Push the NO button on the FSEU to display “I/O MONITOR?”.

(g) Push the YES button on the FSEU to display “PROX SENSORS?”.

(h) Push the NO button twice on the FSEU to display “DISCRETE INPUTS?”.

(i) Push the YES button on the FSEU to display “ALTN ARM”.

(j) Make sure that the FSEU displays “ALTN ARM NOT ARM”.

(k) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the ARM position.

(l) Make sure that the FSEU displays “ALTN ARM ARMED”.

(m) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position.

(n) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(o) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the ARM position.

(p) Move the flap control lever to the 1-unit position to extend the flaps.

(q) Wait for the LE and TE surfaces to reach their 1-unit position.

(r) Make sure that the pointers on the flap position indicator are in the 1-unit white band.

(s) Move and hold the ALTERNATE FLAPS control switch in the DOWN position for 5 seconds, then release.

NOTE: With the circuit breaker open, the bypass valve will not operate.

(t) Make sure that the flaps do not extend and that the flap position indicator pointers remain within the detent 1-unit white band.

(u) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(v) Move the ALTERNATE FLAPS control switch to the UP position and hold until the flaps stop moving.

(w) Make sure that the flap position indicator pointer lies within the detent UP white band.

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(x) Make sure that the “LE FLAPS TRANSIT” and “LE EXTEND” master indication lights on the center panel are off.

(y) Make sure that all the LE flaps and slats indication lights on the overhead panel, P5, are off.

(z) Move the flap control lever to the 40-unit detent.

(aa) Move and hold the ALTERNATE FLAPS control switch to the DOWN position for 5 seconds, then release.

(ab) Wait for the LE surfaces to fully extend.

(ac) Make sure that the LE flaps “EXTEND” and slats “FULL EXTEND” indication lights on the aft overhead panel are now on.

(ad) Move the ALTERNATE FLAPS control switch to the DOWN position and hold until the flaps stop moving.

(ae) Make sure that the flap position indicator pointer lies within the detent 40-unit white band.

(af) Make sure that the “LE FLAPS EXT” master indication light on the center panel is on.

(ag) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position.

SUBTASK 27-51-00-720-002

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Do a test of the power supply for the flap electric motor and the time necessary to retract the flaps:

(a) Move the flap control lever to the 1-unit position to extend the flaps.

(b) Make sure that the pointers on the flap position indicator are in the 1-unit white band.

(c) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

(d) Move the ALTERNATE FLAPS arm switch to the ARM position.

(e) Move and hold the ALTERNATE FLAPS control switch in the UP position for 5 seconds.

NOTE: With the circuit breaker open, the electric motor will not operate.

(f) Make sure that the flaps do not retract.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS DURING THIS PROCEDURE. THE SLATS CAN MOVE AUTOMATICALLY WHEN THE HYDRAULIC SYSTEM IS PRESSURIZED. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(g) Move and hold the ALTERNATE FLAPS control switch in the DOWN position for 5 seconds.

(h) Make sure that the flaps do not move and that the flap position indicator pointers remain within the 1-unit white band.

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(i) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

(j) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position.

(k) Wait for the LE and TE surfaces to hydraulically reach their 1-unit position.

(l) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the ARM position.

(m) Measure the time it takes for the TE flaps to go from the 1-unit position to the UP position.

1) Move the ALTERNATE FLAPS control switch to the UP position and hold until the flaps stop.

2) Make sure that the time for the retraction of the TE flaps is between 47 to 58 seconds.

(n) Make sure that the flap position indicator pointer is within the detent UP white band.

(o) Move the flap control lever to the UP detent.

(p) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position.

SUBTASK 27-51-00-720-003

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Do a test of the UP limit switch:

(a) Move the flap control lever to the 1-unit detent position.

(b) Wait for the LE surfaces and TE surfaces to reach the 1-unit position.

(c) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the ARM position.

(d) Move and hold the ALTERNATE FLAPS control switch in the UP position until the flaps stop.

(e) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

(f) Do a check of the position sensor inputs to the FSEU:

1) Push the NO button three times on the FSEU to display “OTHER FUNCTNS?”.

2) Push the YES button on the FSEU to display “SET OUTPUTS?”.

3) Push the NO button on the FSEU to display “I/O MONITOR?”.

4) Push the YES button on the FSEU to display “PROX SENSORS?”.

5) Push the NO button on the FSEU to display “SYNCHRO INPUTS?”.

6) Push the YES button on the FSEU to display “LVR POS”.

7) Push the arrow keys to step through the position sensor values at the UP position.

8) Make sure that the inputs for the sensors are in the limits shown in (Table 504) for the UP position.

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Table 504/27-51-00-993-803

Display (Sensor)	Sensor Input (Flap Position)	
	UP	40-Units
L FL POS	-1.2 to 4.7	259.9 to 270.3
R FL POS	-1.2 to 4.7	259.9 to 270.3

9) Move the flap control lever to the UP detent.

(g) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position.

SUBTASK 27-51-00-720-004

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Do a test of the DOWN limit switch:

(a) Move the ALTERNATE FLAPS arm switch to the OFF position.

(b) Move the flap control lever to the 30-unit position to extend the flaps.

(c) Wait for the LE surfaces and TE surfaces to reach the 30-unit position.

(d) Make sure that the pointers on the flap position indicator are in the 30-unit white band.

(e) Move the ALTERNATE FLAPS arm switch to the ARM position.

(f) Move the flap control lever to the 40-unit position.

(g) Move and hold the ALTERNATE FLAPS control switch in the DOWN position until the flaps stop.

(h) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

(i) Do a check of the position sensor inputs to the FSEU:

1) Push the NO button three times on the FSEU to display “OTHER FUNCTIONS?”.

2) Push the YES button on the FSEU to display “SET OUTPUTS?”.

3) Push the NO button on the FSEU to display “I/O MONITOR?”.

4) Push the YES button on the FSEU to display “PROX SENSORS?”.

5) Push the NO button on the FSEU to display “SYNCHRO INPUTS?”.

6) Push the YES button on the FSEU to display “LVR POS?”.

7) Push the arrow keys to step through the position sensor values at the 40-unit position.

8) Make sure that the inputs for the sensors are in the limits shown in (Table 504) for the 40-unit position.

(j) Push the ON/OFF button on the front panel of the FSEU to turn it off.

(k) Move the ALTERNATE FLAPS arm switch to the OFF position.

SUBTASK 27-51-00-720-005

(10) Do this task: Flap Priority Valve Test, TASK 27-51-00-720-801.

SUBTASK 27-51-00-720-006

(11) Do this task: Flap Control Lever Force Test, TASK 27-51-00-720-802.

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G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-054

(1) If the FSEU is not turned off, push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-00-410-007

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-00-860-055

(3) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-51-00-740-801

6. FSEU Display and Existing Faults Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test does a check of the Built-In-Test Equipment (BITE) display and power supplies for the Flap/Slat Electronics Unit (FSEU). It also does a check for existing faults in the high lift system detected by the FSEU.

B. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-51-00-740-012

(1) Make sure that the trailing edge flaps are in the fully retracted position.

SUBTASK 27-51-00-710-004

(2) Make sure that the B system hydraulic power is removed prior to performing the test.

(a) If it is necessary, remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-51-00-010-006

(3) To get access to the main equipment center, do this step:

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Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. FSEU Display and Existing Faults Test

SUBTASK 27-51-00-740-001

WARNING IF THERE IS HYDRAULIC PRESSURE DURING THIS TEST, KEEP PERSONNEL AWAY FROM THE FLAPS. THE FLAPS CAN MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

SUBTASK 27-51-00-750-001

(2) Do a test of the DC power supplies for the FSEU:

(a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1

(b) Make sure that the front panel display on the FSEU is still on.

(c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1

(d) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	9	C01468	FLIGHT CONTROL FSEU DC 2

(e) Make sure that the front panel display on the FSEU is still on.

(f) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1

(g) Make sure that the front panel display on the FSEU is off.

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(h) Close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

(i) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

(j) Make sure that the front panel display on the FSEU comes on.

SUBTASK 27-51-00-740-002

(3) Do a test of the BITE display on the FSEU:

(a) Push the down arrow until GROUND TESTS? shows on the display.

(b) Push the YES button to select GROUND TESTS? on the FSEU.

(c) Push the down arrow until DISPLAY TEST? shows on the display.

(d) Push the YES button to select DISPLAY TEST? on the FSEU.

(e) Make sure that the display characters on the front panel of the FSEU turn on in groups of four for approximately 2 seconds.

SUBTASK 27-51-00-740-003

(4) Do a check for EXISTING FAULTS with the FSEU:

NOTE: During the following BITE test, all the LE indication lights (12 amber transit and 20 green extend/full extend lights) on the aft overhead panel will be on for about 5 seconds.

(a) Push the MENU button twice.

NOTE: The display will show EXISTING FAULTS?

(b) Push the YES button to select the EXISTING FAULTS? test.

NOTE: The display will show TEST IN PROGRESS.

(c) Make sure that the lights come on for 5 seconds while the display shows TEST IN PROGRESS:

1) P5 Aft Overhead Panel

a) Leading Edge Devices TRANSIT

b) Leading Edge Devices EXT

c) Leading Edge Devices FULL EXT

(d) Make sure there are no EXISTING FAULTS.

SUBTASK 27-51-00-740-004

(5) Do a test of the ASYM MODE on the FSEU:

(a) Push the MENU switch on the FSEU to display “EXISTING FAULTS?”.

NOTE: The takeoff and landing warning horn might sound when the following steps are performed. If the horns sound, no action is required.

(b) Push the NO switch three times on the FSEU to display “OTHER FUNCTIONS?”.

(c) Push the YES switch on the FSEU to display “SET OUTPUTS?”.

(d) Push the NO switch on the FSEU to display “I/O MONITOR?”.

(e) Push the YES switch on the FSEU to display “PROX SENSORS?”.

(f) Push the NO switch twice on the FSEU to display “DISCRETE INPUTS?”.

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(g) Push the YES switch on the FSEU to display “ALTN ARM NOT ARM”.

(h) Push the NO switch five times on the FSEU to display “ASY MODE CLOSED”.

(i) Open this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

(j) Make sure that the FSEU displays “ASY MODE OPEN”.

(k) Close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

(l) Make sure that the FSEU displays “ASY MODE CLOSED”.

(m) Push the ON/OFF button on the front panel of the FSEU to turn off the display.

SUBTASK 27-51-00-740-011

(6) Do a check for the autoslat analog discrete input to the FSEU:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: Select MENU on the display to show EXISTING FAULTS?.

(b) Push the NO button until OTHER FUNCTIONS? shows on the display.

(c) Push the YES button to select OTHER FUNCTIONS? on the FSEU.

(d) Push the NO button until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? on the FSEU.

(f) Push the NO button until DISCRETE INPUTS? shows on the display.

(g) Push the YES button to select DISCRETE INPUTS? on the FSEU.

(h) Push the NO button until AUTOSLT1 shows on the display.

NOTE: Line 2 on the display will show either COMMAND or NOT CMD.

(i) Push the down arrow to show AUTOSLT2 on the display.

NOTE: Line 2 on the display will show either COMMAND or NOT CMD.

(j) If AUTOSLT1 or AUTOSLT2 shows COMMAND on line 2, the FSEU receives an autoslat command discrete input from the Stall Management Yaw Damper Computer (SMYDC).

1) If AUTOSLT1 or AUTOSLT2 shows COMMAND on line 2, refer to the IFIM and do the applicable procedure(s).

NOTE: The autoslat command discrete from the SMYDC prevents the FSEU leading edge un-commanded motion monitor from being set. AUTOSLT1 comes from SMYDC 1 and AUTOSLT2 comes from SMYDC 2.

(k) If AUTOSLT1 and AUTOSLT2 shows NOT CMD on line 2, then continue.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-058

(1) Push the ON/OFF button on the front panel of the FSEU to turn it off.

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SUBTASK 27-51-00-410-008

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-51-00-740-802

7. Trailing Edge Flap Asymmetry Skew System BITE Test

(Figure 501 and Figure 504)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test does a check of the asymmetry and skew detection functions for the trailing edge flaps.

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-51-00-010-007

(1) To get access to the main equipment center, do this step:

(a) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Trailing Edge Flap Asymmetry and Skew BITE Test

SUBTASK 27-51-00-740-005

(1) Push the ON/OFF button, on the front panel of the Flap/Slat Electronics Unit (FSEU), to turn on the display.

NOTE: The display will show EXISTING FAULTS?

SUBTASK 27-51-00-740-006

(2) Do the BITE test of the asymmetry and skew detection systems:

(a) Push the NO button until GROUND TESTS? shows on the display.

(b) Push the YES button to select TE ASYM-SKW-IND? on the FSEU.

(c) Push the Yes button to show TEST IN PROGRESS on the FSEU.

(d) Make sure that the left indicator needle moves in the clockwise direction.

(e) Push the Yes button in response to IS L IND NDL CW? on the FSEU.

(f) Make sure that the left indicator needle moves in the counterclockwise direction.

(g) Push the Yes button in response to IS L IND NDL CCW? on the FSEU.

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(h) Make sure that the right indicator needle moves in the clockwise direction.

(i) Push the Yes button in response to IS R IND NDL CW? on the FSEU.

(j) Make sure that the right indicator needle moves in the counterclockwise direction.

(k) Push the Yes button in response to IS R IND NDL CCW? on the FSEU.

(l) Make sure that TEST PASSED shows at the end of the test.

SUBTASK 27-51-00-210-004

(3) Make sure that the manual override lever, on the flap bypass valve, is in POSITION 1 (View B, Figure 504).

NOTE: The flap bypass valve is installed in the right main wheel well.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-062

(1) Push the ON/OFF button, on the front panel of the FSEU, to turn it off.

SUBTASK 27-51-00-410-009

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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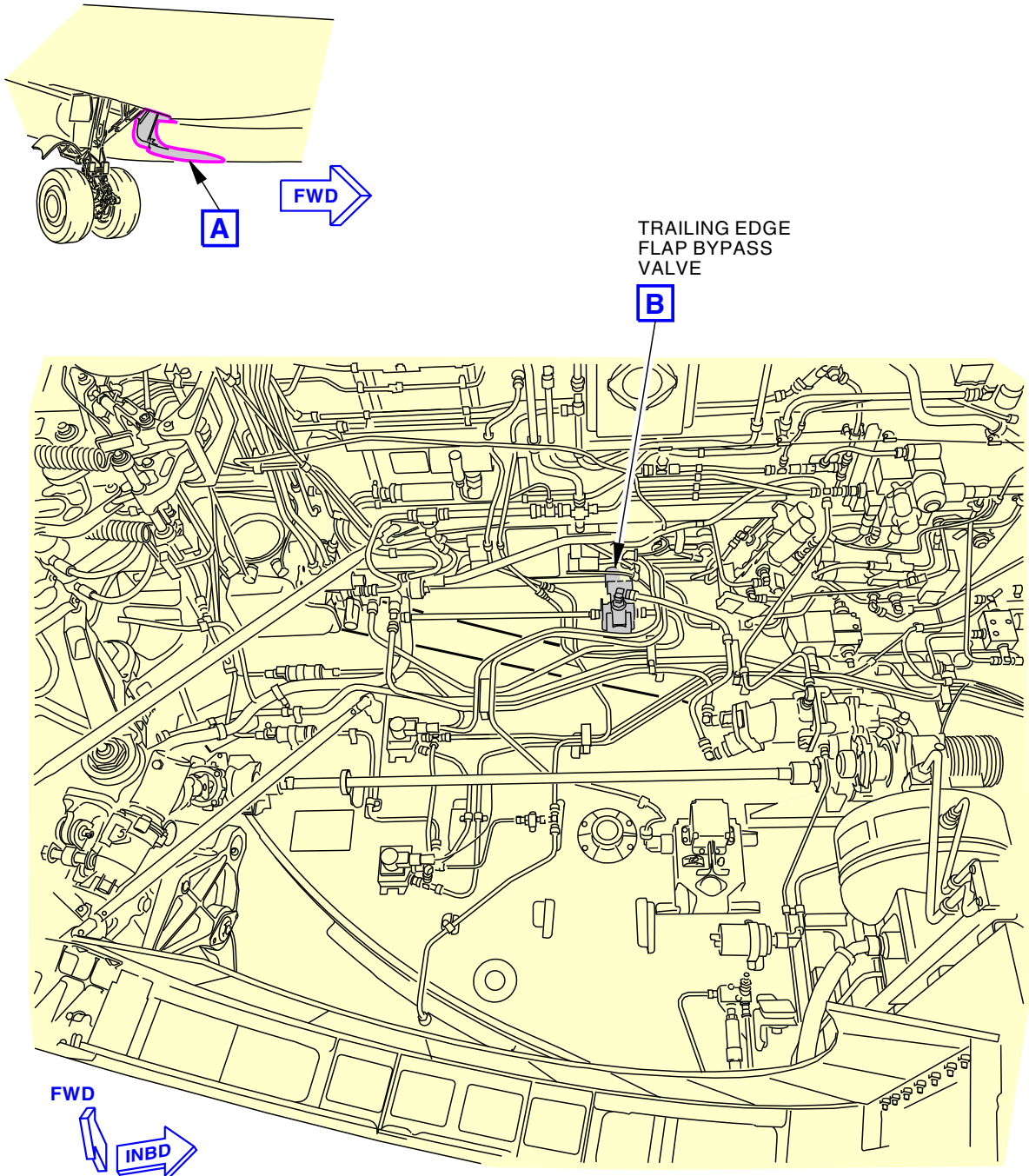

Trailing Edge Flap Bypass Valve
Figure 504/27-51-00-990-817 (Sheet 1 of 2)

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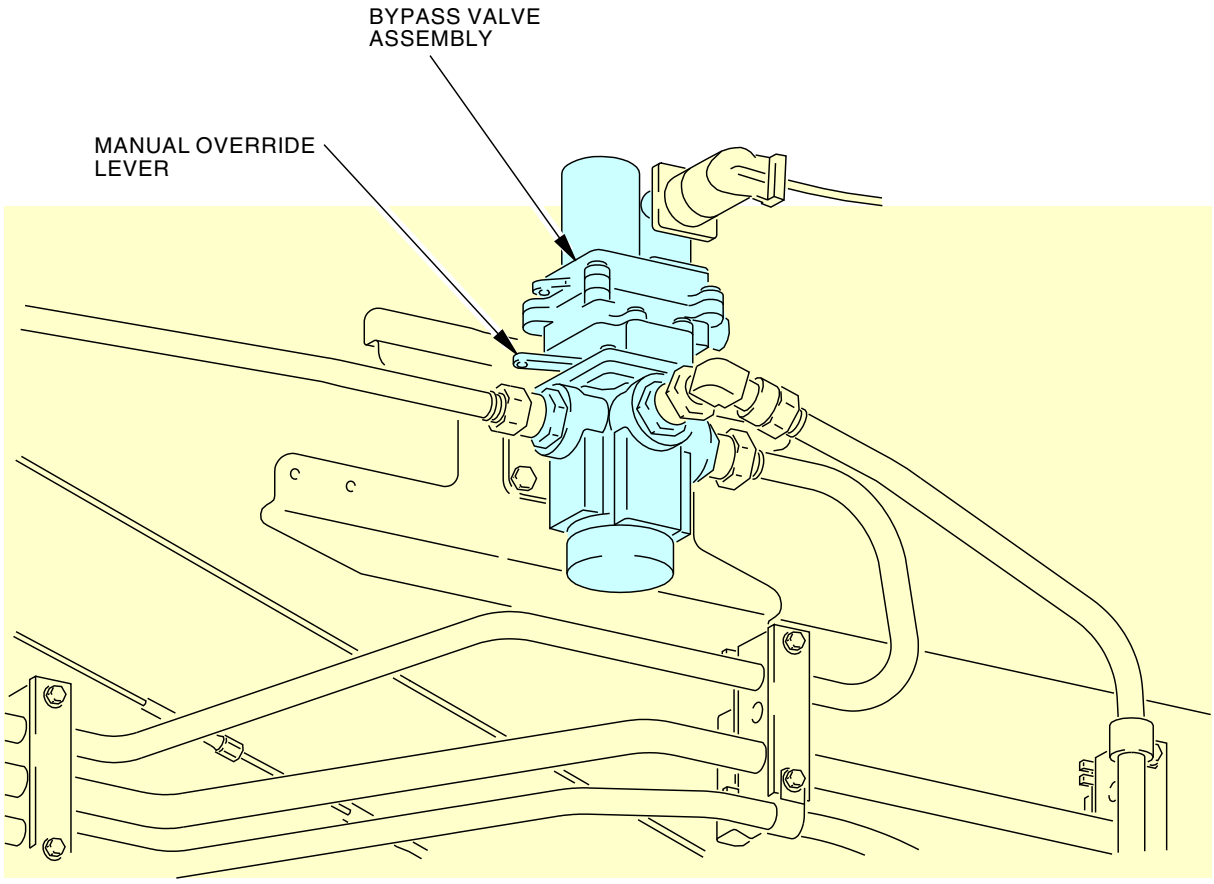

Trailing Edge Flap Bypass Valve
Figure 504/27-51-00-990-817 (Sheet 2 of 2)

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TASK 27-51-00-740-803

8. Trailing Edge Flap Load Relief System BITE Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This test does a check of the load relief functions for the trailing edge flaps.

(2) In this procedure it is necessary to move the flap control lever to move the trailing edge flaps.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-51-00-860-067

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-00-860-100

(2) Set the FLT CONTROL and SPOILER switches on the P5-3 panel to the OFF position.

SUBTASK 27-51-00-010-008

(3) To get access to the main equipment center, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Trailing Edge Flap Load Relief System BITE Test

SUBTASK 27-51-00-740-007

(1) Push the ON/OFF button on the front panel of the Flap/Slat Electronics Unit (FSEU) to turn on the display.

NOTE: The display will show EXISTING FAULTS?

SUBTASK 27-51-00-740-008

(2) Do the BITE test of the load relief system:

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(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

(b) Push the NO switch twice on the FSEU to display “GROUND TESTS?”.

(c) Push the YES switch on the FSEU to display “TE ASYM-SKW-IND?”.

(d) Push the NO switch on the FSEU to display “TE FLAP LD REL?”.

(e) Push the YES switch on the FSEU to display “WARNING:FLP CLR?”.

(f) Push the YES switch on the FSEU to display “FLP LVR TO 40?”.

(g) Move the flap control lever to the 40-unit detent.

(h) Push the YES switch on the FSEU to display “TEST IN PROGRESS?”.

(i) Make sure the “FLP LOAD RLF 40” is displayed on the FSEU front panel.

1) Verify FLAP LOAD RELIEF light momentarily illuminates.

(j) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

NOTE: During the following BITE test, the FLAP LOAD RELIEF light on the forward panel will go on during load relief.

NOTE: The flaps will move in the subsequent steps and the flap indicator will move accordingly.

(k) Push the MENU switch on the FSEU to display “TE FLAP LD REL?”.

(l) Push the YES switch on the FSEU to display “WARNING:FLP CLR?”.

(m) Push the YES switch on the FSEU to display “FLP LVR TO 40?”.

1) Verify FLAP LOAD RELIEF light momentarily illuminates.

NOTE: The flaps will retract to the 30-unit position before extending to the 40-unit position.

(n) Push the YES switch on the FSEU to display “FLP LVR TO 10?”.

(o) Move the flap control lever to the 10-unit detent.

(p) Wait for all the surfaces to reach the flaps 10-unit position.

(q) Push the YES switch on the FSEU to display “FLP LVR TO 5?”.

1) Verify FLAP LOAD RELIEF light momentarily illuminates.

NOTE: The flaps will retract to the 5-unit position before extending to the 10-unit position.

(r) Move the flap control lever to the 5-unit detent.

(s) Wait for all the surfaces to reach the flaps 5-unit position.

(t) Push the YES switch on the FSEU to display “FLP LVR TO UP?”.

1) Verify FLAP LOAD RELIEF light momentarily illuminates.

NOTE: The flaps will stay in its position.

(u) Move the flap control lever to the UP detent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(v) Wait for all the surfaces to reach the flaps UP position.

(w) Push the YES switch on the FSEU to display “TEST PASSED”.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-068

(1) Push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-00-410-010

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-00-860-101

(3) Set the FLT CONTROL and SPOILER switches on the P5–3 panel to the ON position.

SUBTASK 27-51-00-860-070

(4) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-51-00-720-801

9. Flap Priority Valve Test

(Figure 501)

A. General

(1) This test does a check of the flap priority valve.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-51-00-860-073

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Use a hydraulic service cart to supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

NOTE: It will be necessary to control the pressure output of the hydraulic service cart.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Flap Priority Valve Test

SUBTASK 27-51-00-860-074

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS BEFORE YOU MOVE THE FLAPS. THE FLAPS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the 30-unit position to extend the flaps.

NOTE: Wait for the flaps to get to the 30-unit position.

SUBTASK 27-51-00-730-005

(2) Reduce the pressure output from the hydraulic service cart to 2000 psi (13,790 kPa).

SUBTASK 27-51-00-720-007

(3) Do a check of the time necessary to retract the flaps.

NOTE: The flaps will retract slowly with the hydraulic pressure reduced.

(a) Move the flap control lever to the 25-unit position.

NOTE: The flaps can make noise while they retract slowly.

(b) Make sure the time necessary to retract the flaps is a minimum of 59 seconds.

NOTE: It is not necessary to wait more than 1 minute for the flaps to retract.

(c) Increase the pressure output from the hydraulic service cart to 3000 psi (20,684 kPa).

NOTE: The flaps will retract much faster at normal operating pressure.

(d) Move the flap control lever to the 5-unit position.

NOTE: Wait for the flaps to get to the 5-unit position.

SUBTASK 27-51-00-720-008

(4) Do a check of the time necessary to retract the flaps to the UP position.

(a) Move the flap control lever to the UP position.

(b) Make sure the time necessary to retract the flaps is 17 to 22 seconds.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-075

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

TASK 27-51-00-720-802

10. Flap Control Lever Force Test

(Figure 501)

A. General

(1) This test does a check of the force necessary to move the flap control lever.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Test

SUBTASK 27-51-00-860-078

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

F. Flap Control Lever Force Test

SUBTASK 27-51-00-860-079

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the UP position to retract the flaps.

SUBTASK 27-51-00-720-009

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Measure the force necessary to move the flap control lever to the 1-unit position:

(a) Move the flap control lever out of the UP detent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Put a force gauge, COM-1557 on the end of the flap control lever.

(c) Use the force gauge, COM-1557 to move the flap control lever to the 1-unit position.

NOTE: Make sure the force gauge, COM-1557 is perpendicular to the flap control lever when you measure the force.

(d) Make sure the force necessary to move the flap control lever is less than 5 lbf (22.24 N).

SUBTASK 27-51-00-720-010

(3) Use the force gauge, COM-1557 to measure the force necessary to move the flap control lever to the 40-unit position with a stop at each detent.

(a) Make sure the force necessary to move the flap control lever is less than 5 lbf (22.24 N).

SUBTASK 27-51-00-720-011

(4) Use the force gauge, COM-1557 to measure the force necessary to move the flap control lever to the UP position with a stop at each detent.

(a) Make sure the force necessary to move the flap control lever is less than 5 lbf (22.24 N).

SUBTASK 27-51-00-080-004

(5) Remove the force gauge, COM-1557 from the end of the flap control lever.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-080

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-51-00-720-805

11. Flap Control Lever Feel Test

A. General

(1) This test does a check on the Flap Control Lever movement in the up and down movement. To make sure that there is a smooth procedure with the flight handle after control cable adjustments.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Test

SUBTASK 27-51-00-860-103

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B with hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Flap Control Level Feel Test

SUBTASK 27-51-00-720-018

(1) Put the Flap Control Lever between UP and 1 detent.

SUBTASK 27-51-00-720-019

(2) Lift up and move the Flap Control Lever forward to the UP detent.

SUBTASK 27-51-00-720-020

(3) Stow the Flap Control Lever from the lifted position into the UP detent.

(a) Make sure that axial movement is in the bottom direction

(b) Make sure that it is put at the bottom of the detent

(c) Make sure that the Lever goes into the stand smoothly.

NOTE: There will be some permitted resistance because of the cable load in the UP detent.

SUBTASK 27-51-00-720-021

(4) Move the Flap Control Lever from the UP detent.

(a) Make sure that axial movement is in the up direction.

SUBTASK 27-51-00-720-022

(5) Make sure that the Flap Control Lever is smooth when moved in the up direction.

NOTE: There will be some permitted resistance because of the cable load in the UP detent.

SUBTASK 27-51-00-720-023

(6) Stow and attach safely the Flap Control Lever back into the UP detent to complete the test.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-104

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

TASK 27-51-00-720-803

12. Alternate Flap Control System Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) During the functional test, you make sure the alternate operation of the Trailing Edge (TE) flaps is satisfactory.

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B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Functional Test

SUBTASK 27-51-00-860-083

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Procedure

SUBTASK 27-51-00-720-012

(1) Do these steps for the Alternate Flap System Functional Test:

CAUTION DO NOT CONTINUOUSLY OPERATE THE FLAP ELECTRIC MOTOR FOR MORE THAN 4 MINUTES. YOU MUST WAIT A MINIMUM OF 25 MINUTES BETWEEN OPERATIONS OF THE FLAP ELECTRIC MOTOR. IF YOU DO NOT OBEY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(a) Move the flap control lever to the 1-unit position to extend the flaps.

(b) Make sure the pointers on the flap position indicator are in the 1-unit white band.

(c) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

CAUTION DO NOT OPERATE THE TRAILING EDGE FLAPS WITH ELECTRICAL POWER MORE THAN ONE FULL EXTEND/RETRACT CYCLE IN 25 MINUTES. YOU CAN CAUSE DAMAGE TO THE FLAP ELECTRIC MOTORS IF YOU OPERATE THEM TOO FREQUENTLY.

(d) Move the ALTERNATE FLAPS ARM switch to the ARM position.

(e) Move and hold the ALTERNATE FLAPS CONTROL switch in the UP position for 5 seconds.

NOTE: With the circuit breaker open, the electric motor will not operate.

(f) Make sure the flaps do not retract.

(g) Move and hold the ALTERNATE FLAPS CONTROL switch in the DOWN position for 5 seconds.

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(h) Make sure that the flaps do not move and that the flap position indicator pointers remain within the 1-unit white band.

(i) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

(j) Put the ALTERNATE FLAPS ARM switch, on the aft overhead panel in the “OFF” position.

(k) Wait for the Leading Edge (LE) and TE surfaces to hydraulically reach their 1-unit position.

(l) Put the ALTERNATE FLAPS ARM switch, on the aft overhead panel in the “ARM” position.

(m) Measure the time it takes for the TE flaps to go from the 1-unit position to the UP position.

(n) Move the ALTERNATE FLAPS CONTROL switch to the UP position and hold until the flaps stop.

(o) Make sure that the time for the retraction of the TE flaps is between 47 to 58 seconds.

(p) Make sure that the flap position indicator pointer is within the detent UP white band.

(q) Move the flap control lever to the UP detent.

(r) Put the ALTERNATE FLAPS ARM switch, on the aft overhead panel in the “OFF” position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-084

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-51-00-710-802

13. Transmission No-Back Brake Operational Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) During this operational test, you make sure the no-back brakes in the transmissions operate.

(2) This test involves listening for a ratchet sound from the transmissions while the flaps extend.

(3) A minimum of two people are necessary to do this test.

B. References

Reference	Title
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)

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(Continued)

Reference	Title
27-51-31 P/B 401	INBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION
27-51-41 P/B 401	OUTBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1797	Stethoscope - Mechanics, 12 Inch Probe Part #: GA111D Supplier: 55719 Opt Part #: GA111C Supplier: 55719
SPL-12536	Test Equipment - Outboard T.E. Flap Transmission, No-Back Brake Operational Test Part #: C27084-1 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

E. Prepare for the Operational Test

SUBTASK 27-51-00-480-012

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-010-009

(2) Remove the aft fairings for the outboard flaps:

NOTE: Removal of the aft fairings for the inboard flaps is not necessary since the ratcheting sound can be heard easily without removal.

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(a) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

(b) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

SUBTASK 27-51-00-860-087

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

F. Operational Test of the Transmission No-Back Brake

NOTE: This test is applicable to all of the transmissions for the trailing edge flaps.

SUBTASK 27-51-00-860-088

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Retract the flaps to the UP position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-00-710-003

(2) Do a test of the no-back brake in the transmissions:

(a) Put a stethoscope, COM-1797 on the applicable transmission to listen for a ratchet sound.

NOTE: The ratchet sound from the inboard flaps can be easily heard without the need for a stethoscope.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Extend the flaps to the 15 unit position and listen for a ratchet sound from the transmissions. To extend the trailing edge flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

NOTE: The ratchet sound is the no-back brake inside the transmission. It is necessary to do the test again for the additional transmissions, or have additional people listen to the transmissions.

(c) If the ratchet sound cannot be heard on the outboard flaps transmission, install test equipment, SPL-12536 and perform the test again.

(d) If it is necessary to do this test on another transmission, retract the flaps to the UP position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(e) If the ratcheting sound is not heard replace the transmission.

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1) For the inboard transmission replacement do this task: INBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-31/401.

2) For the outboard transmission replacement do this task: OUTBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-41/401.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-089

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-51-00-080-005

(2) Remove test equipment, SPL-12536 if it was installed.

SUBTASK 27-51-00-410-011

(3) Install the aft fairings for the outboard flaps:

(a) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

(b) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

——— END OF TASK ———

TASK 27-51-00-720-804

14. Trailing Edge Flap Load Relief System Functional Test

(Figure 501)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task does a functional check of the load relief system for the trailing edge flaps. It makes sure that there is airspeed data from the Air Data Inertial Reference Unit (ADIRU) to the Flap/Slat Electronics Unit (FSEU).

(2) In this procedure it is necessary to use the pitot static system to simulate airspeed.

B. References

Reference	Title
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-11-00-790-801	Captain's Total Air Pressure System - Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADSE 650 Supplier: 3BSK6 Part #: ADTS2000 Supplier: 52892 Part #: ADTS3350ER Supplier: 52892 Part #: ADTS405MKII Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: ADTS553F Supplier: U0427 Part #: ADTS554F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Part #: TES9463 Supplier: 88277 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS405F Supplier: U0427 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: CSA75700HT-3 Supplier: 3BSK6 Part #: P75701-4 Supplier: 38002 Part #: P75701M2-3 Supplier: 38002

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Prepare for the Test

SUBTASK 27-51-00-860-092

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-00-860-099

(2) Turn OFF system A and B hydraulic power to the flight controls and spoilers on the P5-3 panel.

SUBTASK 27-51-00-010-010

(3) To get access to the main equipment center, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

G. Trailing Edge Flap Load Relief System Functional Test

SUBTASK 27-51-00-740-009

(1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

SUBTASK 27-51-00-000-001

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-00-740-010

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do the Built-In-Test Equipment (BITE) test of the load relief system:

(a) Push the down arrow until GROUND TESTS? shows on the FSEU.

(b) Push the YES button to display “TE ASYM-SKW-IND?” on the FSEU.

(c) Push the down arrow until TE FLAP LD REL? shows on the display.

(d) Push the YES button until “WARNING: FLP CLR?” shows on the display.

(e) Push the YES button until “FLP LVR TO 40?” shows on the display.

(f) Move the flap control lever to the 40-unit detent.

(g) Push the YES button on the FSEU to display “TEST IN PROGRESS”.

(h) Make sure that “FLP LOAD RLF 40” is displayed on the FSEU front panel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

NOTE: During the BITE test, the FLAP LOAD RELIEF light on the forward panel will go on during load relief.

(j) Push the MENU button on the FSEU to display “TE FLAP LD REL?”.

(k) Push the YES button on the FSEU to display “WARNING: FLP CLR?”.

(l) Push the YES button on the FSEU to display “FLP LVR TO 40?”.

(m) Push the YES button on the FSEU to display “FLP LVR TO 10?”.

(n) Move the flap control lever to the 10-unit detent.

(o) Wait for all surfaces to reach the flaps 10-unit detent position.

(p) Push the YES button on the FSEU to display “FLP LVR TO 5?”.

(q) Move the flap control lever to the 5-unit detent.

(r) Wait for all surfaces to reach the flaps 5-unit detent position.

(s) Push the YES button on the FSEU to display “FLP LVR TO UP?”.

(t) Move the flap control lever to the UP detent.

(u) Wait for all surfaces to reach the flaps UP position.

(v) Push the YES button on the FSEU to display “TEST IN PROGRESS”.

(w) Make sure that the FLAP LOAD RELIEF light was on during the load relief.

(x) Make sure the “TEST PASSED” is displayed on the FSEU.

SUBTASK 27-51-00-860-093

(4) Push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-00-860-094

(5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

SUBTASK 27-51-00-480-013

(6) Connect a pitot/static system tester to the left pitot probe to supply airspeed output from the left ADIRU (TASK 34-11-00-790-801).

SUBTASK 27-51-00-860-098

(7) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-00-720-013

(8) Do a test of the load relief system with the flaps at 40 units:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Use the primary system to extend the flaps to the 40-unit position. To extend the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Use the air data model test set, COM-1914 to raise the airspeed to 168 knots (193.33 mph), on the Captain's display unit.

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

(c) Make sure the trailing edge flaps retract to the 30-unit position.

(d) Use the air data model test set, COM-1914 to lower the airspeed to 161 knots (185.28 mph).

(e) Make sure the trailing edge flaps extend to the 40-unit position.

SUBTASK 27-51-00-720-014

(9) Do a test of the load relief system with the flaps at 30 units:

(a) Use the primary system to retract the flaps to the 30-unit position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Use the air data model test set, COM-1914 to raise the airspeed to 177 knots (203.69 mph).

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

(c) Make sure the trailing edge flaps retract to the 25-unit position.

(d) Use the air data model test set, COM-1914 to lower the airspeed to 170 knots (195.63 mph).

(e) Make sure the trailing edge flaps extend to the 30-unit position.

SUBTASK 27-51-00-720-015

(10) Do a test of the load relief system with the flaps at 25 units:

(a) Use the primary system to retract the flaps to the 25-unit position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Use the air data model test set, COM-1914 to raise the airspeed to 192 knots (220.95 mph).

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

(c) Make sure the trailing edge flaps retract to the 15-unit position.

(d) Use the air data model test set, COM-1914 to lower the airspeed to 185 knots (212.89 mph).

(e) Make sure the trailing edge flaps extend to the 25-unit position.

SUBTASK 27-51-00-720-016

(11) Do a test of the load relief system with the flaps at 15 units:

(a) Use the primary system to retract the flaps to the 15-unit position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Use the air data model test set, COM-1914 to raise the airspeed to 202 knots (232.46 mph).

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

(c) Make sure the trailing edge flaps retract to the 10-unit position.

(d) Use the air data model test set, COM-1914 to lower the airspeed to 195 knots (224.40 mph).

(e) Make sure the trailing edge flaps extend to the 15-unit position.

SUBTASK 27-51-00-720-017

(12) Do a test of the load relief system with the flaps at 10 units:

(a) Use the primary system to retract the flaps to the 10-unit position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Use the air data model test set, COM-1914 to raise the airspeed to 212 knots (243.97 mph).

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

(c) Make sure the trailing edge flaps retract to the 5-unit position.

(d) Use the air data model test set, COM-1914 to lower the airspeed to 205 knots (235.91 mph).

(e) Make sure the trailing edge flaps extend to the 10-unit position.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-00-860-095

(1) Move the flap control lever to the UP position to retract the flaps.

SUBTASK 27-51-00-860-096

(2) Put the system back to ambient pressure.

NOTE: When you apply or remove pressure to the pitot system, the rate must not be more than 300 knots (345.23 mph) for each minute.

SUBTASK 27-51-00-080-006

(3) Disconnect the pitot/static system tester from the pitot system:

CAUTION DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO, DAMAGE TO THE ADM CAN OCCUR.

(a) Disconnect the air data model test set, COM-1914 from the pitot test adapter, COM-1916.

(b) Remove the pitot test adapter, COM-1916, from the pitot probe.

(c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-860-097

(4) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-51-00-410-012

(5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these inspections:

(1) An inspection of the trailing edge flap drive system components

(2) An inspection of the trailing edged flap actuation system.

TASK 27-51-00-210-801

2. Trailing Edge Flap Drive System Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
560	Subzone - Left Wing: Trailing Edge , Aft of Rear Spar, Outboard of Inbd Trailing Edge Flap, Inbd of Fixed Trailing Edge
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
660	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Outboard of Inboard Trailing Edge Flap, Inboard of Fixed Trailing Edge

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Trailing Edge Flap Drive System Inspection

SUBTASK 27-51-00-480-014

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-010-011

(2) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-00-040-008

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-00-210-005

(4) Do a general visual inspection of these items:

(a) Flap transmissions

(b) Torque tube support

(c) Seal rib angle gearbox

(d) Main landing gear beam angle gearbox

(e) Torque tube couplings

(f) Tee angle gearbox and U-joint.

SUBTASK 27-51-00-440-005

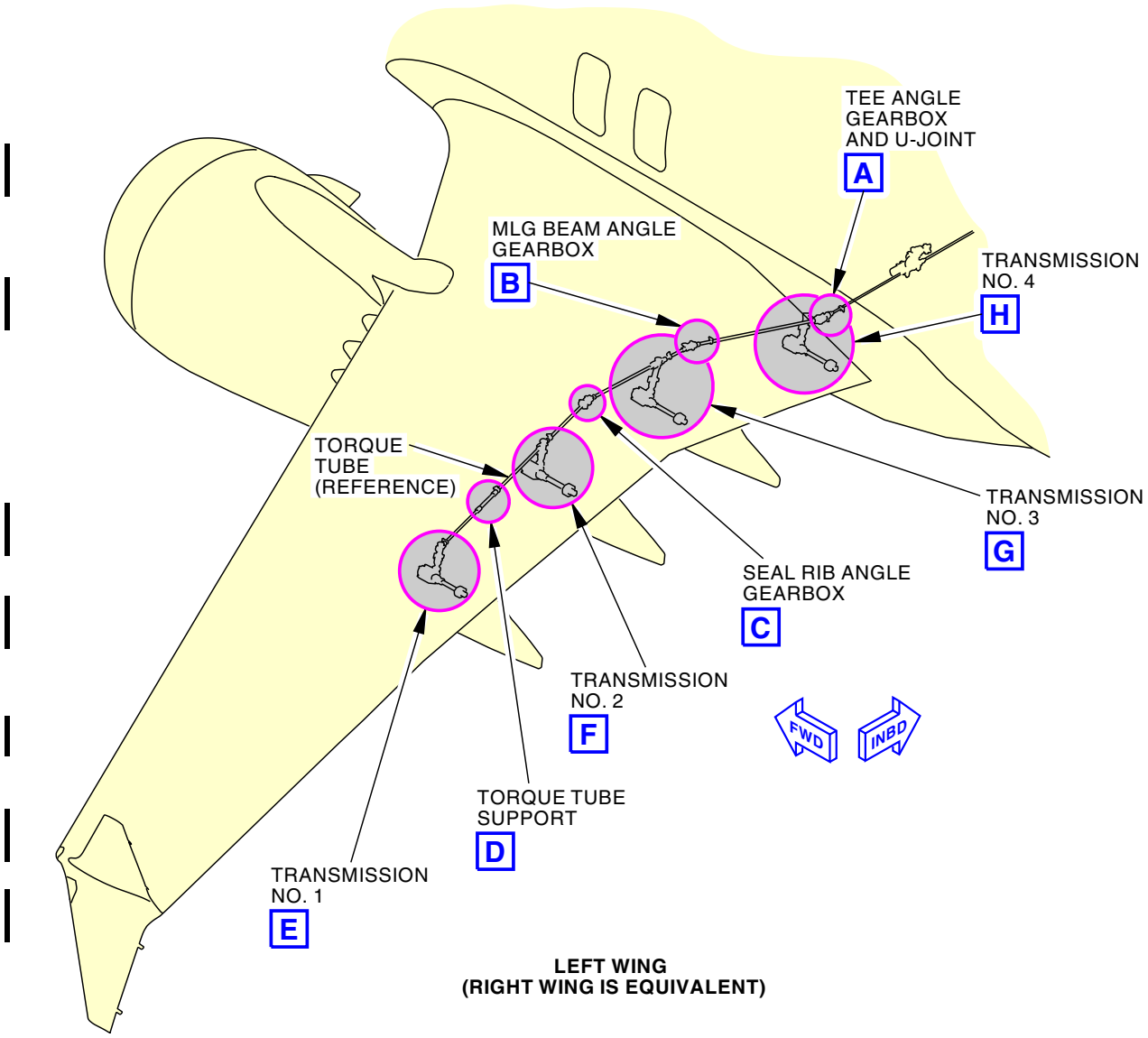
(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-00-010-012

(6) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

END OF TASK

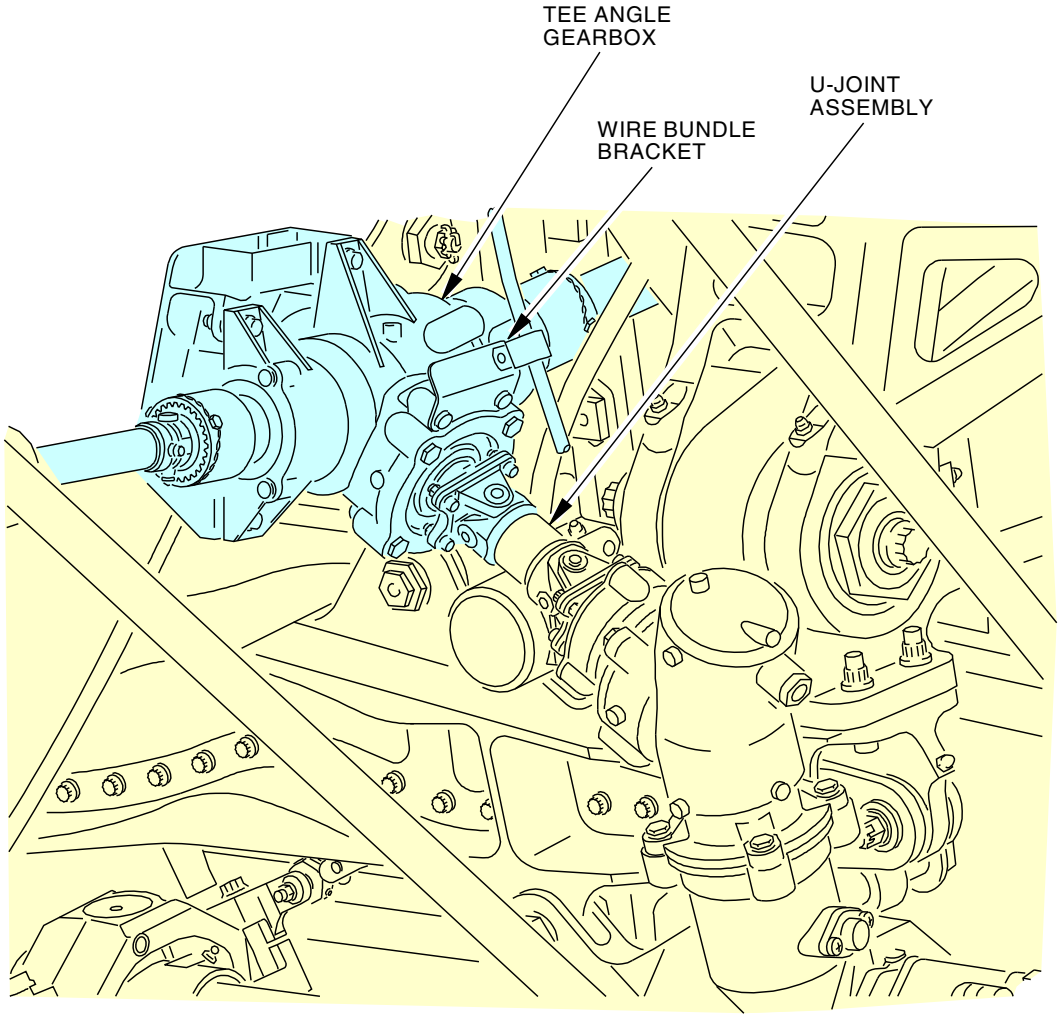
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412752 S00061531277_V2

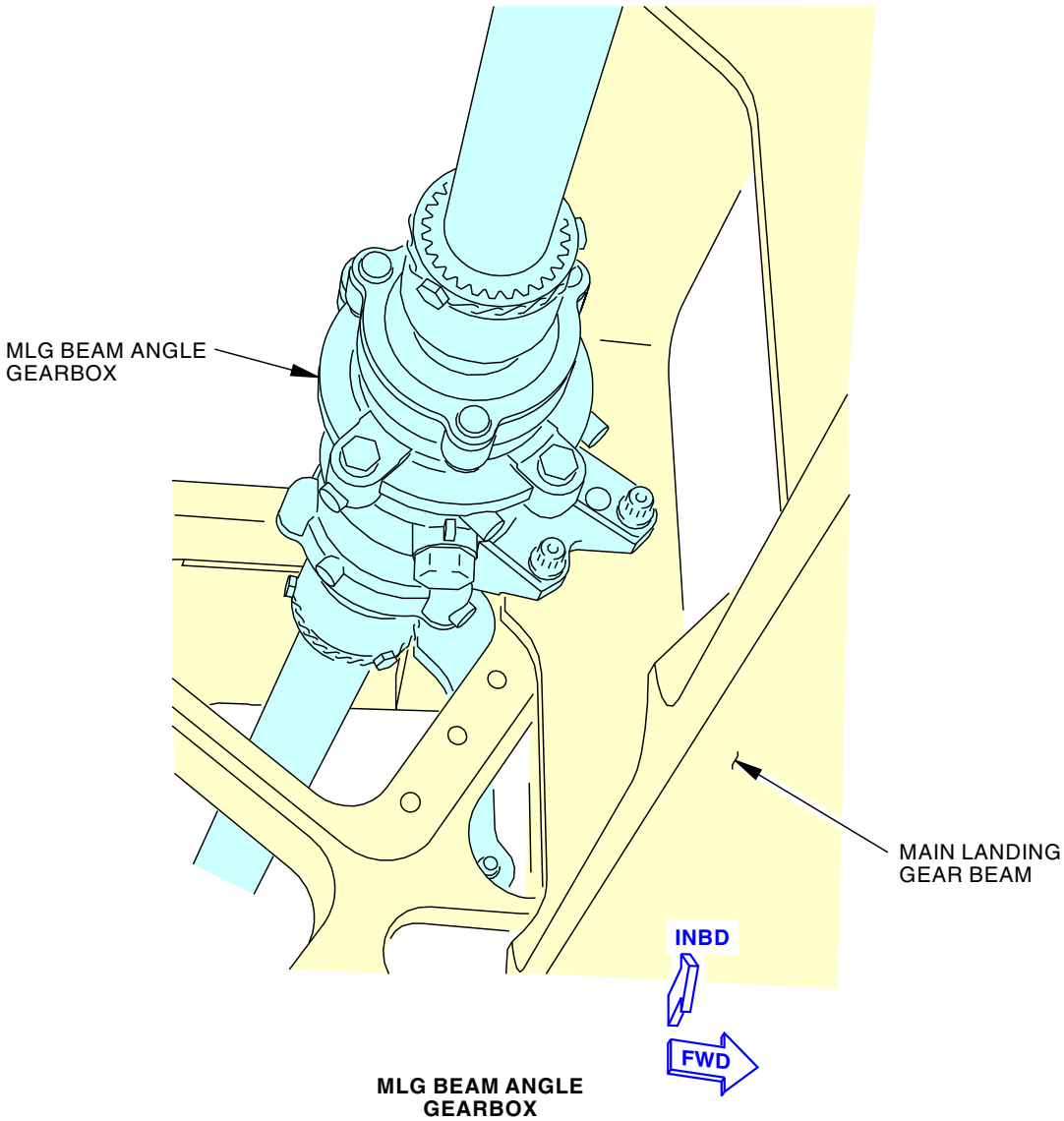
Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



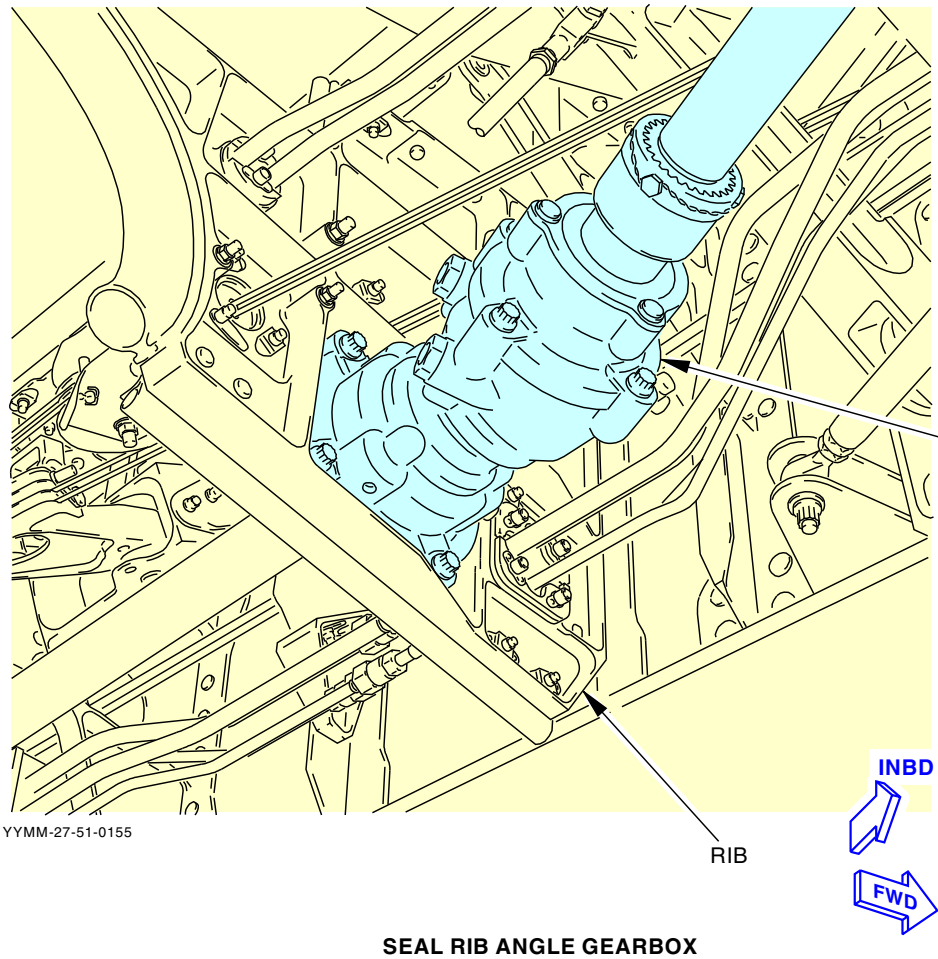
NOTE:

SOME SURROUNDING STRUCTURE REMOVED FOR CLARITY.

3043542 S0000810550_V1

Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



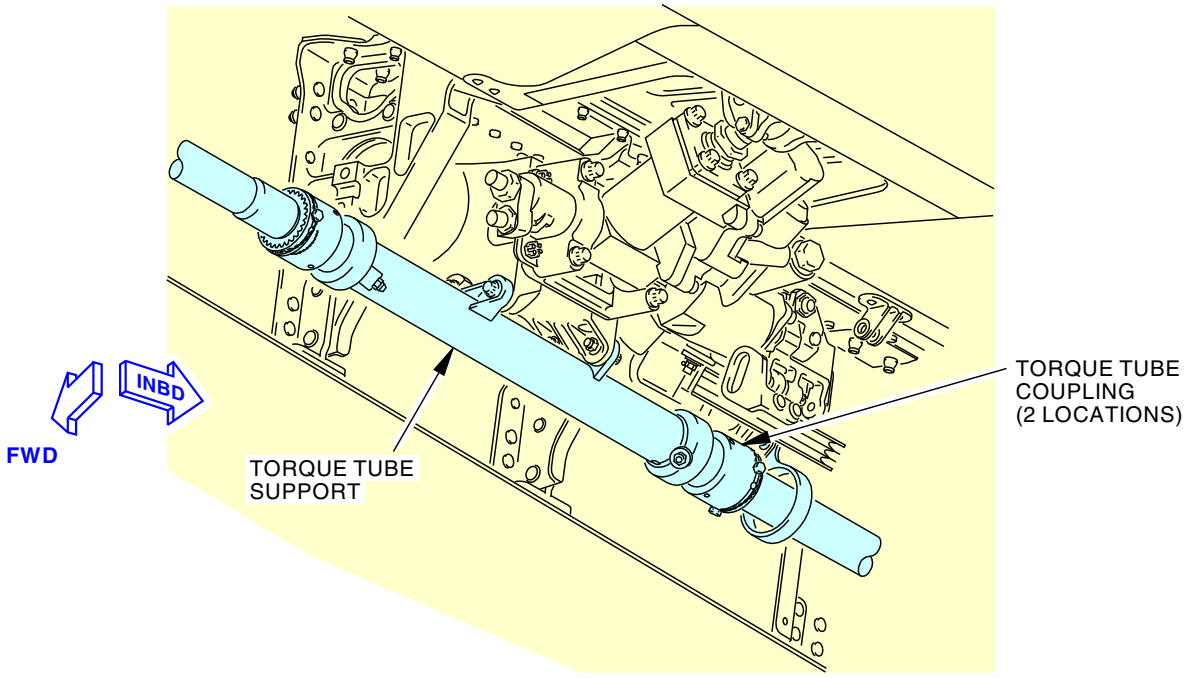
SEAL RIB ANGLE GEARBOX
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

C

3043553 S0000810551_V1

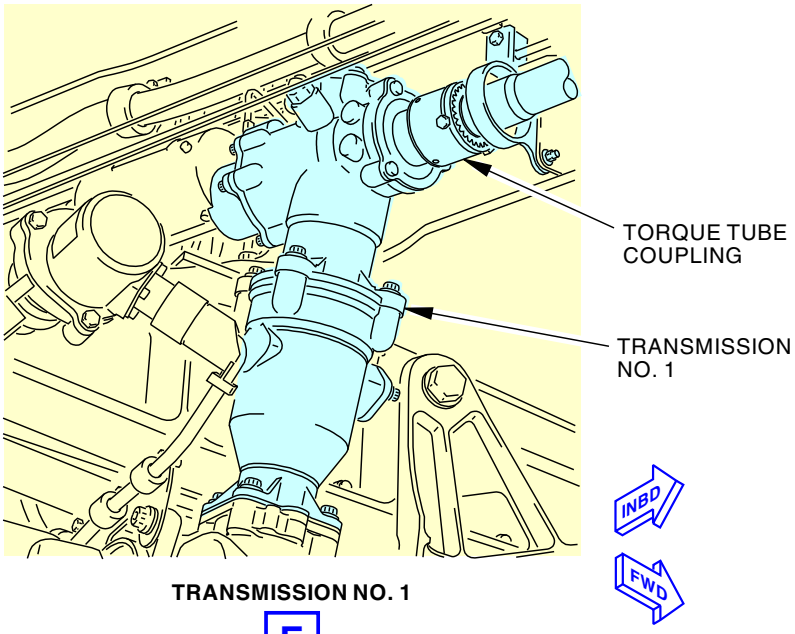
Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TORQUE TUBE SUPPORT

D



TRANSMISSION NO. 1

E

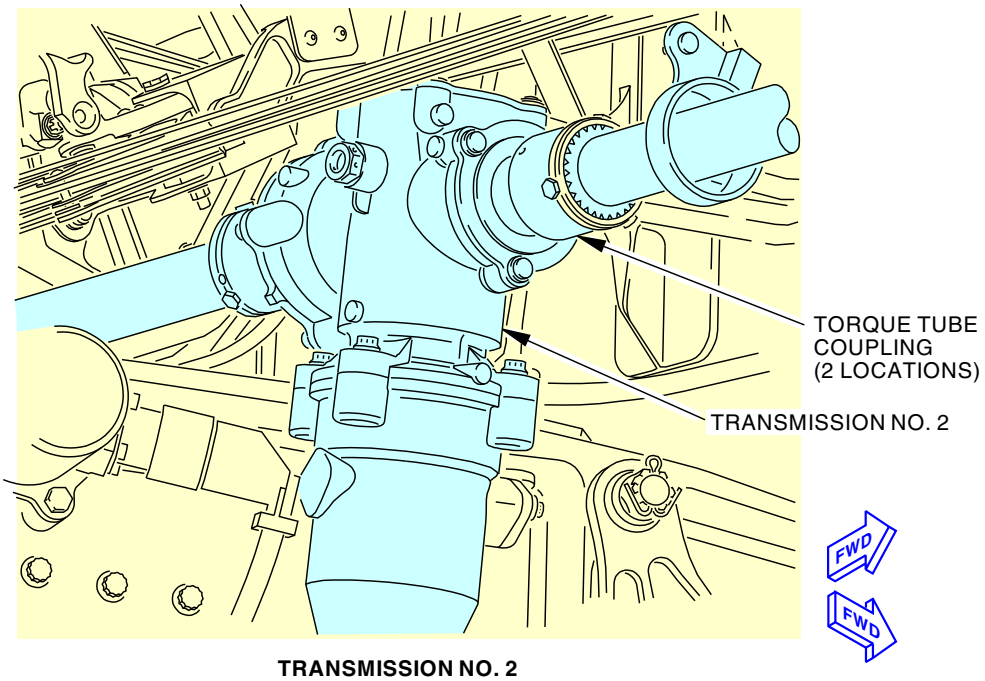
NOTE:

LOWER MIDSPAN PANEL REMOVED FOR CLARITY.

3043558 S0000810552_V1

Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TRANSMISSION NO. 2

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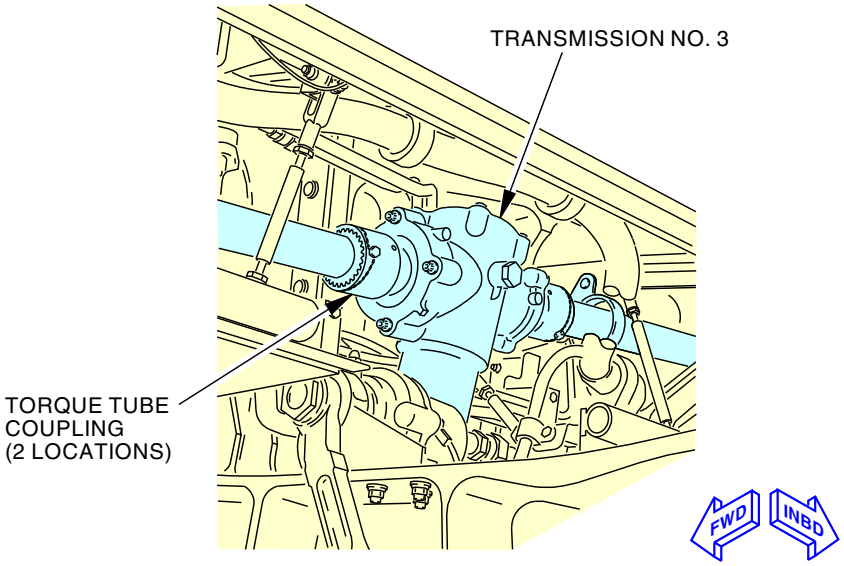


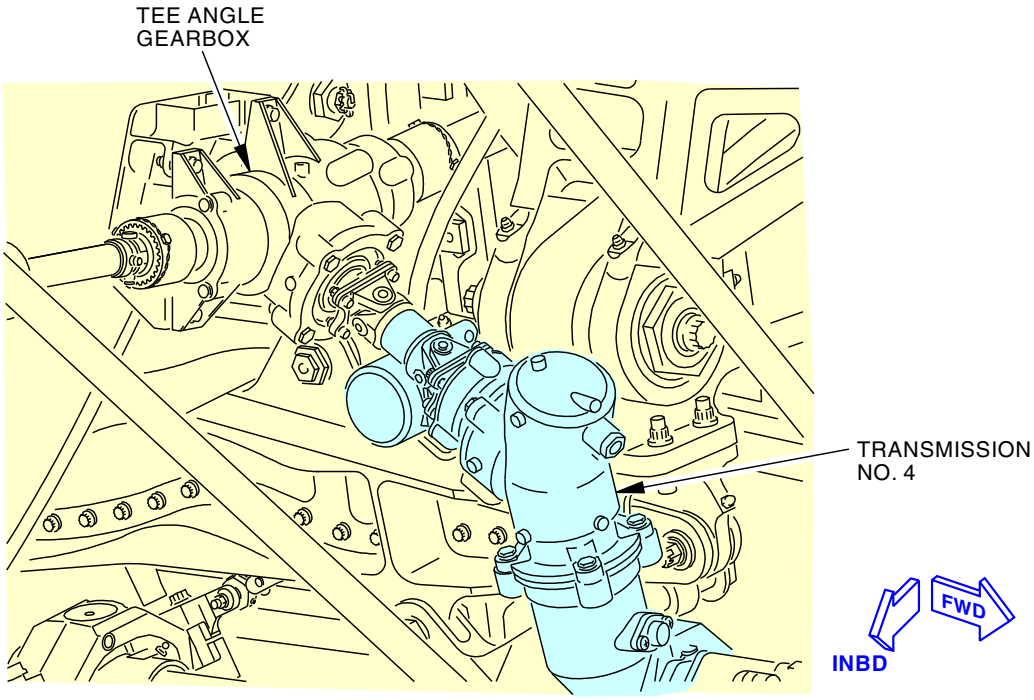
TRANSMISSION NO. 3

G

3043581 S0000810553_V1

Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TRANSMISSION NO. 4

H

3043613 S0000810554_V1

Trailing Edge Flap Drive System Inspection
Figure 601/27-51-00-990-810 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-00-210-802

3. Trailing Edge Flap Actuation System Inspection

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
560	Subzone - Left Wing: Trailing Edge , Aft of Rear Spar, Outboard of Inbd Trailing Edge Flap, Inbd of Fixed Trailing Edge
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
660	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Outboard of Inboard Trailing Edge Flap, Inboard of Fixed Trailing Edge

D. Access Panels

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
567ET	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting
667ET	Flap, Forward Carriage Bearing And Fitting

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Inspection

SUBTASK 27-51-00-480-015

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-00-010-013

(2) Extend the trailing edge flaps to the 40-unit position. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-00-040-009

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Inspection

(Figure 602)

SUBTASK 27-51-00-010-014

(1) At the flap supports, remove the leading edge skin panel [2] from the main flap [1] forward of the carriage:

(a) Remove the bolts [3] that attach the leading edge skin panel [2].

(b) Remove the leading edge skin panel [2] from the main flap [1].

Open these access panels:

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
567ET	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting
667ET	Flap, Forward Carriage Bearing And Fitting

SUBTASK 27-51-00-210-006

(2) Do a detailed visual inspection of these items at the flap supports:

NOTE: These are flap supports No. 1, 2, 7 and 8.

(a) Aft flap drive rod, push rod and bellcrank

NOTE: Some freeplay in the bellcrank is acceptable.

(b) Carriage rollers

(c) Aft link and fittings

(d) Forward carriage bearing and fitting.

SUBTASK 27-51-00-210-007

(3) Do a detailed visual inspection of the deflection control rollers between the inboard and outboard flaps and at the outboard end of the outboard flap.

SUBTASK 27-51-00-210-008

(4) At the outboard aft flap, do a detailed visual inspection of these items:

(a) Aft flap track attachments.

NOTE: There are four aft flap tracks on the outboard flap.

(b) Inboard and outboard programming rollers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Inboard and outboard aft flap pushrods.

(d) Rubstrips common to the aft flap support tracks, and common to the inboard and outboard edge program tracks.

(e) Inboard and outboard aft flap track rollers.

SUBTASK 27-51-00-410-013

(5) Install the leading edge skin panel [2] on the main flap [1] forward of the carriage:

(a) Close these access panels:

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
567ET	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting
667ET	Flap, Forward Carriage Bearing And Fitting

(b) Put the leading edge skin panel [2] in its location on the leading edge of the main flap [1].

(c) Apply compound, C00528 to the holes for the bolts [3].

(d) Install the bolts [3] to attach the leading edge skin panel [2].

(e) Apply sealant, A00247 to fill all of the clearances around the leading edge skin panel [2] that are more than 0.05 in. (1.27 mm).

G. Inboard Flap Inspection

(Figure 603)

SUBTASK 27-51-00-210-009

(1) At the outboard flap support for the inboard flap, do a detailed visual inspection of these items:

NOTE: These are flap supports No. 3 and 6.

(a) Aft flap drive rod and crankshaft

(b) Carriage rollers

SUBTASK 27-51-00-210-010

(2) At the inboard flap support for the inboard flap, do a detailed visual inspection of these items:

NOTE: These are flap supports No. 4 and 5.

(a) Carriage rollers

SUBTASK 27-51-00-210-011

(3) At the inboard aft flap, do a detailed visual inspection of these items:

(a) Aft flap track attachments.

NOTE: There are two aft flap tracks on the inboard flap.

(b) Inboard and outboard programming rollers.

(c) Inboard and outboard aft flap pushrods.

(d) Rubstrips common to the aft flap support tracks, and common to the inboard and outboard edge program tracks.

(e) Inboard and outboard aft flap track rollers.

SUBTASK 27-51-00-440-006

(4) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

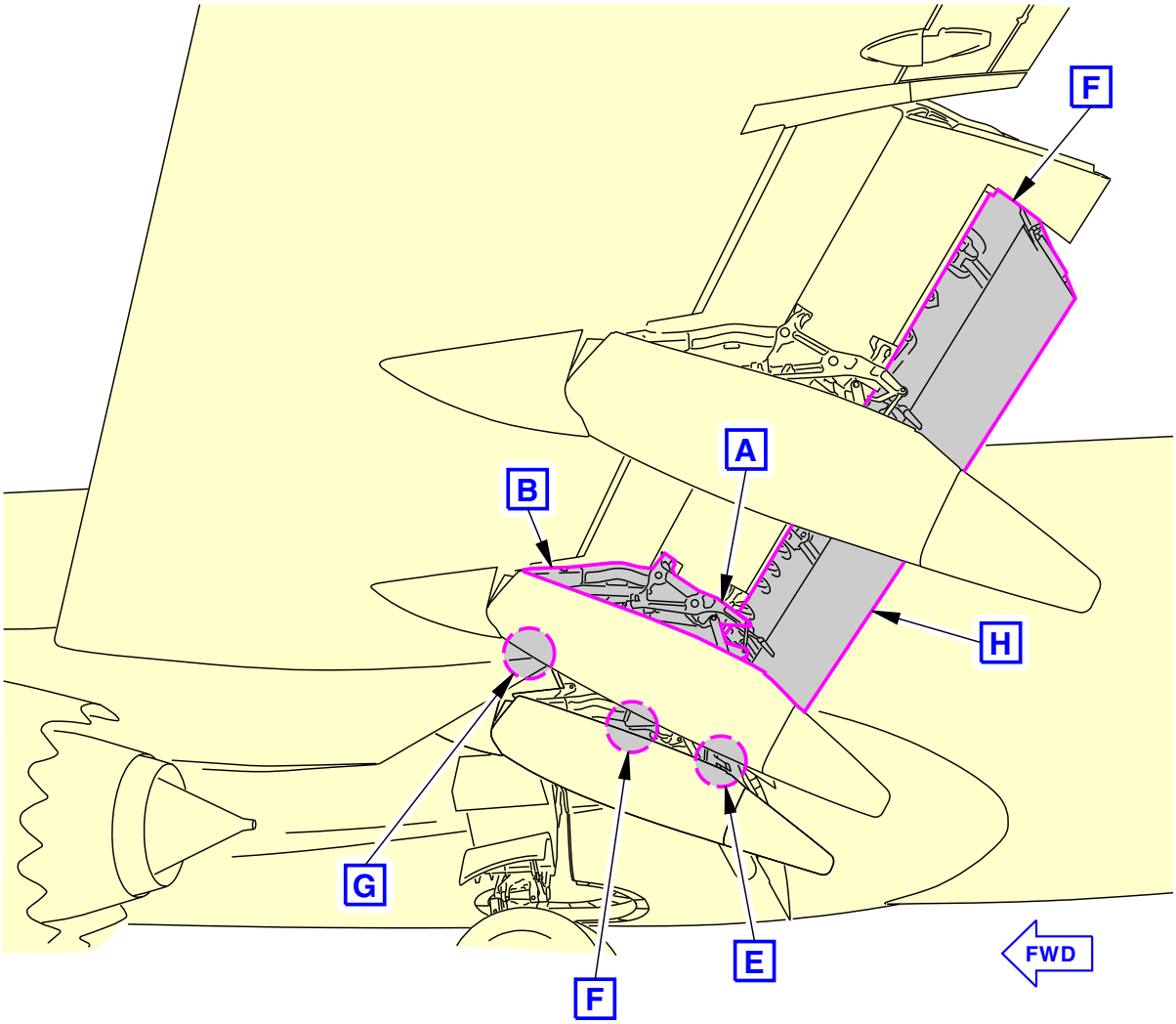
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-00-010-015

(5) Retract the trailing edge flaps to the retracted position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

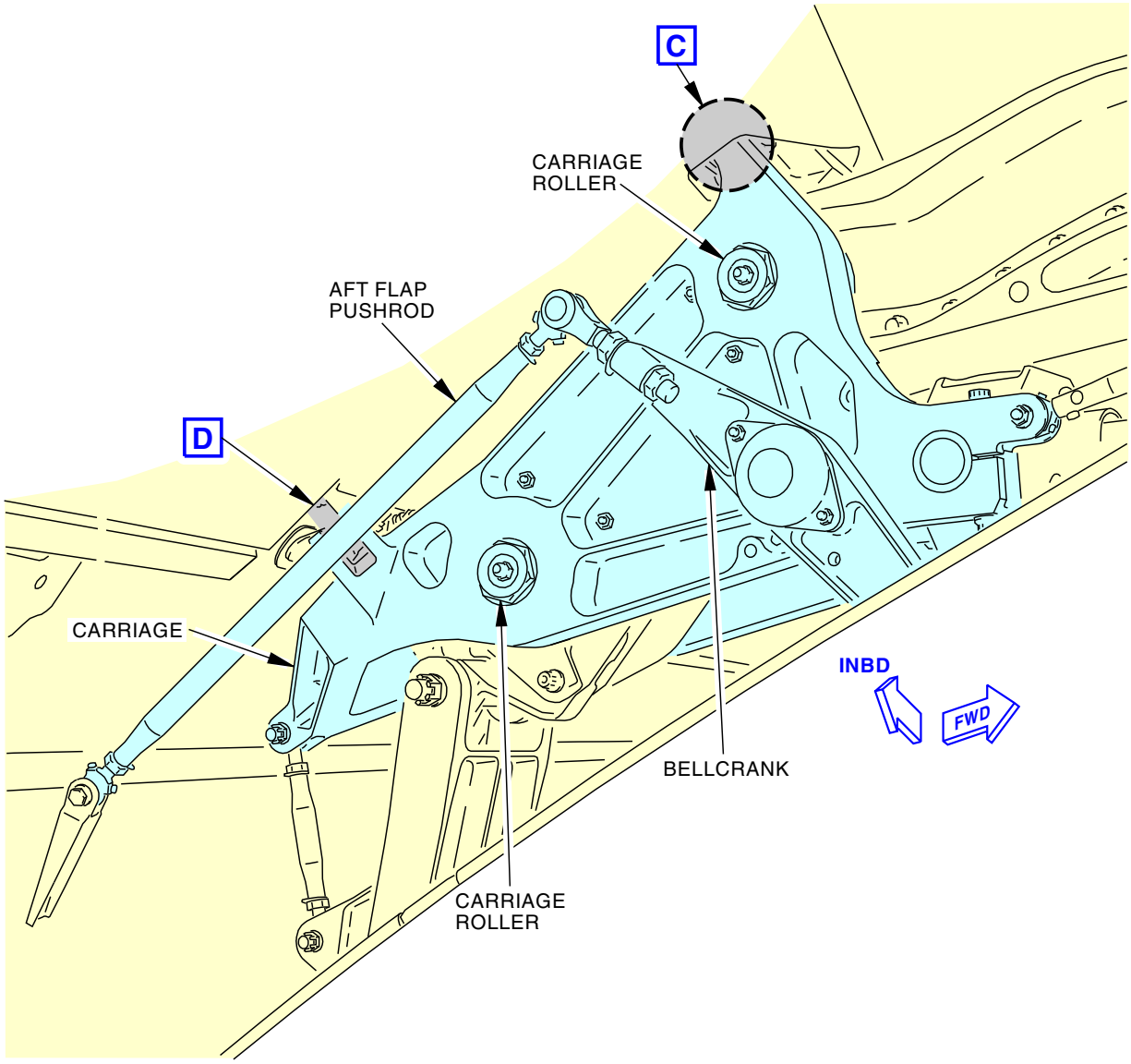


LEFT WING
(RIGHT WING IS EQUIVALENT)

2412753 S00061531279_V1

Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



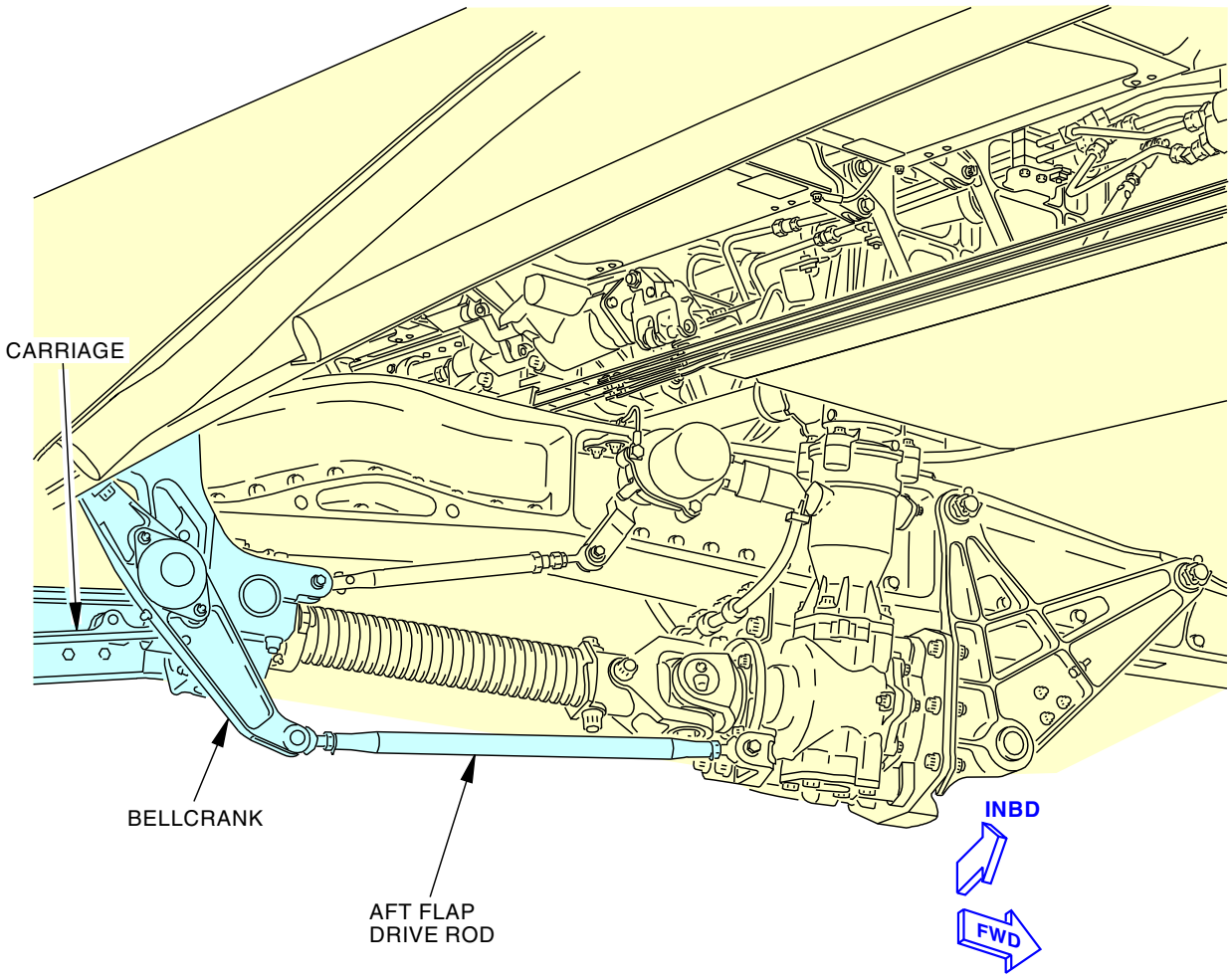
OUTBOARD FLAP INBOARD FLAP SUPPORT
(OUTBOARD FLAP OUTBOARD FLAP SUPPORT IS EQUIVALENT)

A

2412754 S00061531280_V1

Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



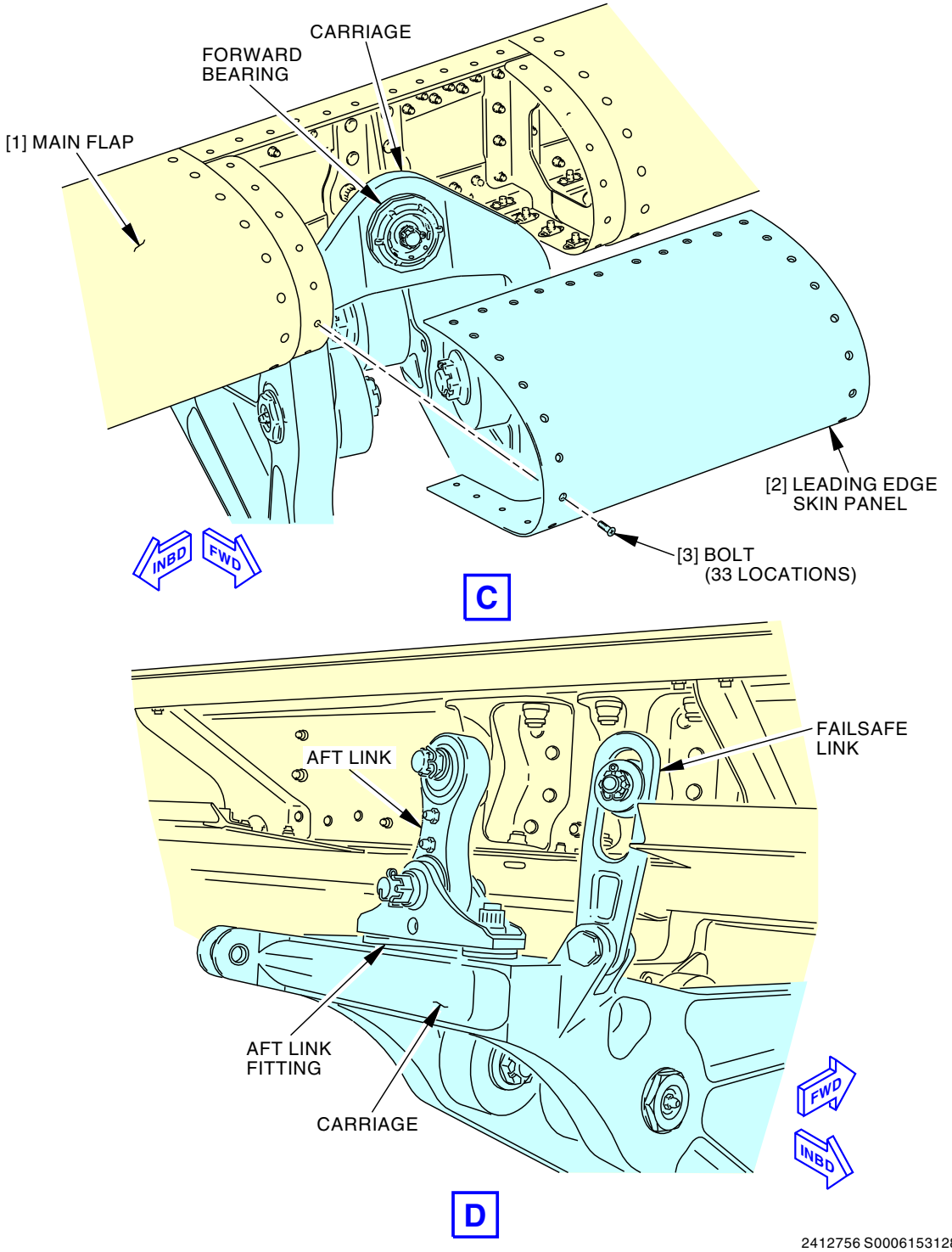
OUTBOARD FLAP INBOARD FLAP SUPPORT
(OUTBOARD FLAP OUTBOARD FLAP SUPPORT IS EQUIVALENT)

B

2412755 S00061531281_V1

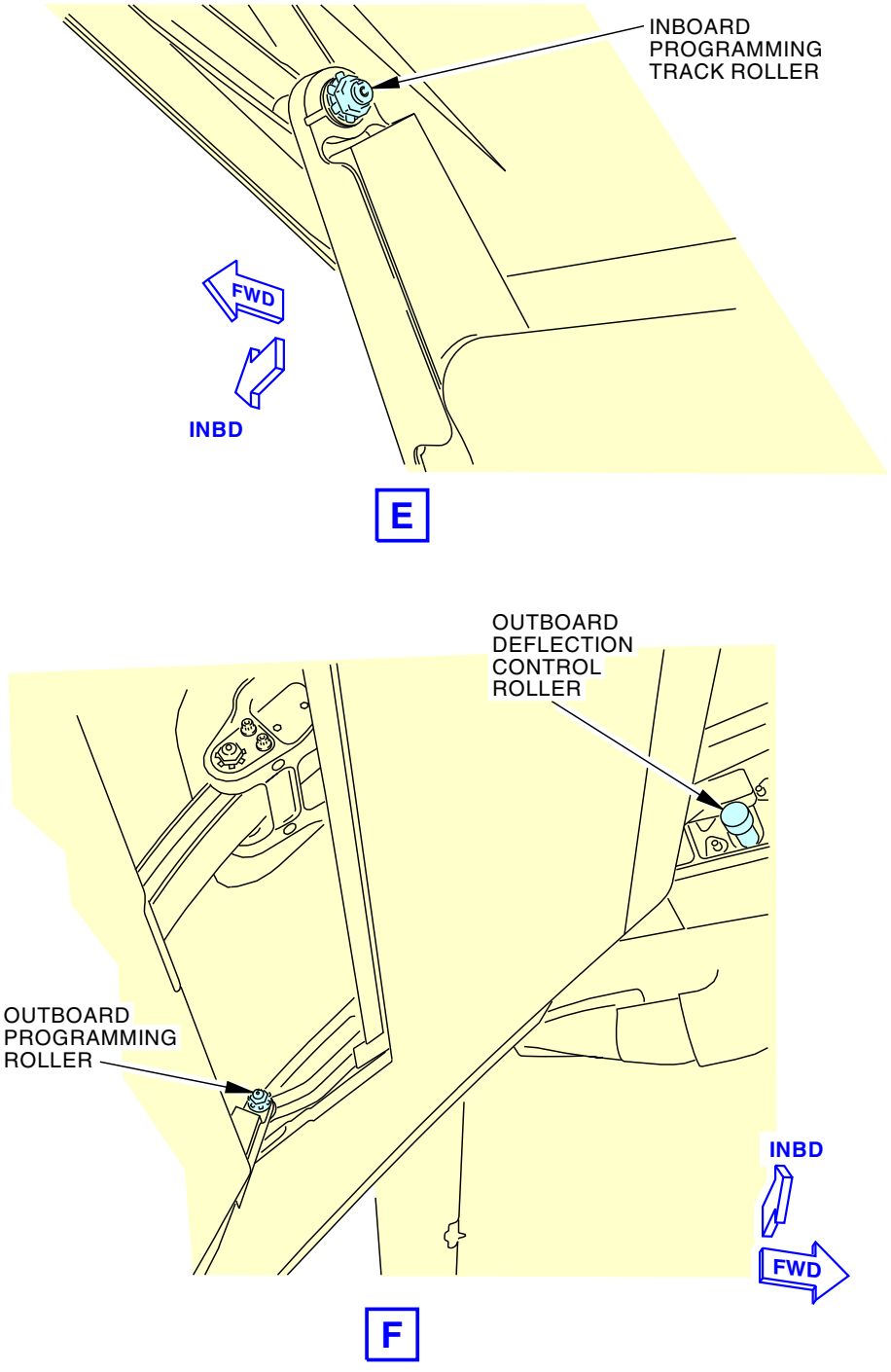
Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 4 of 7)

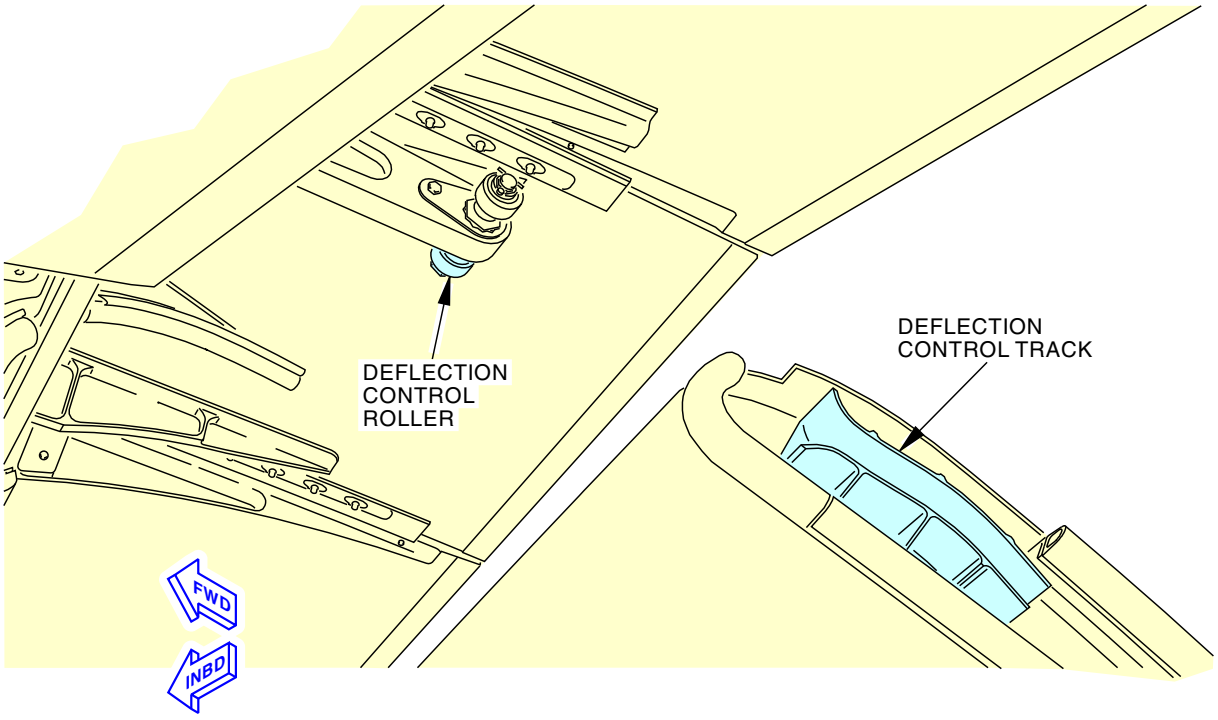
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412757 S00061531283_V1

Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 5 of 7)

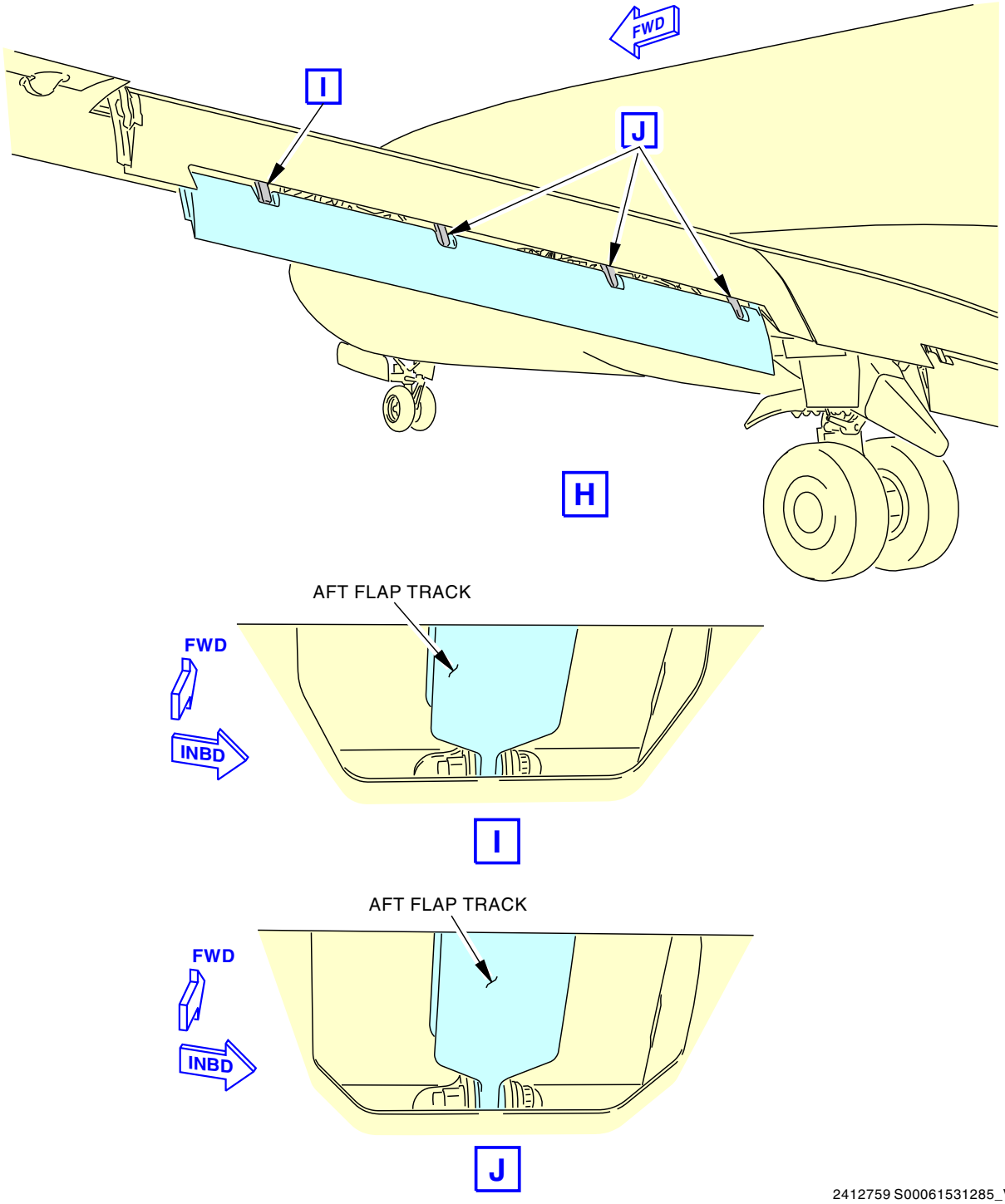
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412758 S00061531284_V1

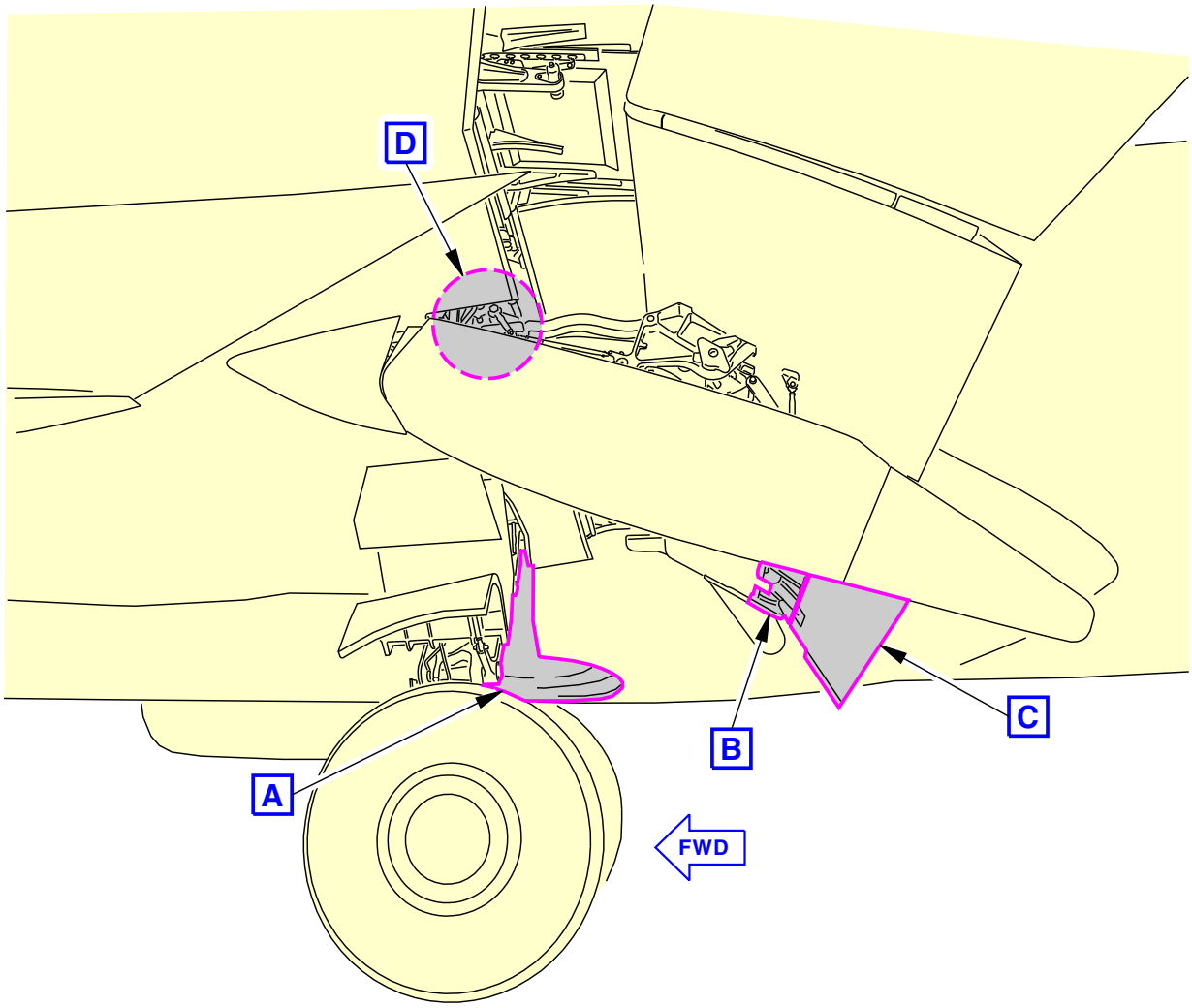
Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Actuation System Inspection
Figure 602/27-51-00-990-811 (Sheet 7 of 7)

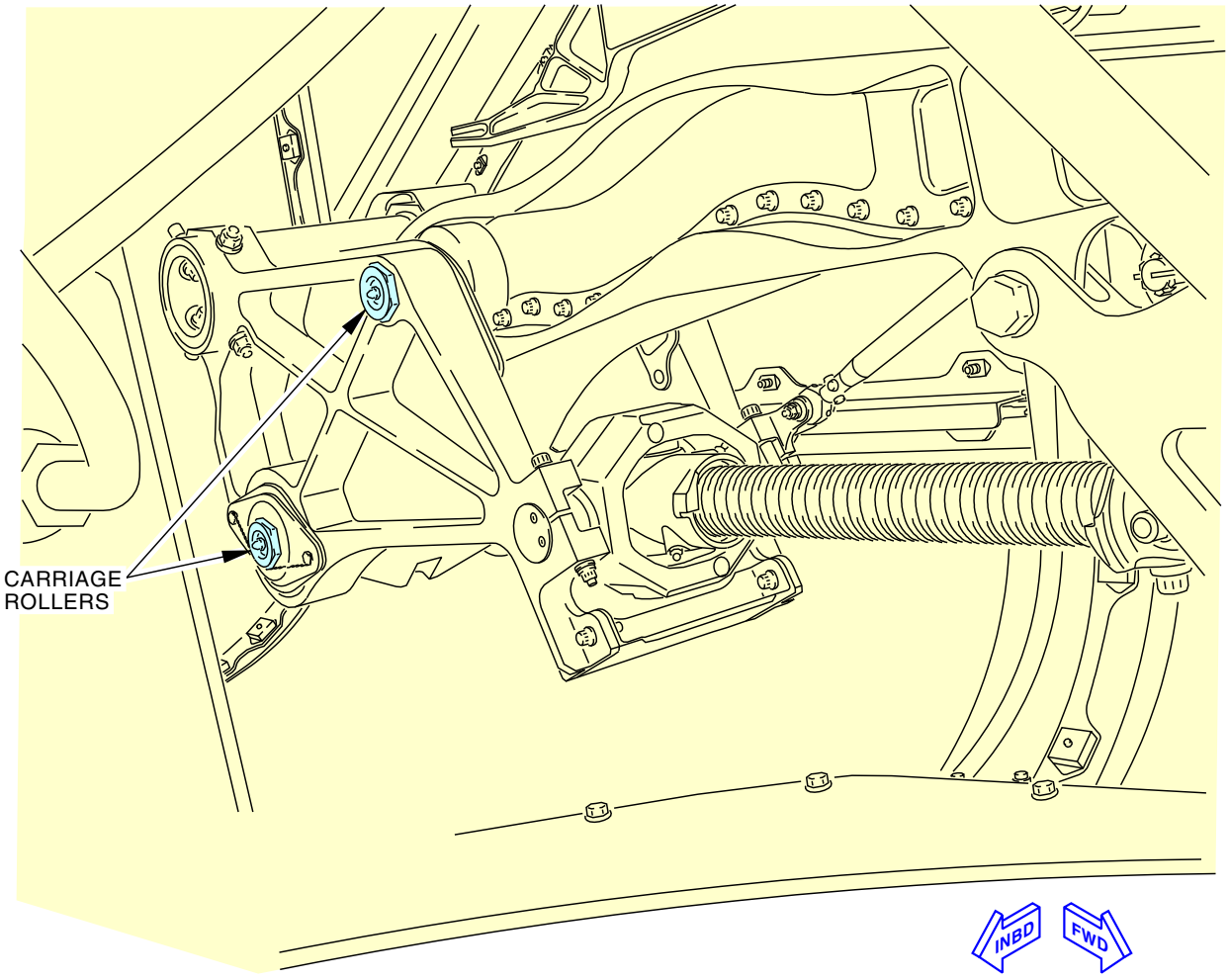
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412760 S00061531286_V1

Inboard Trailing Edge Flap Actuation System Inspection
Figure 603/27-51-00-990-812 (Sheet 1 of 4)

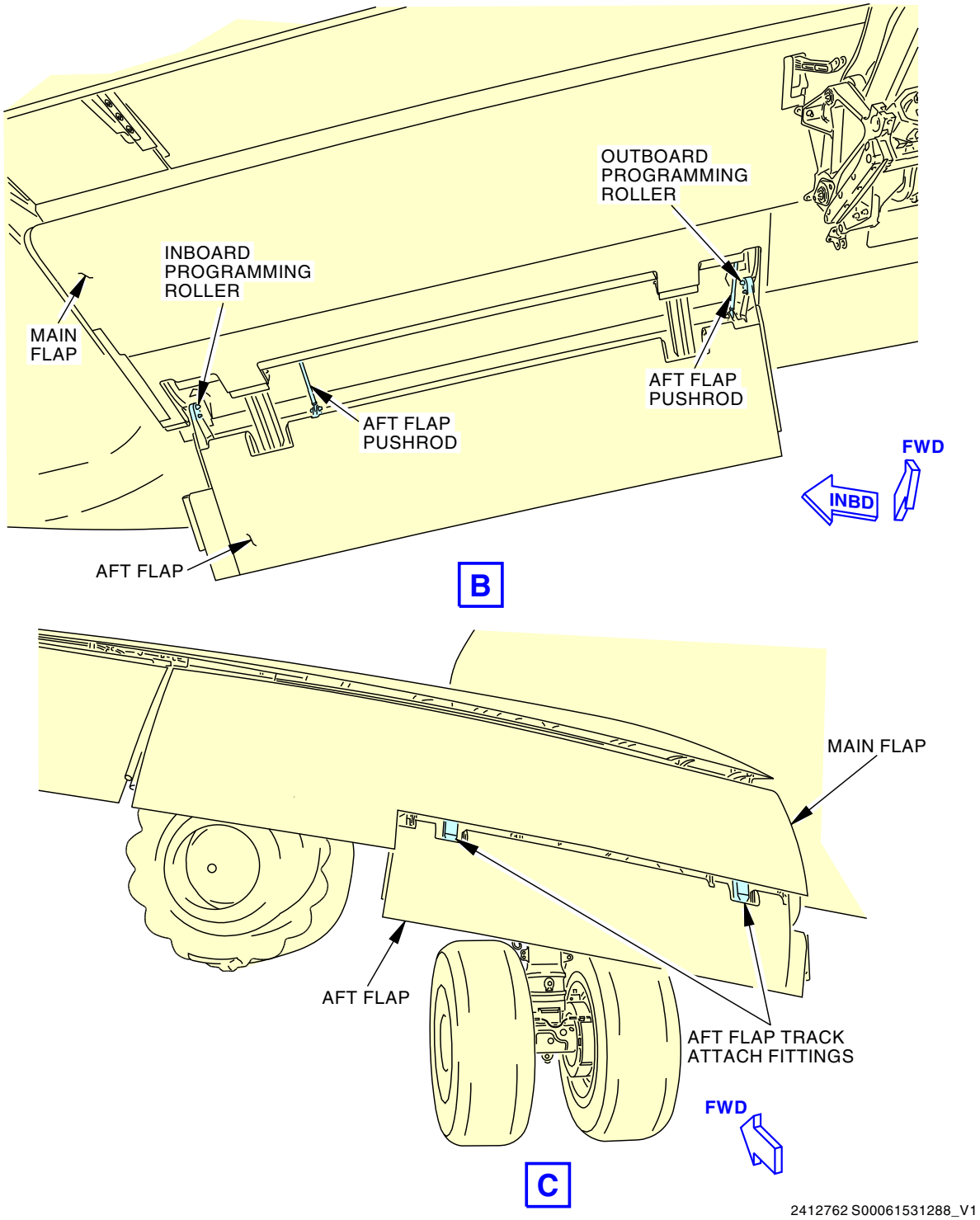
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412761 S00061531287_V1

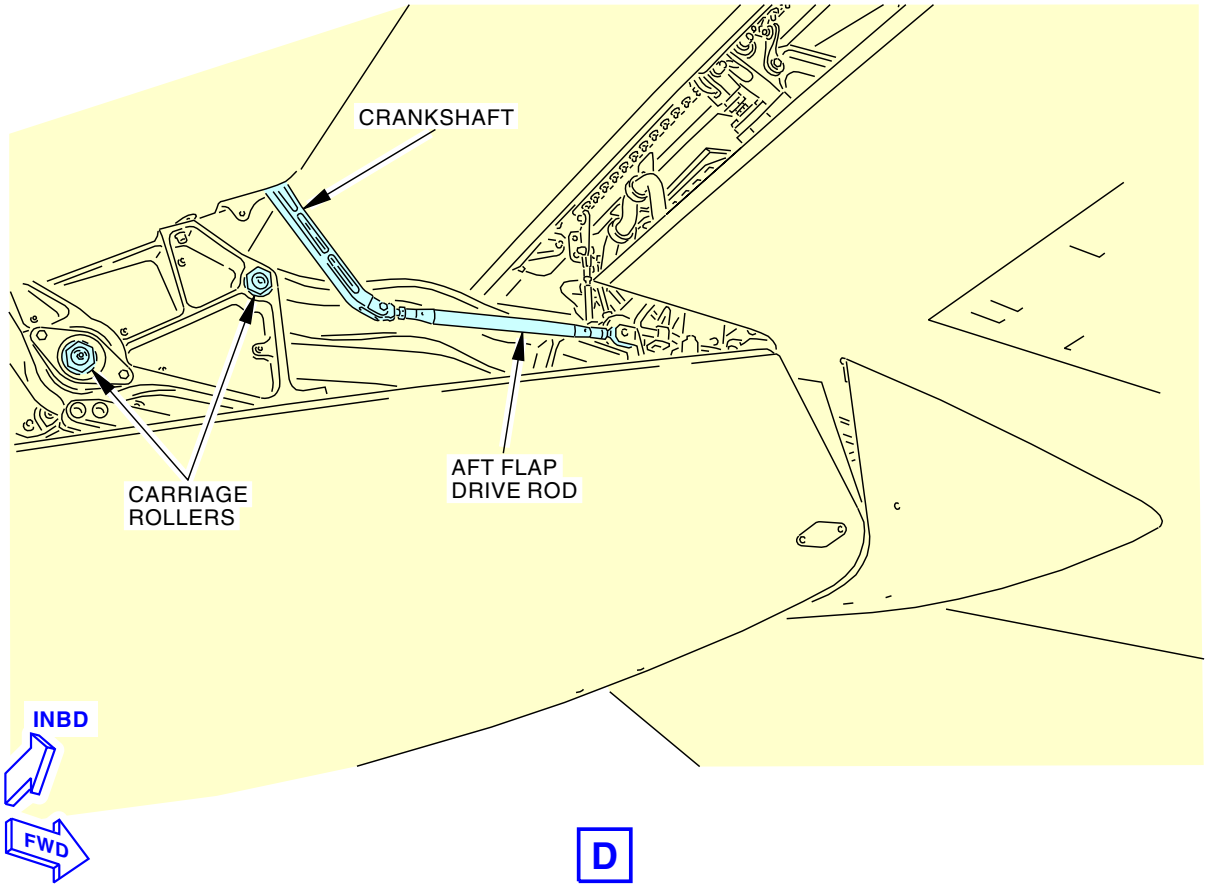
Inboard Trailing Edge Flap Actuation System Inspection
Figure 603/27-51-00-990-812 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Trailing Edge Flap Actuation System Inspection
Figure 603/27-51-00-990-812 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412763 S00061531289_V1

Inboard Trailing Edge Flap Actuation System Inspection
Figure 603/27-51-00-990-812 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP/SLAT ELECTRONICS UNIT (FSEU) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap/slat electronics unit (FSEU) removal

(2) Flap/slat electronics unit (FSEU) installation.

TASK 27-51-01-000-801

2. Flap/Slat Electronics Unit Removal

(Figure 401)

A. General

(1) The flap/slat electronics unit is installed on the E1-1 shelf in the main equipment center.

B. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 401)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Procedure

SUBTASK 27-51-01-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-51-01-010-001

(2) To get access to the main equipment center, do this step:

Open this access panel:

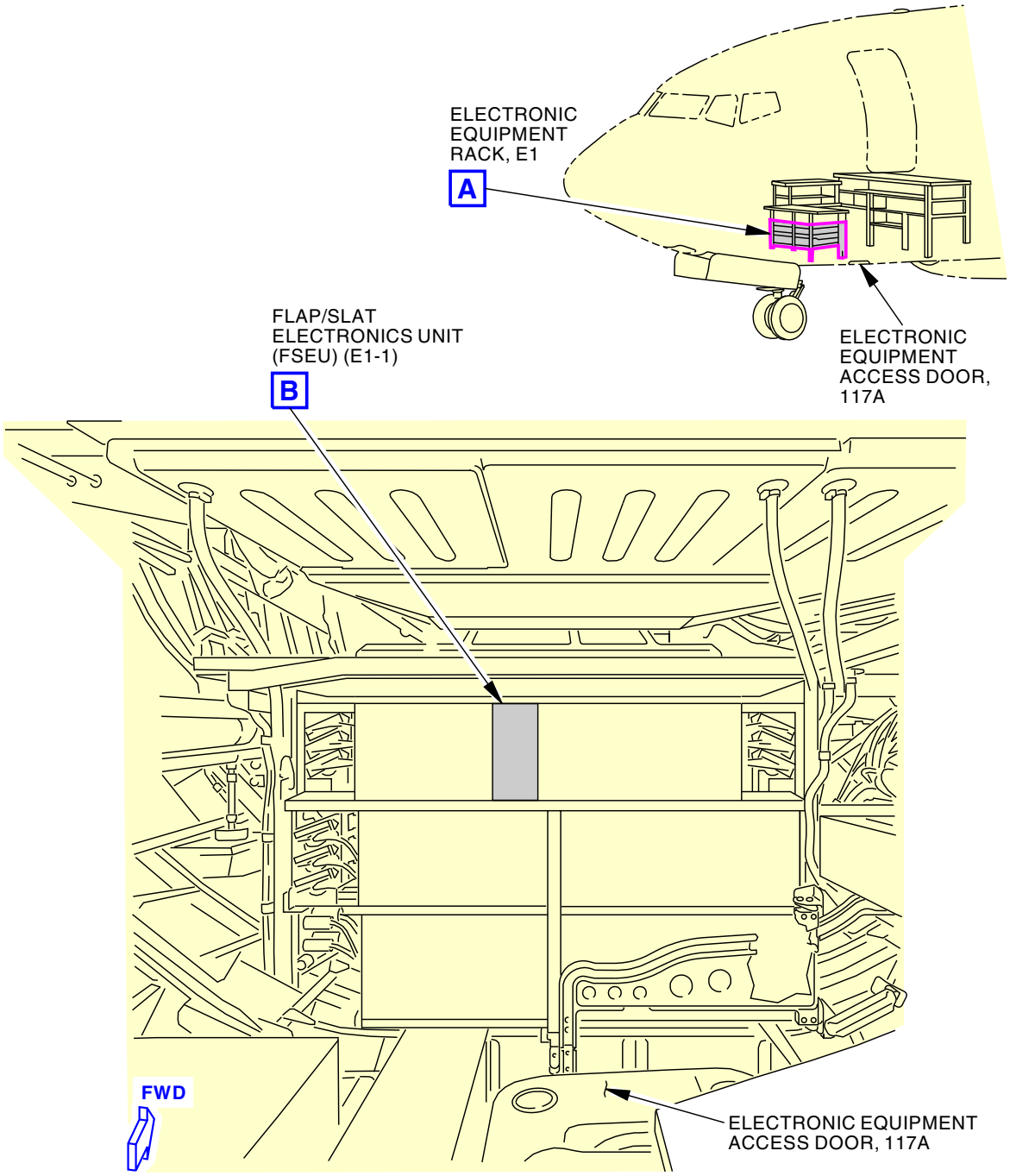
Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-01-020-001

(3) Remove the flap/slat electronics unit [1] from the E1-1 shelf, do this task: E/E Box Removal, TASK 20-10-07-000-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



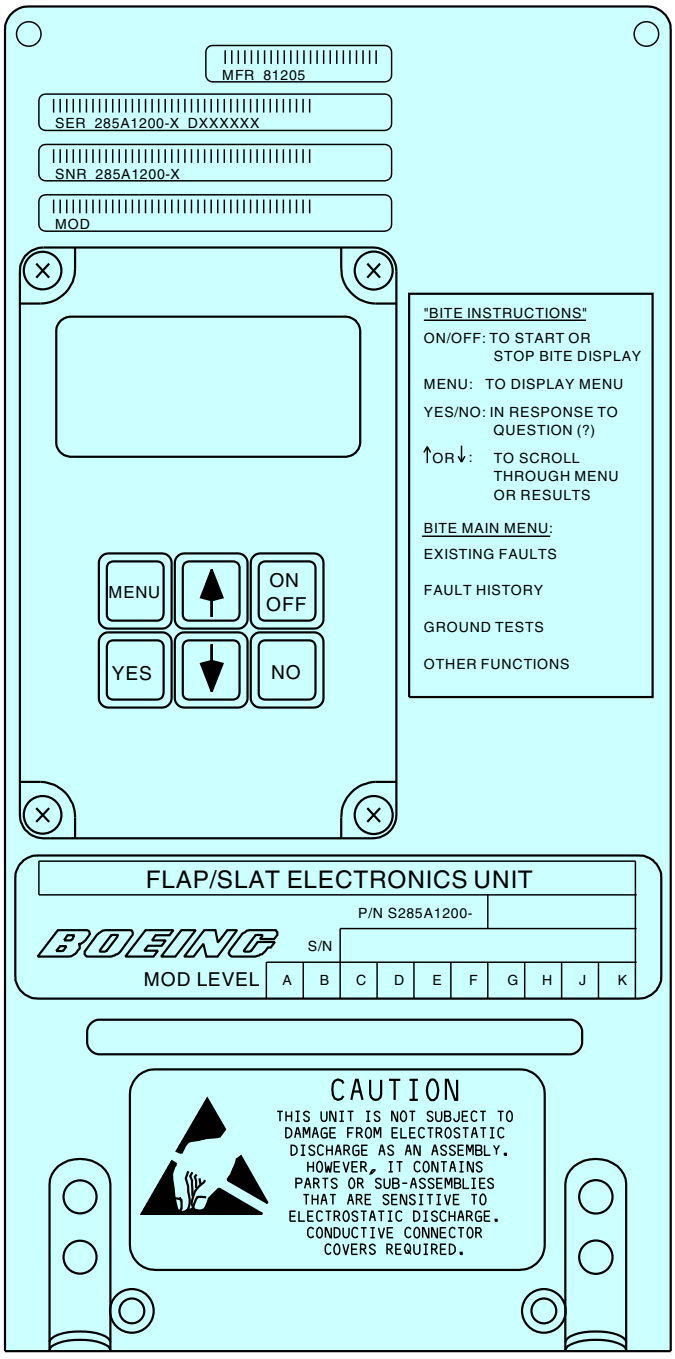
ELECTRONIC EQUIPMENT RACK, E1

A

2412764 S00061531293_V1

Flap/Slat Electronics Unit Installation
Figure 401/27-51-01-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



[1] FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

2412765 S00061531294_V1

Flap/Slat Electronics Unit Installation
Figure 401/27-51-01-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-01-400-801

3. Flap/Slat Electronics Unit Installation

(Figure 401)

A. General

(1) The flap/slat electronics unit is installed on the E1-1 shelf in the main equipment center.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 401)
27-51-00-740-801	FSEU Display and Existing Faults Test (P/B 501)
27-51-00-740-802	Trailing Edge Flap Asymmetry Skew System BITE Test (P/B 501)
27-51-00-740-803	Trailing Edge Flap Load Relief System BITE Test (P/B 501)
27-81-00-700-804	Leading Edge Uncommanded Motion Protection Test (P/B 501)
27-81-00-730-801	Leading Edge Cruise Depressurization Test (P/B 501)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap/slat electronics unit	27-51-01-01-010	SIA ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Flap/Slat Electronic Unit Installation

SUBTASK 27-51-01-420-001

(1) Install the flap/slat electronics unit [1] on the E1-1 shelf, do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 27-51-01-860-002

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

G. Flap/Slat Electronic Unit Installation Test

SUBTASK 27-51-01-740-001

(1) Do the Existing Faults BITE test with the flap/slat electronics unit [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) To do the BITE test, do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-51-01-740-002

(2) Do the Leading Edge Cruise Depressurization Test with the flap/slat electronics unit [1].

(a) To do the depressurization test, do this task: Leading Edge Cruise Depressurization Test, TASK 27-81-00-730-801.

SUBTASK 27-51-01-700-001

(3) Do the Leading Edge Uncommanded Motion Protection Test with the flap/slat electronics unit [1].

(a) To do the uncommanded motion protection test, do this task: Leading Edge Uncommanded Motion Protection Test, TASK 27-81-00-700-804.

SUBTASK 27-51-01-740-003

(4) Do the Load Relief BITE test with the flap/slat electronics unit [1].

(a) To do the BITE test, do this task: Trailing Edge Flap Load Relief System BITE Test, TASK 27-51-00-740-803.

SUBTASK 27-51-01-740-004

(5) Do the Asymmetry Skew System BITE test with the flap/slat electronics unit [1].

(a) To do the BITE test, do this task: Trailing Edge Flap Asymmetry Skew System BITE Test, TASK 27-51-00-740-802.

SUBTASK 27-51-01-710-001

(6) Do a test of the air mode inhibit function of the flap/slat electronics unit [1]:

(a) Simulate air mode, do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

NOTE: It is only necessary to simulate air mode with system 1.

(b) Push the ON/OFF button on the front panel of the flap/slat electronics unit [1] to turn it off and then on.

(c) Make sure that INHIBIT: IN AIR flashes on the display window on the flap/slat electronics unit [1] before the display turns off.

(d) Return the airplane to ground mode, do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

(e) Push the ON/OFF button on the front panel of the flap/slat electronics unit [1] to turn it off and then on.

(f) Make sure that INHIBIT: IN AIR does not show on the display window on the flap/slat electronics unit [1].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-01-010-002

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP BYPASS VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the trailing edge flap bypass valve assembly

(2) An installation of the trailing edge flap bypass valve assembly

(3) A removal of the trailing edge flap bypass valve motor

(4) An installation of the trailing edge flap bypass valve motor.

B. The trailing edge bypass valve assembly includes the valve housing, the bypass valve and the bypass valve motor.

TASK 27-51-02-000-801

2. Trailing Edge Flap Bypass Valve Assembly Removal

(Figure 401)

A. General

(1) This task includes the removal of the bypass valve assembly as a unit. The bypass valve assembly includes the housing, the valve and the valve motor.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-02-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-02-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-02-860-001

(3) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-02-860-002

(4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

E. Trailing Edge Flap Bypass Valve Assembly Removal

SUBTASK 27-51-02-020-001

(1) Disconnect the electrical connector [5] from the bypass valve assembly [4].

(2) If desired, inspect the connector for corrosion now, do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

NOTE: This step is also done in the installation task.

SUBTASK 27-51-02-020-002

(3) Disconnect the hydraulic lines [1] from the bypass valve assembly [4]:

(a) Put a container below the bypass valve assembly [4] to hold the hydraulic fluid.

(b) Disconnect the hydraulic lines [1] from the bypass valve assembly [4].

(c) Install caps on the hydraulic lines [1] and plugs in the hydraulic ports.

SUBTASK 27-51-02-020-003

(4) Remove the flap bypass valve assembly [4]:

(a) Remove the bolts [6] and washers [7] that attach the bypass valve assembly [4] to the bracket [2].

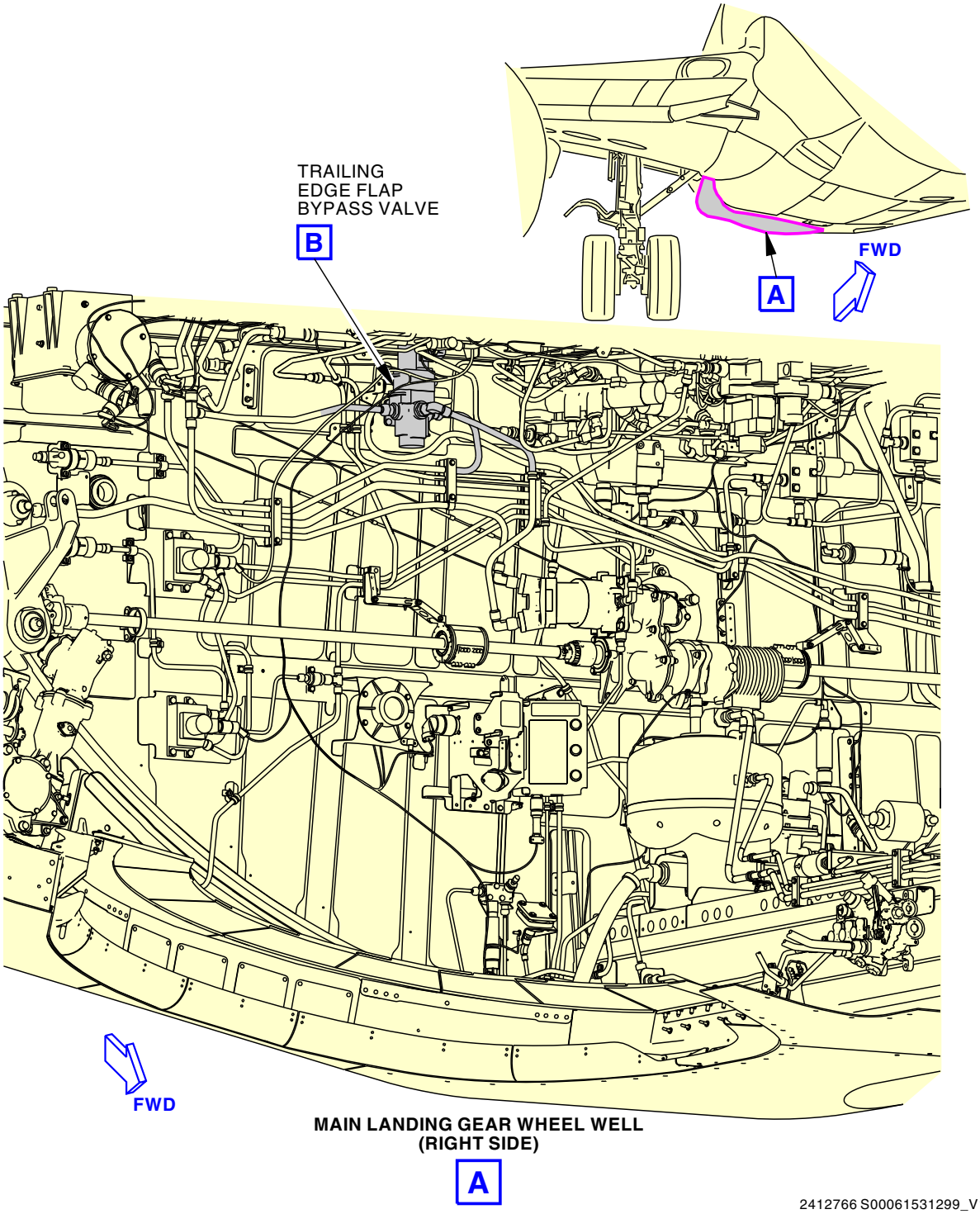
(b) Remove the bypass valve assembly [4] from the bracket [2].

SUBTASK 27-51-02-020-004

(5) If you will install a new bypass valve assembly [4], remove the unions [13] and packings [14] from the bypass valve assembly [4].

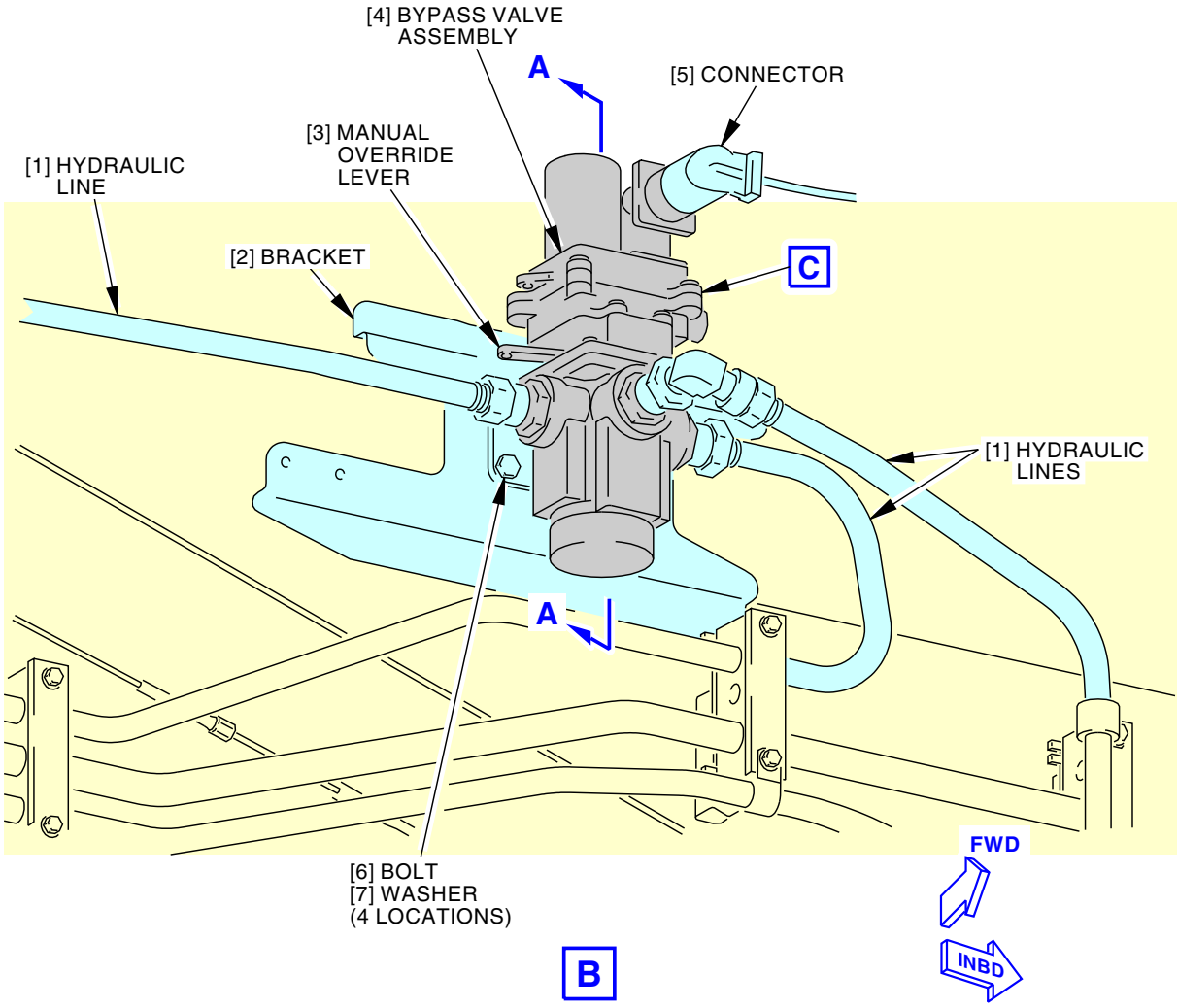
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Bypass Valve Assembly Installation
Figure 401/27-51-02-990-801 (Sheet 1 of 4)

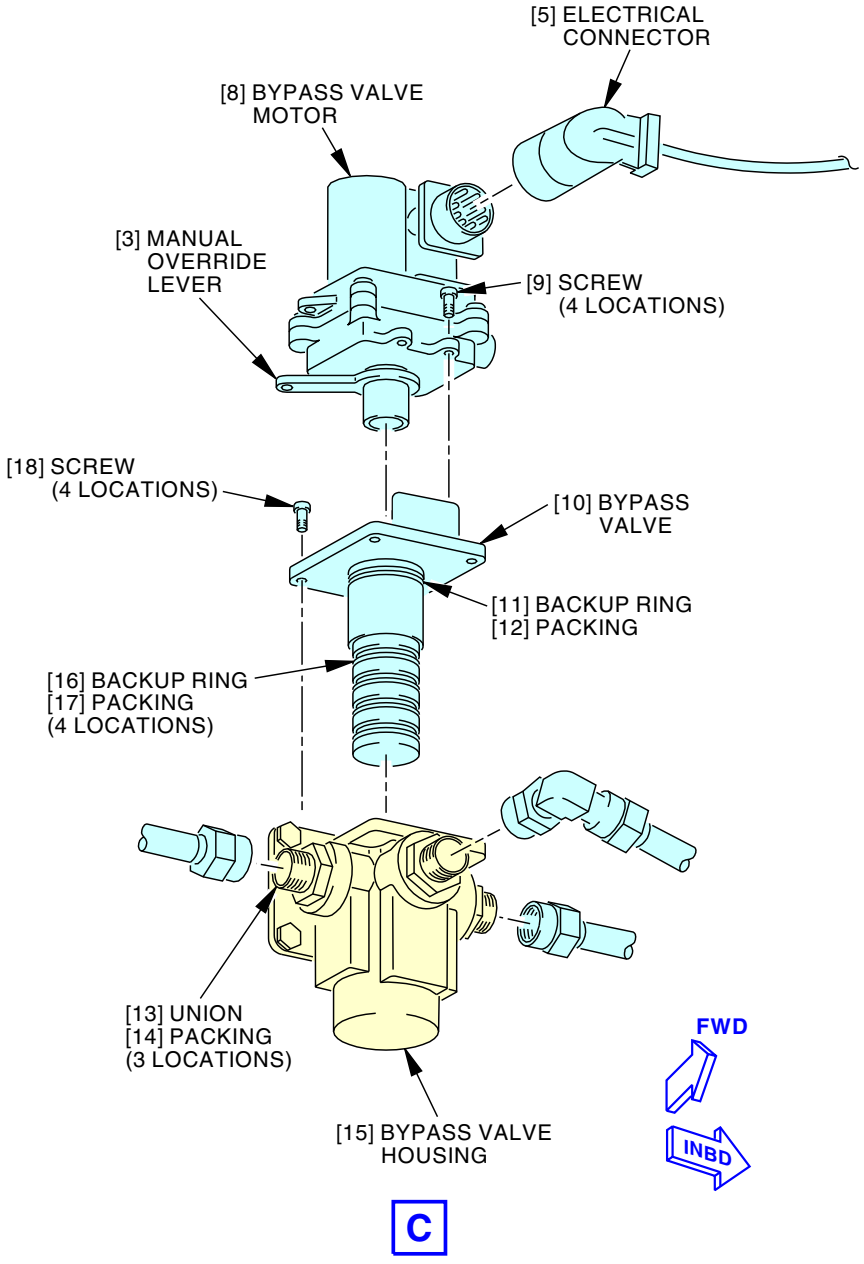
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412767 S00061531300_V1

Trailing Edge Flap Bypass Valve Assembly Installation
Figure 401/27-51-02-990-801 (Sheet 2 of 4)

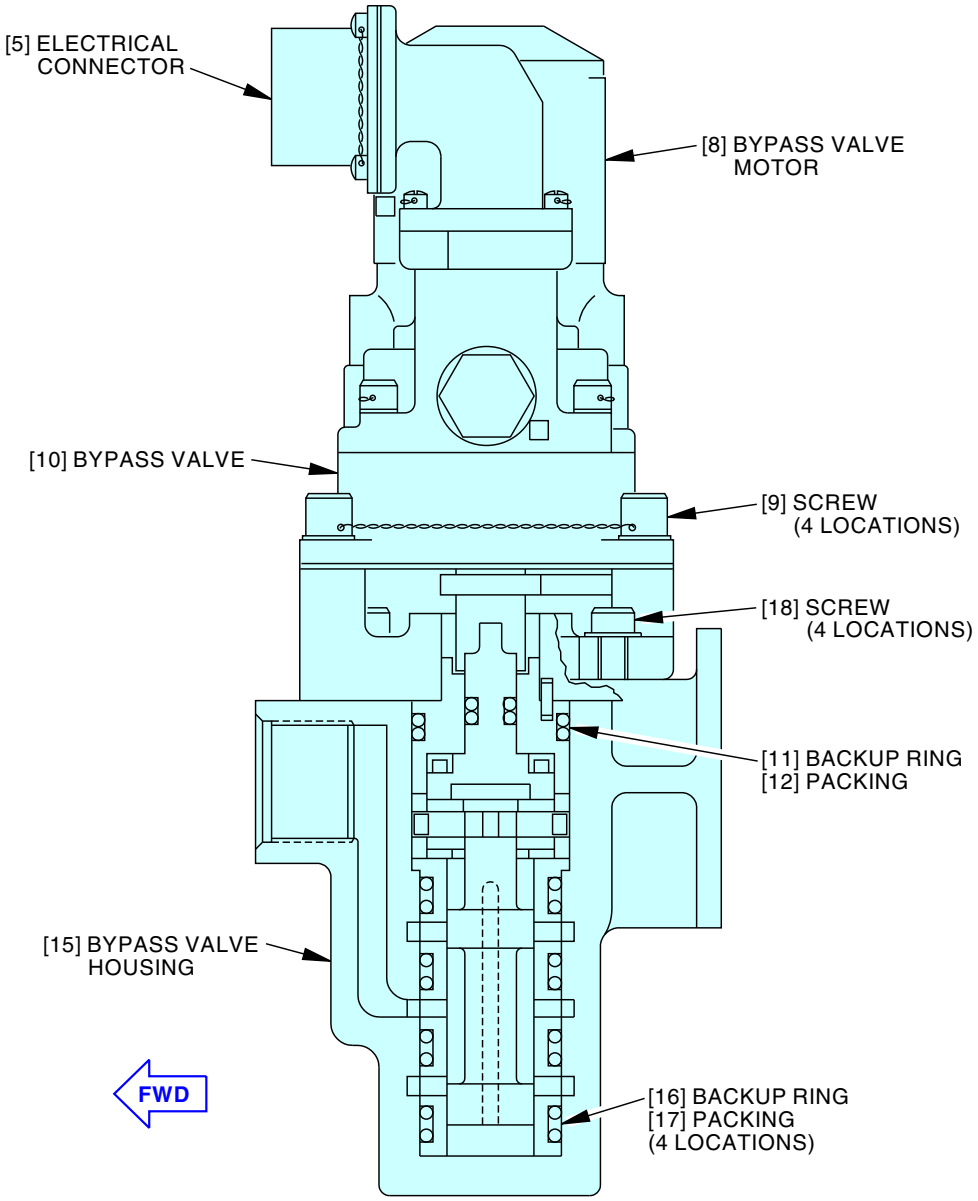
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412768 S00061531301_V1

Trailing Edge Flap Bypass Valve Assembly Installation
Figure 401/27-51-02-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412769 S00061531302_V1

Trailing Edge Flap Bypass Valve Assembly Installation
Figure 401/27-51-02-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-02-400-801

3. Trailing Edge Flap Bypass Valve Assembly Installation

(Figure 401)

A. General

(1) This task includes the installation of the bypass valve assembly as a unit. The bypass valve assembly includes the housing, the valve and the valve motor.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-02-720-801	Trailing Edge Flap Bypass Valve Functional Test (P/B 501)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Bypass valve assembly	27-51-02-01-010	SIA ALL
14	Packing	27-51-02-01-015	SIA ALL

F. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Trailing Edge Flap Bypass Valve Assembly Installation

SUBTASK 27-51-02-420-001

(1) If they are not installed, install the unions [13] in the bypass valve assembly [4]:

(a) Apply MCS 352B fluid, D00054 or fluid, D00070 to the new packings [14].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Put the packings [14] and the unions [13] in their location on the bypass valve assembly [4].

SUBTASK 27-51-02-420-002

(2) Install the bypass valve assembly [4]:

(a) Make sure that the mating surface of the bypass valve assembly [4] and the bracket [2] are clean for electrical bonding.

(b) Put the bypass valve assembly [4] in its position on the bracket [2].

(c) Install the bolts [6] and washers [7] to attach the bypass valve assembly [4] to the bracket [2].

(d) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the bypass valve assembly [4] and the bracket [2] is less than 0.0025 ohm.

SUBTASK 27-51-02-420-003

(3) Connect the hydraulic lines [1] to the bypass valve assembly [4]:

(a) Remove the caps from the hydraulic lines [1] and the plugs from the ports.

(b) Connect the hydraulic lines [1] to the bypass valve assembly [4].

(c) Tighten the B-nuts on the hydraulic lines [1] to 500 ±25 in-lb (56 ±3 N·m).

SUBTASK 27-51-02-210-001

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(4) Before you connect the electrical connector [5], examine the connector for corrosion (TASK 20-60-07-910-802).

SUBTASK 27-51-02-420-004

(5) Connect the electrical connector [5] to the bypass valve assembly [4].

SUBTASK 27-51-02-860-004

(6) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-51-02-860-016

(7) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

SUBTASK 27-51-02-440-001

(8) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-02-720-001

(9) Do this task: Trailing Edge Flap Bypass Valve Functional Test, TASK 27-51-02-720-801.

SUBTASK 27-51-02-210-002

(10) Make sure that there are no hydraulic leaks from the bypass valve assembly [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-02-860-017

(11) If the landing gear downlock pins are not needed, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

TASK 27-51-02-000-803

4. Trailing Edge Flap Bypass Valve Motor Removal

(Figure 401)

A. General

(1) This task includes the removal of the bypass valve motor from the bypass valve.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-02-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-02-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-02-860-009

(3) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

E. Trailing Edge Flap Bypass Valve Motor Removal

SUBTASK 27-51-02-020-007

(1) Disconnect the electrical connector [5] from the bypass valve motor [8].

(2) If desired, inspect the connector for corrosion now (TASK 20-60-07-910-802).

NOTE: This step is also done in the installation task.

SUBTASK 27-51-02-980-001

(3) Move the manual override lever [3] to POSITION 2.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-02-020-008

(4) Remove the bypass valve motor [8] from the bypass valve [10]:

(a) Remove the screws [9] that attach the bypass valve motor [8] to the bypass valve [10].

(b) Carefully lift the bypass valve motor [8] off bypass valve [10].

——— END OF TASK ———

TASK 27-51-02-400-803

5. Trailing Edge Flap Bypass Valve Motor Installation

(Figure 401)

A. General

(1) This task includes the installation of the bypass valve motor on the bypass valve.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-02-720-801	Trailing Edge Flap Bypass Valve Functional Test (P/B 501)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
G02421	Lockwire	NASM20995C40

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Trailing Edge Flap Bypass Valve Motor Installation

SUBTASK 27-51-02-420-007

(1) Install the bypass valve motor [8] on the flap bypass valve [10]:

(a) Carefully put the bypass valve motor [8] in its location on the flap bypass valve [10].

(b) Install the screws [9] to attach the bypass valve motor [8] to the flap bypass valve [10].

(c) Tighten the screws [9] to 12 in-lb (1.4 N·m) - 15 in-lb (1.7 N·m).

(d) Install lockwire, G02421 on the screws [9].

SUBTASK 27-51-02-210-005

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(2) Before you connect the electrical connector [5], examine the connector for corrosion (TASK 20-60-07-910-802).

SUBTASK 27-51-02-420-008

(3) Connect the electrical connector [5] to the bypass valve motor [8].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-02-860-011

(4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-51-02-860-020

(5) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

SUBTASK 27-51-02-440-003

(6) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-02-720-003

(7) Do this task: Trailing Edge Flap Bypass Valve Functional Test, TASK 27-51-02-720-801.

SUBTASK 27-51-02-860-021

(8) If the landing gear downlock pins are not needed, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP BYPASS VALVE - ADJUSTMENT/TEST

1. General

A. This procedure has a functional test of the trailing edge flap bypass valve.

TASK 27-51-02-720-801

2. Trailing Edge Flap Bypass Valve Functional Test

(Figure 501)

A. References

Reference	Title
27-51-00-740-802	Trailing Edge Flap Asymmetry Skew System BITE Test (P/B 501)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-51-02-860-013

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-02-860-014

(2) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

D. Trailing Edge Flap Bypass Valve Functional Test

SUBTASK 27-51-02-740-001

(1) Do this task: Trailing Edge Flap Asymmetry Skew System BITE Test, TASK 27-51-00-740-802.

SUBTASK 27-51-02-720-004

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do a test of the operational speed of the trailing edge flaps:

(a) Move the flap control lever to the UP position and wait for the flaps to reach the UP position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Measure the time it takes for the trailing edge flaps to extend from the UP position to the 1-unit position:

1) Move the flap control lever to the 1-unit position to extend the flaps.

2) Make sure the time it takes for the flaps to extend to the 1-unit position is 11 to 14 seconds.

NOTE: If you will use the system B Electric Motor-Driven Pump (EMDP) only, the extension time will be 34 to 39 seconds.

(c) Measure the time it takes for the trailing edge flaps to retract from the 1-unit position to the UP position:

1) Move the flap control lever to the UP position to retract the flaps.

2) Make sure the time it takes for the flaps to retract to the UP position is 11 to 14 seconds.

NOTE: If you will use the system B EMDP only, the retraction time will be 34 to 39 seconds.

SUBTASK 27-51-02-720-005

(3) Do a test of the operation of the bypass valve while the trailing edge flaps are moving. Do the next two steps within approximately 10 seconds:

NOTE: It is necessary to do the following two steps within approximately 10 seconds. The flaps must still be extending when you do the second step.

(a) Move the flap control lever to the 1-unit position.

(b) While the trailing edge flaps are extending, move the ALTERNATE FLAPS ARM switch to the ARM position.

(c) Make sure the flaps stop extending when you move the ARM switch.

SUBTASK 27-51-02-720-006

(4) Move the flap control lever to the UP position.

(a) Make sure the flaps do not move.

SUBTASK 27-51-02-720-007

(5) Put the ALTERNATE FLAPS ARM switch in the OFF position.

(a) Make sure the flaps retract to the retracted position.

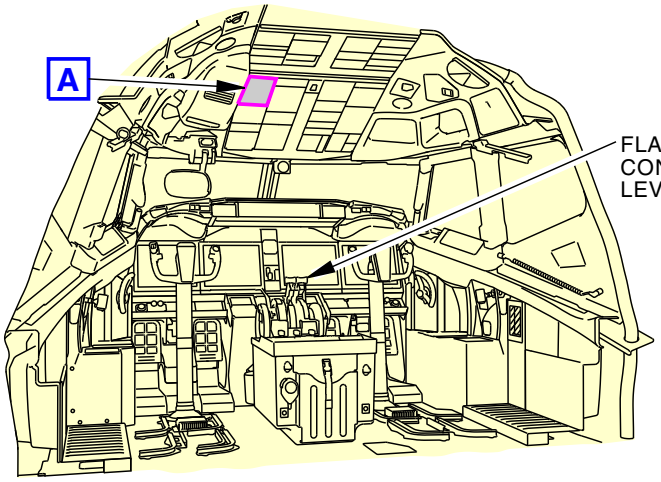
E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-02-860-015

(1) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

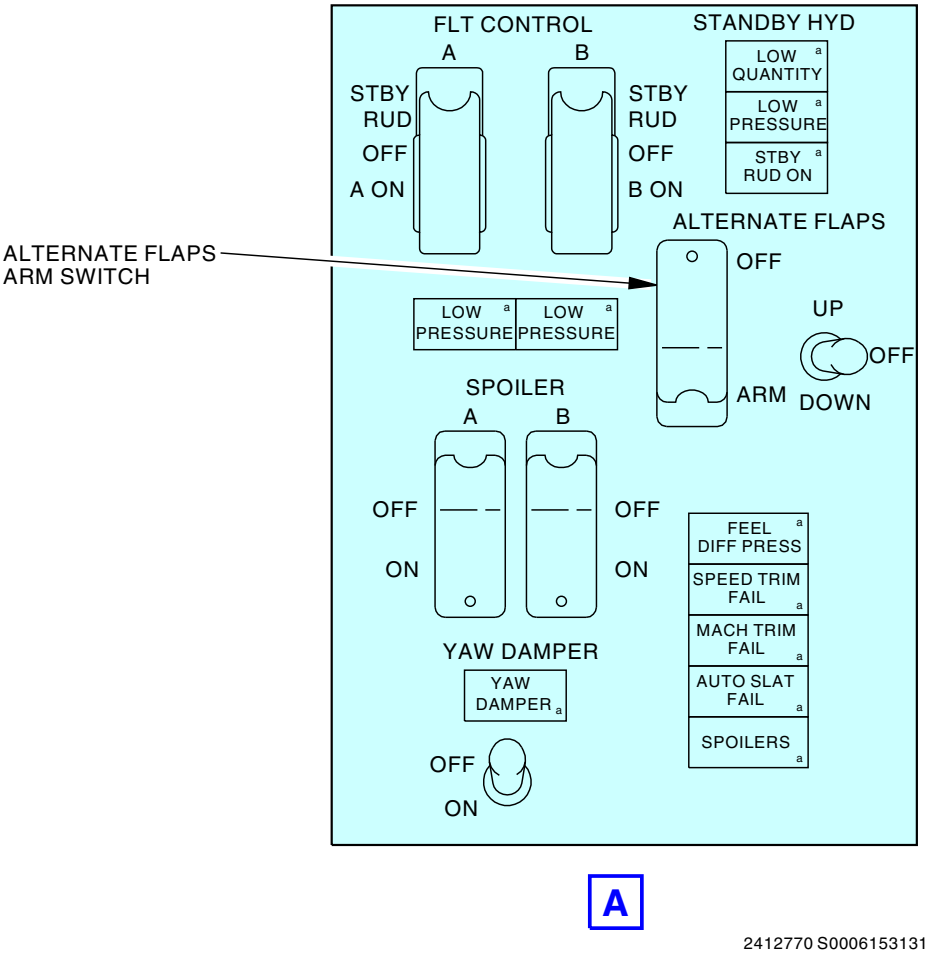
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT

FWD



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Trailing Edge Flap Bypass Valve Test
Figure 501/27-51-02-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP PRIORITY VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap Priority Valve Removal

(2) Flap Priority Valve Installation

TASK 27-51-04-000-801

2. Flap Priority Valve Removal

(Figure 401)

A. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-04-480-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-04-860-001

(2) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802).

E. Flap Priority Valve Removal

SUBTASK 27-51-04-020-001

(1) Do these steps to remove the flap priority valve [1]:

(a) Disconnect the flap flow limiter [6]

(b) Disconnect hydraulic line [2]and hydraulic line [7] from the flap priority valve [1]:

1) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the flap priority valve [1] to hold hydraulic fluid.

2) Disconnect hydraulic line [2] and hydraulic line [7] from the flap priority valve [1].

3) Install plugs in hydraulic line [2] and hydraulic line [7].

(c) Remove the nuts [11] and washers [12], and remove the flap priority valve [1] from the bracket [10].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-04-020-002

(2) If you will install a new flap priority valve [1], do these steps:

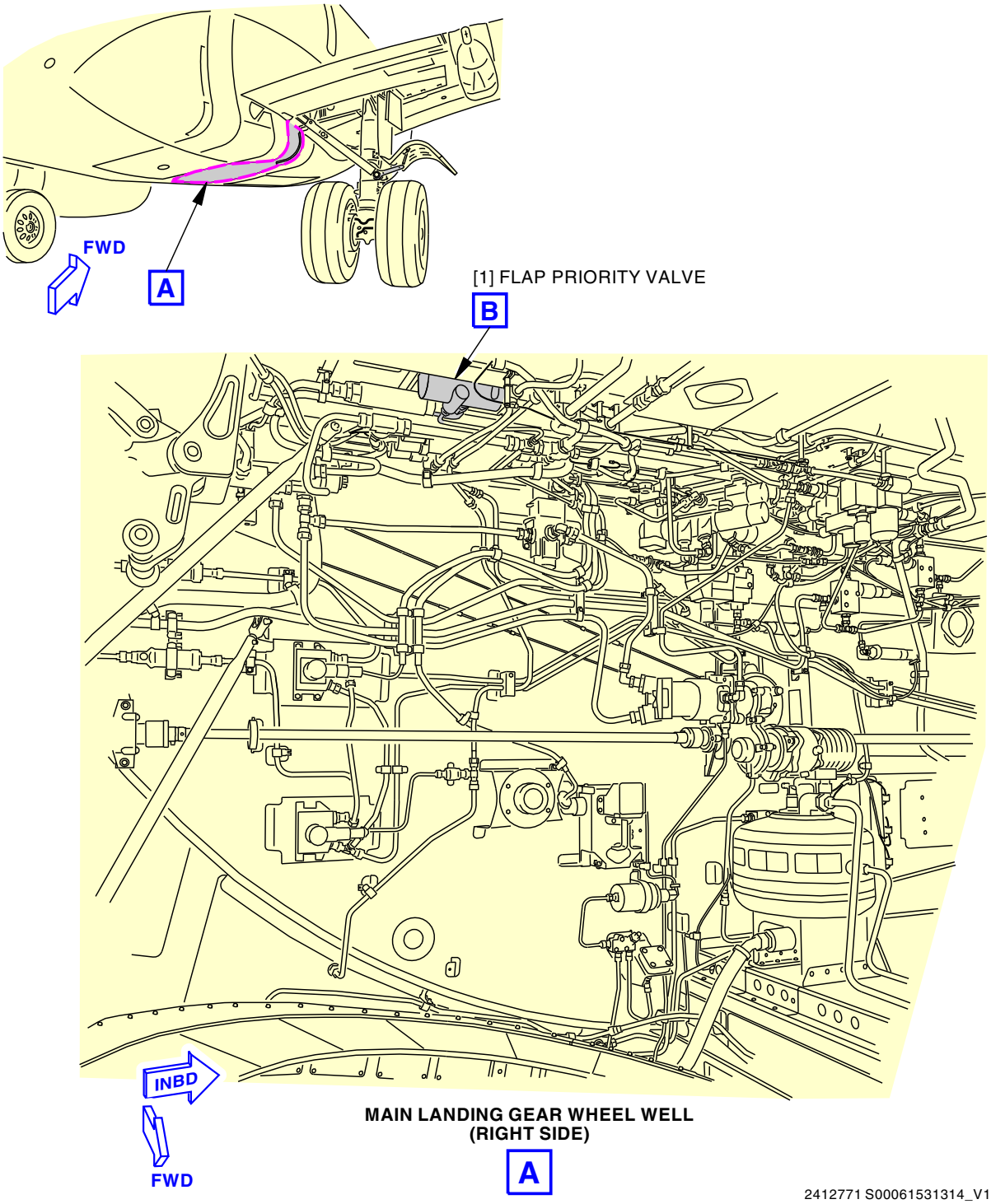
(a) Remove the union [5] and packings [4] from the flap priority valve [1].

(b) Remove the union [8] and packing [9] from the flap priority valve [1].

(c) Remove the reducer [3] and packings [4] from the flap priority valve [1].

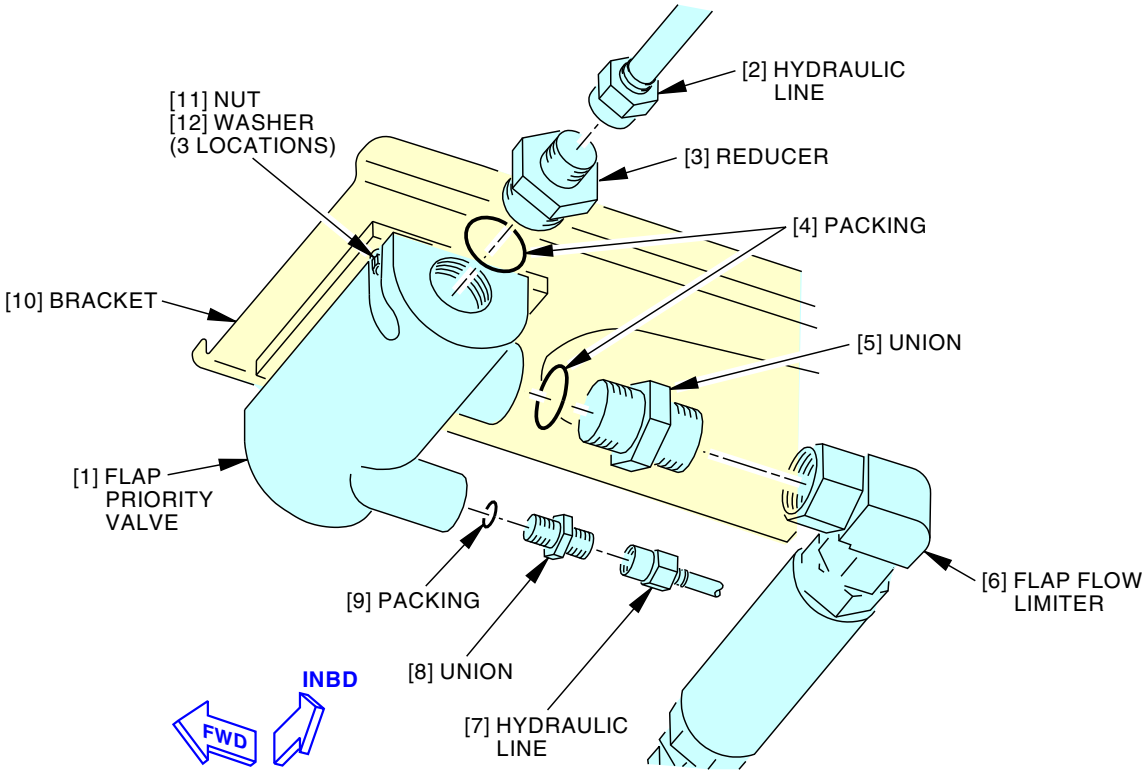
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Priority Valve Installation
Figure 401/27-51-04-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP PRIORITY VALVE

B

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Flap Priority Valve Installation
Figure 401/27-51-04-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-04-400-801

3. Flap Priority Valve Installation

(Figure 401)

A. References

Reference	Title
27-51-00-720-801	Flap Priority Valve Test (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap priority valve	27-51-04-02-005	SIA ALL
4	Packing	27-51-04-02-015	SIA ALL
9	Packing	27-51-04-02-030	SIA ALL

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Flap Priority Valve Installation

SUBTASK 27-51-04-420-001

(1) If you will install a new flap priority valve [1], do these steps to install the union [5], union [8], and reducer [3]:

(a) Apply MCS 352B fluid, D00054, or hydraulic fluid, D00153, to the new packings [4] and new packing [9].

(b) Install the packing [4] and union [5] into the flap priority valve [1].

(c) Install the packing [9] and union [8] into the flap priority valve [1].

(d) Install the packing [4] and reducer [3] into the flap priority valve [1].

SUBTASK 27-51-04-420-002

(2) Do these steps to install the flap priority valve [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts on the bracket [10].

(b) Put the flap priority valve [1] in its location on the bracket [10].

(c) Install the nuts [11] and washers [12] to hold the flap priority valve [1].

(d) Remove the plugs from hydraulic line [2] and hydraulic line [7].

(e) Connect hydraulic line [2] and hydraulic line [7] to the flap priority valve [1].

(f) Tighten the B-nut on the hydraulic line [2] to 500 ±25 in-lb (56 ±3 N·m).

(g) Tighten the B-nut on the hydraulic line [7] to 140 ±7 in-lb (16 ±1 N·m).

(h) Connect the flap flow limiter [6] to the flap priority flap priority valve [1].

SUBTASK 27-51-04-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-51-04-860-003

(4) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-04-210-001

(5) Examine the hydraulic fittings for leaks.

SUBTASK 27-51-04-720-001

(6) Do this task: Flap Priority Valve Test, TASK 27-51-00-720-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP CONTROL LEVER POSITION SENSOR - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) A removal of the flap control lever position sensor

(2) An installation of the flap control lever position sensor

(3) An adjustment of the flap control lever position sensor

(4) An system test of the flap control lever position sensor

(5) A detailed visual inspection of the flap control lever sensor, linkage and rod ends.

B. The flap control lever position sensor is installed in the control stand and operates from the flap control lever.

TASK 27-51-06-000-801

2. Flap Control Lever Position Sensor Removal

(Figure 201)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Removal

SUBTASK 27-51-06-860-001

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-51-06-010-001

(2) Remove the lower right side cover [3] from the lower right side of the control stand [7]:

(a) Remove the screws [5] and the pocket assembly [6] from the lower right side cover [3].

(b) Loosen the two lower screws [8] on the right side of the control stand [7].

(c) Remove the screws [4] that attach the lower right side cover [3] to the control stand [7].

(d) Remove the lower right side cover [3] from the control stand [7].

1) Move the lower right side cover [3] down, away from the upper right side cover [1].

C. Flap Control Lever Position Sensor Removal

SUBTASK 27-51-06-020-001

(1) Disconnect the electrical connector [9] for the flap control lever position sensor [20].

SUBTASK 27-51-06-020-002

(2) Remove the flap control lever position sensor assembly [2]:

NOTE: The position sensor assembly [2] includes the position sensor [20], bracket assembly [23], bracket [24] and the crank [18].

(a) Remove the bolt [15], washers [16] and clamp [14] that attach the wire for the electrical connector [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the bolts [11], washers [12], nuts [13] and clamps [10] that attach the wire for the electrical connector [9].

(c) Remove the bolt [22] and nut [21] that attach the link [17] to the crank [18].

(d) Remove the bolts [19] and washers [30] that attach the flap control lever position sensor assembly [2] to the control stand [7].

SUBTASK 27-51-06-020-003

(3) Remove the flap control lever position sensor [20] from the position sensor assembly [2]:

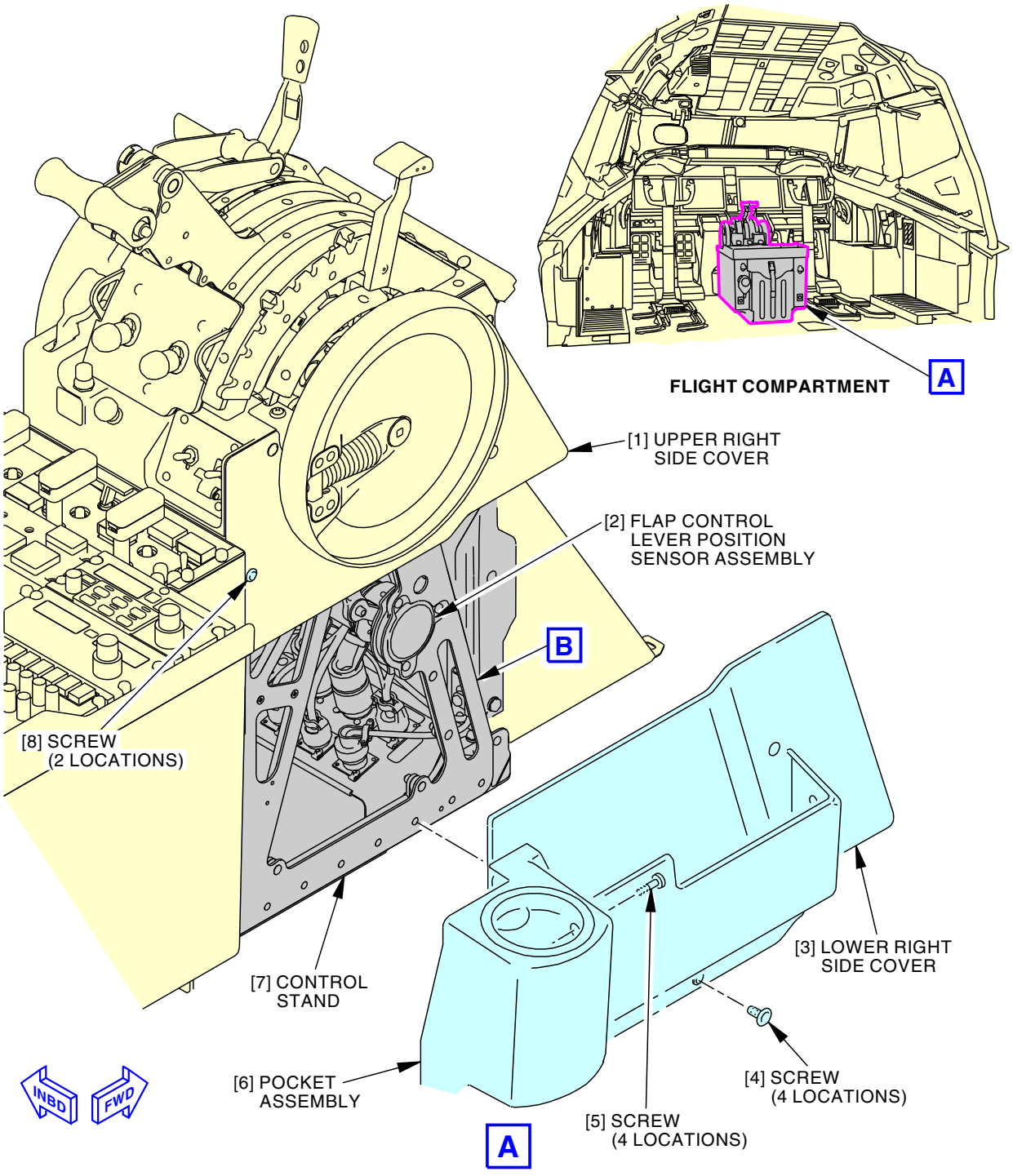
(a) Remove the screw [27], washers [28] and nut [29] that attach the crank [18] to the shaft on the position sensor [20].

(b) Remove the screws [25] and washers [26] that attach the position sensor [20] to the bracket [24].

(c) Remove the flap control lever position sensor [20] from the bracket [24].

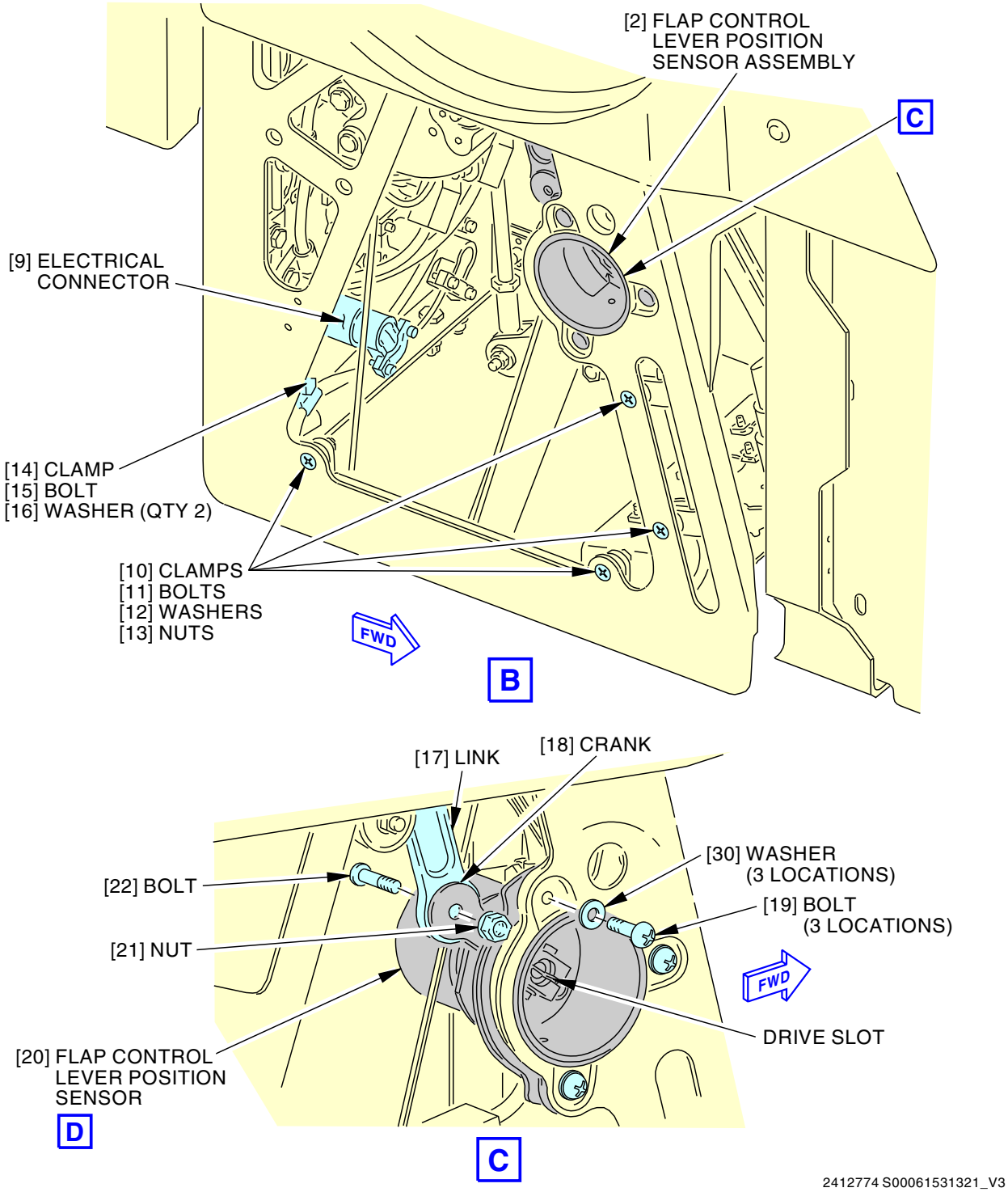
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



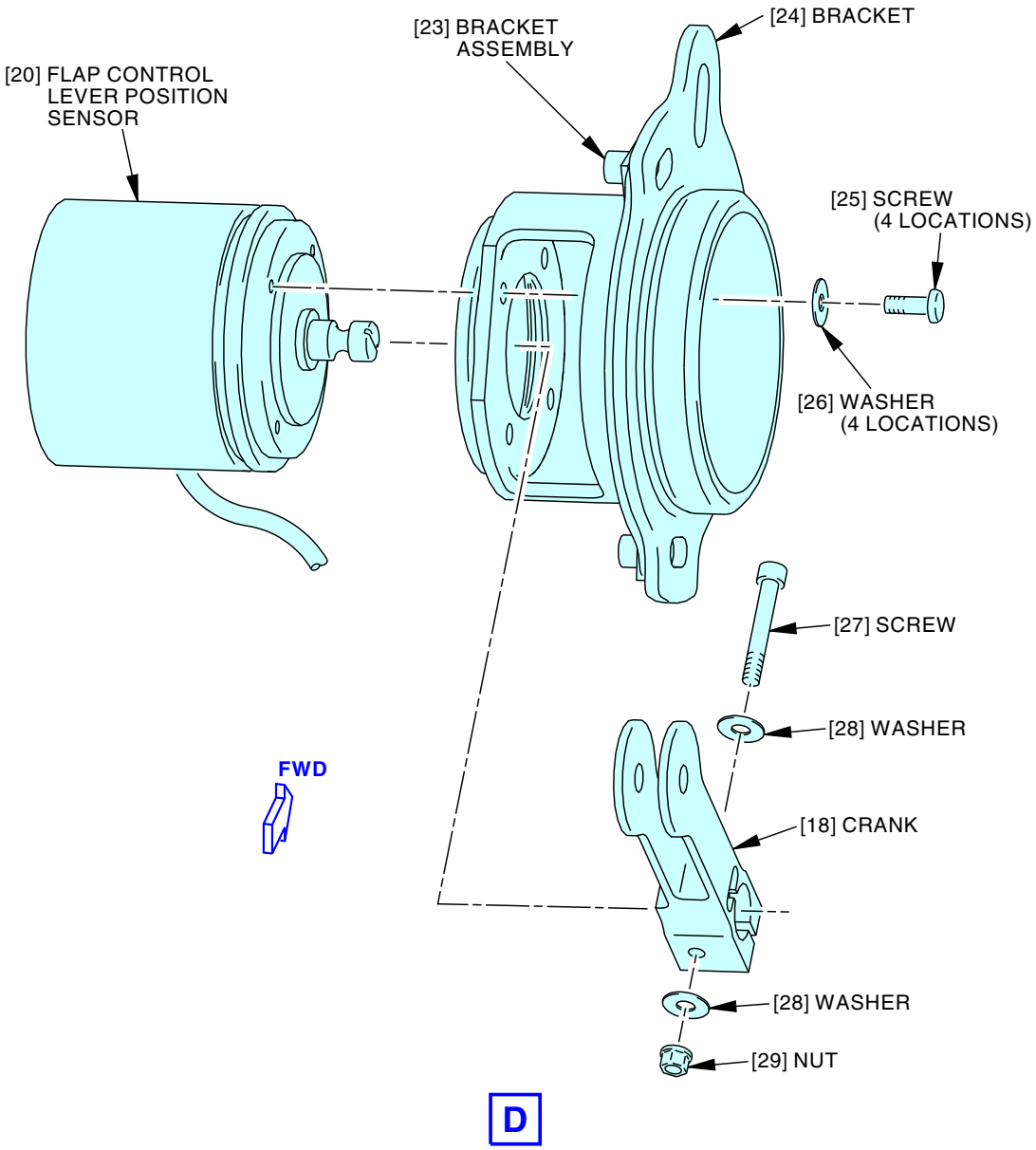
Flap Control Lever Position Sensor Installation
Figure 201/27-51-06-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Lever Position Sensor Installation
Figure 201/27-51-06-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Lever Position Sensor Installation
Figure 201/27-51-06-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-06-400-801

3. Flap Control Lever Position Sensor Installation

(Figure 201)

A. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Upper right side cover	25-11-21-25-080	SIA ALL
2	Sensor assembly	27-51-06-01-085	SIA ALL
3	Lower right side cover	25-11-21-25-150	SIA ALL

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Flap Control Lever Position Sensor Installation

SUBTASK 27-51-06-860-002

(1) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-51-06-010-002

(2) Install the flap control lever position sensor [20] on the position sensor assembly [2]:

NOTE: The position sensor assembly [2] includes the position sensor [20], bracket assembly [23], bracket [24] and the crank [18].

(a) Put the bracket assembly [23] in its position on the bracket [24].

(b) Put the crank [18] in its position through the slot in the bracket [24].

(c) Put the crank [18] on the shaft of the position sensor [20] and put the position sensor [20] in its position on the bracket [24].

(d) Install the screw [27], washers [28] and nut [29] to attach the crank [18] to the position sensor [20].

(e) Install the screws [25] and washers [26] to attach the position sensor [20] to the bracket [24].

(f) Make sure that the wire for the electrical connector [9] is approximately 180° from the crank [18].

SUBTASK 27-51-06-420-001

(3) Install the flap control lever position sensor assembly [2]:

(a) Put the flap control lever position sensor assembly [2] in its position on the control stand [7].

(b) Install the bolts [19] and washers [30] that attach the flap control lever position sensor assembly [2].

(c) Install the bolt [22]and nut [21] to attach the link [17] to the crank [18].

SUBTASK 27-51-06-420-002

(4) Connect the electrical connector [9] for the flap control lever position sensor [20].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-06-420-003

(5) Install the clamps [10] with the bolts [11], washers [12], and nuts [13] to attach the wire for the electrical connector [9] to the control stand [7].

SUBTASK 27-51-06-420-004

(6) Install the clamp [14] with the bolt [15] and washers [16] to attach the wire for the electrical connector [9] to the control stand [7].

SUBTASK 27-51-06-860-003

(7) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-51-06-820-001

(8) Do this task: Flap Control Lever Position Sensor Adjustment and Test, TASK 27-51-06-820-801.

SUBTASK 27-51-06-730-001

(9) Do this task: Flap Control Lever Position Sensor System Test, TASK 27-51-06-730-801.

D. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-06-410-001

(1) Install the lower right side cover [3] on the lower right side of the control stand [7]:

(a) Put the lower right side cover [3] in its position on the control stand [7], under the upper right side cover [1].

(b) Install the screws [4] that attach the lower right side cover [3] to the control stand [7].

(c) Tighten the lower screws [8] that attach the upper right side cover [1].

(d) Install the pocket assembly [6] with the screws [5] on the lower right side cover [3].

END OF TASK

TASK 27-51-06-820-801

4. Flap Control Lever Position Sensor Adjustment and Test

(Figure 201, Figure 202)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

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D. Prepare for the Adjustment

SUBTASK 27-51-06-860-005

(1) If it is supplied, remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

NOTE: If system B hydraulic power is supplied, the flaps and slats will operate during the adjustment.

SUBTASK 27-51-06-010-003

(2) Remove the lower right side cover [3] from the lower right side of the control stand [7] (Figure 201):

(a) Remove the screws [5] and the pocket assembly [6] from the lower right side cover [3].

(b) Loosen the two lower screws [8] for the upper right side cover [1] on the right side of the control stand [7].

(c) Remove the screws [4] that attach the lower right side cover [3] to the control stand [7].

(d) Remove the lower right side cover [3] from the control stand [7].

1) Move the lower right side cover [3] down, away from the upper right side cover [1].

SUBTASK 27-51-06-010-004

(3) To get access to the Flap/Slat Electronics Unit (FSEU) on the E1-1 shelf in the main equipment center, do this task (Figure 202).

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Flap Control Lever Position Sensor Adjustment

SUBTASK 27-51-06-860-006

(1) Move the flap control lever to the 10-unit position.

SUBTASK 27-51-06-740-001

(2) Use the FSEU to find the output of the flap control lever position sensor [20]:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the down arrow until SYNCHRO INPUTS? shows on the display.

(g) Push the YES button to select SYNCHRO INPUTS? from the menu.

(h) Make sure that the LVR POS shows in the limit of 52.3 to 52.9 degrees.

SUBTASK 27-51-06-820-002

(3) If the output of the position sensor [20] shown on the FSEU is not in the limit, adjust the position sensor [20] (Figure 201):

(a) Loosen the bolts [19] that attach the flap control lever position sensor assembly [2] to the control stand [7].

(b) Put a 1/4 inch flat head screwdriver in the drive slot on the position flap control lever sensor assembly [2].

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(c) Carefully turn the position sensor assembly [2] until the FSEU shows the LVR POS in the limit of 52.3 to 52.9 degrees.

(d) Tighten the bolts [19].

(e) Remove the 1/4 inch flat head screwdriver from the drive slot.

(f) Make sure that the LVR POS shows in the limit of 52.37 to 52.87 degrees.

SUBTASK 27-51-06-730-002

(4) Do this task: Flap Control Lever Position Sensor System Test, TASK 27-51-06-730-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-06-860-007

(1) Push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-06-410-002

(2) For the main equipment center, do this task.

Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-06-410-003

(3) Install the lower right side cover [3] on the lower right side of the control stand [7]:

(a) Put the lower right side cover [3] in its position on the control stand [7], under the upper right side cover [1].

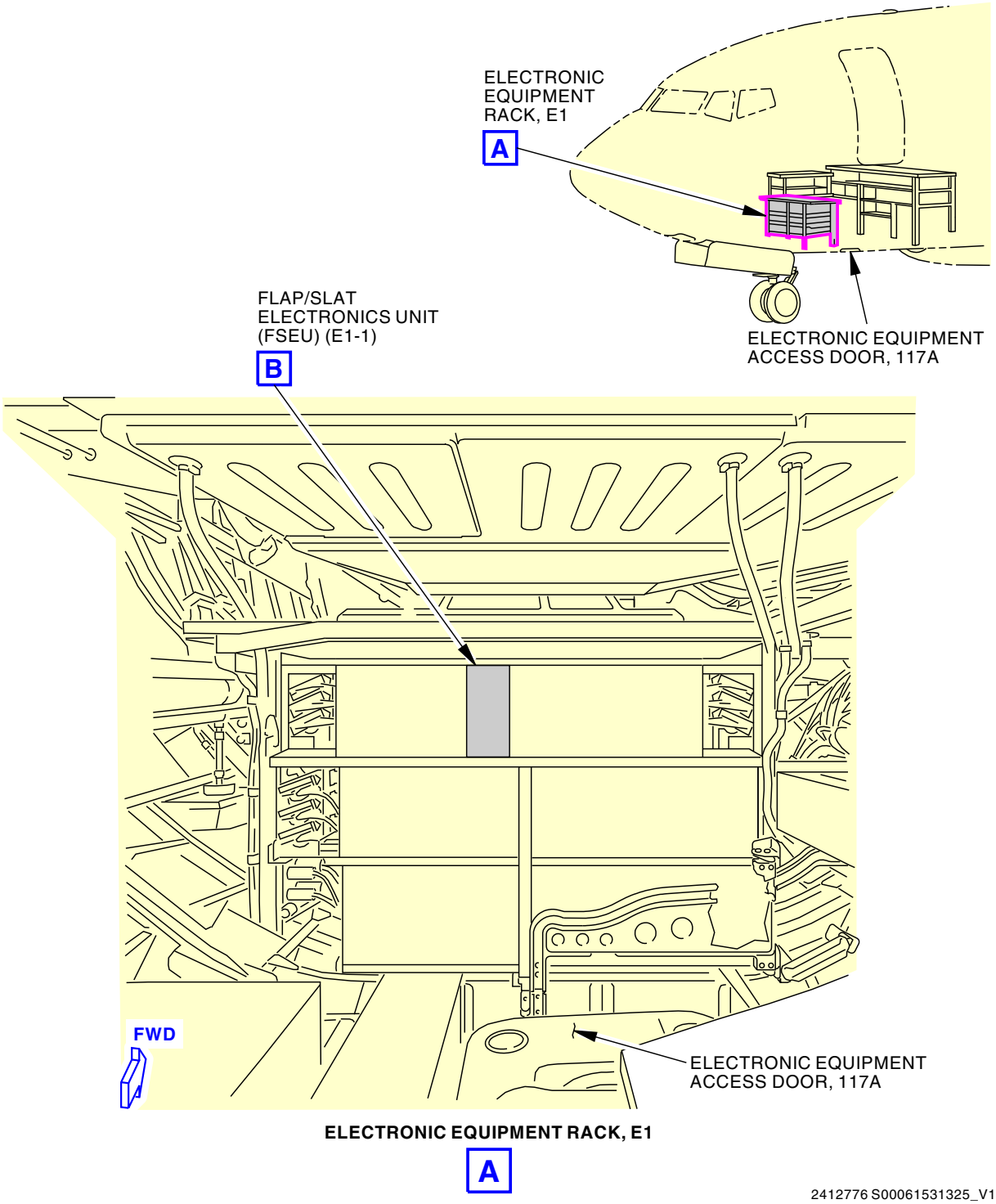
(b) Install the screws [4] that attach the lower right side cover [3] to the control stand [7].

(c) Tighten the lower screws [8] that attach the upper right side cover [1]

(d) Install the pocket assembly [6] with the screws [5] on the lower right side cover [3].

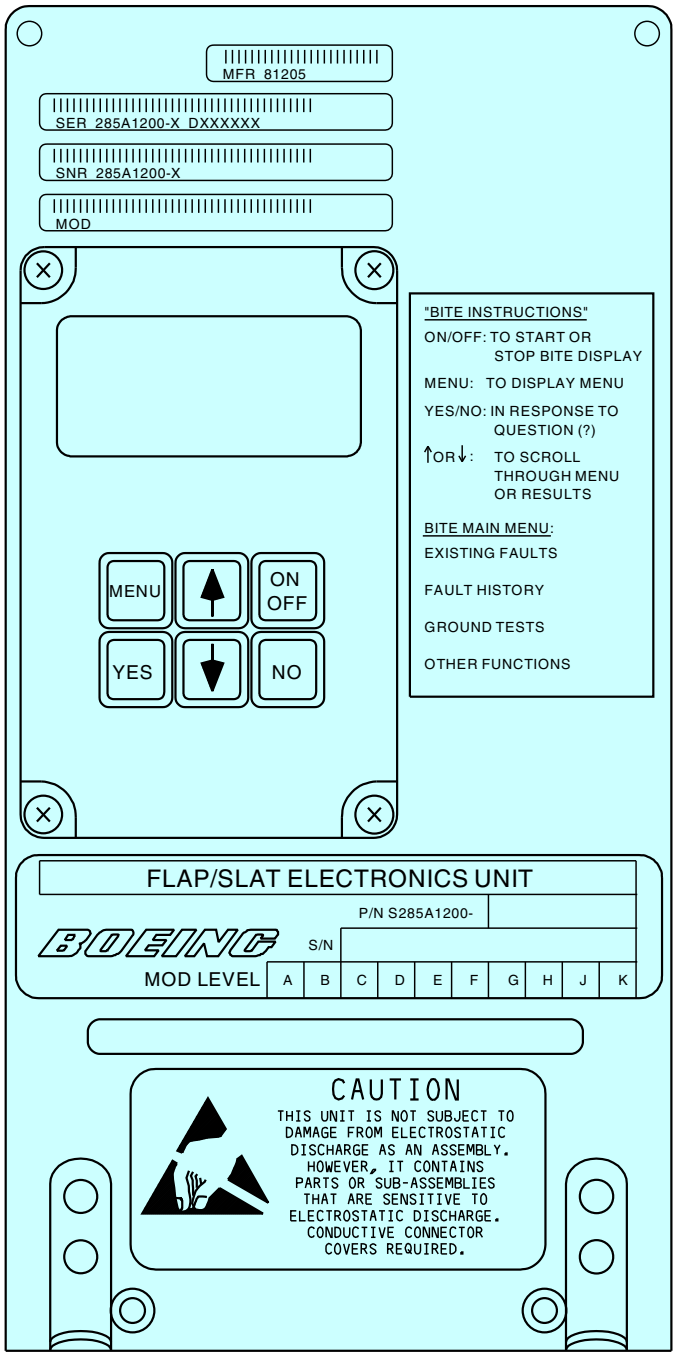
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap/Slat Electronics Unit Installation
Figure 202/27-51-06-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

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Flap/Slat Electronics Unit Installation
Figure 202/27-51-06-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-06-730-801

5. Flap Control Lever Position Sensor System Test

(Figure 202)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-51-06-860-009

(1) If it is supplied, remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

NOTE: If system B hydraulic power is supplied, the flaps and slats will operate during the system test.

SUBTASK 27-51-06-010-005

(2) To get access to the Flap/Slat Electronics Unit (FSEU) on the E1-1 shelf in the main equipment center, do this task.

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Flap Control Lever Position Sensor Test

SUBTASK 27-51-06-730-003

(1) Move the flap control lever to the UP position.

SUBTASK 27-51-06-740-002

(2) Use the FSEU to find the output of the flap control lever position sensor [20] in the UP position:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the down arrow until SYNCRO INPUTS? shows on the display.

(g) Push the YES button to select SYNCHRO INPUTS? from the menu.

(h) Make sure that the LVR POS shows on the FSEU in the limit of -2.8 to +2.8 degrees.

SUBTASK 27-51-06-730-004

(3) Move the flap control lever to the 10-unit position.

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(a) Make sure that the LVR POS shows in the limit of 50.6 to 54.6 degrees.

SUBTASK 27-51-06-730-005

(4) Move the flap control lever to the 40-unit position.

(a) Make sure that the LVR POS shows in the limit of 105.4 to 110.9 degrees.

SUBTASK 27-51-06-730-006

(5) Move the flap control lever to the UP position.

(a) Make sure that the LVR POS shows in the limit of -2.8 to +2.8 degrees.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-06-860-010

(1) Push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-06-410-004

(2) For the main equipment center, do this task.

Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-51-06-210-801

6. Flap Control Lever Position Sensor and Mechanism Detailed Visual Inspection

(Figure 203)

NOTE: This procedure is a scheduled maintenance task.

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Prepare for the Inspection

SUBTASK 27-51-06-010-008

(1) Remove the upper right side cover [1] and lower right side cover [3] from the right side of the control stand [7].

(a) Remove the screws [5] and pocket assembly [6] from the lower right side cover [3].

(b) Remove the screws [8] that attach the upper right side cover [1] and lower right side cover [3] to the control stand [7].

(c) Remove the upper right side cover [1] and lower right side cover [3] from the control stand [7].

1) If it is necessary, remove the stabilizer trim wheel [50] from the right side of the control stand [7].

a) Remove the bolt [51] and spacer [52] that attaches the stabilizer trim wheel [50] to the shaft.

b) Remove the stabilizer trim wheel [50] from the shaft.

C. Flap Control Lever Position Sensor Detailed Visual Inspection

SUBTASK 27-51-06-020-005

(1) Do a detailed visual inspection of the flap control lever sensor assembly [2] and crank [18].

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SUBTASK 27-51-06-210-001

(2) Do a detailed visual inspection of the ends of the link [17].

D. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-06-410-005

(1) Install the upper right side cover [1] and lower right side cover [3] on the right side of the control stand [7].

(a) Put the upper right side cover [1] and lower right side cover [3] in their position on the control stand [7].

NOTE: The lower right side cover goes under the upper right side cover.

(b) Install the screws [8] that attach the upper right side cover [1] and lower right side cover [3] to the control stand [7].

(c) Install the pocket assembly [6] with the screws [5] on the lower right side cover [3].

SUBTASK 27-51-06-420-005

(2) If removed, install the stabilizer trim wheel [50] on the right side of the control stand [7].

(a) Install the stabilizer trim wheel [50] on the shaft with the handle 90 +/- 15 degrees apart from the handle on the other stabilizer trim wheel [50].

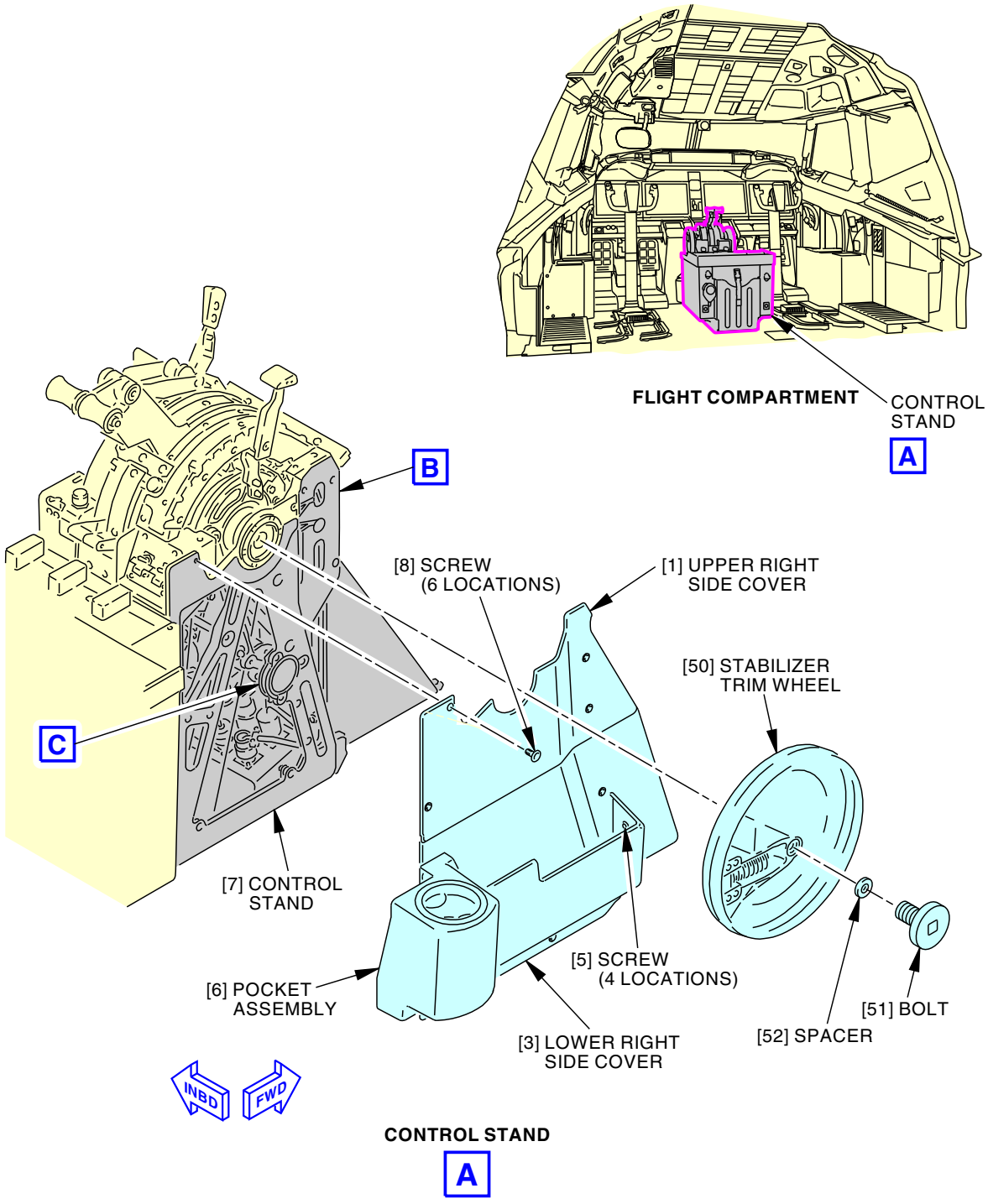
1) Make sure that an equal amount of the shaft is visible on both sides of the pedestal.

(b) Install the spacer [52] and bolt [51] to attach the stabilizer trim wheel [50] to the shaft.

(c) Tighten the bolt [51] to 150 in-lb (16.9 N·m) - 160 in-lb (18.1 N·m) plus run-on torque.

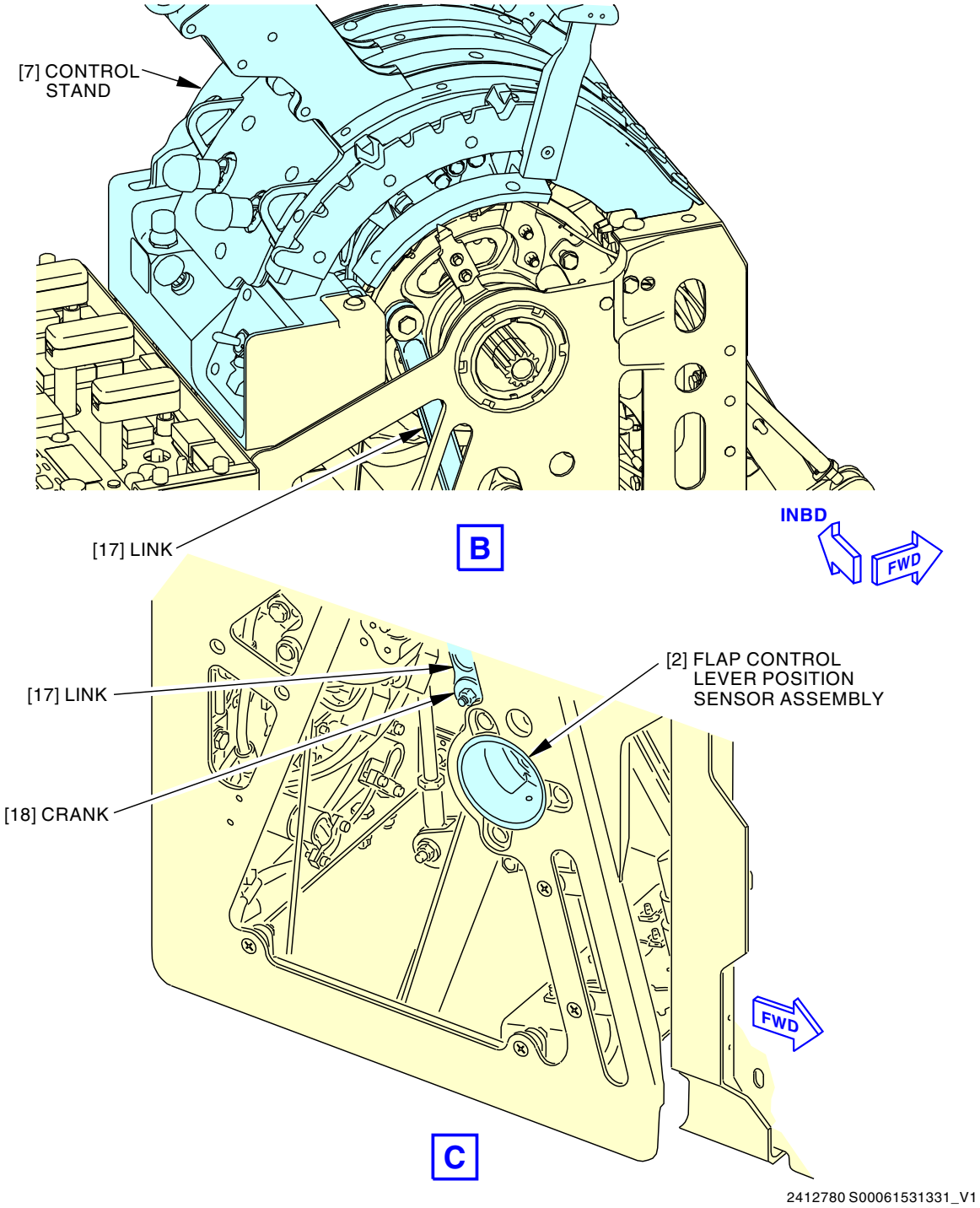
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Lever Position Sensor Inspection
Figure 203/27-51-06-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Lever Position Sensor Inspection
Figure 203/27-51-06-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP LEVER POSITION SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap lever position switch removal

(2) Flap lever position switch installation.

B. There are two flap lever position switches installed on the control stand:

(1) The flap lever 10 to 40-unit position switch

(2) The flap lever UP position switch.

C. The flap lever position switches are installed on the control stand and operate with the flap control lever.

D. There are two options for removal and installation of the flap lever position switches:

(1) You can remove and install the two flap lever position switches as an assembly.

(2) You can remove and install the two flap lever position switches independently by cutting and splicing the wires.

TASK 27-51-08-000-801

2. Flap Lever Position Switch Removal

(Figure 401)

A. Location Zones

Zone	Area
212	Flight Compartment - Right

B. Access Panels

Number	Name/Location
112A	Forward Access Door

C. Prepare for the Removal

SUBTASK 27-51-08-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	10	C00284	PANEL & INSTR ELEX PANEL

SUBTASK 27-51-08-010-002

(2) Remove the stabilizer trim wheel [8] from the right side of the control stand [13]:

(a) Remove the bolt [31] and spacer [32] that attaches the stabilizer trim wheel [8].

(b) Remove the stabilizer trim wheel [8] from the shaft.

SUBTASK 27-51-08-010-003

(3) Remove the upper side cover [7] and lower side cover [11] from the right side of the control stand [13]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the screws [10] and the pocket assembly [12] from the lower side cover [11].

(b) Remove the screws [6] that attach the upper side cover [7] and the lower side cover [11] to the control stand [13].

(c) Remove the upper side cover [7] and the lower side cover [11] from the control stand [13].

SUBTASK 27-51-08-010-004

(4) Remove the stabilizer trim lightplate [3] from the control stand [13]:

(a) Remove the screws [4] and remove the stabilizer trim lightplate [3].

(b) Remove the nuts [17], washers [16] and washers [15] that attach the wires [14] to the stabilizer trim lightplate [3].

SUBTASK 27-51-08-010-005

(5) Remove the screws [2] and bolt [5] and remove the control stand cover [1] from the control stand [13].

D. Flap Lever Position Switch Removal

SUBTASK 27-51-08-020-001

(1) Disconnect the electrical connector [28] for the flap lever position flap lever position switches [24]:

(a) To get access to the electrical connector [28] from below the control stand [13], do this task.

Open this access panel:

Number	Name/Location
112A	Forward Access Door

(b) Disconnect the electrical connector [28] from below.

(c) Remove the screws [29] and washers [30] that attach the electrical connector [28].

(d) Remove the electrical connector [18] from the control stand [13].

SUBTASK 27-51-08-020-002

(2) Remove the flap lever position switches [24] as an assembly:

(a) Remove the bolts [22], bolt [27] and washers [23] that attach the flap lever position switches [24] and the clamp [21] to the control stand [13].

(b) Remove the bolt [25], washer [26] and clamp [21].

(c) Remove the bolts [19], washers [20] and clamps [21] that attach the wires to the control stand [13].

SUBTASK 27-51-08-020-003

(3) Remove a flap lever position switch [24] independently:

(a) For the 10 to 40-unit flap lever position switch [24], remove the bolts [22] and washers [23] that attach the flap lever position switch [24] to the control stand [13].

1) Remove the bolt [25], washer [26] and clamp [21].

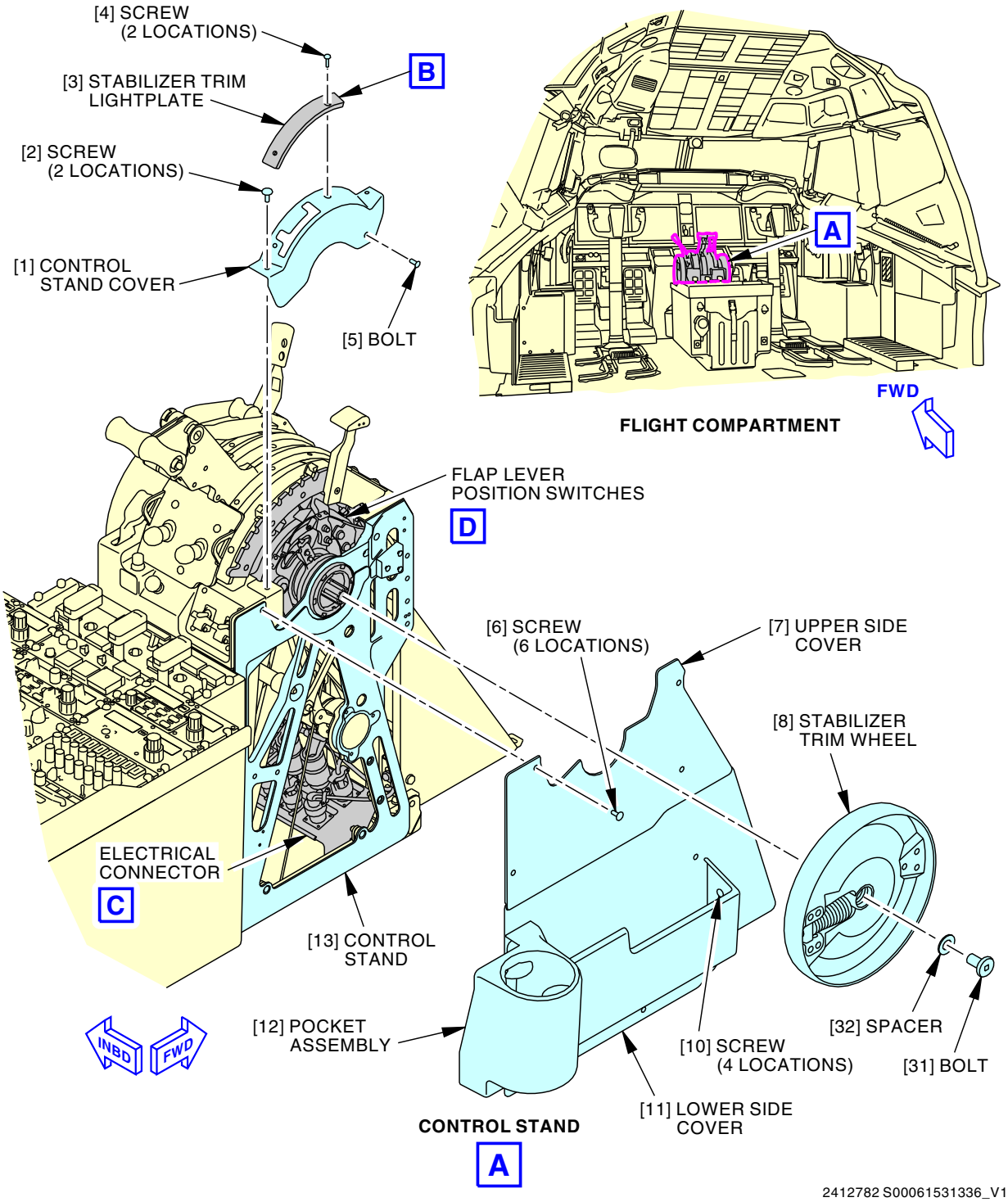
(b) For the UP flap lever position switch [24], remove the bolt [22], bolt [27] and washers [23] that attach the flap lever position switch [24] and the clamp [21] to the control stand [13].

(c) Remove the bolt [19] and washer [20] from a sufficient number of clamps [21] to get access to cut the wires.

(d) Cut the wires for the applicable flap lever position switch [24].

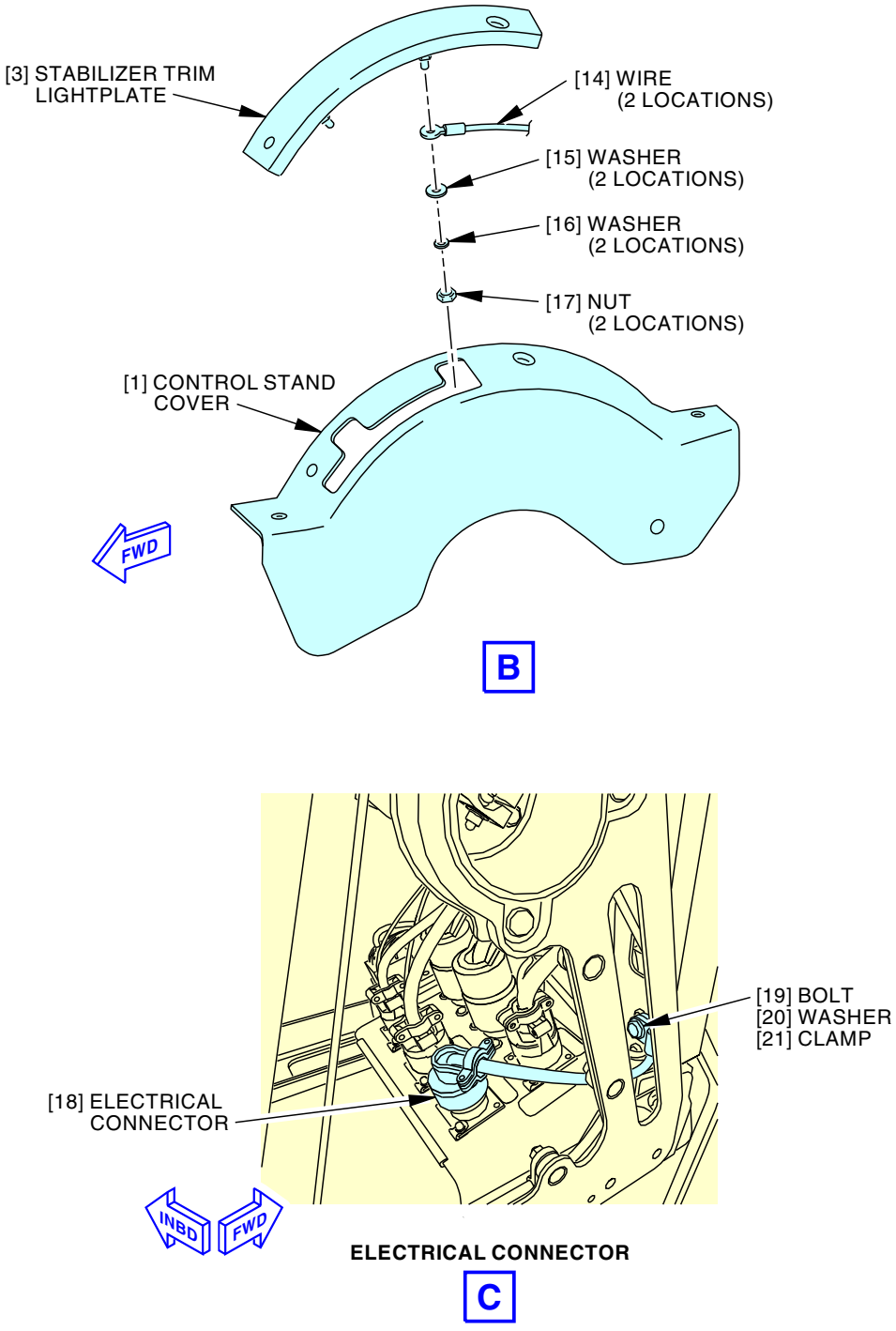
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Lever Position Switch Installation
Figure 401/27-51-08-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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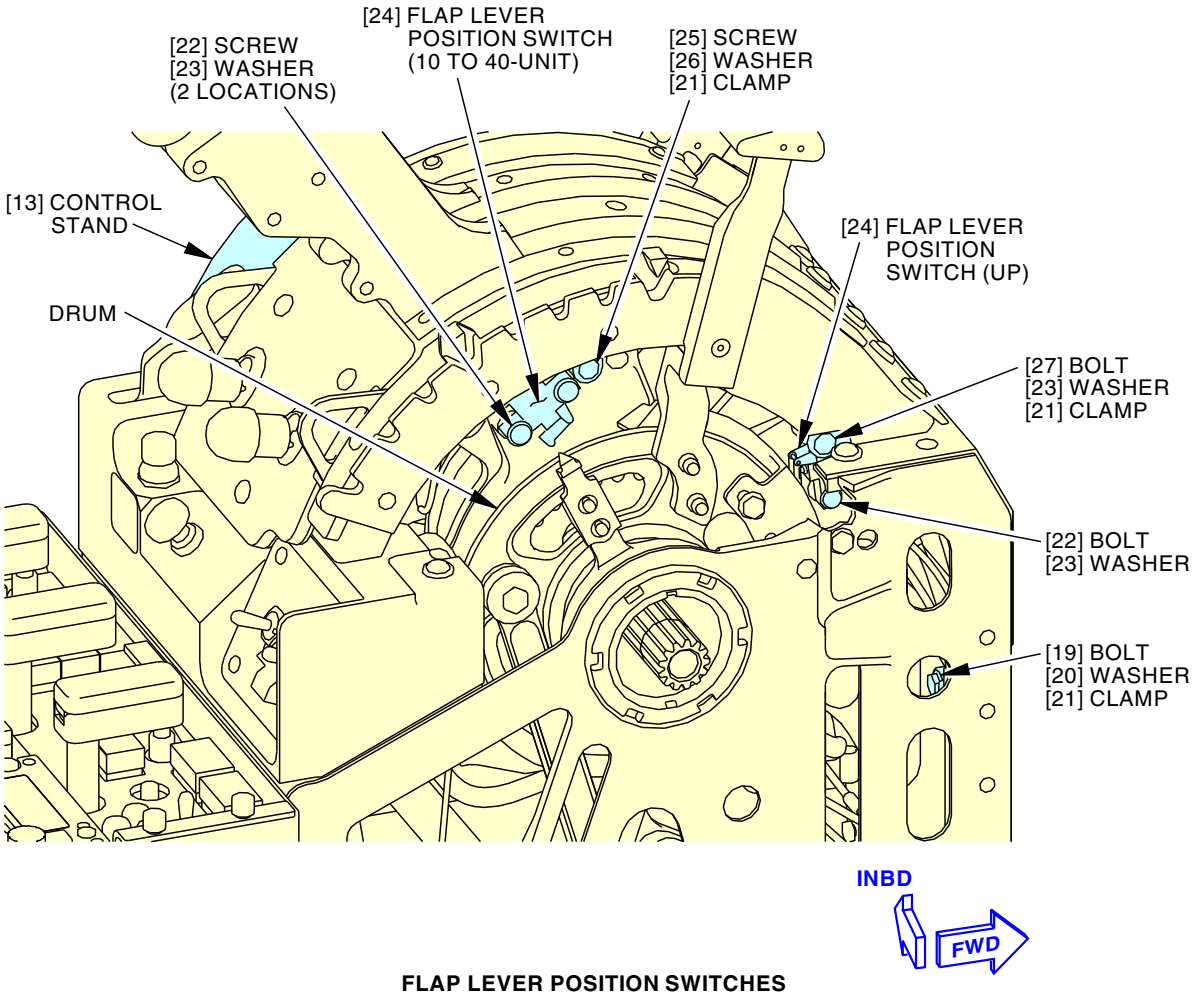
Flap Lever Position Switch Installation
Figure 401/27-51-08-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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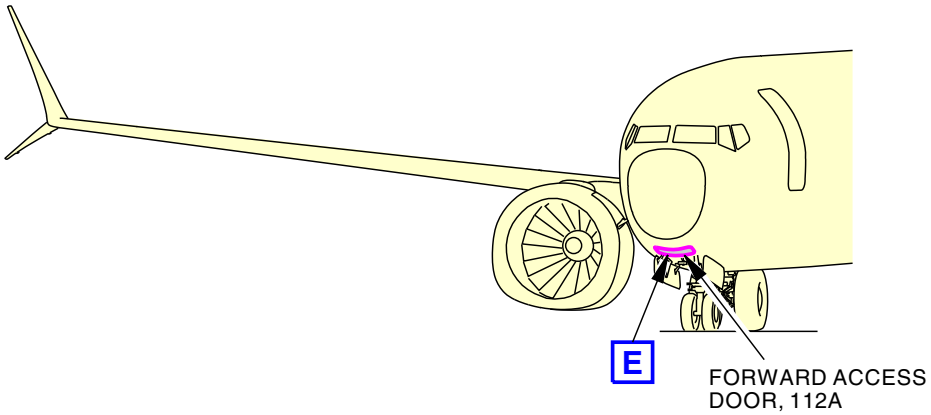
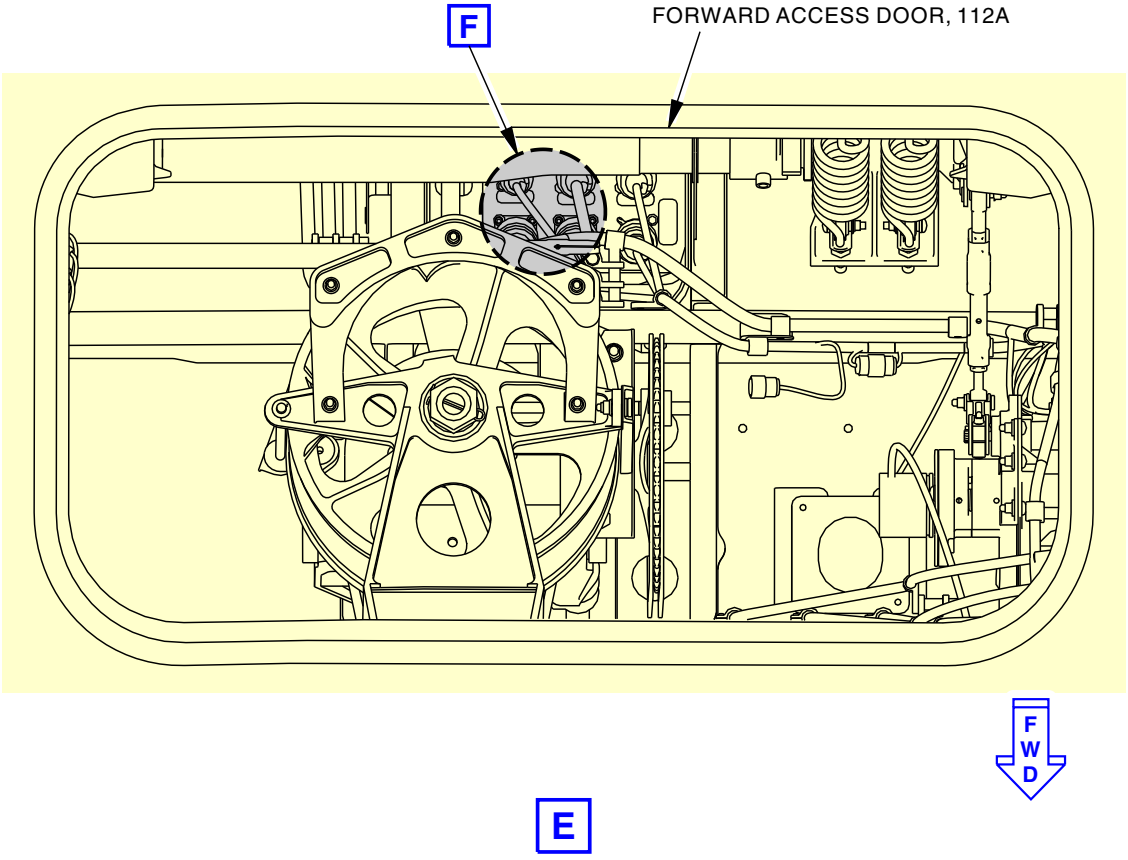
Flap Lever Position Switch Installation
Figure 401/27-51-08-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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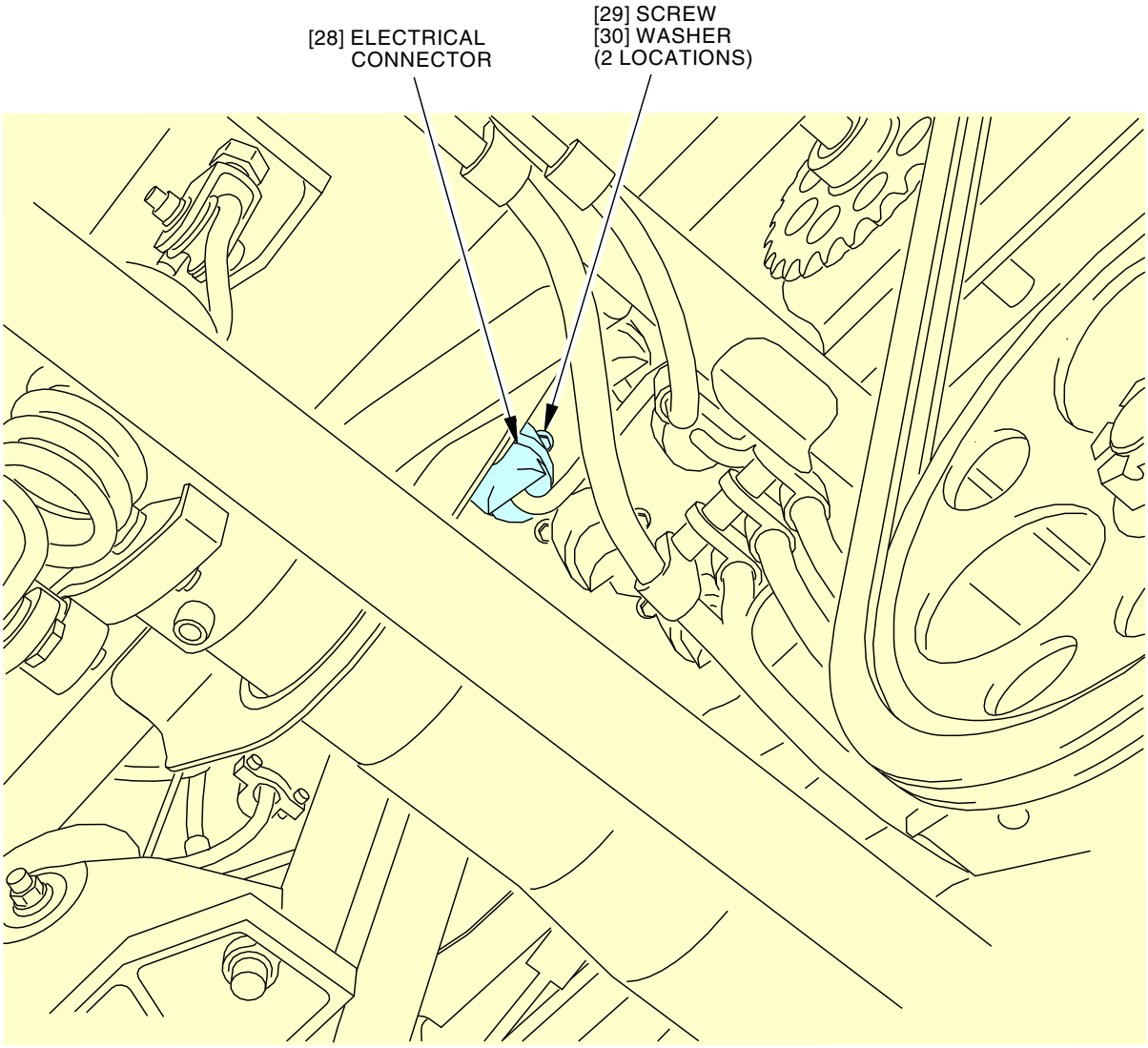
Flap Lever Position Switch Installation
Figure 401/27-51-08-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Lever Position Switch Installation
Figure 401/27-51-08-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-08-400-801

3. Flap Lever Position Switch Installation

(Figure 401)

A. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-740-803	Trailing Edge Flap Load Relief System BITE Test (P/B 501)
27-51-08-820-801	Flap Lever Position Switch Adjustment (P/B 501)
27-81-00-730-801	Leading Edge Cruise Depressurization Test (P/B 501)
SWPM 20-10-11	WIRING ASSEMBLY AND INSTALLATION CONFIGURATION

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	Lower side cover	25-11-21-25-210	SIA ALL
12	Pocket assembly	25-11-21-25-065	SIA ALL
24	Flap lever position switch	27-51-08-01-100	SIA ALL

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Flap Lever Position Switch Installation

SUBTASK 27-51-08-860-002

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	10	C00284	PANEL & INSTR ELEX PANEL

SUBTASK 27-51-08-420-001

(2) Install the flap lever position switches [24] as an assembly:

(a) Put the flap lever position switches [24] with the wires and electrical connector [18], in their position in the control stand [13].

(b) Install the bolts [22], bolt [27] and washers [23] that attach the flap lever position switches [24] and the clamp [21] to the control stand [13].

(c) Install the bolt [25], washer [26] and clamps [21] that attach the wires to the control stand [13].

(d) Install the bolts [19], washers [20] and clamps [21] that attach the wires to the control stand [13].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-08-420-002

(3) Install a flap lever position switch [24] independently:

(a) Splice the wires from the new flap lever position flap lever position switch [24] with the wires in the control stand [13] (SWPM 20-10-11).

(b) For the 10 to 40-unit flap lever position switch [24], install the bolts [22] and washers [23] that attach the flap lever position switch [24] to the control stand [13].

1) Install the bolt [25], washer [26] and clamps [21] that attach the wires to the control stand [13].

(c) For the UP flap lever position switch [24], install the bolt [22], bolt [27] and washers [23] that attach the flap lever position flap lever position switch [24] and the clamp [21] to the control stand [13].

(d) Install the applicable bolts [19], washers [20] and clamps [21] that attach the wires to the control stand [13].

SUBTASK 27-51-08-820-001

(4) Do this task: Flap Lever Position Switch Adjustment, TASK 27-51-08-820-801.

SUBTASK 27-51-08-420-003

(5) Connect the electrical connector [18]

(a) Do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

(b) Put the electrical connector [18] in its position.

(c) Install the screws [29] and washers [30] to attach the electrical connector [18].

(d) Connect the electrical connector [28] from below the control stand [13].

(e) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-51-08-860-003

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-51-08-740-001

(7) Do this task: Trailing Edge Flap Load Relief System BITE Test, TASK 27-51-00-740-803.

SUBTASK 27-51-08-730-001

(8) Do this task: Leading Edge Cruise Depressurization Test, TASK 27-81-00-730-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-08-410-001

(1) Install the control stand cover [1] on the control stand [13] with the screws [2] and the bolt [5].

SUBTASK 27-51-08-010-006

(2) Install the stabilizer trim lightplate [3] on the control stand [13]:

(a) Connect the wires [14] to the stabilizer trim lightplate [3]:

1) Put the wires [14] for in their position on the stabilizer trim lightplate [3].

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2) Install the washers [15], washers [16] and nuts [17] to attach the wires [14].

(b) Put the stabilizer trim lightplate [3] in its location on the control stand [13].

(c) Loosely install the screws [4].

(d) Adjust the position of the stabilizer trim lightplate [3] to align with the stabilizer trim indicator.

(e) Tighten the screws [4].

SUBTASK 27-51-08-410-002

(3) Install the upper side cover [7] and the lower side cover [11] on the right side of the control stand [13]:

(a) Put the upper side cover [7] and the lower side cover [11] in their position on the control stand [13], with the lower side cover [11] under the upper side cover [7]

(b) Install the screws [6] that attach the upper side cover [7] and lower side cover [11] to the control stand [13].

(c) Install the pocket assembly [12] with the screws [10] on the lower side cover [11].

SUBTASK 27-51-08-410-004

(4) Install the stabilizer trim wheel [8] on the right side of the control stand [13]:

(a) Put the stabilizer trim wheel [8] on the shaft.

(b) Make sure that the handle on the stabilizer trim wheel [8] is 75 to 105 degrees from the handle on the left-side stabilizer trim wheel [8].

(c) Install the bolt [31] and spacer [32] to attach the stabilizer trim wheel [8].

(d) Tighten the bolt [31] to 150 in-lb (16.9 N·m) – 160 in-lb (18.1 N·m) above run-on torque.

SUBTASK 27-51-08-860-004

(5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	10	C00284	PANEL & INSTR ELEX PANEL

——— END OF TASK ———

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FLAP LEVER POSITION SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure has an adjustment of the flap lever position switches.

B. The flap lever position switches are installed on the control stand and operate with the flap control lever.

TASK 27-51-08-820-801

2. Flap Lever Position Switch Adjustment

(Figure 501)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Prepare for the Adjustment

SUBTASK 27-51-08-860-005

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	10	C00284	PANEL & INSTR ELEX PANEL

SUBTASK 27-51-08-010-007

(2) Remove the stabilizer trim wheel [8] from the right side of the control stand [13]:

(a) Remove the bolt [9] and spacer [26] that attach the stabilizer trim wheel [8].

(b) Remove the stabilizer trim wheel [8] from the shaft.

SUBTASK 27-51-08-010-008

(3) Remove the upper side cover [7] and lower side cover [11] from the right side of the control stand [13]:

(a) Remove the screws [10] and the pocket assembly [12] from the lower side cover [11].

(b) Remove the screws [6] that attach the upper side cover [7] and the lower side cover [11] to the control stand [13].

(c) Remove the upper side cover [7] and the lower side cover [11] from the control stand [13].

SUBTASK 27-51-08-010-009

(4) Remove the stabilizer trim lightplate [3] from the control stand [13]:

(a) Remove the screws [4] and remove the stabilizer trim lightplate [3].

(b) Remove the nuts [17], washers [16] and washers [15] that attach the wires [14] to the stabilizer trim lightplate [3].

SUBTASK 27-51-08-010-010

(5) Remove the screws [2] and bolt [5] and remove the control stand cover [1] from the control stand [13].

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C. Flap Lever Position Switch Adjustment

NOTE: The adjustment of the flap lever position switch [19] is changed by moving the cam [21] on the flap control lever drum [20].

SUBTASK 27-51-08-020-004

(1) Disconnect the electrical connector [18] for the flap lever position switches [19]:

SUBTASK 27-51-08-860-006

(2) Move the flap control lever to the 5-unit position.

SUBTASK 27-51-08-020-005

(3) Loosen the screws [22] that attach the cam [21] to the flap control lever drum [20].

SUBTASK 27-51-08-820-002

(4) Move the cam [21] fully forward.

SUBTASK 27-51-08-820-003

(5) Adjust the cam [21] on the flap control lever drum [20]:

(a) Do a continuity check between these pins on the electrical connector [18] D5150:

1) Make sure there is continuity between pins 8 and 9.

2) Make sure there is no continuity between pins 9 and 11.

(b) Move the flap control lever to the middle position between the 5-unit and 10-unit detents.

(c) Do a continuity check between these pins on the electrical connector [18] D5150:

1) Make sure there is continuity between pins 8 and 9.

2) Make sure there is no continuity between pins 9 and 11.

(d) Hold the flap control lever in the middle position between the 5-unit and 10-unit detents.

(e) Slowly move the cam [21] on the flap control lever drum [20] aft until the flap lever 10-unit switch operates.

1) Make sure there is no continuity between pins 8 and 9.

2) Make sure there is continuity between pins 9 and 11.

(f) Tighten the screws [22] that attach the cam [21] to the flap control lever drum [20].

1) Make sure there is no continuity between pins 8 and 9.

2) Make sure there is continuity between pins 9 and 11.

SUBTASK 27-51-08-820-004

(6) Move the flap control lever to the 5-unit position.

(a) Make sure there is continuity between pins 8 and 9.

(b) Make sure there is no continuity between pins 9 and 11.

SUBTASK 27-51-08-820-005

(7) Move the flap control lever to the 10-unit position.

(a) Make sure there is no continuity between pins 8 and 9.

(b) Make sure there is continuity between pins 9 and 11.

SUBTASK 27-51-08-820-008

(8) Move the flap control lever to the 40-unit position and verify full travel is accomplished without interference or binding.

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SUBTASK 27-51-08-820-006

(9) Do a check of the adjustment of the UP flap lever position switch [19]:

NOTE: There is no independent adjustment of the UP flap lever position switch [19].

(a) Move the flap control lever to the UP position.

1) Make sure there is no continuity between pins 5 and 6.

2) Make sure there is continuity between pins 5 and 7.

(b) Move the flap control lever to the 1-unit position.

1) Make sure there is continuity between pins 5 and 6.

2) Make sure there is no continuity between pins 5 and 7.

(c) Move the flap control lever to the UP position.

1) Make sure there is no continuity between pins 5 and 6.

2) Make sure there is continuity between pins 5 and 7.

(d) If the cam [21] is not adjusted correctly for the flap lever position switch [19], then adjust the cam [21] again.

SUBTASK 27-51-08-420-004

(10) Connect the electrical connector [18].

SUBTASK 27-51-08-860-007

(11) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-08-410-005

(1) Install the control stand cover [1] on the control stand [13] with the screws [2] and the bolt [5].

SUBTASK 27-51-08-010-011

(2) Install the stabilizer trim lightplate [3] on the control stand [13]:

(a) Connect the wires [14] to the stabilizer trim lightplate [3]:

1) Put the wires [14] in their position on the stabilizer trim lightplate [3].

2) Install the washers [15], washers [16] and nuts [17] to attach the wires [14].

(b) Put the stabilizer trim lightplate [3] in its location on the control stand [13].

(c) Loosely install the screws [4].

(d) Adjust the position of the stabilizer trim lightplate [3] to align with the stabilizer trim indicator.

(e) Tighten the screws [4].

SUBTASK 27-51-08-410-006

(3) Install the upper side cover [7] and the lower side cover [11] on the right side of the control stand [13]:

(a) Put the upper side cover [7] and the lower side cover [11] in their position on the control stand [13], with the lower side cover [11] under the upper side cover [7].

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(b) Install the screws [6] that attach the upper side cover [7] and lower side cover [11] to the control stand [13].

(c) Install the pocket assembly [12] with the screws [10] on the lower side cover [11].

SUBTASK 27-51-08-410-007

(4) Install the stabilizer trim wheel [8] on the right side of the control stand [13]:

(a) Put the stabilizer trim wheel [8] on the shaft.

(b) Make sure the handle on the stabilizer trim wheel [8] is 75 to 105 degrees from the handle of the left-side stabilizer trim wheel [8].

(c) Install the bolt [9] and spacer [26] to attach the stabilizer trim wheel [8].

SUBTASK 27-51-08-860-008

(5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	10	C00284	PANEL & INSTR ELEX PANEL

——— END OF TASK ———

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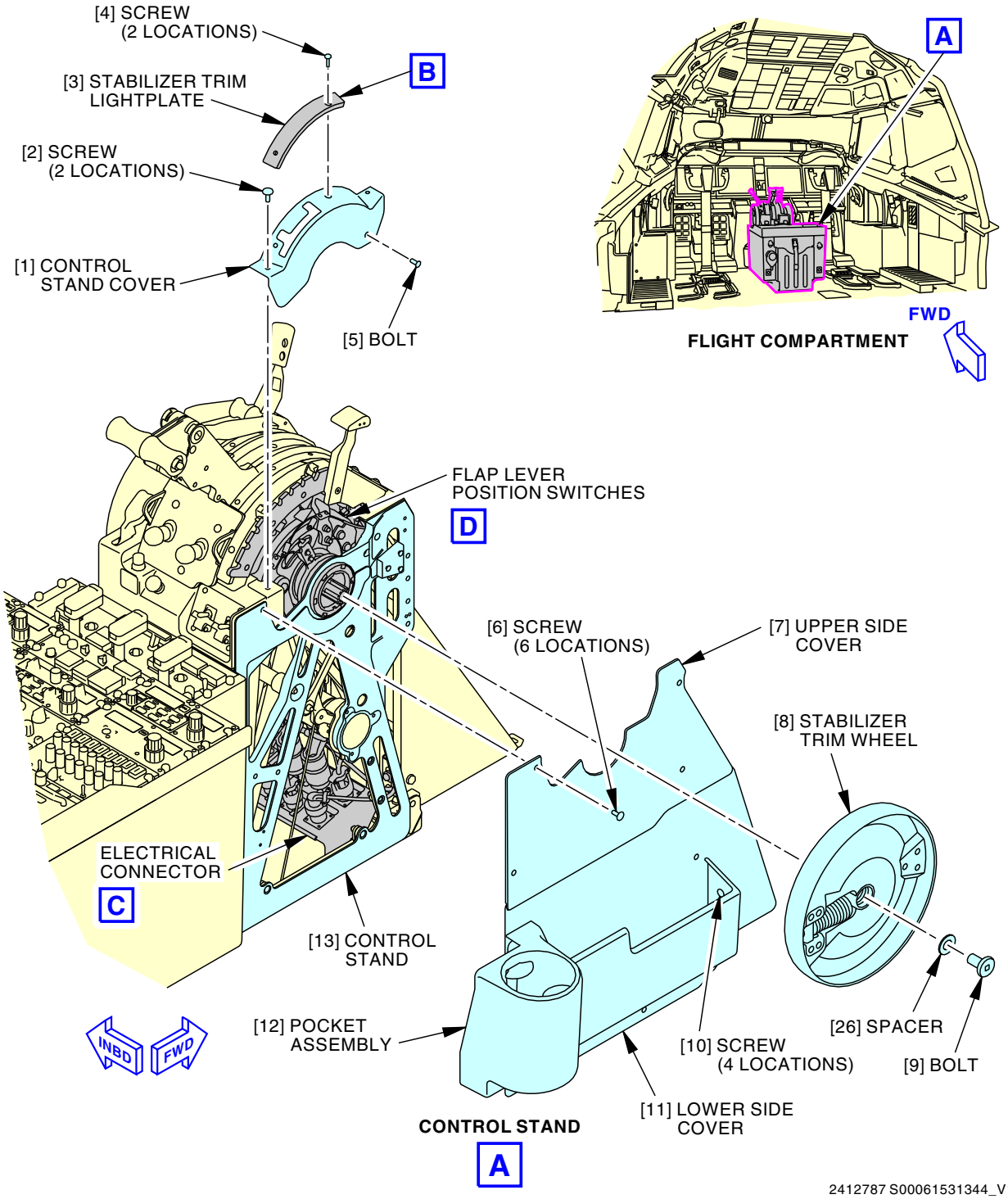

Flap Lever Position Switch Adjustment
Figure 501/27-51-08-990-802 (Sheet 1 of 3)

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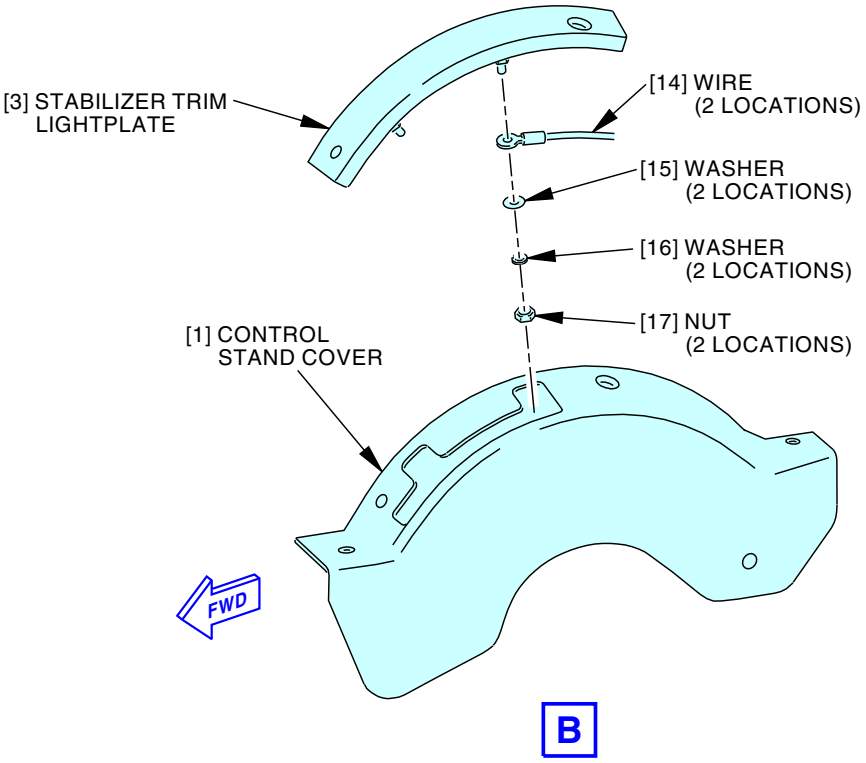

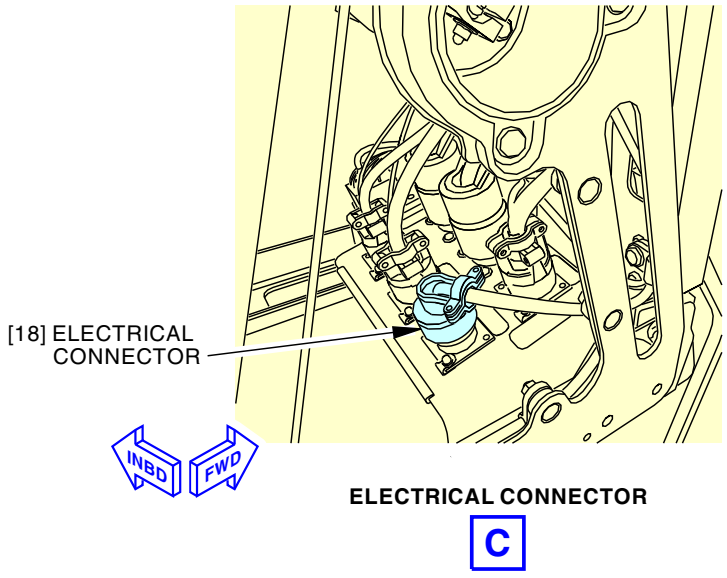

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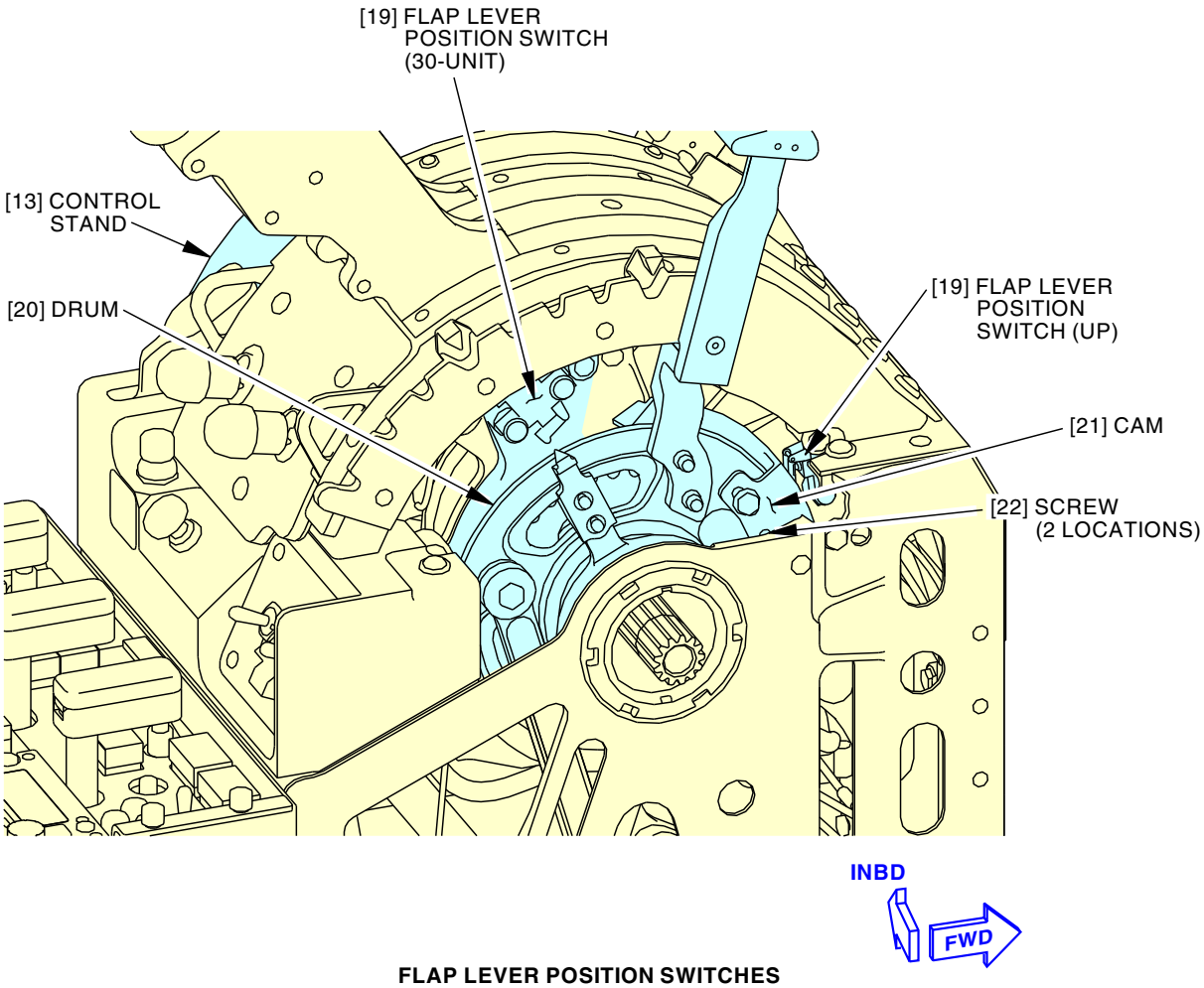
Flap Lever Position Switch Adjustment
Figure 501/27-51-08-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Lever Position Switch Adjustment
Figure 501/27-51-08-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD TRAILING EDGE FLAP - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of inboard trailing edge flap

(2) An installation of inboard trailing edge flap

(3) A removal of inboard trailing edge flap bullnose seal

(4) An installation of inboard trailing edge flap bullnose seal

(5) A removal of inboard trailing edge flap outer seal

(6) An installation of inboard trailing edge flap outer seal

B. This procedure includes the removal and installation of the inboard main flap with the aft flap. You can remove and install the main flap with the aft flap either removed or installed. To remove and install the aft flap only, do this tasks: Inboard Aft Flap Removal, TASK 27-51-12-000-801 and Inboard Aft Flap Installation, TASK 27-51-12-400-801.

C. The inboard main flap and aft flap together weigh approximately 333 lb (151 kg). The main flap alone weighs approximately 300 lb (136 kg).

TASK 27-51-11-000-801

2. Inboard Trailing Edge Flap Removal

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1729	Sling - Equipment, Trailing Edge Flaps Part #: C27052-39 Supplier: 81205

C. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

D. Access Panels

Number	Name/Location
194AL	Aft Wing To Body Fairing Panel
194AR	Aft Wing To Body Fairing Panel
194BL	Flap Track Lubrication Panel - Aft
194BR	Flap Track Lubrication Panel - Aft
194CL	Aft Wing To Body Fairing Panel

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(Continued)

Number	Name/Location
194CR	Aft Wing To Body Fairing Panel

E. Prepare for the Removal

SUBTASK 27-51-11-860-017

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-11-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-010-001

(3) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

SUBTASK 27-51-11-010-002

(4) Remove these panels from the wing to body fairing:

Number	Name/Location
194AL	Aft Wing To Body Fairing Panel
194AR	Aft Wing To Body Fairing Panel
194BL	Flap Track Lubrication Panel - Aft
194CL	Aft Wing To Body Fairing Panel

or open these access panels:

Number	Name/Location
194BR	Flap Track Lubrication Panel - Aft
194CR	Aft Wing To Body Fairing Panel

F. Inboard Trailing Edge Flap Removal

SUBTASK 27-51-11-020-001

(1) Remove the support assembly [131] (Figure 401):

(a) Remove the three bolts [130].

1) Keep the three bolts [130] for the installation.

(b) Remove the support assembly [131].

SUBTASK 27-51-11-020-002

(2) Disconnect the skew control rods for the skew mechanisms from the carriages (Figure 401):

(a) At the outboard carriage [13], remove the nut [8], washer [7], washer [5], bolt [4] and bushing [6] that attaches the skew control rod [3] to the outboard carriage [13].

(b) At the inboard carriage [52], remove the nut [47], washer [46], washer [44], bolt [43] and bushing [45] that attaches the skew control rod [41] to the inboard carriage [52].

SUBTASK 27-51-11-020-003

(3) Disconnect the aft flap drive rod [25] from the crankshaft [18]:

(a) Remove the pin [24], nut [23], washer [22], washer [20], bolt [19] and bushing [21] from the crankshaft [18].

(b) Move the aft flap drive rod [25] away from the inboard flap [1].

SUBTASK 27-51-11-980-001

(4) If the aft flap [2] is installed, move the aft flap [2] to the retracted position on the inboard flap [1]:

(a) Move the crankshaft [18] aft until the aft flap [2] is in the retracted position.

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CAUTION

DO NOT USE A RIG PIN IN THE CRANKSHAFT TO HOLD THE AFT FLAP IN THE RETRACTED POSITION. THIS CAN CAUSE DAMAGE TO THE CRANKSHAFT OR THE FITTING ON THE MAIN FLAP.

(b) Install the restraint strap [83] (part of the sling, SPL-1729) to hold the aft flap [2] in the retracted position.

SUBTASK 27-51-11-480-001

(5) Install the sling [82] on the inboard flap [1] (Figure 402):

(a) Remove the existing bolts [85] at the inboard and outboard ends of the front spar on the inboard flap [1].

1) Keep these bolts [85] for the installation.

(b) Install the sling fittings [81] in the location of the bolts [85].

(c) Remove the existing bolts [86] at the rear spar at the aft end of the inboard flap [1].

1) Keep these bolts [86] for re-installation.

(d) Install the sling fitting [84] in the location of the bolts [86].

(e) Connect the sling [82] to the sling fittings [81] and sling fitting [84].

(f) Connect the sling [82] to an overhead lifting device.

(g) Use the sling [82] to hold the weight of the inboard flap [1].

SUBTASK 27-51-11-020-004

(6) Remove the stop fittings from the flap tracks (Figure 401):

(a) On the flap track [39], remove the nut [56], washer [55], bushings [54] and bolt [53] from the end of the flap track [39].

(b) On the outboard flap track [14], remove the roller stop [30], roller stop [37] and the aft fairing support fitting [35]:

1) Remove the nuts [29], washers [28], bolt [27] and bolts [36] that attach the aft fairing support fitting [35] to the flap track [14].

2) Remove the nuts [34], washers [33], washers [32] and bolts [31] that attach the aft fairing support fitting [35], roller stop [30] and roller stop [37] to the flap track [14].

3) Remove the roller stop [30], roller stop [37] and the aft fairing support fitting [35] from the flap track [14].

SUBTASK 27-51-11-860-002

(7) Use the manual drive system to extend the trailing edge flaps to the stops on the ballscrews (TASK 27-51-00-980-801).

NOTE: During the manual operation of the trailing edge flap, it is not necessary to do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-11-020-005

(8) Remove the inboard flap [1]:

(a) Hold the weight of the inboard flap [1] with the sling [82] and the overhead lifting device.

(b) Disconnect the inboard carriage [52] from the gimbal [40]:

1) Install a support to hold the ballscrew [42] when it is disconnected from the inboard carriage [52].

2) Remove the nuts [50], washers [49] and bolts [48] that attach the carriage bushings [51] to the inboard carriage [52].

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3) Remove the carriage bushings [51] from the inboard carriage [52].

4) Move the gimbal [40] away from the inboard carriage [52].

(c) Disconnect the outboard carriage [13] from the gimbal [16]:

1) Install a support to hold the ballscrew [17] when it is disconnected from the outboard carriage [13].

2) Remove the nut [11], washer [10] and bolt [9] that attach the carriage carriage bushing [15] and bushing assembly [26] to the outboard carriage [13].

3) Remove the carriage bushing [15] and carriage bushing [26] from the outboard carriage [13].

4) Move the gimbal [16] away from the outboard carriage [13].

(d) Use the sling [82] to move the inboard flap [1] aft and down away from the flap tracks.

CAUTION

BE CAREFUL WHEN YOU LOWER THE FLAP TO THE GROUND. YOU CAN CAUSE DAMAGE TO THE TRAILING EDGE OF THE FLAP.

(e) Use the sling [82] to move the inboard flap [1] outboard and aft away from the airplane.

SUBTASK 27-51-11-210-001

(9) Do a check of the configuration of the inboard flap carriage roller cartridges, and inboard seals:

(a) Do a check of the position of the index marks [120] for the carriage roller cartridges on the inboard and outboard carriages.

1) Make a record of the position to use during the installation.

(b) If you will install a different flap, remove and keep the shim and bullnose seal for the installation.

1) Keep and install the same shim and bullnose seal you removed from the airplane.

NOTE: If you install a different bullnose seal or shim, it can cause unsatisfactory flight performance.

——— END OF TASK ———

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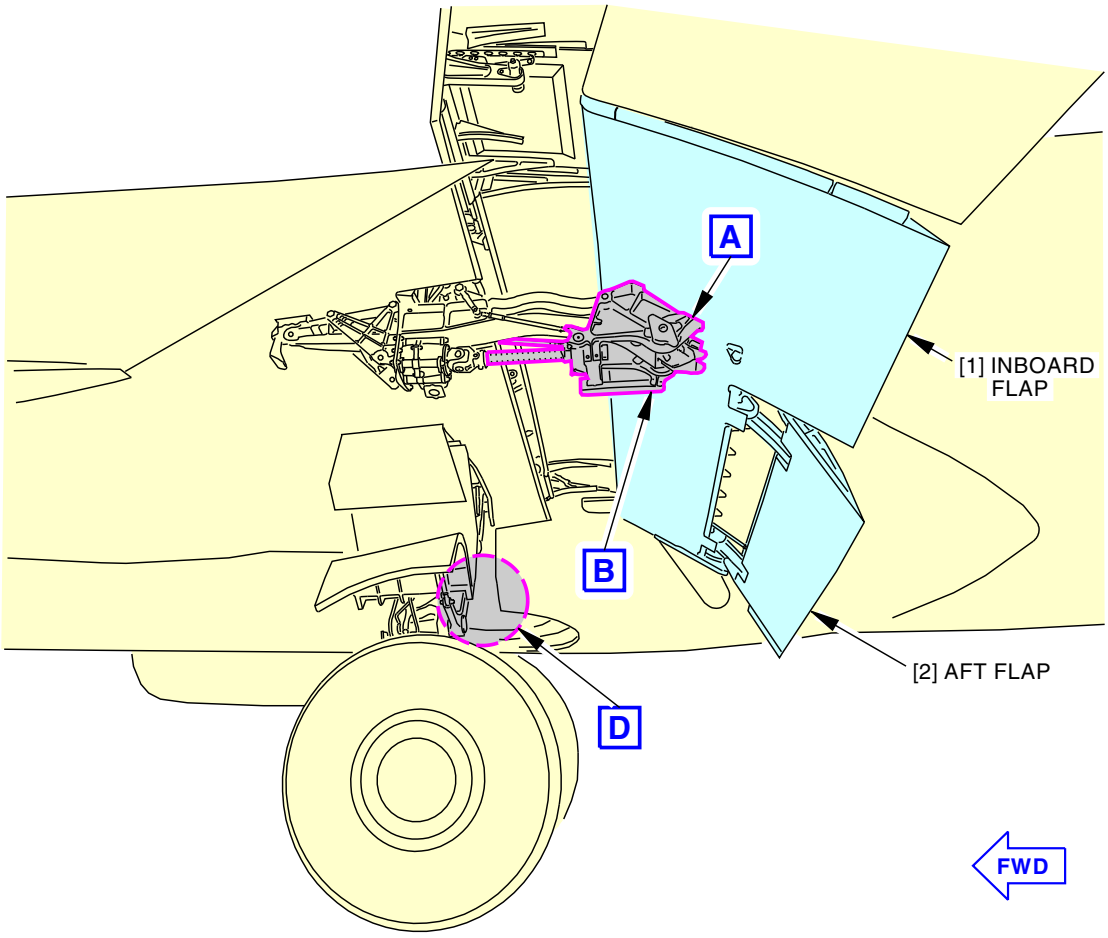

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Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 1 of 7)

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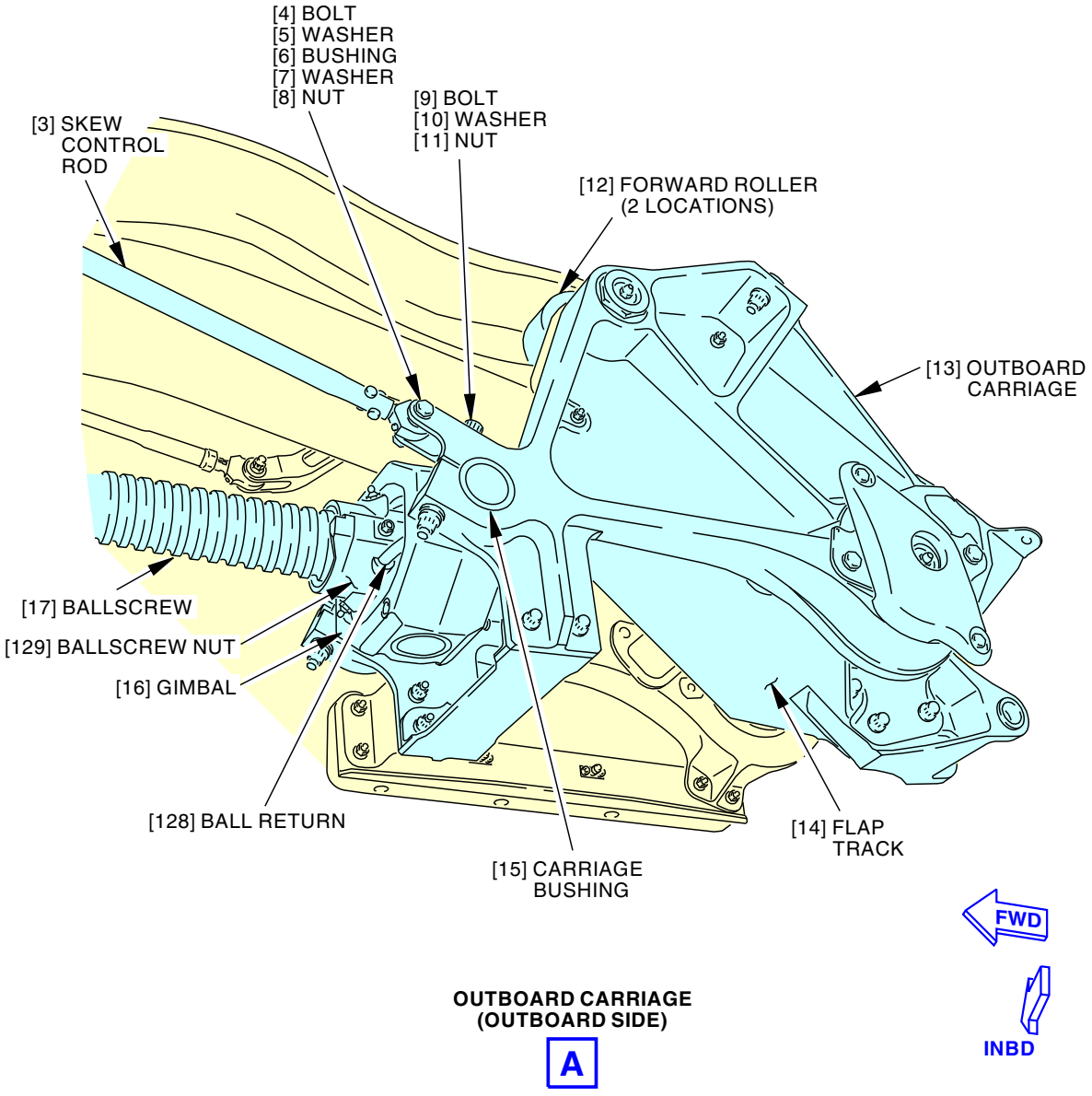

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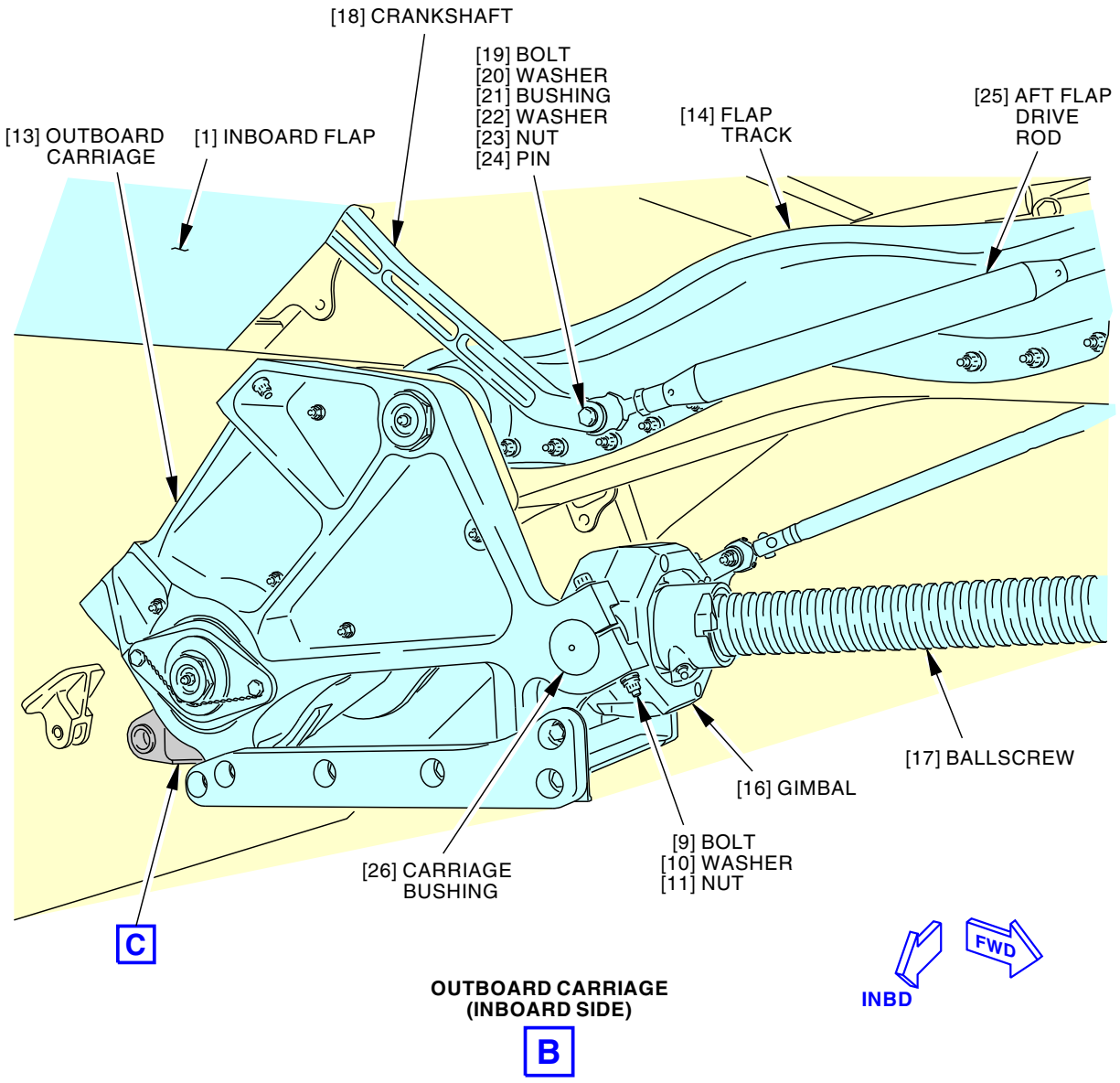
Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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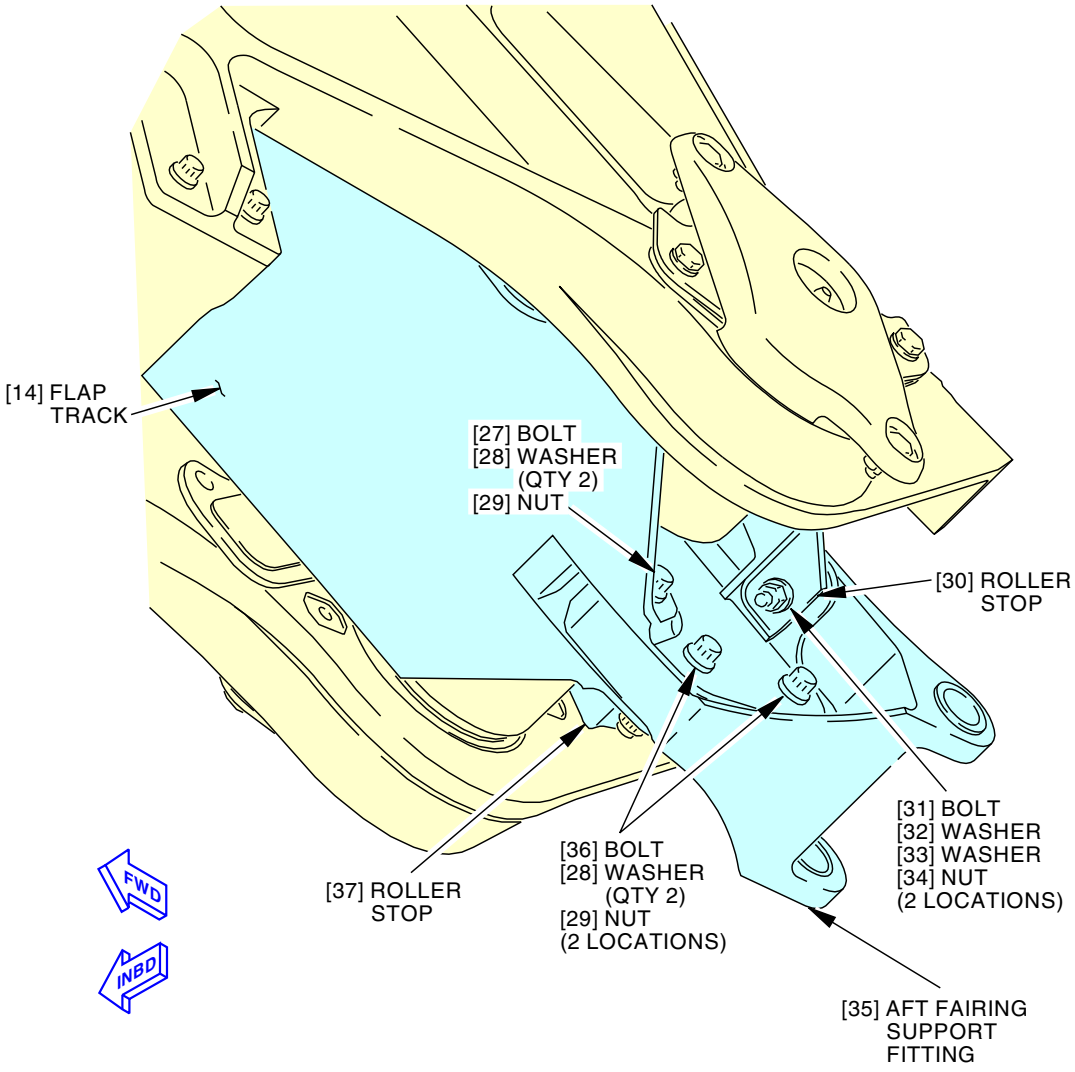
Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 4 of 7)

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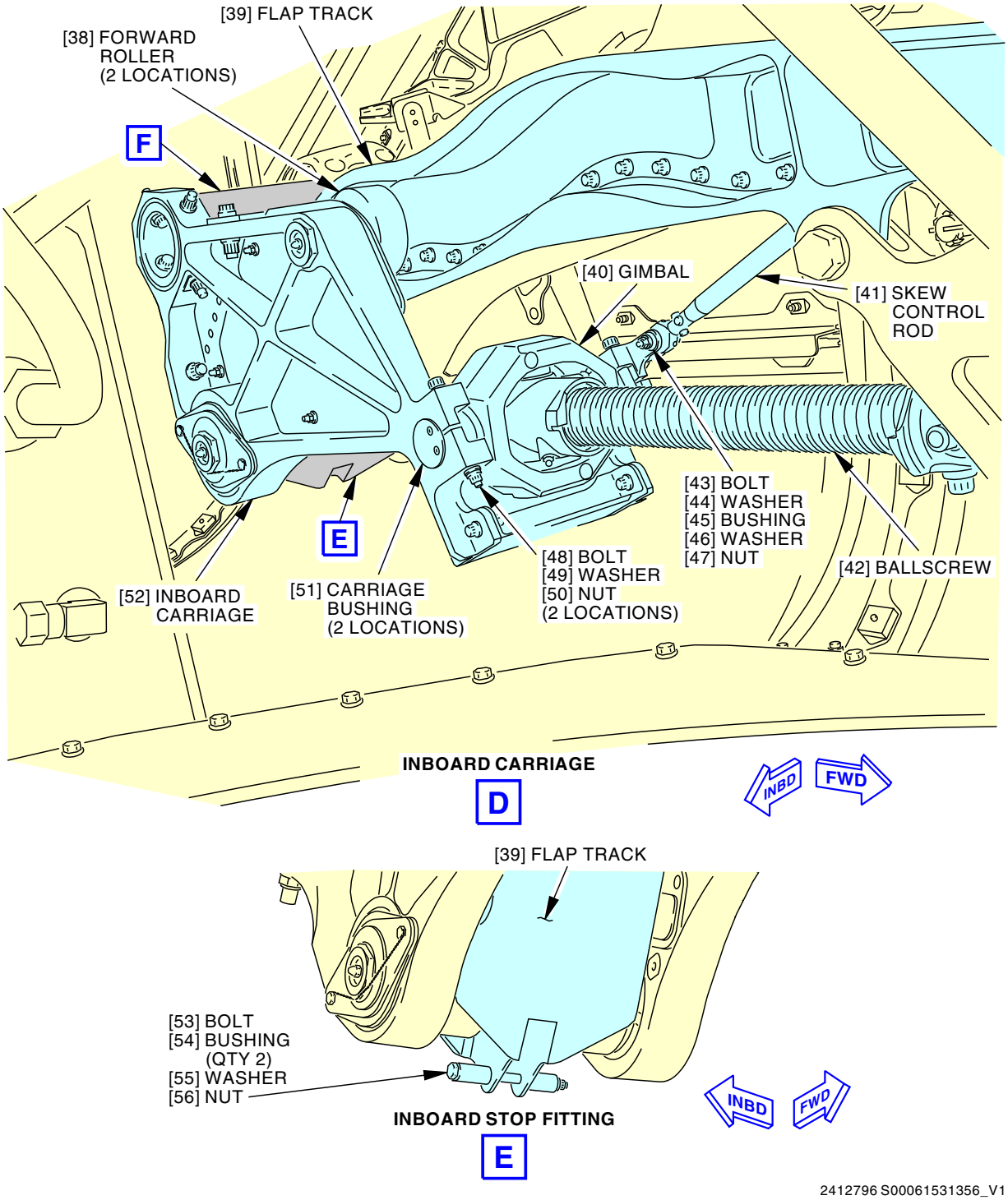

Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 5 of 7)

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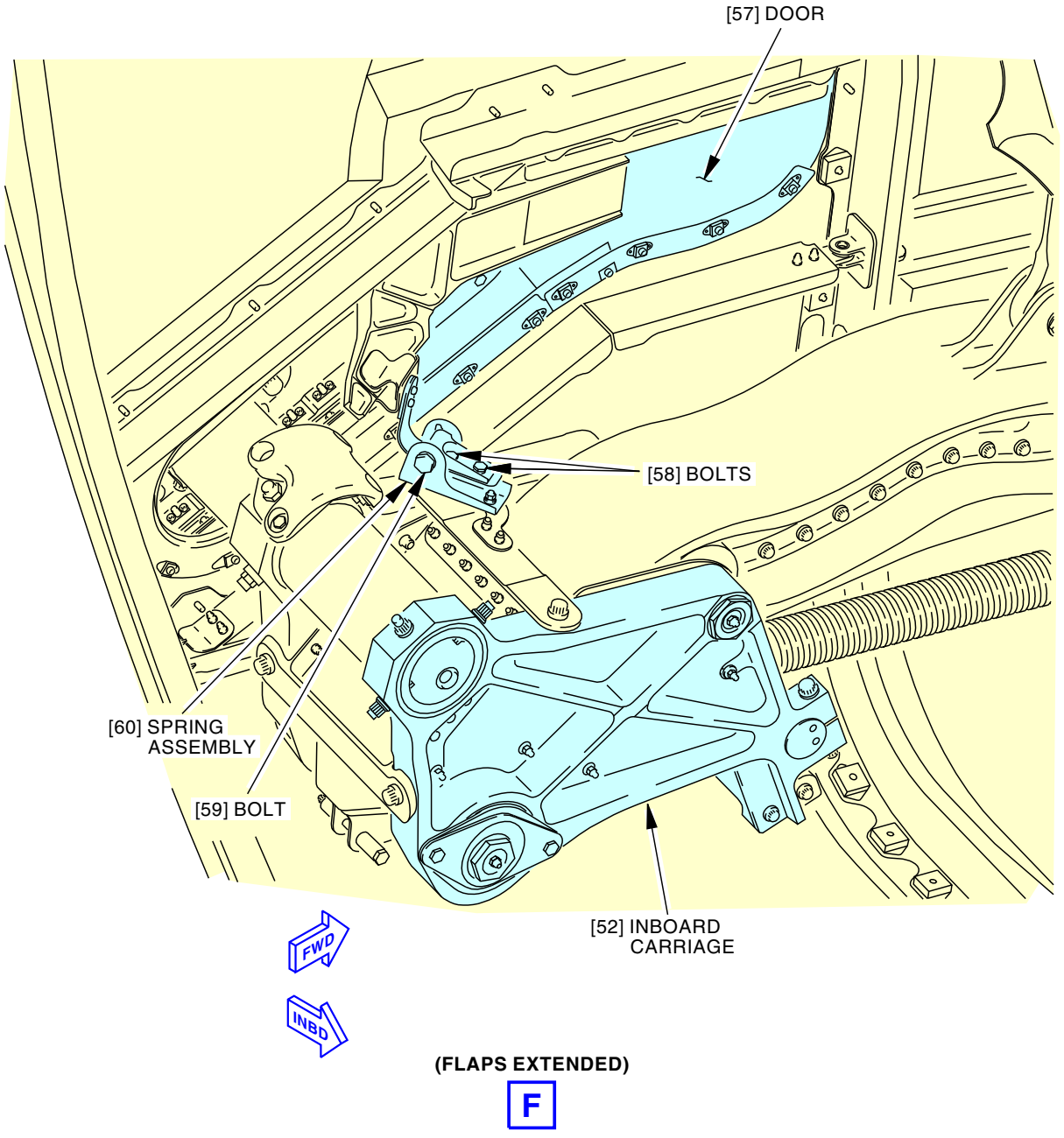

Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 6 of 7)

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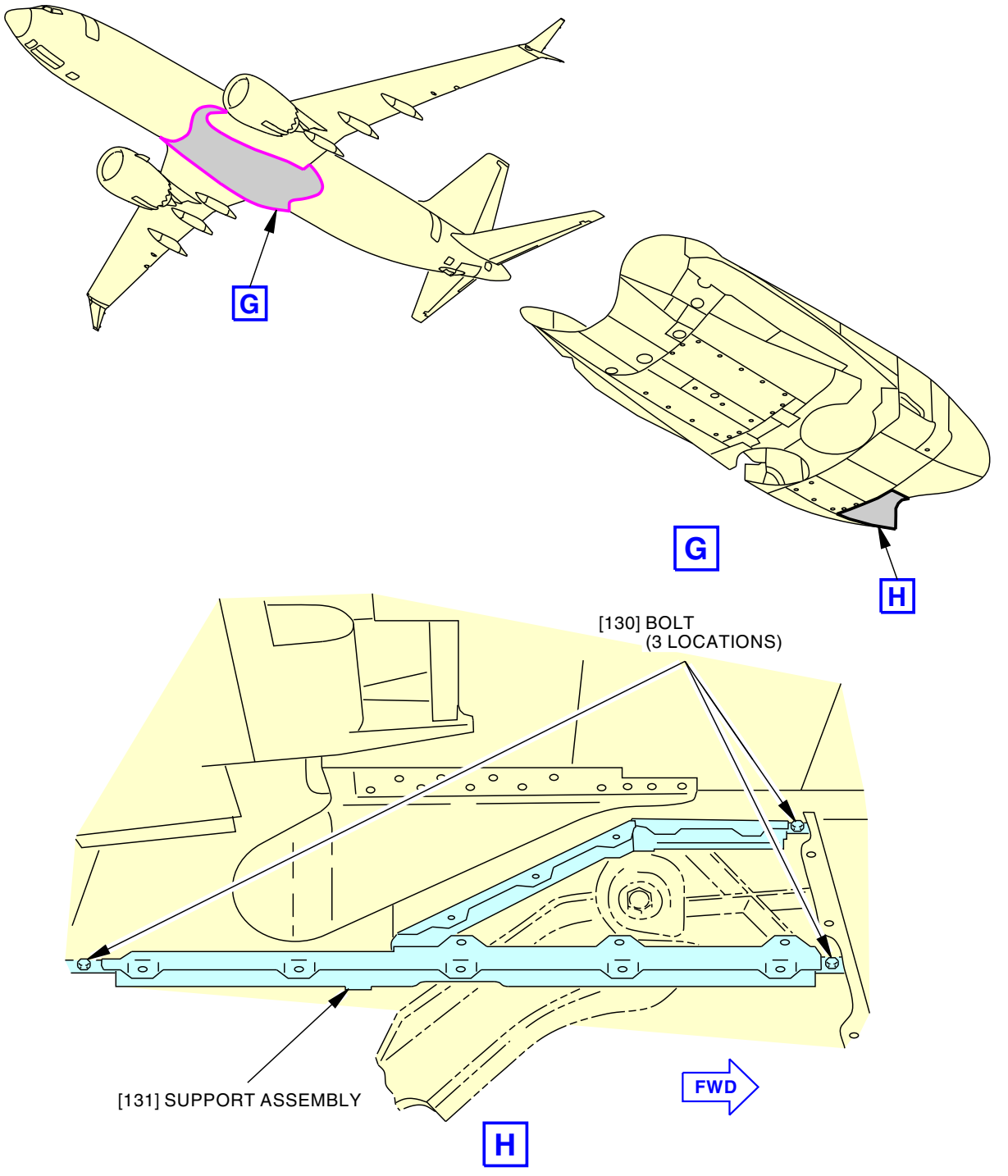

Inboard Trailing Edge Flap Installation
Figure 401/27-51-11-990-801 (Sheet 7 of 7)

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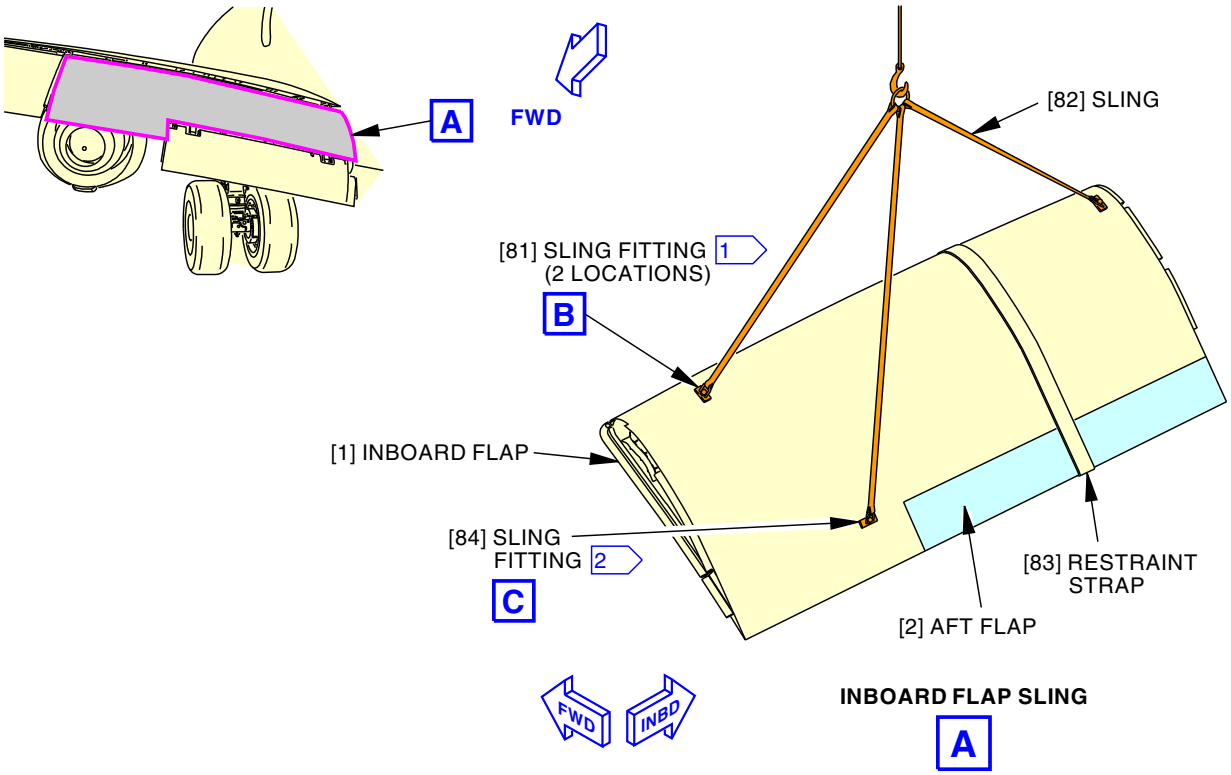
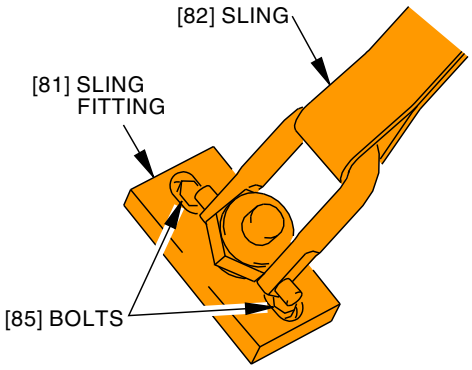
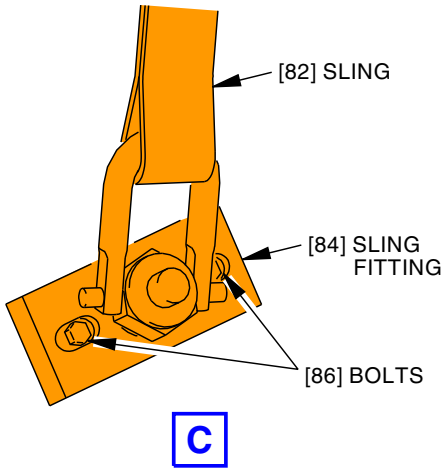






1 ITEF MFSTA 88.4, 175.5 FORWARD OF FLAP FRONT SPAR PLANE.

2 ITEF MFSTA 163.4, COMMON TO FLAP REAR SPAR PLANE.

2412799 S00061531359_V1

Inboard Flap Sling
Figure 402/27-51-11-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-11-400-801

3. Inboard Trailing Edge Flap Installation

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-11-820-801	Inboard Trailing Edge Flap Adjustment (P/B 501)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1729	Sling - Equipment, Trailing Edge Flaps Part #: C27052-39 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Inboard flap	27-51-11-01-100	SIA ALL
		27-51-11-01-105	SIA ALL
2	Aft flap	27-51-12-01A-073	SIA ALL
		27-51-12-01A-076	SIA ALL

E. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

F. Access Panels

Number	Name/Location
194AL	Aft Wing To Body Fairing Panel
194AR	Aft Wing To Body Fairing Panel
194BL	Flap Track Lubrication Panel - Aft
194BR	Flap Track Lubrication Panel - Aft
194CL	Aft Wing To Body Fairing Panel
194CR	Aft Wing To Body Fairing Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Installation

SUBTASK 27-51-11-820-001

(1) Make sure that the carriage roller cartridges are in the correct position (Figure 403):

(a) If you install a different inboard flap [1] than the one you removed, make sure that the cartridge [116] and cartridge [125] are in the same position as the flap you removed.

(b) If you did not record the position of the carriage roller from the flap you removed, then adjust the cartridge [116] and cartridge [125] to the nominal position.

NOTE: The nominal position for the cartridges is -45 degrees for the left wing, and +30 degrees for the right wing.

NOTE: There is no mismatch or alignment dimension to the fixed structure or the outboard flap that the flap is adjusted to meet. The cartridges can be changed from the nominal position to meet lateral trim tolerances.

(c) Make sure that the cartridge [116] and cartridge [125] for the inboard flap [1] are in the same position.

NOTE: The eccentric bushings [115] are not installed on every inboard flap [1].

(d) If it is necessary, adjust the cartridge [125] on the inboard carriage [52] as follows:

1) Loosen the nut [127] on the roller [123].
2) Turn the eccentric bushing [115] until the index mark [120] is in the correct position.
3) Tighten the nut [127] to 160 in-lb (18 N·m) - 975 in-lb (110 N·m).
4) Install the pin [126] in the nut [127].
5) Install the lockwire between the bolts that attach the cartridge [125].

(e) If it is necessary, adjust the cartridge [116] or cartridge [125] on the outboard carriage [13]:

1) Adjust the outboard cartridge [116]:

a) Remove the bolts [113], washers [122] and rub block [121] from the retainer [114].
b) Loosen the nut [118] on the roller [117].
c) Turn the eccentric bushing [115] until the index marks [120] are in the correct position.
d) Tighten the nut [118] on the roller [117] to 160 in-lb (18 N·m) - 975 in-lb (110 N·m).
e) Install the pin [119] in the nut [118].
f) Put the rub block [121] in its position on the retainer [114] and install the bolts [113] and washers [122].

2) Adjust the cartridge [125] as follows:

a) Loosen the nut [127] on the roller [123].
b) Turn the eccentric bushing [115] until the index marks [120] are in the correct position.
c) Tighten the nut [127] on the roller [123] to 160 in-lb (18 N·m) - 975 in-lb (110 N·m).
d) Install the pin [126] in the nut [127].
e) Install lockwire between the bolts that attach the cartridge [125].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-11-210-002

(2) If you will install a different flap, install the shim and bullnose seal you removed from the original flap.

NOTE: Install the same shim and bullnose seal you removed from the airplane. If you install a different bullnose seal or shim, it can cause unsatisfactory flight performance.

SUBTASK 27-51-11-020-006

(3) Make sure that the stop fittings are not installed on the flap tracks.

SUBTASK 27-51-11-480-002

(4) If it is not installed, install the sling [82] on the inboard flap [1] (Figure 402):

(a) Remove the bolts [85] at the inboard and outboard ends of the front spar on the inboard flap [1].

(b) Install the sling fittings [81] in the location of the bolts [85].

(c) Remove the bolts [86] at the rear spar at the aft end of the inboard flap [1].

(d) Install the sling fitting [84] in the location of the bolts [86].

(e) Connect the sling [82] to the sling fittings [81] and sling fitting [84].

SUBTASK 27-51-11-980-002

(5) If it is installed, make sure that the aft flap [2] is restrained in the retracted position on the inboard flap [1]:

CAUTION DO NOT USE A RIG PIN IN THE CRANKSHAFT TO HOLD THE AFT FLAP IN THE RETRACTED POSITION. THIS CAN CAUSE DAMAGE TO THE CRANKSHAFT OR THE FITTING ON THE MAIN FLAP.

(a) Install the restraint strap [83] (part of the sling, SPL-1729) to hold the aft flap [2] in the retracted position.

H. Inboard Trailing Edge Flap Installation

SUBTASK 27-51-11-420-001

(1) Install the inboard flap [1] (Figure 401) as follows:

CAUTION BE VERY CAREFUL WHEN YOU LIFT THE FLAP FROM THE GROUND. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE TRAILING EDGE OF THE FLAP.

(a) Use the sling [82] and the overhead lifting device to move the inboard flap [1] up into its position aft of the flap track [14] and flap track [39].

(b) Align the forward rollers [12] for the outboard carriage [13] with the flap track [14].

(c) Move the inboard flap track [39] to align with the forward rollers [38] for the inboard carriage [52].

CAUTION DO NOT USE THE SLING TO MOVE THE FLAP ON THE FLAP TRACK AFTER THE AFT ROLLERS ENGAGE. THIS CAN CAUSE DAMAGE TO THE FLAP.

(d) Move the inboard flap [1] up and forward on the flap tracks until the carriages align with the gimbal [16] and gimbal [40].

(e) Connect the outboard carriage [13] to the gimbal [16]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the support from the ballscrew [17] and move the gimbal [16] to its position in the outboard carriage [13].
2) On the left wing, make sure that the ball return [128] on the ballscrew nut [129] are outboard.
3) On the right wing, make sure that the ball return [128] on the ballscrew nut [129] are inboard.

NOTE: This is the recommended position for maintenance.

(f) Install the carriage bushing [15] and carriage bushing [26] to attach the gimbal [16] to the outboard carriage [13].

(g) Install the bolts [9], washers [10], and nuts [11] that attach the carriage bushing [15] and bushing assembly [26] to the outboard carriage [13].

(h) Tighten the nuts [11] to 65 in-lb (7.3 N·m) - 75 in-lb (8.5 N·m) more than the run-on torque.

(i) Connect the inboard carriage [52] to the gimbal [40]:

1) Remove the support from the ballscrew [42] and move the gimbal [40] to its position in the inboard carriage [52].
2) Apply grease, D00633, to the inside and outside of the carriage bushings [51].
3) Install the carriage bushings [51] to attach the gimbal [40] to the inboard carriage [52].
4) Install the bolts [48], washers [49] and nuts [50] that attach the carriage bushings [51] to the inboard carriage [52].
5) Tighten the nuts [50] to 65 in-lb (7 N·m) - 75 in-lb (8 N·m).

SUBTASK 27-51-11-420-002

(2) Install the stop fittings for the flap tracks:

(a) On the inboard flap track [39], install the bolt [53], bushings [54], washer [55] and nut [56] on the end of the flap track [39].

(b) On the flap track [14], install the roller stop [30], roller stop [37] and the aft fairing support fitting [35]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply Cor-Ban 27L Compound, G50237 to the mating surfaces of the aft fairing support fitting [35], roller stop [30], roller stop [37], and the flap track [14].
2) Put the roller stop [30], roller stop [37] and the aft fairing support fitting [35] in their positions on the flap track [14].
   a) Make sure that the roller stop [30] and roller stop [37] touch the web of the flap track [14].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

3) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolt [27], bolts [36], and bolts [31].

4) Install the bolts [31], washers [32], washers [33] and nuts [34] that attach the aft fairing support fitting [35], roller stop [30], and roller stop [37] to the flap track [14].

5) Install the bolts [36], bolt [27], washers [28], and nuts [29] that attach the aft fairing support fitting [35] to the flap track [14].

SUBTASK 27-51-11-080-001

(3) Remove the sling [82] from the inboard flap [1] (Figure 402):

(a) Disconnect the sling [82] from the overhead lifting device.

(b) Disconnect the sling [82] from the sling fittings [81] and sling fitting [84].

(c) Remove the sling fittings [81] and sling fitting [84] from the inboard flap [1].

(d) Apply compound, C00528, to the holes for the bolts [85] and bolts [86] in the inboard flap [1].

(e) Install the bolts [85] at the inboard and outboard ends of the front spar on the inboard flap [1].

(f) Install the bolts [86] at the aft end of the inboard flap [1].

SUBTASK 27-51-11-980-003

(4) If the aft flap [2] is installed, move the aft flap [2] to the extended position on the inboard flap [1] as follows:

(a) Remove the restraint strap [83] from the aft flap [2].

(b) Move the crankshaft [18] aft until the aft flap [2] is in the extended position.

SUBTASK 27-51-11-420-003

(5) Connect the aft flap drive rod [25] to the crankshaft [18] (Figure 401) as follows:

(a) Move the aft flap drive rod [25] to its position on the crankshaft [18].

(b) Install the bolt [19], washer [20], bushing [21], washer [22] and nut [23] that attach the aft flap drive rod [25] to the crankshaft [18].

1) Make sure that the head of the bolt [19] is on the inboard side.

(c) Tighten the nut [23] to 30 in-lb (3 N·m) - 50 in-lb (6 N·m).

(d) Install the pin [24] through the nut [23].

SUBTASK 27-51-11-420-004

(6) Connect the skew control rods for the skew mechanisms to the carriages:

(a) Connect the skew control rod [41] to the inboard carriage [52]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolt [43].
2) Install the bolt [43], washer [44], bushing [45], washer [46], and nut [47] to attach the skew control rod [41] to the inboard carriage [52].
   a) Install the bolt [43] with the head away from the center of the flap track [39].

(b) Connect the skew control rod [3] to the outboard carriage [13]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolt [4].
2) Install the bolt [4], washer [5], bushing [6], washer [7] and nut [8] to attach the skew control rod [3] to the outboard carriage [13].
   a) Install the bolt [4] with the head away from the center of the flap track [14].

SUBTASK 27-51-11-420-005

(7) Install the support assembly [131] (Figure 401):
   (a) Install the support assembly [131].
   (b) Install the three bolts [130].

SUBTASK 27-51-11-410-001

(8) Install these access panels for the wing to body fairing:

Number	Name/Location
194AL	Aft Wing To Body Fairing Panel
194AR	Aft Wing To Body Fairing Panel
194BL	Flap Track Lubrication Panel - Aft
194CL	Aft Wing To Body Fairing Panel

or close these access panels:

Number	Name/Location
194BR	Flap Track Lubrication Panel - Aft
194CR	Aft Wing To Body Fairing Panel

SUBTASK 27-51-11-860-003

(9) Extend the trailing edge flaps:
   (a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.
   (b) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).
   (c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-11-210-003

(10) With the flaps fully extended, make sure that the full surface of the spring assembly [60] on the inboard carriage [52] touches the door [57] on the wing to body fairing and that it holds the door closed (Figure 401).

SUBTASK 27-51-11-820-002

(11) If the spring assembly [60] does not touch the door [57], or hold it closed, adjust the position of the spring assembly [60]:

(a) Loosen the bolts [58] and bolt [59] that hold the spring assembly [60] in its position.

(b) Move the spring assembly [60] until it touches the door [57] with its face parallel to the door.

(c) Tighten the bolts [58] and bolt [59].

SUBTASK 27-51-11-820-003

(12) Do this task: Inboard Trailing Edge Flap Adjustment, TASK 27-51-11-820-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-11-410-002

(1) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-11-440-001

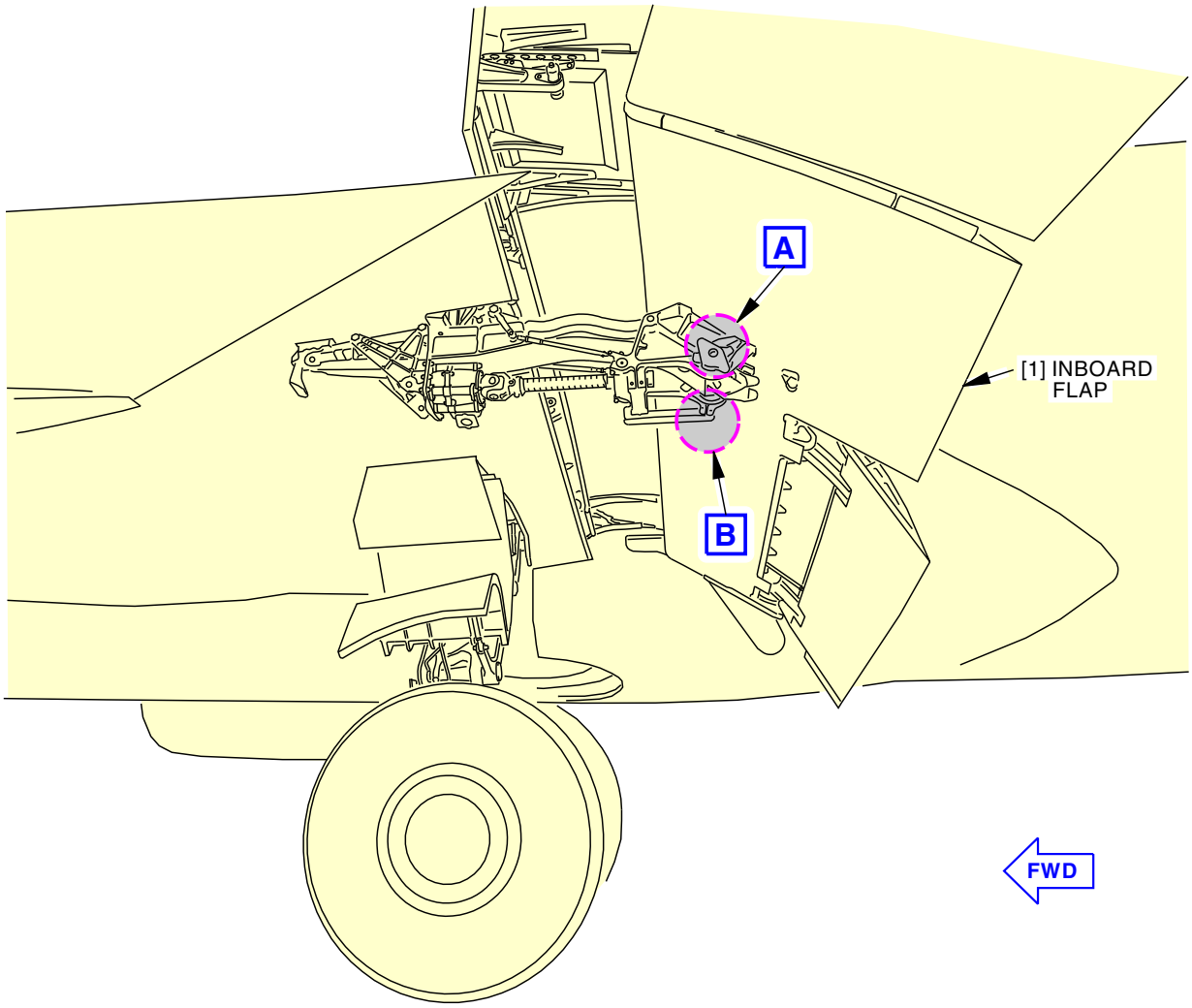
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-11-860-004

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 IF INSTALLED
2 LEFT WING NOMINAL POSITION
3 RIGHT WING NOMINAL POSITION

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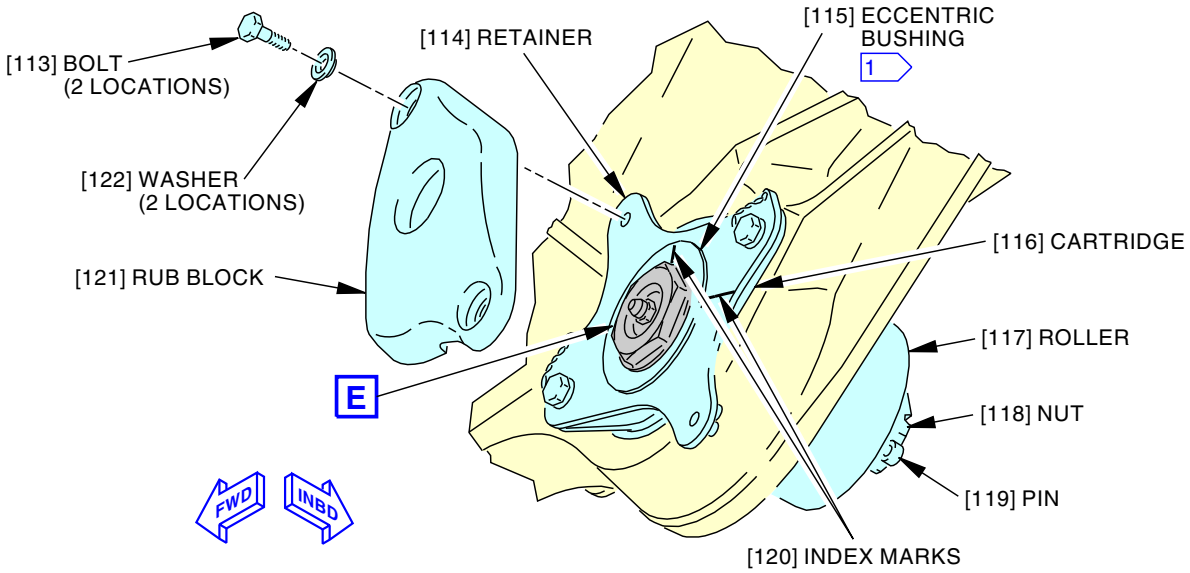
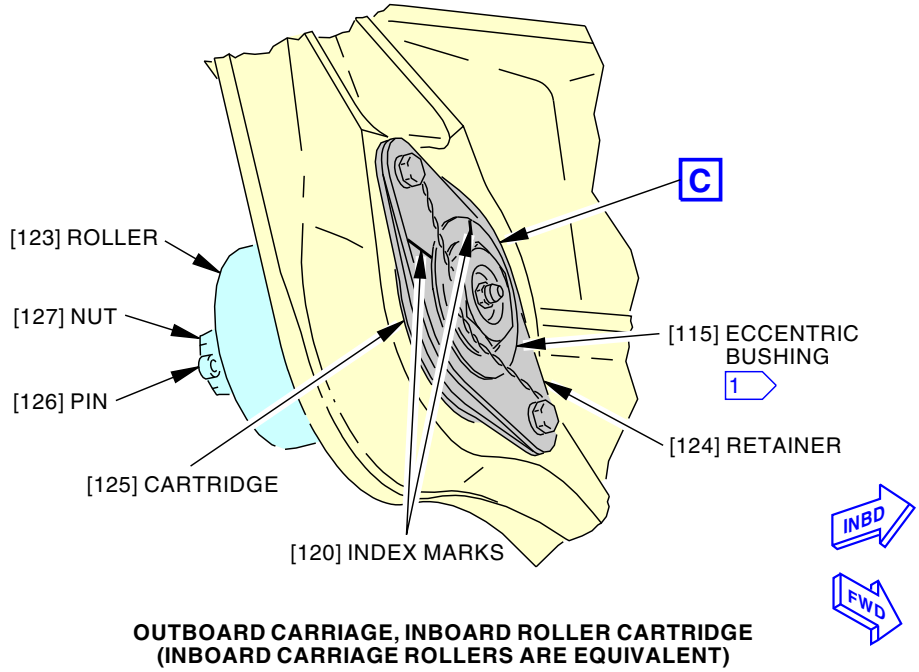
Inboard Flap Roller Adjustment
Figure 403/27-51-11-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD CARRIAGE, OUTBOARD ROLLER CARTRIDGE

A



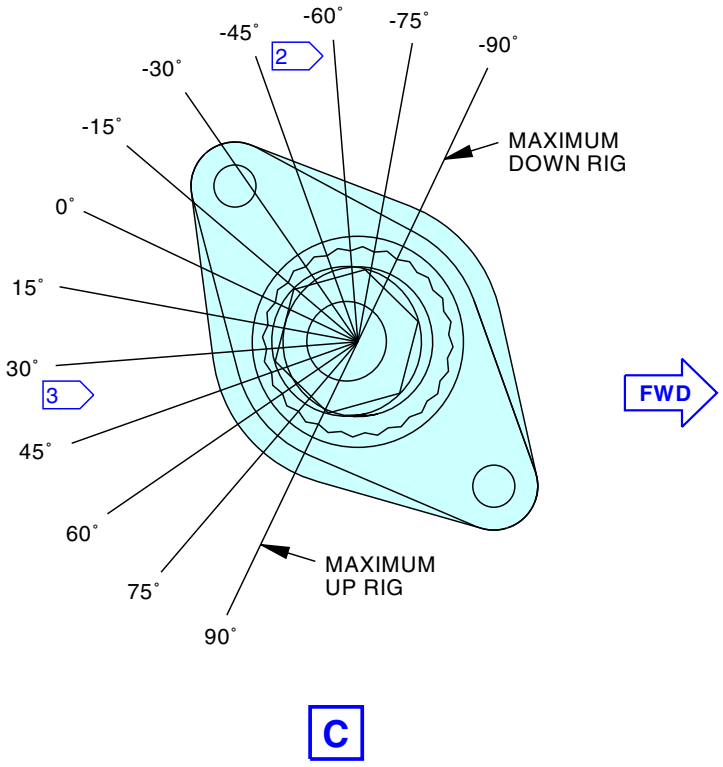
OUTBOARD CARRIAGE, INBOARD ROLLER CARTRIDGE
(INBOARD CARRIAGE ROLLERS ARE EQUIVALENT)

B

2412801 S00061531362_V1

Inboard Flap Roller Adjustment
Figure 403/27-51-11-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Roller Adjustment
Figure 403/27-51-11-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-11-000-802

4. Inboard Trailing Edge Flap Bullnose Seal Removal

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

C. Prepare for the Removal

SUBTASK 27-51-11-860-005

(1) Extend the trailing edge flaps to the 15-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-11-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-480-003

WARNING MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-11-020-007

(4) Remove the bullnose seal [66] (Figure 404):

(a) Move the torque tube door up and inboard to get access to the bullnose seal [66].

(b) Remove the bolts [67] and washers [68] that attach the bullnose seal [66] to the inboard flap [1].

(c) Remove the bullnose seal [66] and shim [69] from the inboard flap [1].

(d) If you will install a different flap, remove and keep the shim [69] and bullnose seal [66] for the installation.

NOTE: Keep and install the same shim [69] and bullnose seal [66] you removed from the airplane. If you install a different bullnose seal or shim, it can cause unsatisfactory flight performance.

END OF TASK

TASK 27-51-11-400-802

5. Inboard Trailing Edge Flap Bullnose Seal Installation

(Figure 404)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
66	Bullnose seal	27-51-11-01-060	SIA ALL
		27-51-11-01-065	SIA ALL

C. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

D. Inboard Trailing Edge Flap Bullnose Seal Installation

SUBTASK 27-51-11-420-006

(1) Install the bullnose seal [66]:

(a) Move the torque tube door up and inboard to get access to the bullnose seal [66].

(b) Put the bullnose seal [66] and the shim [69] in their positions on the inboard flap [1].

(c) Install the bolts [67] and the washers [68] to attach the bullnose seal [66].

(d) Tighten the bolts [67].

(e) Release the torque tube door and let it close.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-11-860-006

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-11-860-007

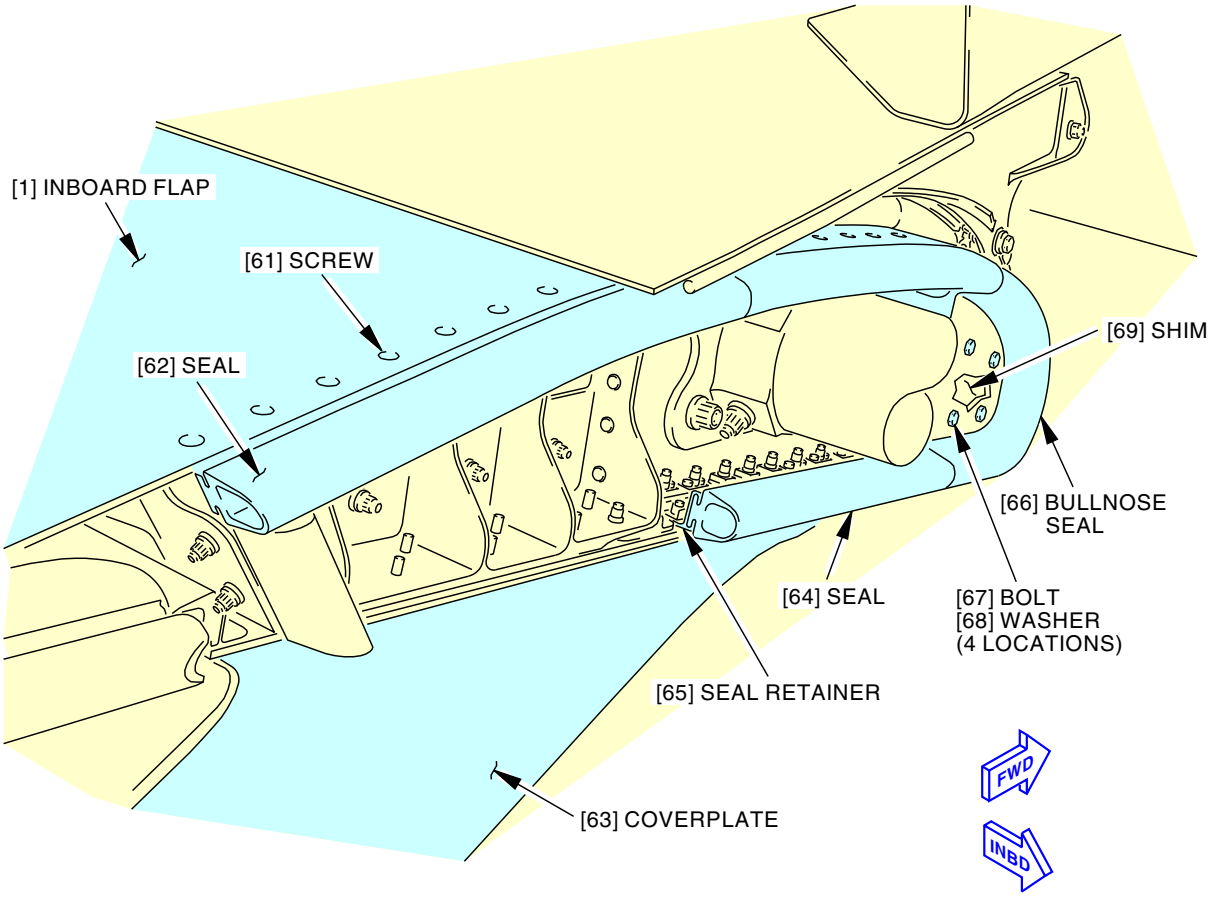
(2) Retract the flaps to the retracted position (TASK 27-51-00-860-804).

SUBTASK 27-51-11-860-008

(3) Do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:
WING-TO-BODY FAIRING NOT SHOWN FOR CLARITY.

2412803 S00061531366_V2

Inboard Trailing Edge Flap Bullnose Seal Installation
Figure 404/27-51-11-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-11-000-803

6. Inboard Trailing Edge Flap Outer Seal Removal

(Figure 405)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

C. Prepare for the Removal

SUBTASK 27-51-11-000-001

(1) Extend the trailing edge flaps to the 15-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-11-000-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

D. Inboard Trailing Edge Flap Outer Seal Removal

WARNING MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

SUBTASK 27-51-11-000-003

(1) If the downlock pins are not installed in the nose and main landing gear, do applicable steps in this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-11-000-004

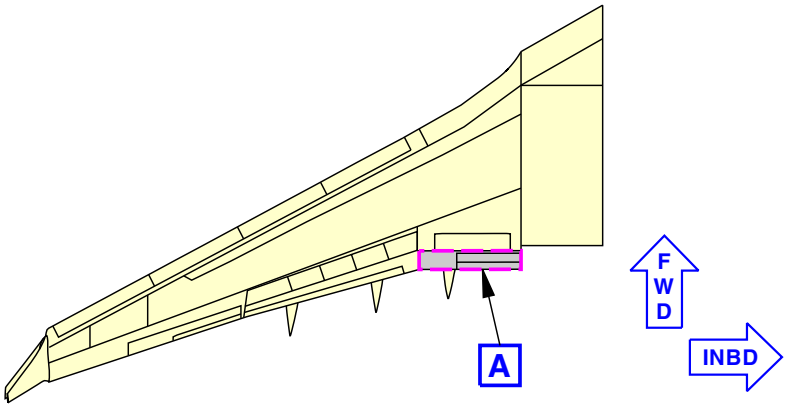
(2) Do these steps to remove the seal [2]:

(a) Remove the screws [3], self align washers [6], washers [4], and nuts [5] that attach the seal [2] to the flap assembly [1].

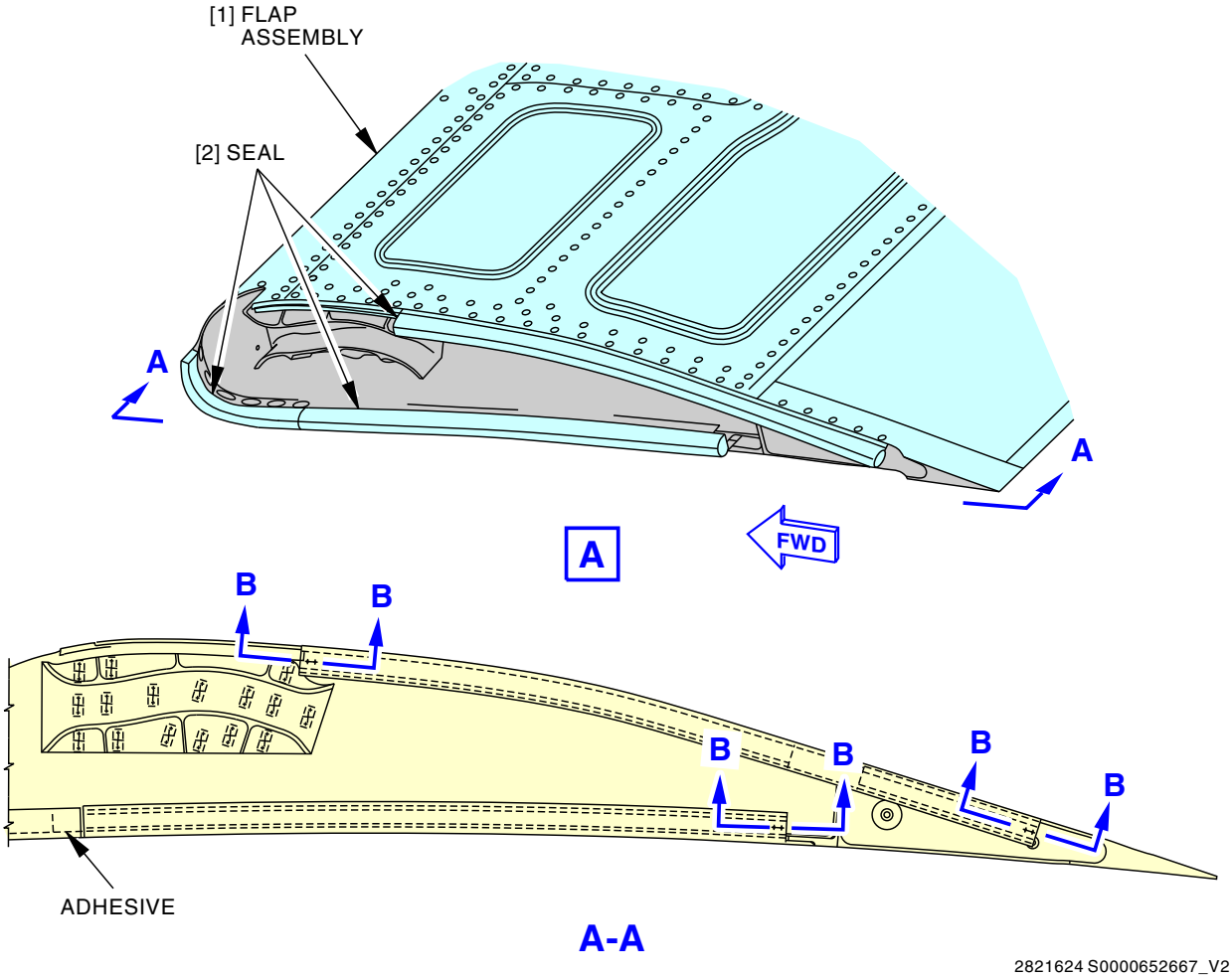
(b) Remove the seal [2] from the flap assembly [1].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT WING IS SHOWN, RIGHT WING IS OPPOSITE)



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Inboard Trailing Edge Flap Outer Seal Installation
Figure 405/27-51-11-990-810 (Sheet 1 of 2)

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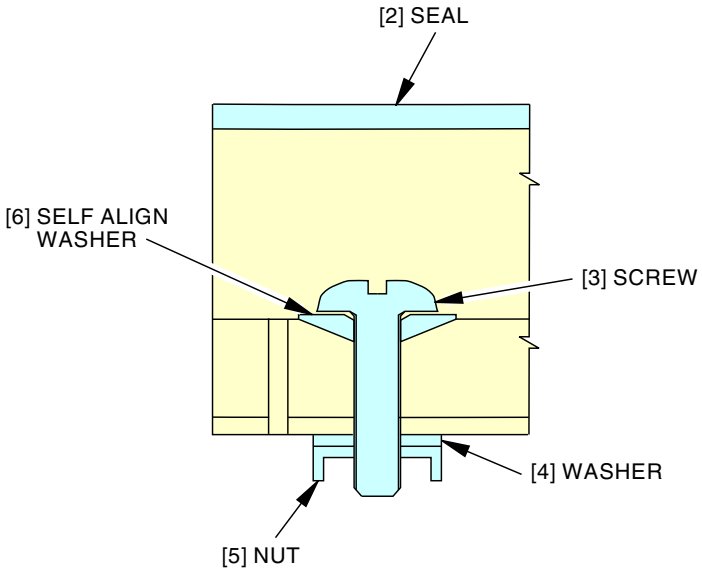

EXAMPLE

B-B

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Inboard Trailing Edge Flap Outer Seal Installation
Figure 405/27-51-11-990-810 (Sheet 2 of 2)

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TASK 27-51-11-400-803

7. Inboard Trailing Edge Flap Outer Seal Installation

(Figure 405)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00027	Adhesive - Silicone Rubber, 1 Part, RTV	BAC5010 Type 60

C. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

D. Inboard Trailing Edge Flap Outer Seal Installation

SUBTASK 27-51-11-400-001

(1) Do these steps to install the seal [2].

(a) Put the seal [2] on the flap assembly [1].

(b) Apply adhesive, A00027, between the forward and lower seals [2].

(c) Install the screws [3], self align washers [6], washers [4] and the nuts [5] that attach the seal [2] to the flap assembly [1].

(d) Tighten the screws [3].

NOTE: Tighten the fastener until the seal [2] starts to visibly compress and clamps to the seal retainer.

E. Put the Airplane Back to Its Condition

SUBTASK 27-51-11-400-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-11-860-019

(2) Retract the flaps to the retracted position (TASK 27-51-00-860-804).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD TRAILING EDGE FLAP - ADJUSTMENT/TEST

1. General

A. This procedure has an adjustment of the inboard trailing edge flap.

B. This procedure includes the adjustment of the main flap with the aft flap either removed or installed.

C. The adjustment instructions included in this procedure are included in the Rigging Diagram - Inbd and Outbd Flaps, Wing Trailing Edge 113A3017.

TASK 27-51-11-820-801

2. Inboard Trailing Edge Flap Adjustment

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-755	Scale - Spring, Push/Pull Type, 0 - 150lbs (0 - 68kg) Capacity

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50375	Kit - Safety Cable, 321 CRES - 0.032 Inch (0.81 mm) Diameter, (Contains both Cable and Ferrule)	BACC13AT3K, AMS 5689

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6

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(Continued)

Zone	Area
653	Right Wing - Inboard Flap

E. Prepare For the Adjustment

SUBTASK 27-51-11-480-006

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 27-51-11-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-010-003

(3) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802 (if required).

SUBTASK 27-51-11-820-004

(4) Make sure the outboard flap [1] is adjusted correctly.

(a) To adjust the outboard flap [1], do this task: Outboard Trailing Edge Flap Adjustment, TASK 27-51-21-820-801.

F. Inboard Trailing Edge Flap Adjustment

NOTE: There is no mismatch, or alignment dimension to the outboard flap, or to fixed structure that the inboard flap is adjusted to meet. The eccentric carriage rollers can be changed from the nominal position to meet lateral trim tolerances.

NOTE: The eccentric bushing is not installed on every inboard flap.

SUBTASK 27-51-11-860-009

(1) Do a check of the adjustment of the deflection roller [12] on the outboard end of the inboard flap [2] (Figure 501):

(a) Manually extend and retract the inboard flap [2] through its full travel (TASK 27-51-00-980-801).

1) While you retract the inboard flap [2], monitor the roller [12] to see if there is preload when it engages the deflection control track [3].

(b) If there is preload when the roller [12] engages the deflection control track [3], then adjust the roller [12]:

1) Manually extend the inboard flap [2] to get access to the roller [12] (TASK 27-51-00-980-801).

2) Remove the bolt [6] and washer [5] that hold the retainer [4] and retainer [13] to the deflection control rib [14].

3) Remove the retainer [13] for the inboard eccentric bushing [10].

4) Remove the pin [7] and loosen the nut [8] on the bolt [11].

5) Turn the inboard eccentric bushing [10] to change the position of the roller [12].

a) Make sure that you do not change the position of the roller [9].

6) Install the retainer [13] for the inboard eccentric bushing [10].

7) Install the bolt [6] and washer [5] that hold the retainer [4] and retainer [13].

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8) Tighten the nut [8] finger tight and install the pin [7].

a) If it is necessary, tighten the nut [8] to the minimum amount necessary to install the pin [7].

SUBTASK 27-51-11-860-010

(2) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

SUBTASK 27-51-11-820-006

(3) Do a check of the adjustment of the aft flap drive rod [17]:

(a) Make sure the trailing edge flaps are in the retracted position.

(b) Install rig pin A/S-8 from the rigging pin kit, SPL-1585, in the rig pin hole [18] in the crankshaft [16].

SUBTASK 27-51-11-820-007

(4) If you cannot install the rig pin, adjust the length of the aft flap drive rod [17]:

(a) Loosen the nuts [15] on the aft flap drive rod [17].

(b) Turn the aft flap drive rod [17] to change the length until you can install the rig pin in the crankshaft [16].

(c) Tighten the nuts [15] on the aft flap drive rod [17].

(d) Install lockwire on the nuts [15].

SUBTASK 27-51-11-080-002

(5) Remove the rig pin A/S-8 rig pin from the crankshaft [16].

SUBTASK 27-51-11-210-004

(6) Do a check of the adjustment of the seals [55] on the inboard end of the inboard flap [2] (Figure 502):

NOTE: These seal compression requirements are not necessary on airplanes with undersize seals [55] installed on the inboard end of the inboard flap [2].

(a) With the trailing edge flaps retracted, make sure the seals [55] on the inboard end of the inboard flap [2] do not contact the wing-to-body fairing [56].

(b) Extend the trailing edge flaps to the 40-unit position:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(c) With the trailing edge flaps extended, make sure the seals [55] on the inboard end of the inboard flap [2] do not contact the wing-to-body fairing [56].

SUBTASK 27-51-11-820-008

(7) Do this procedure to adjust the applicable seal [55] (Figure 502):

(a) Loosen the screws [67] that attach the seal [55] and the seal retainer [68] to the inboard inboard flap [2].

(b) Adjust the position of the seal [55] and the seal retainer [68] outboard, relative to the airplane.

1) Make sure you move the seal [55] and the seal retainer [68] together as a unit.

(c) Take gap measurements on both inboard flap inboard ends, at these locations:

1) Aft end of the upper forward seal retainer.

2) Forward end of the upper forward seal retainer.

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3) Forward end of the lower seal retainer.

(d) Use these measurements to find which side of the airplane has the smallest gaps at the measured locations from the wing-to-body fairing.

(e) Tighten the screws [67] for the retainer assemblies on the flap with the smallest measured gaps.

(f) If the measurement between a given left-right pair is not within 0.10 in. (2.54 mm), or the gaps between the seals and wing-to-body fairing are less than 0.3 in. (7.6 mm), adjust the seals until the symmetry and gap requirements are met, or until the maximum adjustment limit is reached.

(g) Tighten the screws [67].

(h) Apply sealant, A00247, to the inboard side of the seal retainer [68] and the threads of the screws [67].

SUBTASK 27-51-11-860-011

(8) Retract the trailing edge flaps:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the flaps to the retracted position (TASK 27-51-00-860-804).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-820-009

(9) Do this procedure to adjust the coverplate [63] to the wing-to-body fairing panels (Figure 502):

(a) Make sure that the clearance between the coverplate [63] and the wing-to-body fairing is 0.1000 +0.1200 / -0.0000 in. (2.5400 +3.0480 / -0.0000 mm).

NOTE: This distance is referred to as dimension C.

(b) If the measurement between the coverplate [63] and the wing-to-body fairing is not within the tolerance, then adjust the coverplate [63]:

1) Loosen the screws that attach the coverplate [63] to the lower surface of the inboard flap.

2) Apply sealant, A00247, to both sides of the coverplate [63] in the area of the attach screws.

3) Adjust the position of the coverplate [63].

4) Apply the sealant, A00247, in the slots before you install the screws.

5) Tighten the screws.

6) Fill and fair the exposed slots if and as required with the sealant, A00247.

NOTE: The gap between the coverplate [63] and the wing-to-body fairing in the flaps retracted position should not be less than 0.1000 in. (2.54 mm), but can be increased up to 0.2200 in. (5.59 mm) if required for the coverplate [63] to clear the wing-to-body fairing panels by at least 0.0200 in. (0.508 mm) in the flaps extended position.

SUBTASK 27-51-11-210-005

(10) On airplanes with the seal [62] on the wing to body fairing, do these steps:

(a) Make sure the seals [62] on the wing-to-body fairing [56] touch the coverplate [63] on the inboard end of the inboard flap [2].

1) If the seal [62] does not touch the coverplate [63], then adjust the applicable seal [62]:

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a) Loosen the screws [61] that attach the seal [62] and the seal retainer [60] to the wing-to-body fairing [56].

b) Adjust the position of the seal [62] and the seal retainer [60].

<1> Make sure that you move the seal [62] and the seal retainer [60] together as a unit.

c) Tighten the screws [61].

d) Apply sealant, A00247, to smooth the area around the retainer.

SUBTASK 27-51-11-820-010

(11) Do a check of the clearance at the aft flap seal [69]:

(a) At the aft end of the seal retainer [70], measure the distance between the base of the seal retainer [70] and the wing-to-body fairing [56].

NOTE: This distance is referred to as dimension A.

(b) Make sure the aft flap seal [69] is the correct part for the actual dimension A (Table 501).

Table 501/27-51-11-993-801

Dimension A Inches (mm)	Aft Flap Seal Part Number
Less Than 1.05 in. (26.7 mm)	113A2700-29
1.05 in. (26.7 mm) to 1.45 in. (36.8 mm)	113A3172-56
More Than 1.45 in. (36.8 mm)	113A3172-57

(c) If the aft flap seal [69] is not the correct part number, then replace the aft flap seal with the correct part:

1) Remove the lockwire from the ends of the aft flap seal [69].

2) Remove the aft flap seal [69] from the seal retainer [70].

3) Put the new aft flap seal [69] in the seal retainer [70].

4) Install lockwire on the ends of the aft flap seal [69].

SUBTASK 27-51-11-860-012

(12) Extend the trailing edge flaps:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-210-006

(13) With the flaps fully extended, make sure the full surface of the spring assembly [66] on the inboard carriage [59] touches the door [58] on the wing-to-body fairing [56] and that it holds the door closed.

SUBTASK 27-51-11-820-011

(14) If the spring assembly [66] does not touch the door [58], or hold it closed, adjust the position of the spring assembly [66]:

(a) Loosen the bolts [64] and bolt [65] that hold the spring assembly in its position.

(b) Move the spring assembly [66] until it touches the door [58].

(c) Apply a 5 lbf (22.24 N) force with a spring scale, STD-755, against the end of the spring assembly [66] to push it up against the door [58].

(d) Make sure the spring assembly [66] is flat against the adjacent surface of the door [58].

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(e) Tighten the bolts [64] and bolt [65].

SUBTASK 27-51-11-860-013

(15) Retract the trailing edge flaps:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the flaps to the retracted position (TASK 27-51-00-860-804).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-11-220-001

(16) Do a check of the adjustment of the seals between the inboard and outboard flaps (View A-A, Figure 502):

(a) Measure the distance between the lower skin of the outboard flap [1] and the inboard flap [2].

NOTE: This distance is referred to as Dimension B.

(b) Extend the trailing edge flaps:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(c) Measure the distance the outboard flap seal [51] extends past the skin of the outboard flap [1].

1) The distance the outboard flap seal extends should be Dimension B minus 0.75 in. (19.05 mm).

(d) Measure the distance the inboard flap seal [52] extends past the skin of the inboard flap [2].

1) The distance the outboard flap seal extends should be Dimension B minus 0.70 in. (17.78 mm).

SUBTASK 27-51-11-820-012

(17) If the inboard flap seal [52] and the outboard flap seal [51] are not in the correct position, then adjust the seals (View A-A, Figure 502):

(a) Adjust the outboard flap seal [51]:

1) Loosen the screws [54] that attach the seal retainer for the outboard flap seal [51] to the outboard flap [1].

2) Adjust the position of the seal retainer for the outboard flap seal [51].

3) Tighten the screws [54].

4) Make sure the outboard flap seal [51] extends Dimension B minus 0.75 in. (19.05 mm) from the edge of the outboard flap skin.

(b) Adjust the inboard flap seal [52]:

1) Loosen the screws [53] that attach the seal retainer for the inboard flap seal [52] to the inboard flap [2].

2) Adjust the position of the seal retainer for the inboard flap seal [52].

3) Tighten the screws [53].

4) Make sure the inboard flap seal [52] extends Dimension B minus 0.70 in. (17.78 mm) from the edge of the inboard flap skin.

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SUBTASK 27-51-11-860-014

(18) Retract the trailing edge flaps:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Inboard Fixed Panel Adjustment

SUBTASK 27-51-11-860-015

(1) Make sure the flap is in the retracted position.

SUBTASK 27-51-11-220-002

(2) Measure the mismatch between the fixed lower panels [85] and the lower surface of the inboard flap [2] (Figure 503).

SUBTASK 27-51-11-820-013

(3) If the mismatch is not in the limit of 0.00 ±0.06 in. (0.00 ±1.52 mm), adjust the applicable fixed lower panel [85] (Figure 504):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to get access to the rods for the fixed lower panels [85] (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Adjust the position of the outboard fixed lower panel [93]:

1) Loosen the nuts [91] on the rod [92], rod [94], rod [95] and rod [98].

2) Adjust the length of the rod [92], rod [94], rod [95] and rod [98].

3) Tighten the nuts [91] on the rod [92], rod [94], rod [95] and rod [98].

(e) Adjust the position of the fixed lower panel [107]:

1) Remove the nuts [105], washers [104], washers [103] and bolts [102] that attach the rod [106] to the fixed lower panel [107].

2) Adjust the length of the rods [106].

3) Install the bolts [102], washers [103], washers [104] and nuts [105] to attach the rods [106] to the fixed lower panel [107].

4) Install lockwire on the nuts [91].

(f) Adjust the position of the beam assembly [100]:

NOTE: The beam assembly [100] is between panel [107] and panel [101].

1) Loosen the nuts [91] on the rod [99].

2) Adjust the length of the rod [99].

3) Tighten the nuts [91] on the rod [99].

4) Install lockwire on the nuts [91].

(g) Adjust the position of the inboard fixed lower panel [101]:

1) Adjust the rods [111] on the inboard end of the fixed lower panel [101]:

a) Remove the nut [115], washer [114], washer [113] and bolt [112] that attach the rods [111] to the fixed lower panel [101].

b) Adjust the length of the rods [111].

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c) Install the bolt [112], washer [113], washer [114] and nut [115] to attach the rods [111] to the fixed lower panel [101].

d) Install lockwire on the nut [91].

2) Adjust the rod [108], rod [109] and rod [110] for the fixed lower panel [101]:

a) Loosen the nuts [91] on the rod [108], rod [109] and rod [110].

b) Adjust the length of the rod [108], rod [109] and rod [110].

c) Tighten the nuts [91] on the rod [108], rod [109] and rod [110].

d) Install lockwire on the nuts [91].

(h) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(i) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

(j) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(k) Make sure the mismatch between the fixed lower panels and the lower surface of the inboard flap [2] is in the limits.

SUBTASK 27-51-11-220-003

(4) Do a check of the adjustment of the blade seals [84] on the fixed lower panels [85] (Figure 503):

(a) Measure the distance between the lower surface of the inboard flap [2] and the blade seal [84].

SUBTASK 27-51-11-820-014

(5) If the distance between the inboard flap [2] and the blade seal [84] is not in the limit of 0.00 ±0.03 in. (0.00 ±0.76 mm), then adjust the position of the blade seal [84]:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to get access to the fasteners for the seal retainers [83] (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Loosen the screws [82] that attach the seal retainers [83] to the fixed lower panel [85].

(e) Move the seal retainers [83] to the correct position.

1) Make sure that you move the blade seal [84] and the seal retainer [83] together as a unit.

(f) Tighten the screws [82] that attach the seal retainers [83].

(g) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(h) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

(i) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(j) Make sure the distance between the inboard flap [2] and the blade seal [84] is in the limit.

SUBTASK 27-51-11-820-015

(6) Do a check of the adjustment of the bulb seals [81] on the fixed lower panels [85] (Figure 504):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to get access bulb seals [81] on the fixed lower panels [85] (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Measure the distance from the aft end of the blade seal [84] to the aft end of the bulb seal [81].

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(e) If the distance between the blade seal [84] and the bulb seal [81] is not in the limit of 1.428 ±0.060 in. (36.271 ±1.524 mm), adjust the position of the bulb seal [81]:

1) Loosen the screws [82] that attach the bulb seal retainer [83].

2) Adjust the position of the bulb seal [81] and the seal retainer [83].

a) Make sure that you move the bulb seal [81] and the seal retainer [83] together as a unit.

3) Tighten the screws [82].

SUBTASK 27-51-11-410-003

(7) Measure the gap between the fixed upper panel, outboard of spoiler #6 on the left wing or spoiler #7 on the right wing, and the upper surface of the inboard flap [2].

(8) If the gap between the panel trailing edge and the flap upper surface is not within 0.005 in. (0.127 mm) to 0.100 in. (2.540 mm), adjust the upper panel (Figure 503):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

1) Extend the inboard trailing edge flaps to get access to the turnbuckle rod [92], rod [94], rod [95], rod [98] and rod [99] for the fixed upper panels (TASK 27-51-00-860-803).

2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(b) Loosen the two fasteners common to the serrated plates.

(c) Remove the existing safety device wires.

(d) Loosen the lower panel turnbuckle rods common to the upper panel support beam.

(e) Loosen the bolt [118], washer [119], washers [120], washer [121] and nut [122] at each end of the upper panel turnbuckle rod assembly.

1) Add washers [120] as required to achieve a maximum gap of 0.03 in. (0.76 mm) before clamp-up.

2) Make sure that there is a minimum of one washer per side.

(f) Adjust the turnbuckle rods and serrated plates to set the gap between the panel trailing edge and the flap upper surface to within 0.005 in. (0.127 mm) to 0.100 in. (2.540 mm) (Figure 503).

1) Make sure that the threads are visible through the turnbuckle rod inspection hole.

(g) Retighten all fasteners loosened or removed.

(h) Install the safety cable kit, G50375, to the turnbuckle rods as necessary.

SUBTASK 27-51-11-410-004

(9) Do the following steps to adjust the upper fixed trailing edge panel inboard of spoiler #6 on the left wing or spoiler #7 on the right wing:

(a) Loosen the fasteners at each end of the upper turnbuckle rod assembly.

(b) Loosen the fasteners at the panel attach lug.

(c) Remove the existing safety device wires.

(d) Loosen the jam nuts on either end of the turnbuckles.

(e) Adjust the turnbuckle rods to set the gap between the panel trailing edge and the flap upper surface to within 0.005 in. (0.127 mm) to 0.100 in. (2.540 mm) (Figure 503).

(f) Tighten the jam nuts on either end of the turnbuckle rods.

1) Install safety cable kit, G50375, on both ends of the turnbuckle rod.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Tighten the fasteners at the panel attach lugs and at each end of the upper panel turnbuckle rod assemblies.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-11-410-005

(1) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-11-440-002

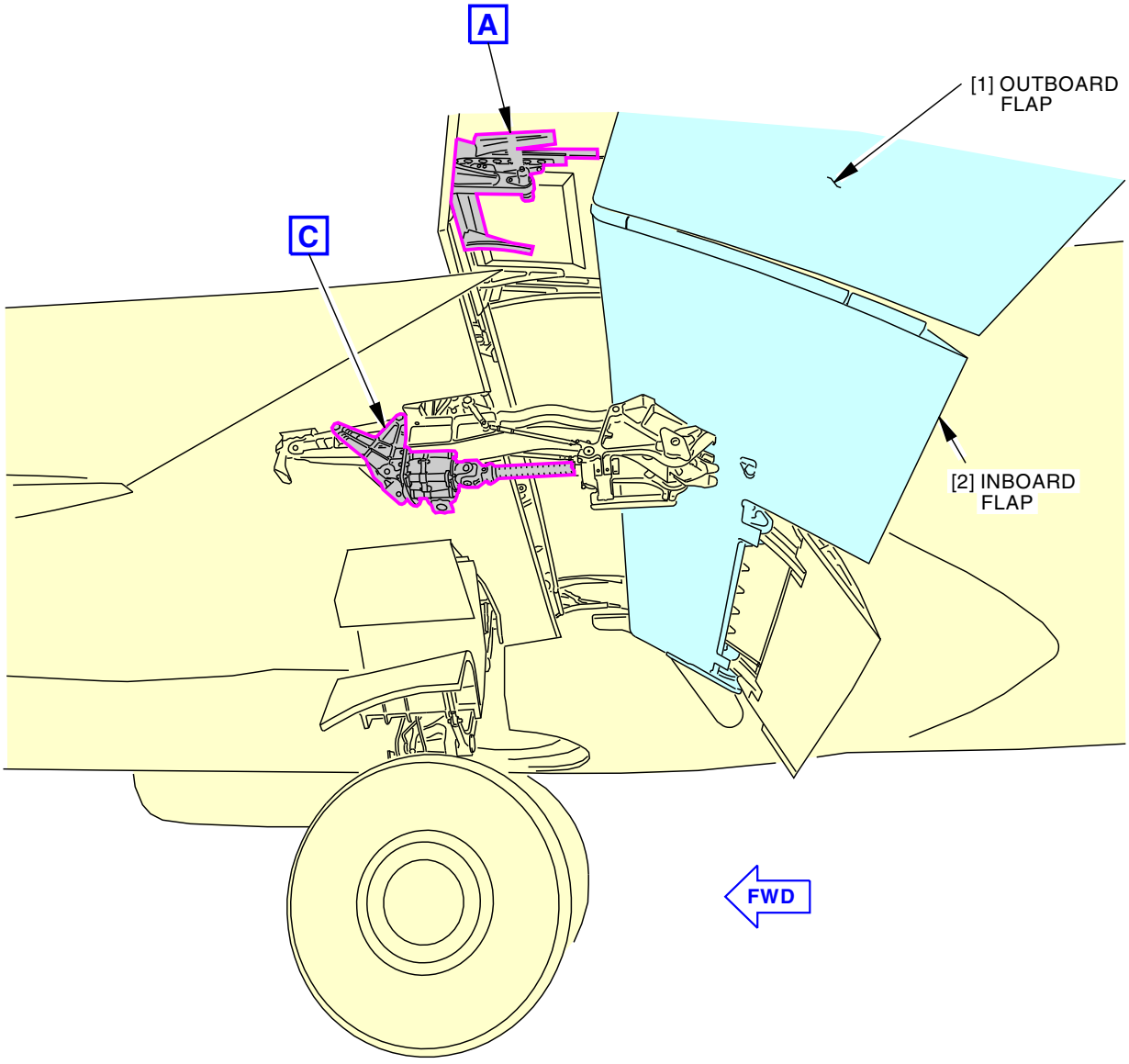
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-11-860-016

(3) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

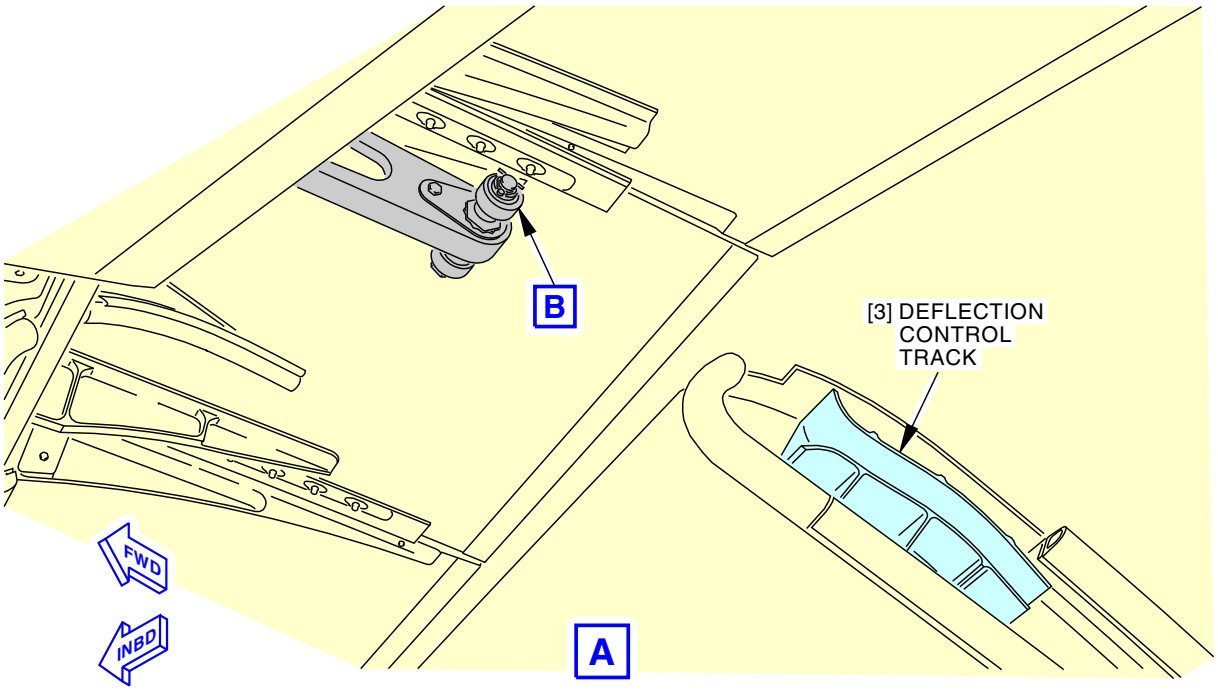


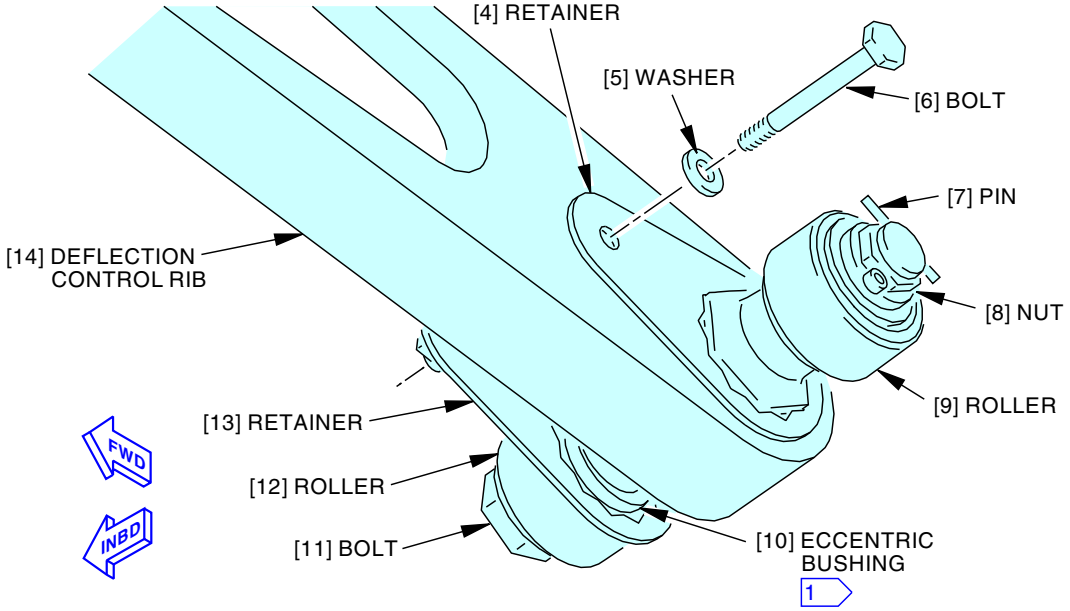
1 IF INSTALLED

2412804 S00061531369_V2

Inboard Trailing Edge Flap Adjustment
Figure 501/27-51-11-990-805 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





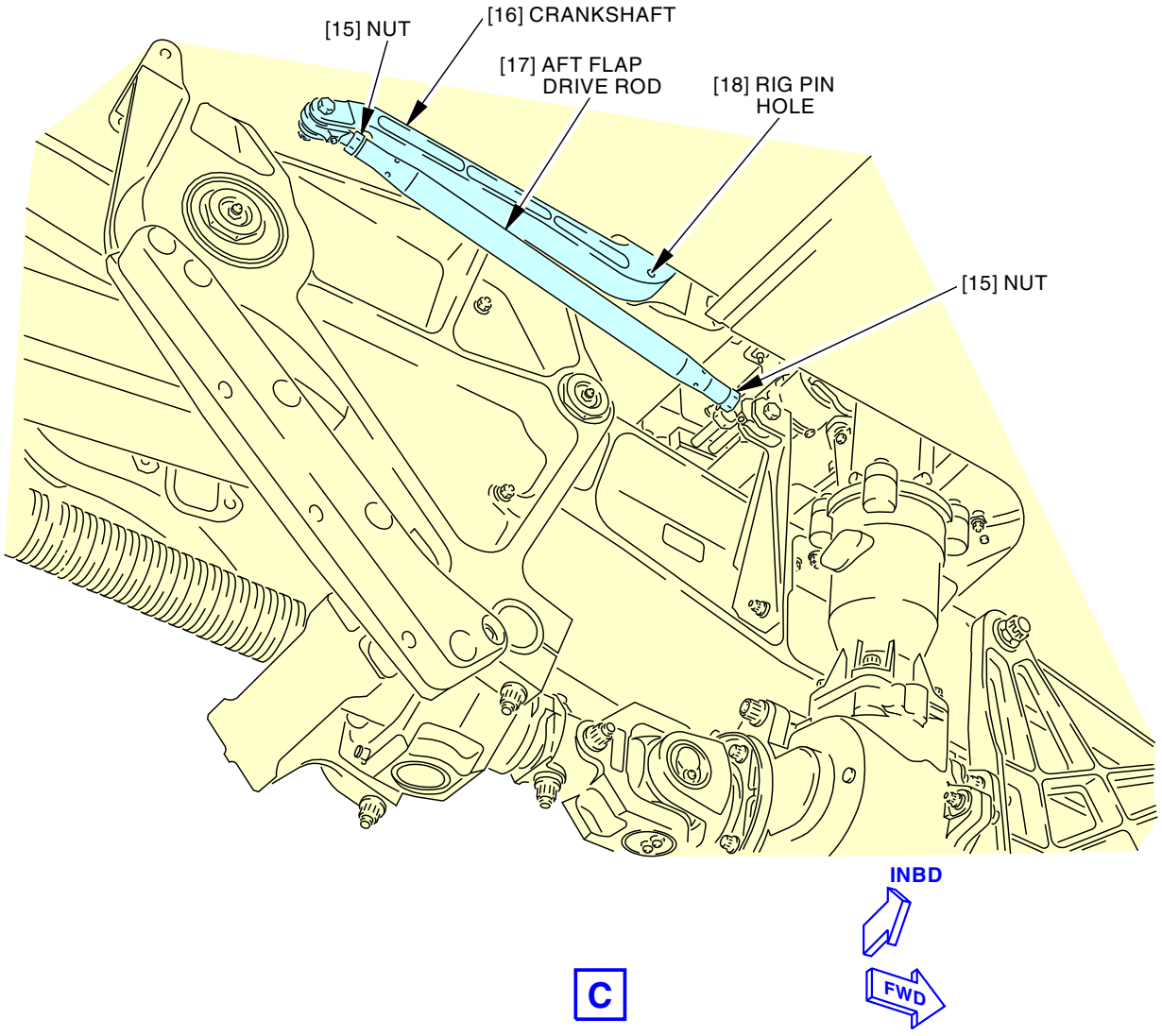
DEFLECTION CONTROL ROLLERS

B

2412805 S00061531370_V1

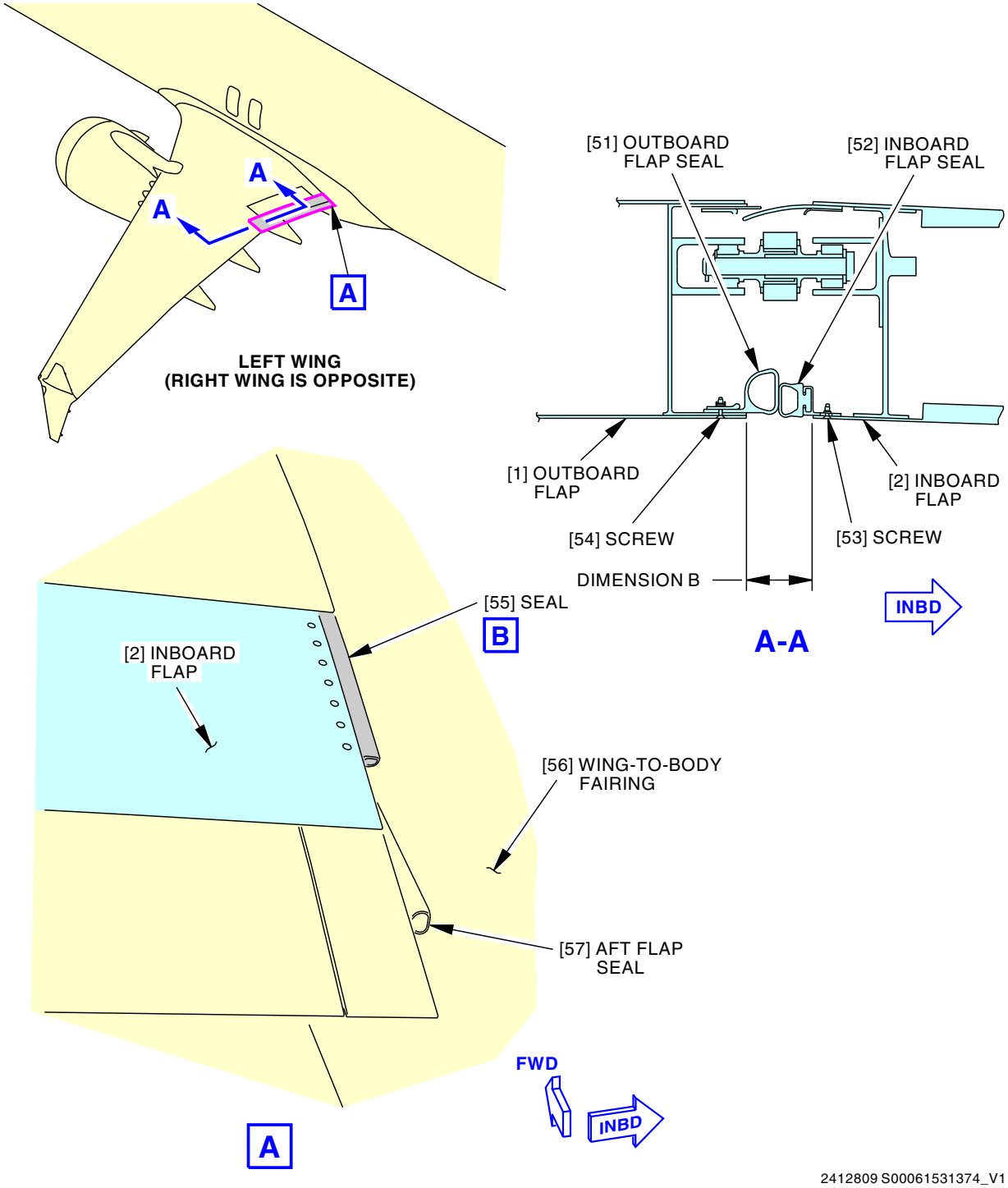
Inboard Trailing Edge Flap Adjustment
Figure 501/27-51-11-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



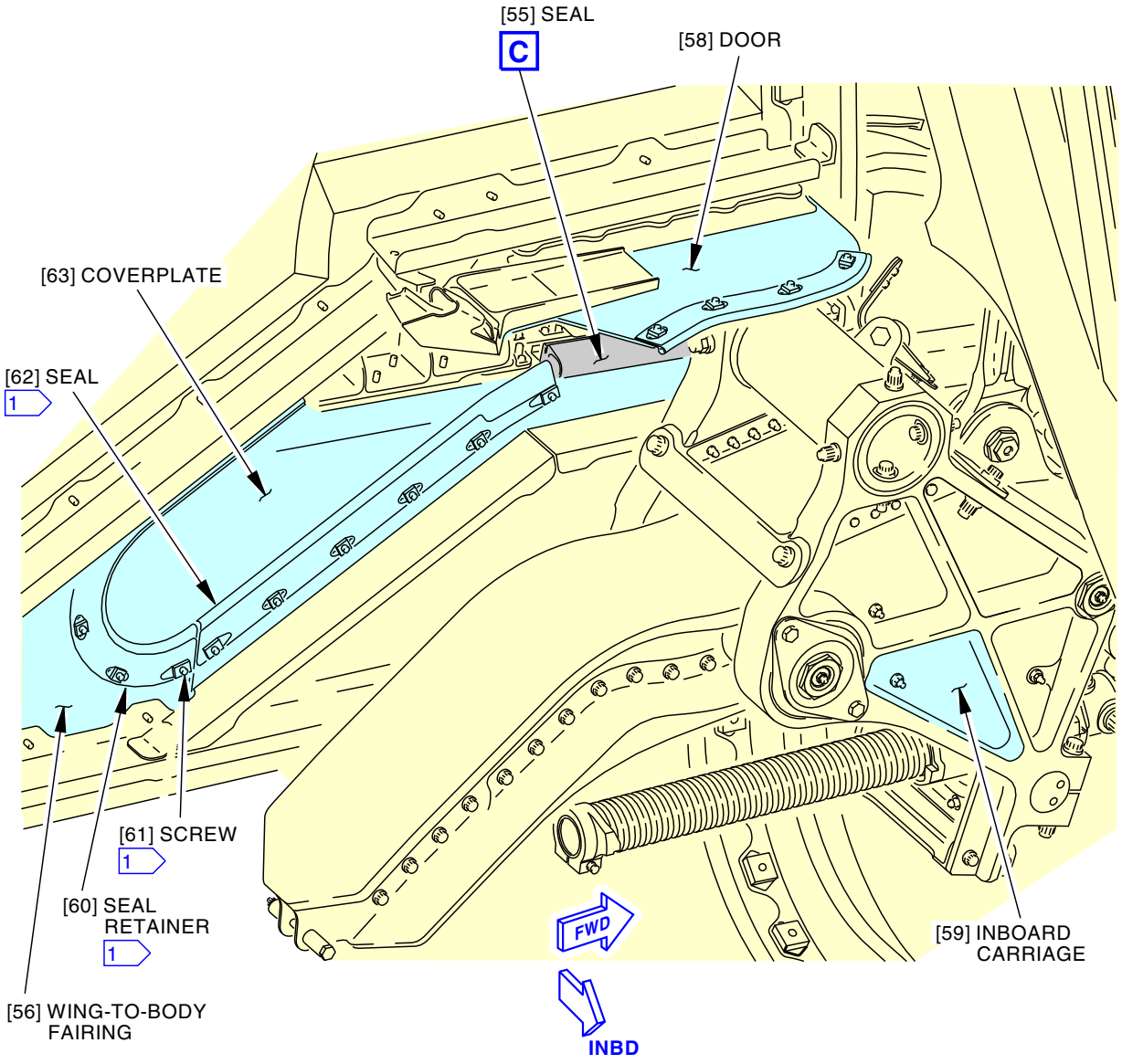
Inboard Trailing Edge Flap Adjustment
Figure 501/27-51-11-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



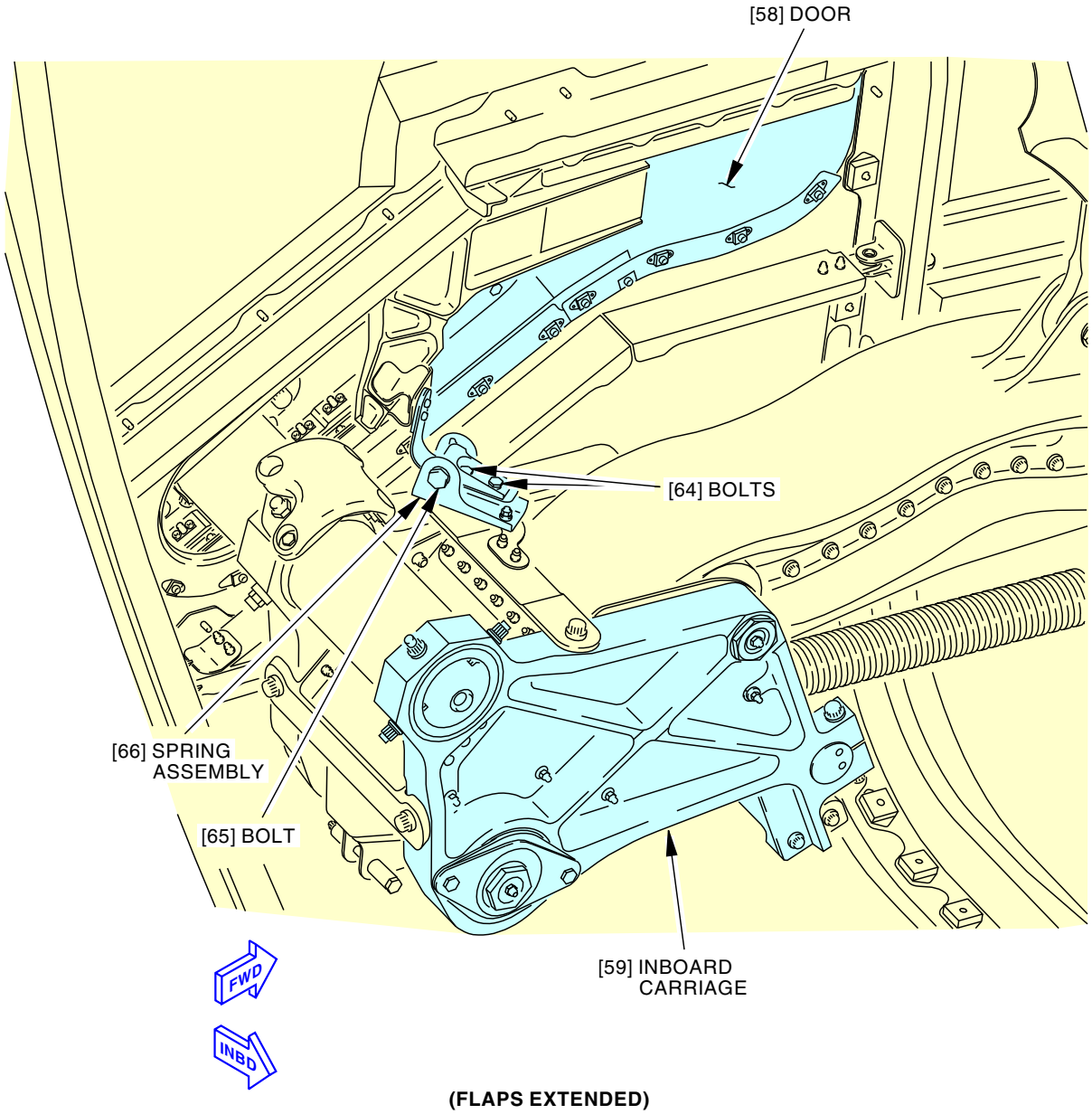
Inboard Flap Seal Adjustment
Figure 502/27-51-11-990-806 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



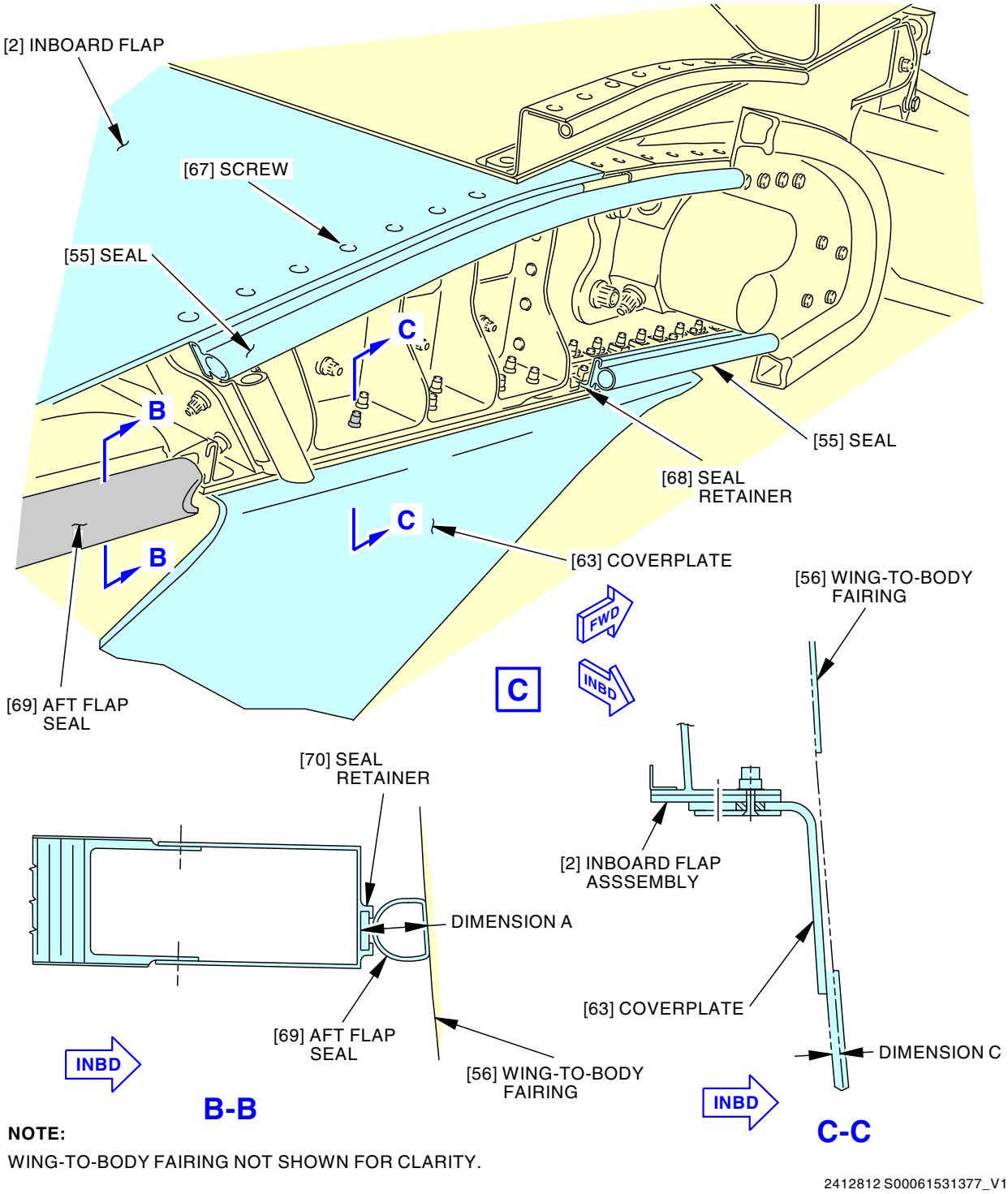
Inboard Flap Seal Adjustment
Figure 502/27-51-11-990-806 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Seal Adjustment
Figure 502/27-51-11-990-806 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



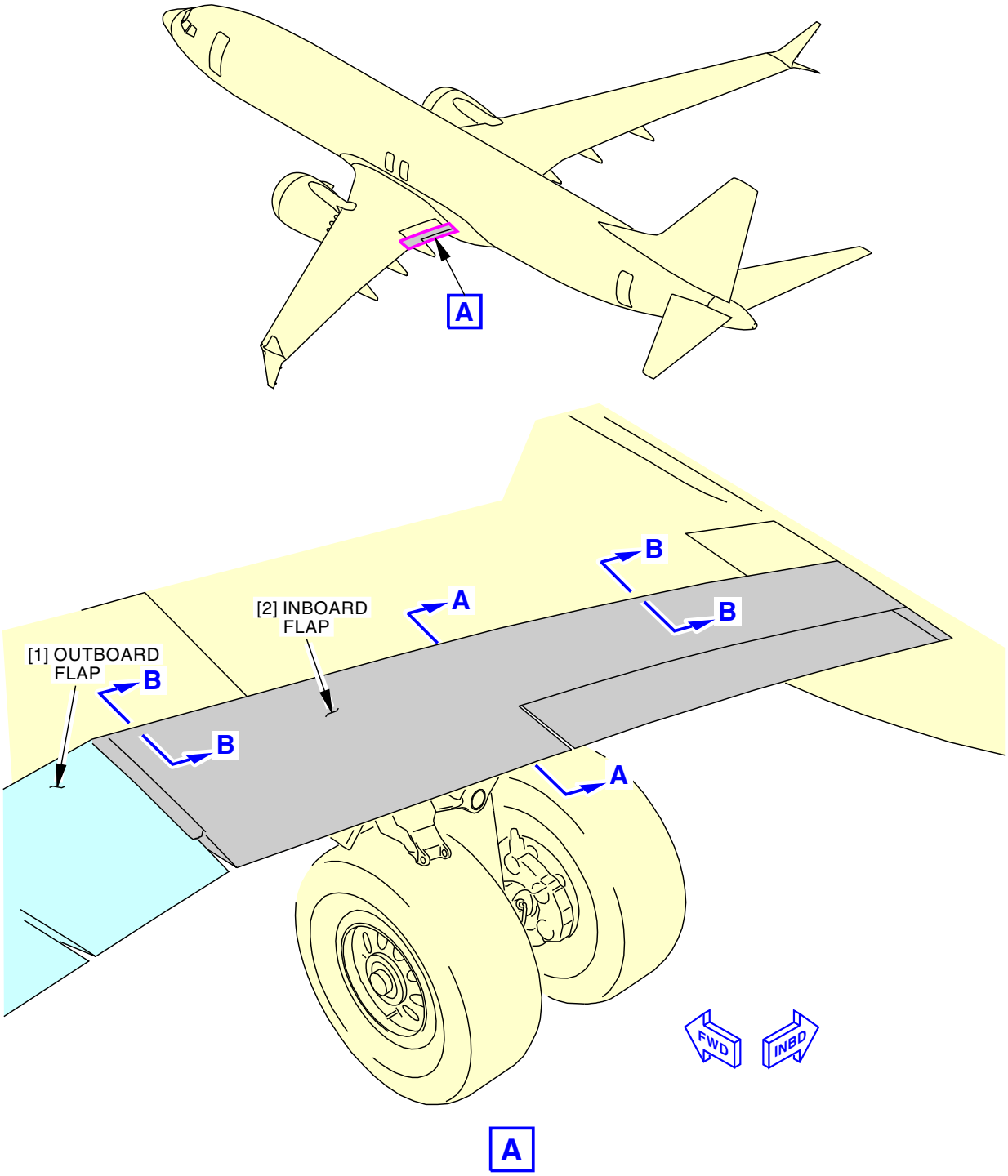
NOTE:

WING-TO-BODY FAIRING NOT SHOWN FOR CLARITY.

2412812 S00061531377_V1

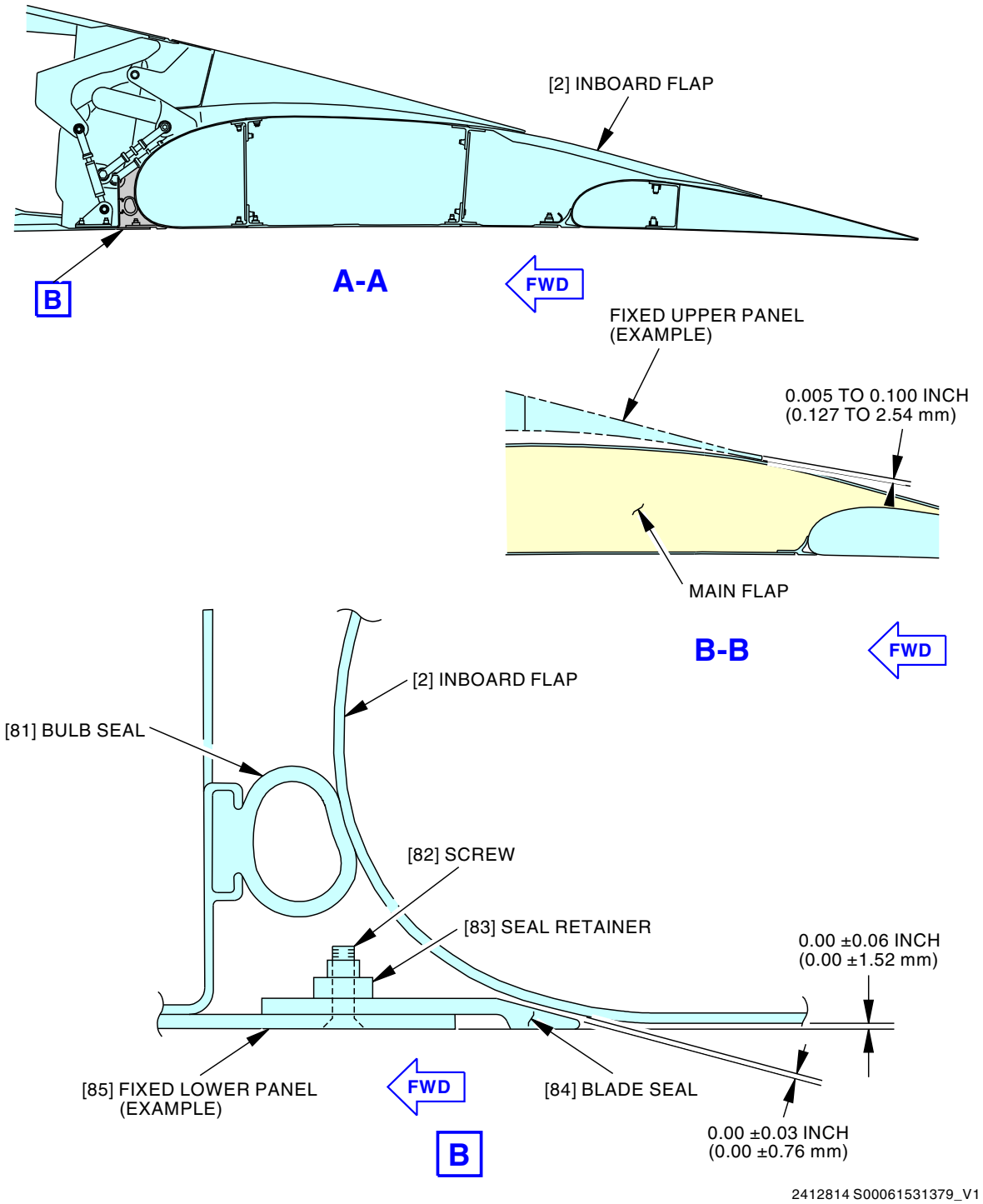
Inboard Flap Seal Adjustment
Figure 502/27-51-11-990-806 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



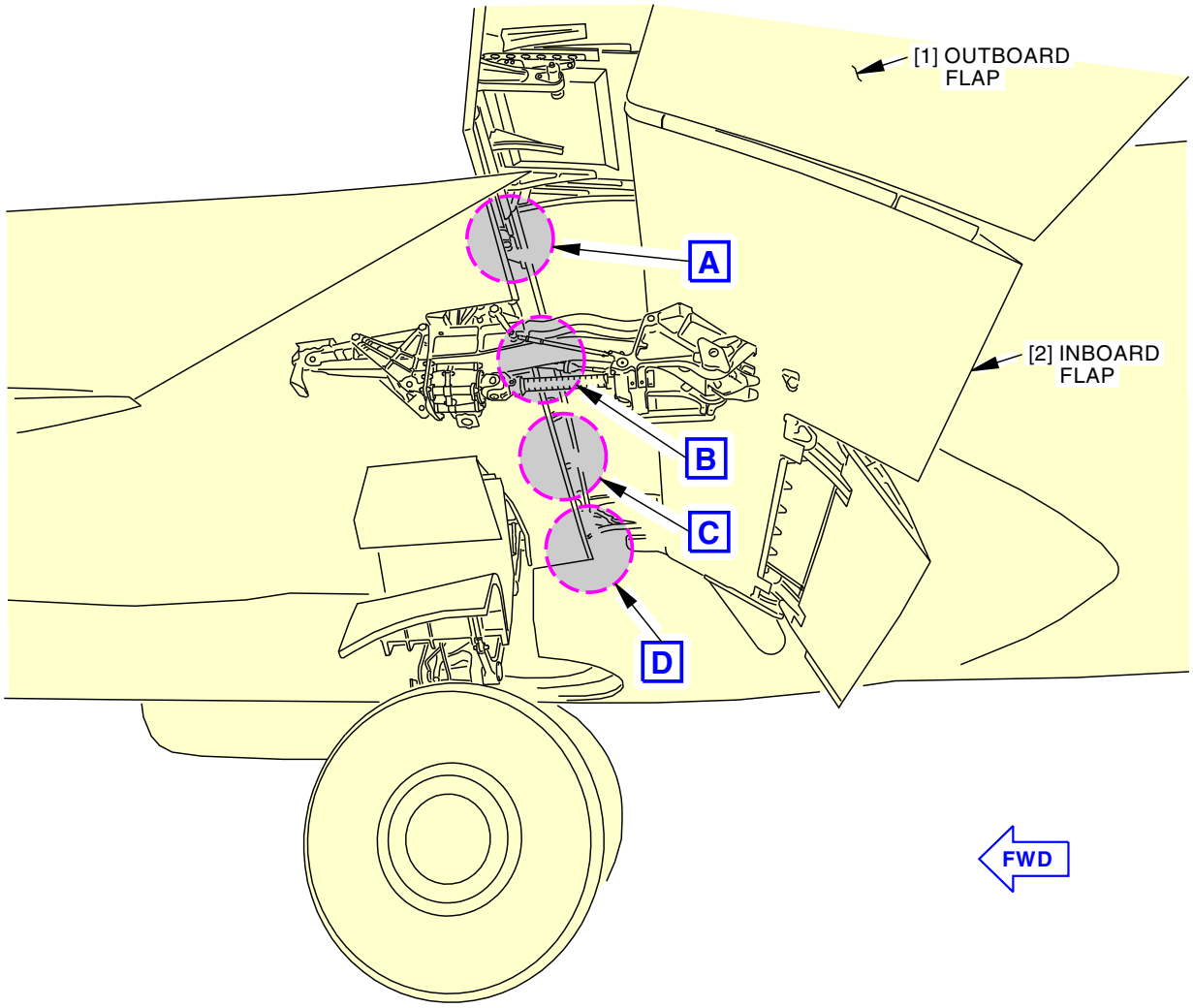
Inboard Trailing Edge Flap Clearances
Figure 503/27-51-11-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Trailing Edge Flap Clearances
Figure 503/27-51-11-990-807 (Sheet 2 of 2)

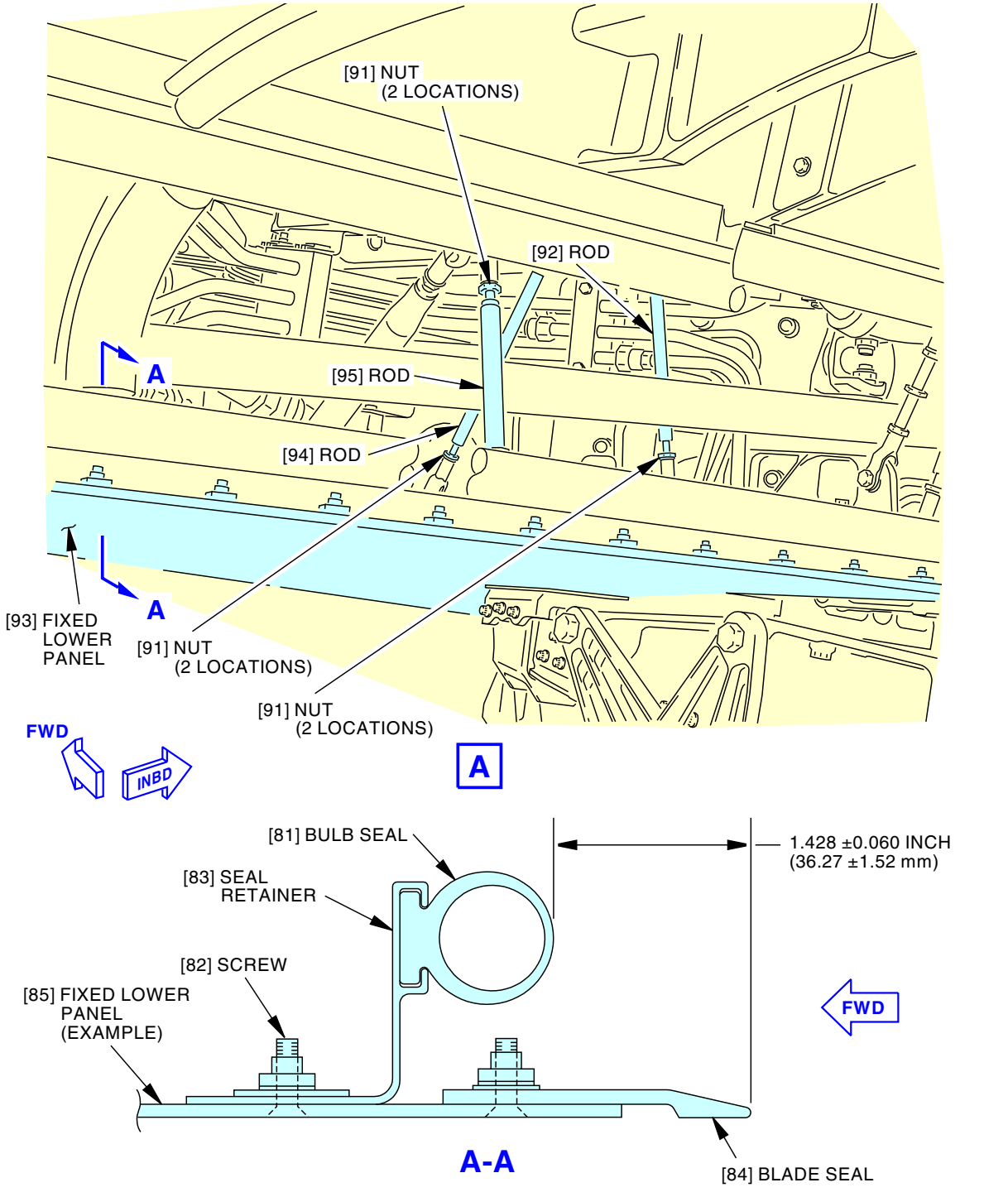
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412815 S00061531380_V1

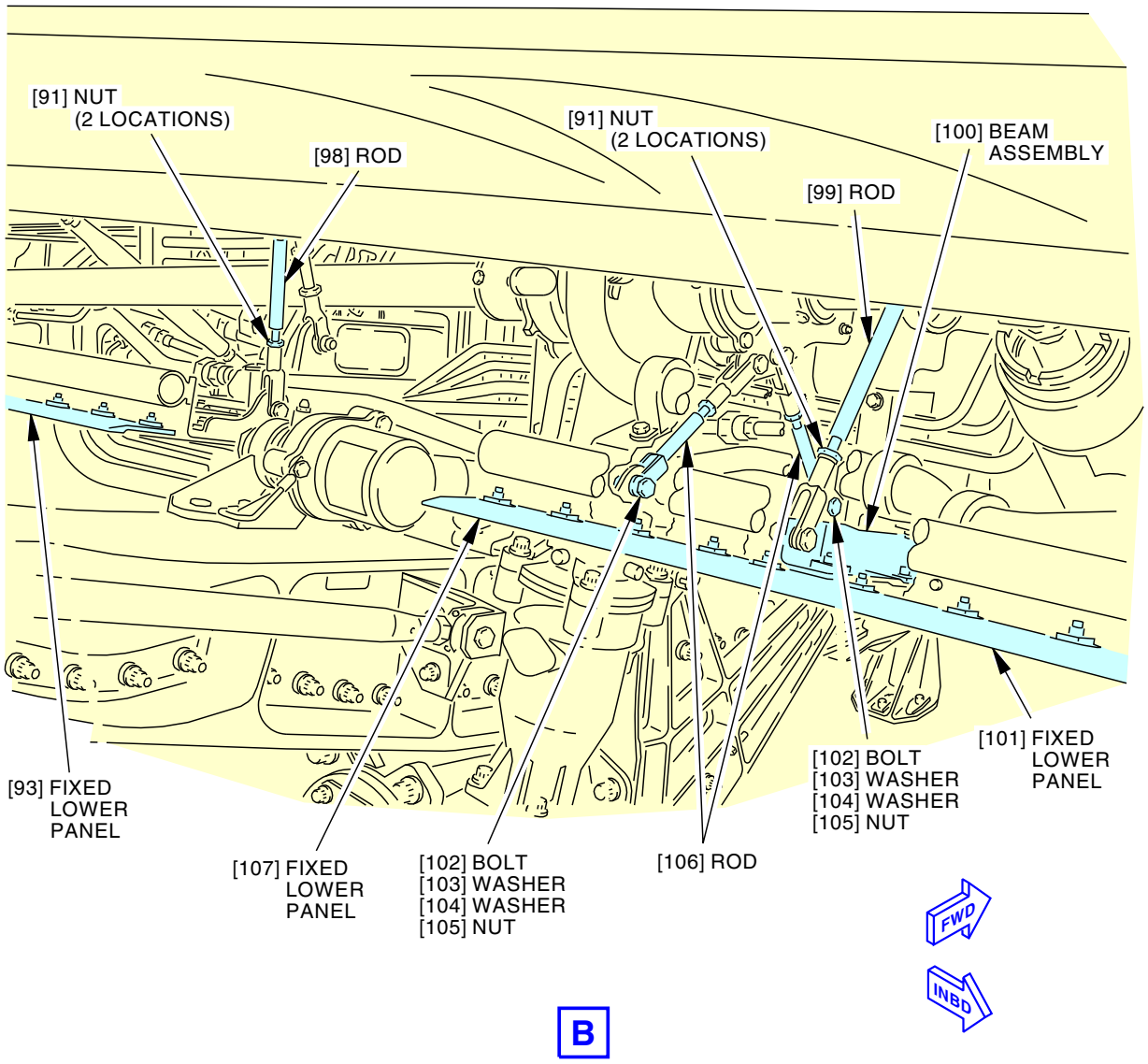
Inboard Fixed Panel Adjustment
Figure 504/27-51-11-990-808 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



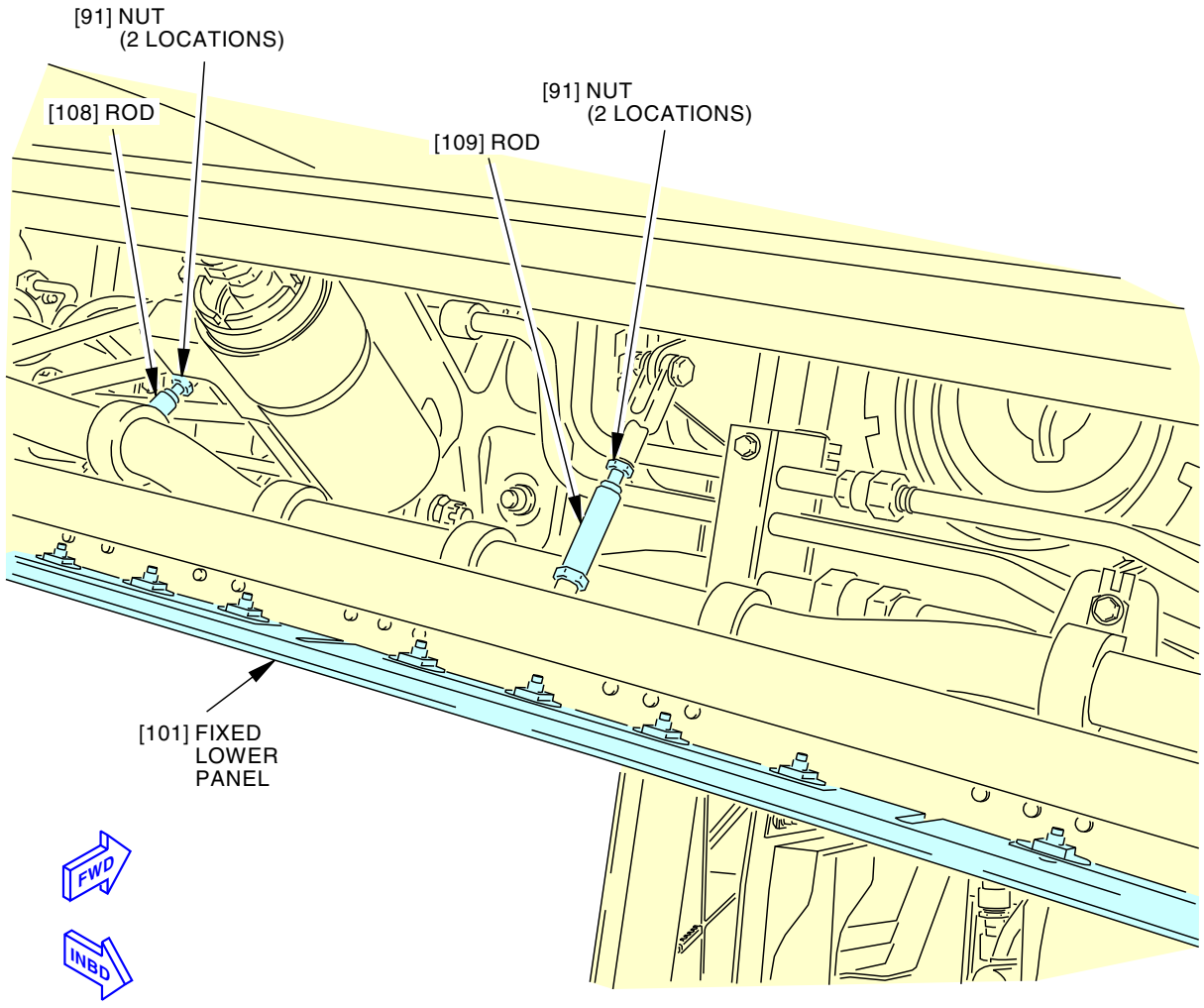
Inboard Fixed Panel Adjustment
Figure 504/27-51-11-990-808 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Fixed Panel Adjustment
Figure 504/27-51-11-990-808 (Sheet 3 of 5)

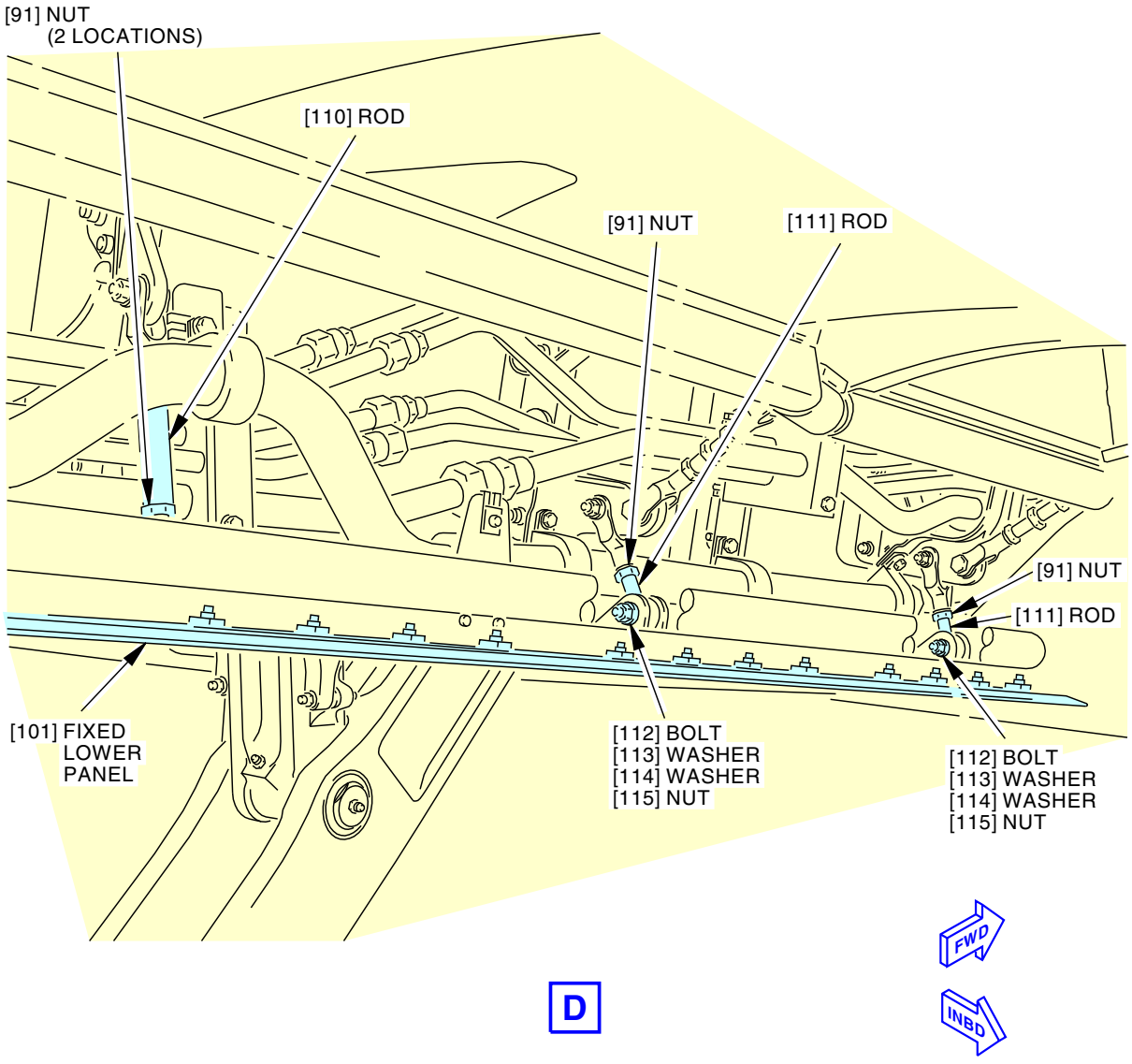
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412818 S00061531383_V1

Inboard Fixed Panel Adjustment
Figure 504/27-51-11-990-808 (Sheet 4 of 5)

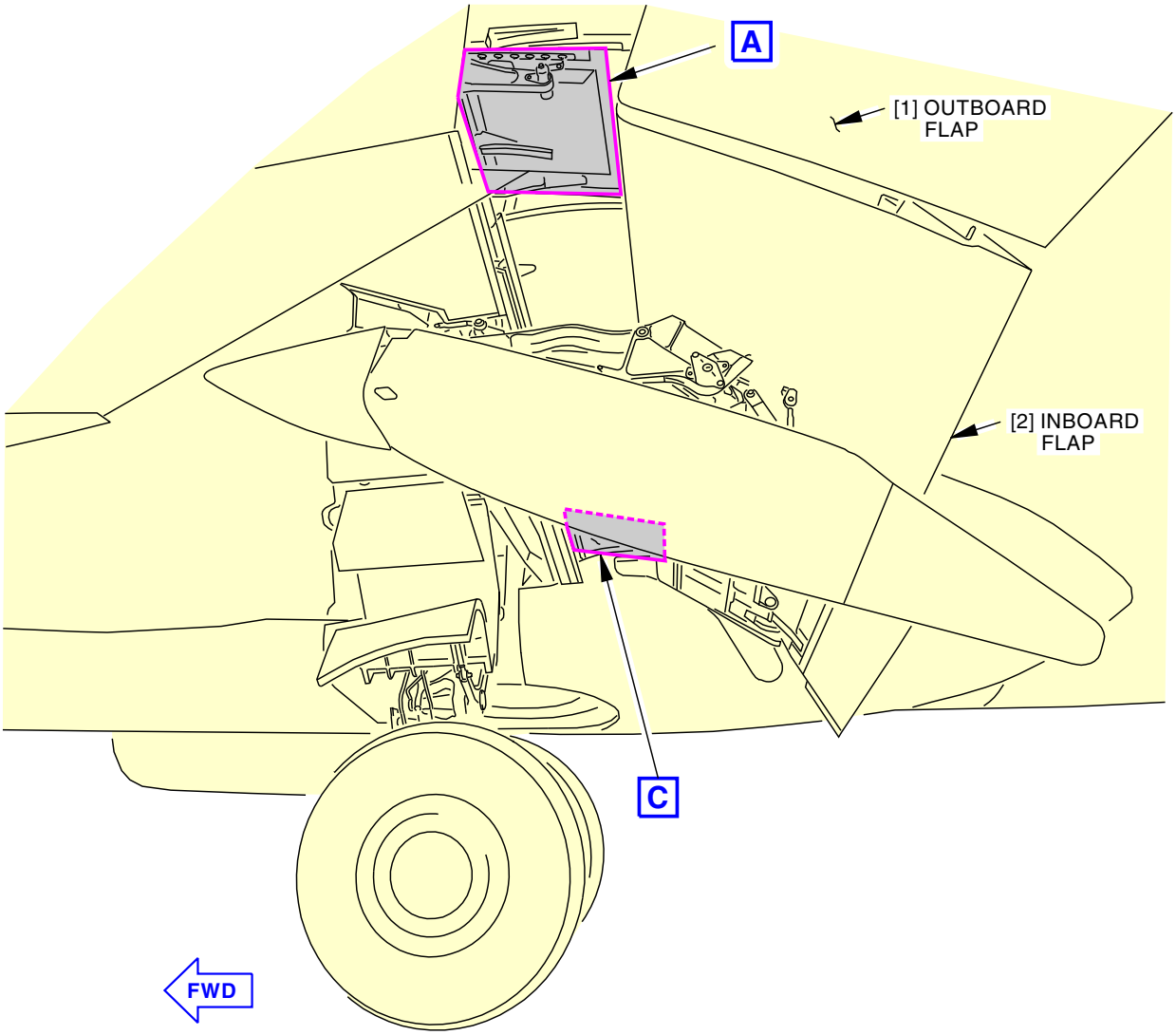
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412819 S00061531384_V1

Inboard Fixed Panel Adjustment
Figure 504/27-51-11-990-808 (Sheet 5 of 5)

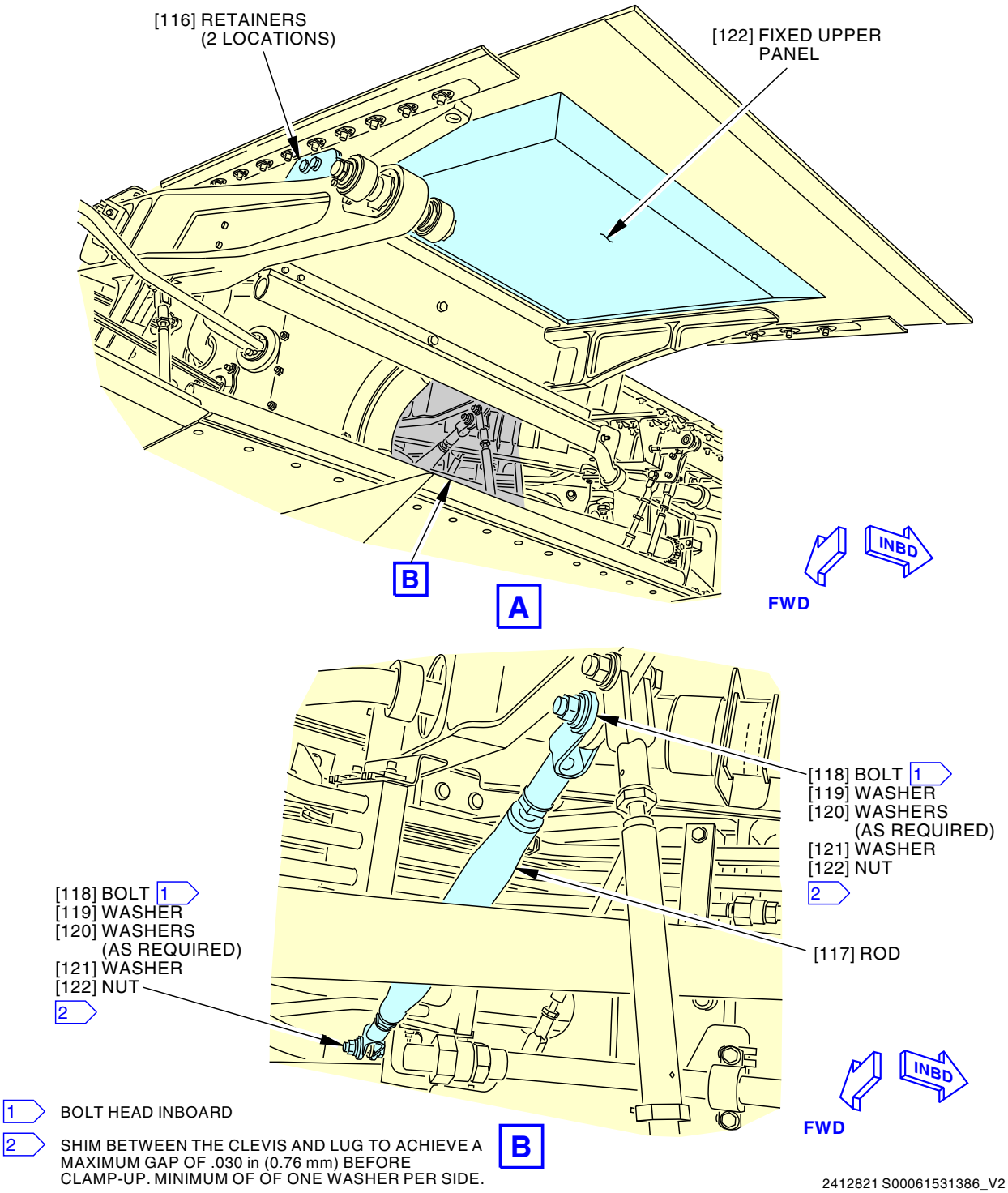
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412820 S00061531385_V1

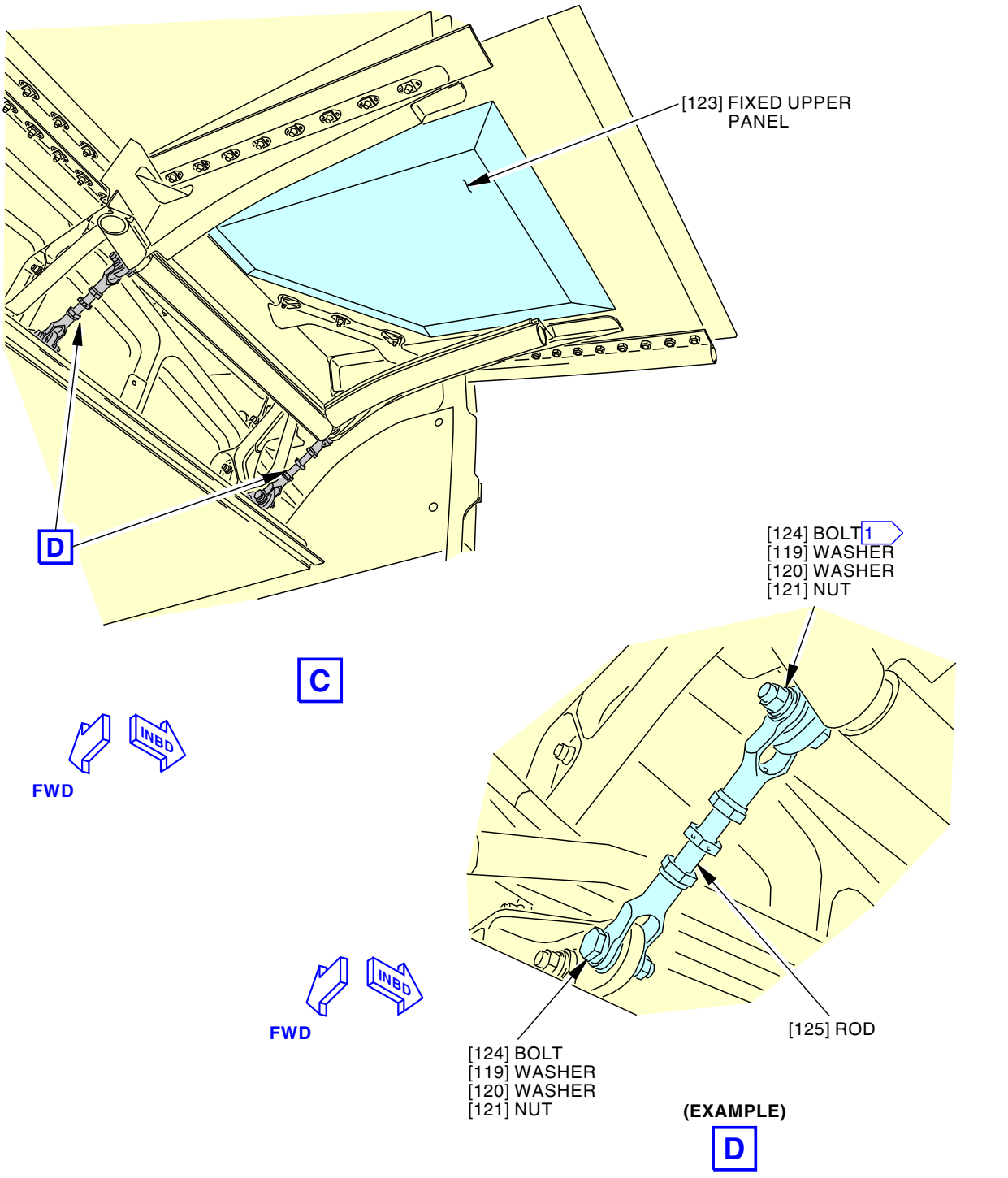
Inboard Fixed Upper Panel Adjustment
Figure 505/27-51-11-990-809 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Fixed Upper Panel Adjustment
Figure 505/27-51-11-990-809 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Fixed Upper Panel Adjustment
Figure 505/27-51-11-990-809 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD AFT FLAP - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the inboard aft flap

(2) Installation of the inboard aft flap.

B. The aft flap weighs approximately 60 lb (27 kg).

TASK 27-51-12-000-801

2. Inboard Aft Flap Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

B. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

C. Prepare for the Removal

SUBTASK 27-51-12-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-12-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

D. Inboard Aft Flap Removal

SUBTASK 27-51-12-020-001

(1) At the outboard flap support, disconnect the crankshaft [3] from the aft flap drive rod [10]:

(a) Remove the pin [9], nut [8], washer [7], bushing [6], washer [5] and bolt [4] that attach the crankshaft [3] to the aft flap drive rod [10].

SUBTASK 27-51-12-980-001

(2) Use the crankshaft [3] to manually move the aft flap assembly [2] to the extended position.

SUBTASK 27-51-12-020-002

(3) Disconnect the inboard and outboard aft flap pushrods [11]:

(a) Remove the pins [19], nuts [18], washers [17], washers [15], bolts [14] and bushings [13] that attach the aft flap pushrods [11] to the aft flap assembly [2].

(b) Move the aft flap pushrods [11] away from the aft flap assembly [2].

SUBTASK 27-51-12-020-003

(4) Remove the aft flap assembly [2]:

NOTE: The aft flap assembly [2] weighs approximately 60 lb (27 kg).

(a) Support the aft flap assembly [2].

(b) Disconnect the aft flap tracks [21] from the aft flap assembly [2]:

1) Remove the pins [22], nuts [23], washers [24], washers [26], bolts [27] and bushings [25] that attach the aft flap tracks [21] to the aft flap assembly [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Move the aft flap tracks [21] forward, away from the aft flap assembly [2].

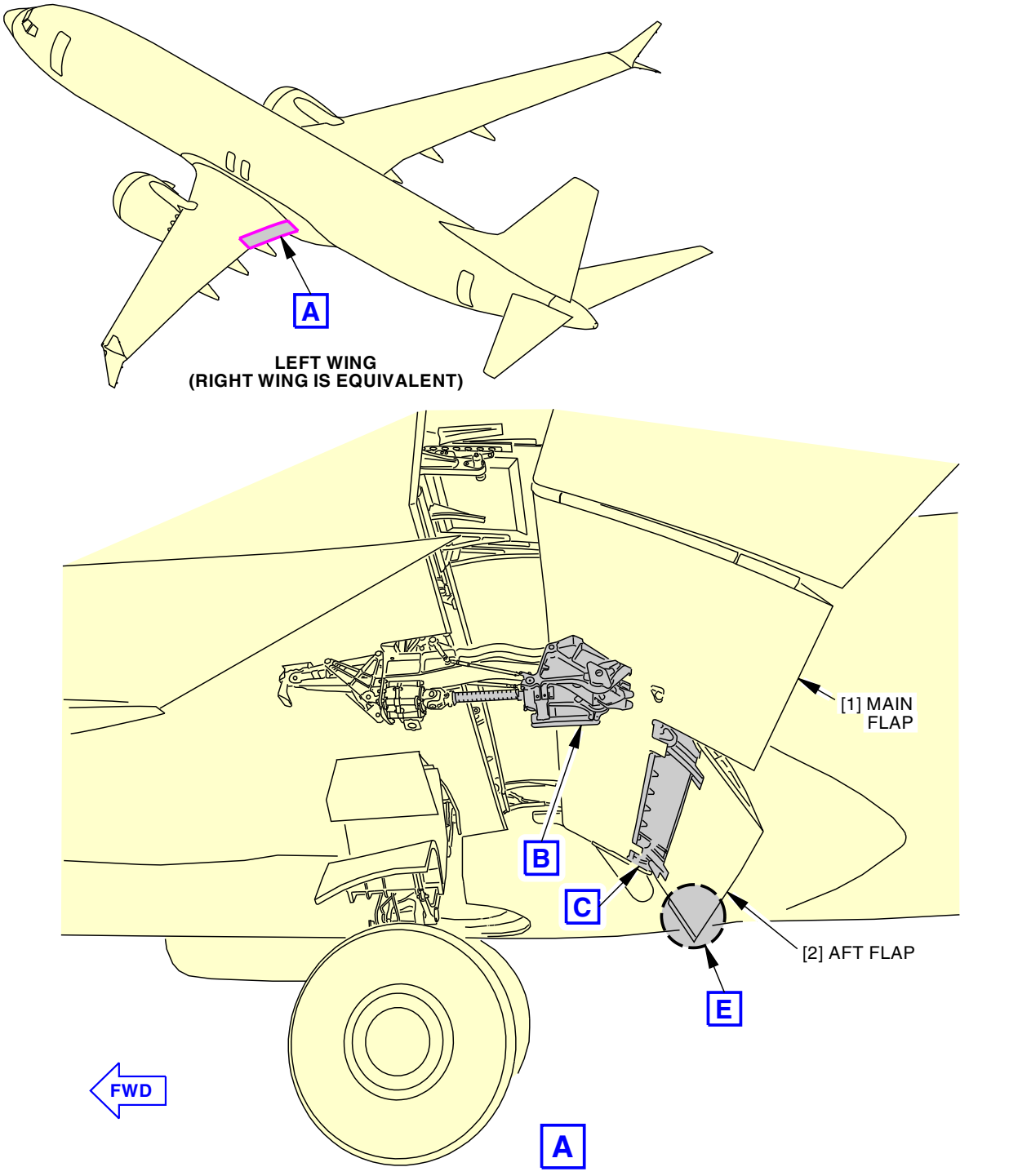
(c) Move the trailing edge of the aft flap assembly [2] down, until it is perpendicular to the main flap [1].

(d) Disengage the inboard and outboard rollers [28] from the programming tracks [38].

1) Disengage the inboard roller [28]first.

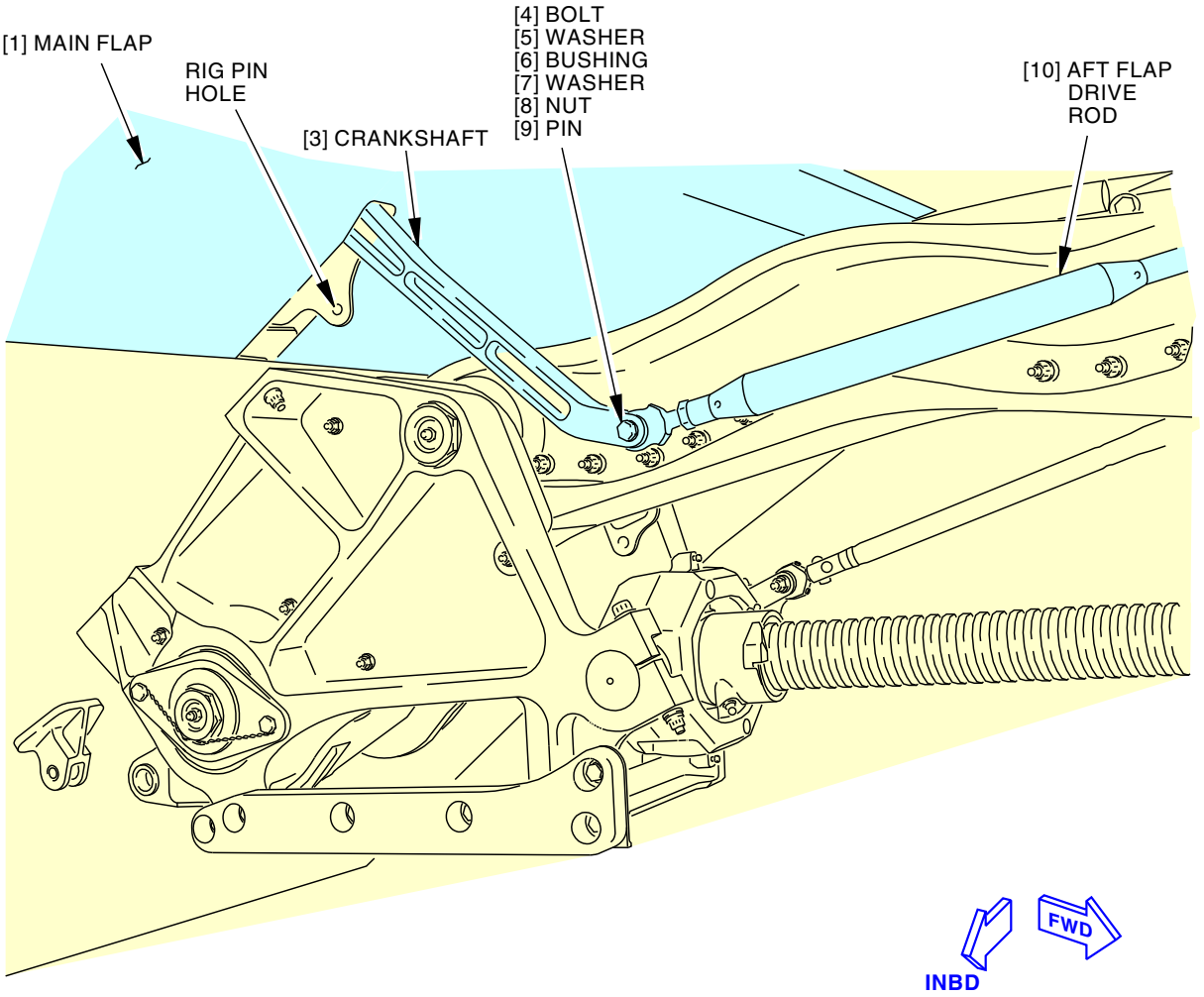
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Aft Flap Installation
Figure 401/27-51-12-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



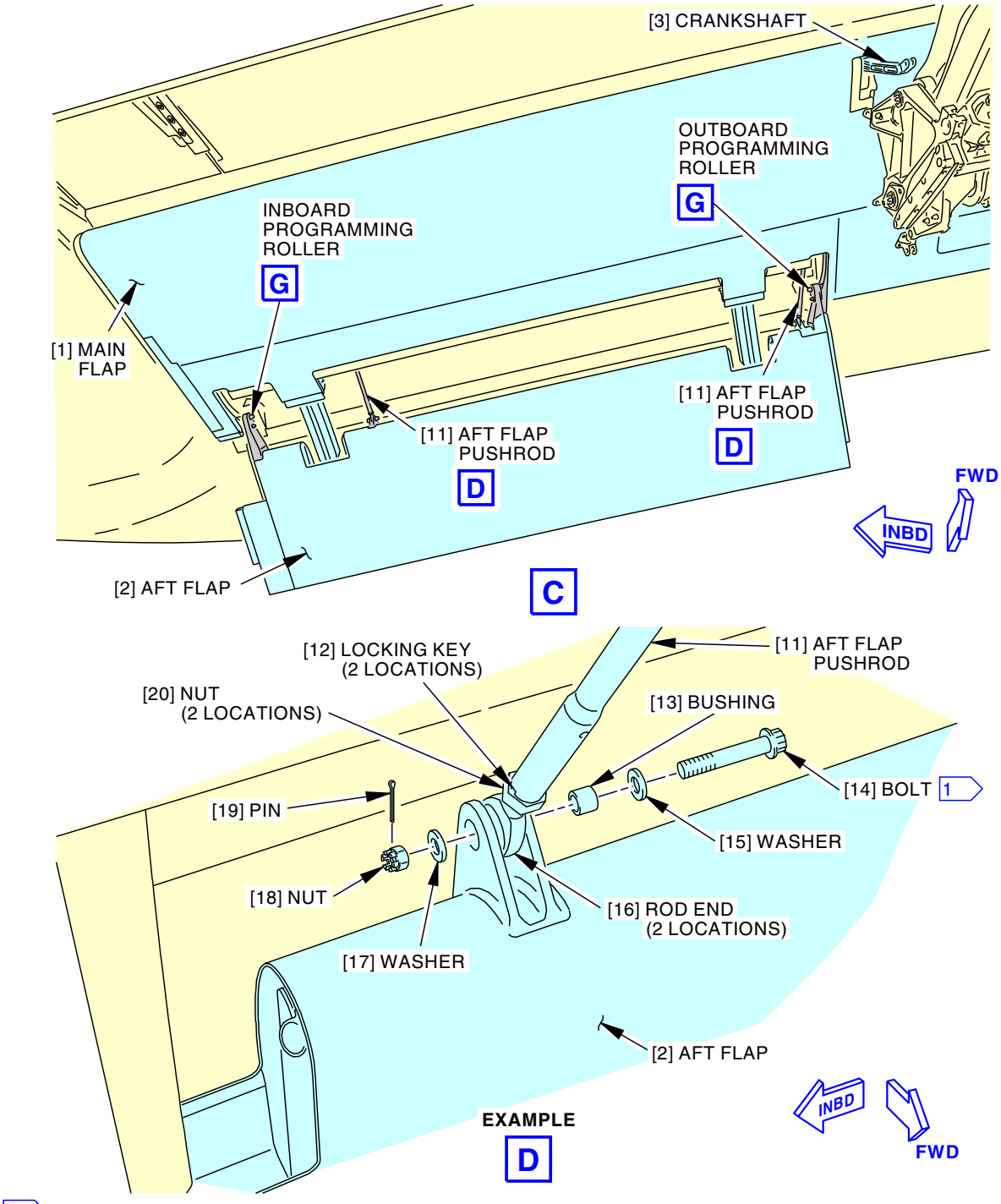
OUTBOARD CARRIAGE (INBOARD SIDE)

B

2412824 S00061531392_V2

Inboard Aft Flap Installation
Figure 401/27-51-12-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

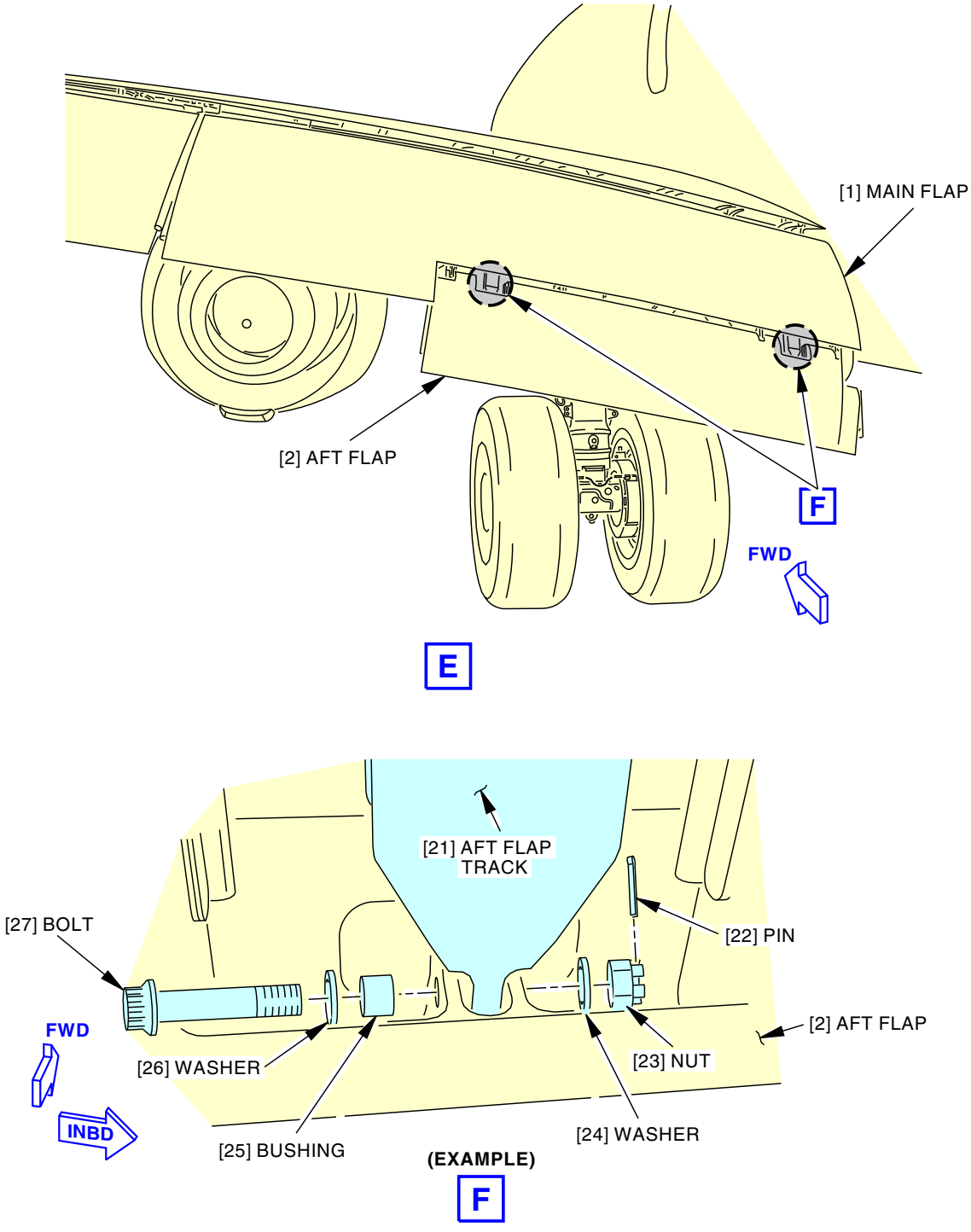


1 FOR THE OUTBOARD PUSHROD, THE BOLT HEAD IS INBOARD

2412825 S00061531393_V1

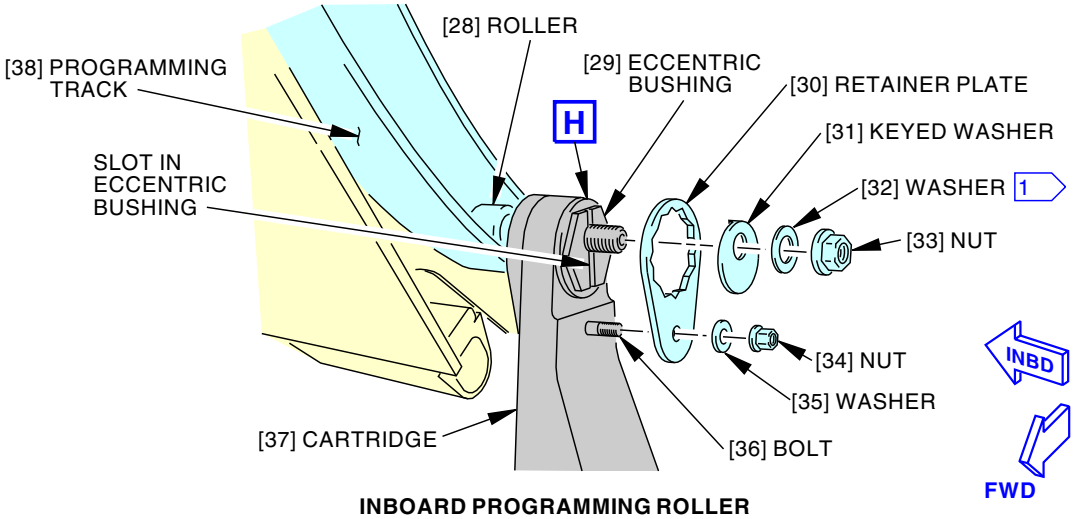
Inboard Aft Flap Installation
Figure 401/27-51-12-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



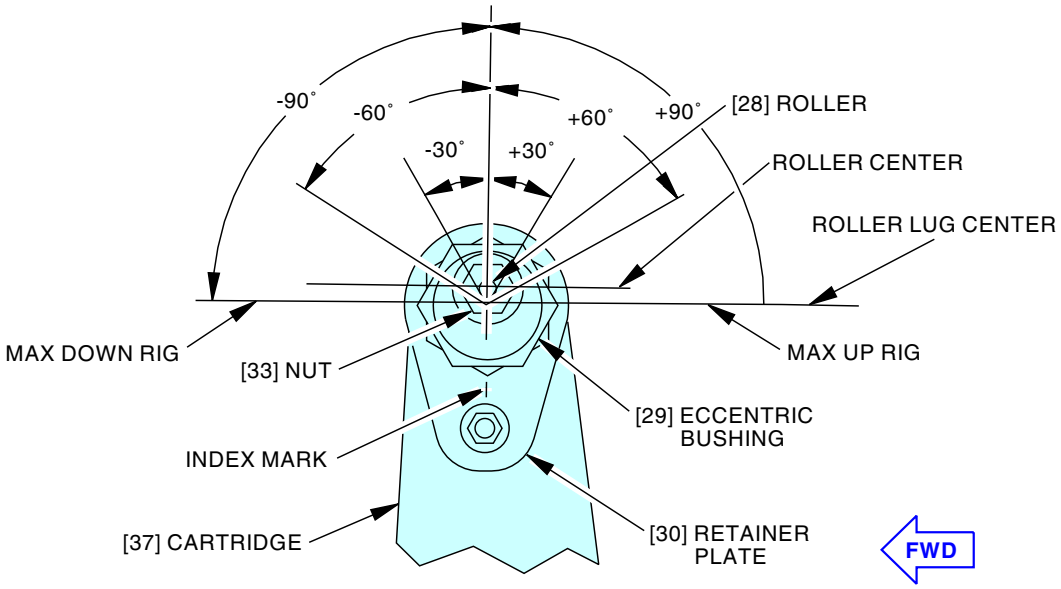
Inboard Aft Flap Installation
Figure 401/27-51-12-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



INBOARD PROGRAMMING ROLLER
(OUTBOARD PROGRAMMING ROLLER IS EQUIVALENT)

G



NOMINAL RIG POSITION

H

1 SOME AIRPLANE CONFIGURATIONS HAVE A TABBED WASHER.

2412827 S00061531395_V2

Inboard Aft Flap Installation
Figure 401/27-51-12-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-12-400-801

3. Inboard Aft Flap Installation

NOTE: The sum of the lengths of external repairs to the inboard aft flap trailing edge wedge and the outboard aft flap trailing edge wedge assemblies must be less than or equal to 24 inches. A single repair that includes both the upper and lower surfaces is counted only once against the spanwise total.

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-16-400-801	Inboard Aft Flap Track Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
STD-600	Mirror - Inspection
STD-7028	Equipment - Borescope Inspection

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Flap assembly	27-51-12-01A-073	SIA ALL
		27-51-12-01A-076	SIA ALL
9	Pin	27-51-14-01-020	SIA ALL
19	Pin	27-51-12-01A-020	SIA ALL
22	Pin	27-51-12-01A-020	SIA ALL

E. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

F. Prepare for the Installation

SUBTASK 27-51-12-820-001

(1) If you will not install the same aft flap assembly [2] and main flap [1], make sure that the inboard and outboard rollers [28] are in the most forward position (Figure 401):

NOTE: With the rollers [28] in the most forward position, the slot in the eccentric bushing [29] will align with the index mark on the retainer plate [30].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the nut [34], washer [35] and retainer plate [30] that hold the eccentric bushing [29].

(b) Loosen the nut [33] on the roller [28].

(c) Turn the eccentric bushing [29] until the roller [28] is in the forward position and the slot aligns with the bolt [36].

NOTE: The bolt [36] will stay in its position.

(d) Apply sealant, A00247, to the threads of the bolt [36].

(e) Install the retainer plate [30] with the washer [35] and nut [34].

(f) Torque the nut [33] on the roller [28] to 102.5 ±7.5 in-lb (11.6 ±0.9 N·m).

(g) If a tabbed washer is installed, bend a minimum of two tabs of the washer [32] over the nut [33].

SUBTASK 27-51-12-420-001

(2) Make sure that the aft flap tracks are installed on the main flap [1] and are in the retracted position.

(a) If they are not installed, do this task: Inboard Aft Flap Track Installation, TASK 27-51-16-400-801.

G. Inboard Aft Flap Installation

SUBTASK 27-51-12-420-002

(1) Install the aft flap assembly [2]:

(a) Hold the aft flap assembly [2] below and approximately perpendicular to the main flap [1].

(b) Engage the outboard roller [28] with the outboard programming track [38].

(c) Engage the inboard roller [28] with the inboard programming track [38].

(d) Lift the trailing edge of the aft flap assembly [2] and hold it in its usual position.

(e) Connect the aft flap assembly [2] to the aft flap tracks [21]:

1) Move the aft flap tracks [21] aft until they align with the aft flap assembly [2].

2) Apply a thin layer of grease, D00633, to the outside diameter of the bushings [25].

3) Install the bushings [25], bolts [27], washers [26], washers [24] and nuts [23] that attach the aft flap tracks [21] to the aft flap assembly [2].

4) Torque the nuts [23] to 125 ±25 in-lb (14 ±3 N·m).

5) Install the pins [22] in the nuts [23].

SUBTASK 27-51-12-020-004

(2) Connect the inboard and outboard aft flap pushrod [11]:

(a) Carefully pull the aft flap pushrod [11] through the cutouts to move them to the extended position.

NOTE: The crankshaft [3] will move when you pull on the aft flap pushrod [11].

(b) Apply a thin layer of grease, D00633, to the outside diameter of the bushings [13].

(c) Install the bushings [13], bolts [14], washers [15], washers [17], and nuts [18] that attach the aft flap pushrod [11] to the aft flap assembly [2].

(d) Torque the nuts [18] to 65 ±15 in-lb (7.3 ±1.7 N·m).

(e) Install the pins [19] in the nuts [18].

SUBTASK 27-51-12-980-002

(3) Use the crankshaft [3] to manually move the aft flap assembly [2] to the retracted position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Inboard Aft Flap Adjustment

SUBTASK 27-51-12-480-001

(1) Install the rig pin (no. F70207-113) from the rigging pin kit, SPL-1585, in the crankshaft [3].

SUBTASK 27-51-12-220-001

(2) Measure the distance between the trailing edge of the aft flap assembly [2] and the trailing edge of the upper cove panel [61] on the main flap [1] (Figure 402).

NOTE: Measure the distance aft of the inboard and outboard aft flap pushrods [11].

(a) At the outboard aft flap pushrod [11], make sure that the distance is 9.2745 ±0.0600 in. (235.57 ±1.53 mm).

(b) At the inboard aft flap pushrod [11], make sure that the distance is 9.2319 ±0.0600 in. (234.49 ±1.52 mm).

SUBTASK 27-51-12-820-002

(3) If the distance at the inboard or outboard aft flap pushrods [11] are not in the limit, then adjust the length of the applicable aft flap pushrod [11] (Figure 401):

(a) Remove the rig pin from the crankshaft [3].

(b) Use the crankshaft [3] to manually extend the aft flap assembly [2] to the extended position.

(c) Adjust the length of the applicable aft flap pushrod [11]:

NOTE: For each 90 degree turn of the aft flap pushrod [11], the trailing edge of the aft flap will move 0.04 in. (1.02 mm).

1) Loosen the nuts [20] on the aft flap pushrod [11].

2) Adjust the length of the aft flap pushrod [11].

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3) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the threads of the rod ends [16].

4) Tighten the nuts [20].

5) Install lockwire on the nuts [20] and the locking keys [12].

(d) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

(e) Install the rig pin in the crankshaft [3].

(f) Make sure that the distance from the trailing edge of the aft flap assembly [2] to the trailing edge of the upper cove panel [61] is in the limit.

SUBTASK 27-51-12-980-003

(4) Give support to the aft flap assembly [2].

NOTE: This is the position the rollers [28] will be in with airloads applied to the aft flap assembly [2].

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(a) Do a visual inspection to make sure that the programming rollers [28] touch the bottom surface of the programming tracks [38], and that the aft rollers on the aft flap tracks [21] touch the top surface of the tracks.

NOTE: If necessary, use an inspection mirror, STD-600 or a borescope, STD-7028 to aid with the inspection.

SUBTASK 27-51-12-220-002

(5) At the outboard end of the aft flap assembly [2], measure the vertical alignment at the trailing edge of the aft flap assembly [2] and the main flap [1] (Figure 402).

SUBTASK 27-51-12-820-003

(6) If the vertical alignment of the trailing edge is not in the limit of 0.000 ±0.100 in. (0.00 ±2.54 mm), then adjust the rollers [28] for the inboard and outboard programming tracks [38] (Figure 401):

(a) Make sure that you keep the two rollers [28] adjusted to the same position.

(b) Remove the rig pin from the crankshaft [3].

(c) Use the crankshaft [3] to manually extend the aft flap assembly [2] to the extended position.

(d) Adjust the position of the rollers [28]:

1) Remove the nut [34], washer [35] and retainer plate [30] that hold the eccentric bushing [29].

2) Loosen the nut [33] on the roller [28].

3) Turn the eccentric bushing [29] to adjust the position of the roller [28].

NOTE: Refer to Table 401 to find how far you must turn the eccentric bushing [29].

Table 401/27-51-12-993-801 Programming Roller Eccentric Bushing Adjustment

Eccentric Bushing Position	Aft Flap Trailing Edge Movement Inches (Millimeters)
Nominal to +30	+0.046 (+1.168)
+30 to +60	+0.034 (+0.864)
+60 to +90	+0.013 (+0.330)
Nominal to -30	-0.046 (-1.168)
-30 to -60	-0.034 (-0.864)
-60 to -90	-0.013 (-0.330)

4) Apply sealant, A00247, to the threads of the bolt [36].

5) Install the retainer plate [30] with the washer [35] and nut [34].

6) Torque the nut [33] on the roller [28] to 102.5 ±7.5 in-lb (11.6 ±0.9 N·m).

(e) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

(f) Install the rig pin in the crankshaft [3].

(g) Make sure that the vertical alignment of the trailing edge of the aft flap assembly [2] and the main flap [1] is in the limit.

SUBTASK 27-51-12-220-003

(7) Measure the clearance between the upper cove panel [61] on the main flap [1] and the upper surface of the aft flap assembly [2] (Figure 402).

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(a) Measure the clearance at all of the cove panel supports [62] and at the aft flap roller fittings [76].

SUBTASK 27-51-12-820-004

(8) If the clearance between the main flap [1] and the aft flap assembly [2] is not in the limit of 0.10 +0.10 / -0.01 in. (2.54 +2.54 / -0.13 mm), then change the thickness of the shims [75] on the cove panel support [62] and the aft flap roller fittings [76]:

(a) Remove the rig pin from the crankshaft [3].

(b) Use the crankshaft [3] to manually extend the aft flap assembly [2] until you can get access to the fasteners for the shims [75] and shims [77].

(c) If it is necessary, change the thickness of the shims [75] on the cove panel supports [62]:

1) Remove the nuts [74], washers [73] and bolts [72] that attach the upper cove panel [61] to the cove panel support [62].

2) Remove the shim [75] from the cove panel support [62] and the upper cove panel [61].

3) Change the thickness of the shim [75].

NOTE: The maximum permitted thickness of the shim [75] is 0.10 in. (2.54 mm).

4) Apply sealant, A00247, to the mating surfaces of the shim [75].

5) Put the shim [75] in its position between the cove panel support [62] and the upper cove panel [61].

WARNING

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6) Apply a layer of Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [72].

7) Install the bolts [72], washers [73] and nuts [74].

(d) If it is necessary, change the thickness of the shims [77] on the aft flap roller fittings [76]:

1) Remove the nuts [80], washers [79] and bolts [78] that attach the upper cove panel [61] to the aft flap roller fitting [76].

2) Remove the shims [77] from the aft flap roller fitting [76] and the upper cove panel [61].

3) Change the thickness of the shim [77].

NOTE: The maximum permitted thickness of the shim [77] is 0.10 in. (2.54 mm).

4) Apply sealant, A00247 to the mating surfaces of the shim [77].

5) Put the shim [77] in its position between the aft flap roller fitting [76] and the upper cove panel [61].

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6) Apply a layer of Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [78].

7) Install the bolts [78], washers [79] and nuts [80].

(e) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

(f) Install the rig pin in the crankshaft [3].

(g) Make sure that the clearance between the main flap [1] and the aft flap assembly [2] is in the limit.

SUBTASK 27-51-12-220-004

(9) Measure the clearance between the lower cove panel [68] on the main flap [1] and the lower surface of the aft flap assembly [2].

(a) Measure the clearance at the two lower cove panel supports [62].

SUBTASK 27-51-12-820-005

(10) If the clearance between the main flap [1] and the aft flap assembly [2] is not in the limit of 0.000 ±0.060 in. (0.00 ±1.52 mm), then change the thickness of the shims [81] on the lower cove panel [68] support:

(a) Remove the rig pin from the crankshaft [3].

(b) Use the crankshaft [3] to manually extend the aft flap assembly [2] until you can get access to the fasteners for the shims [81].

(c) Change the thickness of the shim [81] on the cove panel supports [62]:

1) Remove the nuts [71], washers [70], and bolts [69] that attach the lower cove panel [68] to the cove panel support [62].

2) Remove the shim [81] from the cove panel support [62] and the lower cove panel [68].

3) Change the thickness of the shim [81].

NOTE: The maximum permitted thickness of the shim [81] is 0.10 in. (2.54 mm) millimeters).

4) Apply sealant, A00247, to the mating surfaces of the shim [81].

5) Put the shim [81] in its position between the cove panel support [62] and the lower cove panel [68].

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6) Apply a layer of Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [69].

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7) Install the bolts [69], washers [70] and nuts [71].

(d) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

(e) Install the rig pin in the crankshaft [3].

(f) Make sure that the clearance between the main flap [1] and the aft flap assembly [2] is in the limit.

SUBTASK 27-51-12-220-005

(11) At the inboard end of the aft flap assembly [2], measure the compression of the seal [82] on the aft side of the main flap [1]:

(a) Measure and record the distance between the trailing edge of the aft flap assembly [2] and the lower cove panel [68].

NOTE: This distance is referred to as Dimension A.

(b) Remove the rig pin from the crankshaft [3].

(c) Use the crankshaft [3] to manually extend the aft flap assembly [2] until the seal [82] is not compressed against the aft flap assembly [2].

(d) Measure and record the distance between the aft edge of the seal [82] and the lower cove panel [68].

NOTE: This distance is referred to as Dimension B.

SUBTASK 27-51-12-820-006

(12) If Dimension A minus Dimension B is not in the limit of 12.8393 ±0.1000 in. (326.12 ±2.54 mm), then adjust the position of the seal [82]:

(a) Use the crankshaft [3] to manually extend the aft flap assembly [2] until you can get access to the fasteners for the seal [82].

(b) Loosen the nuts [86], washers [85] and bolts [84] that attach the retainer [83].

(c) Move the retainer [83] with the seal [82] to change the distance to the compression of the seal [82].

NOTE: This will change the Dimension B.

(d) Tighten the bolts [84], washers [85] and nuts [86] that attach the retainer [83].

(e) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

(f) Install the rig pin in the crankshaft [3].

SUBTASK 27-51-12-220-006

(13) Outboard of the inboard aft flap track [21], measure the distance between the aft edge of the seal [63] and the seam on the lower surface of the aft flap assembly [2].

(a) If the distance between the seam on the aft flap assembly [2] and the seal [63] is not in the limit of 4.7091 ±0.1000 in. (119.61 ±2.54 mm), then adjust the position of the seal [63]:

1) Remove the rig pin from the crankshaft [3].

2) Use the crankshaft [3] to manually extend the aft flap assembly [2] until you can get access to the fasteners for the seal [63].

3) Loosen the nuts [66], washers [65] and bolts [64] that attach the retainer [67].

4) Move the retainer [67] with the seal [63] to change the distance to the seam on the aft flap assembly [2].

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5) Tighten the nuts [66], washers [65] and bolts [64] that attach the retainer [67].

6) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

7) Install the rig pin in the crankshaft [3].

(b) Make sure that the distance between the trailing edge of the aft flap assembly [2] and the seal [63] is in the limit.

SUBTASK 27-51-12-220-007

(14) Do a check of the adjustment of the seals at the inboard and outboard ends of the aft flap assembly [2]:

(a) On the inboard and outboard ends of the aft flap assembly [2], measure the distance between the aft flap assembly [2] and the main flap [1].

(b) Remove the rig pin from the crankshaft [3].

(c) Use the crankshaft [3] to manually extend the aft flap assembly [2] until the seal [88] and seal [93] are clear of the main flap [1].

(d) Measure the distance the seal [88] and seal [93] extends away from the aft flap assembly [2].

(e) If the distance the seal [88] and seal [93] extends is not in the limit of the distance you measured plus 0.150 ±0.100 in. (3.81 ±2.54 mm), then adjust the position of the applicable seal [88] or seal [93]:

1) Loosen the nuts [87], washers [91] and bolts [89] that attach the retainer [90].

2) Move the retainer [90] and the seal [88] or seal [93] to change the distance the seal extends past the aft flap assembly [2].

3) Tighten the nuts [87], washers [91] and bolts [92] that attach the retainer [90].

(f) Use the crankshaft [3] to manually retract the aft flap assembly [2] to the retracted position.

NOTE: The seal [88] and seal [93] can extend a maximum of 0.5 in. (12.7 mm) below the lower surface of the main flap [1] when the seals are compressed.

SUBTASK 27-51-12-080-001

(15) Remove the rig pin from the crankshaft [3] if it is necessary.

SUBTASK 27-51-12-420-003

(16) At the outboard flap support, connect the crankshaft [3] to the aft flap drive rod [10] (Figure 401):

(a) Use the crankshaft [3] to manually extend the aft flap assembly [2] until the crankshaft [3] aligns with the aft flap drive rod [10].

(b) Install the bolt [4], washer [5], bushing [6], washer [7] and nut [8] that attach the crankshaft [3] to the aft flap drive rod [10].

1) Make sure that the head of the bolt [4] is on the inboard side.

(c) Torque the nut [8] to 40 ±10 in-lb (4.5 ±1.1 N·m).

(d) Install the pin [9] through the nut [8].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-12-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

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SUBTASK 27-51-12-860-002

(2) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

——— END OF TASK ———

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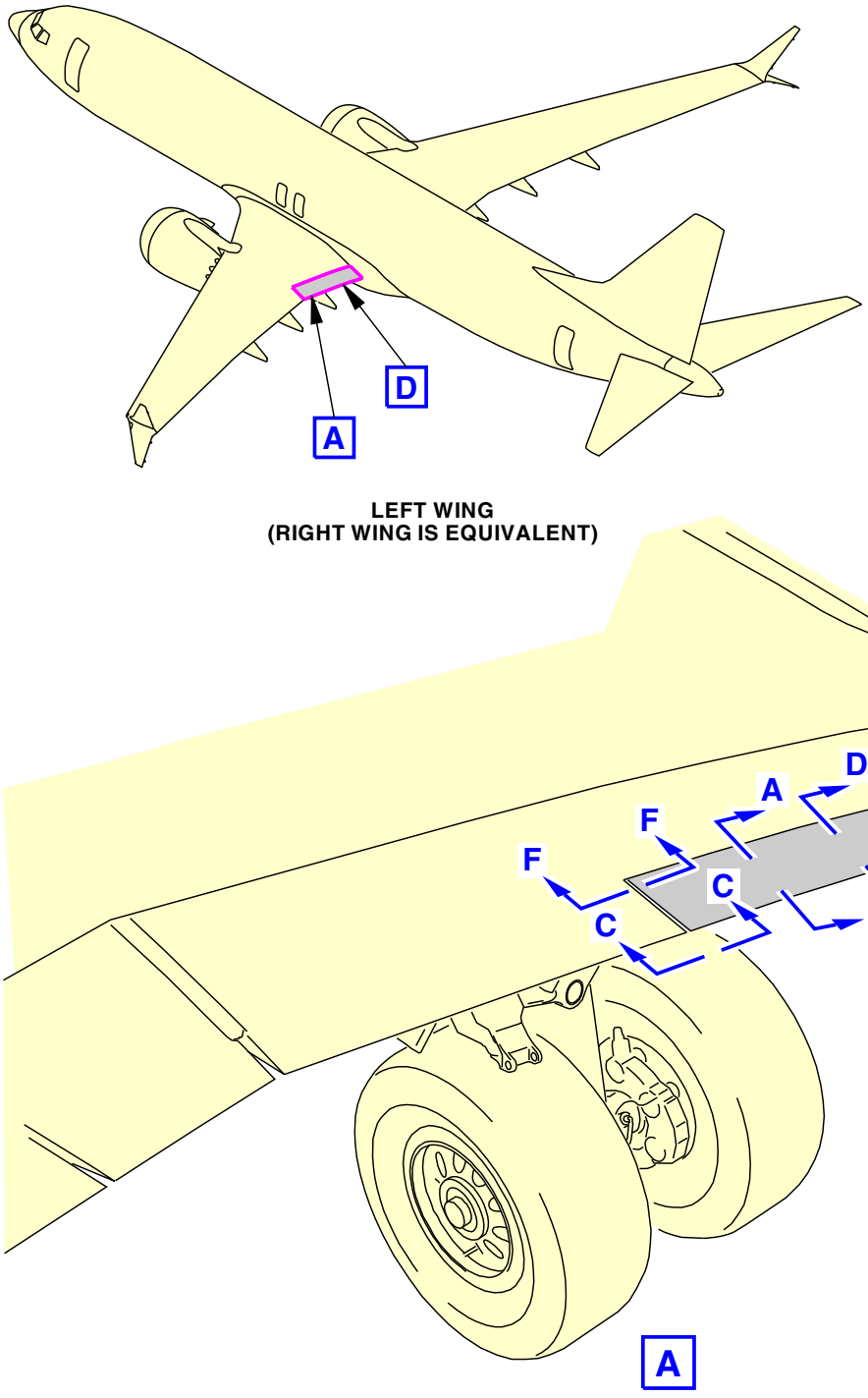

Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 1 of 6)

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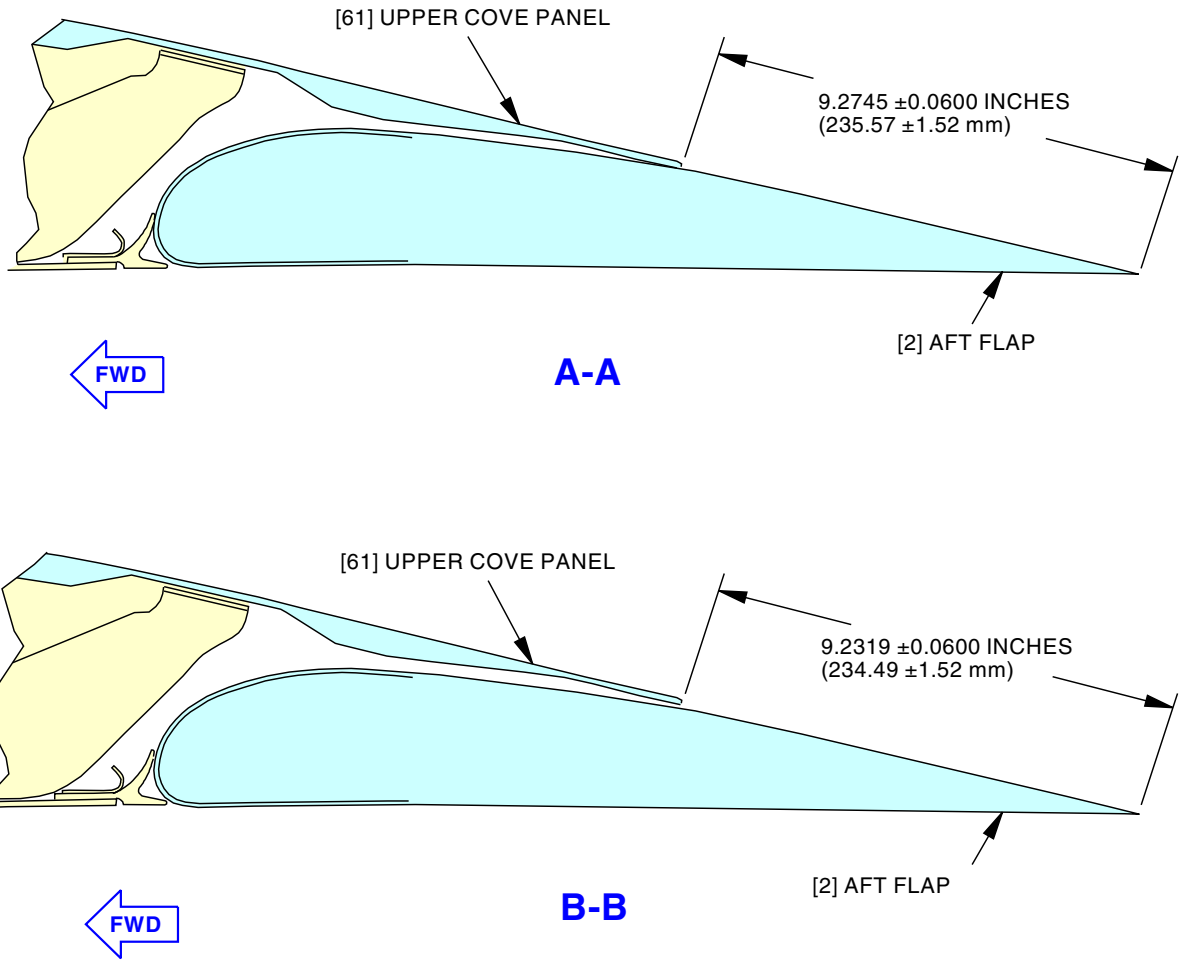

Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 2 of 6)

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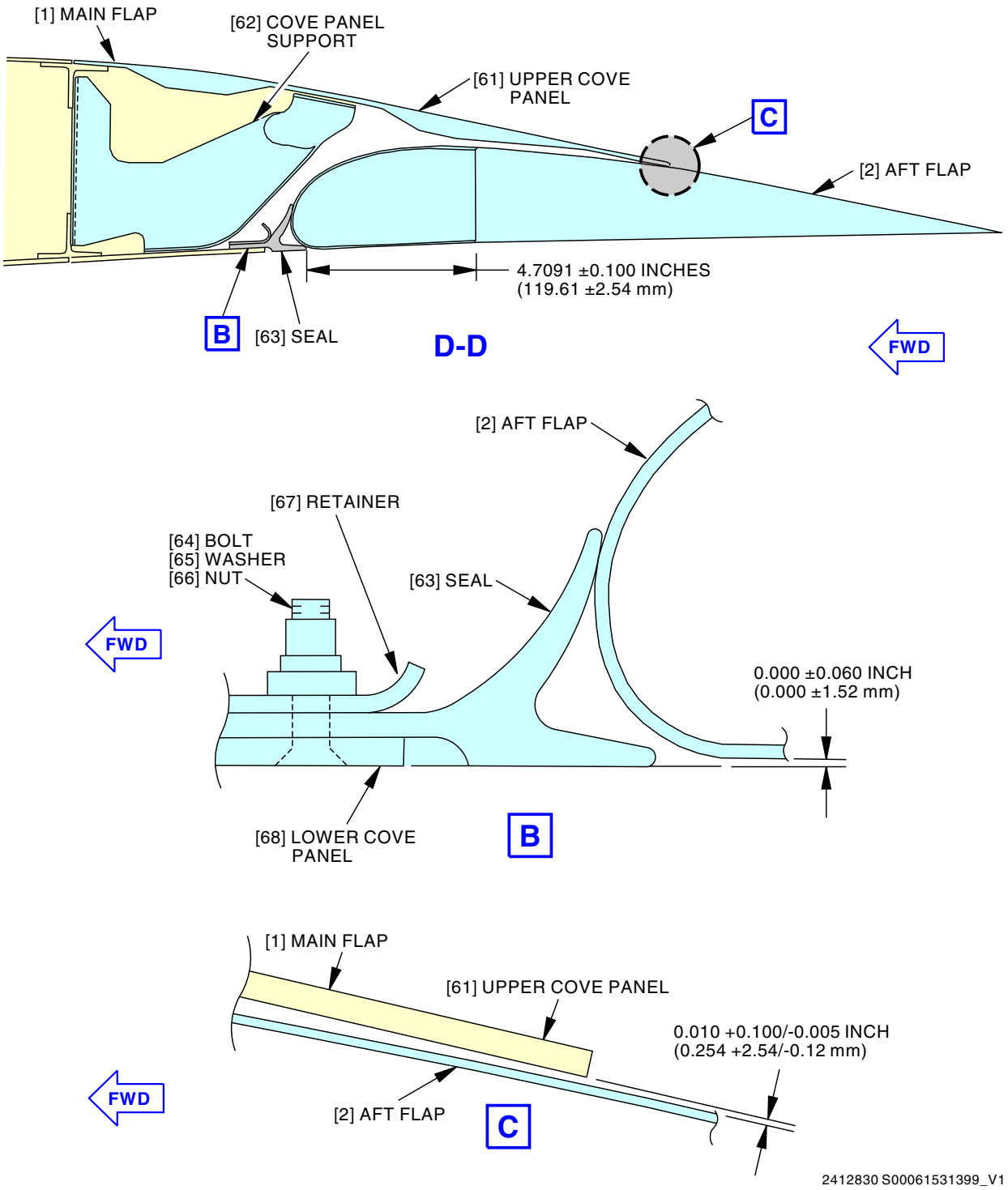

Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 3 of 6)

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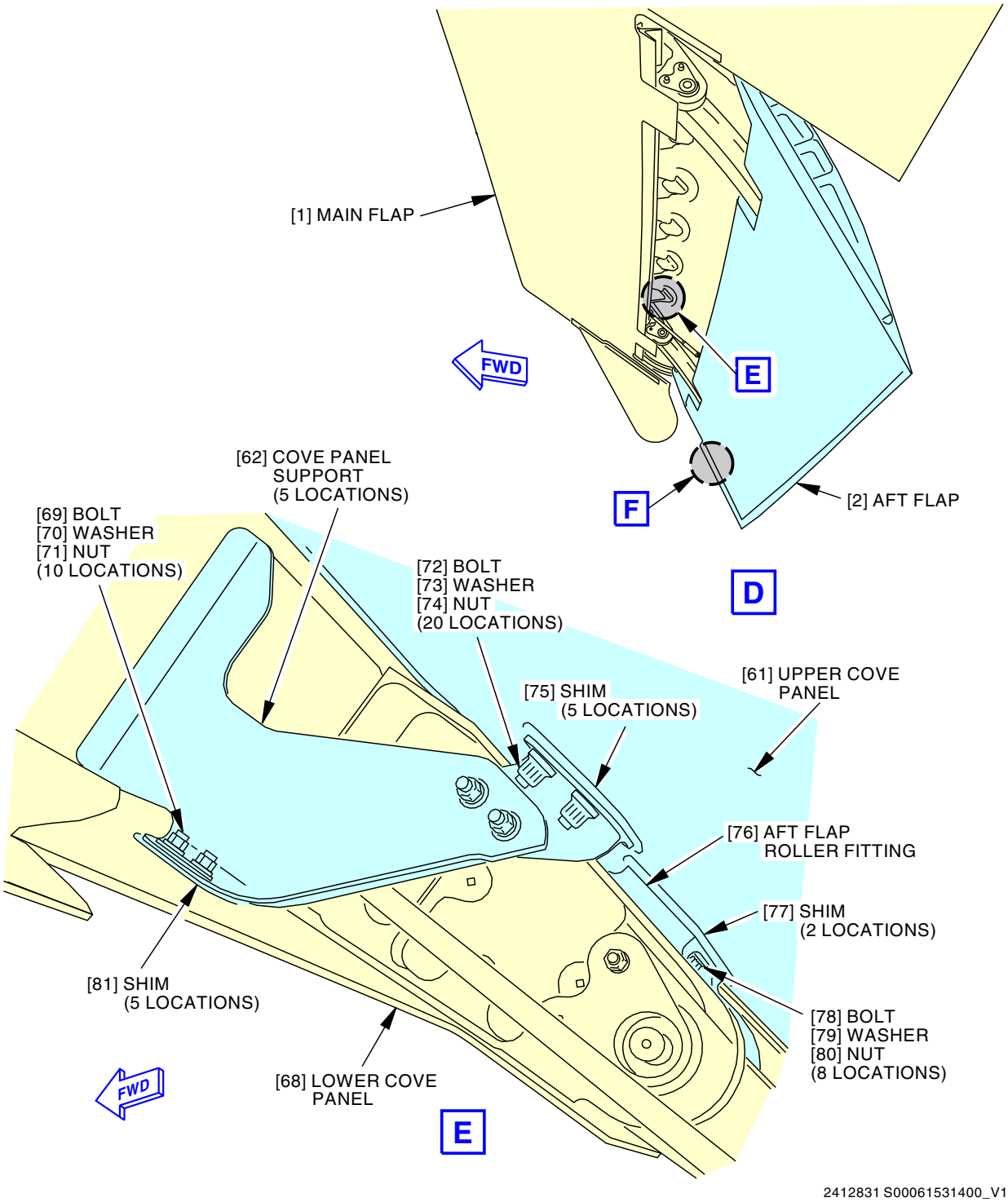

Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 4 of 6)

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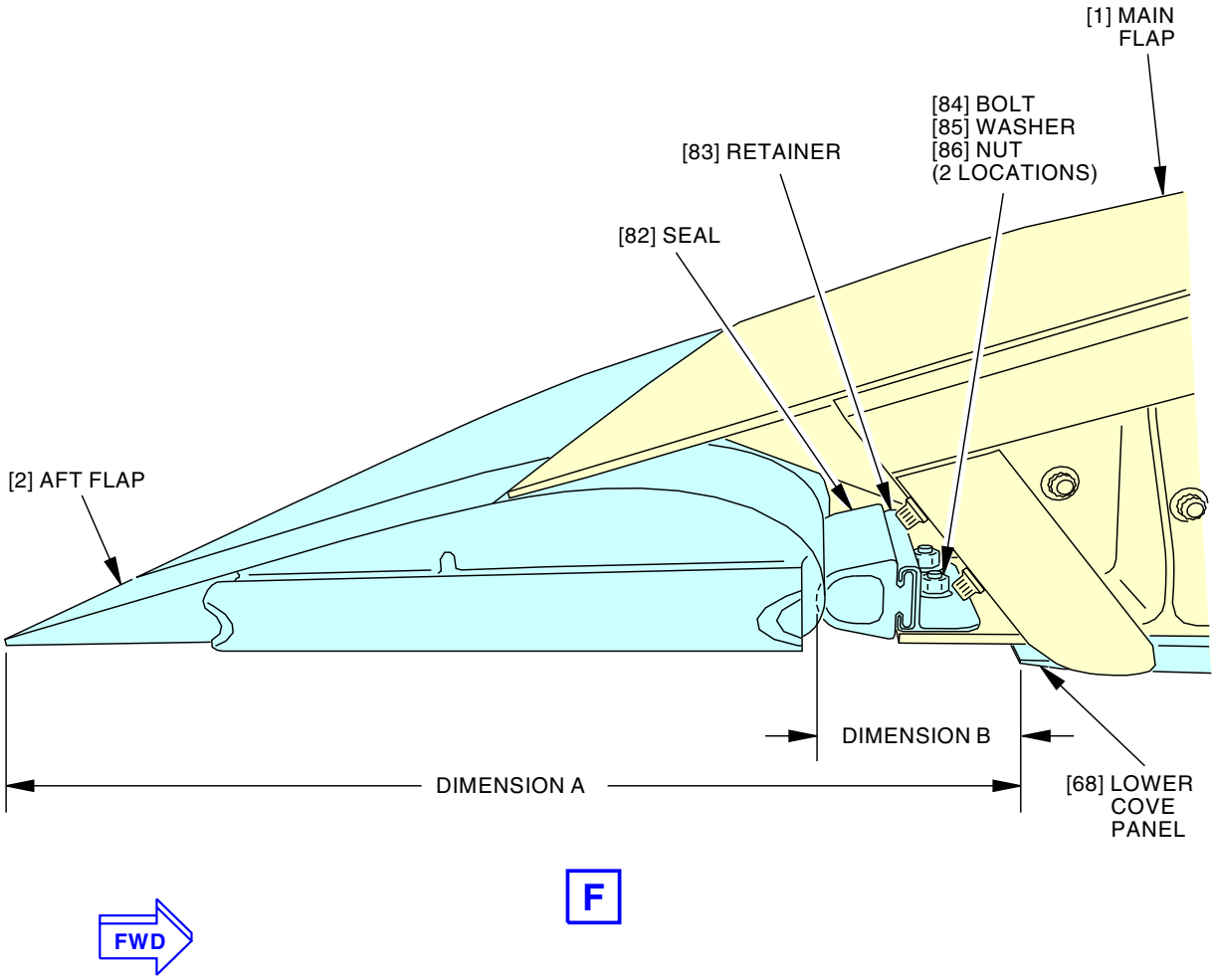

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Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 5 of 6)

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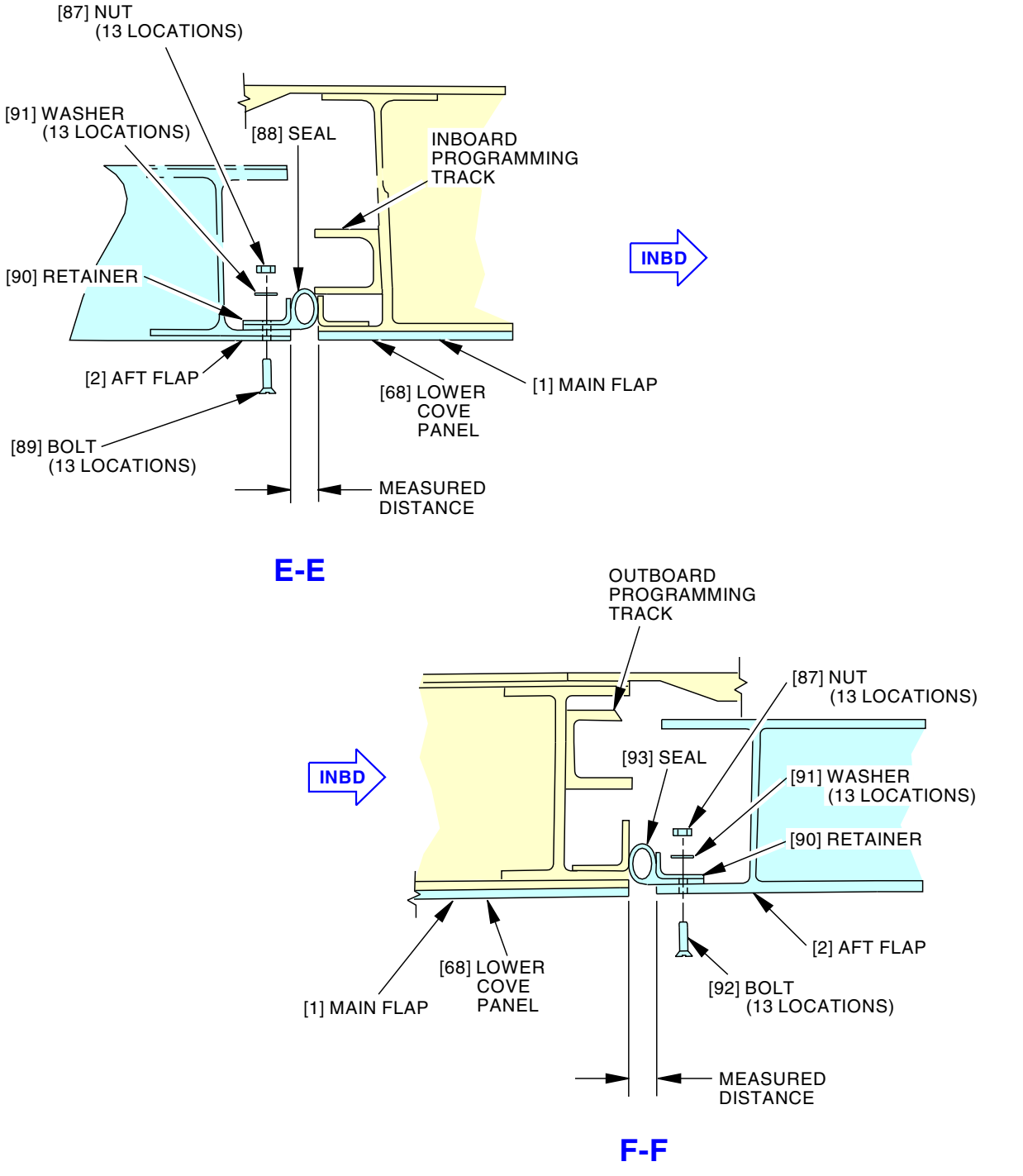

Inboard Aft Flap Adjustment
Figure 402/27-51-12-990-802 (Sheet 6 of 6)

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INBOARD AFT FLAP - INSPECTION/CHECK

1. General

A. This procedure contains a task to do an inspection of the attachment points for the inboard aft flap. The attachment points are the aft flap drive rods and the aft flap tracks.

TASK 27-51-12-200-801

2. Inboard Aft Flap Inspection

(Figure 601)

A. References

Reference	Title
27-51-12-000-801	Inboard Aft Flap Removal (P/B 401)
27-51-12-400-801	Inboard Aft Flap Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

C. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

D. Procedure

SUBTASK 27-51-12-020-005

(1) Do this task: Inboard Aft Flap Removal, TASK 27-51-12-000-801.

SUBTASK 27-51-12-020-007

(2) Examine the parts of the inboard aft flap (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 601/27-51-12-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2545 in. (6.4643 mm)	0.0050 in. (0.1270 mm)
#1 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2455 in. (6.2357 mm)	

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Table 601/27-51-12-993-802 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#2 ROD END	I.D.	0.2500 in. (6.3500 mm)	0.2500 in. (6.3500 mm)	0.2500 in. (6.3500 mm)	0.0015 in. (0.0381 mm)
#2 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2485 in. (6.3119 mm)	
#3 BUSHING	I.D.	0.3750 in. (9.5250 mm)	0.3756 in. (9.5402 mm)	0.3756 in. (9.5402 mm)	0.0016 in. (0.0406 mm)
#3 BUSHING	O.D.	0.3740 in. (9.4996 mm)	0.3745 in. (9.5123 mm)	0.3740 in. (9.4996 mm)	
#4 BUSHING	I.D.	0.2500 in. (6.3500 mm)	0.2505 in. (6.3627 mm)	0.2545 in. (6.4643 mm)	0.0050 in. (0.1270 mm)
#4 BOLT	O.D.	0.2485 in. (6.3119 mm)	0.2495 in. (6.3373 mm)	0.2455 in. (6.2357 mm)	
#5 BUSHING	I.D.	0.3125 in. (7.9375 mm)	0.3130 in. (7.9502 mm)	0.3170 in. (8.0518 mm)	0.0050 in. (0.1270 mm)
#5 BOLT	O.D.	0.3110 in. (7.8994 mm)	0.3120 in. (7.9248 mm)	0.3080 in. (7.8232 mm)	
#6 BUSHING	I.D.	0.4375 in. (11.1125 mm)	0.4382 in. (11.1303 mm)	0.4382 in. (11.1303 mm)	0.0017 in. (0.0432 mm)
#6 BUSHING	O.D.	0.4365 in. (11.0871 mm)	0.4370 in. (11.0998 mm)	0.4365 in. (11.0871 mm)	
#7 TRACK	I.D.	0.3125 in. (7.9375 mm)	0.3130 in. (7.9502 mm)	0.3170 in. (8.0518 mm)	0.0050 in. (0.1270 mm)
#7 BOLT	O.D.	0.3110 in. (7.8994 mm)	0.3120 in. (7.9248 mm)	0.3080 in. (7.8232 mm)	
#8 BUSHING	I.D.	0.3125 in. (7.9375 mm)	0.3131 in. (7.9527 mm)	0.3170 in. (8.0518 mm)	0.0050 in. (0.1270 mm)
#8 BOLT	O.D.	0.3110 in. (7.8994 mm)	0.3120 in. (7.9248 mm)	0.3081 in. (7.8257 mm)	

SUBTASK 27-51-12-420-004

(3) Do this task: Inboard Aft Flap Installation, TASK 27-51-12-400-801.

END OF TASK

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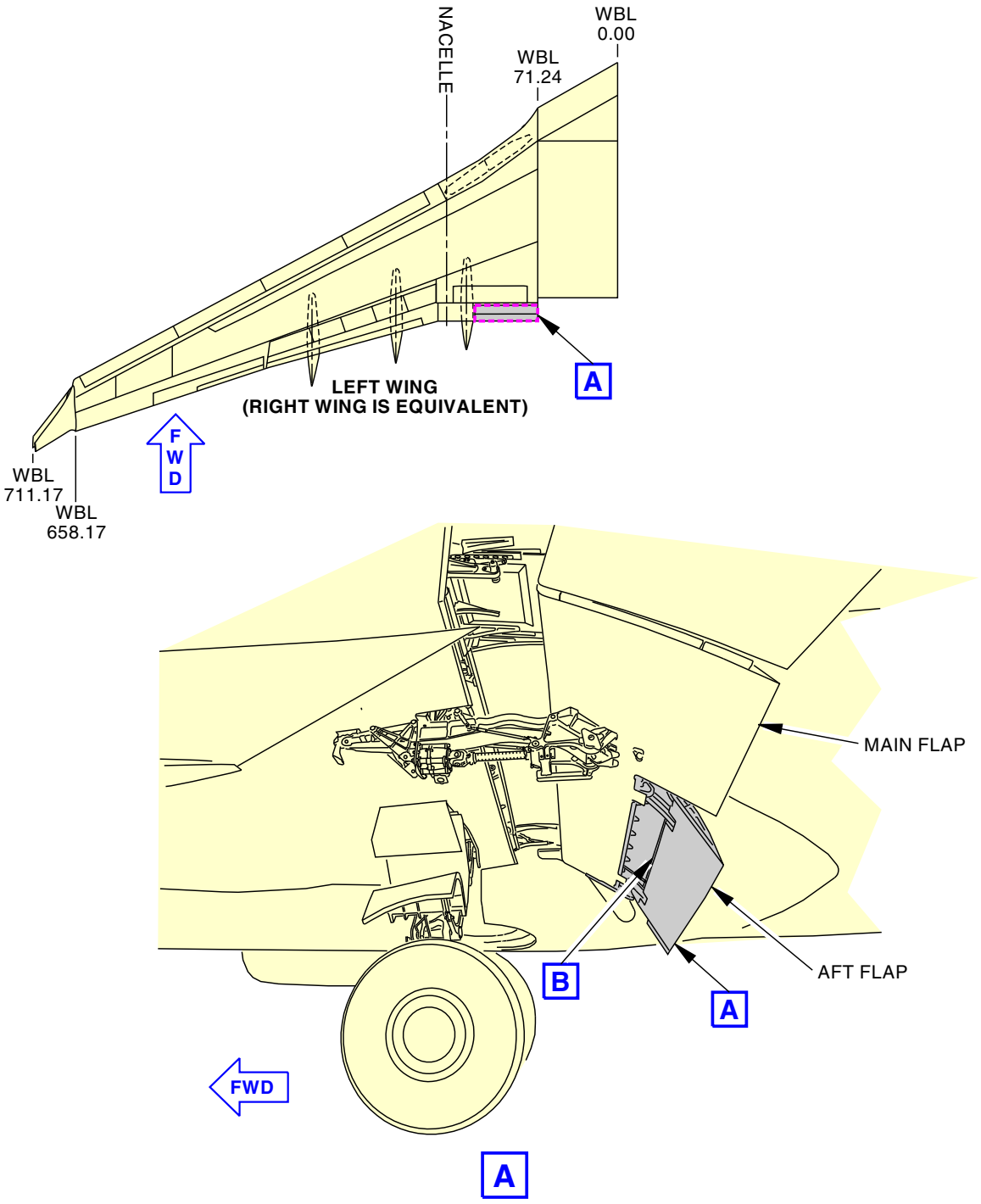

Inboard Aft Flap Inspection
Figure 601/27-51-12-990-803 (Sheet 1 of 4)

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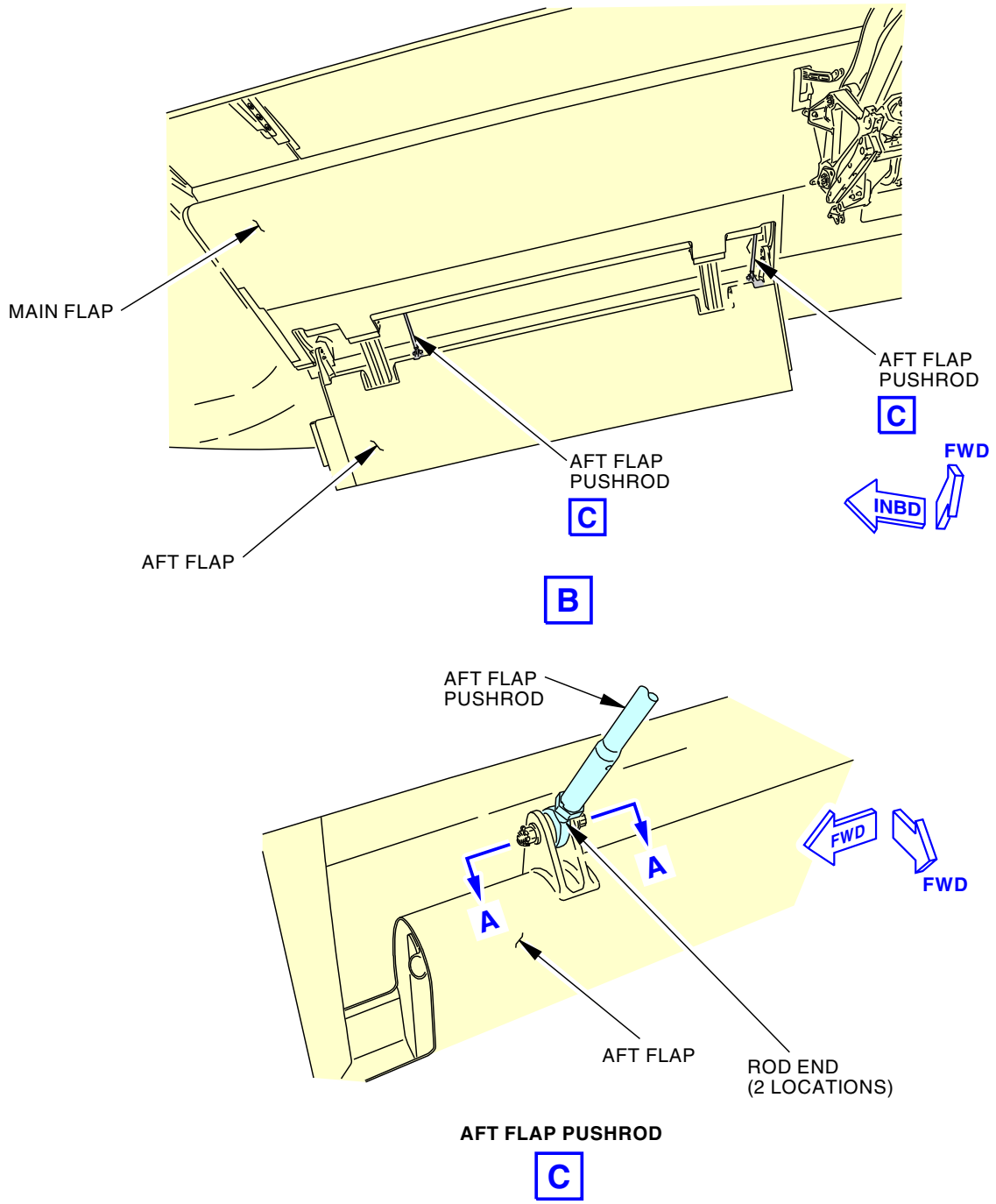

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Inboard Aft Flap Inspection
Figure 601/27-51-12-990-803 (Sheet 2 of 4)

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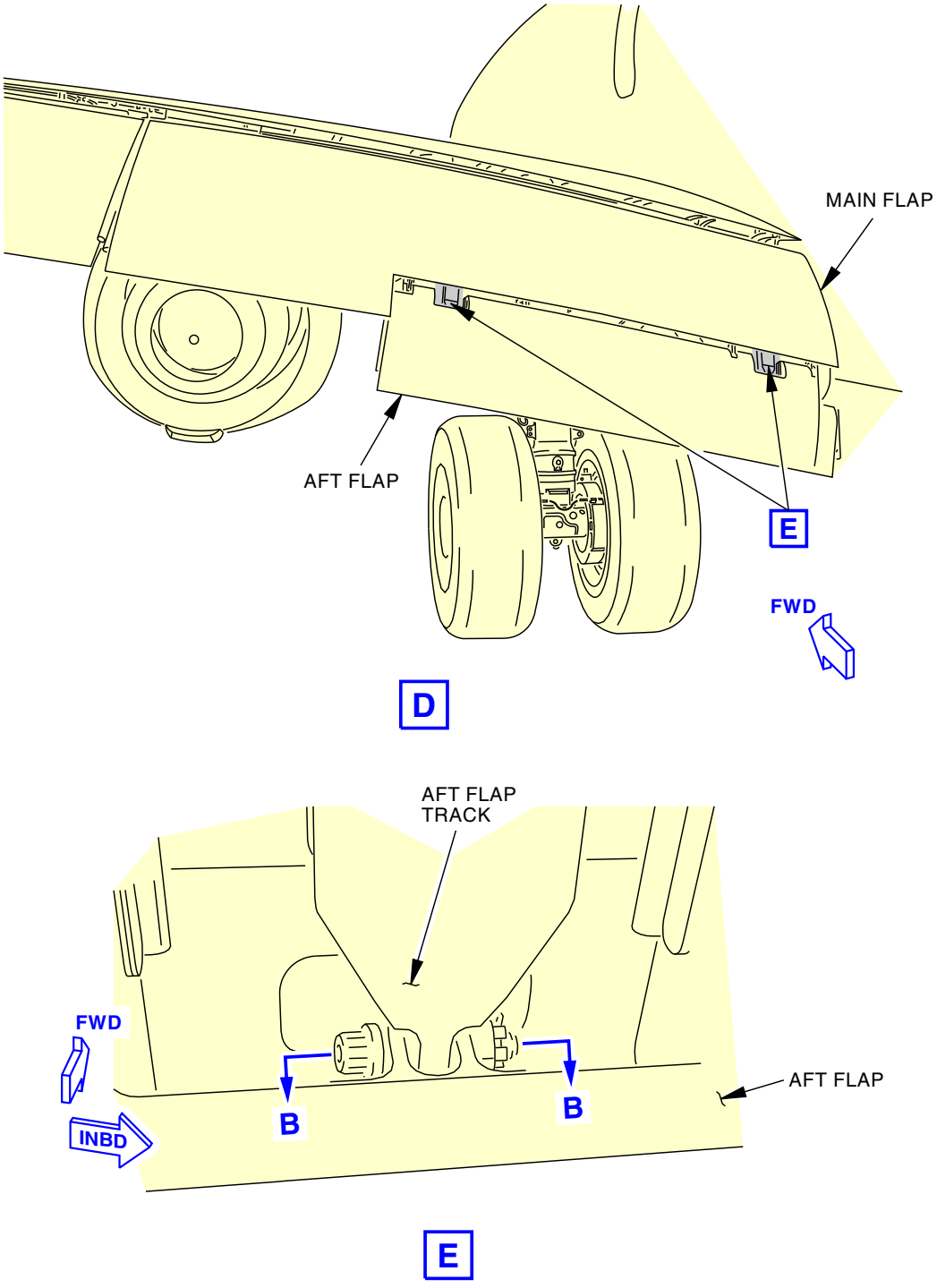
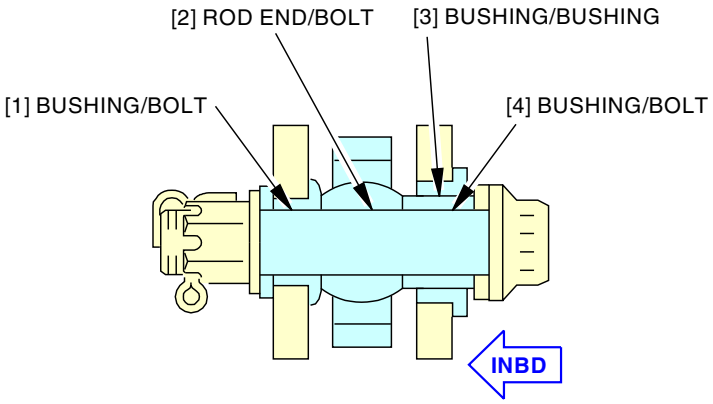
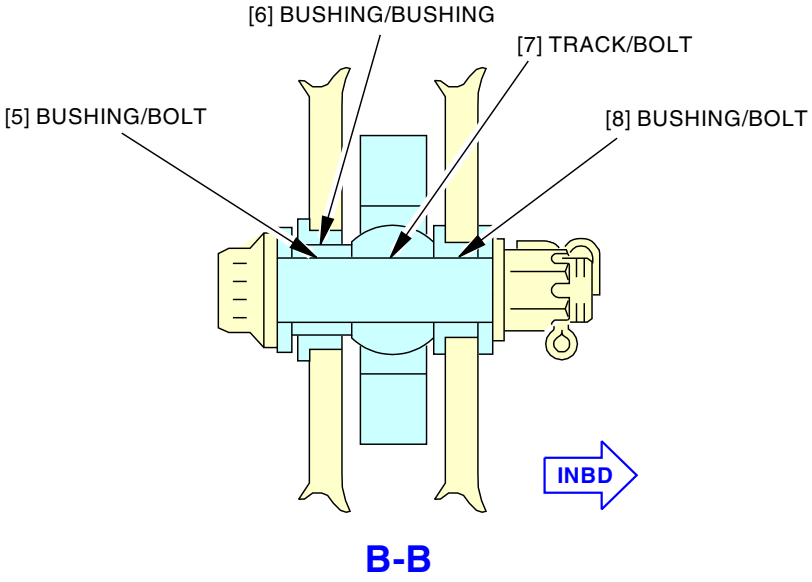


Inboard Aft Flap Inspection
Figure 601/27-51-12-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Inboard Aft Flap Inspection
Figure 601/27-51-12-990-803 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP CARRIAGES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard flap carriage removal (selection)

(2) Inboard flap carriage installation (selection)

(3) Removal of the outboard carriage for the inboard flap

(4) Installation of the outboard carriage for the inboard flap

(5) Removal of the inboard carriage for the inboard flap

(6) Installation of the inboard carriage for the inboard flap.

TASK 27-51-13-000-801

2. Inboard Flap Carriage Removal (Selection)

A. Location Zones

Zone	Area
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
653	Right Wing - Inboard Flap

B. Inboard Flap Carriage Removal (Selection)

SUBTASK 27-51-13-000-001

(1) Do one of these tasks to remove the applicable inboard flap carriage:

(a) Do this task: Inboard Flap Outboard Carriage Removal, TASK 27-51-13-000-802.

(b) Do this task: Inboard Flap Inboard Carriage Removal, TASK 27-51-13-000-803.

——— END OF TASK ———

TASK 27-51-13-400-801

3. Inboard Flap Carriage Installation (Selection)

A. Location Zones

Zone	Area
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
653	Right Wing - Inboard Flap

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Inboard Flap Carriage Installation (Selection)

SUBTASK 27-51-13-400-001

(1) Do one of these tasks to install the applicable inboard flap carriage:

(a) Do this task: Inboard Flap Outboard Carriage Installation, TASK 27-51-13-400-802.

(b) Do this task: Inboard Flap Inboard Carriage Installation, TASK 27-51-13-400-803.

——— END OF TASK ———

TASK 27-51-13-000-802

4. Inboard Flap Outboard Carriage Removal

(Figure 401)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-11-000-801	Inboard Trailing Edge Flap Removal (P/B 401)

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Prepare for the Removal

SUBTASK 27-51-13-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-13-020-001

(2) Do this task: Inboard Trailing Edge Flap Removal, TASK 27-51-11-000-801.

E. Inboard Flap Outboard Carriage Removal

SUBTASK 27-51-13-010-001

(1) Remove the upper skin panel [3] from the main flap [1]:

(a) Remove the bolts [4] that attach the upper skin panel [3] to the main flap [1].

(b) Remove the upper skin panel [3].

SUBTASK 27-51-13-020-002

(2) Remove the carriage [2] from the main flap [1]:

(a) Remove the nuts [15], washers [14], washers [13], bolts [12] and bolts [16] that attach the aft end of the carriage [2].

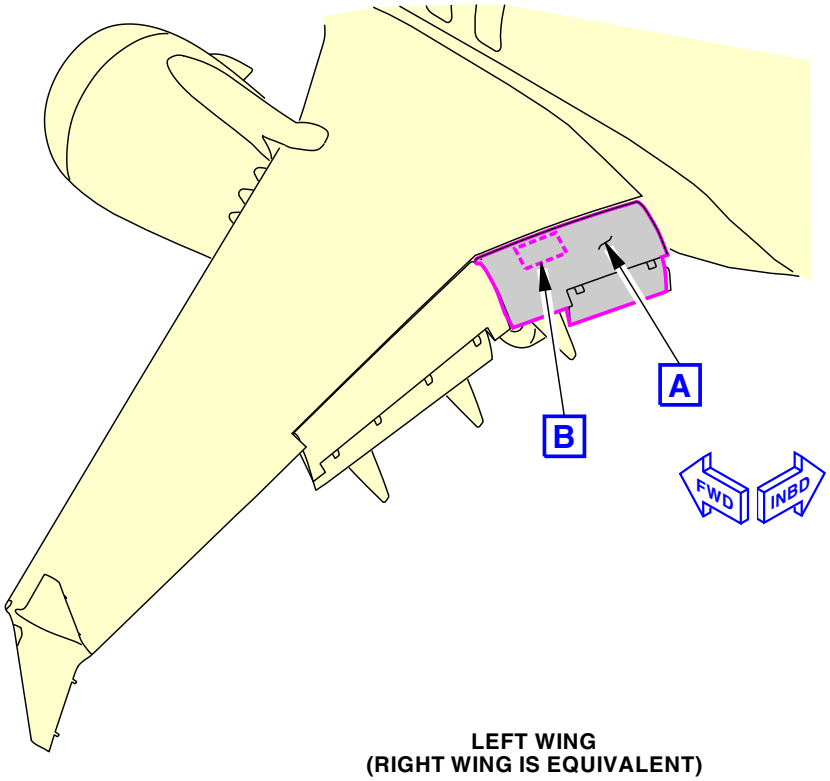
(b) Remove the nuts [11], washers [10] and bolts [9] from the forward end of the carriage [2].

(c) Remove the nuts [8], washers [7], bolts [5] and fillers [6] from the forward end of the carriage [2].

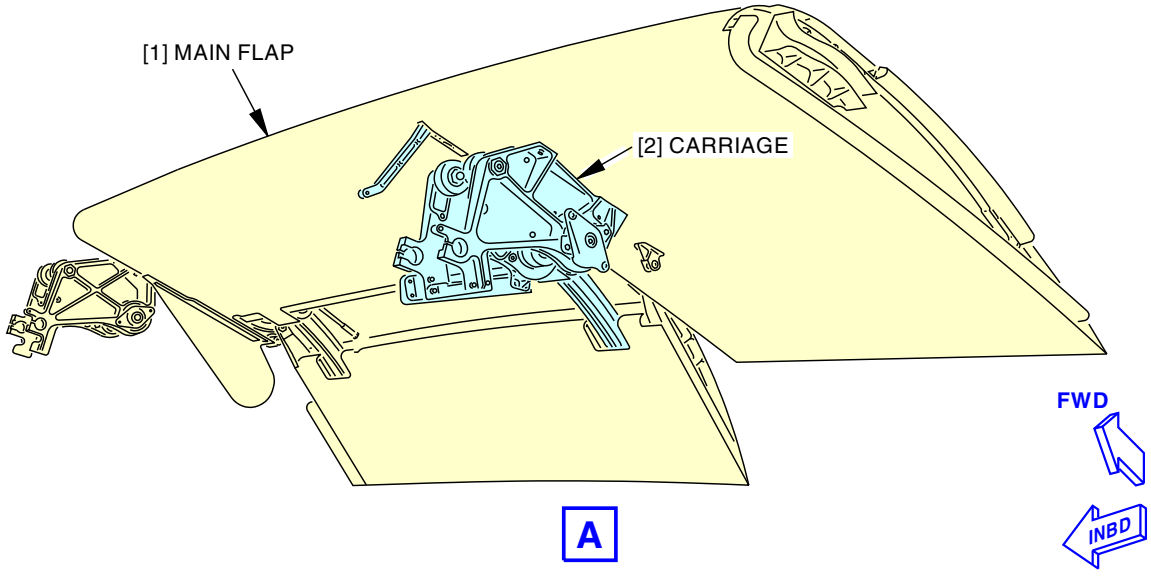
(d) Remove the carriage [2] from the main flap [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS EQUIVALENT)



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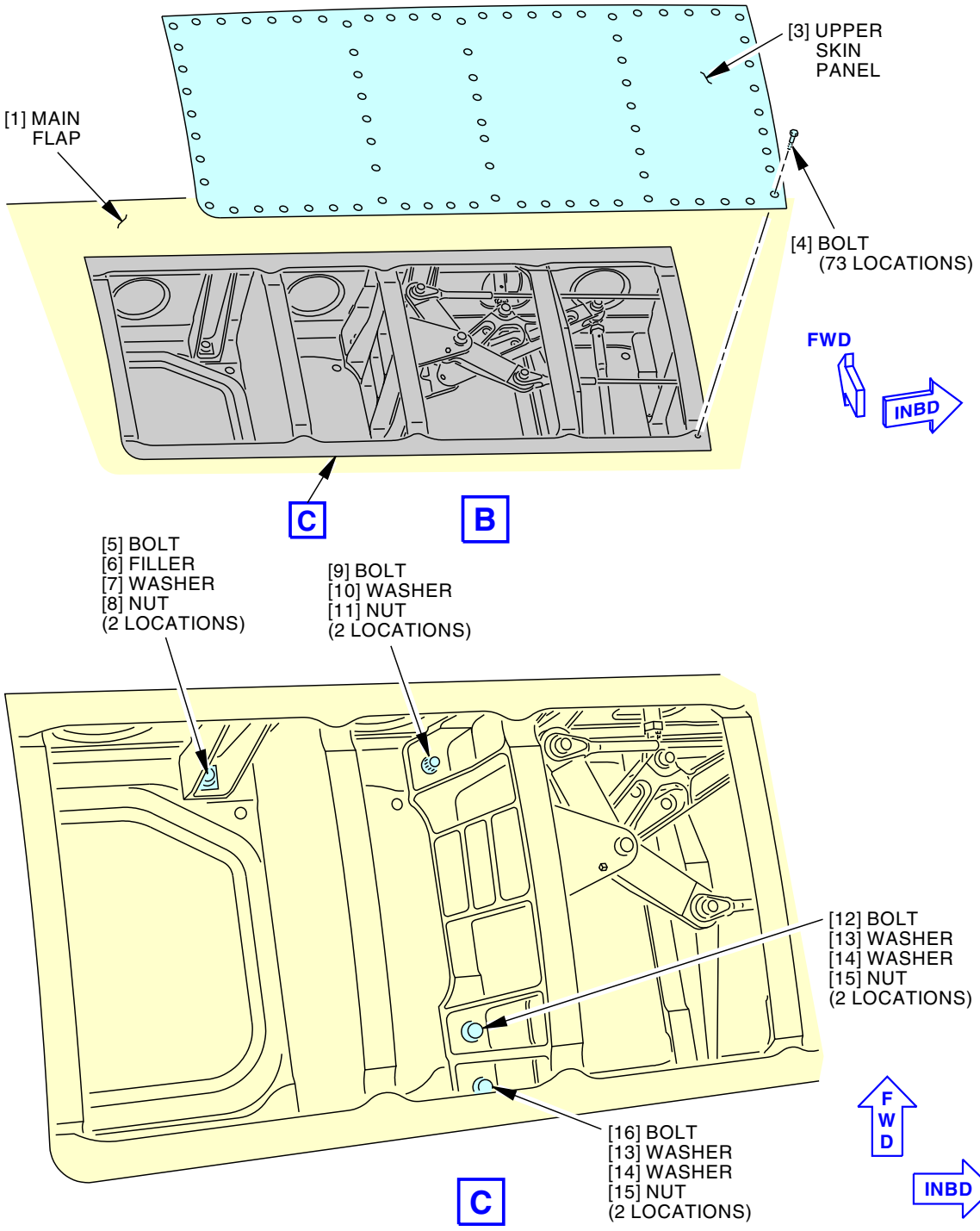
Inboard Flap Outboard Carriage Installation
Figure 401/27-51-13-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Outboard Carriage Installation
Figure 401/27-51-13-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-13-400-802

5. Inboard Flap Outboard Carriage Installation

(Figure 401)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-11-400-801	Inboard Trailing Edge Flap Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Carriage	27-51-13-01A-080	SIA ALL
		27-51-13-01A-085	SIA ALL

E. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

F. Inboard Flap Outboard Carriage Installation

SUBTASK 27-51-13-020-012

(1) Inspect the rub pads [55] for wear.

(a) If the rub pads [55] are worn greater than 50%, they will need to be replaced.

SUBTASK 27-51-13-420-001

(2) Install the carriage [2] on the main flap [1]:

(a) Make sure the upper skin panel [3] is removed from the main flap [1].

(b) Apply sealant, A00247, to the mating surface of the carriage [2] and the main flap [1].

(c) Put the carriage [2] in its position on the main flap [1].

(d) Apply sealant, A00247, to the mating surface of the fillers [6] and the main flap [1].

(e) Put the fillers [6] in their location on the main flap [1].

(f) Apply sealant, A00247, to the shank and threads of the bolts [5], bolts [9], bolts [12] and bolts [16].

(g) Install the bolts [5], washers [7] and nuts [8] to attach the forward end of the carriage [2] to the main flap [1].

(h) Install the bolts [9], washers [10] and nuts [11] at the forward end of the carriage [2].

1) Make sure that the bolts [9] are installed with the bolt heads down.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) Install the bolts [12], bolts [16], washers [13], washers [14] and nuts [15] to attach the aft end of the carriage [2] to the main flap [1].

SUBTASK 27-51-13-410-001

(3) Install the upper skin panel [3] on the main flap [1]:

(a) Apply sealant, A00247, to the mating surface of the upper skin panel [3] and the main flap [1].

(b) Put the upper skin panel [3] in its position.

(c) Install the bolts [4]:

1) Apply compound, C00528 to the forward and aft rows of holes in the upper skin panel [3].

2) Install the bolts [4] in the forward and aft rows of holes.

3) Apply sealant, A00247, to the bolts [4] that go in the ribs and stiffeners in the main flap [1].

4) Install the bolts [4] in the ribs and stiffeners.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-13-420-002

(1) Do this task: Inboard Trailing Edge Flap Installation, TASK 27-51-11-400-801.

SUBTASK 27-51-13-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

TASK 27-51-13-000-803

6. Inboard Flap Inboard Carriage Removal

(Figure 402)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-11-000-801	Inboard Trailing Edge Flap Removal (P/B 401)

C. Location Zones

Zone	Area
541	Left Wing - Fairing Flap Support No. 4
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
653	Right Wing - Inboard Flap

D. Prepare for the Removal

SUBTASK 27-51-13-040-002

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-13-020-003

(2) Do this task: Inboard Trailing Edge Flap Removal, TASK 27-51-11-000-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Inboard Flap Inboard Carriage Removal

SUBTASK 27-51-13-010-002

(1) Remove the lower skin panel [31] from the main flap [1]:

(a) Remove the bolts [32] that attach the lower skin panel [31] to the main flap [1].

(b) Remove the lower skin panel [31].

SUBTASK 27-51-13-020-004

(2) Remove the secondary torque tube [40] from the main flap [1]:

(a) Remove the retainer [39] from the secondary torque tube [40]:

1) Remove the bolt [41], washer [42], nut [44] and filler [43] that attach the secondary torque tube [40] to the main flap [1].

2) Remove the retainer [39] from the secondary torque tube [40].

(b) Remove the nuts [49], washers [48], washers [51] and bolts [50] that attach the inboard end of the carriage [34] and the secondary torque tube [40] to the primary torque tube [38].

(c) Remove the secondary torque tube [40].

SUBTASK 27-51-13-020-005

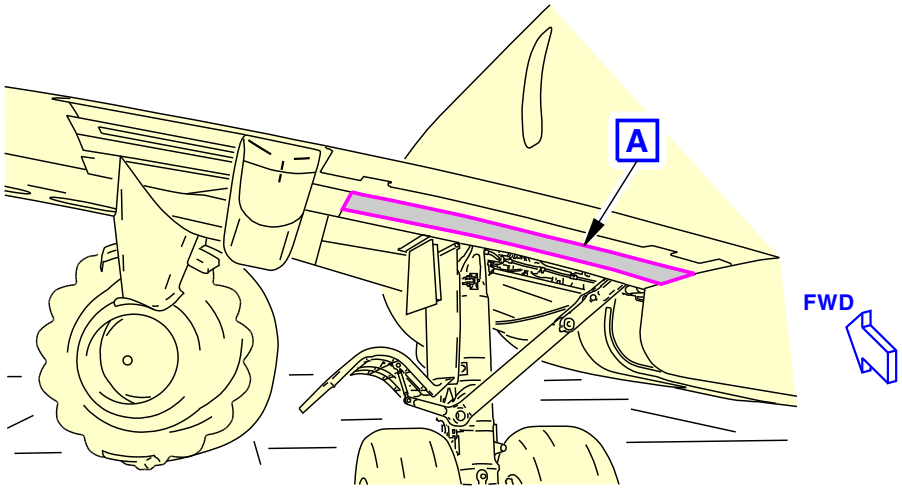
(3) Remove the carriage [34] from the main flap [1]:

(a) Remove the nuts [46], washers [45], bolts [47], bolt [54] and spacers [52] that attach the carriage [34], attach plate [37] and rub block [33] to the primary torque tube [38].

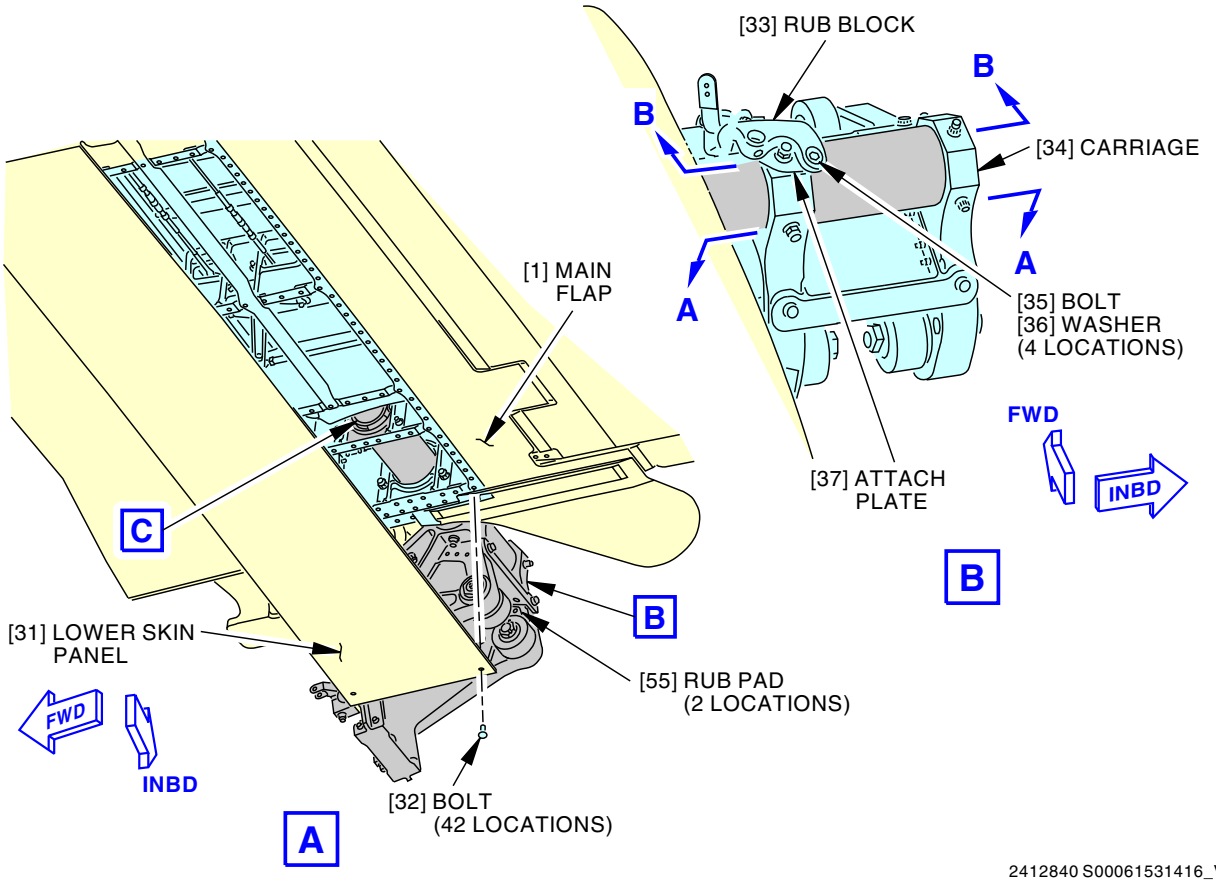
(b) Slide the carriage [34] inboard, off of the primary torque tube [38].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS EQUIVALENT)



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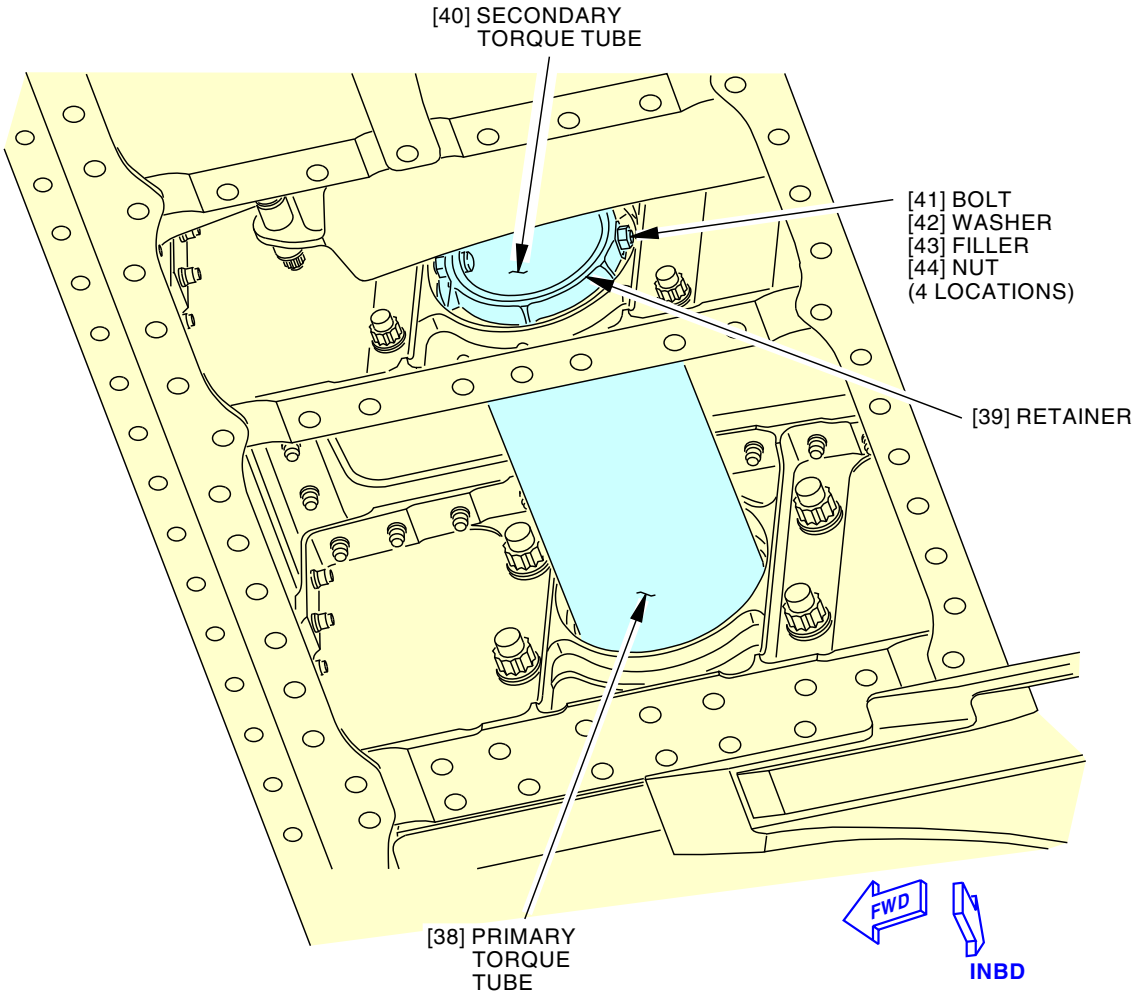
Inboard Flap Inboard Carriage Installation
Figure 402/27-51-13-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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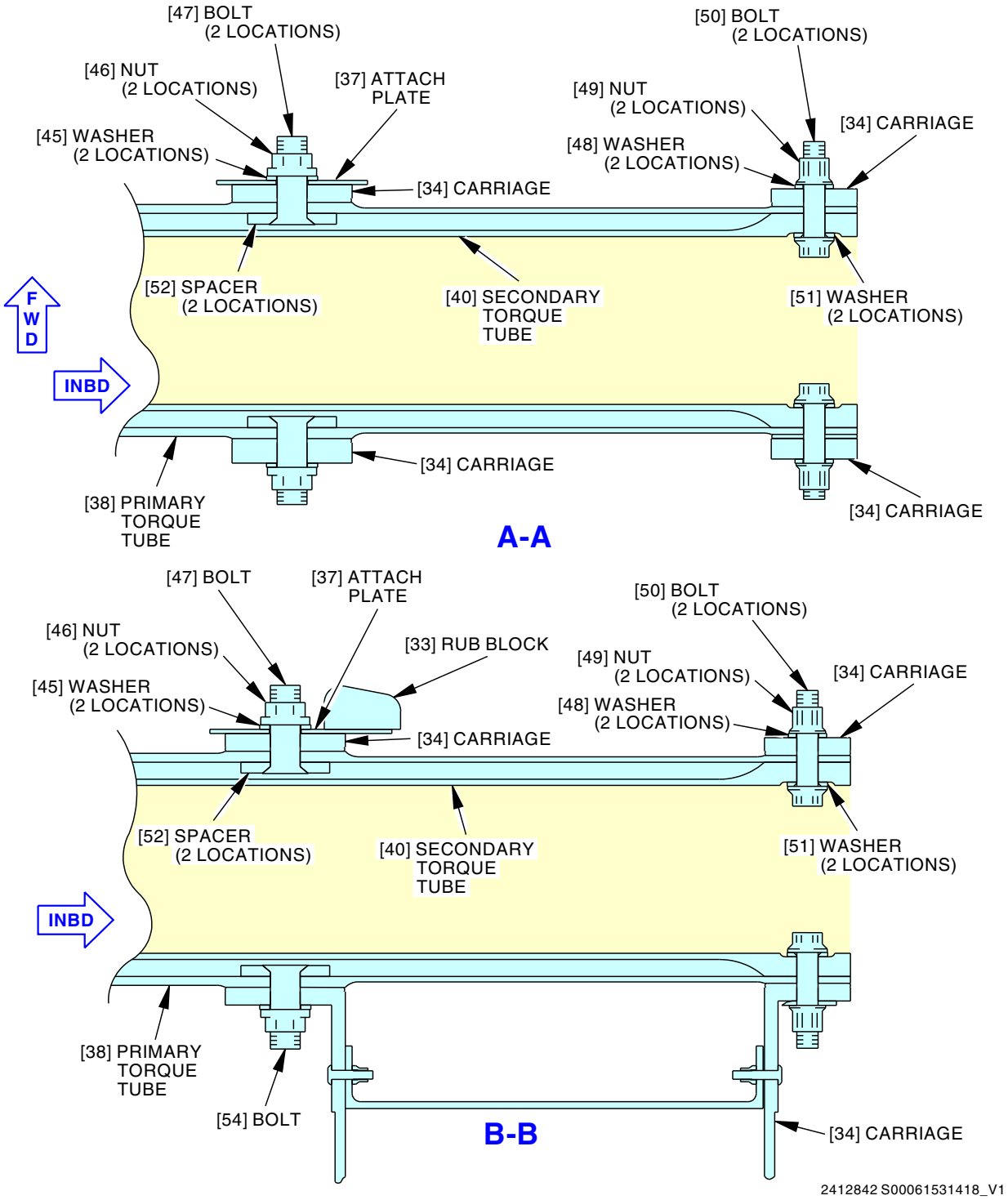
Inboard Flap Inboard Carriage Installation
Figure 402/27-51-13-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Carriage Installation
Figure 402/27-51-13-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-13-400-803

7. Inboard Flap Inboard Carriage Installation

(Figure 402)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-11-400-801	Inboard Trailing Edge Flap Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
34	Carriage	27-51-13-01A-435	SIA ALL
		27-51-13-01A-440	SIA ALL

E. Location Zones

Zone	Area
541	Left Wing - Fairing Flap Support No. 4
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
653	Right Wing - Inboard Flap

F. Inboard Flap Inboard Carriage Installation

SUBTASK 27-51-13-020-013

(1) Inspect the rub pads [55] for wear.

(a) If the resin material of the rub pads [55] is worn more than 40%, replace the rub pads [55].

SUBTASK 27-51-13-420-003

(2) Install the carriage [34] on the main flap [1]:

(a) Put the carriage [34] in its position on the primary torque tube [38].

(b) Apply sealant, A00247, to the mating surface of the spacers [52].

(c) Apply sealant, A00247, to the shank and threads of the bolts [47] and bolt [54].

(d) Install the bolts [47] and bolt [54] with the spacers [52] through the primary torque tube [38] and the carriage [34].

(e) Put the attach plate [37] and rub block [33] in their position on the bolts [47].

(f) Install the washers [45] and nuts [46] on the bolts [47] and bolt [54].

1) Tighten the nuts [46] to torque tool set point of 470 in-lb (53.10 N·m).

a) Tighten the nuts [46] again before the sealant becomes hard.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) If they are not installed, install the bolts [35] and washers [36] that attach the rub block [33] to the attach plate [37].

SUBTASK 27-51-13-420-004

(3) Install the secondary torque tube [40] in the main flap [1]:

(a) Put the secondary torque tube [40] in its location in the primary torque tube [38].

(b) Install the bolts [50] and washers [51] through the secondary torque tube [40], primary torque tube [38] and the carriage [34].

(c) Install the washers [48] and nuts [49] on the bolts [50].

(d) Tighten the nuts [49] to torque tool set point of 320 in-lb (36.2 N·m).

1) Tighten the nuts [49] again before the sealant becomes hard.

(e) Install the retainer [39] on the secondary torque tube [40].

1) Turn the retainer [39] until the holes for the bolts [41] align.

2) Apply sealant, A00247, to the fillers [43].

3) Install the bolts [41], washers [42], fillers [43] and nuts [44].

SUBTASK 27-51-13-410-002

(4) Install the lower skin panel [31] on the main flap [1]:

(a) Apply sealant, A00247, to the mating surface of the lower skin panel [31] and the main flap [1].

(b) Put the lower skin panel [31] in its position.

(c) Install the bolts [32]:

1) Apply compound, C00528, to the forward and aft rows of holes in the lower skin panel [31].

2) Install the bolts [32] in the forward and aft rows of holes.

3) Apply sealant, A00247, to the bolts [32] that go in the ribs and stiffeners in the main flap [1].

4) Install the bolts [32] in the ribs and stiffeners.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-13-420-005

(1) Do this task: Inboard Trailing Edge Flap Installation, TASK 27-51-11-400-801.

SUBTASK 27-51-13-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP CARRIAGES - INSPECTION/CHECK

1. General

A. This procedure contains the tasks to do inspections of the carriages for the inboard trailing edge flaps.

TASK 27-51-13-200-801

2. Inboard Flap Carriage Inspection (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6

B. Inboard Flap Carriage Inspection (Selection)

SUBTASK 27-51-13-200-001

(1) Do one of these tasks to inspect the applicable inboard flap carriage:

(a) Do this task: Inboard Flap Outboard Carriage Inspection, TASK 27-51-13-200-802.

(b) Do this task: Inboard Flap Inboard Carriage Inspection, TASK 27-51-13-200-803.

——— END OF TASK ———

TASK 27-51-13-200-802

3. Inboard Flap Outboard Carriage Inspection

(Figure 601)

A. General

(1) This task gives wear limits for the outboard carriage on the inboard flap.

(2) This task is applicable to the carriages at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-13-000-802	Inboard Flap Outboard Carriage Removal (P/B 401)
27-51-13-400-802	Inboard Flap Outboard Carriage Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Inboard Flap Outboard Carriage Inspection

SUBTASK 27-51-13-020-006

(1) Do this task: Inboard Flap Outboard Carriage Removal, TASK 27-51-13-000-802.

SUBTASK 27-51-13-020-014

(2) Inspect the rub pads [8] for wear.

(a) If the rub pads [8] are worn greater than 50%, they will need to be replaced.

SUBTASK 27-51-13-020-007

(3) Use these tools to do a check for wear on the part of the inboard flap outboard carriage:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-13-020-008

(4) Examine the parts of the inboard flap outboard carriage (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 601/27-51-13-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	1.1870 in 30.150 mm	1.1878 in 30.170 mm	1.1915 in 30.264 mm	0.0050 in
#1 PIN	O.D.	1.1855 in 30.112 mm	1.1865 in 30.137 mm	1.1828 in 30.043 mm	0.1270 mm
#2 ROLLER	I.D.	1.1868 in 30.145 mm	1.1875 in 30.163 mm	1.1915 in 30.264 mm	0.0050 in
#2 PIN	O.D.	1.1855 in 30.112 mm	1.1865 in 30.137 mm	1.1825 in 30.036 mm	0.1270 mm
#3 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	
#4 BUSHING	I.D.	1.2506 in 31.765 mm	1.2514 in 31.786 mm	1.2540 in 31.852 mm	0.0050 in
#4 PIN	O.D.	1.2480 in	1.2490 in	1.2470 in	0.1270 mm

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-51-13-993-801 (Continued)

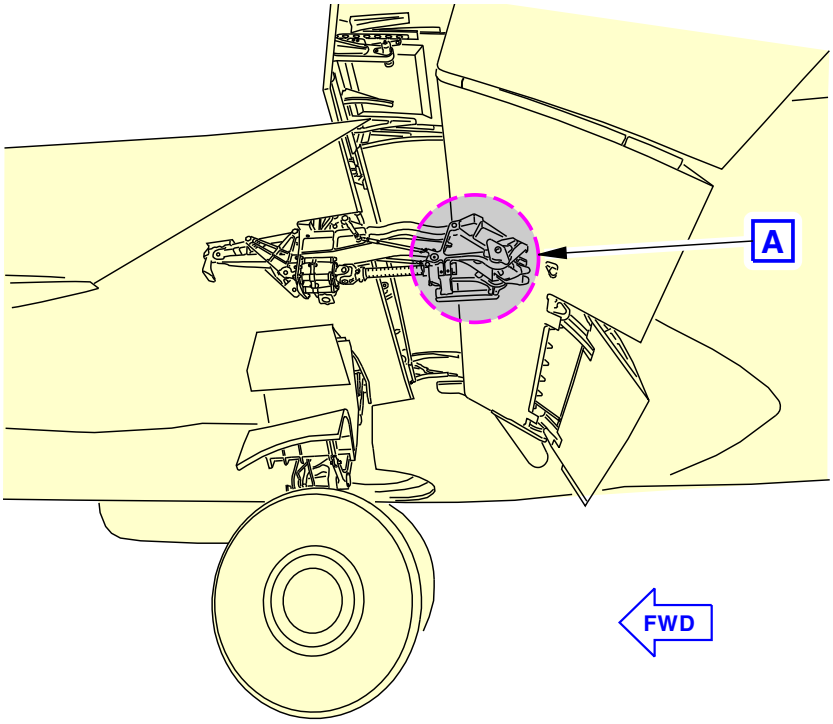
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
		31.699 mm	31.725 mm	31.674 mm	
#5 BUSHING	I.D.	3.3000 in 88.820 mm	3.3020 in 83.871 mm	3.3040 in 83.922 mm	0.0050 in
#5 CARTRIDGE	O.D.	3.2980 in 83.769 mm	3.2990 in 83.795 mm	3.2970 in 83.744 mm	0.1270 mm
#6 ROLLER	I.D.	1.2493 in 31.732 mm	1.2500 in 31.750 mm	1.2540 in 31.852 mm	0.0050 in
#6 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2450 in 31.623 mm	0.1270 mm
#7 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	

SUBTASK 27-51-13-420-006

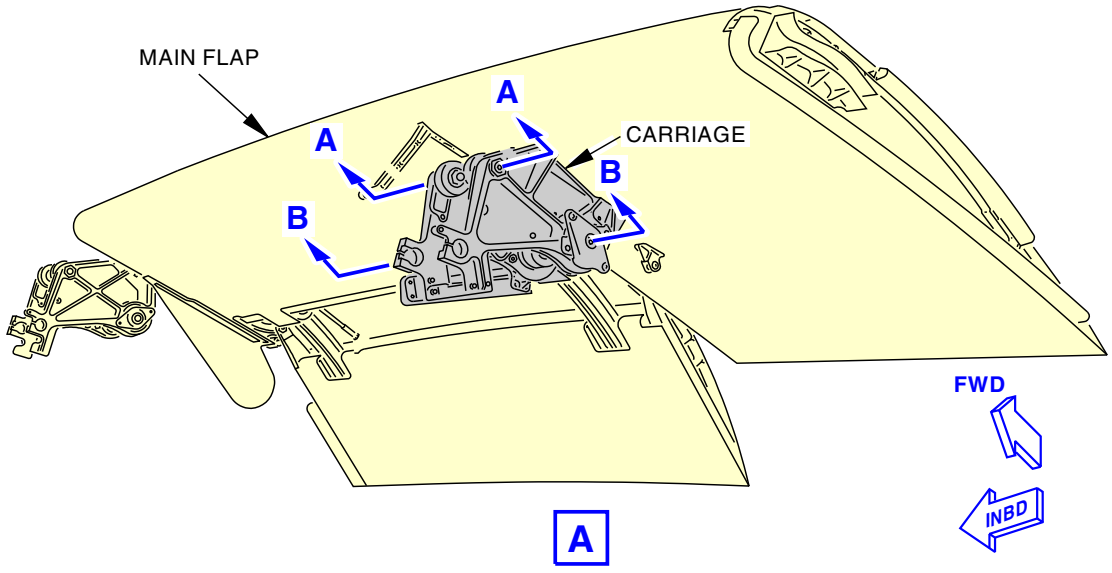
(5) Do this task: Inboard Flap Outboard Carriage Installation, TASK 27-51-13-400-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

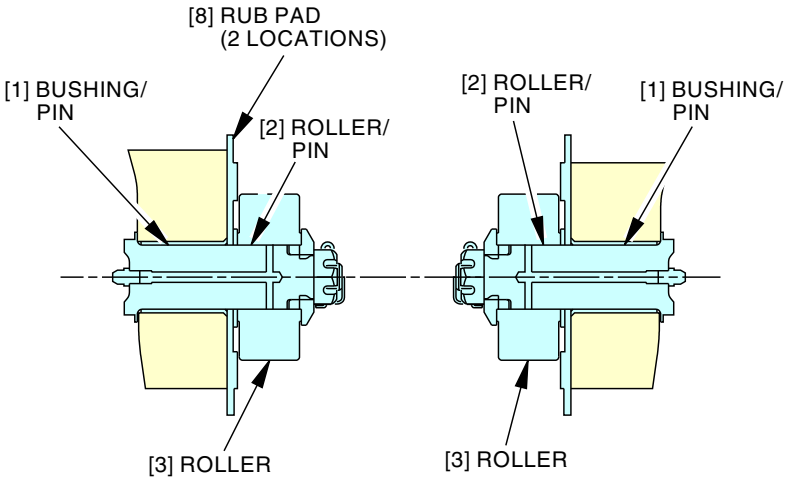


LEFT WING
(RIGHT WING IS EQUIVALENT)

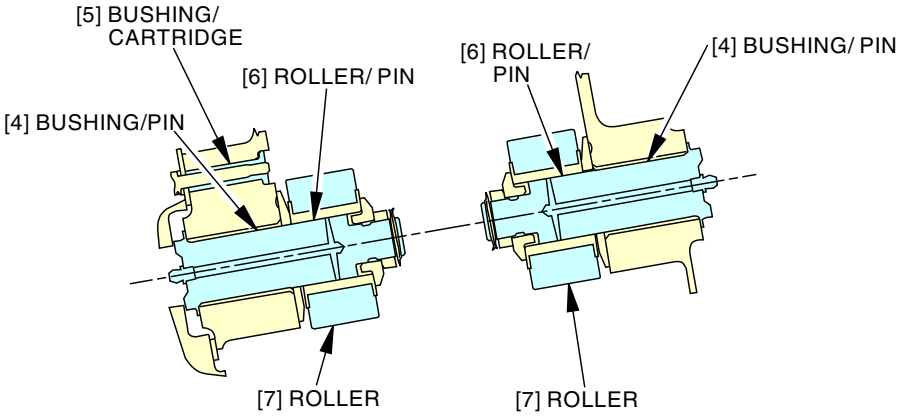


Inboard Flap Outboard Carriage Inspection
Figure 601/27-51-13-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A



B-B

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Inboard Flap Outboard Carriage Inspection
Figure 601/27-51-13-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-13-200-803

4. Inboard Flap Inboard Carriage Inspection

(Figure 602)

A. General

(1) This task gives wear limits for the inboard carriage on the inboard flap.

(2) This task is applicable to the carriages at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-13-000-803	Inboard Flap Inboard Carriage Removal (P/B 401)
27-51-13-400-803	Inboard Flap Inboard Carriage Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

E. Inboard Flap Inboard Carriage Inspection

SUBTASK 27-51-13-020-009

(1) Do this task: Inboard Flap Inboard Carriage Removal, TASK 27-51-13-000-803.

SUBTASK 27-51-13-020-015

(2) inspect the rub pads [8] for wear.

(a) If the rub pads [8] are worn greater than 40%, they will need to be replaced.

SUBTASK 27-51-13-020-010

(3) Use these tools to do a check for wear on the part of the inboard flap inboard carriage:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-13-020-011

(4) Examine the parts of the inboard flap inboard carriage (Table 602):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

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Table 602/27-51-13-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	1.1870 in 30.150 mm	1.1878 in 30.170 mm	1.1915 in 30.264 mm	0.0050 in 0.1270 mm
#1 PIN	O.D.	1.1855 in 30.112 mm	1.1865 in 30.137 mm	1.1828 in 30.043 mm	
#2 ROLLER	I.D.	1.1868 in 30.145 mm	1.1875 in 30.163 mm	1.1915 in 30.264 mm	0.0050 in 0.1270 mm
#2 PIN	O.D.	1.1855 in 30.112 mm	1.1865 in 30.137 mm	1.1825 in 30.036 mm	
#3 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	
#4 ECCENTRIC BUSHING	I.D.	1.2506 in 31.765 mm	1.2514 in 31.786 mm	1.2540 in 31.852 mm	0.0050 in 0.1270 mm
#4 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2470 in 31.674 mm	
#5 ROLLER	I.D.	1.2493 in 31.732 mm	1.2500 in 31.750 mm	1.2540 in 31.852 mm	0.0050 in 0.1270 mm
#5 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2450 in 31.623 mm	
#6 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	

SUBTASK 27-51-13-420-007

(5) Do this task: Inboard Flap Inboard Carriage Installation, TASK 27-51-13-400-803.

——— END OF TASK ———

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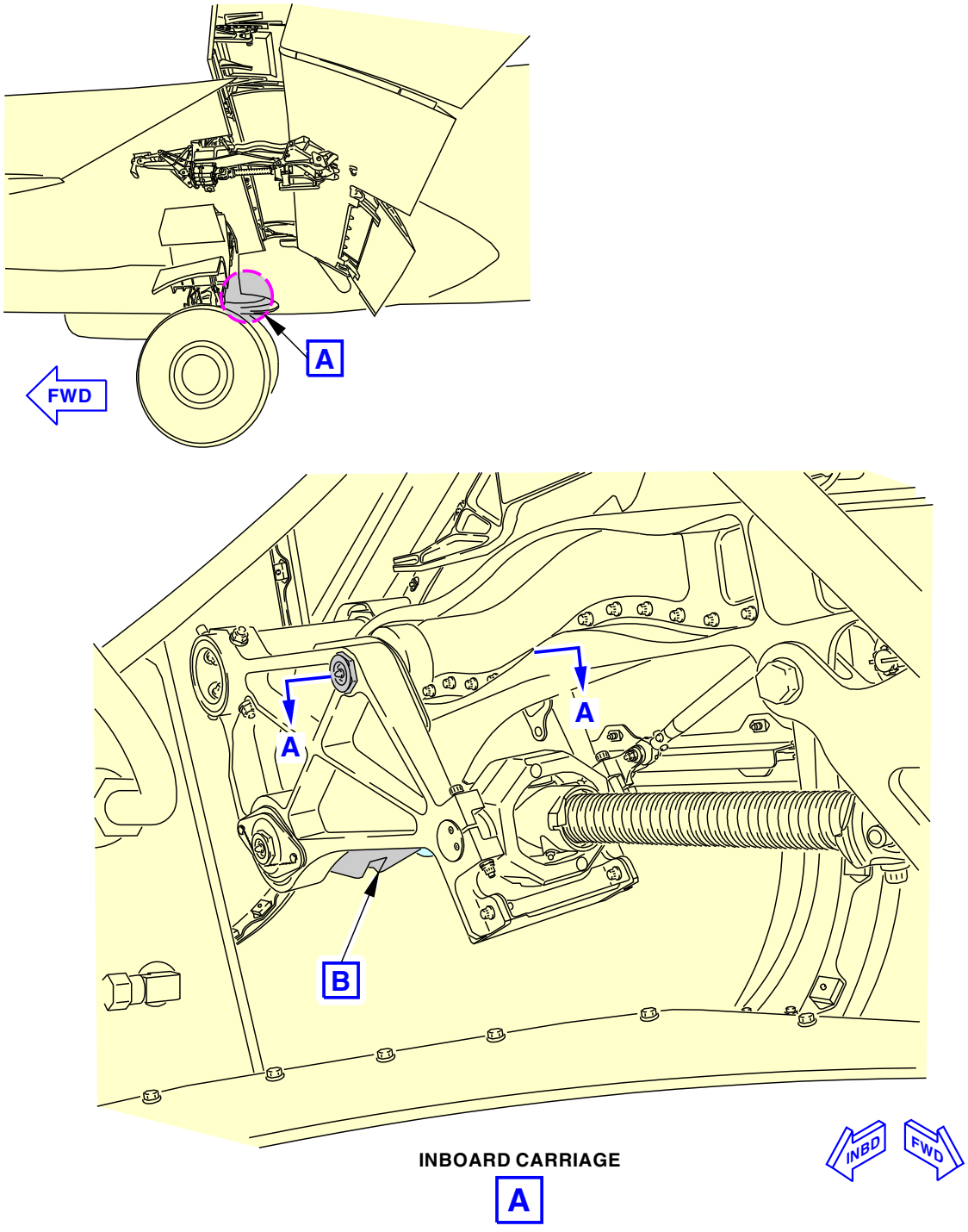
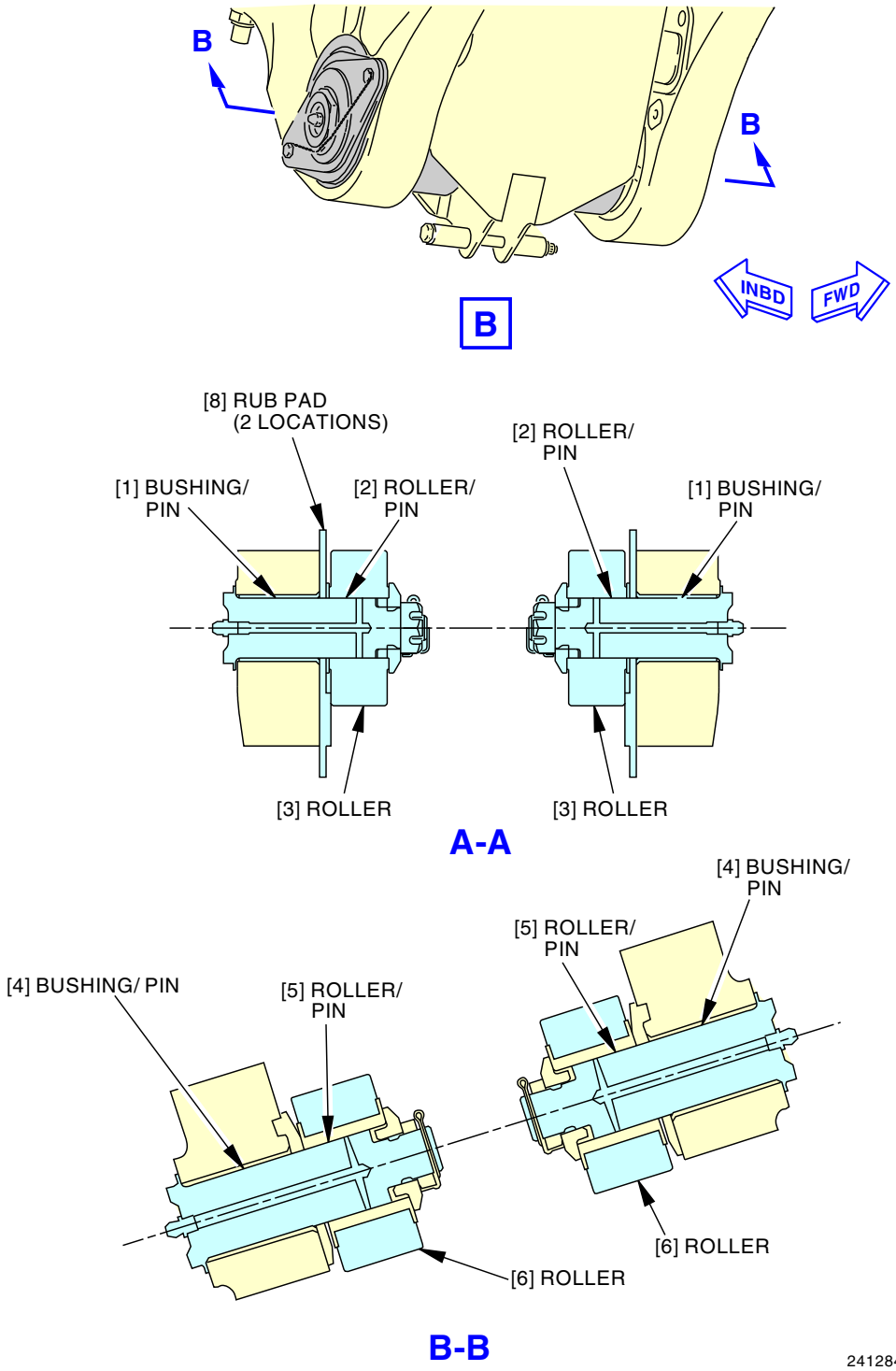


Inboard Flap Inboard Carriage Inspection
Figure 602/27-51-13-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Carriage Inspection
Figure 602/27-51-13-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD AFT FLAP ACTUATING MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard aft flap actuating mechanism removal

(2) Inboard aft flap actuating mechanism installation.

B. The aft flap actuating mechanism includes these parts:

(1) The aft flap drive rod

(2) The interconnect pushrod

(3) The crankshaft

(4) The aft flap pushrods

(5) The cables

(6) The outboard bellcrank

(7) The inboard bellcrank

TASK 27-51-14-000-801

2. Inboard Aft Flap Actuating Mechanism Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)

B. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

C. Prepare for the Removal

SUBTASK 27-51-14-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-14-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-14-010-001

(3) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

SUBTASK 27-51-14-010-002

(4) Remove the upper skin panel [4] from the outboard end of the main flap [1]:

(a) Remove the bolts [3] that attach the upper skin panel [4] to the main flap [1].

(b) Remove the upper skin panel [4].

SUBTASK 27-51-14-010-003

(5) Remove the lower skin panel [58] from the inboard end of the main flap [1]:

(a) Remove the bolts [57] that attach the lower skin panel [58] to the main flap [1].

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(b) Remove the lower skin panel [58].

SUBTASK 27-51-14-010-004

(6) Remove the leading edge panel [40] from the outboard end of the main flap [1]:

(a) Remove the bolts [42] that attach the leading edge panel [40] to the main flap [1].

(b) Remove the leading edge panel [40].

D. Inboard Aft Flap Mechanism Removal

SUBTASK 27-51-14-020-001

(1) Remove the aft flap drive rod assembly [43]:

(a) Remove the pins [50], nuts [49], washers [48], bushings [47], washers [46] and bolts [45] that attach the aft flap drive rod assembly [43] to the drive rod fitting [44] and the crankshaft assembly [17].

(b) Remove the aft flap drive rod assembly [43].

SUBTASK 27-51-14-020-002

(2) Remove the interconnect push rod assembly [18]:

(a) Remove the pin [26], nut [25], washer [24], washer [22], bolt [21] and bushing [23] that attach the interconnect push rod assembly [18] to the crankshaft assembly [17].

(b) Remove the pin [16], nut [15], washer [14], washer [12], bolt [11] and bushing [13] that attach the interconnect push rod assembly [18] to the outboard bellcrank assembly [33].

(c) Remove the interconnect push rod assembly [18].

SUBTASK 27-51-14-020-003

(3) Remove the crankshaft assembly [17]:

(a) Remove the pin [56], nut [55], washer [54], washers [52], bolts [51] and bushings [53] that attach the crankshaft assembly [17] to the ribs [41].

(b) Remove the crankshaft assembly [17].

SUBTASK 27-51-14-020-004

(4) Remove the aft flap push rod assemblies [34]:

(a) Remove the pin [32], nut [31], washer [30], washer [28], bolt [27] and bushing [29] that attach the outboard aft flap push rod assembly [34] to the outboard bellcrank assembly [33].

(b) Remove the pin [32], nut [31], washer [30], bushing [29], washer [28] and bolt [27] that attach the inboard aft flap push rod assembly [34] to the inboard bellcrank assembly [67].

(c) Remove the pin [80], nut [79], washer [78], washer [76], bolt [75] and bushing [77] that attach the aft flap push rod assemblies [34] to the aft flap [2].

(d) Remove the aft flap push rod assemblies [34].

SUBTASK 27-51-14-020-005

(5) Remove the cable assemblies [19] and cable assemblies [64]:

(a) Remove the locking clips [66] from the turnbuckles [65].

(b) Turn the turnbuckles [65] to loosen the cable assemblies [19] and cable assemblies [64].

(c) Remove the pins [63], nuts [62], washers [61], washers [60], teflon washers [90] and bolts [59] that attach the cable assemblies [64] to the inboard bellcrank assembly [67].

(d) Remove the pins [39], nuts [38], washer [37], washers [36], teflon washers [90] and bolts [35] that attach the cable assemblies [19] to the outboard bellcrank assembly [33].

(e) Remove the cable assemblies [19] and cable assemblies [64].

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SUBTASK 27-51-14-020-006

(6) Remove the outboard bellcrank assembly [33]:

(a) Remove the pin [10], nut [9], washer [8], washer [6], bolt [5] and bushings [7] that attach the outboard bellcrank assembly [33] to the main flap [1].

(b) Remove the outboard bellcrank assembly [33].

SUBTASK 27-51-14-020-007

(7) Remove the inboard bellcrank assembly [67]:

(a) Remove the pin [73], nut [72], washer [71], washer [69], bolt [68] and bushings [70] that attach the inboard bellcrank assembly [67] to the main flap [1].

(b) Remove the inboard bellcrank assembly [67].

——— END OF TASK ———

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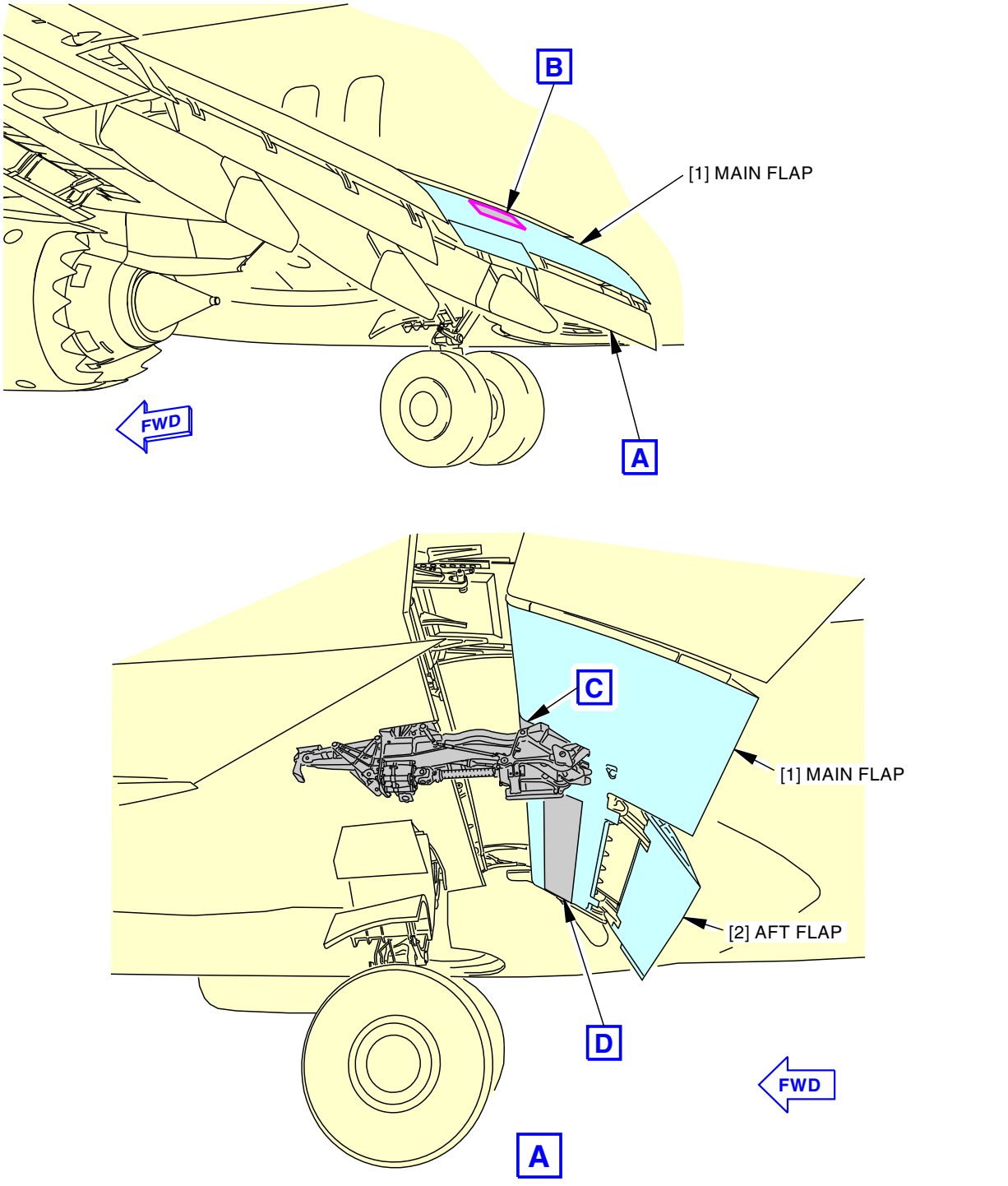
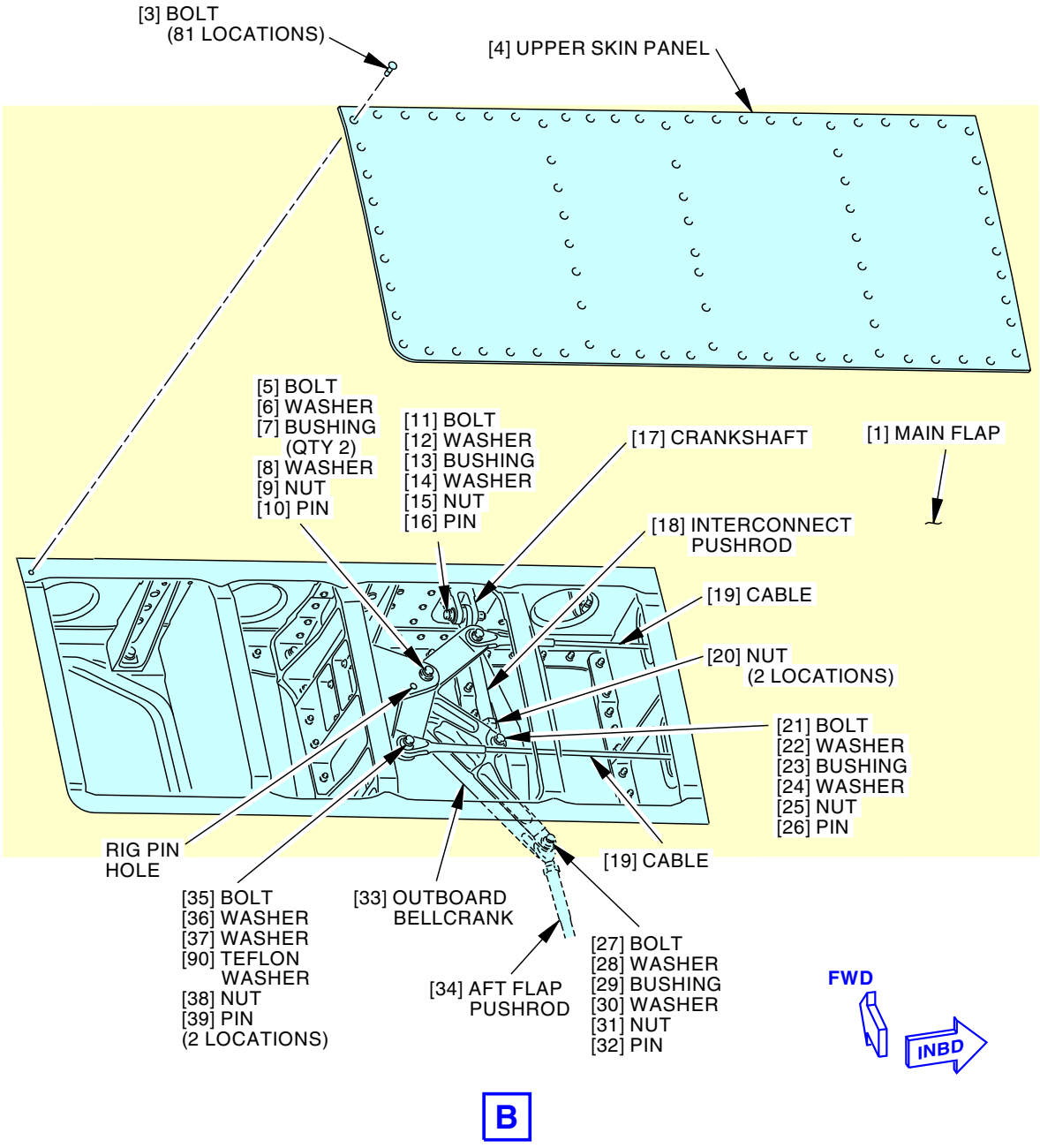


Inboard Aft Flap Actuating Mechanism Installation
Figure 401/27-51-14-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Aft Flap Actuating Mechanism Installation
Figure 401/27-51-14-990-801 (Sheet 2 of 5)

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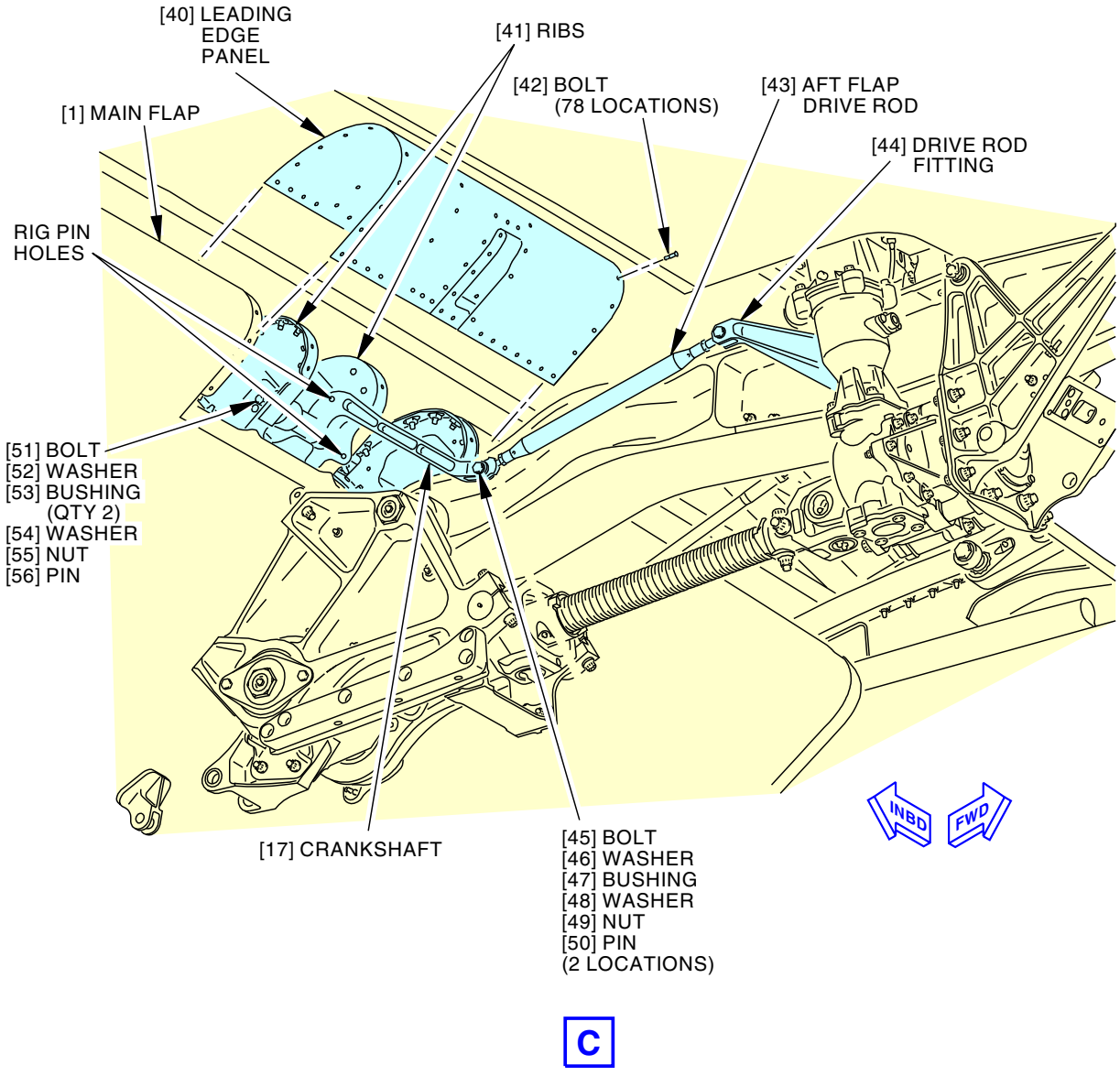

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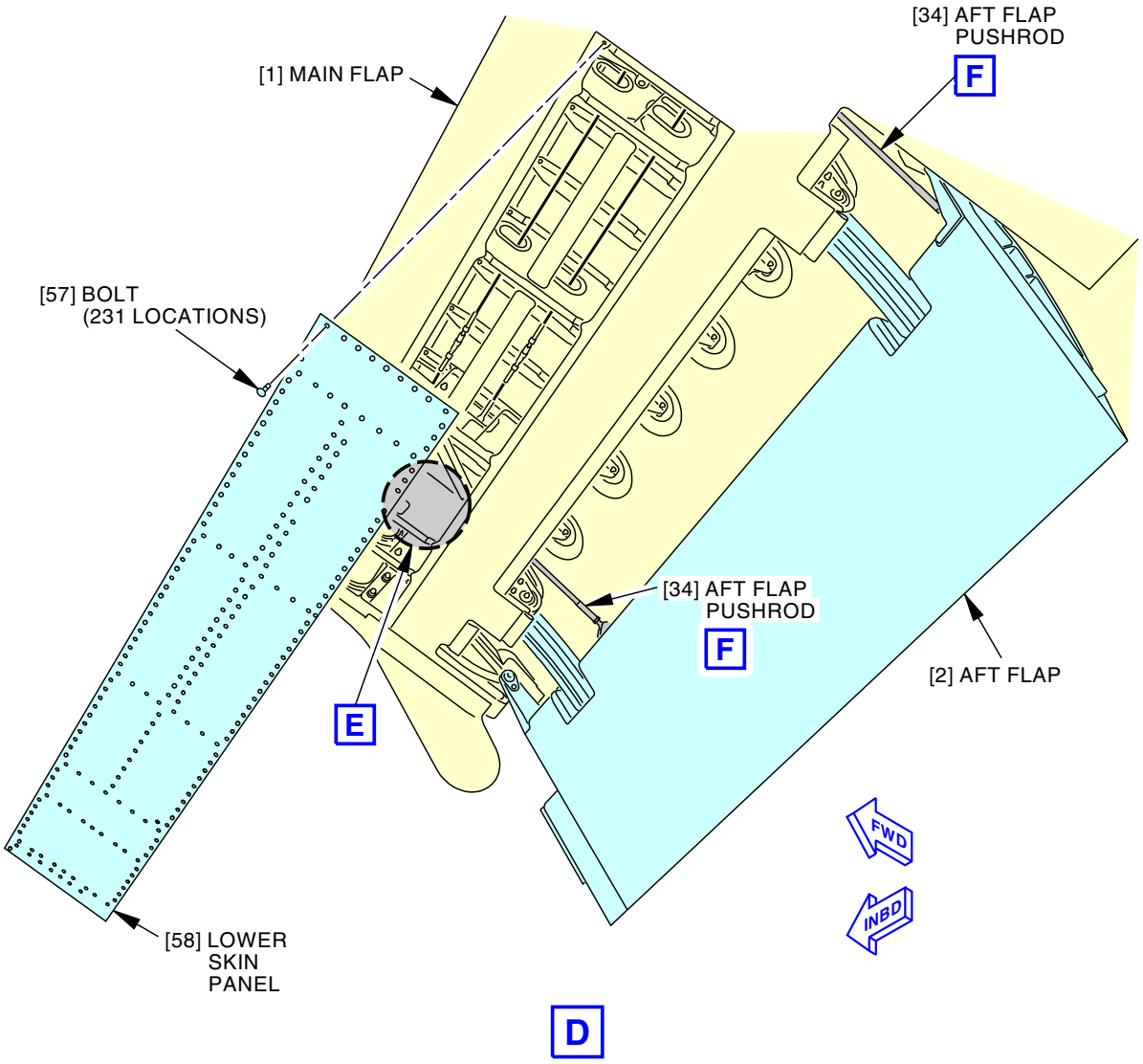
Inboard Aft Flap Actuating Mechanism Installation
Figure 401/27-51-14-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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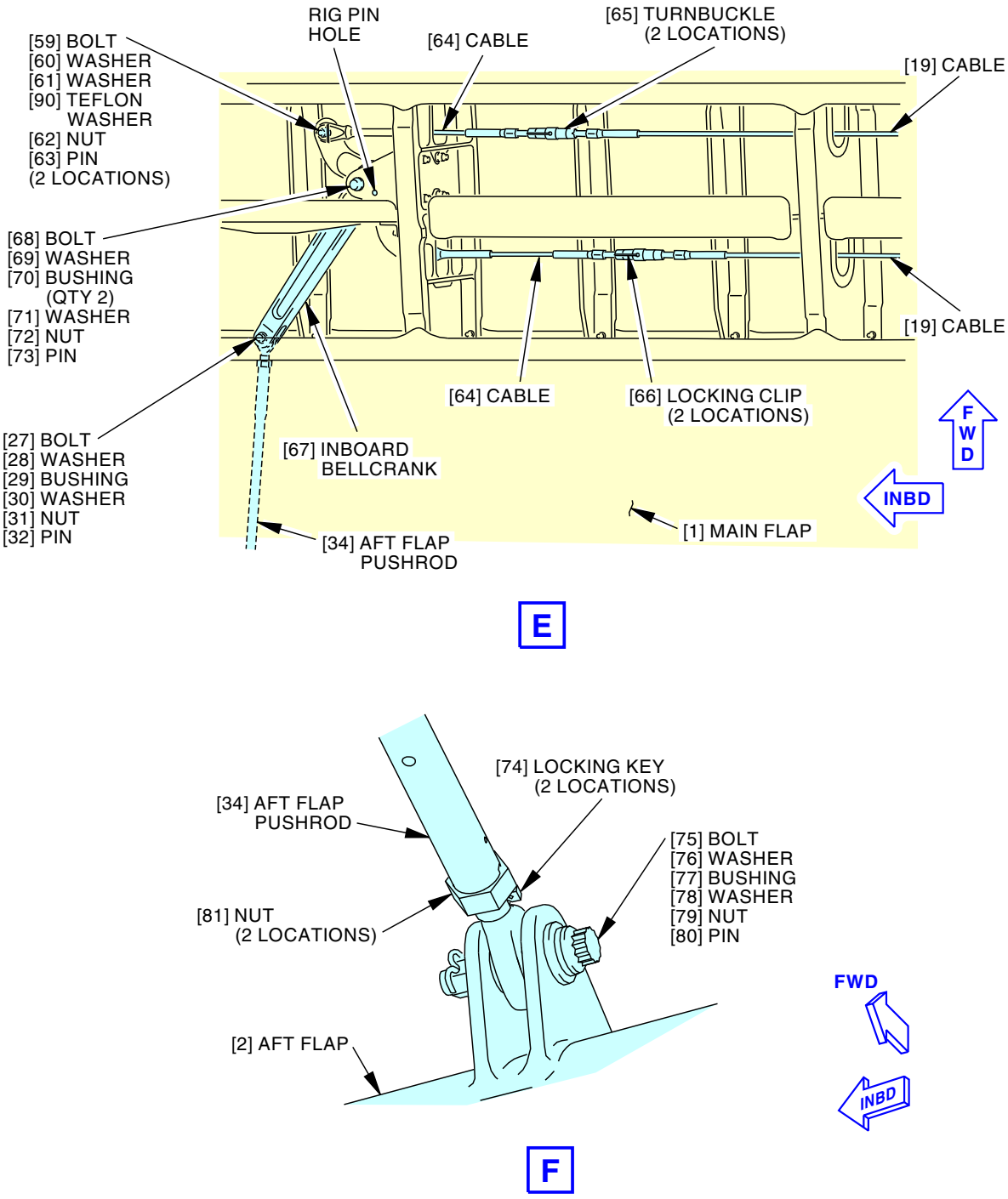
Inboard Aft Flap Actuating Mechanism Installation
Figure 401/27-51-14-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Aft Flap Actuating Mechanism Installation
Figure 401/27-51-14-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-14-400-801

3. Inboard Aft Flap Actuating Mechanism Installation

(Figure 401)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1554	Tensiometer - Cable, High Tension (200 lbs and above) Part #: 102-03120 Supplier: 21844 Part #: ACM-300 Supplier: 13331 Part #: ACM-600 Supplier: 13331 Part #: ACX-500-1 Supplier: 13331 Part #: T5-8008-106-00 Supplier: 0N8U4 Part #: T60-1001-C9-1A Supplier: 0N8U4
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Pin	27-51-14-01A-135	SIA ALL
16	Pin	27-51-14-01A-030	SIA ALL
17	Crankshaft assembly	27-51-14-01A-125	SIA ALL
		27-51-14-01A-130	SIA ALL
18	Rod assembly	27-51-14-01A-210	SIA ALL
19	Cable assembly	27-51-14-01A-290	SIA ALL
		27-51-14-01A-300	SIA ALL
26	Pin	27-51-14-01A-135	SIA ALL
32	Pin	27-51-14-01A-135	SIA ALL
33	Bellcrank assembly	27-51-14-01A-310	SIA ALL
34	Rod assembly	27-51-14-01A-245	SIA ALL
39	Pin	27-51-14-01A-135	SIA ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
43	Rod assembly	27-51-14-01-050	SIA ALL
50	Pin	27-51-14-01-020	SIA ALL
56	Pin	27-51-14-01A-060	SIA ALL
63	Pin	27-51-14-01A-135	SIA ALL
64	Cable assembly	27-51-14-01A-300	SIA ALL
66	Clip	27-51-14-01A-285	SIA ALL
67	Bellcrank assembly	27-51-14-01A-355	SIA ALL
73	Pin	27-51-14-01A-135	SIA ALL
80	Pin	27-51-12-01A-020	SIA ALL

E. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

F. Inboard Aft Flap Actuating Mechanism Installation

SUBTASK 27-51-14-420-001

(1) Install the inboard bellcrank assembly [67]:

(a) Put the inboard bellcrank assembly [67] in its position in the main flap [1].

(b) Install the bushings [70], bolt [68], washer [69], washer [71] and nut [72] to attach the inboard bellcrank assembly [67].

NOTE: Install the bolt [68] with the head down.

(c) Tighten the nut [72] to 100 in-lb (11.3 N·m) to 150 in-lb (16.9 N·m).

(d) Install the pin [73] in the nut [72].

SUBTASK 27-51-14-420-002

(2) Install the outboard bellcrank assembly [33]:

(a) Put the outboard bellcrank assembly [33] in its position in the main flap [1].

(b) Install the bushings [7], bolt [5], washer [6], washer [8] and nut [9] to attach the outboard bellcrank assembly [33].

NOTE: Install the bolt [5] with the head up.

(c) Tighten the nut [9] to 100 in-lb (11.3 N·m) to 150 in-lb (16.9 N·m).

(d) Install the pin [10] in the nut [9].

SUBTASK 27-51-14-420-003

(3) Install the cable assemblies [19] and cable assemblies [64]:

(a) Put the cable assemblies [19] and cable assemblies [64] in their position in the main flap [1].

(b) Install the bolts [35], washers [36], washers [37], teflon washers [90] and nuts [38] to attach the cable assemblies [19] to the outboard bellcrank assembly [33].

(c) Install the bolts [59], washers [60], washers [61], teflon washers [90] and nuts [62] to attach the cable assemblies [64] to the inboard bellcrank assembly [67].

(d) Tighten the nuts [38] and nuts [62] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

(e) Install the pins [39] in the nuts [38].

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(f) Install the pins [63] in the nuts [62].

(g) Connect the cable assemblies [19] and cable assemblies [64] together at the turnbuckles [65].

NOTE: Do not tighten the turnbuckles [65] or install the locking clips [66] at this time.

SUBTASK 27-51-14-420-004

(4) Install the crankshaft assembly [17]:

(a) Put the crankshaft assembly [17] in its position between the ribs [41] on the leading edge of the main flap [1].

(b) Install the bushings [53], bolt [51], washer [52], washer [54], and nut [55] that attach the crankshaft assembly [17] to the ribs [41].

(c) Tighten the nut [55] to 160 in-lb (18.1 N·m) to 240 in-lb (27.1 N·m).

(d) Install the pin [56] in the nut [55].

SUBTASK 27-51-14-420-005

(5) Install the interconnect push rod assembly [18]:

(a) Put the interconnect push rod assembly [18] in its position between the crankshaft assembly [17] and the outboard bellcrank assembly [33].

(b) Install the bushing [13], bolt [11], washer [12], washer [14] and nut [15] that attach the interconnect push rod assembly [18] to the crankshaft assembly [17].

NOTE: Install the bolt [11] with the head outboard.

(c) Install the bushing [23], bolt [21], washer [22], washer [24] and nut [25] that attach the interconnect push rod assembly [18] to the outboard bellcrank assembly [33].

NOTE: Install the bolt [21] with the head up.

(d) Tighten the nut [15] and nut [25] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

(e) Install the pin [16] in the nut [15].

(f) Install the pin [26] in the nut [25].

SUBTASK 27-51-14-820-001

(6) Adjust the interconnect push rod assembly [18], cable assemblies [19] and cable assemblies [64]:

(a) Move the crankshaft assembly [17] to the retracted position.

(b) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the crankshaft assembly [17].

(c) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the outboard bellcrank assembly [33].

(d) If you cannot install the rig pin in the outboard bellcrank assembly [33], adjust the length of the interconnect push rod assembly [18]:

1) Loosen the nuts [20] on the interconnect push rod assembly [18].

2) Turn the interconnect push rod assembly [18] until you can install the rig pin in the outboard bellcrank assembly [33].

3) Tighten the nuts [20] on the interconnect push rod assembly [18].

4) Install MS20995C32 lockwire, G01048 on the nuts [20].

(e) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the inboard bellcrank assembly [67].

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(f) If you cannot install the rig pin in the inboard bellcrank assembly [67], adjust the cables:

1) Remove the rig pin from the rigging pin kit, SPL-1585 from the crankshaft assembly [17].

2) If it is necessary, remove the tension from the forward cable assembly [19] and cable assembly [64]:

a) Remove the locking clips [66] from the turnbuckles [65].

b) Turn the turnbuckles [65].

3) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the inboard bellcrank assembly [67] and the outboard bellcrank assembly [33].

4) Use a high tension cable tensiometer, COM-1554 to adjust the tension in the aft cable assembly [19] until it is in the limit of 200 ±25 lbf (889.6 ±111.2 N).

NOTE: The cable is 3/16” (0.1875 in. (4.7625 mm)) diameter.

5) Use a high tension cable tensiometer, COM-1554 to adjust the tension in the forward cable assembly [19] until you can easily remove and install the rig pins in the bellcranks.

a) Make sure that the tension in the aft cable assembly [19] stays in the limit.

NOTE: The cable is 3/16” (0.1875 in. (4.7625 mm)) diameter.

(g) Install the locking clips [66] in the turnbuckles [65] for the cable assemblies [19] and cable assemblies [64].

(h) Remove the rig pins from the inboard bellcrank assembly [67], outboard bellcrank assembly [33] and the crankshaft assembly [17].

SUBTASK 27-51-14-420-006

(7) Install the aft flap push rod assemblies [34]:

(a) Put the aft flap push rod assemblies [34] in their location between the aft flap [2] and the bellcranks.

(b) Install the bolt [27], washer [28], bushing [29], washer [30] and nut [31] that attach the inboard aft flap push rod assembly [34] to the inboard bellcrank assembly [67].

(c) Install the bushing [29], bolt [27], washer [28], washer [30] and nut [31] that attach the outboard aft flap push rod assembly [34] to the outboard bellcrank assembly [33].

(d) Install the bushings [77],bolts [75], washers [76], washers [78] and nuts [79] that attach the aft flap push rod assemblies [34] to the aft flap [2].

(e) Tighten the nuts [31] and nuts [79] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

(f) Install pins [32] in the nuts [31].

(g) Install pins [80] in the nuts [79].

SUBTASK 27-51-14-820-002

(8) If the aft flap [2] is installed, do an adjustment of the aft flap push rod assemblies [34]:

(a) Use the crankshaft assembly [17] to manually move the aft flap [2] to the retracted position.

(b) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the crankshaft assembly [17].

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(c) Measure the distance between the trailing edge of the aft flap [2] and the trailing edge of the upper cove panel [101] on the main flap [1] (Figure 402).

NOTE: Measure the distance aft of the inboard and outboard aft flap push rod assemblies [34].

1) At the outboard push rod assembly [34], make sure that the distance is 9.2745 ±0.0600 in. (235.57 ±1.53 mm).

2) At the inboard push rod assembly [34], make sure that the distance is 9.2319 ±0.0600 in. (234.49 ±1.52 mm).

(d) If the distance at the inboard or outboard pushrod is not in the limit, then adjust the length of the applicable aft flap push rod assembly [34] (Figure 401):

1) Remove the rig pin from the crankshaft assembly [17].

2) Use the crankshaft assembly [17] to manually extend the aft flap [2] to the extended position.

3) Adjust the length of the applicable aft flap push rod assembly [34]:

NOTE: For each 90 degree turn of the aft flap push rod assembly [34], the trailing edge of the aft flap will move 0.04 in. (1.02 mm).

a) Loosen the nuts [81] on the aft flap push rod assembly [34].

b) Adjust the length of the aft flap push rod assembly [34].

c) Tighten the nuts [81].

d) Install MS20995C32 lockwire, G01048 on the nuts [81] and the locking keys [74].

4) Use the crankshaft assembly [17] to manually retract the aft flap [2] to the retracted position.

5) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–113 or F70207–114) in the crankshaft assembly [17].

6) Make sure that the distance from the trailing edge of the aft flap [2] to the trailing edge of the upper cove panel [101] is in the limit.

(e) Remove the rig pin from the crankshaft assembly [17].

(f) Use the crankshaft assembly [17] to manually extend the aft flap [2] to the extended position.

SUBTASK 27-51-14-420-007

(9) Install the aft flap drive rod assembly [43]:

(a) Put the aft flap drive rod assembly [43] in its position between the drive rod fitting [44] and the crankshaft assembly [17].

(b) Install the bolts [45], washers [46], bushings [47], washers [48] and nuts [49] that attach the aft flap drive rod assembly [43] to the crankshaft assembly [17] and the drive rod fitting [44].

1) Make sure that the heads of the bolts [45] are on the inboard side.

(c) Tighten the nuts [49] to 30 in-lb (3.4 N·m) to 50 in-lb (5.6 N·m).

(d) Install the pins [50] through the nuts [49].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-14-410-001

(1) Install the leading edge panel [40] on the outboard end of the main flap [1]:

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(a) Apply sealant, A00247 to the mating surface of the leading edge panel [40] and the main flap [1].

(b) Put the leading edge panel [40] in its position.

(c) Install the bolts [42]:

1) Apply compound, C00528 to the forward and aft rows of holes in the leading edge panel [40].

2) Install the bolts [42] in the forward and aft rows of holes.

3) Apply sealant, A00247 to the bolts [42]b that go in the ribs and stiffeners in the main flap [1].

4) Install the bolts [42] in the ribs and stiffeners.

SUBTASK 27-51-14-410-002

(2) Install the upper skin panel [4] on the outboard end of the main flap [1]:

(a) Apply sealant, A00247 to the mating surface of the upper skin panel [4] and the main flap [1].

(b) Put the upper skin panel [4] in its position.

(c) Install the bolts [3]:

1) Apply compound, C00528 to the forward and aft rows of holes in the upper skin panel [4].

2) Install the bolts [3] in the forward and aft rows of holes.

3) Apply sealant, A00247 to the bolts [3] that go in the ribs and stiffeners in the main flap [1].

4) Install the bolts [3] in the ribs and stiffeners.

SUBTASK 27-51-14-410-003

(3) Install the lower skin panel [58] on the inboard end of the main flap [1]:

(a) Apply sealant, A00247 to the mating surface of the lower skin panel [58] and the main flap [1].

(b) Put the lower skin panel [58] in its position.

(c) Install the bolts [57]:

1) Apply compound, C00528 to the forward and aft rows of holes in the lower skin panel [58].

2) Install the bolts [57] in the forward and aft rows of holes.

3) Apply sealant, A00247 to the bolts [57] that go in the ribs and stiffeners in the main flap [1].

4) Install the bolts [57] in the ribs and stiffeners.

SUBTASK 27-51-14-410-004

(4) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-14-440-001

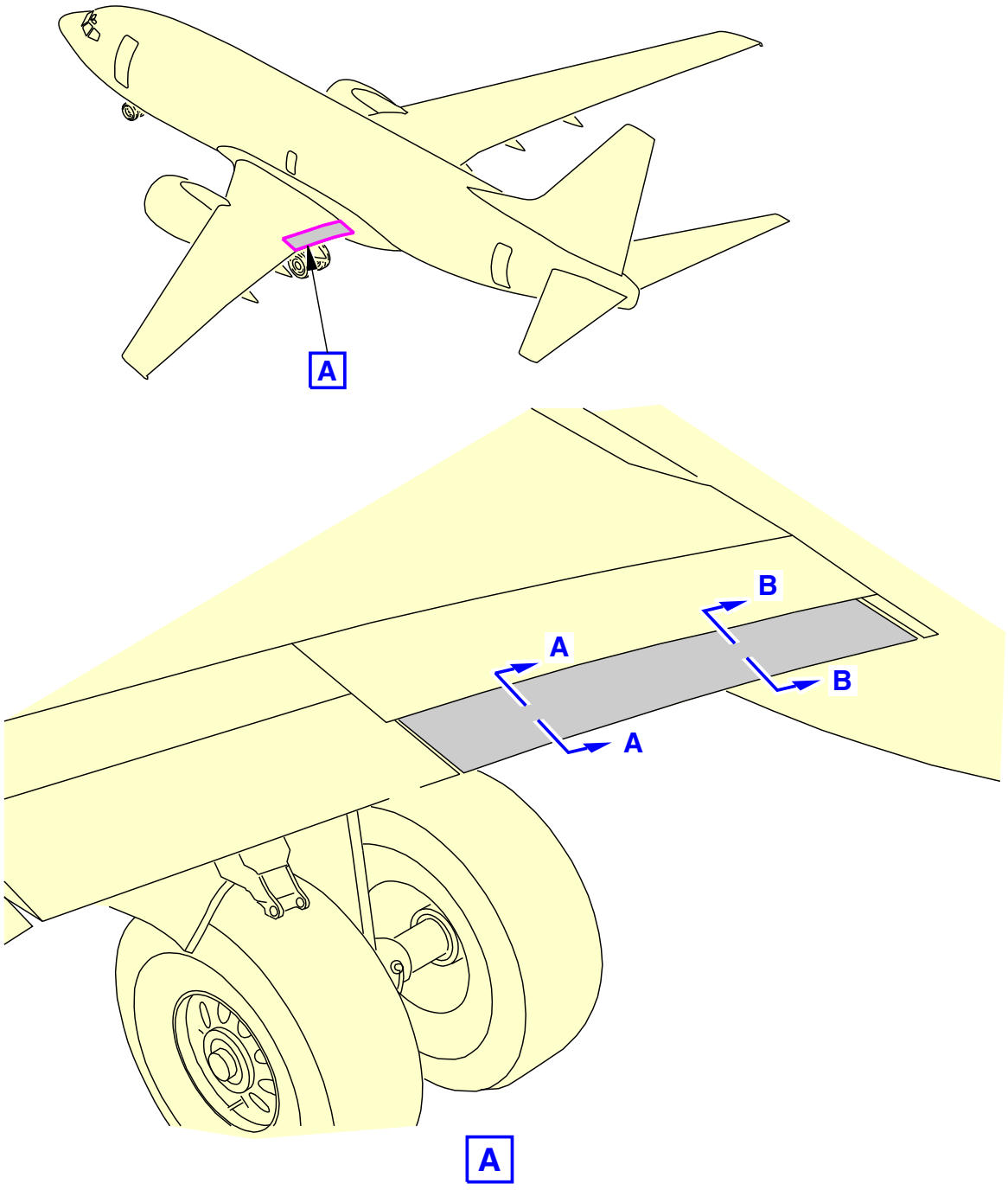
(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-14-860-002

(6) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

END OF TASK

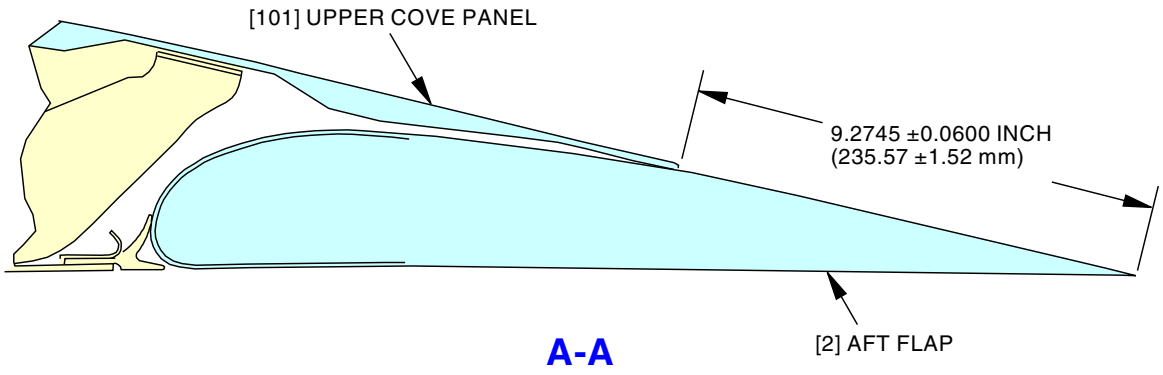
ECCN 9E991 BOEING PROPRIETARY - See title page for details

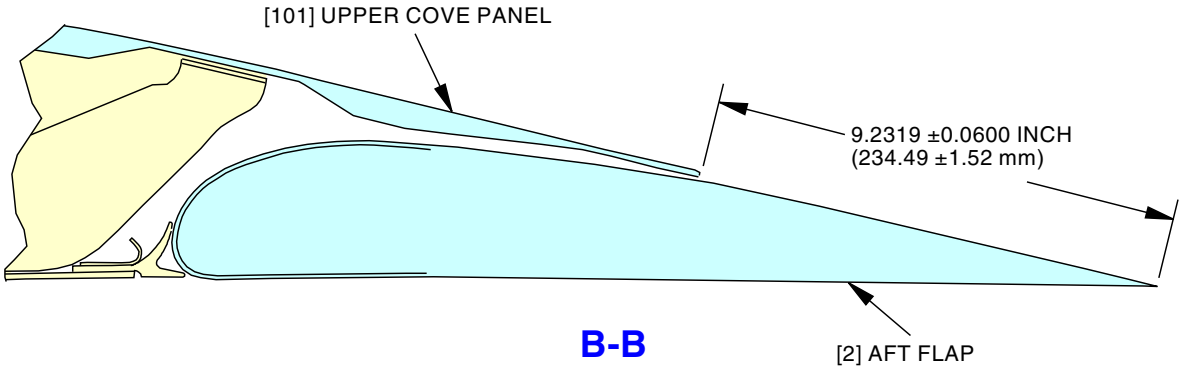


2412852 S00061531436_V1

Inboard Aft Flap Pushrod Adjustment
Figure 402/27-51-14-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Inboard Aft Flap Pushrod Adjustment
Figure 402/27-51-14-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP TRACKS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard Flap Track Removal (Selection)

(2) Inboard Flap Track Installation (Selection)

(3) Inboard Flap Outboard Track Removal

(4) Inboard Flap Outboard Track Installation

(5) Inboard Flap Inboard Track Removal

(6) Inboard Flap Inboard Track Installation.

TASK 27-51-15-000-801

2. Inboard Flap Track Removal (Selection)

A. Procedure

SUBTASK 27-51-15-000-001

(1) Do one of these tasks to remove the applicable inboard flap track:

(a) Do this task: Inboard Flap Outboard Track Removal, TASK 27-51-15-000-802.

(b) Do this task: Inboard Flap Inboard Track Removal, TASK 27-51-15-000-803.

——— END OF TASK ———

TASK 27-51-15-400-801

3. Inboard Flap Track Installation (Selection)

A. Procedure

SUBTASK 27-51-15-400-001

(1) Do one of these tasks to install the applicable inboard flap track:

(a) Do this task: Inboard Flap Outboard Track Installation, TASK 27-51-15-400-802.

(b) Do this task: Inboard Flap Inboard Track Installation, TASK 27-51-15-400-803.

——— END OF TASK ———

TASK 27-51-15-000-802

4. Inboard Flap Outboard Track Removal

(Figure 401)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-11-000-801	Inboard Trailing Edge Flap Removal (P/B 401)
27-51-18-000-801	Inboard Flap Support Forward Fairing Removal (P/B 401)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-31-000-802	Inboard Flap Outboard Transmission Removal (P/B 401)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
27-59-02-000-803	Inboard Flap Outboard Skew Mechanism Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

E. Prepare for the Removal

SUBTASK 27-51-15-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-15-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-15-010-001

(3) Remove the fairings for the outboard track on the inboard flap, do these tasks:

- Inboard Flap Support Forward Fairing Removal, TASK 27-51-18-000-801
- Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802

SUBTASK 27-51-15-020-001

(4) Do this task: Inboard Trailing Edge Flap Removal, TASK 27-51-11-000-801.

SUBTASK 27-51-15-020-002

(5) Do this task: Inboard Flap Outboard Skew Mechanism Removal, TASK 27-59-02-000-803.

SUBTASK 27-51-15-020-003

(6) Do this task: Inboard Flap Outboard Transmission Removal, TASK 27-51-31-000-802.

F. Inboard Flap Outboard Track Removal

SUBTASK 27-51-15-480-001

(1) If you use the adapter, SPL-1733, install it on the flap track [1]:

(a) Install the adapter, SPL-1733 on the flap track [1] approximately 35 in. (89 cm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568 below the adapter, SPL-1733 to support the flap track [1].

(c) If you do not use the adapter, SPL-1733, make sure that you support the flap track while you disconnect it.

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SUBTASK 27-51-15-020-020

(2) Remove the nut [28], washers [29], and bolt [30] that attach the bonding jumper [27] to the structure.

SUBTASK 27-51-15-020-021

(3) Remove the clamp [34] that attaches the electrical wire to the bracket as follows:

(a) Remove the bolt [31], washer [32], and clipnut [33].

SUBTASK 27-51-15-020-004

(4) Disconnect the forward end of the flap track [1] from the track attach fitting:

(a) Remove the bolts [13] and washers [12] that attach the failsafe fitting [14] to the track attach fitting.

(b) Remove the pin [18], nut [17], washer [16], and fuse pin [15] from the forward end of the flap track [1].

SUBTASK 27-51-15-020-005

(5) Disconnect the aft end of the flap track [1] from the structure:

(a) Remove the bolt [8], washer [9], washer [10], and nut [11] from the outboard side of the flap track [1].

(b) Remove the bolt [7], washer [6], washer [4], and nut [3] from the inboard side of the flap track [1].

(c) Measure the thickness of the shim [5].

1) Make sure to mark the track with this measurement data.

NOTE: This measurement data for the removal and replacement of the flap tracks is an important step to obtain ample free movement in the fuse pin joint at the forward end of the flap track and return of the flaps to former operating condition.

SUBTASK 27-51-15-020-006

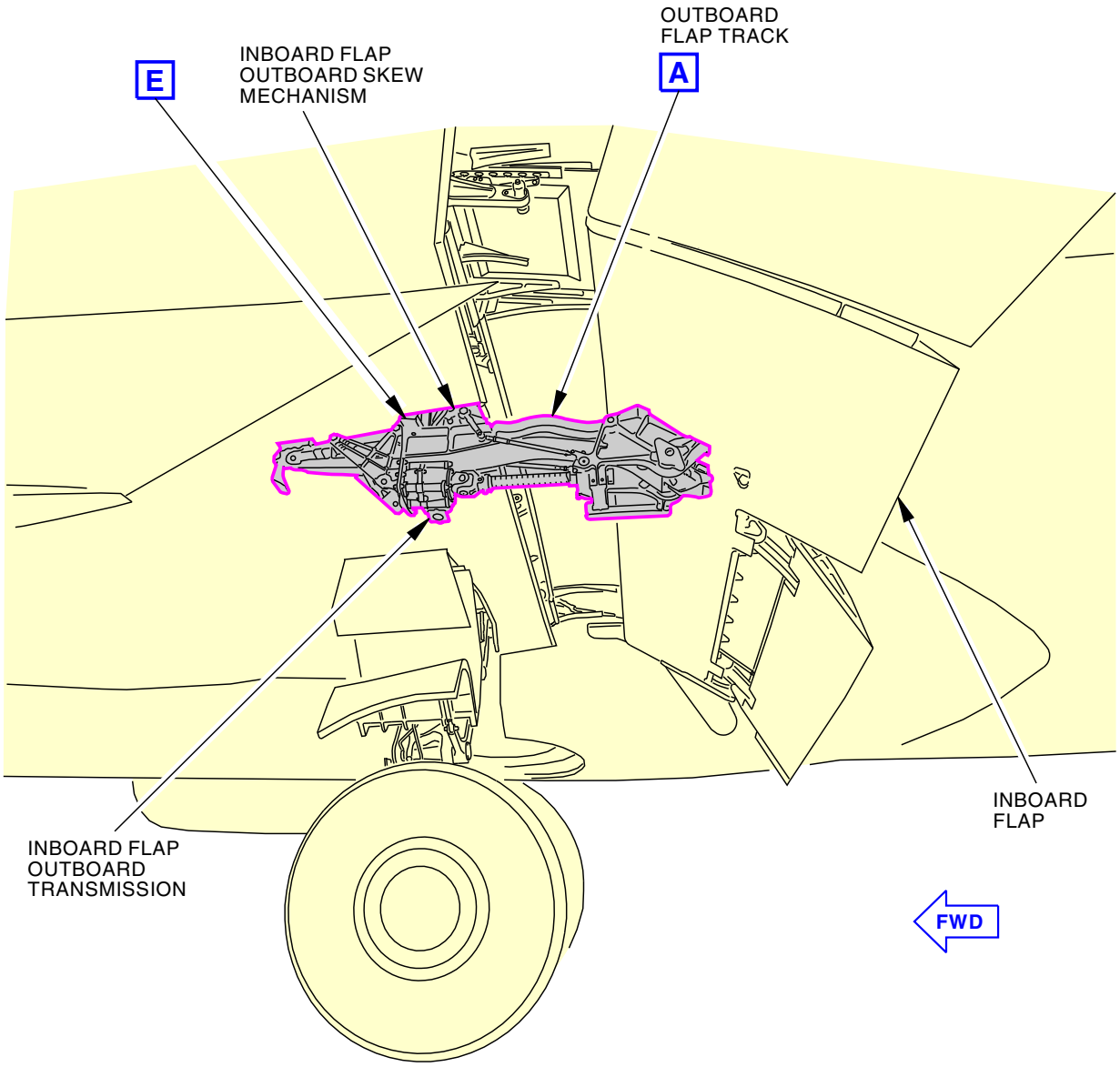
(6) If you install a new flap track [1], remove the transmission attach fitting [2] from the flap track [1]:

(a) Remove the pin [25], nut [24], washer [26], and bolt [19] that attach the forward end of the transmission attach fitting [2].

(b) Remove the pin [23], nut [22], washer [21], and bolt [20] that attach the aft end of the transmission attach fitting [2].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

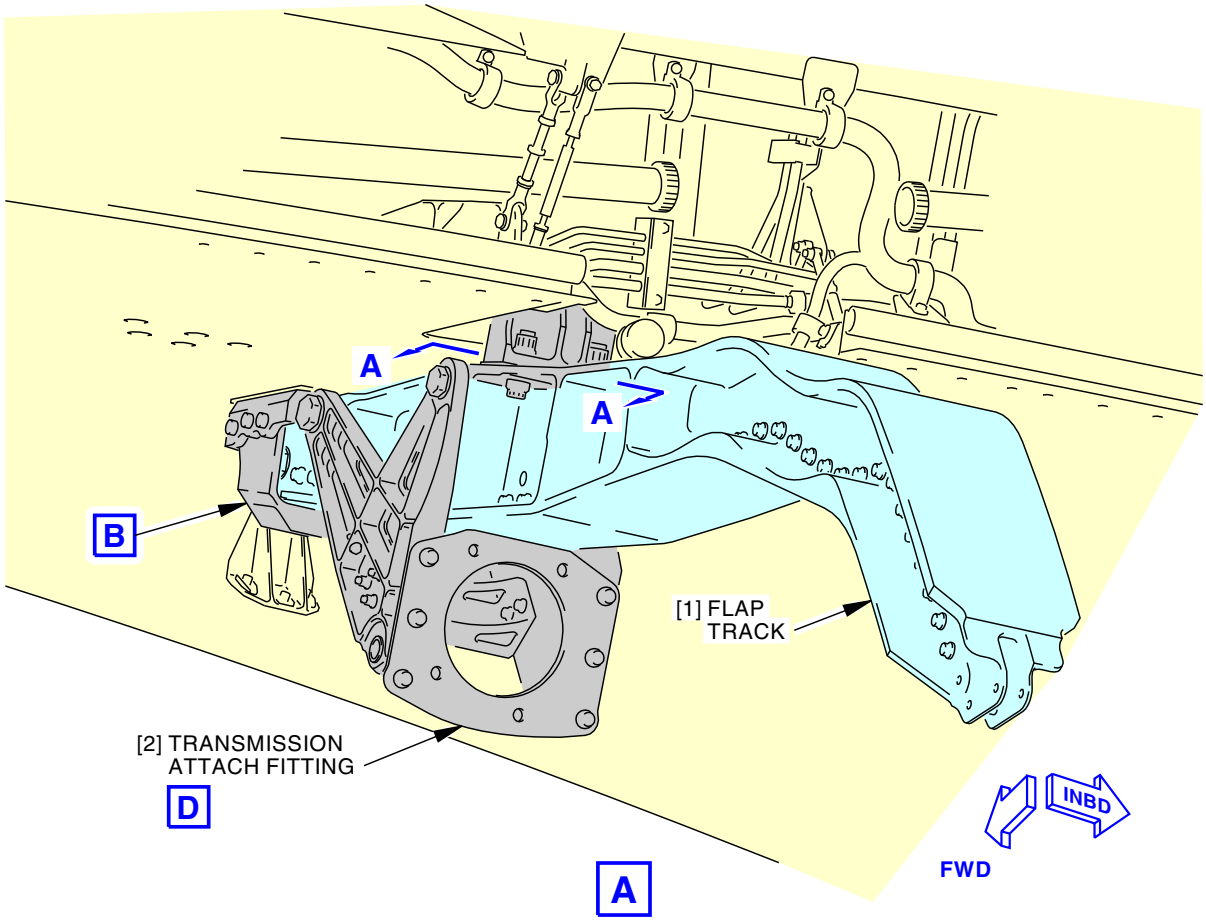


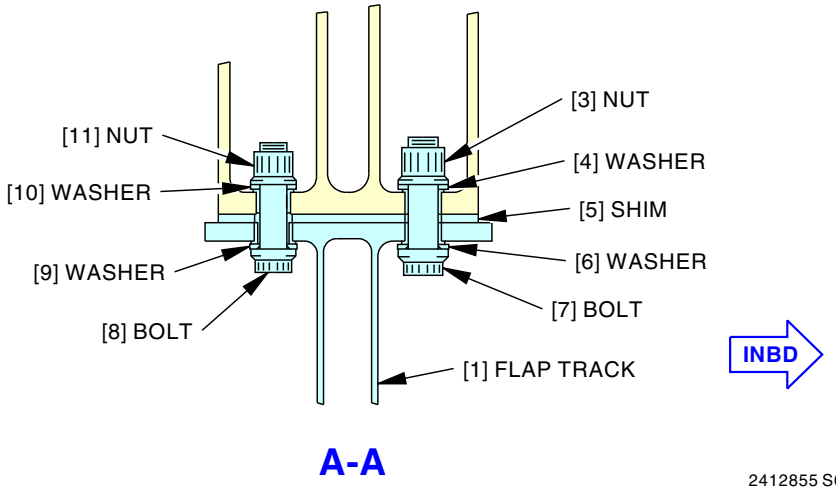
(EXAMPLE)

2412854 S00061531441_V3

Inboard Flap Outboard Flap Track Installation
Figure 401/27-51-15-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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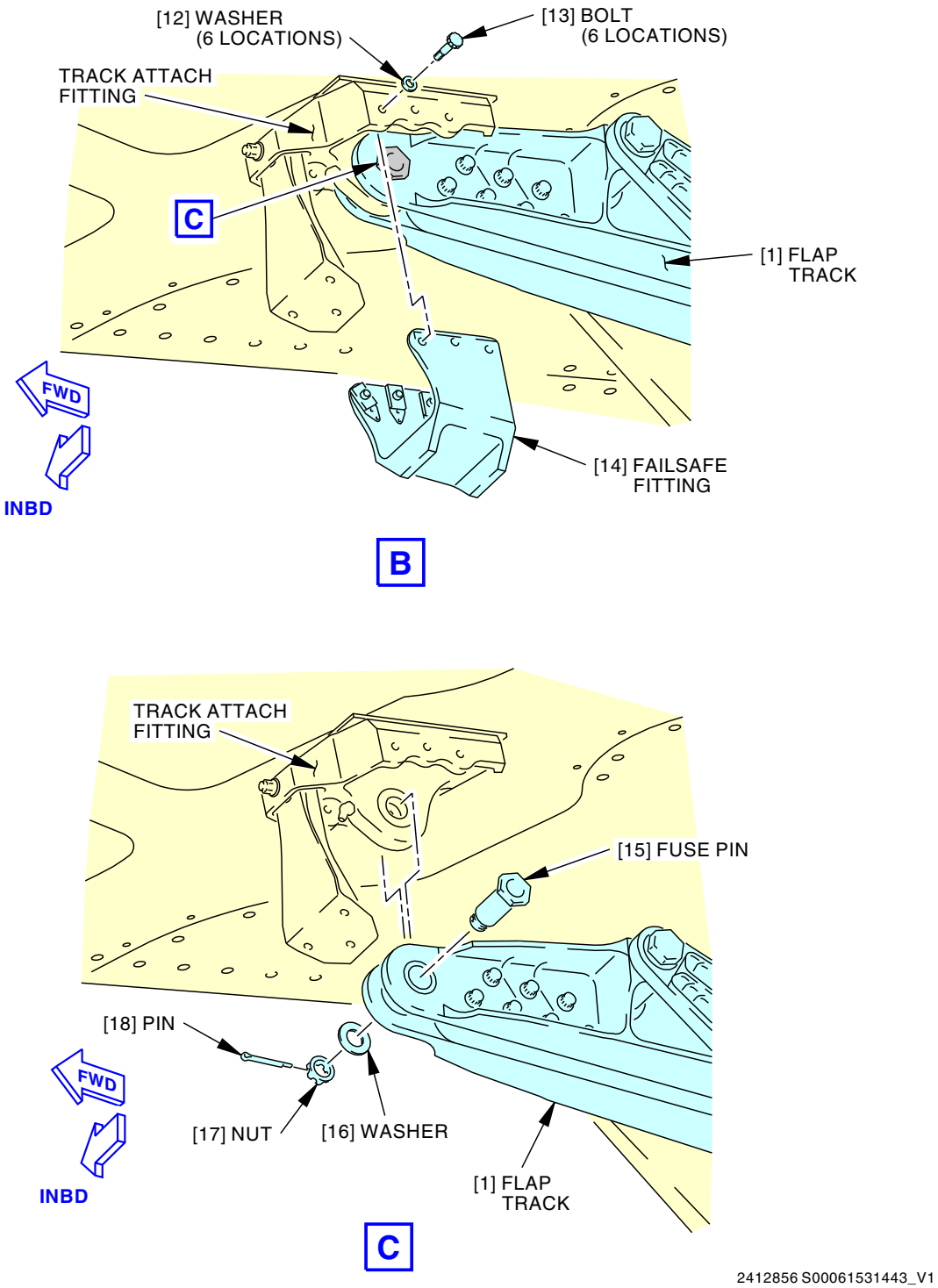
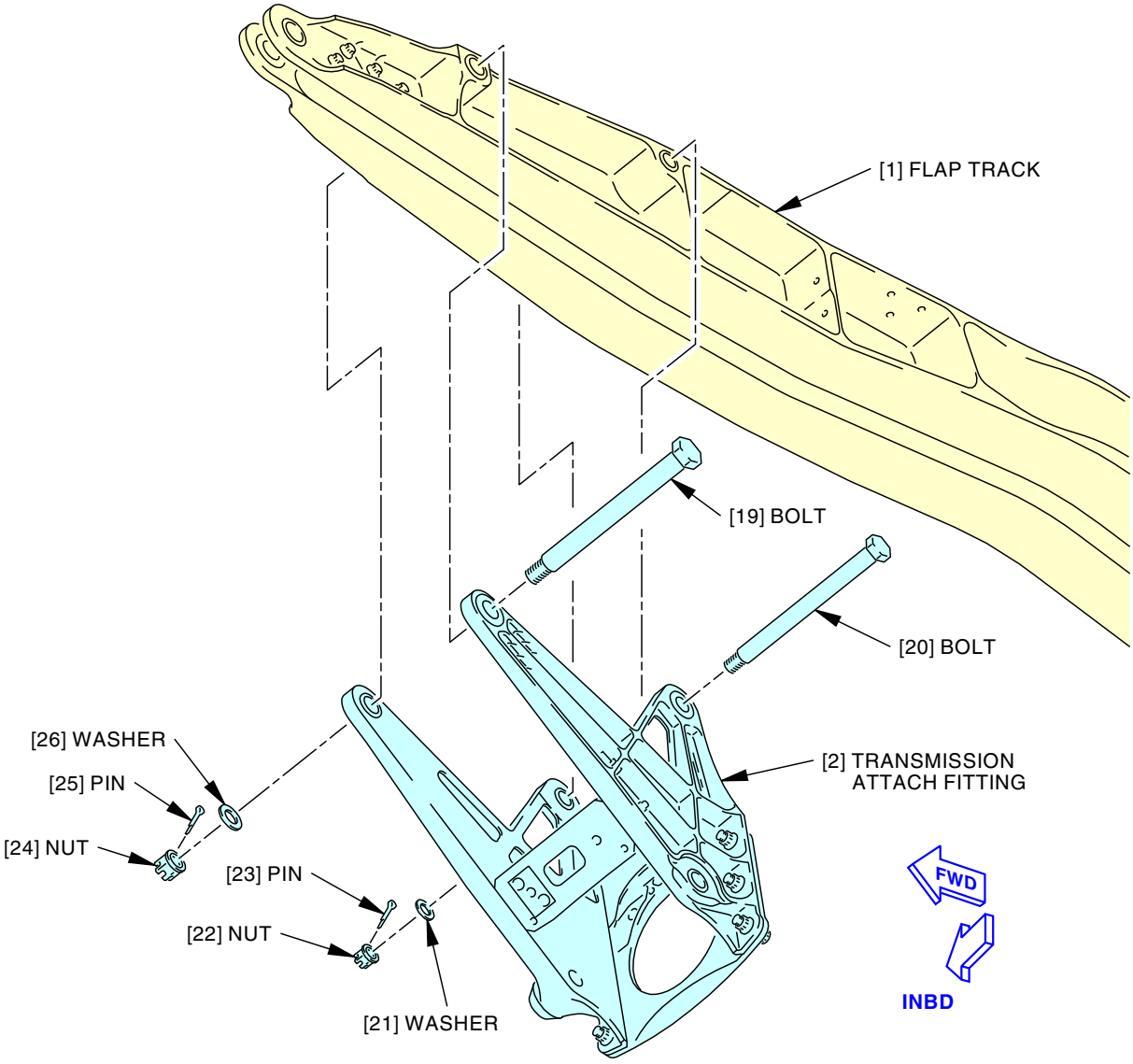
Inboard Flap Outboard Flap Track Installation
Figure 401/27-51-15-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Flap Track Installation
Figure 401/27-51-15-990-801 (Sheet 3 of 5)

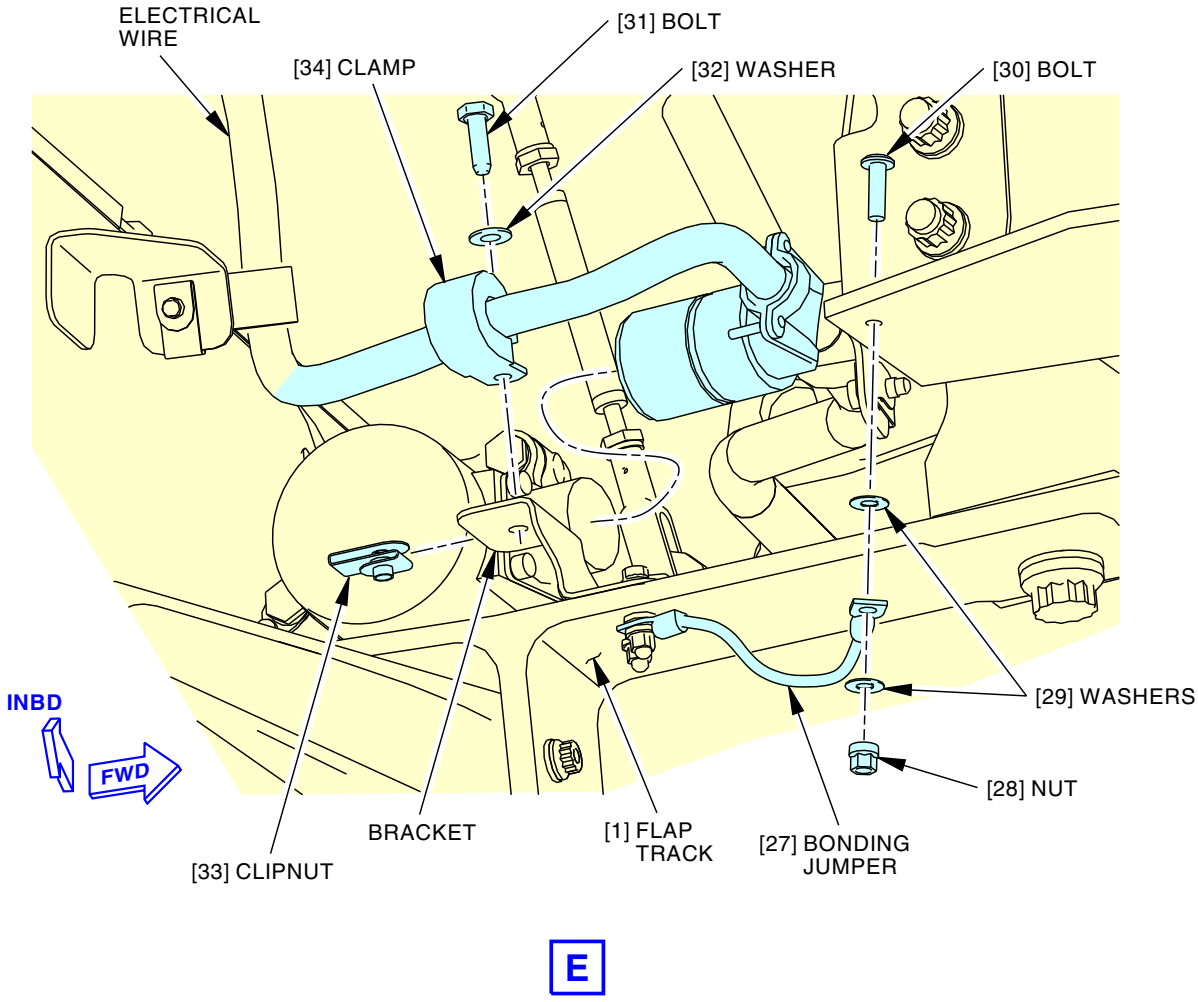
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412857 S00061531444_V1

Inboard Flap Outboard Flap Track Installation
Figure 401/27-51-15-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Outboard Flap Track Installation
Figure 401/27-51-15-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-15-400-802

5. Inboard Flap Outboard Track Installation

(Figure 401)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 3 and 6.

B. References

Reference	Title
12-22-51-640-814	Inboard Flap Outboard Flap Track Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-11-400-801	Inboard Trailing Edge Flap Installation (P/B 401)
27-51-11-820-801	Inboard Trailing Edge Flap Adjustment (P/B 501)
27-51-18-400-801	Inboard Flap Support Forward Fairing Installation (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-31-400-802	Inboard Flap Outboard Transmission Installation (P/B 401)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-02-400-803	Inboard Flap Outboard Skew Mechanism Installation (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2

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(Continued)

Reference	Description	Specification
A50155	Sealant - Fuel Tank	BMS5-45 Class C
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C
B00130	Alcohol - Isopropyl	TT-I-735
D00633	Grease - Aircraft General Purpose	BMS3-33
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50262	Wiper - Cleaning	BMS15-5
G51464	Abrasive - Aluminum Oxide paper, 60 grit or finer	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap track	27-51-15-02-290	SIA ALL
18	Pin	27-51-15-02-105	SIA ALL
23	Pin	27-51-15-02-230	SIA ALL
25	Pin	27-51-15-02-235	SIA ALL

F. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

G. Inboard Flap Outboard Track Installation

SUBTASK 27-51-15-420-001

(1) If it is not installed, install the transmission attach fitting [2]:

(a) Put the transmission attach fitting [2] in its position on the flap track [1].

(b) Install the bolt [20], washer [21], and nut [22] that attach the aft end of the transmission attach fitting [2] to the flap track [1].

(c) Install the pin [23] in the nut [22].

(d) Install the bolt [19], washer [26], and nut [24] that attach the forward end of the transmission attach fitting [2] to the flap track [1].

(e) Install the pin [25] in the nut [24].

SUBTASK 27-51-15-480-002

(2) If you will use the adapter, SPL-1733, install it on the flap track [1]:

(a) Install the adapter, SPL-1733 on the flap track [1] approximately 35 in. (89 cm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568, below the adapter, SPL-1733, to support the flap track [1].

SUBTASK 27-51-15-420-002

(3) Install the flap track [1].

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(a) If it is not installed, install the shim [5] on the structure.

1) Make sure that the shim [5] is the same thickness as the shim [5] that you removed.

NOTE: The original thickness of the shim [5] is on a marker on the structure.

NOTE: If it is necessary to replace the flap track with a new unit, a new shim [5] may need to be made and should be marked and checked after the nuts are torqued that attach the flap track to the structure.

2) Apply sealant, A00247, to the mating surface between shim [5] and flap track [1], and mating surface between shim [5] and structure.

3) Put the shim [5] in its location.

(b) Attach the aft end of the flap track [1]:

1) Lift the flap track [1] to its location on the structure.

2) Install the bolt [7], washer [6], washer [4], and nut [3] that attach the inboard end of the flap track [1].

3) Install the bolt [8], washer [9], washer [10], and nut [11] that attach the outboard end of the flap track [1].

(c) Attach the forward end of the flap track [1]:

1) Apply grease, D00633, to the outside of the fuse pin [15] and the inside of the bushings.

2) Install the fuse pin [15] to attach the forward end of the flap track [1] to the track attach fitting.

(d) Tighten the nut [3] to a torque set point of 1800 in-lb (203 N·m).

(e) Tighten the nut [11] to a torque set point of 1300 in-lb (147 N·m).

(f) Make sure that you can turn the fuse pin [15] in the joint with a maximum of 10 in-lb (1 N·m).

NOTE: You can push up on the forward end of the flap track [1] to take the weight off the fuse pin [15] when you measure the torque.

(g) Install the washer [16] and nut [17] on the fuse pin [15].

(h) Tighten the nut [17] to 330 in-lb (37 N·m) - 350 in-lb (40 N·m).

(i) Loosen the nut [17] to align the hole for the pin [18].

(j) Install the pin [18] in the nut [17].

(k) Apply a fillet seal with sealant, A00247, around the joint where the shim [5], flap track [1], and airplane structure are attached.

SUBTASK 27-51-15-420-003

(4) Install the failsafe fitting [14] on the track attach fitting:

(a) Put the failsafe fitting [14] in its location on the track attach fitting.

(b) Install the bolts [13] and washers [12] to attach the failsafe fitting [14].

SUBTASK 27-51-15-420-014

(5) Install the clamp [34] that attaches the electrical wire to the bracket as follows:

(a) Install the bolt [31], washer [32], and clipnut [33] that attach the clamp [34] and electrical wire to the bracket.

SUBTASK 27-51-15-420-015

(6) Install the bonding jumper [27] as follows:

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(a) Use cotton wiper, G00034, moist in alcohol, B00130, to clean the mating surfaces of the washers [29] and bonding jumper [27].

(b) Clean the mating surface of the structure with 60 grit wet/dry aluminum oxide sandpaper, G51464.

1) Clean the mating surface of the structure with wiper, G50262, moist in alcohol, B00130.

2) If it is necessary, use wiper, G50262, to remove remaining solvent.

(c) Install the bolt [30], washers [29], and nut [28] that attach the bonding jumper [27] to the structure.

1) Apply sealant, A50155, sealant, A50110, sealant, A50231, or sealant, A50296, to the mating surfaces of the bolt [30], washers [29], nut [28], bonding jumper [27], and airplane structure.

2) Tighten the nut [28] to 28 in-lb (3.2 N·m) - 35 in-lb (4.0 N·m).

3) Make sure that there is squeeze out around all the interfaces of each component.

(d) Measure the electrical bonding resistance between the bonding jumper [27] and airplane structure (SWPM 20-20-00).

1) Use the non-intrinsically safe bonding meter, COM-614.

2) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

SUBTASK 27-51-15-480-003

(7) If it is necessary, remove the adapter, SPL-1733, from the flap track [1].

SUBTASK 27-51-15-420-004

(8) Do this task: Inboard Flap Outboard Transmission Installation, TASK 27-51-31-400-802.

SUBTASK 27-51-15-420-005

(9) Do this task: Inboard Flap Outboard Skew Mechanism Installation, TASK 27-59-02-400-803.

SUBTASK 27-51-15-420-006

(10) Do this task: Inboard Trailing Edge Flap Installation, TASK 27-51-11-400-801.

SUBTASK 27-51-15-820-001

(11) Do this task: Inboard Trailing Edge Flap Adjustment, TASK 27-51-11-820-801.

SUBTASK 27-51-15-820-002

(12) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-51-15-640-001

(13) Do this task: Inboard Flap Outboard Flap Track Lubrication, TASK 12-22-51-640-814.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-15-410-001

(1) Install the fairings for the outboard track on the inboard flap, do these tasks:

- Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802
- Inboard Flap Support Forward Fairing Installation, TASK 27-51-18-400-801

SUBTASK 27-51-15-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-15-860-002

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

TASK 27-51-15-000-803

6. Inboard Flap Inboard Track Removal

(Figure 402)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 4 and 5.

B. References

Reference	Title
12-15-31-610-802	Main Landing Gear Shock Strut Servicing, Airplane on the Ground (P/B 301)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-11-000-801	Inboard Trailing Edge Flap Removal (P/B 401)
27-51-31-000-803	Inboard Flap Inboard Transmission Removal (P/B 401)
27-59-02-000-804	Inboard Flap Inboard Skew Mechanism Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205
SPL-9469	Hold Equipment - T.E. Inboard Flap Part #: C27079-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G00018	Nitrogen - Gaseous, Pressurizing, 99.5 Percent Pure	A-A-59503 Type I Grade B, MIL-PRF-27401 Type I Grade A

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

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F. Access Panels

Number	Name/Location
193CL	Wheel Well Panel - Aft Outboard
193CR	Wheel Well Panel - Aft Outboard
194CL	Aft Wing To Body Fairing Panel
194CR	Aft Wing To Body Fairing Panel

G. Prepare for the Removal

SUBTASK 27-51-15-860-003

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-15-480-004

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-15-860-004

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-15-860-005

(4) For the left inboard flap, if applicable:

Open these access panels:

Number	Name/Location
193CL	Wheel Well Panel - Aft Outboard
194CL	Aft Wing To Body Fairing Panel

SUBTASK 27-51-15-860-006

(5) For the right inboard flap, if applicable:

Open these access panels:

Number	Name/Location
193CR	Wheel Well Panel - Aft Outboard
194CR	Aft Wing To Body Fairing Panel

SUBTASK 27-51-15-860-007

(6) If the inboard flap hold equipment, SPL-9469 is not available, then do this task: Inboard Trailing Edge Flap Removal, TASK 27-51-11-000-801.

SUBTASK 27-51-15-480-005

(7) Do the following steps to install the trailing edge inboard flap hold equipment, SPL-9469:

NOTE: The inboard flap hold equipment, SPL-9469 will support the inboard flap so that inboard flap removal is not necessary.

NOTE: It is not necessary that the aft flap be installed in order to install the inboard flap hold equipment, SPL-9469.

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(a) Inflate the shock strut with a sufficient amount of nitrogen, G00018 to provide clearance for the mounting bracket of the lower brace assembly from hold equipment, SPL-9469 (Main Landing Gear Shock Strut Servicing, Airplane on the Ground, TASK 12-15-31-610-802).

(b) Attach the lower brace assembly to the bottom of the outer cylinder of the main landing gear.

(c) Adjust the length of the lower brace assembly until you can attach the lower brace assembly to the aft flap track assembly.

(d) Attach the upper brace assembly to the upper end of the outer cylinder.

(e) Adjust the length of the upper brace assembly until you can attach the upper brace assembly to the aft most fitting on the lower brace assembly.

(f) Attach the side brace assembly to the side brace of the main landing gear.

NOTE: The flange of the backing plate is oriented in the downward direction.

(g) Adjust the length of the side brace assembly until you can attach it to the forward most fitting on the lower brace assembly.

(h) Extend the three brace assemblies until the weight of the flap is supported.

1) If necessary, push up on the inboard flap while extending the brace assemblies.

SUBTASK 27-51-15-020-007

(8) Do this task: Inboard Flap Inboard Skew Mechanism Removal, TASK 27-59-02-000-804.

SUBTASK 27-51-15-020-008

(9) Do this task: Inboard Flap Inboard Transmission Removal, TASK 27-51-31-000-803.

H. Inboard Flap Inboard Track Removal

NOTE: Make sure you support the flap track [41] while you disconnect it.

SUBTASK 27-51-15-480-006

(1) If you will use the adapter, SPL-1733, install it on the flap track [41]:

(a) Install the adapter, SPL-1733 on the flap track [41] approximately 20 in. (51 cm) aft of the track forward attach fitting.

(b) Put a low profile hydraulic jack, COM-1568 below the adapter, SPL-1733 to support the flap track [41].

SUBTASK 27-51-15-020-010

(2) Disconnect the forward end of the flap track [41]:

(a) Remove the nut [56], washer [55] and bolt [52] that attach the flap track [41] to the forward attach assembly [50].

(b) Remove the nut [58], washer [54] and bolt [51] that attach the flap track [41] to the forward attach assembly [50].

SUBTASK 27-51-15-020-019

(3) Disconnect the link [45] from the structure:

(a) Remove the nut [43], washer [42] and bolt [46] from the bolt [49].

(b) Remove the lockwire from the nut [48] and washer [47].

(c) Remove the nut [48] and washer [47] from the bolt [49].

(d) Remove the bolt [49] that attaches the link [45] to the structure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-15-020-011

(4) If you will install a new flap track [41], remove the transmission attach fitting [53] and the link [45] from the flap track [41]:

(a) Remove the bolts [60], bolt [64], washers [61] and nuts [62] that attach the transmission attach fitting [53] to the flap track [41].

(b) Disconnect the link [45] from the flap track [41]:

1) Remove the pin [66], nut [67], washer [65] and bolt [68] from the bolt [72].

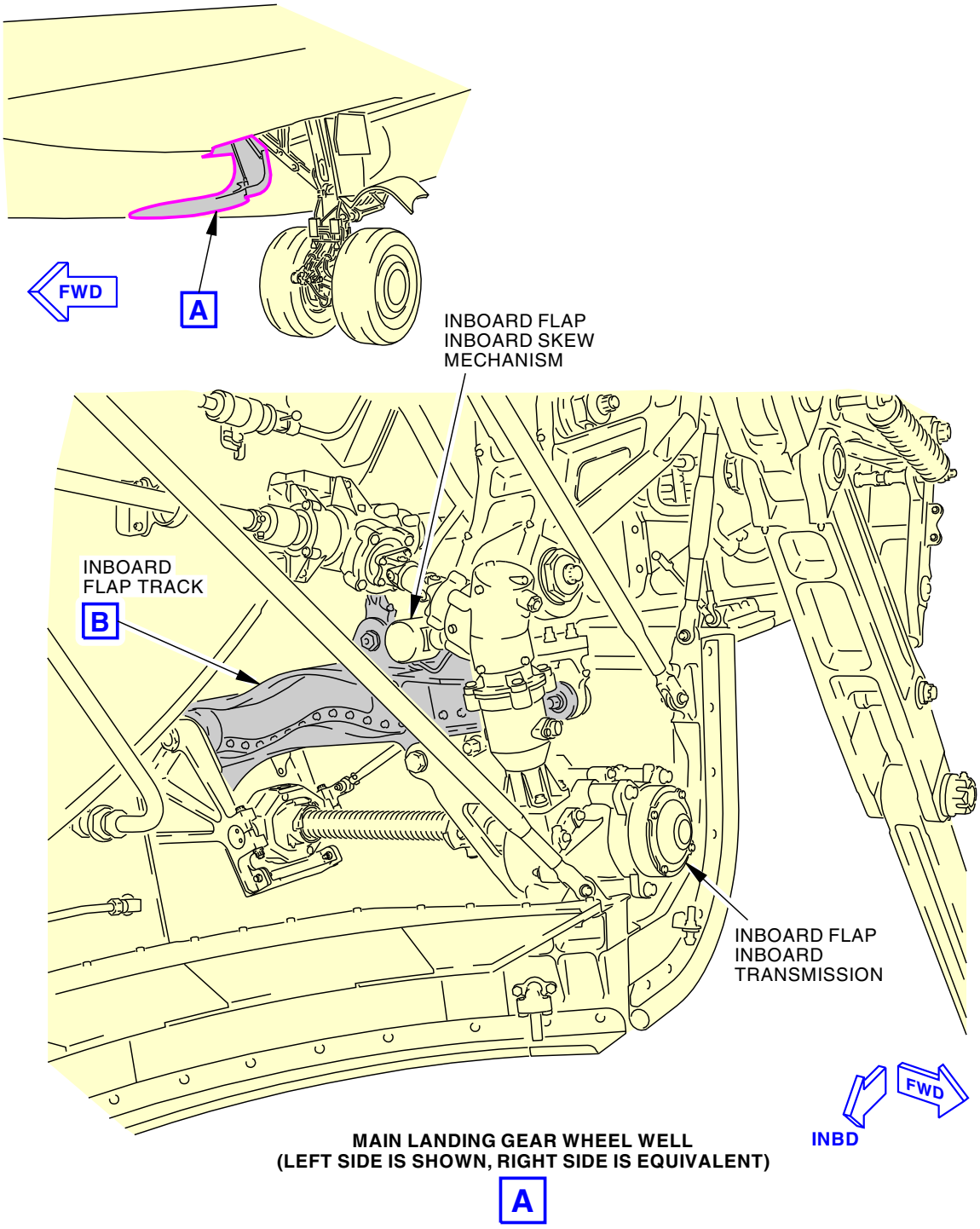
2) Remove the lockwire from the nut [71] and washer [70].

3) Remove the nut [71], washer [70] and washer [69] from the bolt [72].

4) Remove the bolt [72], bushing [73] and washer [69] that attaches the link [45] to the flap track [41].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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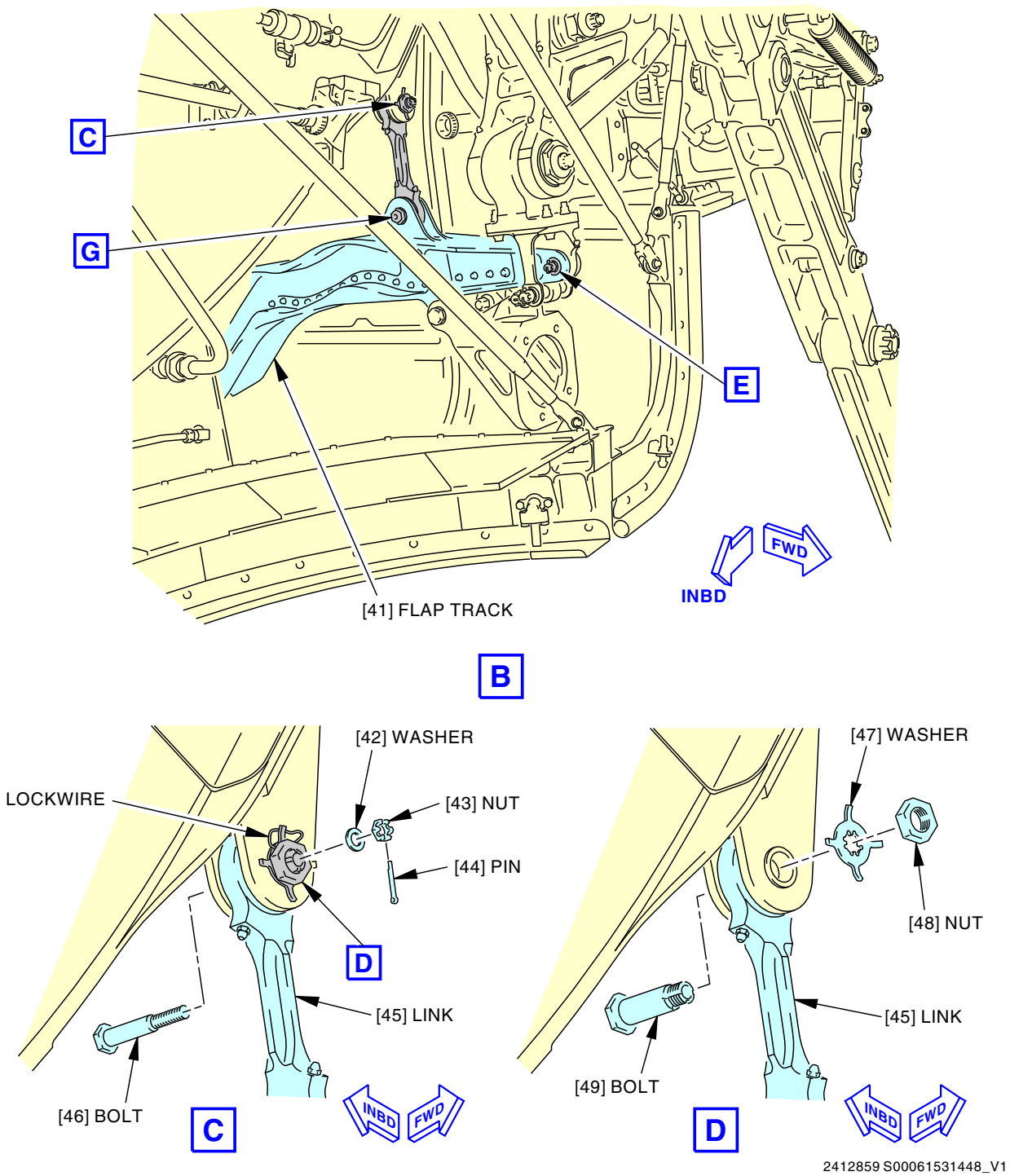
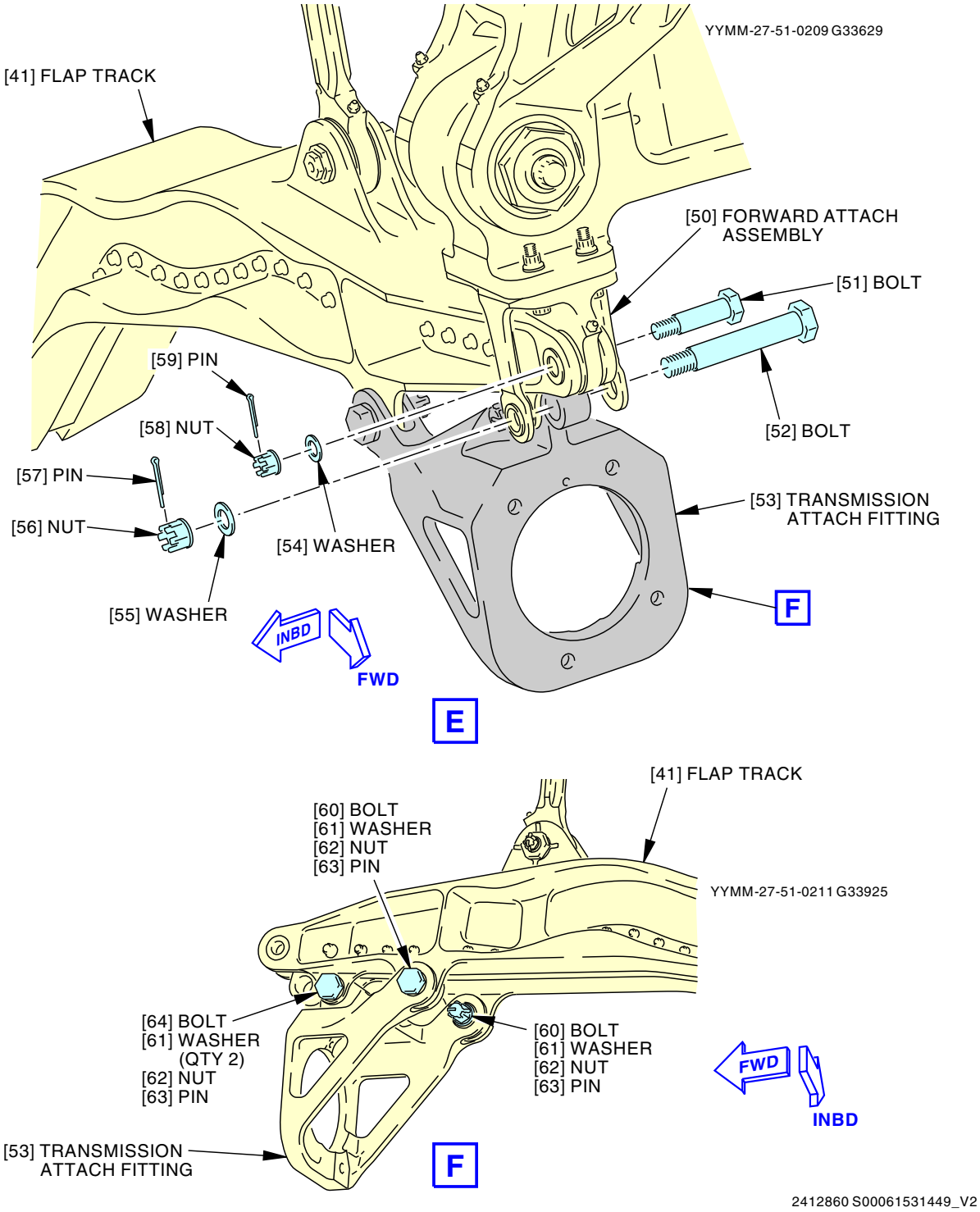
Inboard Flap Inboard Flap Track Installation
Figure 402/27-51-15-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



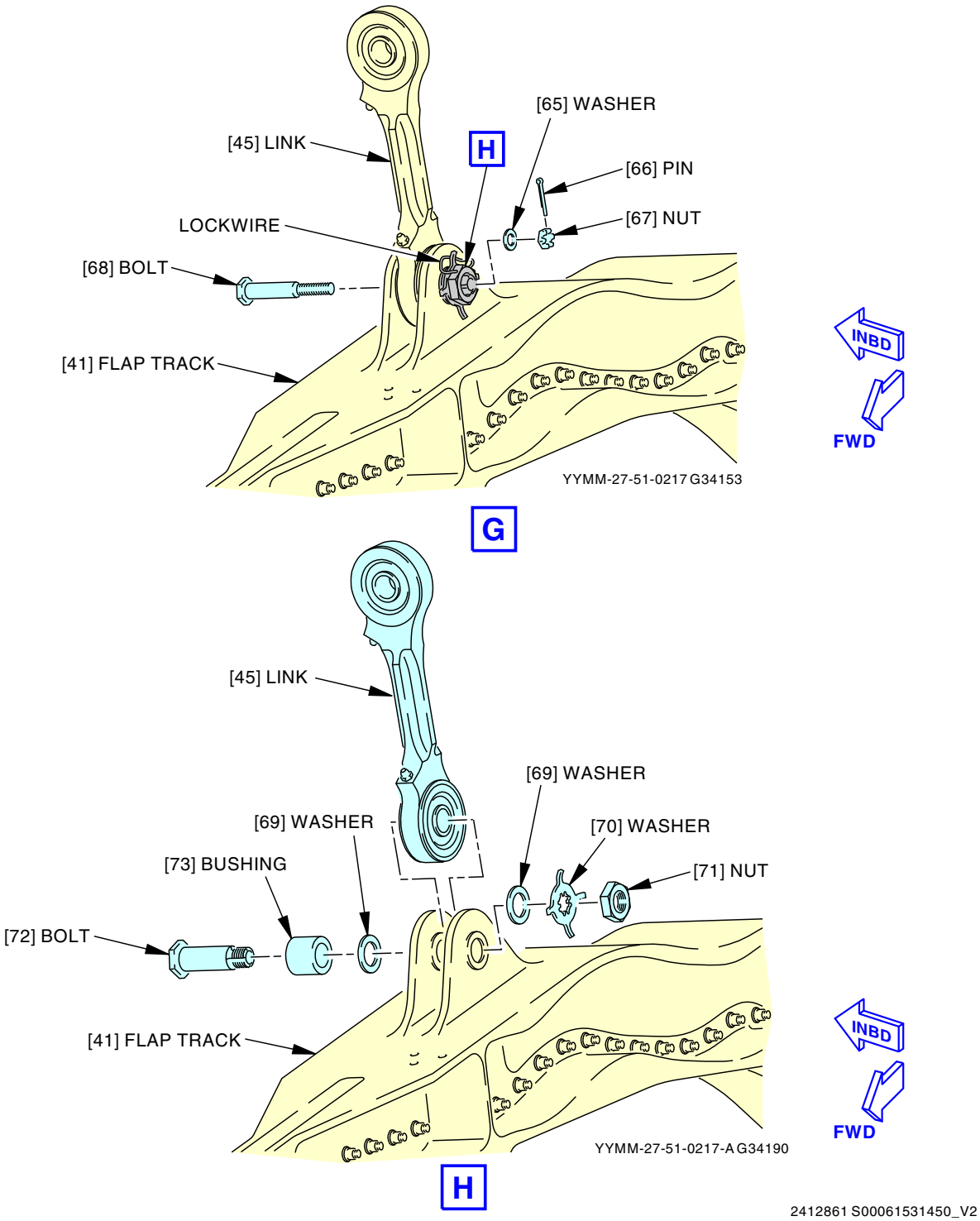
Inboard Flap Inboard Flap Track Installation
Figure 402/27-51-15-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Flap Track Installation
Figure 402/27-51-15-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Flap Track Installation
Figure 402/27-51-15-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-15-400-803

7. Inboard Flap Inboard Track Installation

(Figure 402)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 4 and 5.

B. References

Reference	Title
12-15-31-610-802	Main Landing Gear Shock Strut Servicing, Airplane on the Ground (P/B 301)
12-22-51-640-813	Inboard Flap Inboard Flap Track Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-11-400-801	Inboard Trailing Edge Flap Installation (P/B 401)
27-51-11-820-801	Inboard Trailing Edge Flap Adjustment (P/B 501)
27-51-31-400-803	Inboard Flap Inboard Transmission Installation (P/B 401)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-02-400-804	Inboard Flap Inboard Skew Mechanism Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205
SPL-9469	Hold Equipment - T.E. Inboard Flap Part #: C27079-1 Supplier: 81205

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
41	Flap track	27-51-15-01-330	SIA 001-009
		27-51-15-01-332	SIA ALL
44	Pin	27-51-15-01-140	SIA ALL
57	Pin	27-51-15-01-065	SIA ALL
59	Pin	27-51-15-01-060	SIA ALL
63	Pin	27-51-15-01-270	SIA ALL
66	Pin	27-51-15-01-270	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

F. Access Panels

Number	Name/Location
193CL	Wheel Well Panel - Aft Outboard
193CR	Wheel Well Panel - Aft Outboard
194CL	Aft Wing To Body Fairing Panel
194CR	Aft Wing To Body Fairing Panel

G. Inboard Flap Inboard Track Installation

SUBTASK 27-51-15-420-007

(1) If they are not installed, install the transmission attach fitting [53] and link [45] on the flap track [41]:

(a) Install the transmission attach fitting [53]:

1) Put the transmission attach fitting [53] in its position on the flap track [41].

2) Install the bolts [60], bolt [64], washers [61], and nuts [62] that attach the transmission attach fitting [53] to the flap track [41].

3) Tighten the nut [62] to 600 in-lb (67.8 N·m) - 800 in-lb (90.4 N·m).

4) Install the pins [63] in the nuts [62].

(b) Install the link [45] on the flap track [41]:

1) Put the link [45] in its position on the flap track [41].

2) Install the bolt [72], bushing [73], washers [69], washer [70], and nut [71] to attach the link [45] to the flap track [41].

3) Tighten the nut [71] to 290 in-lb (32.8 N·m) - 510 in-lb (57.6 N·m).

4) Install lockwire between the nut [71] and the washer [70].

5) Install the bolt [68], washer [65], and nut [67] in the bolt [72].

6) Tighten the nut [67] to 30 in-lb (3.4 N·m) - 60 in-lb (6.8 N·m).

7) Install the pin [66] in the nut [67].

SUBTASK 27-51-15-480-007

(2) If you use the adapter, SPL-1733, install it on the flap track [41]:

(a) Install the adapter, SPL-1733 on the flap track [41] approximately 20 in. (51 cm) aft of the track forward attach fitting.

(b) Put a low profile hydraulic jack, COM-1568 below the adapter, SPL-1733 to support the flap track [41].

SUBTASK 27-51-15-020-012

(3) Connect the link [45] to the structure:

(a) Put the link [45] in its position on the structure.

(b) Install the bolt [49], washer [47], and nut [48] to attach the link [45] to the structure.

(c) Tighten the nut [48] to 290 in-lb (32.8 N·m) - 510 in-lb (57.6 N·m).

(d) Install lockwire between the nut [48] and the washer [47].

(e) Install the bolt [46], washer [42], and nut [43] in the bolt [49].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Tighten the nut [43] to 30 in-lb (3.4 N·m) - 60 in-lb (6.8 N·m).

(g) Install the pin [44] in the nut [43].

SUBTASK 27-51-15-420-008

(4) Connect the forward end of the flap track [41]:

(a) Put the flap track [41] in its position on the forward attach assembly [50].

(b) Install the bolt [51], washer [54], and nut [58] that attach the flap track [41] to the forward attach assembly [50].

(c) Install the pin [59] in the nut [58].

(d) Install the bolt [52], washer [55], and nut [56] that attach the flap track [41] to the forward attach assembly [50].

(e) Install the pin [57] in the nut [56].

SUBTASK 27-51-15-480-008

(5) If it is necessary, remove the adapter, SPL-1733 from the flap track [41].

SUBTASK 27-51-15-420-009

(6) Do this task: Inboard Flap Inboard Transmission Installation, TASK 27-51-31-400-803.

SUBTASK 27-51-15-420-010

(7) Do this task: Inboard Flap Inboard Skew Mechanism Installation, TASK 27-59-02-400-804.

SUBTASK 27-51-15-420-011

(8) If the inboard flap hold equipment, SPL-9469 was not used, do this task: Inboard Trailing Edge Flap Installation, TASK 27-51-11-400-801.

SUBTASK 27-51-15-080-001

(9) Remove the inboard flap hold equipment, SPL-9469.

(a) Retract the three brace assemblies to remove the weight of the inboard flap from the hold equipment, SPL-9469.

(b) Remove the side brace assembly.

(c) Remove the upper brace assembly.

(d) Remove the lower brace assembly.

SUBTASK 27-51-15-820-003

(10) Do this task: Inboard Trailing Edge Flap Adjustment, TASK 27-51-11-820-801.

SUBTASK 27-51-15-820-004

(11) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-51-15-640-002

(12) Do this task: Inboard Flap Inboard Flap Track Lubrication, TASK 12-22-51-640-813.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-15-840-001

(1) If the hold equipment, SPL-9469 was used then do these steps:

(a) Inflate the shock strut to the proper servicing height (Main Landing Gear Shock Strut Servicing, Airplane on the Ground, TASK 12-15-31-610-802).

(b) For the left inboard flap, close these access panels:

Number	Name/Location
193CL	Wheel Well Panel - Aft Outboard

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
194CL	Aft Wing To Body Fairing Panel

(c) For the right inboard flap, close these access panels:

Number	Name/Location
193CR	Wheel Well Panel - Aft Outboard
194CR	Aft Wing To Body Fairing Panel

SUBTASK 27-51-15-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-15-860-008

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP TRACKS - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Inboard Flap Track Inspection (Selection)

(2) Inboard Flap Outboard Track Inspection

(3) Inboard Flap Inboard Track Inspection.

TASK 27-51-15-200-801

2. Inboard Flap Track Inspection (Selection)

A. References

Reference	Title
27-51-13-200-802	Inboard Flap Outboard Carriage Inspection (P/B 601)
27-51-13-200-803	Inboard Flap Inboard Carriage Inspection (P/B 601)

B. Procedure

SUBTASK 27-51-15-200-001

(1) Do one of these tasks to inspect the applicable inboard flap track:

(a) Do this task: Inboard Flap Outboard Carriage Inspection, TASK 27-51-13-200-802.

(b) Do this task: Inboard Flap Inboard Carriage Inspection, TASK 27-51-13-200-803.

——— END OF TASK ———

TASK 27-51-15-200-802

3. Inboard Flap Outboard Track Inspection

(Figure 601)

A. General

(1) This task gives wear limits for the outboard track on the inboard flap.

(2) This task is applicable to the flap tracks at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-15-000-802	Inboard Flap Outboard Track Removal (P/B 401)
27-51-15-400-802	Inboard Flap Outboard Track Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

E. Procedure

SUBTASK 27-51-15-020-013

(1) Do this task: Inboard Flap Outboard Track Removal, TASK 27-51-15-000-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-15-020-014

(2) Use these tools to do a check for wear on the part of the inboard flap outboard track:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-15-020-015

(3) Examine the parts of the inboard flap outboard track (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.0.070 in. (1.778 mm).

Table 601/27-51-15-993-801

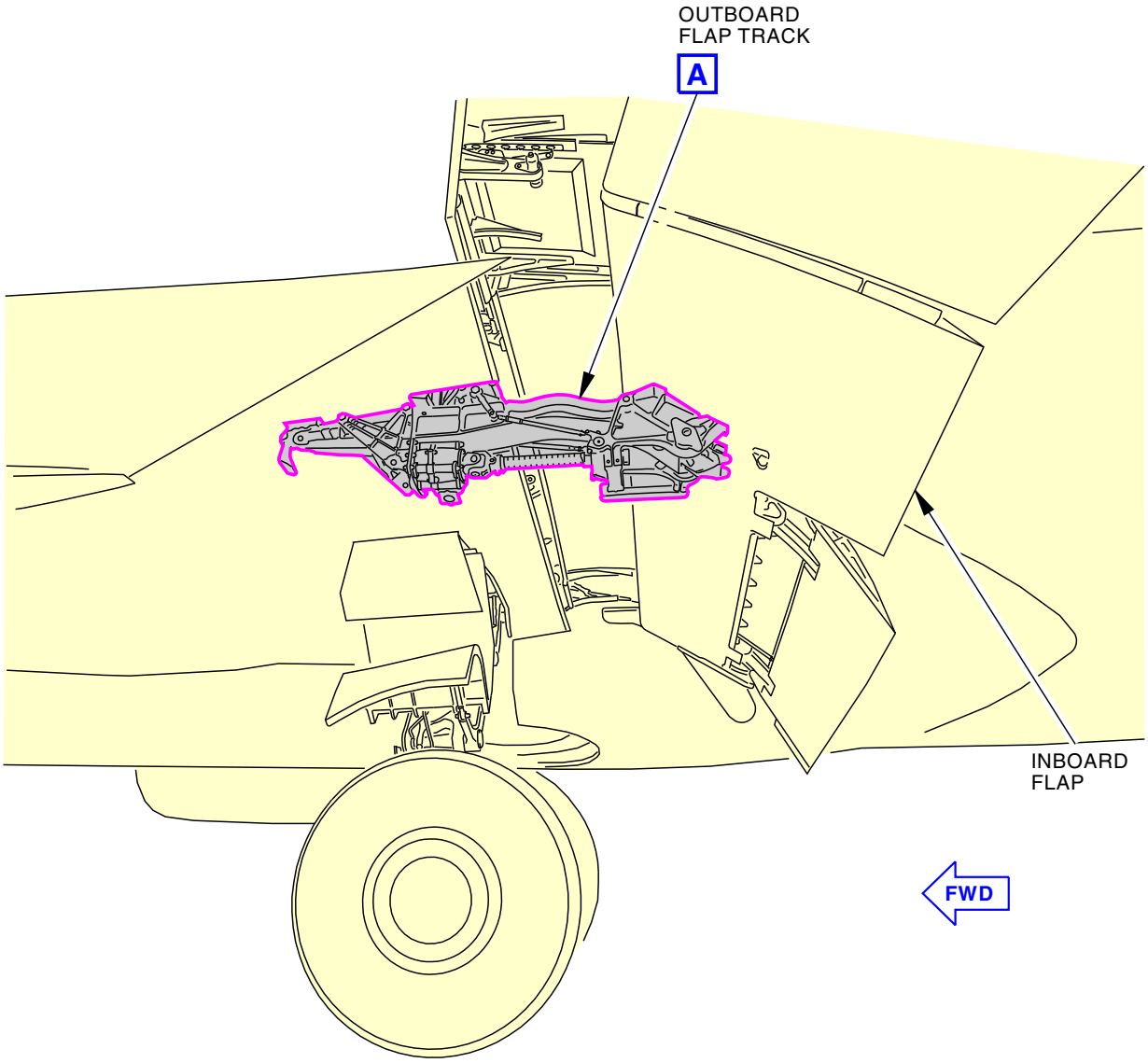
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
BUSHING [1]	I.D.	0.7000 in. (17.7800 mm)	0.7095 in. (18.0213 mm)	0.7118 in. (18.0797 mm)	0.0336 in. (0.8534 mm)
FUSE PIN [5]	O.D.	0.6800 in. (17.2720 mm)	0.6805 in. (17.2847 mm)	0.6782 in. (17.2263 mm)	
BUSHING [2]	I.D.	0.7000 in. (17.7800 mm)	0.7095 in. (18.0213 mm)	0.7118 in. (18.0797 mm)	0.0336 in. (0.8534 mm)
FUSE PIN [5]	O.D.	0.6800 in. (17.2720 mm)	0.6805 in. (17.2847 mm)	0.6782 in. (17.2263 mm)	
BUSHING [3]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5695 in. (14.4653 mm)	0.0080 in. (0.2032 mm)
BOLT [7]	O.D.	0.5605 in. (14.2367 mm)	0.5615 in. (14.2621 mm)	0.5590 in. (14.1986 mm)	
BUSHING [4]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5695 in. (14.4653 mm)	0.0700 in. (1.7780 mm)
BOLT [6]	O.D.	0.4985 in. (12.6619 mm)	0.4995 in. (12.6873 mm)	0.4970 in. (12.6238 mm)	

SUBTASK 27-51-15-420-012

(4) Do this task: Inboard Flap Outboard Track Installation, TASK 27-51-15-400-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

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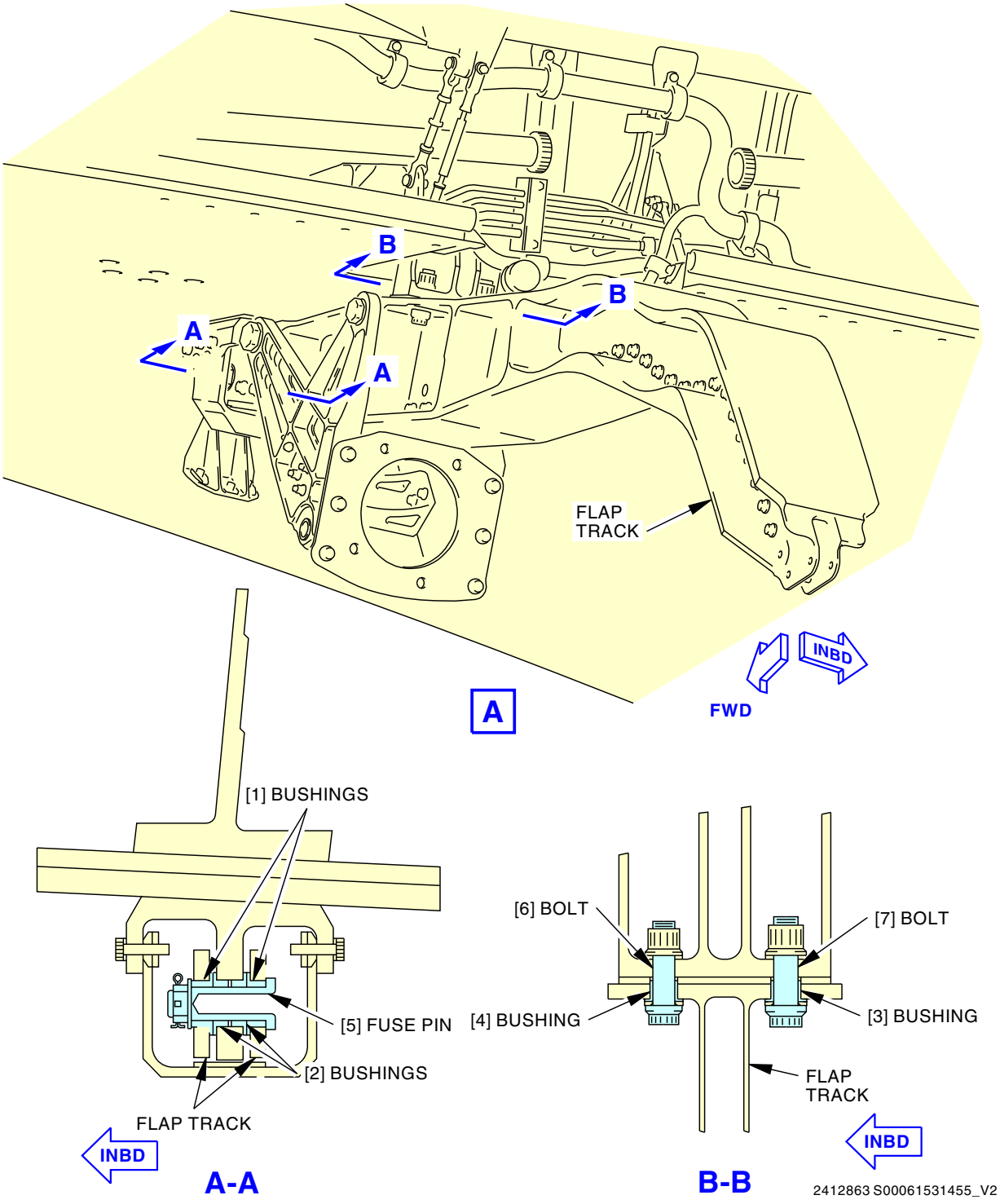
Inboard Flap Outboard Flap Track Wear Limits
Figure 601/27-51-15-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Flap Track Wear Limits
Figure 601/27-51-15-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-15-200-803

4. Inboard Flap Inboard Track Inspection

(Figure 602)

A. General

(1) This task gives wear limits for the inboard track on the inboard flap.

(2) This task is applicable to the flap tracks at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-15-000-803	Inboard Flap Inboard Track Removal (P/B 401)
27-51-15-400-803	Inboard Flap Inboard Track Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

E. Procedure

SUBTASK 27-51-15-020-016

(1) Do this task: Inboard Flap Inboard Track Removal, TASK 27-51-15-000-803.

SUBTASK 27-51-15-020-017

(2) Use these tools to do a check for wear on the part of the inboard flap inboard track:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-15-020-018

(3) Examine the parts of the inboard flap inboard track (Table 602):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 602/27-51-15-993-802

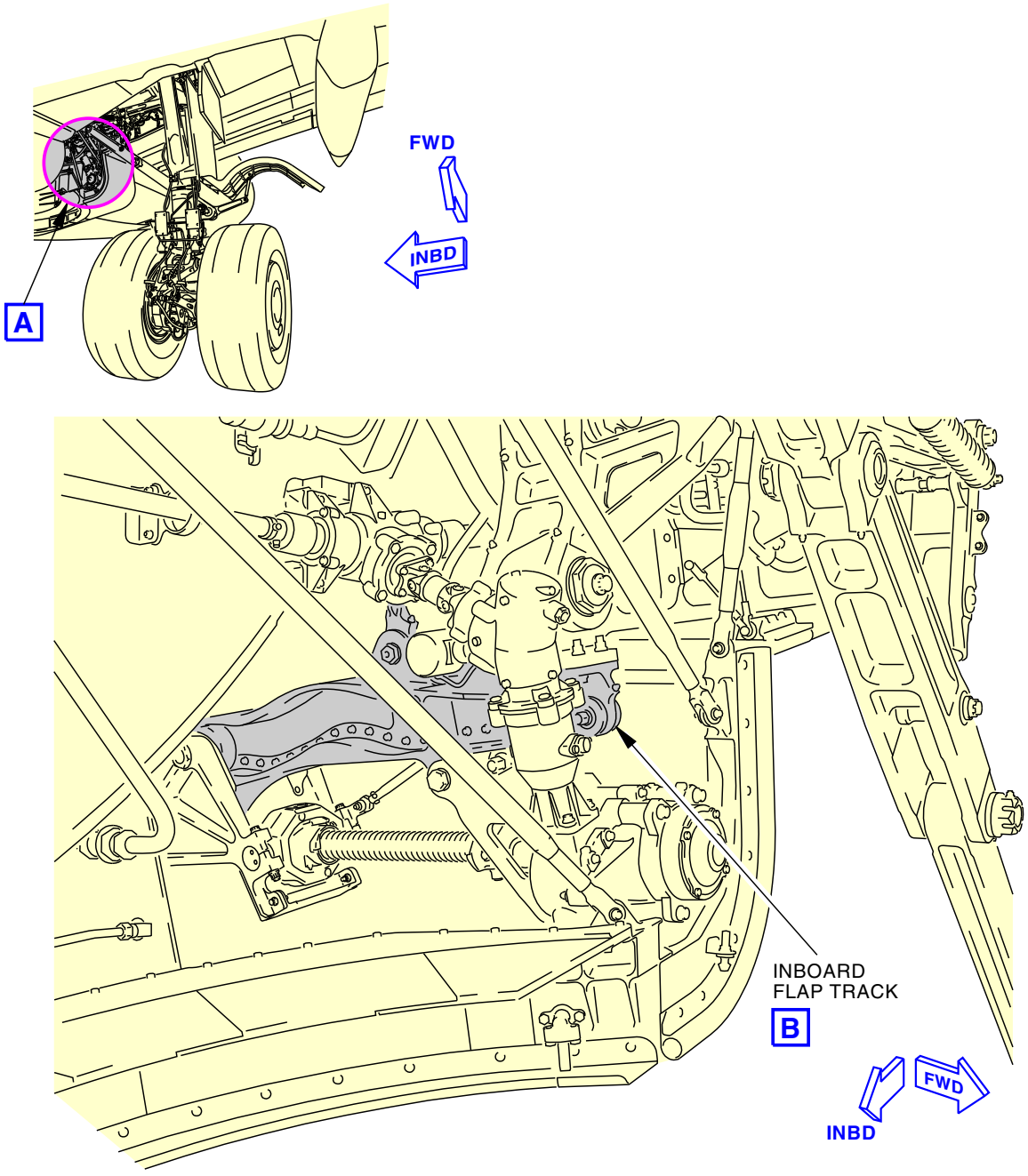
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
PIN (OUTER) [1]	O.D.	0.7485 in. (19.0119 mm)	0.7490 in. (19.0246 mm)	0.7468 in. (18.9687 mm)	
PIN (OUTER) [1]	I.D.	0.4960 in. (12.5984 mm)	0.4990 in. (12.6746 mm)	0.4990 in. (12.6746 mm)	0.0090 in. (0.2286 mm)
PIN (INNER) [2]	O.D.	0.4900 in. (12.4460 mm)	0.4930 in. (12.5222 mm)	0.4900 in. (12.4460 mm)	
BUSHING [3]	I.D.	0.6245 in. (15.8623 mm)	0.6252 in. (15.8801 mm)	0.6278 in. (15.9461 mm)	0.0064 in. (0.1626 mm)
BOLT [4]	O.D.	0.6230 in. (15.8242 mm)	0.6240 in. (15.8496 mm)	0.6214 in. (15.7836 mm)	
BEARING [5]	I.D.	0.6250 in. (15.8750 mm)	0.6255 in. (15.8877 mm)	0.6255 in. (15.8877 mm)	0.0025 in. (0.0635 mm)
BOLT [4]	O.D.	0.6230 in. (15.8242 mm)	0.6240 in. (15.8496 mm)	0.6230 in. (15.8242 mm)	
BUSHING [6]	I.D.	0.7495 in. (19.0373 mm)	0.7503 in. (19.0576 mm)	0.7525 in. (19.1135 mm)	0.0035 in. (0.0889 mm)
BOLT [7]	O.D.	0.7485 in. (19.0119 mm)	0.7490 in. (19.0246 mm)	0.7468 in. (18.9687 mm)	

SUBTASK 27-51-15-420-013

(4) Do this task: Inboard Flap Inboard Track Installation, TASK 27-51-15-400-803.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



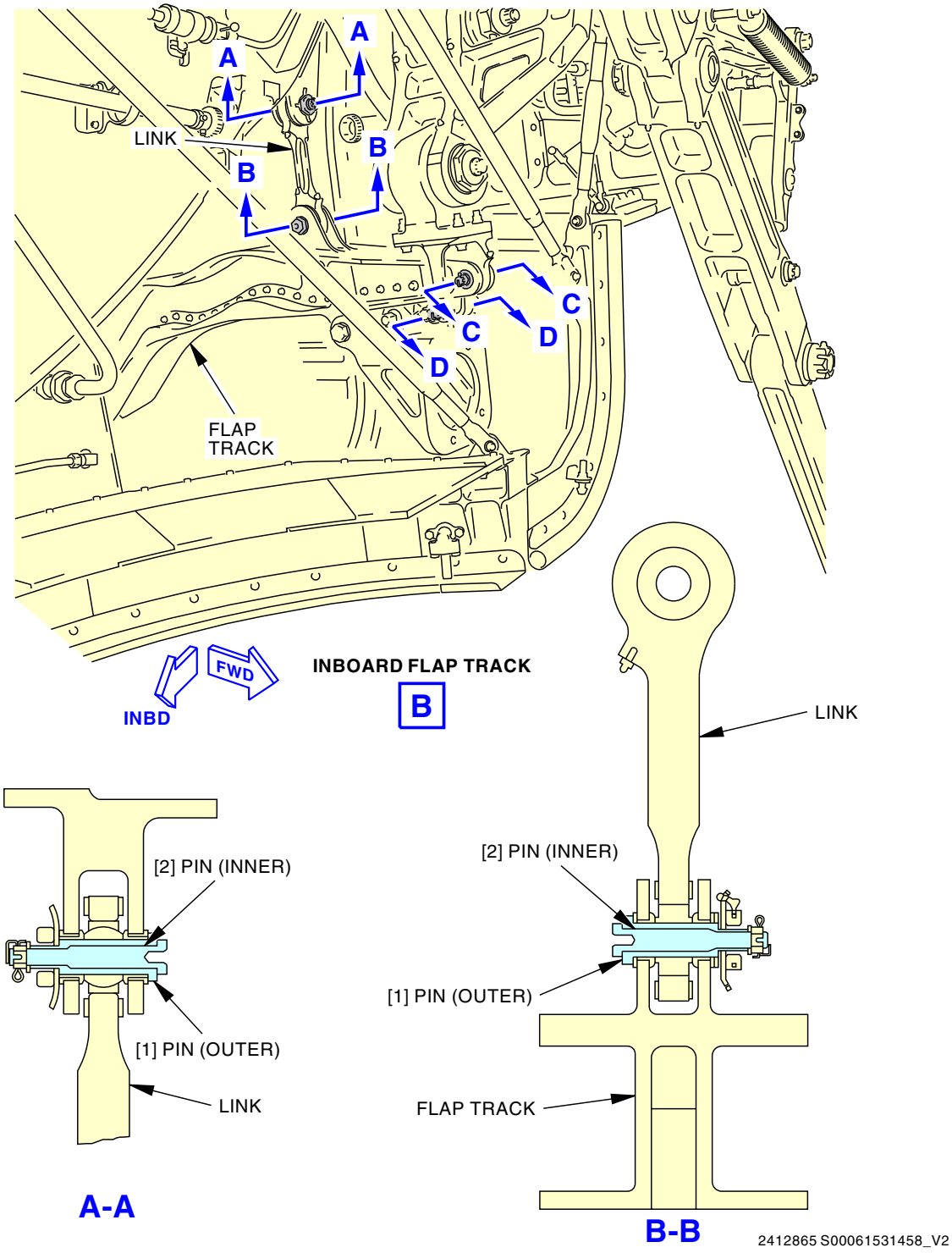
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2412864 S00061531457_V1

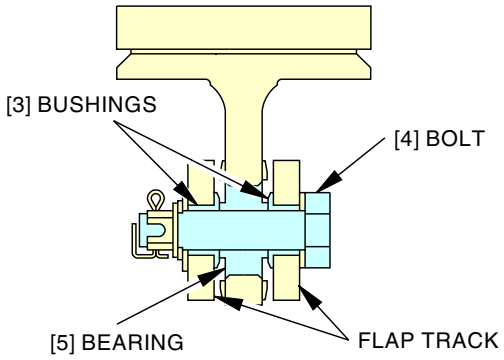
Inboard Flap Inboard Flap Track Inspection
Figure 602/27-51-15-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

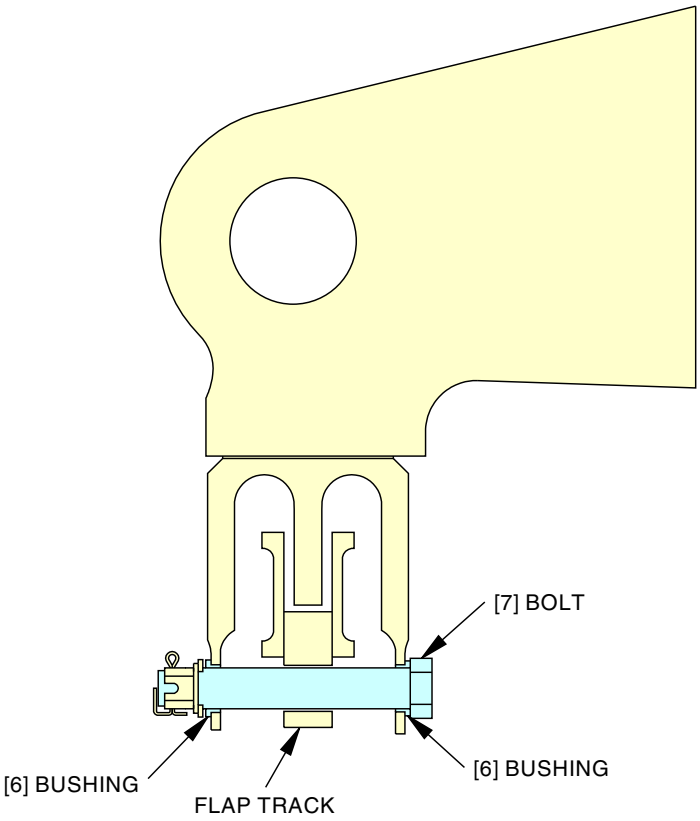


Inboard Flap Inboard Flap Track Inspection
Figure 602/27-51-15-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



C-C



D-D

2412866 S00061531459_V3

Inboard Flap Inboard Flap Track Inspection
Figure 602/27-51-15-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD AFT FLAP TRACKS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard Aft Flap Track Removal

(2) Inboard Aft Flap Track Installation.

B. This procedure is applicable to the two aft flap tracks on the inboard flap.

TASK 27-51-16-000-801

2. Inboard Aft Flap Track Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-12-000-801	Inboard Aft Flap Removal (P/B 401)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)

B. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

C. Prepare for the Removal

SUBTASK 27-51-16-010-001

(1) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

SUBTASK 27-51-16-860-001

(2) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-16-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-16-020-001

(4) Do this task: Inboard Aft Flap Removal, TASK 27-51-12-000-801.

D. Inboard Aft Flap Track Removal

SUBTASK 27-51-16-020-002

(1) Remove aft flap track [2] from the main flap [1]:

(a) Remove the nuts [4] that attach the cartridge assemblies [3] and cartridge assemblies [5] to the aft flap track support [6] on the main flap [1].

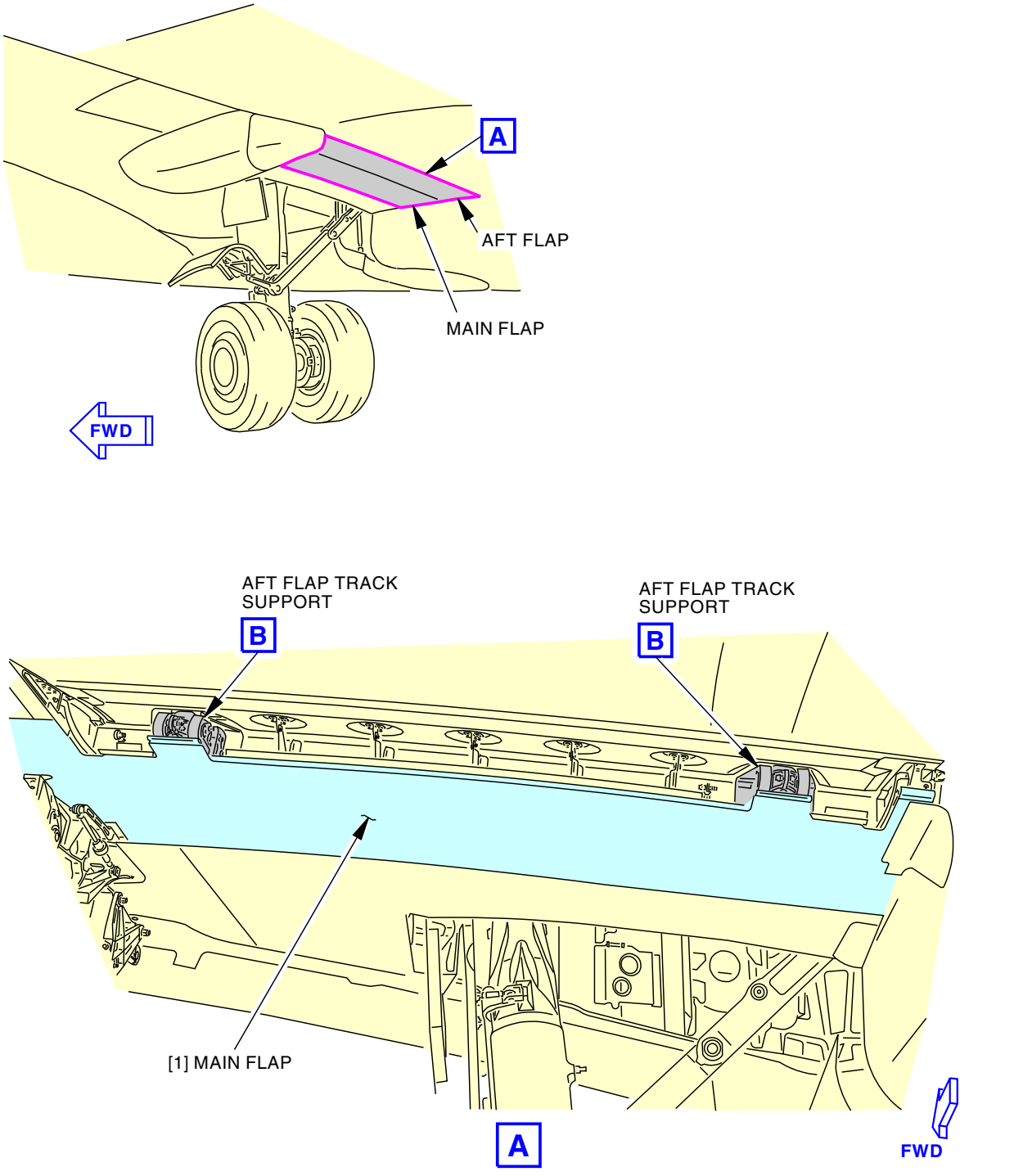
NOTE: There are two cartridge assemblies [3] and two cartridge assemblies [5] on the inboard and the outboard aft flap track supports.

(b) Remove the cartridge assemblies [3] and cartridge assemblies [5] from the aft flap track support [6].

(c) Carefully remove the aft flap track [2] from the aft flap track support [6].

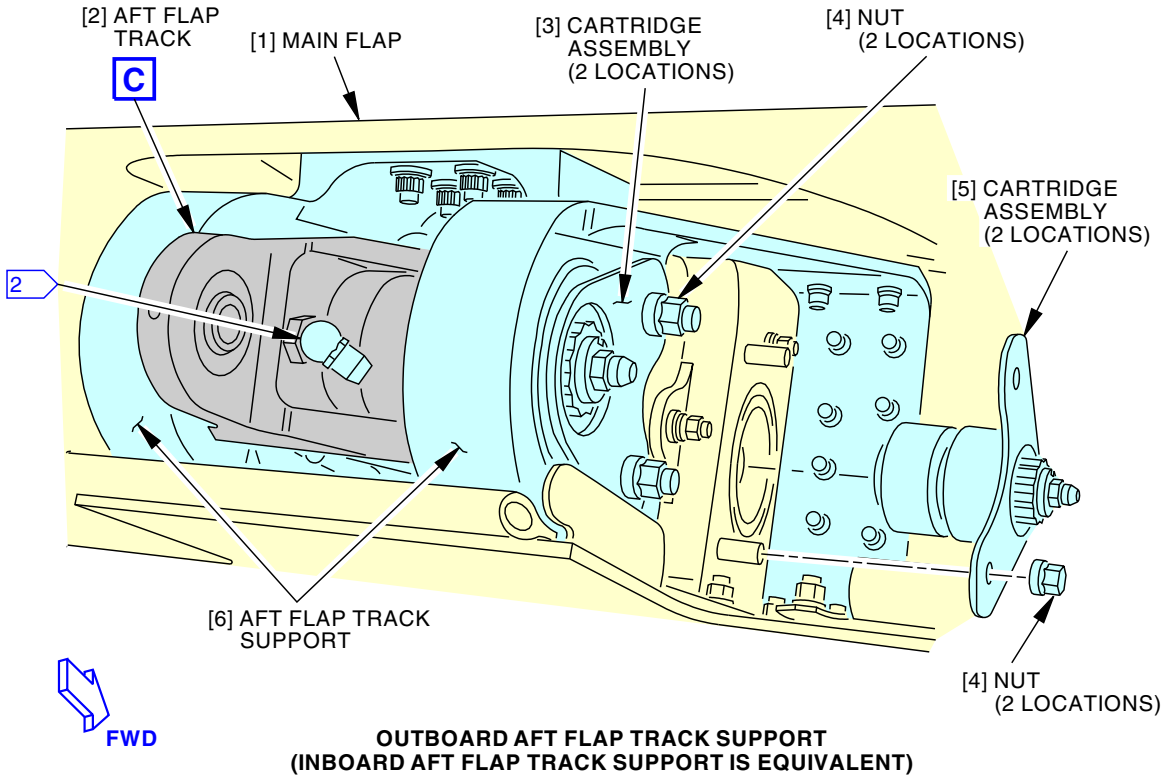
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



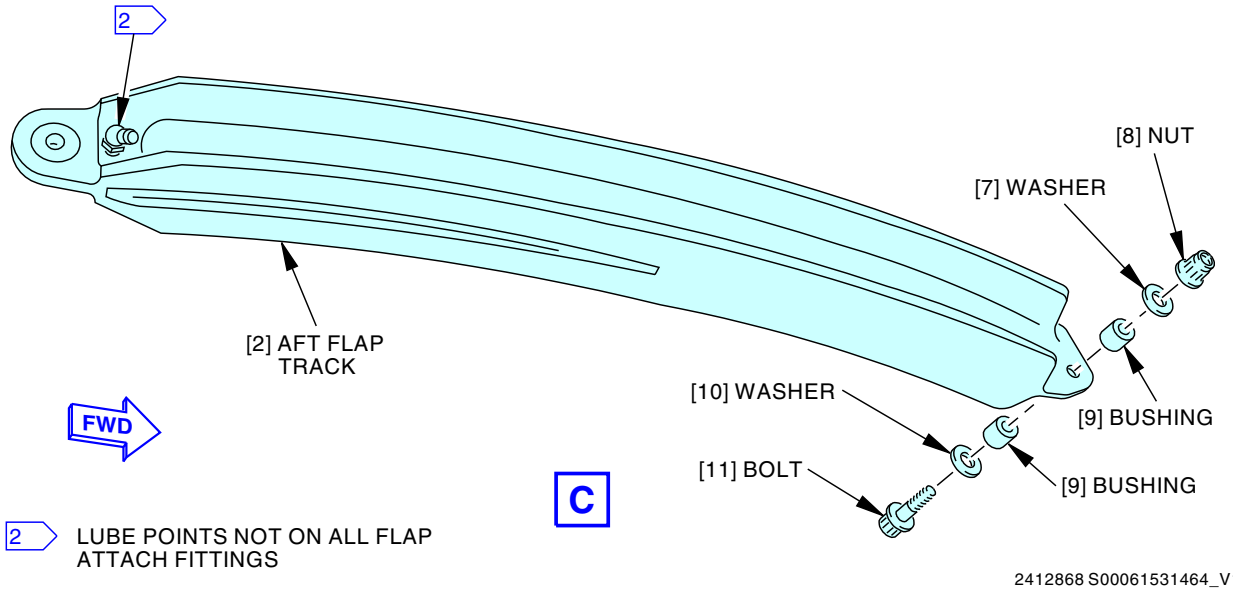
Inboard Aft Flap Track Installation
Figure 401/27-51-16-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD AFT FLAP TRACK SUPPORT
(INBOARD AFT FLAP TRACK SUPPORT IS EQUIVALENT)

B



Inboard Aft Flap Track Installation
Figure 401/27-51-16-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-16-400-801

3. Inboard Aft Flap Track Installation

(Figure 401)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-12-400-801	Inboard Aft Flap Installation (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Track	27-51-16-01A-065	SIA ALL

D. Location Zones

Zone	Area
553	Left Wing - Inboard Flap
653	Right Wing - Inboard Flap

E. Inboard Aft Flap Track Installation

SUBTASK 27-51-16-420-001

(1) If the downstop is not installed on the aft flap track [2], do these steps:

(a) Install the bolt [11], bushings [9], washer [10], washer [7], and nut [8] on the aft flap track [2].

(b) Tighten the nut [8] to 50 in-lb (5.6 N·m) to 75 in-lb (8.5 N·m).

SUBTASK 27-51-16-420-002

(2) Install the aft flap track [2] in the main flap [1]:

(a) Carefully put the aft flap track [2] in its position in the aft flap track support [6] in the main flap [1].

NOTE: Make sure that the downstop is forward of the forward cartridge assemblies [5].

(b) Apply a layer of sealant, A00247 to the mating surface of the cartridge assemblies [3] and cartridge assemblies [5] and the aft flap track support [6].

(c) Put the cartridge assemblies [3] and cartridge assemblies [5] in their position in the aft flap track support [6].

(d) Install the nuts [4] that attach the cartridge assemblies [3] and cartridge assemblies [5] to the aft flap track support [6].

SUBTASK 27-51-16-420-003

(3) Do this task: Inboard Aft Flap Installation, TASK 27-51-12-400-801.

NOTE: It is necessary to do the aft flap adjustment after you install the aft flap.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-16-410-001

(1) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-16-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-16-860-002

(3) Retract the trailing edge flaps to the retracted position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP SUPPORT FAIRING - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard flap support fairing removal (Selection)

(2) Inboard flap support fairing installation (Selection)

(3) Inboard flap support forward fairing removal

(4) Inboard flap support forward fairing installation

(5) Inboard flap support aft fairing removal

(6) Inboard flap support aft fairing installation.

TASK 27-51-18-000-803

2. Inboard Flap Support Fairing Removal (Selection)

A. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

B. Inboard Flap Support Fairing Removal (Selection)

SUBTASK 27-51-18-000-001

(1) Do one of these tasks to remove the applicable inboard flap support fairing:

(a) Do this task: Inboard Flap Support Forward Fairing Removal, TASK 27-51-18-000-801.

(b) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

——— END OF TASK ———

TASK 27-51-18-400-803

3. Inboard Flap Support Fairing Installation (Selection)

A. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

B. Inboard Flap Support Fairing Installation (Selection)

SUBTASK 27-51-18-400-001

(1) Do one of these tasks to install the applicable inboard flap support fairing:

(a) Do this task: Inboard Flap Support Forward Fairing Installation, TASK 27-51-18-400-801.

(b) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

——— END OF TASK ———

TASK 27-51-18-000-801

4. Inboard Flap Support Forward Fairing Removal

(Figure 401)

A. General

(1) This task is applicable to the forward fairing on the No. 3 and No. 6 flap supports.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

D. Inboard Flap Support Forward Fairing Removal

SUBTASK 27-51-18-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-18-020-001

(2) Remove the forward fairing [1]:

(a) Remove the bolts [5] that attach the forward end of the forward fairing [1].

(b) Support the forward fairing [1] and remove the bolts [3] and washers [4] that attach the forward fairing [1] to the fairing attach fitting [13].

(c) Lower the forward fairing [1] until you can get access to the nuts [11] on the jumper wires [23].

(d) Remove the nuts [11] and washers [12] that attach the jumper wires [23].

(e) Remove the forward fairing [1].

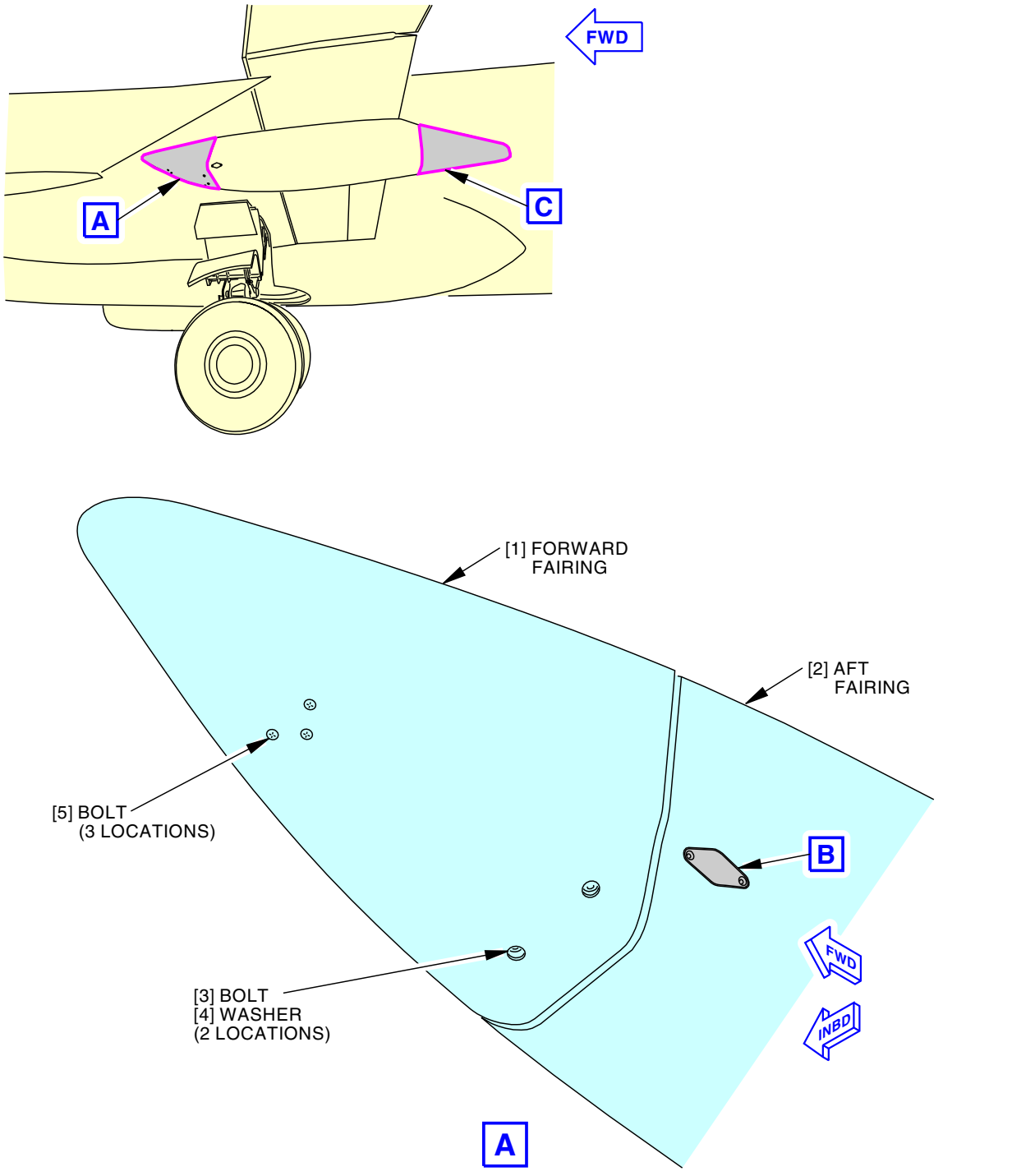
SUBTASK 27-51-18-020-002

(3) If it is necessary, remove the fairing attach fitting [13]:

(a) Remove the lockwires, bolts [8] and washers [9] that attach the fairing attach fitting [13] to the transmission attach fitting [10].

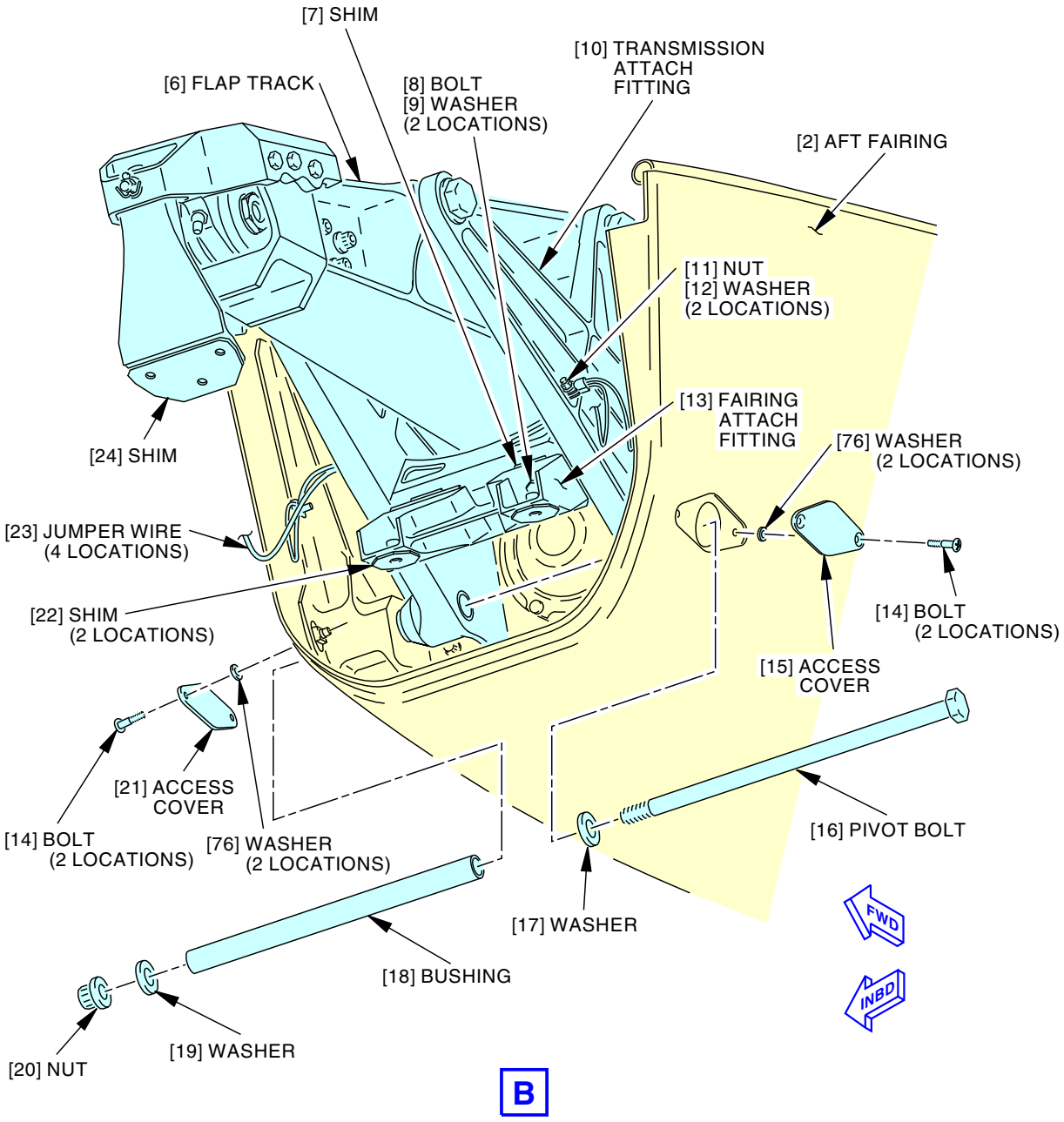
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Support Fairing Installation
Figure 401/27-51-18-990-801 (Sheet 1 of 5)

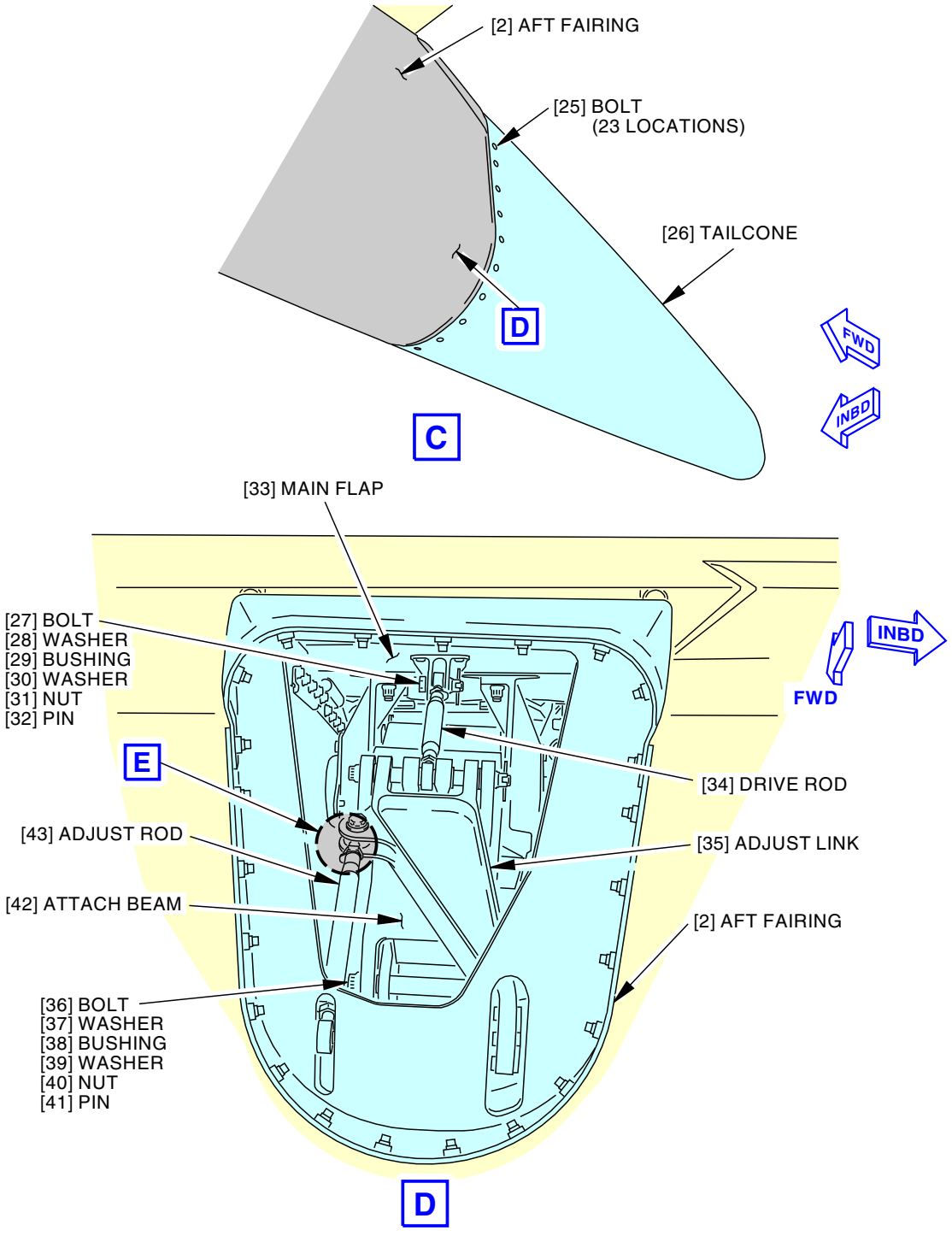
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412870 S00061531470_V2

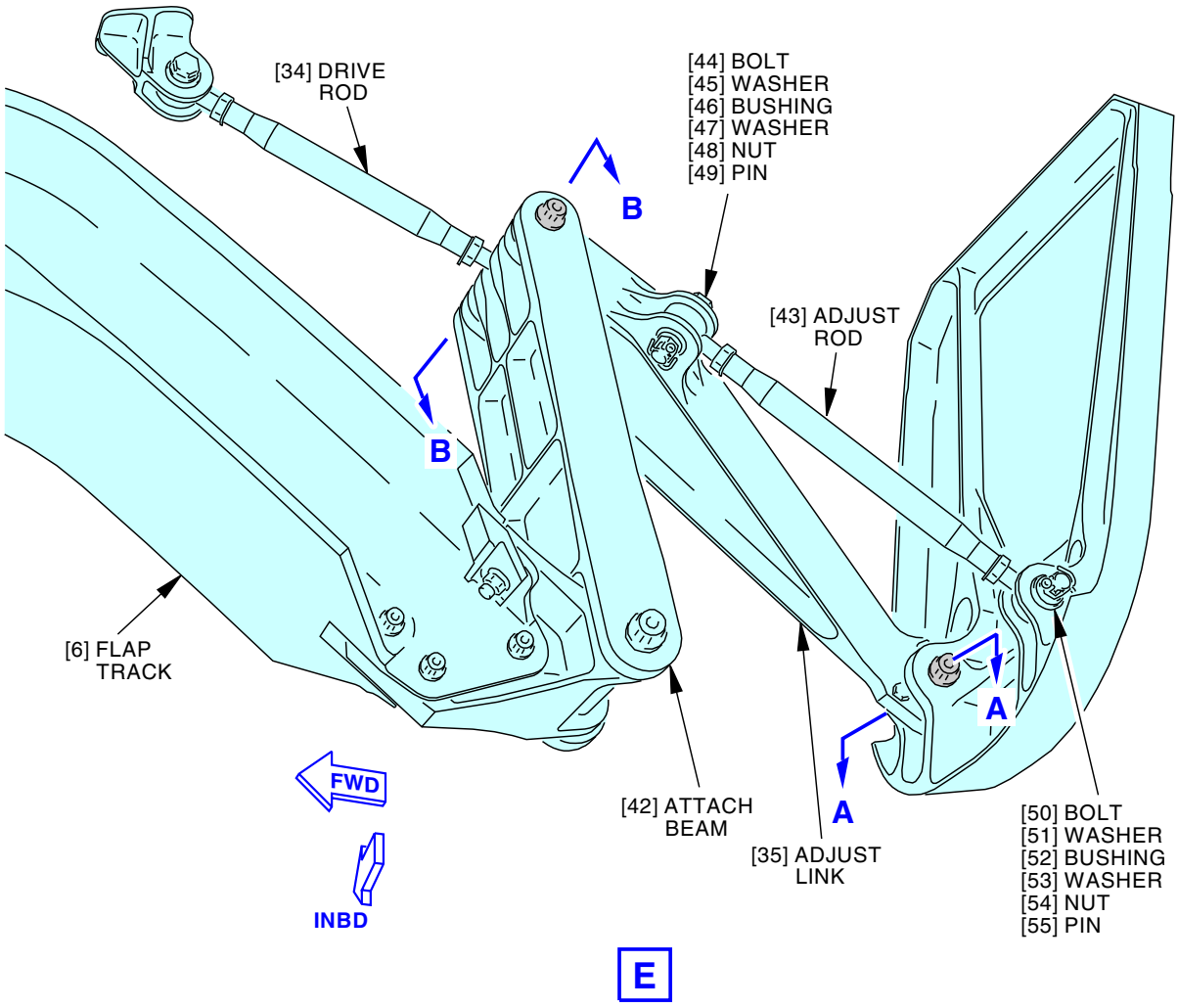
Inboard Flap Support Fairing Installation
Figure 401/27-51-18-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Support Fairing Installation
Figure 401/27-51-18-990-801 (Sheet 3 of 5)

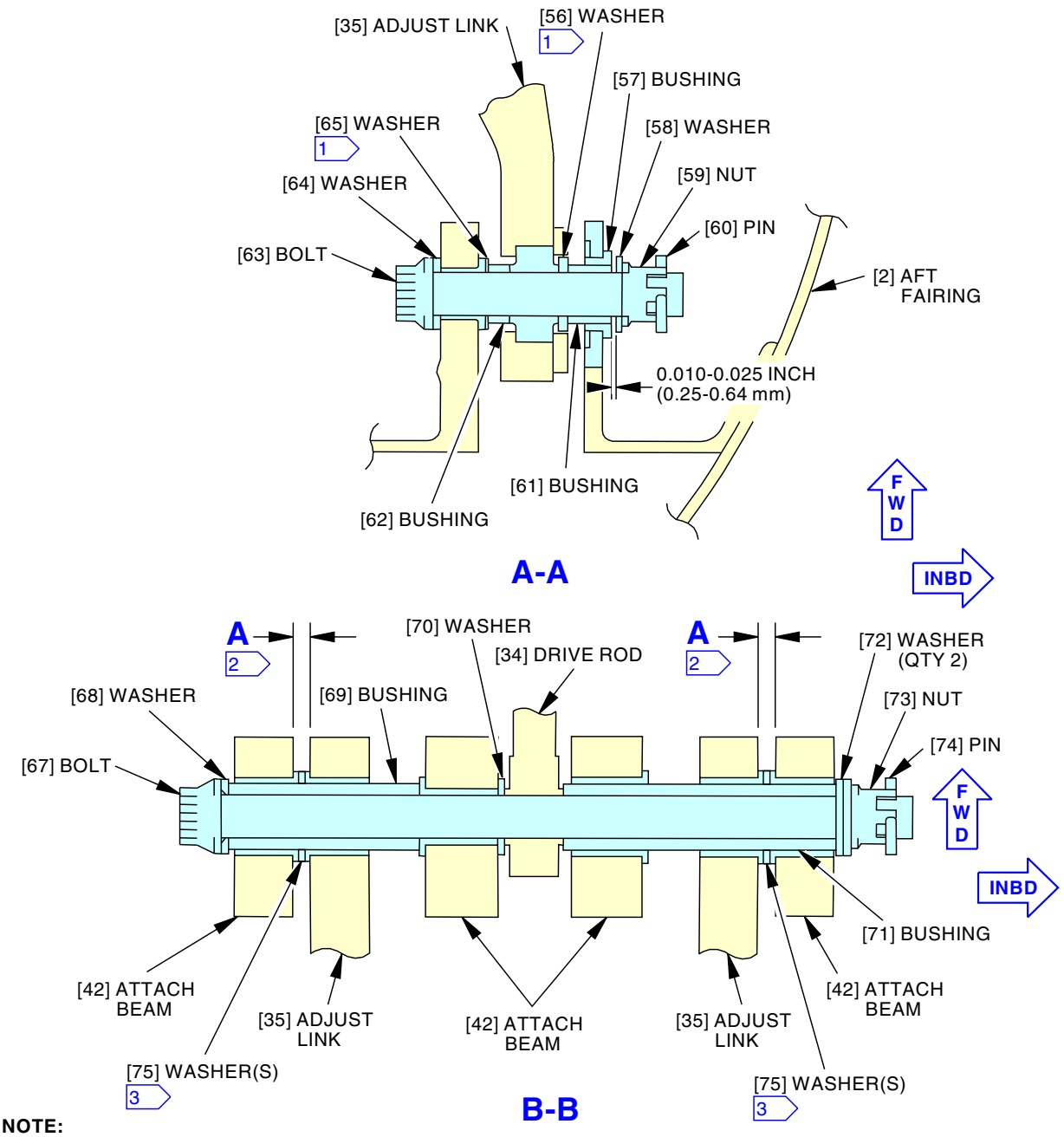
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412872 S00061531472_V1

Inboard Flap Support Fairing Installation
Figure 401/27-51-18-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

1. DISTRIBUTE THE WASHERS TO ACHIEVE THE GAP SHOWN.
2. MAKE SURE GAP A DOES NOT EXCEED 0.002 INCHES (0.5 MM).
3. ADD WASHER AS REQUIRED TO MINIMIZE GAPS BETWEEN THE BUSHINGS. MAXIMUM OF 2 WASHERS.

2412873 S00061531473_V2

Inboard Flap Support Fairing Installation
Figure 401/27-51-18-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-18-400-801

5. Inboard Flap Support Forward Fairing Installation

(Figure 401)

A. General

(1) This task is applicable to the forward fairing on the No. 3 and No. 6 flap supports.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-18-820-801	Inboard Flap Support Fairing Adjustment (P/B 501)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Forward fairing	27-51-18-01-120	SIA ALL
		27-51-18-01-125	SIA ALL

E. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

F. Inboard Flap Support Forward Fairing Installation

SUBTASK 27-51-18-420-001

(1) If it is not installed, install the fairing attach fitting [13] on the transmission attach fitting [10].

(a) Apply primer, C00259, to the mating surfaces of the shim [7].

(b) Put the fairing attach fitting [13] and shim [7] in their location on the transmission attach fitting [10].

(c) Apply compound, C00528, to the bolts [8].

(d) Install the bolts [8] and washers [9] to attach the fairing attach fitting [13].

(e) Install lockwire on the bolts [8].

SUBTASK 27-51-18-420-002

(2) Install the forward fairing [1].

(a) Connect the jumper wires [23] as follows:

1) Lift the forward fairing [1] until you can put the jumper wires [23] on the studs.

2) Install the washers [12] and nuts [11] to attach the jumper wires [23].

3) Apply sealant, A02315, to the nuts [11].

(b) Apply primer, C00259, to the mating surfaces of the shims [22] and shim [24].

(c) If previously removed, put the shims [22] or shim [24] in its position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Apply compound, C00528, to the bolts [3] and bolts [5].

(e) Install the bolts [3] and washers [4] to attach the forward fairing [1] to the fairing attach fitting [13].

1) Tighten the bolts [3] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

(f) Install the bolts [5] to attach the forward end of the forward fairing [1].

1) Tighten the bolts [5] to 73 in-lb (8.25 N·m) - 77 in-lb (8.70 N·m).

SUBTASK 27-51-18-820-001

(3) Do this task: Inboard Flap Support Fairing Adjustment, TASK 27-51-18-820-801.

SUBTASK 27-51-18-390-001

(4) Fill the clearance between the front of the forward fairing [1] and the lower surface of the wing with sealant, A02315.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-18-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

TASK 27-51-18-000-802

6. Inboard Flap Support Aft Fairing Removal

(Figure 401)

A. General

(1) This task is applicable to the aft fairing on the No. 3 and No. 6 flap supports.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

D. Access Panels

Number	Name/Location
542CL	Flap Support No. 3, Access Cover
542CR	Flap Support No. 3, Access Cover
642CL	Flap Support No. 6, Access Cover
642CR	Flap Support No. 6, Access Cover

E. Inboard Flap Support Aft Fairing Removal

SUBTASK 27-51-18-040-002

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-18-010-001

(3) Remove the tailcone [26] from the aft end of the aft fairing [2]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the bolts [25] that attach the tailcone [26] to the aft fairing [2].

(b) Remove the tailcone [26] from the aft fairing [2].

SUBTASK 27-51-18-010-002

(4) Remove the access cover [15] and access cover [21] from the forward end of the aft fairing [2]:

(a) These are the panels:

Number	Name/Location
542CL	Flap Support No. 3, Access Cover
542CR	Flap Support No. 3, Access Cover
642CL	Flap Support No. 6, Access Cover
642CR	Flap Support No. 6, Access Cover

(b) Remove the bolts [14] and washers [76] that attach the access cover [15] and access cover [21] to the aft fairing [2].

NOTE: The washers [76] are located under the access cover [15].

(c) Remove the access cover [15] and access cover [21].

SUBTASK 27-51-18-020-003

(5) Remove the aft fairing [2]:

(a) Disconnect the aft end of the aft fairing [2]:

1) Support the aft end of the aft fairing [2] while you remove the pin [41] and bolt [36].

2) Remove the pin [41], nut [40], washer [39], washer [37], bolt [36] and bushing [38] that attach the lower end of the attach beam [42] to the flap track [6].

3) Remove the pin [32], nut [31], washer [30], washer [28], bolt [27] and bushing [29] that attach the drive rod [34] to the main flap [33].

(b) Disconnect the forward end of the aft fairing [2]:

1) Remove the nut [20] and washer [19] from the pivot bolt [16].

2) Remove the pivot bolt [16], washer [17] and bushing [18] that attach the aft fairing [2] to the transmission attach fitting [10].

(c) Lower the aft fairing [2] until you can get access to the nuts [11] on the jumper wires [23].

NOTE: If the forward fairing has been removed (TASK 27-51-18-000-801), then the jumper wires [23] may have already been removed.

(d) Remove the nuts [11] and washers [12] that attach the jumper wires [23].

(e) Remove the jumper wires [23] from the studs.

(f) Lower the aft fairing [2].

SUBTASK 27-51-18-020-004

(6) If you will install a new aft fairing [2], remove the fairing drive linkage from the aft fairing [2]:

NOTE: The fairing drive linkage includes the drive rod [34], adjust link [35], adjust rod [43] and the attach beam [42].

(a) Remove the pin [55], nut [54], washer [53], washer [51], bolt [50] and bushing [52] that attach the adjust rod [43] to the aft fairing [2].

(b) Remove the adjust link [35] from the aft fairing [2]:

1) Remove the pin [60], nut [59] and washer [58] from the bolt [63].

2) Remove the bolt [63], washer [64], washer [65] and washer [56].

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a) Make a note of the quantity, thickness and location of the washer [56] and washer [65].

3) Remove the bushing [61] and bushing [62] from the aft fairing [2].

(c) Disconnect the drive rod [34] and adjust link [35] from the attach beam [42]:

1) Remove the pin [74], nut [73] and washer [72] from the bolt [67].

2) Remove the bolt [67], washer [68], washer [70], bushing [69], bushing [71] and washers [75].

a) Make a note of the quantity and location of the washer [68], washer [70] and washers [75].

(d) Remove the pin [49], nut [48], washer [47], washer [45], bolt [44] and bushing [46] that attach the adjust rod [43] to the adjust link [35].

——— END OF TASK ———

TASK 27-51-18-400-802

7. Inboard Flap Support Aft Fairing Installation

(Figure 401)

A. General

(1) This task is applicable to the aft fairing on the No. 3 and No. 6 flap supports.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-820-801	Inboard Flap Support Fairing Adjustment (P/B 501)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Aft fairing	27-51-18-01-440	SIA ALL
		27-51-18-01-445	SIA ALL
32	Pin	27-51-18-01-150	SIA ALL
41	Pin	27-51-18-01-150	SIA ALL
49	Pin	27-51-18-01-150	SIA ALL
55	Pin	27-51-18-01-150	SIA ALL
60	Pin	27-51-18-01-150	SIA ALL
74	Pin	27-51-18-01-150	SIA ALL

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E. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

F. Access Panels

Number	Name/Location
542CL	Flap Support No. 3, Access Cover
542CR	Flap Support No. 3, Access Cover
642CL	Flap Support No. 6, Access Cover
642CR	Flap Support No. 6, Access Cover

G. Inboard Flap Support Aft Fairing Installation

SUBTASK 27-51-18-020-005

(1) If the fairing drive linkage is not installed on the aft fairing [2], do these steps:

NOTE: The fairing drive linkage includes the drive rod [34], adjust link [35], adjust rod [43] and the attach beam [42].

(a) Connect the adjust rod [43] to the adjust link [35]:

1) Install the bushing [46], bolt [44], washer [45], washer [47] and nut [48] that attach the adjust rod [43] to the adjust link [35].

a) For the left wing, install the bolt [44] with the head on the same side of the adjust link [35] as the bushing [46].

b) For the right wing, install the bolt [44] with the head on the opposite side of the adjust link [35] as the bushing [46].

2) Install the pin [49] in the nut [48].

(b) Connect the drive rod [34] and adjust link [35] to the attach beam [42]:

1) Put the adjust link [35] in its location on the attach beam [42] with the washers [75], bushing [69] and bushing [71].

a) Add washers [75] as necessary so that the total gap between the attach beam [42] and the adjust link [35] on each side is 0.02 in. (0.05 cm) or less (Figure 401).

NOTE: Maximum of two washers [75] on each side of the attach beam [42].

2) Put the drive rod [34] in its position on the attach beam [42].

3) Install the bolt [67], washer [68], washer [70], two washers [72] and nut [73].

4) Tighten the nut [73]:

a) Lubricate the threads of bolt [67] with grease, D00633.

b) Tighten the nut [73] to 175 ±25 in-lb (19.8 ±2.9 N·m).

5) Install the pin [74].

(c) Connect the adjust link [35] to the aft fairing [2]:

1) Put the adjust link [35] in its location on the aft fairing [2] with the washer [65], washer [66], washer [56], bushing [61] and bushing [62].

a) Install the same number of washers [65] and washers [56] in the same location as you removed.

2) Install the bolt [63], washer [64], washer [58] and nut [59].

3) Measure the clearance between the washer [58] and the flange on the bushing.

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4) If the clearance is not 0.010 in. (0.25 mm) to 0.025 in. (0.64 mm), change the location or the number of the washers [65] and washers [56]:
   a) Remove the nut [59], washer [58], washer [65], washer [56], washer [64], bolt [63], bushing [61] and bushing [62].
   b) Change the number or location of the washers [65] and washers [56].
      NOTE: These types of washers are made in different thicknesses. It may be necessary to choose a similar washer with a different thickness to achieve the proper gap.
   c) Install the bushing [61], bushing [62], bolt [63], washer [64], washers [65], washers [56], washer [58] and nut [59].
   d) Make sure the clearance between the washer [58] and the flange on the bushing [57] is in the limit of 0.010 in. (0.25 mm) to 0.025 in. (0.64 mm).
5) Install the pin [60] in the nut [59].

(d) Connect the adjust rod [43] to the aft fairing [2]:
1) Install the bushing [52], bolt [50], washer [51], washer [53] and nut [54] to attach the adjust rod [43] to the aft fairing [2].
2) Install the pin [55] in the nut [54].

SUBTASK 27-51-18-420-003

(2) Install the aft fairing [2]:

(a) Connect the jumper wires [23]:
1) Lift the forward end of the aft fairing [2] until you can put the jumper wires [23] on the studs.
2) Install the washers [12] and nuts [11] to attach the jumper wires [23].
   NOTE: The jumper wires from the forward fairing are attached to the same stud. You may need to remove the washers [12] and nuts [11] before you can install the jumper wires [23].
3) Apply sealant, A02315, to the nuts [11].

(b) Connect the forward end of the aft fairing [2] to the transmission attach fitting [10]:
1) Lift the forward end of the aft fairing [2] until it aligns with the transmission attach fitting [10].
2) Lubricate the pivot bolt [16] with grease, D00633, or grease, D00013.
3) Install the bushing [18], pivot bolt [16], washer [17], washer [19] and nut [20].
4) Lubricate the nut [20] with grease, D00633.
   a) Tighten the nut [20] to a torque tool set-point of 545 in-lb (61.6 N·m).

(c) Connect the aft end of the aft fairing [2]:
1) Move the attach beam [42] until it aligns with the flap track [6].
2) Lubricate the bolt [36] with grease, D00633, or grease, D00013.
3) Install the bushing [38], bolt [36], washer [37], washer [39] and nut [40].
4) Lubricate the threads of the bolt [36] with grease, D00633.
5) Tighten the nut [40] to 545 ±105 in-lb (61.6 ±11.9 N·m).
6) Install the pin [41] in the nut [40].
7) Align the drive rod [34] with the main flap [33].

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8) Install the bushing [29], bolt [27], washer [28], washer [30] and nut [31].

9) Install the pin [32] in the nut [31].

SUBTASK 27-51-18-820-002

(3) Do this task: Inboard Flap Support Fairing Adjustment, TASK 27-51-18-820-801.

SUBTASK 27-51-18-410-001

(4) Install the access cover [15] and access cover [21] on the forward end of the aft fairing [2]:

(a) These are the panels:

Number	Name/Location
542CL	Flap Support No. 3, Access Cover
542CR	Flap Support No. 3, Access Cover
642CL	Flap Support No. 6, Access Cover
642CR	Flap Support No. 6, Access Cover

(b) Put the washers [76], access cover [15] and access cover [21] in their locations on the aft aft fairing [2].

NOTE: The washers [76] are installed under the access cover [15] and access cover [21].

(c) Install the bolts [14] that attach the access cover [15] and access cover [21].

SUBTASK 27-51-18-010-003

(5) Install the tailcone [26] on the aft fairing [2]:

(a) Put the tailcone [26] in its location on the aft fairing [2].

(b) Install the bolts [25] that attach the tailcone [26].

(c) Fill and aerodynamically fair the clearance between the tailcone [26] and the aft fairing [2] with sealant, A02315.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-18-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP SUPPORT FAIRING - ADJUSTMENT/TEST

1. General

A. This procedure has a task to do the adjustment of the outboard flap support fairings for the inboard flap.

TASK 27-51-18-820-801

2. Inboard Flap Support Fairing Adjustment

(Figure 501)

A. General

(1) This task is applicable to the flap support fairing at supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-000-801	Inboard Flap Support Forward Fairing Removal (P/B 401)
27-51-18-400-801	Inboard Flap Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

E. Prepare for the Adjustment

SUBTASK 27-51-18-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-18-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Aft Fairing Adjustment

SUBTASK 27-51-18-220-001

(1) Measure the clearance between the top surface of the aft fairing [3] and the aft edge of the inboard flap [1].

(a) Measure the clearance at the aft edge of the inboard flap [1] to the aft fairing [3].

(b) Make sure the clearance is in the limit of 0.2884 ±0.0500 in. (7.325 ±1.270 mm).

1) Make sure the aft seal [5] is compressed 20 to 40 percent.

(c) Make sure the clearance is approximately the same on the inboard and outboard sides of the aft fairing [3].

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(d) Measure the clearance between the inboard and outboard sides of the aft fairing [3] to the lower surface of the wing and inboard flap [1].

1) Make sure the clearance is in the limit of 0.6000 in. (15.240 mm) to 0.3000 in. (7.620 mm).

2) Do adjustment below to achieve a continuous trailing edge seal compression of 0.02 in. (0.51 mm) to 0.07 in. (1.78 mm).

SUBTASK 27-51-18-820-003

(2) If the clearance is not in the limit, or if it is not the same on the inboard and outboard sides, adjust the position of the aft fairing [3]:

(a) Remove the bolts [6] and remove the tail cone [4] from the aft fairing [3].

(b) If the clearance is not the same on the inboard and outboard sides, adjust the length of the adjust rod [11]:

1) Loosen the locknuts [10] on the adjust rod [11].

2) Adjust the length of the adjust rod [11] until the clearance is the same on the inboard and outboard sides of the aft fairing [3].

3) Tighten the locknuts [10] on the adjust rod [11] to 95 in-lb (10.7 N·m) - 160 in-lb (18.1 N·m).

4) Install lockwire on the locknuts [10].

(c) If the clearance is not in the limit, adjust the length of the drive rod [8]:

1) Loosen the locknuts [7] on the drive rod [8].

2) Adjust the length of the drive rod [8] until the clearance is in the limit.

3) Tighten the locknuts [7] on the drive rod [8] to 95 in-lb (10.7 N·m) - 160 in-lb (18.1 N·m).

4) Install lockwire on the locknuts [7].

(d) Make sure the clearance is in the limit and it is the same on the inboard and outboard sides of the aft fairing [3].

SUBTASK 27-51-18-220-002

(3) Make sure the seals [18] on the sides of the aft fairing [3] are compressed evenly against the lower surface of the inboard flap [1].

SUBTASK 27-51-18-820-004

(4) If the seals [18] are not compressed evenly against the lower surface of the inboard flap [1], adjust the position of the seals [18]:

(a) Remove the pin [17], nut [16], washer [15], washer [13], bolt [12] and bushing [14] that attach the drive rod [8] to the inboard flap [1].

(b) Lower the aft end of the aft fairing [3] to get access to the fasteners for the seals [18].

(c) Loosen the nuts [19] on the retainer [20].

(d) Move the seal [18] and the retainer [20].

1) Make sure you move the seal [18] and the retainer [20] together as a unit.

(e) Tighten the nuts [19] that hold the retainer [20].

(f) Lift the aft end of the aft fairing [3] to align the drive rod [8] with the inboard flap [1].

(g) Install the bushing [14], bolt [12], washer [13], washer [15] and nut [16].

(h) Install the pin [17] in the nut [16].

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G. Inboard Flap Outboard Forward Fairing Adjustment

SUBTASK 27-51-18-220-003

(1) Measure the mismatch between the forward fairing [2] and the aft fairing [3].

(a) Measure the mismatch on the inboard side and on the bottom of the forward fairing [2].

(b) Make sure the mismatch is in the limit of 0.03 in. (0.76 mm) to -0.01 in. (-0.25 mm).

NOTE: A positive (+) mismatch is when the forward fairing [2] extends past the aft fairing [3]. A negative (-) mismatch is when the aft fairing [3] extends past the forward fairing [2].

SUBTASK 27-51-18-220-004

(2) Make sure the seals [26] on the sides of the forward fairing [2] are compressed evenly against the lower surface of the wing.

SUBTASK 27-51-18-020-006

(3) If the mismatch is not in the limit or if the seals [26] are not compressed evenly, do this task: Inboard Flap Support Forward Fairing Removal, TASK 27-51-18-000-801.

SUBTASK 27-51-18-820-005

(4) If the mismatch between the forward fairing [2] and the aft fairing [3] is not in the limit, then adjust the position of the forward fairing [2]:

(a) If the mismatch is not in the limit on the inboard side of the forward fairing [2], adjust the position of the fairing attach fitting [24]:

1) Loosen the bolts [23] that attach the fairing attach fitting [24] to the transmission attach fitting [21].

2) Move the fairing attach fitting [24] inboard or outboard to get the mismatch in the limit.

3) Tighten the bolts [23] to 97 in-lb (11 N·m) - 103 in-lb (12 N·m).

(b) If the mismatch is not in the limit on the bottom of the forward fairing [2], change the thickness of the shims [25].

1) Apply primer, C00259, to the mating surfaces of the shims [25] and the fairing attach fitting [24].

(c) Fill and aerodynamically fair between the forward fairing [2] and the wing skin.

SUBTASK 27-51-18-820-006

(5) If the seals [26] are not compressed evenly against the lower surface of the wing, adjust the position of the seals [26]:

(a) Loosen the nuts [27] on the retainer [28].

(b) Move the seal [26] and the retainer [28].

1) Make sure you move the seal [26] and the retainer [28]] together as a unit.

(c) Tighten the nuts [27] that hold the retainer [28] to 24 in-lb (3 N·m) - 26 in-lb (3 N·m).

SUBTASK 27-51-18-420-004

(6) If you removed the forward fairing [2], do this task: Inboard Flap Support Forward Fairing Installation, TASK 27-51-18-400-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-18-010-004

(1) Install the tail cone [4] on the aft fairing [3]:

(a) Put the tail cone [4] in its location on the aft fairing [3].

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(b) Install the bolts [6] that attach the tail cone [4].

(c) Fill and aerodynamically fair the clearance between the tail cone [4] and the aft fairing [3] with sealant, A02315.

SUBTASK 27-51-18-440-003

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

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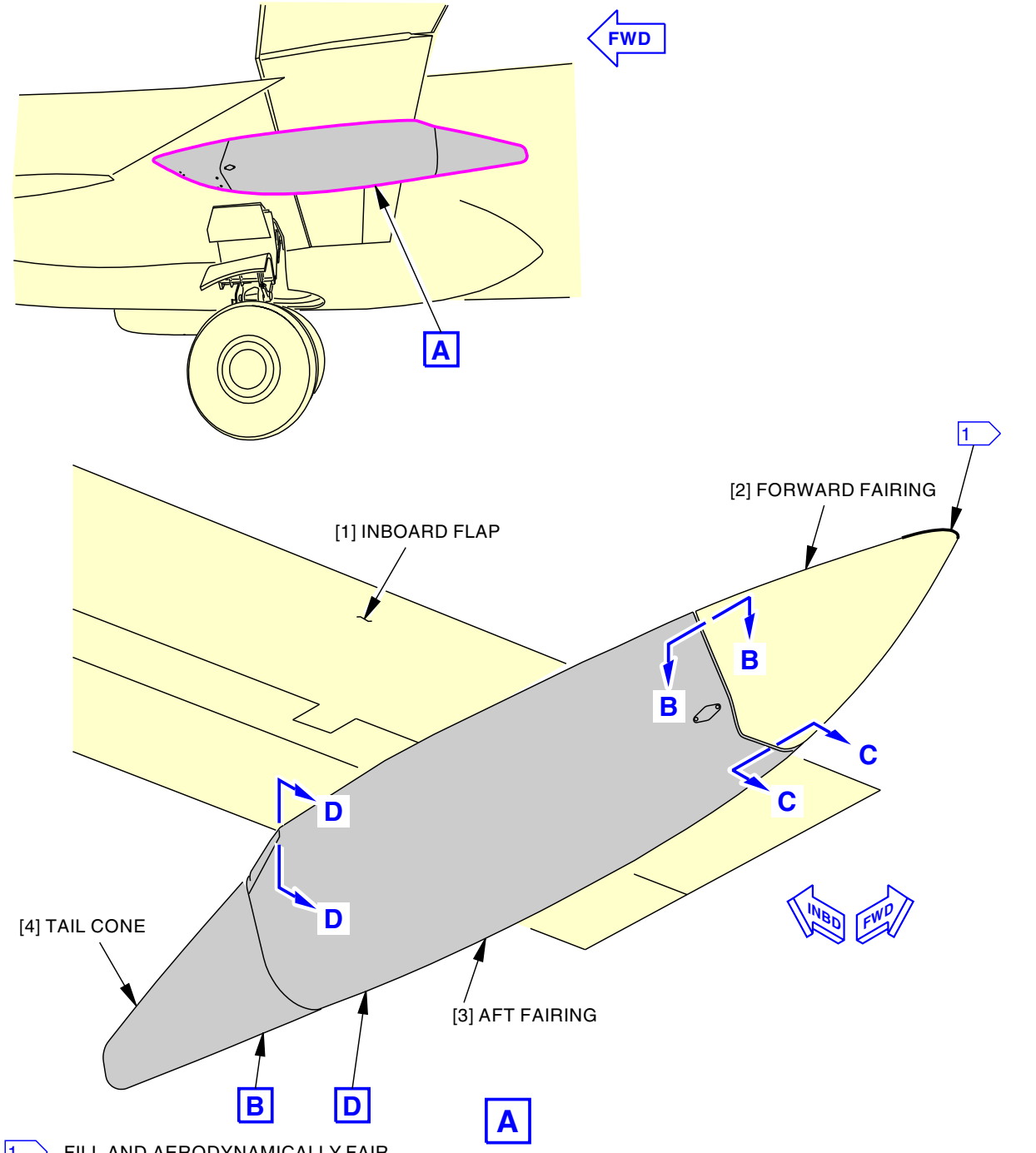
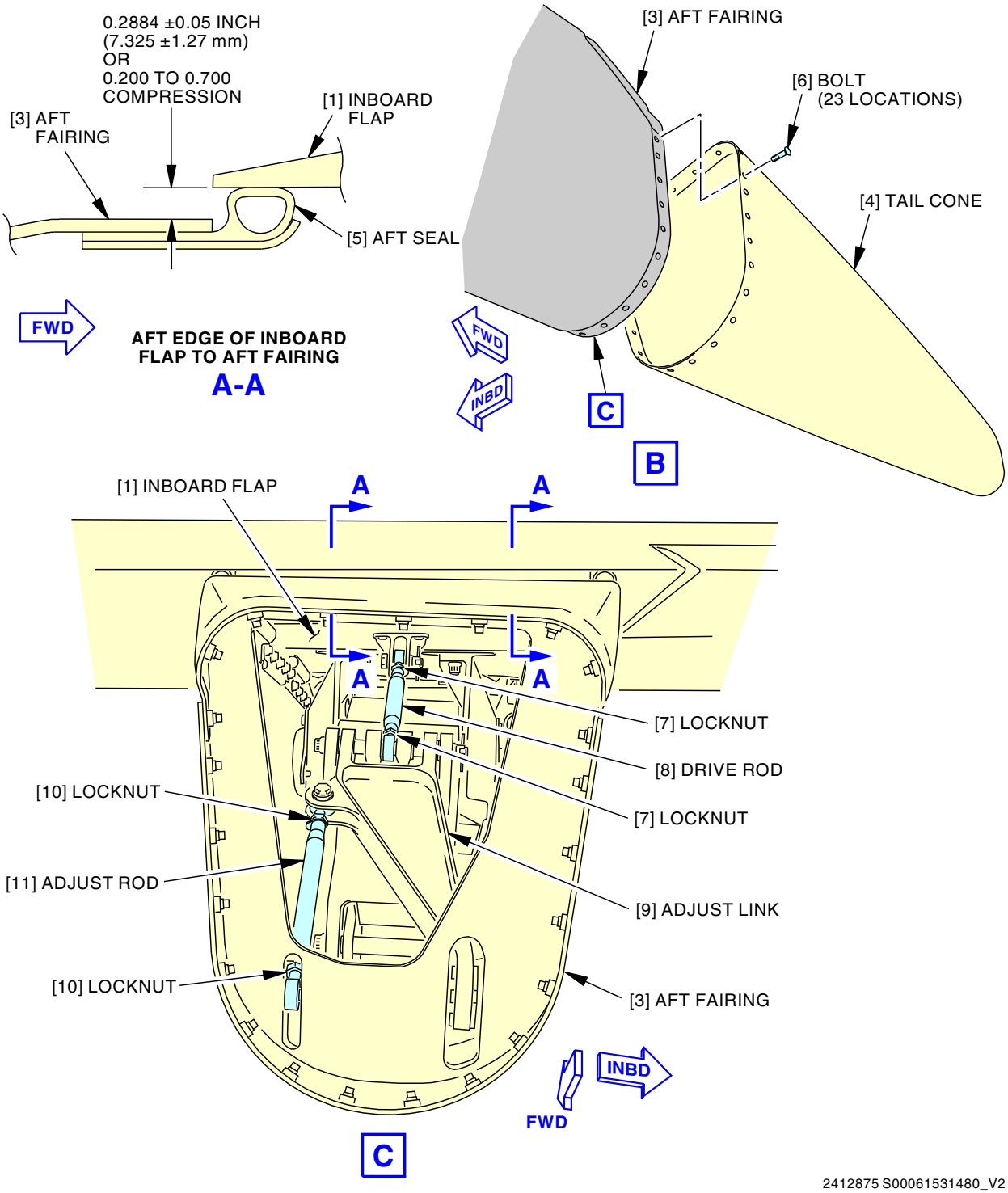


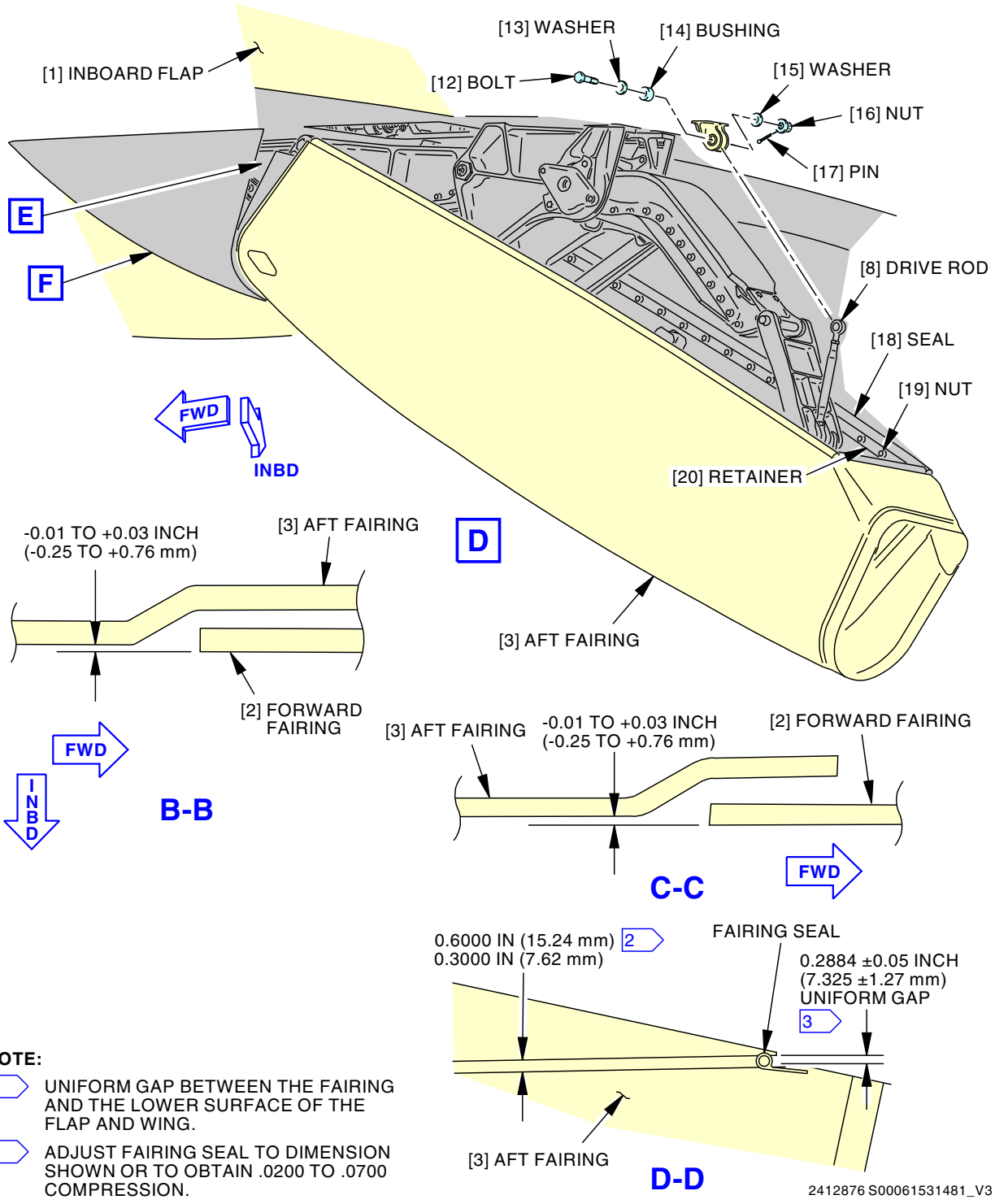
Inboard Flap Support Fairing Adjustment
Figure 501/27-51-18-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Support Fairing Adjustment
Figure 501/27-51-18-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



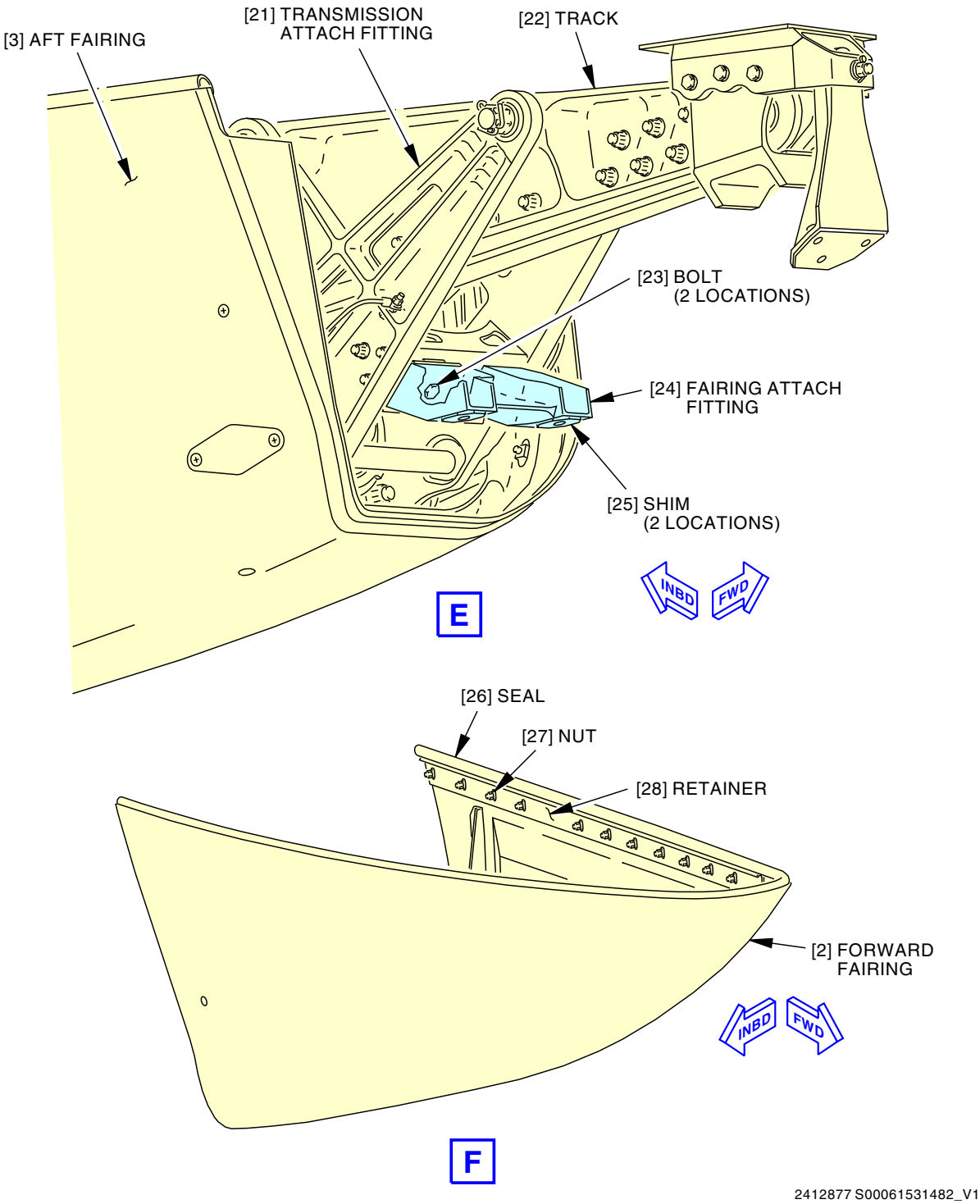
NOTE:

2 UNIFORM GAP BETWEEN THE FAIRING AND THE LOWER SURFACE OF THE FLAP AND WING.

3 ADJUST FAIRING SEAL TO DIMENSION SHOWN OR TO OBTAIN .0200 TO .0700 COMPRESSION.

Inboard Flap Support Fairing Adjustment
Figure 501/27-51-18-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Support Fairing Adjustment
Figure 501/27-51-18-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD TRAILING EDGE FLAP - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of outboard trailing edge flap

(2) An installation of outboard trailing edge flap

(3) A removal of outboard trailing edge flap seal

(4) An installation of outboard trailing edge flap seal.

B. This procedure includes the removal and installation of the main flap with the aft flap. You can remove and install the main flap with the aft flap either removed or installed. For procedures to remove and install the aft flap only, refer to OUTBOARD AFT FLAP - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-22/401.

C. The outboard main flap and aft flap together weigh approximately 388 lb (176 kg). The main flap alone weighs approximately 341 lb (155 kg).

D. Several people are necessary to support the flap during flap replacement and manual flap extension and retraction.

TASK 27-51-21-000-801

2. Outboard Trailing Edge Flap Removal

(Figure 401)

A. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1729	Sling - Equipment, Trailing Edge Flaps Part #: C27052-39 Supplier: 81205
STD-1095	Crane - Lift, 2000 lb Capacity, 30 Foot Height

C. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

D. Access Panels

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting

E. Prepare for the Removal

SUBTASK 27-51-21-010-001

(1) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

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SUBTASK 27-51-21-010-002

(2) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

F. Outboard Trailing Edge Flap Removal

SUBTASK 27-51-21-010-006

(1) Manually retract the trailing edge flap enough to get access to the bolt [43] and bolt [33A] (TASK 27-51-00-980-801).

NOTE: During the manual operation of the trailing edge flap it is not necessary to do trailing edge flap system reactivation.

SUBTASK 27-51-21-010-007

(2) On the inboard track [53], remove the bolt [43], nut [45], and washers [44] under the bolt [43] (View H, Figure 401).

NOTE: The roller can block access to the bolt and therefore it is recommended to remove this bolt before extending flaps to the stops on the jackscrews.

SUBTASK 27-51-21-010-008

(3) On the outboard track [41], remove the bolt [33A], nut [35], and washers [34] under the bolt [33A] (View F, Figure 401).

NOTE: The roller can block access to the bolt and therefore it is recommended to remove this bolt before extending flaps to the stops on the jackscrews.

SUBTASK 27-51-21-010-009

(4) Extend the trailing edge flap to the stops on the jackscrews (Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801).

SUBTASK 27-51-21-020-001

(5) Disconnect the skew control rod [3] from the inboard and outboard carriage [13]:

(a) Remove the nut [18], washer [17], bushing [16], washer [15], and bolt [14] that attach the skew control rod [3] to the carriage [13].

(b) Move the skew control rod [3] away from the carriage [13].

SUBTASK 27-51-21-020-002

(6) Disconnect the aft flap drive rods [11] from the inboard and outboard drive rod attach fittings [10]:

(a) Remove the nut [8], washer [7], washer [5], bolt [4], and bushing [6] that attach the aft flap drive rod [11] to the drive rod attach fitting [10].

NOTE: The aft flap will move down approximately 2 in. (51 mm) when you remove the bolts.

(b) Move the aft flap drive rod [11] away from the drive rod attach fittings [10].

SUBTASK 27-51-21-010-003

(7) Remove the leading edge skin panel [55] from the main flap [1] forward of the inboard carriage [13]:

(a) These are the panels:

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting

(b) Remove the bolts [56] that attach the leading edge skin panel [55].

(c) Remove the leading edge skin panel [55] from the main flap [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-21-480-001

(8) Install the sling [72] (sling, SPL-1729) on the main flap [1] (Figure 402):

(a) Remove the bolts [74] at the inboard end and outboard ends of the main flap [1].

NOTE: The bolts are located along the rear spar, above the inboard and outboard carriages.

(b) Remove the bolts [75] at the front spar on the main flap [1].

(c) Install the sling fittings [71] in the location of the bolts [74] and bolts [75].

(d) Connect the sling [72] (sling, SPL-1729) to the 30 foot height (2000 lb capacity) lift crane, STD-1095.

(e) Use the sling [72] (sling, SPL-1729) to hold the weight of the outboard flap.

SUBTASK 27-51-21-020-003

(9) Remove the stop fittings from the flap tracks (Figure 401):

(a) On the outboard track [41], remove the roller stop [32], roller stop [42], and fairing attach fitting [36]:

1) Remove the nuts [40], washers [39], washers [38], and bolts [37] that attach the roller stop [32], roller stop [42], and fairing attach fitting [36] to the outboard track [41].

2) Remove the roller stop [32] and roller stop [42] from the outboard track [41].

3) Remove the nuts [35], washers [34] under the bolts [33], and bolts [33] that attach the fairing attach fitting [36] to the outboard track [41].

4) Remove the fairing attach fitting [36] from the outboard track [41].

(b) On the inboard track [53], remove the roller stop [46], roller stop [54], and fairing attach fitting [51]:

1) Remove the nuts [50], washers [49], washers [48], and bolts [47] that attach the roller stop [46], roller stop [54], and fairing attach fitting [51] to the inboard track [53].

2) Remove the roller stop [46] and roller stop [54] from the inboard track [53].

3) Remove the nuts [45], washers [44] under the bolts [52], and bolts [52] that attach the fairing attach fitting [51] to the inboard track [53].

4) Remove the fairing attach fitting [51] from the inboard track [53].

SUBTASK 27-51-21-020-004

(10) Remove the main flap [1]:

(a) Hold the weight of the main flap [1] with the sling [72] (sling, SPL-1729).

(b) Disconnect the carriages [13] from the gimbals [20]:

1) Install a support to hold the ballscrews [19] and gimbals [20] when they are disconnected from the carriages [13].

2) Remove the nuts [24], washers [23], and bolts [22] from the carriages [13].

3) Remove the inboard carriage bushings [27] and outboard carriage bushings [21] from the gimbals [20] and carriages [13].

(c) Move the gimbals [20] away from the carriages [13].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

BE CAREFUL WHEN YOU LOWER THE FLAP TO THE GROUND. YOU CAN CAUSE DAMAGE TO THE TRAILING EDGE OF THE FLAP.

(d) Use the sling [72] (sling, SPL-1729) and 30 foot height (2000 lb capacity) lift crane, STD-1095, to move the main flap [1] aft and down away from the tracks.

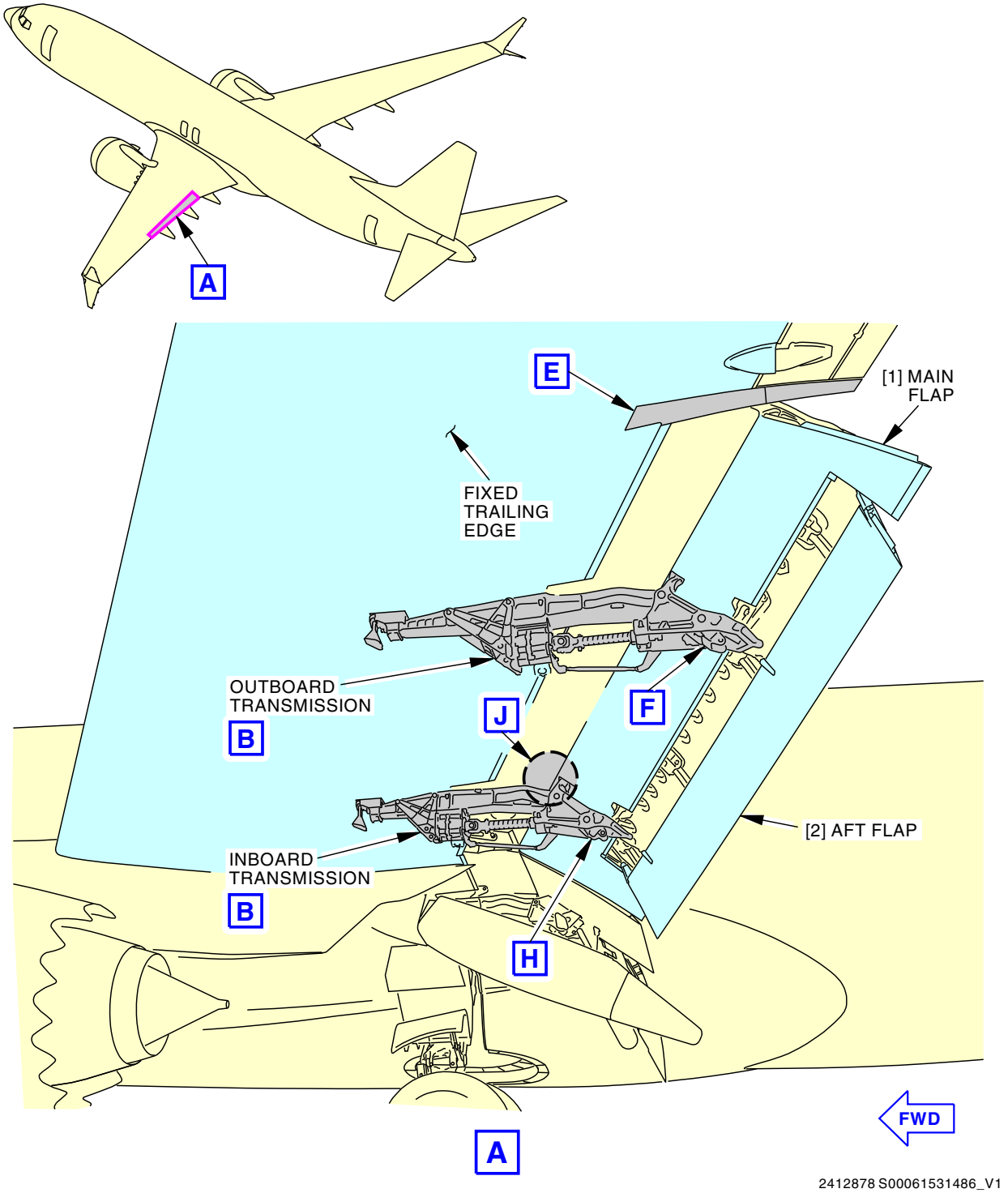
SUBTASK 27-51-21-220-001

(11) Measure and record the thickness of the shims [95] at the outboard carriage [96] and inboard carriage [101] (Figure 403).

NOTE: You will use this dimension during the installation.

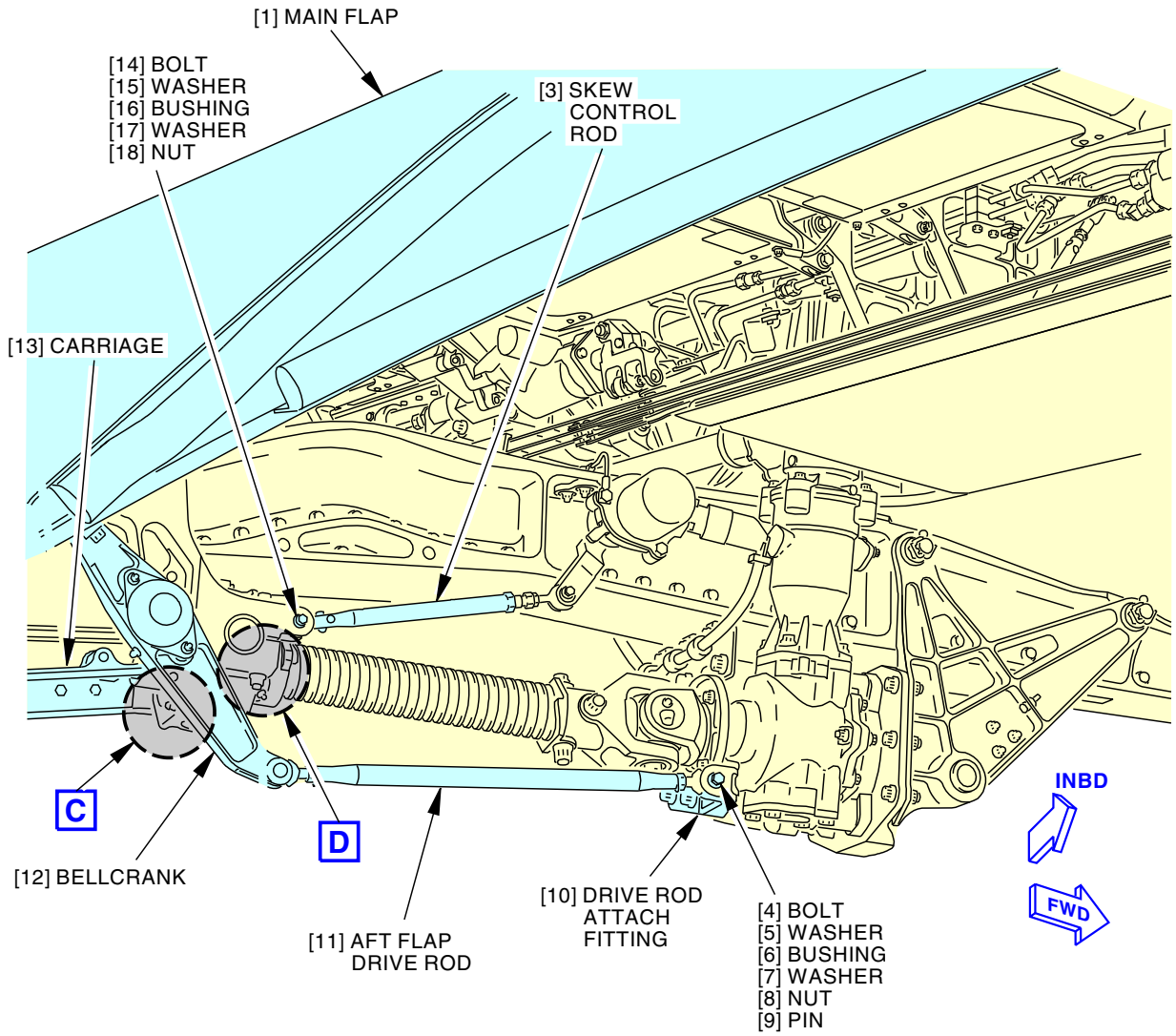
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 1 of 7)

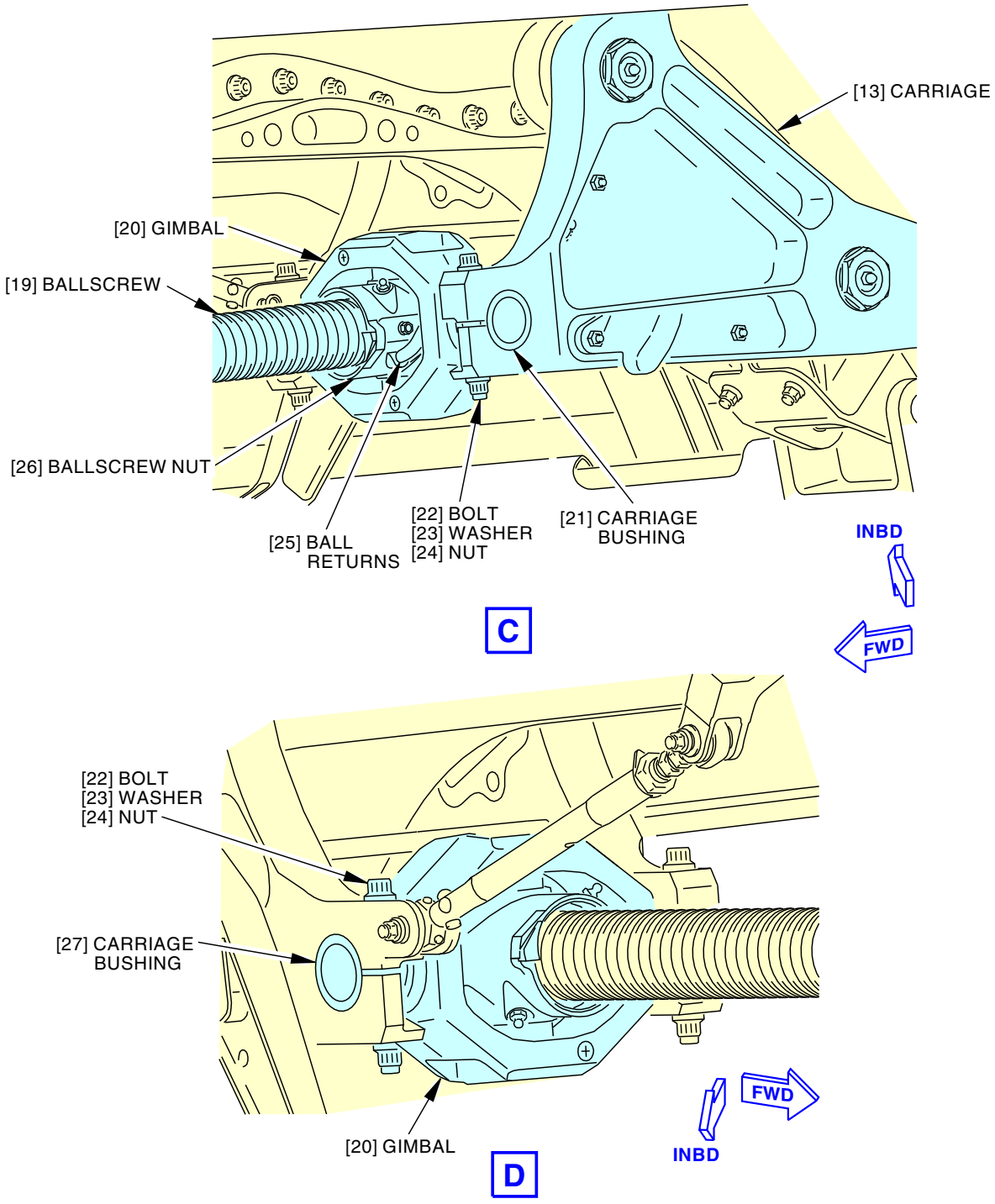
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412879 S00061531487_V1

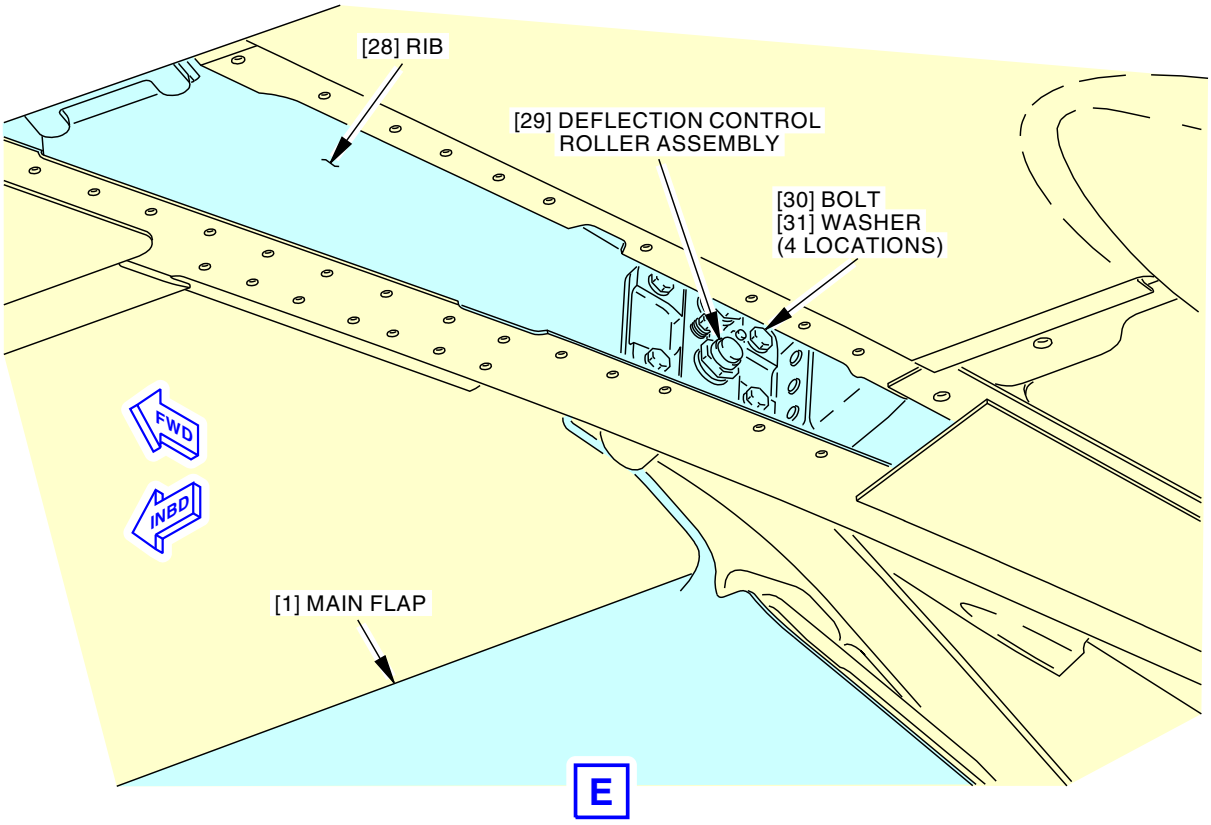
Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 3 of 7)

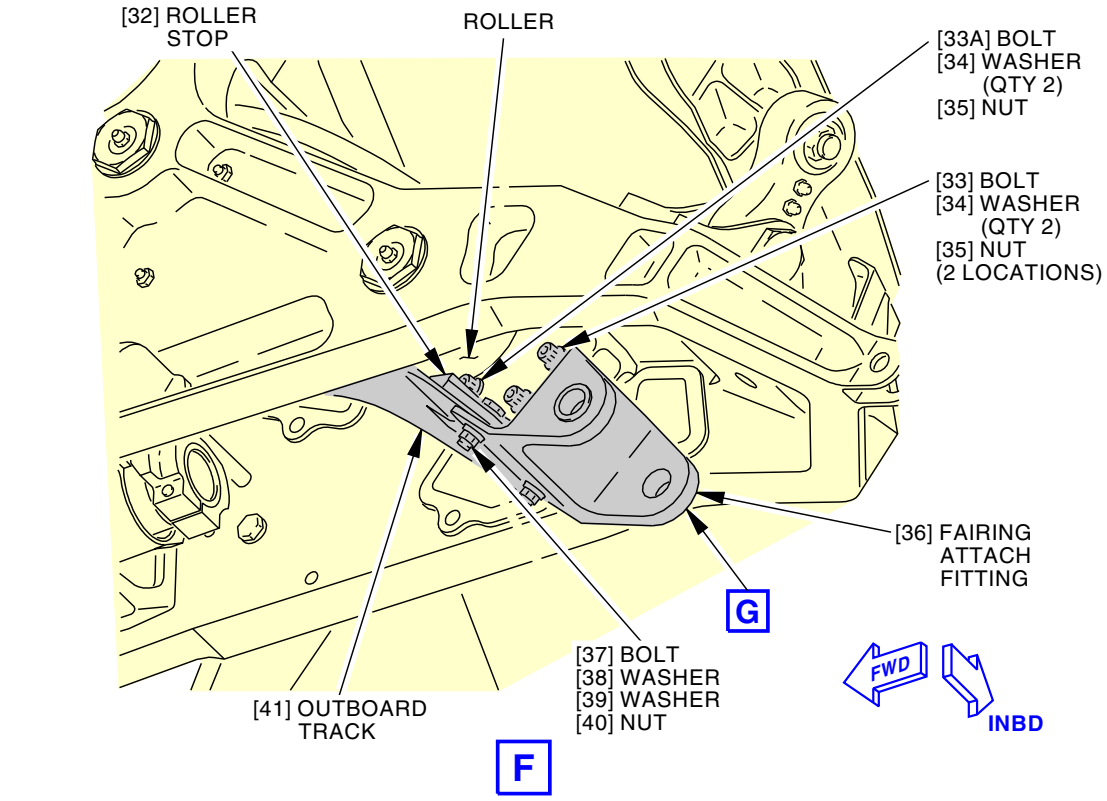
ECCN 9E991 BOEING PROPRIETARY - See title page for details

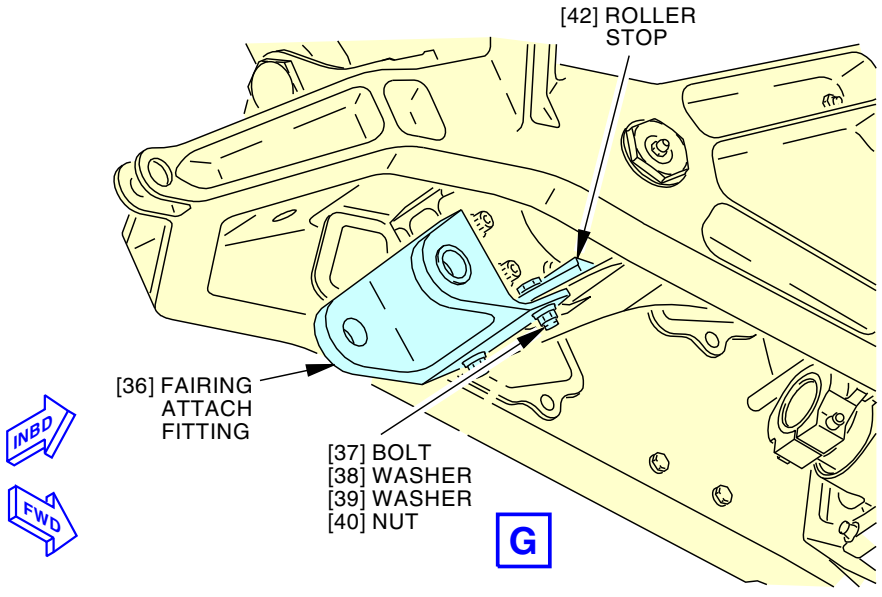


2412881 S00061531489_V1

Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

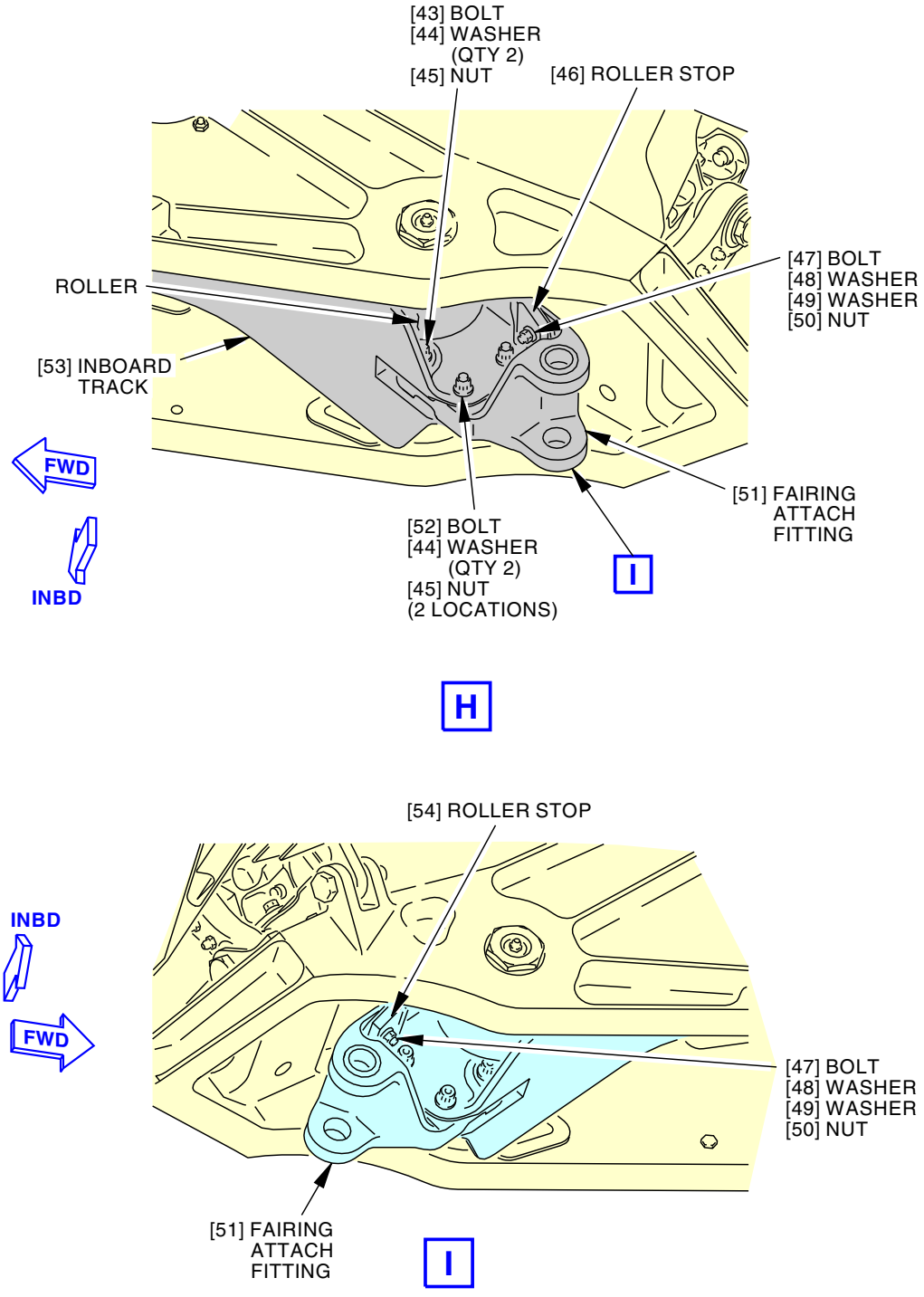




2412882 S00061531490_V2

Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 5 of 7)

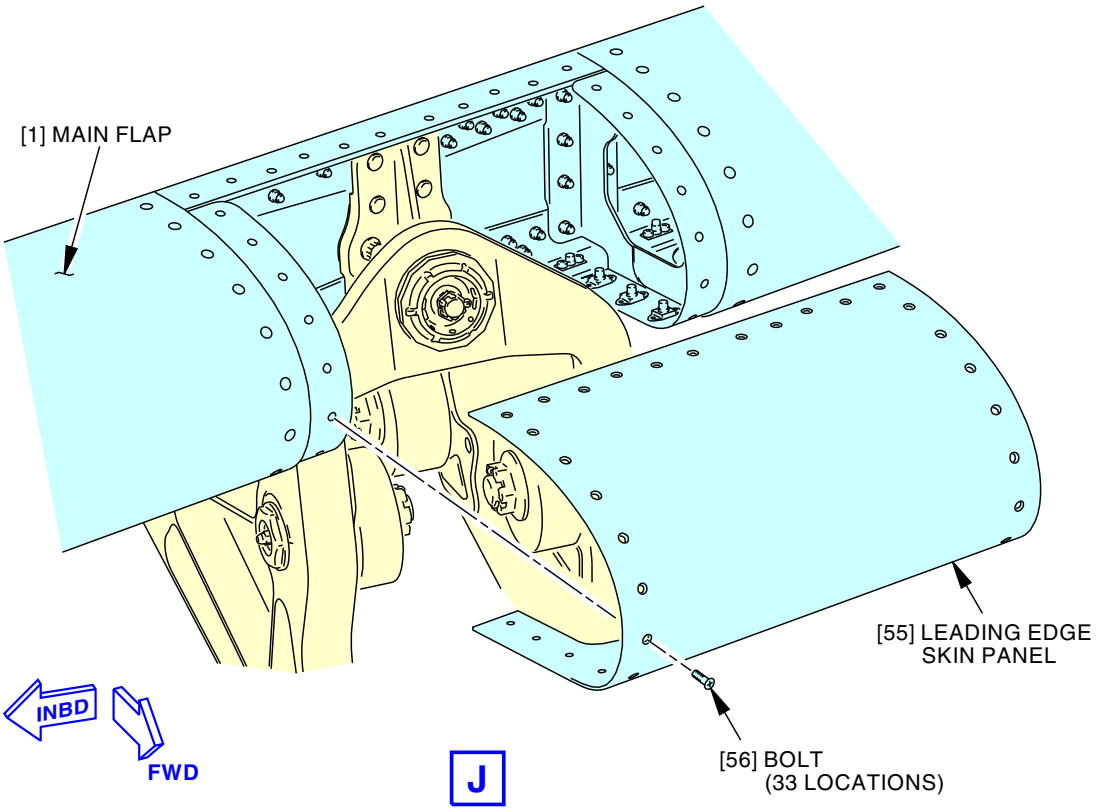
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412883 S00061531491_V2

Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 6 of 7)

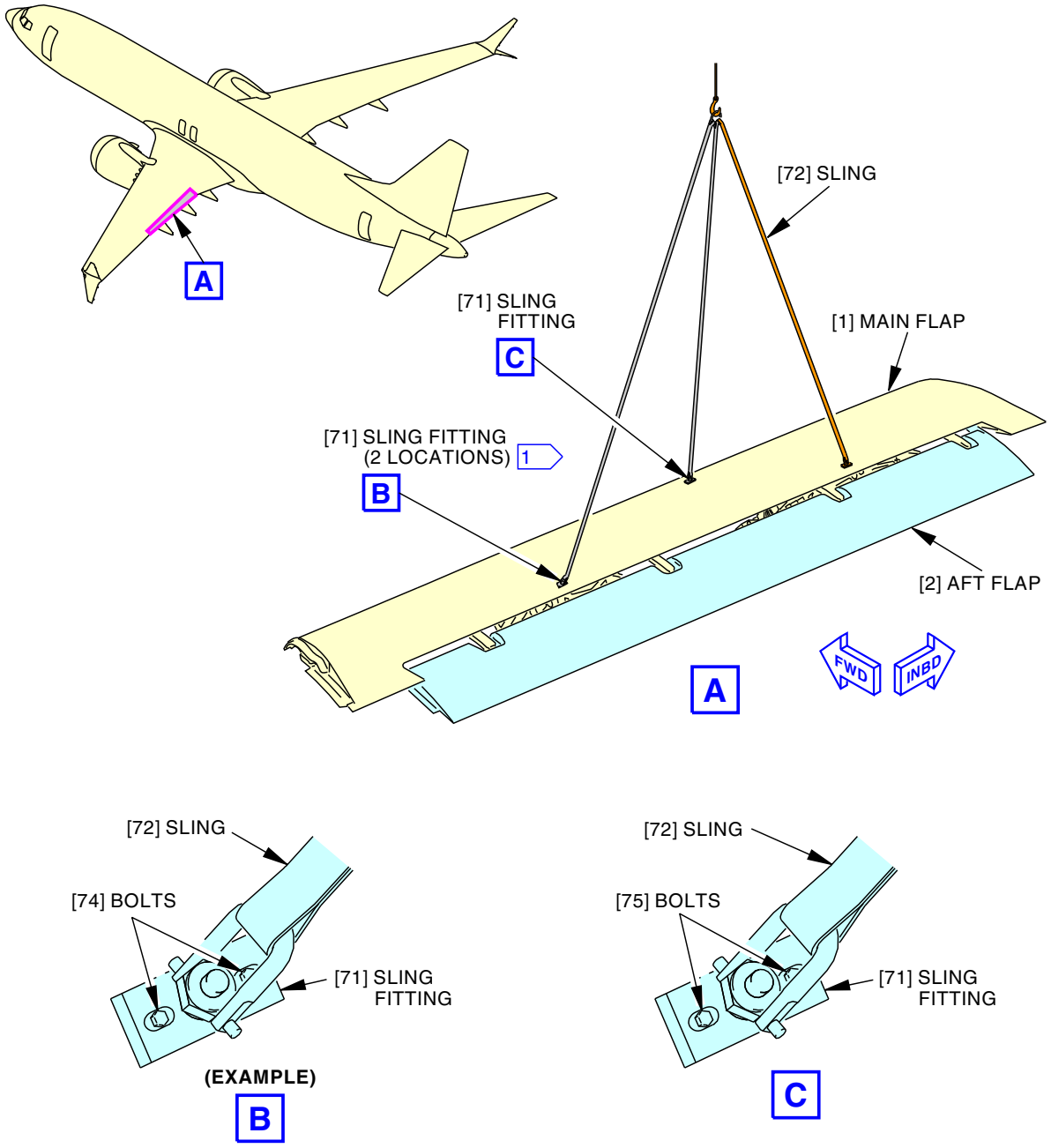
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412884 S00061531492_V1

Outboard Trailing Edge Flap Installation
Figure 401/27-51-21-990-801 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 COMMON TO FLAP TRACKS 1 AND 8 AT WBL 357.6 AND FLAP TRACKS 2 AND 7 AT WBL 254.

2412885 S00061531493_V1

Outboard Trailing Edge Flap Sling Installation
Figure 402/27-51-21-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-21-400-801

3. Outboard Trailing Edge Flap Installation

(Figure 403)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1729	Sling - Equipment, Trailing Edge Flaps Part #: C27052-39 Supplier: 81205
STD-1095	Crane - Lift, 2000 lb Capacity, 30 Foot Height

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Main flap	27-51-21-20-020	SIA ALL
		27-51-21-20-025	SIA ALL

E. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

F. Access Panels

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
667BT	Flap, Forward Carriage Bearing And Fitting
671AB	Lower Outboard Fixed Trailing Edge Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Installation

SUBTASK 27-51-21-220-002

(1) If you will install a different flap than the one you removed, do a check of the thickness of the shims [95] on the inboard carriage [101] and outboard carriage [96].

NOTE: There is no mismatch, or alignment dimension to fixed structure that the flap is adjusted to meet. The flap shims [95] can be changed from the nominal dimension to meet lateral trim tolerances.

(a) Make sure that the thickness of the shims [95] is the same as it was on the previous flap.

1) If you do not know the original thickness of the shims [95], change the thickness to the nominal dimension.

NOTE: The left hand flap carriage shim pack thicknesses are 0.188 in. (4.78 mm) and the right hand flap carriage shim pack thicknesses are 0.313 in. (7.95 mm).

SUBTASK 27-51-21-820-001

(2) If the shims [95] are not the correct thickness, then change the thickness of the shims [95] on the inboard carriage [101] and outboard carriage [96].

(a) At the outboard carriage [96], change the thickness of the shims [95]:

1) Remove the nuts [94], washers [93], and bolts [92] that attach the aft link fitting [91] to the outboard carriage [96].

2) Add or remove shims [95] between the aft link fitting [91] and outboard carriage [96] to get the correct shim thickness.

3) Apply sealant, A00247, to the mating surfaces of the shims [95].

4) Put the shims [95] in their location between the aft link fitting [91] and outboard carriage [96].

NOTE: The left hand flap carriage shim pack thicknesses are 0.188 in. (4.78 mm), the right hand flap carriage shim pack thicknesses are 0.313 in. (7.95 mm).

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [92].

6) Install the bolts [92], washers [93], and nuts [94] that attach the aft link fitting [91] to the outboard carriage [96].

(b) At the inboard carriage [101], change the thickness of the shims [95]:

1) Remove the nuts [100], washers [99], and bolts [98] that attach the aft link fitting [97] to the inboard carriage [101].

2) Add or remove shims [95] between the aft link fitting [97] and inboard carriage [101] to get the correct shim thickness.

3) Apply sealant, A00247, to the mating surfaces of the shims [95].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Put the shims [95] in their location between the aft link fitting [97] and inboard carriage [101].

NOTE: The left hand flap carriage shim pack thicknesses are 0.188 in. (4.78 mm), the right hand flap carriage shim pack thicknesses are 0.313 in. (7.95 mm).

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [98].

6) Install the bolts [98], washers [99], and nuts [100] that attach the aft link fitting [97] to the inboard carriage [101].

SUBTASK 27-51-21-020-005

(3) Remove the outboard deflection control roller assembly [29] from the rib [28] (Figure 401):

(a) Remove these access panels, below the roller assembly [29]:

Number	Name/Location
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
671AB	Lower Outboard Fixed Trailing Edge Access Panel

(b) Remove the bolts [30] and washers [31] that attach the deflection control roller assembly [29] to the rib [28].

(c) Remove the deflection control roller assembly [29] from the rib [28].

SUBTASK 27-51-21-010-004

(4) If it is installed, remove the leading edge skin panel [55] from the main flap [1] forward of the inboard carriage [13]:

NOTE: This panel comes very close to the outboard track when you engage the inboard carriage.

(a) These panels are:

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting

(b) Remove the bolts [56] that attach the leading edge skin panel [55].

(c) Remove the leading edge skin panel [55] from the main flap [1].

SUBTASK 27-51-21-020-006

(5) Make sure that the stop fittings are not installed on the flap tracks.

SUBTASK 27-51-21-480-002

(6) If it is not installed, install the sling [72] (sling, SPL-1729) on the main flap [1] (Figure 402):

(a) Remove the bolts [75] at the front spar on the main flap [1].

(b) Remove the bolts [74] at the inboard end and outboard ends of the main flap [1].

NOTE: The bolts are located along the rear spar, above the inboard and outboard carriages.

(c) Install the sling fittings [71] in the location of the bolts [74] and bolts [75].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Connect the sling [72] (sling, SPL-1729) to the 30 foot height (2000 lb capacity) lift crane, STD-1095.

H. Outboard Trailing Edge Flap Installation

SUBTASK 27-51-21-420-001

(1) Install the main flap [1] (Figure 401):

> **CAUTION** BE VERY CAREFUL WHEN YOU LIFT THE OUTBOARD FLAP FROM THE GROUND. YOU CAN CAUSE DAMAGE TO THE TRAILING EDGE OF THE FLAP.

(a) Use the sling [72] (sling, SPL-1729) and 30 foot height (2000 lb capacity) lift crane, STD-1095, to move the main flap [1] up into its position aft of the main tracks.

(b) If the aft flap [2] is installed, make sure that it is in the extended position.

(c) Engage the rollers on the carriages [13] with the outboard track [41] and inboard track [53].

1) Engage the rollers for the outboard carriage [13] with the outboard track [41] before you engage the rollers for the inboard carriage [13].

NOTE: The installation is easier if the rollers for the outboard carriage start to engage the outboard track before the rollers for the inboard carriage.

(d) Use the sling [72] (sling, SPL-1729) to move the main flap [1] up and forward on the flap tracks until the carriages [13] align with the gimbals [20].

(e) Connect the carriages [13] to the gimbals [20]:

1) Remove the support from the ballscrew [19] and move the gimbal [20] to its position in the carriage [13].

2) On the left wing, make sure that the ball returns [25] on the ballscrew nuts [26] are outboard.

3) On the right wing, make sure that the ball returns [25] on the ballscrew nut [26] are inboard.

NOTE: This is the recommended position for maintenance.

(f) Install the carriage bushing [21] and carriage bushing [27] to attach the gimbal [20] to the carriage [13].

> **CAUTION** MAKE SURE THAT THE CARRIAGE BUSHINGS ALIGN WITH THE CARRIAGE BEFORE YOU INSTALL THE BOLTS. IF THEY DO NOT ALIGN, THE THREADS ON THE BOLTS CAN CAUSE DAMAGE TO THE CARRIAGE BUSHINGS.

(g) Turn the carriage bushing [21] and carriage bushing [27] in the carriage [13] to make sure that the groove aligns with the bolt hole.

(h) Install the bolts [22], washers [23], and nuts [24] to hold the carriage bushing [21] and carriage bushing [27] in the carriage [13].

(i) Tighten the nuts [24] to 70 ±5 in-lb (8 ±1 N·m) more than the run-on torque.

SUBTASK 27-51-21-420-002

(2) Install the stop fittings on the flap tracks:

(a) On the outboard track [41], install the roller stop [32], roller stop [42], and fairing attach fitting [36]:

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WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply Cor-Ban 27L Compound, G50237, to the mating surfaces of the fairing attach fitting [36], roller stop [32], and roller stop [42].
2) Put the roller stop [32], roller stop [42], and fairing attach fitting [36] in their positions on the outboard track [41].
   a) Make sure that the roller stop [32] and roller stop [42] touch the web of the outboard track [41].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

3) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [33] and bolts [37].
4) Install the bolts [37], washers [38], washers [39], and nuts [40] that attach the roller stop [32], roller stop [42], and fairing attach fitting [36] to the outboard track [41].
5) Apply Cor-Ban 27L Compound, G50237, for faying surface sealing for the roller stop [32], roller stop [42], and fairing attach fitting [36] to the outboard track [41].
6) Install the bolts [33], nuts [35], and washers [34] under the bolts [33] that attach the fairing attach fitting [36] to the outboard track [41].
   a) Install the washers [34] with the countersunk outside diameter against the outboard track [41].

      NOTE: Do not install the bolt [33A] with its washers and nut this time. The roller can block access to the bolt [33A].
7) Apply Cor-Ban 27L Compound, G50237, for faying surface sealing for the fairing attach fitting [36] to the outboard track [41].

(b) On the inboard track [53], install the roller stop [46], roller stop [54], and fairing attach fitting [51]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply Cor-Ban 27L Compound, G50237, to the mating surfaces of the fairing attach fitting [51], roller stop [46], and roller stop [54].
2) Put the roller stop [46], roller stop [54], and fairing attach fitting [51] in their positions on the inboard track [53].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that the roller stop [46] and roller stop [54] touch the web of the inboard track [53].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

3) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [47], bolts [52], and bolt [43].

4) Install the bolts [47], washers [48], washers [49], and nuts [50] that attach the roller stop [46], roller stop [54], and fairing attach fitting [51] to the inboard track [53].

5) Apply Cor-Ban 27L Compound, G50237, for faying surface sealing for the roller stop [46], roller stop [54], and fairing attach fitting [51] to the inboard track [53].

6) Install the bolts [52], nuts [45], and washers [44] under the bolt [52] that attach the fairing attach fitting [51] to the inboard track [53].

a) Install the washers [44] with the countersunk outside diameter against the inboard track [53].

NOTE: Do not install the bolt [43] with its washers and nut this time. The roller can block access to the bolt [43].

7) Apply Cor-Ban 27L Compound, G50237, for faying surface sealing for the fairing attach fitting [51] to the inboard track [53].

SUBTASK 27-51-21-080-001

(3) Remove the sling [72] (sling, SPL-1729) from the main flap [1] (Figure 402):

(a) Disconnect the sling [72] (sling, SPL-1729) from the 30 foot height (2000 lb capacity) lift crane, STD-1095.

(b) Disconnect the sling [72] (sling, SPL-1729) from the sling fittings [71].

(c) Remove the sling fittings [71] from the main flap [1].

(d) Apply compound, C00528, to the holes for the bolts [74] and bolts [75] in the main flap [1].

(e) Install the bolts [74] at the inboard and outboard ends of the main flap [1].

(f) Install the bolts [75] at the front spar of the main flap [1].

SUBTASK 27-51-21-410-001

(4) Install the leading edge skin panel [55] on the main flap [1] forward of the inboard carriage [13]:

(a) These panels are:

Number	Name/Location
567BT	Flap, Forward Carriage Bearing And Fitting
667BT	Flap, Forward Carriage Bearing And Fitting

(b) Put the leading edge skin panel [55] in its location on the leading edge of the main flap [1].

(c) Apply compound, C00528, to the holes for the bolts [56].

(d) Install the bolts [56] to attach the leading edge skin panel [55].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Apply sealant, A00247, to fill all of the clearances around the leading edge skin panel [55] that are more than 0.05 in. (1.27 mm).

SUBTASK 27-51-21-420-003

(5) Connect the aft flap drive rods [11] to the drive rod attach fitting [10] (Figure 401):

(a) Move the aft flap drive rod [11] to its position on the drive rod attach fitting [10].

(b) Apply a layer of grease, D00633, to the inside of the bushing [6] and shank of the bolt [4].

(c) Install the bushing [6], bolt [4], and washer [5] to attach the aft flap drive rod [11] to the drive rod attach fitting [10].

1) Install the bolt [4] with the head on the inboard side.

(d) Carefully clean the grease, D00633, from the threads of the bolt [4].

(e) Install the washer [7] and nut [8] on the bolt [4].

(f) Tighten the nut [8] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

(g) Install the pin [9] in the nut [8].

SUBTASK 27-51-21-420-004

(6) Connect the skew control rods [3] to the inboard carriage [13] and outboard carriage [13]:

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [14].

(b) Move the skew control rod [3] to its position on the carriage [13].

(c) Install the bolts [14], washers [15], bushings [16], washers [17], and nuts [18] that attach the skew control rods [3] to the carriages [13].

1) Install the bolts [14] with the heads toward the center of the track.

SUBTASK 27-51-21-010-010

(7) Manually retract the trailing edge flap enough to get access to the holes for the bolt [43] and bolt [33A] (TASK 27-51-00-980-801).

SUBTASK 27-51-21-420-010

(8) On the inboard track [53], install the bolt [43], nut [45], and washers [44] under the bolt [43] (View H, Figure 401).

SUBTASK 27-51-21-420-011

(9) On the outboard track [41], install the bolt [33A], nut [35], and washers [34] under the bolt [33A] (View F, Figure 401).

SUBTASK 27-51-21-440-005

(10) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-21-820-002

(11) Do this task: Outboard Trailing Edge Flap Adjustment, TASK 27-51-21-820-801.

NOTE: This task will include the installation of the deflection control roller assembly and fairings.

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-21-410-002

(1) Install these access panels, below the roller assembly [29]:

Number	Name/Location
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
671AB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-51-21-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-21-860-002

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

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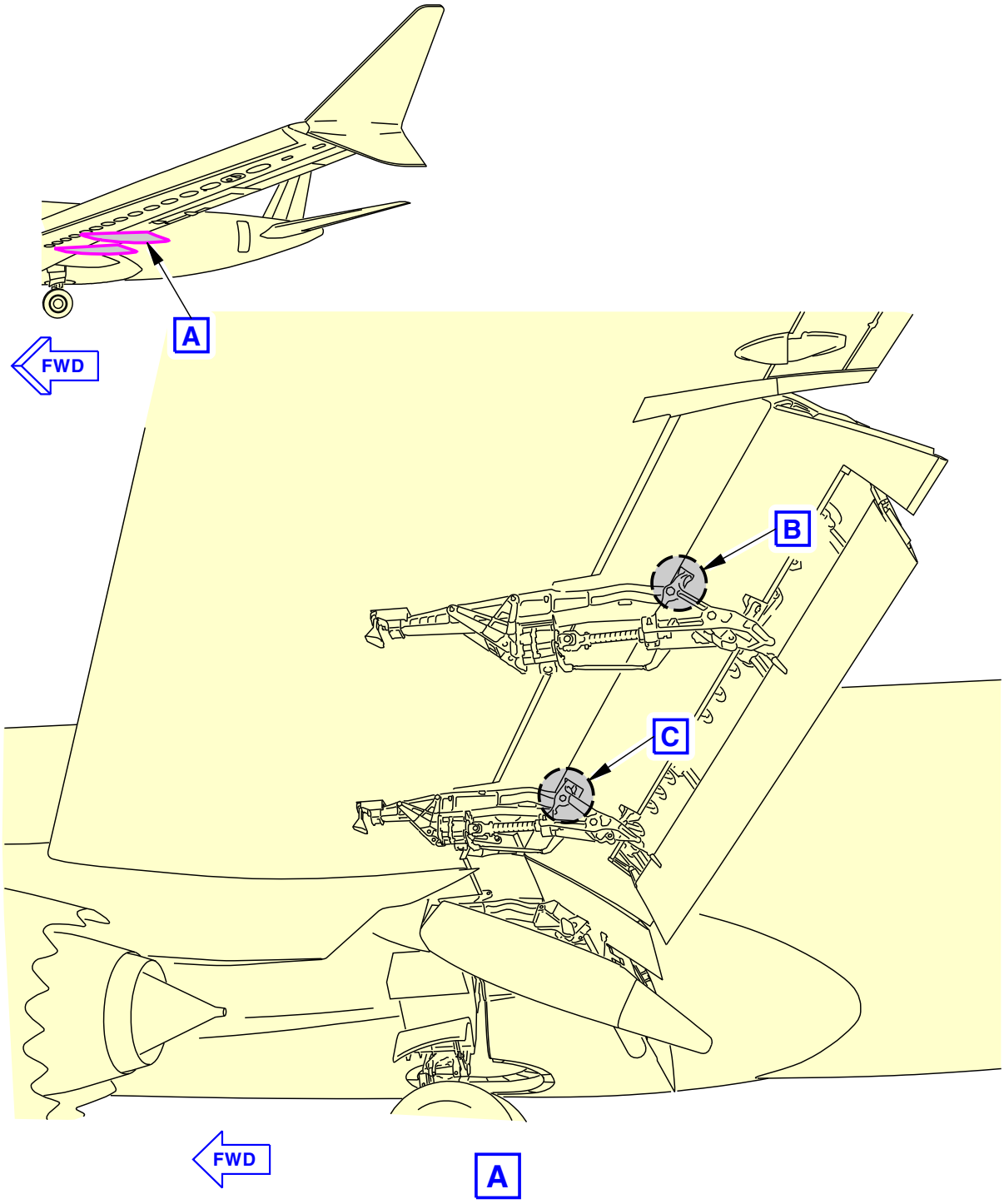

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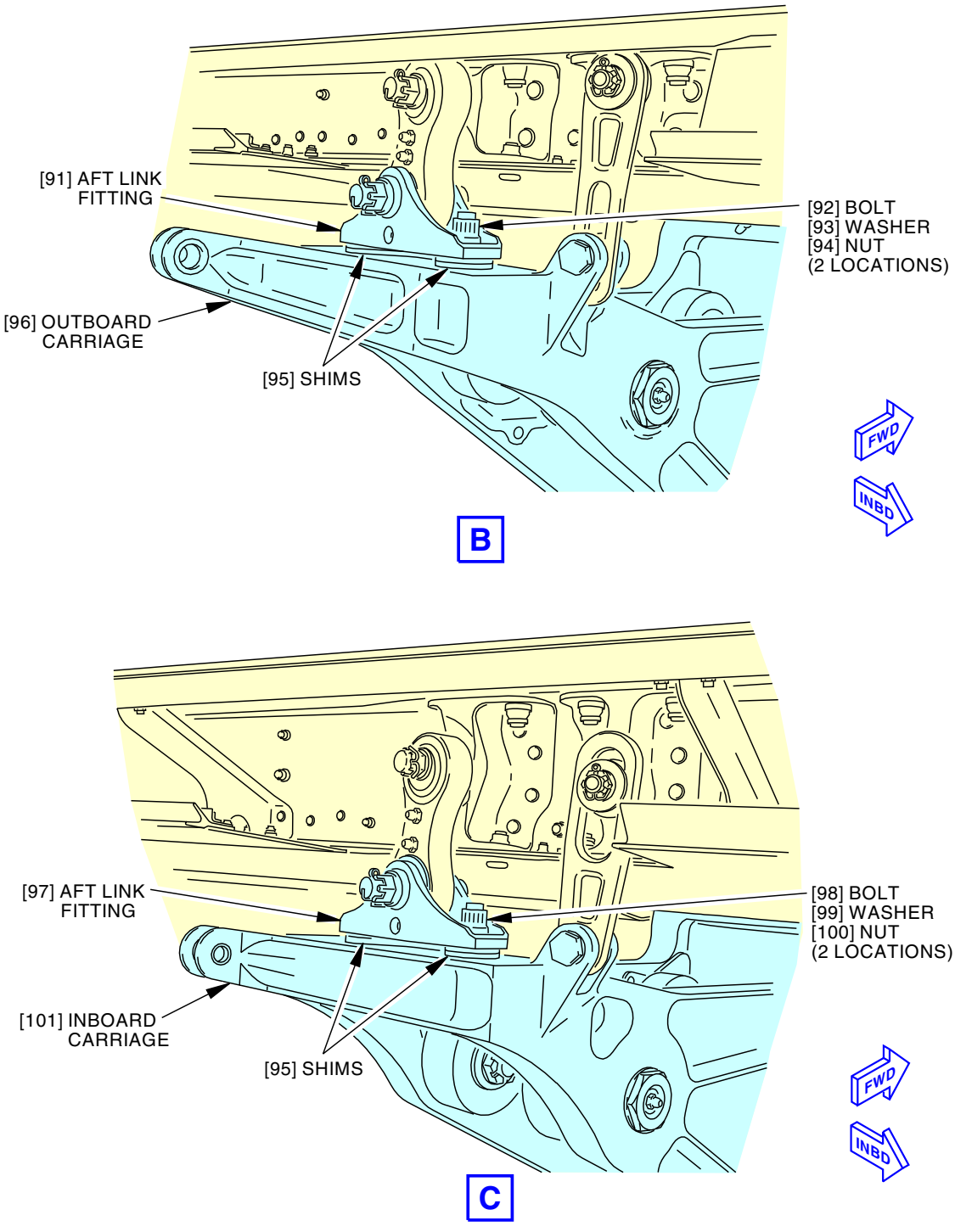
Outboard Trailing Edge Flap Shim Adjustment
Figure 403/27-51-21-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Shim Adjustment
Figure 403/27-51-21-990-803 (Sheet 2 of 2)

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TASK 27-51-21-000-802

4. Outboard Trailing Edge Flap Outer Seal Removal

(Figure 404)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

C. Prepare for the Removal

SUBTASK 27-51-21-860-008

(1) Extend the trailing edge flaps to the 15-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-21-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

D. Outboard Trailing Edge Flap Outer Seal Removal

WARNING MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL OF THE LANDING GEAR. WITHOUT THE GROUND LOCKS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

SUBTASK 27-51-21-480-003

(1) If the downlock pins are not installed in the nose and main landing gear, do applicable steps in this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-21-020-008

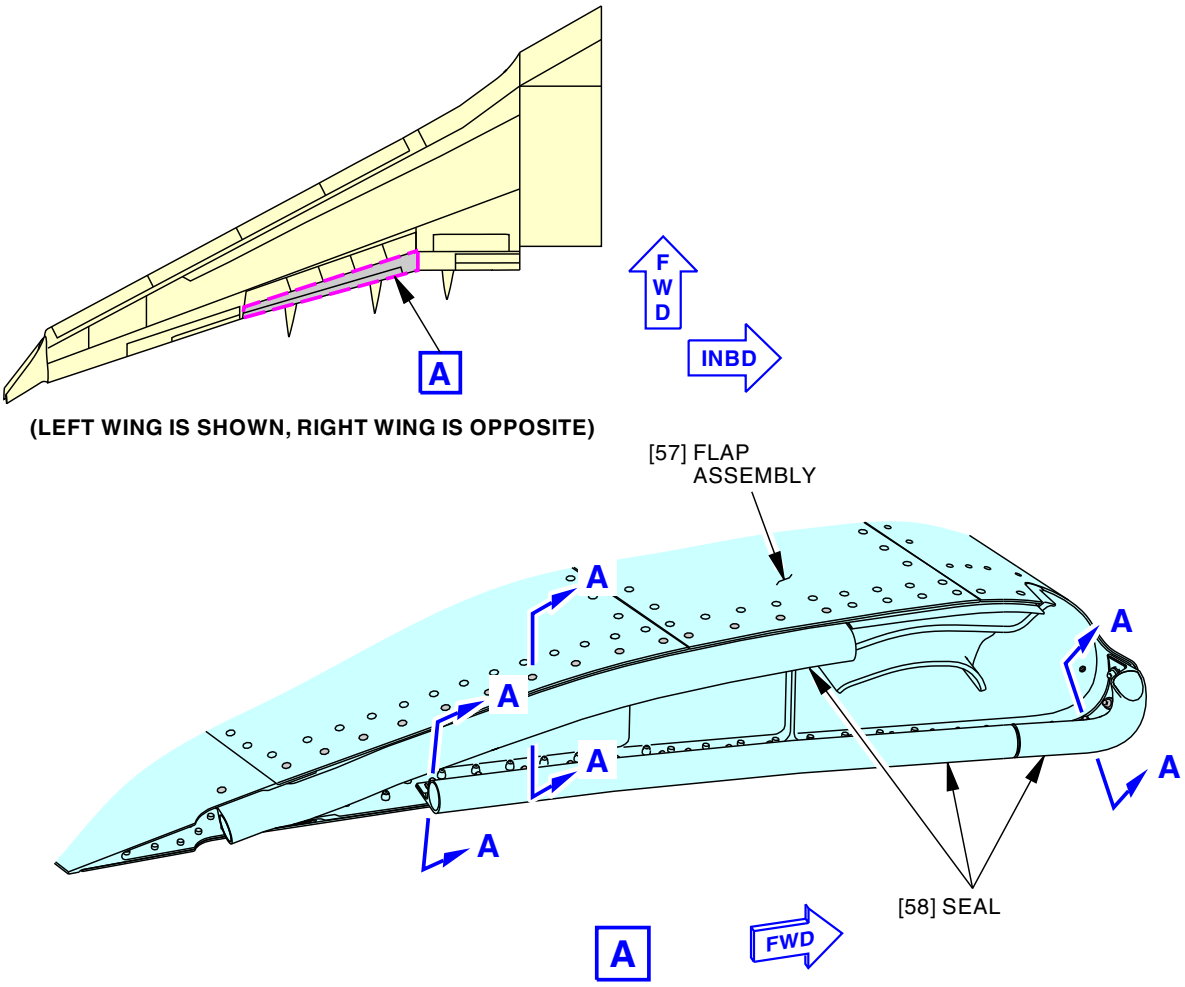
(2) Do these steps to remove the seal [58]:

(a) Remove the screws [62] and seal retainer [65] that attach the seal [58] to the flap assembly [57].

(b) Remove the seal [58] from the flap assembly [57].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Outer Seal Installation
Figure 404/27-51-21-990-808

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-21-400-802

5. Outboard Trailing Edge Flap Outer Seal Installation

(Figure 404)

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Consumable Materials

Reference	Description	Specification
A00027	Adhesive - Silicone Rubber, 1 Part, RTV	BAC5010 Type 60

C. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

D. Outboard Trailing Edge Flap Outer Seal Installation

SUBTASK 27-51-21-420-005

(1) Do these steps to install the seal [58].

(a) Put the seal [58] on the flap assembly [57].

(b) Apply adhesive, A00027, between the forward and lower seal [58].

(c) Install the screws [62] and seal retainer [65] that attach the seal [58] to the flap assembly [57].

(d) Tighten the screws [62].

NOTE: Tighten the fastener until the seal [58] starts to visibly compress and clamps to the seal retainer.

E. Put the Airplane Back to Its Condition

SUBTASK 27-51-21-440-003

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-21-860-009

(2) Retract the flaps to the retracted position (TASK 27-51-00-860-804).

END OF TASK

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OUTBOARD TRAILING EDGE FLAP - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) An adjustment of the outboard trailing edge flap.

TASK 27-51-21-820-801

2. Outboard Trailing Edge Flap Adjustment

(Figure 501, Figure 502, Figure 503, and Figure 504)

A. General

(1) This task includes the adjustment of the main flap with the aft flap either removed or installed.

(2) The adjustment instructions included in this task are included in the Rigging Diagram - Inbd and Outbd Flaps, Wing Trailing Edge 113A3017.

B. References

Reference	Title
27-09-71-820-801	Trailing Edge Flap Adjustment for Lateral Trim and Test (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

E. Access Panels

Number	Name/Location
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
671AB	Lower Outboard Fixed Trailing Edge Access Panel

F. Prepare for the Adjustment

SUBTASK 27-51-21-860-003

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

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SUBTASK 27-51-21-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-21-010-005

(3) Remove the aft fairings from the flap supports:

(a) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

(b) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

SUBTASK 27-51-21-020-007

(4) Remove the outboard deflection control roller assembly [2] from the rib [1] (Figure 501):

(a) Remove or open the applicable access panels below the deflection control roller assembly:

Number	Name/Location
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
671AB	Lower Outboard Fixed Trailing Edge Access Panel

(b) Remove the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

(c) Remove the deflection control roller assembly [2] from the rib [1].

G. Outboard Trailing Edge Flap Adjustment

NOTE: There is no mismatch, or alignment dimension to fixed structure that the flap is adjusted to meet. The flap shims can be changed from the nominal to meet lateral trim tolerances.

SUBTASK 27-51-21-220-003

(1) If a different flap was installed, adjust the thickness of the shims [65] to the same thickness as the original flap.

NOTE: The thickness of the shims on the original flap may have been adjusted for lateral trim (TASK 27-09-71-820-801).

(a) If the original thickness of the shims [65] is unknown, change the thickness to the nominal dimension.

NOTE: The nominal thickness of the shims is 0.188 in. (4.78 mm) left wing, 0.313 in. (7.95 mm) right wing.

SUBTASK 27-51-21-210-001

(2) On the inboard and outboard carriages [43], make sure that three of the four main track rollers [44] touch the flap track [45] (Figure 502).

NOTE: If three of the four main track rollers cannot touch the flap track, it is permitted for the two forward rollers, or the two aft rollers to touch.

SUBTASK 27-51-21-820-003

(3) If it is necessary, adjust the position of the main flap [6] (Figure 503):

NOTE: To adjust the position of the main flap, the thickness of the shims will be changed at the aft link fitting [61] and aft link fitting [67] on the inboard and outboard carriages.

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) At the outboard carriage [66], change the thickness of the shims [65]:

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1) Remove the nuts [64], washers [63], and bolts [62] that attach the aft link fitting [61] to the outboard carriage [66].
2) Add or remove shims [65] between the aft link fitting [61] and outboard carriage [66] to get the correct shim thickness.
3) Apply sealant, A00247, to the mating surfaces of the shims [65].
4) Put the shims [65] in their location between the aft link fitting [61] and outboard carriage [66].

   NOTE: The nominal thickness of the shims is 0.188 in. (4.78 mm) left wing, 0.313 in. (7.95 mm) right wing. The maximum thickness of the shims is 0.50 in. (12.70 mm). The minimum thickness of the shims is 0.00 in. (0.00 mm).

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [62].
6) Install the bolts [62], washers [63], and nuts [64] that attach the aft link fitting [61] to the outboard carriage [66].

(e) At the inboard carriage [71], change the thickness of the shims [65]:

1) Remove the nuts [70], washers [69], and bolts [68] that attach the aft link fitting [67] to the inboard carriage [71].
2) Add or remove shims [65] between the aft link fitting [67] and inboard carriage [71] to get the correct shim thickness.
3) Apply sealant, A00247, to the mating surfaces of the shims [65].
4) Put the shims [65] in their location between the aft link fitting [67] and inboard carriage [71].

   NOTE: The nominal thickness of the shims is 0.188 in. (4.78 mm) left wing, 0.313 in. (7.95 mm) right wing. The maximum thickness of the shims is 0.50 in. (12.70 mm). The minimum thickness of the shims is 0.00 in. (0.00 mm).

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [68].
6) Install the bolts [68], washers [69], and nuts [70] that attach the aft link fitting [67] to the inboard carriage [71].

(f) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(g) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

(h) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

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(i) On the inboard and outboard carriages [43], make sure that a minimum of three main track rollers [44] touch the flap track [45].

NOTE: If three of the four main track rollers cannot touch the flap track, it is permitted for the two forward rollers, or the two aft rollers to touch.

(j) If a minimum of the main track rollers [44] do not touch, add or remove the shims [65] again.

SUBTASK 27-51-21-820-004

(4) Install and adjust the outboard deflection control roller assembly [2] (Figure 501):

(a) When the outboard deflection control roller assembly [2] is adjusted, make sure that the flaps are in the retracted position.

(b) Put the deflection control roller assembly [2] in its location on the rib [1].

(c) Apply Cor-Ban 27L Compound, G50237, to the holes in the rib [1] for the bolts [3].

(d) Loosely install the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

(e) Move the deflection control roller assembly [2] until the upper roller [8] touches the upper surface of the deflection control track [5].

(f) Tighten the bolts [3] to the torque tool set point of 75 in-lb (8.5 N·m).

(g) Extend the trailing edge flaps, do these steps:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(h) Measure the distance from the outboard edge of the deflection control track [5] to the outboard edge of the rollers [8].

(i) Retract the trailing edge flaps, do these steps:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Retract the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-804).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(j) If the distance is not in the limit of 0.00 in. (0.0 mm) to 0.06 in. (1.5 mm), adjust the position of the rollers [8]:

NOTE: The rollers must not be over the edge of the deflection control track [5].

1) Remove the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

2) Remove the nuts [12], bushings [11], bushings [9], and rollers [8] from the deflection control roller assembly [2].

3) Change the position of the bushings [9] or bushings [11] to adjust the position of the rollers [8].

4) Install the rollers [8], bushings [9], bushings [11], and nuts [12] on the deflection control roller assembly [2].

5) Tighten the nuts [12] to the torque tool set point of 400 in-lb (45.2 N·m).

6) Put the deflection control roller assembly [2] in its location on the rib [1].

7) Apply Cor-Ban 27L Compound, G50237, to the holes in the rib [1] for the bolts [3].

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8) Loosely install the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

9) Move the deflection control roller assembly [2] until the rollers [8] touch the upper surface of the deflection control track [5].

10) Tighten the bolts [3] to the torque tool set point of 75 in-lb (8.5 N·m).

(k) Extend the trailing edge flaps, do these steps:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(l) Measure the clearance between the deflection control track [5] and rub pad [10] on the deflection control roller assembly [2].

(m) Retract the trailing edge flaps, do these steps:

1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

2) Retract the trailing edge flaps to the retraction position (TASK 27-51-00-860-804).

3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(n) If the clearance is not in the limit of 0.1248 ±0.0500 in. (3.17 ±1.27 mm), adjust the position of the rub pad [10]:

1) Remove the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

2) Remove the nuts [15], washers [14], fillers [7], bolts [13], and rub pad [10] from the deflection control roller assembly [2].

3) Add or remove fillers [7] to the rub pad [10].

NOTE: For each removed filler, install two additional washers under the nut. For each additional installed filler, remove two washers from under the nut.

4) Install the bolts [13], fillers [7], rub pad [10], washers [14], and nuts [15] on the deflection control roller assembly [2].

5) Put the deflection control roller assembly [2] in its location on the rib [1].

6) Apply Cor-Ban 27L Compound, G50237, to the holes in the rib [1] for the bolts [3].

7) Loosely install the bolts [3] and washers [4] that attach the deflection control roller assembly [2] to the rib [1].

8) Move the deflection control roller assembly [2] until the rollers [8] touch the upper surface of the deflection control track [5].

9) Tighten the bolts [3] to the torque tool set point of 75 in-lb (8.5 N·m).

(o) Install or close the applicable access panels below the deflection control roller assembly:

Number	Name/Location
571AB	Lower Outboard Fixed Trailing Edge Access Panel at Deflector Rib
671AB	Lower Outboard Fixed Trailing Edge Access Panel

SUBTASK 27-51-21-860-004

(5) Extend the trailing edge flaps to do a check of the roller [22] (Figure 501):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

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SUBTASK 27-51-21-860-005

(6) Adjust the roller [22] for the outboard flap:

(a) Use the manual or alternate system to retract trailing edge flaps until the roller [22] engages the deflection control track [16] (TASK 27-51-00-860-804).

NOTE: While the flaps are retracted, monitor the roller to see if the outboard flap deflects when it engages the deflection control track.

(b) Make sure that the deflection control track [16] touches the upper surface of the roller [22].

(c) If the flap deflects when the roller [22] engages the deflection control track [16], or if the deflection control track [16] does not touch the upper surface of the roller [22], adjust the roller [22]:

1) Extend the trailing edge flaps to get access to the roller [22] (TASK 27-51-00-860-803).

2) Remove the bolt [19] and washer [18] that hold the retainer [17] and retainer [26] to the deflection control rib [27].

3) Remove the retainer [17] for the outboard eccentric bushing [23].

4) Remove the pin [20] and loosen the nut [21] on the bolt [24].

5) Turn the outboard eccentric bushing [23] to change the position of the roller [22].

a) Make sure that the position of the roller [25] is not changed.

6) Install the retainer [17] for the outboard eccentric bushing [23].

7) Install the bolt [19] and washer [18] that hold the retainer [17] and retainer [26].

8) Tighten the nut [21] to the minimum amount necessary to install the pin [20].

SUBTASK 27-51-21-860-006

(7) Retract the trailing edge flaps to the retracted position:

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-21-220-004

(8) Measure the mismatch between the lower surface of the main flap [6] and lower fixed panels [41] (Figure 502).

(a) Make sure that the mismatch is in the limit of 0.00 ±0.06 in. (0.00 ±1.52 mm).

SUBTASK 27-51-21-820-005

(9) If the mismatch is not in the limit, adjust the position of the lower fixed panels [41] (Figure 504):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Adjust the applicable links [92] for the lower fixed panels [41]:

1) Remove the nut [97], washer [96], washer [95], washer [94], and bolt [93] that attach the link [92] to the lower fixed panel [41].

2) Loosen the nut [91] and adjust the length of the link [92].

a) Make sure that the threads through the inspection hole in the links [92] are seen.

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3) Install the bolt [93], washer [94], washer [95], washer [96], and nut [97] to attach the link [92] to the lower fixed panel [41].

4) Tighten the nuts [91] on the links [92].

(e) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(f) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

(g) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(h) Make sure that the mismatch between the lower surface of the main flap [6] and lower fixed panels [41] is in the limits.

SUBTASK 27-51-21-220-005

(10) Make sure that the seals [42] on the lower fixed panels [41] are compressed against the leading edge of the main flap [6] (Figure 502).

SUBTASK 27-51-21-820-006

(11) If the seals [42] are not compressed against the main flap [6], adjust the position of the seals [42] (Figure 504):

(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

(b) Extend the trailing edge flaps to the get access to the seals [42] (TASK 27-51-00-860-803).

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Loosen the bolts [98] that attach the seals [42] to the lower fixed panel [41].

(e) Adjust the position of the seals [42].

1) Adjust the seals [42] to achieve 15% to 30% seal compression of the bulb portion of the seal only.

(f) Tighten the bolts [98] that attach the seals [42].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-21-410-005

(1) Install the aft fairings on the flap supports:

(a) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

(b) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

SUBTASK 27-51-21-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-21-860-007

(3) Retract the trailing edge flaps to the retracted position (TASK 27-51-00-860-804).

END OF TASK

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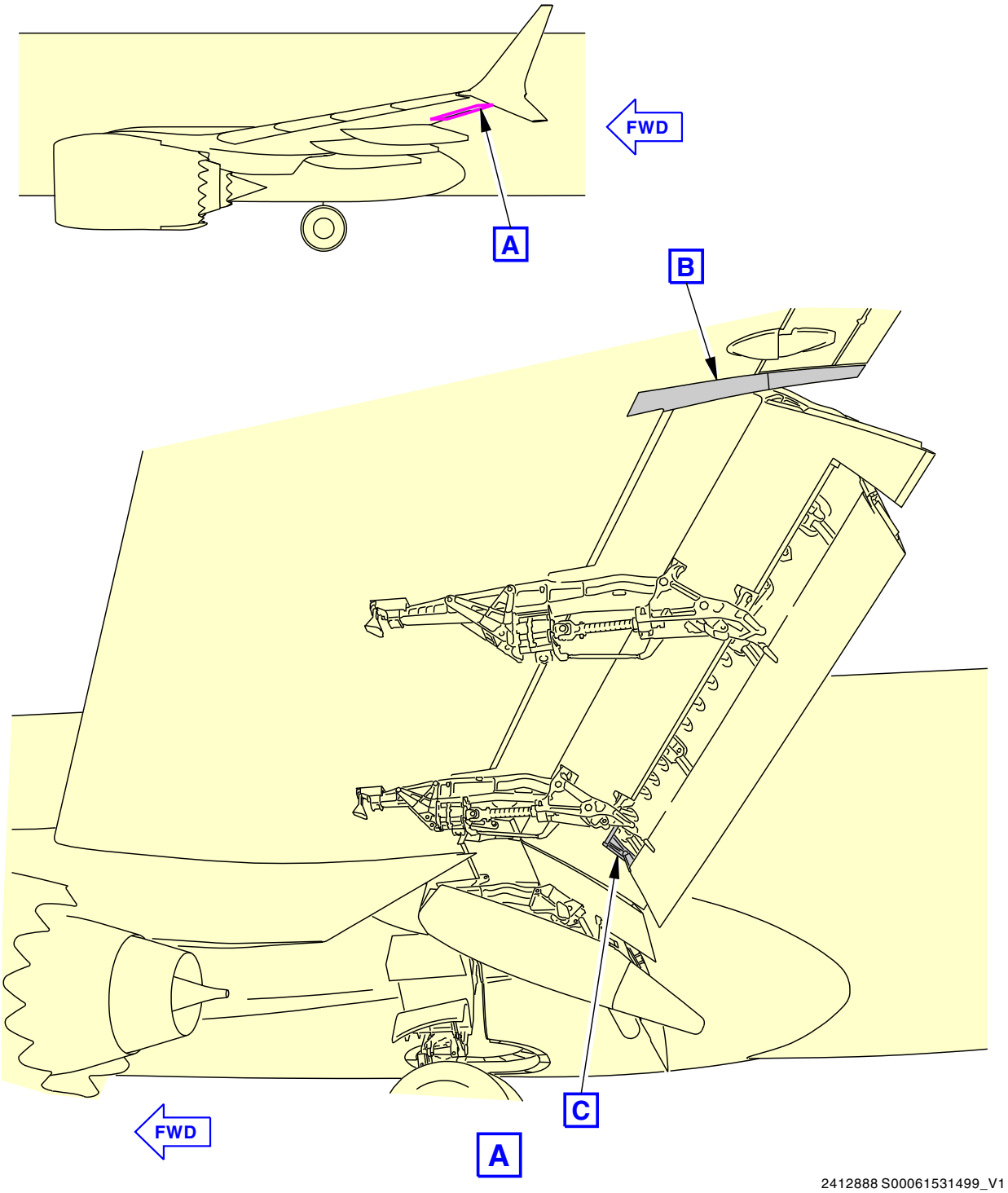

Outboard Trailing Edge Flap Deflection Control Rollers
Figure 501/27-51-21-990-804 (Sheet 1 of 3)

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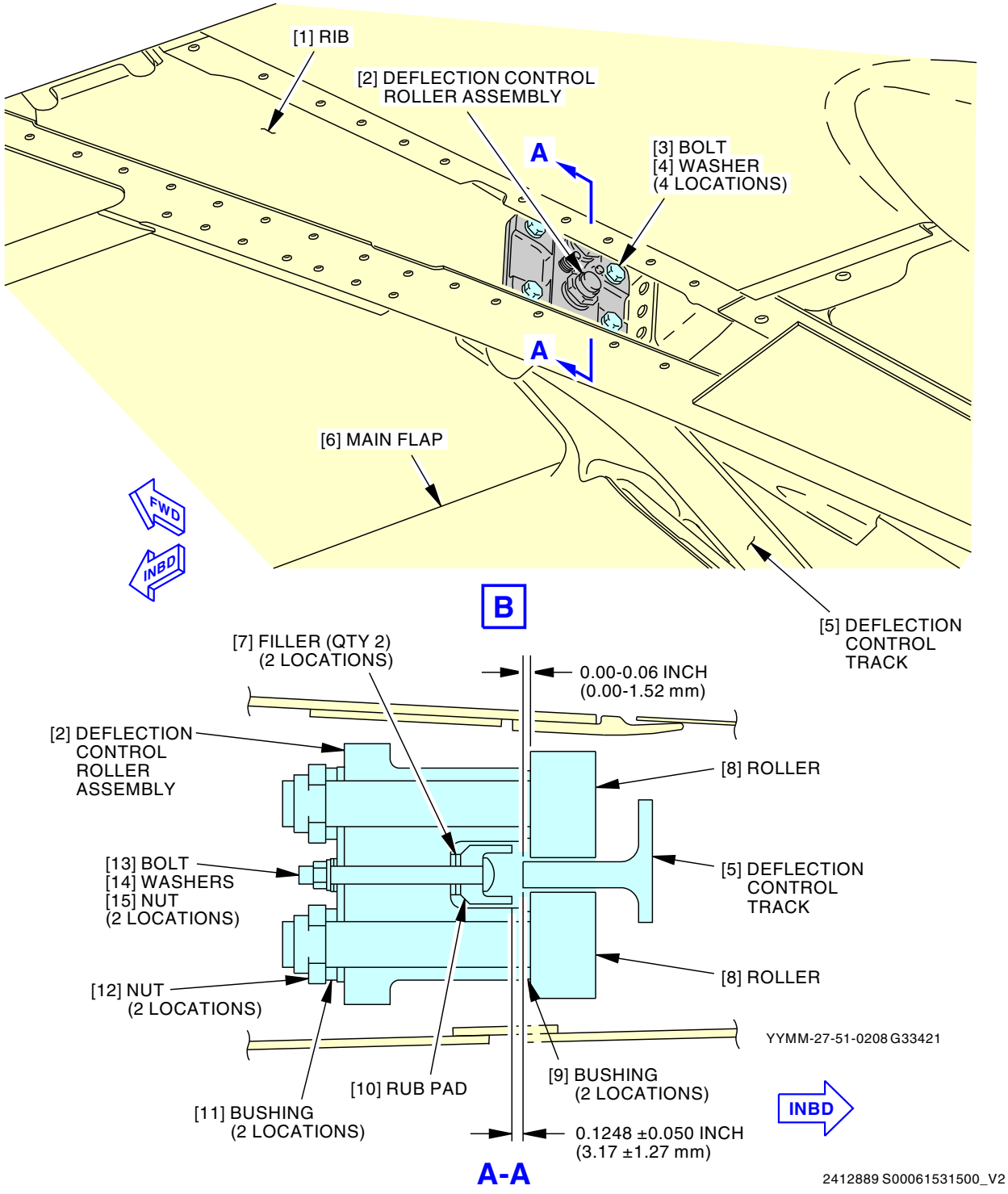

Outboard Trailing Edge Flap Deflection Control Rollers
Figure 501/27-51-21-990-804 (Sheet 2 of 3)

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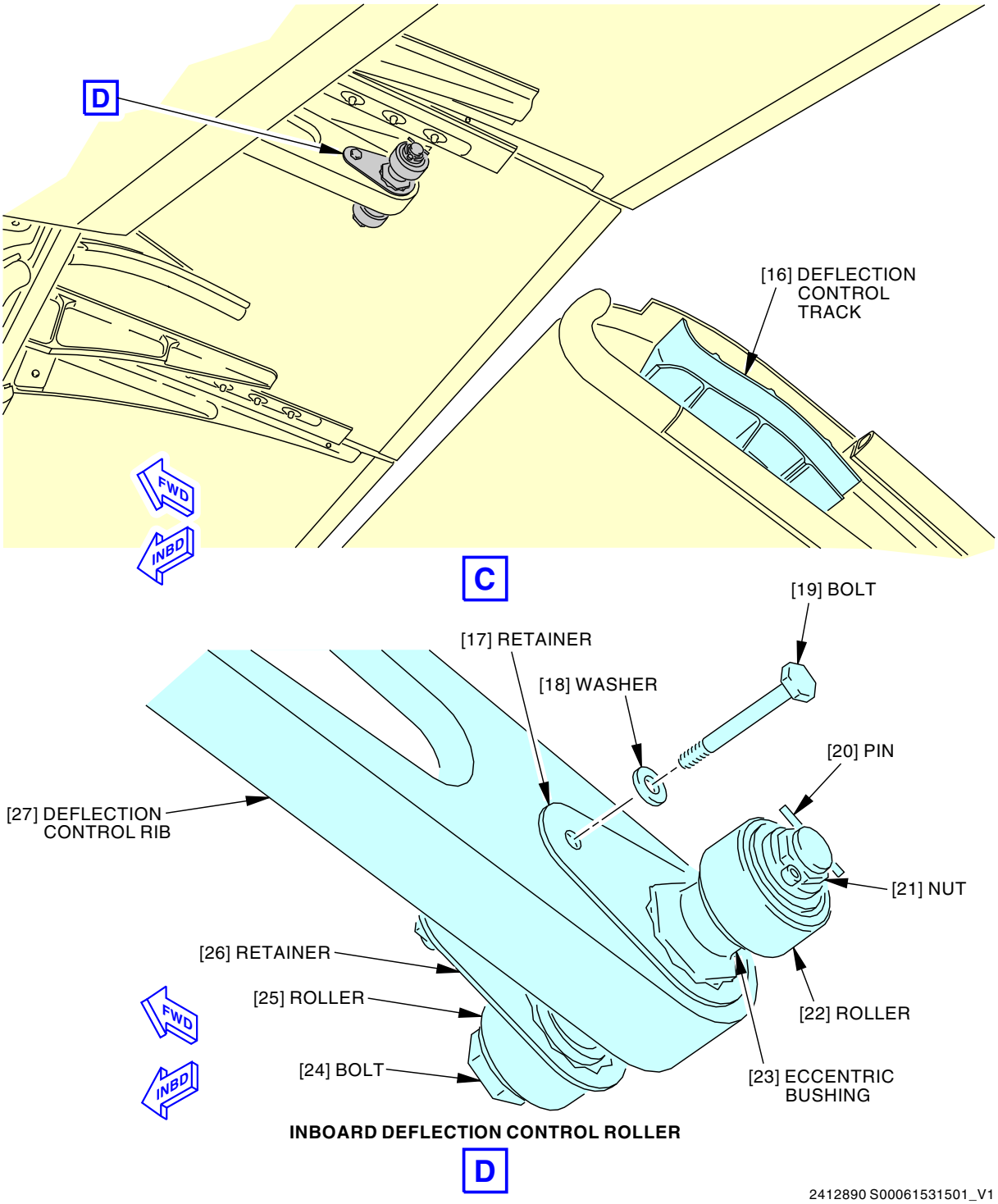
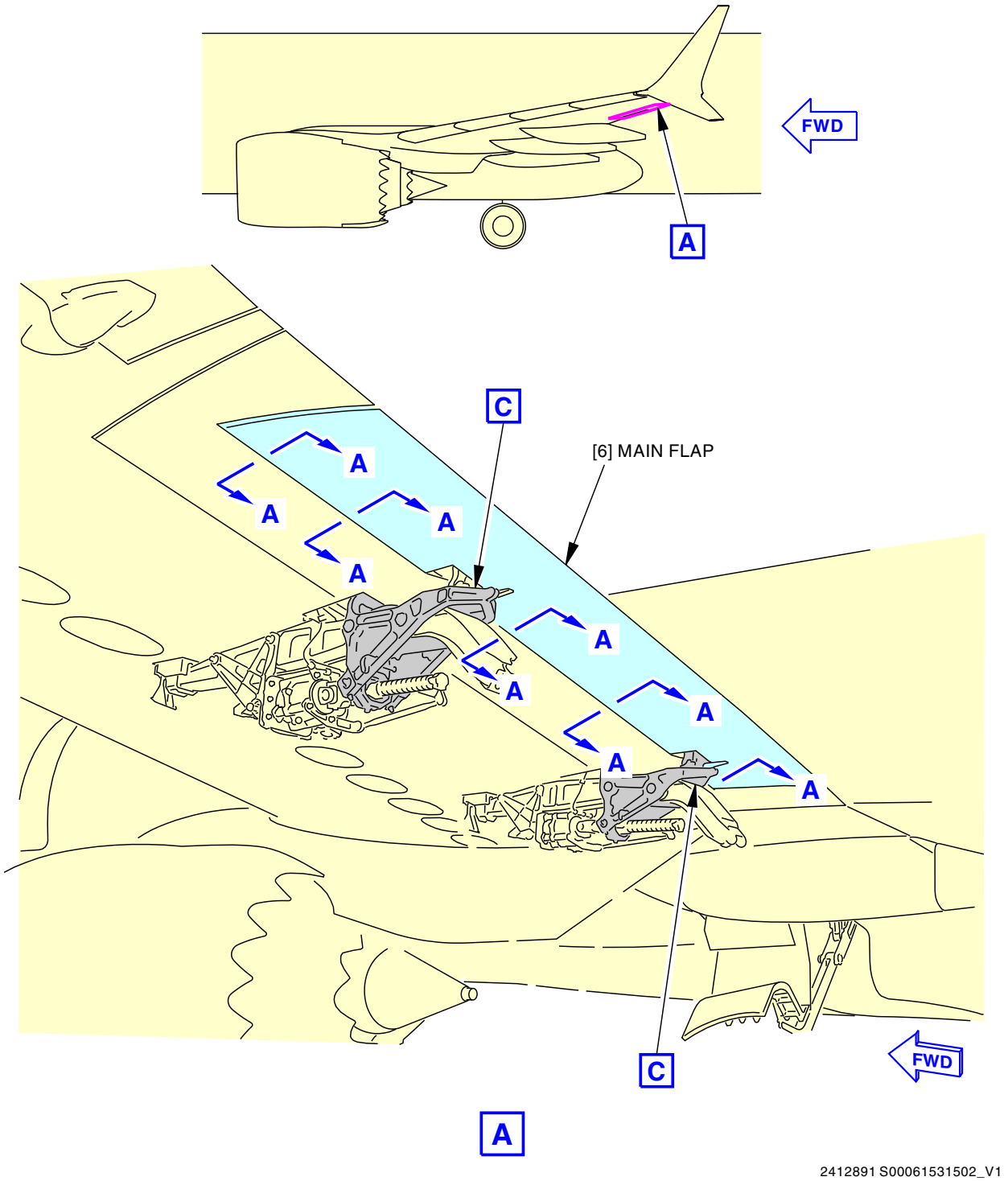


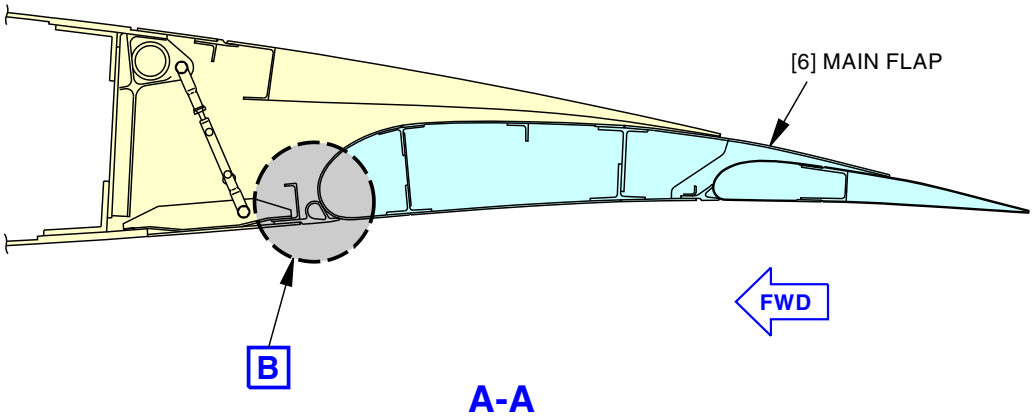
Outboard Trailing Edge Flap Deflection Control Rollers
Figure 501/27-51-21-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

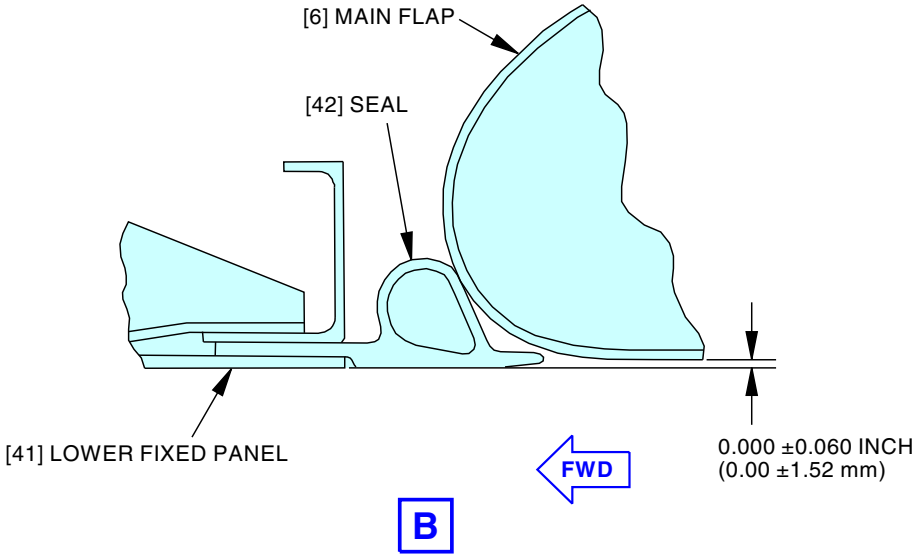


Outboard Trailing Edge Flap Clearances
Figure 502/27-51-21-990-805 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



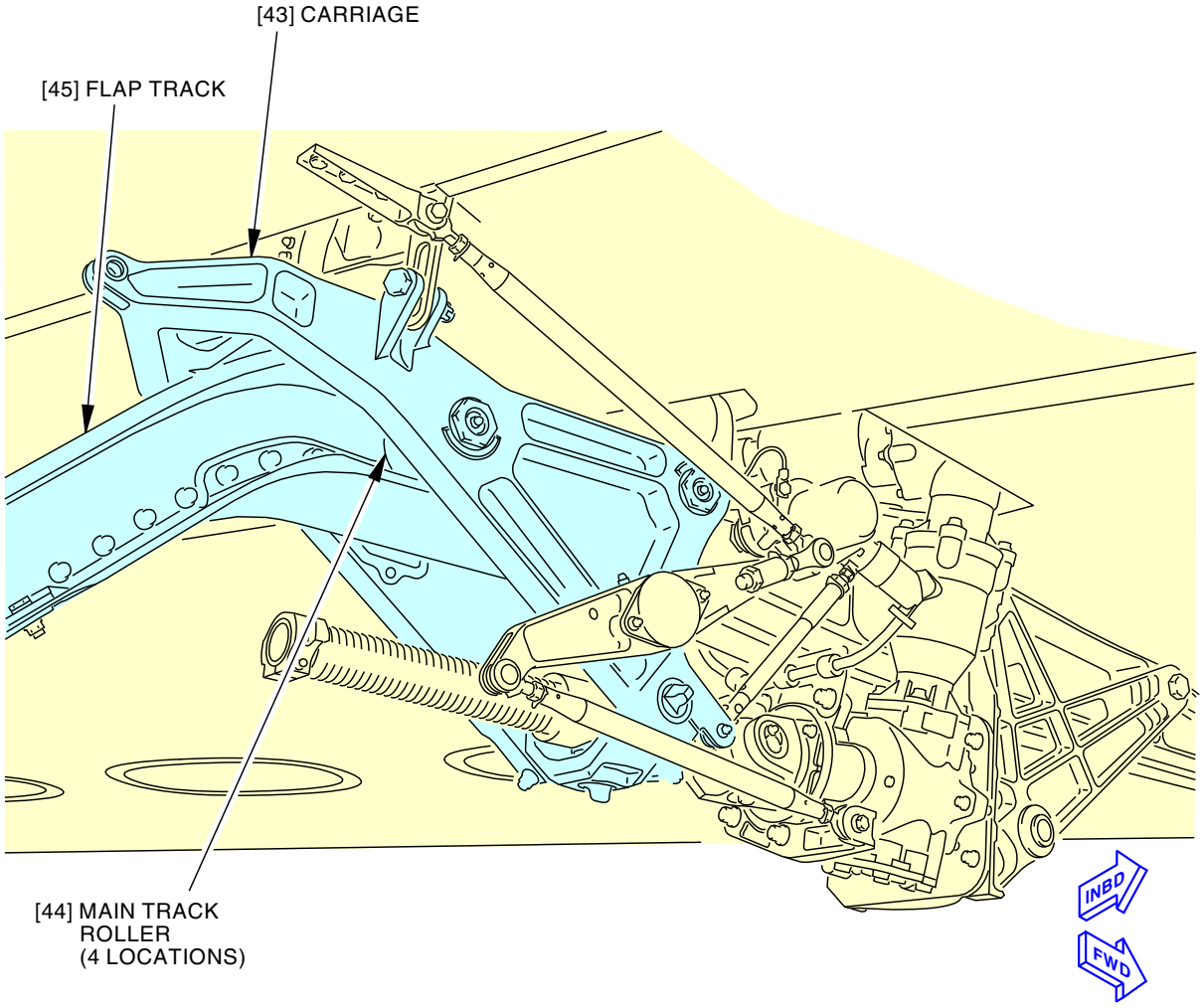
A-A



2412892 S00061531503_V2

Outboard Trailing Edge Flap Clearances
Figure 502/27-51-21-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



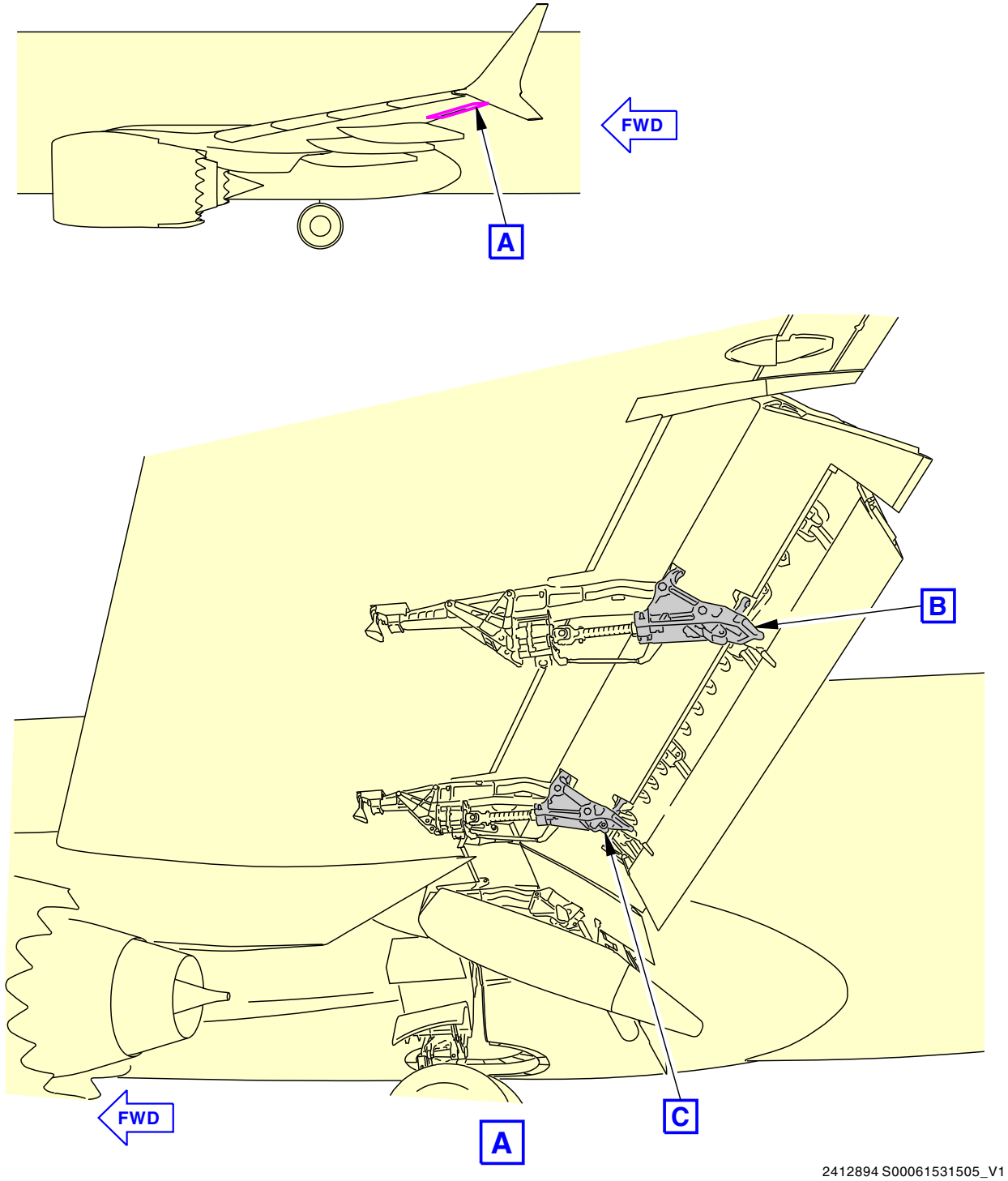
NO. 1 FLAP SUPPORT
(NO. 2 FLAP SUPPORT IS EQUIVALENT)

C

2412893 S00061531504_V1

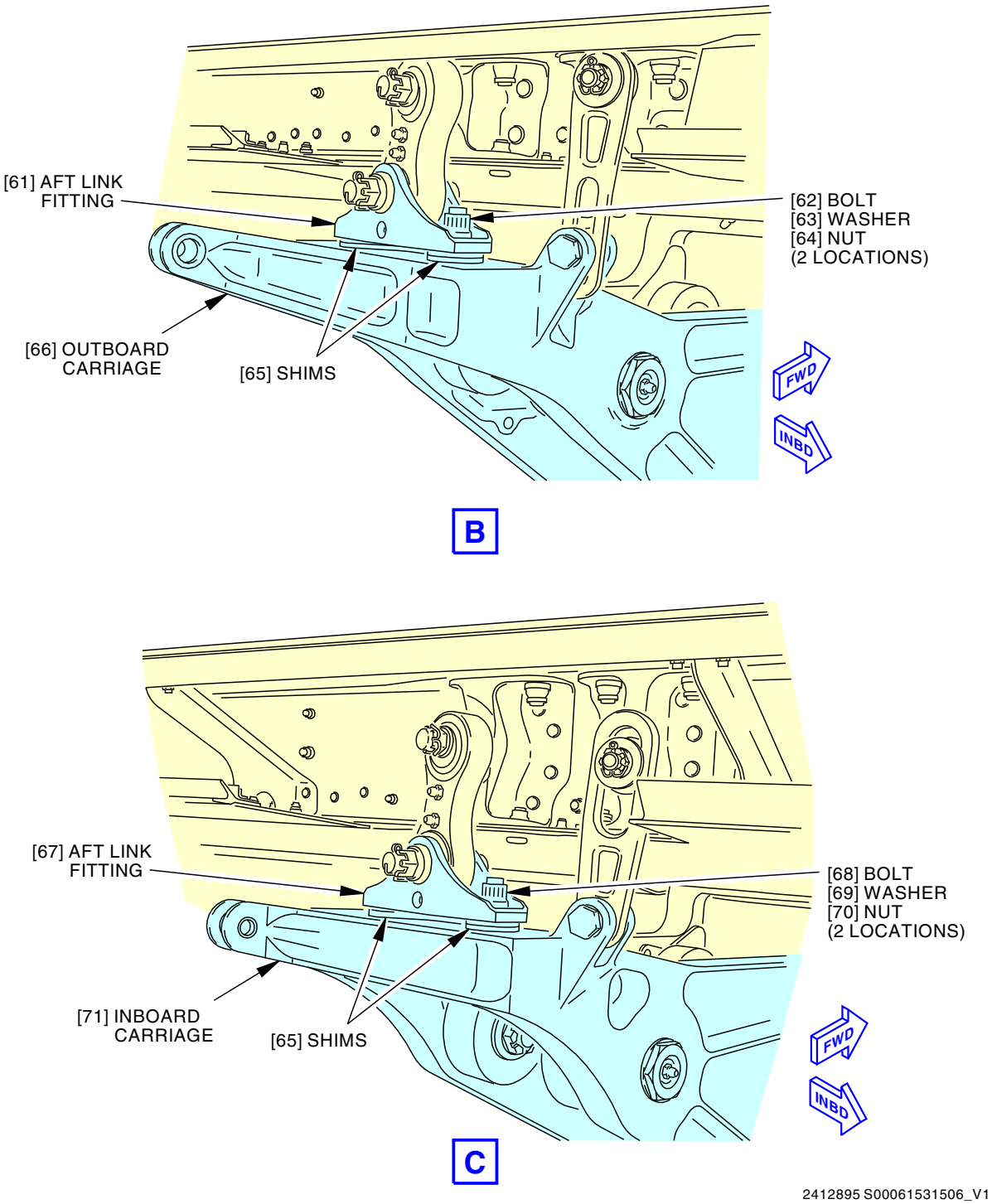
Outboard Trailing Edge Flap Clearances
Figure 502/27-51-21-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



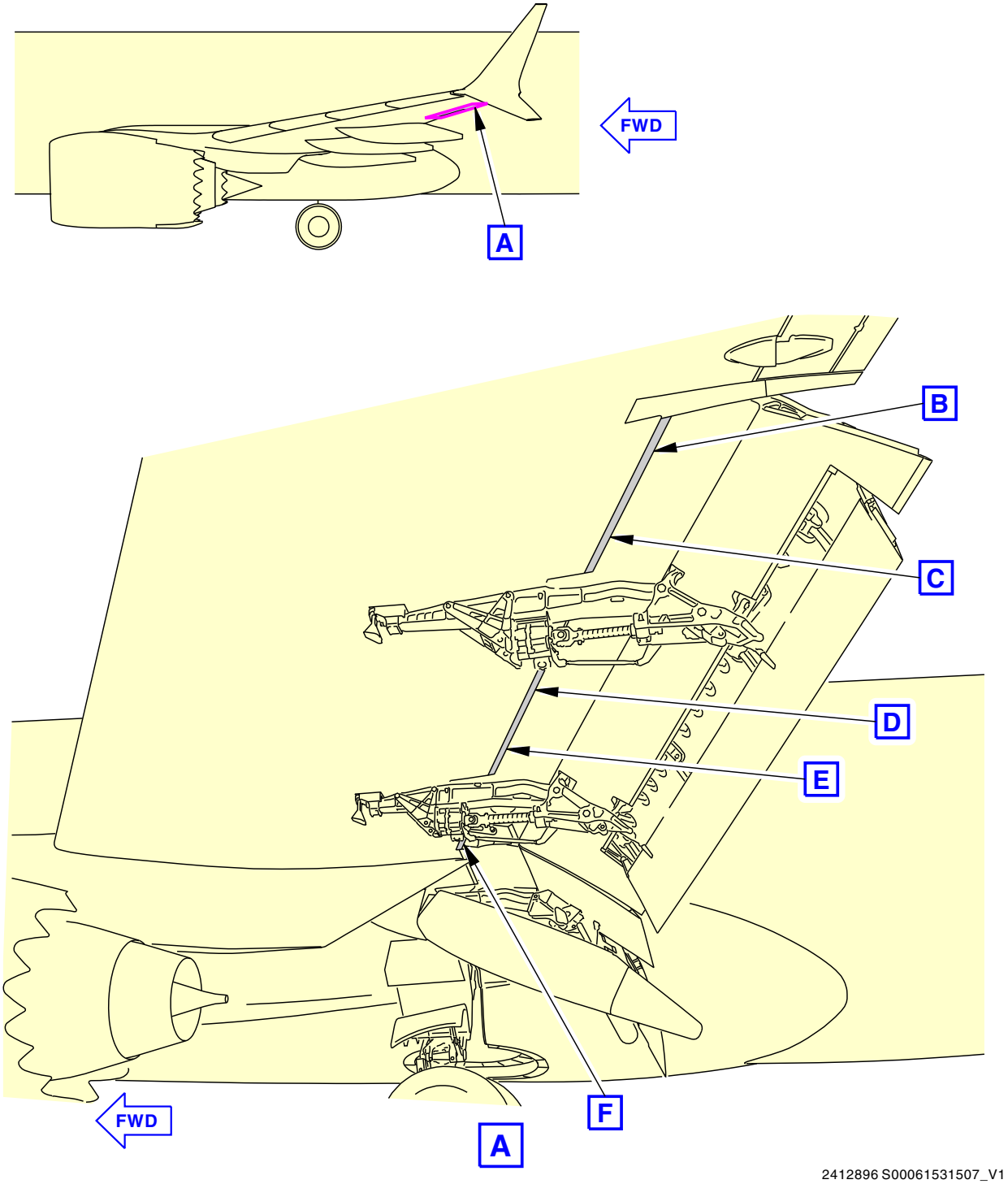
Outboard Trailing Edge Flap Adjustment
Figure 503/27-51-21-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



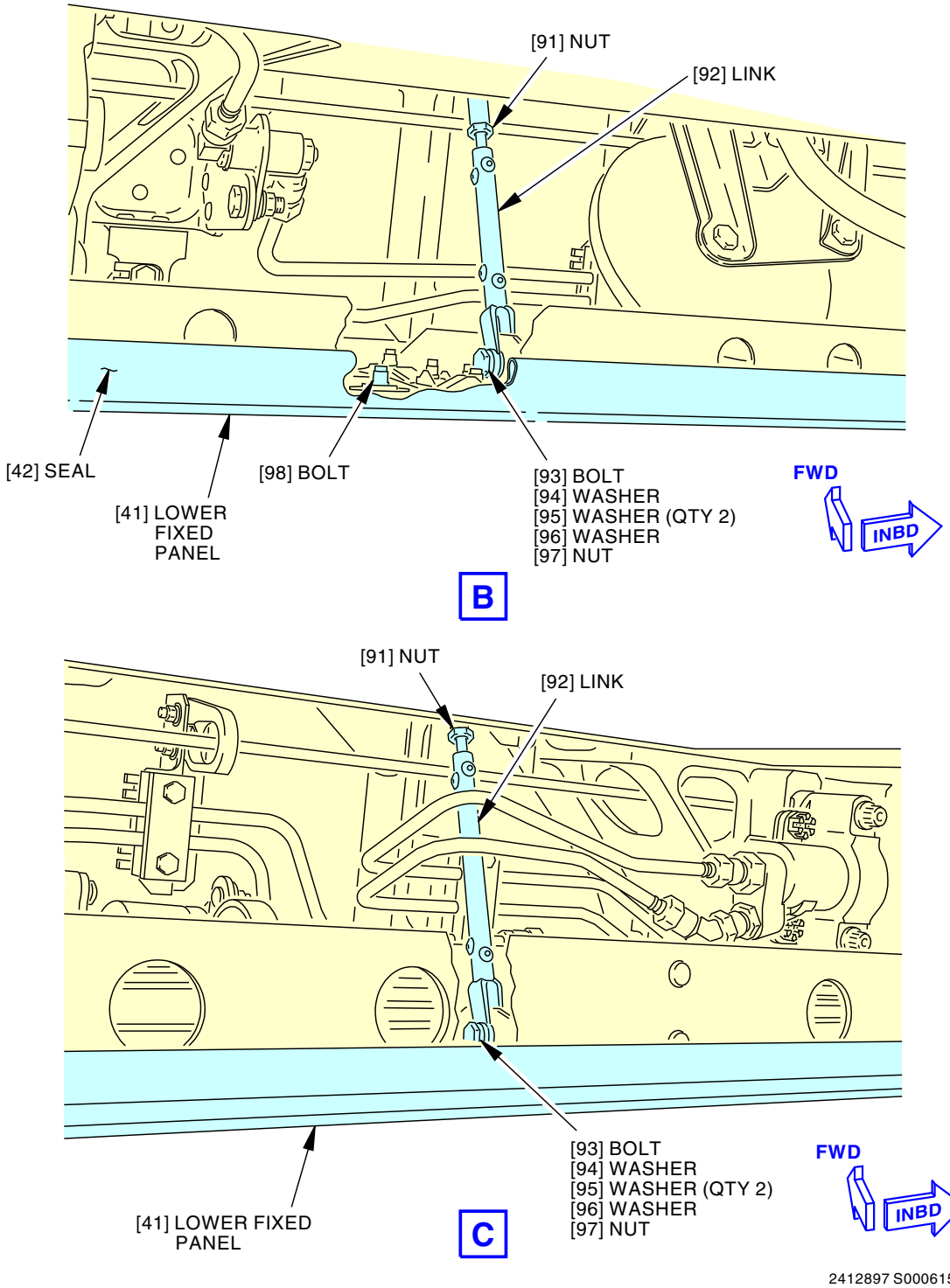
Outboard Trailing Edge Flap Adjustment
Figure 503/27-51-21-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



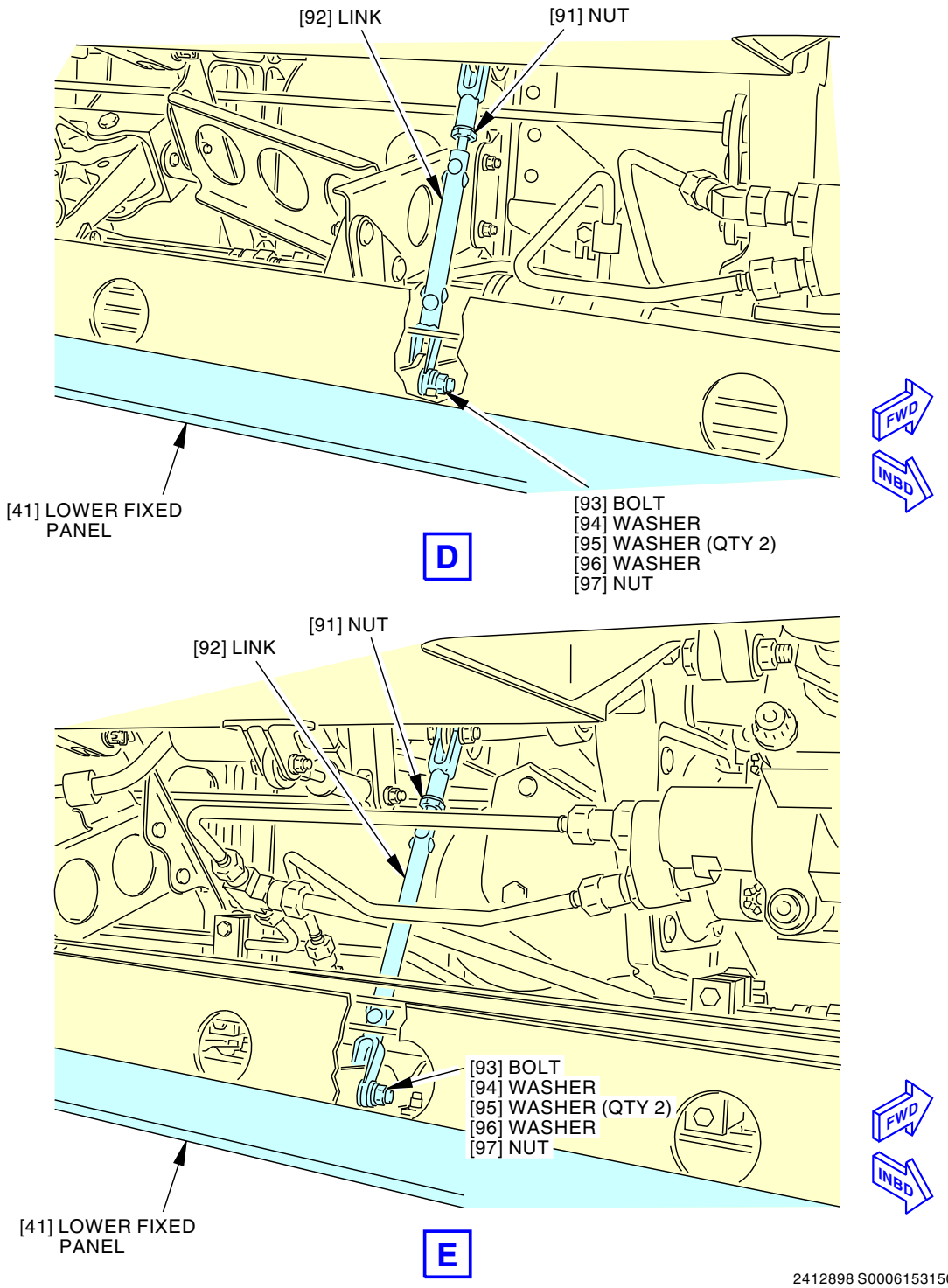
Outboard Trailing Edge Flap Lower Panel Adjustment
Figure 504/27-51-21-990-807 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



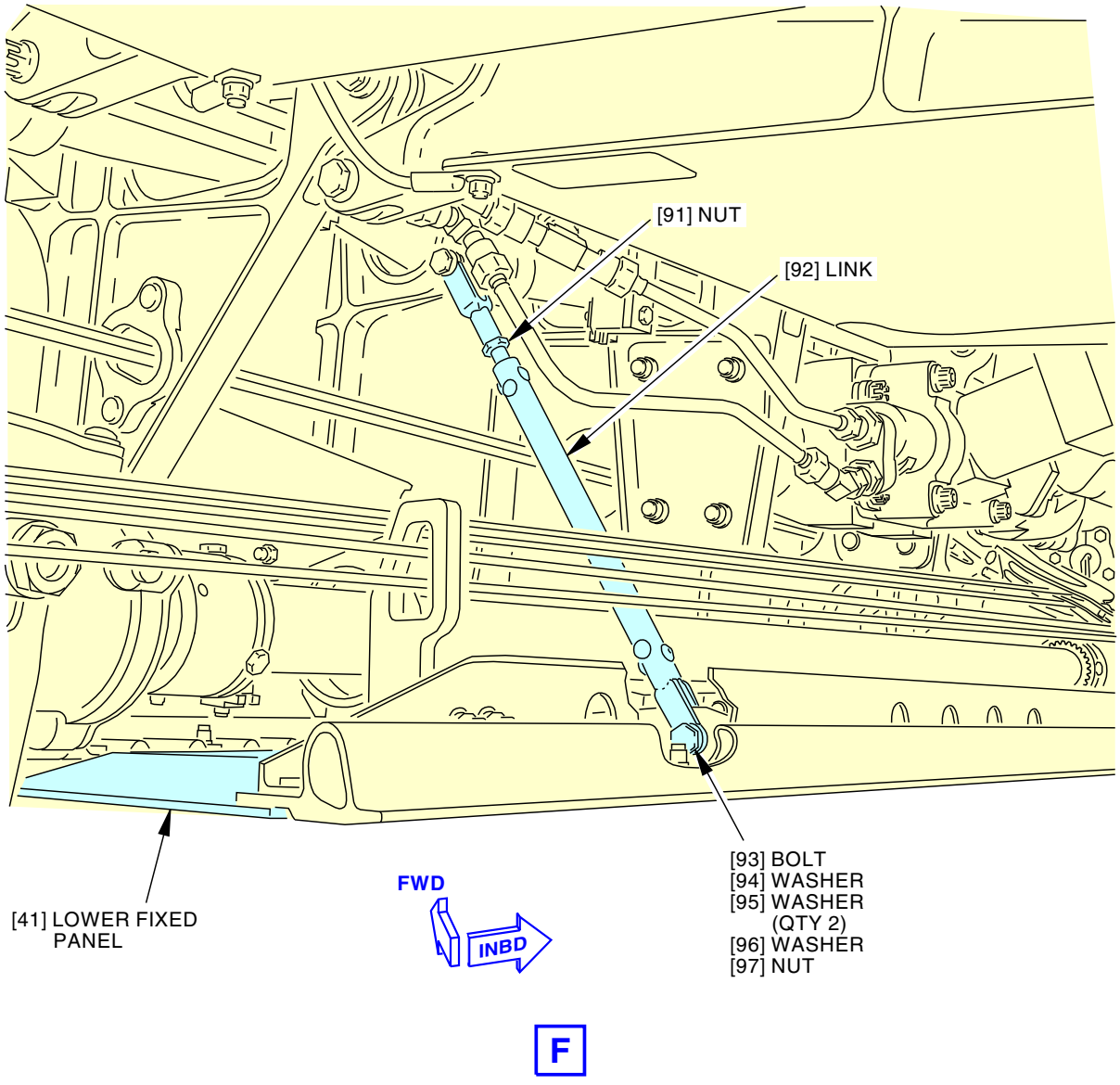
Outboard Trailing Edge Flap Lower Panel Adjustment
Figure 504/27-51-21-990-807 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Lower Panel Adjustment
Figure 504/27-51-21-990-807 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Trailing Edge Flap Lower Panel Adjustment
Figure 504/27-51-21-990-807 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD AFT FLAP - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Outboard aft flap removal

(2) Outboard aft flap installation.

B. An outboard aft flap weighs approximately 50 lb (23 kg).

TASK 27-51-22-000-801

2. Outboard Aft Flap Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)

B. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

C. Access Panels

Number	Name/Location
543DR	Flap Support No. 2 Access Door
544DR	Flap Support No. 1 Access Door
643DL	Flap Support No. 7, Access Door
644DL	Flap Support No. 8, Access Door

D. Prepare for the Removal

SUBTASK 27-51-22-010-001

(1) Do one of the following steps to gain access to the aft flap assembly:

(a) Remove the applicable outboard flap outboard and inboard support aft fairing:

1) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

2) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

(b) Open the access panels on the support aft fairing:

1) Open the applicable access panels:

(TASK 27-51-28-000-803)

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

2) Open the applicable access panels:

(TASK 27-51-28-000-805)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

SUBTASK 27-51-22-860-001

(2) If the trailing edge flaps are not in the fully extended position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

NOTE: The aft flap can also be removed at the fully retracted position if necessary.

SUBTASK 27-51-22-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Aft Flap Removal

SUBTASK 27-51-22-020-001

WARNING SUPPORT THE AFT FLAP ASSEMBLY IN ITS POSITION WHEN YOU DISCONNECT THE RODS. THE AFT FLAP ASSEMBLY WILL MOVE AFT WHEN THE RODS ARE DISCONNECTED. THIS CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Disconnect the aft flap [2] from the rods [11]:

(a) Hold the aft flap [2] so it cannot move aft when you disconnect the rods [11].

(b) Remove the pins [8], nuts [7], washers [6], washers [4], bolts [3] and bushings [5] that attach the rods [11] to the aft flap [2].

(c) Move the rods [11] down, away from the aft flap [2].

SUBTASK 27-51-22-010-003

(2) Remove the coverplate [22] for the outboard roller [21]:

(a) Remove the bolts [23] that attach the coverplate [22].

(b) Remove the coverplate [22] from the main flap [1].

SUBTASK 27-51-22-020-002

(3) Remove the aft flap [2]:

NOTE: The aft flap weighs approximately 50 lb (23 kg).

(a) Support the aft flap [2].

(b) Carefully move the aft flap [2] aft, until it stops.

(c) At the outboard aft flap track [13], remove the pin [35], nut [34], washer [33], washer [31], bolt [30] and bushing [32] that attach the aft flap track [13] to the aft flap [2].

WARNING SUPPORT THE AFT FLAP ASSEMBLY WHEN THE BOLTS ARE REMOVED. WHEN THE LAST BOLTS ARE REMOVED, THE AFT FLAP ASSEMBLY CAN TURN FREELY ON THE ROLLERS. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT.

(d) At the remaining aft flap tracks [14] and aft flap track [64], do these steps:

1) At aft flap tracks [14], remove the pins [41], nuts [40], washers [39], washers [37], bolts [36] and bushings [38] that attach the aft flap tracks [14] to the aft flap [2].

2) At aft flap track [64], remove the pin [70], nut [69], washer [68], bushing [67], washer [66] and bolt [65] that attach the aft flap track [64] to the aft flap [2].

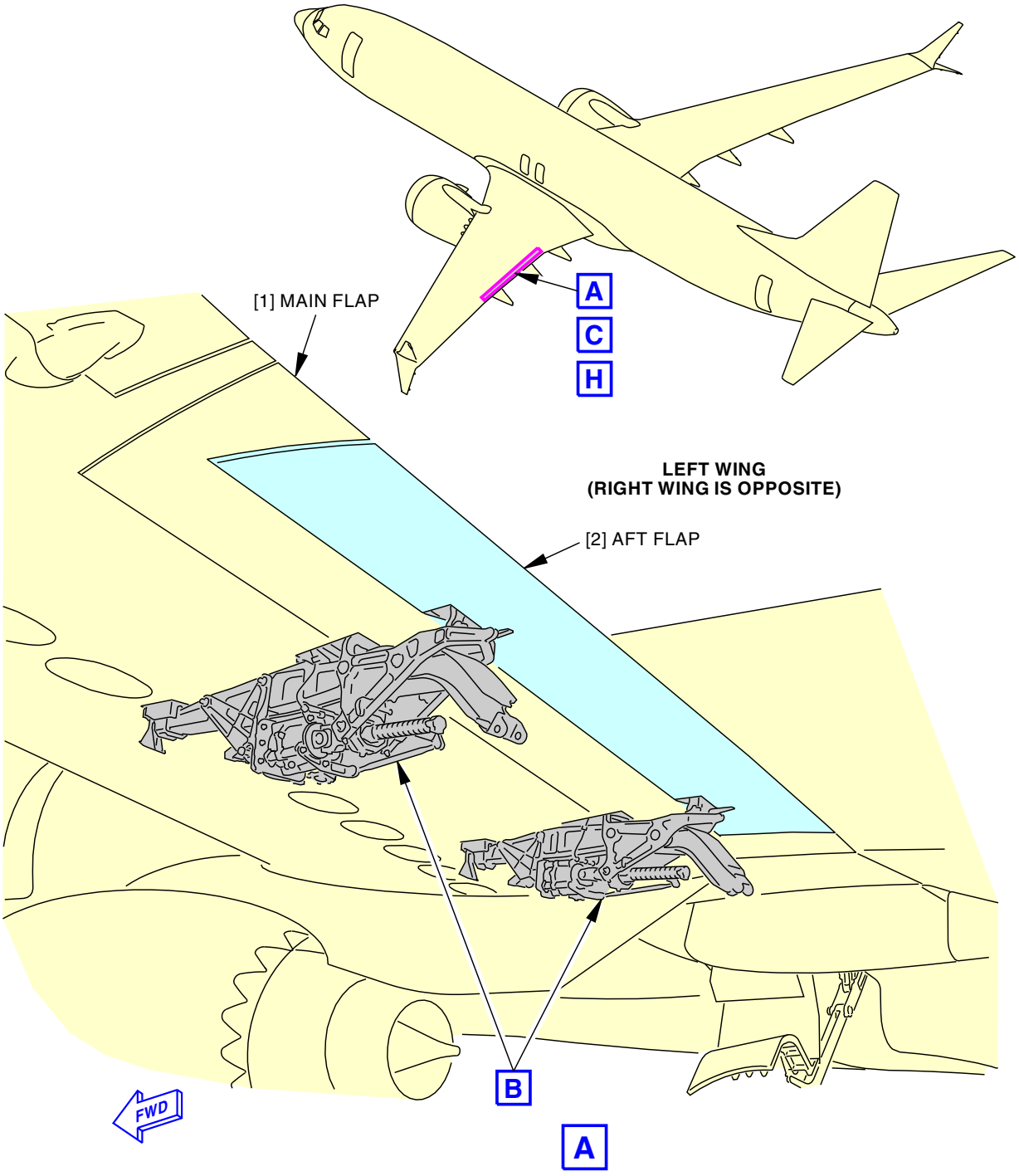
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Move the aft flap track [64], aft flap tracks [14] and aft flap track [13] forward, away from the aft flap [2].

(f) Move the trailing edge of the aft flap [2] down, until it is perpendicular to the main flap [1] and disengage the rollers [21] from the outboard programming track [20] and the inboard programming track [28].

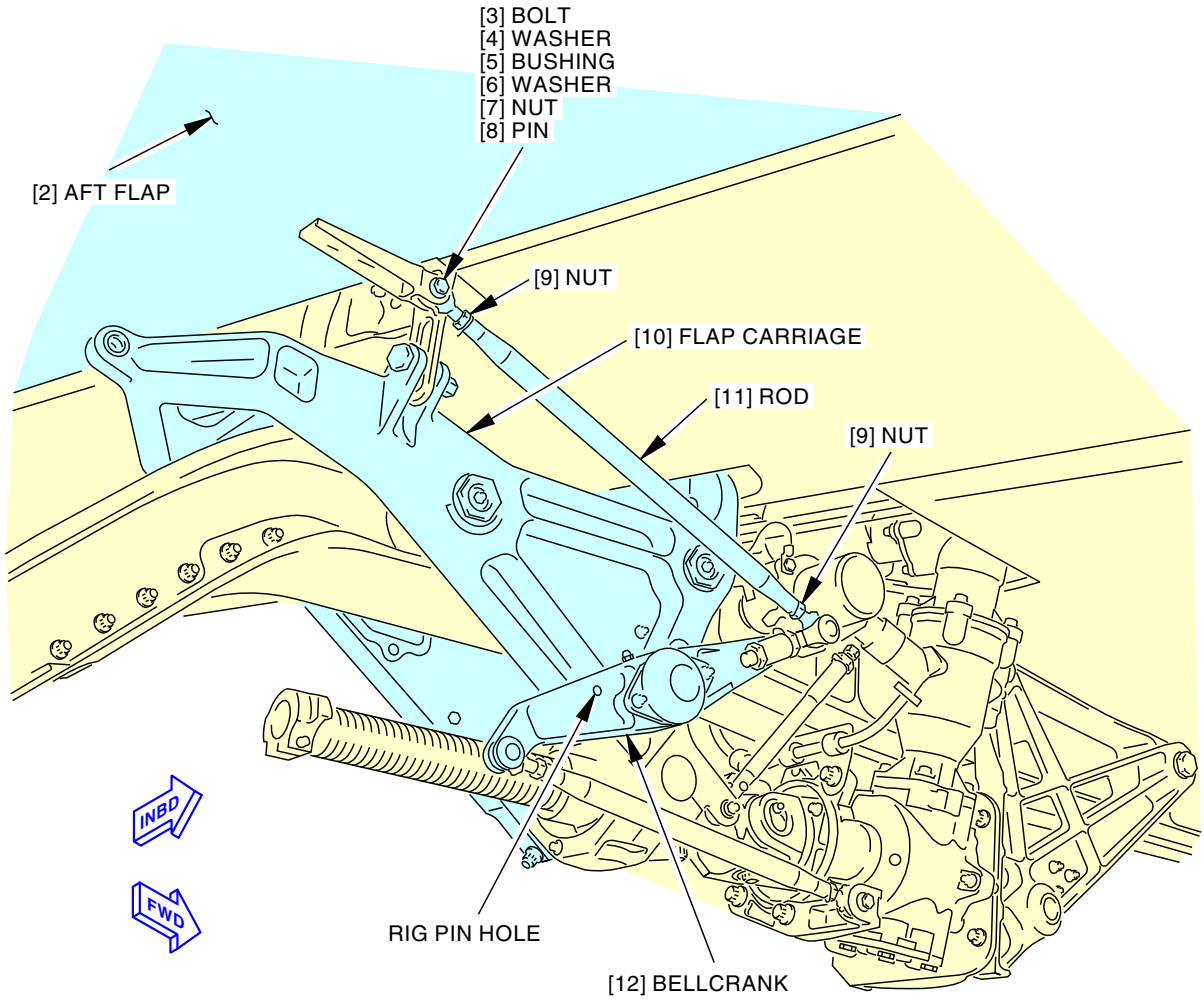
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



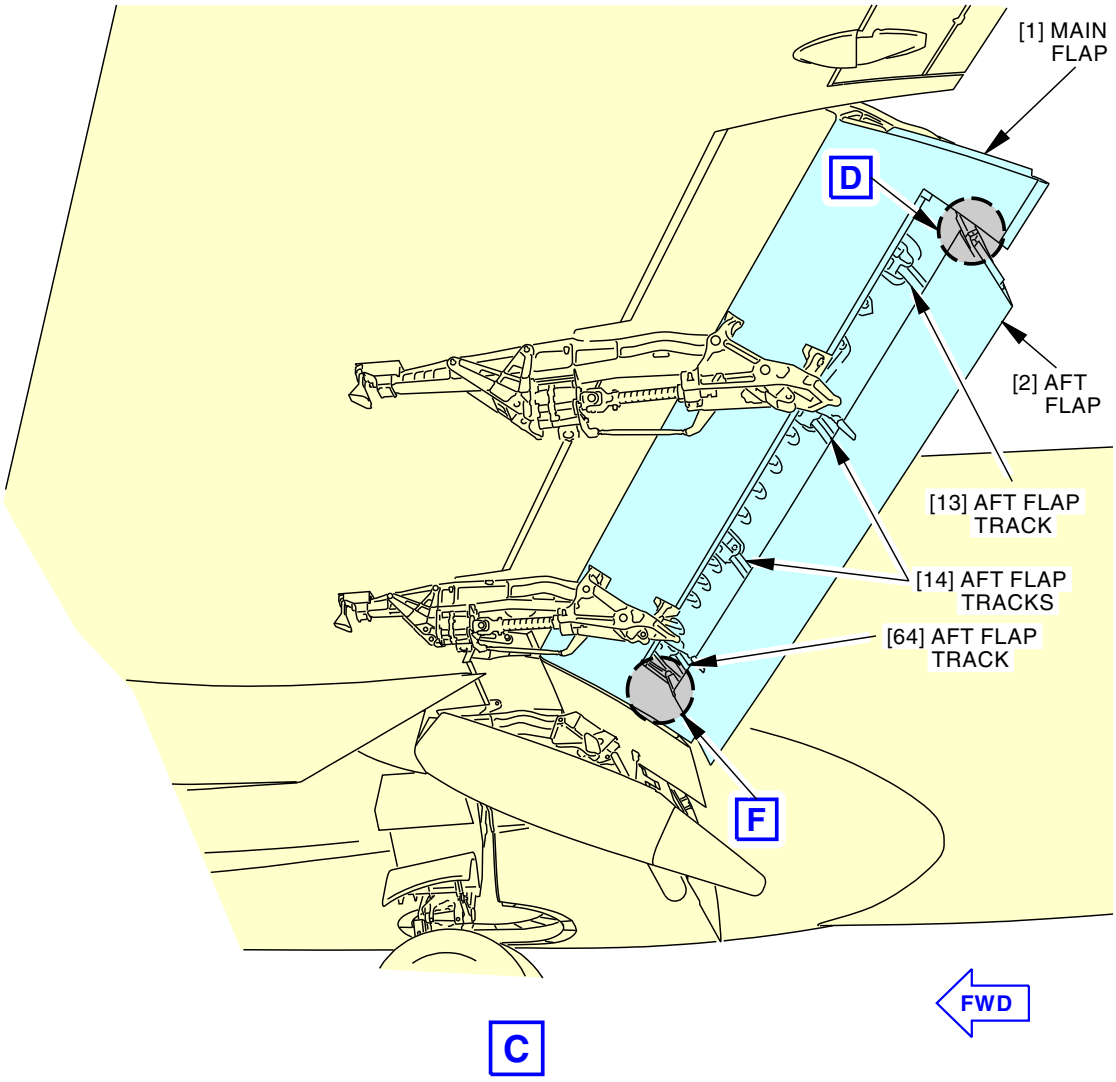
NO. 1 FLAP SUPPORT
(NO. 2 IS EQUIVALENT)

B

2412901 S00061531515_V1

Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 2 of 7)

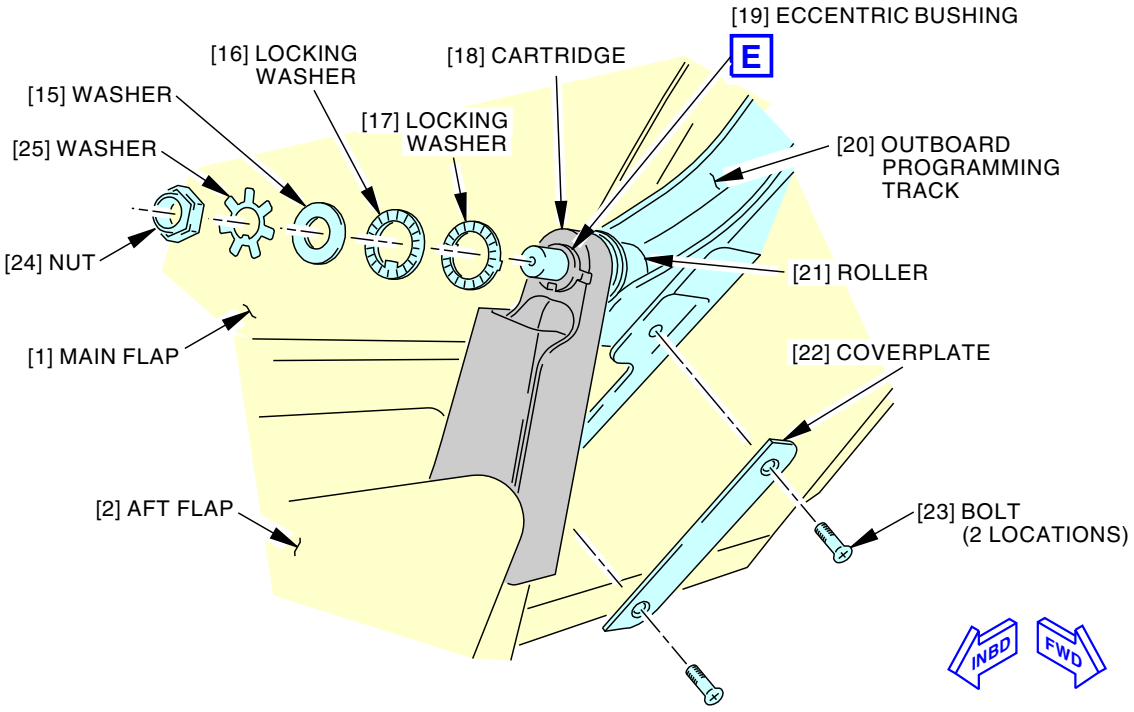
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412902 S00061531516_V4

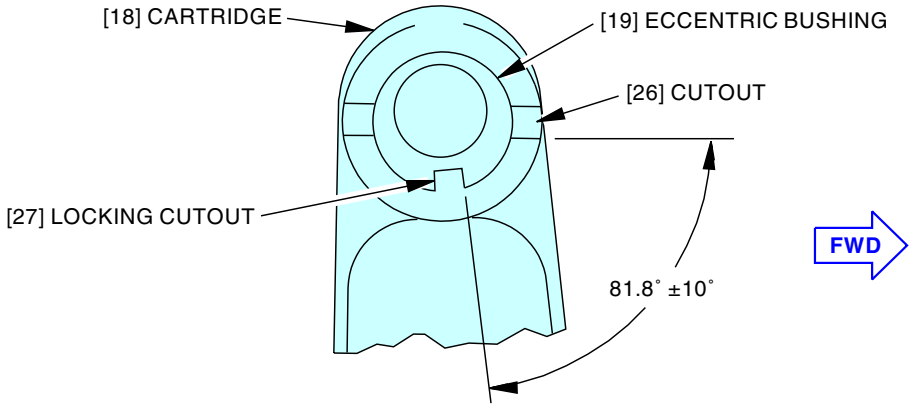
Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD PROGRAMMING ROLLER

D



NOMINAL POSITION

E

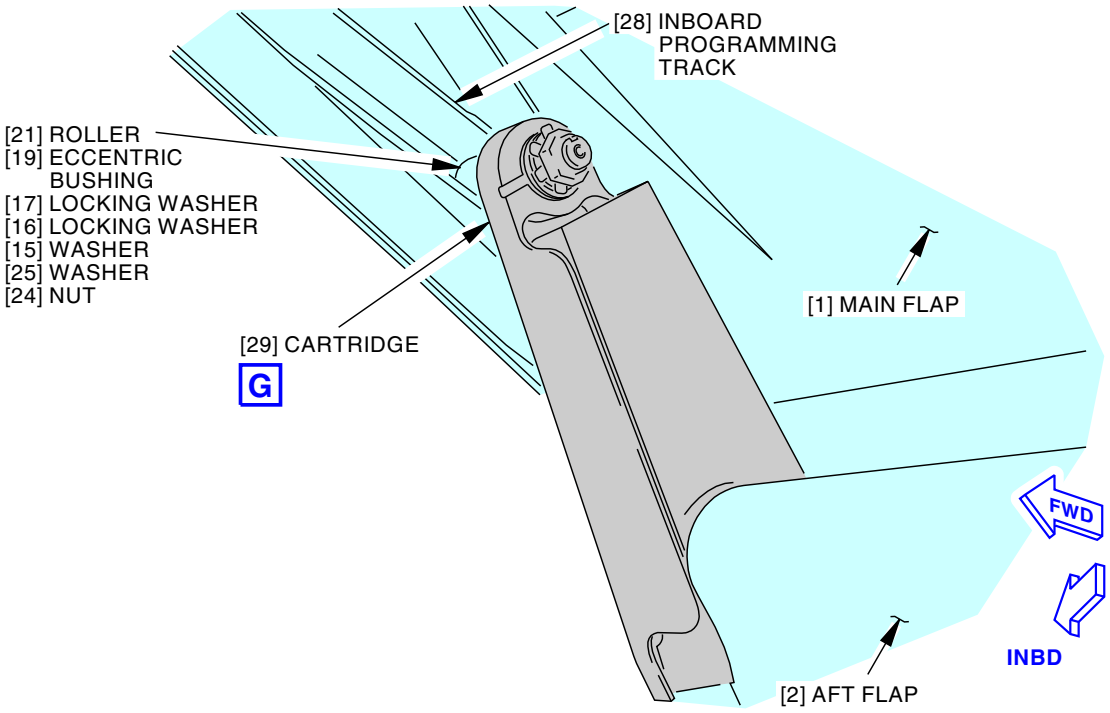
NOTE:

THE NUT AND WASHERS ARE NOT SHOWN.

2412903 S00061531517_V1

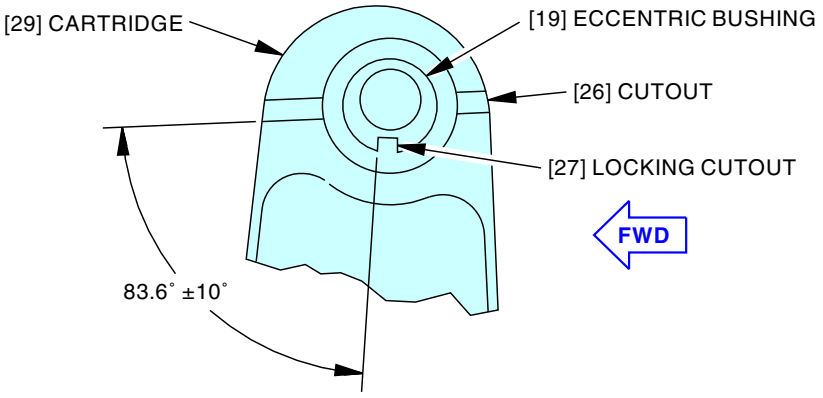
Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



INBOARD PROGRAMMING ROLLER

F



NOMINAL POSITION

G

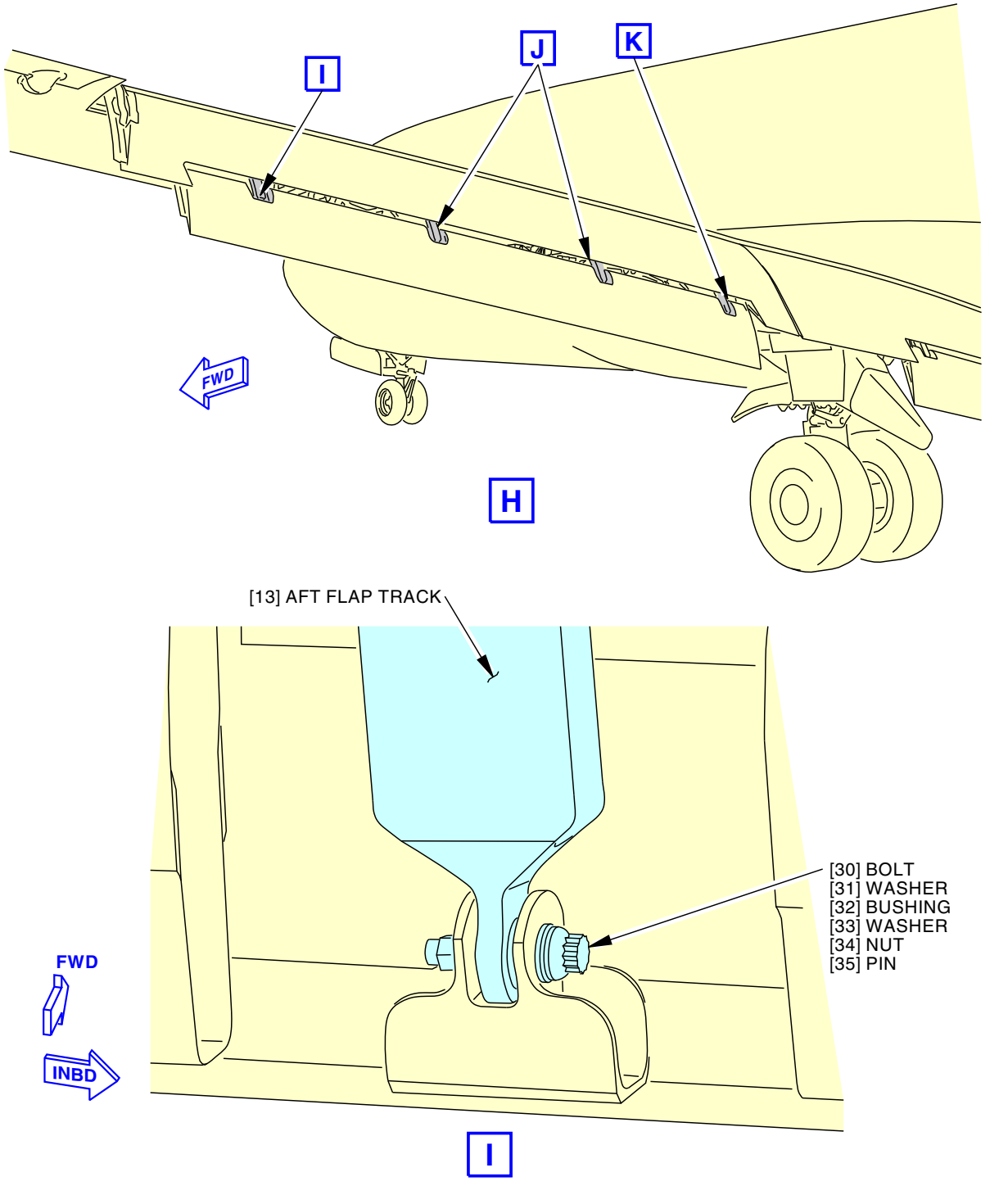
NOTE:

THE NUT AND WASHERS ARE NOT SHOWN.

2412904 S00061531518_V1

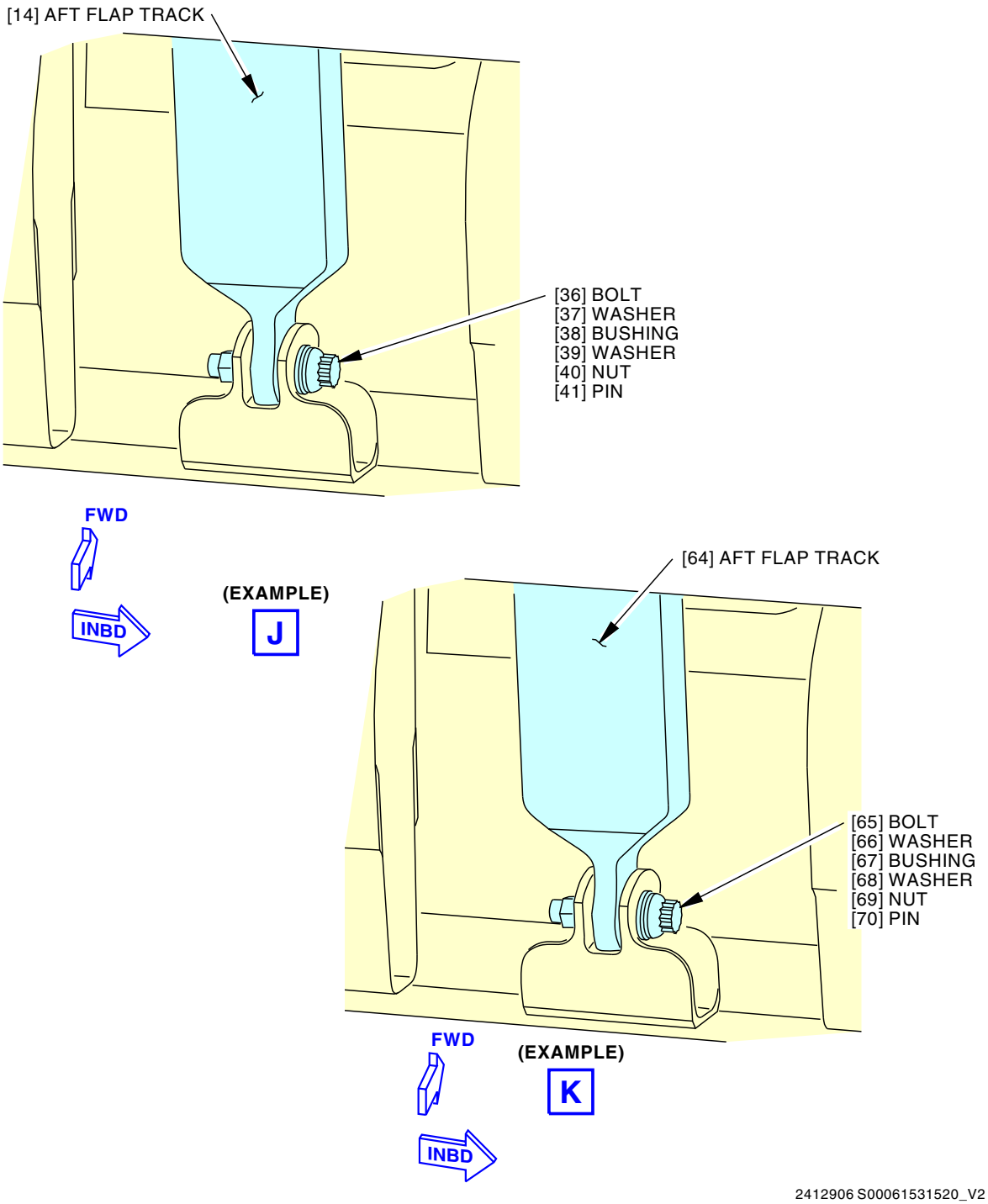
Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Installation
Figure 401/27-51-22-990-801 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-22-400-801

3. Outboard Aft Flap Installation

NOTE: The sum of the lengths of external repairs to the inboard aft flap trailing edge wedge and the outboard aft flap trailing edge wedge assemblies must be less than or equal to 24 inches. A single repair that includes both the upper and lower surfaces is counted only once against the spanwise total.

A. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-26-400-801	Outboard Aft Flap Track Installation (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)
51-21-81-370-801	Apply The Abrasion-Resistant Teflon Finish, BMS 10-86 Type I (P/B 701)
51-71-00-340-801	Bonded Phenolic or Stainless Steel Rub Pad Repair (Heat Source Available) (P/B 801)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Aft flap	27-51-22-20-080	SIA ALL
		27-51-22-20-085	SIA ALL

E. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

F. Access Panels

Number	Name/Location
543DR	Flap Support No. 2 Access Door
544DR	Flap Support No. 1 Access Door
643DL	Flap Support No. 7, Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
644DL	Flap Support No. 8, Access Door

G. Outboard Aft Flap Installation

SUBTASK 27-51-22-820-001

(1) If you will not install the same aft flap [2] and main flap [1], make sure that the inboard and outboard rollers [21] are in the nominal position (Figure 401):

(a) The outboard roller [21] is in the nominal position when the locking cutout [27] is 81.8 ±10.0 degrees from the lower cutout [26] on the cartridge [18].

(b) The inboard roller [21] is in the nominal position when the locking cutout [27] is 83.6 ±10.0 degrees from the lower cutout [26] on the cartridge [29].

(c) If the rollers [21] are not in the nominal position, adjust the position of the rollers [21]:

(d) Remove the nut [24], washer [25] and washer [15] from the roller [21].

(e) Disengage the locking washer [16] from the locking washer [17].

(f) Turn eccentric bushing [19] until the roller [21] is in the nominal position.

(g) Engage the locking washer [16] with the locking washer [17].

(h) Install the washer [15], washer [25] and nut [24] on the roller [21].

(i) Tighten the nut [24] to 95 in-lb (10.7 N·m) to 110 in-lb (12.4 N·m).

(j) Bend a minimum of 2 tabs of the washer [25] to hold the nut [24] in its position.

SUBTASK 27-51-22-010-004

(2) If it is installed on the main flap [1], remove the coverplate [22] for the outboard roller [21]:

(a) Remove the bolts [23] that attach the coverplate [22].

(b) Remove the coverplate [22] from the main flap [1].

SUBTASK 27-51-22-420-001

(3) Make sure that the aft flap track [13] and aft flap tracks [14] are installed on the main flap [1]. To install the aft flap tracks, do this task: Outboard Aft Flap Track Installation, TASK 27-51-26-400-801.

SUBTASK 27-51-22-420-002

(4) Install the aft flap [2]:

NOTE: The aft flap can also be installed at the fully retracted and extended positions. Installation of the aft flap at full extension will require extra protection of the aft flap trailing edge and adjacent flap fairing tail cones from damage. At full extension the flap and fairings are very close together.

(a) Hold the aft flap [2] below and approximately perpendicular to the main flap [1].

(b) Engage the inboard roller [21] with the inboard programming track [28].

(c) Engage the outboard roller [21] with the outboard programming track [20].

(d) Lift the trailing edge of the aft flap [2] and hold it in its usual position.

(e) Connect the aft flap [2] to the aft flap track [13], aft flap tracks [14] and aft flap track [64]:

1) Move the aft flap track [13], aft flap tracks [14] and aft flap track [64] to align with the aft flap [2].

2) Apply grease, D00633 to the shank of the bolt [30], bolts [36], bolt [65] and the inside of the bushing [32], bushings [38] and bushing [67].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that you do not get grease, D00633 on the threads of the bolt [30], bolts [36] and bolt [65].

3) Install the bushing [67], bolt [65] and washer [66] that attach the aft flap track [64] to the aft flap [2].

4) Install the bushings [38], bolts [36] and washers [37] that attach the aft flap tracks [14] to the aft flap [2].

5) Install the bushing [32], bolt [30] and washer [31] that attach the aft flap track [13] to the aft flap [2].

6) Carefully clean all of the grease, D00633 from the threads of the bolts [36], bolt [30] and bolt [65].

7) On the outboard aft flap track [13], install the washer [33] and nut [34] on the bolt [30].

8) Tighten the nut [34] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

9) Install the pin [35] in the nut [34].

10) On the aft flap tracks [14], install the washers [39] and nuts [40] on the bolts [36].

11) Tighten the nut [40] to 100 in-lb (11.3 N·m) to 150 in-lb (16.9 N·m).

12) Install the pins [41] in the nuts [40].

13) On the aft flap track [64], install the washer [68] and nut [69] on the bolt [65].

14) Tighten the nut [69] to 160 in-lb (18.1 N·m) to 240 in-lb (27.1 N·m).

15) Install the pin [70] in the nut [69].

SUBTASK 27-51-22-420-003

(5) Connect the aft flap [2] to the rods [11]:

WARNING SUPPORT THE AFT FLAP ASSEMBLY IN ITS POSITION WHEN YOU DISCONNECT THE RODS. THE AFT FLAP ASSEMBLY WILL MOVE AFT WHEN THE RODS ARE DISCONNECTED. THIS CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Move the aft aft flap [2] until it aligns with the rods [11].

(b) Apply grease, D00633 to the shank of the bolts [3] and the inside of the bushings [5].

1) Make sure that you do not get grease, D00633 on the threads of the bolts [3].

(c) Install the bushings [5], bolts [3] and washers [4] to attach the rods [11] to the aft aft flap [2].

1) Make sure that the heads of the bolts [3] are inboard.

(d) Carefully clean all of the grease, D00633 from the threads of the bolts [3].

(e) Install the nuts [7] and washers [6] on the bolts [3].

(f) Tighten the nuts [7] to 50 in-lb (5.6 N·m) to 80 in-lb (9.0 N·m).

(g) Install the pins [8] in the nuts [7].

H. Outboard Aft Flap Adjustment

SUBTASK 27-51-22-480-001

(1) Install the rig pins, (rigging pin kit, SPL-1585) in the rig pin holes in the inboard and outboard bellcranks [12] and the flap carriages [10].

(a) If it is necessary, move the aft flap [2] or the main flap [1] until you can install the rig pins.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-22-220-001

(2) At the inboard and outboard ends of the aft flap [2], measure the mismatch between the trailing edge of the aft flap [2] and the main flap [1] (Views D and E) (Figure 402).

(a) If the trailing edge flaps are not fully retracted, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-22-820-002

(3) If the mismatch at the inboard and outboard ends of the aft flap [2] is not in the limit of 0.00 ±0.06 in. (0.00 ±1.52 mm), then adjust the length of the applicable rod [11] (Figure 401):

(a) Loosen the nuts [9] on the rod [11].

(b) If you cannot get access to the nuts [9], extend the aft flap [2]:

1) Remove the rig pins from the bellcranks [12] and the flap carriages [10].

2) Extend the aft flap [2], until you can get access to the nuts [9]. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(c) Turn the applicable rod [11] until the mismatch is in the limit at the inboard and outboard ends of the aft flap [2].

NOTE: For each 1/4 turn of the rod [11], the trailing edge of the aft flap [2] will move approximately 0.04 in. (1.02 mm).

(d) Tighten the nuts [9] on the rod [11].

(e) Install lockwire on the nut [9].

(f) If you extended the aft flap [2] to get access to the nuts [9], then do these steps:

1) Retract the aft flap [2] until you can install the rig pins in the bellcranks [12] and the flap carriages [10]. To retract the flap, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

2) Install the rig pins in the bellcranks [12] and the flap carriages [10].

(g) Make sure that the mismatch at the inboard and outboard ends of the aft flap [2] is in the limit.

SUBTASK 27-51-22-980-001

(4) Support the aft flap [2] to make sure that the rollers [21] touch the bottom surface of the programming tracks and the aft rollers for the four inner aft flap tracks touch the top surface of the tracks.

NOTE: This is the position the rollers will be in with airloads applied to the flap.

SUBTASK 27-51-22-220-002

(5) At the inboard and outboard ends of the aft flap [2], measure the vertical alignment at the trailing edge of the aft flap [2] and the main flap [1] (Views B-B and C-C) (Figure 402).

(a) If the vertical alignment of the trailing edge is not in the limit of 0.00 ±0.10 in. (0.00 ±2.54 mm), then adjust the roller [21] for the inboard or outboard programming tracks.

NOTE: If the trailing edge flaps are not fully retracted, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-22-220-003

(6) At the lower cove panels on the main flap [1], measure the mismatch between the aft flap [2] and the main flap [1] (View B)Figure 402.

(a) If the mismatch is not in the limit of 0.00 ±0.06 in. (0.00 ±1.52 mm), then adjust the rollers [21] for the inboard and outboard programming tracks.

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SUBTASK 27-51-22-820-003

(7) If it is necessary, adjust the rollers [21] for the applicable inboard and outboard programming tracks (Figure 401):

(a) If you cannot get the aft flap [2] vertical alignment and the lower surface mismatch in the limits, make sure that the vertical alignment is in the limit.

(b) Remove the rig pins from the bellcranks [12] and the flap carriages [10].

(c) Extend the aft flap [2], until you can get access to the rollers [21]. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(d) Remove the nut [24], washer [25] and washer [15] from the roller [21].

(e) Disengage the locking washer [16] from the locking washer [17].

(f) Turn eccentric bushing [19], until the vertical alignment and the lower surface mismatch are in the limits.

NOTE: If you turn the eccentric bushing [19] 90 degrees, it will move the trailing edge of the aft flap [2] approximately 0.05 in. (1.27 mm).

(g) Engage the locking washer [16] with locking washer [17].

(h) Install the washer [15], washer [25] and nut [24] on the roller [21].

(i) Tighten the nut [24] to 95 in-lb (11 N·m) to 110 in-lb (12 N·m).

(j) Bend the tabs of the washer [25] to hold the nut [24] in its position.

(k) Retract the aft flap [2] until you can install the rig pins in the bellcranks [12] and the flap carriages [10]. To retract the flap, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(l) Install the rig pins in the bellcranks [12] and the flap carriages [10].

(m) Make sure that the vertical alignment and the lower surface mismatch are in the limits.

SUBTASK 27-51-22-980-002

(8) Support the aft flap [2] to make sure that the rollers [21] touch the bottom surface of the programming tracks and the aft rollers for the aft flap tracks touch the top surface of the tracks.

NOTE: This is the position the rollers will be in with airloads applied to the aft flap [2].

SUBTASK 27-51-22-410-001

(9) Install the coverplate [22] for the outboard roller [21] on the main flap [1]:

(a) Put the coverplate [22] in its position on the main flap [1].

(b) Install the bolts [23] that attach the coverplate [22].

SUBTASK 27-51-22-220-004

(10) Measure the clearance between the main flap [1] and the upper surface of the aft flap [2] (View C) (Figure 402).

(a) Measure the clearance at all of the cove panel supports [51] and at the aft flap roller fittings [60].

(b) If the trailing edge flaps are not fully retracted, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-22-220-005

(11) Make sure that the rub strip [50] and teflon coating on the upper surface of the aft flap [2] are not damaged (View C) (Figure 402).

(a) If the rub strip [50] is damaged or missing, then do this task: Bonded Phenolic or Stainless Steel Rub Pad Repair (Heat Source Available), TASK 51-71-00-340-801.

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(b) If the teflon coating is damaged, then do this task: Apply The Abrasion-Resistant Teflon Finish, BMS 10-86 Type I, TASK 51-21-81-370-801.

SUBTASK 27-51-22-820-004

(12) If the clearance between the main flap [1] and the aft flap [2] is not in the limit of 0.0100 +0.1000 / -0.0050 in. (0.2540 +2.5400 / -0.1270 mm), then change the thickness of the shims [58] on the cove panel support [51] or the shims [59] on the aft flap roller fittings [60].

(a) Remove the rig pins from the bellcranks [12] and the flap carriages [10].

(b) Extend the aft flap [2], until you can get access to the fasteners for the shims [58] and shims [59]. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(c) If it is necessary, change the thickness of the shims [58] on the cove panel supports [51]:

1) Remove the nuts [57], washers [56] and bolts [55] that attach the cove panels [52] to the cove panel support [51].

2) Remove the shim [58] from the cove panel support [51] and the cove panel [52].

3) Change the thickness of the shim [58].

NOTE: The maximum permitted thickness of the shim [58] is 0.05 in. (1.27 mm).

4) Apply sealant, A00247 to the mating surfaces of the shim [58].

5) Put the shim [58] in its position between the cove panel support [51] and the cove panel [52].

6) Install the bolts [55], washers [56] and nuts [57].

(d) If it is necessary, change the thickness of the shims [59] on the aft flap roller fittings [60]:

1) Remove the nuts [63], washers [62] and bolts [61] that attach the cove panel [52] to the aft flap roller fitting [60].

2) Remove the shims [59] from the aft flap roller fitting [60] and the cove panel [52].

3) Change the thickness of the shims [59].

NOTE: The maximum permitted thickness of the shims [59] is 0.05 in. (1.27 mm).

4) Apply sealant, A00247 to the mating surfaces of the shims [59].

5) Put the shims [59] in their position between the aft flap roller fitting [60] and the cove panel [52].

6) Install the bolts [61], washers [62] and nuts [63].

7) If it is necessary, trim the excess shim [59] that extends past the aft flap roller fitting [60].

(e) Retract the aft flap [2] until you can install the rig pins in the bellcranks [12] and the flap carriages [10]. To retract the flap, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(f) Install the rig pins in the bellcranks [12] and the flap carriages [10].

(g) Make sure that the clearance between the main flap [1] and the upper surface of the aft flap [2] is in the limit.

SUBTASK 27-51-22-220-006

(13) Measure the deflection of the upper cove panel [52] of the main flap [1] at the inboard and outboard ends of the aft flap [2]:

NOTE: The aft flap [2] can push up on the upper cove panel [52] and cause the panel to deflect.

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(a) Make sure that the deflection is a maximum of 0.200 in. (5.08 mm).

SUBTASK 27-51-22-220-007

(14) Make sure that the seals on the aft lower surface of the main flap [1] are in the correct position:

(a) Measure the distance between the aft edge of the seal [54] and the seam on the lower surface of the aft flap [2] (View A-A).

NOTE: This distance is called DIMENSION Y.

(b) At the inboard end of the aft flap [2], make sure that DIMENSION Y is 5.76 ±0.10 in. (146.30 ±2.54 mm).

(c) At the inboard side of the inboard flap support, make sure that DIMENSION Y is 5.57 ±0.10 in. (141.48 ±2.54 mm).

(d) At the outboard side of the inboard flap support, make sure that DIMENSION Y is 5.46 ±0.10 in. (138.68 ±2.54 mm).

(e) At the inboard side of the outboard flap support, make sure that DIMENSION Y is 4.61 ±0.10 in. (117.09 ±2.54 mm).

(f) At the outboard side of the outboard flap support, make sure that DIMENSION Y is 4.46 ±0.10 in. (113.28 ±2.54 mm).

(g) At the outboard end of the aft flap, make sure that DIMENSION Y is 4.06 ±0.10 in. (103.12 ±2.54 mm).

SUBTASK 27-51-22-820-005

(15) If the position of the seals [54] are not in the limits, adjust the position of the seals [54]:

(a) Remove the rig pins from the bellcranks [12] and the flap carriages [10].

(b) Extend the aft aft flap [2], until you can get access to the fasteners for the seals [54]. To extend the flaps, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(c) Adjust the position of the applicable seal [54]:

1) Loosen the bolts [53] that attach the seal [54].

2) Move the seal [54] forward or aft.

3) Tighten the bolts [53].

(d) Retract the aft aft flap [2] until you can install the rig pins in the bellcranks [12] and the flap carriages [10]. To retract the flap, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

(e) Install the rig pins in the bellcranks [12] and the flap carriages [10].

(f) Make sure that the distance between the seals [54] and the aft flap [2] are in the limit.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-22-080-001

(1) Remove the rig pins from the bellcranks [12] and the flap carriages [10].

SUBTASK 27-51-22-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-22-410-002

(3) If the outboard support aft fairing removed, do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

SUBTASK 27-51-22-410-003

(4) If the inboard support aft fairing removed, do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

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SUBTASK 27-51-22-410-004

(5) If it is open, close the access panels:

(a) Close these access panels:

(TASK 27-51-28-400-803)

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

(b) Close these access panels:

(TASK 27-51-28-400-805)

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

SUBTASK 27-51-22-860-002

(6) Retract the trailing edge flaps to the retracted position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

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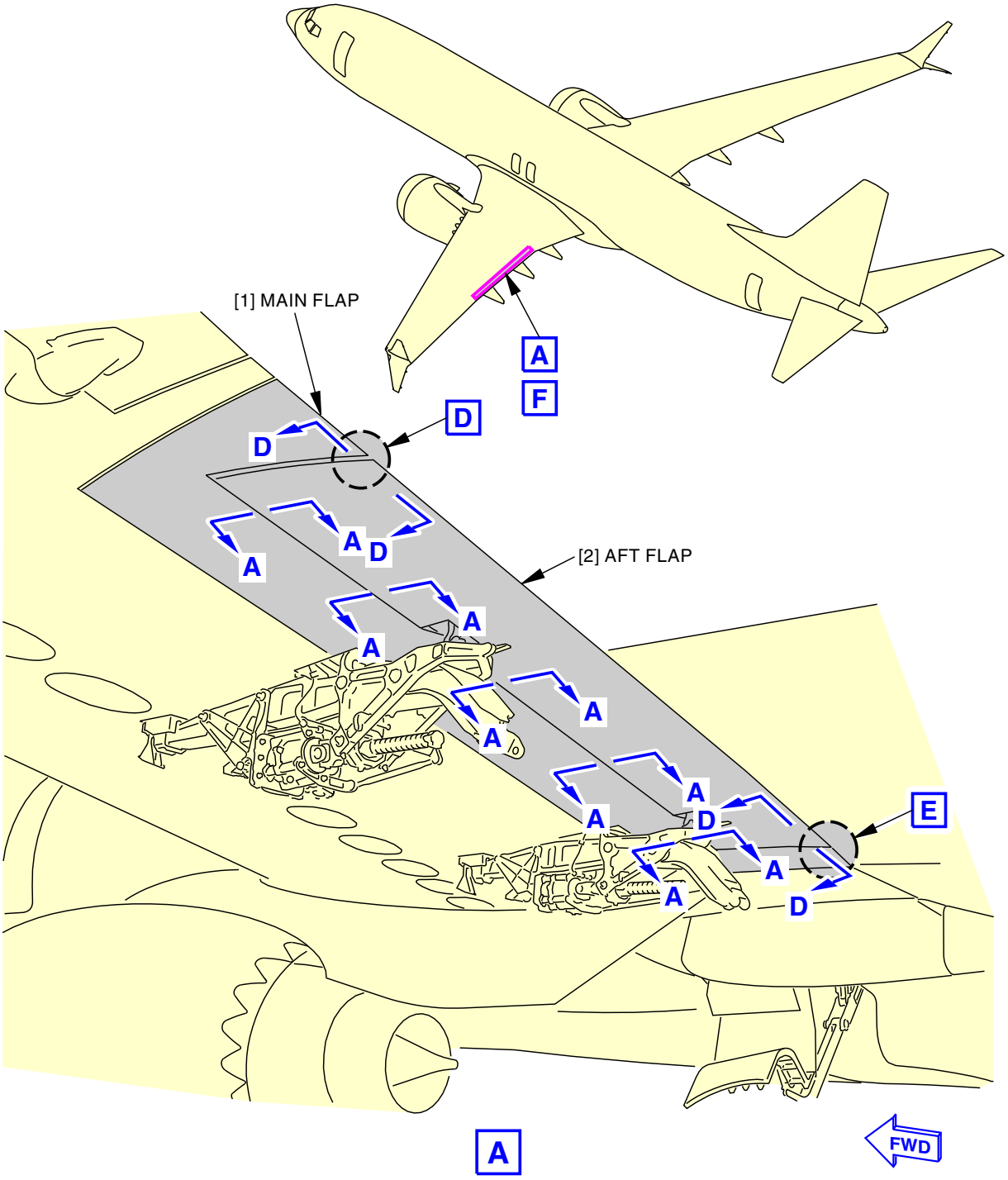

Outboard Aft Flap Adjustment
Figure 402/27-51-22-990-802 (Sheet 1 of 4)

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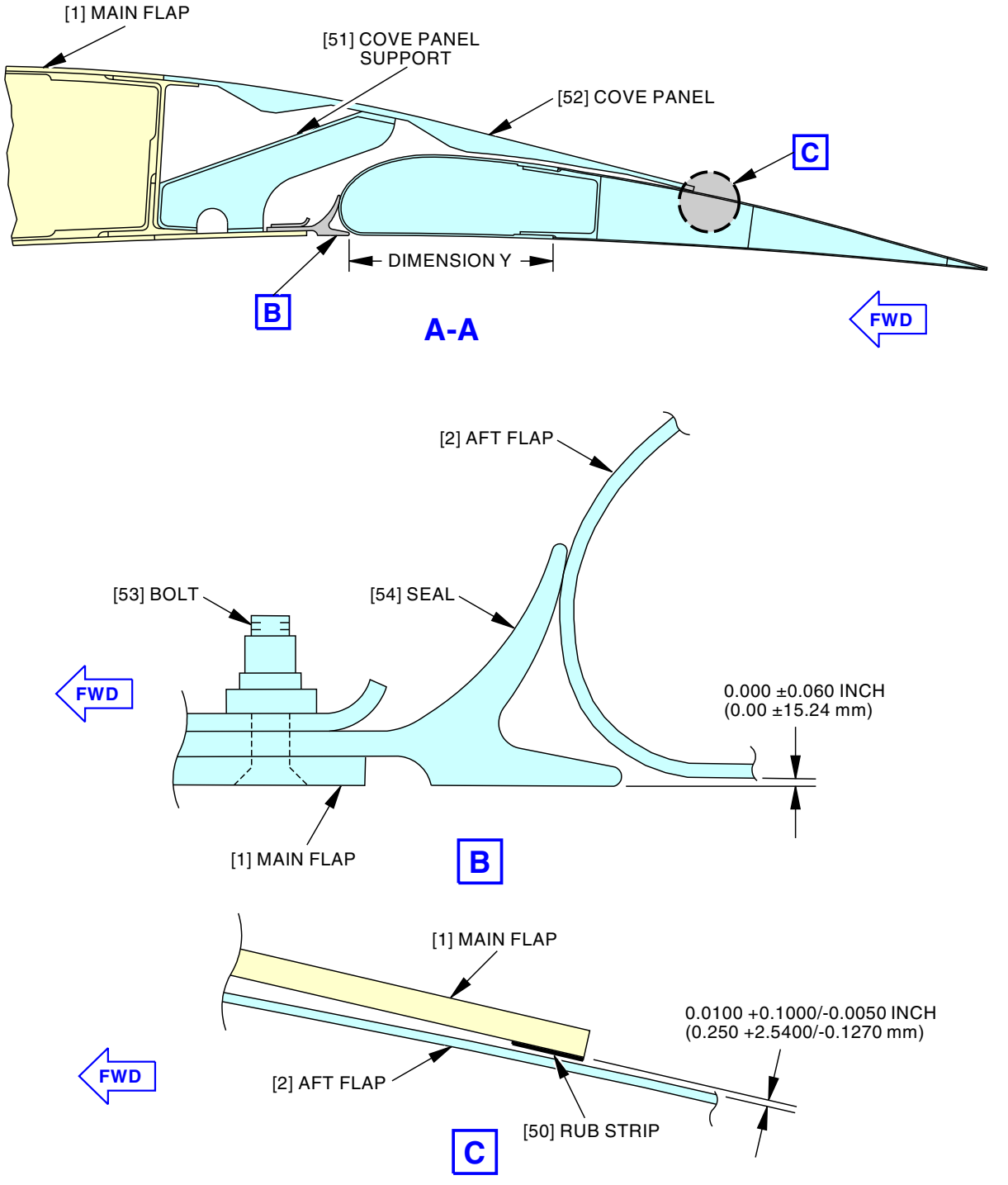
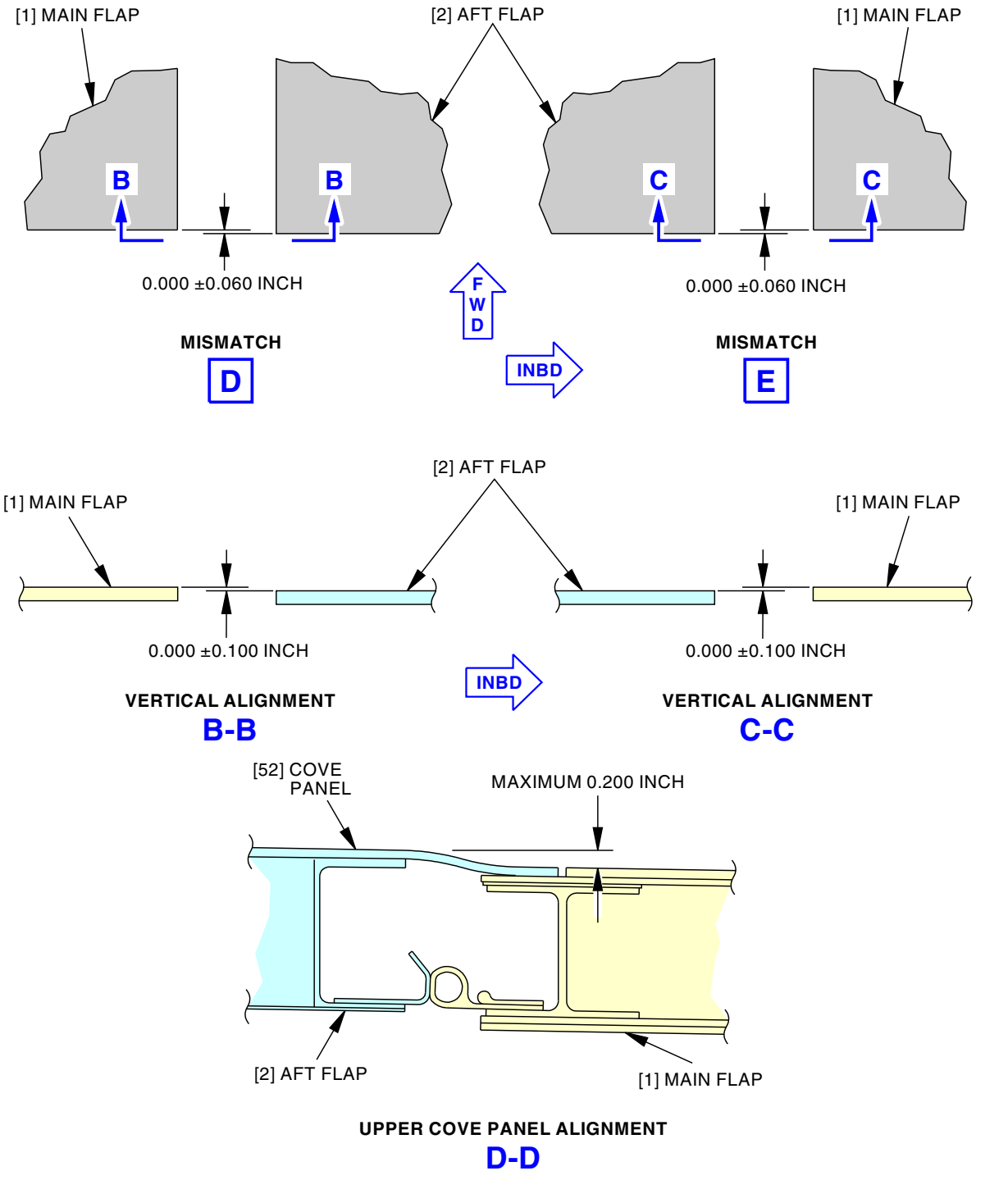


Outboard Aft Flap Adjustment
Figure 402/27-51-22-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Aft Flap Adjustment
Figure 402/27-51-22-990-802 (Sheet 3 of 4)

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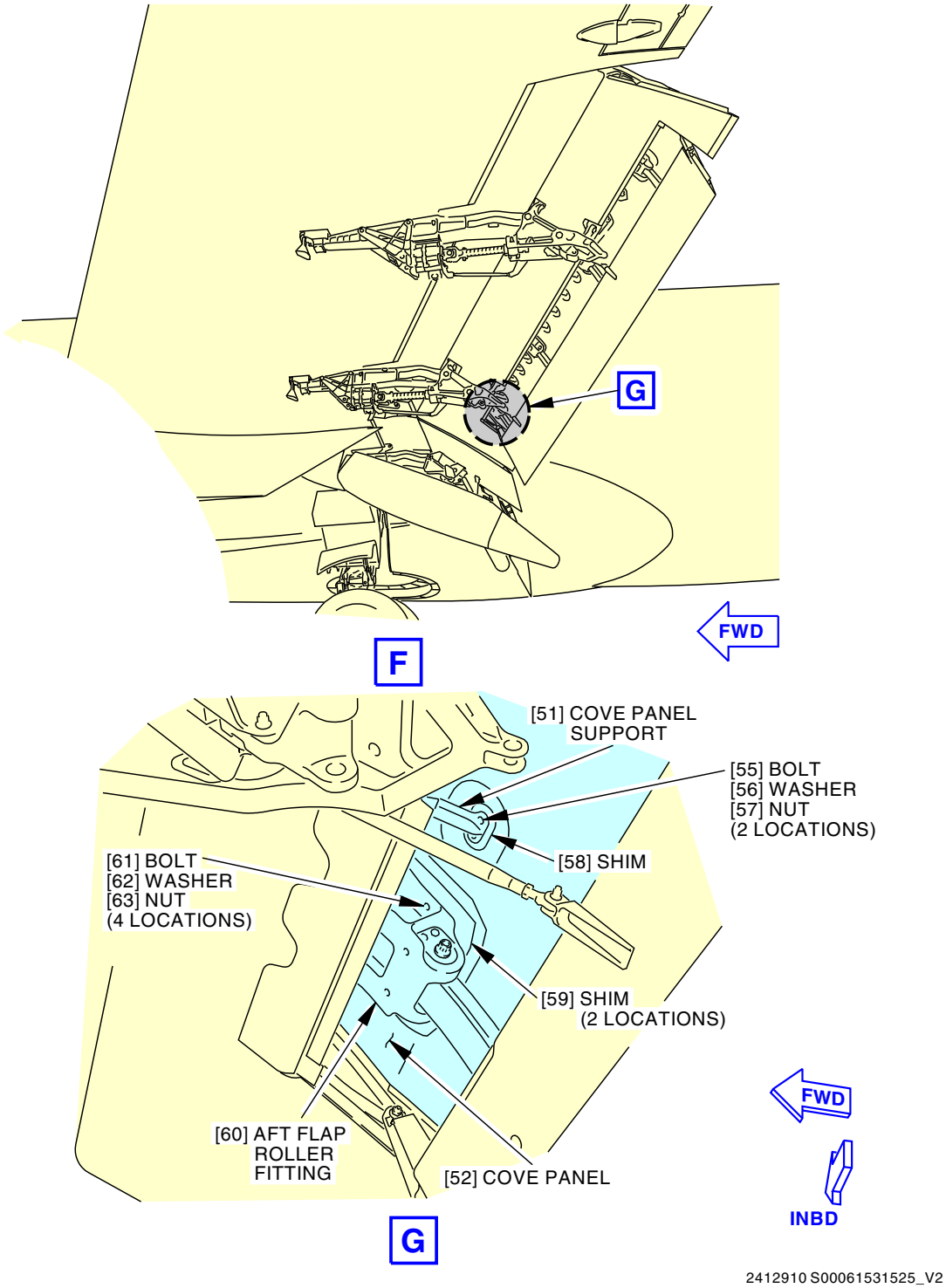

Outboard Aft Flap Adjustment
Figure 402/27-51-22-990-802 (Sheet 4 of 4)

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OUTBOARD AFT FLAP - INSPECTION/CHECK

1. General

A. This procedure contains a task to do an inspection of the attachment points for the outboard aft flap. The attachment points are the aft flap drive rods and the aft flap tracks.

TASK 27-51-22-200-801

2. Outboard Aft Flap Inspection

(Figure 601)

A. References

Reference	Title
27-51-22-000-801	Outboard Aft Flap Removal (P/B 401)
27-51-22-400-801	Outboard Aft Flap Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

C. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

D. Procedure

SUBTASK 27-51-22-020-003

(1) Do this task: Outboard Aft Flap Removal, TASK 27-51-22-000-801.

SUBTASK 27-51-22-020-004

(2) Use these tools to do a check for wear on the part of the outboard aft flap:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-22-020-005

(3) Examine the parts of the outboard aft flap (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 601/27-51-22-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	0.2500 in	0.2505 in	0.2505 in	

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Table 601/27-51-22-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
		6.3500 mm	6.3627 mm	6.3627 mm	0.0015 in
#1 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0381 mm
#2 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5102 mm	0.0016 in
#2 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	0.0406 mm
#3 ROD END	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in
#3 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0254 mm
#4 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2506 in 6.3652 mm	0.2506 in 6.3652 mm	0.0016 in
#4 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0406 mm
#5 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in
#5 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0381 mm
#6 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5402 mm	0.0016 in
#6 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	0.0406 mm
#7 ROD END	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-51-22-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#7 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0254 mm
#8 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in
#8 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0381 mm
#9 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2515 in 6.3881 mm	0.0040 in
#9 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	0.1016 mm
#10 TRACK	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2515 in 6.3881 mm	0.0040 in
#10 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	0.1016 mm
#11 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3765 in 9.5631 mm	0.0040 in
#11 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3725 in 9.4615 mm	0.1016 mm
#12 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2515 in 6.3881 mm	0.0040 in
#12 BOLT	O.D.	0.2485 in 6.3119 mm	0.2495 in 6.3373 mm	0.2475 in 6.2865 mm	0.1016 mm
#13 BUSHING	I.D.	0.3125 in 7.9375 mm	0.3131 in 7.9527 mm	0.3146 in 7.9908 mm	0.0050 in
#13 BOLT	O.D.	0.3110 in	0.3120 in	0.3095 in	0.1270 mm

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Table 601/27-51-22-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
		7.8994 mm	7.9248 mm	7.8613 mm	
#14 TRACK	I.D.	0.3125 in 7.9375 mm	0.3130 in 7.9502 mm	0.3146 in 7.9908 mm	0.0050 in
#14 BOLT	O.D.	0.3110 in 7.8994 mm	0.3120 in 7.9248 mm	0.3095 in 7.8613 mm	0.1270 mm
#15 BUSHING	I.D.	0.4375 in 11.113 mm	0.4382 in 11.130 mm	0.4392 in 11.1557 mm	0.0040 in
#15 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.100 mm	0.4350 in 11.0490 mm	0.1016 mm
#16 BUSHING	I.D.	0.3125 in 7.9375 mm	0.3130 in 7.9502 mm	0.3145 in 7.9908 mm	0.0050 in
#16 BOLT	O.D.	0.3110 in 7.8994 mm	0.3120 in 7.9248 mm	0.3095 in 7.8613 mm	0.1270 mm
#17 BUSHING	I.D.	0.3125 in 7.9375 mm	0.3131 in 7.9527 mm	0.3146 in 7.9908 mm	0.0050 in
#17 BOLT	O.D.	0.3110 in 7.8994 mm	0.3120 in 7.9248 mm	0.3095 in 7.8613 mm	0.1270 mm
#18 TRACK	I.D.	0.3125 in 7.9375 mm	0.3130 in 7.9502 mm	0.3170 in 8.0518 mm	0.0050 in
#18 BOLT	O.D.	0.3110 in 7.8994 mm	0.3120 in 7.9248 mm	0.3080 in 7.8232 mm	0.1270 mm
#19 BUSHING	I.D.	0.4375 in 11.113 mm	0.4382 in 11.130 mm	0.4392 in 11.1557 mm	0.0040 in
#19 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.100 mm	0.4350 in 11.0490 mm	0.1016 mm

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Table 601/27-51-22-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#20 BUSHING	I.D.	0.3125 in 7.9375 mm	0.3130 in 7.9502 mm	0.3145 in 7.9908 mm	0.0050 in 0.1270 mm
#20 BOLT	O.D.	0.3110 in 7.8994 mm	0.3120 in 7.9248 mm	0.3095 in 7.8613 mm	

SUBTASK 27-51-22-420-004

(4) Do this task: Outboard Aft Flap Installation, TASK 27-51-22-400-801.

——— END OF TASK ———

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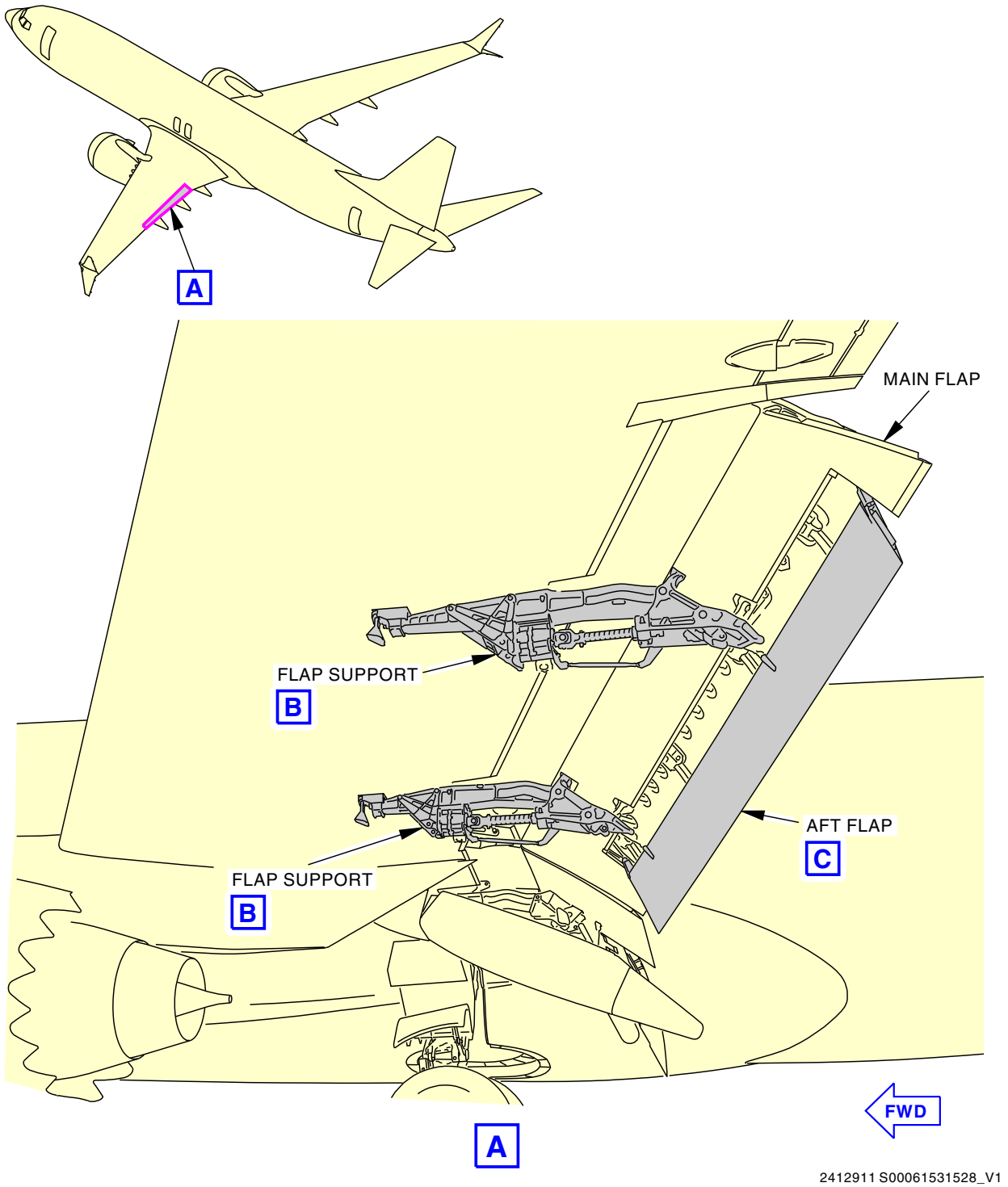
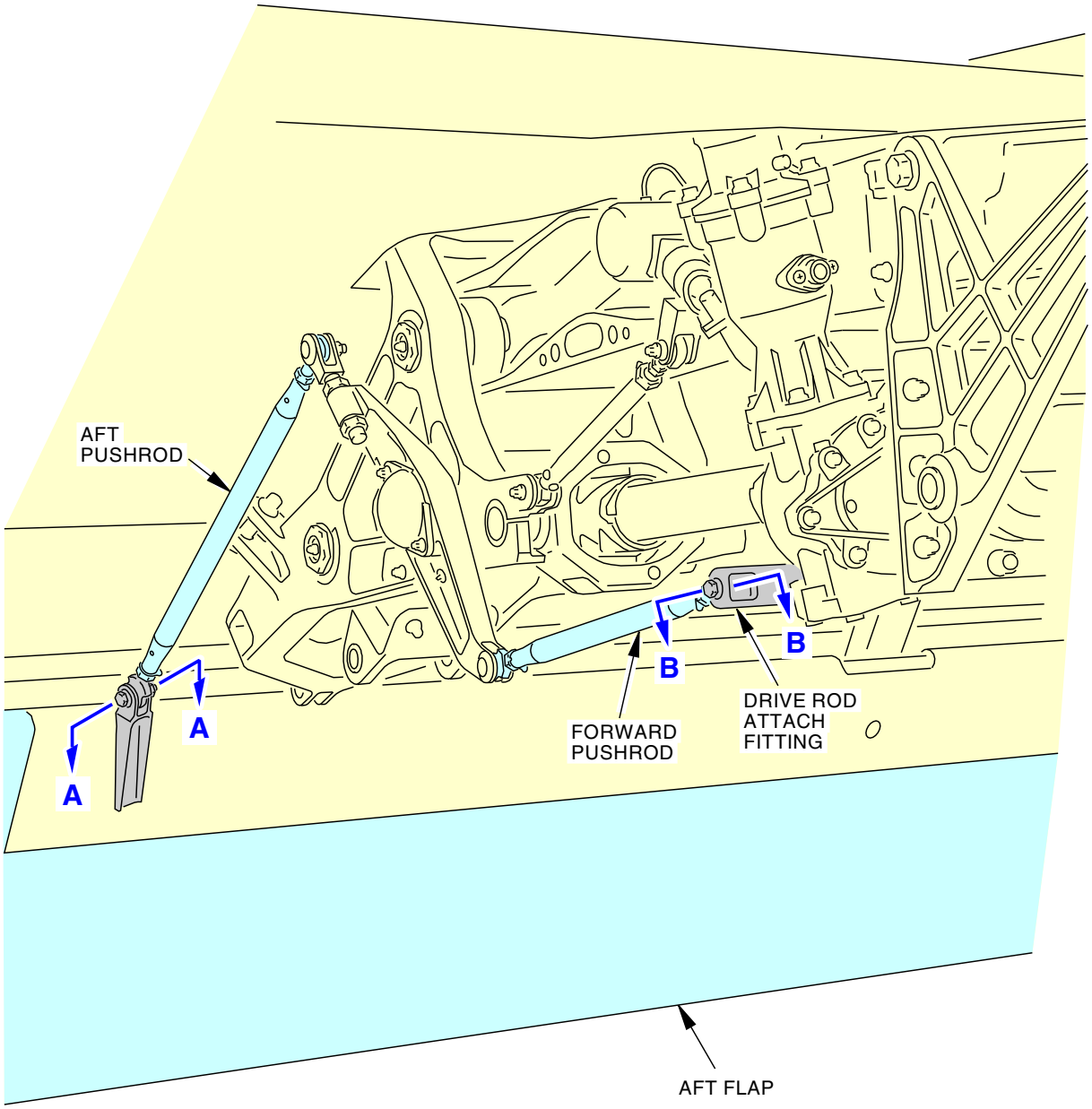


Outboard Aft Flap Inspection
Figure 601/27-51-22-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Inspection
Figure 601/27-51-22-990-803 (Sheet 2 of 4)

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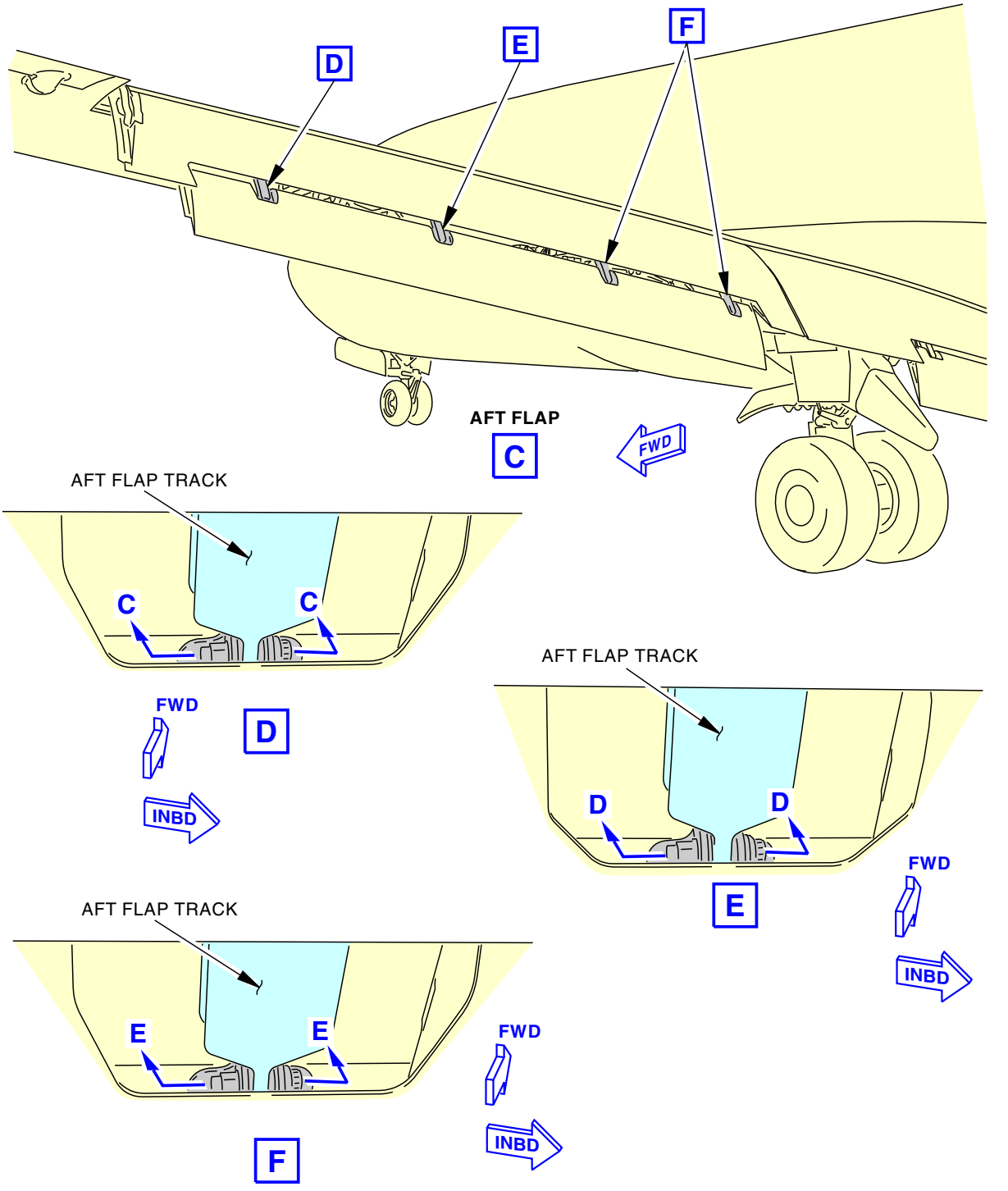
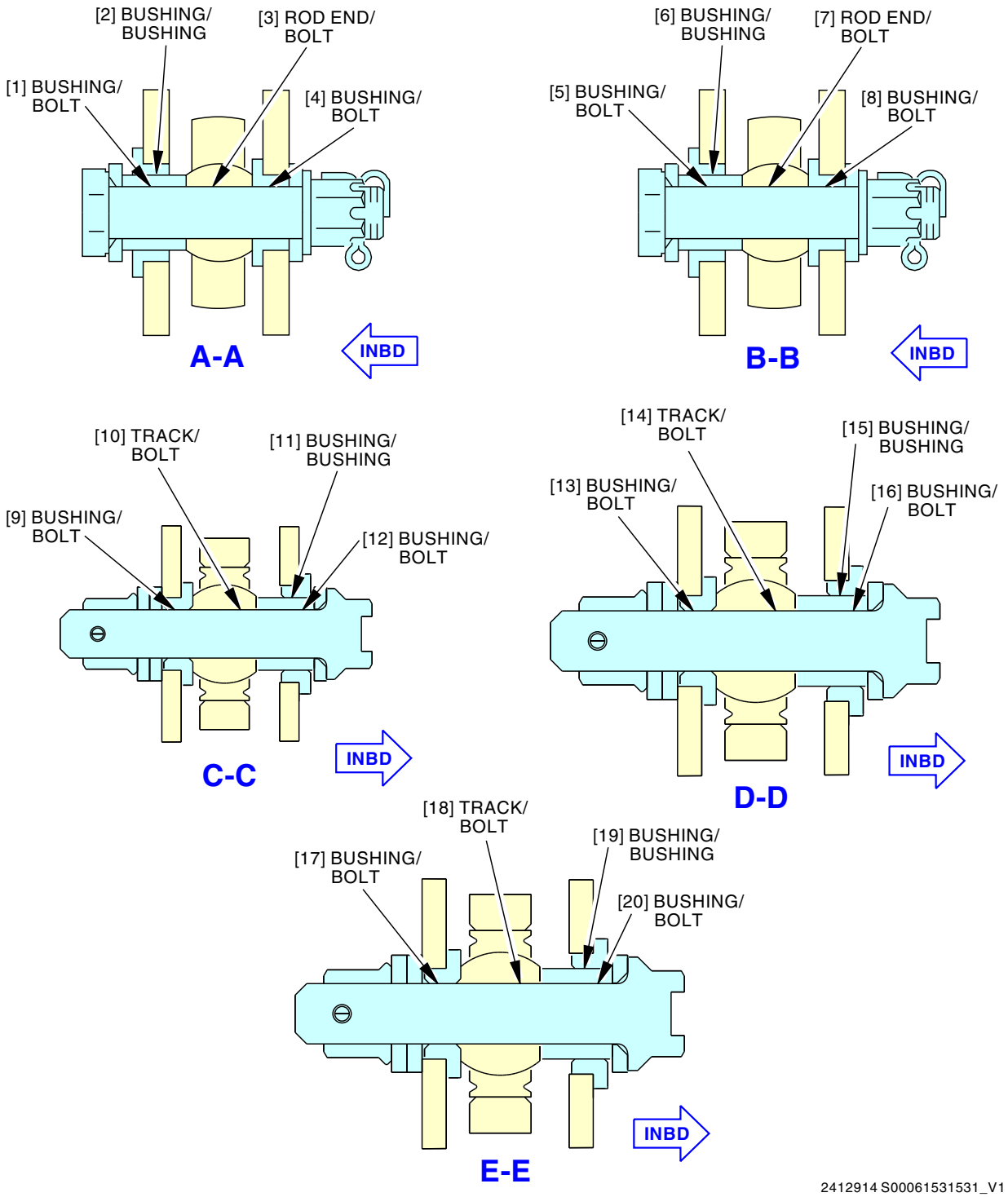


Outboard Aft Flap Inspection
Figure 601/27-51-22-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Inspection
Figure 601/27-51-22-990-803 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP CARRIAGES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the outboard carriage for the outboard flap

(2) An installation of the outboard carriage for the outboard flap

(3) A removal of the inboard carriage for the outboard flap

(4) An installation of the inboard carriage for the outboard flap.

TASK 27-51-23-000-801

2. Outboard Flap Carriage Removal (Selection)

A. Procedure

SUBTASK 27-51-23-000-001

(1) Do one of these tasks to remove the applicable outboard flap carriage:

(a) Do this task:Outboard Flap Outboard Carriage Removal, TASK 27-51-23-000-802.

(b) Do this task:Outboard Flap Inboard Carriage Removal, TASK 27-51-23-000-803.

——— END OF TASK ———

TASK 27-51-23-400-801

3. Outboard Flap Carriage Installation (Selection)

A. Procedure

SUBTASK 27-51-23-400-001

(1) Do one of these tasks to install the applicable outboard flap carriage:

(a) Do this task:Outboard Flap Outboard Carriage Installation, TASK 27-51-23-400-802.

(b) Do this task:Outboard Flap Inboard Carriage Installation, TASK 27-51-23-400-803.

——— END OF TASK ———

TASK 27-51-23-000-802

4. Outboard Flap Outboard Carriage Removal

(Figure 401)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-21-000-801	Outboard Trailing Edge Flap Removal (P/B 401)

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Removal

SUBTASK 27-51-23-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-23-020-001

(2) Do this task: Outboard Trailing Edge Flap Removal, TASK 27-51-21-000-801.

E. Outboard Flap Outboard Carriage Removal

SUBTASK 27-51-23-020-002

(1) Remove the pin [14], nut [13], washer [12], washer [10], bolt [9], and bushing [11] that attach the aft flap pushrod [16] to the aft flap [3].

SUBTASK 27-51-23-020-003

(2) Remove the bellcrank [19] from the carriage assembly [1]:

NOTE: You can remove the aft flap drive rod and aft flap pushrod with the bellcrank.

(a) Remove the nuts [28], washers [27], bolt [20], and bolt [26] that attach the rubcap [17] to the bellcrank [19].

(b) Remove the pin [25], nut [24], washer [23], washer [22], and bolt [21] that attach the bellcrank [19] to the carriage assembly [1].

(c) Measure and record the distance between the center of the bolt hole in the adjustment fitting [54] and bellcrank [19].

NOTE: This distance is referred to as Dimension A. This dimension will be used during the installation of the bellcrank.

SUBTASK 27-51-23-980-001

(3) Manually extend the aft flap [3] away from the main flap [2].

SUBTASK 27-51-23-010-001

(4) Remove the leading edge skin panel [33] from the main flap [2] forward of the carriage assembly [1]:

(a) Remove the bolts [34] that attach the leading edge skin panel [33].

(b) Remove the leading edge skin panel [33] from the main flap [2].

SUBTASK 27-51-23-020-004

(5) Remove the pin [8], nut [7], washers [6], washer [5], and bolt [4] that attach the failsafe link [15] to the carriage assembly [1].

(a) Move the failsafe link [15] away from the carriage assembly [1].

SUBTASK 27-51-23-020-005

(6) Remove the carriage assembly [1] from the main flap [2]:

(a) Remove the pin [53], nut [52], washers [51], bushing [50], washer [49], and bolt [48] that attach the aft link [35] to the aft link fitting [47].

(b) Remove the pin [38], nut [36], and washer [37] that attach the aft link [35] to the main flap [2].

(c) Remove the aft link [35] from the aft link fitting [47] and main flap [2].

(d) Remove the pin [32], nut [30], and washer [31] that attach the forward end of the carriage assembly [1] to the main flap [2].

(e) Move the carriage assembly [1] forward, away from the main flap [2].

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SUBTASK 27-51-23-020-006

(7) If it is necessary, remove the pin [45], nut [42], washer [43], and washer [44] that attach the failsafe link [15] to the main flap [2].

SUBTASK 27-51-23-020-007

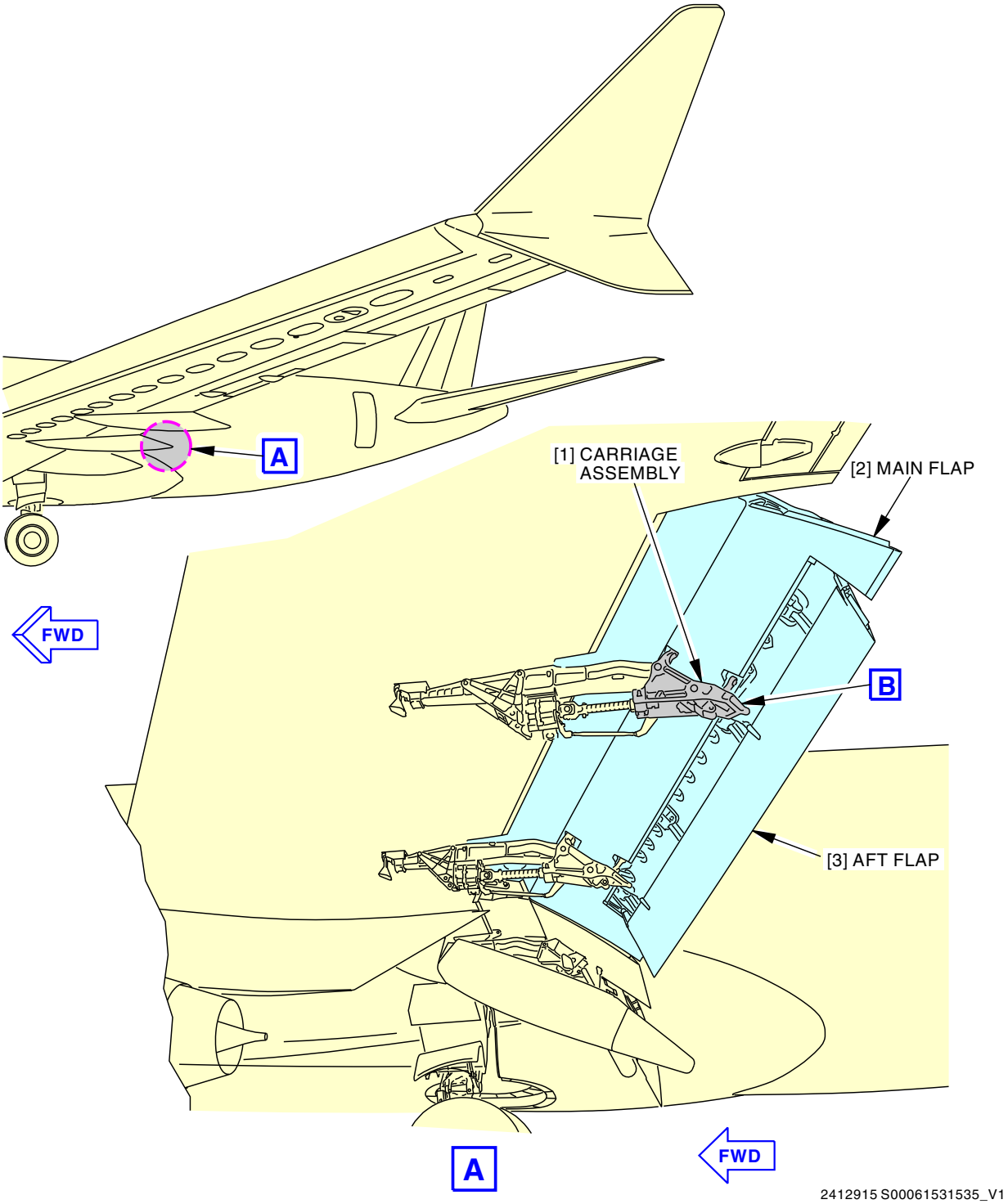
(8) If it is necessary, remove the aft link fitting [47] from the carriage assembly [1]:

(a) Remove the nuts [41], washers [40], and bolts [39] that attach the aft link fitting [47] to the carriage assembly [1].

(b) Measure and record the thickness of the shims [46].

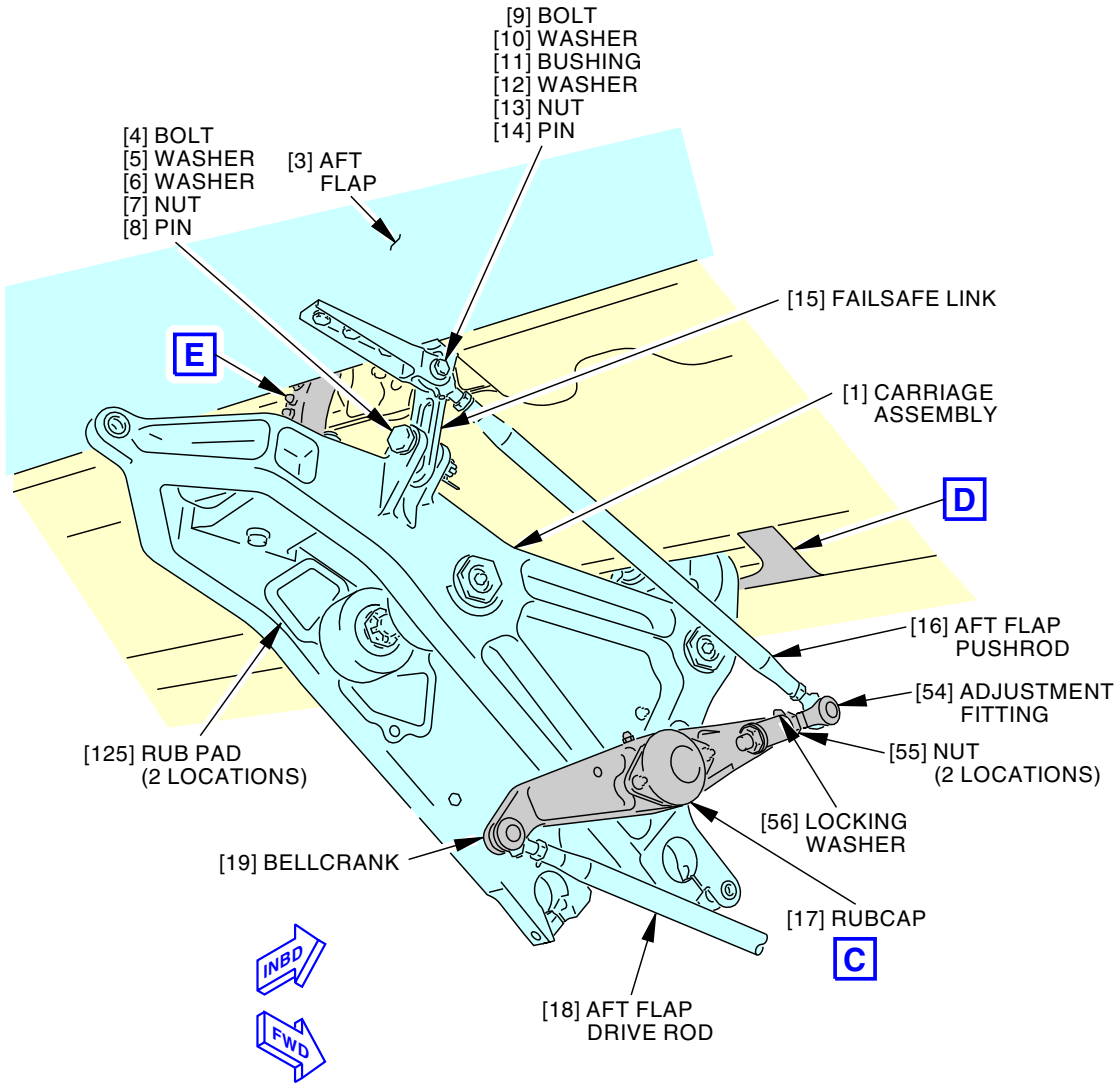
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Carriage Installation
Figure 401/27-51-23-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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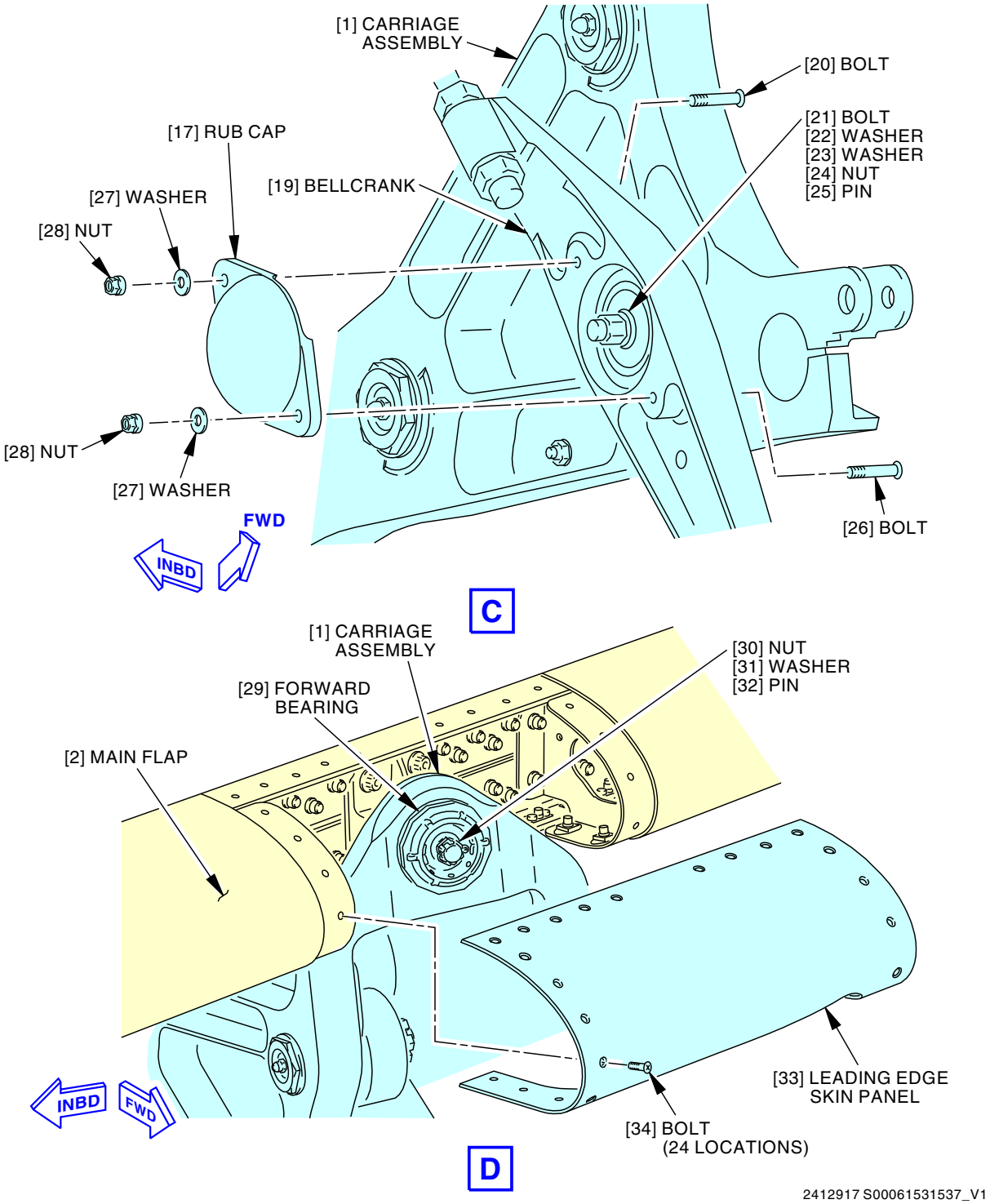
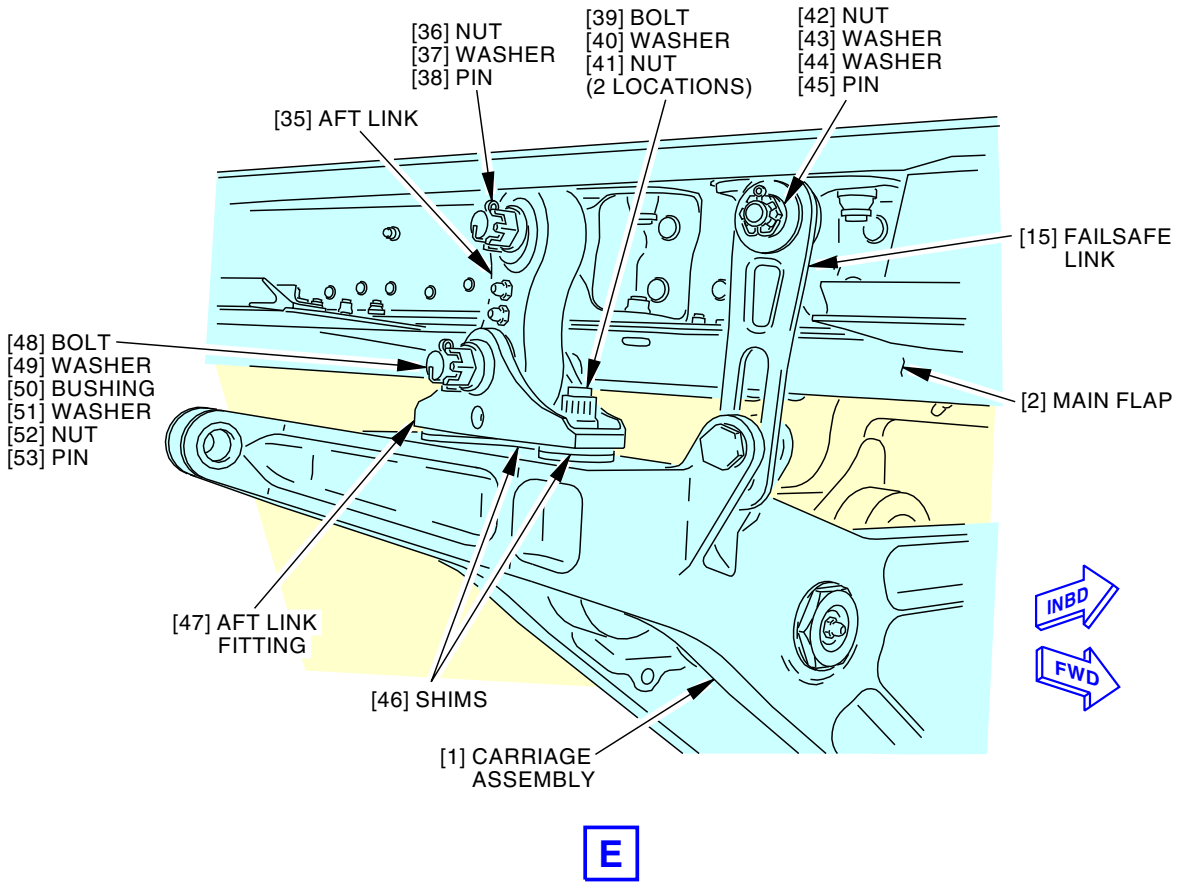
Outboard Flap Outboard Carriage Installation
Figure 401/27-51-23-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Carriage Installation
Figure 401/27-51-23-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Flap Outboard Carriage Installation
Figure 401/27-51-23-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-23-400-802

5. Outboard Flap Outboard Carriage Installation

(Figure 401)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-21-400-801	Outboard Trailing Edge Flap Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50356	Lockwire - MS20995C47, Corrosion Resistant Steel - 0.047 Inch (1.1938 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Carriage assembly	27-51-23-20-080	SIA ALL
		27-51-23-20-085	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

F. Outboard Flap Outboard Carriage Installation

SUBTASK 27-51-23-020-024

(1) Inspect the rub pads [125] for wear.

(a) If the rub pads [125] are worn greater than 50%, the rub pads [125] will need to be replaced.

SUBTASK 27-51-23-020-008

(2) If it is installed, remove the aft link [35] from the carriage assembly [1].

(a) Remove the pin [53], nut [52], washers [51], bushing [50], washer [49], and bolt [48] that attach the aft link [35] to the aft link fitting [47].

SUBTASK 27-51-23-420-001

(3) If it is not installed, install the aft link fitting [47] on the carriage assembly [1]:

(a) Apply sealant, A00247, to the mating surfaces of the shims [46].

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(b) Put the shims [46] in their location between the aft link fitting [47] and carriage assembly [1].

1) Use the same thickness of shims that were removed.

NOTE: The maximum total thickness of the shims is 0.5 in. (12.7 mm). The minimum total thickness of the shims is 0.0 in. (0.0 mm).

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [39].

(d) Install the bolts [39], washers [40], and nuts [41] to attach the aft link fitting [47] to the carriage assembly [1].

SUBTASK 27-51-23-420-002

(4) Install the outboard carriage assembly [1] on the main flap [2]:

(a) Put the carriage assembly [1] in its location on the main flap [2], with the forward spindle on the main flap [2] through the forward bearing [29].

(b) Install the washer [31] and nut [30] that attach the forward end of the carriage assembly [1] to the main flap [2].

(c) Tighten the nut [30] to 440 in-lb (50 N·m) - 650 in-lb (73 N·m).

(d) Install the pin [32] in the nut [30].

(e) Install the aft link [35] on the main flap [2] and aft link fitting [47]:

1) Put the aft link [35] in its position on the main flap [2].

a) Make sure that the lubrication fittings on the aft link [35] are on the aft side.

2) Install the bolt [48], washer [49], bushing [50], washers [51], and nut [52] that attach the aft link [35] to the aft link fitting [47].

3) Install the pin [53] in the nut [52].

4) Install the washer [37] and nut [36] that attach the aft link [35] to the main flap [2].

5) Tighten the nut [36] to 700 in-lb (79 N·m) - 920 in-lb (104 N·m).

6) Install the pin [38] in the nut [36].

SUBTASK 27-51-23-420-003

(5) If it is not installed, install the failsafe link [15] on the main flap [2]:

(a) Put the failsafe link [15] in its position on the main flap [2].

1) Make sure that the slot on the failsafe link [15] is down.

(b) Install the washer [44], washer [43], and nut [42] to attach the failsafe link [15] to the main flap [2].

NOTE: Additional washers may be needed, up to a maximum of three to get the proper alignment of the pin [45] to the nut [42].

(c) Tighten the nut [42] to 220 in-lb (25 N·m) - 280 in-lb (32 N·m).

(d) Install the cotter pin [45] in the nut [42].

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SUBTASK 27-51-23-420-004

(6) Connect the failsafe link [15] to the carriage assembly [1]:

(a) Apply compound, C00528, to the holes in the carriage assembly [1] for the bolt [4].

(b) Install the bolt [4], washer [5], washers [6], and nut [7] that connect the failsafe link [15] to the carriage assembly [1].

NOTE: Bold direction is optional, bolt head forward is preferred.

(c) Tighten the nut [7].

1) Measure the self locking torque value and continue to torque the nut [7] until a sharp increase of 11 ±1 in-lb (1 ±0 N·m) above that value.

2) If it is necessary to align the nearest cotter pin slot, loosen the nut [7].

(d) Install the pin [8] in the nut [7].

SUBTASK 27-51-23-410-001

(7) Install the leading edge skin panel [33] on the main flap [2] forward of the carriage assembly [1]:

(a) Put the leading edge skin panel [33] in its location on the leading edge of the main flap [2].

(b) Apply compound, C00528, to the holes for the bolts [34].

(c) Install the bolts [34] to attach the leading edge skin panel [33].

(d) Apply sealant, A00247, to fill all of the clearances around the leading edge skin panel [33] that are more than 0.05 in. (1.27 mm).

SUBTASK 27-51-23-420-005

(8) Install the bellcrank [19] on the carriage assembly [1]:

(a) Make sure that the bellcrank [19] is the correct length:

NOTE: The length of the bellcrank can be changed to adjust for lateral trim problems.

1) Measure the distance between the center of the bolt hole in the adjustment fitting [54] and bellcrank [19].

NOTE: This distance is referred to as Dimension A.

2) Make sure that the Dimension A on the bellcrank [19] you will install is the same as the bellcrank [19] that you removed.

NOTE: The nominal dimension of the outboard bellcrank is 13.74 in. (349.00 mm).

3) If the bellcrank [19] is not the correct length, adjust the bellcrank [19]:

a) Loosen the nuts [55] on the adjustment fitting [54] until the locking washer [56] is disengaged from the bellcrank [19].

b) Change the position of the adjustment fitting [54].

c) Engage the locking washer [56] with the bellcrank [19].

d) Tighten the nuts [55] on the adjustment fitting [54].

e) Install MS20995C47 lockwire, G50356, on the nuts [55].

(b) Apply grease, D00633, to the shank of the bolt [21].

1) Make sure that you do not get grease, D00633, on the threads of the bolt [21].

(c) Put the bellcrank [19] in its position on the carriage assembly [1].

(d) Install the bolt [21] and washer [22] that attach the bellcrank [19] to the carriage assembly [1].

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(e) Carefully clean all of grease, D00633, from the threads of the bolt [21].

(f) Install the nut [24] and washer [23] on the bolt [21].

(g) Tighten the nut [24] to 1100 in-lb (124 N·m) - 1500 in-lb (169 N·m).

(h) Install the pin [25] in the nut [24].

(i) Attach the rubcap [17] to the bellcrank [19] with the bolt [20], bolt [26], washers [27], and nuts [28].

SUBTASK 27-51-23-420-006

(9) Connect the aft flap pushrod [16] to the aft flap [3]:

(a) Apply grease, D00633, to the shank of the bolt [9] and inside of the bushing [11].

1) Make sure that you do not get grease, D00633, on the threads of the bolt [9].

(b) Install the bushing [11], bolt [9], and washer [10] to attach the aft flap pushrod [16] to the aft flap [3].

1) Make sure that the head of the bolt [9] is inboard.

(c) Carefully clean all of grease, D00633, from the threads of the bolt [9].

(d) Install the nut [13] and washer [12] on the bolt [9].

(e) Tighten the nut [13] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).

(f) Install the pin [14] in the nut [13].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-23-420-007

(1) Do this task: Outboard Trailing Edge Flap Installation, TASK 27-51-21-400-801.

SUBTASK 27-51-23-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK

TASK 27-51-23-000-803

6. Outboard Flap Inboard Carriage Removal

(Figure 402)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-21-000-801	Outboard Trailing Edge Flap Removal (P/B 401)

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-23-040-002

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

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SUBTASK 27-51-23-020-009

(2) Do this task: Outboard Trailing Edge Flap Removal, TASK 27-51-21-000-801.

E. Outboard Flap Inboard Carriage Removal

SUBTASK 27-51-23-020-010

(1) Remove the pin [82], nut [81], washer [80], washer [78], bolt [77], and bushing [79] that attach the aft flap pushrod [84] to the aft flap [3].

SUBTASK 27-51-23-020-011

(2) Remove the bellcrank [85] from the carriage assembly [71]:

NOTE: You can remove the aft flap drive rod and aft flap pushrod with the bellcrank.

(a) Remove the nuts [96], washers [95], bolt [88], and bolt [94] that attach the rubcap [86] to the bellcrank [85].

(b) Remove the pin [93], nut [92], washer [91], washer [90], and bolt [89] that attach the bellcrank [85] to the carriage assembly [71].

(c) Measure and record the distance between the center of the bolt hole in the adjustment fitting [122] and bellcrank [85].

NOTE: This distance is referred to as Dimension A. This dimension will be used during the installation of the bellcrank.

SUBTASK 27-51-23-980-002

(3) Manually extend the aft flap [3] away from the main flap [2].

SUBTASK 27-51-23-010-002

(4) Remove the leading edge skin panel [100] from the main flap [2] forward of the carriage assembly [71]:

(a) Remove the bolts [101] that attach the leading edge skin panel [100].

(b) Remove the leading edge skin panel [100] from the main flap [2].

SUBTASK 27-51-23-020-012

(5) Remove the nut [75], washer [74], washer [73], and bolt [72] that attach the failsafe link [83] to the carriage assembly [71].

(a) Move the failsafe link [83] away from the carriage assembly [71].

SUBTASK 27-51-23-020-013

(6) Remove the carriage assembly [71] from the main flap [2]:

(a) Remove the pin [121], nut [120], washers [119], bushing [118], washer [117], and bolt [116] that attach the aft link [103] to the aft link fitting [115].

(b) Remove the pin [106], nut [104], and washer [105] that attach the aft link [103] to the main flap [2].

(c) Remove the aft link [103] from the aft link fitting [115] and main flap [2].

(d) Remove the pin [99], nut [97], and washer [98] that attach the forward end of the carriage assembly [71] to the main flap [2].

(e) Move the carriage assembly [71] forward, away from the main flap [2].

SUBTASK 27-51-23-020-014

(7) If it is necessary, remove the pin [110], nut [107], washer [108], and washer [109] that attach the failsafe link [83] to the main flap [2].

SUBTASK 27-51-23-020-015

(8) If it is necessary, remove the aft link fitting [115] from the carriage assembly [71]:

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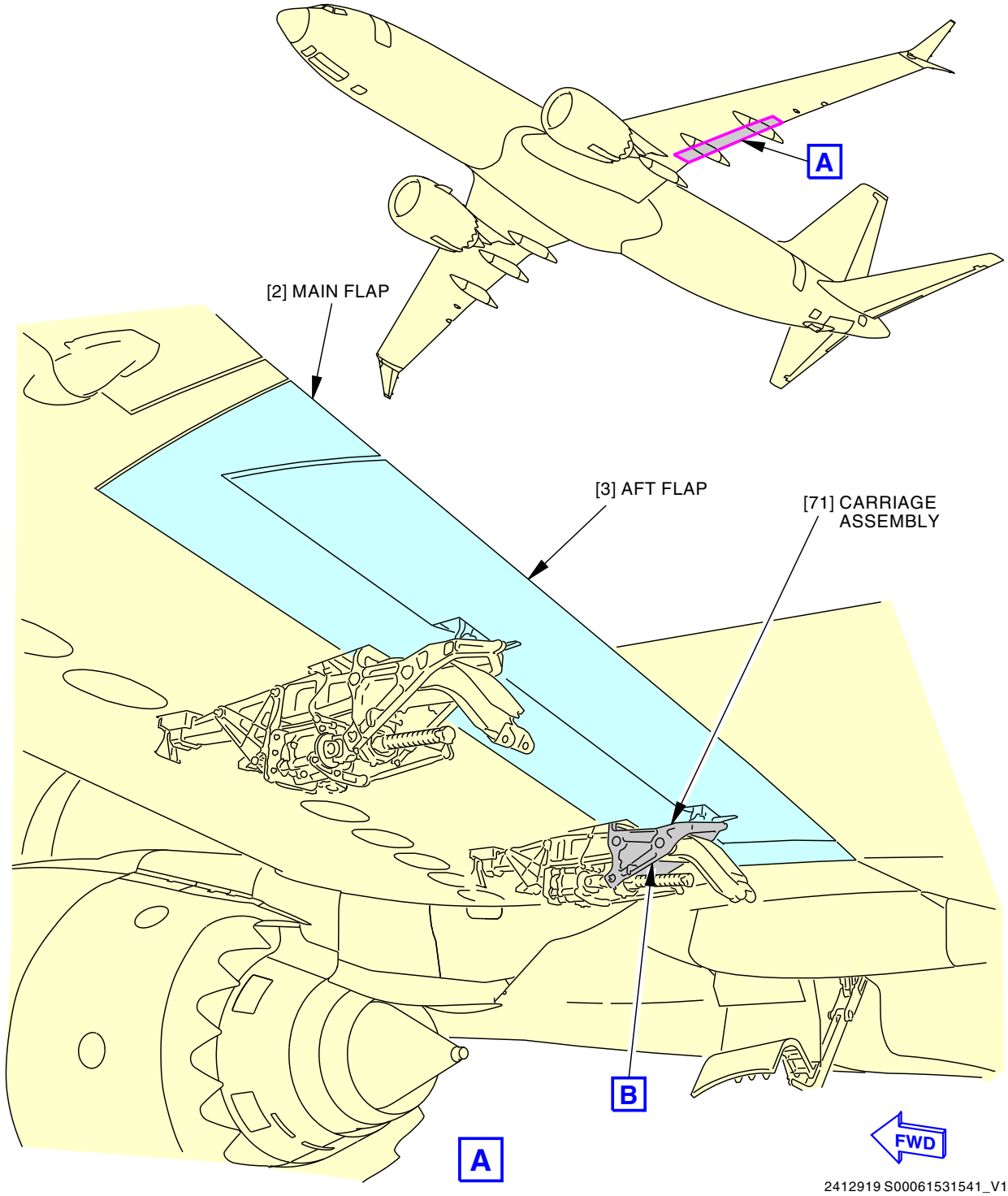
(a) Remove the nuts [113], washers [112], and bolts [111] that attach the aft link fitting [115] to the carriage assembly [71].

(b) Measure and record the thickness of the shims [114].

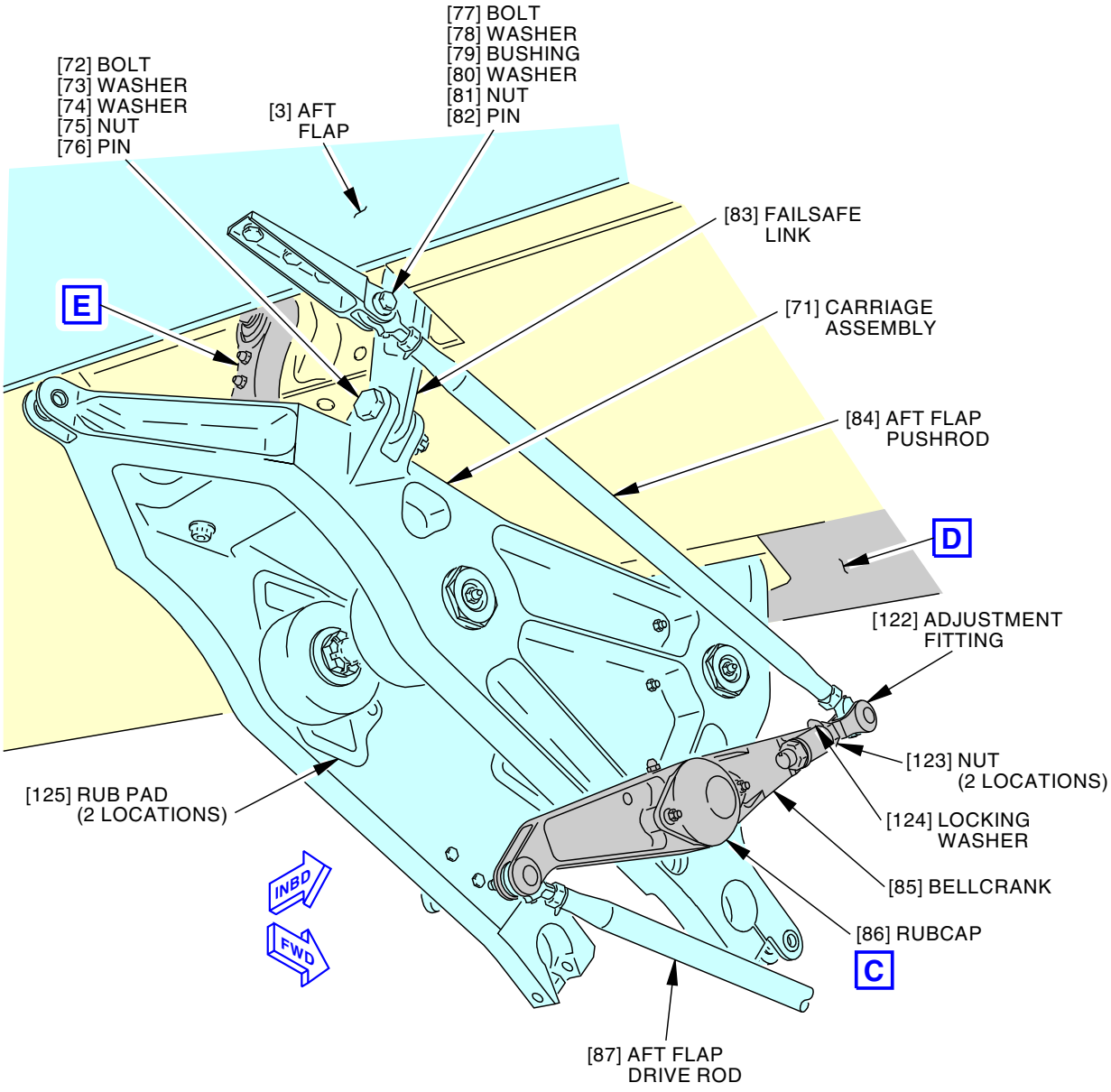
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Carriage Installation
Figure 402/27-51-23-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD FLAP INBOARD CARRIAGE

B

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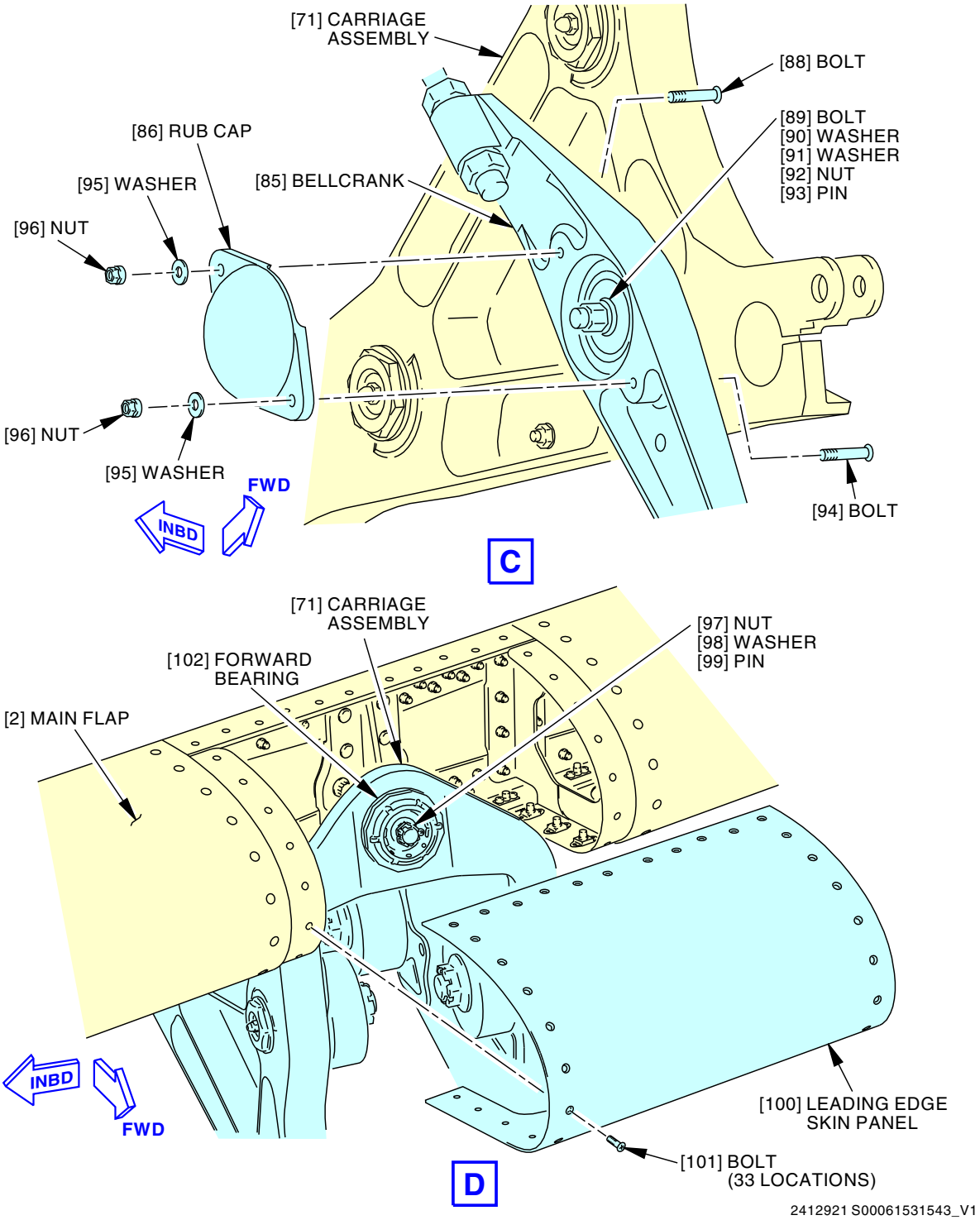
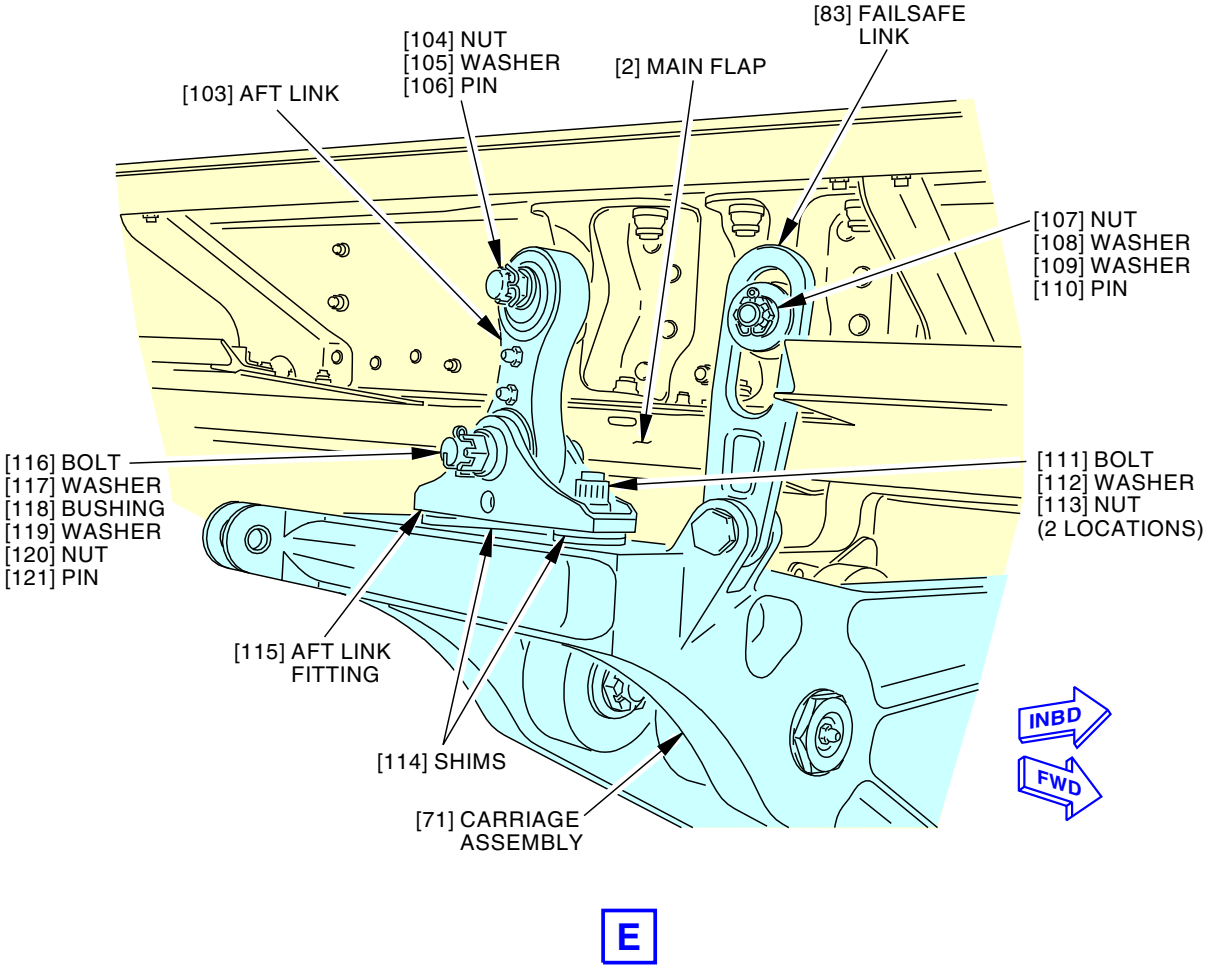
Outboard Flap Inboard Carriage Installation
Figure 402/27-51-23-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Carriage Installation
Figure 402/27-51-23-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Flap Inboard Carriage Installation
Figure 402/27-51-23-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-23-400-803

7. Outboard Flap Inboard Carriage Installation

(Figure 402)

A. General

(1) This task is applicable to the flap carriages at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-21-400-801	Outboard Trailing Edge Flap Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50356	Lockwire - MS20995C47, Corrosion Resistant Steel - 0.047 Inch (1.1938 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
71	Carriage assembly	27-51-23-20-080	SIA ALL
		27-51-23-20-085	SIA ALL

E. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

F. Outboard Flap Inboard Carriage Installation

SUBTASK 27-51-23-020-025

(1) Inspect the rub pads [125] for wear.

(a) If the rub pads [125] are worn greater than 50%, the rub pads [125] will need to be replaced.

SUBTASK 27-51-23-020-016

(2) If it is installed, remove the aft link [103] from the carriage assembly [71].

(a) Remove the pin [121], nut [120], washers [119], bushing [118], washer [117], and bolt [116] that attach the aft link [103] to the aft link fitting [115].

SUBTASK 27-51-23-420-008

(3) If it is not installed, install the aft link fitting [115] on the carriage assembly [71]:

(a) Apply sealant, A00247, to the mating surfaces of the shims [114].

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(b) Put the shims [114] in their location between the aft link fitting [115] and carriage assembly [71].

1) Use the same thickness of shims [114] that you removed.

NOTE: The maximum total thickness of the shims is 0.5 in. (12.7 mm). The minimum total thickness of the shims is 0.0 in. (0.0 mm).

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [111].

(d) Install the bolts [111], washers [112], and nuts [113] to attach the aft link fitting [115] to the carriage assembly [71].

SUBTASK 27-51-23-420-009

(4) Install the inboard carriage assembly [71] on the main flap [2]:

(a) Put the carriage assembly [71] in its location on the main flap [2], with the forward spindle through the forward bearing [102].

(b) Install the washer [98] and nut [97] to attach the forward end of the carriage assembly [71] to the main flap [2].

(c) Tighten the nut [97] to 440 in-lb (50 N·m) - 650 in-lb (73 N·m).

(d) Install the pin [99] in the nut [97].

(e) Install the aft link [103] on the main flap [2] and aft link fitting [115]:

1) Put the aft link [103] in its position on the main flap [2].

a) Make sure that the lubrication fittings on the aft link [103] are on the aft side.

2) Install the bolt [116], washer [117], bushing [118], washers [119], and nut [120] that attach the aft link [103] to the aft link fitting [115].

3) Install the pin [121] in the nut [120].

4) Install the washer [105] and nut [104] that attach the aft link [103] to the main flap [2].

5) Tighten the nut [104] to 700 in-lb (79 N·m) - 920 in-lb (104 N·m).

6) Install the pin [106] in the nut [104].

SUBTASK 27-51-23-420-010

(5) If it is not installed, install the failsafe link [83] on the main flap [2]:

(a) Put the failsafe link [83] in its position on the main flap [2].

1) Make sure that the slot on the failsafe link [83] is up.

(b) Install the washer [109], washer [108], and nut [107] to attach the failsafe link [83] to the main flap [2].

(c) Tighten the nut [107] to 220 in-lb (25 N·m) - 280 in-lb (32 N·m).

(d) Install the pin [110] in the nut [107].

SUBTASK 27-51-23-420-011

(6) Connect the failsafe link [83] to the carriage assembly [71]:

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(a) Apply compound, C00528, to the holes in the carriage assembly [71] for the bolt [72].

(b) Install the bolt [72], washer [73], washers [74], and nut [75] that connect the failsafe link [83] to the carriage assembly [71].

NOTE: Bolt direction is optional; bolt head forward is preferred.

(c) Tighten the nut [75].

1) Measure the self locking torque value and continue to torque the nut [75] until a sharp increase of 11 ±1 in-lb (1 ±0 N·m) above that value.

2) If it is necessary to align the nearest cotter pin slot, loosen the nut [75].

(d) Install the pin [76] in the nut [75].

SUBTASK 27-51-23-410-002

(7) Install the leading edge skin panel [100] on the main flap [2] forward of the carriage assembly [71]:

(a) Put the leading edge skin panel [100] in its location on the leading edge of the main flap [2].

(b) Apply compound, C00528, to the holes for the bolts [101].

(c) Install the bolts [101] to attach the leading edge skin panel [100].

(d) Apply sealant, A00247, to fill all of the clearances around the leading edge skin panel [100] that are more than 0.05 in. (1.27 mm).

SUBTASK 27-51-23-420-012

(8) Install the bellcrank [85] on the carriage assembly [71]:

(a) Make sure that the bellcrank [85] is the correct length:

NOTE: The length of the bellcrank can be changed to adjust for lateral trim problems.

1) Measure the distance between the center of the bolt hole in the adjustment fitting [122] and bellcrank [85].

NOTE: This distance is referred to as Dimension A.

2) Make sure that the Dimension A on the bellcrank [85] you will install is the same as the bellcrank [85] that you removed.

NOTE: The nominal dimension of the inboard bellcrank is 14.5605 in. (369.837 mm).

3) If the bellcrank [85] is not the correct length, adjust the bellcrank [85]:

a) Loosen the nuts [123] on the adjustment fitting [122] until the locking washer [124] is disengaged from the bellcrank [85].

b) Change the position of the adjustment fitting [122].

c) Engage the locking washer [124] with the bellcrank [85].

d) Tighten the nuts [123] on the adjustment fitting [122].

e) Install MS20995C47 lockwire, G50356, on the nuts [123].

(b) Apply grease, D00633, to the shank of the bolt [89].

1) Make sure that you do not get grease, D00633, on the threads of the bolt [89].

(c) Put the bellcrank [85] in its position on the carriage assembly [71].

(d) Install the bolt [89] and washer [90] to attach the bellcrank [85] to the carriage assembly [71].

(e) Carefully clean all of grease, D00633, from the threads of the bolt [89].

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(f) Install the nut [92] and washer [91] on the bolt [89].

(g) Tighten the nut [92] to 1100 in-lb (124 N·m) - 1500 in-lb (169 N·m).

(h) Install the pin [93] in the nut [92].

(i) Attach the rubcap [86] to the bellcrank [85] with the bolt [88], bolt [94], washer [95], and nut [96].

SUBTASK 27-51-23-420-013

(9) Connect the aft flap pushrod [84] to the aft flap [3]:

(a) Apply grease, D00633, to the shank of the bolt [77] and inside of the bushing [79].

1) Make sure that you do not get grease, D00633, on the threads of the bolt [77].

(b) Install the bushing [79], bolt [77], and washer [78] to attach the aft flap pushrod [84] to the aft flap [3].

1) Make sure that the head of the bolt [77] is inboard.

(c) Carefully clean all of grease, D00633, from the threads of the bolt [77].

(d) Install the nut [81] and washer [80] on the bolt [77].

(e) Tighten the nut [81] to 50 in-lb (6 N·m) - 80 in-lb (9 N·m).

(f) Install the pin [82] in the nut [81].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-23-420-014

(1) Do this task: Outboard Trailing Edge Flap Installation, TASK 27-51-21-400-801.

SUBTASK 27-51-23-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK

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OUTBOARD FLAP CARRIAGES - INSPECTION/CHECK

1. General

A. This procedure contains the task to do an inspection of the carriages for the inboard trailing edge flaps.

TASK 27-51-23-200-801

2. Outboard Flap Carriage Inspection (Selection)

A. Procedure

SUBTASK 27-51-23-200-001

(1) Do one of these tasks to inspect the applicable outboard flap carriage:

(a) Do this task:Outboard Flap Outboard Carriage Inspection, TASK 27-51-23-200-802.

(b) Do this task:Outboard Flap Inboard Carriage Inspection, TASK 27-51-23-200-803.

——— END OF TASK ———

TASK 27-51-23-200-802

3. Outboard Flap Outboard Carriage Inspection

(Figure 601)

A. General

(1) This task gives wear limits for the outboard carriage on the outboard flap.

(2) This task is applicable to the carriages at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-23-000-802	Outboard Flap Outboard Carriage Removal (P/B 401)
27-51-23-400-802	Outboard Flap Outboard Carriage Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

E. Procedure

SUBTASK 27-51-23-020-017

(1) Do this task: Outboard Flap Outboard Carriage Removal, TASK 27-51-23-000-802.

SUBTASK 27-51-23-020-023

(2) Inspect the rub pads [18] for wear.

(a) If the rub pads [18] are worn greater than 50%, they will need to be replaced.

SUBTASK 27-51-23-020-018

(3) Use these tools to do a check for wear on the part of the outboard flap outboard carriage:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

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SUBTASK 27-51-23-020-019

(4) Examine the parts of the outboard flap outboard carriage (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 601/27-51-23-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	1.2495 in 31.737 mm	1.2505 in 31.763 mm	1.2523 in 31.808 mm	0.0050 in 0.1270 mm
#1 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2463 in 31.656 mm	
#2 ROLLER	I.D.	1.2493 in 31.732 mm	1.2500 in 31.750 mm	1.2510 in 31.775 mm	0.0040 in 0.1020 mm
#2 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2470 in 31.674 mm	
#3 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	
#4 BUSHING	I.D.	1.1870 in 30.150 mm	1.1878 in 30.170 mm	1.1888 in 30.196 mm	0.0043 in 0.1090 mm
#4 PIN	O.D.	1.1855 in 30.111 mm	1.1865 in 30.137 mm	1.1845 in 30.086 mm	
#5 ROLLER	I.D.	1.1868 in 30.145 mm	1.1875 in 30.163 mm	1.1885 in 30.188 mm	0.0040 in 0.1020 mm
#5 PIN	O.D.	1.1855 in 30.112 mm	1.1865 in 30.137 mm	1.1845 in 30.086 mm	
#6 ROLLER	O.D.	2.9990 in 76.175 mm	3.0010 in 76.225 mm	2.9970 in 76.124 mm	

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Table 601/27-51-23-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#7 BUSHING	I.D.	0.5620 in 14.275 mm	0.5625 in 14.288 mm	0.5625 in 14.288 mm	0.0015 in 0.0381 mm
#7 BOLT	O.D.	0.5610 in 14.249 mm	0.5615 in 14.262 mm	0.5610 in 14.249 mm	
#8 BUSHING	I.D.	0.8120 in 20.625 mm	0.8128 in 20.645 mm	0.8128 in 20.645 mm	0.0018 in 0.0457 mm
#8 BUSHING	O.D.	0.8110 in 20.599 mm	0.8115 in 20.612 mm	0.8110 in 20.599 mm	
#9 BEARING	I.D.	0.5620 in 14.275 mm	0.5628 in 14.295 mm	0.5628 in 14.295 mm	0.0018 in 0.0457 mm
#9 BOLT	O.D.	0.5610 in 14.249 mm	0.5615 in 14.262 mm	0.5610 in 14.249 mm	
#10 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in 0.0381 mm
#10 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	
#11 BEARING	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in 0.0254 mm
#11 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	
#12 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in 0.0381 mm
#12 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	

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Table 601/27-51-23-993-801 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#13 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5402 mm	0.0016 in
#13 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	0.0406 mm
#14 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in
#14 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0381 mm
#15 BEARING	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in
#15 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0254 mm
#16 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2506 in 6.3627 mm	0.2506 in 6.3652 mm	0.0016 in
#16 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0406 mm
#17 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5402 mm	0.0016 in
#17 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	0.0406 mm

SUBTASK 27-51-23-420-015

(5) Do this task: Outboard Flap Outboard Carriage Installation, TASK 27-51-23-400-802.

——— END OF TASK ———

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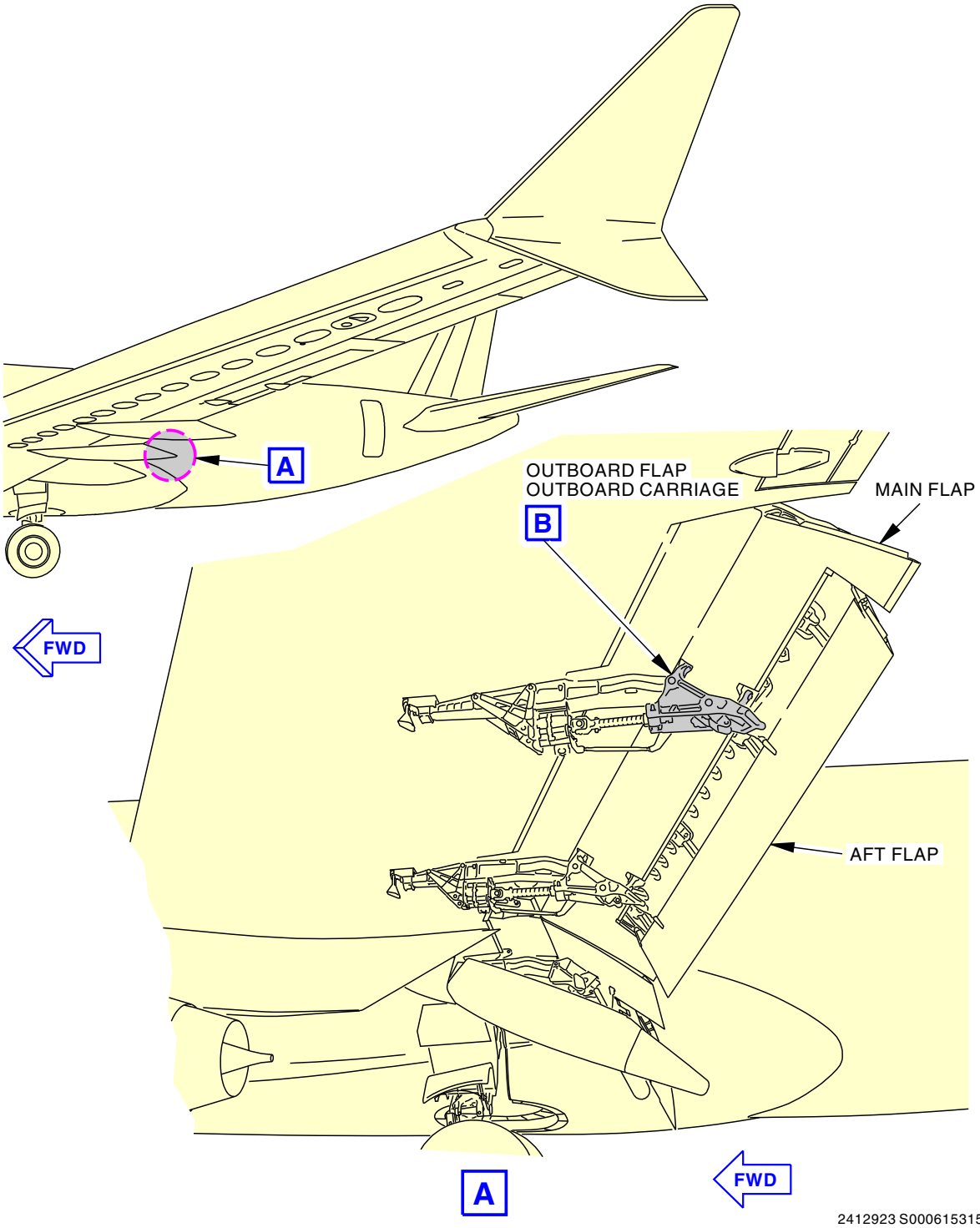

Outboard Flap Outboard Carriage Wear Limits
Figure 601/27-51-23-990-803 (Sheet 1 of 4)

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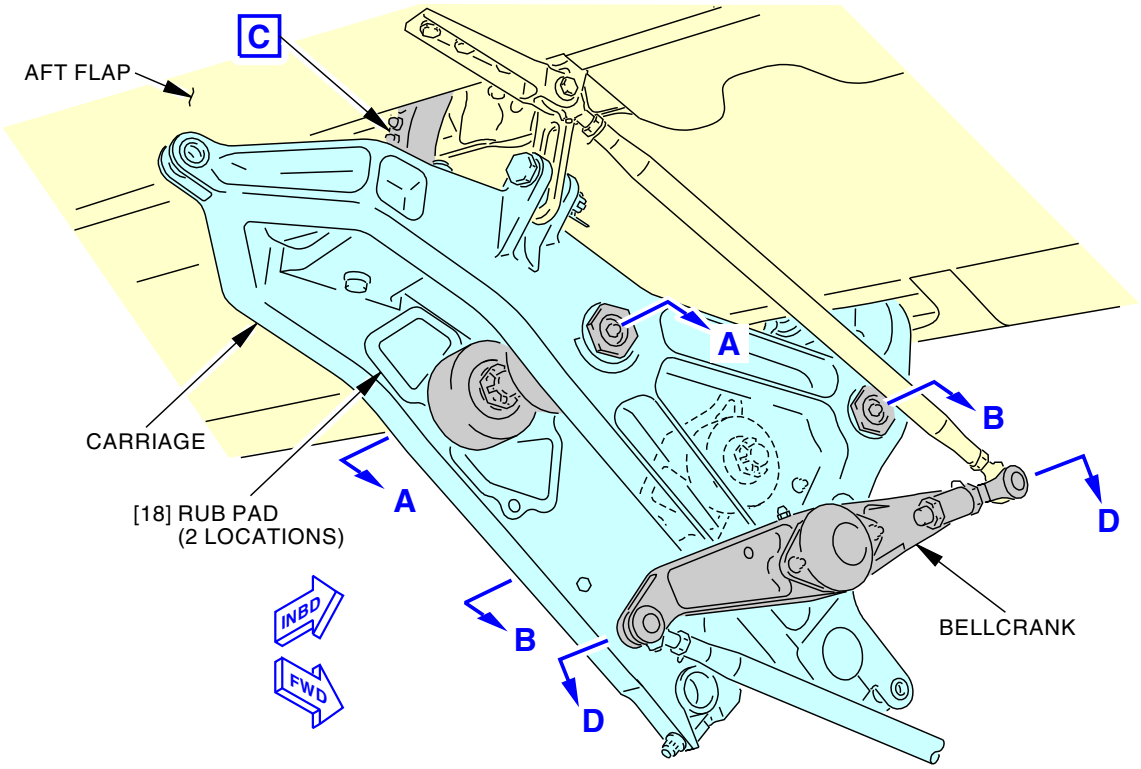
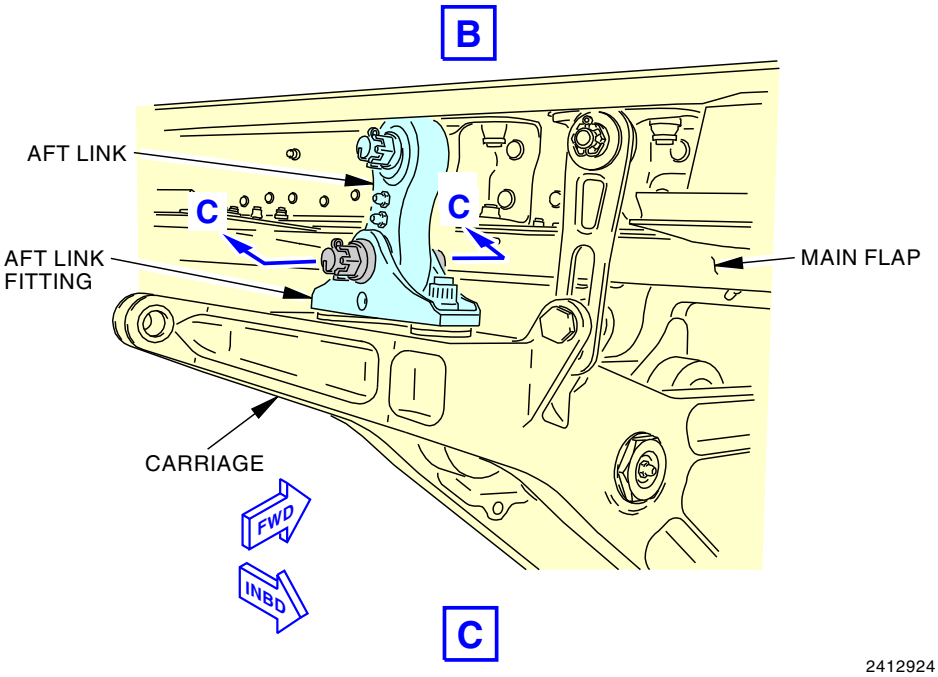


OUTBOARD FLAP OUTBOARD CARRIAGE



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Outboard Flap Outboard Carriage Wear Limits
Figure 601/27-51-23-990-803 (Sheet 2 of 4)

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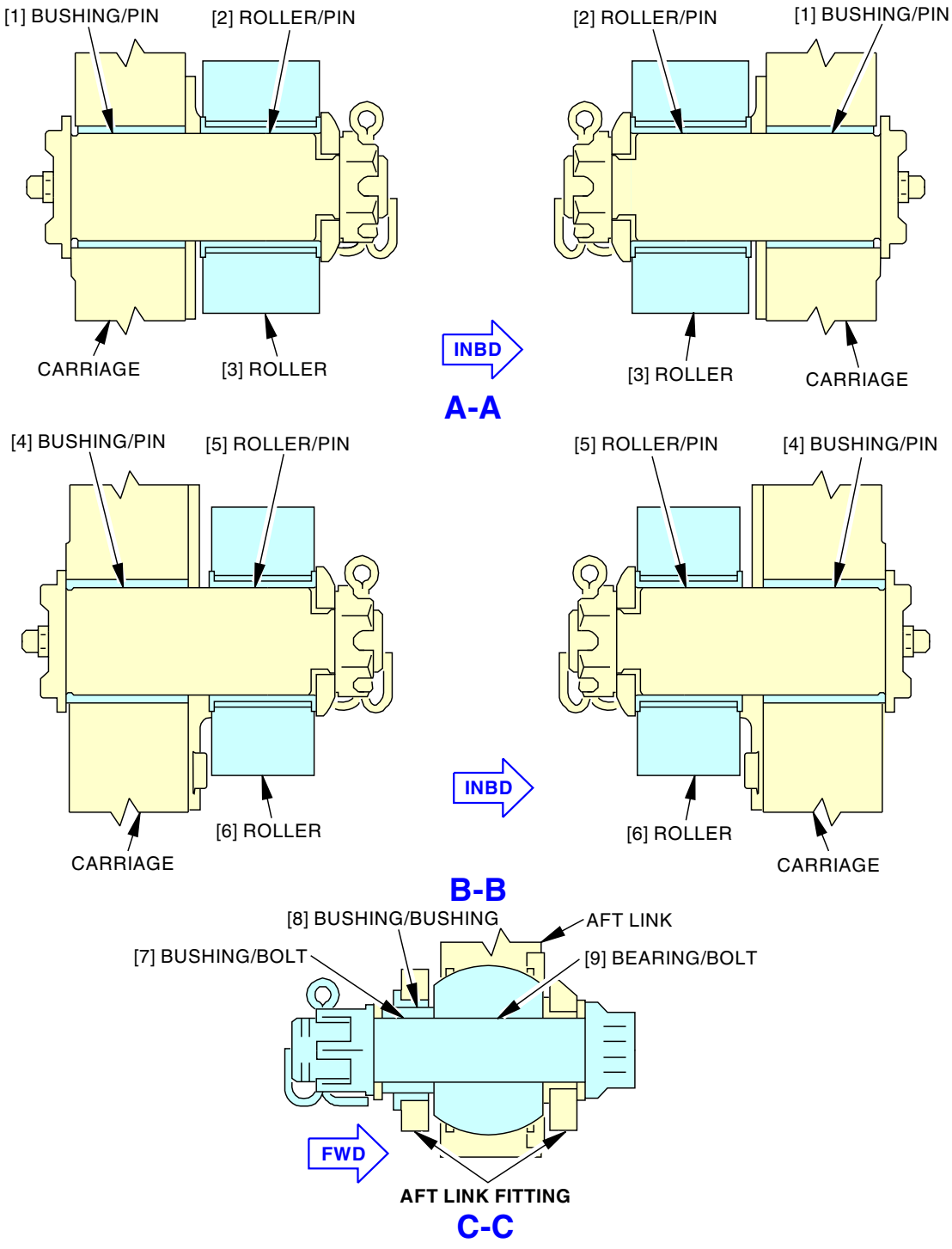

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Outboard Flap Outboard Carriage Wear Limits
Figure 601/27-51-23-990-803 (Sheet 3 of 4)

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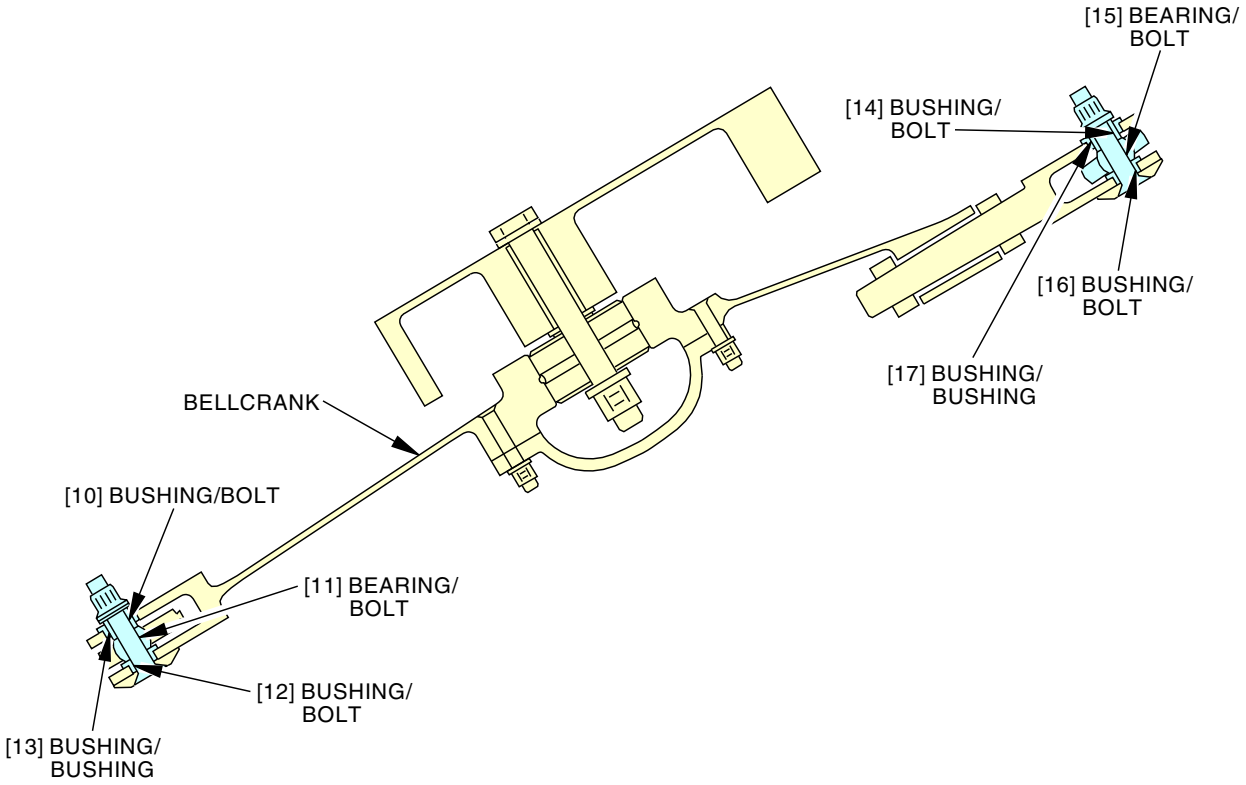

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Outboard Flap Outboard Carriage Wear Limits
Figure 601/27-51-23-990-803 (Sheet 4 of 4)

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TASK 27-51-23-200-803

4. Outboard Flap Inboard Carriage Inspection

(Figure 602)

A. General

(1) This task gives wear limits for the inboard carriage on the outboard flap.

(2) This task is applicable to the carriages at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-23-000-803	Outboard Flap Inboard Carriage Removal (P/B 401)
27-51-23-400-803	Outboard Flap Inboard Carriage Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

E. Procedure

SUBTASK 27-51-23-020-020

(1) Do this task: Outboard Flap Inboard Carriage Removal, TASK 27-51-23-000-803.

SUBTASK 27-51-23-020-026

(2) Inspect the rub pads [18] for wear.

(a) If the rub pads [18] are worn greater than 50%, they will need to be replaced.

SUBTASK 27-51-23-020-021

(3) Use these tools to do a check for wear on the part of the outboard flap inboard carriage:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-23-020-022

(4) Examine the parts of the outboard flap inboard carriage (Table 602):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

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Table 602/27-51-23-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#1 BUSHING	I.D.	1.3120 in 33.325 mm	1.3130 in 33.350 mm	1.3145 in 33.388 mm	0.0050 in 0.1270 mm
#1 PIN	O.D.	1.3105 in 3.3287 mm	1.3115 in 33.312 mm	1.3093 in 33.256 mm	
#2 ROLLER	I.D.	1.3118 in 33.320 mm	1.3125 in 33.338 mm	1.3135 in 33.363 mm	0.0050 in 0.1270 mm
#2 PIN	O.D.	1.3105 in 33.287 mm	1.3115 in 33.312 mm	1.3095 in 33.261 mm	
#3 ROLLER	O.D.	3.4365 in 87.287 mm	3.4385 in 87.338 mm	3.4345 in 87.236 mm	
#4 BUSHING	I.D.	1.2495 in 31.737 mm	1.2505 in 31.763 mm	1.2515 in 31.788 mm	0.0050 in 0.1270 mm
#4 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2470 in 31.674 mm	
#5 ROLLER	I.D.	1.2493 in 31.732 mm	1.2500 in 31.750 mm	1.2515 in 31.788 mm	0.0050 in 0.1270 mm
#5 PIN	O.D.	1.2480 in 31.699 mm	1.2490 in 31.725 mm	1.2470 in 31.674 mm	
#6 ROLLER	O.D.	3.4365 in 87.287 mm	3.4385 in 87.338 mm	3.4345 in 87.236 mm	
#7 BUSHING	I.D.	0.5620 in 14.275 mm	0.5625 in 14.288 mm	0.5625 in 14.288 mm	0.0015 in 0.0381 mm
#7 BOLT	O.D.	0.5610 in 14.249 mm	0.5615 in 14.262 mm	0.5610 in 14.249 mm	

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Table 602/27-51-23-993-802 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
#8 BUSHING	I.D.	0.8120 in 20.625 mm	0.8128 in 20.645 mm	0.8128 in 20.645 mm	0.0018 in 0.0457 mm
#8 BUSHING	O.D.	0.8110 in 20.599 mm	0.8115 in 20.612 mm	0.8110 in 20.599 mm	
#9 BEARING	I.D.	0.5620 in 14.275 mm	0.5628 in 14.295 mm	0.5628 in 14.295 mm	0.0018 in 0.0457 mm
#9 BOLT	O.D.	0.5610 in 14.249 mm	0.5615 in 14.262 mm	0.5610 in 14.249 mm	
#10 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in 0.0381 mm
#10 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	
#11 BEARING	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in 0.0254 mm
#11 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	
#12 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2505 in 6.3627 mm	0.2505 in 6.3627 mm	0.0015 in 0.0381 mm
#12 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	
#13 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5402 mm	0.0016 in 0.0406 mm
#13 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	
#14 BUSHING	I.D.	0.2500 in	0.2505 in	0.2505 in	

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Table 602/27-51-23-993-802 (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
		6.3500 mm	6.3627 mm	6.3627 mm	0.0015 in
#14 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0381 mm
#15 BEARING	I.D.	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.2500 in 6.3500 mm	0.0010 in
#15 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0254 mm
#16 BUSHING	I.D.	0.2500 in 6.3500 mm	0.2506 in 6.3627 mm	0.2506 in 6.3652 mm	0.0016 in
#16 BOLT	O.D.	0.2490 in 6.3246 mm	0.2495 in 6.3373 mm	0.2490 in 6.3246 mm	0.0406 mm
#17 BUSHING	I.D.	0.3750 in 9.5250 mm	0.3756 in 9.5402 mm	0.3756 in 9.5402 mm	0.0016 in
#17 BUSHING	O.D.	0.3740 in 9.4996 mm	0.3745 in 9.5123 mm	0.3740 in 9.4996 mm	0.0406 mm

SUBTASK 27-51-23-420-016

(5) Do this task: Outboard Flap Inboard Carriage Installation, TASK 27-51-23-400-803.

——— END OF TASK ———

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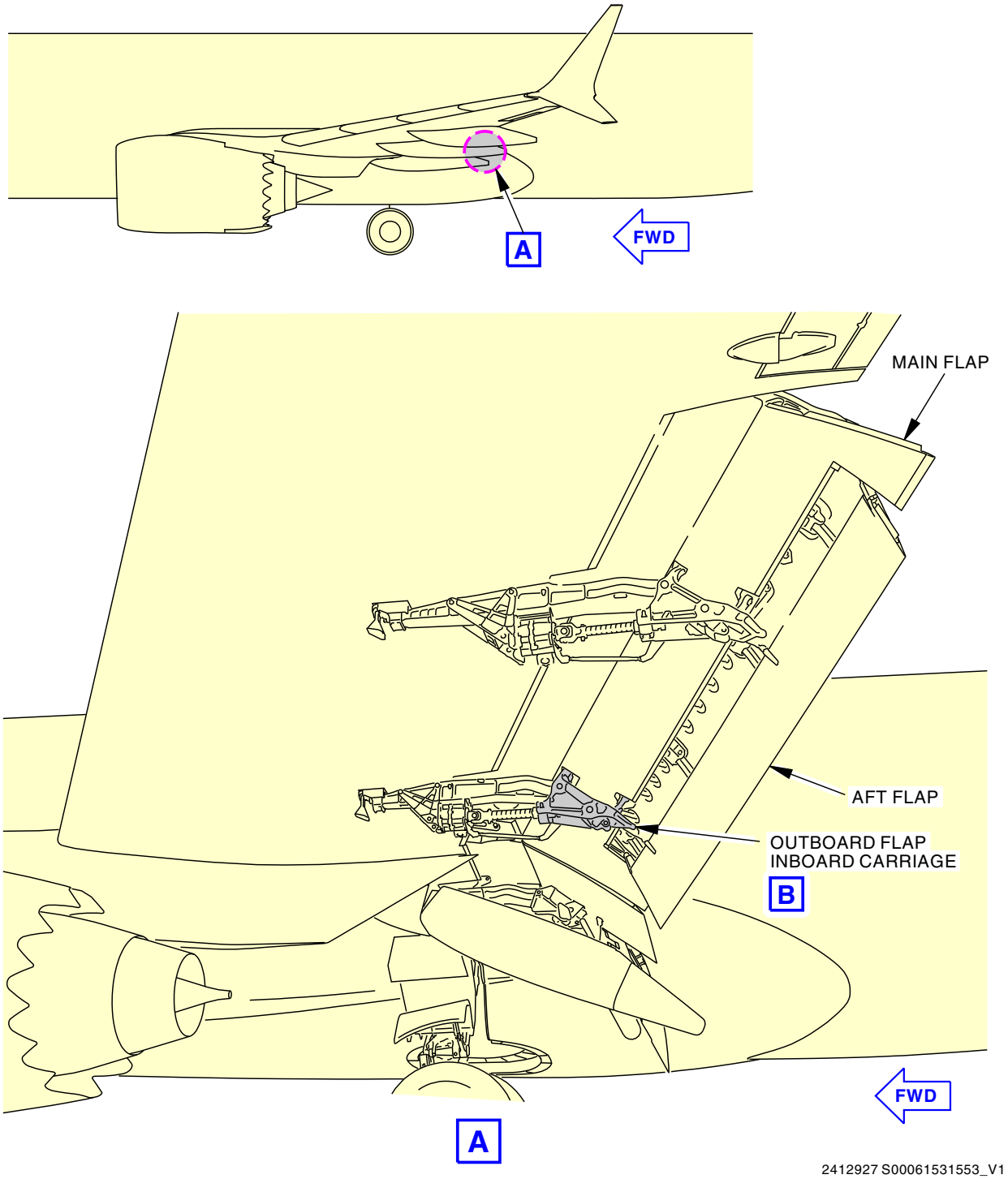
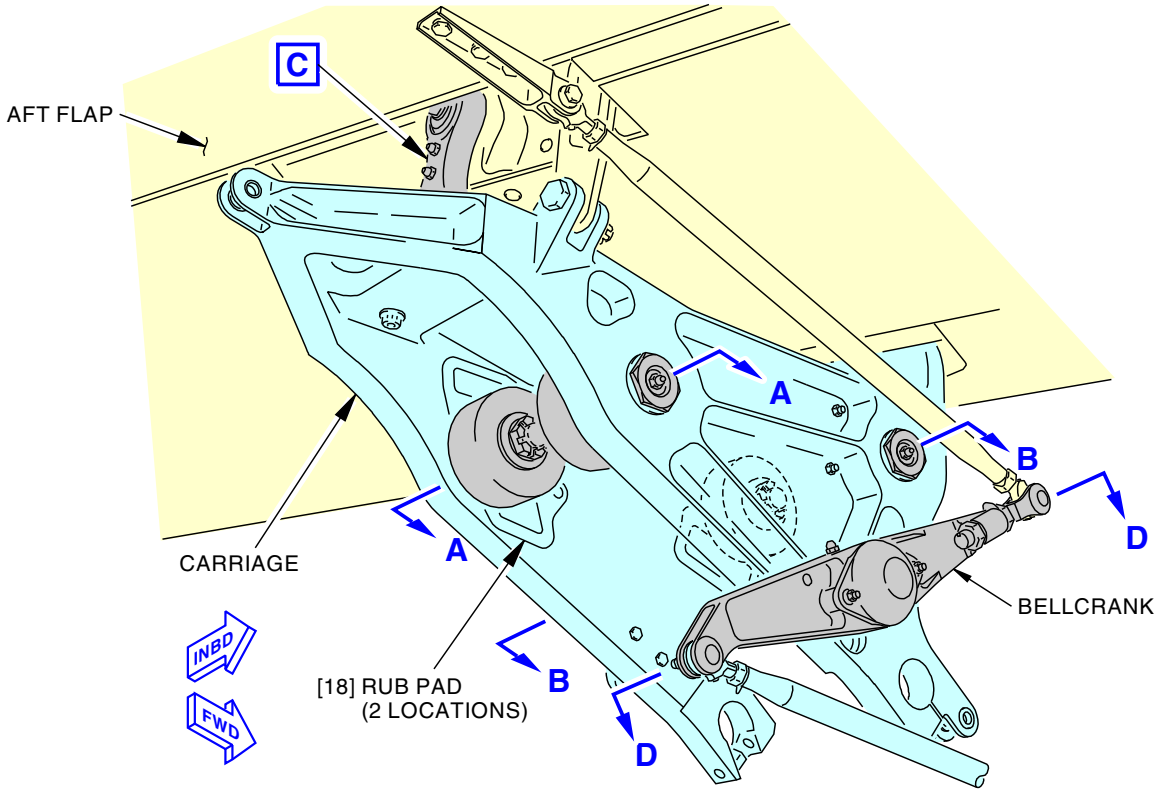
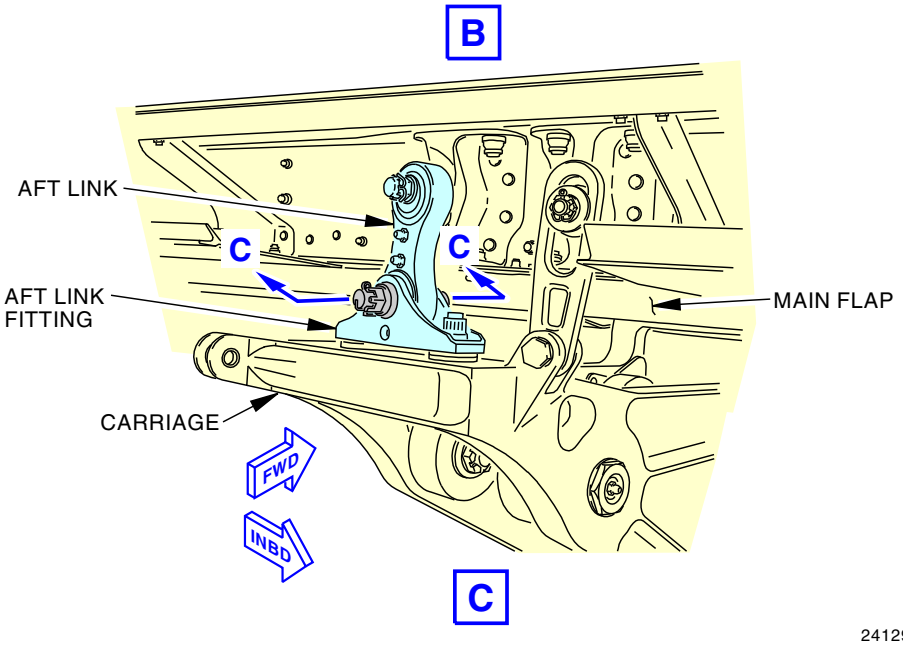


Outboard Flap Inboard Carriage Wear Limits
Figure 602/27-51-23-990-804 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD FLAP INBOARD CARRIAGE



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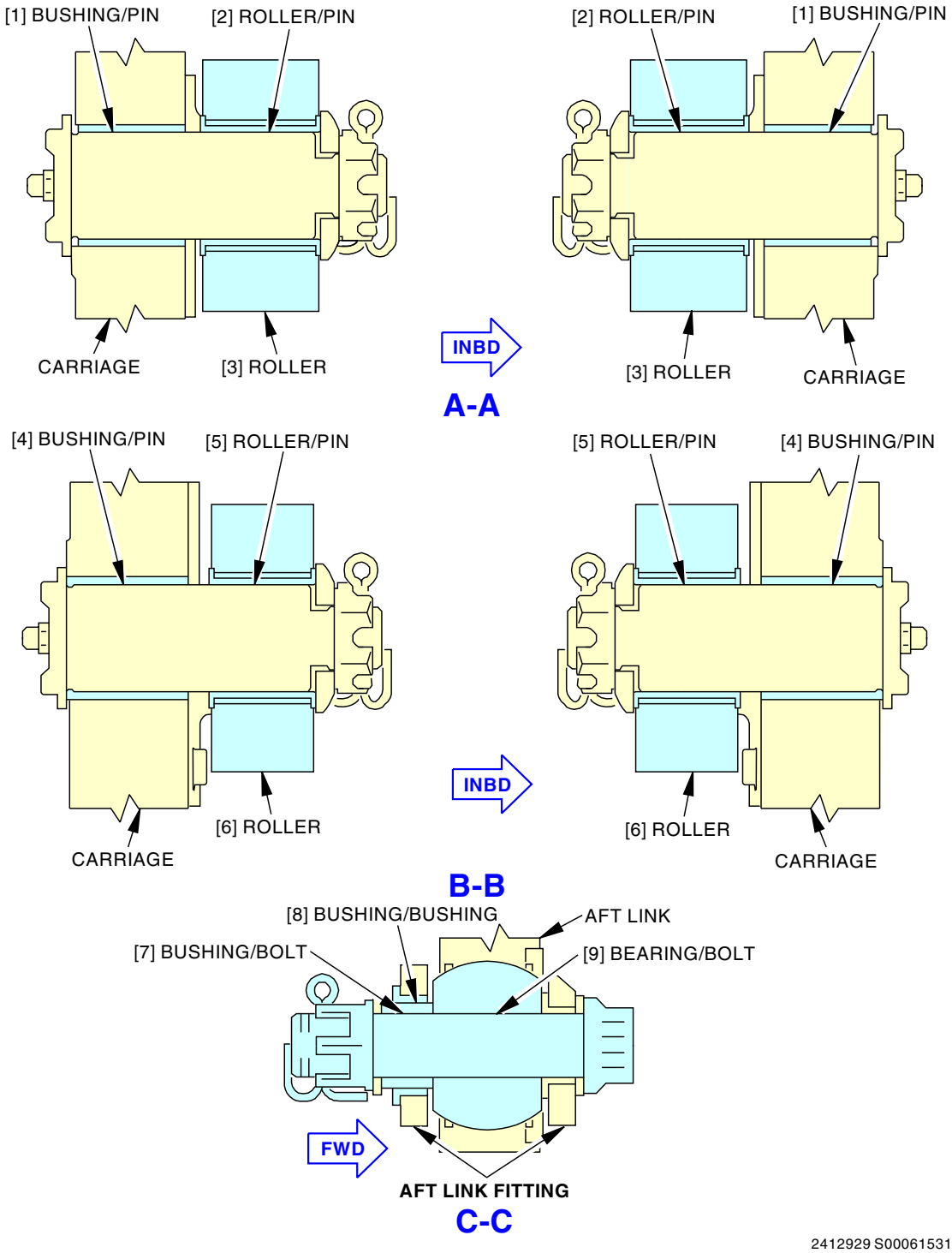
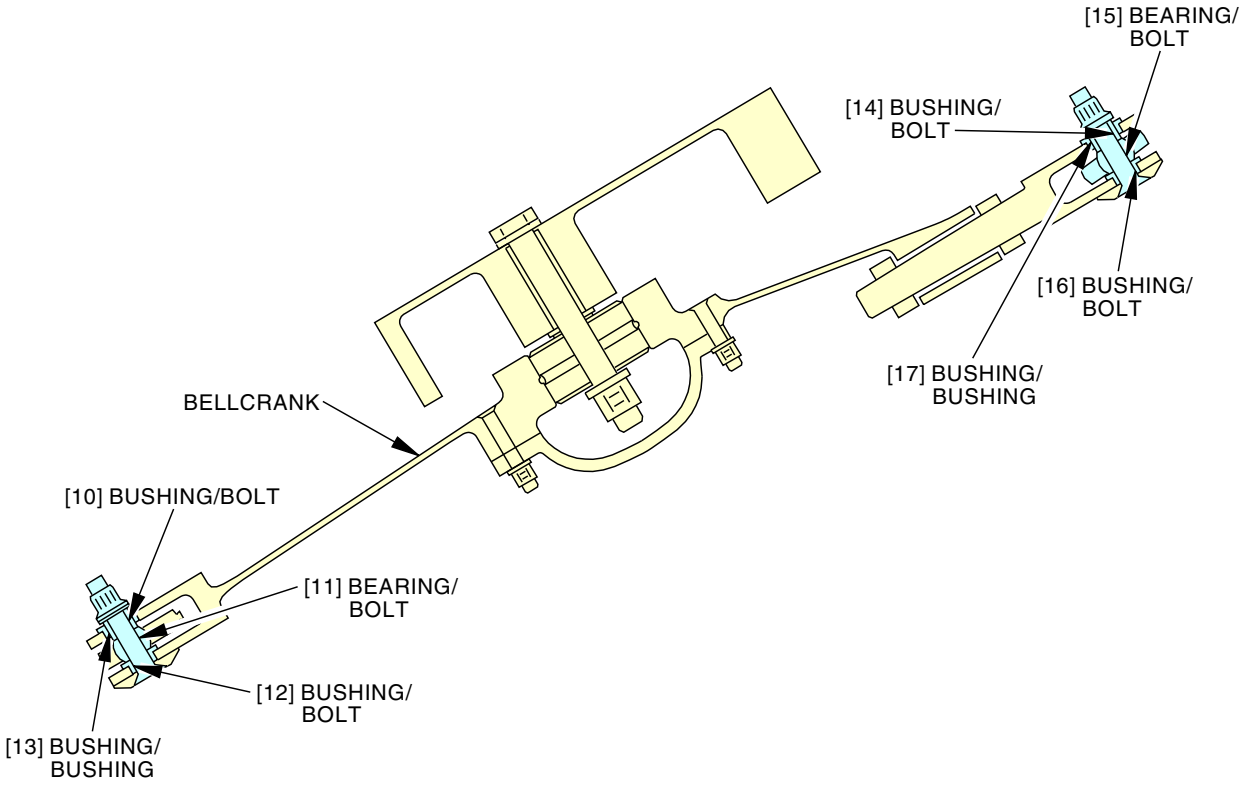
Outboard Flap Inboard Carriage Wear Limits
Figure 602/27-51-23-990-804 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Carriage Wear Limits
Figure 602/27-51-23-990-804 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



D-D

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Outboard Flap Inboard Carriage Wear Limits
Figure 602/27-51-23-990-804 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD AFT FLAP ACTUATING MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Outboard aft flap actuating mechanism removal

(2) Outboard aft flap actuating mechanism installation.

B. The aft flap actuating mechanisms includes the bellcranks, the forward pushrod and the aft pushrod.

TASK 27-51-24-000-801

2. Outboard Aft Flap Actuating Mechanism Removal

(Figure 401)

A. General

(1) This task is applicable to the aft flap actuating mechanism on the inboard flap support and the outboard flap support on the outboard flap.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)

C. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-24-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-24-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-24-010-001

(3) Remove the applicable fairing from the outboard flap:

(a) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

(b) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

E. Outboard Aft Flap Actuating Mechanism Removal

SUBTASK 27-51-24-020-001

(1) Remove the pin [24], nut [23], washer [22], washer [20], bolt [19] and bushing [21] that attach the aft rod assembly [2] to the aft flap [1].

NOTE: When you disconnect the aft rod assembly [2] from the aft flap [1], the aft flap [1] can move a small distance.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-24-020-002

(2) Remove the pin [15], nut [14], washer [13], washer [11], bolt [10] and bushing [12] that attach the forward rod assembly [16] to the drive rod attach fitting [9].

SUBTASK 27-51-24-020-003

(3) Remove the pin [8], nuts [7], washers [6], bushings [5], washers [4] and bolts [3] that attach the aft rod assembly [2] and the forward rod assembly [16] to the bellcrank assembly [17].

SUBTASK 27-51-24-020-004

(4) Remove the bellcrank assembly [17] from the flap carriage [18]:

(a) Remove the nuts [26] and washers [27] from the bolts [28] that attach the rubcap [25] to the bellcrank assembly [17].

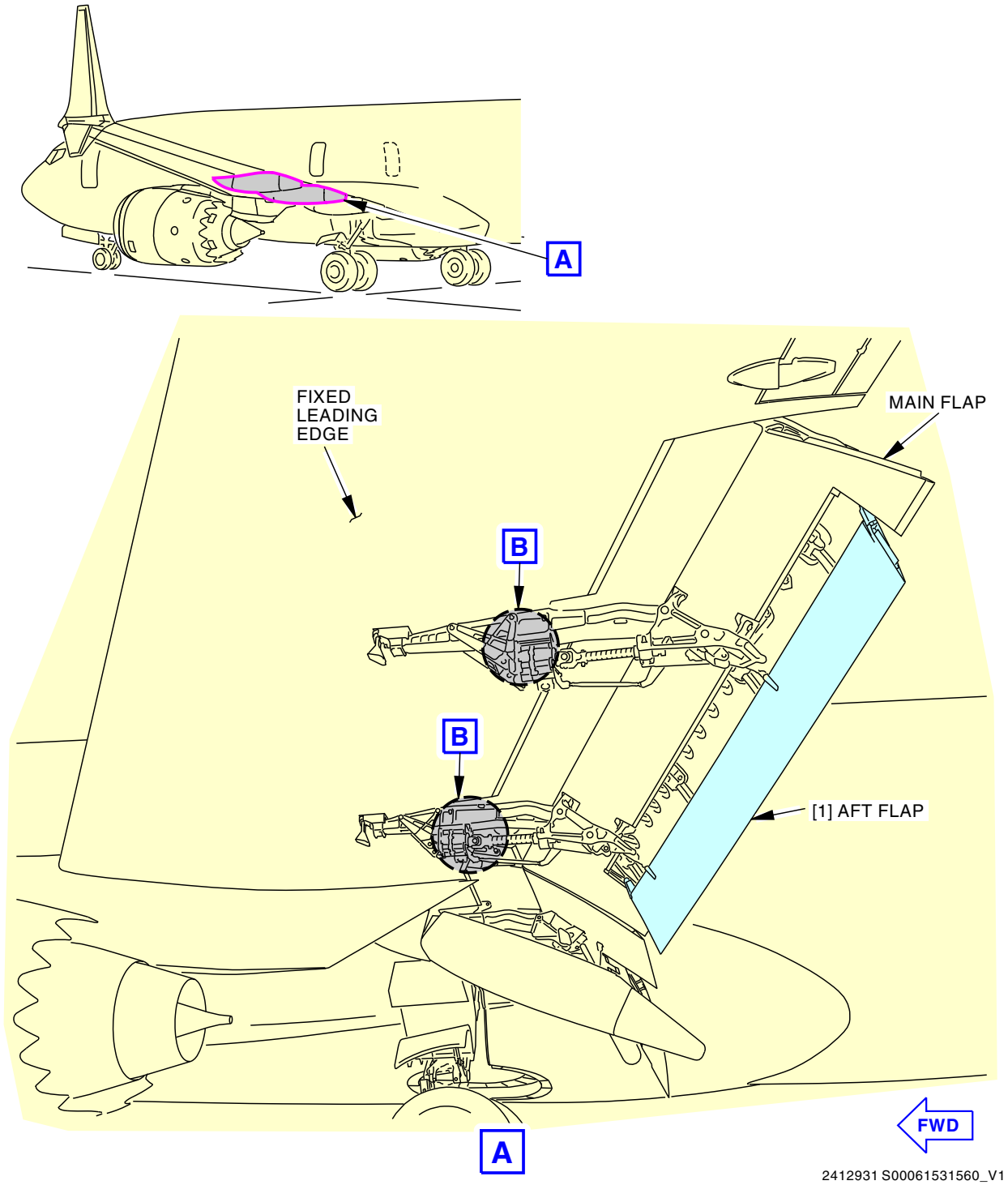
(b) Remove the pin [33], nut [32], washer [31], washer [30] and bolt [29] that attach the bellcrank assembly [17] to the flap carriage [18].

(c) Measure and record the distance between the center of the bolt hole in the adjustment fitting [36] and the bellcrank assembly [17].

NOTE: This distance is referred to as Dimension A.

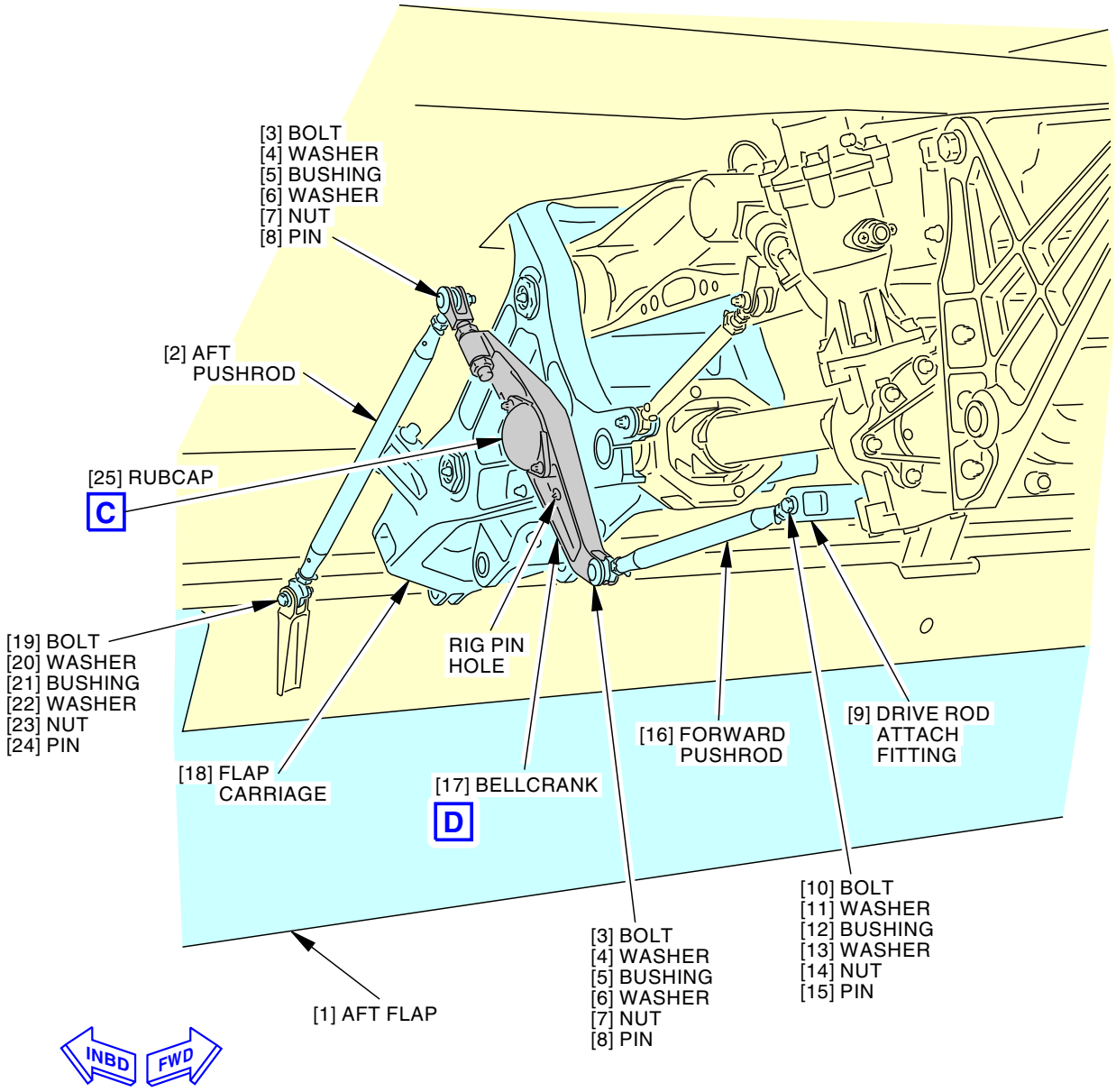
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Drive Mechanism Installation
Figure 401/27-51-24-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NO. 1 FLAP SUPPORT
(NO.2 IS EQUIVALENT)

B

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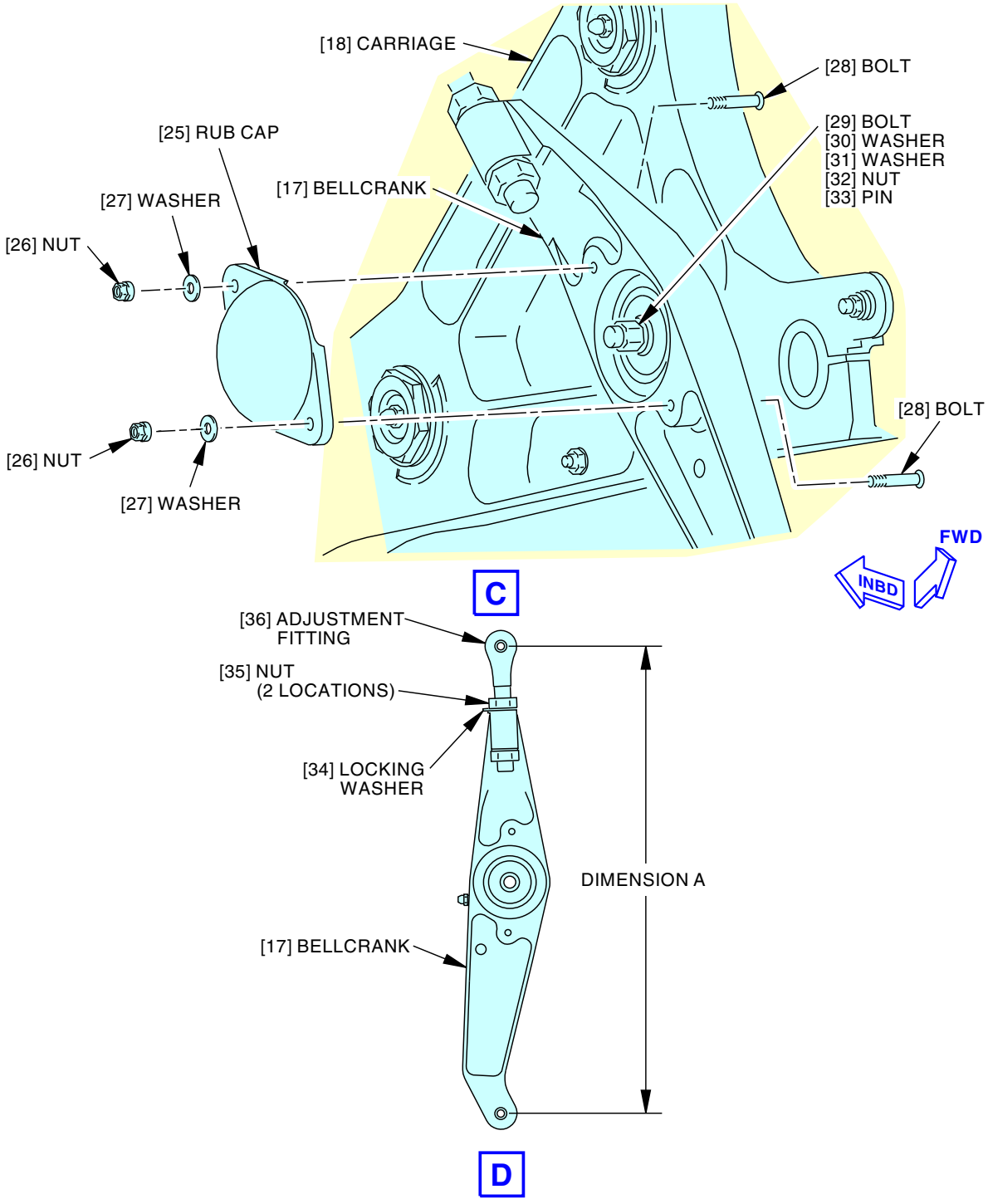
Outboard Aft Flap Drive Mechanism Installation
Figure 401/27-51-24-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Drive Mechanism Installation
Figure 401/27-51-24-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-24-400-801

3. Outboard Aft Flap Actuating Mechanism Installation

(Figure 401)

A. General

(1) This task is applicable to the aft flap actuating mechanism on the inboard flap support and the outboard flap support on the outboard flap.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G00440	Lockwire - MS20995C41, Corrosion Resistant Steel - 0.041 Inch (1.0414 mm) Diameter	NASM20995
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50356	Lockwire - MS20995C47, Corrosion Resistant Steel - 0.047 Inch (1.1938 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Rod assembly	27-51-24-20-115	SIA ALL
		27-51-24-20-120	SIA ALL
8	Pin	27-51-24-20-045	SIA ALL
15	Pin	27-51-24-20-045	SIA ALL
16	Rod assembly	27-51-24-20-130	SIA ALL
17	Bellcrank assembly	27-51-24-20-190	SIA ALL
		27-51-24-20-195	SIA ALL
		27-51-24-20-200	SIA ALL
		27-51-24-20-205	SIA ALL
24	Pin	27-51-24-20-045	SIA ALL
33	Pin	27-51-24-20-040	SIA ALL
36	Adjustment fitting	27-51-24-20-225	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
36 (cont.)		27-51-24-20-230	SIA ALL

F. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

G. Prepare for the Installation

SUBTASK 27-51-24-820-001

(1) Make sure the bellcrank assembly [17] is the correct length:

NOTE: The length of the bellcrank assembly [17] can be changed to adjust for lateral trim problems.

(a) Measure the distance between the center of the bolt hole in the adjustment fitting [36] and the bellcrank assembly [17].

NOTE: This distance is referred to as Dimension A.

(b) Make sure the Dimension A on the bellcrank assembly [17] you will install is the same as the bellcrank assembly [17] that you removed.

NOTE: The nominal dimension of the inboard bellcrank assembly [17] is 14.56 in. (36.98 cm). The nominal dimension of the outboard bellcrank assembly [17] is 13.74 in. (34.90 cm).

1) If the inboard and outboard bellcrank assembly [17] are not at the nominal length, they should both be the same distance from the nominal dimension.

(c) If the bellcrank assembly [17] is not the correct length, adjust the bellcrank assembly [17]:

1) Loosen the nuts [35] on the adjustment fitting [36] until the locking washer [34] is disengaged from the bellcrank assembly [17].

2) Change the position of the adjustment fitting [36].

3) Engage the locking washer [34] with the bellcrank assembly [17].

4) Tighten the nuts [35] on the adjustment fitting [36].

5) Install MS20995C47 lockwire, G50356 on the nut [35].

H. Outboard Aft Flap Actuating Mechanism Installation

SUBTASK 27-51-24-420-001

(1) Install the bellcrank assembly [17] on the flap carriage [18]:

(a) Apply grease, D00633 to the shank of the bolt [29].

NOTE: Make sure you do not get grease, D00633 on the threads of the bolt [29].

(b) Install the bolts [28] in the bellcrank assembly [17].

(c) Put the bellcrank assembly [17] in its position on the flap carriage [18].

(d) Install the bolt [29] and washer [30] that attach the bellcrank assembly [17] to the flap carriage [18].

(e) Carefully clean all of the grease, D00633 from the threads of the bolt [29].

(f) Install the washer [31] and nut [32] on the bolt [29].

(g) Tighten the nut [32] to 760 in-lb (85.9 N·m) to 840 in-lb (94.9 N·m).

(h) Install the pin [33] in the nut [32].

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(i) Attach the rubcap [25] to the bellcrank assembly [17] with the washers [27] and nuts [26].

SUBTASK 27-51-24-420-002

(2) Connect the aft rod assembly [2] and the forward rod assembly [16] to the bellcrank assembly [17]:

(a) Apply grease, D00633 to the shank of the bolts [3] and the inside of the bushings [5].

1) Make sure you do not get grease, D00633 on the threads of the bolts [3].

(b) Install the bolts [3], washers [4] and bushings [5] to attach the aft rod assembly [2] and the forward rod assembly [16] to the bellcrank assembly [17].

1) Make sure the heads of the bolts [3] are inboard.

(c) Carefully clean all of the grease, D00633 from the threads of the bolts [3].

(d) Install the washers [6] and nuts [7] on the bolts [3].

(e) Tighten the nuts [7] to 65 in-lb (7.3 N·m) to 100 in-lb (11.3 N·m).

(f) Install the pins [8] in the nuts [7].

SUBTASK 27-51-24-420-003

(3) Connect the forward rod assembly [16] to the drive rod attach fitting [9]:

(a) Apply grease, D00633 to the shank of the bolt [10] and the inside of the bushing [12].

1) Make sure you do not get grease, D00633 on the threads of the bolt [10].

(b) Install the bushing [12], bolt [10] and washer [11] to attach the forward rod assembly [16] to the drive rod attach fitting [9].

1) Make sure the head of the bolt [10] is inboard.

(c) Carefully clean all of the grease, D00633 from the threads of the bolt [10].

(d) Install the washer [13] and nut [14] on the bolt [10].

(e) Tighten the nut [14] to 65 in-lb (7.3 N·m) to 100 in-lb (11.3 N·m).

(f) Install the pin [15] in the nut [14].

SUBTASK 27-51-24-420-004

(4) Connect the aft rod assembly [2] to the aft flap [1]:

(a) Apply grease, D00633 to the shank of the bolt [19] and the inside of the bushing [21].

1) Make sure you do not get grease, D00633 on the threads of the bolt [19].

(b) Install the bushing [21], bolt [19] and washer [20] to attach the aft rod assembly [2] to the aft flap [1].

1) Make sure the head of the bolt [19] is inboard.

(c) Carefully clean all of the grease, D00633 from the threads of the bolt [19].

(d) Install the washer [22] and nut [23] on the bolt [19].

(e) Tighten the nut [23] to 65 in-lb (7.3 N·m) to 100 in-lb (11.3 N·m).

(f) Install the pin [24] in the nut [23].

I. Aft Flap Drive Mechanism Adjustment

SUBTASK 27-51-24-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-24-860-002

(2) Retract the trailing edge flaps to the retracted position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

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SUBTASK 27-51-24-480-001

(3) Install the rig pin from the rigging pin kit, SPL-1585 (F70207–88) in the rig pin holes in the bellcrank assembly [17] and the flap carriage [18] (Figure 402).

(a) If it is necessary, move the aft flap [1] or the main flap until you can install the rig pins.

SUBTASK 27-51-24-220-001

(4) Measure the mismatch at the between the aft flap [1] and the main flap at the inboard and outboard ends of the aft flap [1].

SUBTASK 27-51-24-820-002

(5) If the mismatch at the inboard and outboard ends of the aft flap [1] is not in the limit of 0.00 ±0.06 in. (0.00 ±1.52 mm), then adjust the length of the applicable aft rod assembly [2]:

(a) Remove the MS20995C41 lockwire, G00440 and loosen the nuts [51] on the aft rod assembly [2].

(b) Turn the applicable aft rod assembly [2] until the mismatch is in the limit at the inboard and outboard ends of the aft flap [1].

NOTE: For each 1/4 turn of the aft rod assembly [2], the trailing edge of the aft flap [1] will move approximately 0.04 in. (1.016 mm).

(c) Tighten the nuts [51] on the aft rod assembly [2].

(d) Install MS20995C41 lockwire, G00440 (Optional - MS20995C32 lockwire, G01048) on the nuts [51].

SUBTASK 27-51-24-080-001

(6) Remove the rig pin from the bellcrank assembly [17].

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-24-410-001

(1) Install the aft fairings on the flap supports:

(a) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

(b) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

SUBTASK 27-51-24-440-002

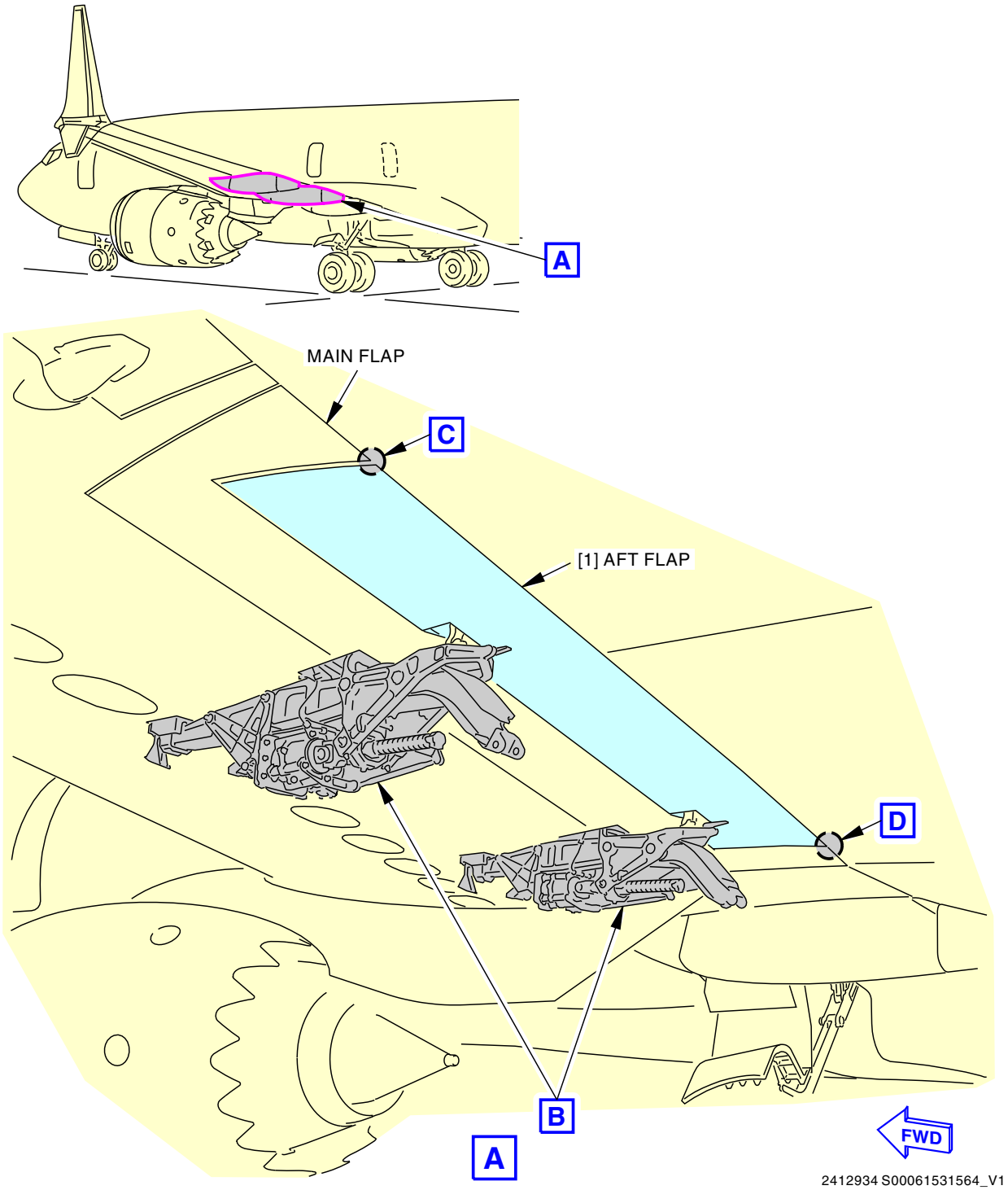
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-24-860-003

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

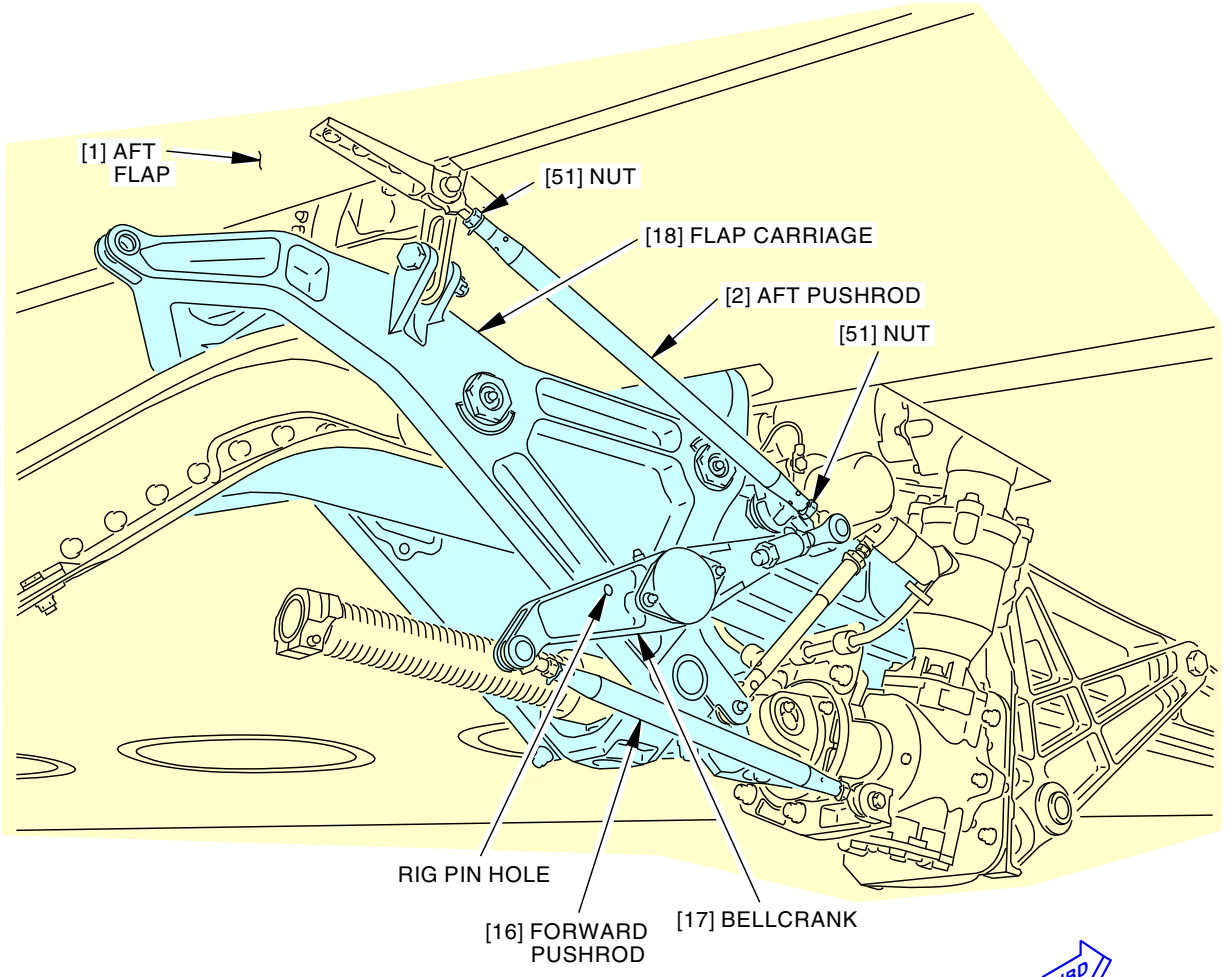
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Drive Mechanism Adjustment
Figure 402/27-51-24-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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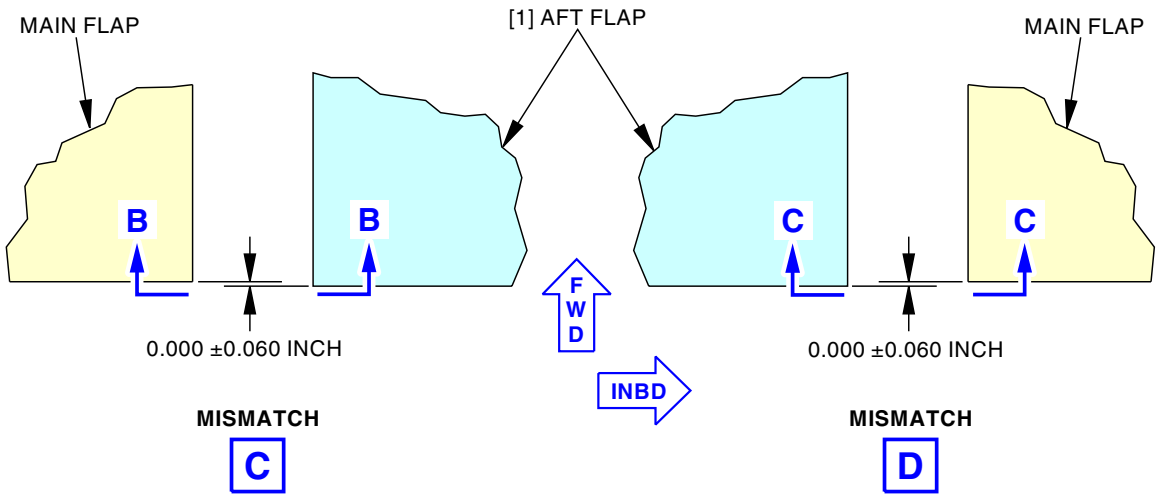
Outboard Aft Flap Drive Mechanism Adjustment
Figure 402/27-51-24-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Aft Flap Drive Mechanism Adjustment
Figure 402/27-51-24-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP TRACKS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Outboard flap track removal (selection)

(2) Outboard flap track installation (selection)

(3) Outboard flap outboard track removal

(4) Outboard flap outboard track installation

(5) Outboard flap inboard track removal

(6) Outboard flap inboard track installation.

TASK 27-51-25-000-801

2. Outboard Flap Track Removal (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

B. Outboard Flap Track Removal (Selection)

SUBTASK 27-51-25-000-001

(1) Do one of these tasks to remove the applicable outboard flap track:

(a) Do this task: Outboard Flap Outboard Track Removal, TASK 27-51-25-000-802.

(b) Do this task: Outboard Flap Inboard Track Removal, TASK 27-51-25-000-803.

——— END OF TASK ———

TASK 27-51-25-400-801

3. Outboard Flap Track Installation (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

B. Outboard Flap Track Installation (Selection)

SUBTASK 27-51-25-400-001

(1) Do one of these tasks to install the applicable outboard flap track:

(a) Do this task: Outboard Flap Outboard Track Installation, TASK 27-51-25-400-802.

(b) Do this task: Outboard Flap Inboard Track Installation, TASK 27-51-25-400-803.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-25-000-802

4. Outboard Flap Outboard Track Removal

(Figure 401)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-21-000-801	Outboard Trailing Edge Flap Removal (P/B 401)
27-51-28-000-802	Outboard Flap Outboard Support Forward Fairing Removal (P/B 401)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-41-000-802	Outboard Flap Outboard Transmission Removal (P/B 401)
27-59-02-000-801	Outboard Flap Outboard Skew Mechanism Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

E. Prepare for the Removal

SUBTASK 27-51-25-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-25-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-25-010-001

(3) Remove the fairings for the outboard track on the outboard flap:

(a) Do this task: Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802.

(b) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

SUBTASK 27-51-25-020-001

(4) Do this task: Outboard Trailing Edge Flap Removal, TASK 27-51-21-000-801.

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SUBTASK 27-51-25-020-002

(5) Do this task: Outboard Flap Outboard Skew Mechanism Removal, TASK 27-59-02-000-801.

SUBTASK 27-51-25-020-003

(6) Do this task: Outboard Flap Outboard Transmission Removal, TASK 27-51-41-000-802.

F. Outboard Flap Outboard Track Removal

SUBTASK 27-51-25-860-002

(1) Make sure that you support the flap track while you disconnect it.

NOTE: The outboard track for the outboard flap weighs approximately 110 lb (50 kg)).

SUBTASK 27-51-25-480-001

(2) If you will use the adapter, SPL-1733, install it on the flap track [1]:

(a) Install the adapter, SPL-1733, on the flap track [1] approximately 33 in. (838 mm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568, below the adapter, SPL-1733, to support the flap track [1].

SUBTASK 27-51-25-020-004

(3) Remove the nut [15], washers [14], washer [12], and bolt [13] to disconnect the jumper wire [16] from the flap track [1].

SUBTASK 27-51-25-020-005

(4) Disconnect the forward end of the flap track [1]:

(a) Remove the bolts [18] and washers [17] that attach the failsafe fitting [19] to the track attach fitting.

(b) Remove the pin [23], nut [22], washer [21], and fuse pin [20] from the forward end of the flap track [1].

SUBTASK 27-51-25-020-006

(5) Disconnect the aft end of the flap track [1] from the structure:

(a) Remove the nut [6], washer [5], washer [4], and bolt [3] that attach the outboard side of the flap track [1] to the structure.

(b) Remove the nut [7], washer [8], washer [10], and bolt [11] that attach the inboard side of the flap track [1] to the structure.

(c) Measure the thickness of the shim [9].

1) Make sure to mark the track with this measurement data.

NOTE: This measurement data for the removal and replacement of the flap tracks [1] is an important step to obtain ample free movement in the fuse pin joint at the forward end of the flap track [1] and return of the flaps to former operating condition.

SUBTASK 27-51-25-020-007

(6) If you will install a new flap track [1], remove the transmission attach fitting [2] from the flap track [1]:

(a) Remove the pins [25], nuts [26], washers [24], and bolts [27] that attach the transmission attach fitting [2] to the flap track [1].

END OF TASK

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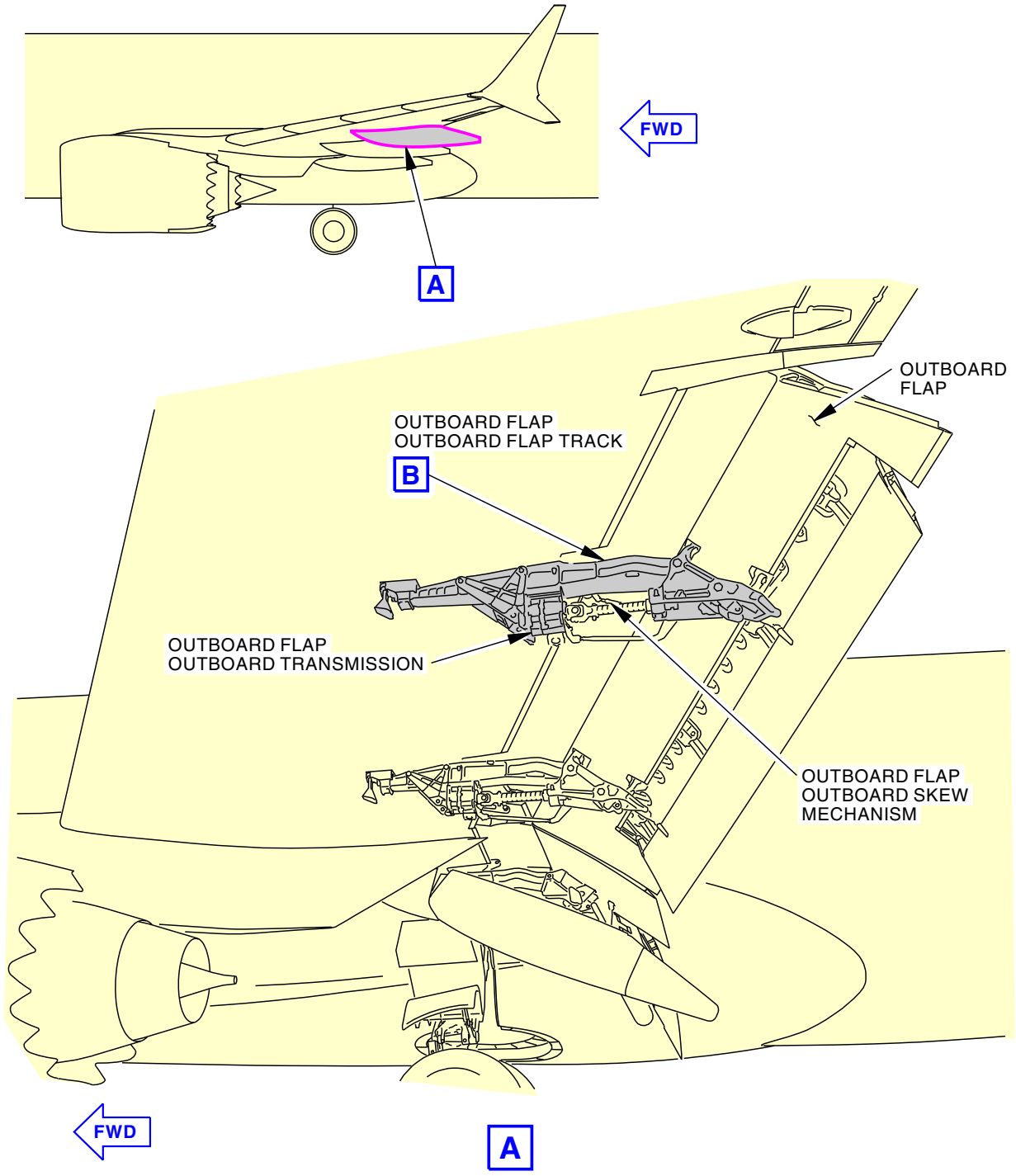

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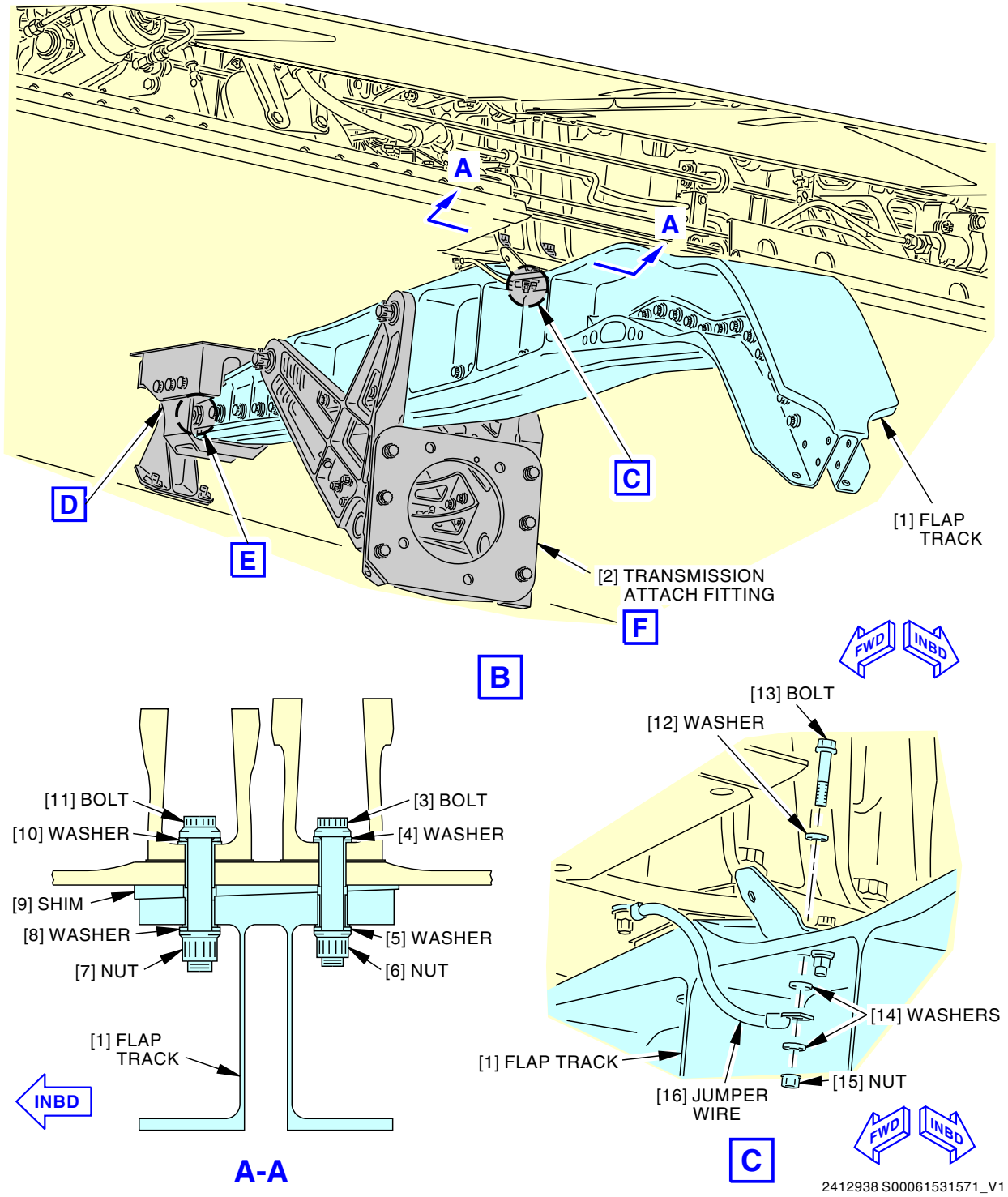
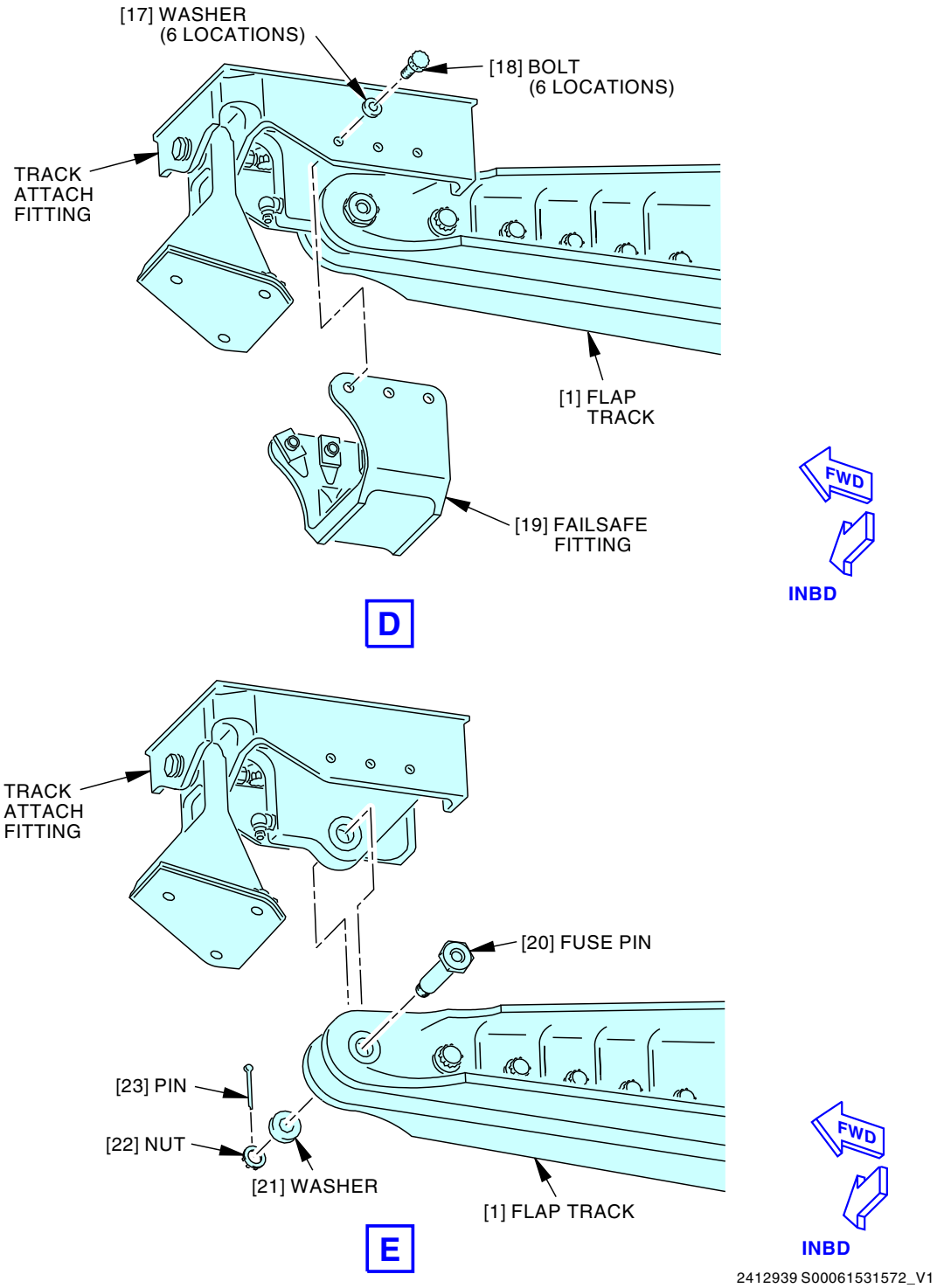
Outboard Flap Outboard Track Installation
Figure 401/27-51-25-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



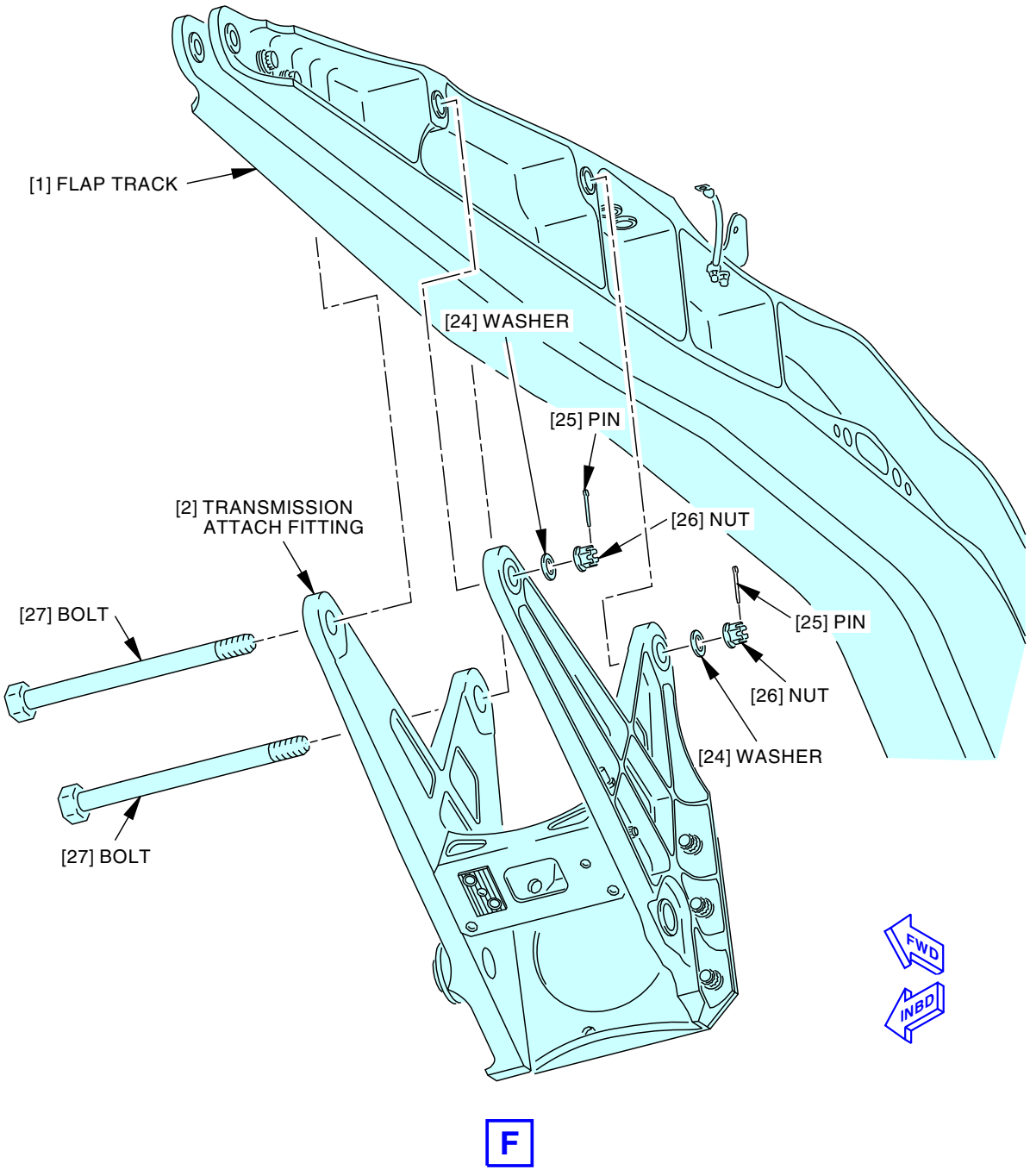
Outboard Flap Outboard Track Installation
Figure 401/27-51-25-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Track Installation
Figure 401/27-51-25-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Track Installation
Figure 401/27-51-25-990-801 (Sheet 4 of 4)

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TASK 27-51-25-400-802

5. Outboard Flap Outboard Track Installation

(Figure 401)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 1 and 8.

B. References

Reference	Title
12-22-51-640-816	Outboard Flap Outboard Flap Track Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-21-400-801	Outboard Trailing Edge Flap Installation (P/B 401)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)
27-51-28-400-802	Outboard Flap Outboard Support Forward Fairing Installation (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-41-400-802	Outboard Flap Outboard Transmission Installation (P/B 401)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-02-400-801	Outboard Flap Outboard Skew Mechanism Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

F. Outboard Flap Outboard Track Installation

SUBTASK 27-51-25-420-001

(1) If it is not installed, install the transmission attach fitting [2]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Put the transmission attach fitting [2] in its location on the flap track [1].

(b) Install the bolts [27], washers [24] and nuts [26] that attach the transmission attach fitting [2] to the flap track [1].

(c) Install the new pins [25] in the nuts [26].

SUBTASK 27-51-25-480-002

(2) If you will use the adapter, SPL-1733, install it on the flap track [1]:

(a) Install the adapter, SPL-1733, on the flap track [1] approximately 33 in. (84 cm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568, below the adapter, SPL-1733, to support the flap track [1].

SUBTASK 27-51-25-420-002

(3) Install the flap track [1]:

(a) If it is not installed, install the shim [9] on the structure:

1) Make sure that the shim [9] is the same thickness as the shim [9] that you removed.

NOTE: The original thickness of the shim [9] is on a marker on the structure.

NOTE: If it is necessary to replace the flap track with a new unit, a new shim [9] may need to be made and should be marked and checked after the nuts are torqued that attach the flap track [1] to the structure.

2) Apply sealant, A00247, to the mating surface of the shim [9] and the structure.

3) Put the shim [9] in its position.

4) Apply a fillet seal of sealant, A00247, around the shim [9].

(b) Attach the aft end of the flap track [1] to the structure:

1) Lift the flap track [1] to its location on the structure.

2) Install the bolt [11], washer [10], washer [8] and nut [7] that attaches the inboard side of the flap track [1] to the structure.

3) Install the bolt [3], washer [4], washer [5] and nut [6] that attaches the outboard side of the flap track [1] to the structure.

(c) Attach the forward end of the flap track [1]:

1) Apply grease, D00633, to the outside of the fuse pin [20] and the inside of the bushings.

2) Install the fuse pin [20] that attaches the forward end of the flap track [1] to the track attach fitting.

(d) Tighten the nut [7] to a torque tool set point of 1800 in-lb (203 N·m).

(e) Tighten the nut [6] to a torque tool set point of 1300 in-lb (147 N·m).

(f) Make sure you can turn the fuse pin [20] in the joint with a maximum of 10 in-lb (1 N·m).

NOTE: You can push up on the forward end of the flap track [1] to take the weight off the fuse pin [20] when you measure the torque.

(g) Install the washer [21] and nut [22] on the fuse pin [20].

(h) Tighten the nut [22] to 110 in-lb (12 N·m) - 130 in-lb (15 N·m).

(i) Loosen the nut [22] to align the hole for the pin [23].

(j) Install the new pin [23] in the nut [22].

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SUBTASK 27-51-25-420-003

(4) Install the failsafe fitting [19] on the track attach fitting:

(a) Put the failsafe fitting [19] in its location on the track attach fitting.

(b) Install the bolts [18] and washers [17] to attach the failsafe fitting [19].

SUBTASK 27-51-25-480-003

(5) If it is necessary, remove the adapter, SPL-1733, from the flap track [1].

SUBTASK 27-51-25-020-008

(6) Install the bolt [13], washer [12], washers [14] and nut [15] to connect the jumper wire [16] to the flap track [1].

SUBTASK 27-51-25-420-004

(7) Do this task: Outboard Flap Outboard Transmission Installation, TASK 27-51-41-400-802.

SUBTASK 27-51-25-420-005

(8) Do this task: Outboard Trailing Edge Flap Installation, TASK 27-51-21-400-801.

SUBTASK 27-51-25-420-006

(9) Do this task: Outboard Flap Outboard Skew Mechanism Installation, TASK 27-59-02-400-801.

SUBTASK 27-51-25-820-001

(10) Do this task: Outboard Trailing Edge Flap Adjustment, TASK 27-51-21-820-801.

SUBTASK 27-51-25-820-002

(11) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-51-25-640-001

(12) Do this task: Outboard Flap Outboard Flap Track Lubrication, TASK 12-22-51-640-816.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-25-410-001

(1) Install the fairings for the outboard track on the outboard flap:

(a) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

(b) Do this task: Outboard Flap Outboard Support Forward Fairing Installation, TASK 27-51-28-400-802.

SUBTASK 27-51-25-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-25-860-003

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

TASK 27-51-25-000-803

6. Outboard Flap Inboard Track Removal

(Figure 402)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 2 and 7.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-21-000-801	Outboard Trailing Edge Flap Removal (P/B 401)
27-51-28-000-804	Outboard Flap Inboard Support Forward Fairing Removal (P/B 401)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-41-000-803	Outboard Flap Inboard Transmission Removal (P/B 401)
27-59-02-000-802	Outboard Flap Inboard Skew Mechanism Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

E. Prepare for the Removal

SUBTASK 27-51-25-860-004

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-25-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-25-010-002

(3) Remove the fairings for the inboard track on the outboard flap:

(a) Do this task: Outboard Flap Inboard Support Forward Fairing Removal, TASK 27-51-28-000-804.

(b) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

SUBTASK 27-51-25-020-009

(4) Do this task: Outboard Trailing Edge Flap Removal, TASK 27-51-21-000-801.

SUBTASK 27-51-25-020-010

(5) Do this task: Outboard Flap Inboard Skew Mechanism Removal, TASK 27-59-02-000-802.

SUBTASK 27-51-25-020-011

(6) Do this task: Outboard Flap Inboard Transmission Removal, TASK 27-51-41-000-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Outboard Flap Inboard Track Removal

SUBTASK 27-51-25-860-005

(1) Make sure that you support the flap track [41] while you disconnect it.

SUBTASK 27-51-25-480-004

(2) If you will use the adapter, SPL-1733, install it on the flap track [41]:

(a) Install the adapter, SPL-1733, on the flap track [41] approximately 33 in. (84 cm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568, below the adapter, SPL-1733, to support the flap track [41].

SUBTASK 27-51-25-020-012

(3) Remove the nut [56], washer [55], washer [54], washer [53] and bolt [52] to disconnect the jumper wire [57] from the flap track [41].

SUBTASK 27-51-25-020-013

(4) Disconnect the forward end of the flap track [41]:

(a) Remove the bolts [59] and washers [58] that attach the failsafe fitting [60] to the track attach fitting.

(b) Remove the pin [64], nut [63], washer [62] and fuse pin [61] from the forward end of the flap track [41].

SUBTASK 27-51-25-020-014

(5) Disconnect the aft end of the flap track [41] from the structure:

(a) Remove the nut [46], washer [45], washer [44] and bolt [43] that attach the outboard side of the flap track [41] to the structure.

(b) Remove the nut [47], washer [48], washer [50] and bolt [51] that attach the inboard side of the flap track [41] to the structure.

(c) Measure the thickness of the shim [49].

1) Make sure to mark the track with this measurement data.

NOTE: This measurement data for the removal and replacement of the flap tracks [41] is an important step to get ample free movement in the fuse pin joint at the forward end of the flap track [41] and return of the flaps to former operating condition.

SUBTASK 27-51-25-020-015

(6) If you will install a new flap track [41], remove the transmission attach fitting [42] from the flap track [41]:

(a) Remove the pins [68], nuts [67], washers [66] and bolts [65] that attach the transmission attach fitting [42] to the flap track [41].

——— END OF TASK ———

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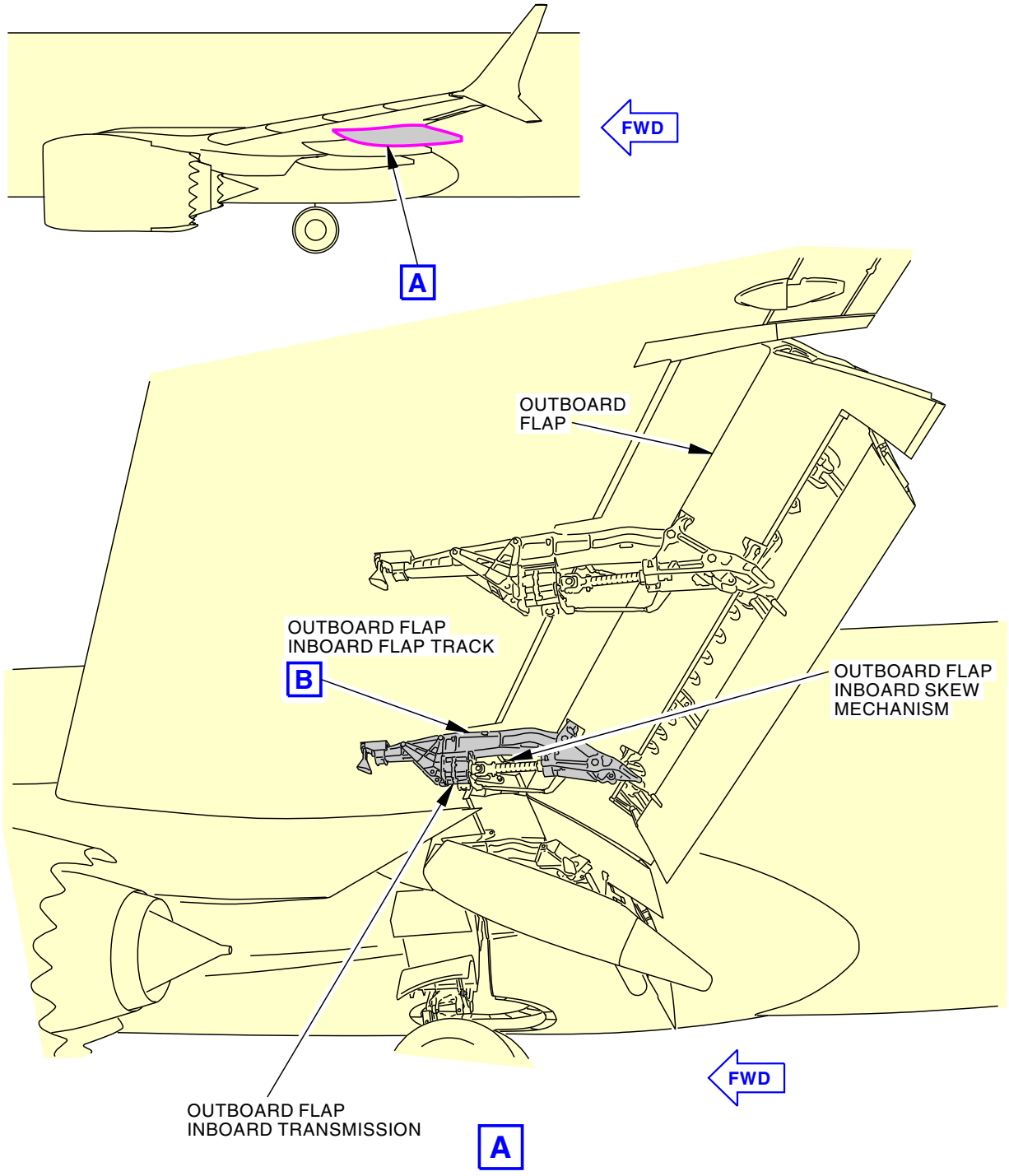

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Outboard Flap Inboard Track Installation
Figure 402/27-51-25-990-802 (Sheet 1 of 4)

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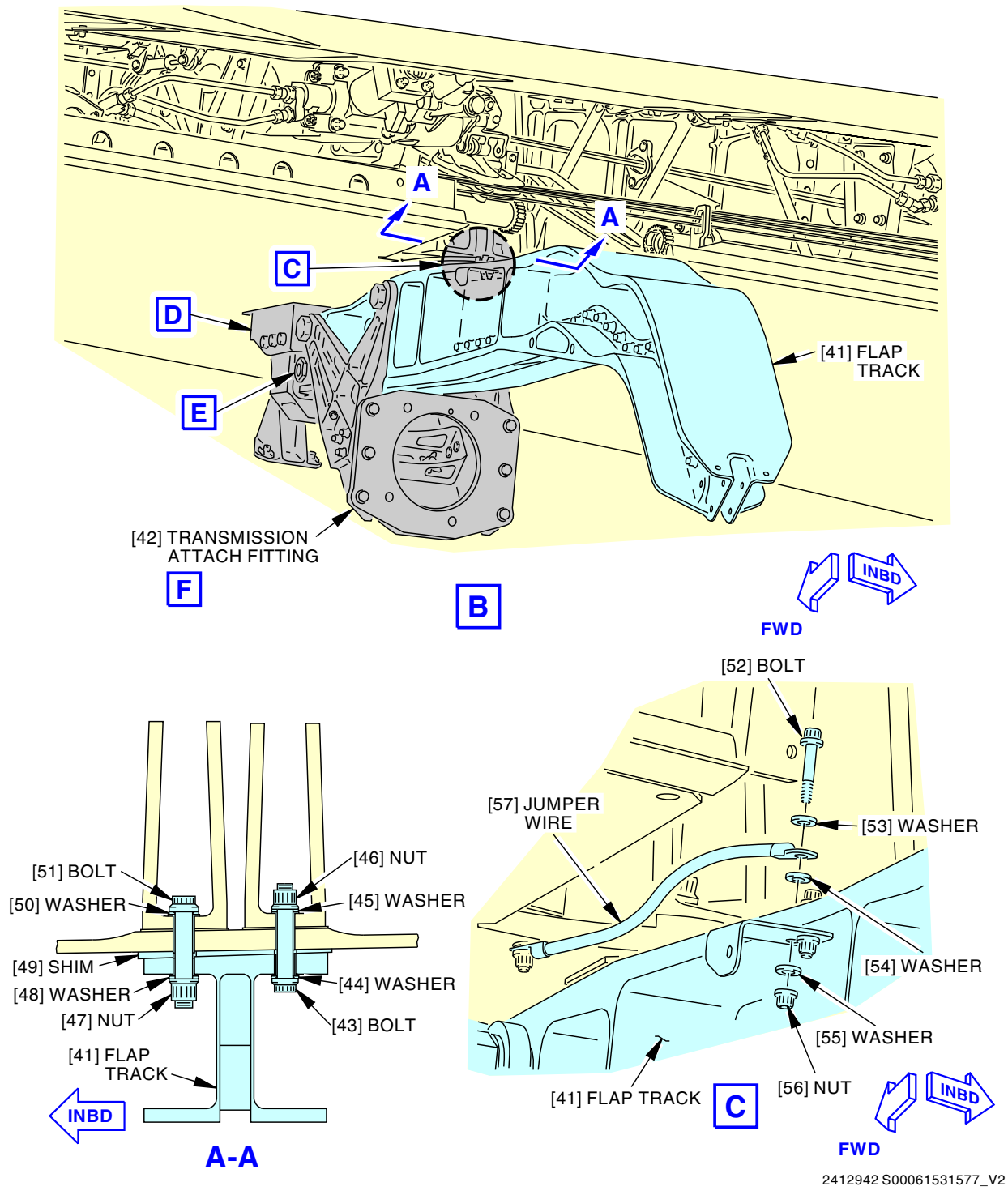

Outboard Flap Inboard Track Installation
Figure 402/27-51-25-990-802 (Sheet 2 of 4)

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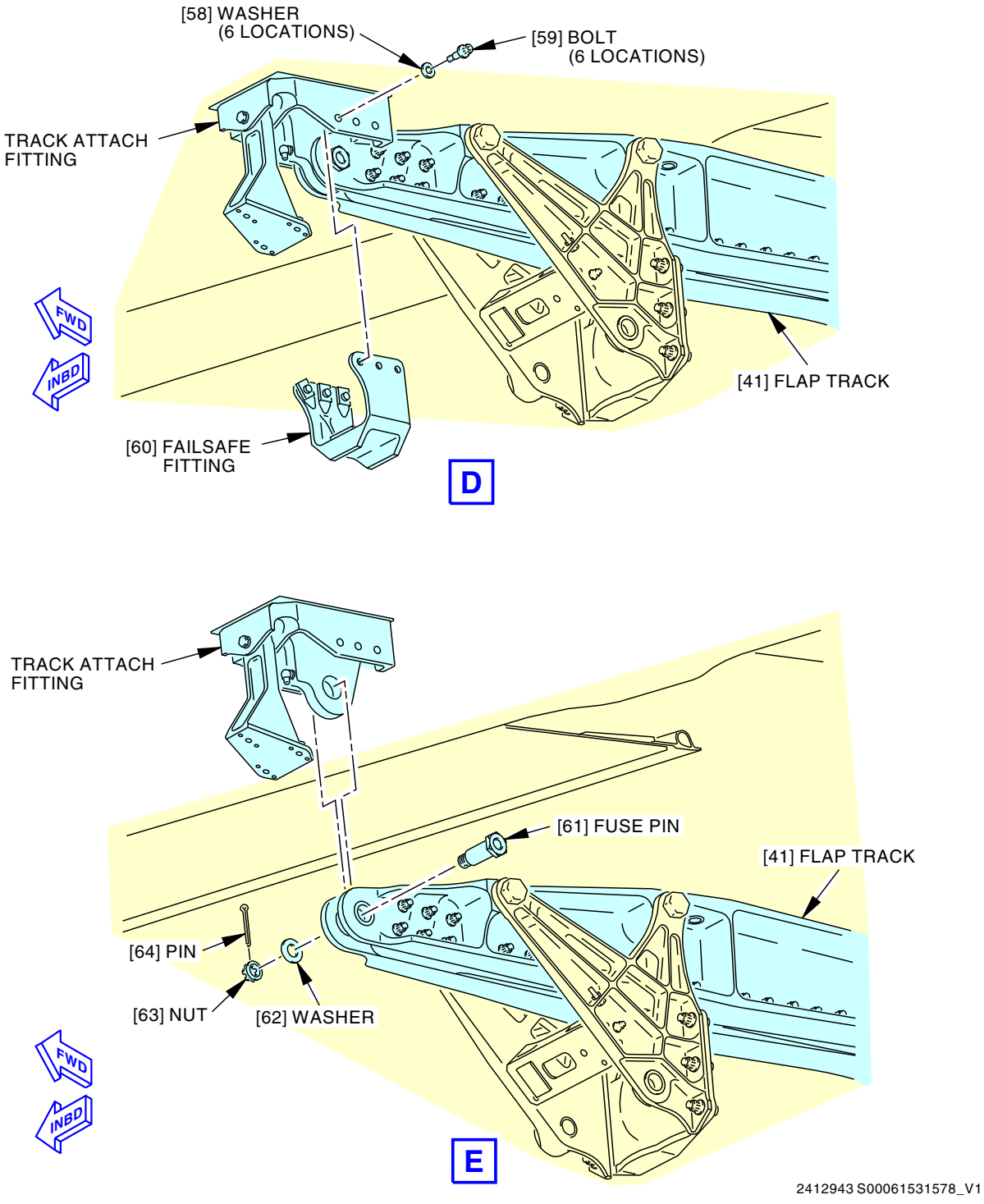
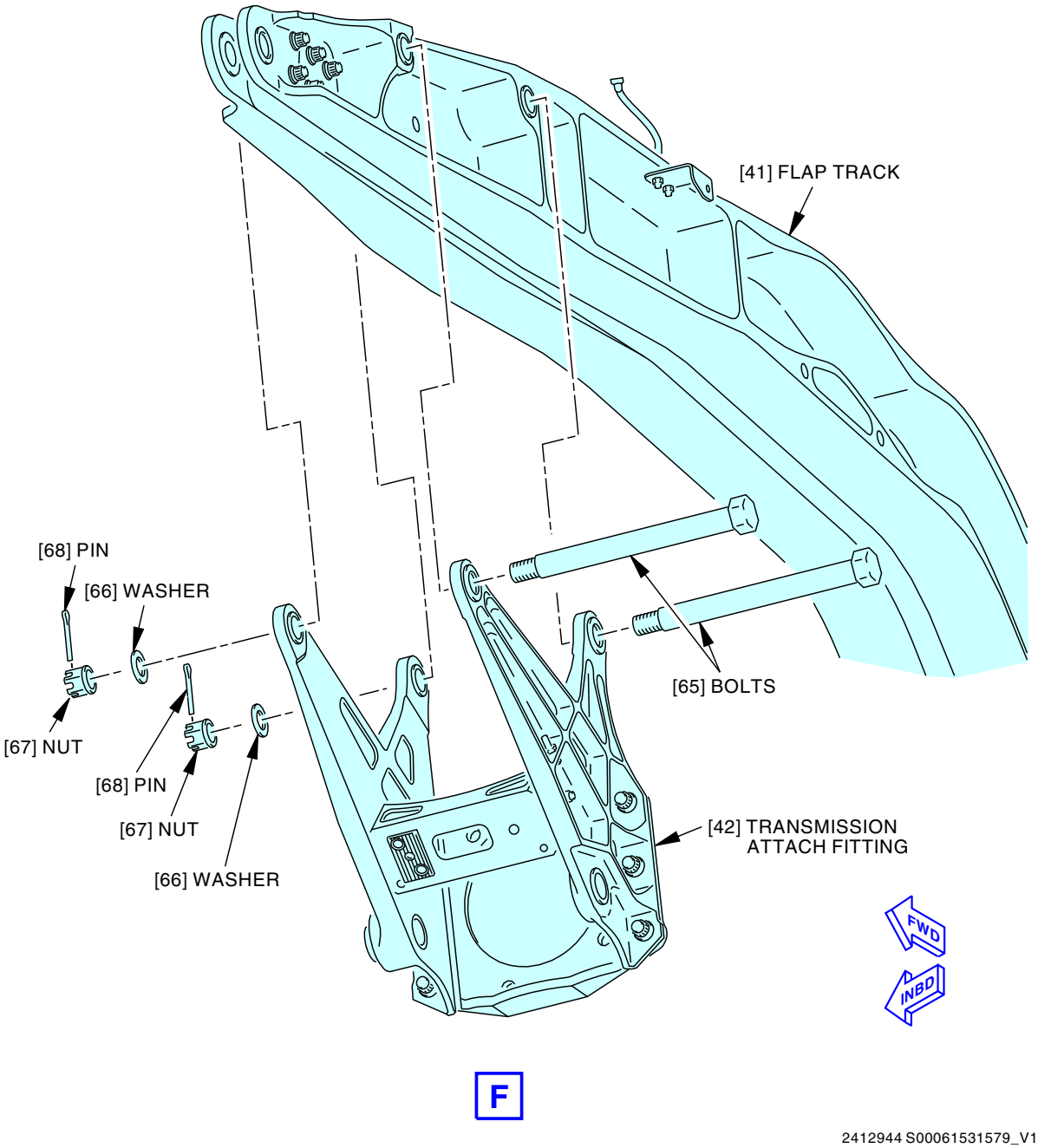


Outboard Flap Inboard Track Installation
Figure 402/27-51-25-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Track Installation
Figure 402/27-51-25-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-25-400-803

7. Outboard Flap Inboard Track Installation

(Figure 402)

A. General

(1) This task is applicable to the flap tracks at flap supports No. 2 and 7.

B. References

Reference	Title
12-22-51-640-815	Outboard Flap Inboard Flap Track Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-21-400-801	Outboard Trailing Edge Flap Installation (P/B 401)
27-51-21-820-801	Outboard Trailing Edge Flap Adjustment (P/B 501)
27-51-28-400-804	Outboard Flap Inboard Support Forward Fairing Installation (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)
27-51-41-400-803	Outboard Flap Inboard Transmission Installation (P/B 401)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-02-400-802	Outboard Flap Inboard Skew Mechanism Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1568	Jack - Hydraulic, General Low Profile Part #: B67563 Supplier: 36251 Part #: HW93718 Supplier: 28047 Opt Part #: W93718 Supplier: 36251
SPL-1733	Adapter - Hoist, Removal/Installation, Flap Track Part #: C27040-29 Supplier: 81205 Opt Part #: C27040-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
41	Flap track	27-51-25-03-135	SIA 010-014

F. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Outboard Flap Inboard Track Installation

SUBTASK 27-51-25-420-007

(1) If it is not installed, install the transmission attach fitting [42]:

(a) Put the transmission attach fitting [42] in its location on the flap track [41].

(b) Install the bolts [65], washers [66], and nuts [67] that attach the aft end of the transmission attach fitting [42] to the flap track [41].

(c) Install the new pins [68] in the nuts [67].

SUBTASK 27-51-25-480-005

(2) If you will use the adapter, SPL-1733, install it on the flap track [41]:

(a) Install the adapter, SPL-1733, on the flap track [41] approximately 33 in. (838 mm) aft of the track attach fitting.

(b) Put a low profile hydraulic jack, COM-1568, below the adapter, SPL-1733, to support the flap track [41].

SUBTASK 27-51-25-420-008

(3) Install the flap track [41]:

(a) If it is not installed, install the shim [49] on the structure:

1) Make sure the shim [49] is the same thickness as the shim [49] that you removed.

NOTE: The original thickness of the shim [49] is on a marker on the structure.

NOTE: If it is necessary to replace the flap track [41] with a new unit, a new shim [49] may need to be made and should be marked and checked after the nuts are torqued that attach the flap track to the structure.

2) Apply sealant, A00247, to the mating surface of the shim [49] and the structure.

3) Put the shim [49] in its position.

4) Apply a fillet seal of sealant, A00247, around the shim [49].

(b) Attach the aft end of the flap track [41] to the structure:

1) Lift the flap track [41] to its location on the structure.

2) Install the bolt [51], washer [50], washer [48], and nut [47] that attaches the inboard side of the flap track [41] to the structure.

3) Install the bolt [43], washer [44], washer [45], and nut [46] that attaches the outboard side of the flap track [41] to the structure.

NOTE: You can install the bolt [43] with the head down. The washer [45] is installed adjacent to the flap track [41].

(c) Attach the forward end of the flap track [41]:

1) Apply grease, D00633, to the outside of the fuse pin [61] and the inside of the bushings.

2) Install the fuse pin [61] that attaches the forward end of the flap track [41] to the track attach fitting.

(d) Tighten the nut [47] to a torque tool set point of 2300 in-lb (260 N·m).

(e) Tighten the nut [46] to a torque tool set point of 1800 in-lb (203 N·m).

(f) Make sure you can turn the fuse pin [61] in the joint with a maximum of 10 in-lb (1 N·m).

NOTE: You can push up on the forward end of the flap track [41] to take the weight off the fuse pin [61] when you measure the torque.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Install the washer [62] and nut [63] on the fuse pin [61].

(h) Tighten the nut [63] to 330 in-lb (37 N·m) - 350 in-lb (40 N·m).

(i) Loosen the nut [63] to align the hole for the pin [64].

(j) Install the new pin [64] in the nut [63].

SUBTASK 27-51-25-420-009

(4) Install the failsafe fitting [60] on the track attach fitting:

(a) Put the failsafe fitting [60] in its location on the track attach fitting.

(b) Install the bolts [59] and washers [58] to attach the failsafe fitting [60].

SUBTASK 27-51-25-480-006

(5) If it is necessary, remove the adapter, SPL-1733, from the flap track [41].

SUBTASK 27-51-25-020-016

(6) Install the bolt [52], washer [53], washer [54], washer [55], and nut [56] to connect the jumper wire [57] to the flap track [41].

SUBTASK 27-51-25-420-010

(7) Do this task: Outboard Flap Inboard Transmission Installation, TASK 27-51-41-400-803.

SUBTASK 27-51-25-420-011

(8) Do this task: Outboard Trailing Edge Flap Installation, TASK 27-51-21-400-801.

SUBTASK 27-51-25-420-012

(9) Do this task: Outboard Flap Inboard Skew Mechanism Installation, TASK 27-59-02-400-802.

SUBTASK 27-51-25-820-003

(10) Do this task: Outboard Trailing Edge Flap Adjustment, TASK 27-51-21-820-801.

SUBTASK 27-51-25-820-004

(11) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-51-25-640-002

(12) Do this task: Outboard Flap Inboard Flap Track Lubrication, TASK 12-22-51-640-815.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-25-410-002

(1) Install the fairings for the inboard track on the outboard flap:

(a) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

(b) Do this task: Outboard Flap Inboard Support Forward Fairing Installation, TASK 27-51-28-400-804.

SUBTASK 27-51-25-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-25-860-006

(3) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP TRACKS - INSPECTION/CHECK

1. General

A. This procedure contains tasks to do inspections of the flap tracks for the outboard trailing edge flaps.

TASK 27-51-25-200-801

2. Outboard Flap Track Inspection (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

B. Outboard Flap Track Inspection (Selection)

SUBTASK 27-51-25-200-001

(1) Do one of these tasks to inspect the applicable outboard flap track:

(a) Do this task: Outboard Flap Outboard Track Inspection, TASK 27-51-25-200-802.

(b) Do this task: Outboard Flap Inboard Track Inspection, TASK 27-51-25-200-803.

——— END OF TASK ———

TASK 27-51-25-200-802

3. Outboard Flap Outboard Track Inspection

(Figure 601)

A. General

(1) This task gives wear limits for the outboard track on the outboard flap.

(2) this task is applicable to the flap tracks at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-25-000-802	Outboard Flap Outboard Track Removal (P/B 401)
27-51-25-400-802	Outboard Flap Outboard Track Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

E. Outboard Flap Outboard Track Inspection

SUBTASK 27-51-25-020-017

(1) Do this task: Outboard Flap Outboard Track Removal, TASK 27-51-25-000-802.

SUBTASK 27-51-25-020-018

(2) Use these tools to do a check for wear on the part of the outboard flap outboard track:

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(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-25-020-019

(3) Examine the parts of the outboard flap outboard track (Table 601):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 601/27-51-25-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
bushing [1]	I.D.	0.5236 in. (13.2994 mm)	0.5332 in. (13.5433 mm)	0.5347 in. (13.5814 mm)	0.0327 in. (0.8306 mm)
fuse pin [2]	O.D.	0.5030 in. (12.7762 mm)	0.5035 in. (12.7889 mm)	0.5020 in. (12.7508 mm)	0.0327 in. (0.8306 mm)
bushing [3]	I.D.	0.5236 in. (13.2994 mm)	0.5332 in. (13.5433 mm)	0.5347 in. (13.5814 mm)	0.0327 in. (0.8306 mm)
fuse pin [2]	O.D.	0.5030 in. (12.7762 mm)	0.5035 in. (12.7889 mm)	0.5020 in. (12.7508 mm)	0.0327 in. (0.8306 mm)
bushing [4]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5695 in. (14.4653 mm)	0.0080 in. (0.2032 mm)
bolt [5]	O.D.	0.5605 in. (14.2367 mm)	0.5615 in. (14.2621 mm)	0.5590 in. (14.1986 mm)	0.0080 in. (0.2032 mm)
bushing [6]	I.D.	0.5000 in. (12.7000 mm)	0.5050 in. (12.8270 mm)	0.5050 in. (12.8270 mm)	0.0065 in. (0.1651 mm)
bolt [7]	O.D.	0.4985 in. (12.6619 mm)	0.4995 in. (12.6873 mm)	0.4985 in. (12.6619 mm)	0.0065 in. (0.1651 mm)
bushing [8]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5695 in. (14.4653 mm)	0.0700 in. (1.7780 mm)
bolt [7]	O.D.	0.4985 in. (12.6619 mm)	0.4995 in. (12.6873 mm)	0.4970 in. (12.6238 mm)	0.0700 in. (1.7780 mm)
bushing [9]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5695 in. (14.4653 mm)	0.0080 in. (0.2032 mm)

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Table 601/27-51-25-993-801 (Continued)

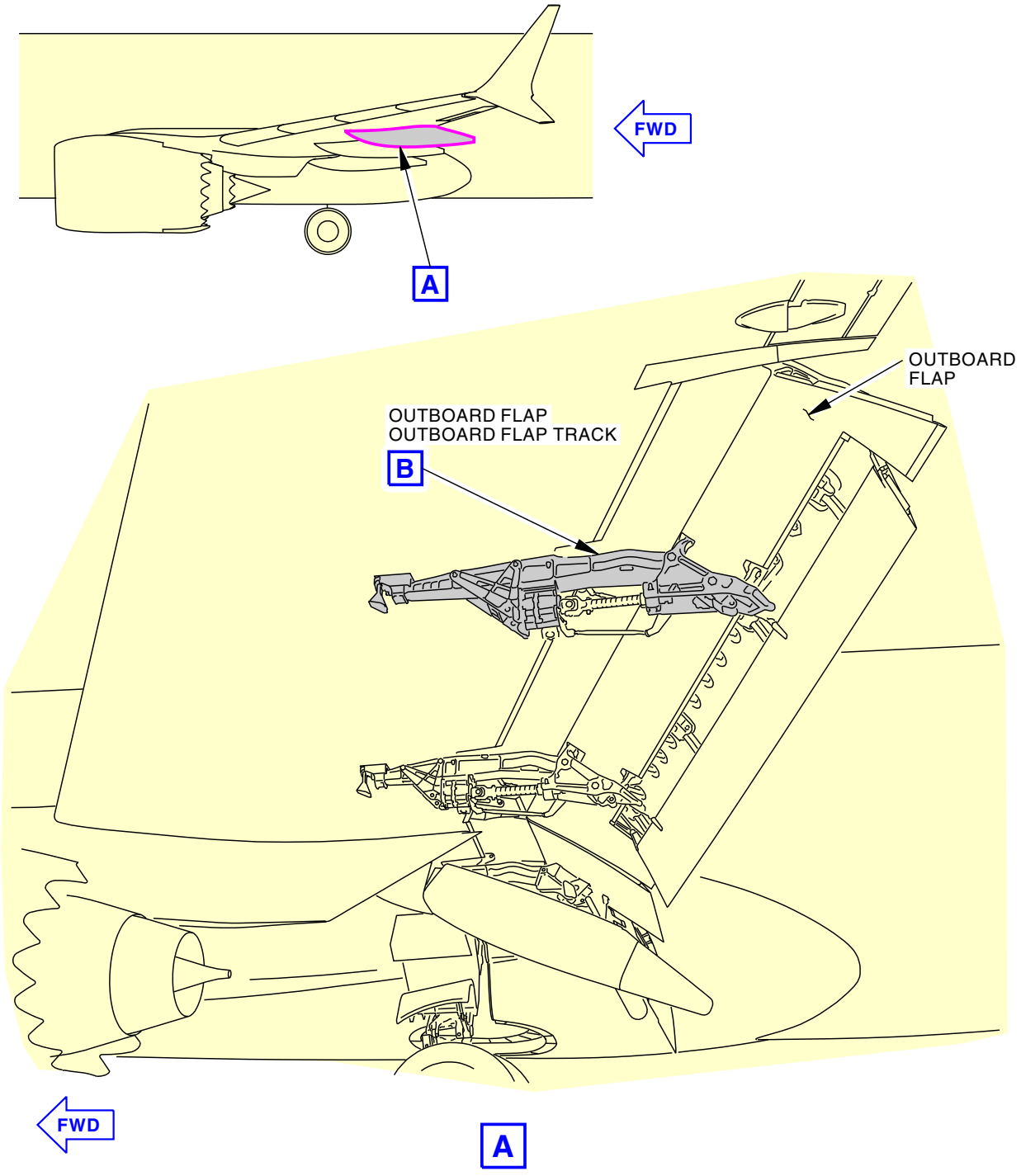
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
bolt [5]	O.D.	0.5605 in. (14.2367 mm)	0.5615 in. (14.2621 mm)	0.5590 in. (14.1986 mm)	0.0080 in. (0.2032 mm)

SUBTASK 27-51-25-420-013

(4) Do this task: Outboard Flap Outboard Track Installation, TASK 27-51-25-400-802.

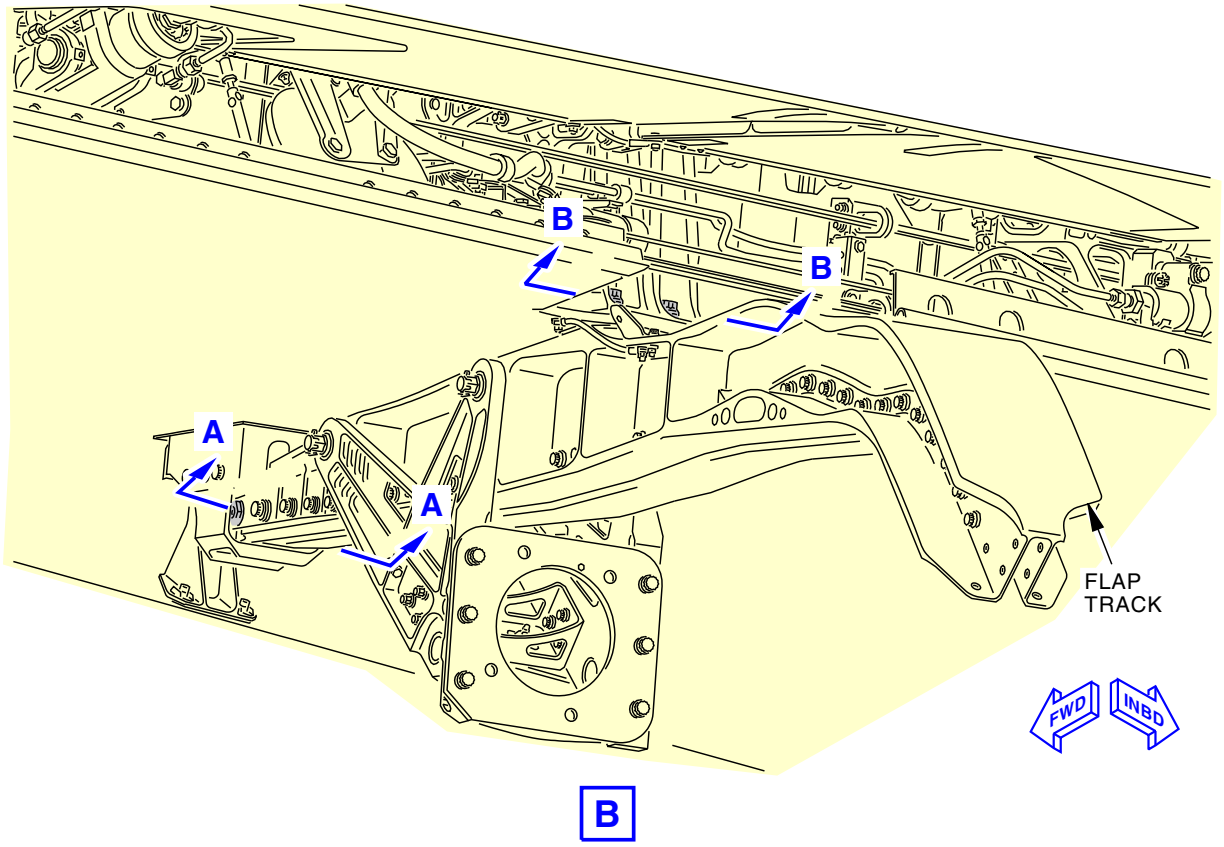
——— END OF TASK ———

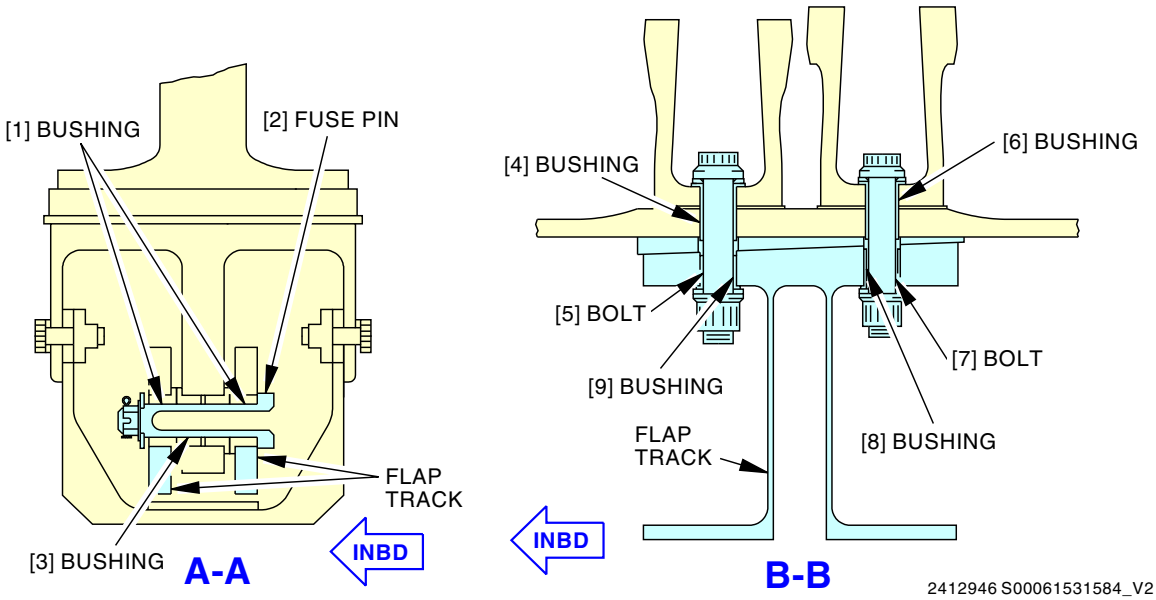
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Track Wear Limits
Figure 601/27-51-25-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





Outboard Flap Outboard Track Wear Limits
Figure 601/27-51-25-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-25-200-803

4. Outboard Flap Inboard Track Inspection

(Figure 602)

A. General

(1) This task gives wear limits for the inboard track on the outboard flap.

(2) This task is applicable to the flap tracks at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-25-000-803	Outboard Flap Inboard Track Removal (P/B 401)
27-51-25-400-803	Outboard Flap Inboard Track Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

E. Outboard Flap Inboard Track Inspection

SUBTASK 27-51-25-020-020

(1) Do this task: Outboard Flap Inboard Track Removal, TASK 27-51-25-000-803.

SUBTASK 27-51-25-020-021

(2) Use these tools to do a check for wear on the part of the inboard flap inboard track:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-51-25-020-022

(3) Examine the parts of the inboard flap inboard track (Table 602):

(a) Remove the parts that you will measure.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions.

(d) If the parts are not in tolerance, replace or repair the parts.

Table 602/27-51-25-993-802

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
bushing [2]	I.D.	0.7000 in. (17.7800 mm)	0.7095 in. (18.0213 mm)	0.7118 in. (18.0797 mm)	0.0336 in. (0.8534 mm)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 602/27-51-25-993-802 (Continued)

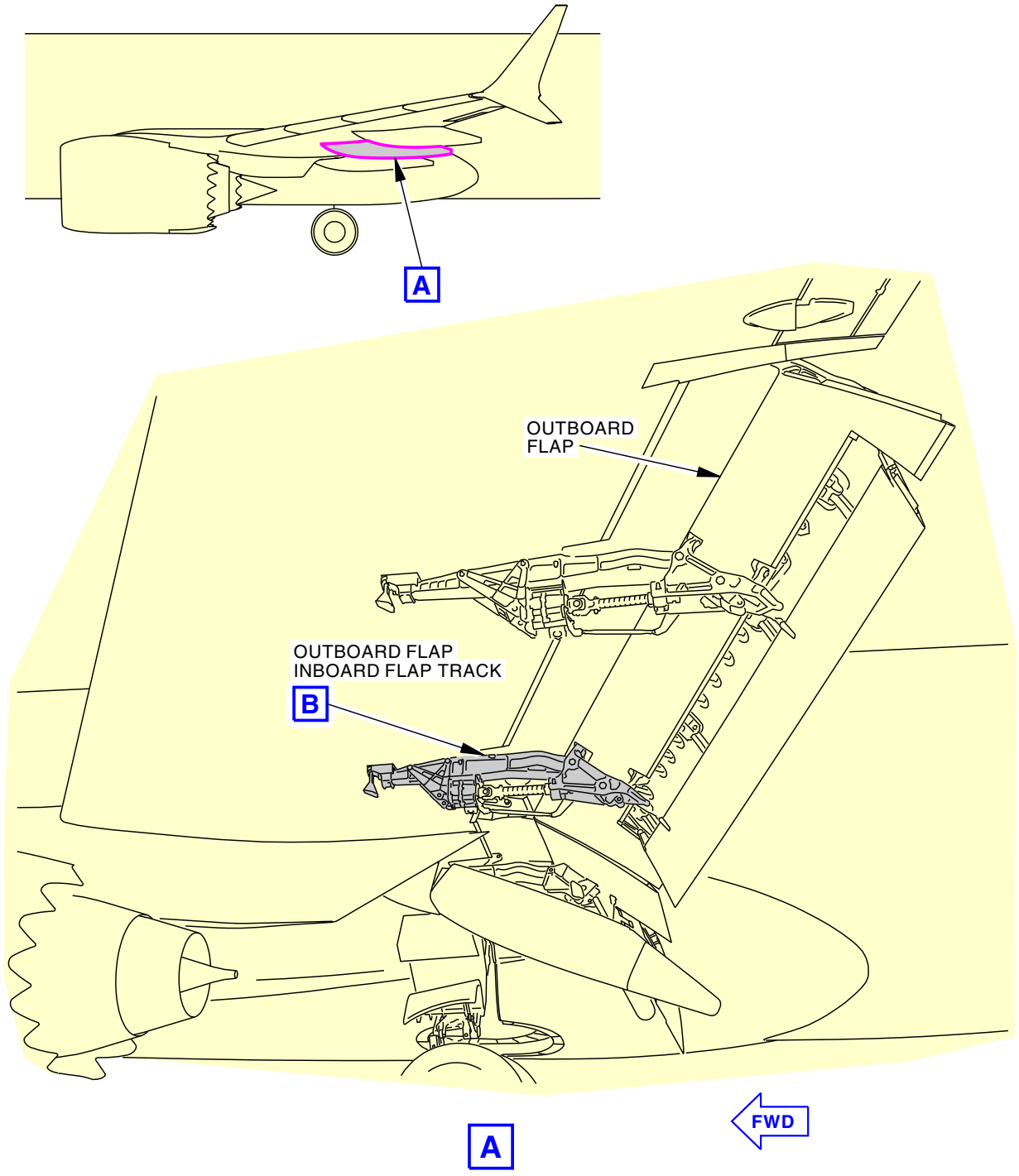
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE CLEARANCE inches/mm
fuse pin [1]	O.D.	0.6800 in. (17.2720 mm)	0.6805 in. (17.2847 mm)	0.6782 in. (17.2263 mm)	0.0336 in. (0.8534 mm)
bushing [3]	I.D.	0.7000 in. (17.7800 mm)	0.7095 in. (18.0213 mm)	0.7118 in. (18.0797 mm)	0.0336 in. (0.8534 mm)
fuse pin [1]	O.D.	0.6800 in. (17.2720 mm)	0.6805 in. (17.2847 mm)	0.6782 in. (17.2263 mm)	0.0336 in. (0.8534 mm)
bushing [4]	I.D.	0.6262 in. (15.9055 mm)	0.6311 in. (16.0299 mm)	0.6320 in. (16.0528 mm)	0.0105 in. (0.2667 mm)
bolt [5]	O.D.	0.6230 in. (15.8242 mm)	0.6240 in. (15.8496 mm)	0.6215 in. (15.7861 mm)	0.0105 in. (0.2667 mm)
bushing [6]	I.D.	0.5620 in. (14.2748 mm)	0.5670 in. (14.4018 mm)	0.5670 in. (14.4018 mm)	0.0065 in. (0.1651 mm)
bolt [7]	O.D.	0.5605 in. (14.2367 mm)	0.5615 in. (14.2621 mm)	0.5605 in. (14.2367 mm)	0.0065 in. (0.1651 mm)
bushing [8]	I.D.	0.6245 in. (15.8623 mm)	0.6295 in. (15.9893 mm)	0.6320 in. (16.0528 mm)	0.0730 in. (1.8542 mm)
bolt [7]	O.D.	0.5605 in. (14.2367 mm)	0.5615 in. (14.2621 mm)	0.5590 in. (14.1986 mm)	0.0730 in. (1.8542 mm)
bushing [9]	I.D.	0.6245 in. (15.8623 mm)	0.6295 in. (15.9893 mm)	0.6320 in. (16.0528 mm)	0.0105 in. (0.2667 mm)
bolt [5]	O.D.	0.6230 in. (15.8242 mm)	0.6240 in. (15.8496 mm)	0.6215 in. (15.7861 mm)	0.0105 in. (0.2667 mm)

SUBTASK 27-51-25-420-014

(4) Do this task: Outboard Flap Inboard Track Installation, TASK 27-51-25-400-803.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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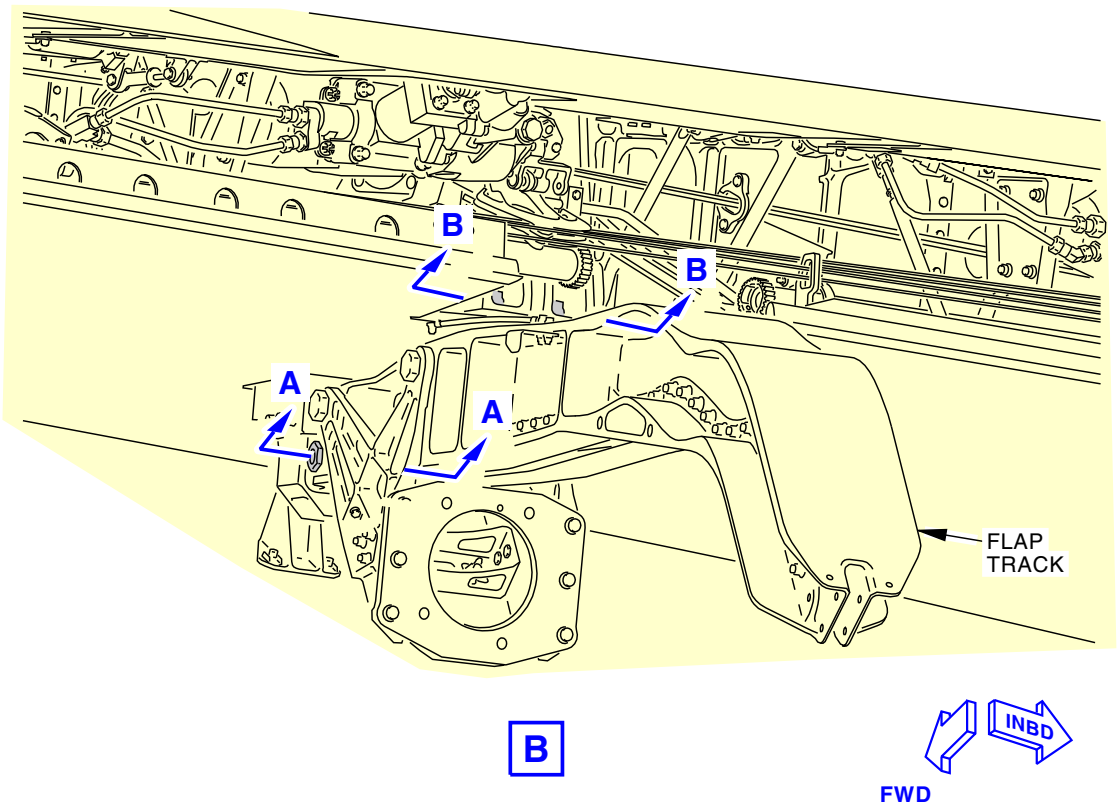
Outboard Flap Inboard Track Wear Limits
Figure 602/27-51-25-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Track Wear Limits
Figure 602/27-51-25-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD AFT FLAP TRACKS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the aft flap tracks for the outboard flap

(2) An installation of the aft flap tracks for the outboard flap.

B. There are four aft flap tracks on the outboard flaps. You can use this procedure to remove and install one or more of the aft flap tracks. If you remove more than two aft flap tracks, it is necessary to remove the aft flap from the main flap.

TASK 27-51-26-000-801

2. Outboard Aft Flap Track Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-22-000-801	Outboard Aft Flap Removal (P/B 401)

B. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

C. Prepare for the Removal

SUBTASK 27-51-26-020-001

(1) If it is necessary to remove more than two aft flap tracks, remove the aft flap [2], do this task: Outboard Aft Flap Removal, TASK 27-51-22-000-801.

SUBTASK 27-51-26-860-001

WARNING

IF YOU REMOVE ONE OR TWO AFT FLAP TRACKS WITH THE AFT FLAP ATTACHED TO THE MAIN FLAP, MAKE SURE THE INBOARD AND OUTBOARD AFT FLAP PROGRAMMING ROLLERS REMAIN ENGAGED IN THEIR RELATED PROGRAMMING TRACKS. ROLLERS CAN BECOME DISENGAGED FROM THE PROGRAMMING TRACKS AND CAN CAUSE INJURY TO PERSONNEL AND DAMAGE THE AFT FLAP FAIRING.

(2) If it is necessary to remove one or two aft flap tracks, extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-26-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

D. Outboard Aft Flap Track Removal

SUBTASK 27-51-26-020-002

(1) For the outboard aft flap track No. 1 [3], remove the cotter pin [12], nut [11], washer [10], washer [8], bolt [7], and bushing [9] that attach the aft flap track No. 1 [3] to the aft flap [2] (View A, Figure 401).

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SUBTASK 27-51-26-020-003

(2) For the aft flap track No. 2 [4], aft flap track No. 3 [5], or aft flap track No. 4 [6], remove the cotter pin [18], nut [17], washer [16], washer [14], bolt [13], and bushing [15] that attach the aft flap track No. 2 [4], aft flap track No. 3 [5], or aft flap track No. 4 [6] to the aft flap [2] (View B, Figure 401).

SUBTASK 27-51-26-020-004

(3) Remove the aft flap track assembly from the main flap [1] (View D, Figure 401):

NOTE: The flap track assemblies at each of the track positions are similar in assembly. The rib aft track support, aft flap track, and rub plate assembly part numbers are specific to each of the track positions.

(a) Remove lockwire, bolts [19], and washers [20] that attach the cartridge assemblies [21] to the track support rib [22] on the main flap [1] (View E, Figure 401).

(b) Retain the barrel nuts [19A] and retainer clips [20A] in the aft flap rib support.

NOTE: If the barrel nuts and retainer clips come out, mark their location and keep them for installation later.

(c) Remove the cartridge assemblies [21] from the track support rib [22].

NOTE: There are four cartridge assemblies in the track support rib at each track position.

(d) Remove lockwire, bolts [101], and washers [102] that attach the left rub plate assembly [110] and right rub plate assembly [111] to the track support rib [22] (View F, Figure 401).

(e) Carefully remove the aft flap track together with left rub plate assembly [110] and right rub plate assembly [111] from the track support rib [22].

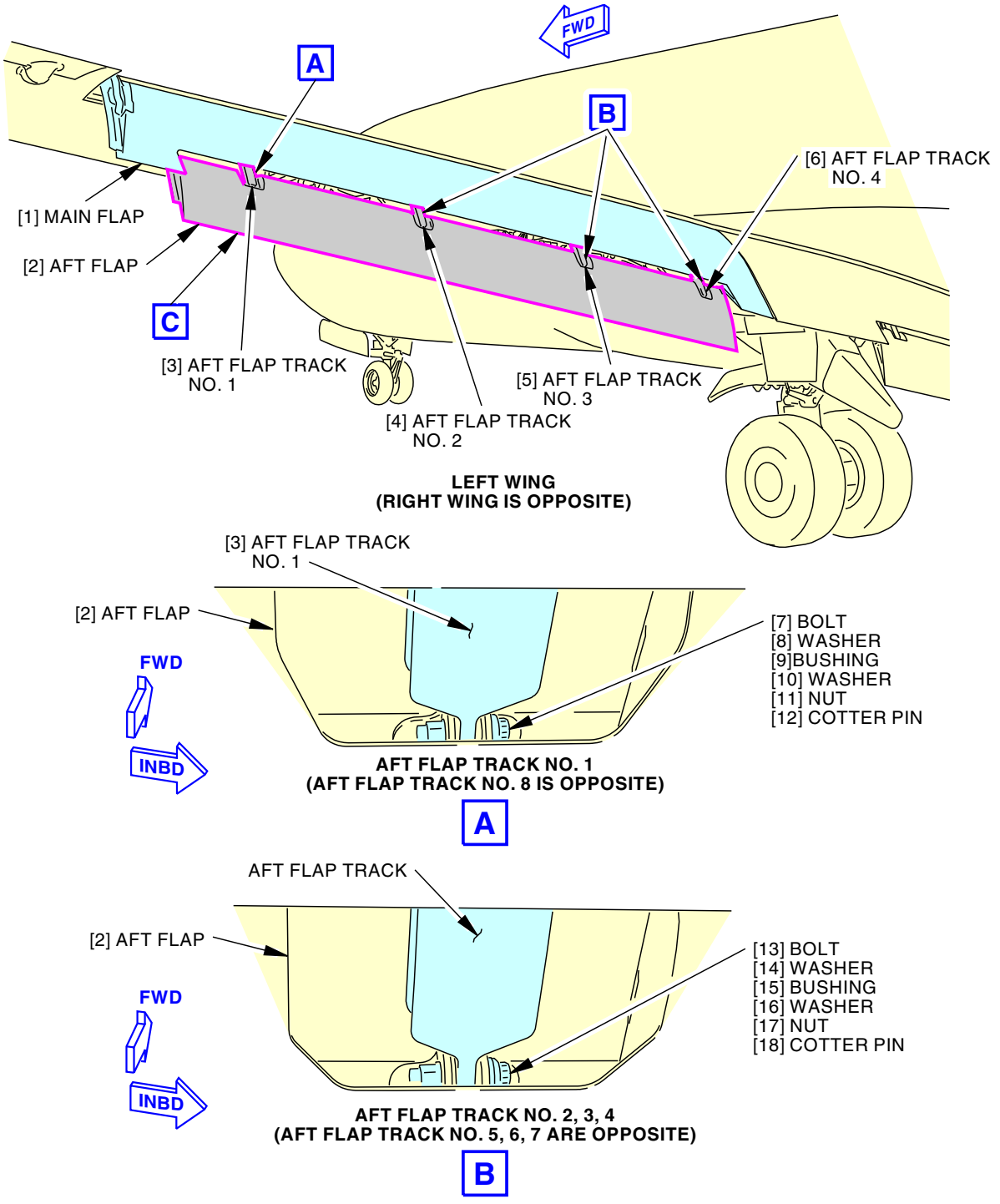
SUBTASK 27-51-26-000-001

(4) Remove the down stop from the forward end of the aft flap track assembly (View D, Figure 401).

(a) Remove the bolt [26], washer [27], washer [29], bushings [28], and nut [30] from the aft flap track.

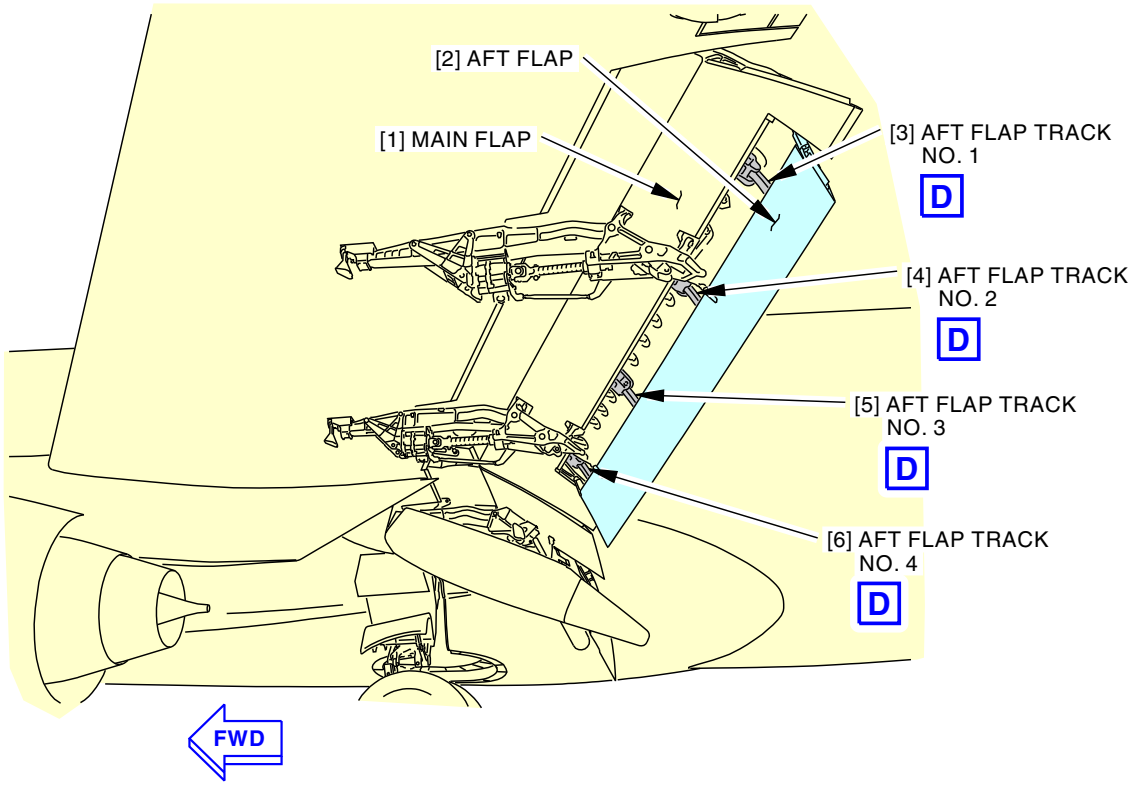
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Track Installation
Figure 401/27-51-26-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AFT FLAP TRACK NO. 1, 2, 3, 4
(AFT FLAP TRACK NO. 5, 6, 7, 8 ARE OPPOSITE)

C

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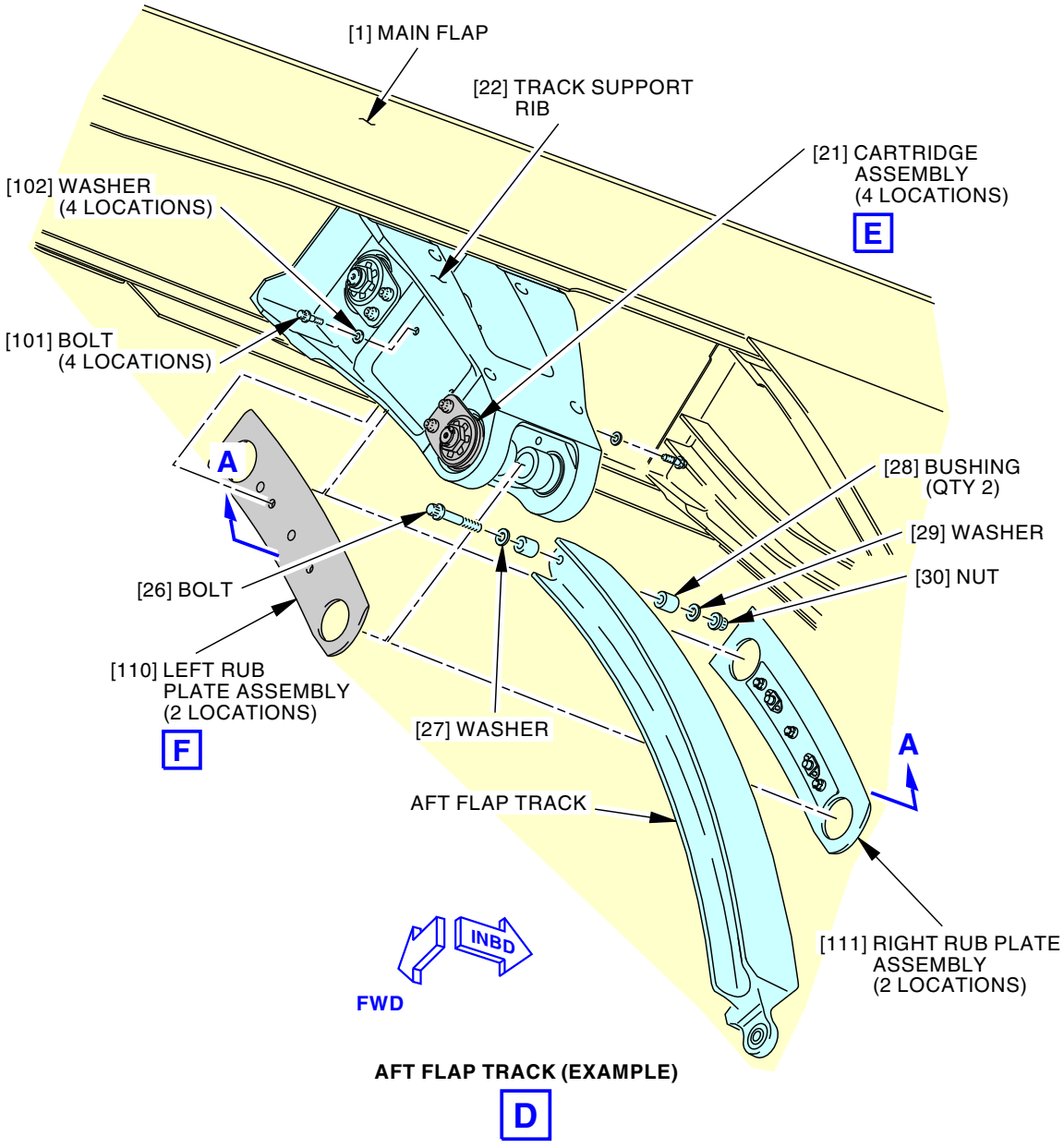
Outboard Aft Flap Track Installation
Figure 401/27-51-26-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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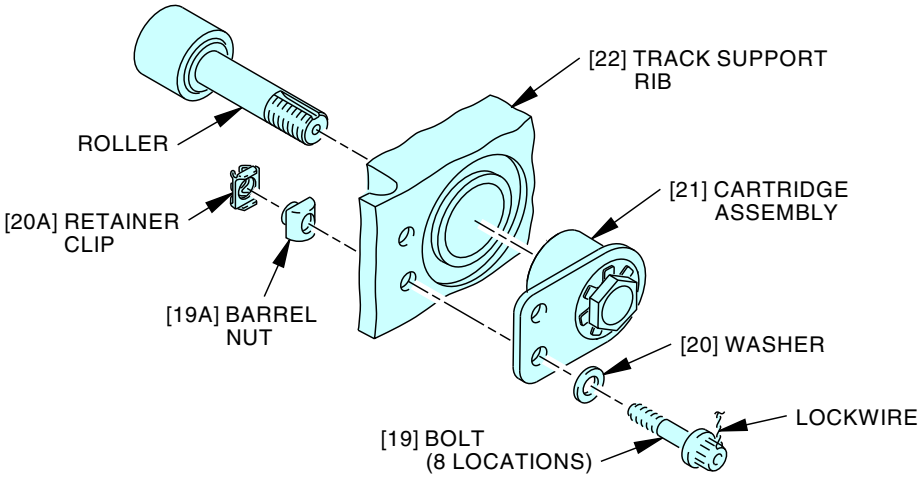
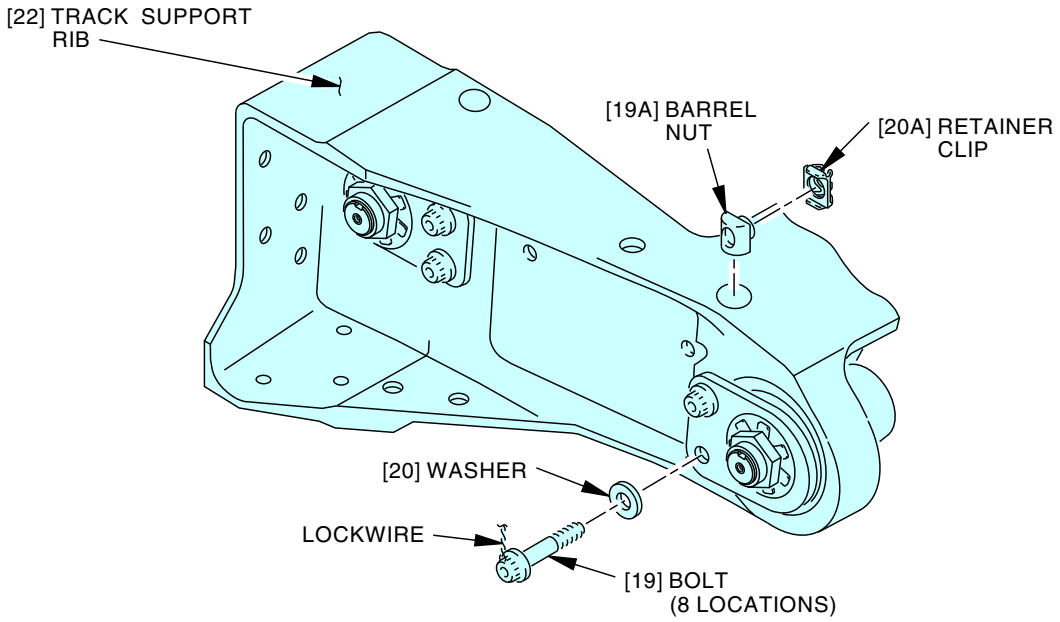
Outboard Aft Flap Track Installation
Figure 401/27-51-26-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CARTRIDGE ASSEMBLY (EXAMPLE)

E



CARTRIDGE ASSEMBLY (EXAMPLE)

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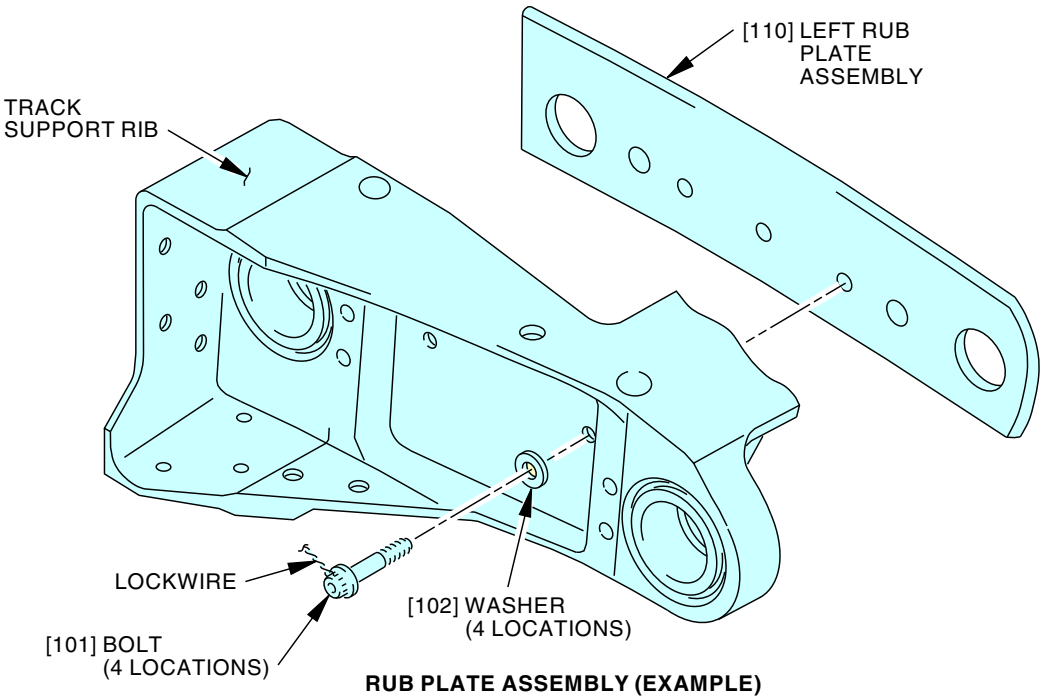
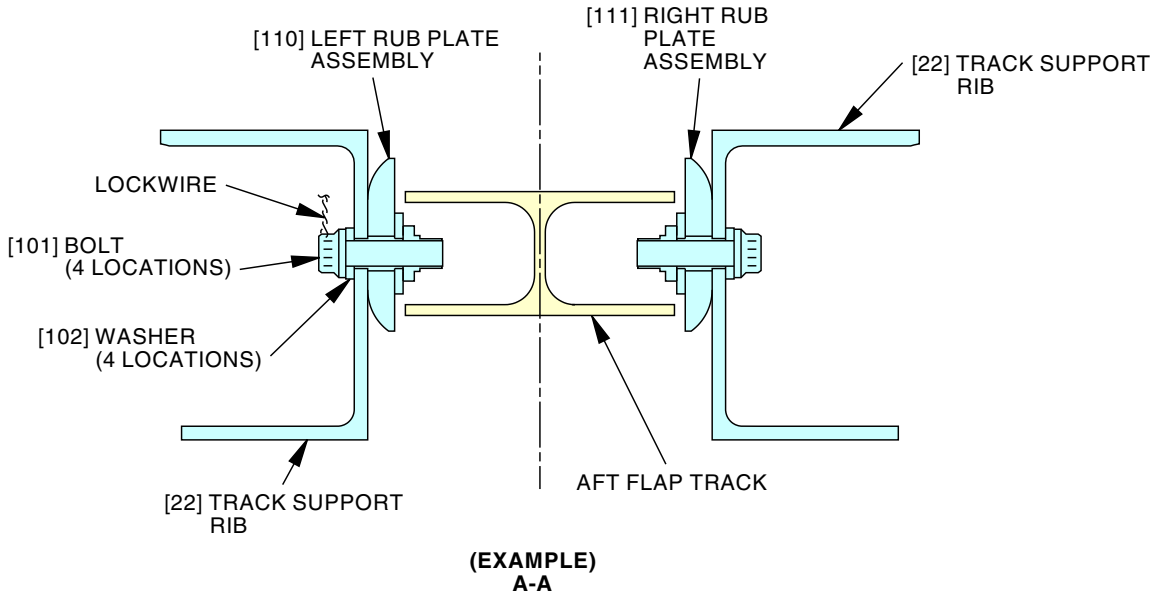
Outboard Aft Flap Track Installation
Figure 401/27-51-26-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



RUB PLATE ASSEMBLY (EXAMPLE)

F



(EXAMPLE)
A-A

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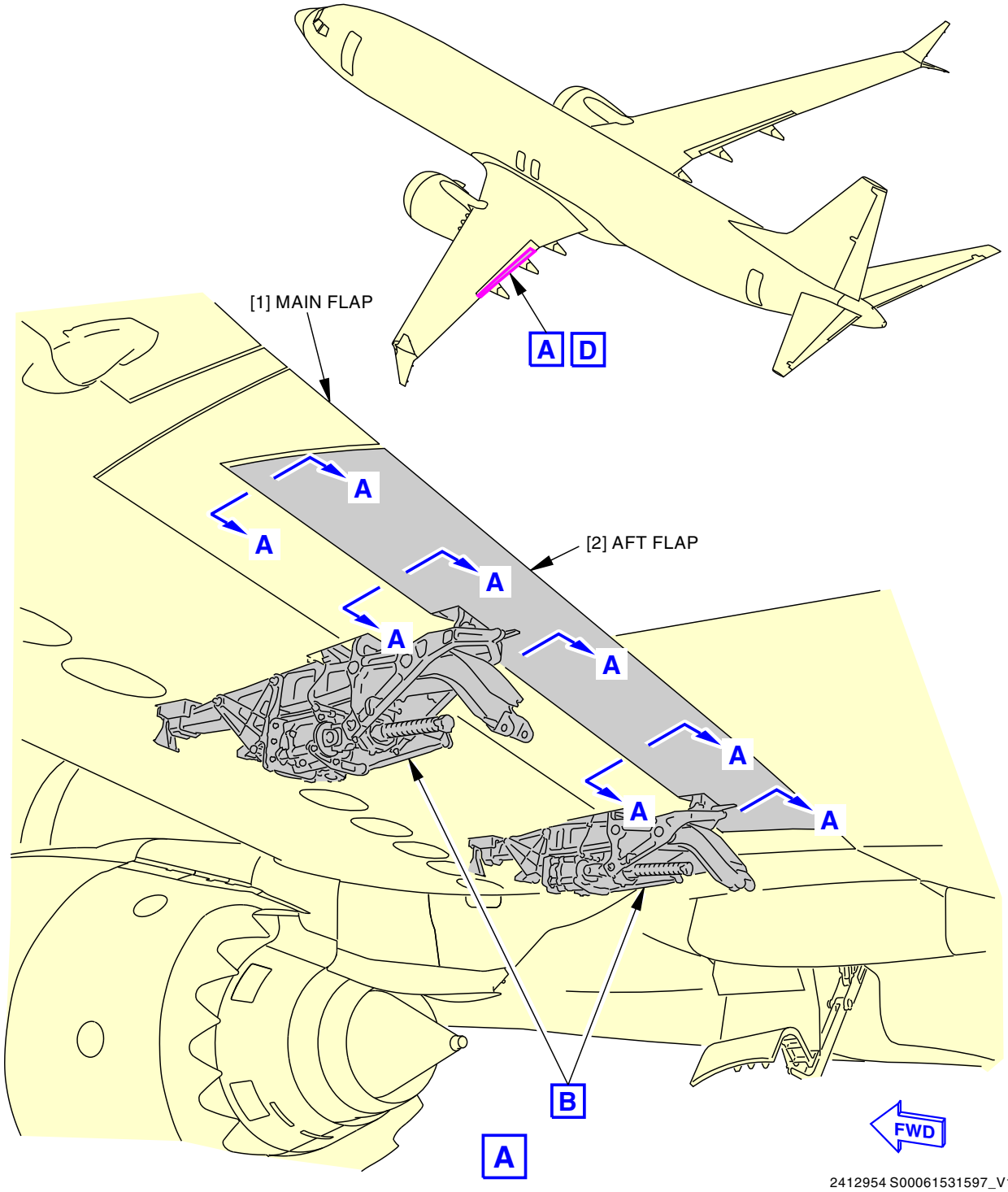
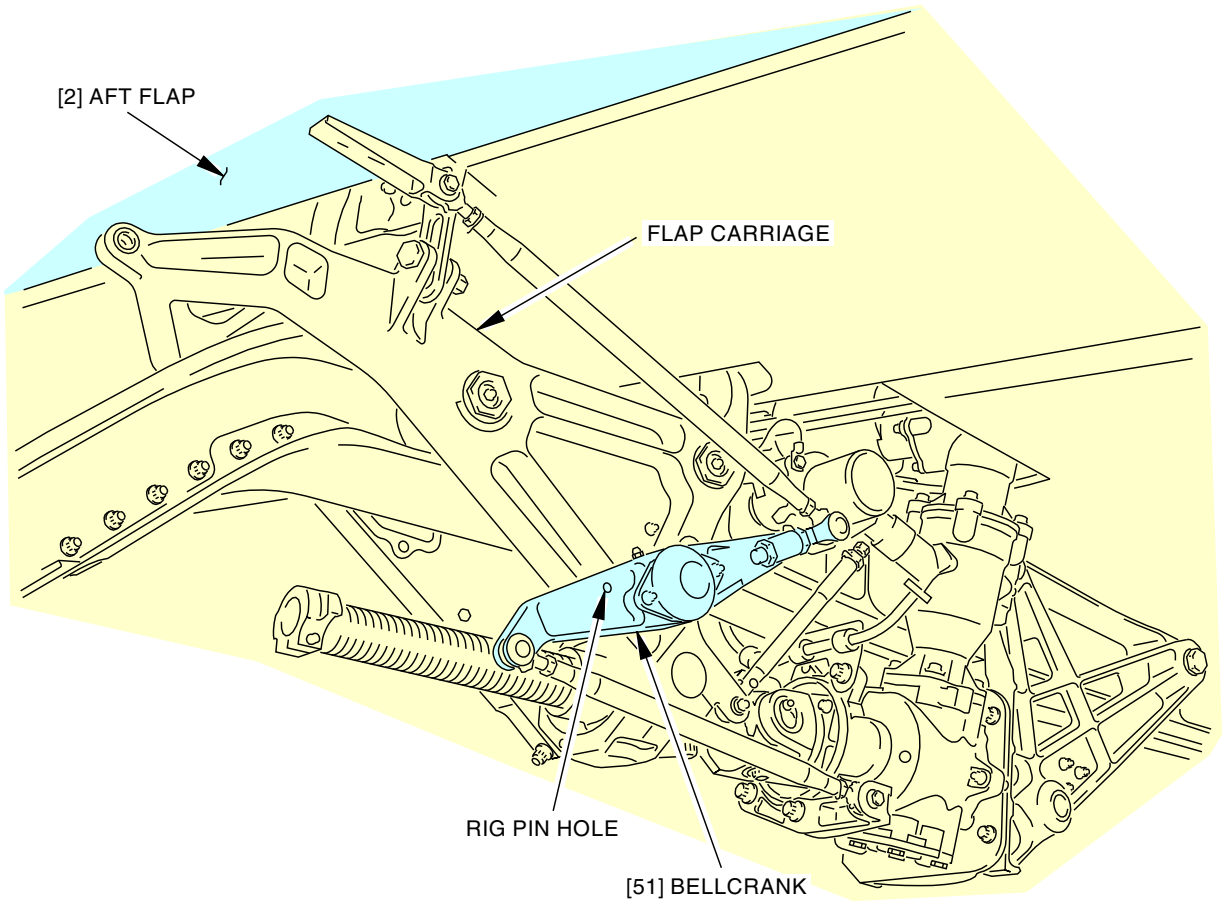
Outboard Aft Flap Track Installation
Figure 401/27-51-26-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Aft Flap Track Adjustment
Figure 402/27-51-26-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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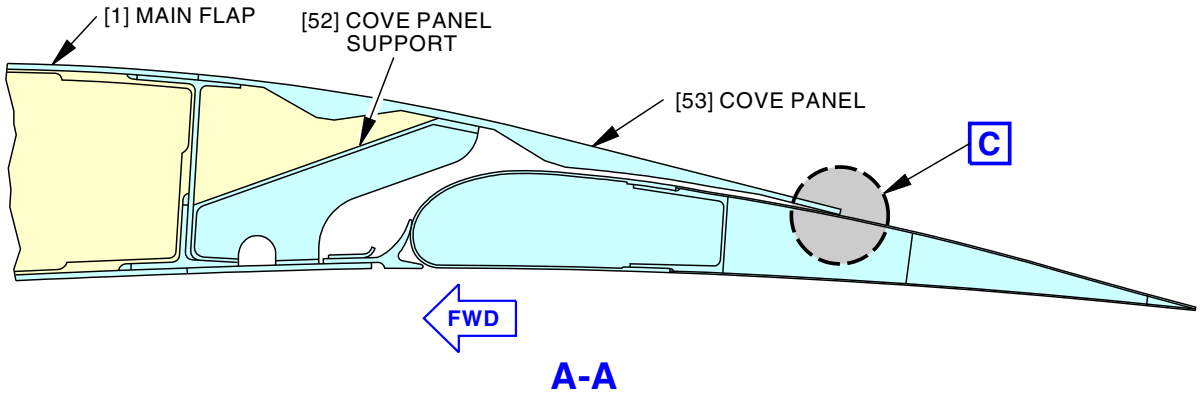
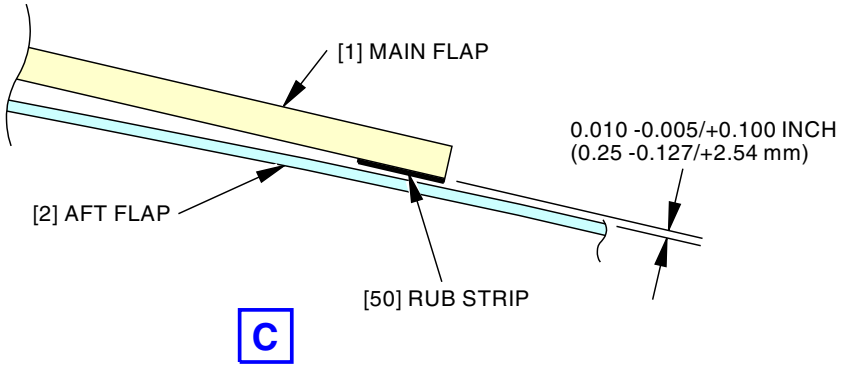
Outboard Aft Flap Track Adjustment
Figure 402/27-51-26-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Outboard Aft Flap Track Adjustment
Figure 402/27-51-26-990-803 (Sheet 3 of 4)

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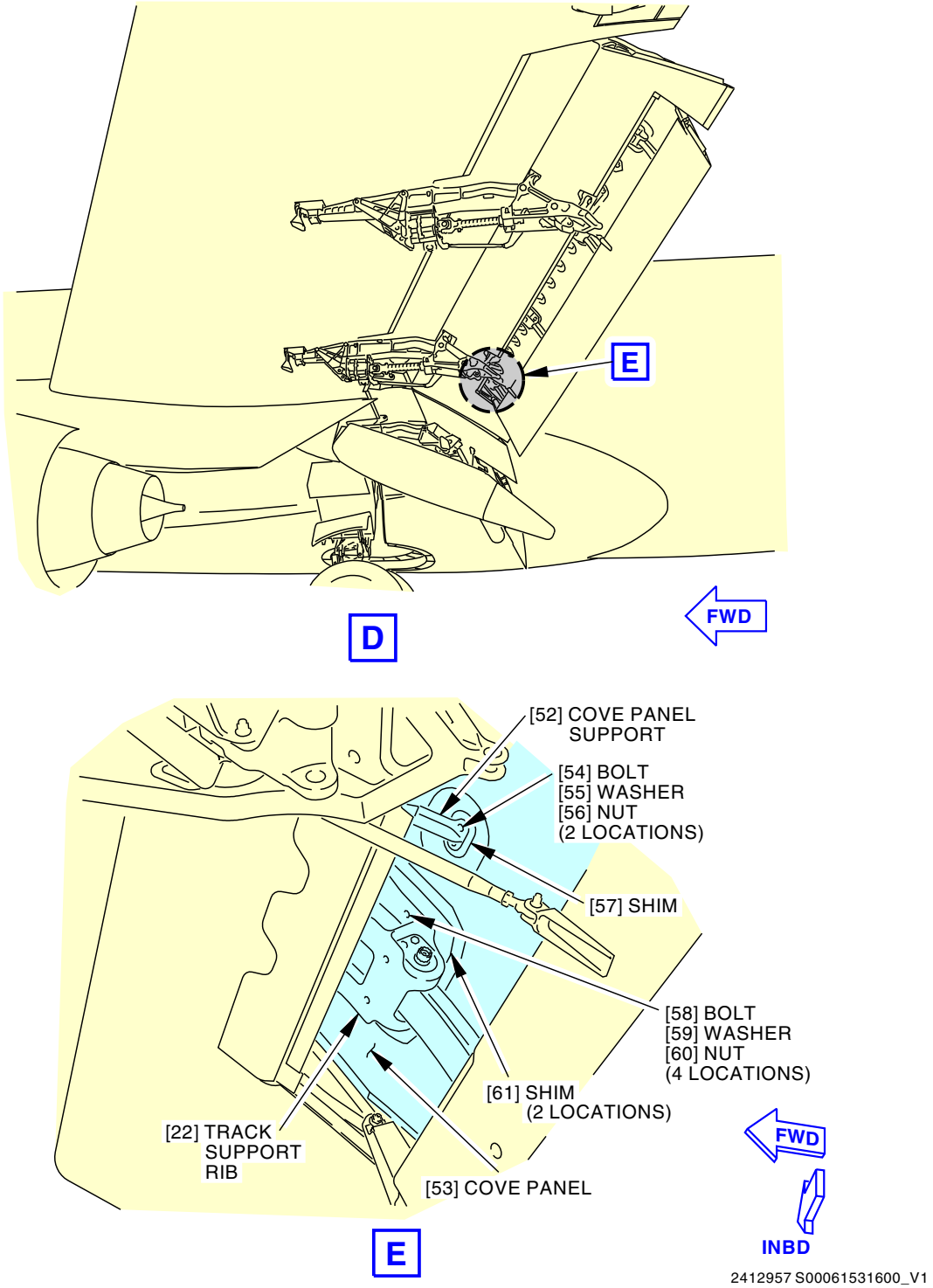

Outboard Aft Flap Track Adjustment
Figure 402/27-51-26-990-803 (Sheet 4 of 4)

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TASK 27-51-26-400-801

3. Outboard Aft Flap Track Installation

(Figure 401, Figure 402)

A. References

Reference	Title
12-22-51-640-812	Outboard Main Flap and Aft Flap Roller and Linkage Lubrication (P/B 301)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-22-400-801	Outboard Aft Flap Installation (P/B 401)
51-21-81-370-801	Apply The Abrasion-Resistant Teflon Finish, BMS 10-86 Type I (P/B 701)
51-71-00-340-801	Bonded Phenolic or Stainless Steel Rub Pad Repair (Heat Source Available) (P/B 801)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Aft flap track No. 1	27-51-26-20-045	SIA ALL
4	Aft flap track No. 2	27-51-26-20-060	SIA ALL
5	Aft flap track No. 3	27-51-26-20-075	SIA ALL
6	Aft flap track No. 4	27-51-26-20-090	SIA ALL

E. Location Zones

Zone	Area
567	Left Wing - Outboard Flap
667	Right Wing - Outboard Flap

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F. Outboard Aft Flap Track Installation

SUBTASK 27-51-26-420-001

(1) If the downstop is not installed on the applicable aft flap track, do these steps:

(a) Install the bolt [26], bushings [28], washer [27], washer [29], and nut [30] on the aft flap track.

(b) Tighten the nut [30] the minimum amount to necessary to hold the bushings [28] tight.

SUBTASK 27-51-26-420-002

(2) Install the aft flap track assembly in the main flap [1] (View D, Figure 401):

NOTE: The flap track assemblies at each of the track positions are similar in assembly. The rib aft track support, aft flap track, and rub plate assembly part numbers are specific to each of the track positions.

(a) Insert the left rub plate assembly [110] and right rub plate assembly [111] into the sides of the aft flap track with the nutlock plates facing inward to the centerline of the track.

(b) Carefully place the aft track together with the rub plates in its position in the track support rib [22] of the main flap [1].

(c) Install the bolts [101], washers [102] that attach the left rub plate assembly [110] and right rub plate assembly [111] to either side of the track support rib [22] (View F, Figure 401).

(d) Install MS20995C32 lockwire, G01048, on the bolts [101] at each side of the track.

(e) Apply a layer of grease, D00633, to the outside of the cartridge assemblies [21] and inside diameter of the track support rib [22].

(f) Put the cartridge assemblies [21] in position in the track support rib [22].

NOTE: Install the forward cartridge assembly first so that you can access the barrel nuts and retainer clips if it is necessary.

(g) If the barrel nuts [19A] and retainer clips [20A] did not remain in the rib support, install them in the track support rib [22] before installing the attaching bolts [19] (View E, Figure 401).

(h) Install the bolts [19] and washers [20] that attach the cartridge assemblies [21] to the track support rib [22] (View E, Figure 401).

1) Install MS20995C32 lockwire, G01048, on the bolts [19] at each of the cartridge assemblies [21].

SUBTASK 27-51-26-420-003

WARNING MAKE SURE THAT YOU ENGAGE THE INBOARD-AND-OUTBOARD AFT FLAP-PROGRAMMING-ROLLERS IN THEIR RELATED PROGRAMMING TRACKS. ROLLERS CAN DISENGAGE FROM THE PROGRAMMING TRACKS AND CAN CAUSE INJURY TO PERSONNEL AND DAMAGE THE AFT FLAP FAIRING.

(3) If the aft flap [2] is installed, connect the applicable aft flap track to the aft flap [2]:

(a) Connect the aft flap track No. 1 [3] to the aft flap [2]:

1) Move the aft flap track No. 1 [3] until it aligns with the aft flap [2].

2) Apply grease, D00633, to the shank of the bolt [7] and inside of the bushing [9].

a) Make sure that there is no grease, D00633, on the threads of the bolt [7].

3) Install the bushing [9], bolt [7], and washer [8] that attach the aft flap track No. 1 [3] to the aft flap [2].

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4) Carefully clean all of grease, D00633, from the threads of the bolt [7].
5) Install the washer [10] and nut [11] on the bolt [7].
6) Tighten the nut [11] to 65 ±15 in-lb (7.3 ±1.7 N·m).
7) Install the cotter pin [12] in the nut [11].

(b) Connect the aft flap track No. 2 [4] or aft flap track No. 3 [5] to the aft flap [2]:
1) Move the applicable aft flap track until it aligns with the aft flap [2].
2) Apply grease, D00633, to the shank of the bolt [13] and inside of the bushing [15].
a) Make sure that there is no grease, D00633, on the threads of the bolt [13].
3) Install the bushing [15], bolt [13], and washer [14] that attach the aft flap track No. 2 [4] or aft flap track No. 3 [5] to the aft flap [2].
4) Carefully clean all of grease, D00633, from the threads of the bolt [13].
5) Install the washer [16] and nut [17] on the bolt [13].
6) Tighten the nut [17] to 125 ±25 in-lb (14.1 ±2.8 N·m).
7) Install the cotter pin [18] in the nut [17].

(c) Connect the aft flap track No. 4 [6] to the aft flap [2]:
1) Move the applicable aft flap track until it aligns with the aft flap [2].
2) Apply grease, D00633, to the shank of the bolt [13] and inside of the bushing [15].
a) Make sure that there is no grease, D00633, on the threads of the bolt [13].
3) Install the bushing [15], bolt [13], and washer [14] that attach the aft flap track No. 4 [6] to the aft flap [2].
4) Carefully clean all of grease, D00633, from the threads of the bolt [13].
5) Install the washer [16] and nut [17] on the bolt [13].
6) Tighten the nut [17] to 200 ±40 in-lb (22.6 ±4.5 N·m).
7) Install the cotter pin [18] in the nut [17].

SUBTASK 27-51-26-420-004

(4) If it is not installed, install the aft flap [2] (TASK 27-51-22-400-801).

SUBTASK 27-51-26-640-001

(5) Lubricate the cartridge assemblies [21] and cartridge assemblies [25] with grease, D00633 (TASK 12-22-51-640-812).

SUBTASK 27-51-26-860-002

(6) If the trailing edge flaps are not in the retracted position, retract the flaps (TASK 27-51-00-860-804):
(a) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.
(b) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.
(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Outboard Aft Flap Adjustment

SUBTASK 27-51-26-480-001

(1) On the inboard and outboard flap supports, install the rig pins (rigging pin kit, SPL-1585) in the rig pin holes in the bellcrank [51] and flap carriage (Figure 402).
(a) If it is necessary, move the aft flap [2] or main flap [1] until you can install the rig pins.

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SUBTASK 27-51-26-980-001

(2) Support the aft flap [2] to make sure that the programming rollers touch the bottom surface of the programming tracks and aft rollers for the aft flap tracks touch the top surface of the tracks.

NOTE: This is the position the rollers will be in with airloads applied to the flap.

SUBTASK 27-51-26-220-001

(3) Measure the clearance between the main flap [1] and upper surface of the aft flap [2] (View C, Figure 402).

(a) Measure the clearance at all of the cove panel supports [52] and at the track support ribs [22].

SUBTASK 27-51-26-220-002

(4) Make sure that the rub strip [50] and Teflon coating on the upper surface of the aft flap [2] are not damaged (View C, Figure 402).

(a) If the rub strip [50] is damaged or missing, do this task: Bonded Phenolic or Stainless Steel Rub Pad Repair (Heat Source Available), TASK 51-71-00-340-801.

(b) If the Teflon coating is damaged, do this task: Apply The Abrasion-Resistant Teflon Finish, BMS 10-86 Type I, TASK 51-21-81-370-801.

SUBTASK 27-51-26-820-001

(5) If the clearance between the main flap [1] and aft flap [2] is not in the limit of 0.010 +0.100 / -0.005 in. (0.254 +2.540 / -0.127 mm), change the thickness of the shims [61] on the cove panel support [52] or the shims [61] on the track support ribs [22].

(a) Remove the rig pins from the bellcranks [51].

(b) Extend the aft flap [2], until you can get access to the fasteners for the shim [57] and shims [61] (TASK 27-51-00-860-803).

(c) If it is necessary, change the thickness of the shims [61] on the cove panel supports [52] as follows:

1) Remove the nuts [56], washers [55], and bolts [54] that attach the cove panel [53] to the cove panel support [52].

2) Remove the shim [57] from the cove panel support [52] and cove panel [53].

3) Change the thickness of the shim [57].

NOTE: The maximum permitted thickness of the shim is 0.050 in. (1.270 mm).

4) Apply sealant, A00247, to the mating surfaces of the shim [57].

5) Put the shim [57] in its position between the cove panel support [52] and cove panel [53].

6) Install the bolts [54], washers [55], and nuts [56].

(d) If it is necessary, change the thickness of the shims [61] on the track support rib [22] as follows:

1) Remove the nuts [60], washers [59], and bolts [58] that attach the cove panel [53] to the track support rib [22].

2) Remove the shims [61] from the track support rib [22] and cove panel [53].

3) Change the thickness of the shims [61].

NOTE: The maximum permitted thickness of the shim is 0.050 in. (1.270 mm).

4) Apply sealant, A00247, to the mating surfaces of the shims [61].

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5) Put the shims [61] in their position between the track support rib [22] and cove panel [53].

6) Install the bolts [58], washers [59], and nuts [60].

7) If it is necessary, trim the excess shim [61] that extends past the track support rib [22].

(e) Retract the aft flap [2] until you can install the rig pins in the bellcranks [51] (TASK 27-51-00-860-804).

(f) Install the rig pins in the bellcranks [51].

(g) Make sure that the clearance between the main flap [1] and upper surface of the aft flap [2] is in the limit.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-26-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-26-860-003

(2) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP SUPPORT FAIRINGS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) For the outboard flap support on the outboard flap:

(a) A removal of the forward fairing.

(b) An installation of the forward fairing.

(c) A removal of the aft fairing.

(d) An installation of the aft fairing.

(2) For the inboard flap support on the outboard flap:

(a) A removal of the forward fairing.

(b) An installation of the forward fairing.

(c) A removal of the aft fairing.

(d) An installation of the aft fairing.

TASK 27-51-28-000-801

2. Outboard Flap Support Fairings Removal (Selection)

A. Procedure

SUBTASK 27-51-28-000-001

(1) Do one of these tasks to remove the applicable outboard flap support fairing:

(a) Do this task:Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802.

(b) Do this task:Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

(c) Do this task:Outboard Flap Inboard Support Forward Fairing Removal, TASK 27-51-28-000-804.

(d) Do this task:Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

——— END OF TASK ———

TASK 27-51-28-400-801

3. Outboard Flap Support Fairings Installation (Selection)

A. Procedure

SUBTASK 27-51-28-400-001

(1) Do one of these tasks to install the applicable outboard flap support fairing:

(a) Do this task:Outboard Flap Outboard Support Forward Fairing Installation, TASK 27-51-28-400-802.

(b) Do this task:Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

(c) Do this task:Outboard Flap Inboard Support Forward Fairing Installation, TASK 27-51-28-400-804.

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(d) Do this task:Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

——— END OF TASK ———

TASK 27-51-28-000-802

4. Outboard Flap Outboard Support Forward Fairing Removal

(Figure 401)

A. General

(1) This task is applicable to the forward fairing on the No. 1 and No. 8 flap supports.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Procedure

SUBTASK 27-51-28-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-28-020-001

(2) Remove the forward fairing [1]:

(a) Remove the bolts [6] that attach the forward end of the forward fairing [1].

(b) Support the forward fairing [1] and remove the bolts [4] and washers [5] that attach the forward fairing [1] to the fairing attach fitting [13].

(c) Lower the forward fairing [1] until you can get access to the nuts [11] on the jumper wires [22].

(d) Remove the nuts [11] and washers [12] that attach the jumper wires [22].

(e) Remove the jumper wires [22] from the studs.

(f) Remove the forward fairing [1].

SUBTASK 27-51-28-020-002

(3) If it is necessary, remove the fairing attach fitting [13]:

(a) Remove the lockwire, bolts [8] and washers [9] that attach the fairing attach fitting [13] to the transmission attach fitting [10].

——— END OF TASK ———

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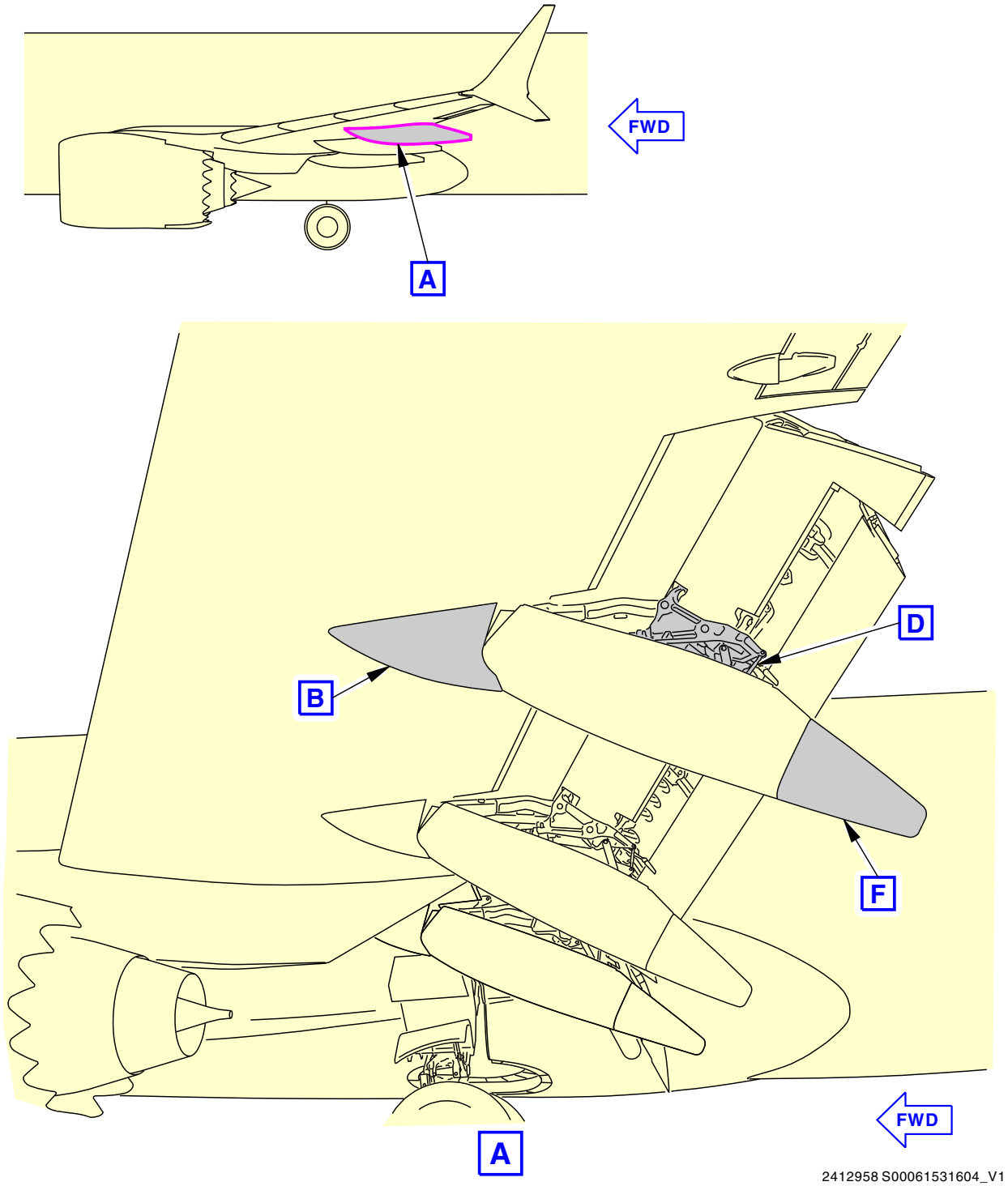

Outboard Flap Outboard Support Fairing Installation
Figure 401/27-51-28-990-801 (Sheet 1 of 5)

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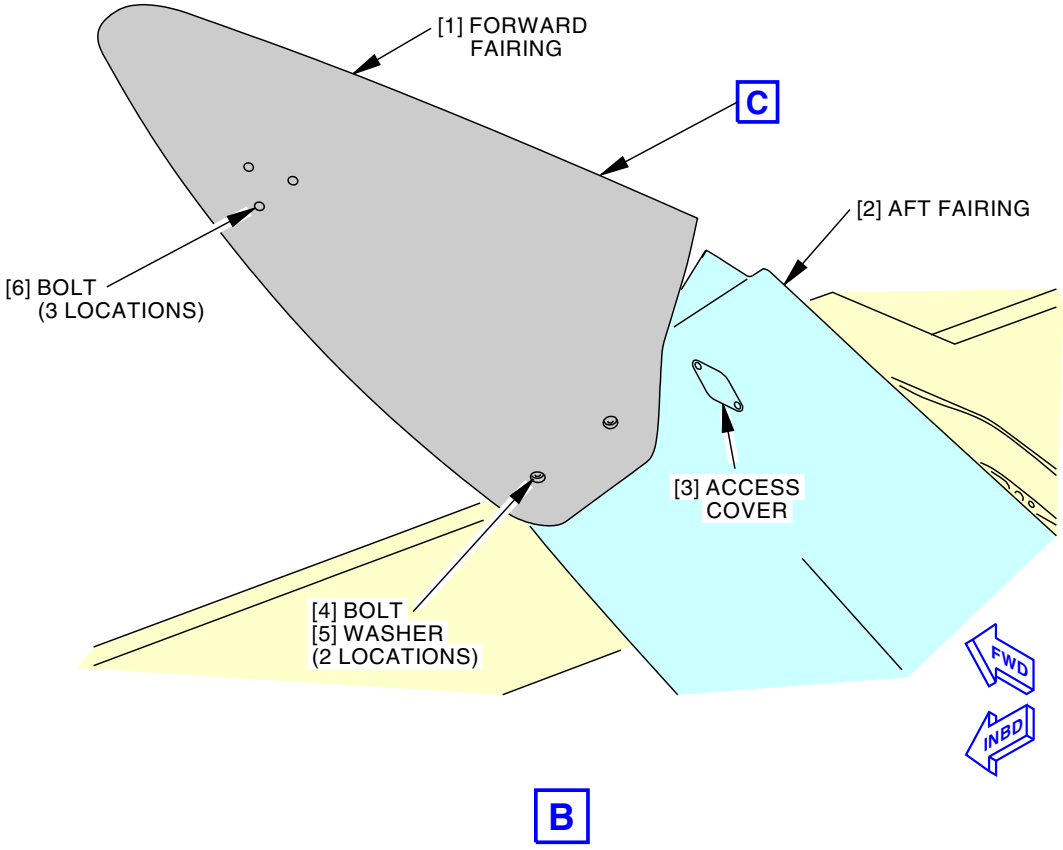

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Outboard Flap Outboard Support Fairing Installation
Figure 401/27-51-28-990-801 (Sheet 2 of 5)

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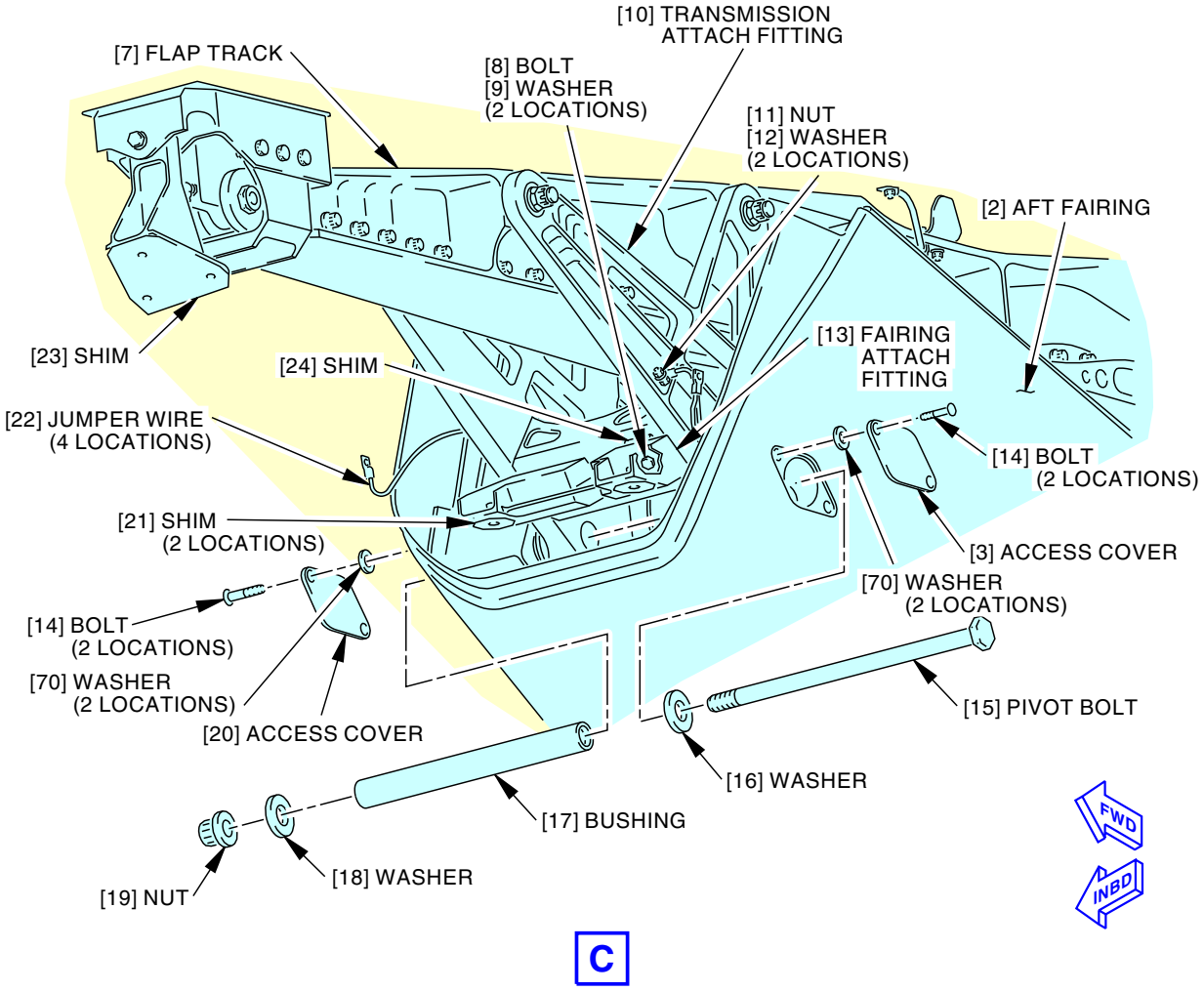

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Outboard Flap Outboard Support Fairing Installation
Figure 401/27-51-28-990-801 (Sheet 3 of 5)

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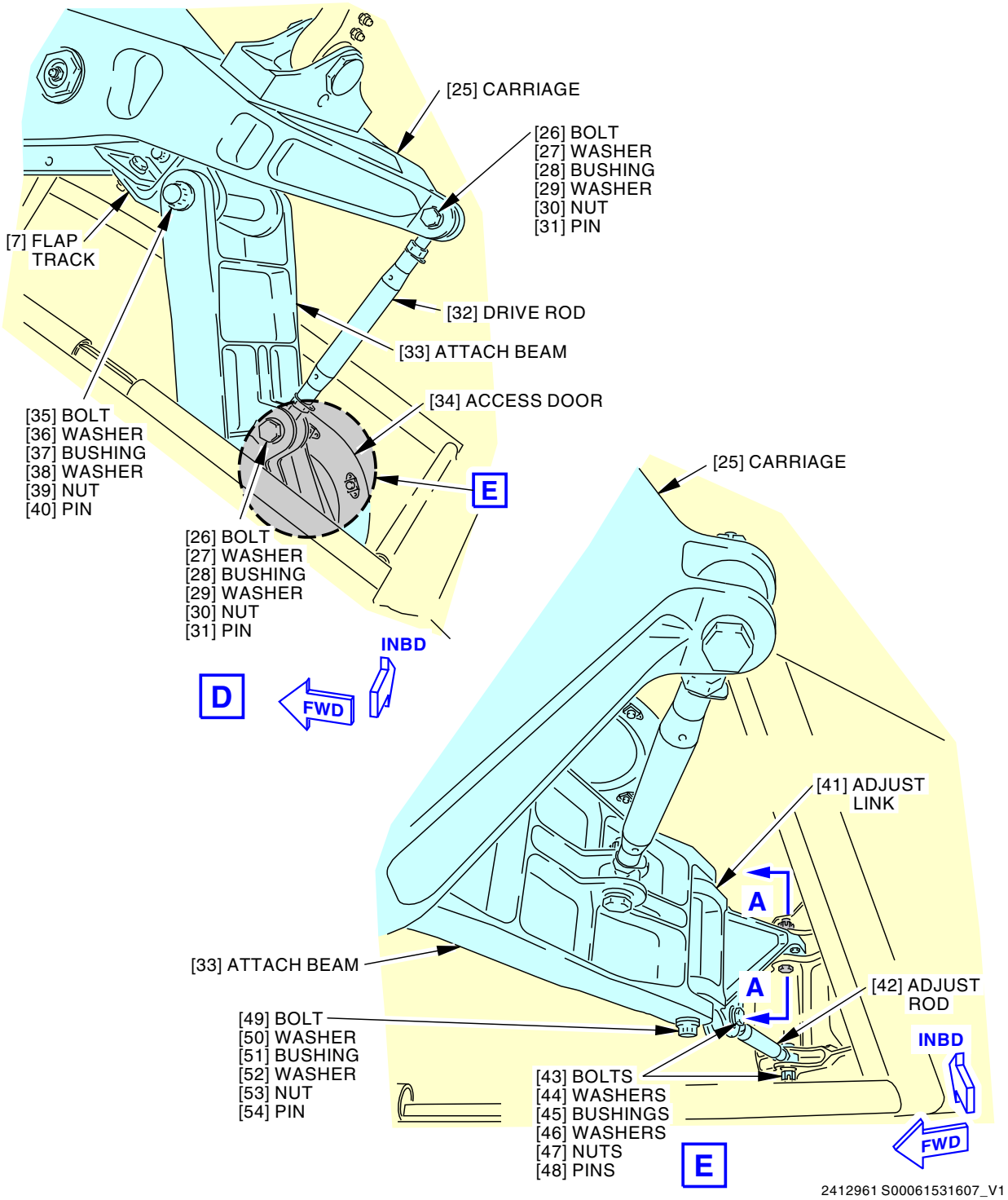

Outboard Flap Outboard Support Fairing Installation
Figure 401/27-51-28-990-801 (Sheet 4 of 5)

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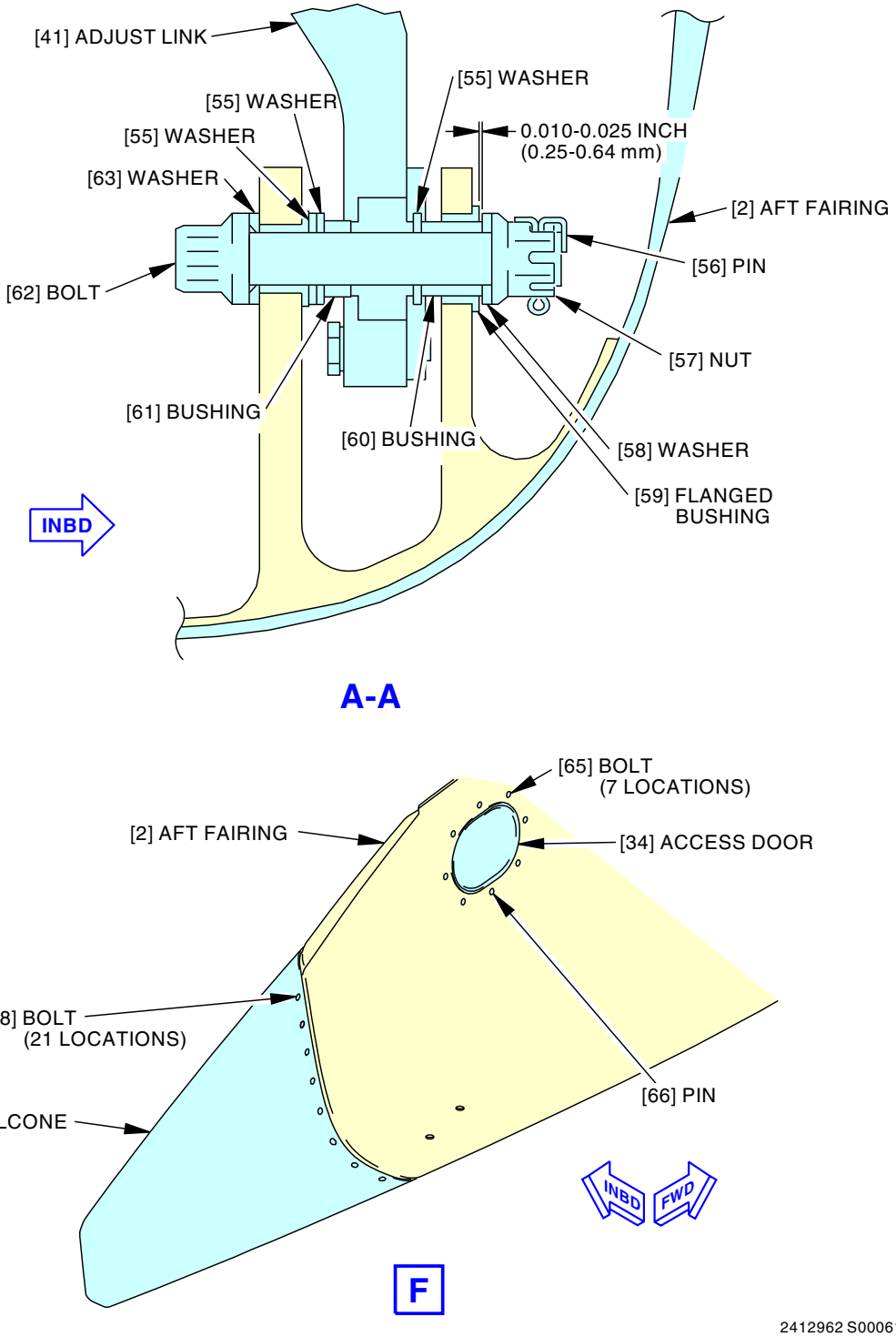

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Outboard Flap Outboard Support Fairing Installation
Figure 401/27-51-28-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-28-400-802

5. Outboard Flap Outboard Support Forward Fairing Installation

(Figure 401)

A. General

(1) This task is applicable to the forward fairing on the No. 1 and No. 8 flap supports.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-28-820-801	Outboard Flap Outboard Support Fairing Adjustment (P/B 501)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Forward fairing	27-51-28-01-120	SIA ALL
		27-51-28-01-125	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

F. Outboard Flap Outboard Support Forward Fairing Installation

SUBTASK 27-51-28-420-001

(1) If it is not installed, install the fairing attach fitting [13] on the transmission attach fitting [10].

(a) Apply primer, C00259, to the mating surfaces of the shim [24].

(b) Put the fairing attach fitting [13] and shim [24] in their location on the transmission attach fitting [10].

(c) Apply compound, C00528, to the holes for the bolts [8].

(d) Install the bolts [8] and washers [9] to attach the fairing attach fitting [13] to the transmission attach fitting [10].

(e) Install lockwire between the bolts [8] and fairing attach fitting [13].

SUBTASK 27-51-28-420-002

(2) Install the forward fairing [1].

(a) Connect the jumper wires [22] as follows:

1) Lift the forward fairing [1] until you can put the jumper wires [22] on the studs.

2) Install the washers [12] and nuts [11] to attach the jumper wires [22].

3) Apply sealant, A02315, to the nuts [11].

(b) Apply primer, C00259, to the mating surfaces of the shims [21] and shim [23].

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(c) If previously removed, put the shims [21] or shim [23] in its position.

(d) Apply compound, C00528, to the holes for the bolts [4] and bolts [6].

(e) Install the bolts [4] and washers [5] to attach the forward fairing [1] to the fairing attach fitting [13].

1) Tighten the bolts [4] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

(f) Install the bolts [6] to attach the forward end of the forward fairing [1].

1) Tighten the bolts [6] to 73 in-lb (8.25 N·m) - 77 in-lb (8.70 N·m).

SUBTASK 27-51-28-820-001

(3) Do this task: Outboard Flap Outboard Support Fairing Adjustment, TASK 27-51-28-820-801.

NOTE: The aft fairing must be installed and adjusted before you can do the adjustment of the forward fairing.

SUBTASK 27-51-28-390-001

(4) Fill the clearance between the front of the forward fairing [1] and the lower surface of the wing with sealant, A02315.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

TASK 27-51-28-000-803

6. Outboard Flap Outboard Support Aft Fairing Removal

(Figure 401)

A. General

(1) This task is applicable to the aft fairing on the No. 1 and No. 8 flap supports.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Access Panels

Number	Name/Location
544CL	Flap Support No. 1 Access Cover
544CR	Flap Support No. 1 Access Cover
544DR	Flap Support No. 1 Access Door
644CL	Flap Support No. 8, Access Cover
644CR	Flap Support No. 8, Access Cover
644DL	Flap Support No. 8, Access Door

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E. Procedure

SUBTASK 27-51-28-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

NOTE: If you cannot extend the flaps, it will be necessary to open the access door [34] on the aft fairing [2].

SUBTASK 27-51-28-010-001

(2) If it is necessary, open the access door [34] on the aft fairing [2]:

(a) These are the doors:

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

(b) Remove the bolts [65] that attach the access door [34] to the aft fairing [2].

(c) Loosen the screw [66] on the access door [34].

NOTE: The screw [66] has a cotter pin installed on the inboard side.

(d) Turn the access door [34] around the screw [66].

SUBTASK 27-51-28-040-002

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-28-010-002

(4) Remove the access cover [3] and access cover [20] from the forward end of the aft fairing [2]:

(a) These are the covers:

Number	Name/Location
544CL	Flap Support No. 1 Access Cover
544CR	Flap Support No. 1 Access Cover
644CL	Flap Support No. 8, Access Cover
644CR	Flap Support No. 8, Access Cover

(b) Remove the bolts [14] and washers [70] that attach the access cover [3] and access cover [20] to the aft fairing [2].

(c) Remove the access cover [3] and access cover [20].

SUBTASK 27-51-28-020-003

(5) Remove the aft fairing [2]:

(a) Support the aft fairing [2].

(b) Disconnect the aft end of the aft fairing [2]:

1) Remove the pin [31], nut [30], washer [29], washer [27], bolt [26] and bushing [28] that attach the drive rod [32] to the carriage [25].

2) Remove the pin [40], nut [39], washer [38], washer [36], bolt [35] and bushing [37] that attach the attach beam [33] to the flap track [7].

(c) Disconnect the forward end of the aft fairing [2]:

1) Remove the nut [19] and washer [18] from the pivot bolt [15].

2) Remove the pivot bolt [15], washer [16] and bushing [17] that attach the aft fairing [2] to the transmission attach fitting [10].

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(d) Lower the aft fairing [2] until you can get access to the nuts [11] on the jumper wires [22].

NOTE: The jumper wires for the forward fairing and aft fairing are attached at the same stud. If the forward fairing has been removed (Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802), then the jumper wires [22] may have already been removed.

(e) Remove the nuts [11] and washers [12] that attach the jumper wires [22].

(f) Remove the jumper wires [22] from the studs.

(g) Lower the aft fairing [2].

SUBTASK 27-51-28-020-004

(6) If you will install a new aft fairing [2], remove the fairing drive linkage from the aft fairing [2]:

NOTE: The fairing drive linkage includes the drive rod [32], adjust link [41], adjust rod [42] and the attach beam [33].

(a) Remove the pin [48], nut [47], washer [46], washer [44], bolt [43] and bushing [45] that attach the adjust rod [42] to the aft fairing [2].

(b) Remove the adjust link [41] from the aft fairing [2]:

1) Remove the pin [56], nut [57] and washer [58] from the bolt [62].

2) Remove the bolt [62], washer [63] and washers [55].

a) Make a note of the thickness and location of the washers [55] and adjust as necessary to achieve the proper gap.

3) Remove the bushing [60] and bushing [61] from the aft fairing [2].

(c) Remove the pin [54], nut [53], washer [52], washer [50], bolt [49] and bushing [51] that attach the adjust link [41] to the attach beam [33].

(d) Remove the pin [31], nut [30], washer [29], washer [27], bolt [26] and bushing [28] that attach the drive rod [32] to the attach beam [33].

(e) Remove the pin [48], nut [47], washer [46], washer [44], bolt [43] and bushing [45] that attach the adjust rod [42] to the adjust link [41].

SUBTASK 27-51-28-010-003

(7) If it is necessary, remove the tailcone assembly [67] from the aft fairing [2]:

(a) Remove the bolts [68] that attach the tailcone assembly [67] to the aft fairing [2].

(b) Remove the tailcone assembly [67] from the aft fairing [2].

END OF TASK

TASK 27-51-28-400-803

7. Outboard Flap Outboard Support Aft Fairing Installation

(Figure 401)

A. General

(1) This task is applicable to the aft fairing on the No. 1 and No. 8 flap supports.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-820-801	Outboard Flap Outboard Support Fairing Adjustment (P/B 501)

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C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Aft fairing	27-51-28-01-435	SIA ALL
		27-51-28-01-440	SIA ALL
31	Pin	27-51-28-01-155	SIA ALL
40	Pin	27-51-28-01-155	SIA ALL
48	Pin	27-51-28-01-155	SIA ALL
56	Pin	27-51-28-01-155	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

F. Access Panels

Number	Name/Location
544CL	Flap Support No. 1 Access Cover
544CR	Flap Support No. 1 Access Cover
544DR	Flap Support No. 1 Access Door
644CL	Flap Support No. 8, Access Cover
644CR	Flap Support No. 8, Access Cover
644DL	Flap Support No. 8, Access Door

G. Outboard Flap Outboard Support Aft Fairing Installation

SUBTASK 27-51-28-020-005

(1) If the fairing drive linkage is not installed on the aft fairing [2], do these steps:

NOTE: The fairing drive linkage includes the drive rod [32], adjust link [41], adjust rod [42] and the attach beam [33].

(a) Connect the adjust rod [42] to the adjust link [41]:

1) Install the bushing [45], bolt [43], washer [44], washer [46] and nut [47] that attach the adjust rod [42] to the adjust link [41].

NOTE: For the left wing, install the bolt [43] with the head on the same side of the adjust link [41] as the bushing [45]. For the right wing, install the bolt [43] with the head on the opposite side of the adjust link [41] as the bushing [45].

2) Install the pin [48] in the nut [47].

(b) Connect the adjust link [41] to the attach beam [33]:

1) Put the adjust link [41] in its position on the attach beam [33].

2) Install the bushing [51], bolt [49], washer [50], washer [52] and nut [53] to attach the adjust link [41] to the attach beam [33].

3) Tighten the nut [53]:

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a) Lubricate the bolt [49] with grease, D00633.

b) Tighten the nut [53] to 240 in-lb (27 N·m) to 300 in-lb (34 N·m).

4) Install the pin [54] in the nut [53].

(c) Connect the drive rod [32] to the attach beam [33]:

1) Put the drive rod [32] in its position on the attach beam [33].

2) Install the bushing [28], bolt [26], washer [27], washer [29] and nut [30] to attach the drive rod [32] to the attach beam [33].

3) Install the pin [31] in the nut [30].

(d) Connect the adjust link [41] to the aft fairing [2]:

1) Put the adjust link [41] in its location on the aft fairing [2] with the washers [55], bushing [60] and bushing [61].

a) Install the same number of washers [55] in the same location as you removed them.

2) Install the bolt [62], washer [63], washer [58] and nut [57].

3) Tighten the nut [57]:

a) Lubricate the bolt [62] with grease, D00633.

b) Tighten the nut [57] to 240 in-lb (27 N·m) to 300 in-lb (34 N·m).

4) Measure the clearance between the washer [58] and the flange on the flanged bushing [59].

5) If the clearance is not 0.010 in. (0.254 mm) to 0.025 in. (0.635 mm), change the location of the washers [55]:

a) Remove the nut [57], washer [58], washers [55], washer [63], bolt [62], bushing [60] and bushing [61].

b) Change the number or location of the washers [55].

c) Install the bushing [60], bushing [61], bolt [62], washer [63], washers [55], washer [58] and nut [57].

d) Make sure the clearance between the washer [58] and the flange on the flanged bushing [59] is in the limit of 0.010 in. (0.254 mm) to 0.025 in. (0.635 mm).

e) Lubricate the bolt [62] with grease, D00633.

f) Tighten the nut [57] to 240 in-lb (27 N·m) to 300 in-lb (34 N·m).

6) Install the pin [56] in the nut [57].

(e) Connect the adjust adjust rod [42] to the aft fairing [2]:

1) Install the bushing [45], bolt [43], washer [44], washer [46] and nut [47] that attach the adjust rod [42] to the aft fairing [2].

2) Install the pin [48] in the nut [47].

SUBTASK 27-51-28-420-003

(2) Install the aft fairing [2]:

(a) Connect the jumper wires [22]:

1) Lift the forward end of the aft fairing [2] until you can put the jumper wires [22] on the studs.

NOTE: The jumper wires for the forward fairing also attach to the studs.

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a) Make sure that the jumper wires for the forward fairing are installed on the studs.

2) Install the washers [12] and nuts [11] to attach the jumper wires [22].

3) Apply sealant, A02315 to the nuts [11].

(b) Connect the forward end of the aft fairing [2] to the transmission attach fitting [10]:

1) Lift the forward end of the aft fairing [2] until it aligns with the transmission attach fitting [10].

2) Install the bushing [17], pivot bolt [15], washer [18], washer [16] and nut [19].

3) Tighten the nut [19]:

a) Lubricate the pivot bolt [15] with grease, D00633.

b) Tighten the nut [19] to 1000 in-lb (113 N·m) to 1200 in-lb (136 N·m).

(c) Connect the aft end of the aft fairing [2]:

1) Move the attach beam [33] until it aligns with the flap track [7].

2) Install the bushing [37], bolt [35], washer [36], washer [38] and nut [39].

3) Tighten the nut [39]:

a) Lubricate the bolt [35] with grease, D00633.

b) Tighten the nut [39] to 440 in-lb (50 N·m) to 650 in-lb (73 N·m).

4) Install the pin [40] in the nut [39].

5) Align the drive rod [32] with the carriage [25].

6) Install the bushing [28], bolt [26], washer [27], washer [29] and nut [30].

a) Install the bolt [26] with the head on the outboard side.

7) Install the pin [31] in the nut [30].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-28-860-002

(2) Retract the flaps to the retracted position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-28-820-002

(3) Do this task: Outboard Flap Outboard Support Fairing Adjustment, TASK 27-51-28-820-801.

SUBTASK 27-51-28-410-001

(4) Install the access cover [3] and access cover [20] on the forward end of the aft fairing [2]:

(a) These are the covers:

Number	Name/Location
544CL	Flap Support No. 1 Access Cover
544CR	Flap Support No. 1 Access Cover
644CL	Flap Support No. 8, Access Cover
644CR	Flap Support No. 8, Access Cover

(b) Put the access cover [3] and access cover [20] in their locations on the aft fairing [2].

(c) Install the bolts [14] that attach the access cover [3] and access cover [20].

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SUBTASK 27-51-28-410-002

(5) If it is open, close the access door [34] on the aft fairing [2]:

(a) These are the doors:

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

(b) Turn the access door [34] around the screw [66] until it is in its position.

(c) Install the bolts [65] that attach the access door [34] to the aft fairing [2].

(d) Tighten the screw [66] on the access door [34].

SUBTASK 27-51-28-410-003

(6) If it is not installed, install the tailcone assembly [67] on the aft fairing [2]:

(a) Put the tailcone assembly [67] in its location on the aft fairing [2].

(b) Install the bolts [68] that attach the tailcone assembly [67].

(c) Fill and aerodynamically fair the clearance between the tailcone assembly [67] and the aft fairing [2] with sealant, A02315.

——— END OF TASK ———

TASK 27-51-28-000-804

8. Outboard Flap Inboard Support Forward Fairing Removal

(Figure 402)

A. General

(1) This task is applicable to the forward fairing on the No. 2 and No. 7 flap supports.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

D. Procedure

SUBTASK 27-51-28-040-003

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-28-020-006

(2) Remove the forward fairing [81]:

(a) Remove the bolts [86] that attach the forward end of the forward fairing [81].

(b) Remove the bolts [84] and washers [85] that attach the forward fairing [81] to the fairing attach fitting [95].

NOTE: Support the forward fairing [81] when you remove the bolts [84].

(c) Lower the forward fairing [81] until you can get access to the nuts [92] on the jumper wires [103].

(d) Remove the nuts [92] and washers [93] that attach the jumper wires [103].

(e) Remove the jumper wires [103] from the studs.

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(f) Remove the forward fairing [81].

SUBTASK 27-51-28-020-007

(3) If it is necessary, remove the fairing attach fitting [95]:

(a) Remove the lockwire, bolts [89] and washers [90] that attach the fairing attach fitting [95] to the transmission attach fitting [91].

——— END OF TASK ———

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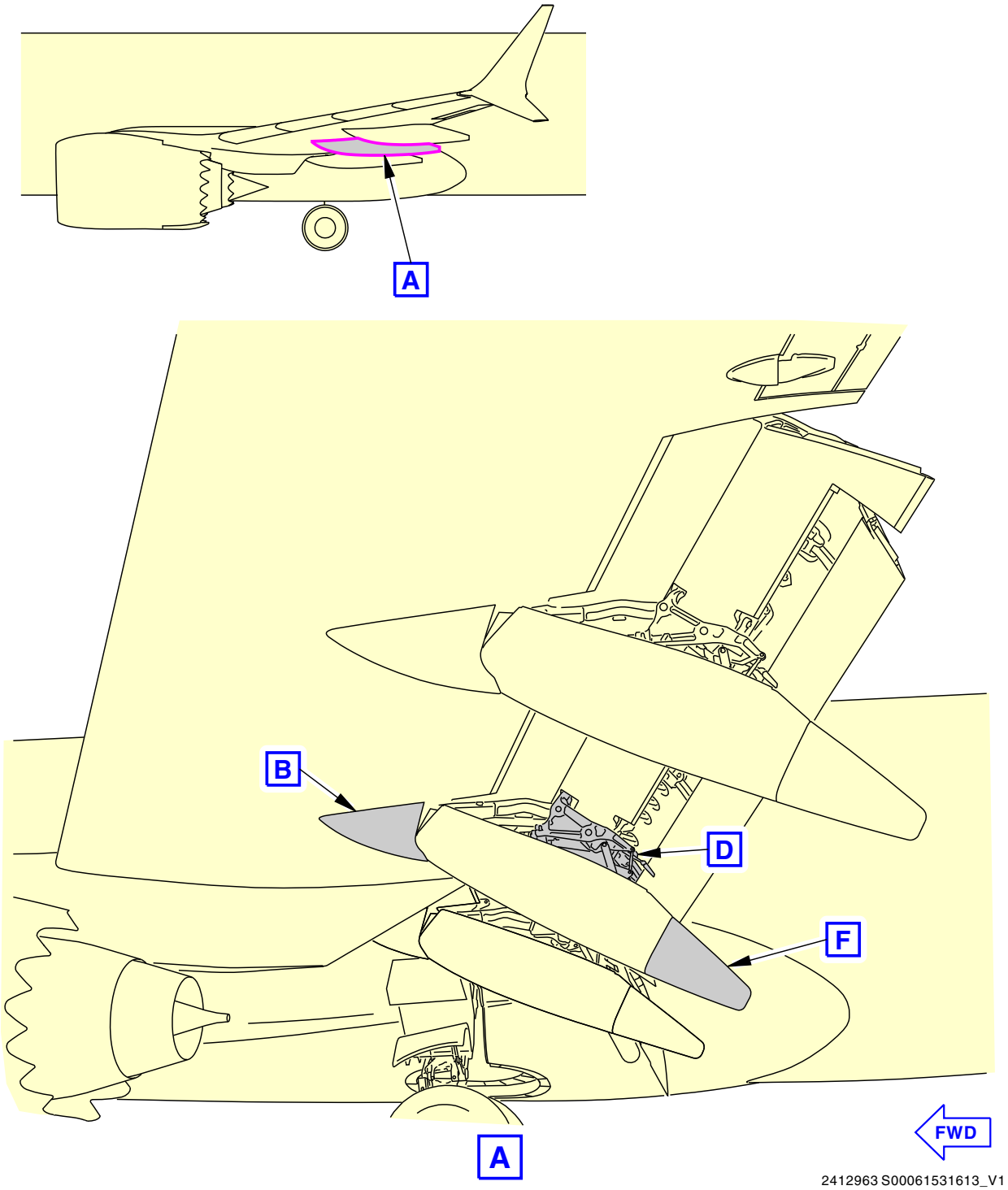
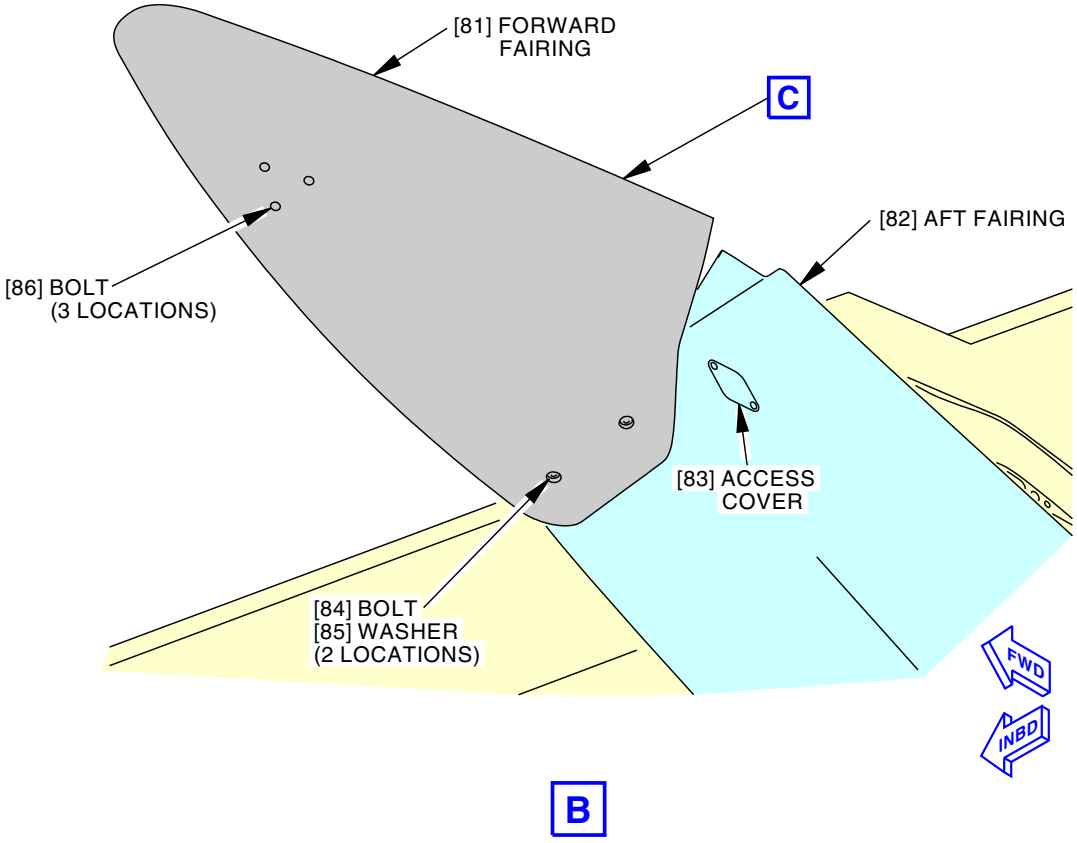


Outboard Flap Inboard Support Fairing Installation
Figure 402/27-51-28-990-802 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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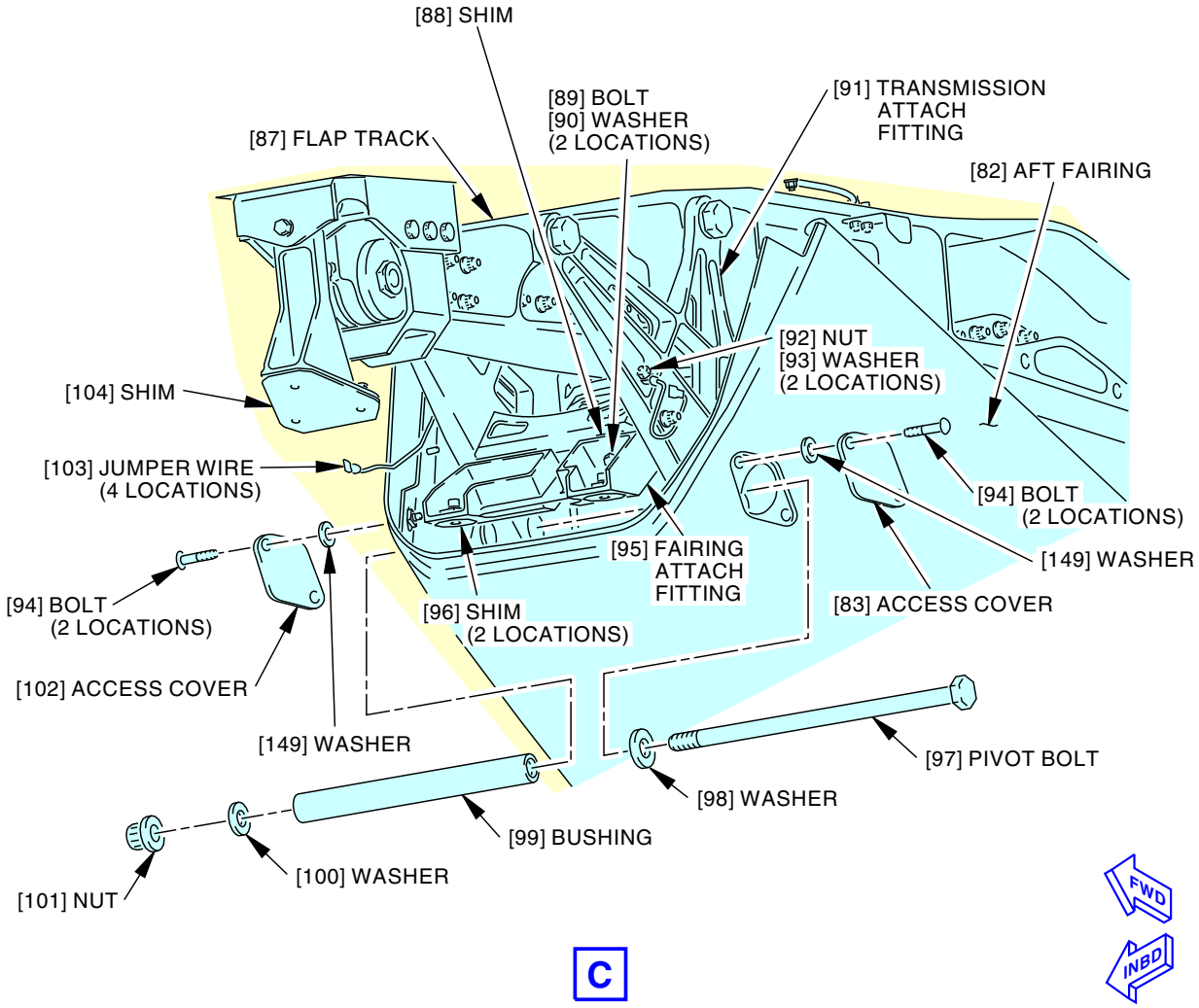
Outboard Flap Inboard Support Fairing Installation
Figure 402/27-51-28-990-802 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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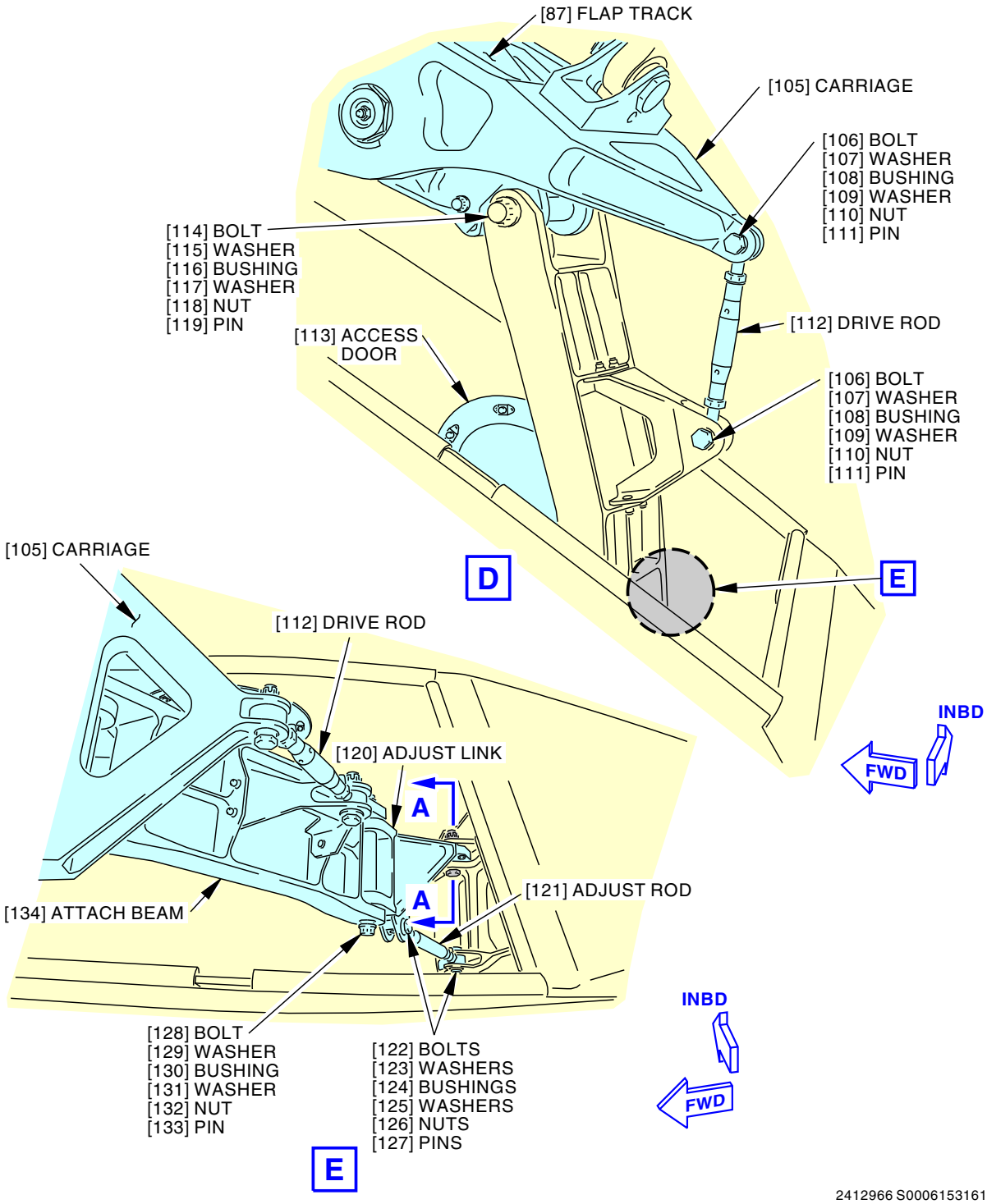
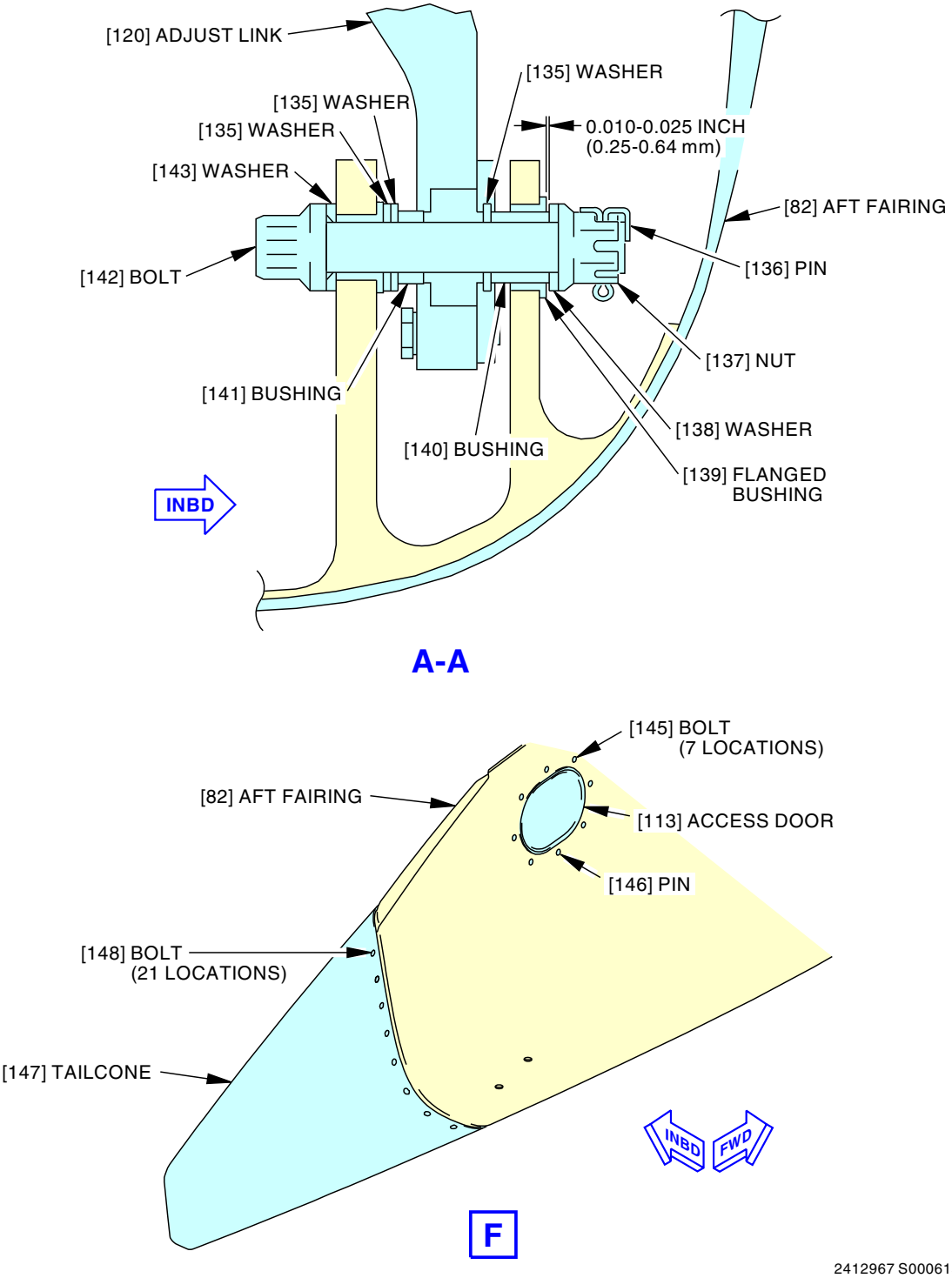
Outboard Flap Inboard Support Fairing Installation
Figure 402/27-51-28-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Support Fairing Installation
Figure 402/27-51-28-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Support Fairing Installation
Figure 402/27-51-28-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-28-400-804

9. Outboard Flap Inboard Support Forward Fairing Installation

(Figure 402)

A. General

(1) This task is applicable to the forward fairing on the No. 2 and No. 7 flap supports.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-28-820-802	Outboard Flap Inboard Support Fairing Adjustment (P/B 501)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
81	Forward fairing	27-51-28-04-120	SIA ALL
		27-51-28-04-125	SIA ALL

E. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

F. Forward Fairing Installation

SUBTASK 27-51-28-420-004

(1) If it is not installed, install the fairing attach fitting [95] on the transmission attach fitting [91].

(a) Apply primer, C00259, to the mating surfaces of the shim [88].

(b) Put the fairing attach fitting [95] and shim [88] in their location on the transmission attach fitting [91].

(c) Apply compound, C00528, to the holes for the bolts [89].

(d) Install the bolts [89] and washers [90] to attach the fairing attach fitting [95].

(e) Install lockwire between the bolts [89] and fairing attach fitting [95].

SUBTASK 27-51-28-420-005

(2) Install the forward fairing [81].

(a) Connect the jumper wire [103] as follows:

1) Lift the forward fairing [81] until you can put the jumper wires [103] on the studs.

2) Install the washers [93] and nuts [92] to attach the jumper wires [103].

3) Apply sealant, A02315, to the nuts [92].

(b) Apply primer, C00259, to the mating surfaces of the shims [96] and shim [104].

(c) If previously removed, put the shims [96] or shim [104] in its position.

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(d) Apply compound, C00528, to the holes for the bolt [84] and bolts [86].

(e) Install the bolts [84] and washers [85] to attach the forward fairing [81] to the fairing attach fitting [95].

1) Tighten the bolts [84] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m).

(f) Install the bolts [86] to attach the forward end of the forward fairing [81].

1) Tighten the bolts [86] to 73 in-lb (8.25 N·m) - 77 in-lb (8.70 N·m).

SUBTASK 27-51-28-820-003

(3) Do this task: Outboard Flap Inboard Support Fairing Adjustment, TASK 27-51-28-820-802.

NOTE: The aft fairing must be installed and adjusted before you can do the adjustment of the forward fairing.

SUBTASK 27-51-28-390-002

(4) Fill the clearance between the front of the forward fairing [81] and the lower surface of the wing with sealant, A02315.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-003

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK

TASK 27-51-28-000-805

10. Outboard Flap Inboard Support Aft Fairing Removal

(Figure 402)

A. General

(1) This task is applicable to the aft fairing at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

D. Access Panels

Number	Name/Location
543CL	Flap Support No. 2 Access Cover
543CR	Flap Support No. 2 Access Cover
543DR	Flap Support No. 2 Access Door
643CL	Flap Support No. 7, Access Cover
643CR	Flap Support No. 7, Access Cover
643DL	Flap Support No. 7, Access Door

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E. Procedure

SUBTASK 27-51-28-860-003

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

NOTE: If you cannot extend the flaps, it will be necessary to open the access door [113] on the aft fairing [82].

SUBTASK 27-51-28-010-004

(2) If it is necessary, open the access door [113] on the aft fairing [82]:

(a) These are the doors:

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

(b) Remove the bolts [145] that attach the access door [113] to the aft fairing [82].

(c) Loosen the pin [146] on the access door [113].

NOTE: The screw [146] has a cotter pin installed on the inboard side.

(d) Turn the access door [113] around the pin [146].

SUBTASK 27-51-28-040-004

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-28-010-005

(4) Remove the access cover [83] and access cover [102] from the forward end of the aft fairing [82]:

(a) These are the covers:

Number	Name/Location
543CL	Flap Support No. 2 Access Cover
543CR	Flap Support No. 2 Access Cover
643CL	Flap Support No. 7, Access Cover
643CR	Flap Support No. 7, Access Cover

(b) Remove the bolts [94] and washers [149] that attach the access cover [83] and access cover [102] to the aft fairing [82].

(c) Remove the access cover [83] and access cover [102].

SUBTASK 27-51-28-020-008

(5) Remove the aft fairing [82]:

(a) Support the aft fairing [82].

(b) Disconnect the aft end of the aft fairing [82]:

1) Remove the pin [111], nut [110], washer [109], washer [107], bolt [106] and bushing [108] that attach the drive rod [112] to the carriage [105].

2) Remove the pin [119], nut [118], washer [117], washer [115], bolt [114] and bushing [116] that attach the end of the attach beam [134] to the flap track [87].

(c) Disconnect the forward end of the aft fairing [82]:

1) Remove the nut [101] and washer [100] from the pivot bolt [97].

2) Remove the pivot bolt [97], washer [98] and bushing [99] that attach the aft fairing [82] to the transmission attach fitting [91].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Lower the aft fairing [82] until you can get access to the nuts [92] on the jumper wires [103].

NOTE: The jumper wires for the forward fairing and the aft fairing are attached at the same stud. If the forward fairing has been removed (Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802), then the jumper wires [103] may have already been removed.

(e) Remove the nuts [92] and washers [93] that attach the jumper wires [103].

(f) Remove the jumper wires [103] from the studs.

(g) Lower the aft fairing [82].

SUBTASK 27-51-28-020-009

(6) If you will install a new aft fairing [82], remove the fairing drive linkage from the aft fairing [82]:

NOTE: The fairing drive linkage includes the drive rod [112], adjust link [120], adjust rod [121] and the attach beam [134].

(a) Remove the pin [127], nut [126], washer [125], washer [123], bolt [122] and bushing [124] that attach the adjust rod [121] to the aft fairing [82].

(b) Remove the adjust link [120] from the aft fairing [82]:

1) Remove the pin [136], nut [137] and washer [138] from the bolt [142].

2) Remove the bolt [142], washer [143] and washers [135].

NOTE: Make a note of the thickness and location of the washers [135].

3) Remove the bushing [140] and bushing [141] from the aft fairing [82].

(c) Remove the pin [133], nut [132], washer [131], washer [129], bolt [128] and bushing [130] that attach the adjust link [120] to the attach beam [134].

(d) Remove the pin [111], nut [110], washer [109], washer [107], bolt [106] and bushing [108] that attach the drive rod [112] to the attach beam [134].

(e) Remove the pin [127], nut [126], washer [125], washer [123], bolt [122] and bushing [124] that attach the adjust rod [121] to the adjust link [120].

SUBTASK 27-51-28-010-006

(7) If it is necessary, remove the tailcone assembly [147] from the aft fairing [82]:

(a) Remove the bolts [148] that attach the tailcone assembly [147] to the aft fairing [82].

(b) Remove the tailcone assembly [147] from the aft fairing [82].

END OF TASK

TASK 27-51-28-400-805

11. Outboard Flap Inboard Support Aft Fairing Installation

(Figure 402)

A. General

(1) This task is applicable to the aft fairing at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-820-802	Outboard Flap Inboard Support Fairing Adjustment (P/B 501)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
82	Aft fairing	27-51-28-04-485	SIA ALL
		27-51-28-04-490	SIA ALL
111	Pin	27-51-28-04-155	SIA ALL
119	Pin	27-51-28-04-155	SIA ALL
127	Pin	27-51-28-04-155	SIA ALL
133	Pin	27-51-28-04-160	SIA ALL

E. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

F. Access Panels

Number	Name/Location
543CL	Flap Support No. 2 Access Cover
543CR	Flap Support No. 2 Access Cover
543DR	Flap Support No. 2 Access Door
643CL	Flap Support No. 7, Access Cover
643CR	Flap Support No. 7, Access Cover
643DL	Flap Support No. 7, Access Door

G. Outboard Flap Inboard Support Aft Fairing Installation

SUBTASK 27-51-28-020-010

(1) If the fairing drive linkage is not installed on the aft fairing [82], do these steps:

NOTE: The fairing drive linkage includes the drive rod [112], adjust link [120], adjust rod [121] and the attach beam [134].

(a) Connect the adjust rod [121] to the adjust link [120]:

1) Install the bushing [124], bolt [122], washer [123], washer [125] and nut [126] that attach the adjust rod [121] to the adjust link [120].

NOTE: For the left wing, install the bolt [122] with the head on the same side of the adjust link [120] as the bushing [124]. For the right wing, install the bolt [122] with the head on the opposite side of the adjust link [120] as the bushing [124].

2) Install the pin [127] in the nut [126].

(b) Connect the adjust link [120] to the attach beam [134]:

1) Put the adjust link [120] in its position on the attach beam [134].

2) Install the bushing [130], bolt [128], washer [129], washer [131] and nut [132] to attach the adjust link [120] to the attach beam [134].

3) Tighten the nut [132]:

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a) Lubricate the bolt [128] with grease, D00633.

b) Tighten the nut [132] to 240 in-lb (27 N·m) - 300 in-lb (34 N·m).

4) Install the pin [133] in the nut [132].

(c) Connect the drive rod [112] to the attach beam [134]:

1) Put the drive rod [112] in its position on the attach beam [134].

2) Install the bushing [108], bolt [106], washer [107], washer [109] and nut [110] to attach the drive rod [112] to the attach beam [134].

3) Install the pin [111] in the nut [110].

(d) Connect the adjust link [120] to the aft fairing [82]:

1) Put the adjust link [120] in its location on the aft fairing [82] with the washers [135], bushing [140] and bushing [141].

a) Install the same number of washers [135] in the same location as you removed them.

2) Install the bolt [142], washer [143], washer [138] and nut [137].

3) Tighten the nut [137]:

a) Lubricate the bolt [142] with grease, D00633.

b) Tighten the nut [137] to 240 in-lb (27 N·m) - 300 in-lb (34 N·m).

4) Measure the clearance between the washer [138] and the flange on the flanged bushing [139].

5) If the clearance is not 0.010 in. (0.25 mm) to 0.025 in. (0.64 mm), change the number or location of the washers [135]:

a) Remove the nut [137], washer [138], washers [143], washers [135], bolt [142], bushing [141] and bushing [140].

b) Change the number or location of the washers [135].

c) Install the bushing [140], bushing [141], bolt [142], washer [143], washers [135], washer [138] and nut [137].

d) Make sure that the clearance between the washer [138] and the flange on the flanged bushing [139] is in the limit of 0.010 in. (0.254 mm) to 0.025 in. (0.635 mm).

e) Lubricate the bolt [142] with grease, D00633.

f) Tighten the nut [137] to 240 in-lb (27 N·m) - 300 in-lb (34 N·m).

6) Install the cotter pin [136] in the nut [137].

(e) Connect the adjust rod [121] to the aft fairing [82]:

1) Install the bushing [124], bolt [122], washer [123], washer [125] and nut [126] that attach the adjust rod [121] to the aft fairing [82].

2) Install the pin [127] in the nut [126].

SUBTASK 27-51-28-420-006

(2) Install the aft fairing [82]:

(a) Connect the jumper wires [103]:

1) Lift the forward end of the aft fairing [82] until you can put the jumper wires [103] on the studs.

NOTE: The jumper wires for the forward fairing also attach to the studs.

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a) Make sure that the jumper wires for the forward fairing are installed on the studs.

2) Install the washers [93] and nuts [92] to attach the jumper wires [103].

3) Apply sealant, A02315 to the nuts [92].

(b) Connect the forward end of the aft fairing [82] to the transmission attach fitting [91]:

1) Lift the forward end of the aft fairing [82] until it aligns with the transmission attach fitting [91].

2) Install the bushing [99], pivot bolt [97], washer [98], washer [100] and nut [101].

3) Tighten the nut [101]:

a) Lubricate the pivot bolt [97] with grease, D00633.

b) Tighten the nut [101] to 1000 in-lb (113 N·m) - 1200 in-lb (136 N·m).

(c) Connect the aft end of the aft fairing [82]:

1) Move the attach beam [134] until it aligns with the flap track [87].

2) Install the bushing [116], bolt [114], washer [115], washer [117] and nut [118].

3) Tighten the nut [118]:

a) Lubricate the bolt [114] with grease, D00633.

b) Tighten the nut [118] to 700 in-lb (79 N·m) - 920 in-lb (104 N·m).

4) Install the pin [119] in the nut [118].

5) Align the drive drive rod [112] with the carriage [105].

6) Install the bushing [108], bolt [106], washer [107], washer [109] and nut [110].

a) Install the bolt [106] with the head on the outboard side.

7) Install the pin [111] in the nut [110].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-004

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-28-860-004

(2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-28-820-004

(3) Do this task: Outboard Flap Inboard Support Fairing Adjustment, TASK 27-51-28-820-802.

SUBTASK 27-51-28-410-004

(4) Install the access cover [83] and access cover [102] on the forward end of the aft fairing [82]:

(a) These are the covers:

Number	Name/Location
543CL	Flap Support No. 2 Access Cover
543CR	Flap Support No. 2 Access Cover
643CL	Flap Support No. 7, Access Cover
643CR	Flap Support No. 7, Access Cover

(b) Put the access cover [83] and access cover [102] in their locations on the aft fairing [82].

(c) Install the bolts [94] that attach the access cover [83] and access cover [102].

SUBTASK 27-51-28-410-005

(5) If it is open, close the access door [113] on the aft fairing [82]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) These are the doors:

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

(b) Turn the access door [113] around the pin [146] until it is in its position.

(c) Install the bolts [145] that attach the access door [113] to the aft fairing [82].

(d) Tighten the pin [146] on the access door [113].

SUBTASK 27-51-28-410-006

(6) If it is not installed, install the tailcone assembly [147] on the aft fairing [82]:

(a) Put the tailcone assembly [147] in its location on the aft fairing [82].

(b) Install the bolts [148] that attach the tailcone assembly [147].

(c) Fill and aerodynamically fair the clearance between the tailcone assembly [147] and the aft fairing [82] with sealant, A02315.

——— END OF TASK ———

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OUTBOARD FLAP SUPPORT FAIRINGS - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Outboard flap support fairings adjustment (selection)

(2) Adjustment of the outboard flap support fairing for the outboard flap

(3) Adjustment of the inboard flap support fairing for the outboard flap.

TASK 27-51-28-800-801

2. Outboard Flap Support Fairings Adjustment (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

B. Outboard Flap Support Fairings Adjustment (Selection)

SUBTASK 27-51-28-820-005

(1) Do one of these tasks to adjust the applicable outboard flap support fairing:

(a) Do this task: Outboard Flap Outboard Support Fairing Adjustment, TASK 27-51-28-820-801.

(b) Do this task: Outboard Flap Inboard Support Fairing Adjustment, TASK 27-51-28-820-802.

——— END OF TASK ———

TASK 27-51-28-820-801

3. Outboard Flap Outboard Support Fairing Adjustment

(Figure 501)

A. General

(1) This task is applicable to the fairings at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-000-802	Outboard Flap Outboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-802	Outboard Flap Outboard Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

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D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

E. Access Panels

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

F. Prepare for the Adjustment

SUBTASK 27-51-28-860-005

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-28-040-005

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Outboard Flap Outboard Support Aft Fairing Adjustment

SUBTASK 27-51-28-480-001

(1) Apply a 150 lb (68 kg) weight to preload the aft fairing [4]:

(a) Put a strap across the top of the aft fairing [4] at the line of fasteners for the tailcone [5].

(b) Attach a 150 lb (68 kg) weight to the strap.

1) Make sure that the weight is evenly applied to the inboard and outboard sides of the aft fairing [4].

SUBTASK 27-51-28-820-006

(2) Move the preload pads [7] away from the aft flap [1] as follows:

NOTE: It is necessary to move the preload pads to correctly measure the clearance between the aft flap and the aft fairing.

(a) Loosen the bolts [8] that attach the preload pads [7] to the aft fairing [4].

(b) Move the preload pads [7] away from the lower surface of the aft flap [1].

SUBTASK 27-51-28-220-001

(3) Measure the clearance between the top surface of the aft fairing [4] and the aft edge of the aft flap [1].

(a) Measure the clearance at the aft edge of the aft flap [1] to the aft fairing [4].

(b) Make sure that the clearance is in the limit of 0.2884 ±0.0500 in. (7.33 ±1.27 mm).

(c) Make sure that the clearance is approximately the same on the inboard and outboard sides of the aft fairing [4].

(d) Measure the clearance between the inboard and outboard sides of the aft fairing to the lower surface of the wing and flap.

1) Make sure that the clearance is in the limit of 0.6000 in. (15.2400 mm) to 0.3000 in. (7.6200 mm) seal adjustment to achieve a continuous compression of 0.02 to 0.07.

SUBTASK 27-51-28-820-007

(4) If the clearance is not in the limit, or if it is not the same on the inboard and outboard sides, then adjust the position of the aft fairing [4]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) On the side of the aft fairing open the applicable access panels:

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

(b) If the clearance is not the same on the inboard and outboard sides, adjust the length of the adjust rod [21]:

1) Remove the weight from the aft fairing [4].
2) Remove the pin [15], nut [14], washer [13], washer [11], bolt [10], and bushing [12] that attach the drive rod [17] to the carriage [9].
   a) Support the aft fairing [4] when you remove the bolt [10].
3) Lower the aft end of the aft fairing [4] to get access to the adjust rod [21].
4) Loosen the locknuts [20] on the adjust rod [21].
5) Adjust the length of the adjust rod [21] until the clearance is the same on the inboard and outboard sides of the aft fairing [4].
6) Tighten the locknuts [20] on the adjust rod [21].
7) Install the lockwire on the locknuts [20].
8) Lift the aft end of the aft fairing [4] and align the drive rod [17] with the carriage [9].
9) Install the bushing [12], bolt [10], washer [11], washer [13], and nut [14] to attach the drive rod [17] to the carriage [9].
   a) Install the bolt [10] with the head on the outboard side.
10) Install the cotter pin [15] in the nut [14].

(c) If the clearance is not in the limit, adjust the length of the drive rod [17]:

1) Loosen the locknuts [16] on the drive rod [17].
2) Adjust the length of the drive rod [17] until the clearance is in the limit.
3) Tighten the locknuts [16] on the drive rod [17].
4) Install the lockwire on the locknuts [16].

(d) Make sure that the clearance is in the limit and that it is the same on the inboard and outboard sides of the aft fairing [4].

SUBTASK 27-51-28-820-008

(5) Adjust the position of the preload pads [7]:

(a) With the 150 lb (68 kg) weight applied to the aft fairing [4], move the preload pads [7] up until they touch the lower surface of the aft flap [1].

(b) Tighten the bolts [8] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m) that attach the preload pads [7].

SUBTASK 27-51-28-080-001

(6) Remove the 150 lb (68 kg) weight and the strap from the aft fairing [4].

SUBTASK 27-51-28-210-001

(7) Make sure that the seals [6] on the sides of the aft fairing [4] are compressed 10 to 25 percent against the lower surface of the flap.

SUBTASK 27-51-28-820-009

(8) If the seals [6] are not compressed correctly against the lower surface of the flap, adjust the position of the seals [6]:

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(a) Remove the pin [15], nut [14], washer [13], washer [11], bolt [10], and bushing [12] that attach the drive rod [17] to the carriage [9].

(b) Lower the aft end of the aft fairing [4] to get access to the fasteners for the seals [6].

(c) Loosen the nut [18] on the retainer [19].

(d) Move the seal [6] and retainer [19].

1) Make sure that you move the seal [6] and retainer [19] together as a unit.

(e) Tighten the nut [18] on the retainer [19].

(f) Lift the aft end of the aft fairing [4] and align the drive rod [17] with the carriage [9].

(g) Install the bushing [12], bolt [10], washer [11], washer [13], and nut [14] to attach the drive rod [17] to the carriage [9].

1) Install the bolt [10] with the head on the outboard side.

(h) Install the cotter pin [15] in the nut [14].

SUBTASK 27-51-28-410-007

(9) On the side of the aft fairing close the applicable access panels:

Number	Name/Location
544DR	Flap Support No. 1 Access Door
644DL	Flap Support No. 8, Access Door

H. Outboard Flap Outboard Forward Fairing Adjustment

SUBTASK 27-51-28-220-002

(1) Measure the mismatch between the forward fairing [3] and aft fairing [4].

(a) Measure the mismatch on the inboard side and on the bottom of the forward fairing [3].

(b) Make sure that the mismatch is in the limit of 0.03 in. (0.76 mm) to -0.01 in. (-0.25 mm).

NOTE: A positive (+) mismatch is when the forward fairing extends past the aft fairing. A negative (-) mismatch is when the aft fairing extends past the forward fairing.

SUBTASK 27-51-28-220-003

(2) Make sure that the seals [26] on the sides of the forward fairing [3] are compressed 10 to 25 percent against the lower surface of the main flap [2].

SUBTASK 27-51-28-020-011

(3) If the mismatch is not in the limit or if the seals [26] are not compressed correctly, do this task: Outboard Flap Outboard Support Forward Fairing Removal, TASK 27-51-28-000-802.

SUBTASK 27-51-28-820-010

(4) If the mismatch between the forward fairing [3] and aft fairing [4] is not in the limit, then adjust the position of the forward fairing [3]:

(a) If the mismatch is not in the limit on the inboard side of the forward fairing [3], then adjust the position of the fairing attach fitting [24]:

1) Loosen the bolts [23] that attach the fairing attach fitting [24] to the transmission attach fitting [22].

2) Move the fairing attach fitting [24] inboard or outboard to get the mismatch in the clearance.

3) Tighten the bolts [23].

4) Install the lockwire on the bolts [23].

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(b) If the mismatch is not in the limit on the bottom of the forward fairing [3], change the thickness of the shims [25].

1) Apply primer, C00259, to the mating surfaces of the shim [25] and fairing attach fitting [24].

2) Fill and aerodynamically fair between the forward fairing and wing skin.

SUBTASK 27-51-28-820-011

(5) If the seals [26] are not compressed evenly against the lower surface of the main flap [2], then adjust the position of the seals [26]:

(a) Loosen the nuts [27] on the retainer [28].

(b) Move the seal [26] and retainer [28].

(c) Tighten the nuts [27] that hold the retainer [28].

SUBTASK 27-51-28-420-007

(6) If you removed the forward fairing [3], do this task: Outboard Flap Outboard Support Forward Fairing Installation, TASK 27-51-28-400-802.

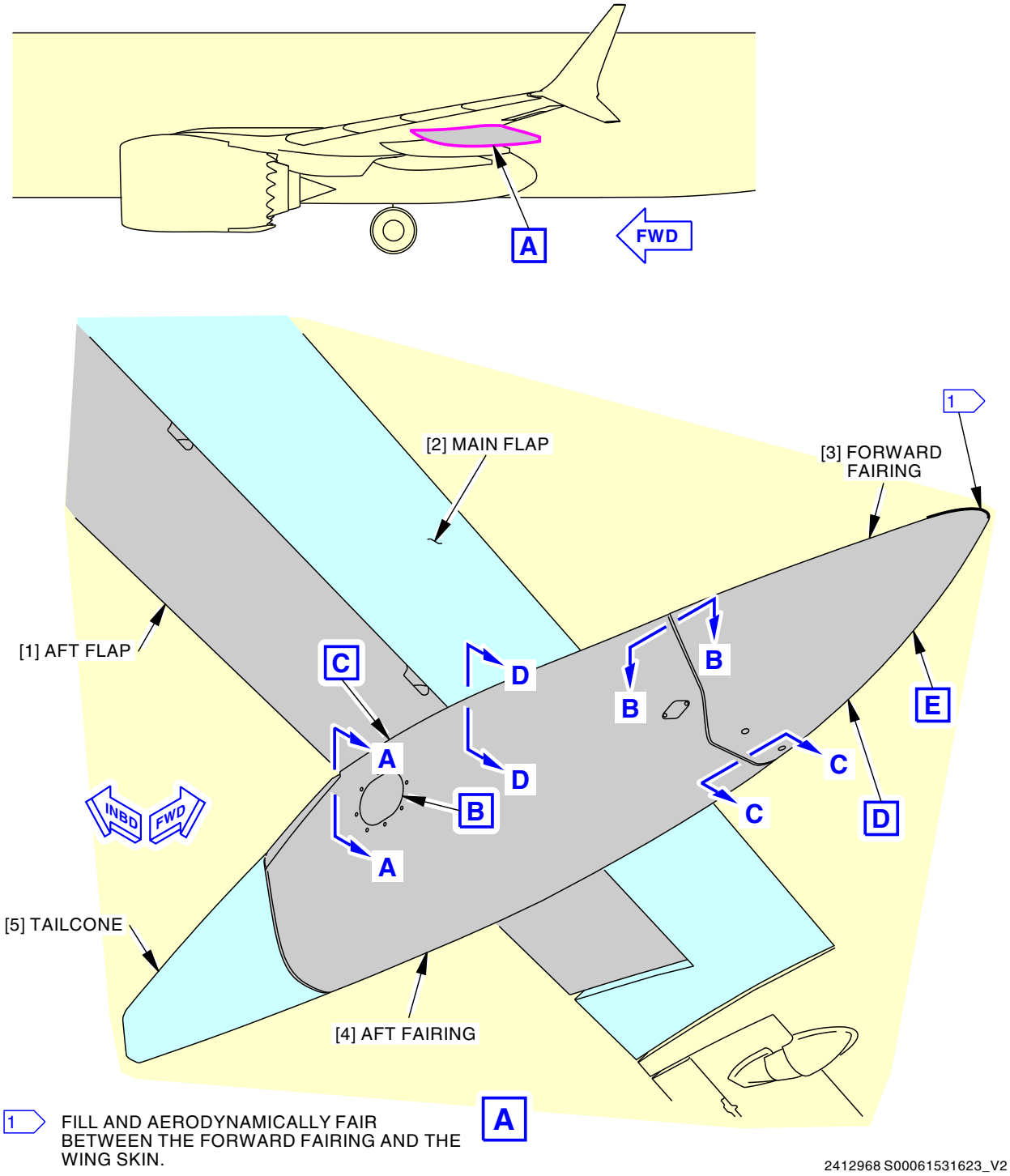
I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-005

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

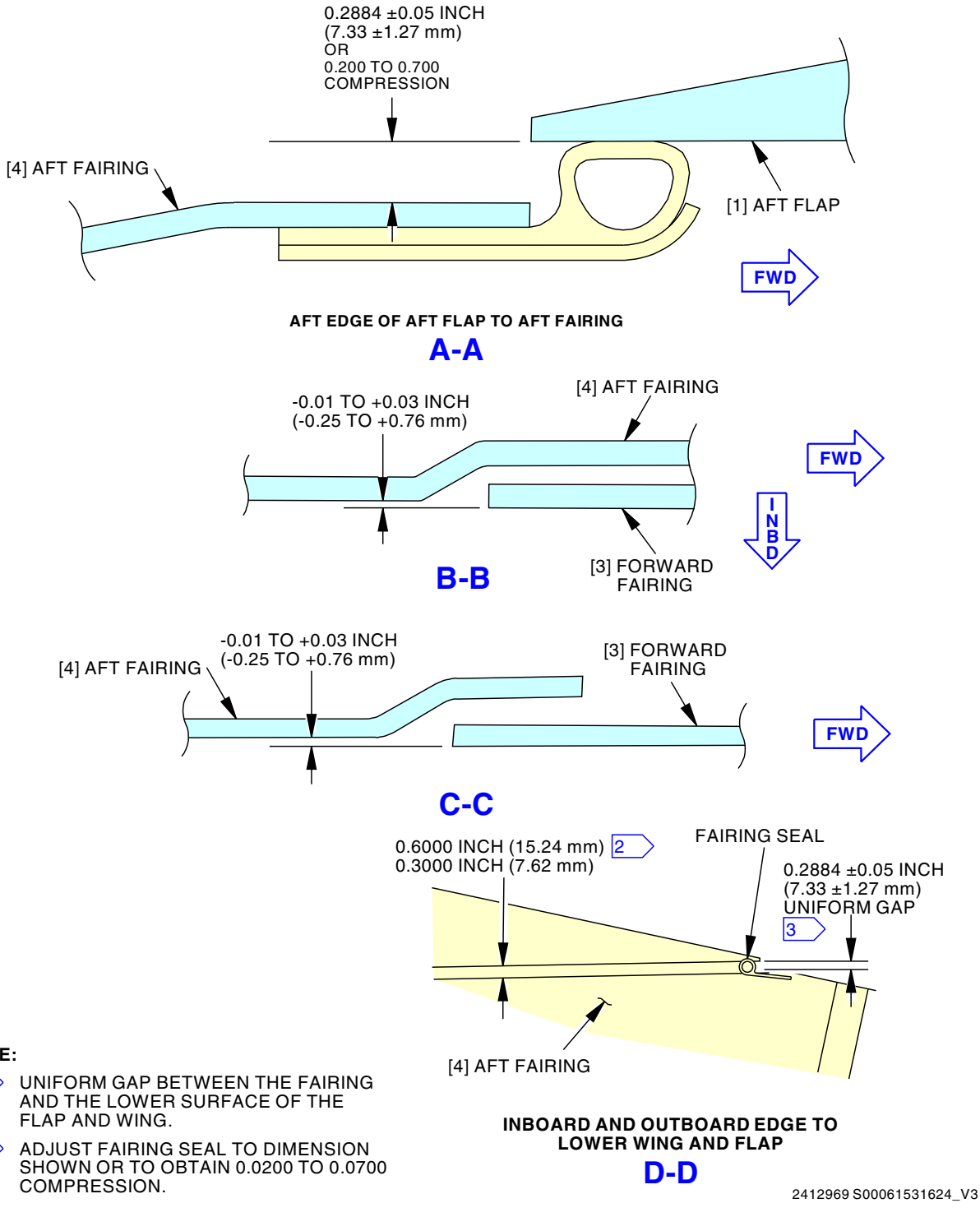
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Support Fairing Adjustment
Figure 501/27-51-28-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

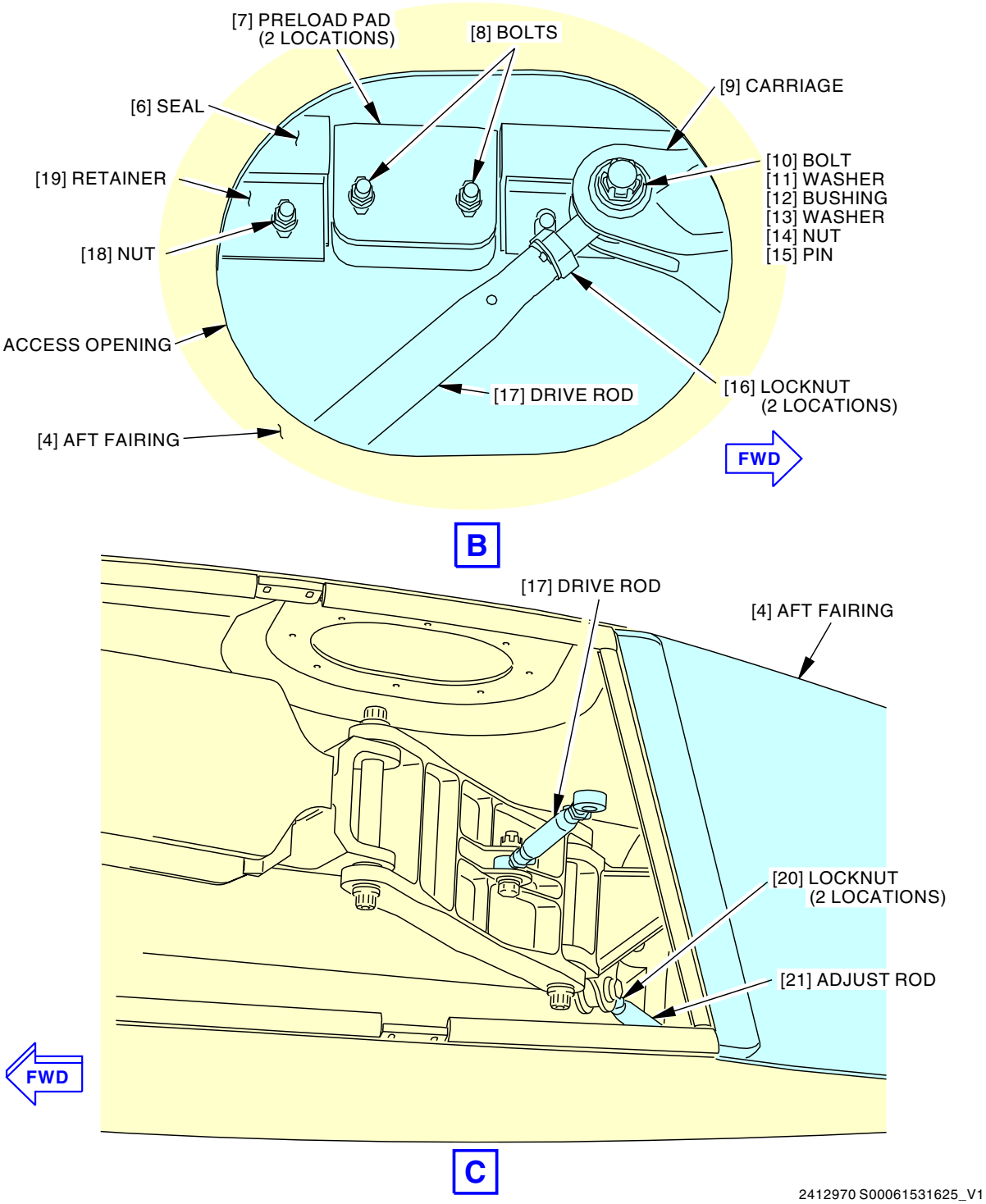
2 UNIFORM GAP BETWEEN THE FAIRING AND THE LOWER SURFACE OF THE FLAP AND WING.

3 ADJUST FAIRING SEAL TO DIMENSION SHOWN OR TO OBTAIN 0.0200 TO 0.0700 COMPRESSION.

2412969 S00061531624_V3

Outboard Flap Outboard Support Fairing Adjustment
Figure 501/27-51-28-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Support Fairing Adjustment
Figure 501/27-51-28-990-803 (Sheet 3 of 4)

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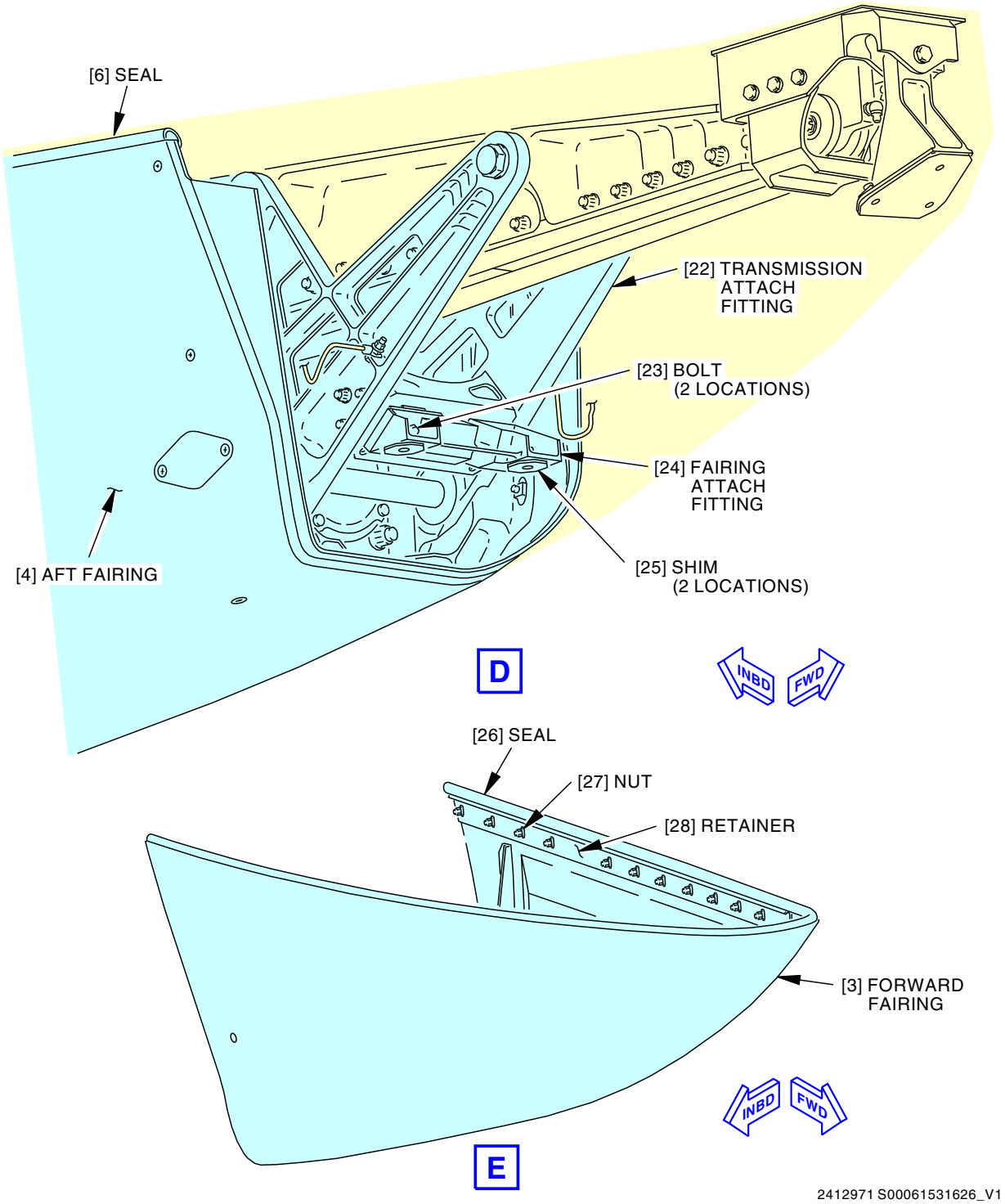

Outboard Flap Outboard Support Fairing Adjustment
Figure 501/27-51-28-990-803 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-28-820-802

4. Outboard Flap Inboard Support Fairing Adjustment

(Figure 502)

A. General

(1) This task is applicable to the fairings at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-000-804	Outboard Flap Inboard Support Forward Fairing Removal (P/B 401)
27-51-28-400-804	Outboard Flap Inboard Support Forward Fairing Installation (P/B 401)

C. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

E. Access Panels

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

F. Prepare for the Adjustment

SUBTASK 27-51-28-860-006

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-28-040-006

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

G. Outboard Flap Inboard Support Aft Fairing Adjustment

SUBTASK 27-51-28-480-002

(1) Apply a 150 lb (68 kg) weight to preload the aft fairing [44]:

(a) Put a strap across the top of the aft fairing [44] at the line of fasteners for the tailcone [45].

(b) Attach a 150 lb (68 kg) weight to the strap.

1) Make sure that the weight is evenly applied to the inboard and outboard sides of the aft fairing [44].

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SUBTASK 27-51-28-820-012

(2) Move the preload pads [59] away from the aft flap [41] as follows:

NOTE: It is necessary to move the preload pads to correctly measure the clearance between the aft flap and aft fairing.

(a) Loosen the bolts [58] that attach the preload pads [59] to the aft fairing [44].

(b) Move the preload pad [59] away from the lower surface of the aft flap [41].

SUBTASK 27-51-28-220-004

(3) Measure the clearance between the top surface of the aft fairing [44] and the aft edge of the aft flap [41].

(a) Measure the clearance at the aft edge of the aft flap [41] to the aft fairing [44].

(b) Make sure that the clearance is in the limit of 0.2884 ±0.0500 in. (7.33 ±1.27 mm).

(c) Make sure that the clearance is approximately the same on the inboard and outboard sides of the aft fairing [44].

(d) Measure the clearance between the inboard and outboard sides of the aft fairing to the lower surface of the wing and flap.

1) Make sure that the clearance is in the limit of 0.6000 in. (15.2400 mm) to 0.3000 in. (7.6200 mm) seal adjustment to achieve a continuous compression of 0.02 to 0.07.

SUBTASK 27-51-28-820-013

(4) If the clearance is not in the limit, or if it is not the same on the inboard and outboard sides, then adjust the position of the aft fairing [44]:

(a) On the side of the aft fairing open the applicable access panels:

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

(b) If the clearance is not the same on the inboard and outboard sides, adjust the length of the adjust rod [60]:

1) Remove the weight from the aft fairing [44].

2) Remove the pin [55], nut [54], washer [53], washer [51], bolt [50], and bushing [52] that attach the drive rod [57] to the carriage [49].

a) Support the aft fairing [44] when you remove the bolt [50].

3) Lower the aft end of the aft fairing [44] to get access to the adjust rod [60].

4) Loosen the locknuts [61] on the adjust rod [60].

5) Adjust the length of the adjust rod [60] until the clearance is the same on the inboard and outboard sides of the aft fairing [44].

6) Tighten the locknuts [61] on the adjust rod [60].

7) Install the lockwire on the locknuts [61].

8) Lift the aft end of the aft fairing [44] and align the drive rod [57] with the carriage [49].

9) Install the bushing [52], bolt [50], washer [51], washer [53], and nut [54] to attach the drive rod [57] to the carriage [49].

a) Install the bolt [50] with the head on the outboard side.

10) Install the cotter pin [55] in the nut [54].

(c) If the clearance is not in the limit, adjust the length of the drive rod [57]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Loosen the locknuts [56] on the drive rod [57].
2) Adjust the length of the drive rod [57] until the clearance is in the limit.
3) Tighten the locknuts [56] on the drive rod [57].
4) Install the lockwire on the locknuts [56].

(d) Make sure that the clearance is in the limit and that it is the same on the inboard and outboard sides of the aft fairing [44].

SUBTASK 27-51-28-820-014

(5) Adjust the position of the preload pads [59]:

(a) With the 150 lb (68 kg) weight applied to the aft fairing [44], move the preload pads [59] up until they touch the lower surface of the aft flap [41].

(b) Tighten the bolts [58] to 90 in-lb (10.2 N·m) - 125 in-lb (14.1 N·m) that attach the preload pads [59].

SUBTASK 27-51-28-080-002

(6) Remove the weight from the aft fairing [44].

SUBTASK 27-51-28-210-002

(7) Make sure that the seals [6] on the sides of the aft fairing [44] are compressed 10 to 25 percent against the lower surface of the flap.

SUBTASK 27-51-28-820-015

(8) If the seals [47] are not compressed correctly against the lower surface of the flap, adjust the position of the seals [47]:

(a) Remove the pin [55], nut [54], washer [53], washer [51], bolt [50], and bushing [52] that attach the drive rod [57] to the carriage [49].

(b) Lower the aft end of the aft fairing [44] to get access to the fasteners for the seals [47].

(c) Loosen the nuts [46] on the retainer [48].

(d) Move the seal [47] and retainer [48].

1) Make sure that you move the seal [47] and retainer [48] together as a unit.

(e) Tighten the nuts [46] on the retainer [48].

(f) Lift the aft end of the aft fairing [44] to align the drive rod [57] with the carriage [49].

(g) Install the bushing [52], bolt [50], washer [51], washer [53], and nut [54] to attach the drive rod [57] to the carriage [49].

1) Install the bolt [50] with the head on the outboard side.

(h) Install the cotter pin [55] in the nut [54].

SUBTASK 27-51-28-410-008

(9) On the side of the aft fairing close the applicable access panels:

Number	Name/Location
543DR	Flap Support No. 2 Access Door
643DL	Flap Support No. 7, Access Door

H. Outboard Flap Inboard Forward Fairing Adjustment

SUBTASK 27-51-28-220-005

(1) Measure the mismatch between the forward fairing [43] and aft fairing [44].

(a) Measure the mismatch on the inboard side and on the bottom of the forward fairing [43].

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(b) Make sure that the mismatch is in the limit of 0.03 in. (0.76 mm) to -0.01 in. (-0.25 mm).

NOTE: A positive (+) mismatch is when the forward fairing extends past the aft fairing. A negative (-) mismatch is when the aft fairing extends past the forward fairing.

SUBTASK 27-51-28-220-006

(2) Make sure that the seals [66] on the sides of the forward fairing [43] are compressed 10 to 25 percent against the lower surface of the main flap [42].

SUBTASK 27-51-28-020-012

(3) If the mismatch is not in the limit or if the seals [66] are not compressed correctly, do this task: Outboard Flap Inboard Support Forward Fairing Removal, TASK 27-51-28-000-804.

SUBTASK 27-51-28-820-016

(4) If the mismatch between the forward fairing [43] and aft fairing [44] is not in the limit, then adjust the position of the forward fairing [43]:

(a) If the mismatch is not in the limit on the inboard side of the forward fairing [43], adjust the position of the fairing attach fitting [64]:

1) Loosen the bolts [63] that attach the fairing attach fitting [64] to the transmission attach fitting [62].

2) Move the fairing attach fitting [64] inboard or outboard to get the mismatch in the clearance.

3) Tighten the bolts [63].

4) Install the lockwire on the bolts [63].

(b) If the mismatch is not in the limit on the bottom of the forward fairing [43], change the thickness of the shims [65].

1) Apply primer, C00259, to the mating surfaces of the shim [65] and fairing attach fitting [64].

(c) Fill and aerodynamically fair between the forward fairing and the wing skin.

SUBTASK 27-51-28-820-017

(5) If the seals [66] are not compressed evenly against the lower surface of the main flap [42], adjust the position of the seal [66]:

(a) Loosen the nuts [67] on the retainer [68].

(b) Move the seal [66] and retainer [68].

(c) Tighten the nuts [67] that hold the retainer [68].

SUBTASK 27-51-28-420-008

(6) If you removed the forward fairing [43], do this task: Outboard Flap Inboard Support Forward Fairing Installation, TASK 27-51-28-400-804.

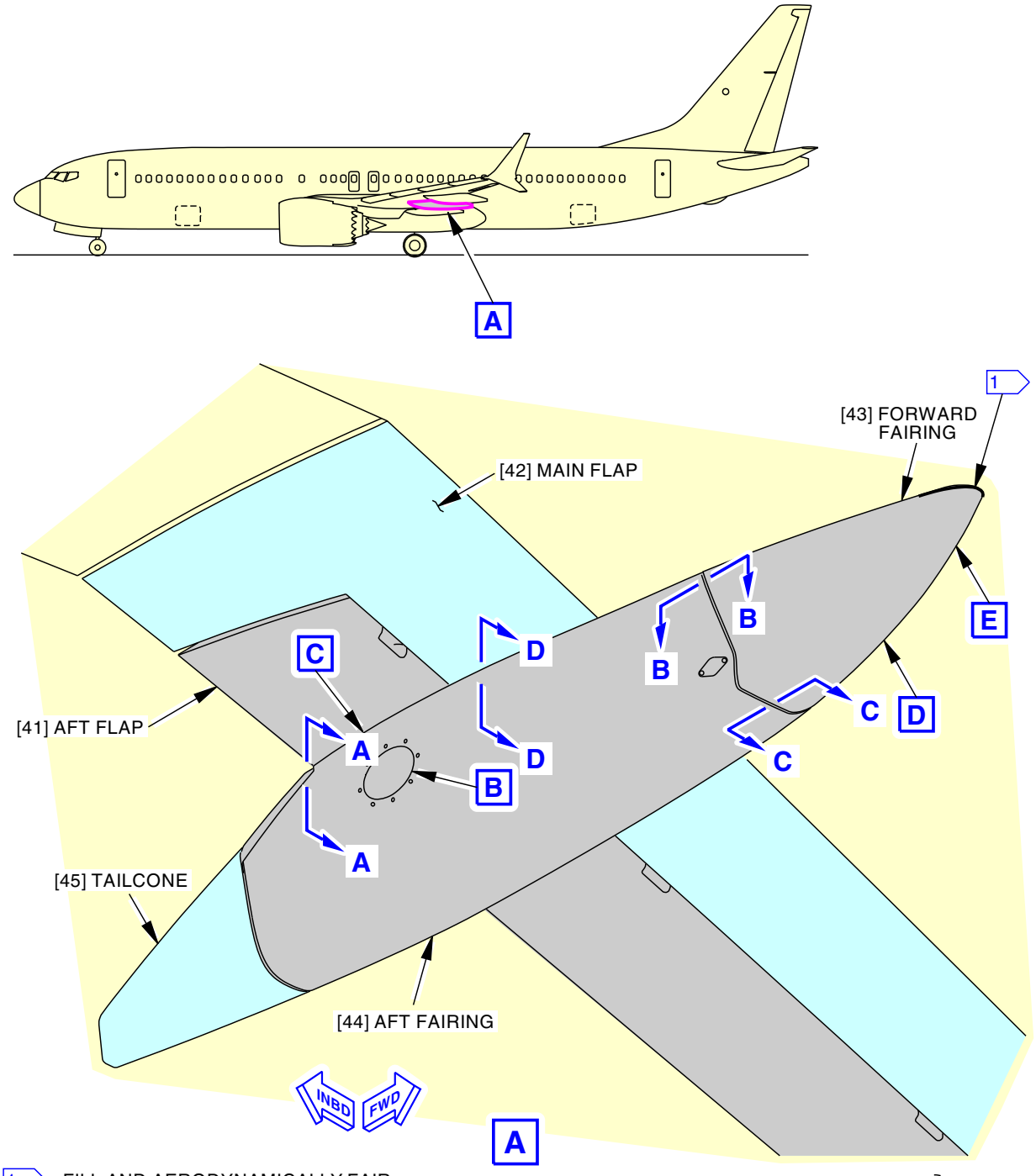
I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-28-440-006

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

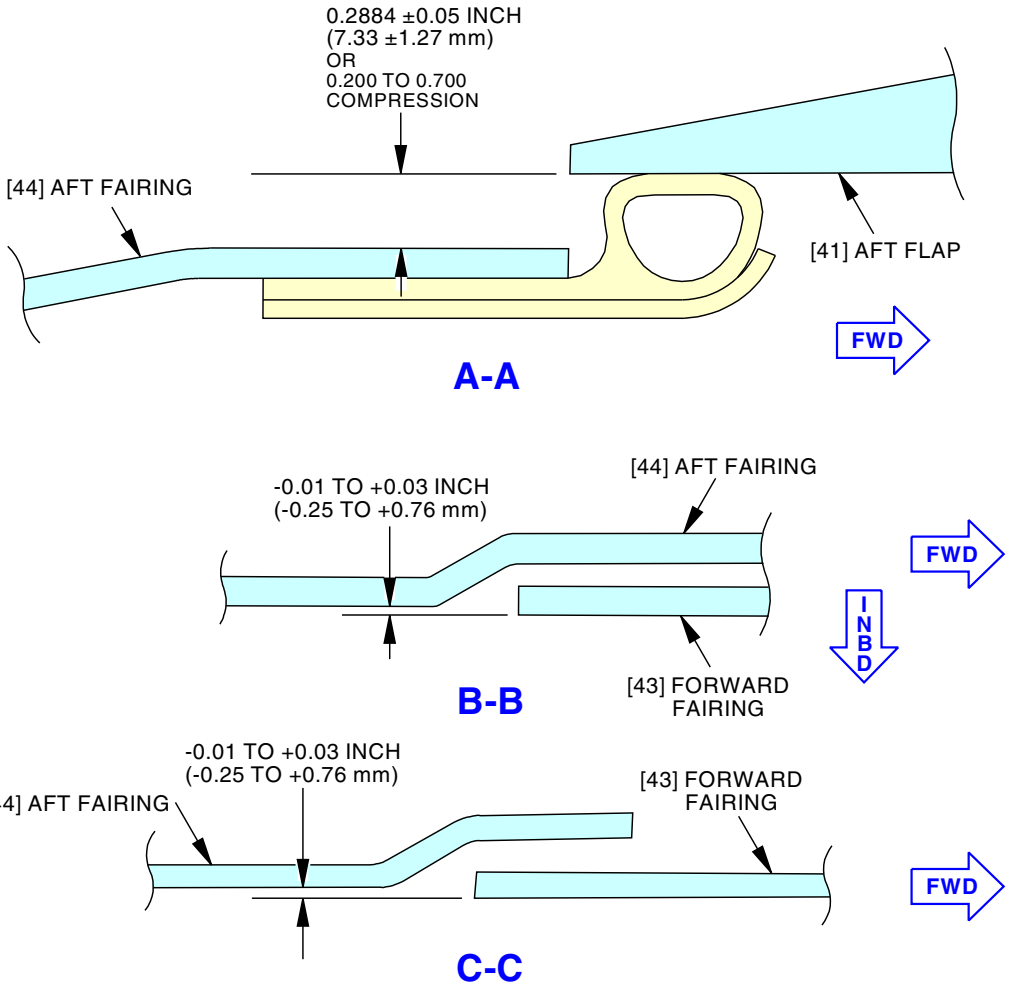
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Support Fairing Adjustment
Figure 502/27-51-28-990-804 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

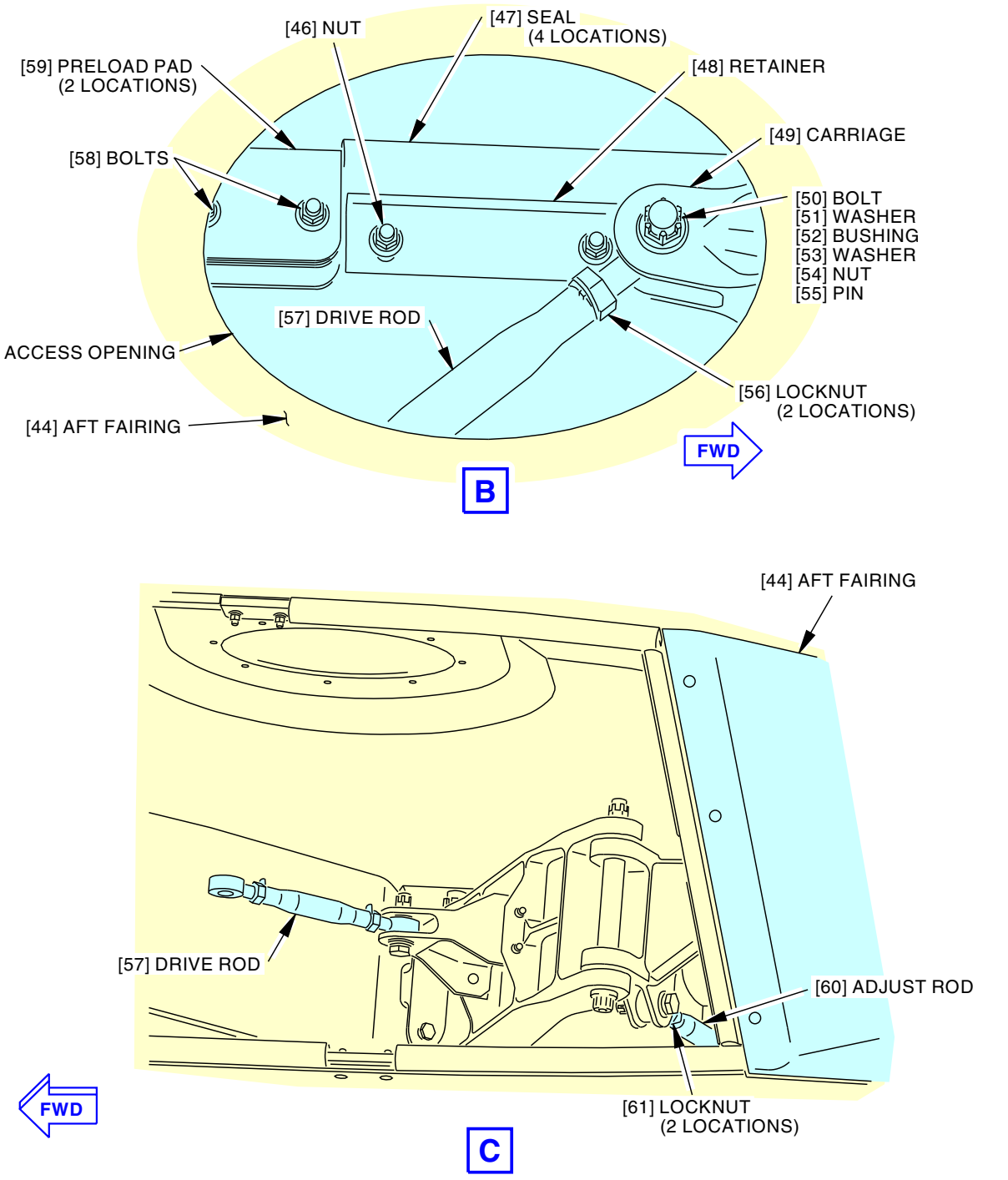
2 UNIFORM GAP BETWEEN THE FAIRING AND THE LOWER SURFACE OF THE FLAP AND WING.

3 ADJUST FAIRING SEAL TO DIMENSION SHOWN OR TO OBTAIN 0.0200 TO 0.0700 COMPRESSION.

2412973 S00061531629_V3

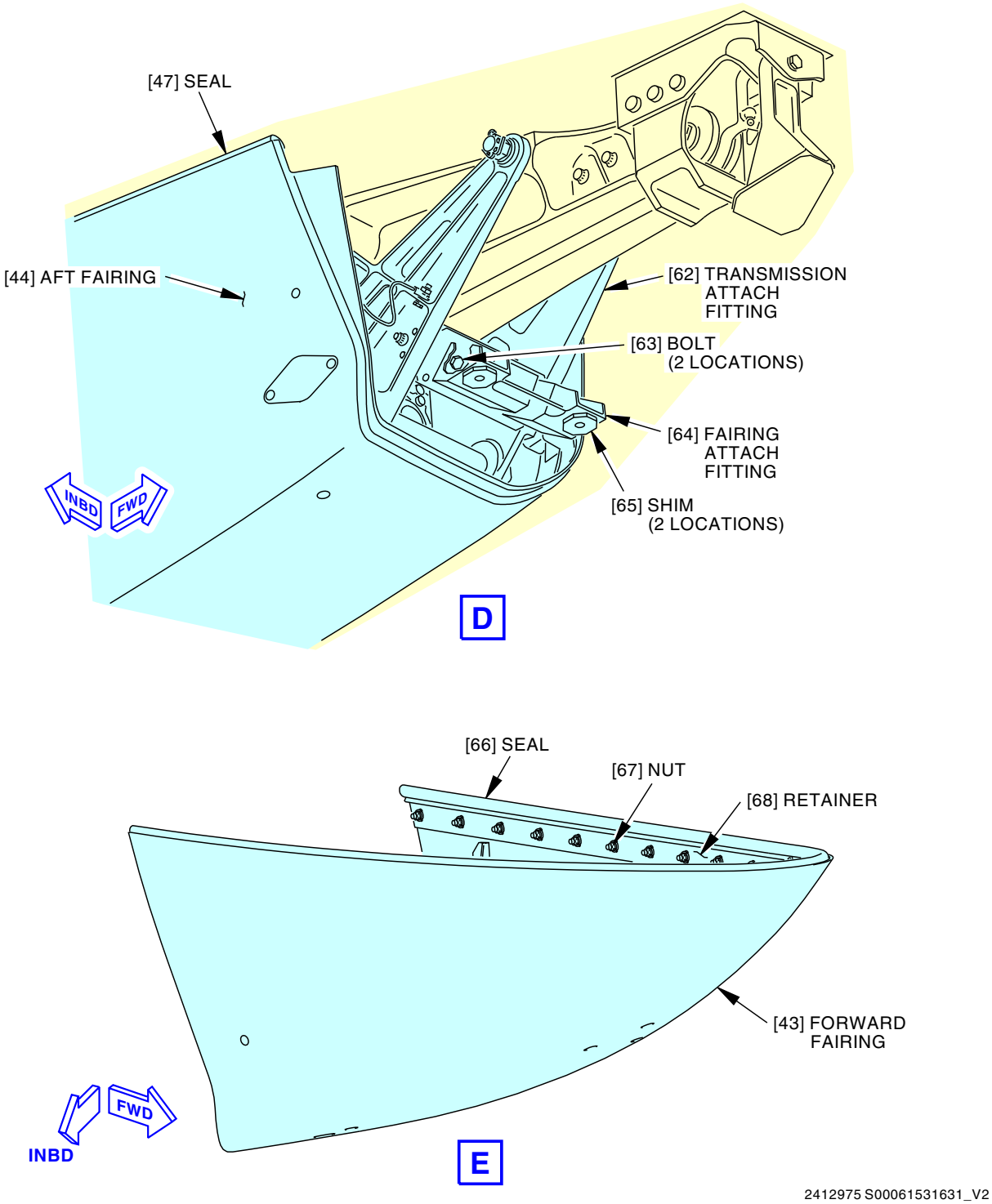
Outboard Flap Inboard Support Fairing Adjustment
Figure 502/27-51-28-990-804 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Support Fairing Adjustment
Figure 502/27-51-28-990-804 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Support Fairing Adjustment
Figure 502/27-51-28-990-804 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard Flap Transmission Removal (Selection)

(2) Inboard Flap Transmission Installation (Selection)

(3) Inboard Flap Outboard Transmission Removal

(4) Inboard Flap Outboard Transmission Installation

(5) Inboard Flap Inboard Transmission Removal

(6) Inboard Flap Inboard Transmission Installation.

TASK 27-51-31-000-801

2. Inboard Flap Transmission Removal (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

B. Inboard Flap Transmission Removal (Selection)

SUBTASK 27-51-31-000-001

(1) Do one of these tasks to remove the applicable inboard flap transmission:

(a) Do this task: Inboard Flap Outboard Transmission Removal, TASK 27-51-31-000-802.

(b) Do this task: Inboard Flap Inboard Transmission Removal, TASK 27-51-31-000-803.

——— END OF TASK ———

TASK 27-51-31-400-801

3. Inboard Flap Transmission Installation (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Inboard Flap Transmission Installation (Selection)

SUBTASK 27-51-31-400-001

(1) Do one of these tasks to install the applicable inboard flap transmission:

(a) Do this task: Inboard Flap Outboard Transmission Installation, TASK 27-51-31-400-802.

(b) Do this task: Inboard Flap Inboard Transmission Installation, TASK 27-51-31-400-803.

——— END OF TASK ———

TASK 27-51-31-000-802

4. Inboard Flap Outboard Transmission Removal

(Figure 401)

A. General

(1) This task is applicable to the transmissions at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Prepare for the Removal

SUBTASK 27-51-31-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-31-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-31-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-31-010-001

(4) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Inboard Flap Outboard Transmission Removal

SUBTASK 27-51-31-980-001

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

SUBTASK 27-51-31-020-001

(2) Disconnect the torque tubes [1] from the transmission [4]:

(a) Remove the lockwire and screws [3] that attach the coupling sleeves [2] to the splined couplings [5] on the torque tubes [1].

(b) Move the coupling sleeves [2] off the splined couplings [5].

SUBTASK 27-51-31-020-002

CAUTION

MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(3) Disconnect the ballscrew [6] with the gimbal [14] from the carriage [8]:

(a) Install a support to hold the ballscrew [6] when it is disconnected from the carriage [8].

(b) Remove the nuts [11], washers [12], and bolts [7] that attach the carriage bushing [9] and carriage bushing [13] to the carriage [8].

(c) Remove the carriage bushing [9] and carriage bushing [13] from the carriage [8].

(d) Move the gimbal [14] away from the carriage [8].

SUBTASK 27-51-31-020-003

(4) Disconnect the ballscrew [6] from the yoke [16] on the transmission [4]:

(a) Remove the nuts [20], washers [19], washers [18], and bolts [17] that attach the ballscrew [6] to the yoke [16].

(b) Remove the ballscrew [6] from the yoke [16].

1) You can turn the ballscrew [6] and the gimbal [14] to remove the ballscrew [6].

(c) Remove the ballscrew [6] with the gimbal [14].

SUBTASK 27-51-31-020-004

(5) Remove the transmission [4]:

NOTE: The transmission [4] weighs approximately 50 lb (23 kg)

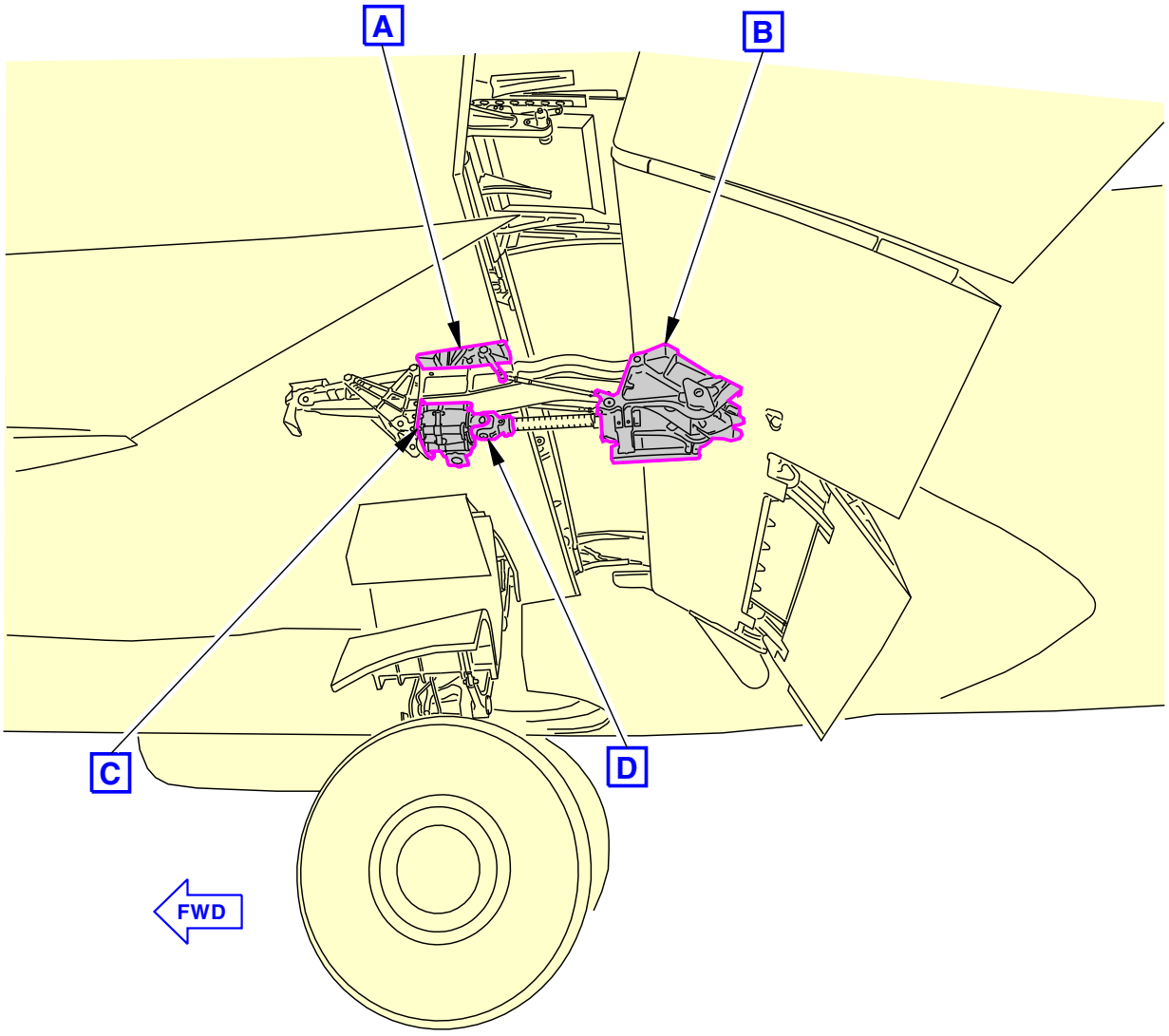
(a) Support the transmission [4] while you disconnect the transmission attach fitting [15] from the sideplates.

(b) Remove the nuts [24], washers [23], washers [22], and bolts [21] that attach the transmission attach fitting [15] to the sideplates.

(c) Carefully lower the transmission [4].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

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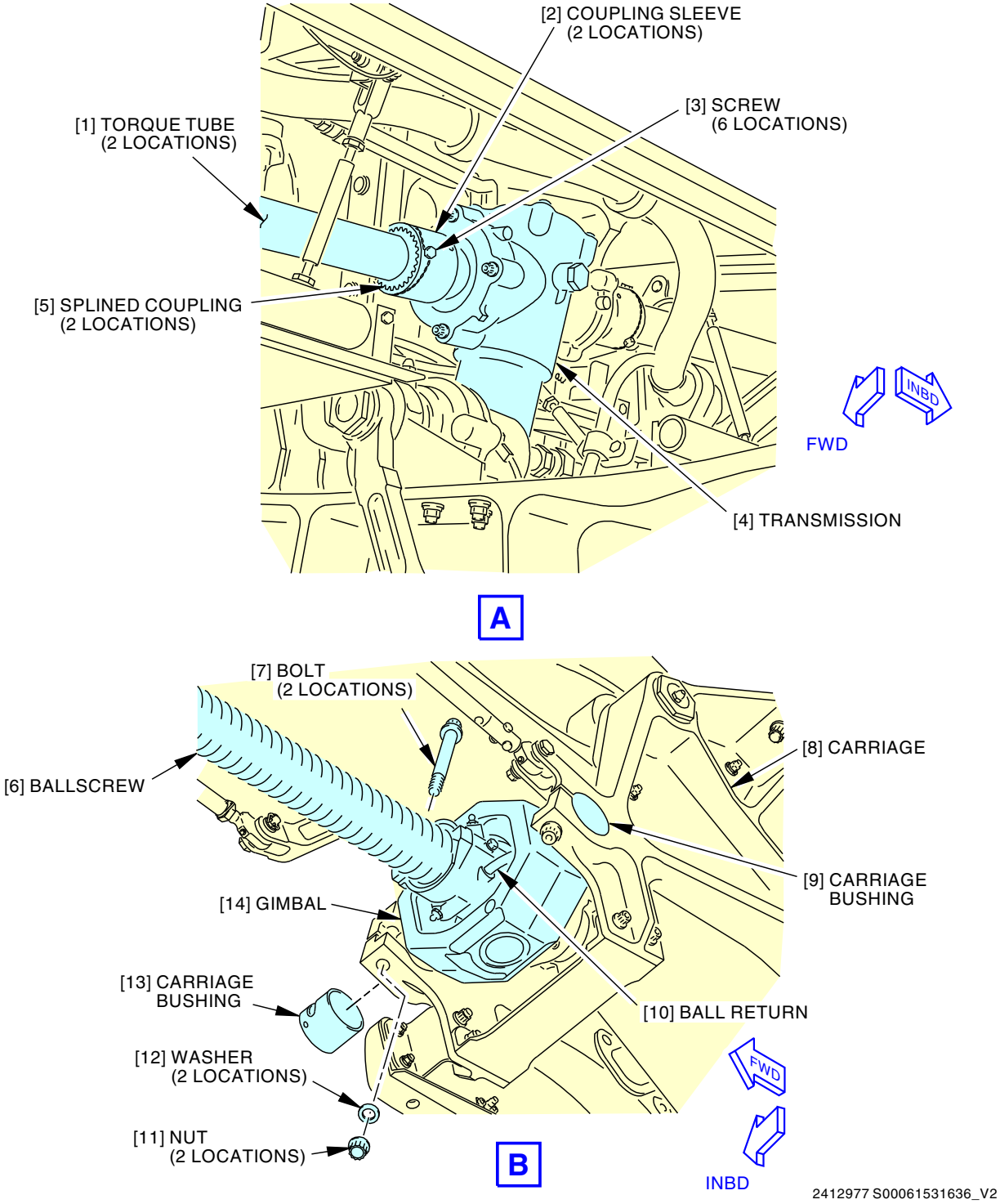
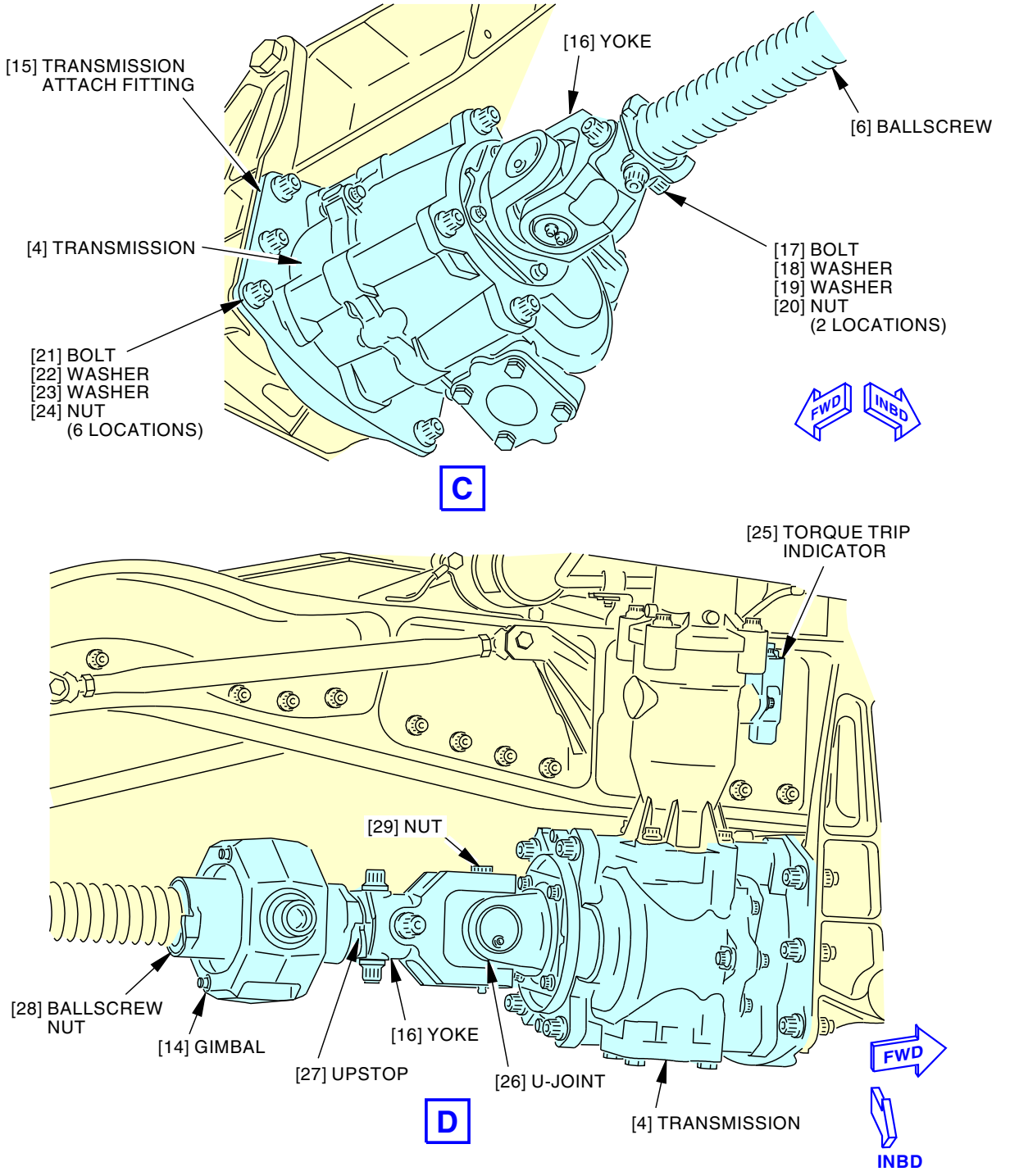
Inboard Flap Outboard Transmission Installation
Figure 401/27-51-31-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Transmission Installation
Figure 401/27-51-31-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Transmission Installation
Figure 401/27-51-31-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-31-400-802

5. Inboard Flap Outboard Transmission Installation

(Figure 401)

A. General

(1) This task is applicable to the transmissions at flap supports No. 3 and 6.

B. References

Reference	Title
12-22-51-640-803	Inboard Flap Outboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Transmission	27-51-31-12-030	SIA ALL
		27-51-31-12-035	SIA ALL
6	Ballscrew	27-51-32-03-030	SIA ALL
		27-51-32-04-055	SIA ALL

E. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

F. Inboard Flap Outboard Transmission Installation

SUBTASK 27-51-31-420-001

(1) Install the transmission [4]:

NOTE: The transmission [4] weighs approximately 50 lb (23 kg).

(a) Use sealant, A00247, to fay seal the mating surface of the transmission attach fitting [15] and the sideplates.

(b) Carefully lift the transmission [4] and put the transmission attach fitting [15] in position on the sideplates.

(c) Install the bolts [21], washers [22], washers [23], and nuts [24] to attach the transmission attach fitting [15] to the side plates.

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1) Tighten the nuts [24] to a torque tool setpoint of 410 in-lb (46.3 N·m).

(d) Wait a minimum of ten minutes and tighten the nuts [24] again.

SUBTASK 27-51-31-420-002

(2) Connect the ballscrew [6] to the yoke [16] on the transmission [4]:

(a) Turn the ballscrew nut [28] until it is at the forward end of the ballscrew [6].

(b) Apply a layer of grease, D00633, to the mating surfaces of the yoke [16] and the ballscrew [6].

(c) Put the ballscrew [6] into the yoke [16].

(d) Apply a layer of grease, D00633, to the shank and threads of the bolts [17].

(e) Install the bolts [17], washers [18], washers [19], and nuts [20] to attach the ballscrew [6] to the yoke [16].

(f) Make sure that the ballscrew [6] is installed correctly in the yoke [16]:

1) Turn the transmission [4] until the nut [29] on the U-joint [26] is up.

2) Turn the ballscrew nut [28] until the upstop is 180° from the upstop [27] on the yoke [16].

3) If the ball returns [10] on the ballscrew nut [28] are not in the correct position, then change the position of the ballscrew [6] as follows:

NOTE: On transmission No. 3, the ball returns [10] should be on the outboard side. On transmission No. 6, the ball returns [10] should be on the inboard side.

a) Remove the nuts [20], washers [19], washers [18], and bolts [17] that attach the ballscrew [6] to the yoke [16].

b) Turn the ballscrew [6] 180° in the yoke [16].

c) Install the bolts [17], washers [18], washers [19], and nuts [20].

(g) Tighten the nuts [20].

SUBTASK 27-51-31-420-003

(3) Connect the ballscrew [6] with the gimbal [14] to the carriage [8] as follows:

(a) Move the gimbal [14] to the downstop on the ballscrew [6].

NOTE: On transmission No. 3, the ball returns [10] on the ballscrew nut [28] should be on the outboard side. On transmission No. 6, the ball returns [10] on the ballscrew nut [28] should be on the inboard side.

(b) Move the carriage [8] to align with the gimbal [14].

(c) Install the carriage bushing [9] and carriage bushing [13] to attach the gimbal [14] to the carriage [8].

(d) Install the bolts [7], washers [12], and nuts [11] that attach the carriage bushing [9] and carriage bushing [13] to the gimbal [14].

(e) Tighten the nuts [11] to 65 in-lb (7.3 N·m) - 75 in-lb (8.5 N·m) more than the run-on torque.

SUBTASK 27-51-31-420-004

(4) Connect the torque tubes [1] to the transmission [4]:

(a) Apply grease, D00633, to the coupling sleeves [2].

(b) Put the splined couplings [5] in the coupling sleeves [2].

(c) Install the screws [3] to attach the torque tubes [1] to the transmission [4].

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(d) Install lockwire on the screws [3].

SUBTASK 27-51-31-640-001

(5) Apply grease, D00633, to the end of the plunger on the torque trip indicator [25] and push it down around the sides of the plunger.

NOTE: Not all transmissions have a torque trip indicator [25] installed.

SUBTASK 27-51-31-640-002

(6) Lubricate the transmission [4], ballscrew [6], and gimbal [14] (TASK 12-22-51-640-803).

SUBTASK 27-51-31-210-001

(7) Make sure that the torque trip indicator [25] on the transmission [4] is set.

NOTE: Not all transmissions have a torque trip indicator [25].

SUBTASK 27-51-31-820-001

(8) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-31-410-001

(1) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-31-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-31-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply hydraulic system B power (TASK 29-11-00-860-801).

SUBTASK 27-51-31-860-003

(4) Use the primary system to retract the flaps to the retracted position (TASK 27-51-00-860-801).

SUBTASK 27-51-31-860-004

(5) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-31-210-002

(6) Make sure that the torque trip indicator [25] on the transmission [4] is set.

NOTE: Not all transmissions have a torque trip indicator [25].

SUBTASK 27-51-31-860-005

(7) Remove hydraulic system B power (TASK 29-11-00-860-805).

END OF TASK

TASK 27-51-31-000-803

6. Inboard Flap Inboard Transmission Removal

(Figure 402)

A. General

(1) This task is applicable to the transmissions at flap supports No. 4 and 5.

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B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

D. Prepare for the Removal

SUBTASK 27-51-31-860-006

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-31-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-31-040-002

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Inboard Transmission Removal

SUBTASK 27-51-31-980-002

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

SUBTASK 27-51-31-020-005

(2) Remove the U-joint assembly [70]:

(a) Remove the bolts [66], washers [67], and nuts [68] that attach the U-joint assembly [70] to the transmission [49] and the tee angle gearbox [69].

(b) Remove the U-joint assembly [70] from the transmission [49].

SUBTASK 27-51-31-020-006

CAUTION MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(3) Disconnect the ballscrew [42] with the gimbal [43] from the carriage [47]:

(a) Install a support to hold the ballscrew [42] when it is disconnected from the carriage [47].

(b) Remove the nuts [44], washers [45], and bolts [41] that attach the carriage bushings [46] to the carriage [47].

(c) Remove the carriage bushings [46] from the carriage [47].

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(d) Move the gimbal [43] away from the carriage [47].

SUBTASK 27-51-31-020-007

(4) Disconnect the ballscrew [42] from the yoke [53] on the transmission [49]:

(a) Remove the nuts [59], washers [58], washers [57], and bolts [56] that attach the ballscrew [42] to the yoke [53].

(b) Remove the ballscrew [42] from the yoke [53].

1) You can turn the ballscrew [42] and the gimbal [43] to get access to remove the ballscrew [42].

(c) Remove the ballscrew [42] with the gimbal [43].

SUBTASK 27-51-31-020-008

(5) Remove the transmission [49]:

NOTE: The transmission [49] weighs approximately 50 lb (23 kg).

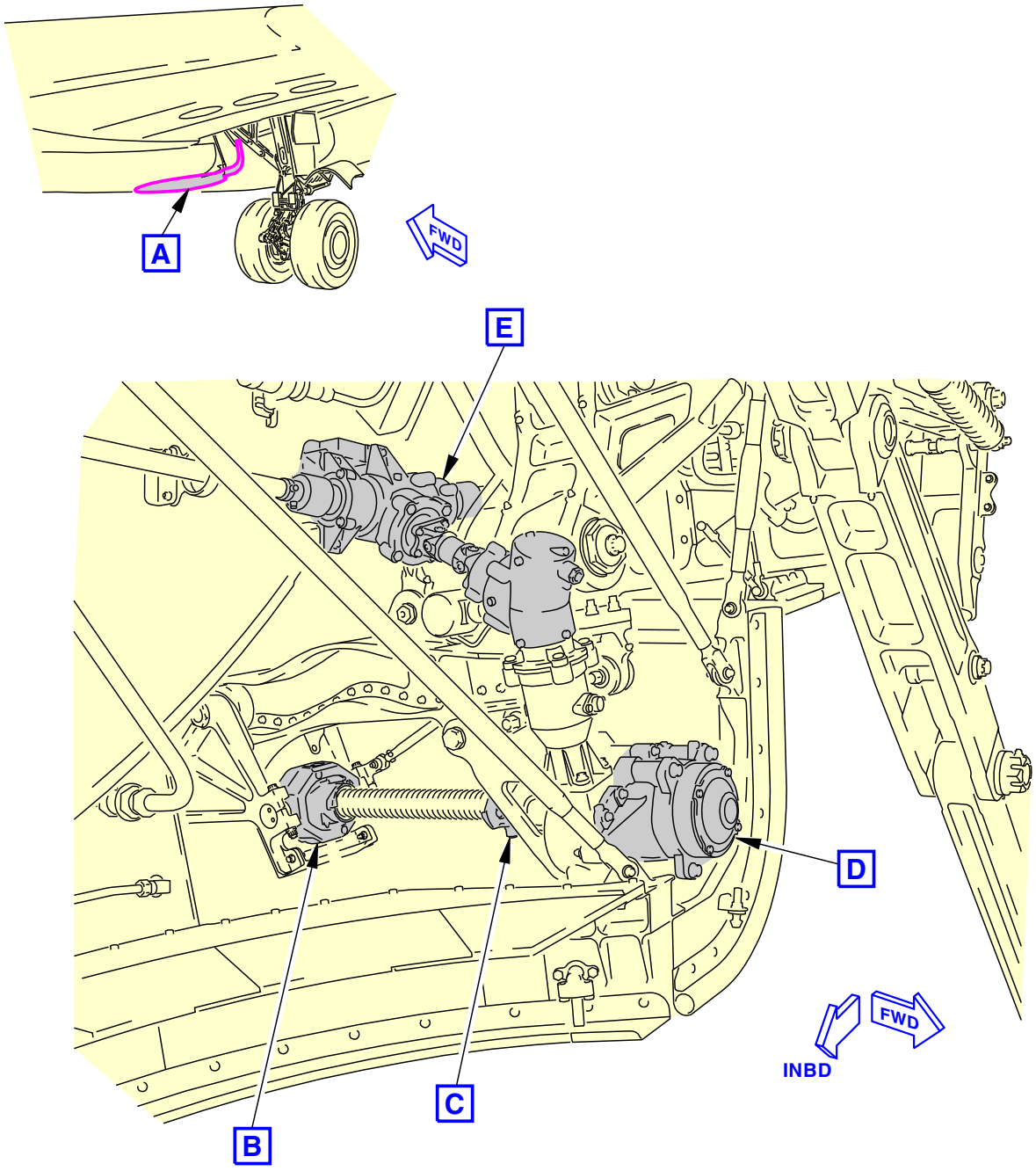
(a) Support the transmission [49] while you disconnect it from the transmission attach fitting [51].

(b) Remove the nuts [63], washers [62], washers [61], bolts [60], bolt [64], and bolt [65] that attach the transmission [49] to the transmission attach fitting [51].

(c) Carefully remove the transmission [49].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



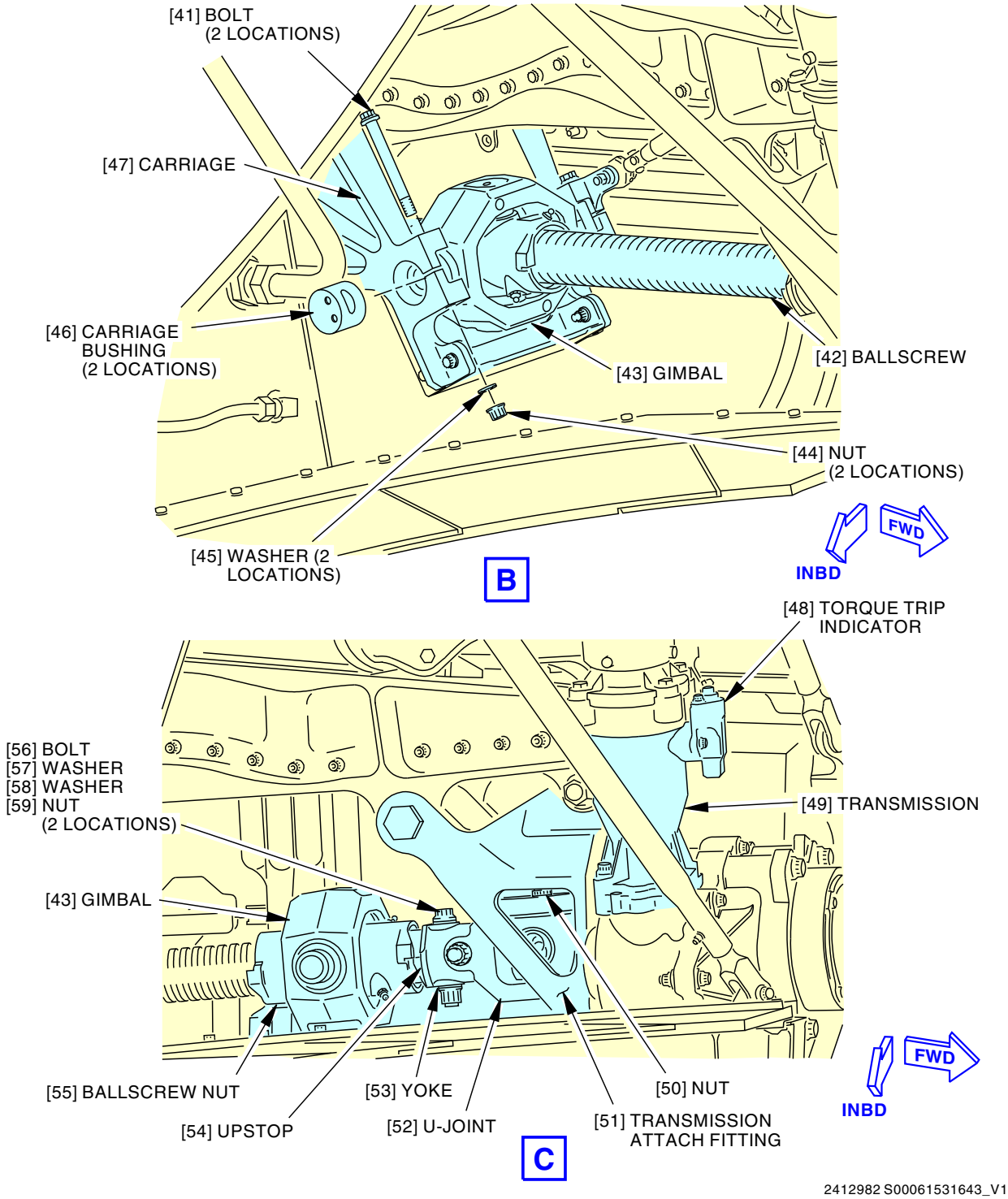
**MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)**

A

2412980 S00061531641_V1

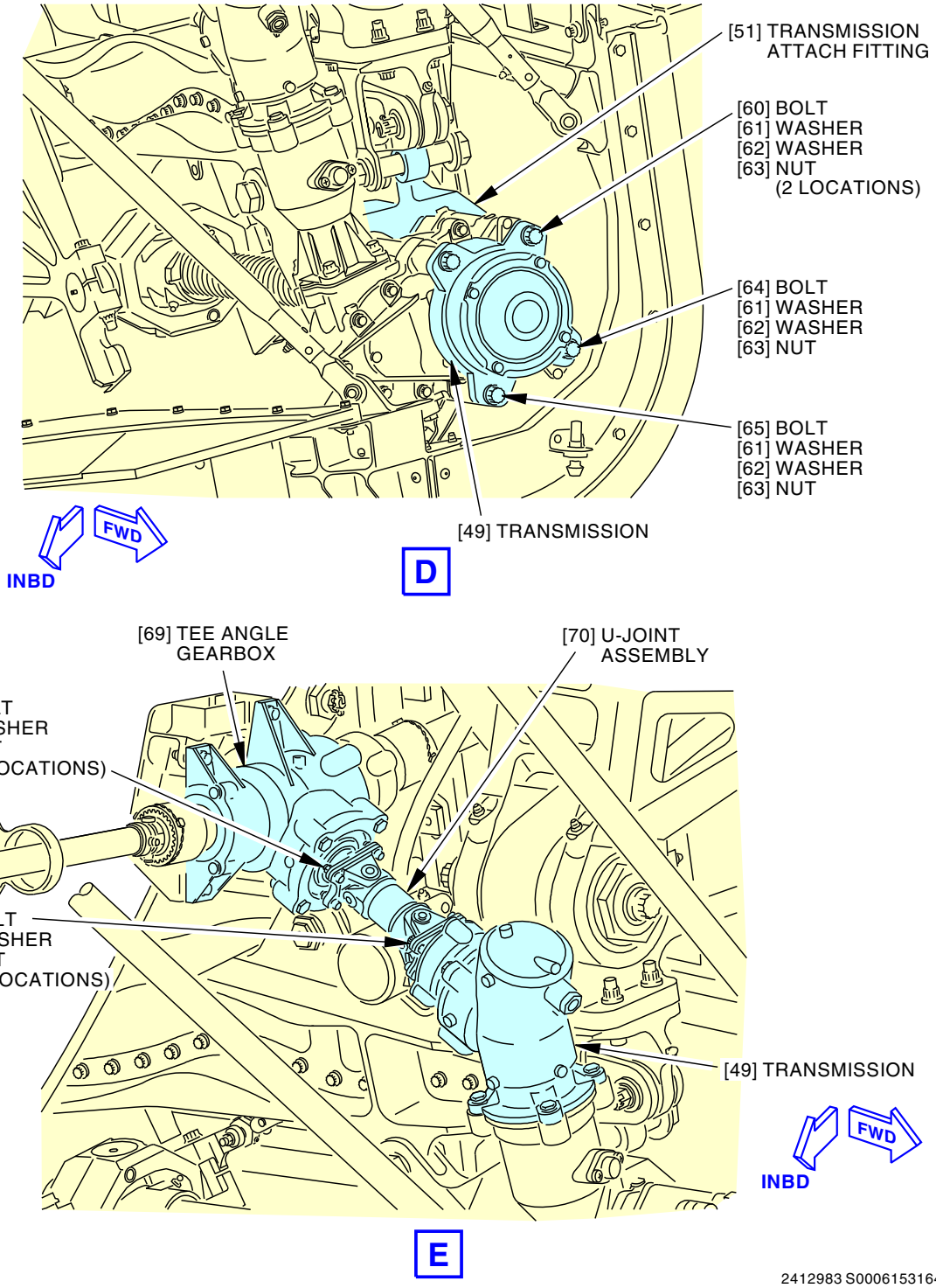
**Inboard Flap Inboard Transmission Installation
Figure 402/27-51-31-990-802 (Sheet 1 of 3)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Transmission Installation
Figure 402/27-51-31-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Transmission Installation
Figure 402/27-51-31-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-31-400-803

7. Inboard Flap Inboard Transmission Installation

(Figure 402)

A. General

(1) This task is applicable to the transmissions at flap supports No. 4 and 5.

B. References

Reference	Title
12-22-51-640-802	Inboard Flap Inboard Ballscrew Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
42	Ballscrew	27-51-32-04-055	SIA ALL
49	Transmission	27-51-31-14-040	SIA ALL
		27-51-31-14-045	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

F. Inboard Flap Inboard Transmission Installation

SUBTASK 27-51-31-420-005

(1) Install the transmission [49]:

NOTE: The transmission [49] weighs approximately 50 lb (23 kg).

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin layer of Cor-Ban 27L Compound, G50237, to the mating surface of the transmission [49] and the transmission attach fitting [51].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply a layer of Cor-Ban 27L Compound, G50237, to the bolt holes in the transmission [49].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply a layer of Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [60], bolt [64] and bolt [65].

(d) Carefully lift the transmission [49] to its position on the transmission attach fitting [51].

(e) Install the bolts [60], bolt [64], bolt [65], washers [61], washers [62], and nuts [63] to attach the transmission [49] to the transmission attach fitting [51].

1) Tighten the nuts [63] to a torque tool setpoint of 500 in-lb (56 N·m) - 550 in-lb (62 N·m).

SUBTASK 27-51-31-420-006

(2) Connect the ballscrew [42] to the yoke [53] on the transmission [49] as follows:

(a) Turn the ballscrew nut [55] until it is at the forward end of the ballscrew [42].

(b) Apply a layer of grease, D00633, to the mating surfaces of the yoke [53] and the ballscrew [42].

(c) Put the ballscrew [42] into the yoke [53].

(d) Apply a layer of grease, D00633, to the shank and threads of the bolts [56].

(e) Install the bolts [56], washers [57], washers [58], and nuts [59] to attach the ballscrew [42] to the yoke [53].

(f) Make sure that the ballscrew [42] is installed correctly in the yoke [53] as follows:

1) Turn the transmission [49] until the nut [50] on the U-joint [52] is up.

2) Turn the ballscrew nut [55] until the upstop is 180° from the upstop [54] on the yoke [53].

3) If the ball returns on the ballscrew nut [55] are not in the correct position, then change the position of the ballscrew [42] as follows:

NOTE: On transmission No. 4, the ball returns should be on the outboard side. On transmission No. 5, the ball returns should be on the inboard side.

a) Remove the nuts [59], washers [58], washers [57], and bolts [56] that attach the ballscrew [42] to the yoke [53].

b) Turn the ballscrew [42] 180° in the yoke [53].

c) Install the bolts [56], washers [57], washers [58], and nuts [59].

(g) Tighten the nuts [59].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-31-420-007

(3) Connect the ballscrew [42] with the gimbal [43] to the carriage [47] as follows:

(a) Move the gimbal [43] to the downstop on the ballscrew [42].

NOTE: On transmission No. 4, the ball returns on the ballscrew nut [55] should be on the outboard side. On transmission No. 5, the ball returns on the ballscrew nut [55] should be on the inboard side.

(b) Move the carriage [47] to align with the gimbal [43].

(c) Install the carriage bushings [46] to attach the gimbal [43] to the carriage [47].

(d) Install the bolts [41], washers [45], and nuts [44] that attach the carriage bushings [46] to the carriage [47].

(e) Tighten the nuts [44] to 65 in-lb (7.3 N·m) - 75 in-lb (8.5 N·m) more than the run-on torque.

SUBTASK 27-51-31-420-008

(4) Install the U-joint assembly [70]:

(a) Put the U-joint assembly [70] in its position between the transmission [49] and the tee angle gearbox [69].

(b) Install the bolts [66], washers [67], and nuts [68] that attach the U-joint assembly [70] to the transmission [49] and the tee angle gearbox [69].

SUBTASK 27-51-31-640-003

(5) Apply grease, D00633, to the end of the plunger on the torque trip indicator [48] and push it down around the sides of the plunger.

NOTE: Not all transmissions have a torque trip indicator.

SUBTASK 27-51-31-640-004

(6) Lubricate the transmission [49] and ballscrew [42] (TASK 12-22-51-640-802).

SUBTASK 27-51-31-210-003

(7) Make sure that the torque trip indicator [48] on the transmission [49] is set.

NOTE: Not all transmissions have a torque trip indicator installed.

SUBTASK 27-51-31-820-002

(8) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-31-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-31-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply B hydraulic system B power (TASK 29-11-00-860-801).

SUBTASK 27-51-31-860-008

(3) Use the primary system to retract the flaps to the retracted position (TASK 27-51-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-31-860-009

(4) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-31-210-004

(5) Make sure that the torque trip indicator [48] on the transmission [49] is set.

NOTE: Not all transmissions have torque trip indicator installed.

SUBTASK 27-51-31-860-010

(6) Remove hydraulic system B power (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard Flap Ballscrew and Gimbal Removal (Selection)

(2) Inboard Flap Ballscrew and Gimbal Installation (Selection)

(3) Inboard Flap Outboard Ballscrew and Gimbal Removal

(4) Inboard Flap Outboard Ballscrew and Gimbal Installation

(5) Inboard Flap Inboard Ballscrew and Gimbal Removal

(6) Inboard Flap Inboard Ballscrew and Gimbal Installation.

TASK 27-51-32-000-801

2. Inboard Flap Ballscrew and Gimbal Removal (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

B. Inboard Flap Ballscrew and Gimbal Removal (Selection)

SUBTASK 27-51-32-000-001

(1) Do one of these tasks to remove the applicable inboard flap ballscrew and gimbal:

(a) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-802.

(b) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-803.

——— END OF TASK ———

TASK 27-51-32-400-801

3. Inboard Flap Ballscrew and Gimbal Installation (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Inboard Flap Ballscrew and Gimbal Installation (Selection)

SUBTASK 27-51-32-400-001

(1) Do one of these tasks to install the applicable inboard flap ballscrew and gimbal:

(a) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-802.

(b) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-803.

——— END OF TASK ———

TASK 27-51-32-000-802

4. Inboard Flap Outboard Ballscrew and Gimbal Removal

(Figure 401)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

D. Prepare for the Removal

SUBTASK 27-51-32-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are in the nose and main landing gears (TASK 32-00-01-480-801).

SUBTASK 27-51-32-010-001

(2) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

E. Inboard Flap Outboard Ballscrew and Gimbal Removal

SUBTASK 27-51-32-980-001

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-32-020-001

CAUTION MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(2) Disconnect the ballscrew [1] with the gimbal [12] from the carriage [3] as follows:

(a) Install a support to hold the ballscrew [1] when it is disconnected from the carriage [3].

(b) Remove the nuts [9], washers [10], and bolts [2] that attach the carriage bushing [4] and carriage bushing [11] to the carriage [3].

(c) Remove the carriage bushing [4] and carriage bushing [11] from the carriage [3].

(d) Move the gimbal [12] away from the carriage [3].

SUBTASK 27-51-32-020-002

(3) Disconnect the ballscrew [1] from the yoke [17] on the transmission [15] as follows:

(a) Remove the nuts [21], washers [20], washers [19], and bolts [18] that attach the ballscrew [1] to the yoke [17].

(b) Remove the ballscrew [1] from the yoke [17].

NOTE: You can turn the ballscrew [1] and the gimbal [12] to remove the ballscrew [1].

(c) Remove the ballscrew [1] with the gimbal [12].

SUBTASK 27-51-32-020-003

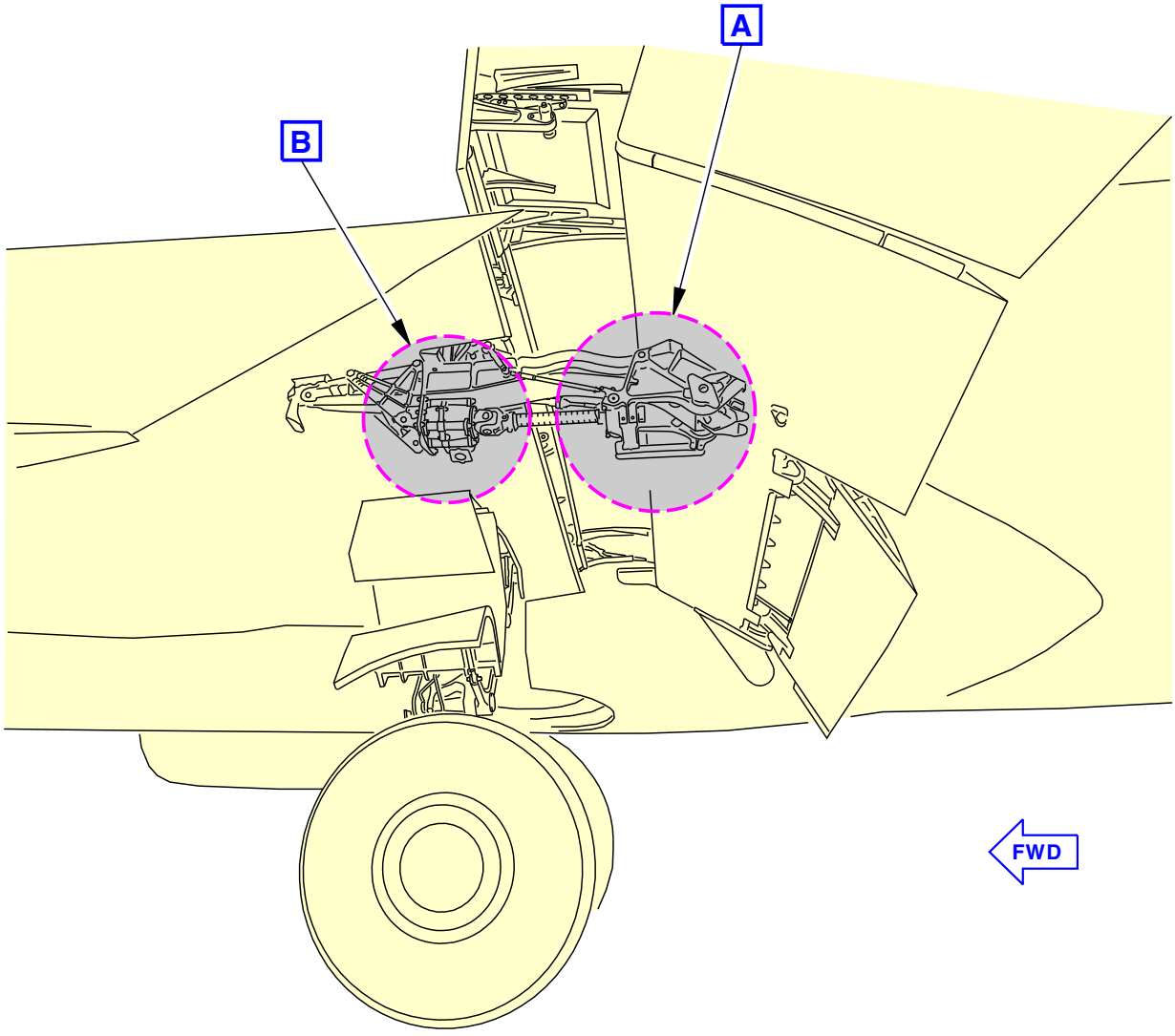
(4) If it is necessary, remove the gimbal [12] from the ballscrew nut [22]:

(a) Remove the bolts [13], washers [6], and collars [7] that attach the gimbal bushings [8] to the gimbal [12].

(b) Remove the gimbal [12] from the ballscrew nut [22].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

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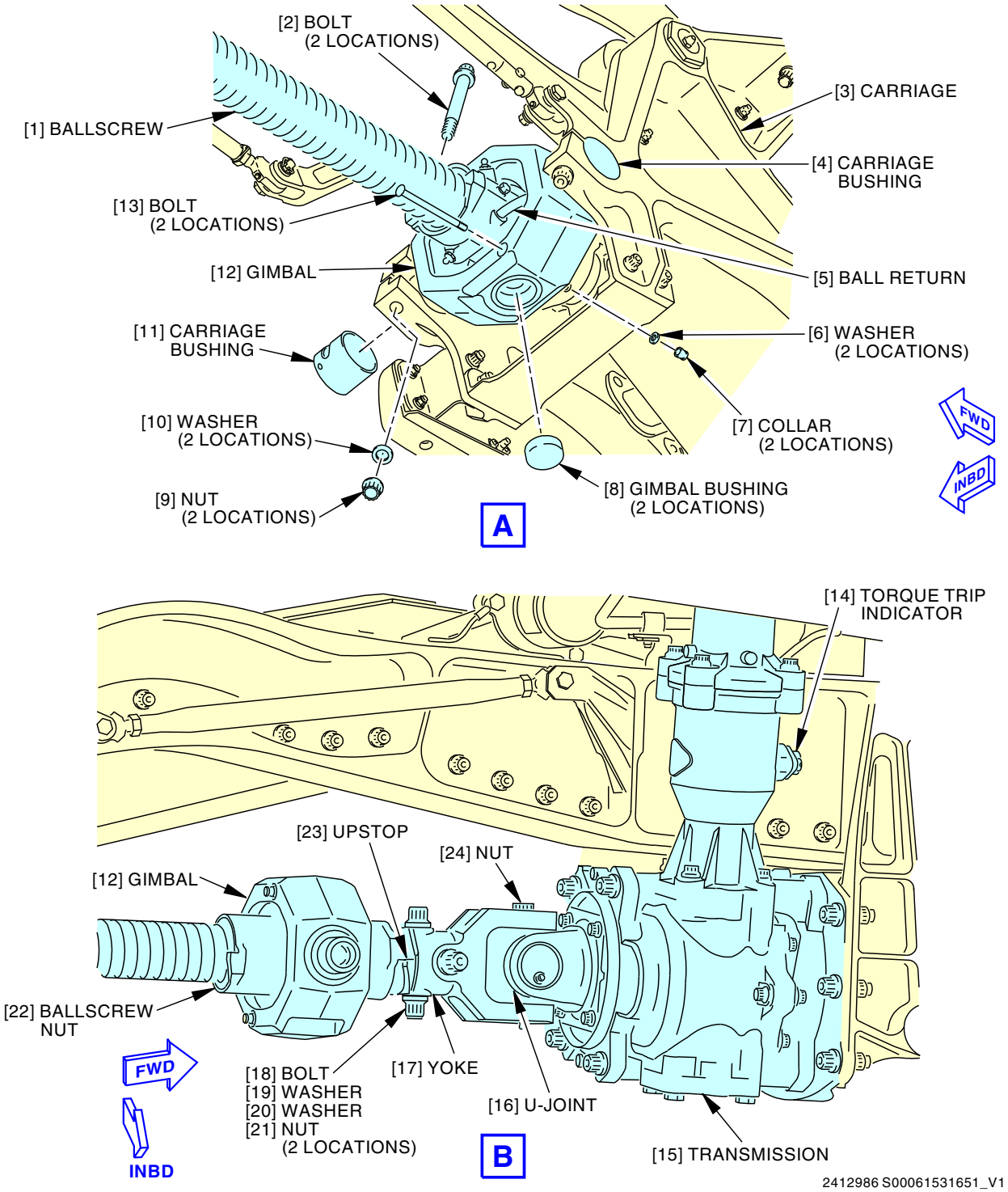
Inboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-32-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-32-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-400-802

5. Inboard Flap Outboard Ballscrew and Gimbal Installation

(Figure 401)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 3 and 6.

B. References

Reference	Title
12-22-51-640-803	Inboard Flap Outboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Ballscrew	27-51-32-03-030	SIA ALL
7	Collar	27-51-32-03-025	SIA ALL
12	Gimbal	27-51-32-03-060	SIA ALL

E. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

F. Inboard Flap Outboard Ballscrew and Gimbal Installation

SUBTASK 27-51-32-420-001

(1) If you removed it, install the gimbal [12] on the ballscrew nut [22]:

(a) Apply grease, D00633 to the inside and outside mating surfaces of the gimbal bushings [8].

(b) Apply grease, D00633 to the outside surfaces of the gimbal bushings [8].

(c) Put the gimbal [12] in its location on the ballscrew nut [22].

(d) Install the gimbal bushings [8] through the gimbal [12] on the ballscrew nut [22].

(e) Install the bolts [13], washers [6], and collars [7] that attach the gimbal bushings [8] to the gimbal [12].

SUBTASK 27-51-32-420-002

(2) Connect the ballscrew [1] to the yoke [17] on the transmission [15]:

(a) Turn the ballscrew nut [22] until it is at the forward end of the ballscrew [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Apply a layer of grease, D00633 to the mating surfaces of the yoke [17] and the ballscrew [1].

(c) Put the ballscrew [1] into the yoke [17].

(d) Apply a layer of grease, D00633 to the shank and threads of the bolts [18].

(e) Install the bolts [18], washers [19], washers [20], and nuts [21] to attach the ballscrew [1] to the yoke [17].

(f) Make sure that you install the ballscrew [1] correctly in the yoke [17] as follows:

1) Turn the transmission [15] until the nut [24] on the U-joint [16] is up.

2) Turn the ballscrew nut [22] until the upstop is 180° from the upstop [23] on the yoke [17].

3) If the ball return [5] on the ballscrew nut [22] are not in the correct position, then change the position of the ballscrew [1]:

NOTE: On transmission No. 3, the ball returns [5] on the ballscrew nut [22] should be on the outboard side. On transmission No. 6, the ball returns [5] on the ballscrew nut [22] should be on the inboard side.

a) Remove the nuts [21], washers [20], washers [19], and bolts [18] that attach the ballscrew [1] to the yoke [17].

b) Turn the ballscrew [1] 180° in the yoke [17].

c) Install the bolts [18], washers [19], washers [20], and nuts [21].

(g) Tighten the nuts [21].

SUBTASK 27-51-32-420-003

(3) Connect the ballscrew [1] with the gimbal [12] to the carriage [3] as follows:

(a) Move the gimbal [12] to the downstop on the ballscrew [1].

NOTE: On transmission No. 3, the ball returns [5] on the ballscrew nut [22] should be on the outboard side. On transmission No. 6, the ball returns [5] on the ballscrew nut [22] should be on the inboard side.

(b) Move the carriage [3] to align with the gimbal [12].

(c) Apply grease, D00633 to the inside and outside surfaces of the carriage bushing [4] and carriage bushing [11].

(d) Apply grease, D00633 to the outside surfaces of the carriage bushing [4] and carriage bushing [11].

(e) Install the carriage bushing [4] and carriage bushing [11] to attach the gimbal [12] to the carriage [3].

(f) Install the bolts [2], washers [10], and nuts [9] that attach the carriage bushing [4] and carriage bushing [11] to the carriage [3].

(g) Tighten the nuts [9] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run-on torque.

SUBTASK 27-51-32-210-001

(4) Make sure that the torque trip indicator [14] on the transmission [15] is set.

SUBTASK 27-51-32-640-001

(5) Apply grease, D00633 to the end of the plunger on the torque trip indicator [14] and push it down around the sides of the plunger.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-32-640-002

(6) Lubricate the transmission [15], ballscrew [1] and gimbal [12] (TASK 12-22-51-640-803).

SUBTASK 27-51-32-820-001

(7) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-410-001

(1) Do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-32-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-51-32-860-003

(4) Retract the flaps with the primary system (TASK 27-51-00-860-801).

SUBTASK 27-51-32-860-004

(5) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-32-210-002

(6) Make sure that the torque trip indicator [14] on the transmission [15] is set.

SUBTASK 27-51-32-860-005

(7) Remove system B hydraulic power (TASK 29-11-00-860-805).

——— END OF TASK ———

TASK 27-51-32-000-803

6. Inboard Flap Inboard Ballscrew and Gimbal Removal

(Figure 402)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4

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(Continued)

Zone	Area
641	Right Wing - Fairing Flap Support No. 5

D. Prepare for the Removal

SUBTASK 27-51-32-860-006

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-32-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-32-040-002

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Inboard Flap Inboard Ballscrew and Gimbal Removal

SUBTASK 27-51-32-980-002

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew. To extend them, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

SUBTASK 27-51-32-020-004

CAUTION MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(2) Disconnect the ballscrew [44] with the gimbal [45] from the carriage [49]:

(a) Install a support to hold the ballscrew [44] when it is disconnected from the carriage [49].

(b) Remove the nuts [46], washers [47], and bolts [50] that attach the carriage bushings [48] to the carriage [49].

(c) Remove the carriage bushings [48] from the carriage [49].

(d) Move the gimbal [45] away from the carriage [49].

SUBTASK 27-51-32-020-005

(3) Disconnect the ballscrew [44] from the yoke [56] on the transmission [53]:

(a) Remove the nuts [62], washers [61], washers [60], and bolts [59] that attach the ballscrew [44] to the yoke [56].

(b) Remove the ballscrew [44] from the yoke [56].

NOTE: You can turn the ballscrew [44] and the gimbal [45] to remove the ballscrew [44].

(c) Remove the ballscrew [44] with the gimbal [45].

SUBTASK 27-51-32-020-006

(4) If it is necessary, remove the gimbal [45] from the ballscrew nut [58]:

(a) Remove the bolts [43], washers [41], and collars [51] that attach the gimbal bushings [42] to the gimbal [45].

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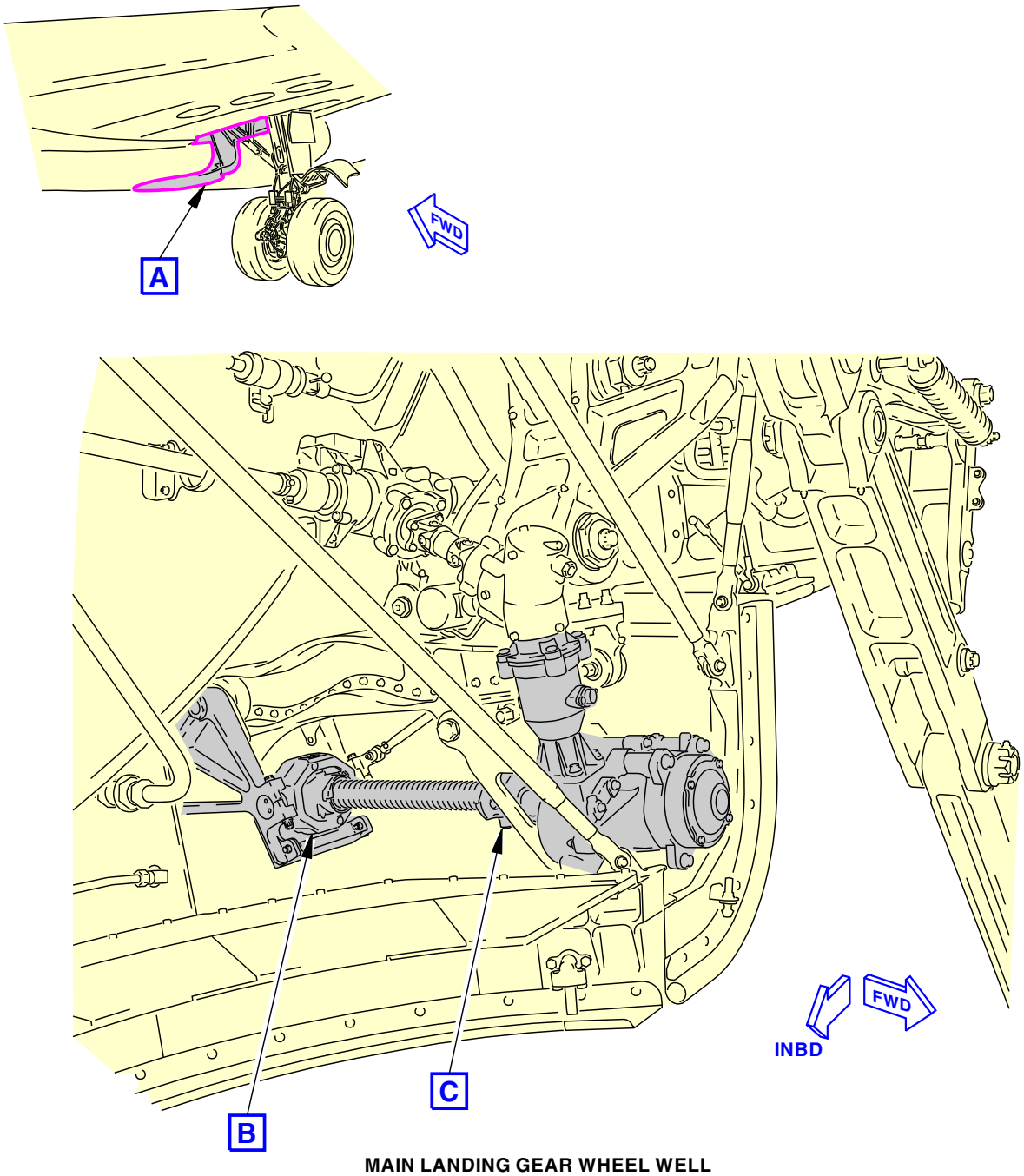
(b) Remove the gimbal [45] from the ballscrew nut [58].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)

A

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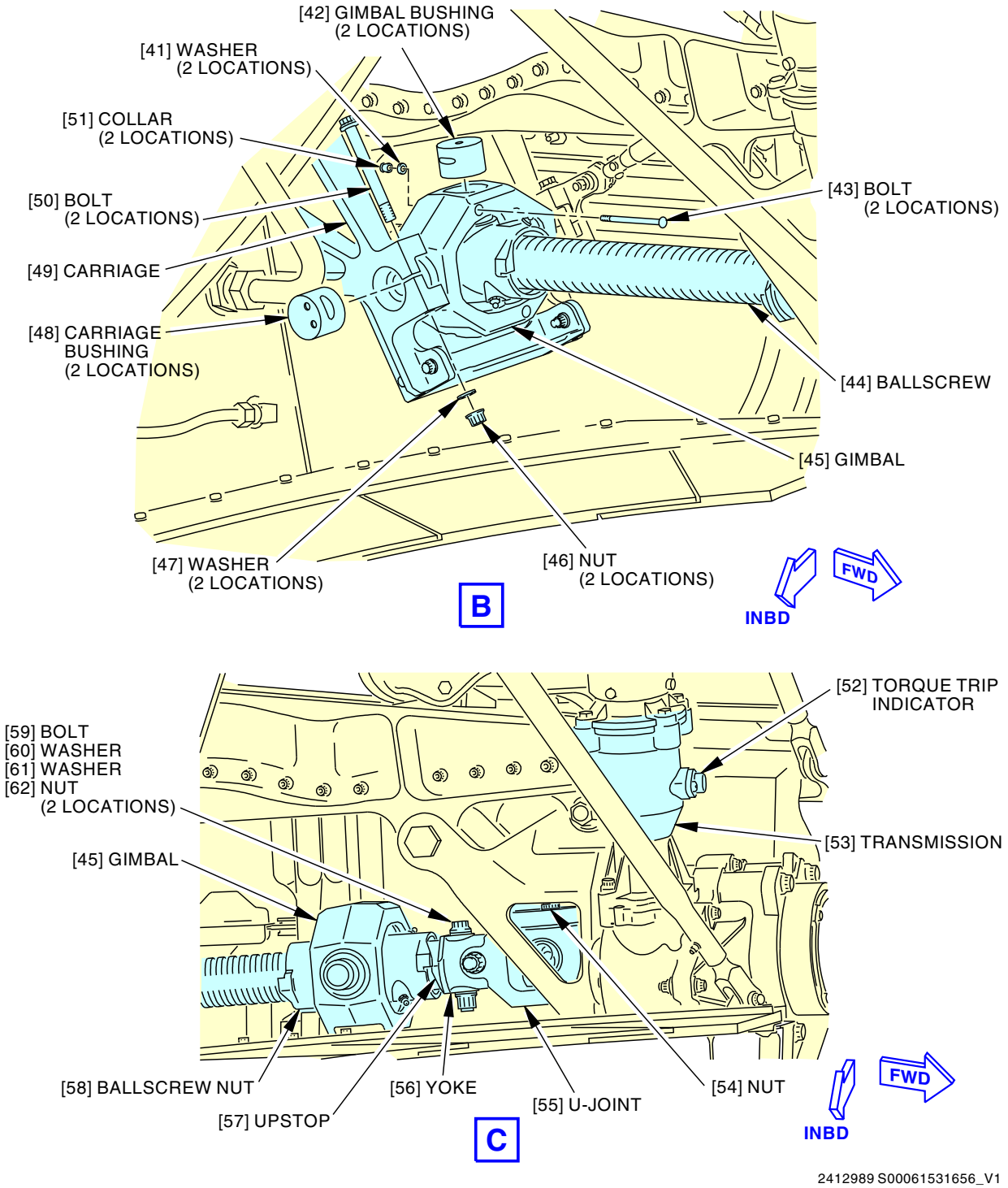
Inboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-32-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-32-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-400-803

7. Inboard Flap Inboard Ballscrew and Gimbal Installation

(Figure 402)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 4 and 5.

B. References

Reference	Title
12-22-51-640-802	Inboard Flap Inboard Ballscrew Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
44	Ballscrew	27-51-32-04-055	SIA ALL
45	Gimbal	27-51-32-04-030	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

F. Inboard Flap Inboard Ballscrew and Gimbal Installation

SUBTASK 27-51-32-420-004

(1) If you removed it, install the gimbal [45] on the ballscrew nut [58]:

(a) Put the gimbal [45] in its location on the ballscrew nut [58].

(b) Install the gimbal bushings [42] through the gimbal [45] on the ballscrew nut [58].

(c) Install the bolts [43], washers [41], and washers [41] to attach the gimbal bushing [42] to the gimbal [45].

SUBTASK 27-51-32-420-005

(2) Connect the ballscrew [44] to the yoke [56] on the transmission [53]:

(a) Turn the ballscrew nut [58] until it is at the forward end of the ballscrew [44].

(b) Apply a layer of grease, D00633 to the mating surfaces of the yoke [56] and the ballscrew [44].

(c) Put the ballscrew [44] into the yoke [56].

(d) Apply a layer of grease, D00633 to the shank and threads of the bolts [59].

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(e) Install the bolts [59], washers [60], washers [61], and nuts [62] to attach the ballscrew [44] to the yoke [56].

(f) Make sure that the ballscrew [44] is installed correctly in the yoke [56]:

1) Turn the transmission [53] until the nut [54] on the U-joint [55] is up.

2) Turn the ballscrew nut [58] until the upstop is 180° from the upstop [57] on the yoke [56].

3) If the ball returns on the ballscrew nut [58] are not in the correct position, then change the position of the ballscrew [44]:

NOTE: On transmission No. 4, the ball returns on the ballscrew nut [58] should be on the outboard side. On transmission No. 5, the ball returns on the ballscrew nut [58] should be on the inboard side.

a) Remove the nuts [62], washers [61], washers [60], and bolts [59] that attach the ballscrew [44] to the yoke [56].

b) Turn the ballscrew [44] 180° in the yoke [56].

c) Install the bolts [59], washers [60], washers [61], and nuts [62].

(g) Tighten the nuts [62].

SUBTASK 27-51-32-420-006

(3) Connect the ballscrew [44] with the gimbal [45] to the carriage [49]:

(a) Move the gimbal [45] to the downstop on the ballscrew [44].

NOTE: On transmission No. 4, the ball returns on the ballscrew nut [58] should be on the outboard side. On transmission No. 5, the ball returns on the ballscrew nut [58] shold be on the inboard side.

(b) Move the carriage [49] to align with the gimbal [45].

(c) Install the carriage bushings [48] to attach the gimbal [45] to the carriage [49].

(d) Install the bolts [50], washers [47], and nuts [46] that attach the carriage bushing [48] to the carriage [49].

(e) Tighten the nuts [46] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run-on torque.

SUBTASK 27-51-32-210-003

(4) Make sure that the torque trip indicator [52] on the transmission [53] is set.

SUBTASK 27-51-32-640-003

(5) Apply grease, D00633 to the end of the plunger on the torque trip indicator [52] and push it down around the sides of the plunger.

SUBTASK 27-51-32-640-004

(6) Lubricate the transmission [53] and ballscrew [44], do this task: Inboard Flap Inboard Ballscrew Lubrication, TASK 12-22-51-640-802.

SUBTASK 27-51-32-820-002

(7) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-440-002

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

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SUBTASK 27-51-32-860-007

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-32-860-008

(3) Use the primary system to retract the flaps to the retracted position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-32-860-009

(4) Use the primary system to extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-32-210-004

(5) Make sure that the torque trip indicator [52] on the transmission [53] is set.

SUBTASK 27-51-32-860-010

(6) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD FLAP BALLSCREWS AND GIMBALS - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Inboard Flap Outboard Ballscrew Inspection

(2) Inboard Flap Inboard Ballscrew Inspection

(3) Inboard Flap Outboard Carriage Bushing and Gimbal Bushing Inspection

(4) Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection

(5) Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection

(6) Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection.

TASK 27-51-32-220-801

2. Inboard Flap Outboard Ballscrew Inspection

(Figure 601)

A. General

(1) This task is applicable to the ballscrew at flap supports No. 3 and 6.

(2) There are two methods that you can use to apply a load to the ballscrew nut to measure the movement on the ballscrew. This procedure gives instructions for each method.

(a) You can push up on the trailing edge of the flap to apply the load.

(b) You can use the lever and clamp tool to apply the load to the ballscrew nut.

(3) It is not necessary to use the two methods to apply the load.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-32-000-802	Inboard Flap Outboard Ballscrew and Gimbal Removal (P/B 401)
27-51-32-400-802	Inboard Flap Outboard Ballscrew and Gimbal Installation (P/B 401)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1753	Equipment - Test, Flap Screw Backlash Part #: C27030-109 Supplier: 81205 Opt Part #: C27030-94 Supplier: 81205

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D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

E. Prepare for the Inspection

SUBTASK 27-51-32-860-011

(1) Extend the trailing edge flaps to the “40” position (TASK 27-51-00-860-803).

SUBTASK 27-51-32-480-003

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not in the nose and main landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-32-040-003

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Ballscrew Backlash Check Without the Lever and Clamp Tool

SUBTASK 27-51-32-480-004

(1) Install the dial indicator assembly on the ballscrew as follows:

NOTE: The dial indicator assembly is a part of the tester, SPL-1753.

(a) Put the dial indicator assembly on the ballscrew.

NOTE: Make sure that the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-32-220-001

(2) Measure the backlash of the ballscrew and ballscrew nut as follows:

(a) Push up on the outboard trailing edge end of the inboard flap.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do the above steps a total of five times to make sure that the movement of the dial indicator is repeatable.

(d) Make sure that the backlash is not more than 0.0073 in. (0.185 mm).

SUBTASK 27-51-32-960-001

(3) If the backlash is more than 0.0073 in. (0.185 mm), do these steps:

(a) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-802.

(b) Replace the ballscrew assembly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-802.

SUBTASK 27-51-32-080-001

(4) Remove the dial indicator assembly from the ballscrew.

SUBTASK 27-51-32-440-003

(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-012

(6) Retract the trailing edge flaps to the “0” position (TASK 27-51-00-860-804).

G. Inboard Flap Outboard Ballscrew Backlash Check with the lever and clamp tool

SUBTASK 27-51-32-020-007

(1) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

SUBTASK 27-51-32-860-013

(2) Set the trailing edge flaps to the “15” position (TASK 27-51-00-860-803 or TASK 27-51-00-860-804).

SUBTASK 27-51-32-040-004

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-32-480-005

(4) Install the lever and clamp tool of the tester, SPL-1753 on the ballscrew:

(a) Put the lever and clamp tool in its position on the ballscrew aft of the ballscrew nut.

(b) Make sure that the load surfaces of the lever and clamp tool touch the aft side of the ballscrew nut.

(c) Tighten the clamp-up bolt to 200 in-lb (22.6 N·m) - 300 in-lb (33.9 N·m).

(d) Make sure that the handles of the lever and clamp tool are in the relaxed position.

SUBTASK 27-51-32-480-006

(5) Install the dial indicator assembly of the tester, SPL-1753 on the ballscrew:

(a) Put the dial indicator assembly on the ballscrew.

(b) Make sure that the pointer touches the forward end of the ballscrew nut.

(c) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(d) Adjust the dial indicator to zero.

SUBTASK 27-51-32-220-002

(6) Measure the backlash of the ballscrew and ballscrew nut as follows:

(a) Move the handles of the lever and clamp tool together until the dial indicator stops.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do the above steps a total of five times to make sure that the movement of the dial indicator is repeatable.

SUBTASK 27-51-32-960-002

(7) If the backlash is more than 0.007 in. (0.178 mm), do these steps:

(a) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Replace the ballscrew assembly.

(c) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-802.

SUBTASK 27-51-32-080-002

(8) Remove the dial indicator assembly and the lever and clamp tool from the ballscrew.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-410-002

(1) If you removed the fairing, do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-32-440-005

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-014

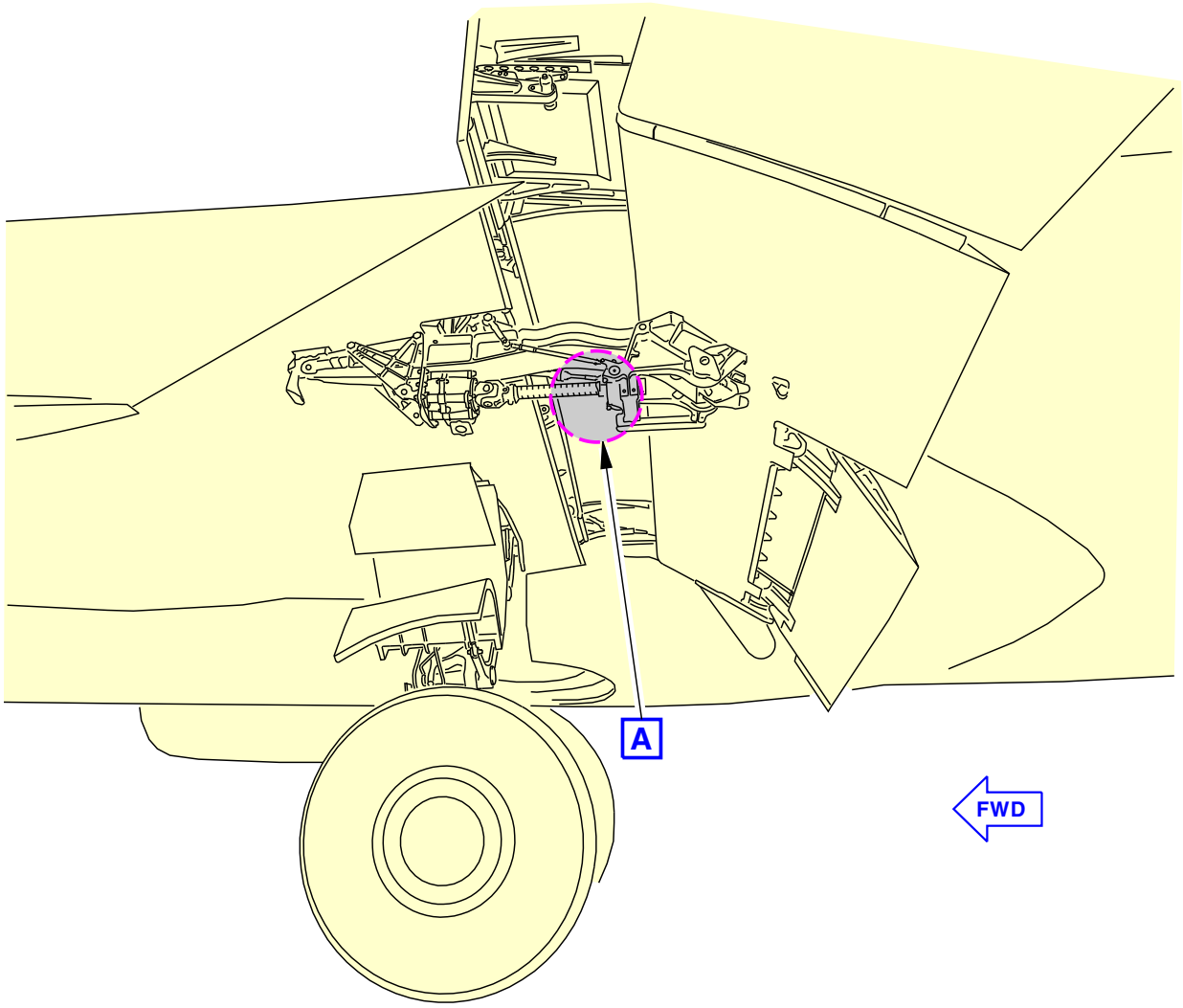
(3) Retract the trailing edge flaps to the “0” position (TASK 27-51-00-860-804).

SUBTASK 27-51-32-020-008

(4) If the downlock pins are not necessary, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

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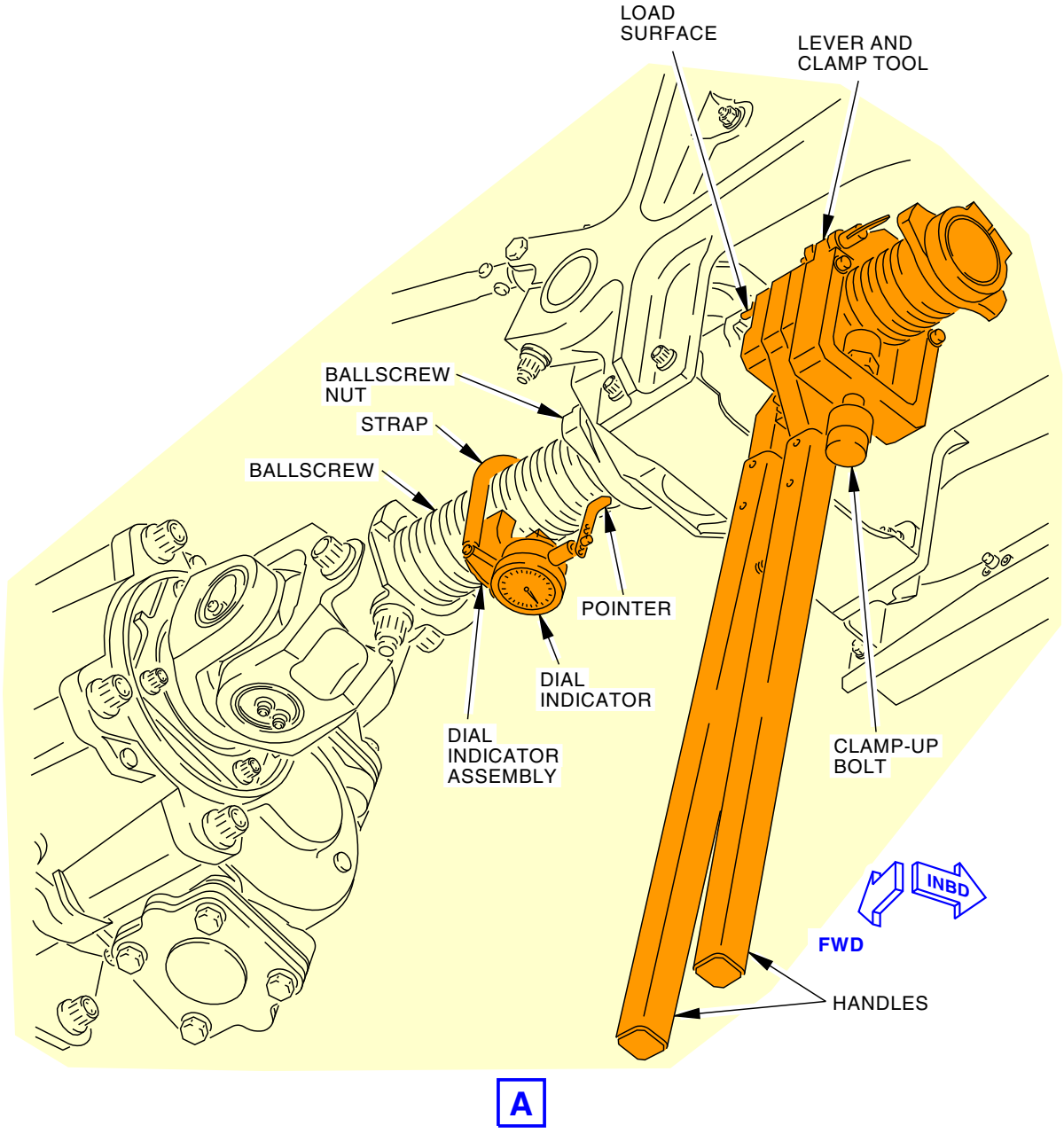
Inboard Flap Outboard Ballscrew and Gimbal Inspection
Figure 601/27-51-32-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Outboard Ballscrew and Gimbal Inspection
Figure 601/27-51-32-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-220-802

3. Inboard Flap Inboard Ballscrew Inspection

(Figure 602)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 4 and 5.

(2) There are two methods that you can use to apply a load to the ballscrew nut to measure the movement on the ballscrew. This procedure gives instructions for each method.

(a) You can push up on the trailing edge of the flap to apply the load.

(b) You can use the lever and clamp tool to apply the load to the ballscrew nut.

(3) It is not necessary to use the two methods to apply the load.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-32-000-803	Inboard Flap Inboard Ballscrew and Gimbal Removal (P/B 401)
27-51-32-400-803	Inboard Flap Inboard Ballscrew and Gimbal Installation (P/B 401)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1753	Equipment - Test, Flap Screw Backlash Part #: C27030-109 Supplier: 81205 Opt Part #: C27030-94 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

E. Prepare for the Inspection

SUBTASK 27-51-32-860-015

(1) Extend the trailing edge flaps to the “40” position (TASK 27-51-00-860-803).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-32-480-007

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not in the nose and main landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-32-040-005

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Inboard Ballscrew Backlash Check Without the Lever and Clamp Tool

SUBTASK 27-51-32-480-008

(1) Install the dial indicator assembly of the tester, SPL-1753 on the ballscrew:

(a) Put the dial indicator assembly on the ballscrew as follows:

1) Make sure that the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-32-220-003

(2) Measure the backlash of the ballscrew and ballscrew nut as follows:

(a) Push up on the inboard trailing edge end of the inboard flap.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do the above steps a total of five times to make sure that the movement of the dial indicator is repeatable.

(d) Make sure that the backlash is not more than 0.007 in. (0.178 mm).

SUBTASK 27-51-32-960-003

(3) If the backlash is more than 0.007 in. (0.178 mm), replace the ballscrew assembly as follows:

(a) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-803.

(b) Replace the ballscrew assembly.

(c) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-803.

SUBTASK 27-51-32-080-003

(4) Remove the dial indicator assembly from the ballscrew.

SUBTASK 27-51-32-440-006

(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-016

(6) Move the trailing edge flaps to the fully retracted position (TASK 27-51-00-860-804).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Inboard Flap Inboard Ballscrew Backlash Check With The Lever And Clamp Tool

SUBTASK 27-51-32-000-002

(1) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

SUBTASK 27-51-32-440-007

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-017

(3) Retract the trailing edge flaps to the 15-unit position (TASK 27-51-00-860-804).

SUBTASK 27-51-32-040-006

(4) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-32-480-009

(5) Install the lever and clamp tool of the tester, SPL-1753 on the ballscrew as follows:

(a) Put the lever and clamp tool in its position on the ballscrew aft of the ballscrew nut.

(b) Make sure that the load surfaces of the lever and clamp tool touch the aft side of the ballscrew nut.

(c) Tighten the clamp-up bolt to 200 in-lb (22.6 N·m) - 300 in-lb (33.9 N·m).

(d) Make sure that the handles of the lever and clamp tool are in the relaxed position.

SUBTASK 27-51-32-480-010

(6) Install the dial indicator assembly of the tester, SPL-1753 on the ballscrew as follows:

(a) Put the dial indicator assembly on the ballscrew.

(b) Make sure that the pointer touches the forward end of the ballscrew nut.

(c) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(d) Adjust the dial indicator to zero.

SUBTASK 27-51-32-220-004

(7) Measure the backlash of the ballscrew and ballscrew nut as follows:

(a) Move the handles of the lever and clamp tool together until the dial indicator stops.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do the above steps a total of five times to make sure that the movement of the dial indicator is repeatable.

(d) Make sure that the backlash is not more than 0.0073 in. (0.185 mm).

SUBTASK 27-51-32-960-004

(8) If the backlash is more than 0.0073 in. (0.185 mm), replace the ballscrew assembly as follows:

(a) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-803.

(b) Replace the ballscrew assembly.

(c) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-803.

SUBTASK 27-51-32-080-004

(9) Remove the dial indicator assembly and the lever and clamp tool from the ballscrew.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-400-002

(1) If you removed the fairing, do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-32-440-008

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-018

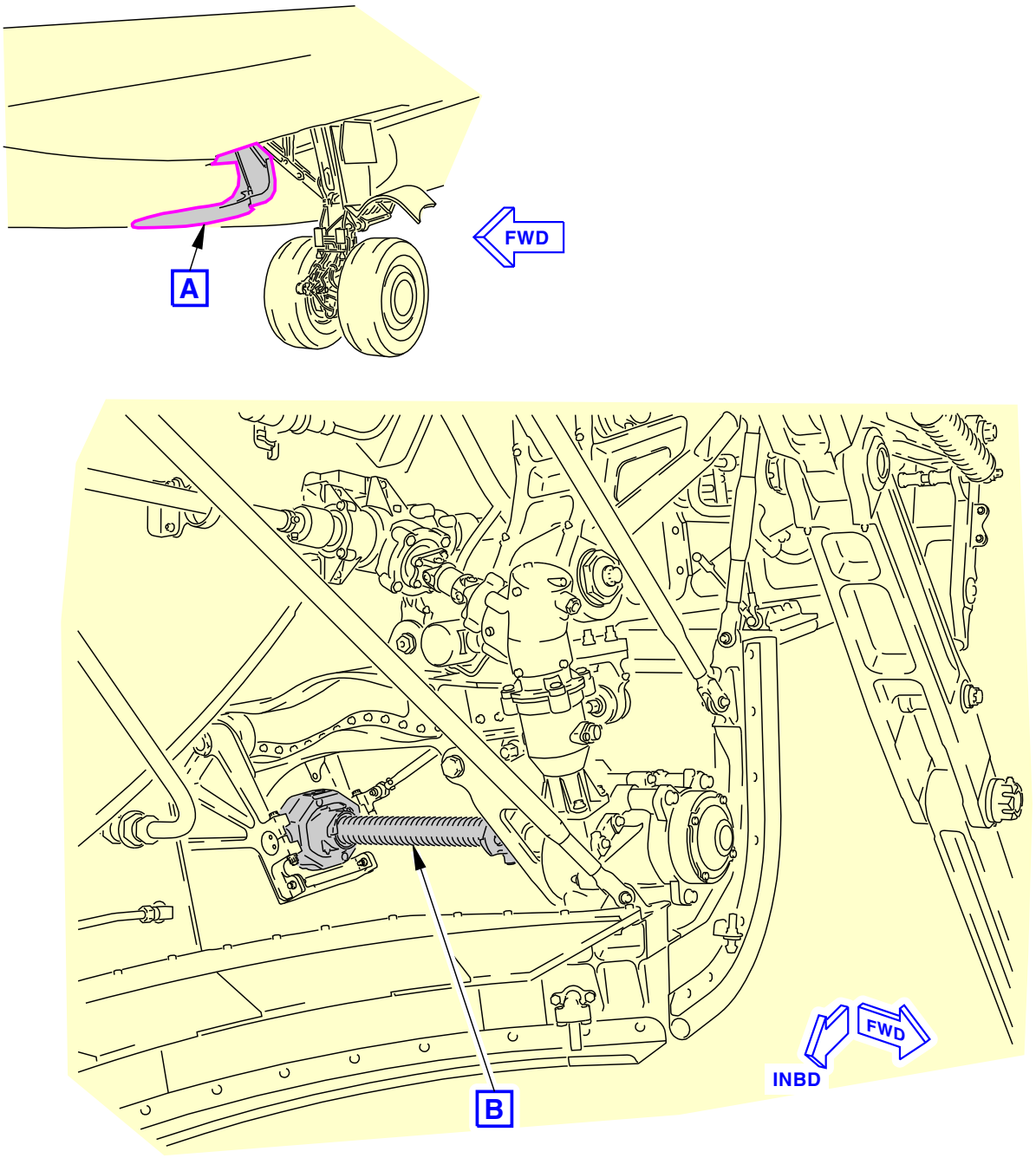
(3) Move the trailing edge flaps to the fully retracted position (TASK 27-51-00-860-804).

SUBTASK 27-51-32-020-009

(4) If the downlock pins are not necessary, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



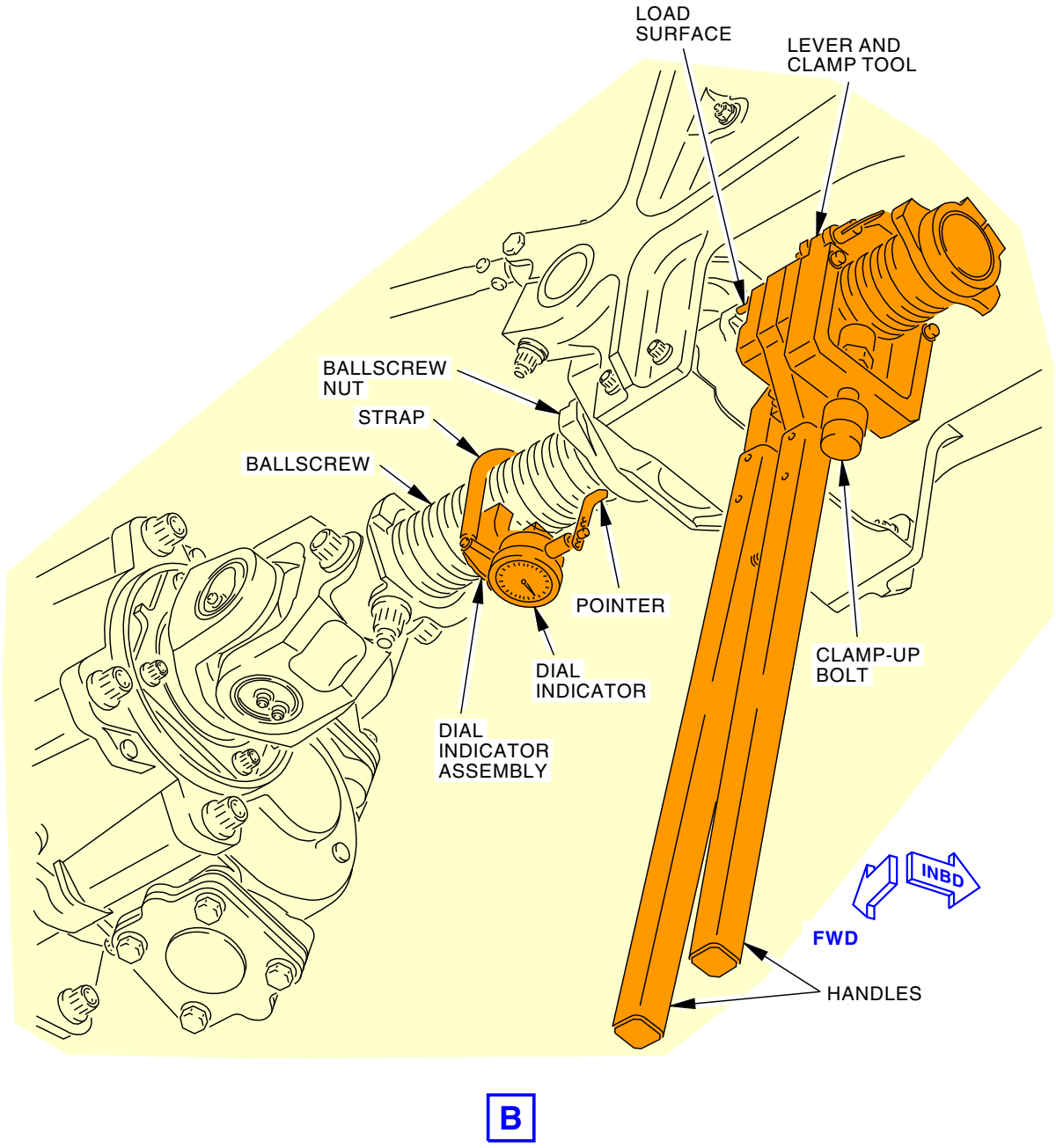
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2412992 S00061531663_V1

Inboard Flap Inboard Ballscrew and Gimbal Inspection
Figure 602/27-51-32-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2412993 S00061531664_V1

Inboard Flap Inboard Ballscrew and Gimbal Inspection
Figure 602/27-51-32-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-200-801

4. Inboard Flap Outboard Carriage Bushing and Gimbal Bushing Inspection

(Figure 603)

A. General

(1) This task is applicable to the ballscrew at flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-18-000-802	Inboard Flap Support Aft Fairing Removal (P/B 401)
27-51-18-400-802	Inboard Flap Support Aft Fairing Installation (P/B 401)
27-51-32-000-802	Inboard Flap Outboard Ballscrew and Gimbal Removal (P/B 401)
27-51-32-400-802	Inboard Flap Outboard Ballscrew and Gimbal Installation (P/B 401)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-4872	Gage - Feeler (0.002 - 0.010 inch)

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

E. Prepare for the Inspection

SUBTASK 27-51-32-860-019

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-32-480-011

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(2) Make sure that the downlock pins are in the nose and main landing gears (TASK 32-00-01-480-801).

SUBTASK 27-51-32-040-007

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Gimbal Bushing and Carriage Bushing Freeplay Check

SUBTASK 27-51-32-000-003

(1) Do this task: Inboard Flap Support Aft Fairing Removal, TASK 27-51-18-000-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-32-220-005

(2) Measure the gimbal bushing freeplay as follows:

(a) Push up (Y - axis) on the ballscrew.

NOTE: This will apply a load on the ballscrew nut and move it up.

(b) Measure between the ballnut flange and the gimbal bushing with a feeler gage, STD-4872 or equivalent.

NOTE: The movement of the ballscrew nut is the freeplay.

(c) Make sure that the freeplay is not less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm).

NOTE: The freeplay tolerance for the gimbal bushing is 0.040 in. (1.02 mm) to 0.080 in. (2.03 mm).

SUBTASK 27-51-32-220-006

(3) Measure the carriage bushing freeplay as follows:

(a) Push left or right (X-axis) on the ballscrew.

NOTE: This will apply a load on the gimbal and move it to one side.

(b) Measure between the carriage flange and the carriage bushing with a feeler gage, STD-4872 or equivalent.

NOTE: The movement of the gimbal is the freeplay.

(c) Make sure that the freeplay is not less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm).

NOTE: The freeplay tolerance for the carriage bushing is 0.040 in. (1.02 mm) to 0.080 in. (2.03 mm).

SUBTASK 27-51-32-960-007

(4) If the carriage or gimbal bushing freeplay is less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm), do these steps:

(a) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-802.

(b) Replace the worn carriage or gimbal bushing.

(c) Do this task: Inboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-400-003

(1) If you removed the fairing, do this task: Inboard Flap Support Aft Fairing Installation, TASK 27-51-18-400-802.

SUBTASK 27-51-32-860-020

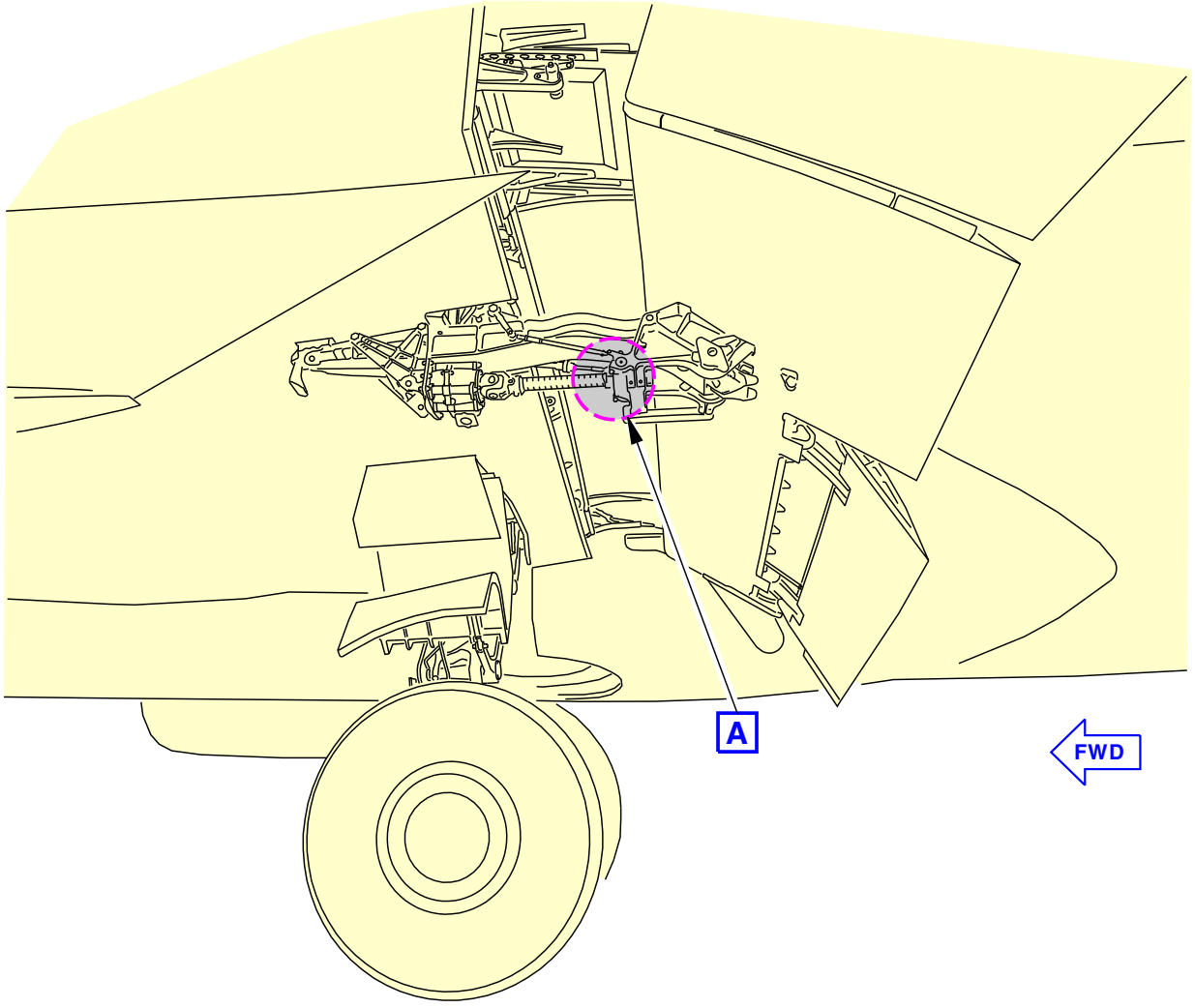
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-020-010

(3) If the downlock pins are not necessary, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)

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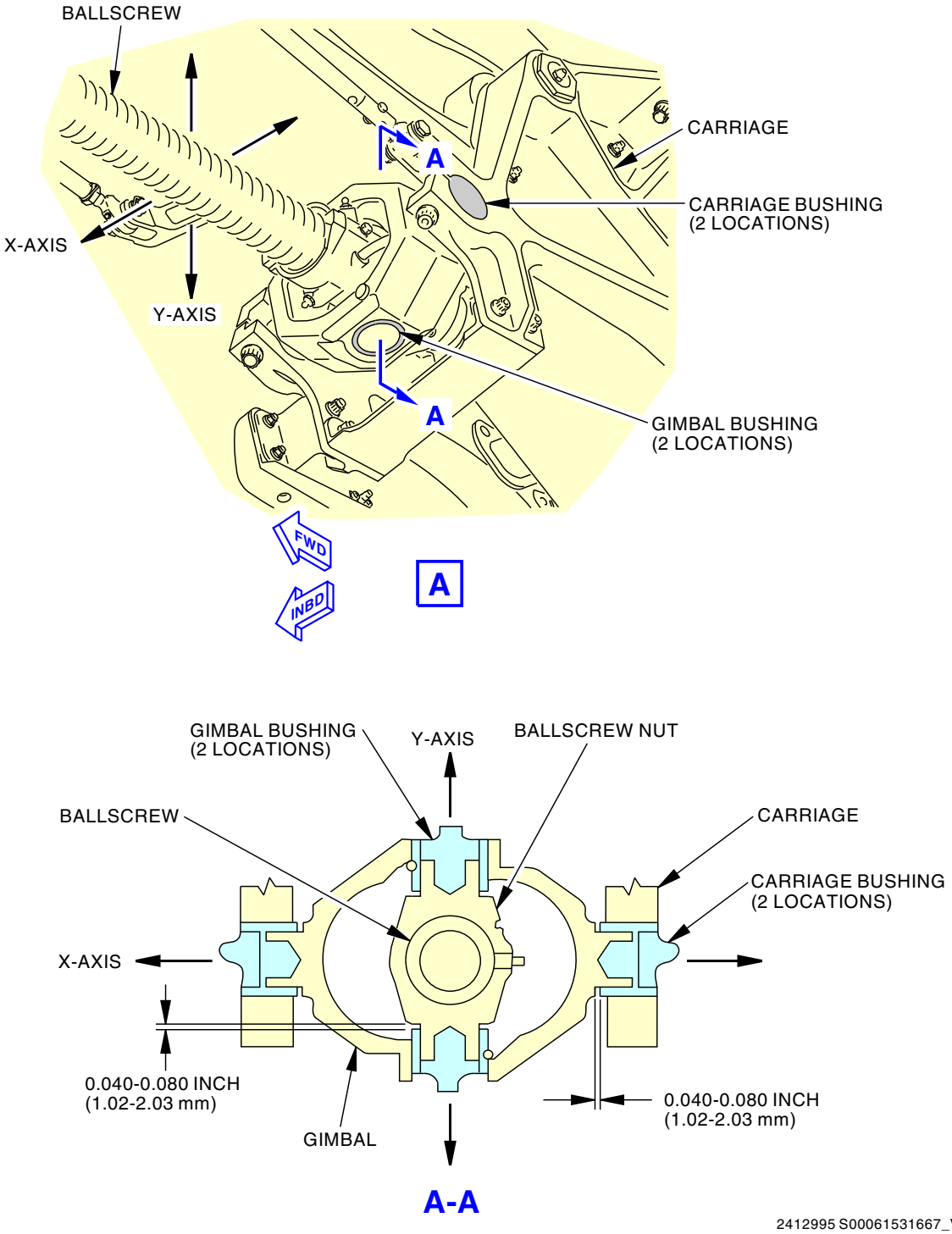
Inboard Flap Outboard Carriage Bushing and Gimbal Bushing Inspection
Figure 603/27-51-32-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Outboard Carriage Bushing and Gimbal Bushing Inspection
Figure 603/27-51-32-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-200-802

5. Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection

Figure 604

A. General

(1) This task is applicable to the ballscrew at flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-32-000-803	Inboard Flap Inboard Ballscrew and Gimbal Removal (P/B 401)
27-51-32-400-803	Inboard Flap Inboard Ballscrew and Gimbal Installation (P/B 401)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-4872	Gage - Feeler (0.002 - 0.010 inch)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

E. Prepare for the Inspection

SUBTASK 27-51-32-860-022

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-32-480-012

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(2) Make sure that the downlock pins are in the nose and main landing gears (TASK 32-00-01-480-801).

SUBTASK 27-51-32-040-008

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection

SUBTASK 27-51-32-220-007

(1) Measure the gimbal bushing freeplay as follows:

(a) Push up (Y-axis) on the ballscrew.

NOTE: This will apply a load on the ballscrew nut and move it up.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Measure between the ballnut flange and the gimbal bushing with a feeler gage, STD-4872 or equivalent.

NOTE: The movement of the ballscrew nut is the freeplay.

(c) Make sure that the freeplay is not less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm).

NOTE: The freeplay tolerance for the gimbal bushing is 0.040 in. (1.02 mm) to 0.080 in. (2.03 mm).

SUBTASK 27-51-32-220-008

(2) Measure the carriage bushing freeplay as follows:

(a) Push left or right (X-axis) on the ballscrew.

NOTE: This will apply a load on the gimbal and move it to one side.

(b) Measure between the carriage flange and the carriage bushing with a feeler gage, STD-4872 or equivalent.

NOTE: The movement of the gimbal is the freeplay.

(c) Make sure that the freeplay is not less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm).

NOTE: The freeplay tolerance for the carriage bushing is 0.040 in. (1.02 mm) to 0.080 in. (2.03 mm).

SUBTASK 27-51-32-960-005

(3) If the carriage or gimbal bushing freeplay is less than 0.040 in. (1.02 mm) or more than 0.080 in. (2.03 mm), do these steps:

(a) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-32-000-803.

(b) Replace the worn bushing.

(c) Do this task: Inboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-32-400-803.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-440-011

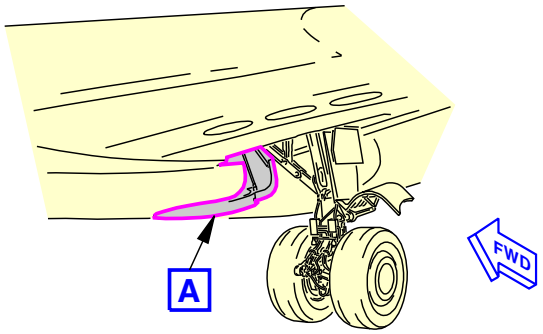
(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

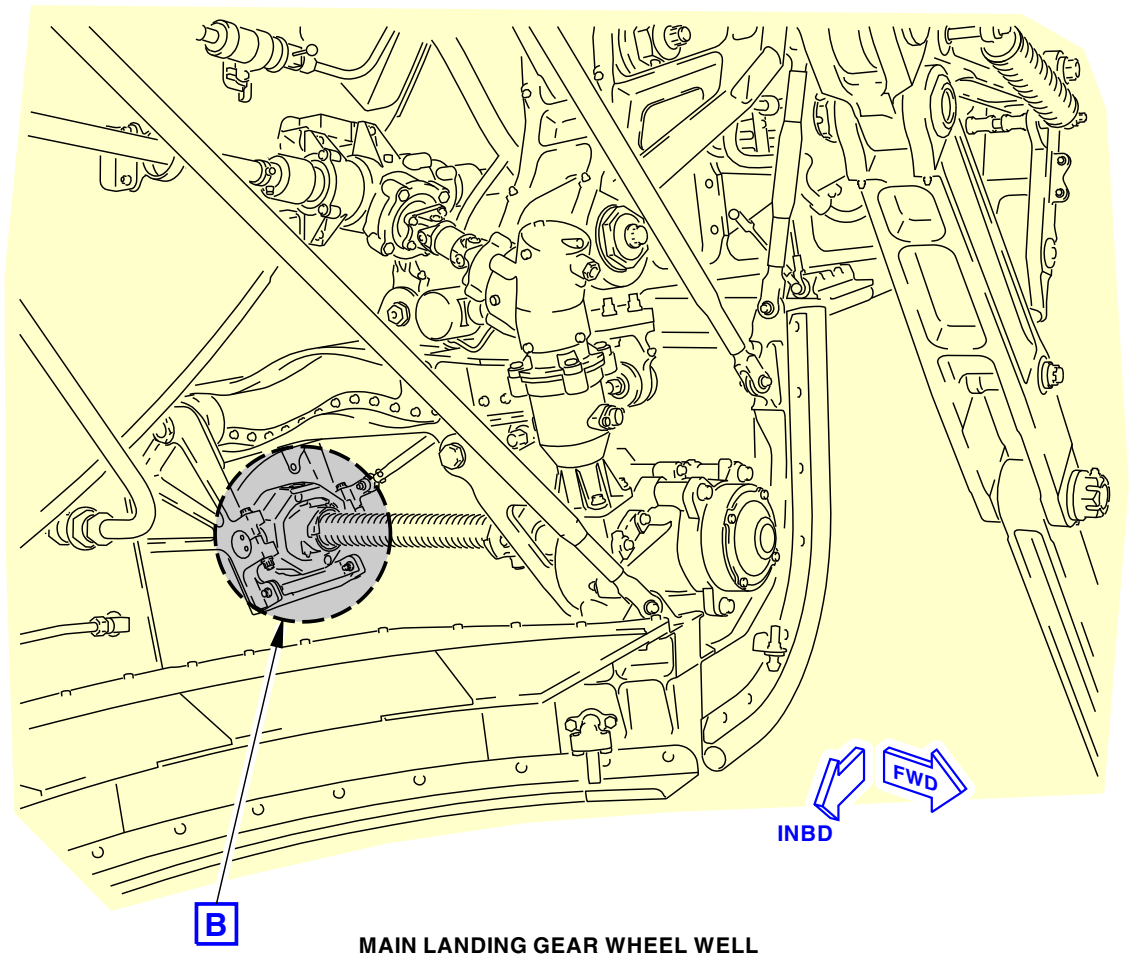
SUBTASK 27-51-32-020-011

(2) If the downlock pins are not necessary, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





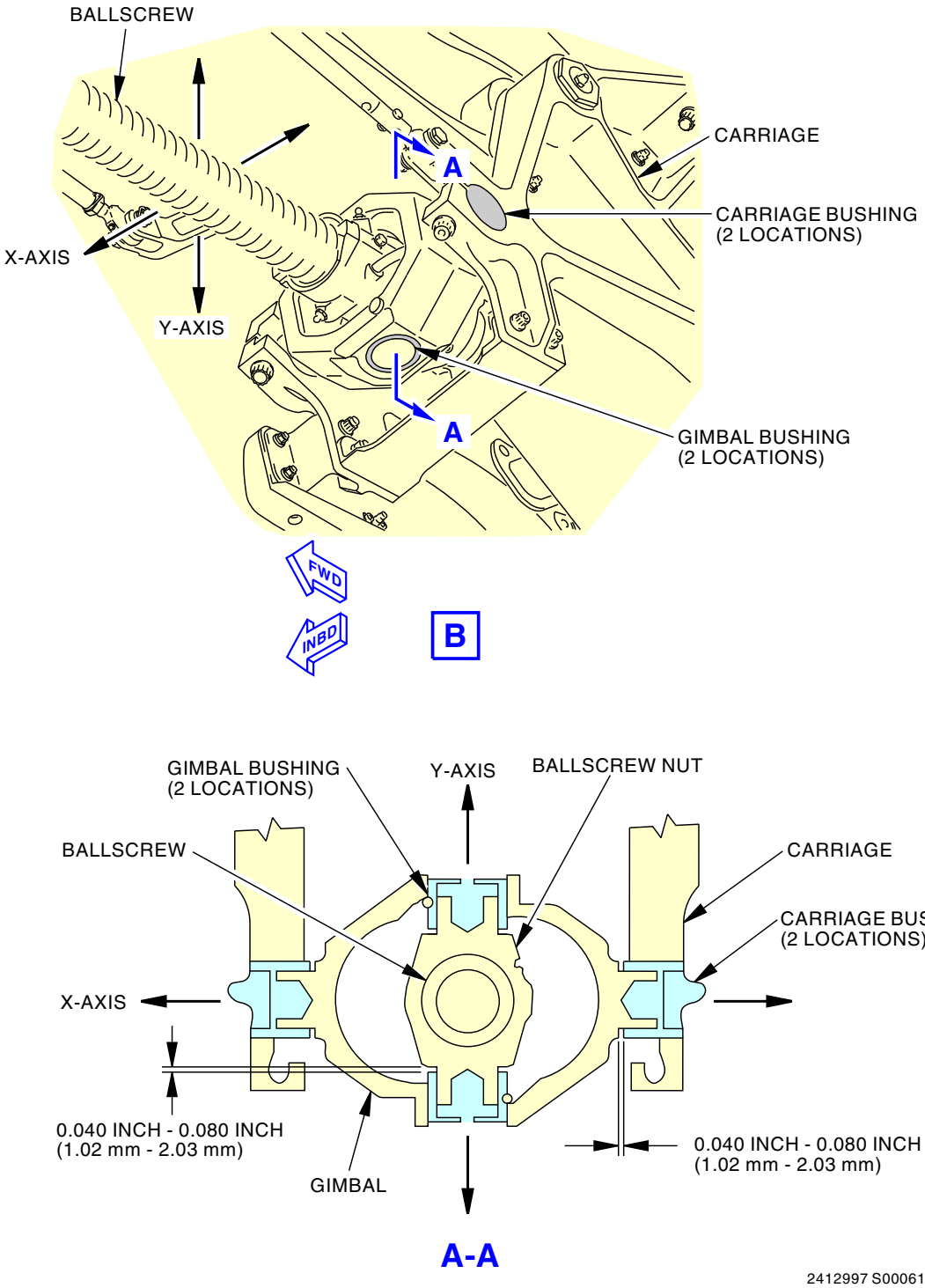
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)

A

2412996 S00061531669_V1

Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection
Figure 604/27-51-32-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Carriage Bushing and Gimbal Bushing Inspection
Figure 604/27-51-32-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-200-803

6. Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection

(Figure 605)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is for the detailed inspection of the inboard flap inboard ballscrew.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-32 P/B 401	INBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01043	Cloth - Lint-free	

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Lubrication Inspection

SUBTASK 27-51-32-040-009

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Inboard Ballscrew Lubrication Inspection

SUBTASK 27-51-32-640-005

(1) This table supplies data for the subsequent lubrication and inspection steps:

Table 601/27-51-32-993-801 Inboard Flap Inboard Ballscrew Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
-	No. 4 Ballscrew Nut (No. 5 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1

SUBTASK 27-51-32-640-006

(2) Lubricate and examine the ballscrew nut as follows:

(a) Remove the old grease and dirt on and around the ballscrew nut and grease vent with a lint-free cloth, G01043 or equivalent.

CAUTION

DO NOT USE GREASE GUN PRESSURE IN EXCESS OF 36 PSI (2.5 BAR). EXCESSIVE GREASE GUN NOZZLE PRESSURE AND FLOW RATE CAN DAMAGE THE SEALS.

(b) Lubricate the ballscrew nut with grease, D00633 as follows:

NOTE: The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure that clean grease comes out from the grease vent.

   NOTE: Clean grease must come out through the grease vent. This will make sure that the used grease has been flushed out.

2) If the clean grease does not comes out from the vent, replace the ballscrew assembly on or before the next interval inspection (PAGEBLOCK 27-51-32/401).

3) Make sure that grease does not freely come out through the ballscrew nut seal.

   NOTE: It is acceptable for a small quantity of grease to come out through the ballscrew nut seal.

4) If the grease freely comes through the ballscrew nut seal, then replace the ballscrew assembly on or before the next interval inspection (PAGEBLOCK 27-51-32/401).

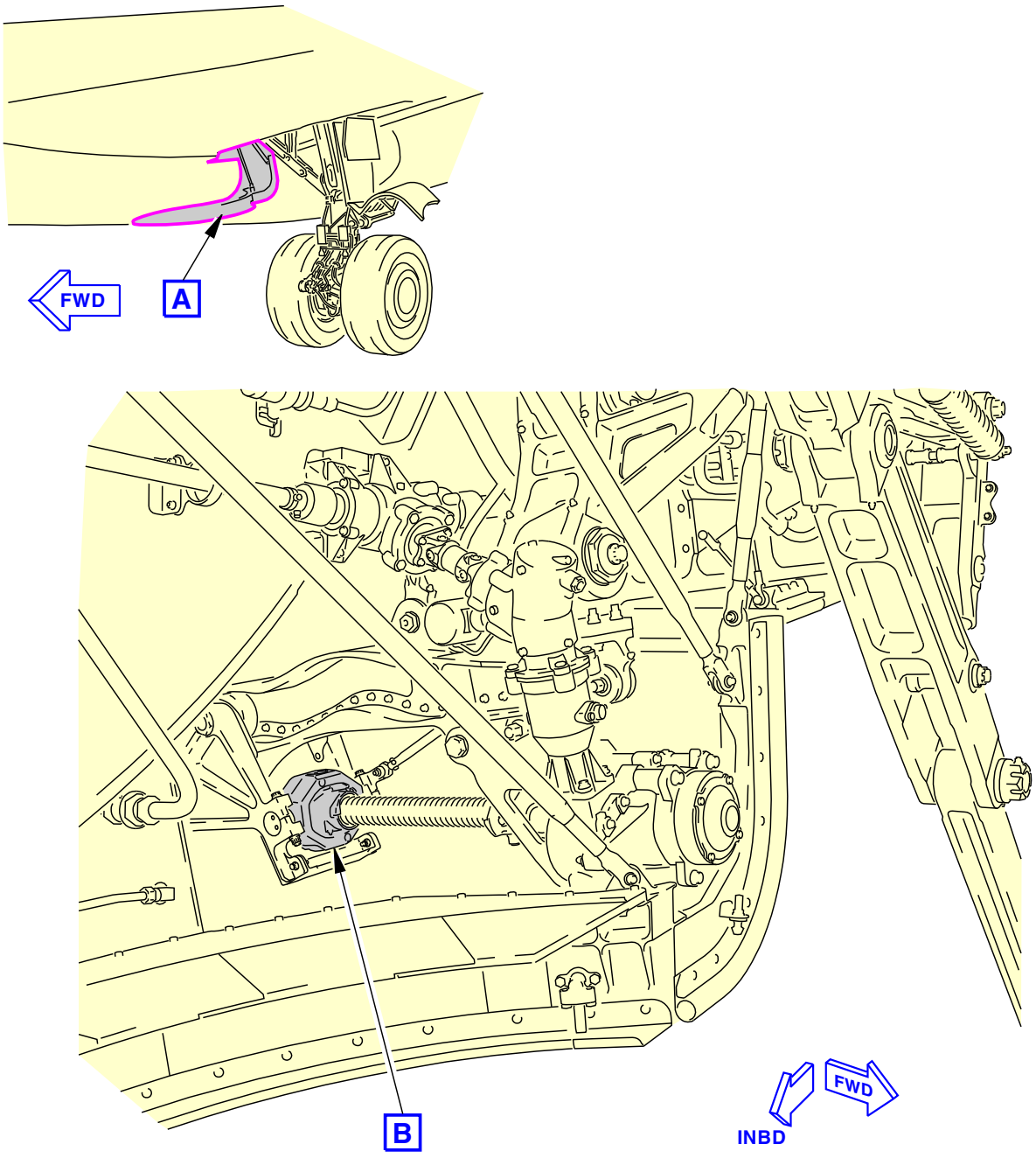
G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-440-009

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



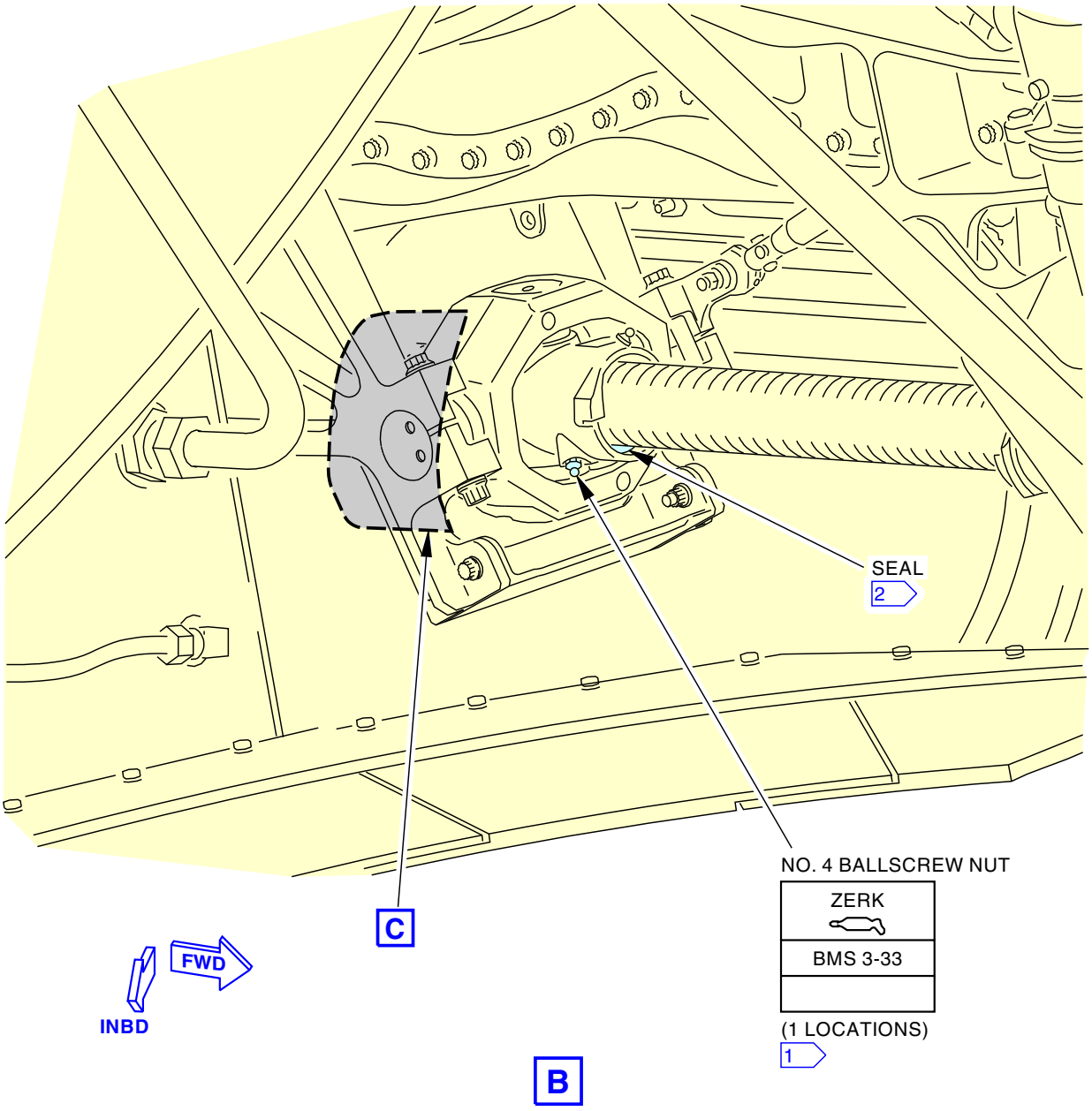
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2412998 S00061531672_V1

Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 605/27-51-32-990-807 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



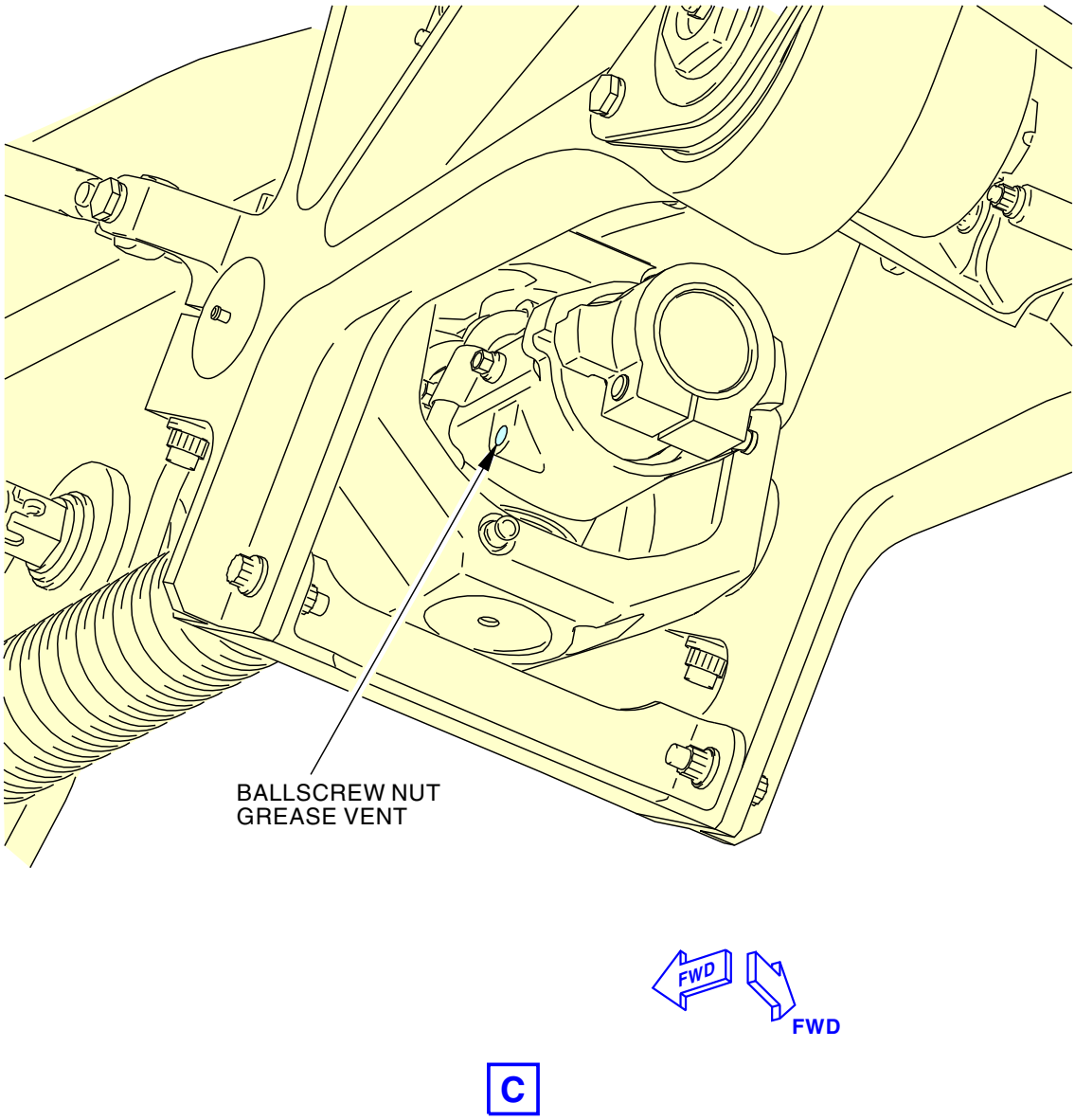
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

2 GREASE SHOULD NOT FREELY COME OUT THROUGH THE SEAL DURING LUBRICATION. IT IS ACCEPTABLE FOR A SMALL AMOUNT TO COME OUT.

2412999 S00061531673_V1

Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 605/27-51-32-990-807 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 605/27-51-32-990-807 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-32-200-804

7. Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection

(Figure 606)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task is for the detailed inspection of the inboard flap outboard ballscrew.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-32 P/B 401	INBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01043	Cloth - Lint-free	

D. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
553	Left Wing - Inboard Flap
642	Right Wing - Fairing Flap Support No. 6
653	Right Wing - Inboard Flap

E. Prepare for the Lubrication Inspection

SUBTASK 27-51-32-860-024

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-32-040-010

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Flap Outboard Ballscrew and Gimbal Lubrication

SUBTASK 27-51-32-640-007

(1) This table supplies data for the subsequent lubrication and inspection step:

Table 602/27-51-32-993-802 Inboard Flap Outboard Ballscrew Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
-	No. 3 Ballscrew Nut (No. 6 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1

SUBTASK 27-51-32-640-008

(2) Do these steps for the ballscrew nut lubrication and inspection:

(a) Remove the old grease and dirt on and around the ballscrew nut and grease vent with a lint-free cloth, G01043 or equivalent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION DO NOT USE GREASE GUN PRESSURE IN EXCESS OF 36 PSI (2.5 BAR). EXCESSIVE GREASE GUN NOZZLE PRESSURE AND FLOW RATE CAN DAMAGE THE SEALS.

(b) Lubricate the ballscrew nut with grease, D00633 as follows:

NOTE: The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

1) Make sure that clean grease comes out from the grease vent.

NOTE: Clean grease must come out through the grease vent. This will make sure that the used grease has been flushed out.

2) If the clean grease does not comes out from the vent, then replace the ballscrew assembly on or before the next interval inspection (PAGEBLOCK 27-51-32/401).

3) Make sure that grease does not freely come out through the ballscrew nut seal.

NOTE: It is acceptable for a small quantity of grease to come out through the ballscrew nut seal.

4) If the grease freely comes through the ballscrew nut seal, then replace the ballscrew assembly on or before the next interval inspection (PAGEBLOCK 27-51-32/401).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-32-440-010

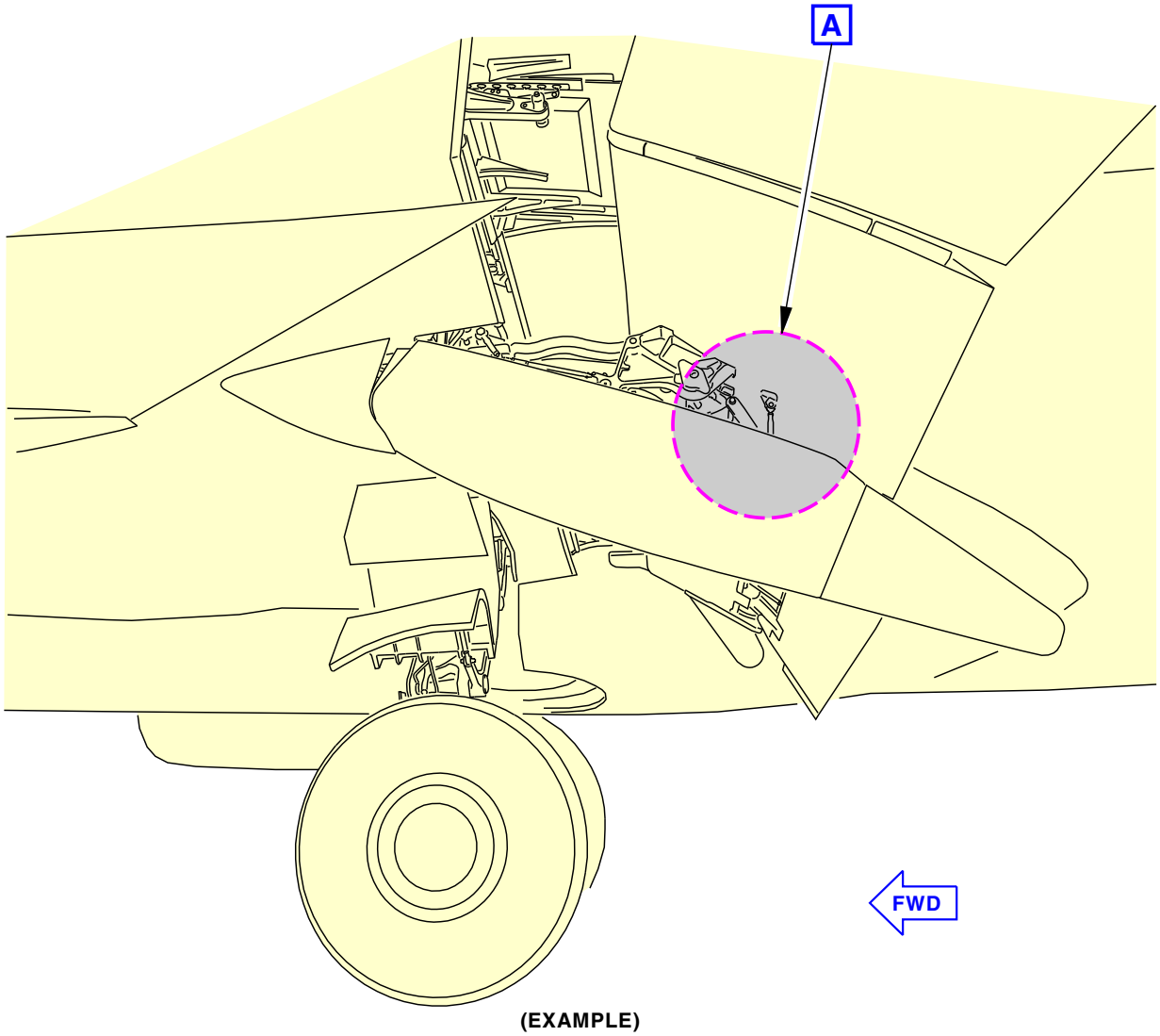
(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-32-860-025

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: (Retract the Trailing Edge Flaps, TASK 27-51-00-860-804).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

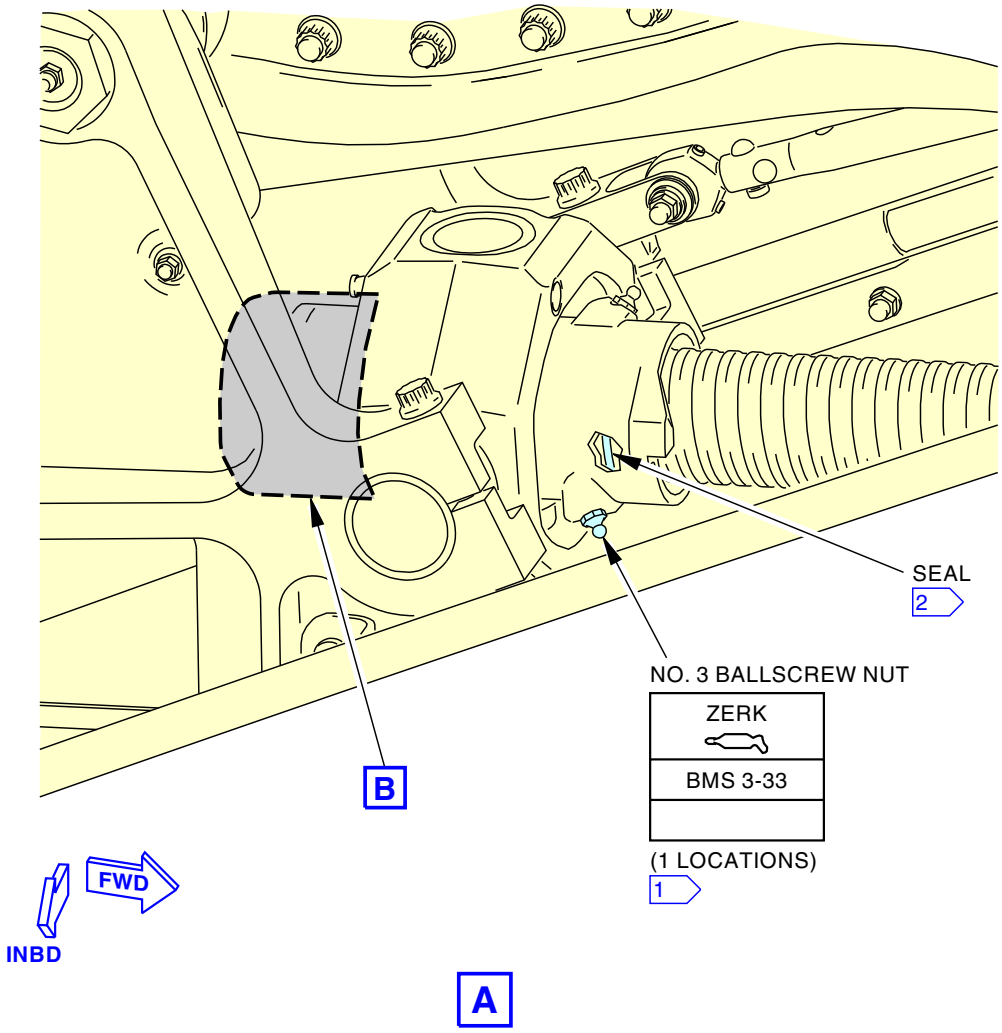


(EXAMPLE)

2413001 S00061531676_V2

Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 606/27-51-32-990-808 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



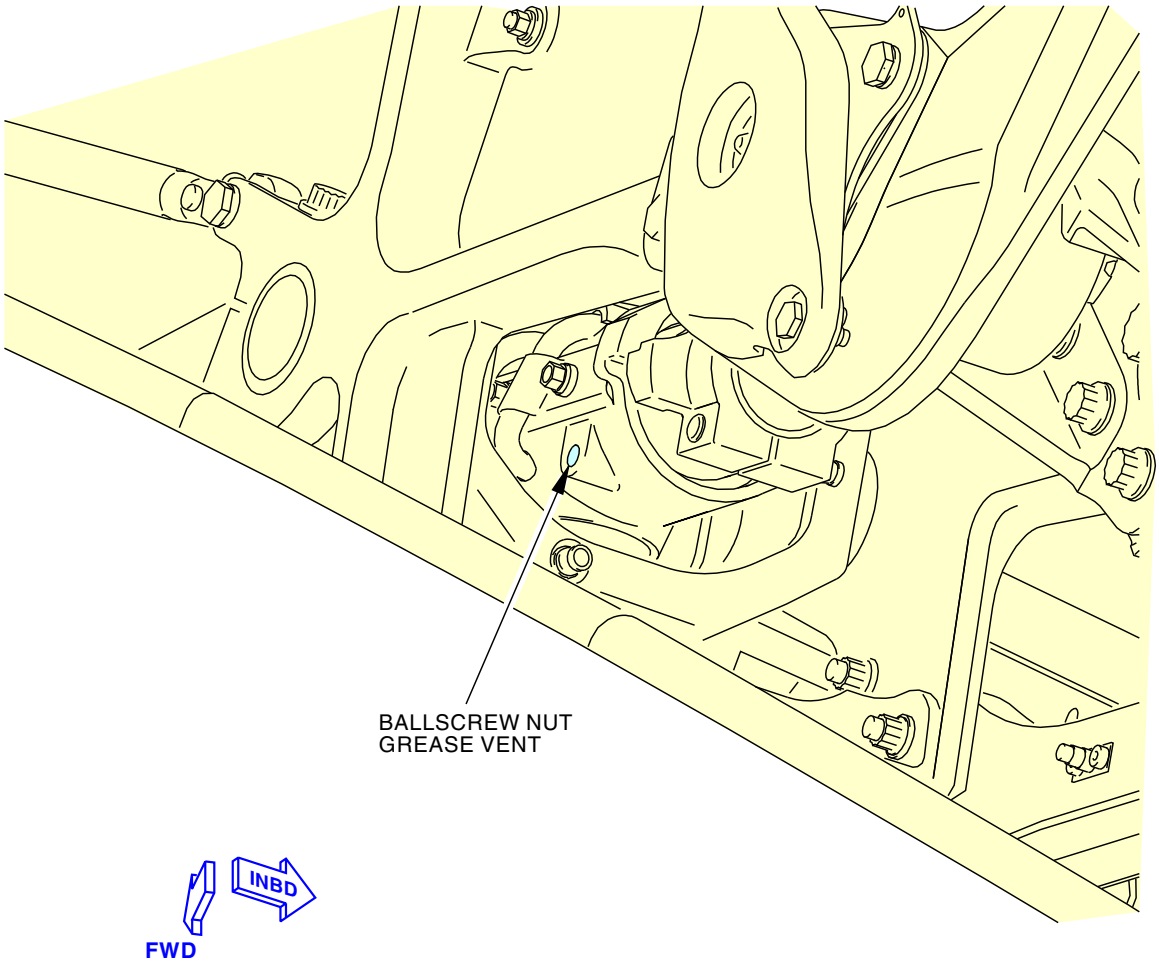
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

2 GREASE SHOULD NOT FREELY COME OUT THROUGH THE SEAL DURING LUBRICATION. IT IS ACCEPTABLE FOR A SMALL AMOUNT TO COME OUT.

2413002 S00061531677_V1

Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 606/27-51-32-990-808 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413003 S00061531678_V1

Inboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 606/27-51-32-990-808 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Outboard flap transmission removal (selection)

(2) Outboard flap transmission installation (selection)

(3) Outboard flap outboard transmission removal

(4) Outboard flap outboard transmission installation

(5) Outboard flap inboard transmission removal

(6) Outboard flap inboard transmission installation.

TASK 27-51-41-000-801

2. Outboard Flap Transmission Removal (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

B. Outboard Flap Transmission Removal (Selection)

SUBTASK 27-51-41-000-001

(1) Do one of these tasks to remove the applicable outboard flap transmission:

(a) Do this task: Outboard Flap Outboard Transmission Removal, TASK 27-51-41-000-802.

(b) Do this task: Outboard Flap Inboard Transmission Removal, TASK 27-51-41-000-803.

——— END OF TASK ———

TASK 27-51-41-400-801

3. Outboard Flap Transmission Installation (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

B. Outboard Flap Transmission Installation (Selection)

SUBTASK 27-51-41-400-001

(1) Do one of these tasks to install the applicable outboard flap transmission:

(a) Do this task: Outboard Flap Outboard Transmission Installation, TASK 27-51-41-400-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Do this task: Outboard Flap Inboard Transmission Installation, TASK 27-51-41-400-803.

——— END OF TASK ———

TASK 27-51-41-000-802

4. Outboard Flap Outboard Transmission Removal

(Figure 401)

A. General

(1) This task is applicable to the transmissions at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-58-01-000-801	Flap Position Transmitter Removal (P/B 401)

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-41-010-001

(1) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

E. Outboard Flap Outboard Transmission Removal

SUBTASK 27-51-41-980-001

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

SUBTASK 27-51-41-020-001

(2) Do this task: Flap Position Transmitter Removal, TASK 27-58-01-000-801.

SUBTASK 27-51-41-020-002

(3) Disconnect the torque tube [9] from the transmission [4]:

(a) Remove the lockwire and screws [11] that attach the coupling sleeve [8] to the splined coupling [10] on the torque tube [9].

(b) Move the coupling sleeve [8] off the splined coupling [10].

SUBTASK 27-51-41-020-003

(4) Disconnect the aft flap drive rod [6] from the drive rod attach fitting [37]:

(a) Remove the pin [36], nut [35], washer [34], washer [32], bolt [31] and bushing [33] that attach the aft flap drive rod [6] to the drive rod attach fitting [37].

(b) Move the aft flap drive rod [6] away from the drive rod attach fitting [37].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-41-020-004

CAUTION MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(5) Disconnect the ballscrew [2] with the gimbal [13] from the carriage [1]:

NOTE: When you disconnect the ballscrew [2] from the carriage [1], the outboard flap can move a small distance to the downstop on the flap track.

(a) Remove the nuts [15], washers [16] and bolts [17] from the carriage [1].

(b) Remove the inboard carriage bushing [20] and the outboard carriage bushing [14] from the gimbal [13] and the carriage [1].

(c) Move the ballscrew [2] and gimbal [13] away from the carriage [1].

SUBTASK 27-51-41-020-005

(6) Disconnect the ballscrew [2] from the yoke [5] on the transmission [4]:

(a) Remove the nuts [24], washers [22], washers [23] and bolts [21] that attach the ballscrew [2] to the yoke [5].

(b) Remove the ballscrew [2] from the yoke [5].

NOTE: You can turn the ballscrew [2] and the gimbal [13] to get access to remove the ballscrew [2].

(c) Remove the ballscrew [2] with the gimbal [13].

SUBTASK 27-51-41-020-006

WARNING GET SUFFICIENT AID FROM OTHER PERSONNEL AND EQUIPMENT TO HOLD THE COMPONENT DURING THE REMOVAL, AND INSTALLATION. THE COMPONENT IS HEAVY. THIS WILL PREVENT INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(7) Remove the transmission [4]:

NOTE: It is not necessary to do this step if the transmission attach fitting [3] will remain on the sideplate.

NOTE: The transmission [4] weighs approximately 50 lb (23 kg).

(a) Remove the bolts [38] that attach the wires to the wire bracket [26].

(b) Hold the transmission [4] while you disconnect the transmission attach fitting [3] from the sideplates.

(c) Remove the nuts [30], washers [29], washers [28] and bolts [27] that attach the transmission attach fitting [3] to the sideplates.

(d) Carefully lower the transmission [4] and the wire bracket [26].

SUBTASK 27-51-41-020-012

(8) Remove the transmission [4] from the transmission attach fitting [3]:

(a) Hold the transmission [4] while you disconnect it from the transmission attach fitting [3].

(b) Remove the nuts [45], washers [44], washers [43], bolts [42], and wire bracket [26] from the transmission [4].

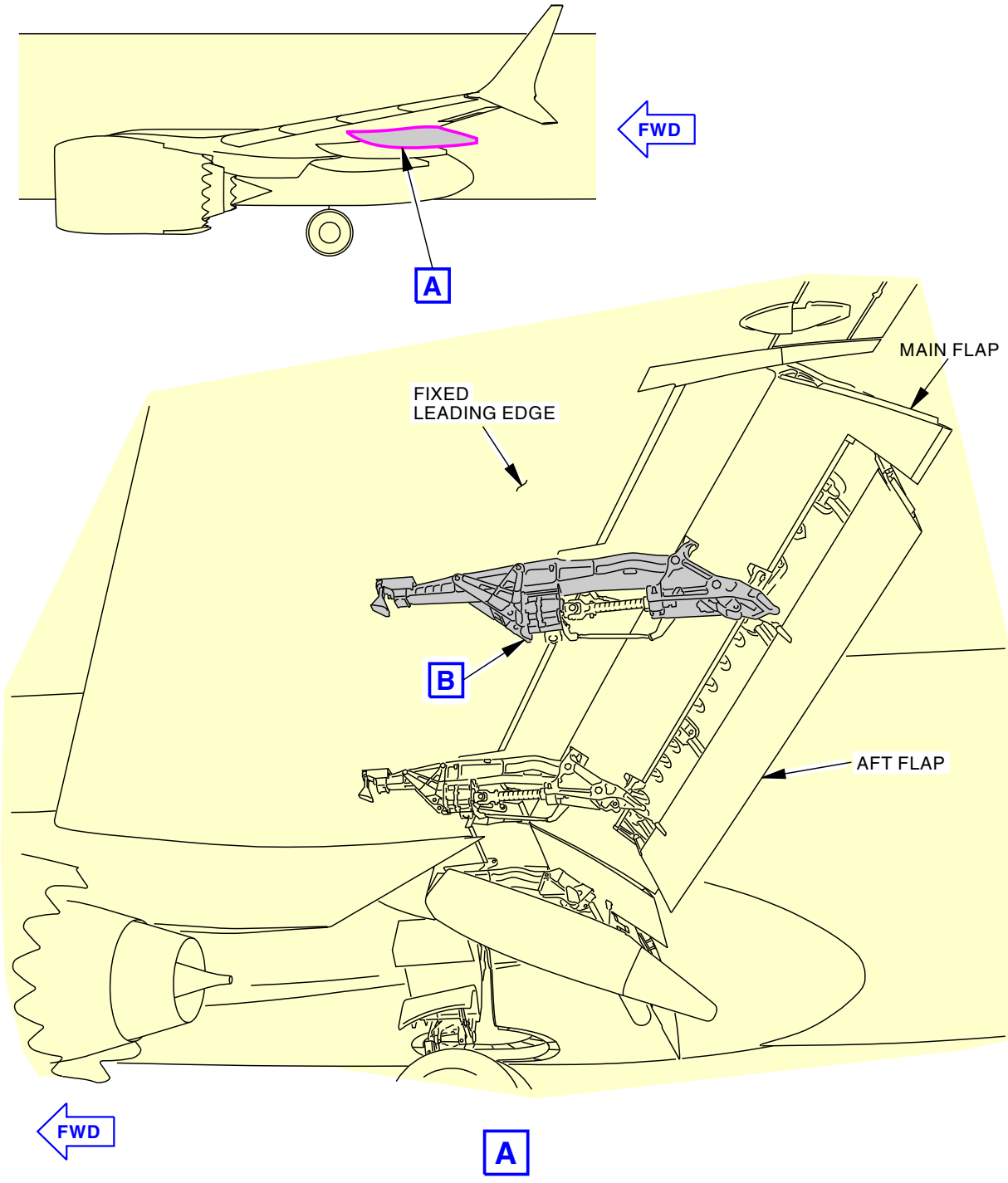
(c) Remove the nuts [45], washers [44], washers [43], bolt [46], bolt [47], and drive rod attach fitting [37] from the transmission [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Remove the transmission [4] from the transmission attach fitting [3].

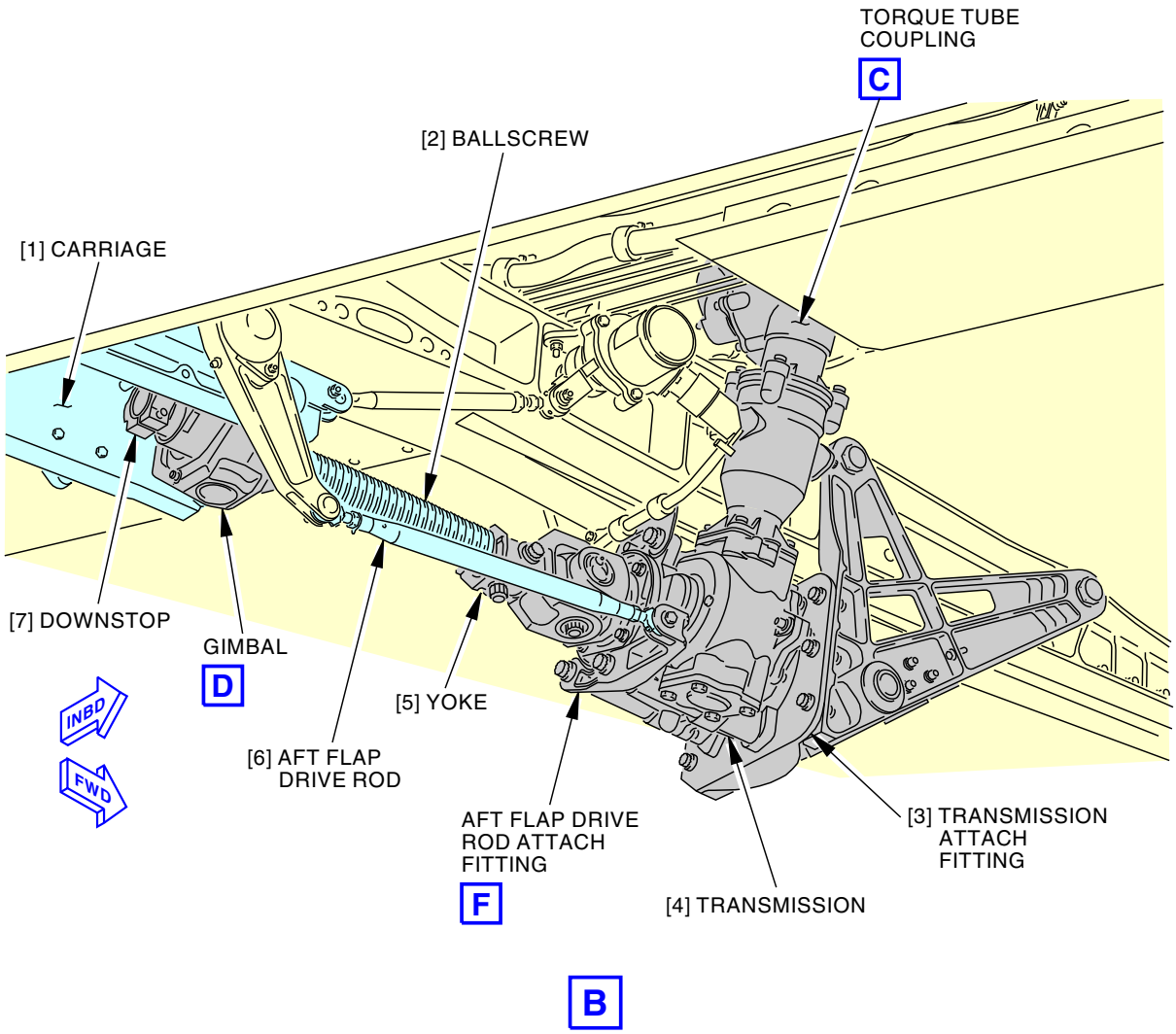
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Transmission Installation
Figure 401/27-51-41-990-801 (Sheet 1 of 5)

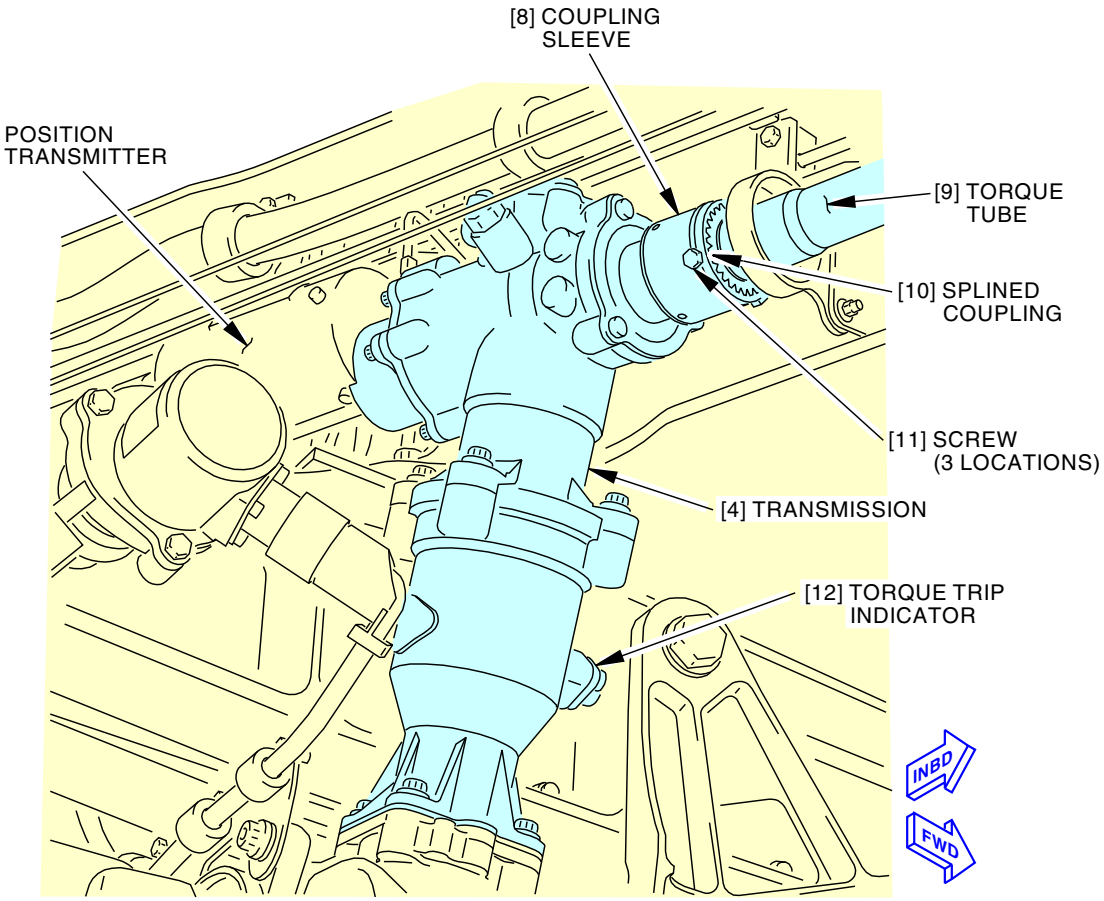
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413005 S00061531683_V2

Outboard Flap Outboard Transmission Installation
Figure 401/27-51-41-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



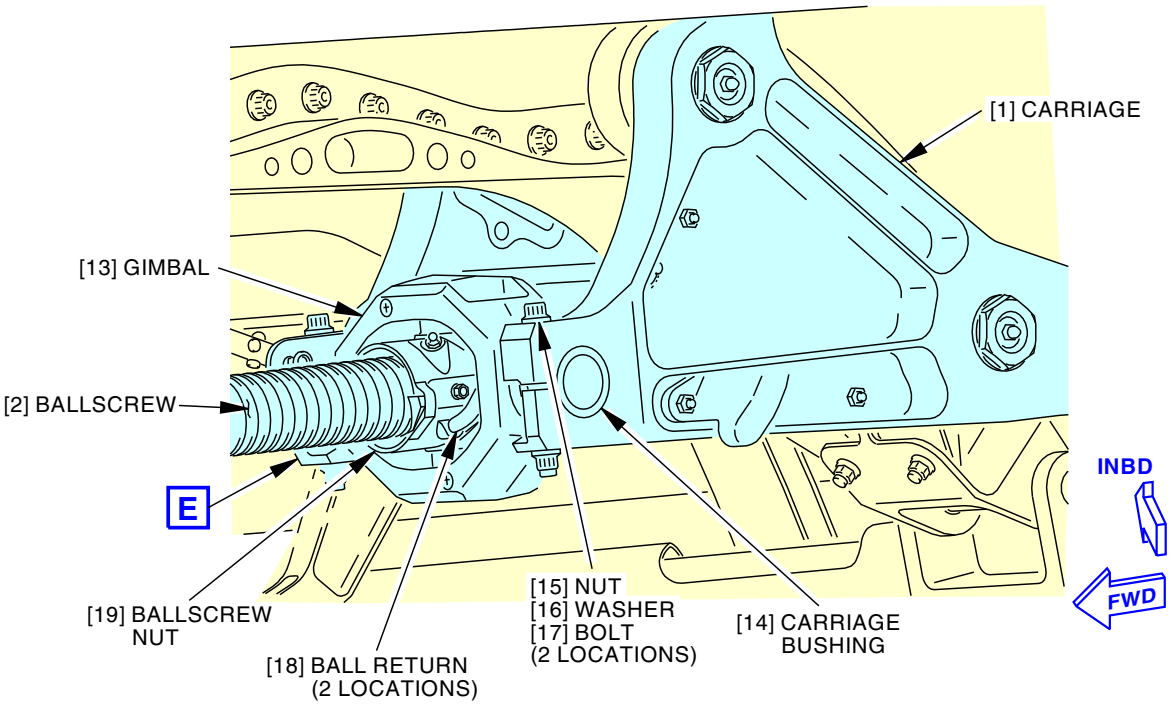
TORQUE TUBE COUPLING

C

2413007 S00061531685_V1

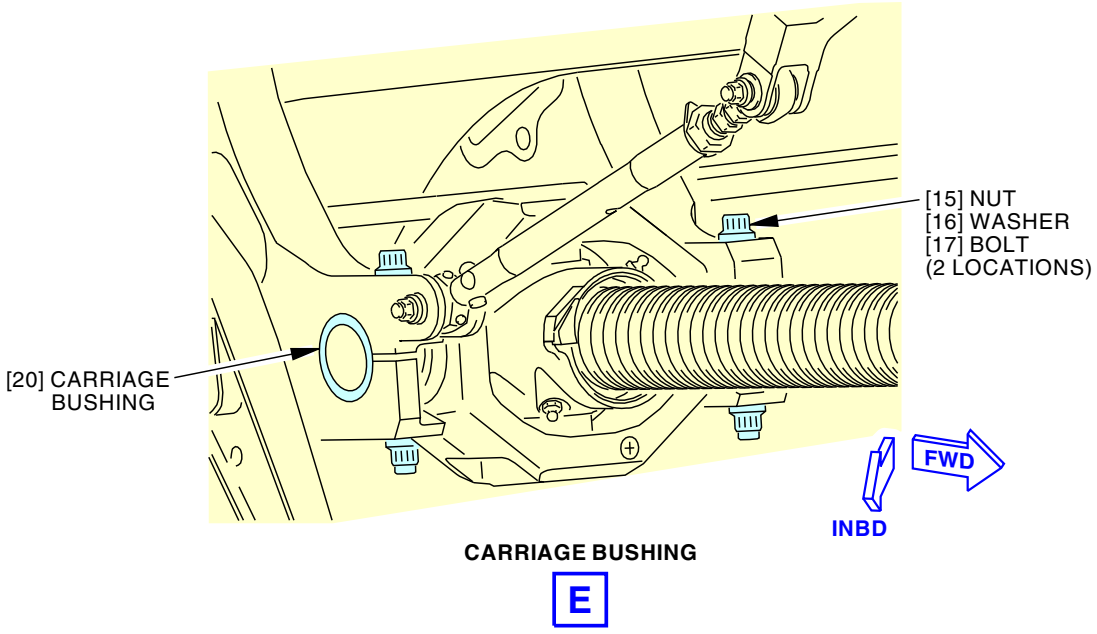
Outboard Flap Outboard Transmission Installation
Figure 401/27-51-41-990-801 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



GIMBAL

D



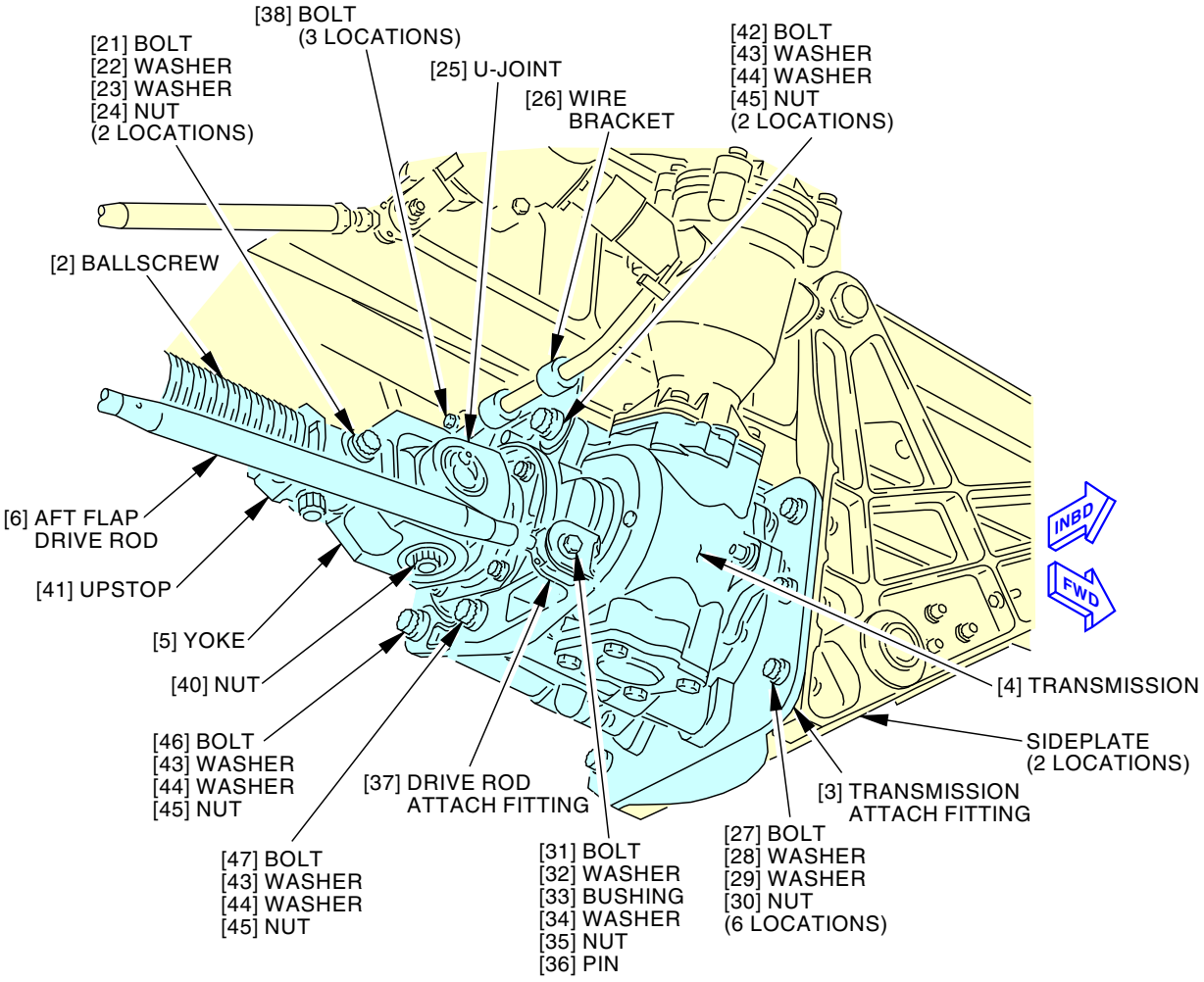
CARRIAGE BUSHING

E

2413008 S00061531686_V1

Outboard Flap Outboard Transmission Installation
Figure 401/27-51-41-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AFT FLAP DRIVE ROD ATTACH FITTING

F

2413009 S00061531687_V4

Outboard Flap Outboard Transmission Installation
Figure 401/27-51-41-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-41-400-802

5. Outboard Flap Outboard Transmission Installation

(Figure 401)

A. General

(1) This task is applicable to the transmissions at flap supports No. 1 and 8.

B. References

Reference	Title
12-22-51-640-805	Outboard Flap Outboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-58-01-400-801	Flap Position Transmitter Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Ballscrew	27-51-42-03-055	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

F. Outboard Flap Outboard Transmission Installation

SUBTASK 27-51-41-420-012

(1) Install the transmission [4] to the transmission attach fitting [3]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin layer of Cor-Ban 27L Compound, G50237, to the mating surfaces of the transmission [4], transmission attach fitting [3], drive rod attach fitting [37], and wire bracket [26].

(b) Apply a layer of Cor-Ban 27L Compound, G50237, to the bolt holes in the transmission [4] and the shank and threads of the top two bolts [42], bottom bolt [46] and bolt [47].

(c) Hold the transmission [4] in position on the transmission attach fitting [3].

(d) Put the bolts [42], washers [43], and wire bracket [26] in position on the transmission [4].

(e) Install the bolts [42], washers [43], washers [44], nuts [45], and the wire bracket [26] to the transmission [4].

(f) Put the bolt [46], bolt [47], washers [43], and the drive rod attach fitting [37] in position on the transmission [4].

(g) Install the bolt [46], bolt [47], washers [43], washers [44], nuts [45], and the drive rod attach fitting [37] to the transmission [4].

(h) Tighten the nuts [45] to 394 in-lb (44.5 N·m) - 425 in-lb (48.0 N·m).

SUBTASK 27-51-41-420-001

WARNING

BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(2) Install the transmission [4]:

NOTE: This step is not necessary if the transmission attach fitting [3] remained on the sideplate.

NOTE: The transmission [4] weighs approximately 50 lb (23 kg).

(a) Apply a thin layer of sealant, A00247, to the mating surfaces of the transmission [4] and the sideplates.

(b) Apply a layer of sealant, A00247, to the bolt holes in the transmission [4] and the shank and threads of the bolts [27].

(c) Carefully lift the transmission [4] and position the transmission attach fitting [3] on the sideplates.

(d) Install the bolts [27], washers [28], washers [29], and nuts [30].

(e) Tighten the nuts [30] to 220 in-lb (25 N·m) - 410 in-lb (46 N·m).

1) When applicable, re-tighten the nuts [30] to 220 in-lb (25 N·m) - 410 in-lb (46 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(f) Apply a layer of Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [38].

(g) Install the bolts [38] to attach the wires to the wire bracket [26].

SUBTASK 27-51-41-420-002

(3) Connect the ballscrew [2] to the yoke [5] on the transmission [4]:

(a) Turn the ballscrew nut [19] until it is at the forward end of the ballscrew [2].

(b) Apply a layer of grease, D00633, to the mating surfaces of the yoke [5] and the ballscrew [2].

(c) Put the ballscrew [2] into the yoke [5].

(d) Apply a layer of grease, D00633, to the shank and threads of the bolts [21].

(e) Install the bolts [21], washers [22], washers [23] and nuts [24] to attach the ballscrew [2] to the yoke [5].

(f) Make sure the ballscrew [2] is installed correctly in the yoke [5]:

1) Turn the transmission [4] until the nut [40] on the U-joint [25] is down.

2) Turn the ballscrew nut [19] until the upstop is 180° from the upstop [41] on the yoke [5].

3) If the ball returns [18] on the ballscrew nut [19] are not on the outboard side, change the position of the ballscrew [2]:

a) Remove the nuts [24], washers [23], washers [22] and bolts [21] that attach the ballscrew [2] to the yoke [5].

b) Turn the ballscrew [2] 180° in the yoke [5].

c) Install the bolts [21], washers [22], washers [23] and nuts [24].

(g) Tighten the nuts [24] to 100 in-lb (11.3 N·m) to 120 in-lb (13.6 N·m) more than the run-on torque.

SUBTASK 27-51-41-420-003

(4) Connect the ballscrew [2] with the gimbal [13] to the carriage [1]:

(a) Move the gimbal [13] aft on the ballscrew [2] until it is at the down stop [7].

(b) On transmission No. 1, make sure the ball returns [18] on the ballscrew nut [19] are outboard and the grease vent is on the lower side.

(c) On transmission No. 8, make sure the ball returns [18] on the ballscrew nut [19] are inboard and the grease vent is on the lower side.

NOTE: This is the recommended position for maintenance.

(d) Lift the outboard flap until the carriage [1] aligns with the gimbal [13].

(e) Install the carriage bushing [14] and carriage bushing [20] to attach the gimbal [13] to the carriage [1].

(f) Install the bolts [17], washers [16] and nuts [15] to hold the carriage bushing [14] and carriage bushing [20] in the carriage [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Tighten the nuts [15] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run-on torque.

SUBTASK 27-51-41-420-004

(5) Connect the aft flap drive rod [6] to the drive rod attach fitting [37]:

(a) Put the aft flap drive rod [6] in its position in the drive rod attach fitting [37].

(b) Apply a layer of grease, D00633, to the inside of the bushing [33] and the shank of the bolt [31].

(c) Install the bushing [33], bolt [31] and washer [32] to attach the aft flap drive rod [6] to the drive rod attach fitting [37].

(d) Carefully clean the grease, D00633, from the threads of the bolt [31].

(e) Install the washer [34] and nut [35] on the bolt [31].

(f) Tighten the nut [35] to 65 in-lb (7.3 N·m) to 100 in-lb (11.3 N·m).

(g) Install the pin [36] in the nut [35].

SUBTASK 27-51-41-420-005

(6) Connect the torque tube [9] to the transmission [4]:

(a) Apply grease, D00633, to the coupling sleeve [8].

(b) Put the splined coupling [10] in the coupling sleeve [8].

(c) Install the screws [11] to attach the torque tube [9] to the transmission [4].

(d) Install MS20995NC32 lockwire, G50347 on the screws [11].

SUBTASK 27-51-41-420-006

(7) Do this task: Flap Position Transmitter Installation, TASK 27-58-01-400-801.

SUBTASK 27-51-41-640-001

(8) Apply grease, D00633, to the end of the plunger on the torque trip indicator [12] and push it down around the sides of the plunger.

NOTE: Not all transmissions have a torque trip indicator installed.

SUBTASK 27-51-41-210-001

(9) Make sure the torque trip indicator [12] on the transmission [4] is set.

NOTE: Not all transmissions have a torque trip indicator installed.

SUBTASK 27-51-41-640-002

(10) Lubricate the transmission [4], ballscrew [2] and gimbal [13] (TASK 12-22-51-640-805).

SUBTASK 27-51-41-820-001

(11) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-41-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-41-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply hydraulic system B power (TASK 29-11-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-41-860-003

(3) Use the primary system to retract the flaps to the retracted position (TASK 27-51-00-860-801).

SUBTASK 27-51-41-860-004

(4) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-41-210-002

(5) Make sure the torque trip indicator [12] on the transmission [4] is set.

NOTE: Not all transmissions have torque trip indicator installed.

SUBTASK 27-51-41-210-003

(6) Make sure the flap position indicator on the center instrument panel shows the UP position.

SUBTASK 27-51-41-860-005

(7) Remove hydraulic system B power (TASK 29-11-00-860-805).

SUBTASK 27-51-41-410-001

(8) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

——— END OF TASK ———

TASK 27-51-41-000-803

6. Outboard Flap Inboard Transmission Removal

(Figure 402)

A. General

(1) This task is applicable to the transmissions at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-41-010-002

(1) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

E. Outboard Flap Inboard Transmission Removal

SUBTASK 27-51-41-980-002

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

SUBTASK 27-51-41-020-007

(2) Disconnect the torque tubes [68] from the transmission [64]:

(a) Remove the screws [70] that attach the coupling sleeves [67] to the splined couplings [69] on the torque tubes [68].

(b) Move the coupling sleeves [67] off the splined couplings [69].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-41-020-008

(3) Disconnect the aft flap drive rod [66] from the drive rod attach fitting [96]:

(a) Remove the nut [94], washer [93], washer [91], bolt [90] and bushing [92] that attach the aft flap drive rod [66] to the drive rod attach fitting [96].

(b) Move the aft flap drive rod [66] away from the drive rod attach fitting [96].

SUBTASK 27-51-41-020-009

CAUTION

MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(4) Disconnect the ballscrew [62] with the gimbal [72] from the carriage [61]:

NOTE: When you disconnect the ballscrew [62] from the carriage [61], the outboard flap can move a small distance to the downstop on the flap track.

(a) Remove the nut [74], washer [75] and bolt [76] from the carriage [61].

(b) Remove the inboard carriage bushing [79] and outboard carriage bushing [73] from the gimbal [72] and the carriage [61].

(c) Move the ballscrew [62] and gimbal away from the carriage [61].

SUBTASK 27-51-41-020-010

(5) Disconnect the ballscrew [62] from the yoke [65] on the transmission [64]:

(a) Remove the nuts [83], washers [82], washers [81] and bolts [80] that attach the ballscrew [62] to the yoke [65].

(b) Remove the ballscrew [62] from the yoke [65].

NOTE: You can turn the ballscrew [62] and the gimbal [72] to get access to remove the ballscrew [62].

(c) Remove the ballscrew [62] with the gimbal [72].

SUBTASK 27-51-41-020-011

WARNING

BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(6) Remove the transmission [64]:

NOTE: It is not necessary to do this step if the transmission attach fitting [63] will remain on the sideplate.

NOTE: The transmission [64] weighs approximately 50 lb (23 kg).

(a) Remove the bolts [97] that attach the wires to the wire bracket [85].

(b) Hold the transmission [64] while you disconnect the transmission attach fitting [63] from the sideplates.

(c) Remove the nuts [89], washers [88], washers [87] and bolts [86] that attach the transmission attach fitting [63] to the sideplates.

(d) Carefully lower the transmission [64] and the wire bracket [85].

SUBTASK 27-51-41-020-013

(7) Remove the transmission [64] from the transmission attach fitting [63]:

(a) Hold the transmission [64] while you disconnect it from the transmission attach fitting [63].

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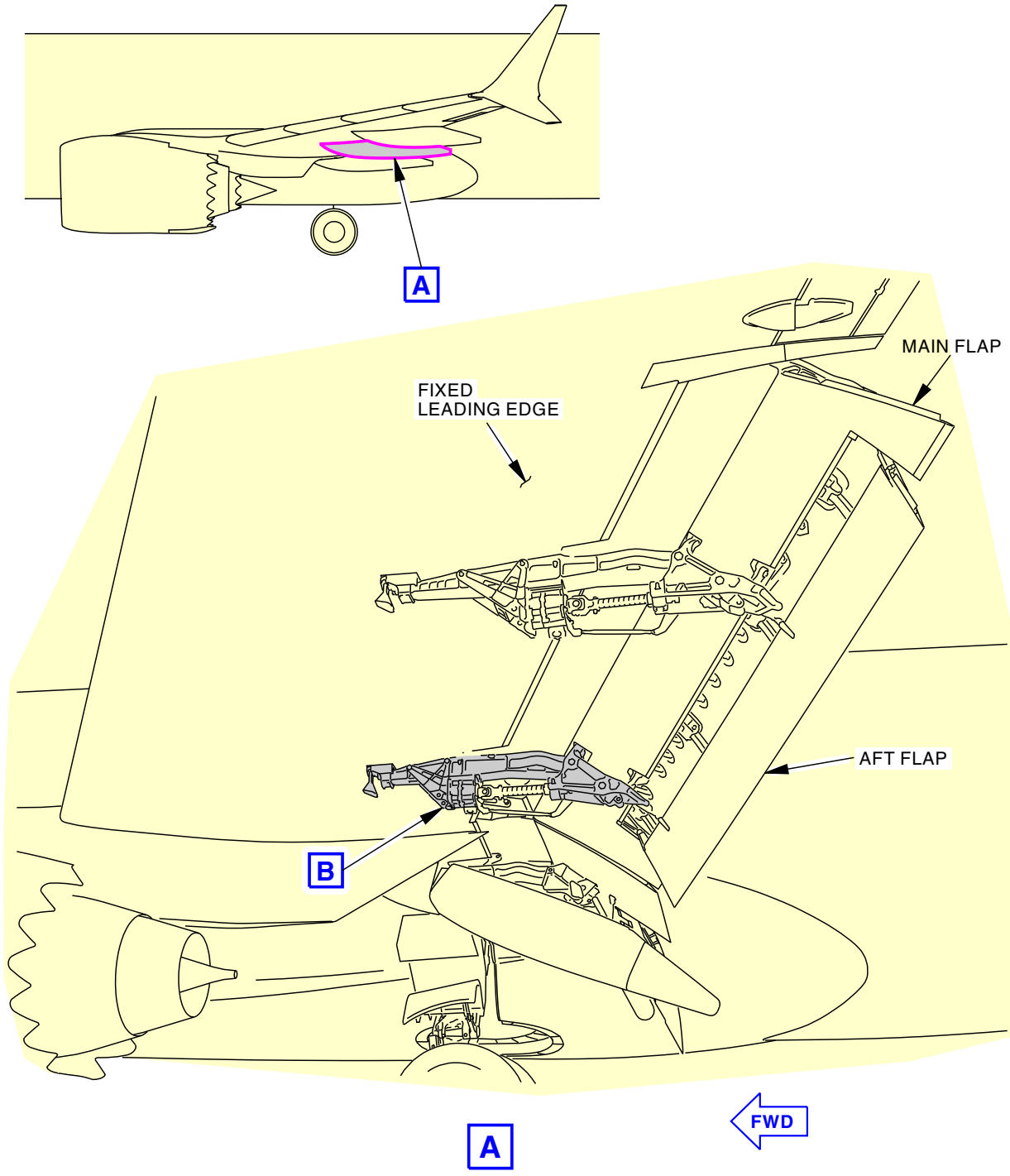
(b) Remove the nuts [104], washers [103], washers [102], bolts [101], and wire bracket [85] from the transmission [64].

(c) Remove the nuts [104], washers [103], washers [102], bolt [105], bolt [106], and drive rod attach fitting [96] from the transmission [64].

(d) Remove the transmission [64] from the transmission attach fitting [63].

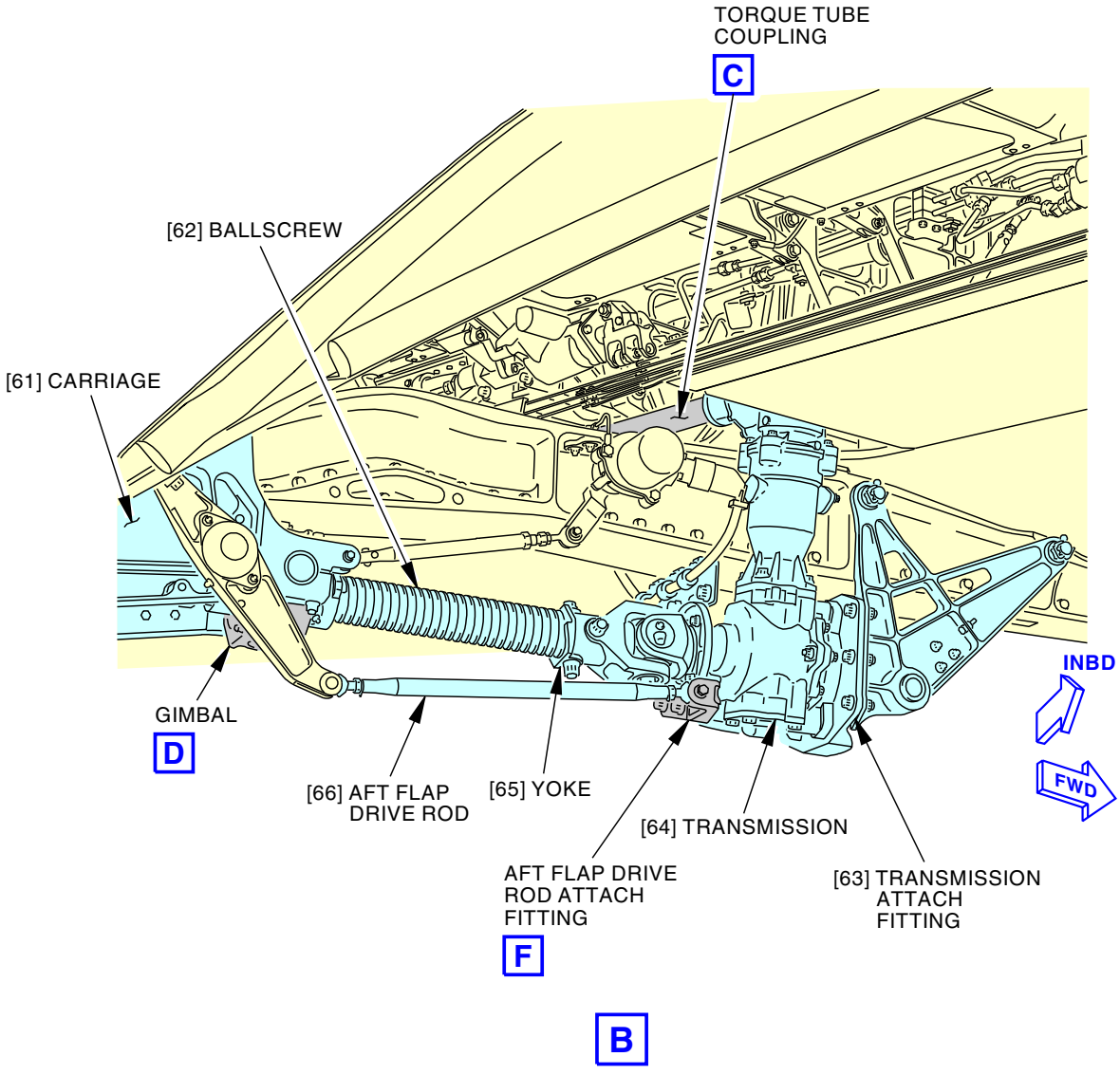
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Transmission Installation
Figure 402/27-51-41-990-802 (Sheet 1 of 5)

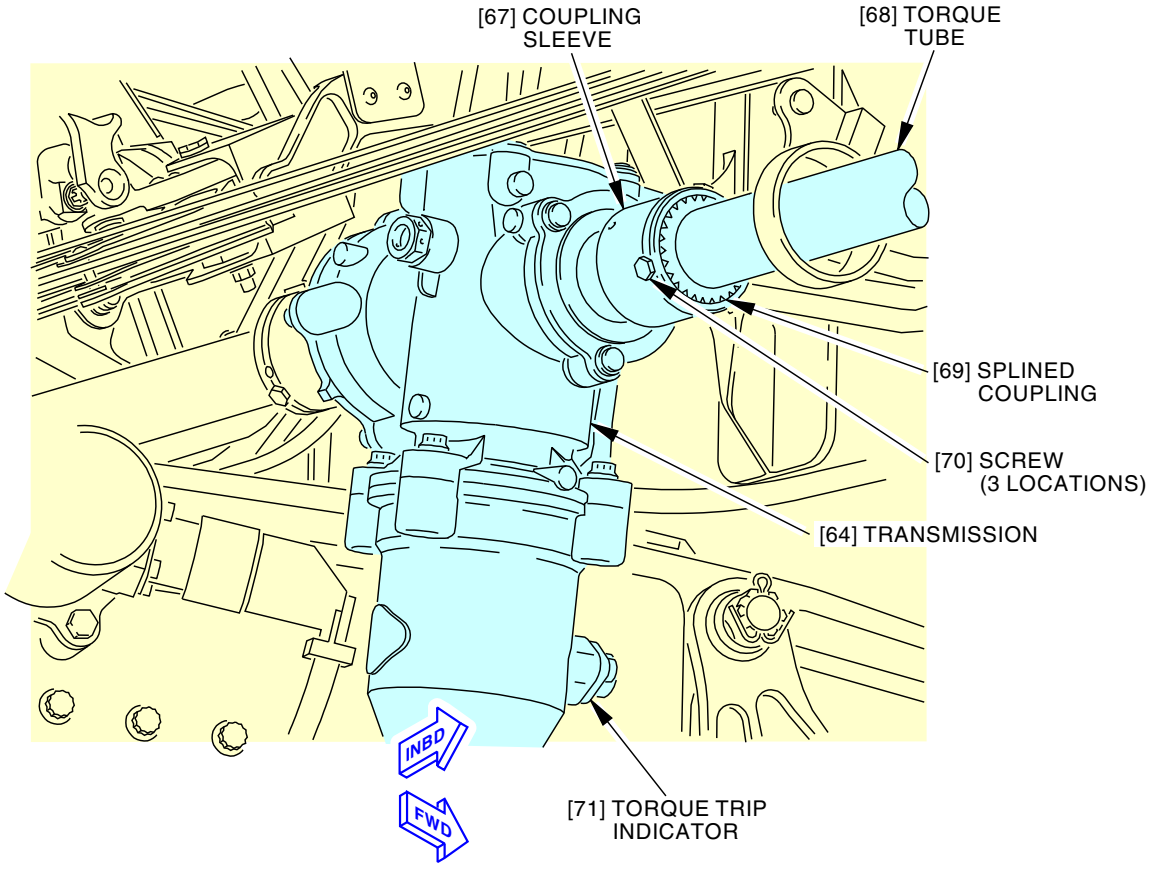
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413011 S00061531691_V2

Outboard Flap Inboard Transmission Installation
Figure 402/27-51-41-990-802 (Sheet 2 of 5)

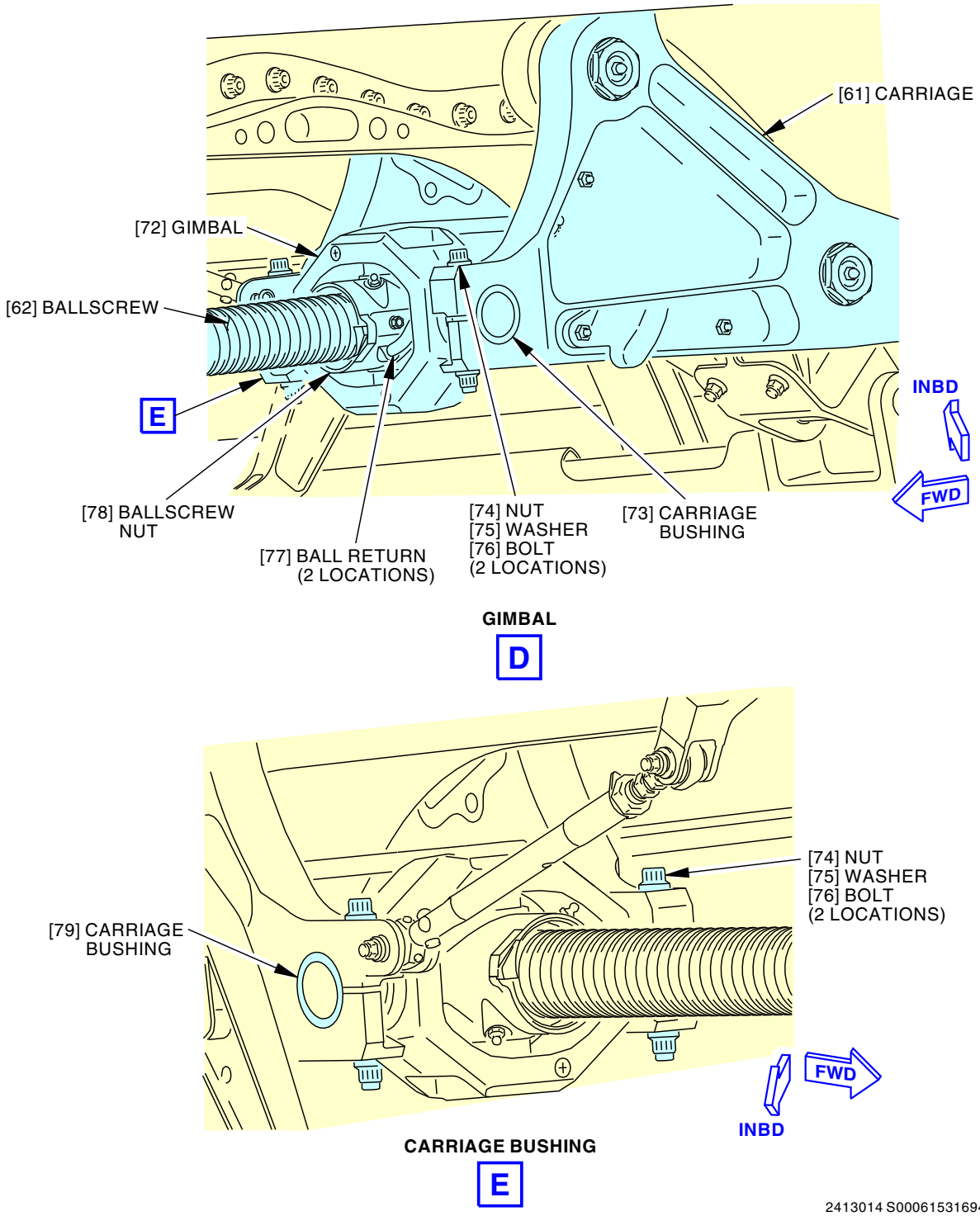
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413013 S00061531693_V1

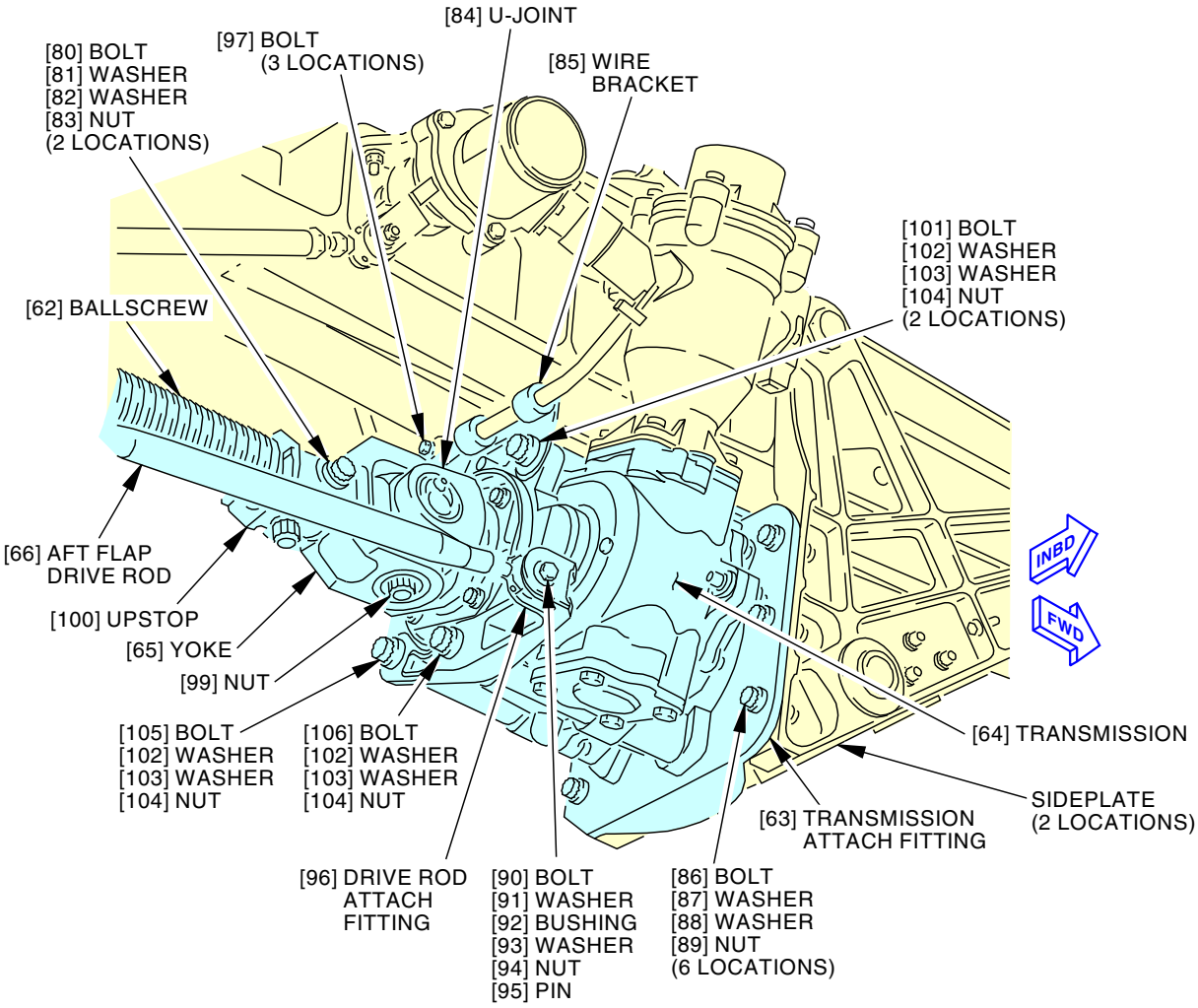
Outboard Flap Inboard Transmission Installation
Figure 402/27-51-41-990-802 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Transmission Installation
Figure 402/27-51-41-990-802 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



AFT FLAP DRIVE ROD ATTACH FITTING

F

2413015 S00061531695_V4

Outboard Flap Inboard Transmission Installation
Figure 402/27-51-41-990-802 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-41-400-803

7. Outboard Flap Inboard Transmission Installation

(Figure 402)

A. General

(1) This task is applicable to the transmissions at flap supports No. 2 and 7.

B. References

Reference	Title
12-22-51-640-804	Outboard Flap Inboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
62	Ballscrew	27-51-42-04-025	SIA ALL
64	Transmission	27-51-41-13-095	SIA ALL
		27-51-41-13-100	SIA ALL

E. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

F. Outboard Flap Inboard Transmission Installation

SUBTASK 27-51-41-420-013

(1) Install the transmission [64] to the transmission attach fitting [63]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the transmission [64], transmission attach fitting [63], drive rod attach fitting [96], and wire bracket [85].

(b) Apply a layer of Cor-Ban 27L Compound, G50237 to the bolt holes in the transmission [64] and the shank and threads of the top two bolts [101], bottom bolt [105] and bolt [106].

(c) Hold the transmission [64] in position on the transmission attach fitting [63].

(d) Put the bolts [101], washers [102], and wire bracket [85] in position on the transmission [64].

(e) Install the bolts [101], washers [102], washers [103], nuts [104], and the wire bracket [85] to the transmission [64].

(f) Put the bolt [105], bolt [106], washers [102], and the drive rod attach fitting [96] in position on the transmission [64].

(g) Install the bolt [105], bolt [106], washers [102], washers [103], nuts [104], and the drive rod attach fitting [96] to the transmission [64].

(h) Tighten the nuts [104] to 394 in-lb (44.5 N·m) - 425 in-lb (48.0 N·m).

SUBTASK 27-51-41-420-007

WARNING

BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(2) Install the transmission [64]:

NOTE: This step is not necessary if the transmission attach fitting [63] remained on the sideplate.

NOTE: The transmission [64] weighs approximately 50 lb (23 kg).

(a) Apply a thin layer of sealant, A00247, to the mating surfaces of the transmission [64] and the sideplates.

(b) Apply a layer of sealant, A00247, to the bolt holes in the transmission [64] and the shank and threads of the bolts [86].

(c) Carefully lift the transmission [64] to its position on the transmission attach fitting [63] on the sideplates.

(d) Install the bolts [86], washers [87], washers [88], and nuts [89].

(e) Tighten the nuts [89] to 350 in-lb (40 N·m) - 410 in-lb (46 N·m).

1) When applicable, re-tighten the nuts [89] to 350 in-lb (40 N·m) - 410 in-lb (46 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(f) Apply a layer of Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [97].

(g) Install the bolts [97] to attach the wires to the wire bracket [85].

SUBTASK 27-51-41-420-008

(3) Connect the ballscrew [62] to the yoke [65] on the transmission [64]:

(a) Turn the ballscrew nut [78] until it is at the forward end of the ballscrew [62].

(b) Apply a layer of grease, D00633, to the mating surfaces of the yoke [65] and the ballscrew [62].

(c) Put the ballscrew [62] into the yoke [65].

(d) Apply a layer of grease, D00633, to the shank and threads of the bolts [80].

(e) Install the bolts [80], washers [81], washers [82] and nuts [83] to attach the ballscrew [62] to the yoke [65].

(f) Make sure the ballscrew [62] is installed correctly in the yoke [65]:

1) Turn the transmission [64] until the nut [99] on the U-joint [84] is down.

2) Turn the ballscrew nut [78] until the upstop is 180° from the upstop [100] on the yoke [65].

3) If the ball returns [77] on the ballscrew nut [78] are not on the outboard side, change the position of the ballscrew [62]:

a) Remove the nuts [83], washers [82], washers [81] and bolts [80] that attach the ballscrew [62] to the yoke [65].

b) Turn the ballscrew [62] 180° in the yoke [65].

c) Install the bolts [80], washers [81], washers [82] and nuts [83].

(g) Tighten the nuts [83] to 100 in-lb (11.3 N·m) to 120 in-lb (13.6 N·m) more than the run-on torque.

SUBTASK 27-51-41-420-009

(4) Connect the ballscrew [62] with the gimbal [72] to the carriage [61]:

(a) Move the gimbal [72] aft on the ballscrew [62] until it is at the downstop.

(b) On transmission No. 2, make sure the ball returns [77] on the ballscrew nut [78] are outboard and the grease vent is on the lower side.

(c) On transmission No. 7, make sure the ball returns [77] on the ballscrew nut [78] are inboard and the grease vent is on the lower side.

NOTE: This is the recommended position for maintenance.

(d) Lift the outboard flap until the carriage [61] aligns with the gimbal [72].

(e) Install the carriage bushing [73] and carriage bushing [79] to attach the gimbal [72] to the carriage [61].

(f) Install the bolts [76], washers [75] and nuts [74] to hold the carriage bushing [73] and carriage bushing [79] in the carriage [61].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Tighten the nuts [74] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run on torque.

SUBTASK 27-51-41-420-010

(5) Connect the aft flap drive rod [66] to the drive rod attach fitting [96]:

(a) Put the aft flap drive rod [66] in its position in the drive rod attach fitting [96].

(b) Apply a layer of grease, D00633, to the inside of the bushing [92] and the shank of the bolt [90].

(c) Install the bushing [92], bolt [90] and washer [91] to attach the aft flap drive rod [66] to the drive rod attach fitting [96].

(d) Carefully clean the grease, D00633, from the threads of the bolt [90].

(e) Install the washer [93] and nut [94] on the bolt [90].

(f) Tighten the nut [94] to 65 in-lb (7.3 N·m) - 100 in-lb (11.3 N·m).

(g) Install the pin [95] in the nut [94].

SUBTASK 27-51-41-420-011

(6) Connect the torque tubes [68] to the transmission [64]:

(a) Apply grease, D00633, to the coupling sleeves [67].

(b) Put the splined couplings [69] in the coupling sleeves [67].

(c) Install the screws [70] to attach the torque tubes [68] to the transmission [64].

(d) Install MS20995NC32 lockwire, G50347 on the screws [70].

SUBTASK 27-51-41-640-003

(7) Lubricate the transmission [64], ballscrew [62] and gimbal [72] (TASK 12-22-51-640-804).

SUBTASK 27-51-41-640-004

(8) Apply grease, D00633, to the end of the plunger on the torque trip indicator [71] and push it down around the sides of the plunger.

NOTE: Not all transmissions have a torque trip indicator installed.

SUBTASK 27-51-41-210-004

(9) Make sure that the torque trip indicator [71] on the transmission [64] is set.

NOTE: Not all transmissions have a torque trip indicator installed.

SUBTASK 27-51-41-820-002

(10) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-41-410-002

(1) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

SUBTASK 27-51-41-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-41-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic system B power (TASK 29-11-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-41-860-008

(4) Use the primary system to retract the flaps to the retracted position (TASK 27-51-00-860-801).

SUBTASK 27-51-41-860-009

(5) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-41-210-005

(6) Make sure the torque trip indicator [71] on the transmission [64] is set.

NOTE: Not all transmissions have torque trip indicator.

SUBTASK 27-51-41-210-006

(7) Make sure that the flap position indicator on the center instrument panel shows the UP position.

SUBTASK 27-51-41-860-010

(8) Remove hydraulic system B power (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Outboard flap ballscrew and gimbal removal (selection)

(2) Outboard flap ballscrew and gimbal installation (selection)

(3) Removal of the outboard ballscrew and gimbal for the outboard flap

(4) Installation of the outboard ballscrew and gimbal for the outboard flap

(5) Removal of the inboard ballscrew and gimbal for the outboard flap

(6) Installation of the inboard ballscrew and gimbal for the outboard flap.

TASK 27-51-42-000-801

2. Outboard Flap Ballscrew and Gimbal Removal (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

B. Outboard Flap Ballscrew and Gimbal Removal (Selection)

SUBTASK 27-51-42-000-001

(1) Do one of these tasks to remove the applicable outboard flap ballscrew and gimbal:

(a) Do this task: Outboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-802.

(b) Do this task: Outboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-803.

——— END OF TASK ———

TASK 27-51-42-400-801

3. Outboard Flap Ballscrew and Gimbal Installation (Selection)

A. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

B. Outboard Flap Ballscrew and Gimbal Installation (Selection)

SUBTASK 27-51-42-400-001

(1) Do one of these tasks to install the applicable outboard flap ballscrew and gimbal:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Do this task: Outboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-802.

(b) Do this task: Outboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-803.

——— END OF TASK ———

TASK 27-51-42-000-802

4. Outboard Flap Outboard Ballscrew and Gimbal Removal

(Figure 401)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-42-010-001

(1) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

E. Outboard Flap Outboard Ballscrew and Gimbal Removal

SUBTASK 27-51-42-980-001

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

SUBTASK 27-51-42-020-001

CAUTION MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(2) Disconnect the ballscrew [2] with the gimbal [14] from the carriage [1]:

NOTE: When you disconnect the ballscrew [2] from the carriage [1], the outboard flap can move a small distance to the downstop on the flap track.

(a) Remove the nut [8], washer [7] and bolt [6] from the carriage [1].

(b) Remove the inboard carriage bushing [9] and outboard carriage bushing [15] from the gimbal [14] and the carriage [1].

(c) Move the ballscrew [2] and gimbal [14] away from the carriage [1].

SUBTASK 27-51-42-020-002

(3) Disconnect the ballscrew [2] from the yoke [4] on the transmission [3]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the nuts [19], washers [18], washers [17] and bolts [16] that attach the ballscrew [2] to the yoke [4].

(b) Remove the ballscrew [2] from the yoke [4].

NOTE: You can turn the ballscrew [2] and the gimbal [14] to get access to remove the ballscrew [2].

(c) Remove the ballscrew [2] with the gimbal [14].

SUBTASK 27-51-42-020-003

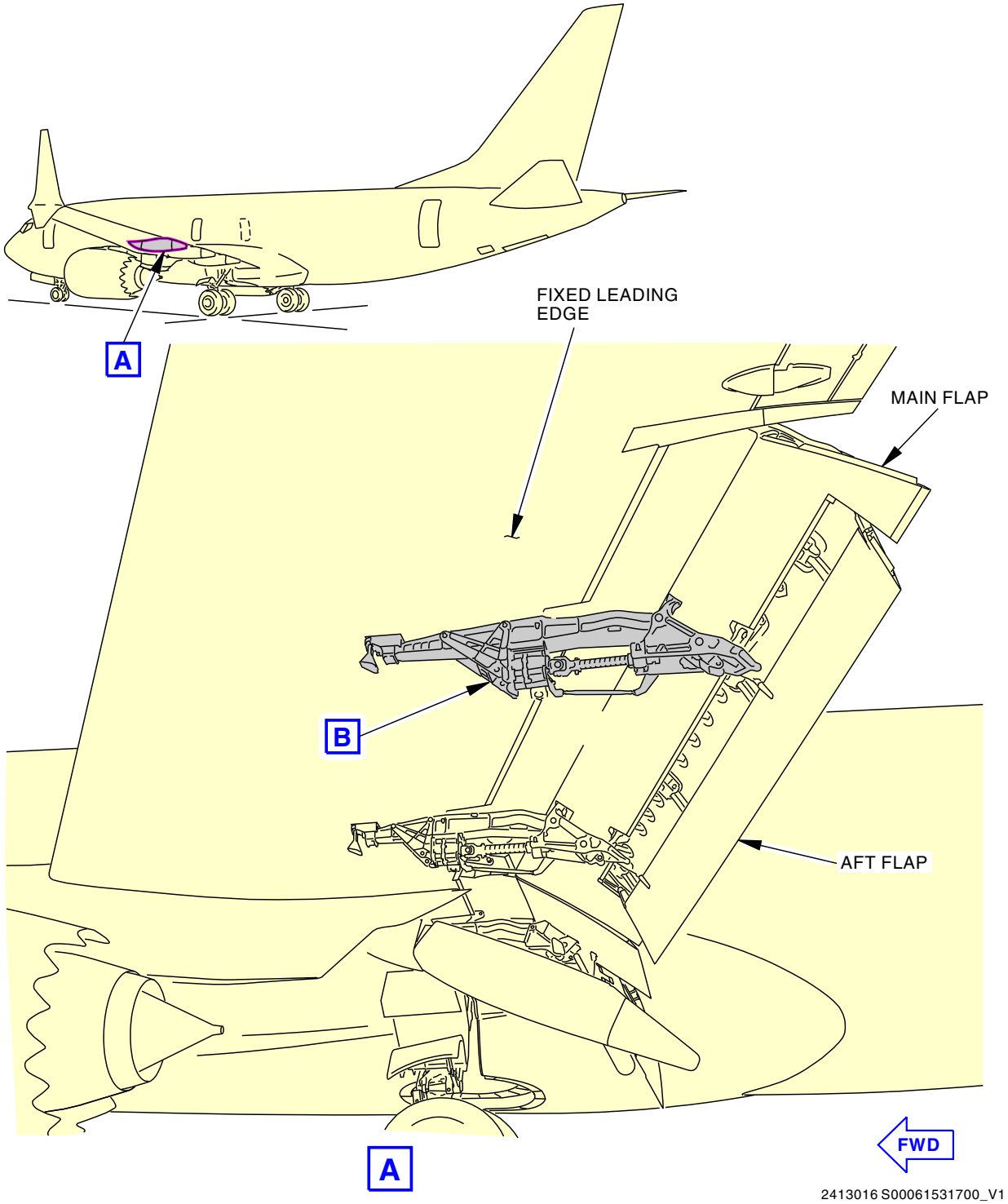
(4) If it is necessary, remove the gimbal [14] from the ballscrew nut [13]:

(a) Remove the bolts [12], washers [11] and collars [10] that attach the gimbal bushings [5] to the gimbal [14].

(b) Remove the gimbal [14] from the ballscrew nut [13].

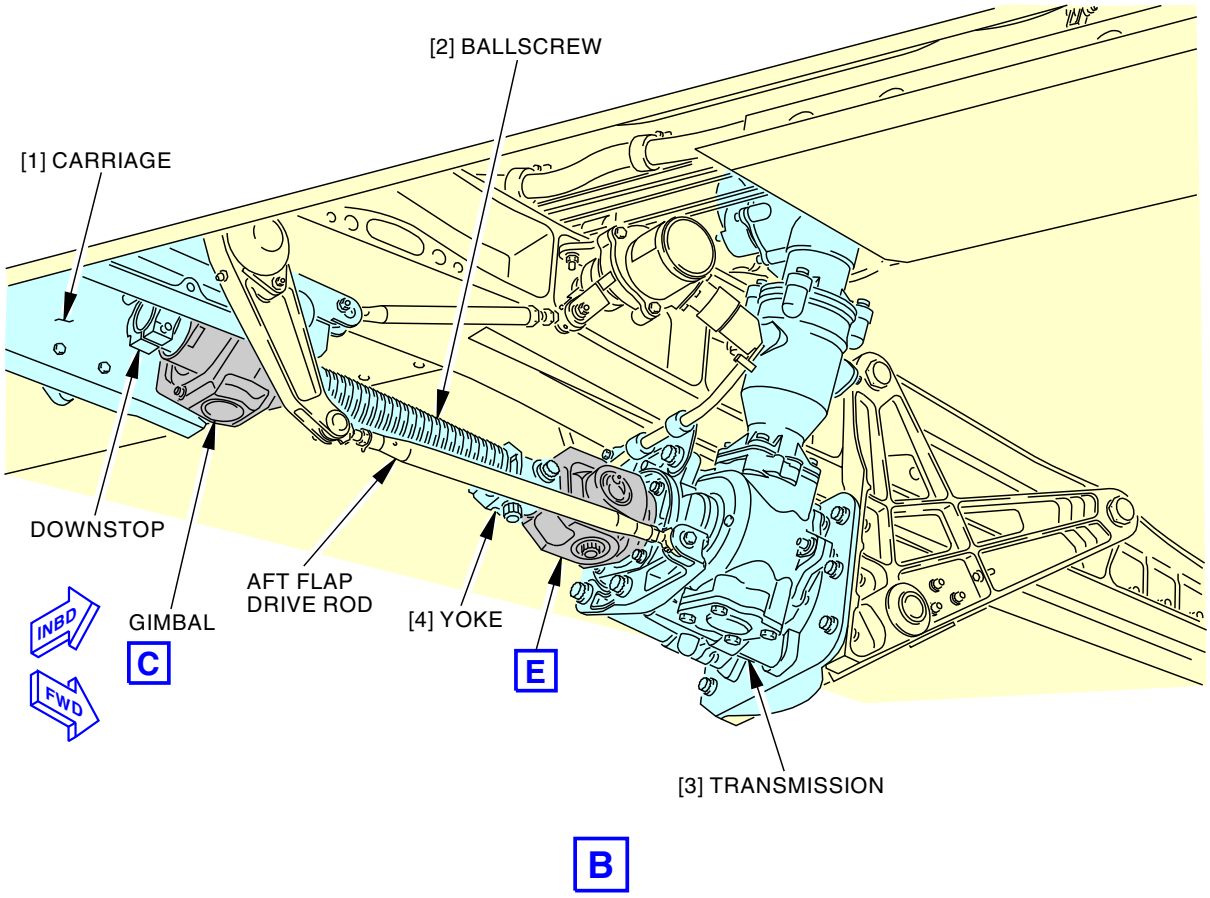
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-42-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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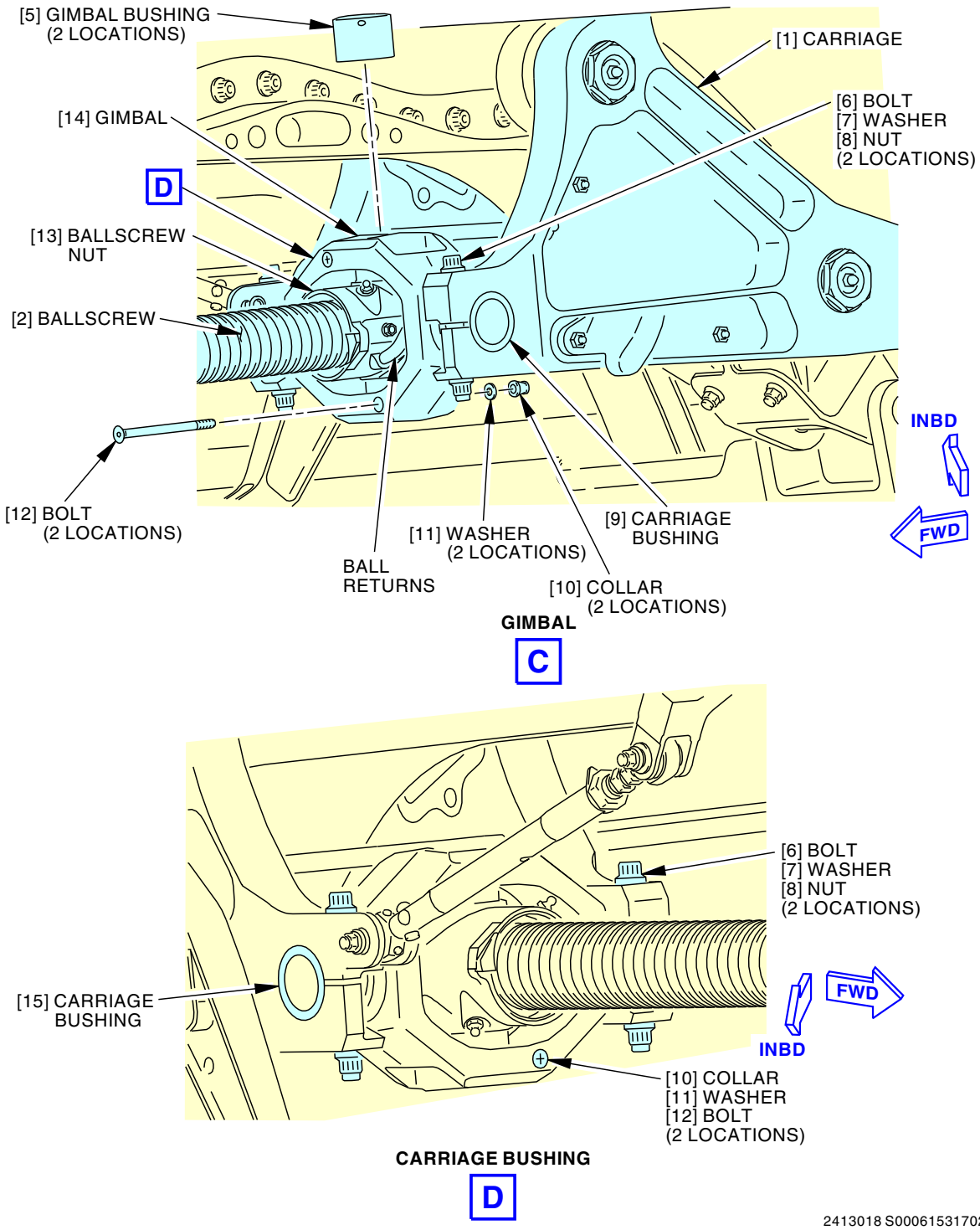
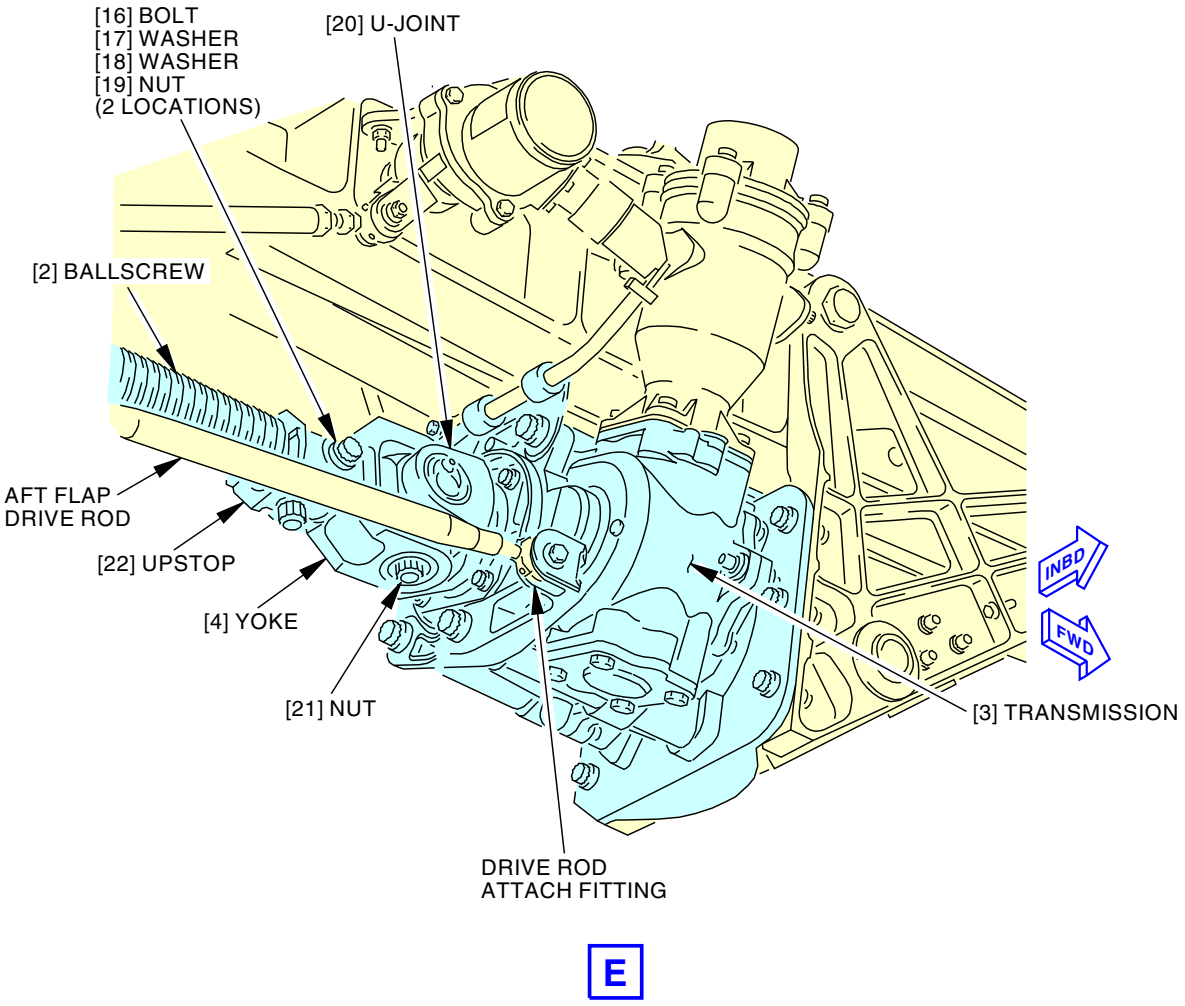
Outboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-42-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-42-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413019 S00061531703_V1

Outboard Flap Outboard Ballscrew and Gimbal Installation
Figure 401/27-51-42-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-42-400-802

5. Outboard Flap Outboard Ballscrew and Gimbal Installation

(Figure 401)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 1 and 8.

B. References

Reference	Title
12-22-51-640-805	Outboard Flap Outboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Ballscrew	27-51-42-03-055	SIA ALL
14	Gimbal	27-51-42-03-050	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

F. Outboard Flap Outboard Ballscrew and Gimbal Installation

SUBTASK 27-51-42-420-001

(1) If you removed it, install the gimbal [14] on the ballscrew nut [13]:

(a) Apply grease, D00633 to the inside and outside mating surfaces of the gimbal bushings [5].

(b) Apply grease, D00633 to the outside surfaces of the gimbal bushings [5].

(c) Put the gimbal [14] in its location on the ballscrew nut [13].

(d) Install the gimbal bushings [5] through the gimbal [14] on the ballscrew nut [13].

(e) Install the bolts [12], washers [11] and collars [10] to attach the gimbal bushings [5] to the gimbal [14].

SUBTASK 27-51-42-420-002

(2) Connect the ballscrew [2] to the yoke [4] on the transmission [3]:

(a) Turn the ballscrew nut [13] until it is at the forward end of the ballscrew [2].

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(b) Apply a layer of grease, D00633 to the mating surfaces of the yoke [4] and the ballscrew [2].

(c) Put the ballscrew [2] into the yoke [4].

(d) Apply a layer of grease, D00633 to the shank and threads of the bolts [16].

(e) Install the bolts [16], washers [17], washers [18] and nuts [19] to attach the ballscrew [2] to the yoke [4].

(f) Make sure the ballscrew [2] is installed correctly in the yoke [4]:

1) Turn the transmission [3] until the nut [21] on the U-joint [20] is down.

2) Turn the ballscrew nut [13] until the upstop is 180° from the upstop [22] on the yoke [4].

3) If the ball returns on the ballscrew nut [13] are not on the outboard side, change the position of the ballscrew [2]:

a) Remove the nuts [19], washers [18], washers [17] and bolts [16] that attach the ballscrew [2] to the yoke [4].

b) Turn the ballscrew [2] 180° in the yoke [4].

c) Install the bolts [16], washers [17], washers [18] and nuts [19].

(g) Tighten the nuts [19].

SUBTASK 27-51-42-420-003

(3) Connect the ballscrew [2] with the gimbal [14] to the carriage [1]:

(a) Move the gimbal [14] aft on the ballscrew [2] until it is at the downstop.

(b) On transmission No. 1, make sure the ball returns on the ballscrew nut [13] are on the outboard side.

(c) On transmission No. 8, make sure the ball returns on the ballscrew nut [13] are on the inboard side.

(d) Apply grease, D00633 to the outside surfaces of the carriage bushing [9] and carriage bushing [15]

(e) Lift the outboard flap until the carriage [1] aligns with the gimbal [14].

(f) Install the carriage bushing [9] and carriage bushing [15] to attach the gimbal [14] to the carriage [1].

(g) Install the bolts [6], washers [7] and nuts [8] to hold the carriage bushing [9] and carriage bushing [15] in the carriage [1].

(h) Tighten the nuts [8] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run on torque.

SUBTASK 27-51-42-640-001

(4) Lubricate the transmission [3], ballscrew [2] and gimbal [14]. To lubricate them, do this task: Outboard Flap Outboard Ballscrew and Gimbal Lubrication, TASK 12-22-51-640-805.

SUBTASK 27-51-42-820-001

(5) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-42-410-001

(1) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

SUBTASK 27-51-42-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

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SUBTASK 27-51-42-860-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-42-860-003

(4) Use the primary system to retract the flaps to the retracted position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-42-860-004

(5) Use the primary system to extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-42-860-005

(6) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-51-42-000-803

6. Outboard Flap Inboard Ballscrew and Gimbal Removal

(Figure 402)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-42-010-002

(1) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

E. Outboard Flap Inboard Ballscrew and Gimbal Removal

SUBTASK 27-51-42-980-002

(1) Manually extend the trailing edge flaps to the downstop on the ballscrew (TASK 27-51-00-980-801).

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SUBTASK 27-51-42-020-004

CAUTION: MAKE SURE THAT YOU HOLD THE BALLSCREW WHILE YOU DISCONNECT IT. IF THE U-JOINT IS ALLOWED TO SUPPORT THE WEIGHT OF THE BALLSCREW, THIS WILL CAUSE DAMAGE TO THE U-JOINT.

(2) Disconnect the ballscrew [42] with the gimbal [54] from the carriage [41]:

NOTE: When you disconnect the ballscrew [42] from the carriage [41], the outboard flap can move a small distance to the downstop on the flap track.

(a) Remove the nut [48], washer [47] and bolt [46] from the carriage [41].

(b) Remove the inboard carriage bushing [49] and outboard carriage bushing [55] from the gimbal [54] and the carriage [41].

(c) Move the ballscrew [42] and gimbal [54] away from the carriage [41].

SUBTASK 27-51-42-020-005

(3) Disconnect the ballscrew [42] from the yoke [44] on the transmission [43]:

(a) Remove the nuts [59], washers [58], washers [57] and bolts [56] that attach the ballscrew [42] to the yoke [44].

(b) Remove the ballscrew [42] from the yoke [44].

NOTE: You can turn the ballscrew [42] and the gimbal [54] to get access to remove the ballscrew [42].

(c) Remove the ballscrew [42] with the gimbal [54].

SUBTASK 27-51-42-020-006

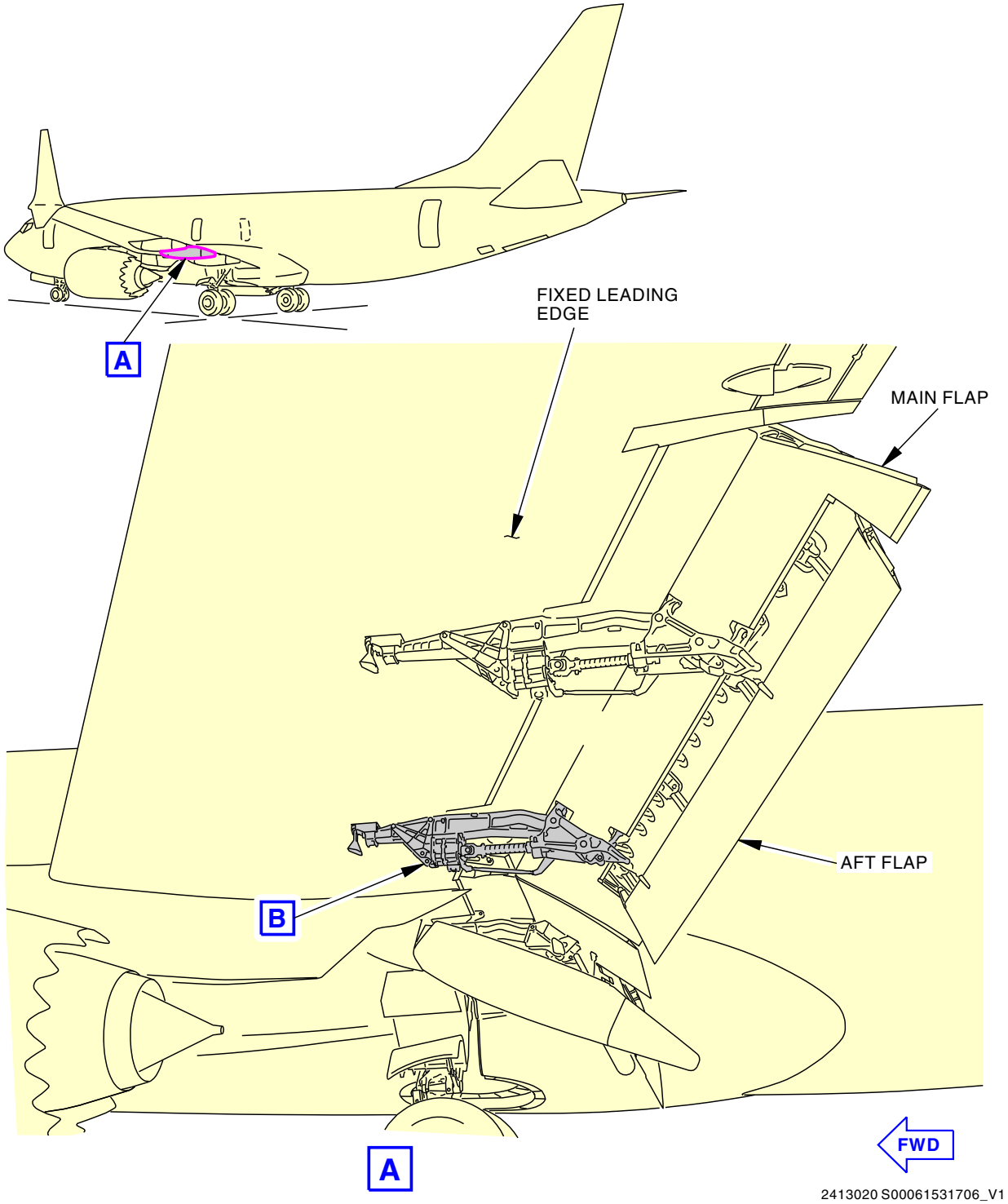
(4) If it is necessary, remove the gimbal [54] from the ballscrew nut [53]:

(a) Remove the bolts [52], washers [51] and collars [50] that attach the gimbal bushings [45] to the gimbal [54].

(b) Remove the gimbal bushings [45] from the ballscrew nut [53].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-42-990-802 (Sheet 1 of 4)

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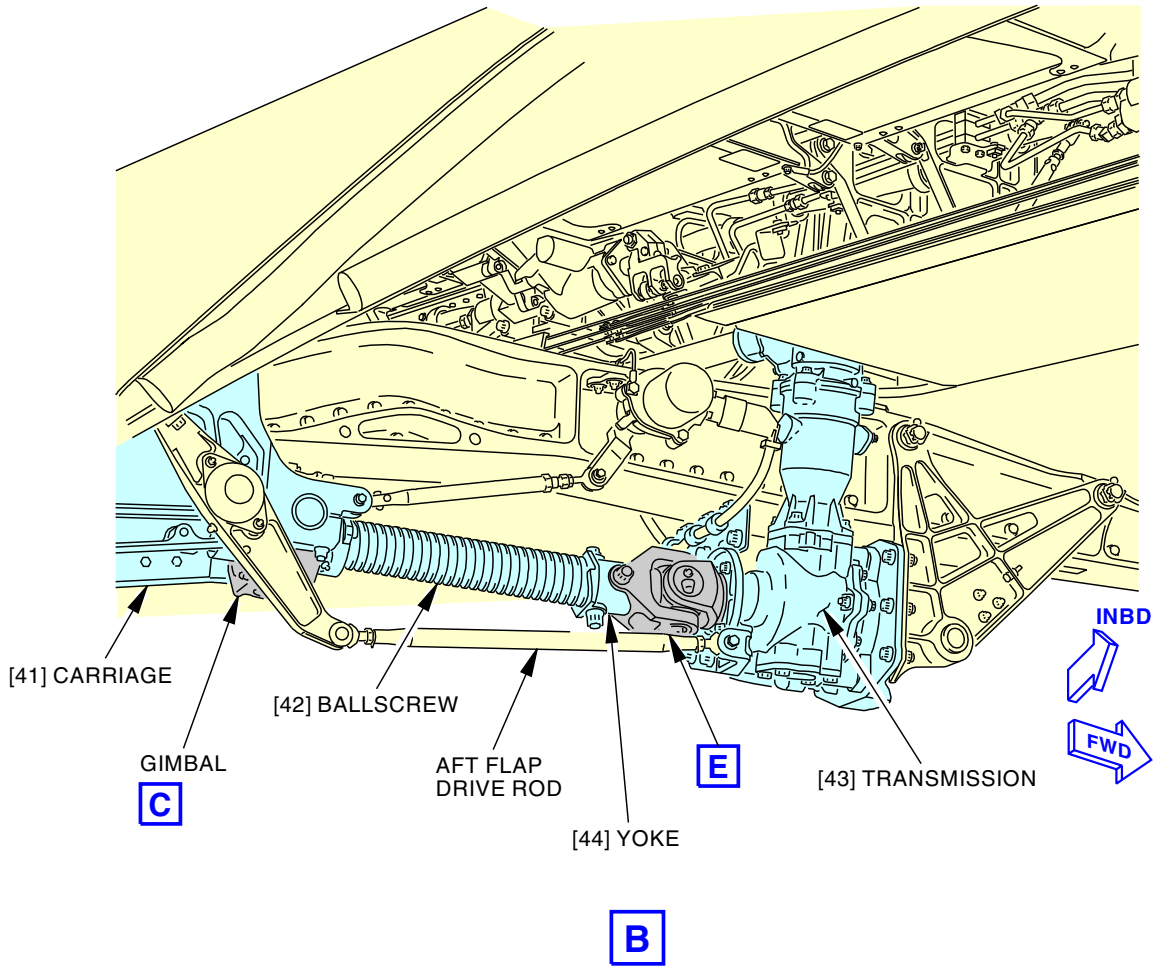

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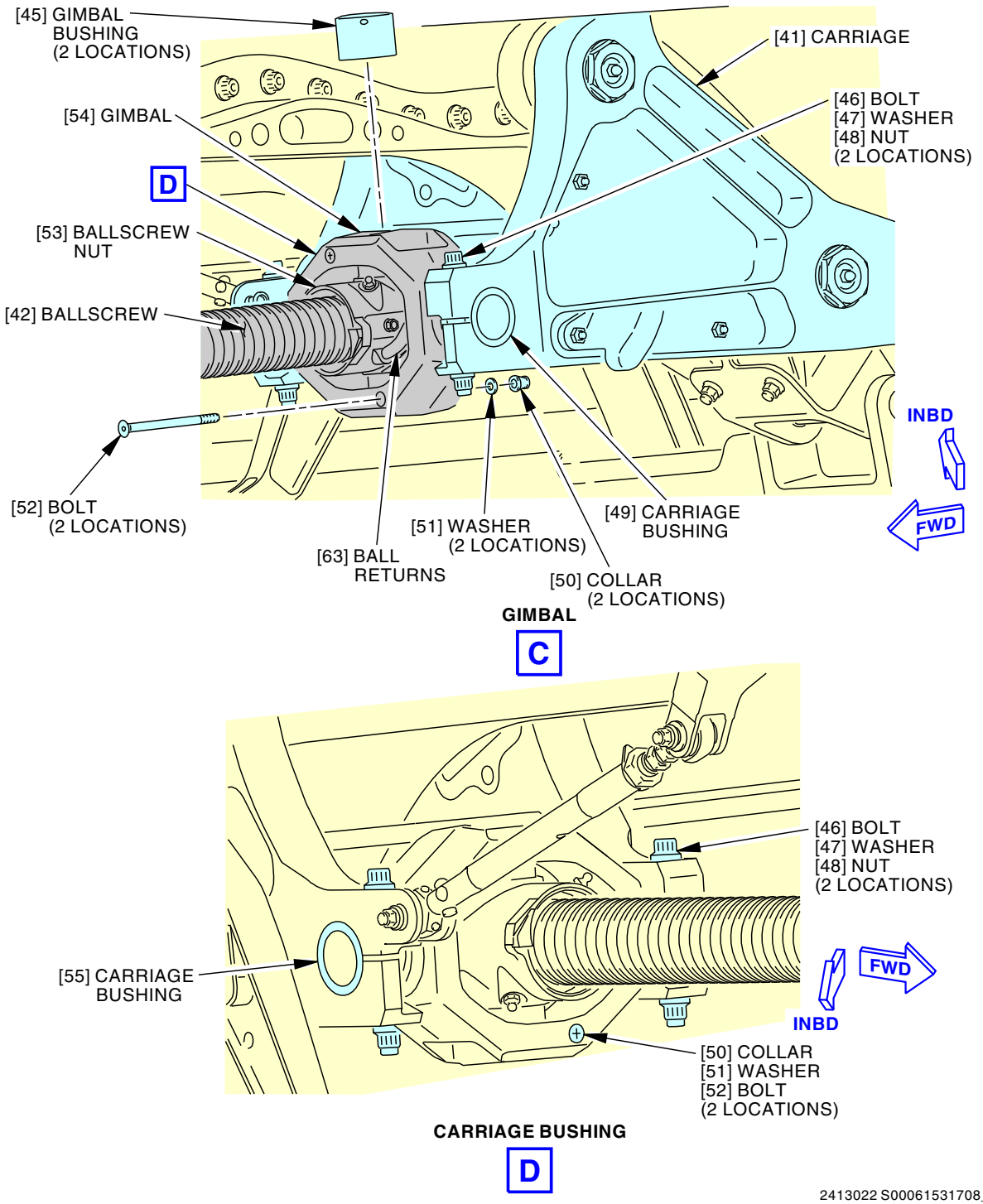
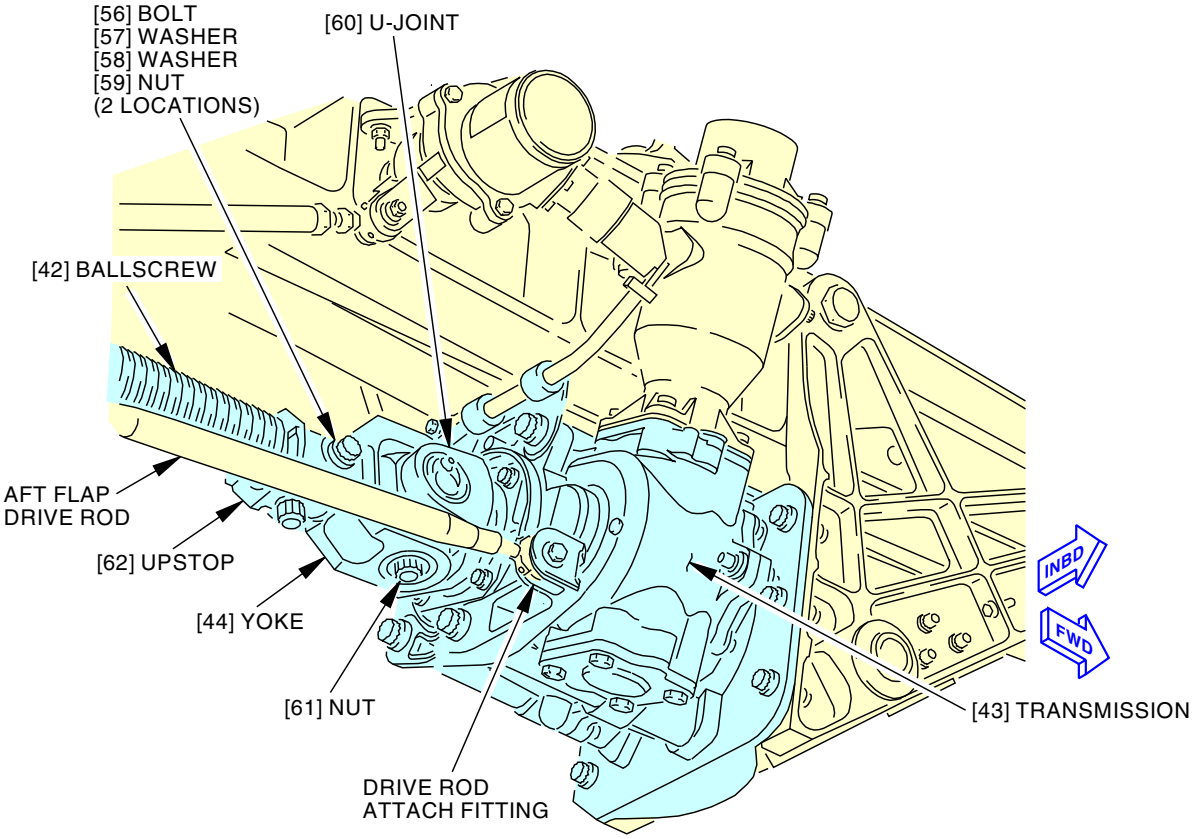
Outboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-42-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-42-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Flap Inboard Ballscrew and Gimbal Installation
Figure 402/27-51-42-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-42-400-803

7. Outboard Flap Inboard Ballscrew and Gimbal Installation

(Figure 402)

A. General

(1) This task is applicable to the ballscrew and gimbal at flap supports No. 2 and 7.

B. References

Reference	Title
12-22-51-640-804	Outboard Flap Inboard Ballscrew and Gimbal Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
42	Ballscrew	27-51-42-04-025	SIA ALL
54	Gimbal	27-51-42-04-050	SIA ALL

E. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

F. Outboard Flap Inboard Ballscrew and Gimbal Installation

SUBTASK 27-51-42-420-004

(1) If you removed it, install the gimbal [54] on the ballscrew nut [53]:

(a)

Apply grease, D00633 to the inside and outside mating surfaces of the gimbal bushings [45].

(b) Apply grease, D00633 to the outside surfaces of the gimbal bushing [45].

(c) Put the gimbal [54] in its location on the ballscrew nut [53].

(d) Install the gimbal bushings [45] through the gimbal [54] on the ballscrew nut [53].

(e) Install the bolts [52], washers [51] and collars [50] to attach the gimbal bushings [45] to the gimbal [54].

SUBTASK 27-51-42-420-005

(2) Connect the ballscrew [42] to the yoke [44] on the transmission [43]:

(a) Turn the ballscrew nut [53] until it is at the forward end of the ballscrew [42].

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(b) Apply a layer of grease, D00633 to the mating surfaces of the yoke [44] and the ballscrew [42].

(c) Put the ballscrew [42] into the yoke [44].

(d) Apply a layer of grease, D00633 to the shank and threads of the bolts [56].

(e) Install the bolts [56], washers [57], washers [58] and nuts [59] to attach the ballscrew [42] to the yoke [44].

(f) Make sure the ballscrew [42] is installed correctly in the yoke [44]:

1) Turn the transmission [43] until the nut [61] on the U-joint [60] is down.

2) Turn the ballscrew nut [53] until the upstop is 180° from the upstop [62] on the yoke [44].

3) If the ball returns on the ballscrew nut [53] are not on the outboard side, change the position of the ballscrew [42]:

NOTE: On transmission No. 2, the ball returns [63] on the ballscrew nut [53] should be on the outboard side. On transmission No. 7, the ball returns [63] on the ballscrew nut [53] should be on the inboard side.

a) Remove the nuts [59], washers [58], washers [57] and bolts [56] that attach the ballscrew [42] to the yoke [44].

b) Turn the ballscrew [42] 180° in the yoke [44].

c) Install the bolts [56], washers [57], washers [58] and nuts [59].

(g) Tighten the nuts [59].

SUBTASK 27-51-42-420-006

(3) Connect the ballscrew [42] with the gimbal [54] to the carriage [41]:

(a) Move the gimbal [54] aft on the ballscrew [42] until it is at the downstop.

NOTE: On transmission No. 2, the ball returns [63] on the ballscrew nut [53] should be on the outboard side. On transmission No. 7, the ball returns [63] on the ballscrew nut [53] should be on the inboard side.

(b) Apply grease, D00633 to the outside surfaces of the carriage bushing [49] and carriage bushing [55].

(c) Lift the outboard flap until the carriage [41] aligns with the gimbal [54].

(d) Install the carriage bushing [49] and carriage bushing [55] to attach the gimbal [54] to the carriage [41].

(e) Install the bolts [46], washers [47] and nuts [48] to hold the carriage bushing [49] and carriage bushing [55] in the carriage [41].

(f) Tighten the nuts [48] to 65 in-lb (7.3 N·m) to 75 in-lb (8.5 N·m) more than the run on torque.

SUBTASK 27-51-42-640-002

(4) Lubricate the transmission [43], ballscrew [42] and gimbal [54]. To lubricate them, do this task: Outboard Flap Inboard Ballscrew and Gimbal Lubrication, TASK 12-22-51-640-804.

SUBTASK 27-51-42-820-002

(5) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-42-410-002

(1) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

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SUBTASK 27-51-42-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-42-860-008

(4) Use the primary system to retract the flaps to the retracted position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-42-860-009

(5) Use the primary system to extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-42-860-010

(6) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD FLAP BALLSCREWS AND GIMBALS - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) A check of the backlash in the outboard ballscrew on the outboard flap

(2) A check of the backlash in the inboard ballscrew on the outboard flap

(3) An outboard flap inboard ballscrew detailed lubrication inspection

(4) An outboard flap outboard ballscrew detailed lubrication inspection

TASK 27-51-42-220-801

2. Outboard Flap Outboard Ballscrew Inspection

(Figure 601)

A. General

(1) This task is applicable to the ballscrew and ballscrew nut at flap supports No. 1 and 8.

(2) There are two methods that you can use to apply a load to the ballscrew nut to measure the movement on the ballscrew. This procedure gives instructions for each method.

(a) You can push up on the trailing edge of the flap to apply the load.

(b) You can use the lever and clamp tool to apply the load to the ballscrew nut.

(3) It is not necessary to use the two methods to apply the load.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-000-803	Outboard Flap Outboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-803	Outboard Flap Outboard Support Aft Fairing Installation (P/B 401)
27-51-42-000-802	Outboard Flap Outboard Ballscrew and Gimbal Removal (P/B 401)
27-51-42-400-802	Outboard Flap Outboard Ballscrew and Gimbal Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1753	Equipment - Test, Flap Screw Backlash Part #: C27030-109 Supplier: 81205 Opt Part #: C27030-94 Supplier: 81205

D. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap

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(Continued)

Zone	Area
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

E. Prepare for the Inspection

SUBTASK 27-51-42-860-011

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-42-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Flap Outboard Ballscrew Backlash Check Without the Lever and Clamp Tool

NOTE: With this method, you manually push on the trailing edge of the flap to apply the load to the ballscrew nut.

SUBTASK 27-51-42-480-001

(1) Install the dial indicator assembly on the ballscrew:

NOTE: The dial indicator assembly is a part of the tester, SPL-1753.

(a) Put the dial indicator assembly on the ballscrew.

1) Make sure the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-42-220-001

(2) Measure the backlash of the ballscrew and ballscrew nut:

(a) Push up on the outboard trailing edge of the outboard flap.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do these steps a total of five times to make sure the movement of the dial indicator is repeatable.

SUBTASK 27-51-42-960-001

(3) If the backlash is more than 0.007 in. (0.178 mm), then replace the ballscrew assembly.

These are the tasks:

Outboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-802,

Outboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-802.

SUBTASK 27-51-42-080-001

(4) Remove the dial indicator assembly from the ballscrew.

SUBTASK 27-51-42-440-003

(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-012

(6) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Outboard Flap Outboard Ballscrew Backlash Check With the Lever and Clamp Tool

NOTE: With this method, you use the lever and clamp tool to apply the load to the ballscrew nut.

SUBTASK 27-51-42-010-003

(1) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, TASK 27-51-28-000-803.

SUBTASK 27-51-42-440-004

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-013

(3) Retract the trailing edge flaps to the 15-unit position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-42-040-004

(4) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-42-480-002

(5) Install the lever and clamp tool on the ballscrew:

NOTE: The lever and clamp tool is a part of the tester, SPL-1753.

(a) Put the lever and clamp tool in its position on the ballscrew aft of the ballscrew nut.

NOTE: Make sure the load surfaces of the lever and clamp tool touch the aft side of the ballscrew nut.

(b) Tighten the clamp-up bolt to 200 in-lb (22.6 N·m) to 300 in-lb (33.9 N·m).

NOTE: Make sure the handles of the lever and clamp tool are in the relaxed position.

SUBTASK 27-51-42-480-003

(6) Install the dial indicator assembly on the ballscrew:

NOTE: The dial indicator assembly is a part of the tester, SPL-1753.

(a) Put the dial indicator assembly on the ballscrew.

NOTE: Make sure the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-42-220-002

(7) Measure the backlash of the ballscrew and ballscrew nut:

(a) Move the handles of the lever and clamp tool together until the dial indicator stops.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do these steps a total of five times to make sure the movement of the dial indicator is repeatable.

SUBTASK 27-51-42-960-002

(8) If the backlash is more than 0.007 in. (0.178 mm), then replace the ballscrew assembly.

These are the tasks:

Outboard Flap Outboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-802,

Outboard Flap Outboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-42-080-002

(9) Remove the dial indicator assembly and the lever and clamp tool from the ballscrew.

SUBTASK 27-51-42-410-003

(10) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, TASK 27-51-28-400-803.

SUBTASK 27-51-42-440-005

(11) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-014

(12) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

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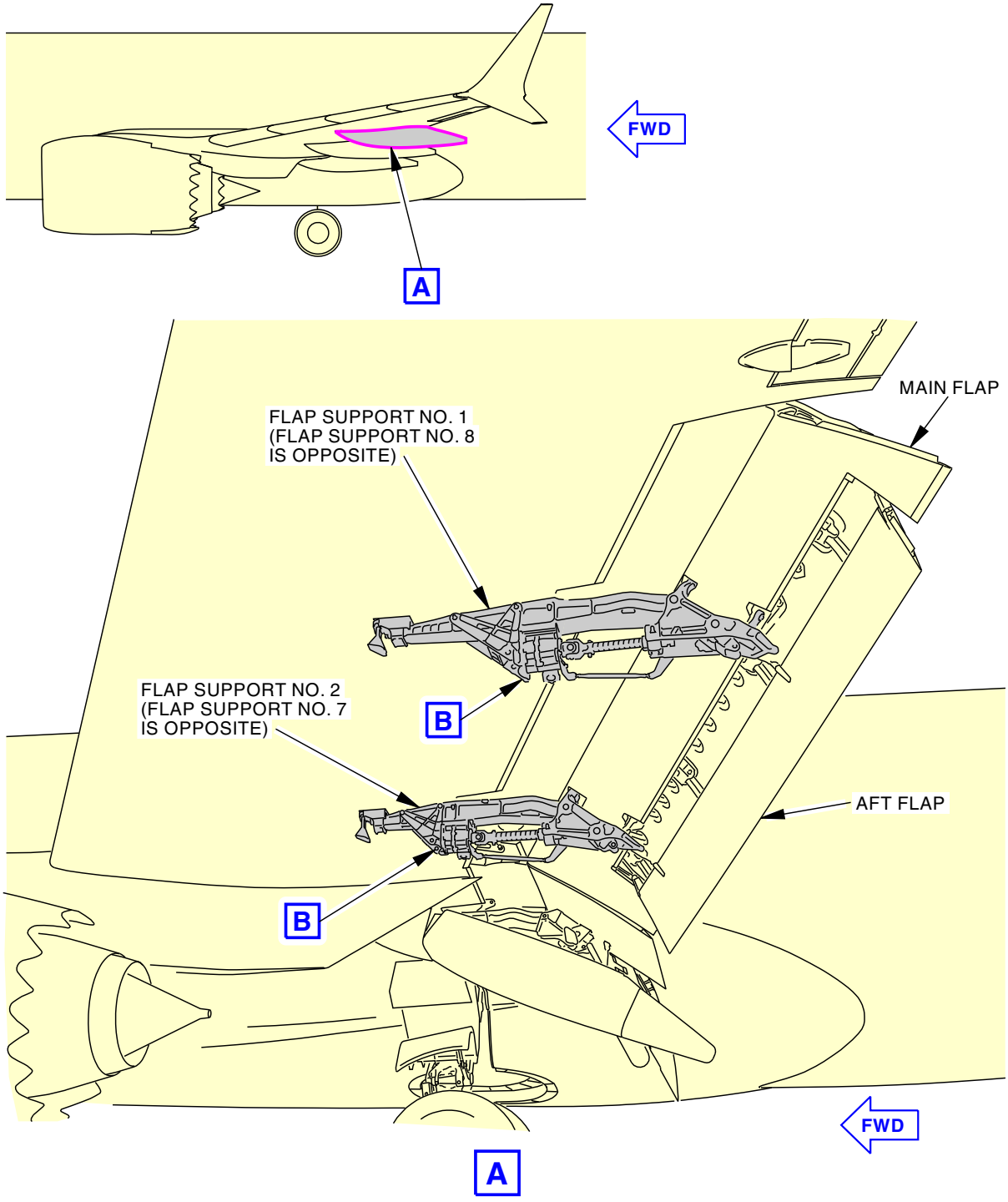
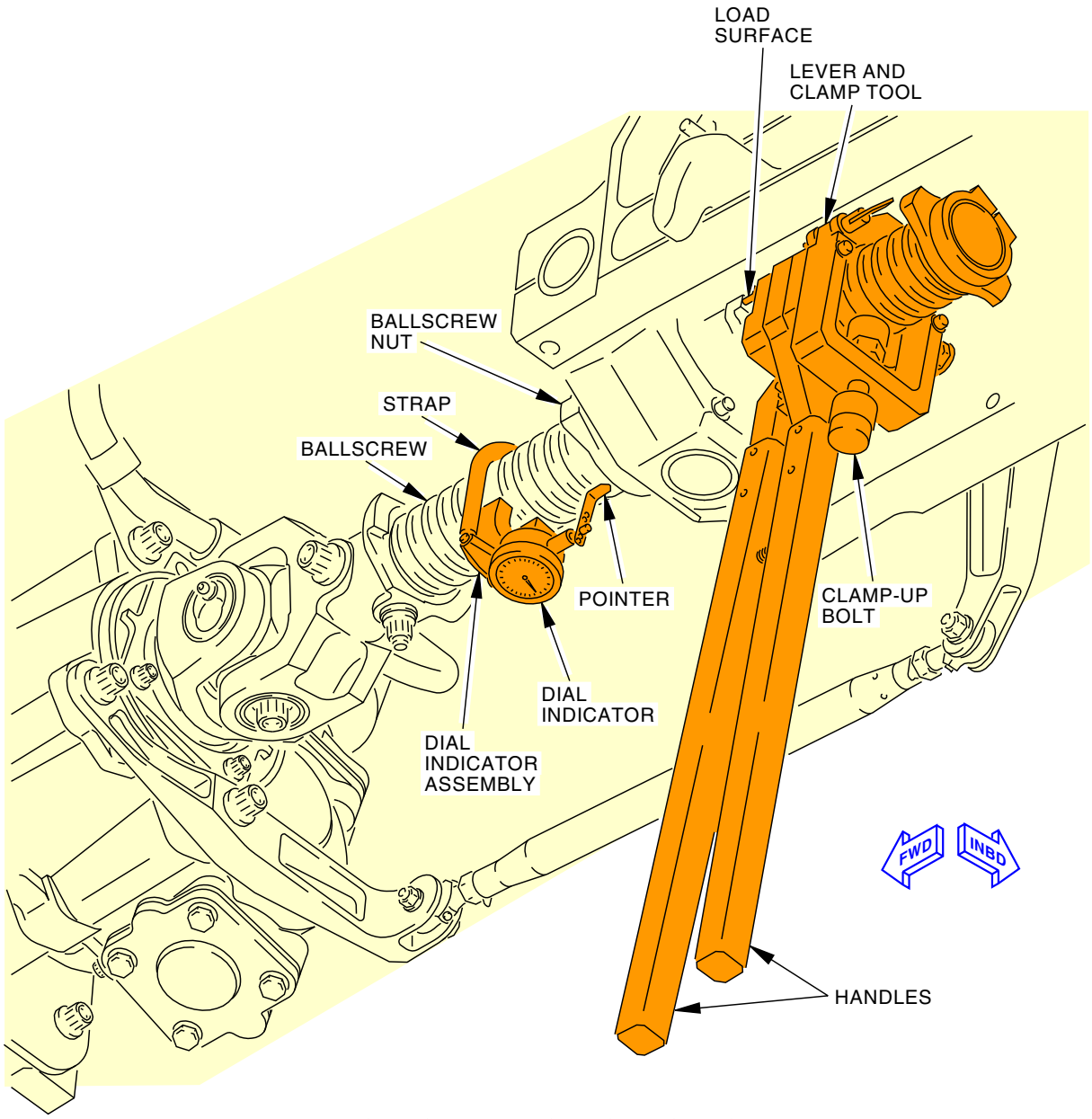


Outboard Flap Ballscrew and Gimbal Inspection
Figure 601/27-51-42-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD FLAP OUTBOARD SUPPORT
(OUTBOARD FLAP INBOARD SUPPORT EQUIVALENT)

B

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Outboard Flap Ballscrew and Gimbal Inspection
Figure 601/27-51-42-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-42-220-802

3. Outboard Flap Inboard Ballscrew Inspection

(Figure 601)

A. General

(1) This task is applicable to the ballscrew and ballscrew nut at flap supports No. 2 and 7.

(2) There are two methods that you can use to apply a load to the ballscrew nut to measure the movement on the ballscrew. This procedure gives instructions for each method.

(a) You can push up on the trailing edge of the flap to apply the load.

(b) You can use the lever and clamp tool to apply the load to the ballscrew nut.

(3) It is not necessary to use the two methods to apply the load.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-28-000-805	Outboard Flap Inboard Support Aft Fairing Removal (P/B 401)
27-51-28-400-805	Outboard Flap Inboard Support Aft Fairing Installation (P/B 401)
27-51-42-000-803	Outboard Flap Inboard Ballscrew and Gimbal Removal (P/B 401)
27-51-42-400-803	Outboard Flap Inboard Ballscrew and Gimbal Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1753	Equipment - Test, Flap Screw Backlash Part #: C27030-109 Supplier: 81205 Opt Part #: C27030-94 Supplier: 81205

D. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

E. Prepare for the Inspection

SUBTASK 27-51-42-860-015

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-42-040-005

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Outboard Flap Inboard Ballscrew Backlash Check Without the Lever and Clamp Tool

NOTE: With this method, you manually push on the trailing edge of the flap to apply the load to the ballscrew nut.

SUBTASK 27-51-42-480-004

(1) Install the dial indicator assembly on the ballscrew:

NOTE: The dial indicator assembly is a part of the tester, SPL-1753.

(a) Put the dial indicator assembly on the ballscrew.

1) Make sure the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-42-220-003

(2) Measure the backlash of the ballscrew and ballscrew nut:

(a) Push up on the inboard trailing edge end of the outboard flap.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do these steps a total of five times to make sure the movement of the dial indicator is repeatable.

SUBTASK 27-51-42-960-003

(3) If the backlash is more than 0.007 in. (0.178 mm), then replace the ballscrew assembly.

These are the tasks:

Outboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-803,

Outboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-803.

SUBTASK 27-51-42-080-003

(4) Remove the dial indicator assembly from the ballscrew.

SUBTASK 27-51-42-440-006

(5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-016

(6) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

G. Outboard Flap Inboard Ballscrew Backlash Check With the Lever and Clamp Tool

NOTE: With this method, you use the lever and clamp tool to apply the load to the ballscrew nut.

SUBTASK 27-51-42-010-004

(1) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, TASK 27-51-28-000-805.

SUBTASK 27-51-42-860-017

(2) Retract the trailing edge flaps to the 15-unit position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-42-040-006

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-42-480-005

(4) Install the lever and clamp tool on the ballscrew:

NOTE: The lever and clamp tool is a part of the tester, SPL-1753.

(a) Put the lever and clamp tool in its position on the ballscrew aft of the ballscrew nut.

NOTE: Make sure the load surfaces of the lever and clamp tool touch the aft side of the ballscrew nut.

(b) Tighten the clamp-up bolt to 200 in-lb (22.6 N·m) to .

NOTE: Make sure the handles of the lever and clamp tool are in the relaxed position.

SUBTASK 27-51-42-480-006

(5) Install the dial indicator assembly on the ballscrew:

NOTE: The dial indicator assembly is a part of the tester, SPL-1753.

(a) Put the dial indicator assembly on the ballscrew.

NOTE: Make sure the pointer touches the forward end of the ballscrew nut.

(b) Put the strap around the ballscrew to help hold the dial indicator assembly on the ballscrew.

(c) Adjust the dial indicator to zero.

SUBTASK 27-51-42-220-004

(6) Measure the backlash of the ballscrew and ballscrew nut:

(a) Move the handles of the lever and clamp tool together until the dial indicator stops.

NOTE: This will apply a load to the ballscrew nut, and move it forward on the ballscrew.

(b) Use the dial indicator to measure the movement of the ballscrew nut.

NOTE: The movement of the ballscrew nut is the backlash.

(c) Do these steps a total of five times to make sure the movement of the dial indicator is repeatable.

SUBTASK 27-51-42-960-004

(7) If the backlash is more than 0.007 in. (0.178 mm), then replace the ballscrew assembly.

These are the tasks:

Outboard Flap Inboard Ballscrew and Gimbal Removal, TASK 27-51-42-000-803,

Outboard Flap Inboard Ballscrew and Gimbal Installation, TASK 27-51-42-400-803.

SUBTASK 27-51-42-080-004

(8) Remove the dial indicator assembly and the lever and clamp tool from the ballscrew.

SUBTASK 27-51-42-410-004

(9) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, TASK 27-51-28-400-805.

SUBTASK 27-51-42-440-007

(10) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-018

(11) Retract the trailing edge flaps to the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-42-200-801

4. Outboard Flap Inboard Ballscrew Detailed Lubrication Inspection

(Figure 602)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-42 P/B 401	OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01043	Cloth - Lint-free	

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
567	Left Wing - Outboard Flap
643	Right Wing - Fairing Flap Support No. 7
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication Inspection

SUBTASK 27-51-42-860-019

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-42-040-007

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Inboard Ballscrew Lubrication Inspection

(Table 601)

SUBTASK 27-51-42-640-003

(1) This table supplies data for the subsequent lubrication and inspection steps:

Table 601/27-51-42-993-801 Outboard Flap Inboard Ballscrew Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
-	No. 2 Ballscrew Nut (No. 7 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1

SUBTASK 27-51-42-640-004

(2) Do these steps for the ballscrew nut lubrication and inspection:

(a) Remove the old grease and dirt on and around the ballscrew nut and grease vent with a lint-free cloth, G01043 or equivalent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT USE GREASE GUN PRESSURE IN EXCESS OF 36 PSI (2.5 BAR). EXCESSIVE GREASE GUN NOZZLE PRESSURE AND FLOW RATE CAN DAMAGE THE SEALS.

(b) Lubricate the ballscrew nut with grease, D00633.

NOTE: The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

1) Make sure that clean grease comes out from the grease vent.

NOTE: Clean grease must come out through the grease vent. This will make sure that the used grease has been flushed out.

a) If the clean grease does not comes out from the vent, then replace the ballscrew assembly on or before the next interval inspection (OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-42/401).

2) Make sure that grease does not freely come out through the ballscrew nut seal.

NOTE: It is acceptable for a small quantity of grease to come out through the ballscrew nut seal.

a) If the grease freely comes through the ballscrew nut seal, then replace the ballscrew assembly on or before the next interval inspection (OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-42/401)

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-42-440-008

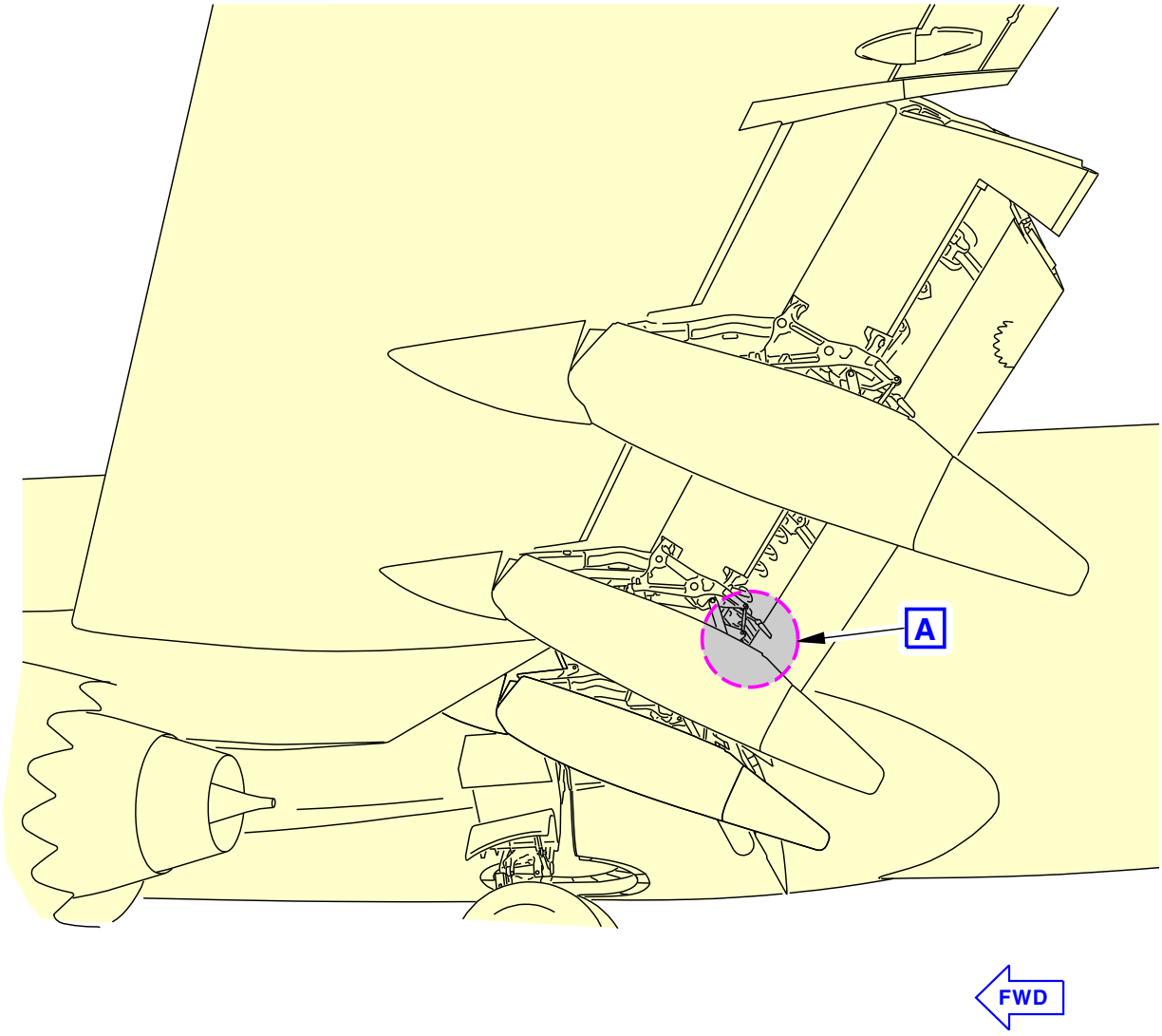
(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-020

(2) Retract the trailing edge flaps to the UP position. To retract them, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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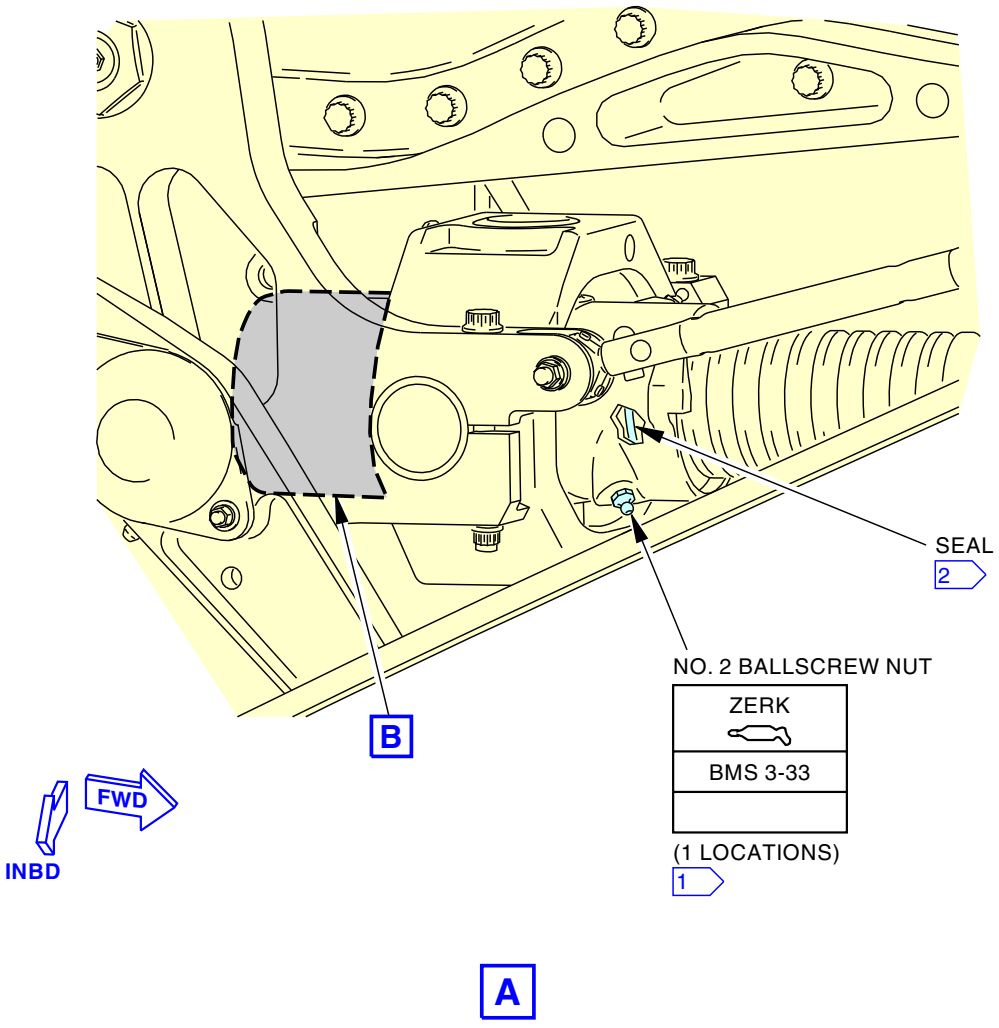
Outboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 602/27-51-42-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



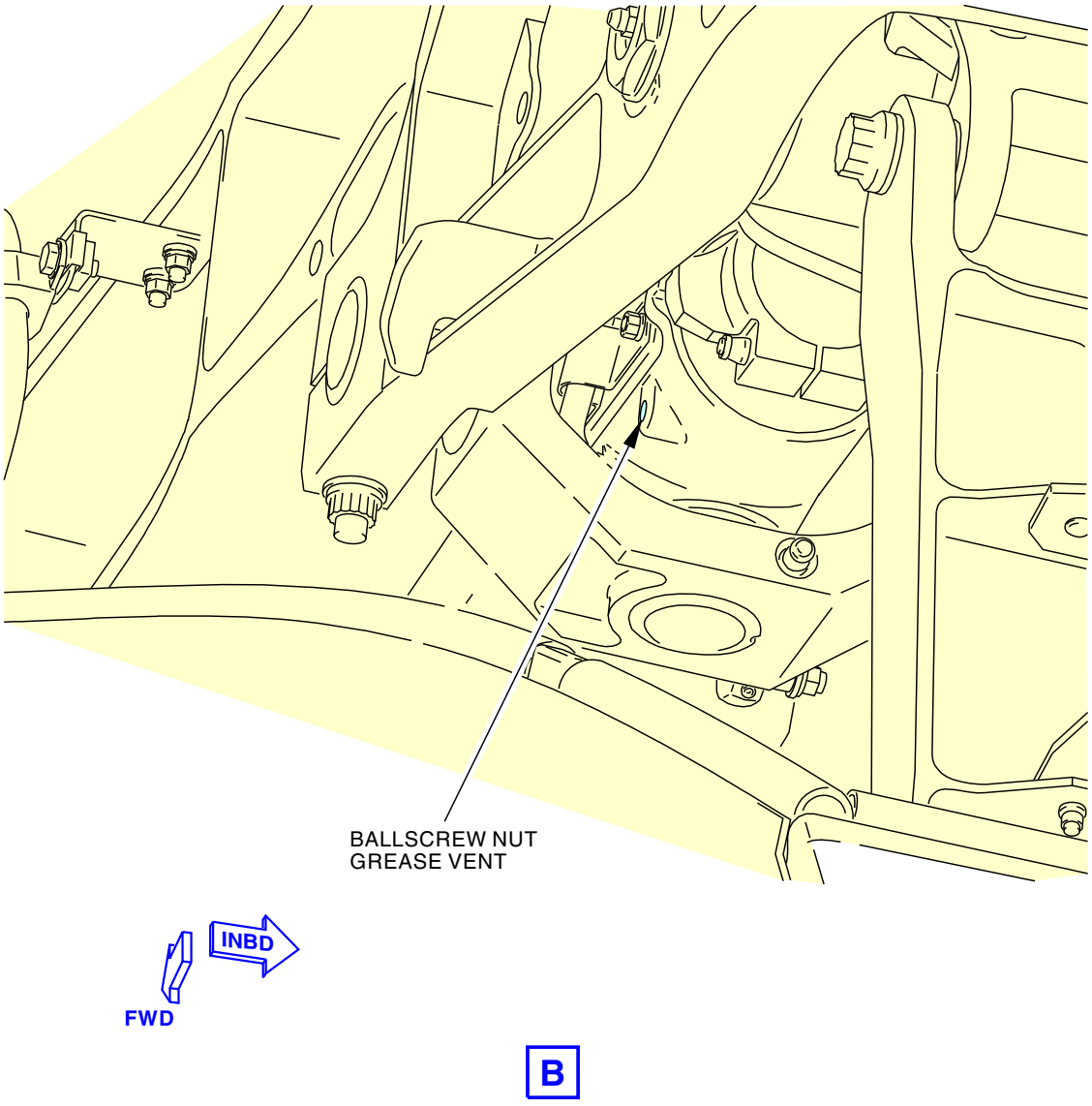
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

2 GREASE SHOULD NOT FREELY COME OUT THROUGH THE SEAL DURING LUBRICATION. IT IS ACCEPTABLE FOR A SMALL AMOUNT TO COME OUT.

2413027 S00061531718_V1

Outboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 602/27-51-42-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413028 S00061531719_V1

Outboard Flap Inboard Ballscrew Detailed Lubrication Inspection
Figure 602/27-51-42-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-42-200-802

5. Outboard Flap Outboard Ballscrew Detailed Lubrication Inspection

(Figure 603)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-42 P/B 401	OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G01043	Cloth - Lint-free	

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
567	Left Wing - Outboard Flap
644	Right Wing - Fairing Flap Support No. 8
667	Right Wing - Outboard Flap

D. Prepare for the Lubrication Inspection

SUBTASK 27-51-42-860-021

(1) Extend the trailing edge flaps to the 40-unit position, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-42-040-008

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Outboard Flap Outboard Ballscrew and Gimbal Lubrication

(Table 602)

SUBTASK 27-51-42-640-005

(1) This table supplies data for the subsequent lubrication and inspection steps:

Table 602/27-51-42-993-802 Outboard Flap Outboard Ballscrew and Gimbal Servicing

Item No.	Nomenclature	Lubricant	Method of Application	Number of Locations
-	No. 1 Ballscrew Nut (No. 8 Ballscrew Nut is Equivalent)	grease, D00633	Zerk	1

SUBTASK 27-51-42-640-006

(2) Do these steps for the ballscrew nut lubrication and inspection:

(a) Remove the old grease and dirt on and around the ballscrew nut and grease vent with a lint-free cloth, G01043 or equivalent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT USE GREASE GUN PRESSURE IN EXCESS OF 36 PSI (2.5 BAR). EXCESSIVE GREASE GUN NOZZLE PRESSURE AND FLOW RATE CAN DAMAGE THE SEALS.

(b) Lubricate the ballscrew nut with grease, D00633.

NOTE: The ballscrew nut has two grease fittings. It is only necessary to lubricate one of them.

1) Make sure that clean grease comes out from the grease vent.

NOTE: Clean grease must come out through the grease vent. This will make sure that the used grease has been flushed out.

a) If the clean grease does not comes out from the vent, then replace the ballscrew assembly on or before the next interval inspection (OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-42/401).

2) Make sure that grease does not freely come out through the ballscrew nut seal.

NOTE: It is acceptable for a small quantity of grease to come out through the ballscrew nut seal.

a) If the grease freely comes through the ballscrew nut seal, then replace the ballscrew assembly on or before the next interval inspection (OUTBOARD FLAP BALLSCREWS AND GIMBALS - REMOVAL/INSTALLATION, PAGEBLOCK 27-51-42/401)

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-42-440-009

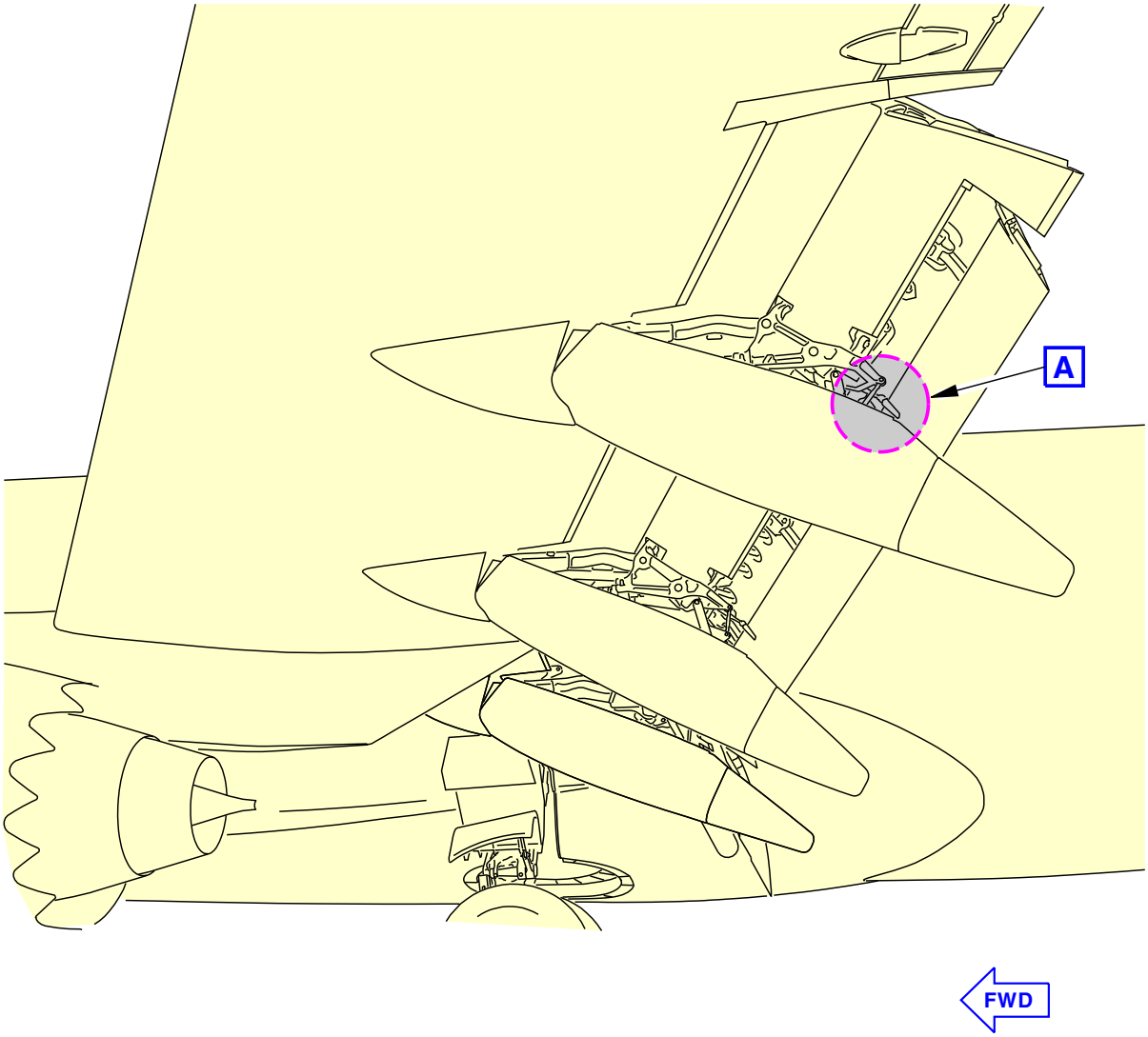
(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-42-860-022

(2) Retract the trailing edge flaps to the UP position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

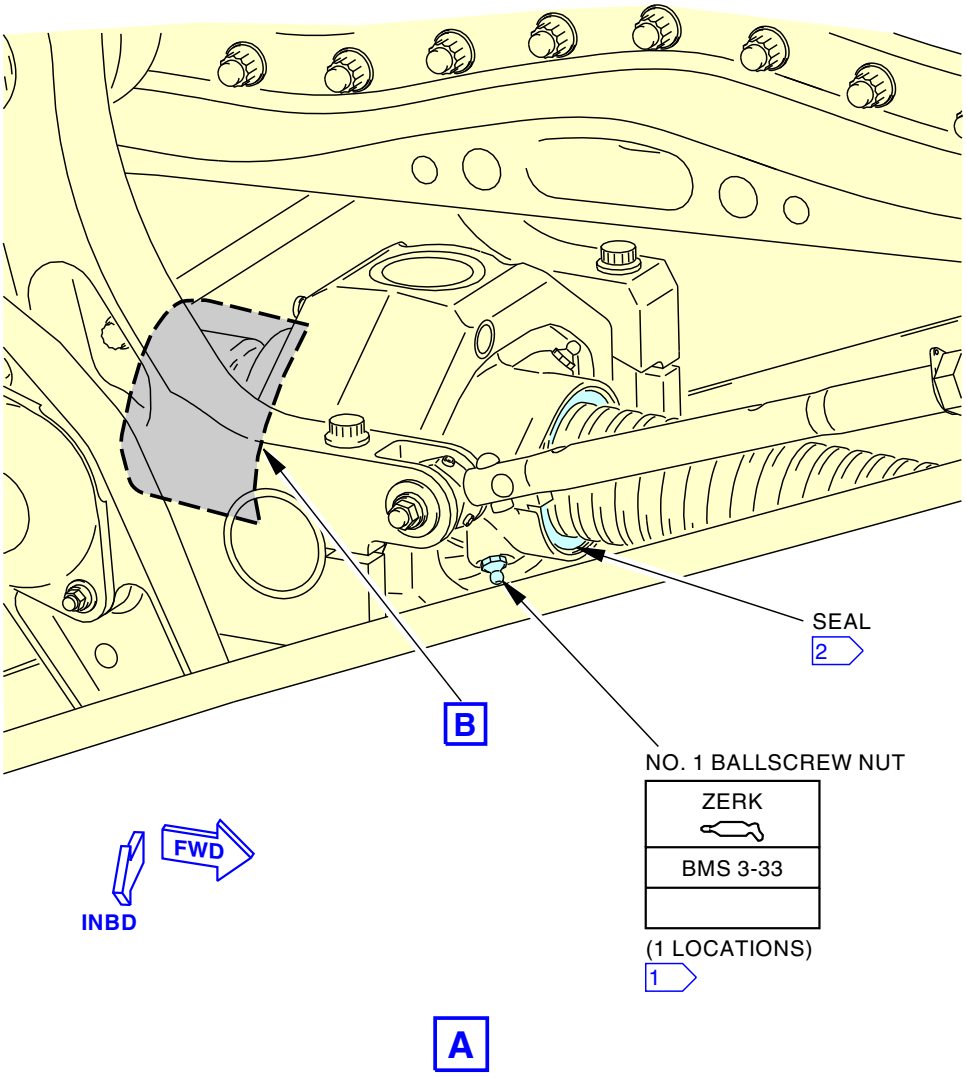
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413029 S00061531721_V1

Outboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 603/27-51-42-990-805 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



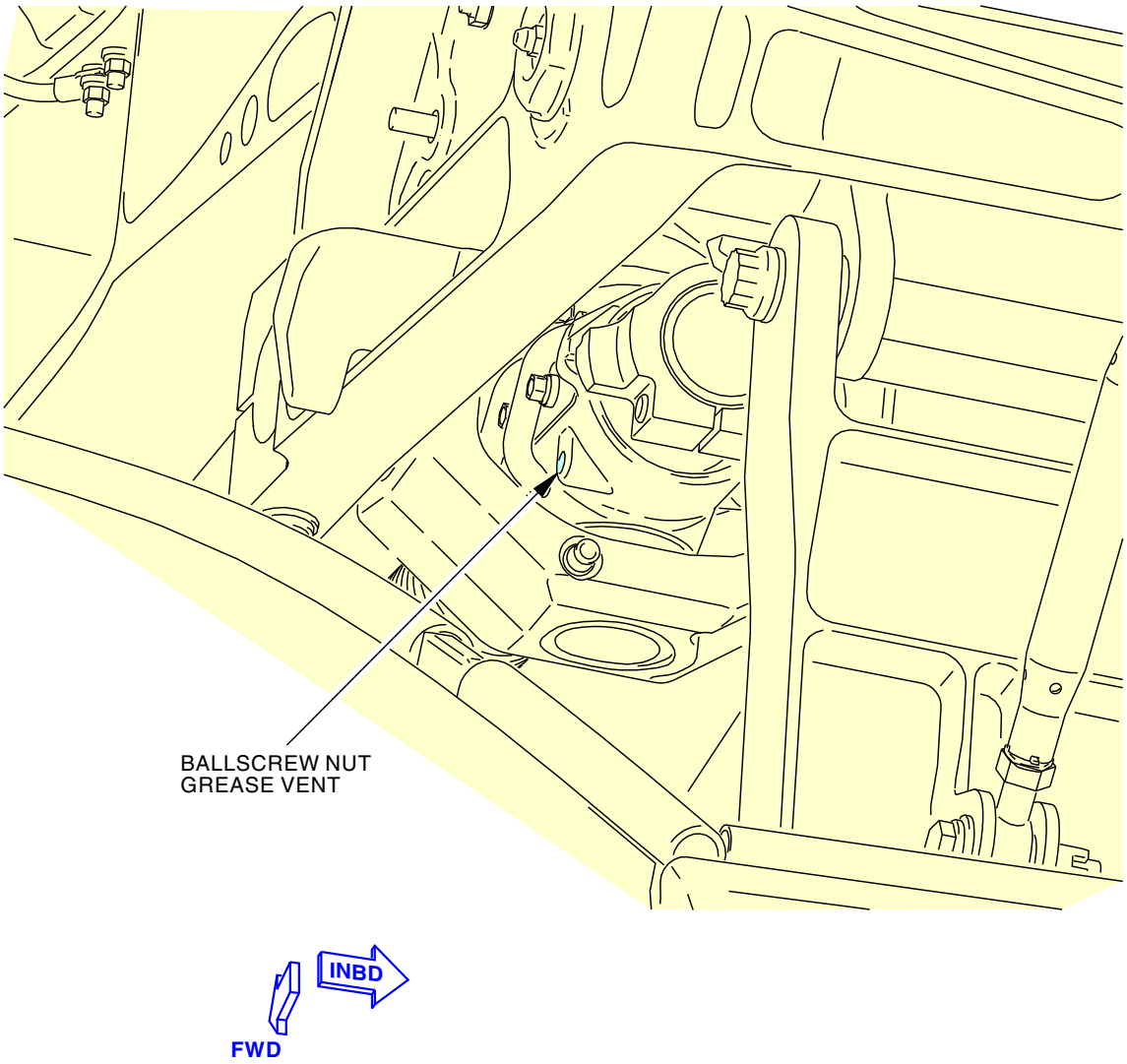
1 THE BALLSCREW NUT HAS TWO GREASE FITTINGS. IT IS ONLY NECESSARY TO GREASE ONE OF THEM.

2 GREASE SHOULD NOT FREELY COME OUT THROUGH THE SEAL DURING LUBRICATION. IT IS ACCEPTABLE FOR A SMALL AMOUNT TO COME OUT.

2413030 S00061531722_V1

Outboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 603/27-51-42-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413031 S00061531723_V1

Outboard Flap Outboard Ballscrew Detailed Lubrication Inspection
Figure 603/27-51-42-990-805 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP POWER DRIVE UNIT (PDU) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flap Power Drive Unit (PDU)

(2) An installation of the flap PDU

(3) A replacement of the flap PDU manual drive shearout

(4) A removal of the flap PDU seal

(5) An installation of the flap PDU seal.

TASK 27-51-51-000-801

2. Flap Power Drive Unit (PDU) Removal

(Figure 401)

A. General

(1) You can remove and install the flap power drive unit (PDU) with the hydraulic and electric motors either removed or installed. This task gives the instructions to remove the PDU with the hydraulic and electric motors installed.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Removal

SUBTASK 27-51-51-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-51-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-51-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-51-860-002

(4) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802).

F. Flap Power Drive Unit Removal

SUBTASK 27-51-51-860-003

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-51-020-001

(2) Disconnect the electrical connector [18] from the electric motor [19].

SUBTASK 27-51-51-020-002

(3) Disconnect the hydraulic line [1], hydraulic lines [69], and case drain line [20] from the hydraulic motor [22].

(a) Disconnect the hydraulic lines [1] and hydraulic lines [69].

(b) Install a caps/plugs, STD-14686, on hydraulic lines [1] and hydraulic lines [69].

(c) Disconnect the case drain line [20].

(d) Install a cap/plug, STD-14686, on the case drain line [20].

(e) Install a caps/plugs, STD-14686, in the ports on the hydraulic motor [22].

SUBTASK 27-51-51-020-003

(4) Remove the nut [17], washer [16], and screw [15] that attach the jumper wire [13] to the electrical connector [18].

SUBTASK 27-51-51-010-001

(5) Remove the lower pan [25] from the flap control unit [23].

(a) Remove the screws [24] that attach the lower pan [25] to the flap control unit [23].

(b) Remove the lower pan [25].

SUBTASK 27-51-51-480-002

(6) Install the flap actuator rig pin, from the rigging pin kit, SPL-1585, through the cam follower arm [27] and valve cam [26].

(a) Use a rig pin, F70207-116, SPL-12421.

SUBTASK 27-51-51-480-003

(7) Install the clamp set, SPL-1726, on the torque tubes [12] on both sides of the flap power drive unit [21].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-51-020-004

(8) Disconnect the torque tubes [12] from the flap power drive unit [21].

(a) Remove the lockwire from the screws [35].

(b) Remove the screws [35] that attach the coupling sleeves [36] to the splined couplings [37] on the torque tubes [12].

(c) Move the coupling sleeves [36] off the splined couplings [37].

SUBTASK 27-51-51-020-005

(9) Disconnect the cables [6] from the cables [2] on the flap control unit [23].

NOTE: The lower cables are WFFA and upper cables are WFFB.

(a) Install a label on the cables [2] to identify them.

(b) Remove the locking clips [3] from the turnbuckles [4].

(c) Disconnect the turnbuckles [4].

SUBTASK 27-51-51-020-006

(10) Remove the flap power drive unit [21].

(a) Remove the nuts [10], washers [9], washers [8], bolts [14], and bolt [7] that attach the flap power drive unit [21] to the structure.

(b) Remove the flap power drive unit [21].

SUBTASK 27-51-51-020-007

(11) If it is necessary, remove the cables [6] from the flap power drive unit [21].

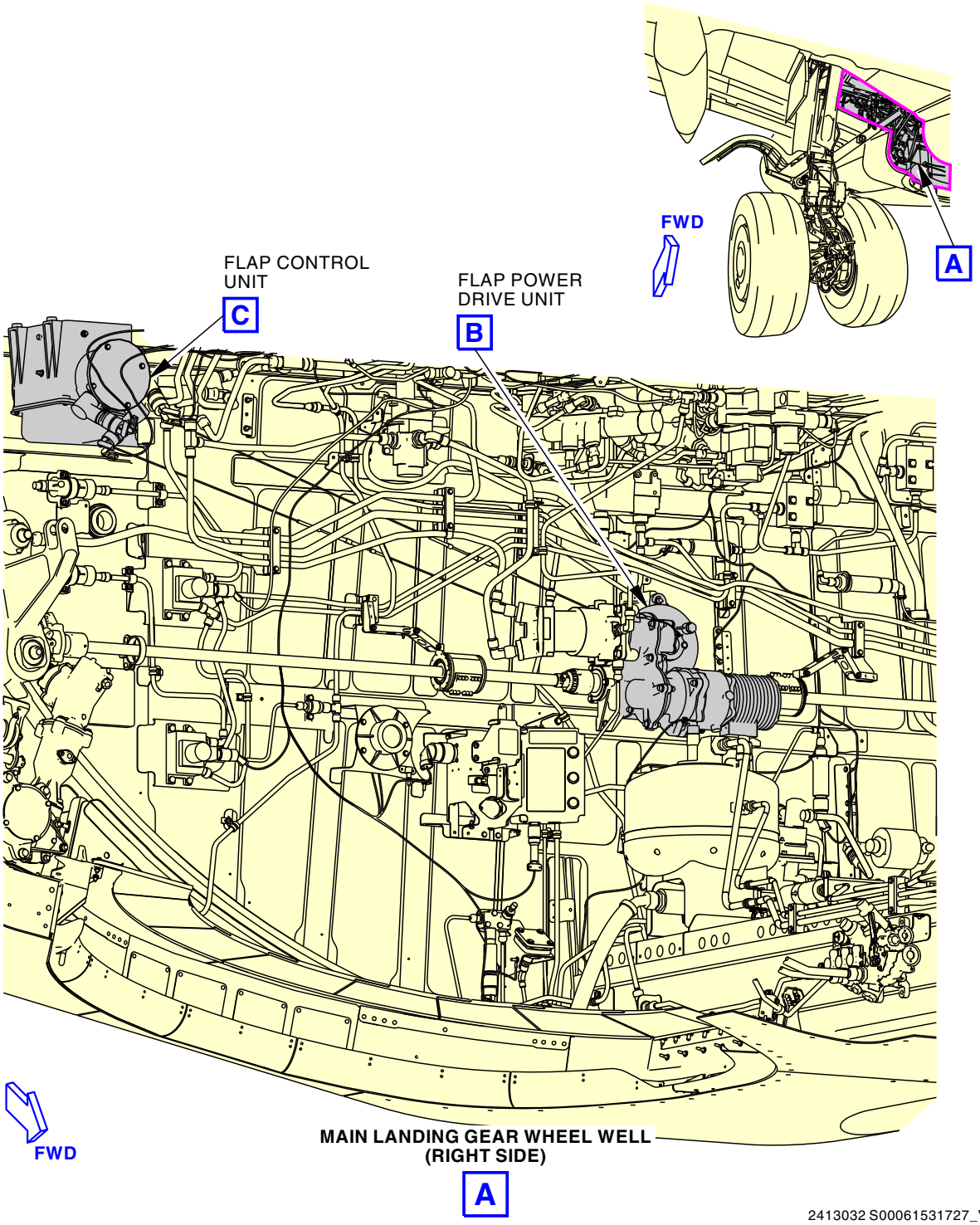
(a) Remove and discard the cotter pins [33] that attach the cable [6] to the cable drum [34].

(b) Manually turn the output shaft one or more revolutions in the each direction.

(c) Remove the cables [6] from the cable drum [34].

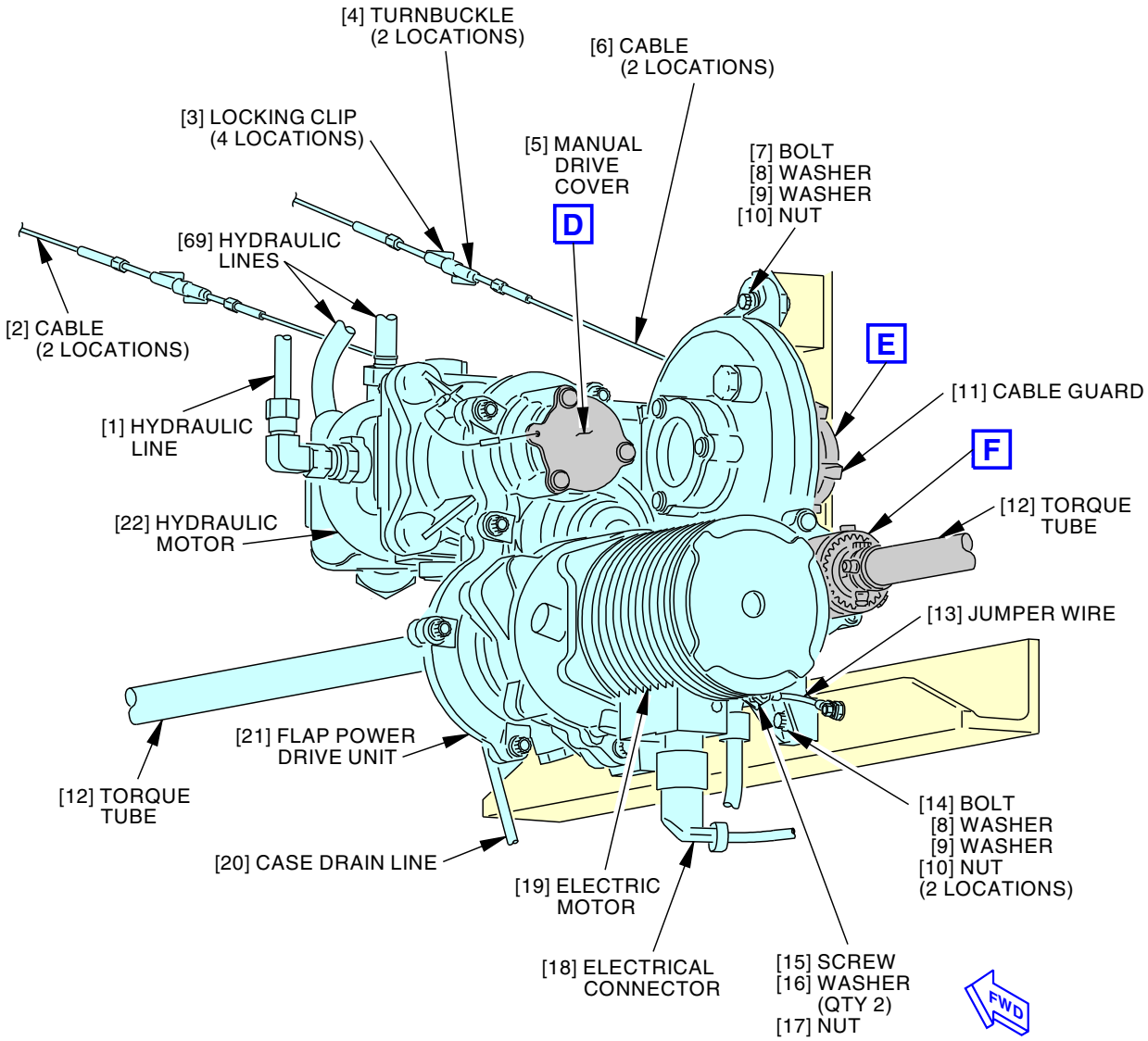
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Power Drive Unit Installation
Figure 401/27-51-51-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



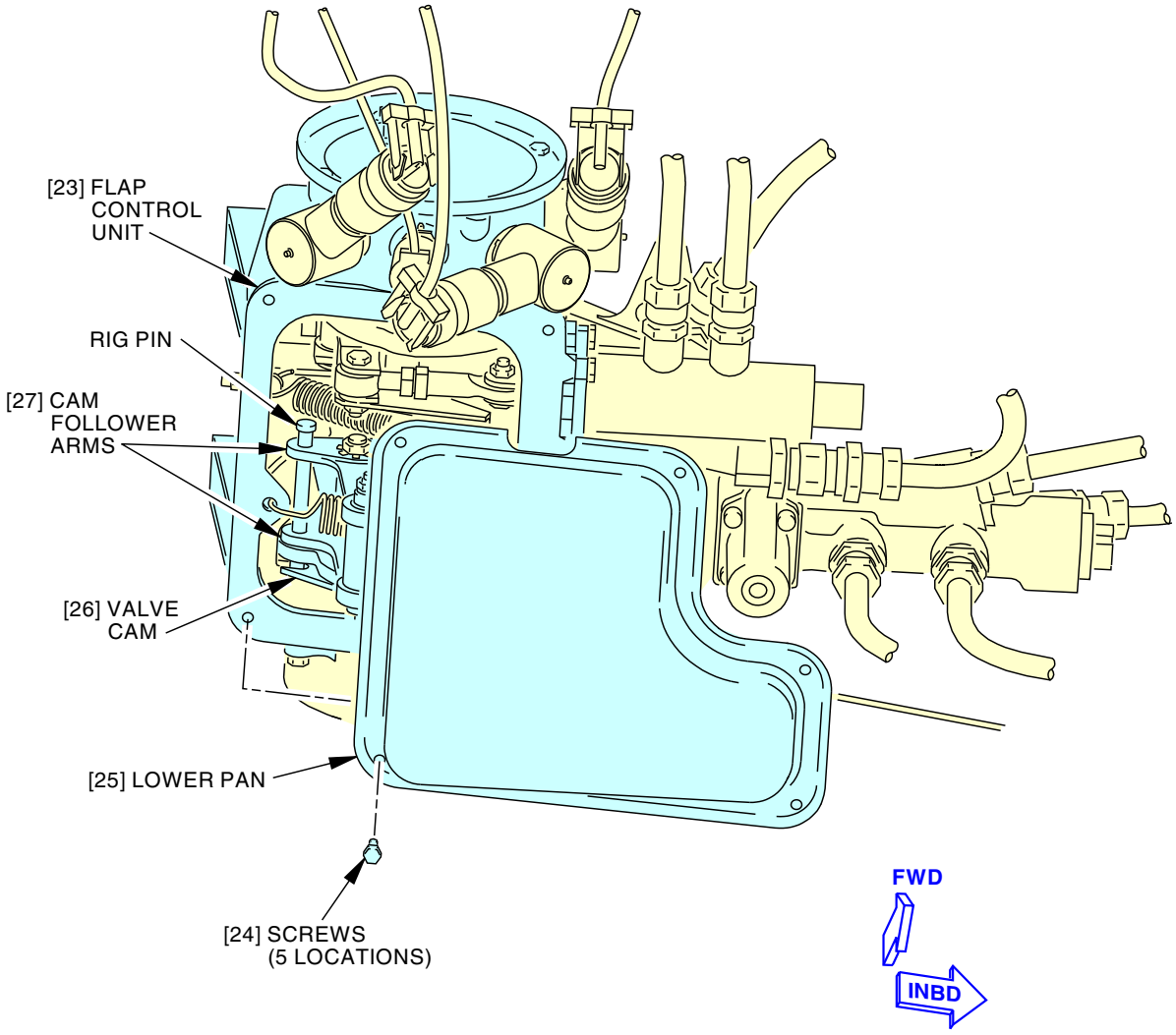
FLAP POWER DRIVE UNIT

B

2413033 S00061531728_V2

Flap Power Drive Unit Installation
Figure 401/27-51-51-990-801 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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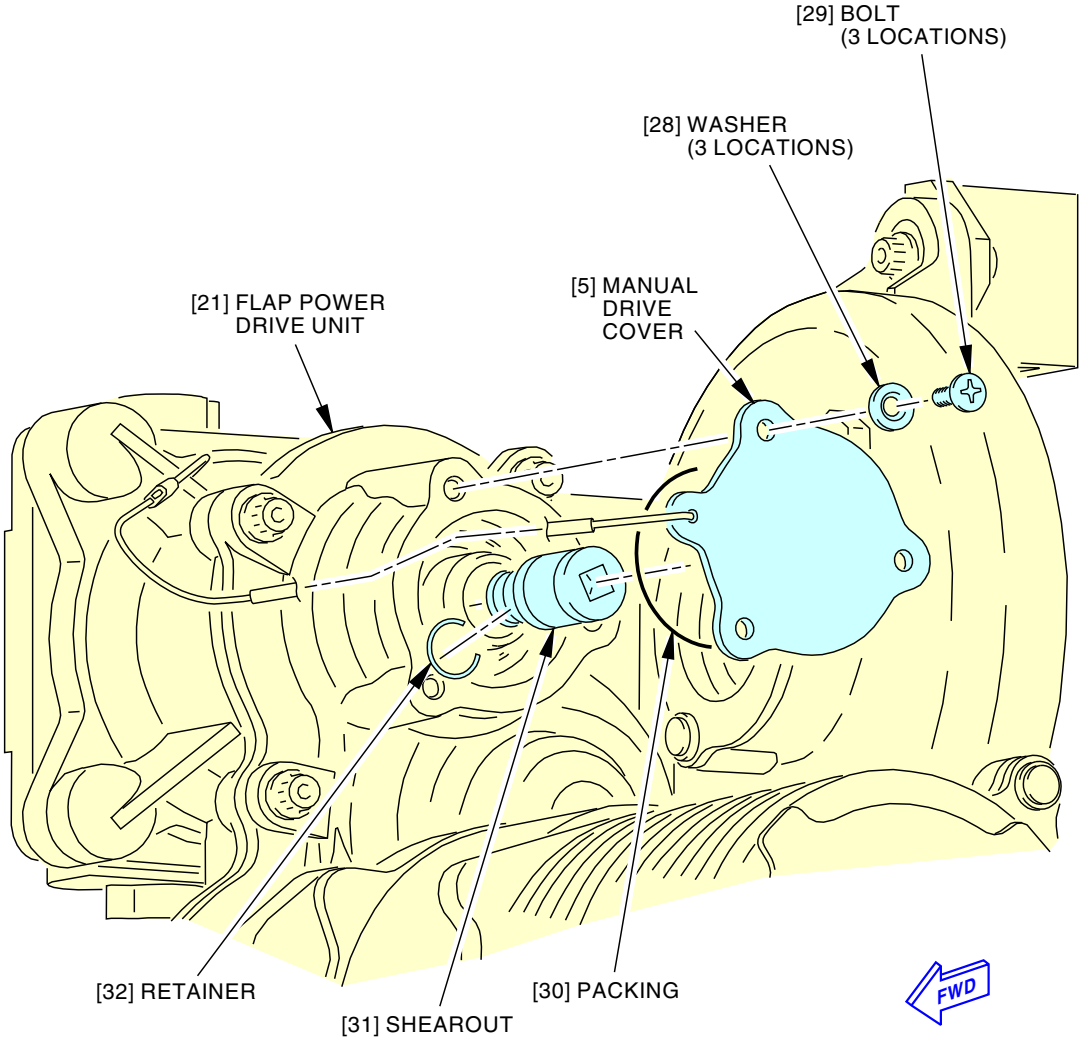
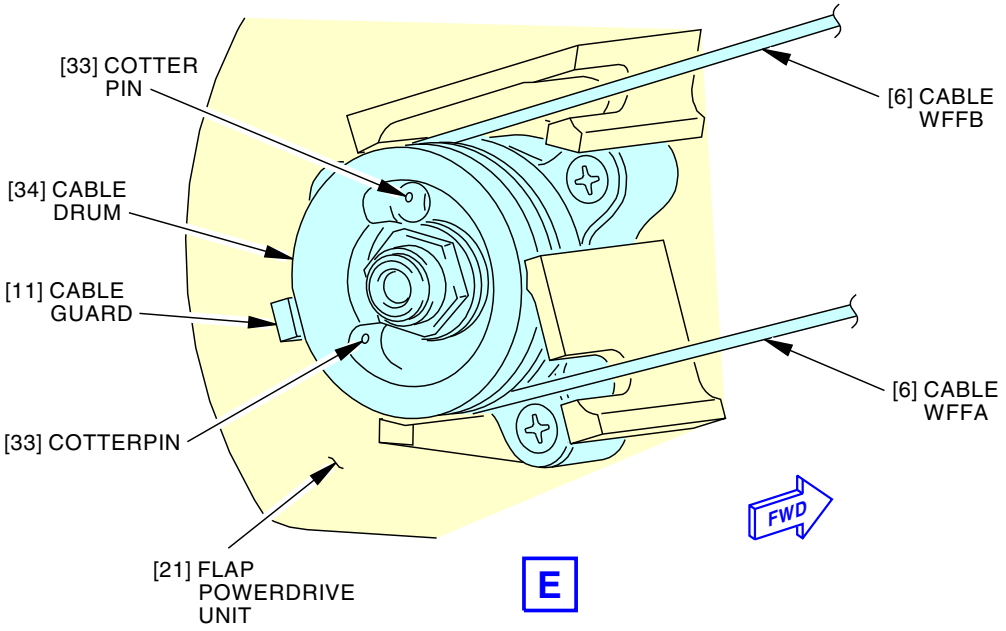
Flap Power Drive Unit Installation
Figure 401/27-51-51-990-801 (Sheet 3 of 5)

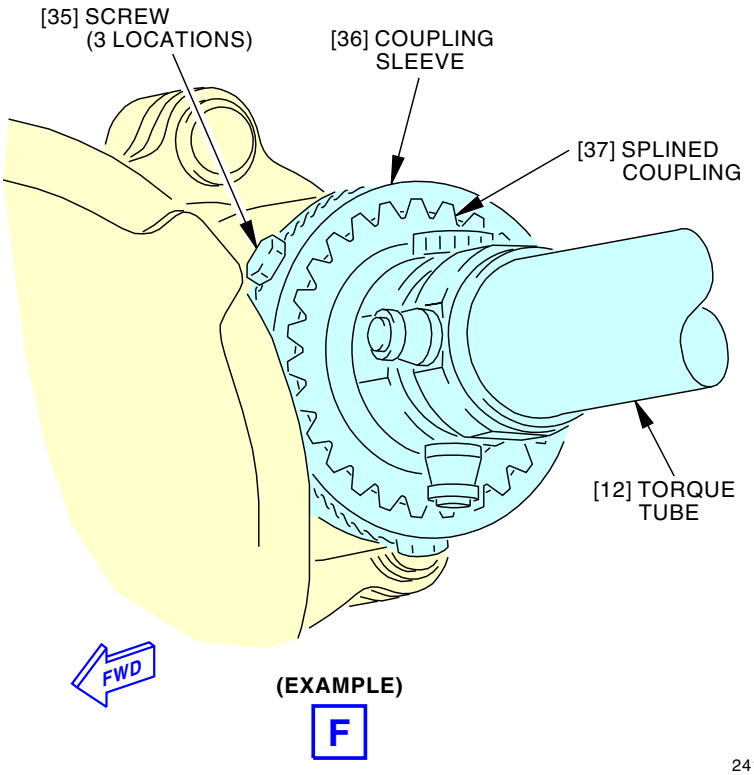
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Power Drive Unit Installation
Figure 401/27-51-51-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Flap Power Drive Unit Installation
Figure 401/27-51-51-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-51-400-801

3. Flap Power Drive Unit (PDU) Installation

(Figure 401)

A. General

(1) You can remove and install the flap Power Drive Unit (PDU) with the hydraulic and electric motors either removed or installed. This task gives the instructions to install the PDU with the hydraulic and electric motors installed.

B. References

Reference	Title
12-22-51-610-801	Trailing Edge Flap Power Drive Unit Servicing (P/B 301)
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-801	Trailing Edge Flap Control System Adjustment and Test (P/B 501)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-51-720-801	Flap Power Drive Unit Functional Test (P/B 501)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
COM-1553	Tensiometer - Cable, Low Tension (200 lbs and below) Part #: 102-03108 Supplier: 21844 Part #: 102-03120 Supplier: 21844 Part #: ACM-200 Supplier: 13331 Part #: ACX-250-1 Supplier: 13331 Part #: T60-1001-C8-1A Supplier: 0N8U4
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

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(Continued)

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Locking clip	27-51-00-21-010	SIA ALL
21	Flap power drive unit	27-51-51-01-055	SIA ALL
33	Cotter pin	27-51-51-10-328	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Flap Power Drive Unit Installation

SUBTASK 27-51-51-860-005

(1) Make sure that the flaps are in the retracted position.

SUBTASK 27-51-51-420-001

(2) If the cables [6] are not installed, install the cables [6] on the flap power drive unit [21], do these steps:

(a) Put the cables [6] in their position on the cable drum [34].

(b) Manually turn the output shaft of one or more revolutions in the each direction.

(c) Install the new cotter pins [33] to attach the cable [6] to the cable drum [34].

SUBTASK 27-51-51-820-001

(3) Make sure that the cables [6] and cable drum [34] are in the correct position, do these steps:

(a) Turn the flap power drive unit [21] until the black rig marks on the cable drum [34] align with the white cable guard [11] on the flap power drive unit [21].

(b) Make sure that the lower cable [6] wraps around the cable drum [34] 2 to 2 1/2 turns.

NOTE: This is cable WFFA.

(c) Make sure that the upper cable [6] wraps around the cable drum [34] 0 to 1/2 turns.

NOTE: This is cable WFFB.

SUBTASK 27-51-51-420-002

(4) Install the flap power drive unit [21], do these steps:

(a) Put the flap power drive unit [21] in its position on the structure.

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WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 (recommended), to the shank and threads of the bolt [7] and bolts [14].

(c) Install the bolt [7], bolts [14], washers [8], washers [9], and nuts [10] to attach the flap power drive unit [21].

SUBTASK 27-51-51-420-003

(5) Connect the cables [6] to the cables [2] for the flap control unit [23], do these steps:

(a) Connect the cables [2] and cables [6] at the turnbuckles [4].

(b) Remove the labels from the cables [2].

(c) Tighten the cables [2] to 125 ±10 lbf (556 ±45 N).

NOTE: This is an initial cable tension. The cables will be adjusted to their final tension during the trailing edge flap control system adjustment.

1) Use the low tension cable tensiometer, COM-1553, to measure the tension of the cables [2].

(d) Install the locking clips [3] on the turnbuckles [4].

SUBTASK 27-51-51-420-004

(6) Connect the torque tubes [12] to the flap power drive unit [21], do these steps:

NOTE: Do not turn the torque tubes more than 5 spline teeth, in either direction, to the nearest position where the bolt holes align at the torque tube coupling connection. Do not turn the PDU at this step.

(a) Apply grease, D00633, to the coupling sleeve [36].

(b) Put the splined couplings [37] in the coupling sleeves [36].

(c) Install the screws [35] to attach the coupling sleeves [36] to the splined couplings [37].

(d) Install MS20995C32 lockwire, G01048, on the screws [35].

SUBTASK 27-51-51-420-005

(7) Connect the jumper wire [13] for the electric motor [19], do these steps:

(a) Install the screw [15], washers [16], and nut [17] that attach the jumper wire [13].

(b) Measure the electrical bonding resistance between the jumper wire [13] and electric motor [19] (SWPM 20-20-00).

NOTE: When you measure the resistance, the probe can be closer than 0.25 in. (6.4 mm) to the jumper terminal.

1) Use an intrinsically safe approved bonding meter, COM-1550.

2) Make sure that the resistance is less than 0.0004 ohm (0.4 milliohm).

(c) Put a fillet seal of sealant, A02315, or sealant, A00247, around the two ends of the screw [15].

SUBTASK 27-51-51-080-001

(8) Remove the clamp set, SPL-1726, from the torque tubes [12].

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SUBTASK 27-51-51-420-006

(9) Connect the hydraulic line [1], hydraulic lines [69], and case drain line [20] to the hydraulic motor [22], do these steps:

(a) Remove the caps/plugs, STD-14686, from the ports on the hydraulic motor [22].

(b) Remove the caps/plugs, STD-14686, from the hydraulic line [1] and hydraulic lines [69].

(c) Connect the hydraulic line [1] and hydraulic lines [69] to the hydraulic motor [22].

(d) Remove the cap from the case drain line [20].

(e) Connect the case drain line [20] to the flap power drive unit [21].

(f) Tighten the B-nut on hydraulic line [1] to 270 ±14 in-lb (31 ±2 N·m).

(g) Tighten the B-nuts on hydraulic lines [69] to 500 ±25 in-lb (56 ±3 N·m).

SUBTASK 27-51-51-420-007

(10) Connect the electrical connector [18] to the electric motor [19].

SUBTASK 27-51-51-610-002

(11) Do this task: Trailing Edge Flap Power Drive Unit Servicing, TASK 12-22-51-610-801.

SUBTASK 27-51-51-820-002

(12) Do this task: Trailing Edge Flap Control System Adjustment and Test, TASK 27-51-00-820-801.

NOTE: This adjustment will include the final adjustment of the cables WFFA and WFFB.

SUBTASK 27-51-51-080-002

(13) Remove the rig pin, F70207-116, SPL-12421, from the flap control unit [23].

SUBTASK 27-51-51-820-003

(14) Do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-51-640-001

(15) Lubricate the torque tube couplings (TASK 12-22-51-640-801).

SUBTASK 27-51-51-410-001

(16) Install the lower pan [25] on the flap control unit [23], do these steps:

(a) Put the lower pan [25] in its location on the flap control unit [23].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply a layer of Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [24].

(c) Install the screws [24] to attach the lower pan [25].

SUBTASK 27-51-51-860-006

(17) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-51-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-51-720-001

(2) Do this task: Flap Power Drive Unit Functional Test, TASK 27-51-51-720-801.

——— END OF TASK ———

TASK 27-51-51-960-801

4. Flap Power Drive Unit Manual Drive Shearout Replacement

(Figure 401)

A. General

(1) The manual drive input on the flap power drive unit has a shearout feature. The shearout is designed to break if too much torque is applied to the manual drive.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1281	Screw - No. 6 (0.1380-32 UNC-2A) x 2 Inch Minimum Length

D. Consumable Materials

Reference	Description	Specification
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Flap power drive unit	27-51-51-01-055	SIA ALL
30	Packing	27-51-51-10-115	SIA ALL
31	Shearout	27-51-51-10-130	SIA ALL
32	Retainer	27-51-51-10-125	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Prepare for the Removal

SUBTASK 27-51-51-040-002

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-51-860-007

(2) Remove system B hydraulic power (TASK 29-11-00-860-805).

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H. Flap Power Drive Unit Manual Drive Shearout Replacement

SUBTASK 27-51-51-010-002

(1) Remove the manual drive cover [5] from the flap power drive unit [21]:

(a) Remove the bolts [29] and washers [28] that attach the manual drive cover [5].

(b) Remove the manual drive cover [5] from the flap power drive unit [21].

SUBTASK 27-51-51-020-008

(2) Remove the shearout [31] from the flap power drive unit [21]:

(a) Install a screw, STD-1281, in the threaded part of the shearout [31].

(b) Pull on the screw, STD-1281, to remove the shearout [31] with the retainer [32] from the flap power drive unit [21].

NOTE: It will take approximately 30 lbf (133 N) to remove the shearout [31].

SUBTASK 27-51-51-420-008

(3) Install a new shearout [31] in the flap power drive unit [21]:

(a) Put a new retainer [32] on the shearout [31].

(b) Apply grease, D00633, to the splines on the shearout [31].

(c) Use a 3/8-inch square drive to push the shearout [31] in the flap power drive unit [21] until you feel the retainer [32] engage.

SUBTASK 27-51-51-710-001

(4) Use the manual drive to extend and retract the trailing edge flaps (TASK 27-51-00-980-801).

SUBTASK 27-51-51-410-002

(5) Install the manual drive cover [5] on the flap power drive unit [21]:

(a) Apply fluid, D00467, to the new packing [30] on the manual drive cover [5].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the mating surface of the manual drive cover [5] and the flap power drive unit [21].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [29].

(d) Put the manual drive cover [5] and the new packing [30] on the flap power drive unit [21].

(e) Install the bolts [29] and washers [28] to attach the manual drive cover [5].

SUBTASK 27-51-51-440-002

(6) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

END OF TASK

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TASK 27-51-51-000-802

5. Flap Power Drive Unit (PDU) Seal Removal

(Figure 401, Figure 402)

A. General

(1) This procedure is applicable to the input and output seals on the Power Drive Unit (PDU) at the attachment of the hydraulic motor, electric motor, and torque tubes.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-52-000-801	Flap Hydraulic Motor Removal (P/B 401)
27-51-53-000-801	Flap Electric Motor Removal (P/B 401)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205
SPL-5384	Wrench - Coupling Sleeve Flap Actuation Part #: C27041-1 Supplier: 81205
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Removal

SUBTASK 27-51-51-480-004

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-51-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-51-860-008

(3) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802).

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F. Input Seal Removal

SUBTASK 27-51-51-010-003

(1) To replace the seal [53] for the hydraulic motor [22], remove the hydraulic motor [22] from the flap power drive unit [21] (TASK 27-51-52-000-801).

SUBTASK 27-51-51-010-004

(2) To replace the seal [53] for the electric motor [19], remove the electric motor [19] from the flap power drive unit [21] (TASK 27-51-53-000-801).

SUBTASK 27-51-51-680-001

(3) Drain the fluid from the flap power drive unit [21]:

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the drain port to catch the fluid.

(b) Remove the lockwire, drain plug [51], and packing [52] from the drain port.

1) Discard the packing [52].

(c) Wait for the fluid to drain from the flap power drive unit [21].

SUBTASK 27-51-51-020-009

(4) Remove and discard the seal [53] from the flap power drive unit [21]:

(a) Remove the screws [55] and retainer [54] from the shaft [68] on the flap power drive unit [21].

CAUTION USE CAUTION WHEN YOU REMOVE THE SEAL FROM THE POWER DRIVE UNIT. YOU CAN SCRATCH THE PINION GEAR SHAFT, OR THE PDU HOUSING. SCRATCHES, OR OTHER DAMAGE CAN CAUSE FLUID LEAKS THROUGH THE NEW SEAL.

(b) Carefully remove and discard the seal [53] from the flap power drive unit [21].

G. Output Seal Removal

SUBTASK 27-51-51-000-001

(1) To replace the seal [56] for the output shaft, remove the torque tube [12] from the flap power drive unit [21]:

(a) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(b) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

(c) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

(d) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802 or TASK 29-09-00-860-802).

(e) Install the clamp set, SPL-1726, on the torque tubes [12] on both sides of the flap power drive unit [21].

(f) Disconnect the torque tubes [12] from the flap power drive unit [21]:

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1) Remove the lockwire and screws [35] that attach the coupling sleeves [36] to the splined couplings [37] on the torque tubes [12].

2) Move the coupling sleeves [36] off the splined couplings [37].

SUBTASK 27-51-51-680-002

(2) Drain the fluid from the flap power drive unit [21]:

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203, below the drain port to catch the fluid.

(b) Remove the drain plug [51] and packing [52] from the drain port.

1) Discard the packing [52].

(c) Wait for the fluid to drain from the flap power drive unit [21].

SUBTASK 27-51-51-020-010

(3) Remove and discard the seals [56] from the flap power drive unit [21]:

(a) Remove the coupling sleeves [65]:

1) Use the coupling sleeve wrench, SPL-5384, to hold the coupling sleeves [65] while you remove the bolts [67] and packings [66].

2) Remove the coupling seals [63], coupling halves [64], coupling sleeves [65], and seal shields [62].

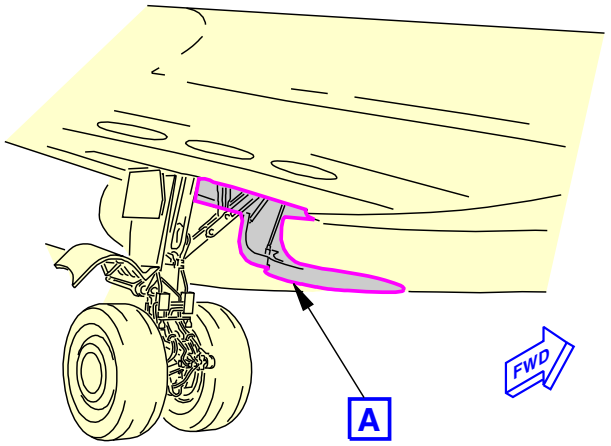
3) Remove the bolts [61], washers [60], retainers [59], and seal rings [57] from the flap power drive unit [21].

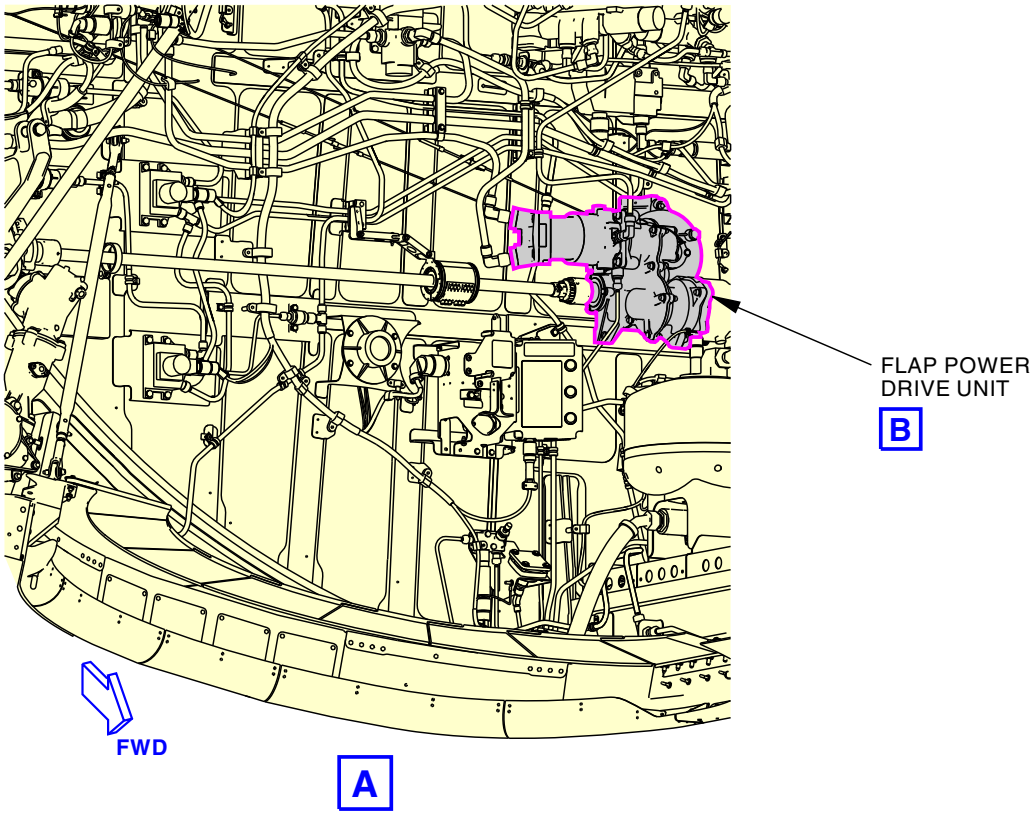
CAUTION USE SOFT TOOLS TO REMOVE THE SEALS OR SEAL RINGS FROM THE COMPONENT. HARD TOOLS CAN CAUSE DAMAGE TO THE COMPONENT MATING SURFACES AND LEAKAGE CAN OCCUR.

4) Remove and discard the seals [56] and packings [58] from the flap power drive unit [21].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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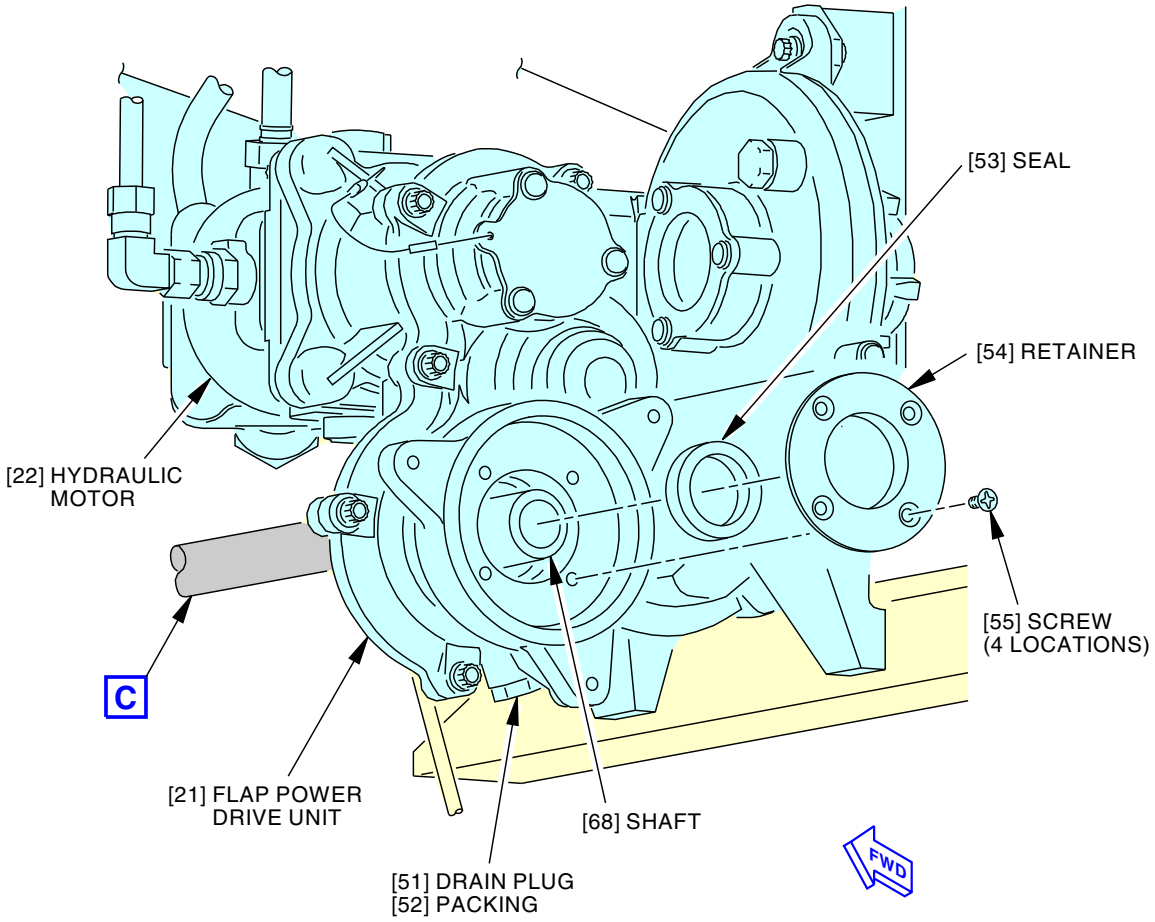
Flap Power Drive Unit Seal Installation
Figure 402/27-51-51-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP POWER DRIVE UNIT (MOTOR REMOVED)
(RIGHT SIDE IS SHOWN, LEFT SIDE IS EQUIVALENT)

B

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Flap Power Drive Unit Seal Installation
Figure 402/27-51-51-990-802 (Sheet 2 of 3)

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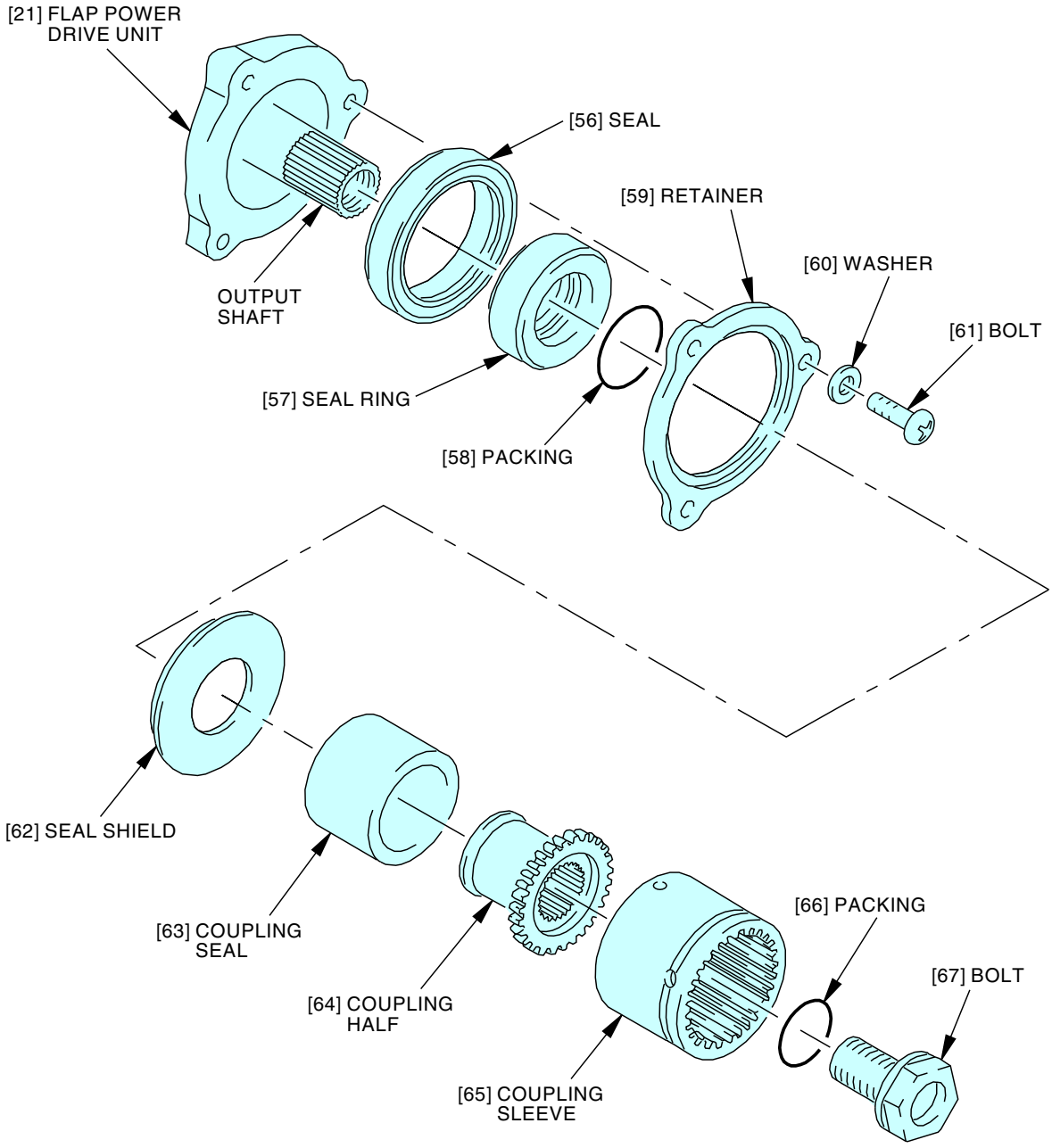

FLAP POWER DRIVE UNIT (TORQUE TUBE REMOVED)
(RIGHT SIDE IS SHOWN, LEFT SIDE IS EQUIVALENT)

C

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Flap Power Drive Unit Seal Installation
Figure 402/27-51-51-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-51-400-802

6. Flap Power Drive Unit (PDU) Seal Installation

(Figure 402)

A. General

(1) This procedure is applicable to the input and output seals on the power drive unit (PDU) at the attachment of the hydraulic motor, the electric motor, and the output torque tubes.

B. References

Reference	Title
12-22-51-610-801	Trailing Edge Flap Power Drive Unit Servicing (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-52-400-801	Flap Hydraulic Motor Installation (P/B 401)
27-51-53-400-801	Flap Electric Motor Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-5384	Wrench - Coupling Sleeve Flap Actuation Part #: C27041-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00070	Fluid - Hydraulic, Petroleum Base	MIL-PRF-5606 (Replaces MIL-H-5606)
D00467	Fluid - Landing Gear Shock Strut	BMS3-32 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
21	Flap power drive unit	27-51-51-01-055	SIA ALL
52	Packing	27-51-51-10-440	SIA ALL
53	Seal	27-51-51-10-120	SIA ALL
56	Seal	27-51-51-10-080	SIA ALL
58	Packing	27-51-51-10-075	SIA ALL
66	Packing	27-51-51-10-030	SIA ALL

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F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Input Seal Installation

SUBTASK 27-51-51-020-011

(1) Install the new seal [53] on the flap power drive unit [21]:

(a) Make sure that the new seal [53] and the mating surfaces on the flap power drive unit [21] are clean.

(b) Lubricate the new new seal [53] and the mating surfaces on the flap power drive unit [21] with fluid, D00070.

(c) Install the new seal [53] in the flap power drive unit [21].

NOTE: You can use the retainer [54] to protect the seal lip and to get the correct seal depth.

1) Make sure that you protect the seal lip of the new seal [53] when it is installed.

NOTE: While the new seal [53] is being installed, the splines on the shaft can cause damage to the new seal [53].

2) Insert the new seal [53] to a depth of 0.32 in. (8.13 mm) - 0.33 in. (8.38 mm).

(d) To install the plain retainer [54], do these steps:

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

1) Apply a layer of Cor-Ban 27L Compound, G50237 to the flange of the retainer [54] and to the shank and threads of the screws [55].

2) Install the retainer [54] and the screws [55] on the flap power drive unit [21].

(e) To install the retainer [54] with the excluder seal (and O-ring), do these steps:

1) Apply a layer of corrosion inhibiting material, G50136 to the flange of the retainer [54] and to the shank and threads of the screws [55].

2) Make sure that the seal bore in the flap power drive unit [21] is clean.

3) Lubricate the seal bore in the flap power drive unit [21] with Christo-lube MCG111 grease, D50011.

4) Lubricate the excluder seal lips (and O-ring) on the retainer [54] with Christo-lube MCG111 grease, D50011.

(f) Install the retainer [54] and the screws [55] on the flap power drive unit [21].

SUBTASK 27-51-51-410-003

(2) If you removed the electric motor [19], do this task: Flap Electric Motor Installation, TASK 27-51-53-400-801.

SUBTASK 27-51-51-410-004

(3) If you removed the hydraulic motor [22], do this task: Flap Hydraulic Motor Installation, TASK 27-51-52-400-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-51-680-003

(4) Install the drain plug [51] in the flap power drive unit [21]:

(a) Lubricate the new new packing [52] with fluid, D00467.

(b) Install the drain plug [51] and the new packing [52] in the drain port.

(c) Tighten the drain plug [51] to 110 in-lb (12.43 N·m) - 130 in-lb (14.69 N·m) more than the run-on torque.

(d) Install lockwire on the drain plug [51].

SUBTASK 27-51-51-610-001

(5) Fill the flap power drive unit [21] with fluid, D00467 (TASK 12-22-51-610-801).

SUBTASK 27-51-51-790-001

(6) Make sure that there are no hydraulic leaks from the flap power drive unit [21]:

(a) Do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Operate the flaps full up to full down a minimum of 3 cycles while you do a check for leaks from the new PDU seal.

H. Output Seal Installation

SUBTASK 27-51-51-420-009

(1) Install the new seal [56] on the flap power drive unit [21]:

(a) Make sure that the new seal [56] and the mating surfaces on the flap power drive unit [21] are clean.

(b) Lubricate the new packing [58] with fluid, D00467.

(c) Install the new packing [58] in the seal ring [57].

(d) Install the seal ring [57] and the new packing [58] on the output shaft of the flap power drive unit [21].

(e) Lubricate the new seal [56] and the mating surfaces on the flap power drive unit [21] with fluid, D00070.

(f) Install the new seal [56] in the flap power drive unit [21].

NOTE: You can use the retainer [59] to protect the seal lip and to get the correct seal depth.

(g) Insert the new seal [56] to a depth of 0.17 in. (4.32 mm) - 0.18 in. (4.57 mm).

SUBTASK 27-51-51-410-005

(2) Install the coupling sleeve [65] on the flap power drive unit [21]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the flange of the retainer [59] and to the shank and threads of the bolts [61].

(b) Install the retainer [59], washers [60], and bolts [61] on the flap power drive unit [21]

(c) Fill the space between the seal ring [57] and retainer [59] with grease, D00633.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the seal shield [62], flat side outboard, on the retainer [59].

(e) Install the coupling seal [63] on the coupling half [64].

(f) Apply grease, D00633, to the splines of the coupling sleeve [65].

(g) Install the coupling half [64] on the flap power drive unit [21].

(h) Lubricate the new packing [66] on the bolt [67] with grease, D00633.

(i) Apply grease, D00633, under the head of the bolt [67].

(j) Install the bolt [67] and the new packing [66] in the output shaft of the flap power drive unit [21].

(k) Use the coupling sleeve wrench, SPL-5384, to hold the coupling sleeve [65] and tighten the bolt [67] to 600 in-lb (67.79 N·m) - 720 in-lb (81.35 N·m) more than the run-on torque.

SUBTASK 27-51-51-680-004

(3) Install the drain plug [51] in the flap power drive unit [21]:

(a) Lubricate the new new packing [52] with fluid, D00467.

(b) Install the drain plug [51] and the new packing [52] in the drain port.

(c) Tighten the drain plug [51] to 110 in-lb (12.43 N·m) - 130 in-lb (14.69 N·m) more than the run-on torque.

(d) Install lockwire on the drain plug [51].

SUBTASK 27-51-51-610-003

(4) Fill the flap power drive unit [21] with fluid, D00467 (TASK 12-22-51-610-801).

SUBTASK 27-51-51-790-002

(5) Make sure that there are no hydraulic leaks from the flap power drive unit [21]:

(a) Do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(b) Operate the flaps full up to full down a minimum of 3 cycles while you do a check for leaks from the new PDU seal.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-51-440-003

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP POWER DRIVE UNIT - ADJUSTMENT/TEST

1. General

A. This procedure has a functional test of the flap power drive unit.

TASK 27-51-51-720-801

2. Flap Power Drive Unit Functional Test

(Figure 501)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-51-51-010-005

(1) To get access to the main equipment center, do this step:

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-51-860-010

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power (TASK 29-11-00-860-801).

(a) Do not use the EMDP for this test.

NOTE: The EMDP does not create enough pressure to meet the extend and retract time limits.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Flap Power Drive Unit Functional Test

SUBTASK 27-51-51-730-001

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do a test of the primary operation of the trailing edge flaps:

(a) Move the flap control lever to the UP position and wait for the flaps to reach the UP position.

(b) Do one of these methods to show the flap position sensor and skew sensor inputs to the FSEU:

1) On the FSEU BITE display (Method 1):

a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

b) Push the down arrow until OTHER FUNCTNS? shows on the display.

c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

d) Push the down arrow until I/O MONITOR? shows on the display.

e) Push the YES button to select I/O MONITOR? on the menu.

f) Push the down arrow until SYNCHRO INPUTS? shows on the display.

g) Push the YES button to select SYNCRO INPUTS? from the menu.

2) On the MAX Display System (MDS) (Method 2):

a) Push the SYS button on the Multifunction Display Panel (MFP).

b) Select the Maint button on the MENU bar at the top right of the System Page.

c) Push the SEL button on the SELECTOR knob.

d) Turn the SELECTOR knob to select MAINT DATA PGS on the Maintenance menu.

e) Move the cursor down and then select the ATA 27 FLIGHT CONTROL DISPLAY button below the REAL column on the MAINT DATA PGS menu.

(c) Make sure that the inputs for the sensors are in the limits shown in Table 501 or Table 502 for the UP position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

Table 501/27-51-51-993-802

Display (Sensor)	FSEU Sensor Value Range (Flap Position)		
	UP	1-Unit	40-Units
LVR POS	-2.8 to 2.8	13.8 to 21.4	105.4 to 110.9
L FL POS	-3.7 to 1.8	34.5 to 40.8	267.1 to 273.3
R FL POS	-3.7 to 1.8	34.5 to 40.8	267.1 to 273.3
F1 SKEW	295.7 to 311.0	12.2 to 29.1	224.4 to 242.1
F2 SKEW	330.5 to 346.0	60.9 to 78.1	279.2 to 296.9
F3 SKEW	0.0 to 13.2	82.9 to 99.2	288.7 to 305.5

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Table 501/27-51-51-993-802 (Continued)

Display (Sensor)	FSEU Sensor Value Range (Flap Position)		
	UP	1-Unit	40-Units
F4 SKEW	332.8 to 346.9	24.3 to 40.0	265.1 to 282.1
F5 SKEW	13.1 to 27.2	320.0 to 336.7	77.9 to 94.9
F6 SKEW	346.8 to 360.0	260.8 to 277.1	54.5 to 71.3
F7 SKEW	14.0 to 29.5	281.9 to 299.1	63.1 to 80.8
F8 SKEW	49.0 to 64.3	330.9 to 347.8	117.9 to 135.6

2) For Method 2, observe the sensor values on the MDS.

Table 502/27-51-51-993-803

Display (Sensor)	MDS Sensor Value Range (Flap Position)		
	UP	1-Unit	40-Units
LVR POS	-2.8 to 2.8	13.8 to 21.4	105.4 to 110.9
L FL POS	-3.7 to 1.8	34.5 to 40.8	267.1 to 273.3
R FL POS	-3.7 to 1.8	34.5 to 40.8	267.1 to 273.3
F1 SKEW	-64.3 to -49	12.2 to 29.1	224.4 to 242.1
F2 SKEW	-29.5 to -14	60.9 to 78.1	279.2 to 296.9
F3 SKEW	0.0 to 13.2	82.9 to 99.2	288.7 to 305.5
F4 SKEW	-27.2 to -13.1	24.3 to 40.0	265.1 to 282.1
F5 SKEW	-27.2 to -13.1	24.3 to 40.0	265.1 to 282.1
F6 SKEW	0.0 to 13.2	82.9 to 99.2	288.7 to 305.5
F7 SKEW	-29.5 to -14	60.9 to 78.1	279.2 to 296.9
F8 SKEW	-64.3 to -49	12.2 to 29.1	224.4 to 242.1

(d) Move the flap control lever to the 1-unit position to extend the flaps.

(e) Make sure that the inputs for the sensors are in the limits shown in Table 501 or Table 502 for the 1-unit position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(f) Move the flap control lever to the 40-unit position to extend the flaps.

1) Measure the time it takes for the trailing edge flaps to extend from the 1-unit position to the 40-unit position.

(g) Make sure that the time it takes for the flaps to extend is 22 to 27 seconds.

(h) Make sure that the inputs for the sensors are in the limits shown in Table 501 or Table 502 for the 40-unit position.

1) For Method 1, push the arrow keys on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(i) Move the flap control lever to the 1-unit position to retract the flaps.

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1) Measure the time it takes for the trailing edge flaps to retract from the 40-unit position to the 1-unit position.

(j) Make sure that the time it takes for the flaps to retract is 22 to 27 seconds.

(k) Move the flap control lever to the UP position to retract the flaps.

SUBTASK 27-51-51-720-002

(2) Do a test of the power supply for the flap electric motor:

(a) Move the flap control lever to the 1-unit position to extend the flaps.

(b) Make sure that the pointers on the flap position indicator are in the 1-unit white band.

(c) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

(d) Move the ALTERNATE FLAPS ARM switch to the ARM position.

(e) Move and hold the ALTERNATE FLAPS CONTROL switch in the UP position for 5 seconds.

NOTE: With the circuit breaker open, the electric motor will not operate.

(f) Make sure that the flaps do not retract.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(g) Move and hold the ALTERNATE FLAPS CONTROL switch in the DOWN position for 5 seconds.

NOTE: The leading edge slats will extend.

(h) Make sure that the trailing edge flaps do not extend.

(i) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-51-720-003

(3) Do a test of the time necessary to retract the flaps with the alternate system:

(a) Move and hold the ALTERNATE FLAPS CONTROL switch in the UP position until the flaps stop.

(b) Make sure that the time necessary to retract the flaps is 47 to 58 seconds.

(c) Make sure that the pointers on the flap position indicator are in the UP white band.

SUBTASK 27-51-51-860-011

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Move the flap control lever to the UP position to retract the flaps.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-51-860-012

(1) For Method 1, push the ON/OFF button on the front panel of the FSEU to turn it off.

SUBTASK 27-51-51-860-014

(2) For Method 2, push the SYS button on the MFP to put the displays back to normal.

SUBTASK 27-51-51-410-006

(3) For the main equipment center, do this task:

(a) Close this access panel:

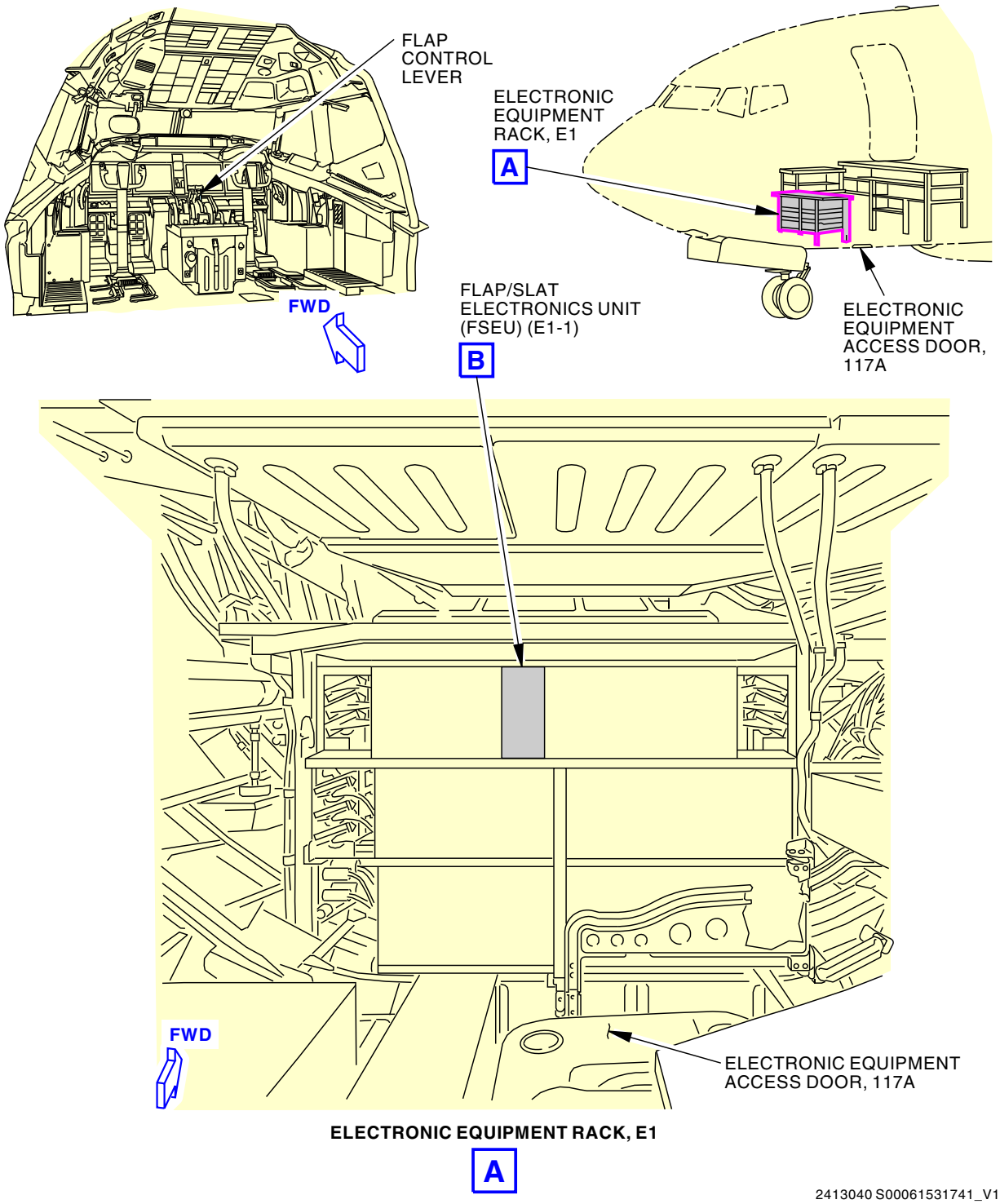
Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-51-860-013

(4) Remove system B hydraulic power (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Power Drive Unit Test
Figure 501/27-51-51-990-803 (Sheet 1 of 2)

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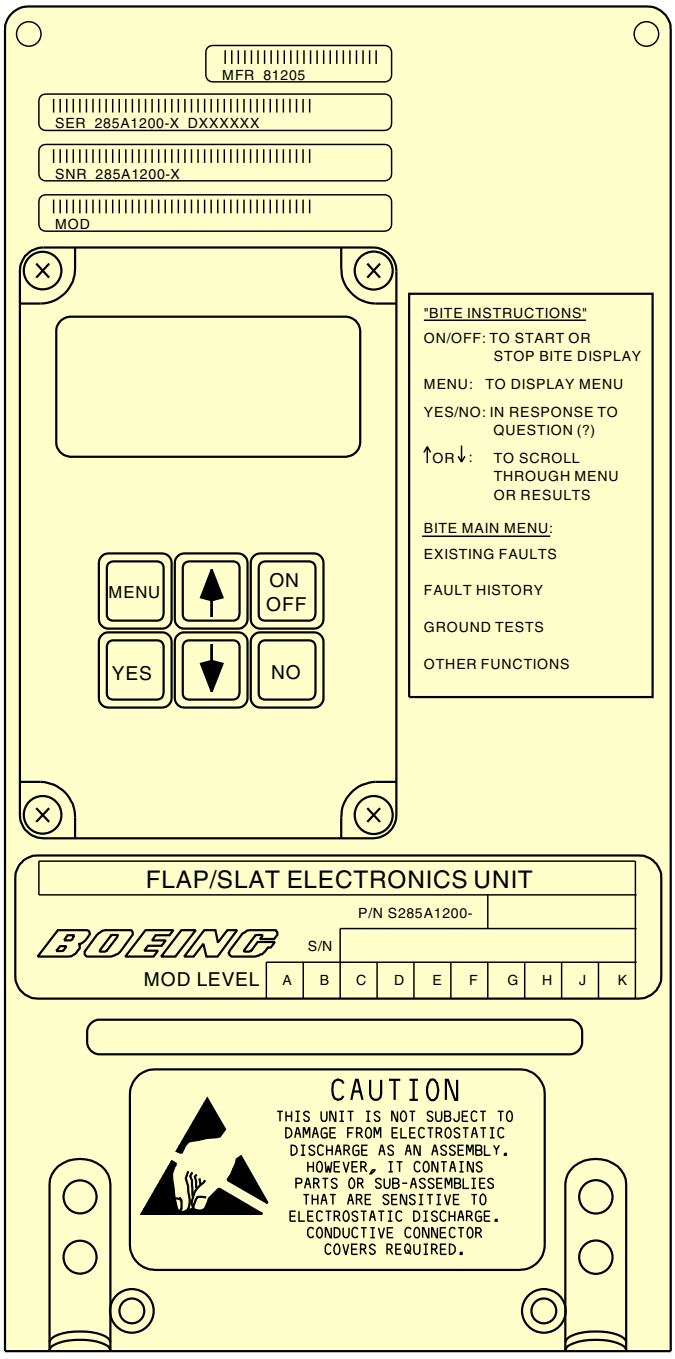

FLAP/SLAT ELECTRONICS UNIT (FSEU) (E1-1)

B

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Flap Power Drive Unit Test
Figure 501/27-51-51-990-803 (Sheet 2 of 2)

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FLAP HYDRAULIC MOTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap Hydraulic Motor Removal

(2) Flap Hydraulic Motor Installation.

B. The flap hydraulic motor is installed on the flap power drive unit (PDU) in the main landing gear wheel well.

TASK 27-51-52-000-801

2. Flap Hydraulic Motor Removal

(Figure 401)

A. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-52-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-52-860-001

(2) Remove the pressure from the system B hydraulic reservoir (TASK 29-09-00-860-802).

E. Flap Hydraulic Motor Removal

SUBTASK 27-51-52-020-001

(1) Disconnect the hydraulic lines:

(a) Disconnect hydraulic line [1] and hydraulic lines [13] from the hydraulic motor [3].

(b) Install caps/plugs, STD-14686, on hydraulic line [1] and hydraulic lines [13].

(c) Install caps/plugs, STD-14686, in the ports on the hydraulic motor [3].

SUBTASK 27-51-52-020-002

(2) Remove the hydraulic motor [3]:

(a) Remove the bolts [6] and washers [7] that attach the hydraulic motor [3] to the power drive unit [2].

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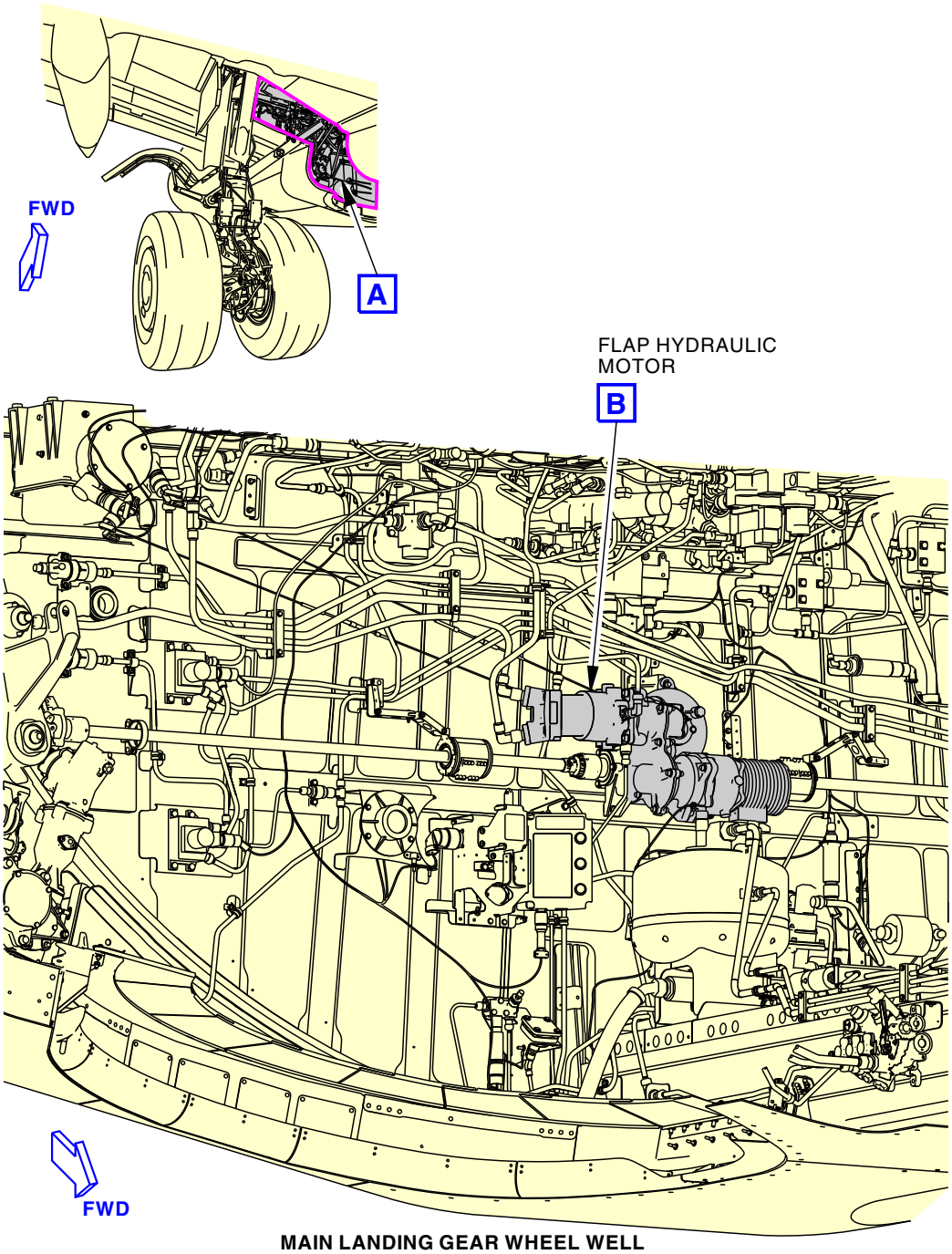
(b) Remove the hydraulic motor [3] from the power drive unit [2].

SUBTASK 27-51-52-020-003

(3) If you will install a new hydraulic motor [3], remove the reducers [4], elbow [9], check valve [11], packings [5], and packing [12] from the hydraulic motor [3].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Hydraulic Motor Installation
Figure 401/27-51-52-990-801 (Sheet 1 of 2)

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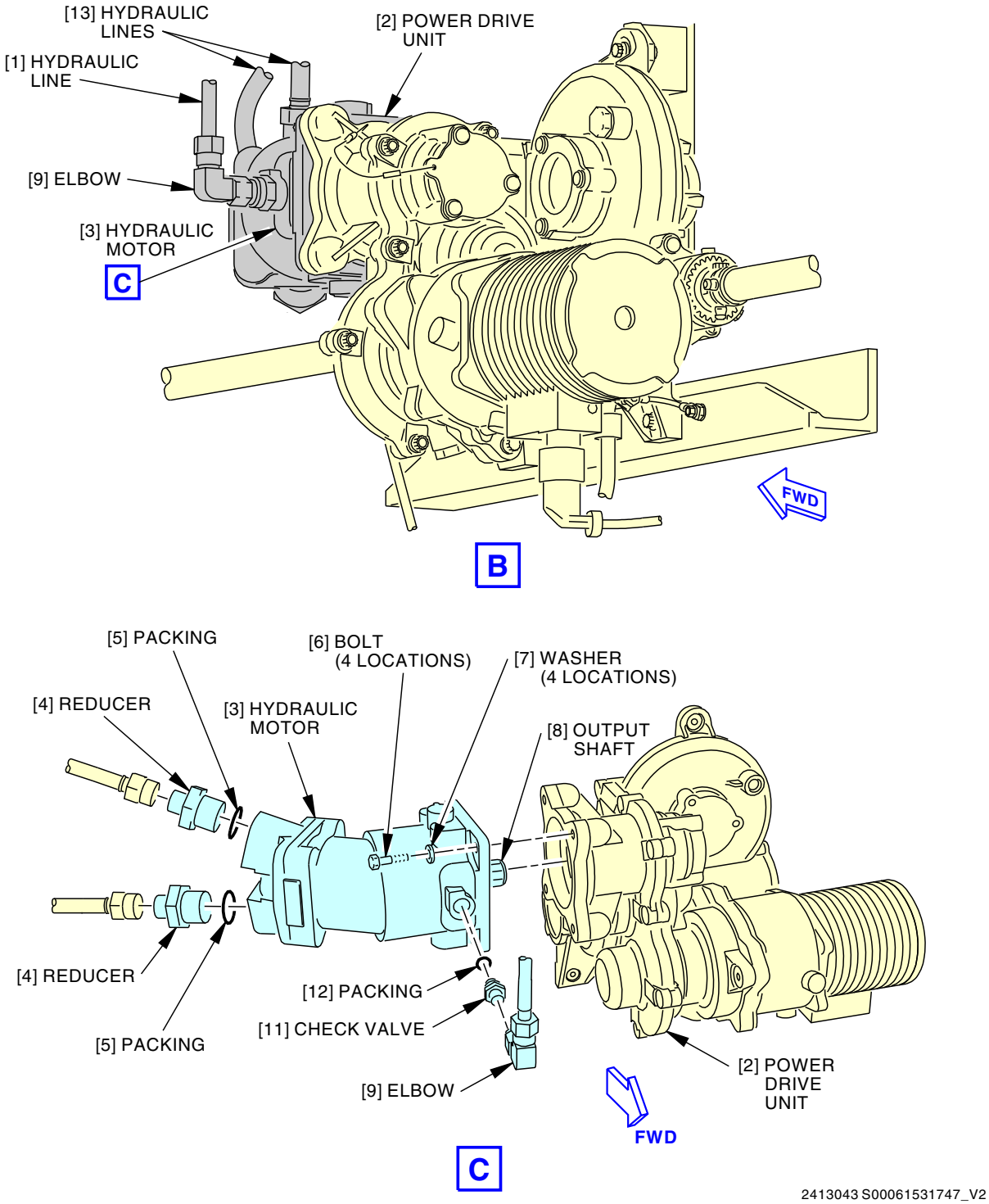

Flap Hydraulic Motor Installation
Figure 401/27-51-52-990-801 (Sheet 2 of 2)

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TASK 27-51-52-400-801

3. Flap Hydraulic Motor Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

C. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Hydraulic motor	27-51-52-01-060	SIA ALL
5	Packing	27-51-52-01-055	SIA ALL
12	Packing	27-51-52-01-035	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

F. Flap Hydraulic Motor Installation

SUBTASK 27-51-52-420-001

(1) If you will install a new hydraulic motor [3], install the reducers [4], elbow [9], check valve [11], packings [5], packing [12]:

(a) Apply MCS 352B fluid, D00054, or hydraulic fluid, D00153, to the new packings [5] and packing [12].

(b) Install the packings [5] and the reducers [4] in the hydraulic motor [3].

1) Tighten the reducers [4] to 550 in-lb (62 N·m)-600 in-lb (68 N·m).

(c) Install the packing [12] and the check valve [11] in the hydraulic motor [3].

1) Tighten the check valve [11] to 155 in-lb (18 N·m)-165 in-lb (19 N·m).

(d) Install the elbow [9] in the check valve [11].

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SUBTASK 27-51-52-420-002

(2) Install the hydraulic motor [3]:

(a) Apply grease, D00633, to the splines on the output shaft [8] of the hydraulic motor [3]:

(b) Fill the space between the hydraulic motor [3] and the power drive unit [2] with grease, D00633.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the hydraulic motor [3] and the power drive unit [2].

(d) Put the hydraulic motor [3] in its location on the power drive unit [2].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(e) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [6].

(f) Install the bolts [6] and washers [7] to attach the hydraulic motor [3].

(g) Tighten the bolts [6] to 105 ±10 in-lb (11.9 ±1.2 N·m) .

SUBTASK 27-51-52-420-003

(3) Connect hydraulic line [1] and hydraulic lines [13] to the hydraulic motor [3]:

(a) Remove the caps/plugs, STD-14686, from the hydraulic lines [1].

(b) Remove the caps/plugs, STD-14686, from the ports on the hydraulic motor [3].

(c) Install the hydraulic line [1] and hydraulic lines [13] in the hydraulic motor [3].

(d) Tighten the B-nut on hydraulic line [1] to 270 ±14 in-lb (31 ±2 N·m).

(e) Tighten the B-nuts on hydraulic lines [13] to 500 ±25 in-lb (56 ±3 N·m).

G. Flap Hydraulic Motor Installation Test

SUBTASK 27-51-52-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-51-52-710-001

(2) Use the primary system to extend and retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-52-210-001

(3) Make sure that there are no hydraulic leaks from the hydraulic motor [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-52-860-003

(1) Remove system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-51-52-610-001

(2) If it is necessary, fill the system B hydraulic reservoir (TASK 12-12-00-610-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP ELECTRIC MOTOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flap electric motor

(2) An installation of the flap electric motor.

B. The flap electric motor is installed on the flap Power Drive Unit (PDU) in the main wheel well.

C. The flap electric motor weighs approximately 16 lb (7.3 kg).

TASK 27-51-53-000-801

2. Flap Electric Motor Removal

(Figure 401)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

C. Prepare for the Removal

SUBTASK 27-51-53-480-002

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 27-51-53-860-001

(2) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

D. Flap Electric Motor Removal

SUBTASK 27-51-53-860-002

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-53-020-001

(2) Disconnect the electrical connector [5] from the flap electric motor [2].

(a) If it is necessary, examine the connector for corrosion.

NOTE: This step is also done in the installation task.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) If there is corrosion, correct the problem (SWPM 20-60-03).

SUBTASK 27-51-53-020-002

(3) Remove the flap electric motor [2]:

(a) Remove the screw [8], washers [9], and nut [10] that attach the jumper wire [7] to the flap electric motor [2].

(b) Remove lockwire from the bolts [4] and discard.

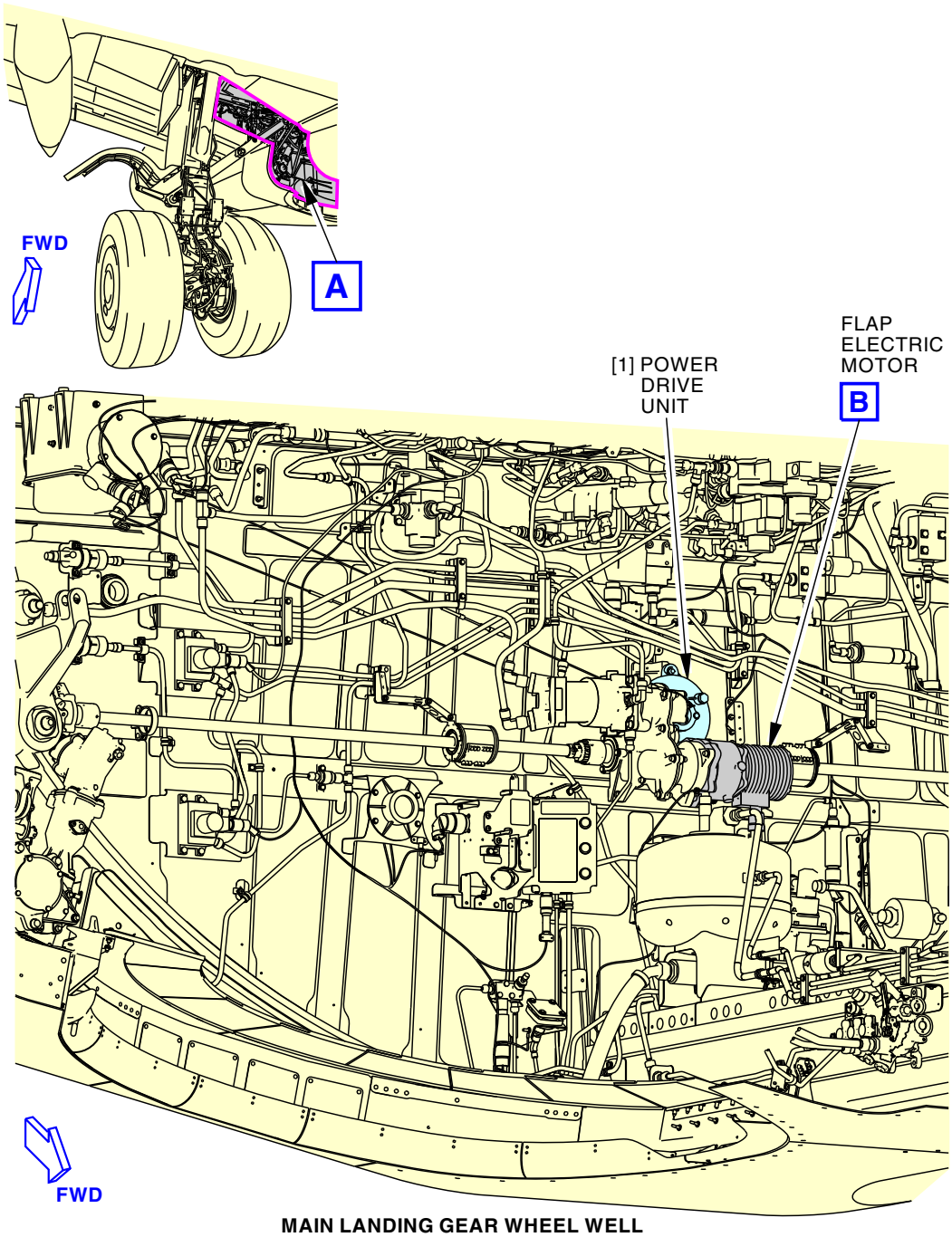
NOTE: Observe the orientation of the bolts for installation.

(c) Remove the bolts [4] and washers [3] that attach the flap electric motor [2] to the power drive unit [1].

(d) Remove the flap electric motor [2] from the power drive unit [1].

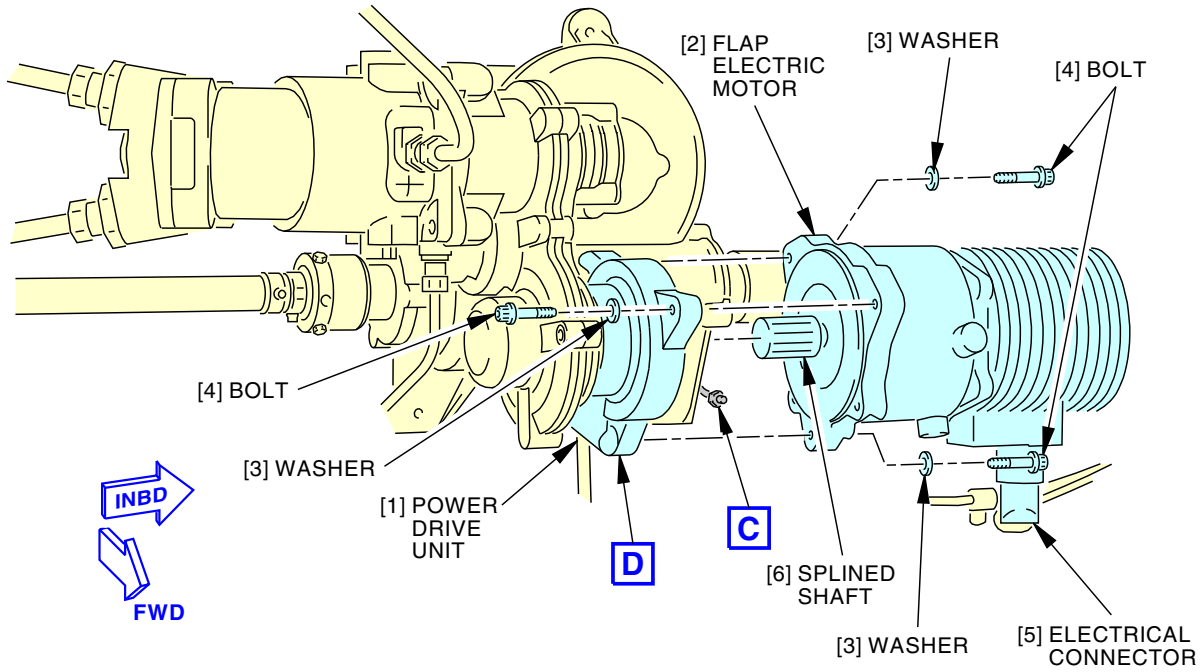
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



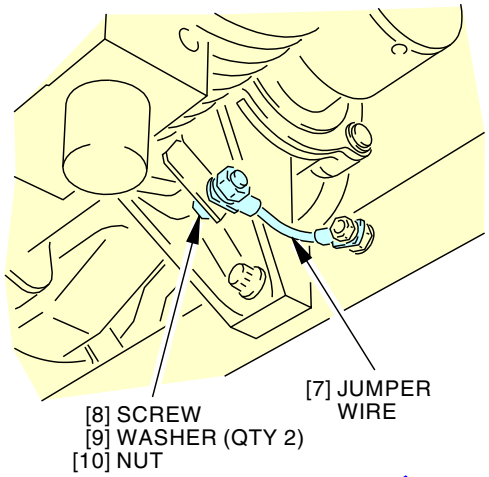
Flap Electric Motor Installation
Figure 401/27-51-53-990-801 (Sheet 1 of 2)

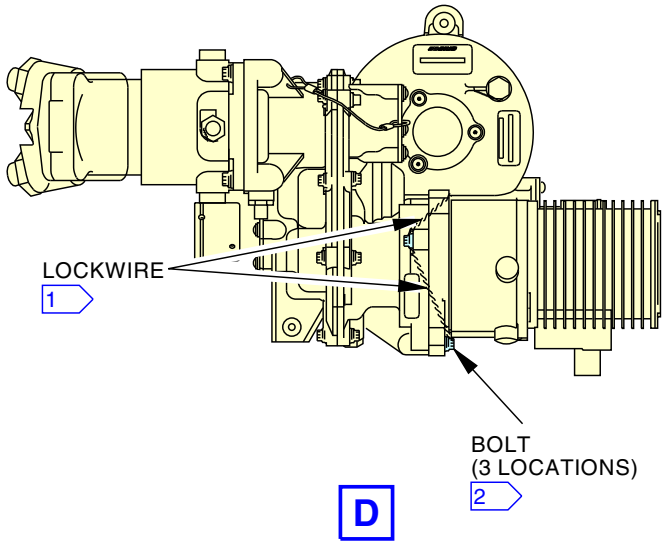
ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP ELECTRIC MOTOR

B





1 USE DOUBLE TWIST METHOD TO LOCKWIRE BOLTS TOGETHER
2 INSTALL AS SHOWN IN SOPM 20-50-00

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Flap Electric Motor Installation
Figure 401/27-51-53-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-53-400-801

3. Flap Electric Motor Installation

(Figure 401)

A. References

Reference	Title
12-22-51-610-805	Trailing Edge Flap Electric Motor Servicing (P/B 301)
27-51-00-860-802	Trailing Edge Flap System Operation With Alternate Control (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Flap electric motor	27-51-53-01-020	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Flap Electric Motor Installation

SUBTASK 27-51-53-860-003

(1) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-53-420-001

(2) Install the flap electric motor [2]:

(a) Apply a layer of grease, D00633, to the splined shaft [6] on the flap electric motor [2].

(b) Fill the area between the flap electric motor [2] and power drive unit [1] with grease, D00633.

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply a thin layer of Cor-Ban 27L Compound, G50237, to the mating surface of the flap electric motor [2] and power drive unit [1].

(d) Put the flap electric motor [2] in its position on the power drive unit [1].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(e) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [4].

(f) Install the bolts [4] and washers [3] to attach the flap electric motor [2] to the power drive unit [1].

1) Make sure to install the bolts [4] in the correct orientation (Figure 401).

(g) Tighten the bolts [4] to 50 in-lb (5.6 N·m) - 60 in-lb (6.8 N·m) more than the run-on torque.

(h) Install MS20995C32 lockwire, G01048, on the bolts [4] using the double twist method.

SUBTASK 27-51-53-420-002

(3) Connect the jumper wire [7] to the flap electric motor [2]:

(a) Install the screw [8], washers [9], and nut [10] to attach the jumper wire [7].

(b) Measure the electrical bonding resistance between the jumper wire [7] and flap electric motor [2] (SWPM 20-20-00).

NOTE: When you measure the resistance, the probe can be closer than 0.25 in. (6.40 mm) to the jumper terminal.

1) Use an intrinsically safe approved bonding meter, COM-1550.

2) Make sure that the resistance is 0.0004 ohm (0.4 milliohm) or less.

(c) Put a fillet of sealant, A02315, or sealant, A00247, around the two ends of the screw [8].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-53-210-001

(4) Before the electrical connector [5] connection, examine the connector for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS THAT USE DEICING FLUID WHICH CONTAINS POTASSIUM FORMATE. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(a) If there was corrosion, correct the problem (SWPM 20-60-03).

(b) Apply D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

SUBTASK 27-51-53-420-003

(5) Connect the electrical connector [5] to the flap electric motor [2].

SUBTASK 27-51-53-610-001

(6) Service the flap electric motor [2] (TASK 12-22-51-610-805).

G. Flap Electric Motor Installation Test

SUBTASK 27-51-53-860-005

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-51-53-710-001

(2) Use the alternate system to extend and retract the flaps (TASK 27-51-00-860-802).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-53-080-001

(1) Remove the downlock pins in the nose and main landing gear (TASK 32-00-01-080-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TEE ANGLE GEARBOX - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Tee Angle Gearbox Removal

(2) Tee Angle Gearbox Installation.

B. The tee angle gearbox is installed on the bulkhead aft of the inboard transmissions for the inboard flap.

TASK 27-51-55-000-801

2. Tee Angle Gearbox Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-55-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-55-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Tee Angle Gearbox Removal

SUBTASK 27-51-55-020-001

(1) Disconnect the torque tubes [13] from the tee angle gearbox [1]:

(a) Install a clamp set, SPL-1726 on the torque tube [13] outboard of the tee angle gearbox [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the lockwires and screws [3] that attach the coupling sleeves [2] to the splined couplings [14].

(c) Move the coupling sleeves [2] off the splined couplings [14].

SUBTASK 27-51-55-020-002

(2) Remove the U-joint assembly [8]:

(a) Remove the nuts [12], washers [11], and bolts [10] that attach the U-joint assembly [8] to the transmission [9] and the tee angle gearbox [1].

(b) Remove the U-joint assembly [8].

(c) Remove the wire bundle from the bracket on the tee angle gearbox [1].

SUBTASK 27-51-55-020-003

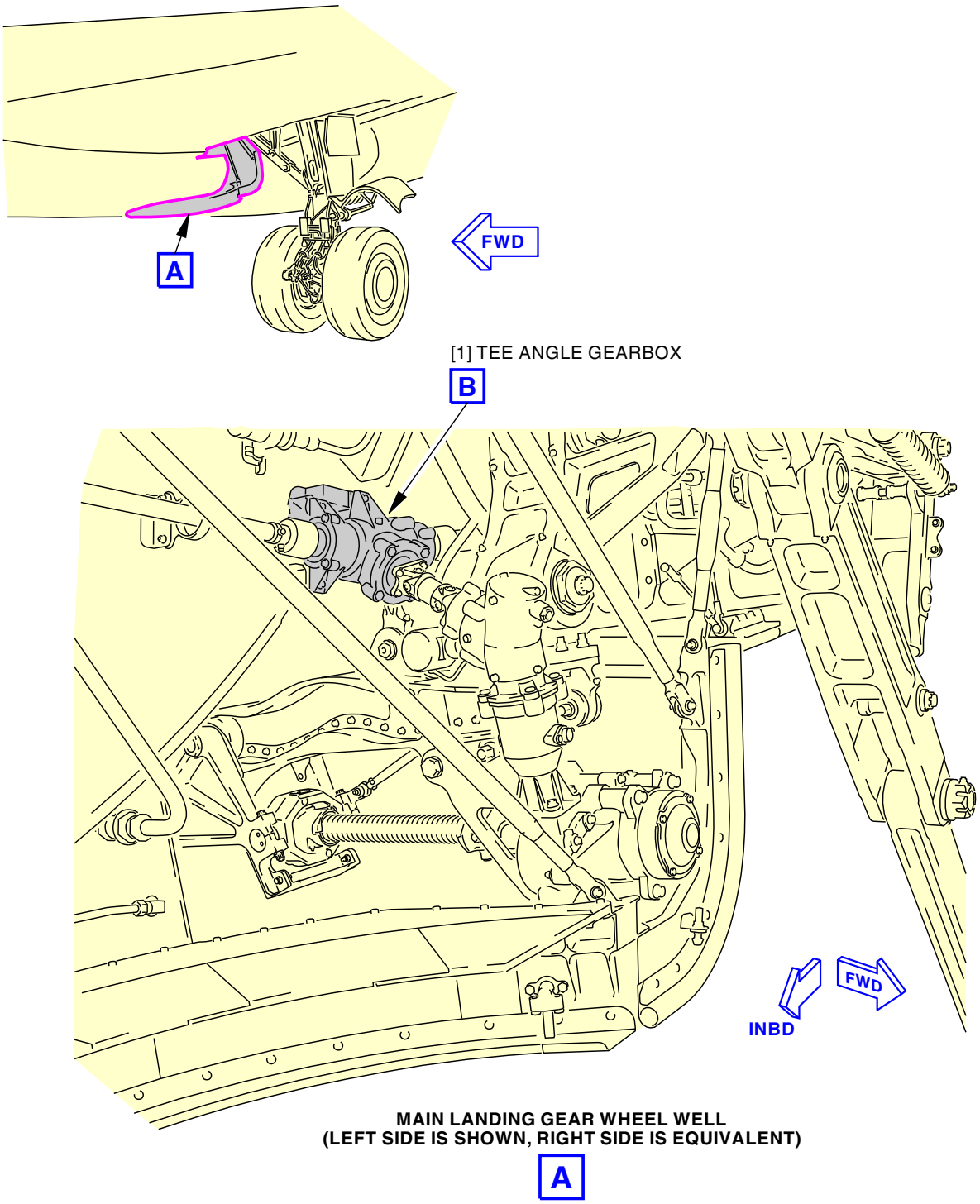
(3) Remove the tee angle gearbox [1]:

(a) Remove the nuts [7], washers [6], washers [5], and bolts [4] that attach the tee angle gearbox [1] to the structure.

(b) Remove the tee angle gearbox [1].

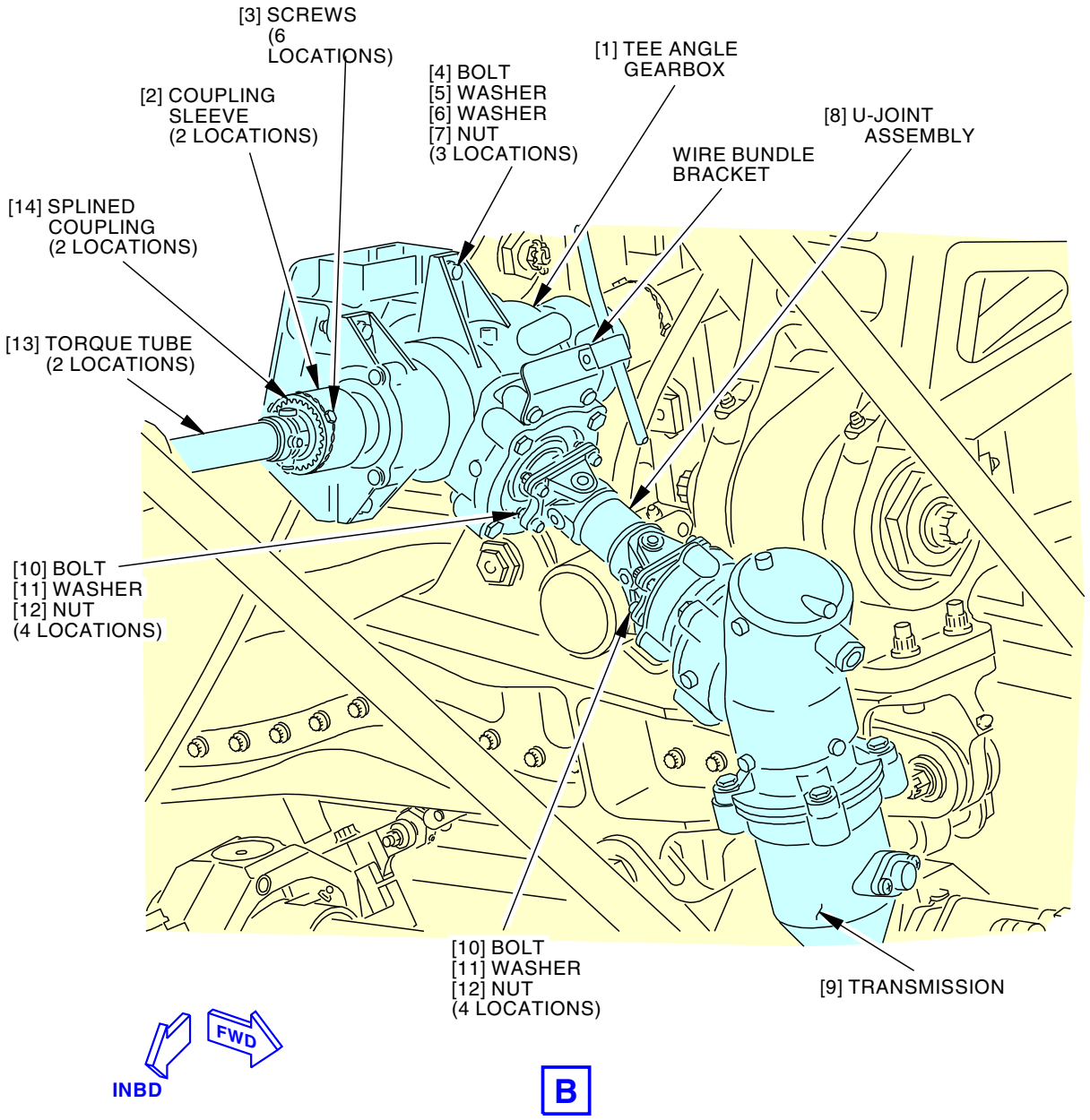
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Tee Angle Gearbox Installation
Figure 401/27-51-55-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Tee Angle Gearbox Installation
Figure 401/27-51-55-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-55-400-801

3. Tee Angle Gearbox Installation

(Figure 401)

A. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
12-22-51-640-806	U-Joint and Tee Angle Gearbox Lubrication (P/B 301)
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Tee angle gearbox	27-51-55-01A-030	SIA ALL
		27-51-55-01A-035	SIA ALL
8	U-joint assembly	27-51-31-16-010	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

F. Tee Angle Gearbox Installation

SUBTASK 27-51-55-420-001

(1) Install the tee angle gearbox [1] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [4].

(b) Put the tee angle gearbox [1] in its position on the structure.

(c) Install the bolts [4], washers [5], washers [6], and nuts [7] to attach the tee angle gearbox [1].

SUBTASK 27-51-55-420-002

(2) Install the U-joint assembly [8] as follows:

(a) Put the U-joint assembly [8] in its position between the transmission [9] and the tee angle gearbox [1].

(b) Install the bolts [10], washers [11], and nuts [12] that attach the U-joint assembly [8] to the transmission [9] and the tee angle tee angle gearbox [1].

(c) Install the wire bundle on the wire bundle bracket on the tee angle gearbox [1].

SUBTASK 27-51-55-420-003

(3) Connect the torque tubes [13] to the tee angle gearbox [1] as follows:

(a) Apply grease, D00633, to the coupling sleeves [2].

(b) Put the splined couplings [14] in the coupling sleeves [2].

(c) Install the screws [3] to attach the torque tubes [13] to the tee angle gearbox [1].

(d) Install lockwire on the screws [3].

(e) Remove the clamp set, SPL-1726, from the torque tube [13] outboard of the tee angle gearbox [1].

SUBTASK 27-51-55-820-001

(4) If the torque tubes [13] moved, while they were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-55-640-001

(5) Lubricate the torque tubes [13], U-joint assembly [8], and tee angle gearbox [1] as follows:

(a) Lubricate the torque tubes [13] (TASK 12-22-51-640-801).

(b) Lubricate the U-joint assembly [8] and the tee angle gearbox [1] (TASK 12-22-51-640-806).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-55-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-55-860-001

(2) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-55-860-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-51-55-710-001

(4) Use the primary system to extend the flaps to the 40-unit position (TASK 27-51-00-860-801).

(a) Make sure that the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-55-710-002

(5) Use the primary system to retract the flaps to the UP position (TASK 27-51-00-860-801).

(a) Make sure that the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-55-860-003

(6) Remove system B hydraulic power (TASK 29-11-00-860-805).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MLG BEAM ANGLE GEARBOX - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Main Landing Gear Beam Angle Gearbox Removal

(2) Main Landing Gear Beam Angle Gearbox Installation.

B. The main landing gear beam angle gearbox is installed on the main landing gear beam between the transmissions for the inboard flap.

TASK 27-51-56-000-801

2. Main Landing Gear Beam Angle Gearbox Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Location Zones

Zone	Area
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap

D. Prepare for the Removal

SUBTASK 27-51-56-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-56-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. MLG Beam Angle Gearbox Removal

SUBTASK 27-51-56-020-001

(1) Disconnect the torque tubes [10] from the angle gearbox [1]:

(a) Install clamp set, SPL-1726 on the torque tube [10] outboard of the angle gearbox [1].

(b) Remove the lockwire and screws [3] that attach the coupling sleeves [4] to the splined couplings [2].

(c) Move the coupling sleeves [4] off the splined couplings [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-56-020-002

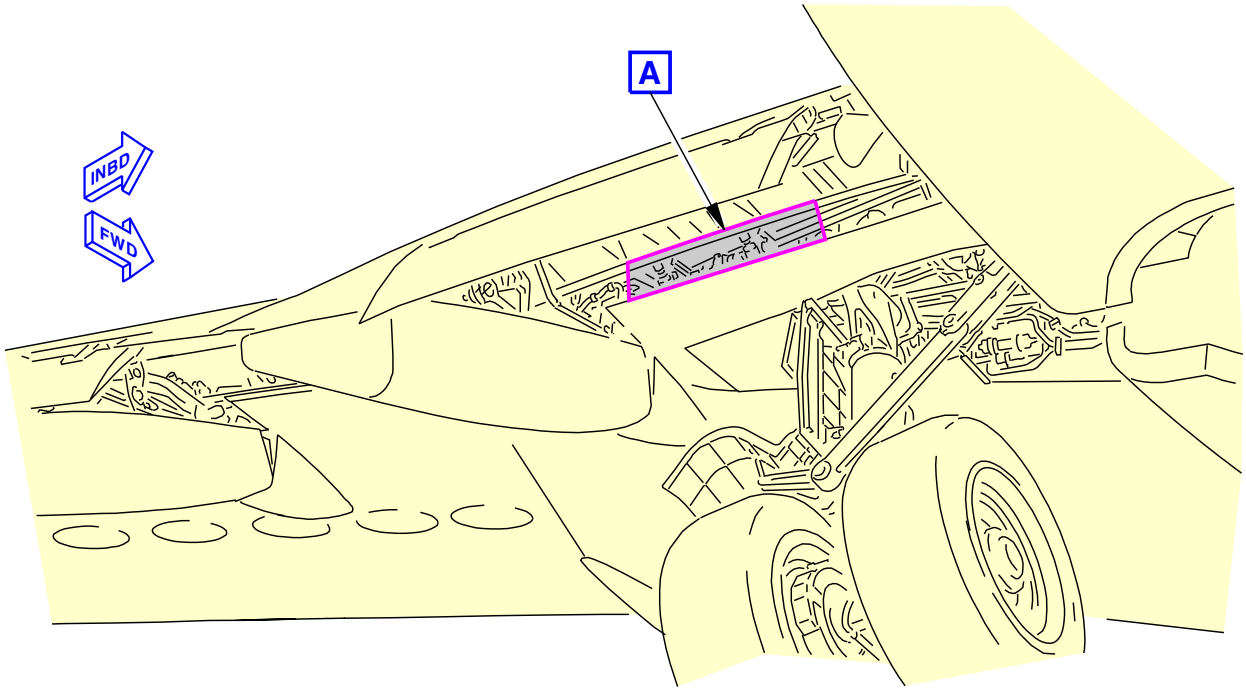
(2) Remove the angle gearbox [1]:

(a) Remove the nuts [8], washers [7], washer [6], and bolts [5] that attach the angle gearbox [1] to the main landing gear beam [9].

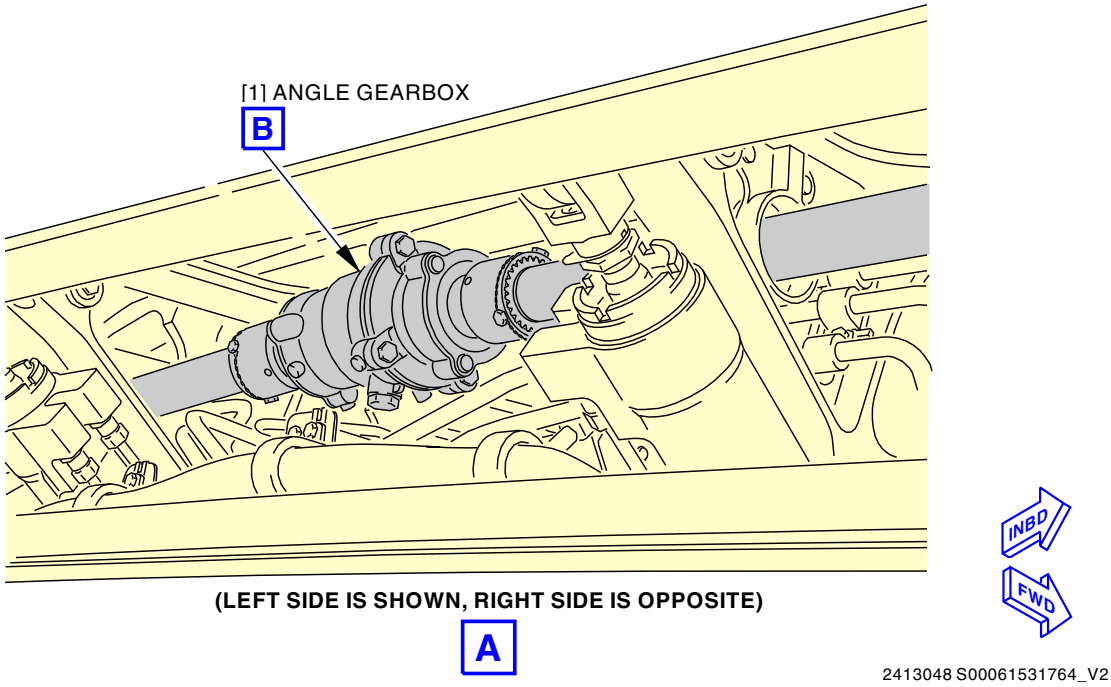
(b) Remove the angle gearbox [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING SHOWN
(RIGHT WING IS EQUIVALENT)
(EXAMPLE)

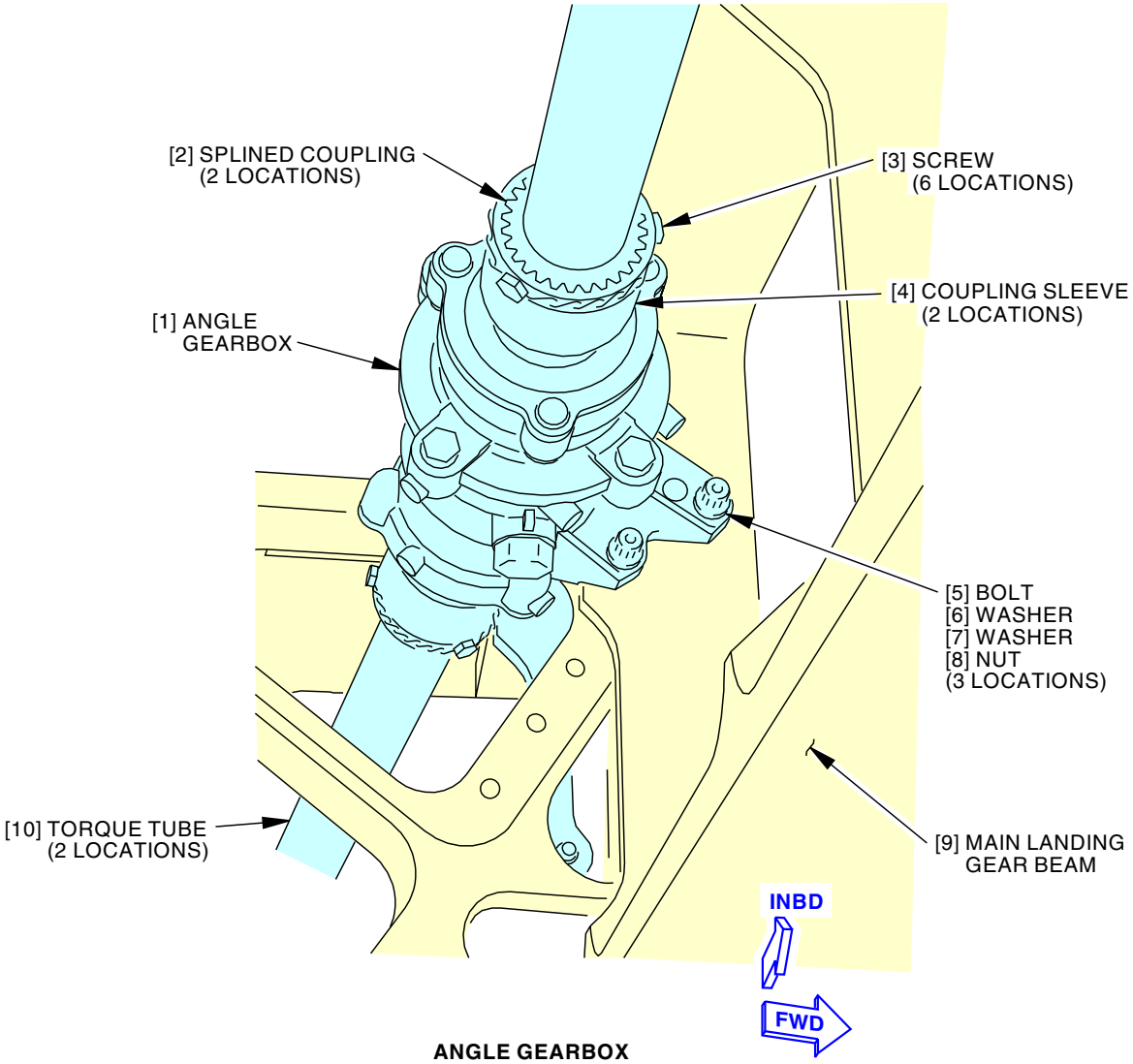


(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

2413048 S00061531764_V2

MLG Beam Angle Gearbox Installation
Figure 401/27-51-56-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

SOME SURROUNDING STRUCTURE
REMOVED FOR CLARITY.

2413049 S00061531765_V1

MLG Beam Angle Gearbox Installation
Figure 401/27-51-56-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-56-400-801

3. Main Landing Gear Beam Angle Gearbox Installation

(Figure 401)

A. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Angle gearbox	27-51-56-01-010	SIA ALL
		27-51-56-01-015	SIA ALL

E. Location Zones

Zone	Area
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap

F. MLG Beam Angle Gearbox Installation

SUBTASK 27-51-56-420-001

(1) Install the angle gearbox [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a layer of Cor-Ban 27L Compound, G50237, to the mating surface of the angle gearbox [1] and the main landing gear beam [9].

(b) Put the angle gearbox [1] in its position on the main landing gear beam [9].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [5].

(d) Install the bolts [5], washers [6], washers [7],and nuts [8] to attach the angle gearbox [1] to the main landing gear beam [9].

SUBTASK 27-51-56-420-002

(2) Connect the torque tubes [10] to the angle gearbox [1]:

(a) Apply grease, D00633, to the coupling sleeves [4].

(b) Put the splined couplings [2] in the coupling sleeves [4].

(c) Install the screws [3] to attach the torque tubes [10] to the angle gearbox [1].

(d) Install lockwire on the screws [3].

(e) Remove the clamp set, SPL-1726, from the torque tubes [10] outboard of the angle gearbox [1].

SUBTASK 27-51-56-820-001

(3) If the torque tubes [10] moved, while they were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-56-600-001

(4) Lubricate the torque tubes [10] (TASK 12-22-51-640-801).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-56-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-56-710-001

(2) Use the primary system to retract the flaps to the UP position (TASK 27-51-00-860-801).

NOTE: Make sure that the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-56-710-002

(3) Use the primary system to extend the flaps to the 40-unit position (TASK 27-51-00-860-801).

NOTE: Make sure that the pointers for the flap position indicators are in the 40-unit white band.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-56-860-002

(4) Use the primary system to retract the flaps to the UP position (TASK 27-51-00-860-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SEAL RIB ANGLE GEARBOX - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Seal rib angle gearbox removal

(2) Seal rib angle gearbox installation.

B. The seal rib angle gearbox is installed between the seal ribs between the inboard and outboard flap.

TASK 27-51-57-000-801

2. Seal Rib Angle Gearbox Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge

D. Access Panels

Number	Name/Location
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

E. Prepare for the Removal

SUBTASK 27-51-57-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-57-010-001

(2) Below the seal rib angle gearbox [5], do the applicable step:

(a) Remove this access panel:

Number	Name/Location
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

(b) Open this access panel:

Number	Name/Location
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Seal Rib Angle Gearbox Removal

SUBTASK 27-51-57-020-001

(1) Disconnect the torque tubes [3] from the seal rib angle gearbox [5]:

(a) Install clamp set, SPL-1726, on the torque tube [3] outboard of the seal rib angle gearbox [5].

(b) Remove the lockwire from the screws [4].

(c) Remove the screws [4] that attach the coupling sleeves [1] to the splined couplings [2].

(d) Move the coupling sleeves [1] off the splined couplings [2].

SUBTASK 27-51-57-020-002

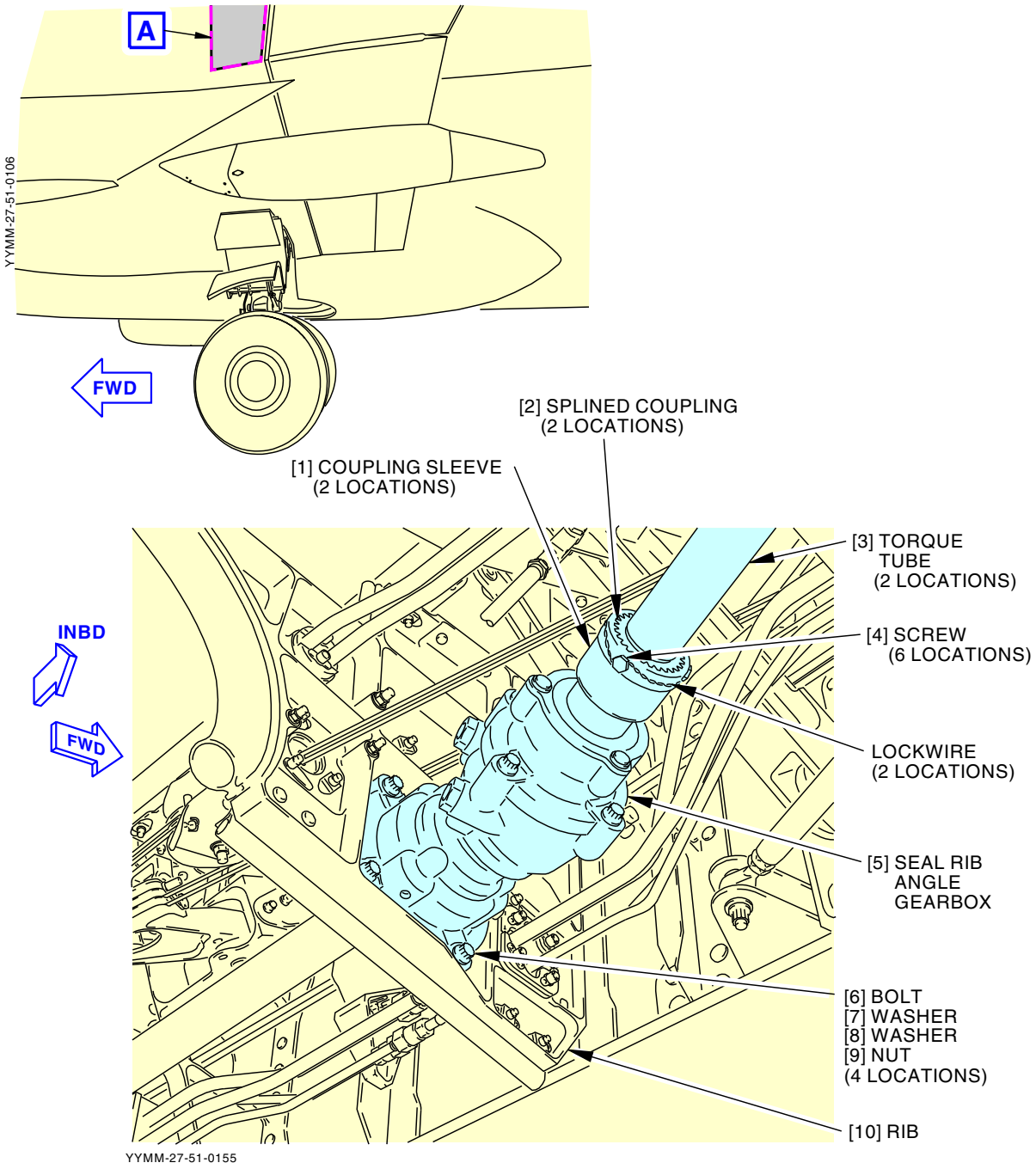
(2) Remove the seal rib angle gearbox [5]:

(a) Remove the nuts [9], washers [8], washers [7] and bolts [6] that attach the seal rib angle gearbox [5] to the rib [10].

(b) Remove the seal rib angle gearbox [5].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SEAL RIB ANGLE GEARBOX
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2413050 S00061531770_V2

Seal Rib Angle Gearbox Installation
Figure 401/27-51-57-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-57-400-801

3. Seal Rib Angle Gearbox Installation

(Figure 401)

A. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Seal rib angle gearbox	27-51-57-01-010	SIA ALL

E. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge

F. Access Panels

Number	Name/Location
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

G. Seal Rib Angle Gearbox Installation

SUBTASK 27-51-57-420-001

(1) Install the seal rib angle gearbox [5]:

(a) Put the seal rib angle gearbox [5] in its position on the rib [10].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [6].

(c) Install the bolts [6], washers [7], washers [8] and nuts [9] to attach the seal rib angle gearbox [5] to the rib [10].

SUBTASK 27-51-57-420-002

(2) Connect the torque tubes [3] to the seal rib angle gearbox [5]:

(a) Apply grease, D00633, to the coupling sleeves [1].

(b) Put the splined couplings [2] in the coupling sleeves [1].

(c) Install the screws [4] to attach the torque tubes [3] to the seal rib angle gearbox [5].

(d) Install lockwire on the screws [4].

(e) Remove the clamp set, SPL-1726, from the torque tubes [3] outboard of the seal rib angle gearbox [5].

SUBTASK 27-51-57-820-001

(3) If the torque tubes [3] moved while they were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-57-640-001

(4) Lubricate the torque tubes [3] (TASK 12-22-51-640-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-57-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-57-710-001

(2) Use the primary system to extend the flaps to the 40-unit position (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-57-710-002

(3) Use the primary system to retract the flaps to the UP position (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-57-410-001

(4) Below the seal rib angle gearbox [5], do the applicable step:

(a) Install this access panel:

Number	Name/Location
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

(b) Close this access panel:

Number	Name/Location
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP TORQUE TUBES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap torque tube removal (selection)

(2) Flap torque tube installation (selection)

(3) Outboard wing flap torque tube removal

(4) Outboard wing flap torque tube installation

(5) Inboard wing flap torque tube removal

(6) Inboard wing flap torque tube installation

(7) Wheel well flap torque tubes removal

(8) Wheel well flap torque tubes installation.

TASK 27-51-58-000-801

2. Flap Torque Tube Removal (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

B. Flap Torque Tube Removal (Selection)

SUBTASK 27-51-58-000-001

(1) Do one of these tasks to remove the applicable flap torque tube:

(a) Do this task: Outboard Wing Flap Torque Tube Removal, TASK 27-51-58-000-802.

(b) Do this task: Inboard Wing Flap Torque Tube Removal, TASK 27-51-58-000-803.

(c) Do this task: Wheel Well Flap Torque Tube Removal, TASK 27-51-58-000-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-58-400-801

3. Flap Torque Tube Installation (Selection)

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

B. Flap Torque Tube Installation (Selection)

SUBTASK 27-51-58-400-001

(1) Do one of these tasks to install the applicable flap torque tube.

(a) Do this task: Outboard Wing Flap Torque Tube Installation, TASK 27-51-58-400-802.

(b) Do this task: Inboard Wing Flap Torque Tube Installation, TASK 27-51-58-400-803.

(c) Do this task: Wheel Well Flap Torque Tube Installation, TASK 27-51-58-400-804.

——— END OF TASK ———

TASK 27-51-58-000-802

4. Outboard Wing Flap Torque Tube Removal

(Figure 401)

A. General

(1) This task is applicable to the torque tubes outboard of the seal rib angle gearbox.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

E. Prepare for the Removal

SUBTASK 27-51-58-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-58-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Outboard Wing Flap Torque Tube Removal

SUBTASK 27-51-58-480-001

(1) Install the clamp set, SPL-1726 on the torque tubes inboard and outboard of the applicable torque tube (Figure 402):

NOTE: The clamp set can be used to stop inadvertent movement of the flap drive system while the torque tubes are disconnected. If the flap drive system moves, then it will be necessary to do the flap drive system adjustment.

(a) Put the clamp assembly in its location on the applicable torque tube.

(b) Turn the knob to tighten the clamp assembly on the torque tube.

(c) Turn the rod until it touches the structure to make sure the clamp assembly does not turn.

SUBTASK 27-51-58-020-001

(2) Remove the applicable torque tube guard [10]:

(a) Remove the nuts [9], washers [8] and the bolts [7], bolts [11] or bolts [12] that attach the torque tube guard [10].

(b) Remove the torque tube guard [10] from the torque tube.

SUBTASK 27-51-58-020-002

(3) Remove the tube assembly [1], tube assembly [2] or tube assembly [3]:

(a) Remove the lockwire for the screws [6].

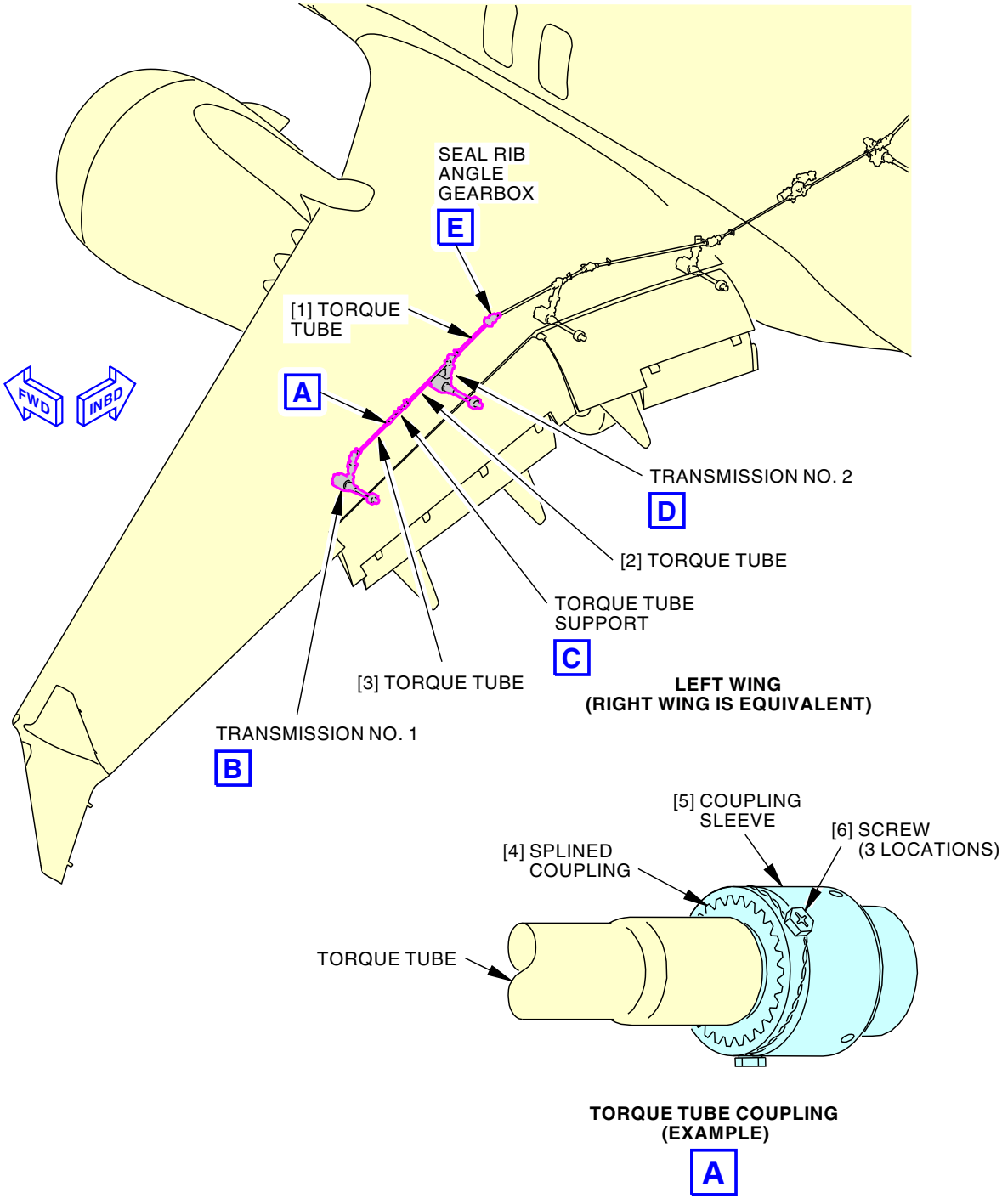
(b) Remove the screws [6] that attach the coupling sleeves [5] to the splined couplings [4].

(c) Move the coupling sleeves [5] off the splined couplings [4].

(d) Remove the tube assembly [1], tube assembly [2] or tube assembly [3].

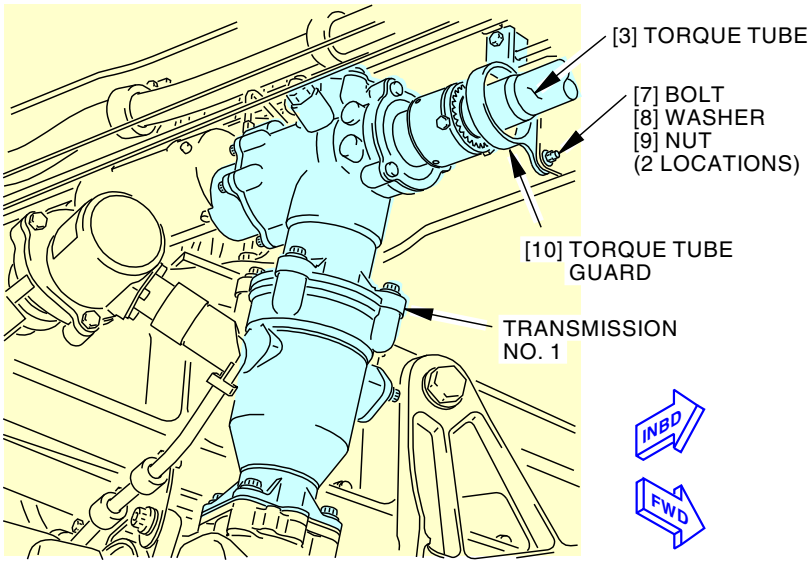
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



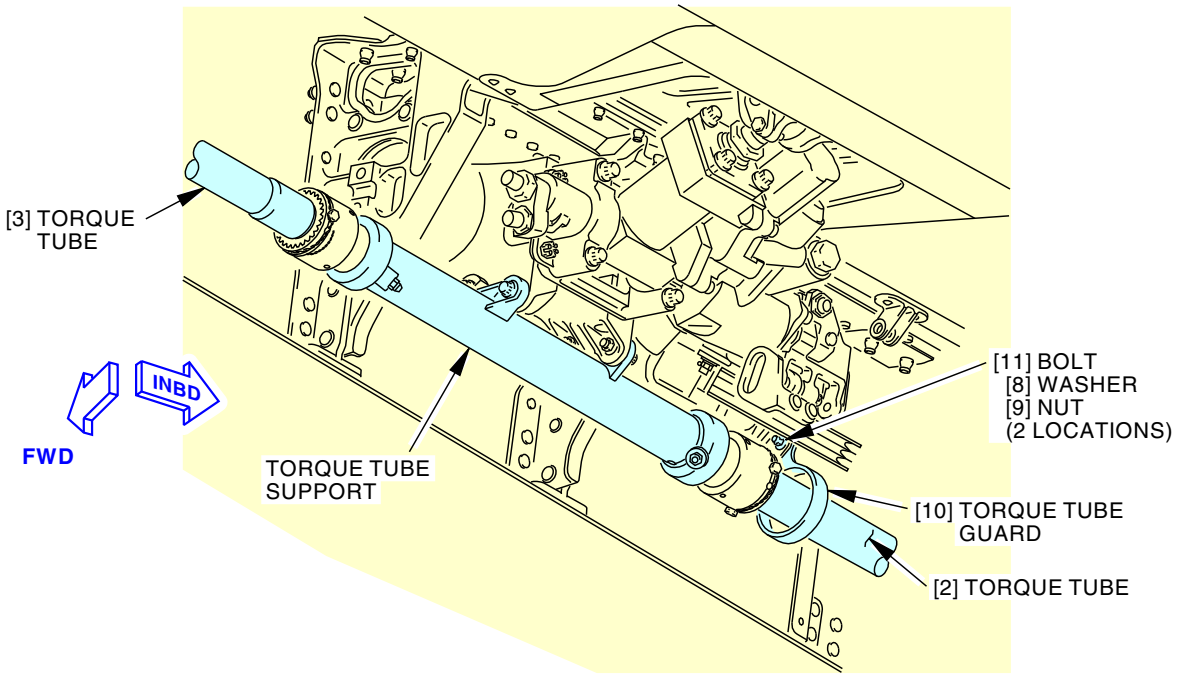
Outboard Wing Flap Torque Tube Installation
Figure 401/27-51-58-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TRANSMISSION NO. 1

B



NOTE:

LOWER MIDSPAN PANEL REMOVED FOR CLARITY.

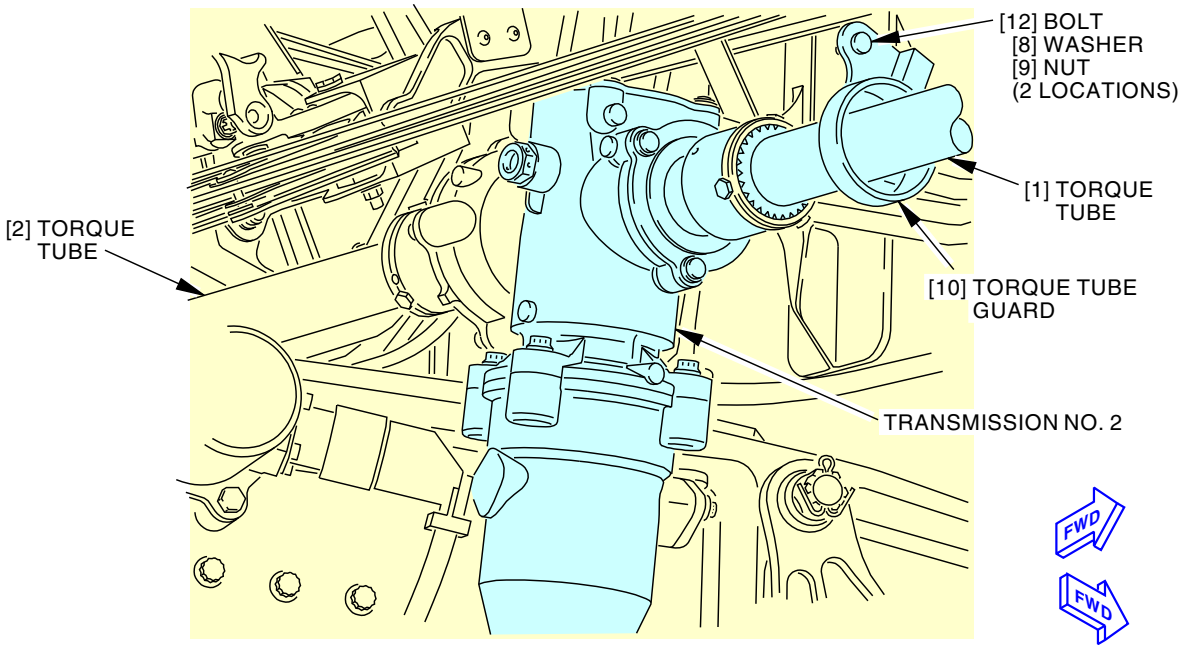
TORQUE TUBE SUPPORT

C

2413052 S00061531776_V1

Outboard Wing Flap Torque Tube Installation
Figure 401/27-51-58-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TRANSMISSION NO. 2

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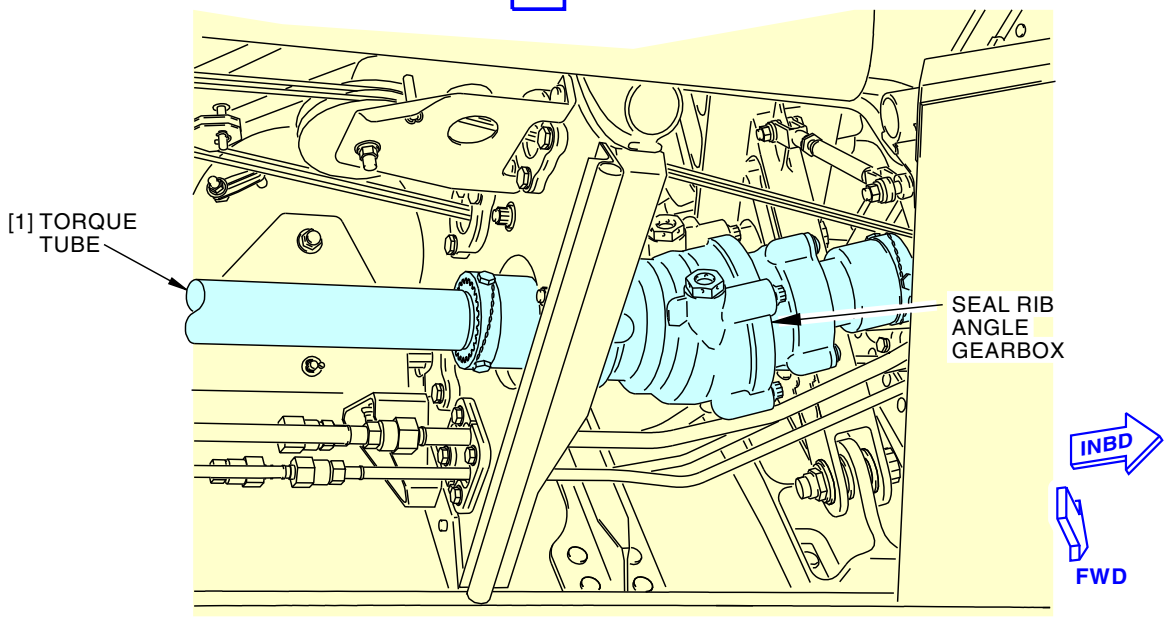


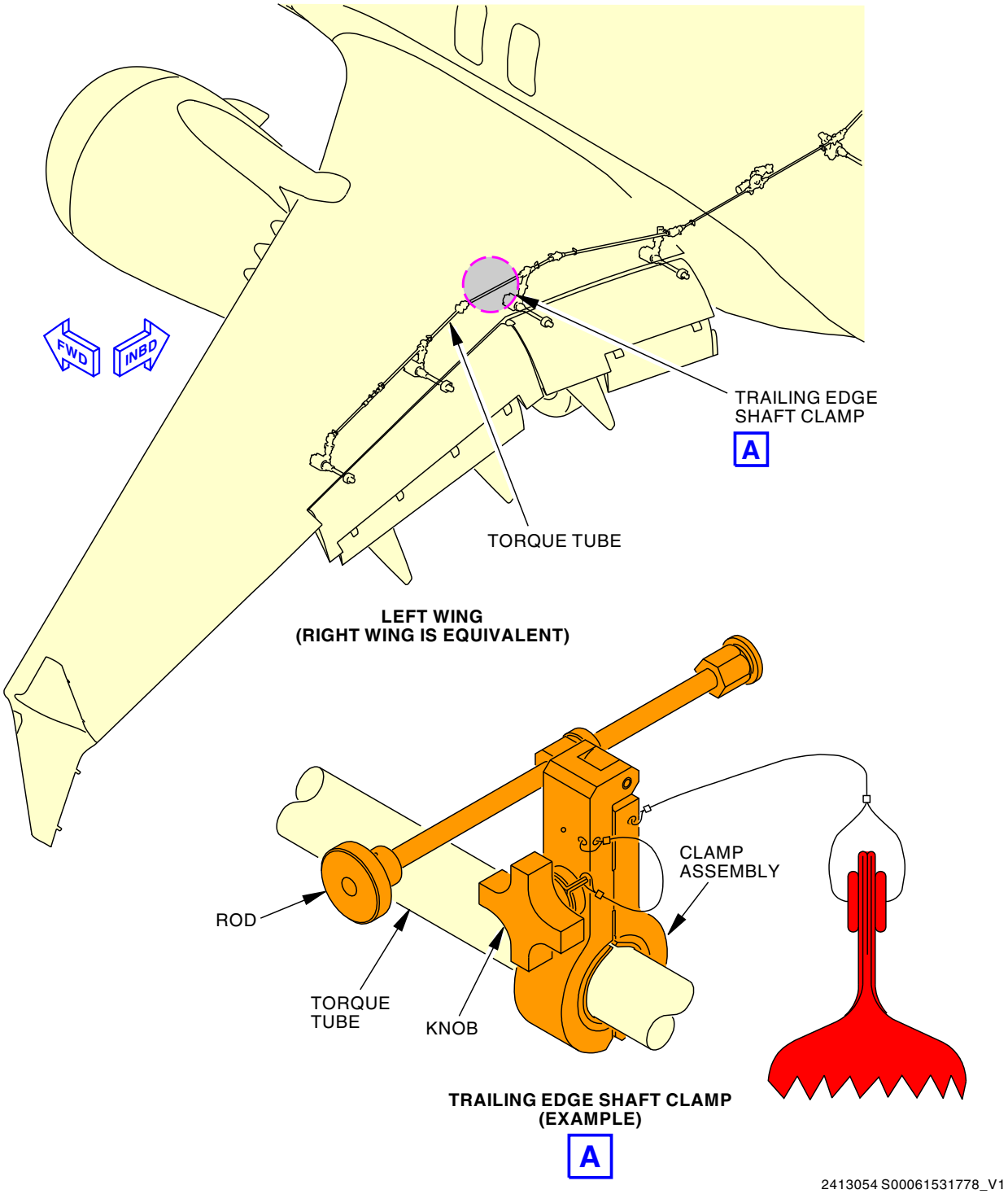
SEAL RIB ANGLE GEARBOX

E

2413053 S00061531777_V1

Outboard Wing Flap Torque Tube Installation
Figure 401/27-51-58-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Torque Tube Clamp Installation
Figure 402/27-51-58-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-58-400-802

5. Outboard Wing Flap Torque Tube Installation

(Figure 401)

A. General

(1) This task is applicable to the torque tubes outboard of the seal rib angle gearbox.

B. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Tube assembly	27-51-58-10-035	SIA ALL
2	Tube assembly	27-51-58-10-025	SIA ALL
3	Tube assembly	27-51-58-10-015	SIA ALL

F. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

G. Outboard Wing Flap Torque Tube Installation

SUBTASK 27-51-58-420-001

(1) Install the tube assembly [1], tube assembly [2] or tube assembly [3]:

(a) Apply grease, D00633, to the coupling sleeves [5].

(b) Put the tube assembly [1], tube assembly [2] or tube assembly [3] in its position.

(c) Put the coupling sleeves [5] on the splined couplings [4].

(d) Install the screws [6] to attach the coupling sleeves [5] to the splined couplings [4].

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(e) Install the lockwire or safety cable on the screws [6].

SUBTASK 27-51-58-080-001

(2) Remove the clamp set, SPL-1726, from the torque tubes.

SUBTASK 27-51-58-420-002

(3) Install the applicable torque tube guard [10]:

(a) Put the torque tube guard [10] on the torque tube.

(b) Install the bolts [7], bolts [11], or bolts [12], washers [8] and nuts [9] that attach the torque tube guard [10].

SUBTASK 27-51-58-820-001

(4) If a torque tube turned while the torque tubes were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-58-640-001

(1) For the applicable torque tube, do this task: Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication, TASK 12-22-51-640-801.

SUBTASK 27-51-58-440-001

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-58-710-001

(3) Use the primary system to retract the flaps (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-58-710-002

(4) Use the primary system to extend the flaps to the 40-unit position (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-58-710-003

(5) Use the primary system to retract the flaps (TASK 27-51-00-860-801).

——— END OF TASK ———

TASK 27-51-58-000-803

6. Inboard Wing Flap Torque Tube Removal

(Figure 403)

A. General

(1) This task is applicable to the torque tubes inboard of the seal rib angle gearbox and outboard of the Tee angle gearbox.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap

E. Prepare for the Removal

SUBTASK 27-51-58-860-002

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-58-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-58-040-002

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Inboard Wing Flap Torque Tube Removal

SUBTASK 27-51-58-480-003

(1) Install the clamp set, SPL-1726 on the torque tubes inboard and outboard of the applicable torque tube (Figure 402):

NOTE: The clamp set can be used to stop inadvertent movement of the flap drive system while the torque tubes are disconnected. If the flap drive system moves, then it will be necessary to do the flap drive system adjustment.

(a) Put the clamp assembly in its location on the applicable torque tube.

(b) Turn the knob to tighten the clamp assembly on the torque tube.

(c) Turn the rod until it touches the structure to make sure the clamp assembly does not turn.

SUBTASK 27-51-58-020-003

(2) For tube assembly [32] or tube assembly [33], remove the applicable torque tube guard [37]:

NOTE: The tube assembly [31] does not have a torque tube guard [37].

(a) Remove the nuts [36], washers [35], bolts [34] or bolts [38] that attach the torque tube guard [37].

(b) Remove the torque tube guard [37] from the torque tube.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-58-020-004

(3) Remove the tube assembly [31], tube assembly [32] or tube assembly [33]:

(a) Remove the lockwire or safety cable from the screws [6].

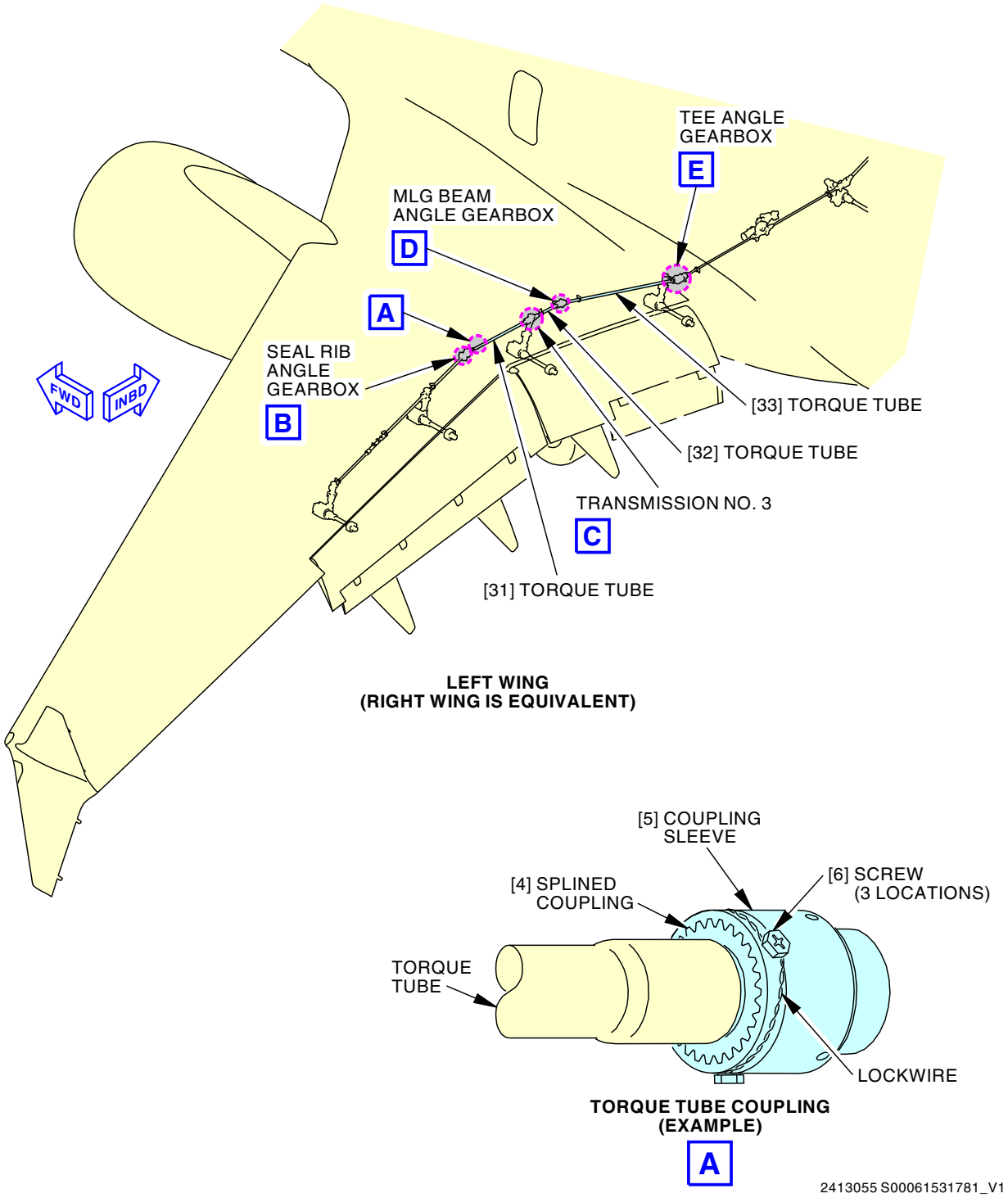
(b) Remove the screws [6] that attach the coupling sleeves [5] to the splined couplings [4].

(c) Move the coupling sleeves [5] off the splined couplings [4].

(d) Remove the tube assembly [31], tube assembly [32] or tube assembly [33].

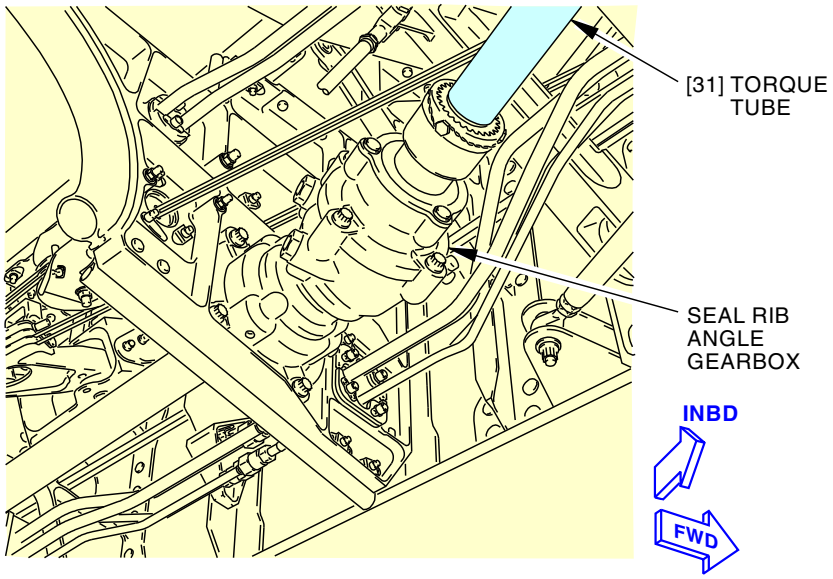
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



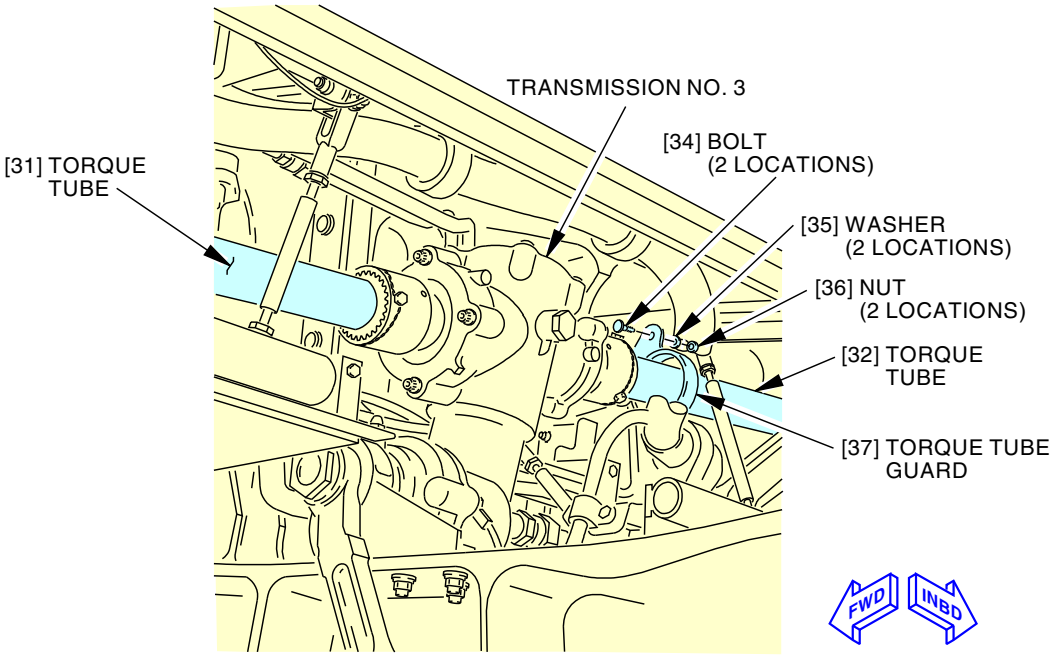
Inboard Wing Flap Torque Tube Installation
Figure 403/27-51-58-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SEAL RIB ANGLE GEARBOX

B



TRANSMISSION NO. 3

C

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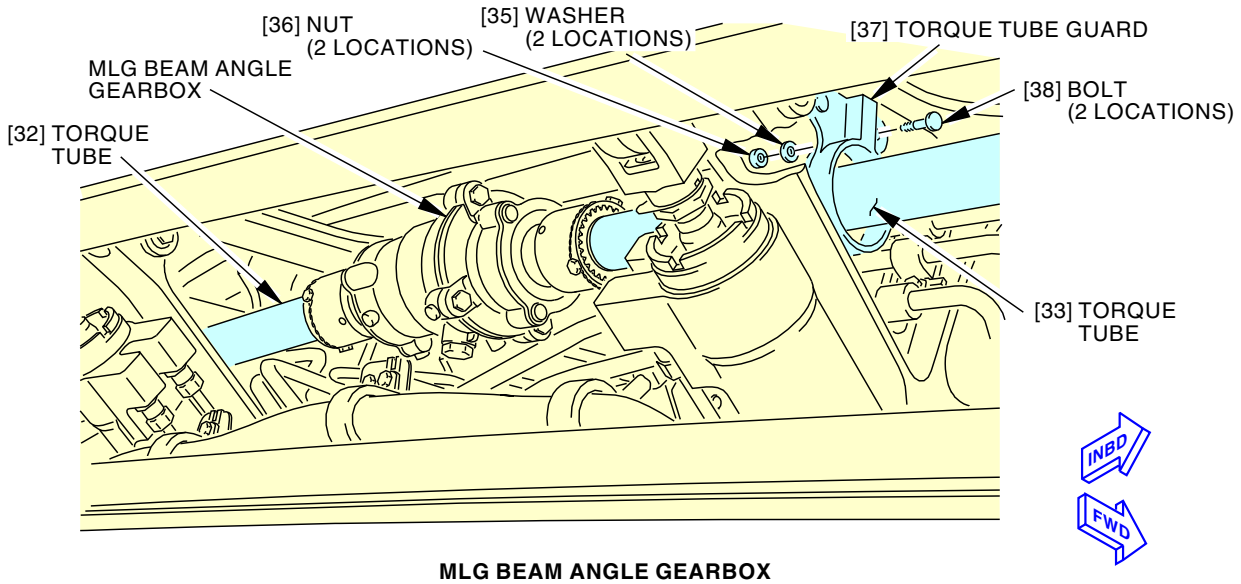
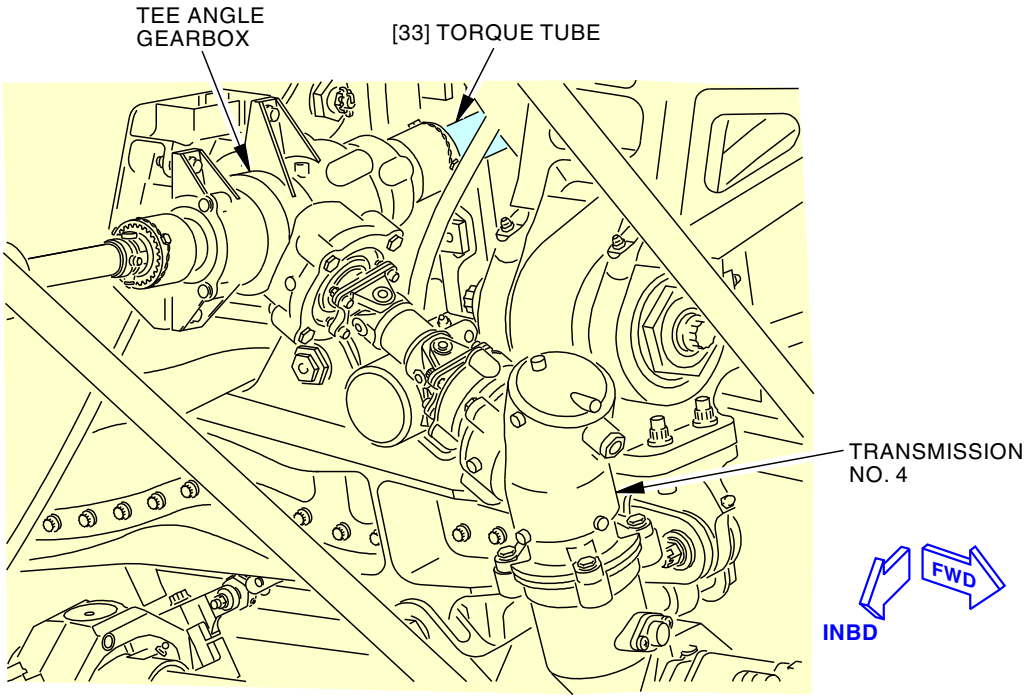
Inboard Wing Flap Torque Tube Installation
Figure 403/27-51-58-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MLG BEAM ANGLE GEARBOX

D



TEE ANGLE GEARBOX

E

2413057 S00061531783_V1

Inboard Wing Flap Torque Tube Installation
Figure 403/27-51-58-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-58-400-803

7. Inboard Wing Flap Torque Tube Installation

(Figure 403)

A. General

(1) This task is applicable to the torque tubes inboard of the seal rib angle gearbox and outboard of the Tee angle gearbox.

B. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
31	Tube assembly	27-51-58-10-045	SIA ALL
32	Tube assembly	27-51-58-10-055	SIA ALL
33	Tube assembly	27-51-58-03-030	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap

G. Inboard Wing Flap Torque Tube Installation

SUBTASK 27-51-58-420-003

(1) Install the tube assembly [31], tube assembly [32] or tube assembly [33]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Apply grease, D00633 to the coupling sleeves [5].

(b) Put the tube assembly [31], tube assembly [32] or tube assembly [33] in its position.

(c) Put the coupling sleeves [5] on the splined couplings [4].

(d) Install the screws [6] to attach the coupling sleeves [5] to the splined couplings [4].

(e) Install the lockwire or the safety cable on the screws [6].

SUBTASK 27-51-58-080-002

(2) Remove the clamp set, SPL-1726 from the torque tubes.

SUBTASK 27-51-58-420-004

(3) For tube assembly [32] or tube assembly [33], install the applicable torque tube guard [37]:

(a) Put the torque tube guard [37] on the torque tube.

(b) Install the bolts [34], or bolts [38], washers [35] and nuts [36] that attach the torque tube guard [37].

SUBTASK 27-51-58-820-002

(4) If a torque tube turned while the torque tubes were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-58-640-002

(1) For the applicable torque tube, do this task: Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication, TASK 12-22-51-640-801.

SUBTASK 27-51-58-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-58-710-004

(3) Use the primary system to retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(a) Make sure the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-58-710-005

(4) Use the primary system to extend the flaps to the 40-unit position, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(a) Make sure the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-58-710-006

(5) Use the primary system to retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-58-080-005

(6) Remove the downlock pins from the nose and main landing gear, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

TASK 27-51-58-000-804

8. Wheel Well Flap Torque Tube Removal

(Figure 404)

A. General

(1) This task is applicable to the torque tubes in the wheel well between the Tee angle gearboxes.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Removal

SUBTASK 27-51-58-480-004

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-58-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Wheel Well Flap Torque Tube Removal

SUBTASK 27-51-58-480-005

(1) Install the clamp set, SPL-1726 on a torque tube outboard of the applicable torque tube (Figure 402):

NOTE: The clamp set can be used to stop inadvertent movement of the flap drive system while the torque tubes are disconnected. If the flap drive system moves, then it will be necessary to do the flap drive system adjustment.

(a) Put the clamp assembly in its location on the applicable torque tube.

(b) Turn the knob to tighten the clamp assembly on the torque tube.

(c) Turn the rod until it touches the structure to make sure the clamp assembly does not turn.

SUBTASK 27-51-58-020-005

(2) Remove the torque tube guard [52]:

(a) Remove the nuts [55] , washers [54] and bolts [53] that attach the torque tube guard [52].

(b) Remove the torque tube guard [52] from the tube assembly [51].

SUBTASK 27-51-58-020-006

(3) Remove the tube assembly [51]:

(a) Remove the lockwire or safety cable from the screws [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

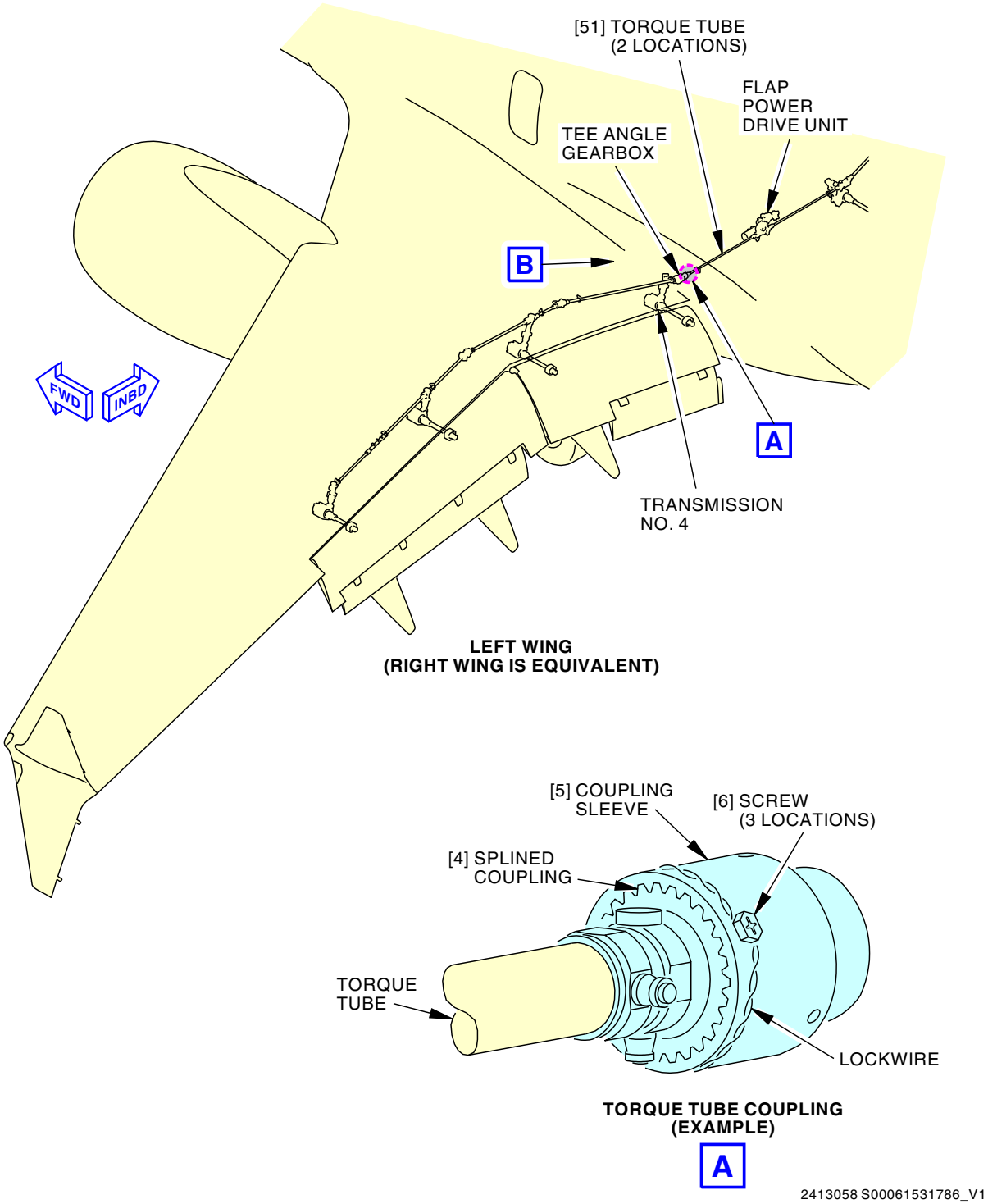
(b) Remove the screws [6] that attach the coupling sleeves [5] to the splined couplings [4].

(c) Move the coupling sleeves [5] off the splined couplings [4].

(d) Remove the tube assembly [51].

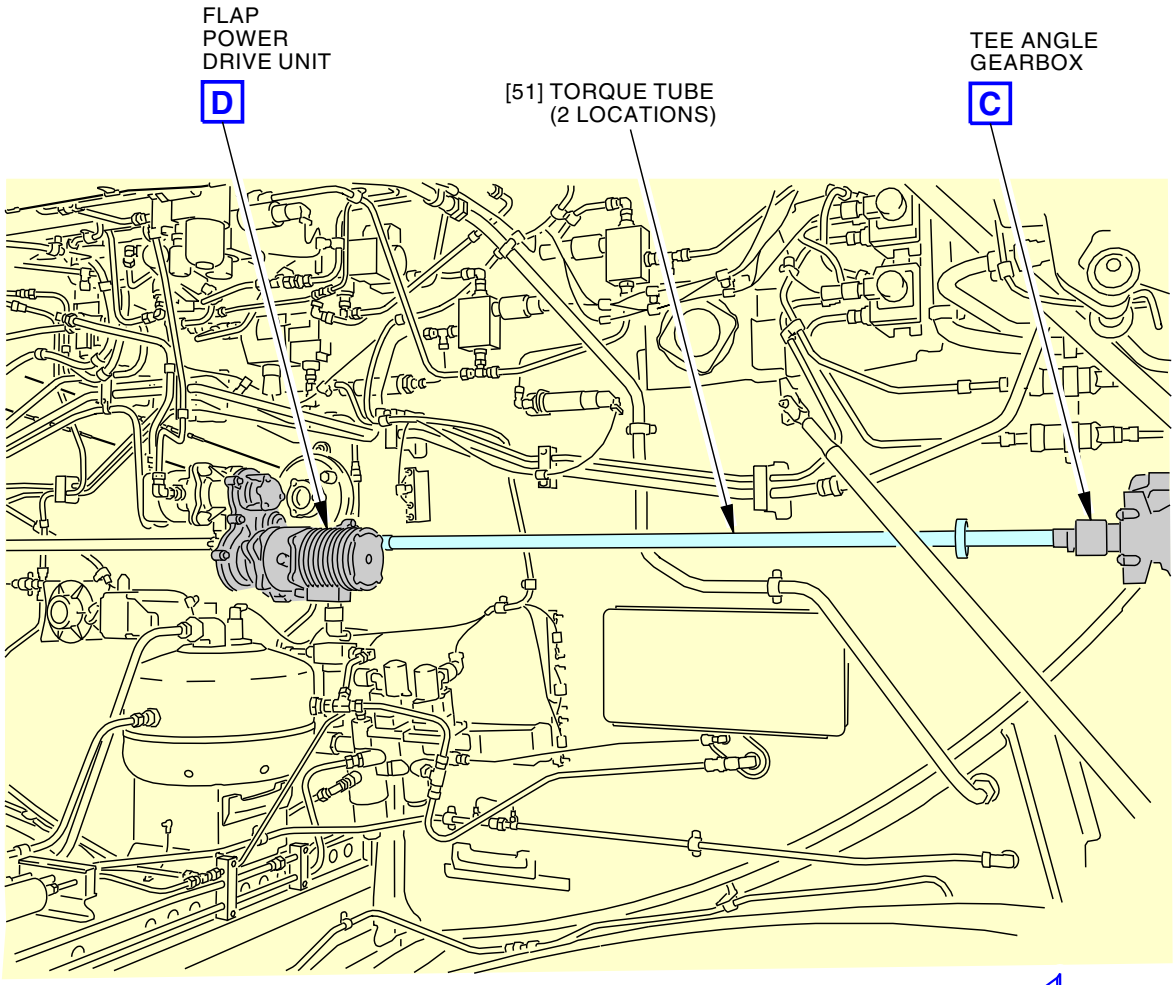
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Wheel Well Flap Torque Tube Installation
Figure 404/27-51-58-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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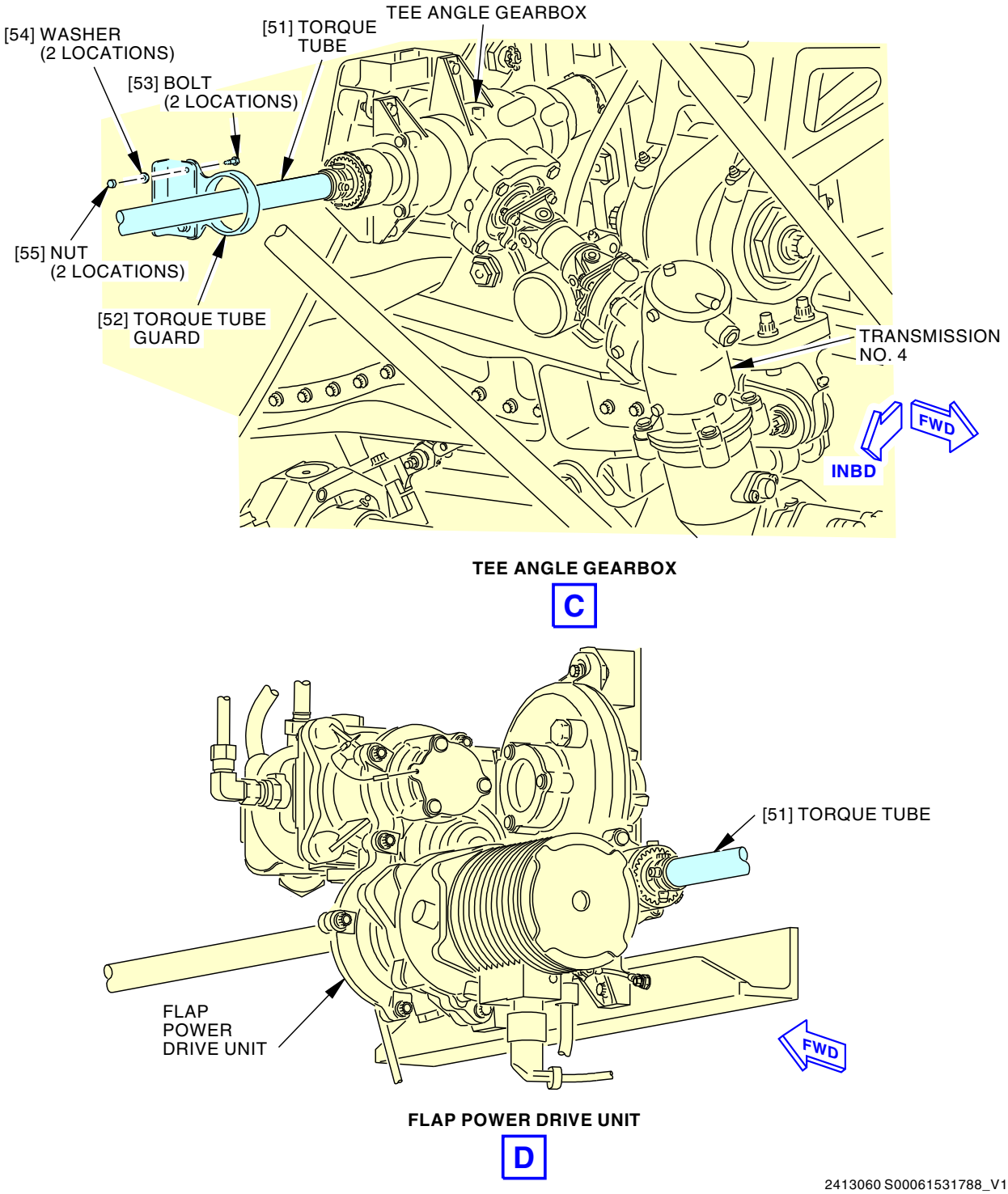
Wheel Well Flap Torque Tube Installation
Figure 404/27-51-58-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Wheel Well Flap Torque Tube Installation
Figure 404/27-51-58-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-58-400-804

9. Wheel Well Flap Torque Tube Installation

(Figure 404)

A. General

(1) This task is applicable to the torque tubes in the wheel well between the Tee angle gearboxes.

B. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
51	Tube assembly	27-51-58-03-060	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Wheel Well Flap Torque Tube Installation

SUBTASK 27-51-58-420-005

(1) Install the tube assembly [51]:

(a) Apply grease, D00633 to the coupling sleeves [5].

(b) Put the tube assembly [51] in its position.

(c) Put the coupling sleeves [5] on the splined couplings [4].

(d) Install the screws [6] to attach the coupling sleeves [5] to the splined couplings [4].

(e) Install the lockwire or the safety cable on the screws [6].

SUBTASK 27-51-58-080-003

(2) Remove the clamp set, SPL-1726 from the torque tubes.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-58-420-006

(3) Install the torque tube guard [52]:

(a) Put the torque tube guard [52] on the tube assembly [51].

(b) Install the bolts [53], washers [54] and nuts [55] that attach the torque tube guard [52].

SUBTASK 27-51-58-820-003

(4) If a torque tube turned while the torque tubes were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-58-640-003

(1) For the applicable torque tube, do this task: Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication, TASK 12-22-51-640-801.

SUBTASK 27-51-58-440-003

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-58-710-007

(3) Use the primary system to extend the flaps to the 40-unit position, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(a) Make sure the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-58-710-008

(4) Use the primary system to retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(a) Make sure the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-58-080-004

(5) Remove the downlock pins from the nose and main landing gear, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP TORQUE TUBES - INSPECTION/CHECK

1. General

A. This procedure contains the following task:

- Flap Torque Tube Inspection

TASK 27-51-58-200-801

2. Flap Torque Tube - Inspection

(Figure 601)

A. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-31 P/B 401	INBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION
27-51-41 P/B 401	OUTBOARD FLAP TRANSMISSIONS - REMOVAL/INSTALLATION
27-51-51 P/B 401	FLAP POWER DRIVE UNIT (PDU) - REMOVAL/INSTALLATION
27-51-55 P/B 401	TEE ANGLE GEARBOX - REMOVAL/INSTALLATION
27-51-56 P/B 401	MLG BEAM ANGLE GEARBOX - REMOVAL/INSTALLATION
27-51-57 P/B 401	SEAL RIB ANGLE GEARBOX - REMOVAL/INSTALLATION
27-51-58 P/B 401	FLAP TORQUE TUBES - REMOVAL/INSTALLATION
27-51-58-000-802	Outboard Wing Flap Torque Tube Removal (P/B 401)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
G50375	Kit - Safety Cable, 321 CRES - 0.032 Inch (0.81 mm) Diameter, (Contains both Cable and Ferrule)	BACC13AT3K, AMS 5689

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
550	Subzone - Left Wing: Trailing Edge, Aft of Rear Spar, Inbd of Outboard Trailing Edge Flap
553	Left Wing - Inboard Flap
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
650	Subzone - Right Wing: Trailing Edge, Aft of Rear Spar, Inboard of Outboard Trailing Edge Flap
653	Right Wing - Inboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

E. Prepare for the Inspection

SUBTASK 27-51-58-860-003

(1) Install the ground locks in the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 27-51-58-860-004

(2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-51-58-040-004

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Torque Tube Inspection

SUBTASK 27-51-58-480-006

(1) Install the clamp set, SPL-1726, on the torque tubes inboard and outboard of the applicable torque tube (TASK 27-51-58-000-802):

NOTE: The clamp set can be used to stop inadvertent movement of the flap drive system while the torque tubes are disconnected. If the flap drive system moves, then it will be necessary to do the flap drive system adjustment.

(a) Put the clamp assembly in its location on the applicable torque tube.

(b) Turn the knob to tighten the clamp assembly on the torque tube.

(c) Turn the rod until it touches the structure to make sure the clamp assembly does not turn.

SUBTASK 27-51-58-220-001

(2) Examine the flap torque tube splined couplers (Figure 601).

(a) Remove the torque tube guards, if it is applicable.

(b) Remove the three screws that attach the coupling sleeve to the spline coupling on the opposite end of the torque tube.

(c) Move the coupling sleeve off the torque tube spline to disconnect the torque tube.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Measure the angular backlash between the units coupling half and coupling sleeve.

1) Move the torque tube axially, the full length of the sleeve, to find the point of maximum backlash.

NOTE: Since the wear on the coupler will not be uniform, the torque tube is moved axially.

2) Make sure the angular backlash is 2 degrees or less.

(e) If the angular backlash is not in tolerance, replace the applicable unit:

- Torque Tube Assembly (PAGEBLOCK 27-51-58/401)
- Inboard Flap Transmission (PAGEBLOCK 27-51-31/401)
- Outboard Flap Transmission (PAGEBLOCK 27-51-41/401)
- Flap Power Drive Unit (PDU) (PAGEBLOCK 27-51-51/401)
- Tee Angle Gearbox (PAGEBLOCK 27-51-55/401)
- MLG Beam Angle Gearbox (PAGEBLOCK 27-51-56/401)
- Seal Rib Angle Gearbox (PAGEBLOCK 27-51-57/401)

(f) If the angular backlash is in tolerance, attach the coupling sleeve:

1) Apply a layer of the grease, D00633 (recommended), or grease, D00013 (alternate), on the splines of the coupling sleeve.

2) Engage the coupling sleeve with the coupling.

3) Install the three screws to attach the coupling sleeve.

4) Install the MS20995NC32 lockwire, G01912 (recommended), or safety cable kit, G50375 (alternate), on the heads of the screws.

(g) Remove the clamp set, SPL-1726, from the torque tubes.

(h) Install the torque tube guards, if it is applicable.

(i) Do a check to make sure that the torque tube has free axial movement.

SUBTASK 27-51-58-220-002

(3) Examine the center sleeve bearings:

(a) Measure the radial depth of the worn areas at the center sleeve bearing.

1) Make sure that the worn area is less than 0.080 in. (2.03 mm) maximum radial depth on the sleeve.

NOTE: This limit applies to torque tubes that use either phenolic or CRES torque tube center bearings.

(b) Replace the torque tube if it is not in the limits (PAGEBLOCK 27-51-58/401).

SUBTASK 27-51-58-220-003

(4) Examine the torque tube for loose rivets:

(a) Make sure there is no movement between the end fitting and the tube.

1) If there is movement between the end fitting and the tube, do one of these procedures:

2) Replace any torque tube which shows movement between the end fitting and the torque tube (PAGEBLOCK 27-51-58/401).

3) Repair any torque tube which shows movement between the end fitting and the torque tube (PAGEBLOCK 27-51-58/401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-58-640-004

(1) For the applicable torque tube, do this task: Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication, TASK 12-22-51-640-801.

SUBTASK 27-51-58-440-004

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-58-710-009

(3) Use the primary system to retract the flaps (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the UP white band.

SUBTASK 27-51-58-710-010

(4) Use the primary system to extend the flaps to the 40-unit position (TASK 27-51-00-860-801).

(a) Make sure the pointers for the flap position indicators are in the 40-unit white band.

SUBTASK 27-51-58-710-011

(5) Use the primary system to retract the flaps (TASK 27-51-00-860-801).

SUBTASK 27-51-58-020-007

(6) Remove the ground locks in the nose and main landing gear (TASK 32-00-01-080-801).

——— END OF TASK ———

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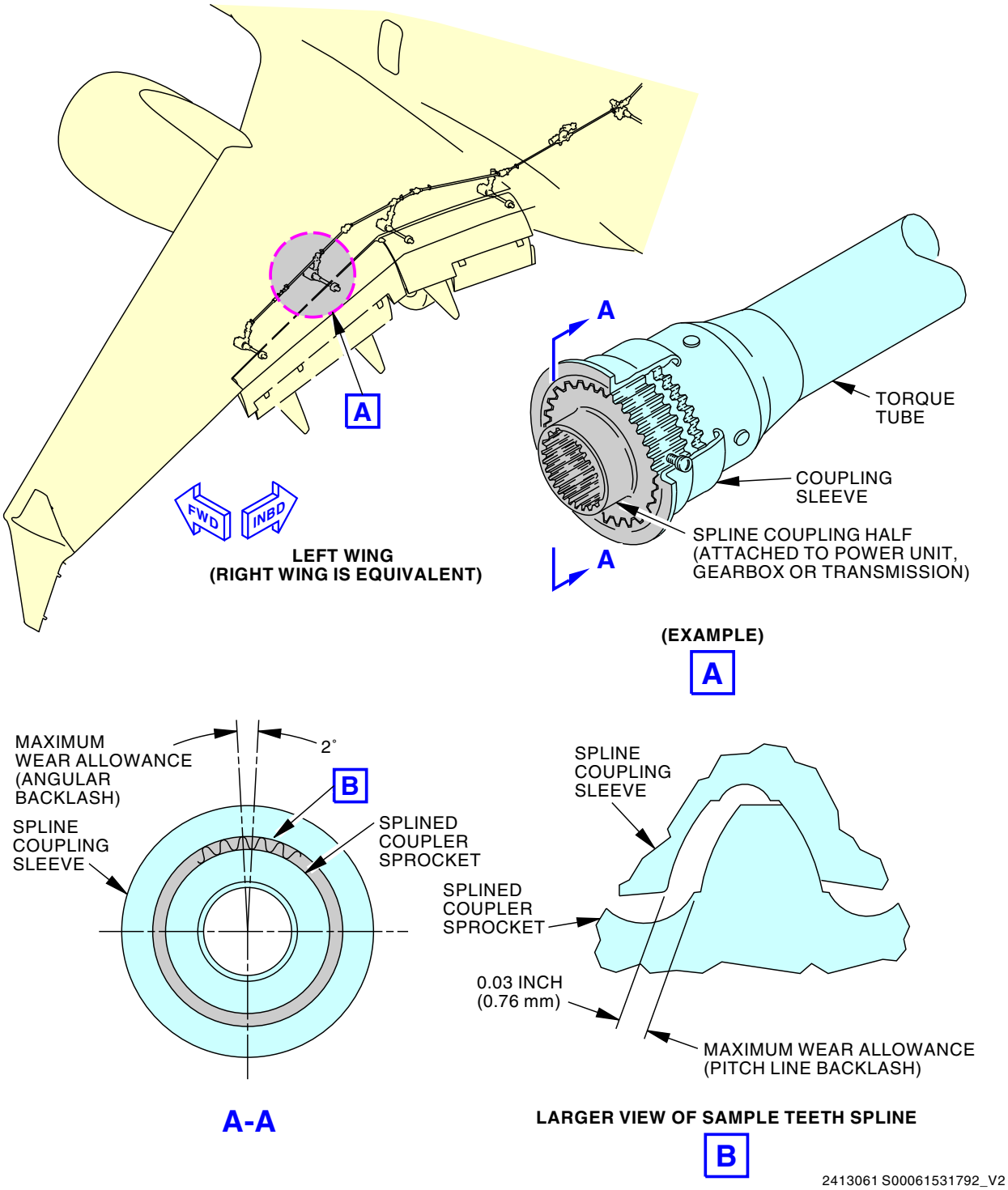


Flap Torque Splined Coupler Wear Limits
Figure 601/27-51-58-990-805

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP TORQUE TUBE SUPPORT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flap torque tube support

(2) An installation of the flap torque tube support.

TASK 27-51-59-000-801

2. Flap Torque Tube Support Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

D. Prepare for the Removal

SUBTASK 27-51-59-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-51-59-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

E. Flap Torque Tube Support Removal

SUBTASK 27-51-59-020-001

(1) Disconnect the torque tubes [4] from the support assembly [6]:

(a) Install clamp set, SPL-1726 on the torque tubes [4] inboard and outboard of the support assembly [6].

(b) Remove the lockwire [16] and the screws [5] that attach the coupling sleeves [3] to the splined couplings [1].

(c) Move the coupling sleeves [3] off the splined couplings [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-59-020-002

(2) Remove the torque tube support assembly [6]:

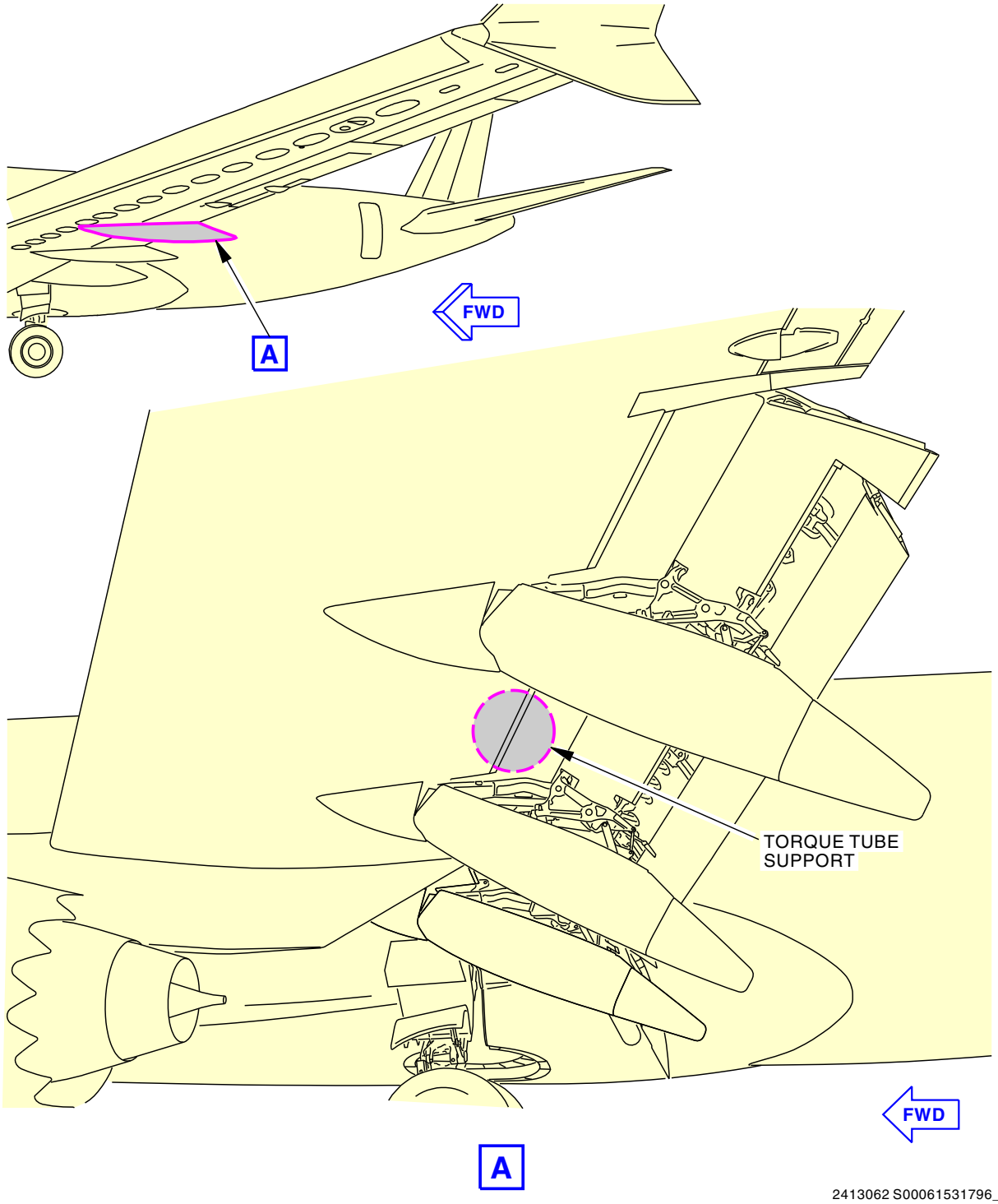
(a) Remove the nuts [15], washers [14], washers [13] and bolts [12] that attach the support assembly [6] to the spoiler actuator support [2].

(b) Remove the nuts [11], washers [10], washers [8], bolts [7] and bushings [9] that attach the support assembly [6] to the spoiler actuator support [2].

(c) Remove the support assembly [6].

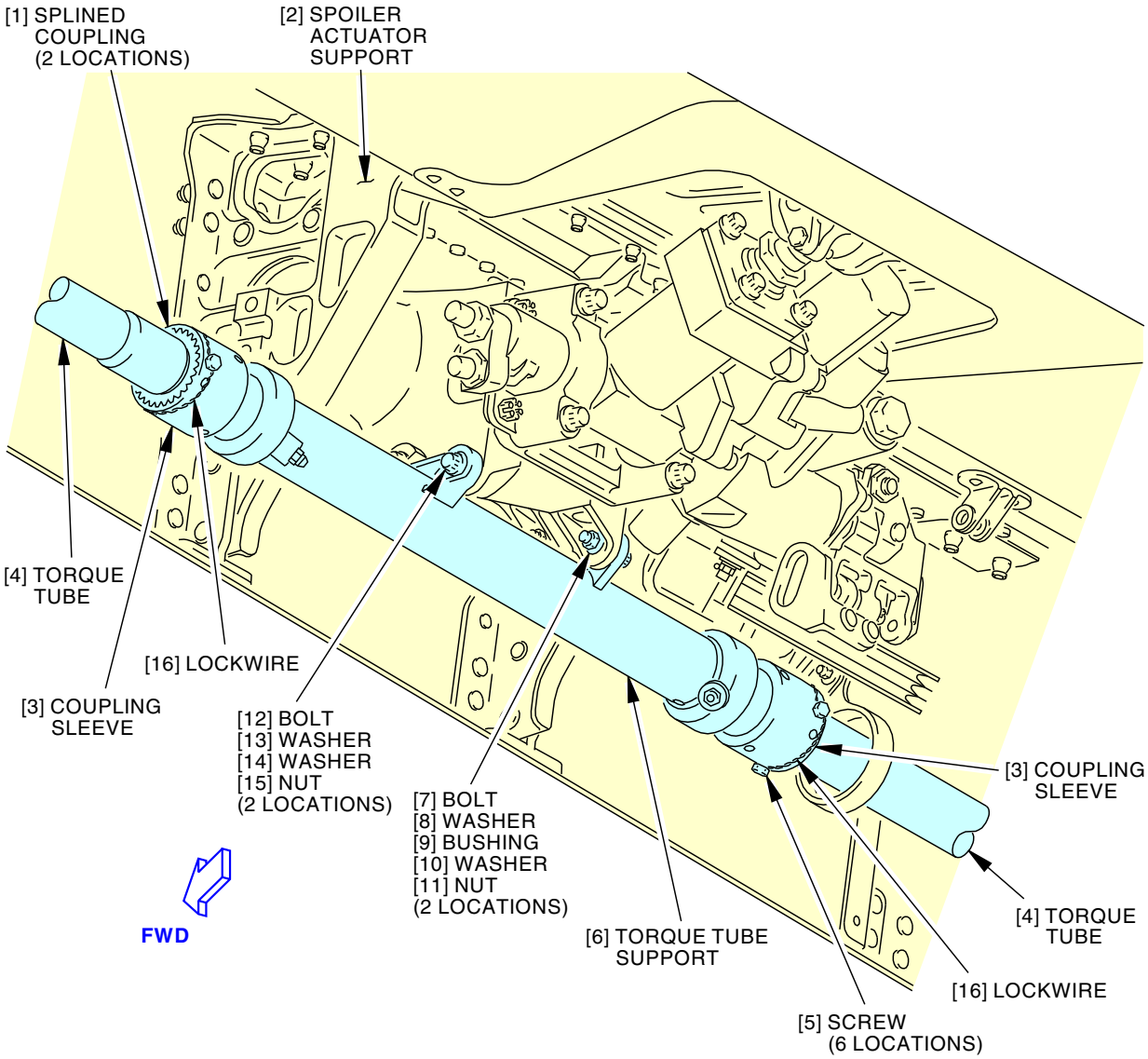
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Torque Tube Support Installation
Figure 401/27-51-59-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TORQUE TUBE SUPPORT
(LOWER MIDSPAN PANEL REMOVED FOR CLARITY)
(LEFT WING SHOWN, RIGHT IS EQUIVALENT)

B

2413063 S00061531797_V2

Flap Torque Tube Support Installation
Figure 401/27-51-59-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-59-400-801

3. Flap Torque Tube Support Installation

(Figure 401)

A. References

Reference	Title
12-22-51-640-801	Trailing Edge Flap Torque Tube and Torque Tube Support Lubrication (P/B 301)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Support assembly	27-51-59-01-040	SIA ALL
		27-51-59-01-045	SIA ALL

E. Location Zones

Zone	Area
561	Left Wing - Rear Spar to Trailing Edge, Outboard Of Inboard Flap, Inboard of Fixed Trailing Edge
567	Left Wing - Outboard Flap
661	Right Wing - Rear Spar to Trailing Edge, Outboard of Inboard Flap, Inboard of Fixed Trailing Edge
667	Right Wing - Outboard Flap

F. Flap Torque Tube Support Installation

SUBTASK 27-51-59-420-001

(1) Install the torque tube support assembly [6]:

(a) Put the support assembly [6] in its position on the spoiler actuator support [2].

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WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [7] and bolts [12].

(c) Install the bolts [12], washers [13], washers [14] and nuts [15] to attach the left side of the support assembly [6] to the spoiler actuator support [2].

(d) Install the bushings [9], bolts [7], washers [8], washers [10] and nuts [11] to attach the right side of the support assembly [6] to the spoiler actuator support [2].

SUBTASK 27-51-59-420-002

(2) Connect the torque tubes [4] to the support assembly [6]:

(a) Apply grease, D00633, to the coupling sleeves [3].

(b) Put the splined couplings [1] in the coupling sleeves [3].

(c) Install the screws [5] to attach the torque tubes [4] to the support assembly [6].

(d) Install lockwire [16] on the screws [5].

(e) Remove the clamp set, SPL-1726, from the torque tubes [4] inboard and outboard of the support assembly [6].

SUBTASK 27-51-59-820-001

(3) If the torque tubes [4] turned while they were disconnected, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-51-59-640-001

(4) Lubricate the torque tubes [4] and the support assembly [6] (TASK 12-22-51-640-801).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-59-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-59-860-002

(2) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap Control Unit Removal

(2) Flap Control Unit Installation.

B. The flap control unit includes the flap control valves for the leading edge and the trailing edge, the control linkage, follow-up linkage, and the flap limit switch cams.

C. The flap limit switches are installed on the flap control unit. It is necessary to remove the flap limit switches from the flap control unit.

TASK 27-51-61-000-801

2. Flap Control Unit Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-63-000-801	Flap Limit Switch Removal (P/B 401)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
31-51-01-000-801	Flap Landing Warning Switch Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

B. Location Zones

Zone	Area
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

D. Prepare for the Removal

SUBTASK 27-51-61-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-61-860-002

(2) Remove the pressure from the system B hydraulic reservoir, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-61-860-003

(3) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-61-480-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-61-010-001

(5) Remove the floor panel to get access to the top of the flap control unit assembly [9], do this task: Passenger Cabin Floor Panel Removal, TASK 53-21-00-000-801

(Figure 401).

NOTE: The floor panel is located between stations 706 and 727B on the right side of the airplane.

E. Flap Control Unit Removal

SUBTASK 27-51-61-020-001

(1) Disconnect the cable assembly WFA [1] and cable assembly WFB [1] from the quadrant [5].

(a) Open this access panel:

Number	Name/Location
112A	Forward Access Door

(b) To get access to the turnbuckles [3], do this task:

Open this access panel:

(Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801)

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

(c) Remove the locking clips [2] and loosen the turnbuckles [3] on the cable assembly WFA [1] and cable assembly WFB [1].

(d) Remove the pin [8], pin [6], and spacers [7] from the quadrant [5].

(e) Remove the straps [10] that attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(f) Remove the pins [4] that attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(g) Remove the cable assembly WFA [1] and cable assembly WFB [1] from the quadrant [5].

SUBTASK 27-51-61-020-002

(2) Remove the quadrant [5] from the flap control unit assembly [9].

(a) Remove the nut [11] and washer [17] that attach the quadrant [5] to the flap control unit assembly [9].

(b) Remove the quadrant [5] from the flap control unit assembly [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-61-020-003

(3) Remove the flap limit switches [39] from the flap control unit assembly [9] (Figure 402).

NOTE: It is not necessary to disconnect the wires for the flap limit switches [39].

(a) Remove the screws [40], washers [56], and switch cover [31] from the flap control unit assembly [9].

(b) For the Flap UP limit switch, S245, Flap Up limit switch, S1051, and Flap DOWN limit switch, S246, do this task: Flap Limit Switch Removal, TASK 27-51-63-000-801.

(c) For the Landing Warning Switch, S138, do this task: Flap Landing Warning Switch Removal, TASK 31-51-01-000-801.

SUBTASK 27-51-61-020-004

(4) Disconnect the cable WFFA [48] and cable WFFB [48] at the turnbuckles [50].

NOTE: It is necessary to remove the cable WFFA [48] and the cable WFFB [48] with the flap control unit assembly [9].

(a) Remove the locking clips [49] and disconnect the turnbuckles [50] on the cable WFFA [48] and cable WFFB [48].

(b) Put a label on the cable WFFA [48] and the cable WFFB [48] to identify them.

SUBTASK 27-51-61-020-005

(5) Disconnect the electrical connector [33] from the trailing edge control valve [34].

SUBTASK 27-51-61-020-006

(6) Disconnect the hydraulic lines.

(a) Disconnect hydraulic line [27], hydraulic line [28], hydraulic line [29], hydraulic line [30], and hydraulic line [32] from the trailing edge control valve [34].

(b) Disconnect hydraulic line [23], hydraulic line [24], hydraulic line [25], and hydraulic line [26] from the leading edge control valve [35].

SUBTASK 27-51-61-020-007

(7) Remove the flap control unit assembly [9].

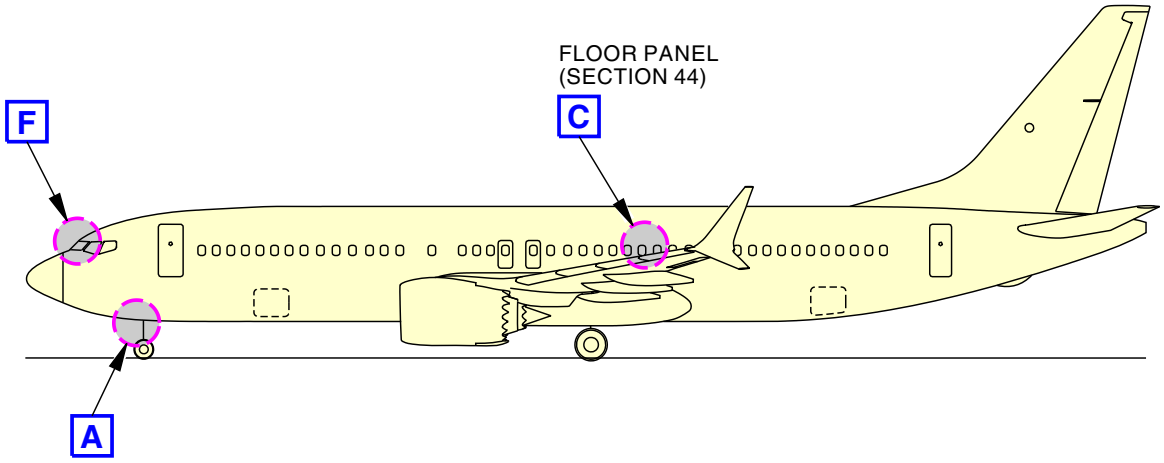
(a) Remove the bolts [15] and washers [14] from above the flap control unit assembly [9] (Figure 401).

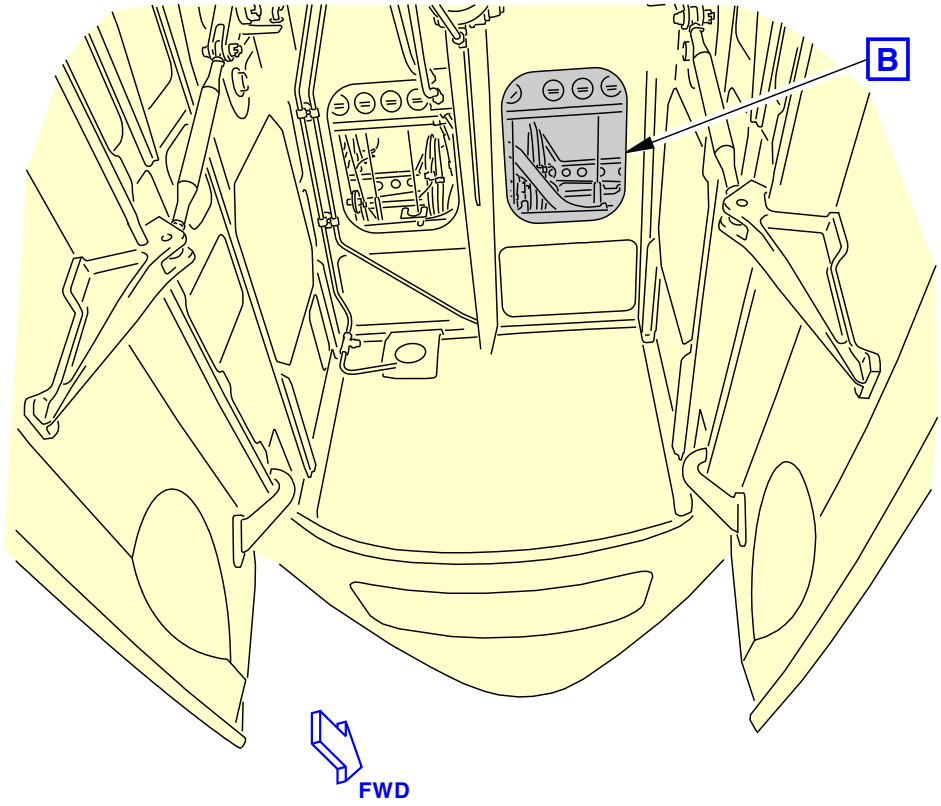
(b) Remove the bolts [41] and washers [42] from below the flap control unit assembly [9] (Figure 402).

(c) Remove the flap control unit assembly [9].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





NOSE LANDING GEAR WHEEL WELL

A

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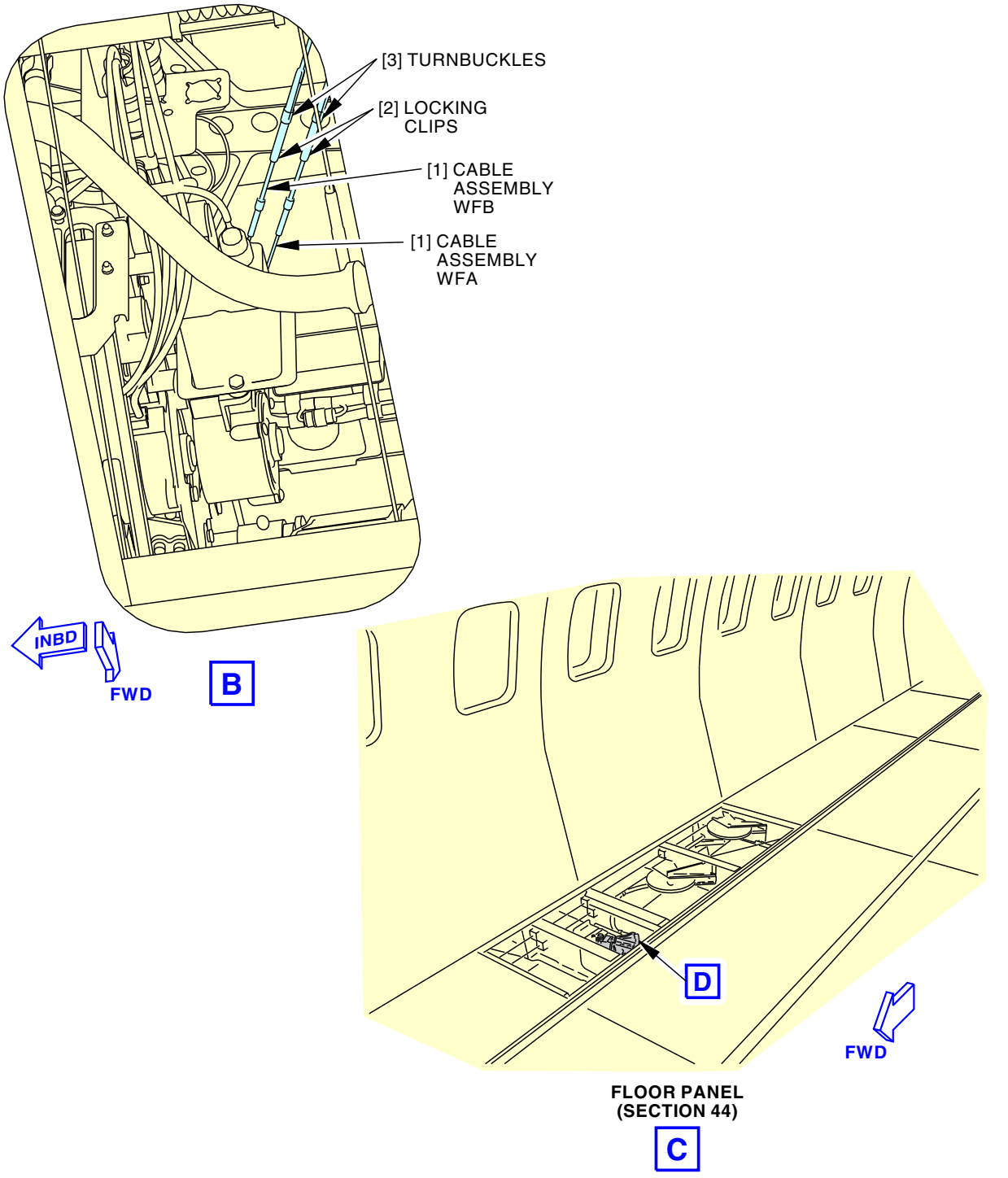
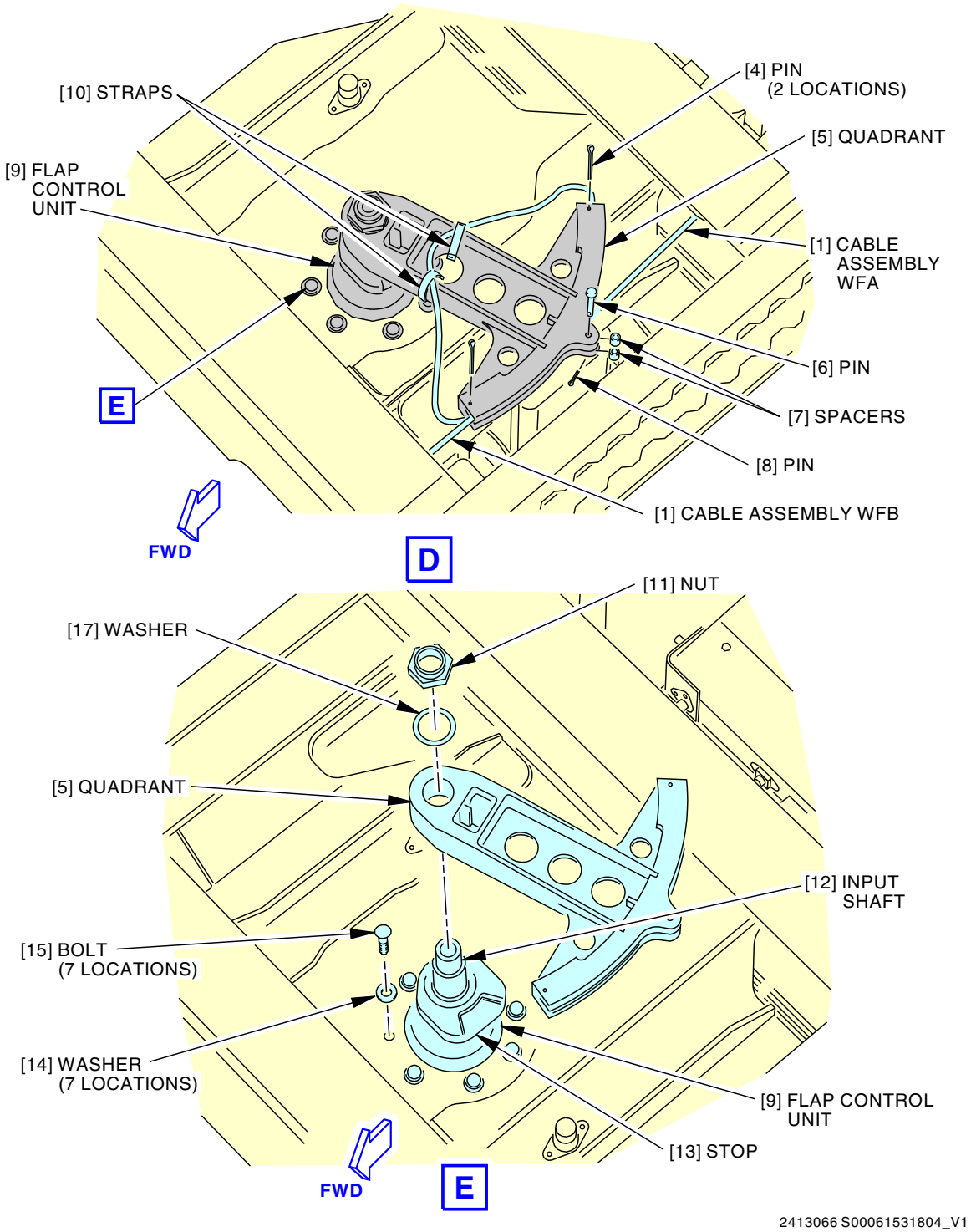
Flap Control Unit Quadrant Installation
Figure 401/27-51-61-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



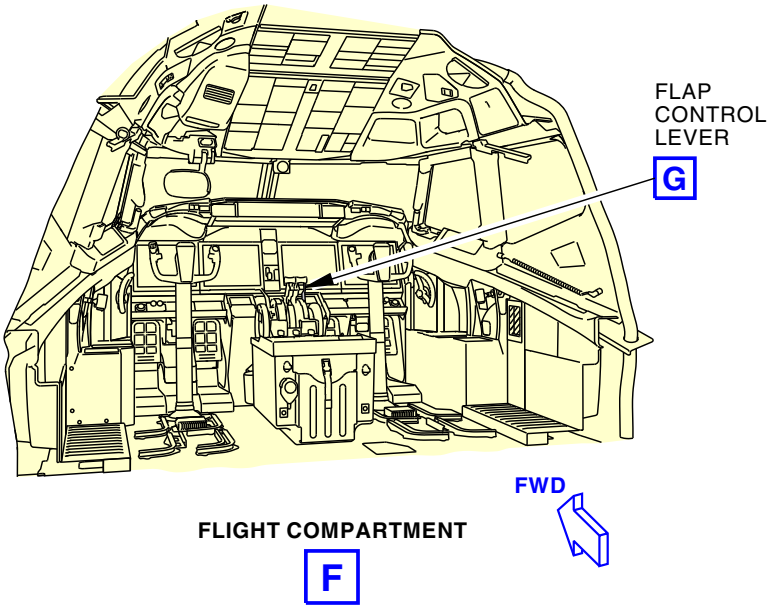
Flap Control Unit Quadrant Installation
Figure 401/27-51-61-990-801 (Sheet 2 of 4)

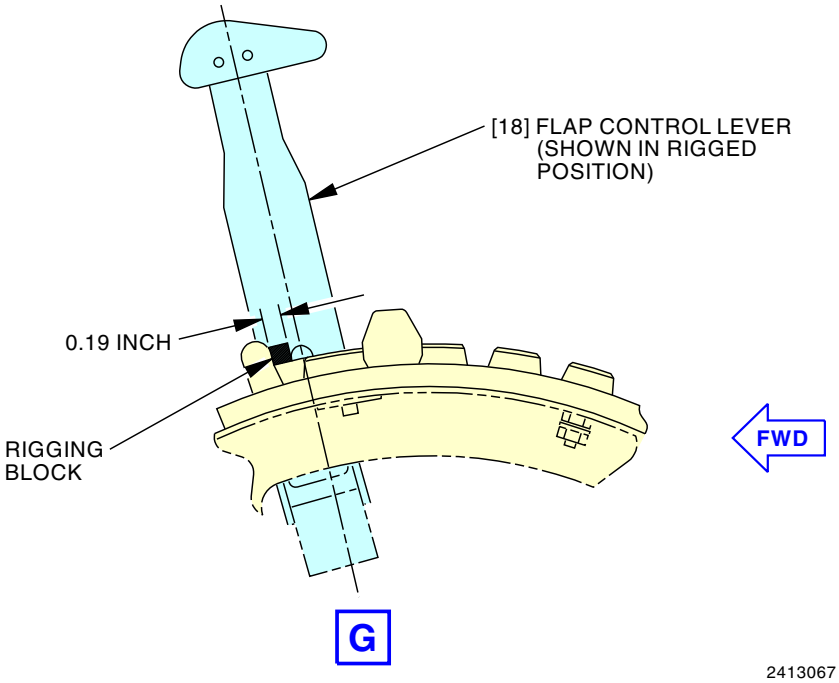
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Unit Quadrant Installation
Figure 401/27-51-61-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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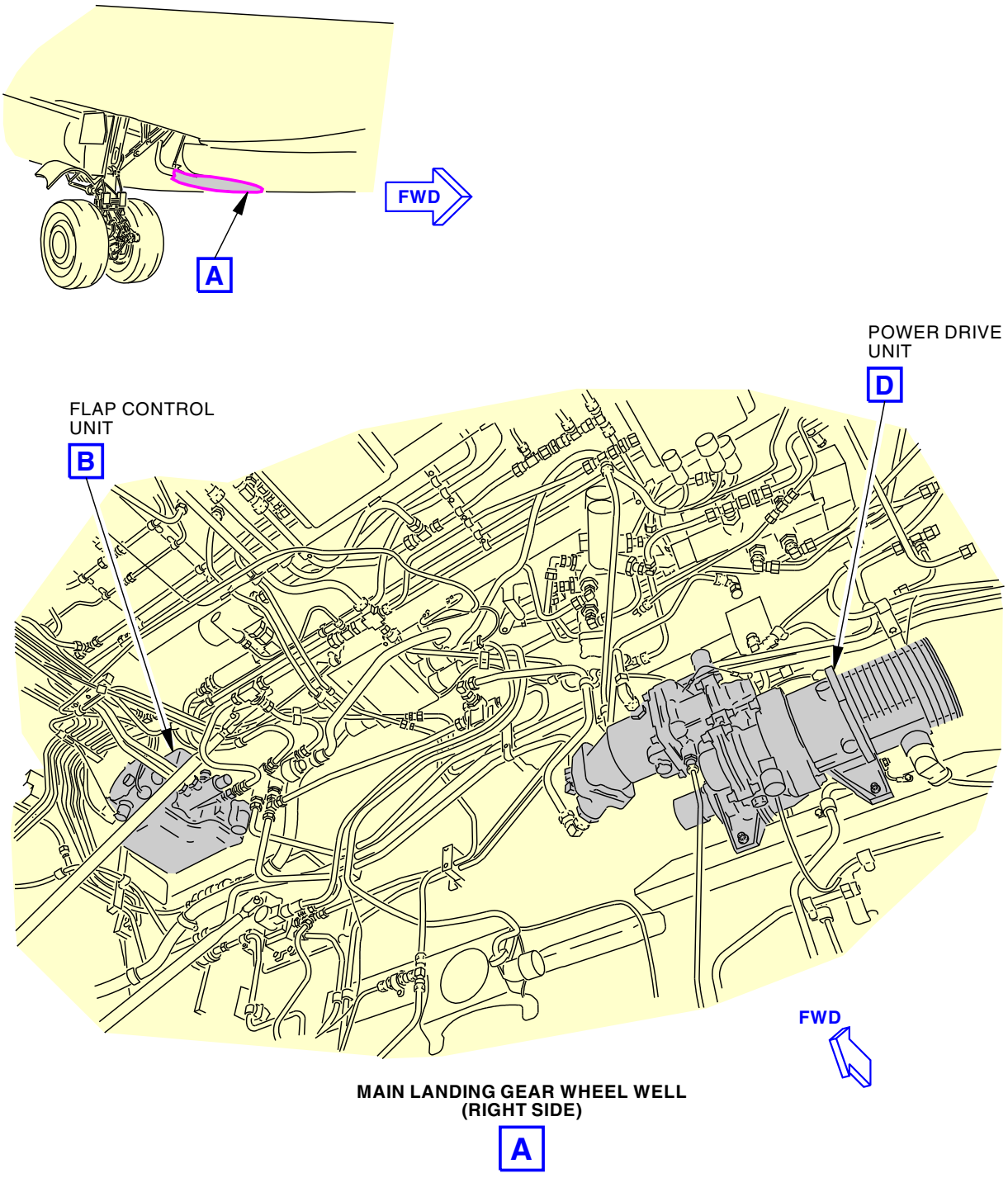
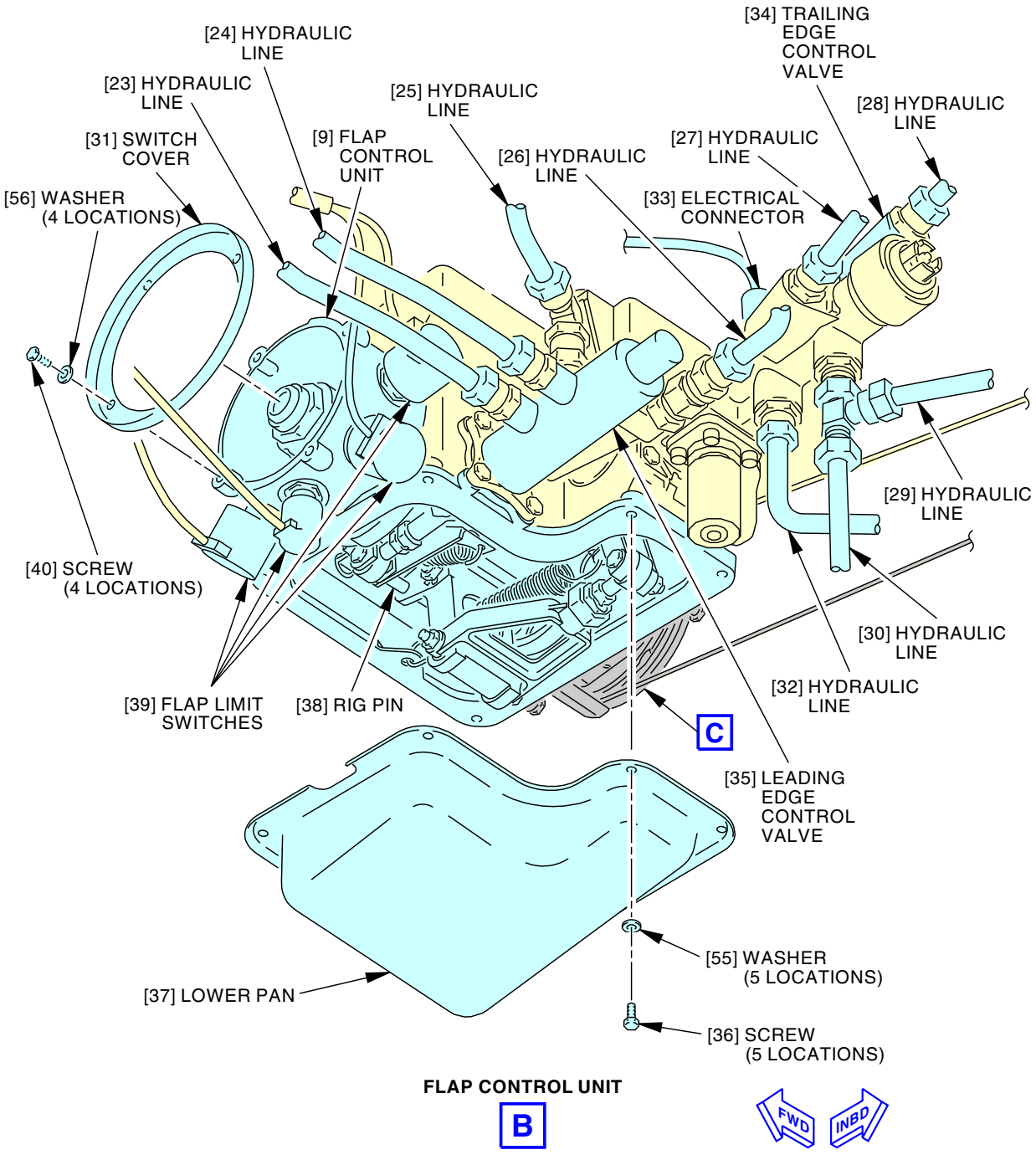
Flap Control Unit Quadrant Installation
Figure 401/27-51-61-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



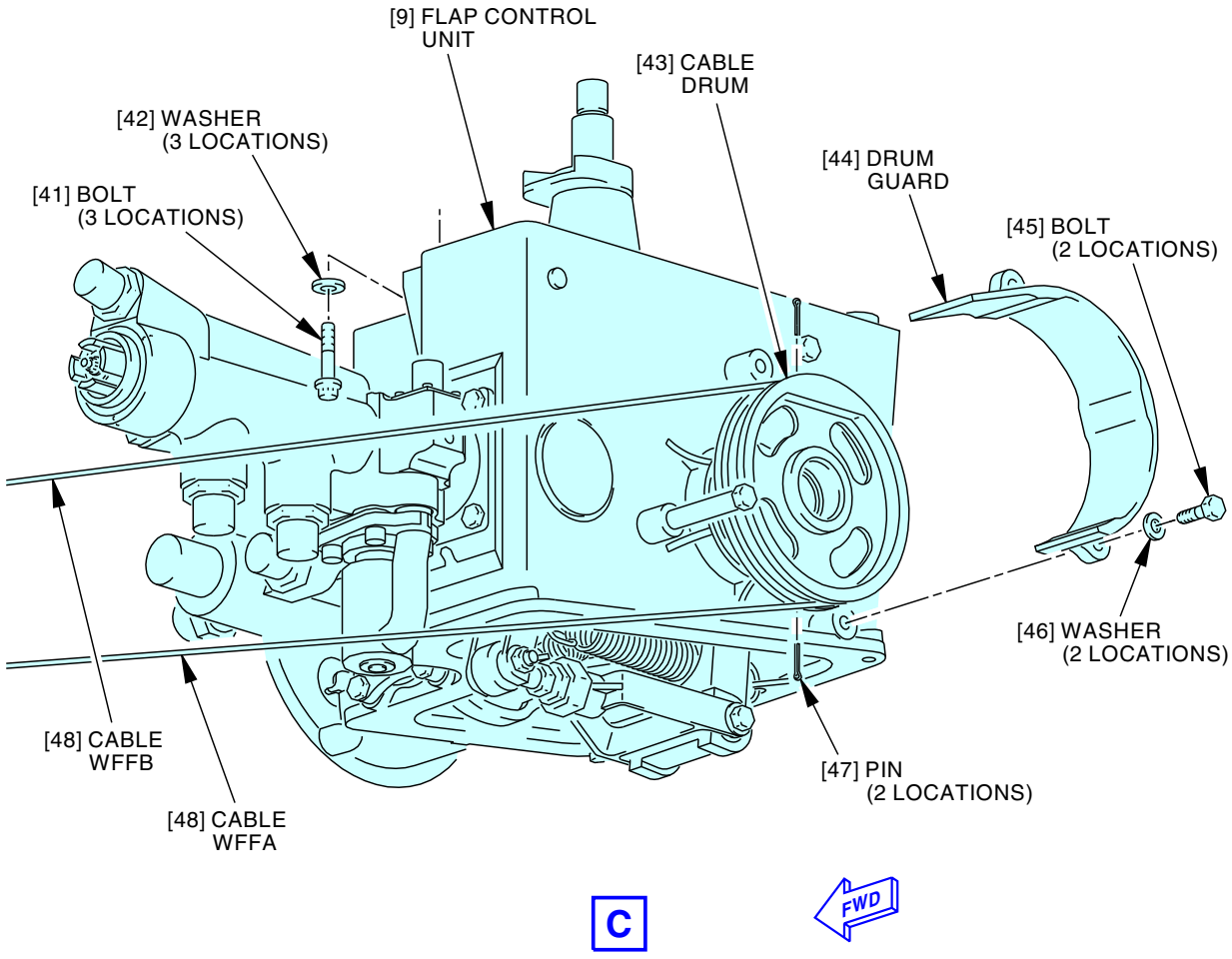
Flap Control Unit Installation
Figure 402/27-51-61-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Unit Installation
Figure 402/27-51-61-990-802 (Sheet 2 of 4)

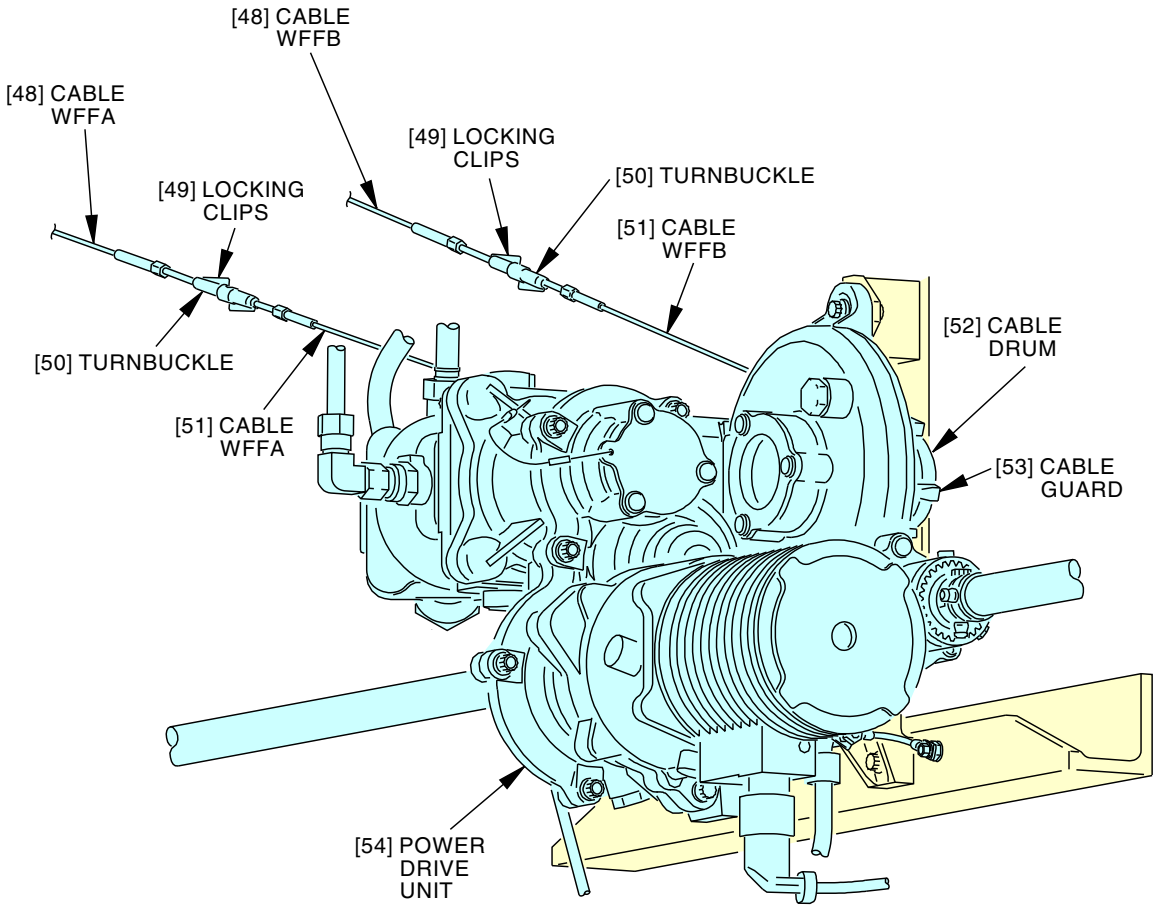
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413070 S00061531808_V2

Flap Control Unit Installation
Figure 402/27-51-61-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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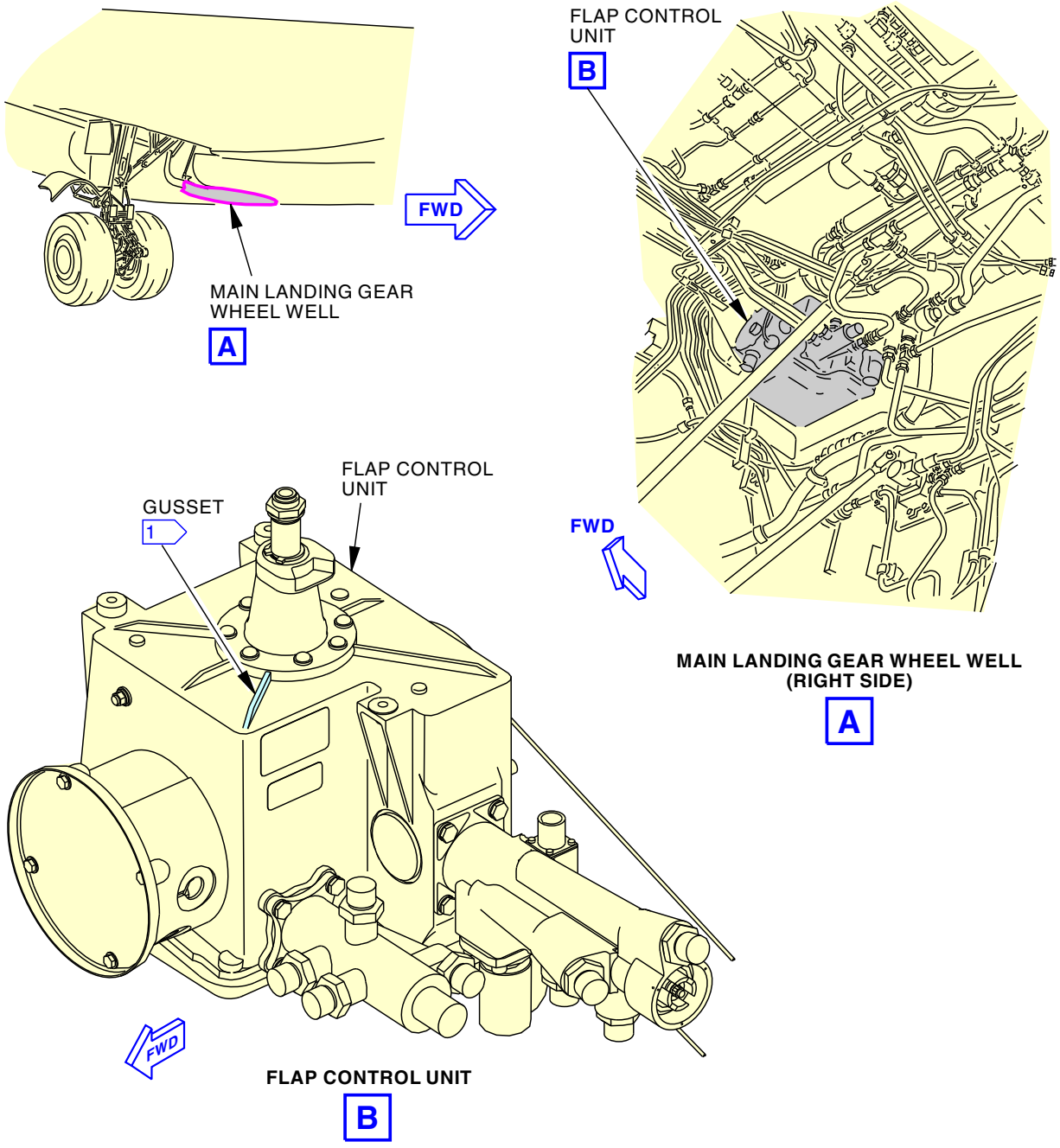
Flap Control Unit Installation
Figure 402/27-51-61-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 CLEARANCE BETWEEN THE GUSSET OF THE FLAP CONTROL UNIT AND THE FASTENER HEAD OF THE STRUCTURE IS A MINIMUM OF 0.010 INCH (0.254 mm).

2990318 S0000767454_V1

Flap Control Unit Installation
Figure 403/27-51-61-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-61-400-801

3. Flap Control Unit Installation

(Figure 401, Figure 402)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
27-51-00-730-801	Trailing Edge Flap System Test (P/B 501)
27-51-00-820-801	Trailing Edge Flap Control System Adjustment and Test (P/B 501)
27-51-63-400-801	Flap Limit Switch Installation (P/B 401)
27-51-63-820-801	Flaps Limit Switch Adjustment (P/B 501)
31-51-01-400-801	Flap Landing Warning Switch Installation (P/B 401)
31-51-01-820-801	Flap Landing Warning Switch Adjustment and Test (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205
STD-6394	Tensionmeter - Cable
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I

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(Continued)

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50077	Abrasive - Aluminum Oxide Paper, 240 grit or finer	
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Clip	27-51-00-21-005	SIA ALL
4	Pin	27-51-00-21-150	SIA ALL
5	Quadrant	27-51-61-02A-015	SIA ALL
6	Pin	27-51-62-01A-010	SIA ALL
8	Pin	27-51-62-01A-005	SIA ALL
9	Flap control unit assembly	27-51-61-02A-040	SIA ALL
10	Strap	27-51-00-21-155	SIA ALL
47	Pin	27-51-61-01A-065	SIA ALL
49	Clip	27-51-00-21-010	SIA ALL

E. Location Zones

Zone	Area
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
212	Flight Compartment - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

F. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

G. Prepare for the Installation

SUBTASK 27-51-61-820-001

(1) Install the rig pin [38] in the flap control unit assembly [9] (Figure 402).

NOTE: This will make sure that the flap control unit assembly [9] is in the adjusted position.

(a) Remove the screws [36], washers [55], and lower pan [37] from the flap control unit assembly [9].

(b) Install the rig pin [38] through the cam follower arm and valve cam.

1) Use rig pin, F70207-116, SPL-12421, from rigging pin kit, SPL-1585.

SUBTASK 27-51-61-420-001

(2) If they are not installed, install the cable WFFA [48] and cable WFFB [48] on the flap control unit assembly [9] as follows:

(a) Remove the bolts [45], washers [46], and drum guard [44] from the flap control unit assembly [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Put the cable WFFA [48] and cable WFFB [48] in their location on the cable drum [43].

1) Wrap the cable WFFA [48] around the cable drum [43] 1/2 turns.

2) Wrap the cable WFFB [48] around the cable drum [43] 1 1/2 turn.

(c) Install the cotter pins [47] to hold the cable WFFA [48] and cable WFFB [48] on the cable drum [43].

(d) Put the drum guard [44] in its location on the flap control unit assembly [9].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(e) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [45].

(f) Install the bolts [45] and washers [46] to attach the drum guard [44].

H. Flap Control Unit Installation

SUBTASK 27-51-61-420-002

(1) Install the flap control unit assembly [9].

(a) Make sure that the area around four of the seven holes for the bolts [15] on the flap control unit assembly [9] is clean for electrical bonding.

(b) Apply a layer of sealant, A00247, to the mating surface of the flap control unit assembly [9] and the structure.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(c) Apply a layer of Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [41].

(d) Lift the flap control unit assembly [9] to its position.

(e) Install the bolts [41] and washers [42] to attach the flap control unit assembly [9].

(f) Install the bolts [15] and washers [14] from above to attach the flap control unit assembly [9] (Figure 401).

(g) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the resistance between the flap control unit assembly [9] and the structure is 0.008 ohm (8 milliohms) or less.

(h) Apply a bead of sealant, A02315, to the heads of the bolt [15].

SIA 006-014

SUBTASK 27-51-61-320-001

(2) Make sure that the clearance between the gusset of the flap control unit assembly [9] and the head of the fastener is not less than 0.010 in. (0.254 mm) (Figure 403).

(a) If the clearance is less than 0.010 in. (0.254 mm), do the following steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 006-014 (Continued)

CAUTION REMOVE MINIMUM MATERIAL WHEN YOU BLEND THE GUSSET OF THE FLAP CONTROL UNIT. DO NOT EXTEND THE BLEND AROUND THE GUSSET. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

1) Use 240 grit or finer abrasive paper, G50077, on the gusset of the flap control unit assembly [9] to achieve a minimum clearance of 0.010 in. (0.254 mm).
2) Apply coating, C00064, to the reduced gusset of the flap control unit assembly [9].
3) Apply two coats of primer, C00259, to the reduced gusset of the flap control unit assembly [9].
4) Apply sealant, A00247, to the reduced gusset of the flap control unit assembly [9].

SIA ALL

SUBTASK 27-51-61-420-003

(3) Install the quadrant [5] on the flap control unit assembly [9] (Figure 401).
   (a) Put the quadrant [5] in its position on the input shaft [12] for the flap control unit assembly [9].
   (b) Apply grease, D00633, to the threads on the input shaft [12].
   (c) Install the washer [17] and nut [11] on the input shaft [12].
   (d) Tighten the nut [11] to 250 in-lb (28.2 N·m) - 300 in-lb (33.9 N·m) more than the run-on torque.

SUBTASK 27-51-61-420-004

(4) Connect the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].
   (a) Put the flap control lever [18] in the rigged position.
      1) Put a 0.190 ±0.005 in. (4.826 ±0.127 mm) thick rigging block between the detent pin on the flap control lever [18] and the upstop on the detent plate.
         a) Make sure that the rigging block does not go into the flap UP detent.
      2) Install a clamp to hold the quadrant [5] against the aft side of the stop [13] on the flap control unit assembly [9].
   (b) Put the cable assembly WFA [1] and cable assembly WFB [1] in its position on the quadrant [5].

      NOTE: The cable assembly WFA [1] and the cable assembly WFB [1] attaches to the quadrant [5] in two locations. There is a loop of cable that goes through the straps [10].

   (c) Install the pins [4] and straps [10] to attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].
   (d) Install the pin [6], spacers [7], and pin [8] on the quadrant [5].
   (e) Use a cable tensionmeter, STD-6394, to adjust the turnbuckles [3] to tighten the cable assembly WFA [1] and cable assembly WFB [1] until the tension is 275 ±15 lb (125 ±7 kg).

      NOTE: You will adjust the cable assembly WFA [1] and the cable assembly WFB [1] to the final tension and remove the tools from the flap control unit during the flap control unit adjustment procedure.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-61-420-005

(5) Connect the hydraulic lines (Figure 402).

(a) Remove the plugs from the ports of the leading edge control valve [35] and trailing edge control valve [34].

(b) Remove the caps/plugs, STD-14686, from the hydraulic lines.

(c) Connect hydraulic line [23], hydraulic line [24], hydraulic line [25], and hydraulic line [26] to the leading edge control valve [35].

1) Tighten the B-nuts on the hydraulic line [23], hydraulic line [24], and hydraulic line [25] to 500 ±25 in-lb (56 ±3 N·m).

2) Tighten the B-nut on the hydraulic line [26] to 280 ±14 in-lb (32 ±2 N·m).

(d) Connect the hydraulic line [27], hydraulic line [28], hydraulic line [29], hydraulic line [30], and hydraulic line [32] to the trailing edge control valve [34].

1) Tighten the B-nuts on the hydraulic line [27] and hydraulic line [32] to 500 ±25 in-lb (56 ±3 N·m).

2) Tighten the B-nuts on the hydraulic line [29] and hydraulic line [30] to 270 ±14 in-lb (31 ±2 N·m).

3) Tighten the B-nut on the hydraulic line [28] to 280 ±14 in-lb (32 ±2 N·m).

SUBTASK 27-51-61-210-001

(6) Before you connect the electrical connector [33], examine the connector for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(a) If there was corrosion, correct the problem (SWPM 20-60-03).

(b) Apply the D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

SUBTASK 27-51-61-420-006

(7) Connect the electrical connector [33] to the trailing edge control valve [34].

SUBTASK 27-51-61-420-007

(8) Connect the cable WFFA [48] and cable WFFB [48] at the turnbuckles [50].

(a) Make sure that the flap power drive unit [54] is in the rigged position.

1) Make sure that the black rig mark on the cable drum [52] extends past the white cable guard [53] a minimum of 0.03 in. (0.76 mm) on each side.

WARNING

DO NOT RETRACT THE POWER DRIVE UNIT PAST THE RIG MARK IN THE UP DIRECTION. YOU CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

2) If the power drive unit [54] is not in the rigged position, use the manual drive to move the power drive unit [54].

(b) Connect the cable WFFA [48] and cable WFFB [48] to the cables [51] at the turnbuckles [50].

NOTE: Cable WFFA is the lower cable [51].

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(c) Use a cable tensionmeter, STD-6394, to adjust the turnbuckles [50] to tighten the cable WFFA [48] and cable WFFB [48] until the tension is 125 ±10 lbf (556 ±45 N).

NOTE: You will adjust the cable WFFA [48] and the cable WFFB [48] to the final tension during the flap control system adjustment procedure.

SUBTASK 27-51-61-820-002

(9) Do this task: Trailing Edge Flap Control System Adjustment and Test, TASK 27-51-00-820-801.

NOTE: This task includes the adjustment of the cables, the removal of the rig pin and the clamp from the flap control unit assembly [9] and the removal of the rigging tool from the flap control lever.

SUBTASK 27-51-61-420-008

(10) Install the locking clips [2] on the turnbuckles [3] for cable assembly WFA [1] and cable assembly WFB [1] (Figure 401).

SUBTASK 27-51-61-420-009

(11) Install the locking clips [49] on the turnbuckles [50] for cable WFFA [48] and cable WFFB [48] (Figure 402).

SUBTASK 27-51-61-420-010

(12) Install the flap limit switches [39] in the flap control unit assembly [9] as follows:

(a) For the Landing Warning Switch, S138, do this task: Flap Landing Warning Switch Installation, TASK 31-51-01-400-801.

(b) For the Flap UP limit switch, S245, Flap DOWN limit switch, S246, and Flap UP limit switch, S1051, do this task: Flap Limit Switch Installation, TASK 27-51-63-400-801.

SUBTASK 27-51-61-420-011

(13) Do the adjustment of the flap limit switches [39] in the flap control unit assembly [9] as follows:

(a) For the Landing Warning Switch, S138, do this task: Flap Landing Warning Switch Adjustment and Test, TASK 31-51-01-820-801.

(b) For the Flap UP limit switch, S245, Flap DOWN limit switch, S246, and Flap UP limit switch, S1051, do this task: Flaps Limit Switch Adjustment, TASK 27-51-63-820-801.

SUBTASK 27-51-61-410-001

(14) Close this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-51-61-410-005

(15) Close this access panel:

(Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801, Cabin Pressure Leak Test, TASK 05-51-91-790-801)

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

SUBTASK 27-51-61-860-004

(16) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-61-730-001

(17) Do this task: Trailing Edge Flap System Test, TASK 27-51-00-730-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-61-410-002

(1) Install the lower pan [37] on the flap control unit assembly [9].

(a) Put the lower pan [37] in its location on the flap control unit assembly [9].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [36].

(c) Install the washers [55] and screws [36] to attach the lower pan [37].

SUBTASK 27-51-61-410-003

(2) Install the switch cover [31] on the flap control unit assembly [9].

(a) Put the switch cover [31] in its location on the flap control unit assembly [9].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [40].

(c) Install the washers [56] and screws [40] to attach the switch cover [31].

SUBTASK 27-51-61-410-004

(3) Install the floor panel above the flap control unit assembly [9] (TASK 53-21-00-400-801).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP CONTROL QUADRANT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap control quadrant removal

(2) Flap control quadrant installation.

TASK 27-51-62-000-801

2. Flap Control Quadrant Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-21-00-000-801	Passenger Cabin Floor Panel Removal (P/B 401)

B. Location Zones

Zone	Area
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

C. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

D. Prepare for the Removal

SUBTASK 27-51-62-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-62-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-62-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-62-010-001

(4) Remove the floor panel to get access to the top of the flap control unit [9], do this task: Passenger Cabin Floor Panel Removal, TASK 53-21-00-000-801.

NOTE: The floor panel is located between stations 706 and 727B on the right side of the airplane.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Flap Control Quadrant Removal

SUBTASK 27-51-62-020-001

(1) Disconnect the cable assembly WFA [1] and cable assembly WFB [1] from the quadrant [5].

(a) To get access to the turnbuckles [3], do this task:

Open this access panel:

Number	Name/Location
112A	Forward Access Door

or remove this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

1) Do this task: Nose Wheel Well Access Panels Removal, TASK 53-14-01-020-801.

(b) Remove the locking clips [2] and loosen the turnbuckles [3] on the cable assembly WFA [1] and cable assembly WFB [1].

(c) Remove the pin [8], pin [6], and the two spacers [7] from the quadrant [5].

(d) Remove the straps [10] that attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(e) Remove the pins [4] that attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(f) Remove the cable assembly WFA [1] cable assembly WFB [1] from the quadrant [5].

SUBTASK 27-51-62-020-002

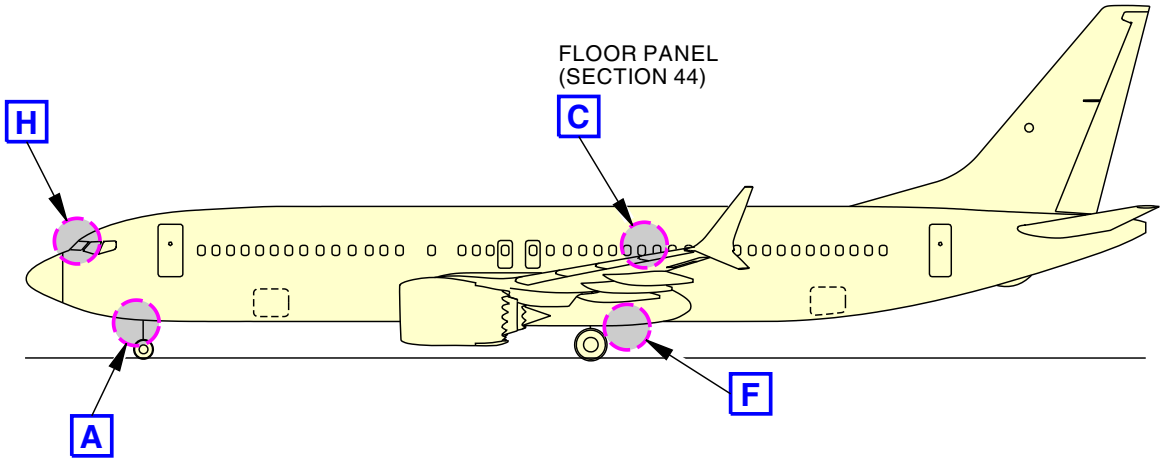
(2) Remove the quadrant [5] from the flap control unit [9].

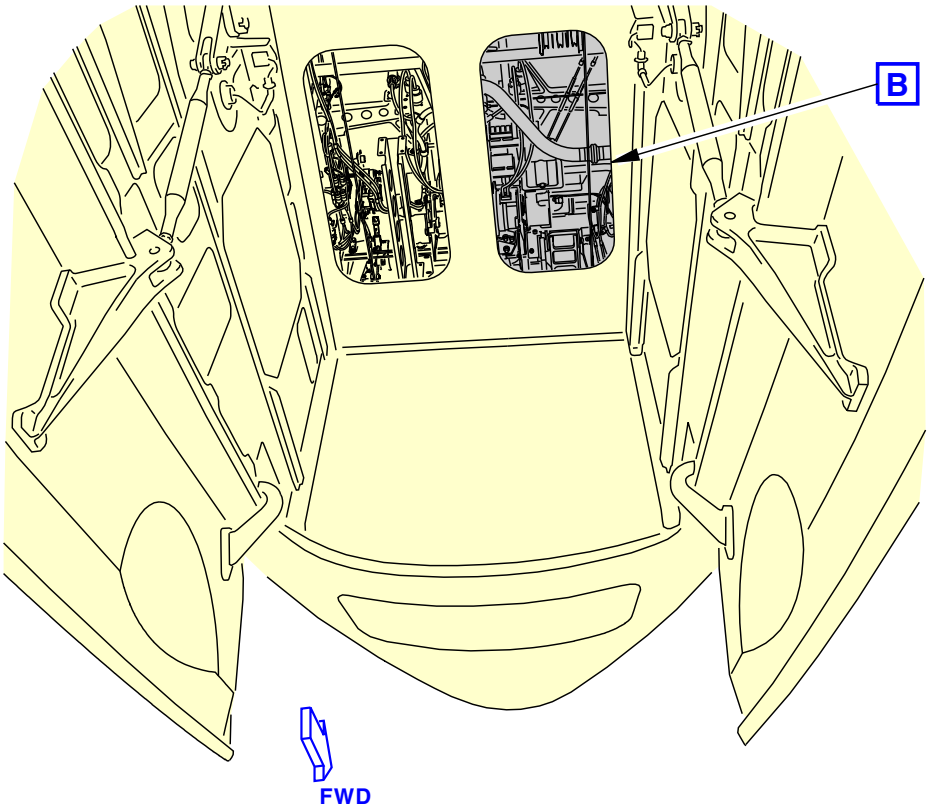
(a) Remove the nut [11] and washer [15] that attach the quadrant [5] to the flap control unit [9].

(b) Remove the quadrant [5] from the flap control unit [9].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





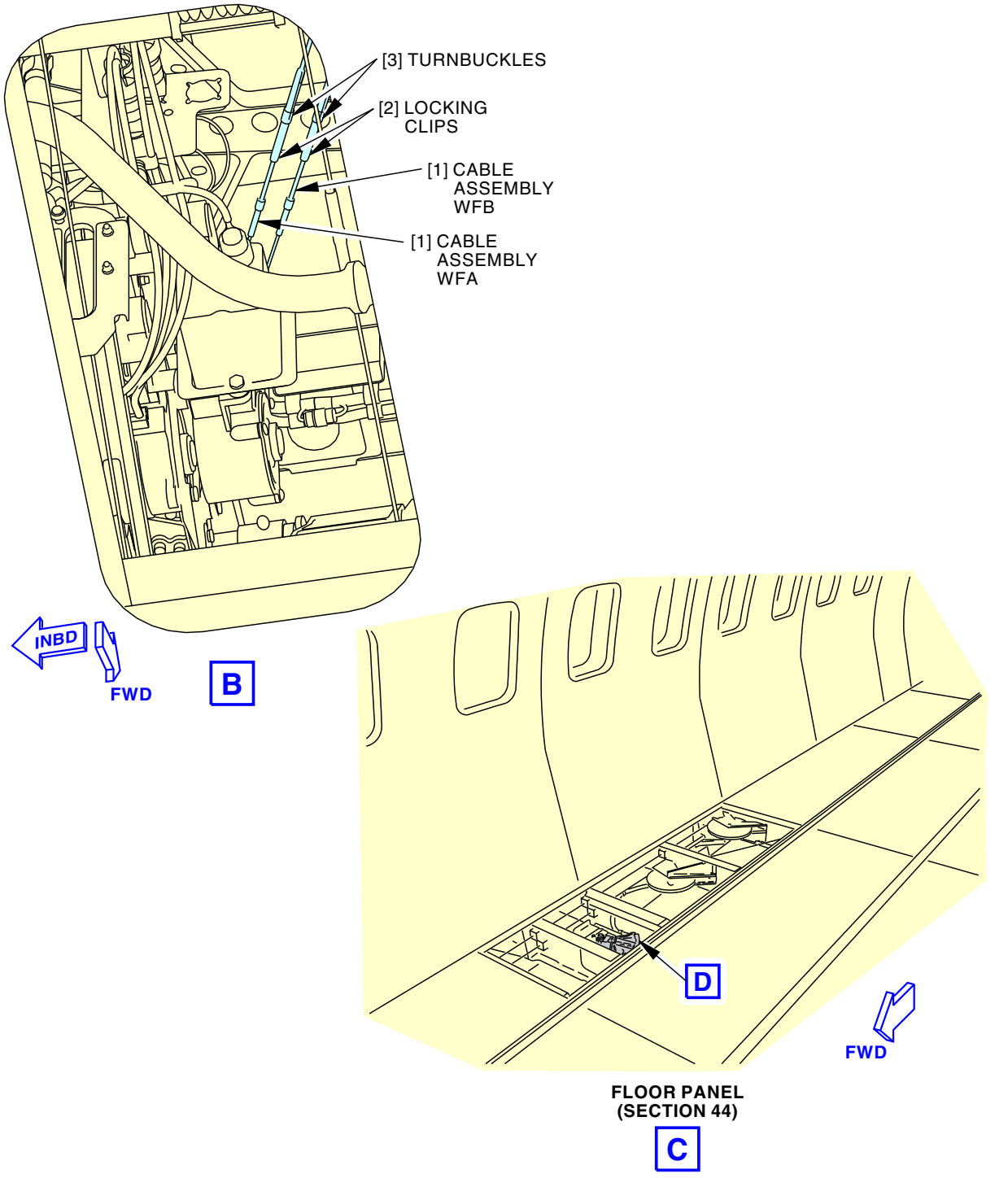
NOSE LANDING GEAR WHEEL WELL

A

2413072 S00061531814_V1

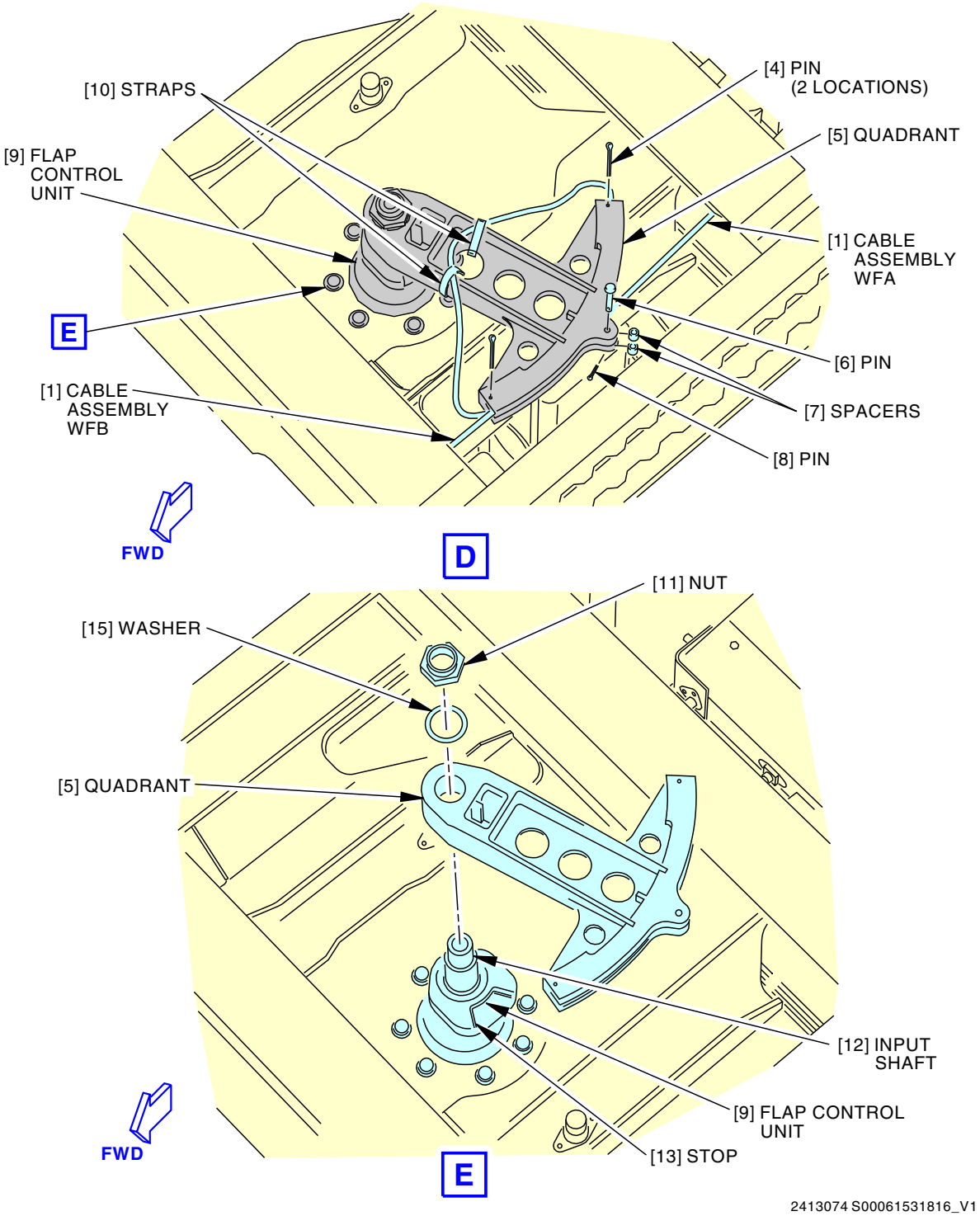
Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



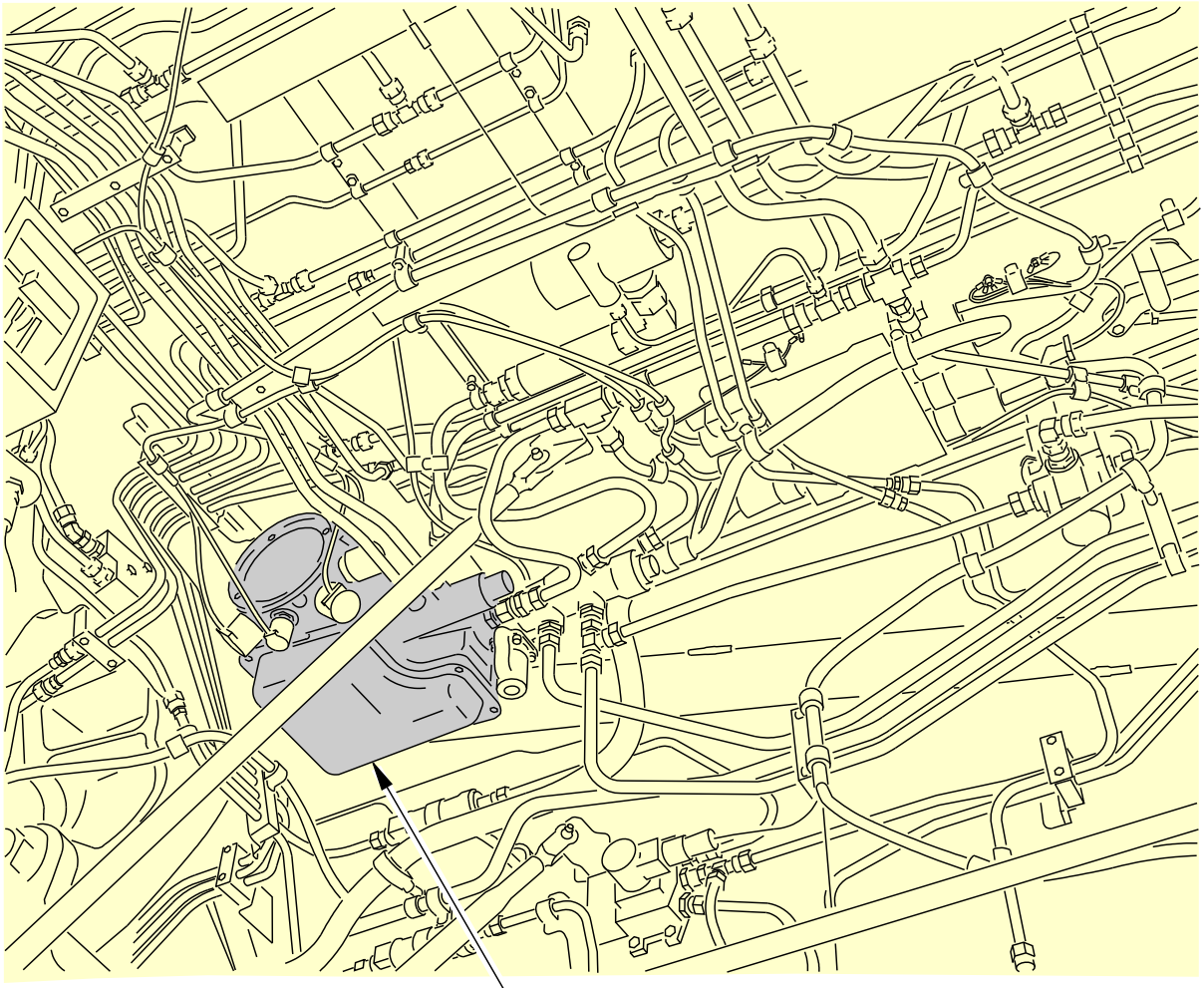
Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



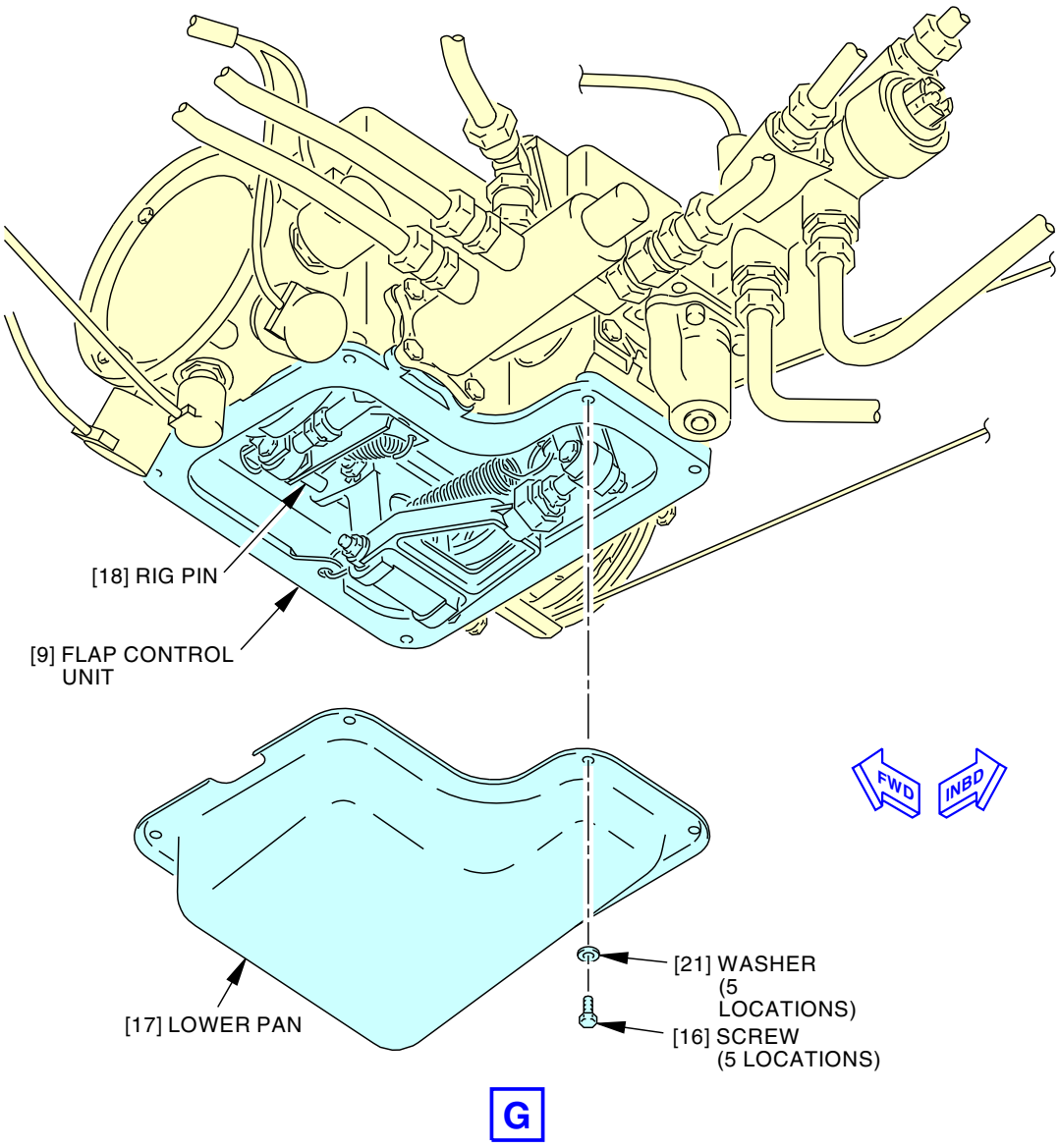
**MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)**

F

2413075 S00061531817_V1

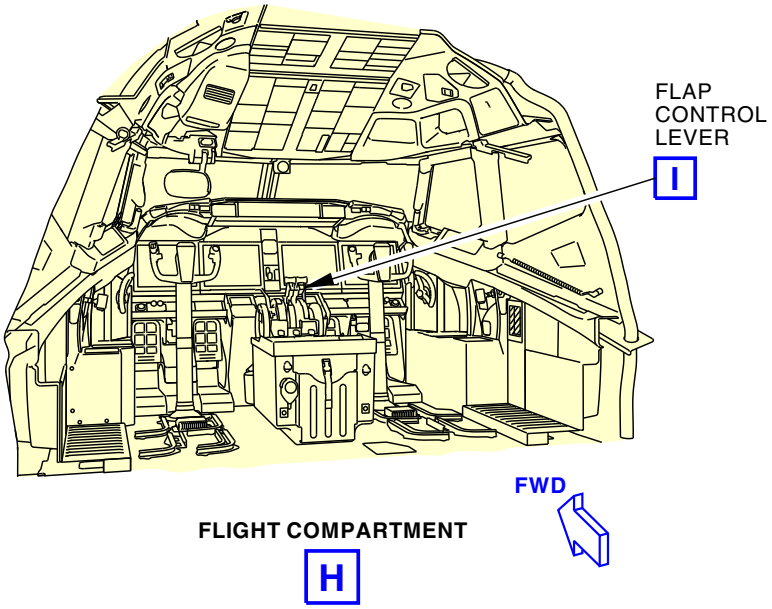
**Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 4 of 6)**

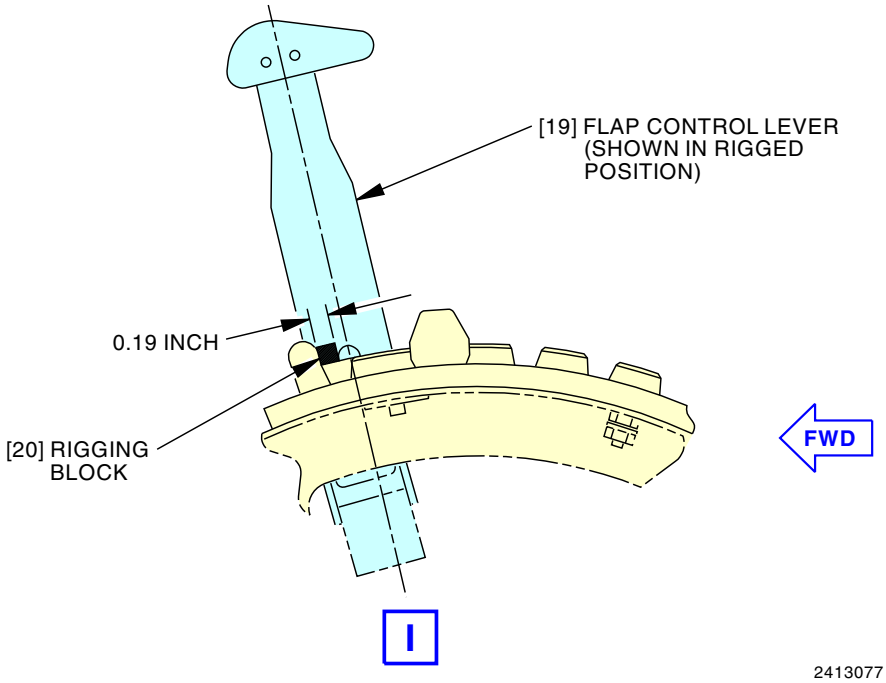
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Flap Control Quadrant Installation
Figure 401/27-51-62-990-801 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-62-400-801

3. Flap Control Quadrant Installation

(Figure 401)

A. References

Reference	Title
05-51-91-790-801	Cabin Pressure Leak Test (P/B 201)
27-51-00-820-801	Trailing Edge Flap Control System Adjustment and Test (P/B 501)
32-00-01-080-801	Landing Gear Downlock Pins Removal (P/B 201)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
53-21-00-400-801	Passenger Cabin Floor Panel Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Locking clip	27-51-00-21-005	SIA ALL
4	Pin	27-51-00-21-150	SIA ALL
5	Quadrant	27-51-61-02A-015	SIA ALL
		27-51-62-01A-020	SIA ALL
8	Pin	27-51-62-01A-005	SIA ALL
9	Flap control unit	27-51-61-02A-040	SIA ALL
10	Strap	27-51-00-21-155	SIA ALL

E. Location Zones

Zone	Area
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
240	Subzone - Passenger Compartment - Body Station 663.75 to Body Station 1016.00

F. Access Panels

Number	Name/Location
112A	Forward Access Door
114AC	Fwd Nose Wheel Well Upper Access Panel

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Flap Control Quadrant Installation

SUBTASK 27-51-62-820-001

(1) Install the rig pin [18] in the flap control unit [9].

NOTE: This will make sure the flap control unit [9] is in the adjusted position.

(a) Remove the screws [16] and washers [21], and the lower pan [17] from the flap control unit [9].

(b) Install the rig pin [18] through the cam follower arm and the valve cam.

1) Use rig pin, F70207-116, SPL-12421, from the rigging pin kit, SPL-1585.

SUBTASK 27-51-62-420-001

(2) Install the quadrant [5] on the flap control unit [9].

(a) Put the quadrant [5] in its position on the input shaft [12] for the flap control unit [9].

(b) Apply grease, D00633, to the threads on the input shaft [12].

(c) Install the washer [15] and nut [11] on the input shaft [12].

(d) Tighten the nut [11] to 250 in-lb (28.2 N·m) to 300 in-lb (33.9 N·m) more than the run-on torque.

SUBTASK 27-51-62-420-002

(3) Connect the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(a) Put the flap control lever [19] in the rigged position:

1) Put a 0.19 in. (4.83 mm) thick rigging block [20] between the detent pin on the flap control lever [19] and the upstop on the detent plate.

NOTE: Make sure that rigging block [20] does not go into the flap UP detent.

2) Install a clamp to hold the quadrant [5] against the aft side of the stop [13] on the flap control unit [9].

(b) Put the cable assembly WFA [1] and cable assembly WFB [1] in its position on the quadrant [5].

NOTE: The cable assembly WFA [1] and cable assembly WFB [1] attaches to the quadrant [5] in two locations. There is a loop of cable that goes through the straps [10].

(c) Install the pins [4] and straps [10] to attach the cable assembly WFA [1] and cable assembly WFB [1] to the quadrant [5].

(d) Install the pin [6], spacers [7], and pin [8] on the quadrant [5].

(e) Use the turnbuckles [3] to tighten the cable assembly WFA [1] and cable assembly WFB [1] until the tension is 275 ±15 lb (125 ±7 kg).

NOTE: You will adjust the cable assembly WFA [1] and cable assembly WFB [1] to the final tension and remove the tools from the flap control unit during the flap control system adjustment procedure.

SUBTASK 27-51-62-820-002

(4) Do this task: Trailing Edge Flap Control System Adjustment and Test, TASK 27-51-00-820-801.

NOTE: This task includes the removal of the rig pin and the clamp from the flap control unit [9] and the removal of the rigging tool from the flap control lever.

SUBTASK 27-51-62-420-003

(5) Install the locking clips [2] on the turnbuckles [3] for cable assembly WFA [1] and cable assembly WFB [1].

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H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-62-410-001

(1) Install the lower pan [17] on the flap control unit [9]:

(a) Put the lower pan [17] in its location on the flap control unit [9].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [16].

(c) Install the washers [21] and screws [16] to attach the lower pan [17].

SUBTASK 27-51-62-410-002

(2) To get access to the turnbuckles [3], do this task:

Close this access panel:

Number	Name/Location
112A	Forward Access Door

or install this access panel:

Number	Name/Location
114AC	Fwd Nose Wheel Well Upper Access Panel

(a) Do this task: Nose Wheel Well Access Panels Installation, TASK 53-14-01-420-801.

(b) Do this task: Cabin Pressure Leak Test, TASK 05-51-91-790-801.

SUBTASK 27-51-62-410-003

(3) Install the floor panel above the flap control unit [9], do this task: Passenger Cabin Floor Panel Installation, TASK 53-21-00-400-801.

SUBTASK 27-51-62-080-001

(4) If the downlock pins are installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Removal, TASK 32-00-01-080-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP LIMIT SWITCHES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Flap Limit Switch Removal

(2) Flap Limit Switch Installation.

B. This procedure is applicable to these switches on the flap control unit:

(1) S245 TE Flaps UP Switch

(2) S246 TE Flaps DOWN Switch

(3) S1051 TE Flaps UP Switch

C. The S138 Landing Warning Switch is also installed on the flap control unit. The removal procedure is covered in (TASK 31-51-01-000-801).

TASK 27-51-63-000-801

2. Flap Limit Switch Removal

(Figure 401)

A. General

(1) This task is applicable to the TE Flaps UP switch, S245, the TE Flaps DOWN switch, S246 and the TE Flaps UP switch S1051.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-4962	Wrench - Limit Switch, Flap Control Unit Part #: F80197-5 Supplier: 81205

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Removal

SUBTASK 27-51-63-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-63-480-001

WARNING MAKE SURE THAT THE DOWNLOCK PIN IS REMOVED ON THE TAILSKID. WITH THE DOWNLOCK PIN INSTALLED THE TAILSKID WILL NOT EXTEND AND CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-63-040-001

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

F. Flap Limit Switch Removal

SUBTASK 27-51-63-860-002

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	11	C00442	PASSENGER CABIN SIGNS PASS SIGN CONT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

SUBTASK 27-51-63-010-001

(2) Remove the switch cover [8] from the flap control unit [1]:

(a) Remove the screws [7] and washers [21] that attach the switch cover [8].

(b) Remove the switch cover [8] from the flap control unit [1].

SUBTASK 27-51-63-860-003

(3) Disconnect the electrical connectors [6] from the applicable limit switch:

SUBTASK 27-51-63-020-001

(4) Use FCU limit switch wrench, SPL-4962 to remove the limit switch [9]:

(a) Remove the roller guide lock ring [12] from the roller guide [11].

(b) Remove the roller guide [11] from the limit switch [9].

(c) Remove the nut [13] and washer [14] from the limit switch [9].

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(d) Remove the limit switch [9] with the nut [13] and washer [15] from the flap control unit [1].

(e) Put the nut [13], washer [14], roller guide [11], and the roller guide lock ring [12] on the limit switch [9] to keep the parts together.

SUBTASK 27-51-63-020-002

(5) Use FCU limit switch wrench, SPL-4962 to remove the limit switch [10]:

(a) Remove the roller guide lock ring [17] from the roller guide [16].

(b) Remove the roller guide [16] from the limit switch [10].

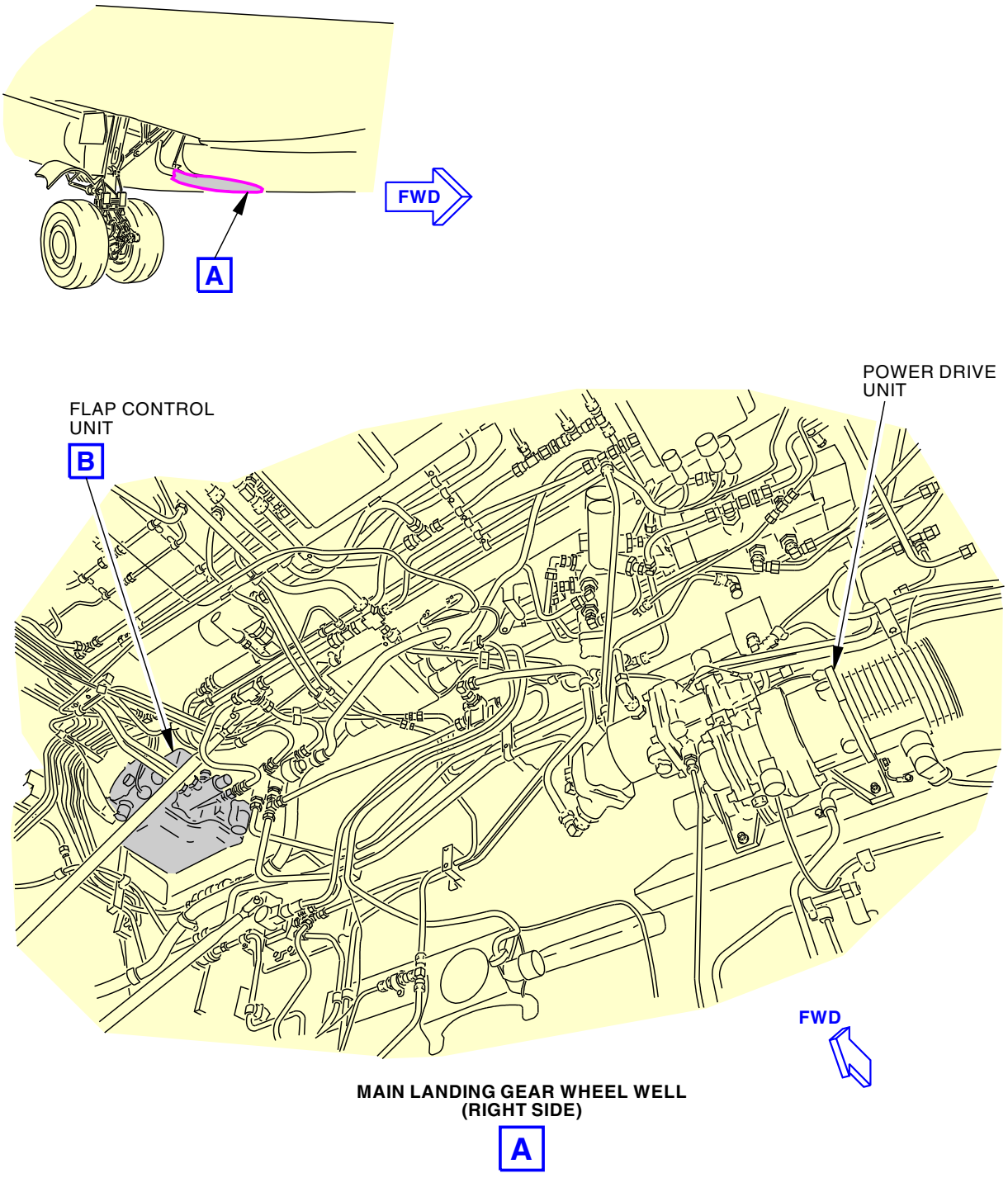
(c) Remove the nut [18] and washer [19] from the limit switch [10].

(d) Remove the limit switch [10] with the nut [18] and washer [20] from the flap control unit [1].

(e) Put the nut [18], washer [19], roller guide [16], and the roller guide lock ring [17] on the limit switch [10] to keep the parts together.

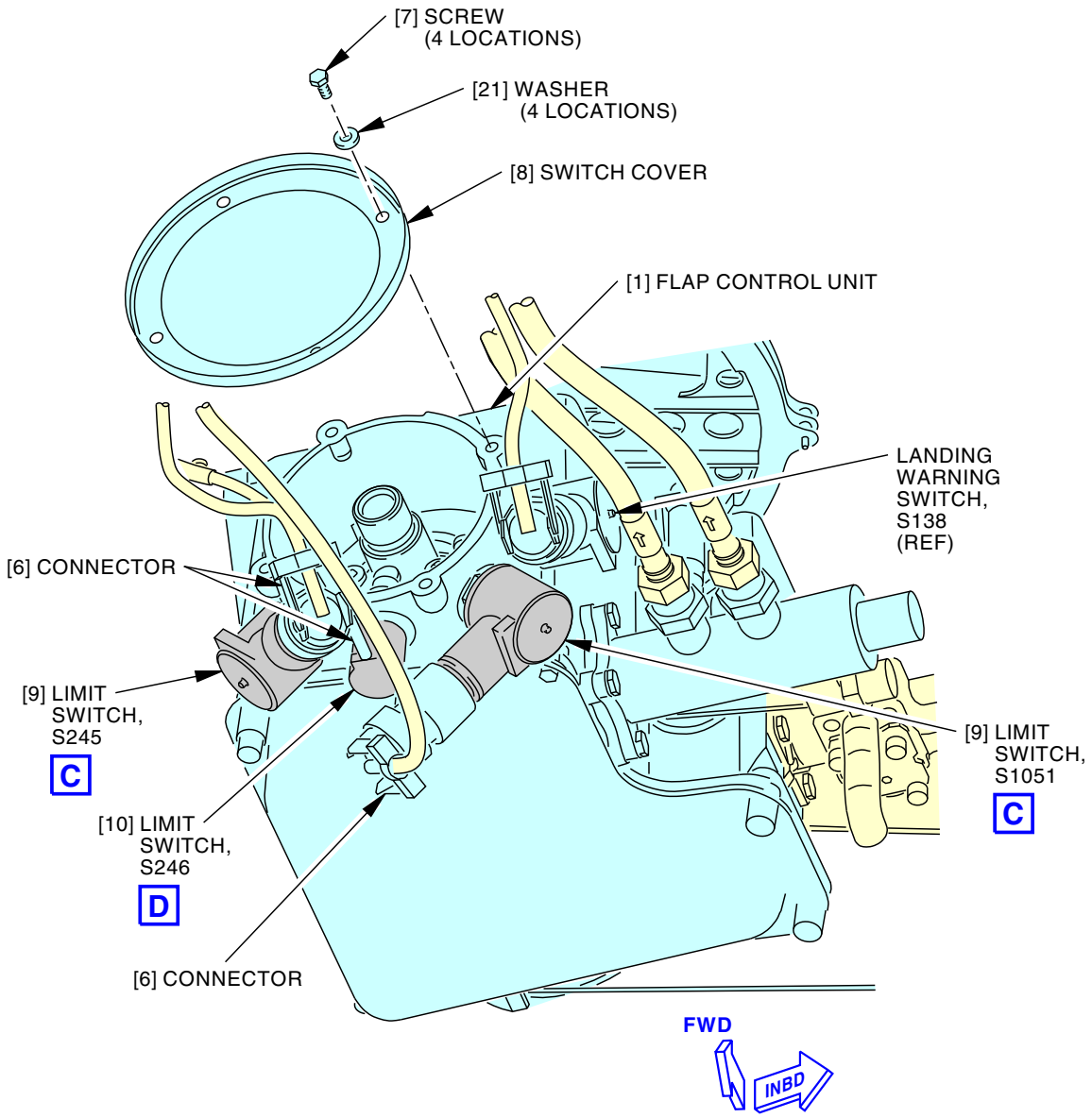
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Limit Switch Installation
Figure 401/27-51-63-990-801 (Sheet 1 of 3)

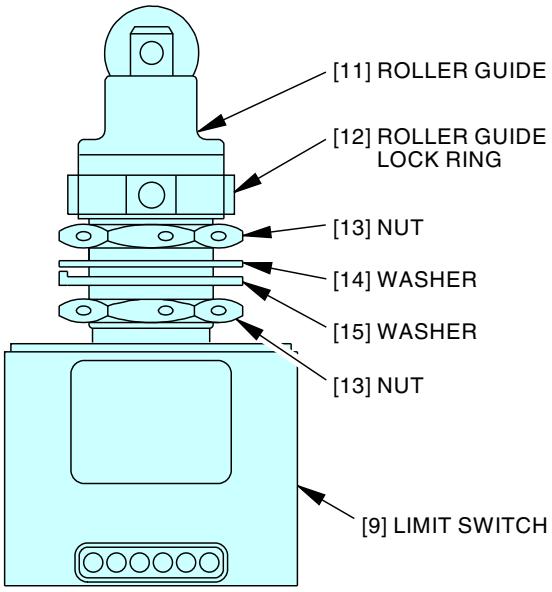
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413080 S00061531826_V1

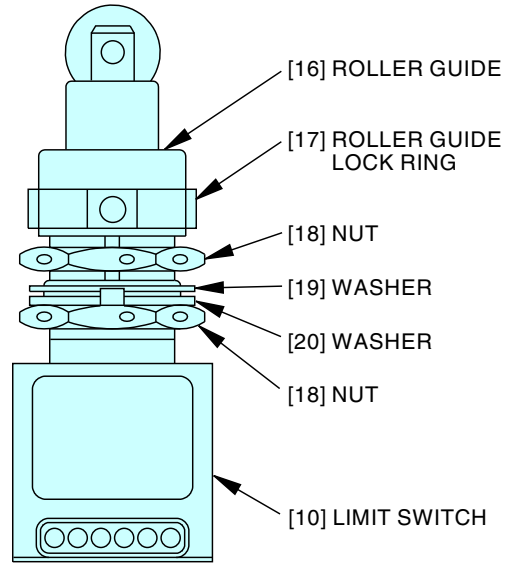
Flap Limit Switch Installation
Figure 401/27-51-63-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TE FLAPS UP
LIMIT SWITCH, S245, S1051

C



TE FLAPS DOWN
LIMIT SWITCH, S246

D

2413081 S00061531827_V1

Flap Limit Switch Installation
Figure 401/27-51-63-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-63-400-801

3. Flap Limit Switch Installation

(Figure 401)

A. General

(1) This task is applicable to the TE Flaps UP switch, S245, the TE Flaps DOWN switch, S246 and the TE Flaps UP switch S1051.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-63-710-801	Flaps UP Limit Switch, S1051 Operational Test (P/B 501)
27-51-63-720-801	Flaps UP Limit Switch, S245 Functional Test (P/B 501)
27-51-63-720-802	Flaps DOWN Limit Switch, S246 Functional Test (P/B 501)
27-51-63-820-801	Flaps Limit Switch Adjustment (P/B 501)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
SPL-4962	Wrench - Limit Switch, Flap Control Unit Part #: F80197-5 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap control unit	27-51-61-02A-040	SIA ALL
9	Switch	27-51-63-01B-010	SIA ALL

F. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

G. Flap Limit Switch Installation

SUBTASK 27-51-63-420-001

(1) Use FCU limit switch wrench, SPL-4962 to install the limit switch [9]:

(a) Remove the roller guide lock ring [12], roller guide [11], nut [13], and washer [14] from the limit switch [9].

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(b) Put the limit switch [9] with the washer [15] and nut [13] in its location on the flap control unit [1].

1) Install the outer nut [13] with three threads showing as a good start point.

NOTE: The tang washer [15] points in the direction of the flap control unit.

(c) Install the washer [14] and nut [13] to hold the limit switch [9] in its position.

(d) Put the roller guide [11] in its position on the limit switch [9].

(e) Install the roller guide lock ring [12] to hold the roller guide [11] in its position.

SUBTASK 27-51-63-420-002

(2) Use FCU limit switch wrench, SPL-4962 to install the limit switch [10]:

(a) Remove the roller guide lock ring [17], roller guide [16], nut [18], and washer [19] from the limit switch [10].

(b) Put the limit switch [10] with the washer [20] and nut [18] in its location on the flap control unit [1].

1) Install the outer nut [18] with three threads showing as a good start point.

NOTE: The tang washer [20] points in the direction of the flap control unit.

(c) Install the washer [19] and nut [18] to hold the limit switch [10] in its position.

(d) Put the roller guide [16] in its position on the limit switch [10].

(e) Install the roller guide lock ring [17] to hold the roller guide [16] in its position.

SUBTASK 27-51-63-760-001

(3) Measure resistance between the limit switch and the flap control unit [1] with a intrinsically safe approved bonding meter, COM-1550.

(a) Make sure that the resistance between the limit switch and the flap control unit [1] is less than 2.5 milliohms.

SUBTASK 27-51-63-860-004

(4) Attach the electrical wires for the limit switch:

(a) Connect the connectors [6] to the switches at the flap control unit [1].

SUBTASK 27-51-63-860-005

(5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	7	C00285	YAW DAMPER AC

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	11	C00442	PASSENGER CABIN SIGNS PASS SIGN CONT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

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(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

SUBTASK 27-51-63-820-001

(6) Adjust the applicable limit switch [9] or limit switch [10]. To adjust the limit switch, do this task: Flaps Limit Switch Adjustment, TASK 27-51-63-820-801.

SUBTASK 27-51-63-420-003

(7) Install lockwire on the nuts [18] for the limit switch [10].

SUBTASK 27-51-63-420-004

(8) Install lockwire on the nuts [13] for the limit switch [9].

SUBTASK 27-51-63-410-001

(9) Install the switch cover [8] on the flap control unit [1]:

(a) Put the switch cover [8] in its location on the flap control unit [1].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the screws [7].

(c) Install the washer [21] and screws [7] that attach the switch cover [8].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-63-440-001

(1) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-51-63-720-001

(2) Do the applicable test of the limit switch:

(a) For the TE Flap UP switch [9], S245, do this task: Flaps UP Limit Switch, S245 Functional Test, TASK 27-51-63-720-801.

(b) For the TE Flap Down switch [10], S246, do this task: Flaps DOWN Limit Switch, S246 Functional Test, TASK 27-51-63-720-802.

(c) For the TE Flap UP switch [9], S1051, do this task: Flaps UP Limit Switch, S1051 Operational Test, TASK 27-51-63-710-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP LIMIT SWITCHES - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Flaps Limit Switch Adjustment

(2) Flaps UP Limit Switch, S245 Functional Test

(3) Flaps DOWN Limit Switch, S246 Functional Test

(4) Flaps UP Limit Switch, S1051 Operational Test.

TASK 27-51-63-820-801

2. Flaps Limit Switch Adjustment

(Figure 501)

A. General

(1) This task is applicable to the TE Flaps UP switch, S245, the TE Flaps DOWN switch, S246, and the TE Flaps UP switch, S1051.

(2) The flap drive system and the cables must be correctly adjusted before you do this task.

B. References

Reference	Title
20-10-44-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-31-00-700-802	Elevator Tab Control System - Operational Test (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-22-00-710-801	Power Transfer Unit Operational Test (P/B 501)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

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E. Prepare for the Adjustment

SUBTASK 27-51-63-860-006

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-63-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-63-040-002

(3) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-51-63-010-002

(4) Remove the switch cover [3] from the flap control unit [1]:

(a) Remove the screws [2] and washers [11] that attach the switch cover [3].

(b) Remove the switch cover [3] from the flap control unit [1].

F. Flaps UP Limit Switch S245 Adjustment

SUBTASK 27-51-63-860-007

(1) Move the trailing edge flaps until the Dimension X on the Number 4 or 5 ballscrew is 0.79 ±0.03 in. (20.07 ±0.77 mm) (TASK 27-51-00-860-803).

NOTE: You will only extend the trailing edge flaps a small distance to get to this position. Do not disconnect the torque tubes from the power drive unit to extend the flaps.

SUBTASK 27-51-63-820-002

(2) Adjust the position of the Flaps UP limit switch [4], S245:

(a) Loosen the nuts [8] on the limit switch [4].

(b) Remove the MS20995C32 lockwire, G01048, from the nuts [8] (TASK 20-10-44-000-801).

(c) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves away from the cam [6].

NOTE: It is necessary to move the limit switch [4] away from the cam [6] for the first part of the adjustment. There will be no continuity through the switch pins 'A' and 'C' when the switch operates.

(d) Do a check for no continuity between pin 12 and ground at connector D46044P.

NOTE: There will be no continuity between pins 'A' and 'C' on the limit switch [4] while not depressed against the cam [6].

(e) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves toward the cam [6].

NOTE: Move the limit switch [4] toward the cam [6] until there is continuity through the switch pins 'A' and 'C'.

(f) Do a check for continuity between pin 12 and ground at connector D46044P.

NOTE: There will be no continuity between pins 'A' and 'C' on the limit switch [4] until it is depressed against the cam [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves away from the cam [6] and there is no continuity through the pins.

(h) Make sure that the limit switch [4] is in the correct position:

1) Pull the cable [12] WFFB to the side to turn the cam [6] slightly in the extend direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). Cable WFFB cable [12] is the upper cable between the flap power drive unit and the flap control unit [1].

2) Make sure that there is continuity between the pins.

3) Pull the cable [12] WFFA to the side to turn the cam [6] slightly in the retract direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). Cable WFFA cable [12] is the lower cable between the flap power drive unit and the flap control unit [1].

4) Make sure that there is no continuity between the pins.

5) Adjust the nuts [8] until the limit switch [4] is in the correct position.

(i) Tighten the nuts [8] on the limit switch [4].

(j) Install MS20995C32 lockwire, G01048, on the nuts [8] (TASK 20-10-44-400-801).

(k) Fillet seal the switch between the switch body and the wall of the flap control unit [1] with sealant, A02315.

SUBTASK 27-51-63-730-001

(3) Do the test of the Flaps UP limit switch [4], S245 (TASK 27-51-63-720-801).

G. Flaps UP Limit Switch S1051 Adjustment

SUBTASK 27-51-63-860-008

(1) Move the trailing edge flaps until the Dimension X on the Number 4 or 5 ballscrew is 1.18 ±0.03 in. (29.97 ±0.76 mm) (TASK 27-51-00-860-803).

NOTE: This position is approximately 1 1/2 turn of the ballscrew from the upstop. Do not disconnect the torque tubes from the power drive unit to extend the flaps.

SUBTASK 27-51-63-820-003

(2) Adjust the position of the Flaps UP limit switch [4], S1051:

(a) Remove the MS20995C32 lockwire, G01048, from the nuts [8] (TASK 20-10-44-000-801).

(b) Loosen the nuts [8] on the limit switch [4].

(c) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves away from the cam [6].

NOTE: It is necessary to move the limit switch [4] away from the cam [6] for the first part of the adjustment. There will be no continuity through the switch pins 'A' and 'C'.

(d) Do a check for no continuity between pins 5 and 15 at connector D46040P.

NOTE: There will be no continuity between pins 'A' and 'C' on the limit switch [4] while not depressed against the cam [6].

(e) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves toward the cam [6].

NOTE: Move the limit switch [4] toward the cam [6] until there is continuity through the switch pins 'A' and 'C'.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Do a check for continuity between pin 5 and 15 at connector D46040P.

NOTE: There will be no continuity between pins 'A' and 'C' on the limit switch [4] until depressed against the cam [6].

(g) Turn the inner nut [8] on the limit switch [4] so that the switch roller moves away from the cam [6] and there is no continuity through the pins.

(h) Make sure that the limit switch [4] is in the correct position:

1) Pull the cable [12] WFFB to the side to turn the cam [6] slightly in the extend direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). Cable WFFB cable [12] is the upper cable between the flap power drive unit and the flap control unit [1].

2) Make sure that there is continuity between the pins.

3) Pull the cable [12] WFFA to the side to turn the cam [6] slightly in the retract direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). Cable WFFA cable [12] is the lower cable between the flap power drive unit and the flap control unit [1].

4) Make sure that there is no continuity between the pins.

5) Adjust the nuts [8] until the limit switch [4] is in the correct position.

(i) Tighten the nuts [8] on the limit switch [4].

(j) Install MS20995C32 lockwire, G01048, on the nuts [8] (TASK 20-10-44-400-801).

(k) Fillet seal the switch between the switch body and the wall of the flap control unit [1] with sealant, A02315.

SUBTASK 27-51-63-730-002

(3) Do the test of the Flaps UP limit switch [4], S1051 (TASK 27-31-00-700-802).

SUBTASK 27-51-63-710-001

(4) Do the test of the Flaps UP limit switch [4], S1051 (TASK 29-22-00-710-801).

SUBTASK 27-51-63-710-002

(5) Do a test of the ram air door function:

(a) Put the L PACK and R PACK switches to the OFF position.

(b) Make sure that the applicable air conditioning pack is OFF for more than 30 minutes.

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(c) Extend the trailing edge flaps to the 1-unit position (TASK 27-51-00-860-803).

(d) Disconnect the D15832 (D15836) connector from the left (right) flow control and shutoff valve.

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(e) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Make sure that the ram air deflector door closes.

(g) Retract the trailing edge flaps to full up position (TASK 27-51-00-860-804).

(h) Make sure that the left (right) ram air inlet doors close.

(i) Remove the electrical connector D3916 (D3918) from the left (right) ram air temp sensor.

NOTE: The actuator will retract when the connector is removed.

(j) Make sure that the left (right) ram air inlet doors open.

(k) Reconnect the D3916 (D3918) connector from the left (right) ram air temperature sensor.

(l) Reconnect the D15832 (D15836) connector to the left (right) flow control valve.

(m) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

H. Flaps Down Limit Switch S246 Adjustment

SUBTASK 27-51-63-860-009

(1) Move the trailing edge flaps until the Dimension X on the Number 4 or 5 ballscrew is 11.9 ±0.0 in. (302.26 ±0.76 mm) (TASK 27-51-00-860-803).

NOTE: The trailing edge flaps will be in approximately the 40-unit position. Do not disconnect the torque tubes from the power drive unit to extend the flaps.

SUBTASK 27-51-63-820-004

(2) Adjust the position of the Flaps DOWN limit switch [5], S246:

NOTE: It is necessary to move the limit switch [5] away from the cam for the adjustment. There should not be any continuity through the switch pins 1 and 3 when the flaps are approximately in the 40-unit position.

(a) Loosen the nuts [10] on the limit switch [5].

(b) Remove the MS20995C32 lockwire, G01048, from the nuts [10] (TASK 20-10-44-000-801).

(c) Use the nuts [10] to adjust the position of the limit switch [5] until the switch is depressed against the cam [6] and there is continuity between pins 1 and 3 of the limit switch [5].

(d) Carefully loosen the inside nut [10], and then tighten the outside nut [10] to move the limit switch [5] away from the cam [6] until there is no continuity through the pins.

(e) Make sure that the limit switch [5] is in the correct position:

1) Pull the cable [12] WFFA to the side to turn the cam [6] slightly in the retract direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). WFFA cable [12] is the lower cable between the flap power drive unit and the flap control unit [1].

2) Make sure that there is continuity between the pins.

3) Pull the cable [12] WFFB to the side to turn the cam [6] slightly in the extended direction.

NOTE: Pull on the cable to deflect it approximately 1.2 in. (30.48 mm). WFFB cable [12] is the upper cable between the flap power drive unit and the flap control unit [1].

4) Make sure that there is no continuity between the pins.

5) Adjust the nuts [10] until the limit switch [5] is in the correct position.

(f) Tighten the nuts [10] on the limit switch [5], 15 in-lb (2 N·m) to 45 in-lb (5 N·m)).

(g) Install the MS20995C32 lockwire, G01048, on the nuts [10] (TASK 20-10-44-400-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Fillet seal with sealant, A02315

SUBTASK 27-51-63-730-003

(3) Do the test of the Flaps DOWN limit switch [5], S246 (TASK 27-51-63-720-802).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-63-410-002

(1) Install the switch cover [3] on the flap control unit [1]:

(a) Put the switch cover [3] in its location on the flap control unit [1].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the screws [2].

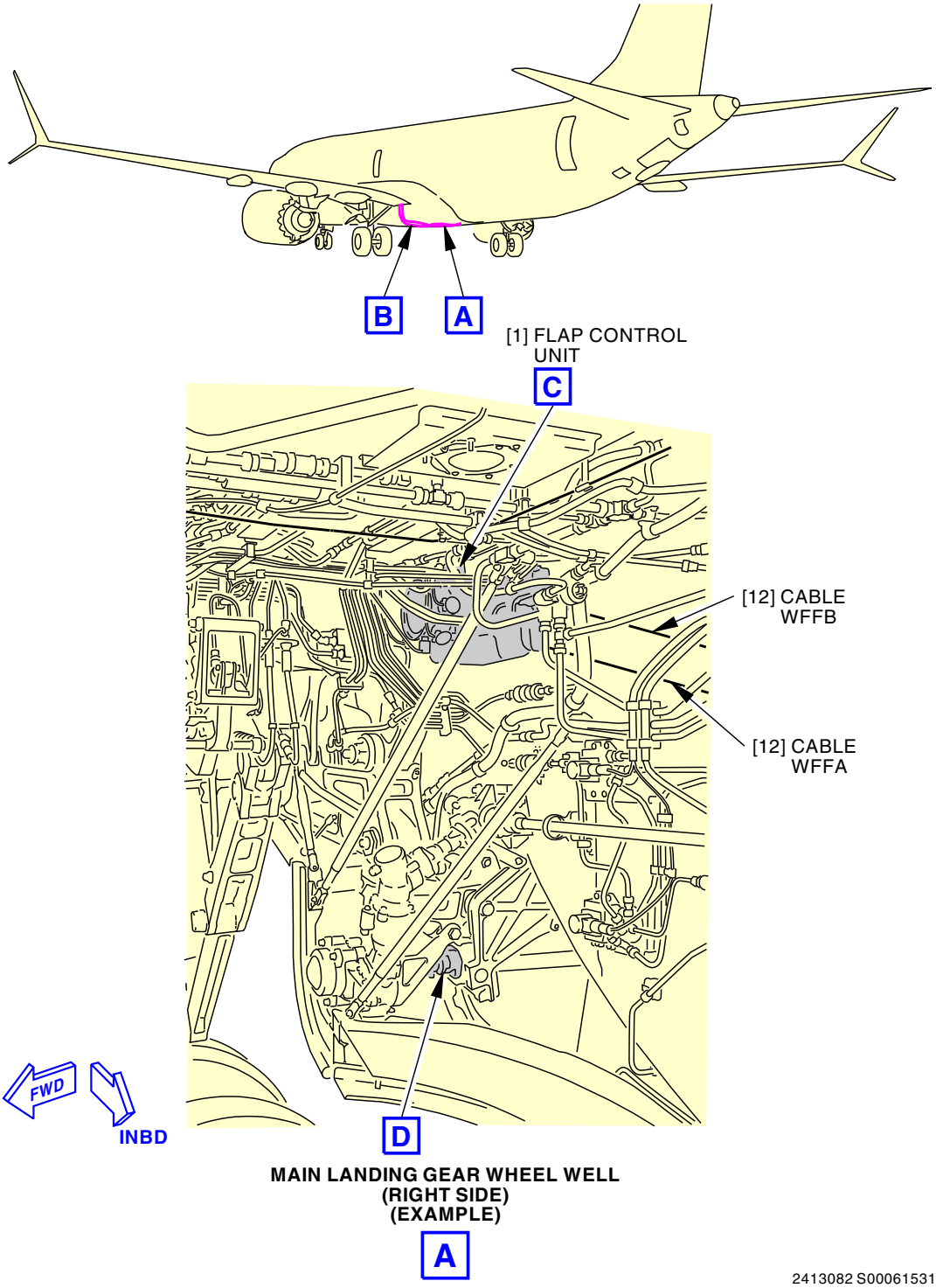
(c) Install the washers [11] and screws [2] that attach the switch cover [3].

SUBTASK 27-51-63-440-002

(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

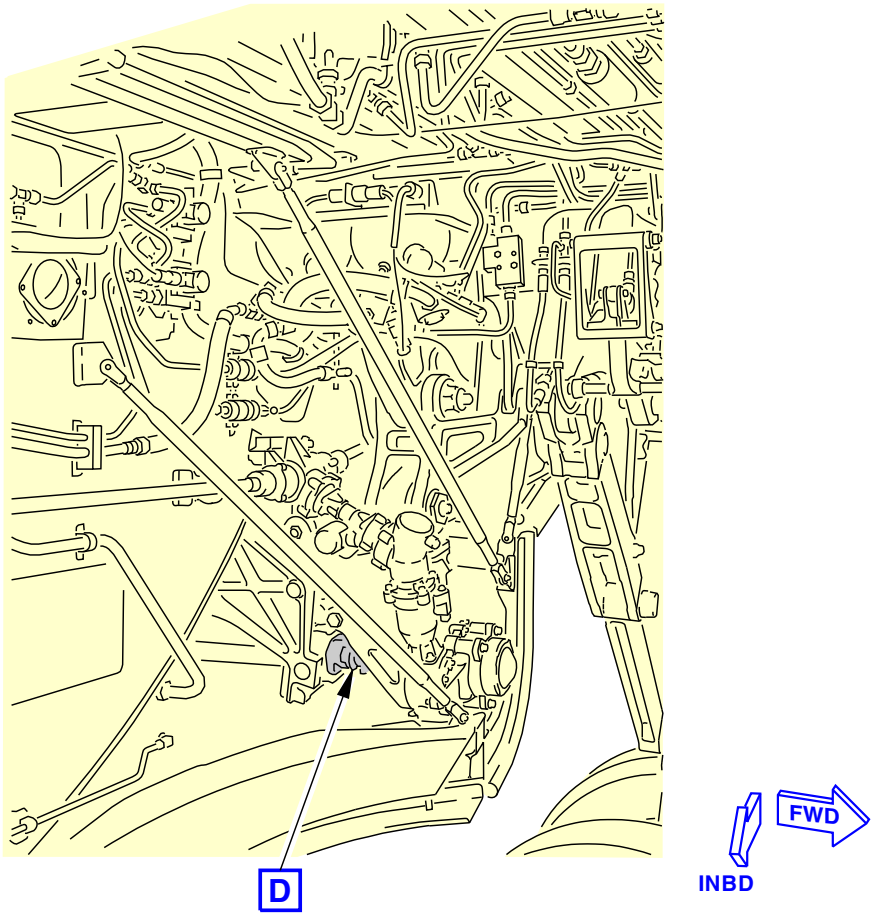
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Limit Switches Adjustment
Figure 501/27-51-63-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



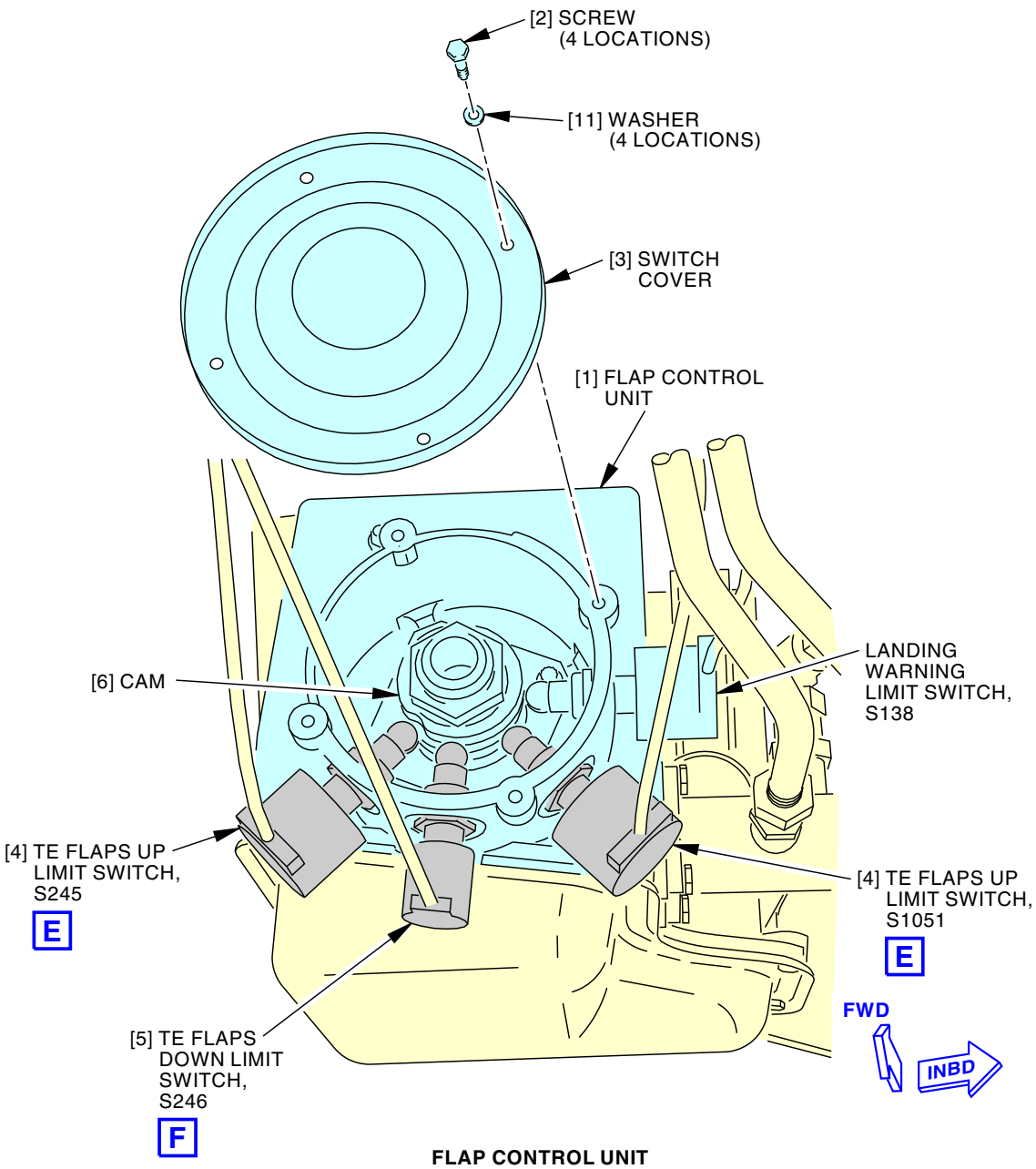
**MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)
(EXAMPLE)**

B

2413083 S00061531832_V2

**Flap Limit Switches Adjustment
Figure 501/27-51-63-990-802 (Sheet 2 of 4)**

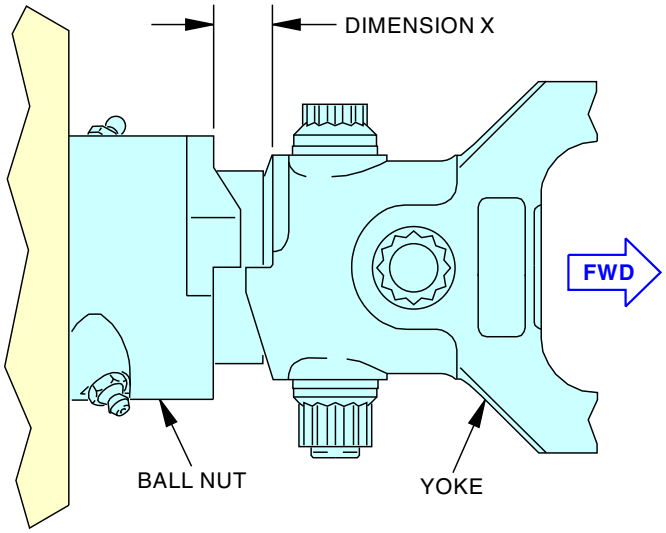
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413084 S00061531833_V1

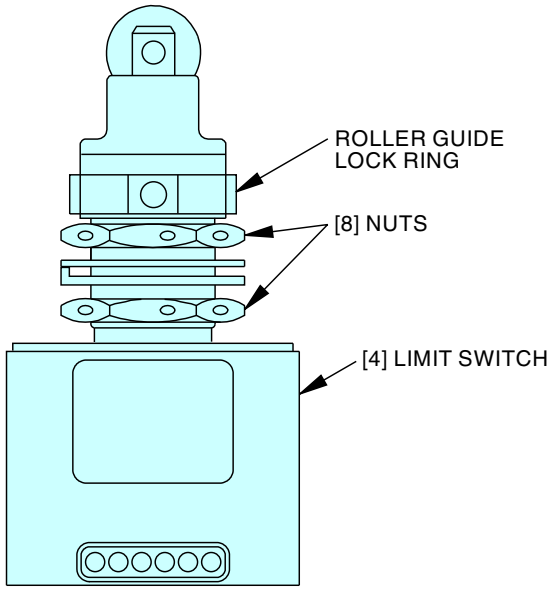
Flap Limit Switches Adjustment
Figure 501/27-51-63-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



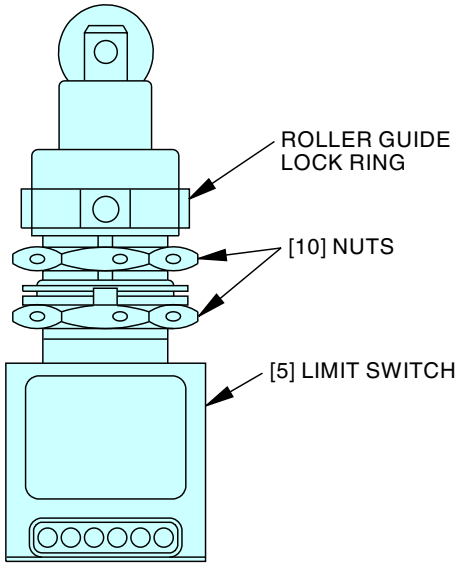
(EXAMPLE)

D



TE FLAPS UP LIMIT SWITCHES, S245, S1051

E



TE FLAPS DOWN LIMIT SWITCH, S246

F

2413085 S00061531834_V1

Flap Limit Switches Adjustment
Figure 501/27-51-63-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-63-720-801

3. Flaps UP Limit Switch, S245 Functional Test

(Figure 502)

A. General

(1) This task is applicable to the Flaps UP Limit Switch, S245.

B. References

Reference	Title
27-41-71-700-801	Stabilizer Trim Motor Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Functional Test

SUBTASK 27-51-63-010-003

(1) To get access to the Electronic Equipment Center, do this step:

(a) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-63-860-011

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power (TASK 29-11-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Flaps UP Limit Switch, S245 Functional Test

SUBTASK 27-51-63-860-012

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the 1-unit position.

(a) Wait for the flaps and slats to move to the 1-unit position.

SUBTASK 27-51-63-710-003

(2) Move the ALTERNATE FLAPS ARM switch to the ARM position.

SUBTASK 27-51-63-710-004

(3) Move the ALTERNATE FLAPS control switch to the UP position and hold it until the trailing edge flaps stop moving.

SUBTASK 27-51-63-740-001

(4) Use the FSEU to do a check of the position of the trailing edge flaps:

(a) Push the ON/OFF button on the front panel of the FSEU to turn the display on.

NOTE: The display will show EXISTING FAULTS?.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the down arrow until SYNCRO INPUTS? shows on the display.

(g) Push the YES button to select SYNCHRO INPUTS? from the menu.

(h) Push the down arrow to find the L FL POS and R FL POS indications on the menu.

(i) Make sure that the L FL POS and R FL POS indications are in the limit of -1.2 to 4.7.

(j) Push the ON/OFF button on the front panel of the FSEU to turn the front panel display off.

SUBTASK 27-51-63-860-013

(5) Move the flap control lever to the UP position to agree with the position of the flaps.

SUBTASK 27-51-63-710-005

(6) Move the ALTERNATE FLAPS ARM switch to the OFF position.

SUBTASK 27-51-63-720-002

(7) Align the air data inertial reference system (TASK 34-21-00-820-802 or TASK 34-21-00-820-801 or TASK 34-21-00-820-803).

(a) Do a test of the stall management yaw damper (SMYD) function of the S245 flap limit switch.

(b) Push the ON/OFF button on the SMYD 1 and 2 BITE panel to turn on the BITE display.

(c) Make sure that the SMYD BITE display shows EXISTING FAULTS?.

(d) Push the down arrow button to the selection GROUND TESTS?.

(e) Push the YES button.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Push the down arrow button to the selection DISCRETE INPUTS?.

(g) Push the YES button.

(h) Push the down arrow button as necessary until the display shows FLAP UP = UP.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(i) Move the flap control lever to the 1-unit position.

1) Wait for the flaps and slats to move to the 1-unit position.

(j) Make sure that the SMYD BITE display shows FLAP UP = NOT UP.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(k) Move the flap control lever to the UP position.

(l) Make sure that the SMYD BITE display shows FLAP UP = UP.

(m) Push the ON/OFF button on the SMYD 1 and 2 BITE panel to turn off the BITE display.

SUBTASK 27-51-63-720-003

(8) Do this task:Stabilizer Trim Motor Test, TASK 27-41-71-700-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-63-860-014

(1) Remove system B hydraulic power (TASK 29-11-00-860-805).

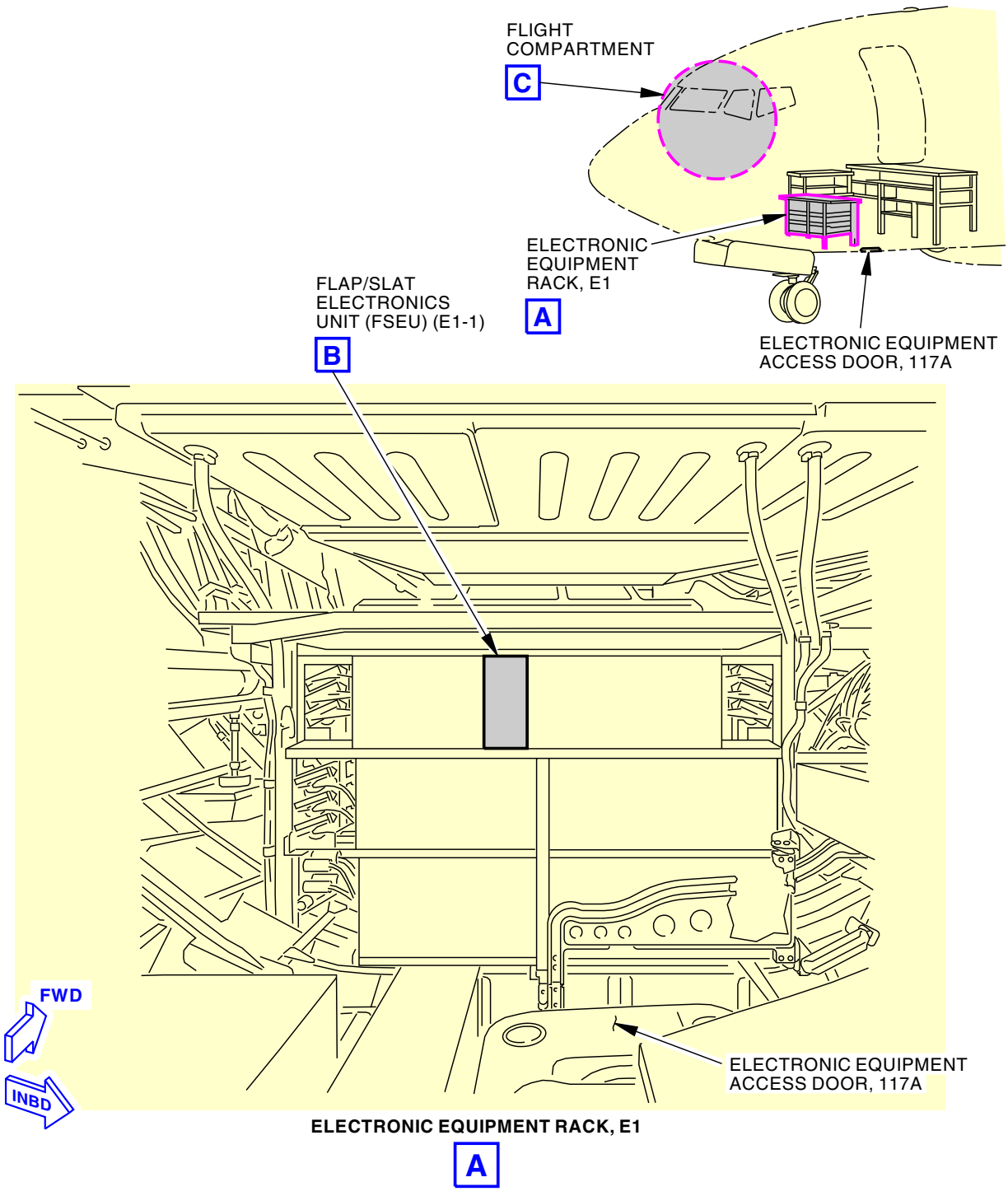
SUBTASK 27-51-63-940-001

(2) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

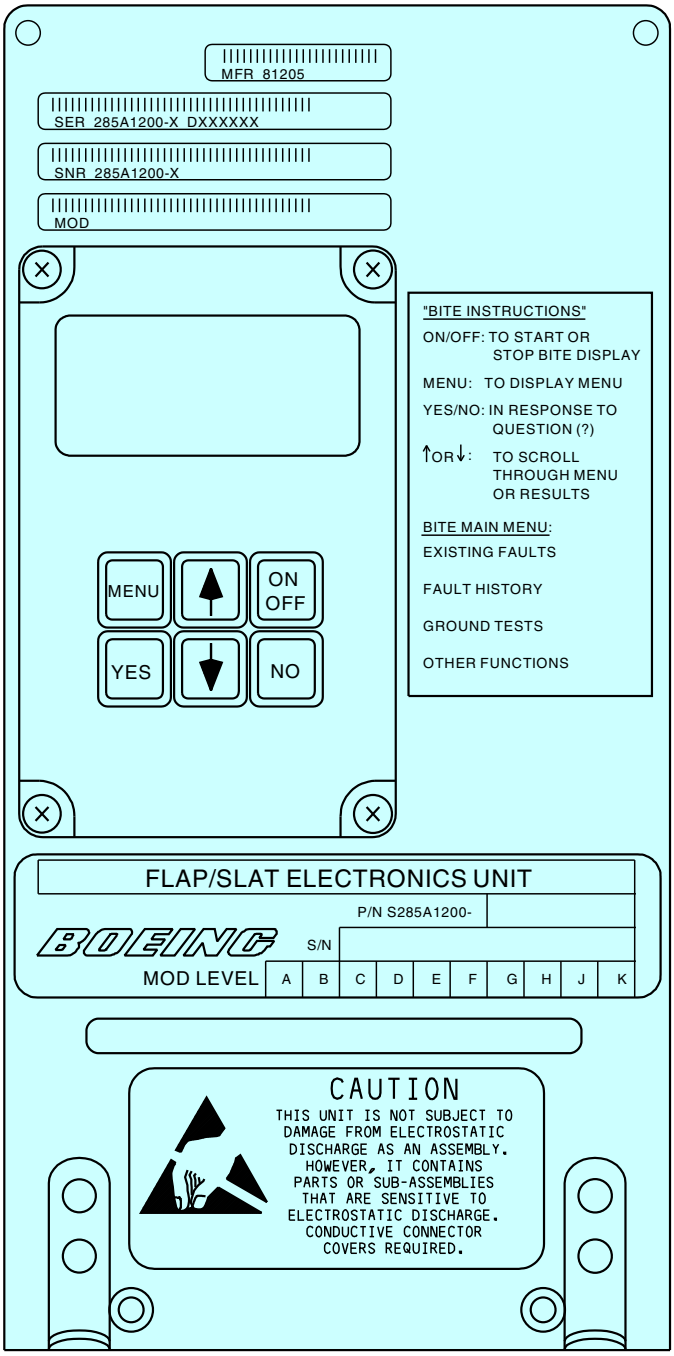
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap Limit Switch Test
Figure 502/27-51-63-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



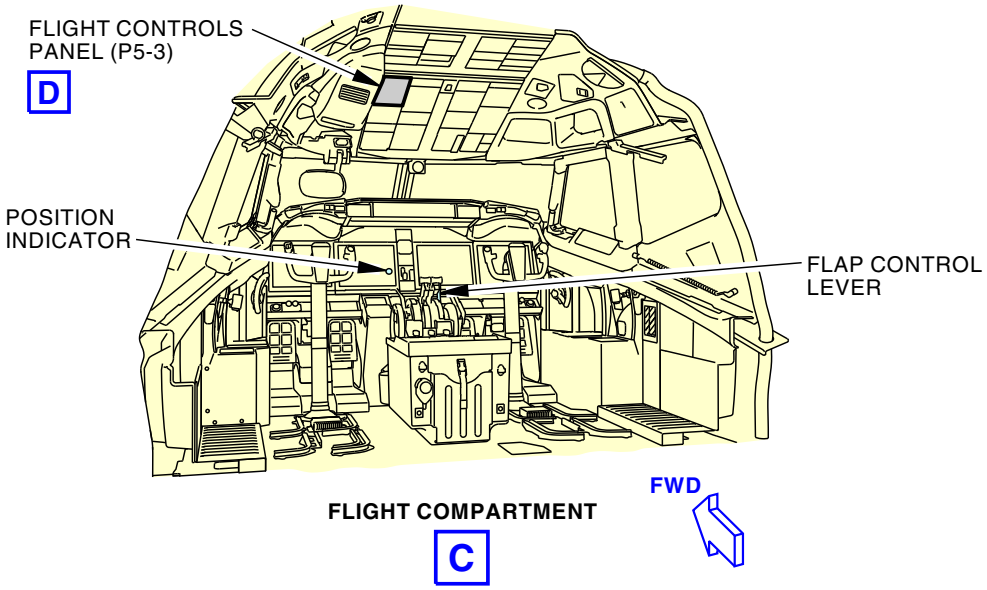
FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

2413087 S00061531837_V1

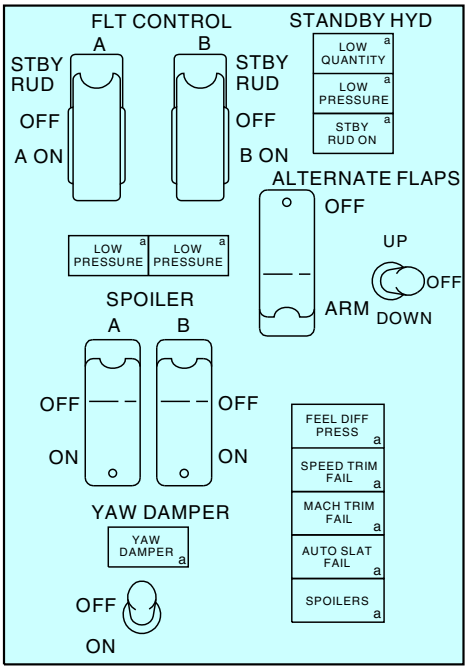
Flap Limit Switch Test
Figure 502/27-51-63-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT

C



FLIGHT CONTROLS PANEL (P5-3)

D

2413088 S00061531838_V1

Flap Limit Switch Test
Figure 502/27-51-63-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-63-720-802

4. Flaps DOWN Limit Switch, S246 Functional Test

(Figure 502)

A. General

(1) This task is applicable to the Flaps DOWN Limit Switch, S246.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Functional Test

SUBTASK 27-51-63-010-004

(1) To get access to the Electronic Equipment Center, do this step:

(a) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-63-860-016

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power (TASK 29-11-00-860-801).

F. Flaps DOWN Limit Switch, S246 Test

SUBTASK 27-51-63-860-017

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the 30-unit position.

(a) Wait for the flaps to move to the 30-unit position.

SUBTASK 27-51-63-710-006

(2) Move the ALTERNATE FLAPS ARM switch to the ARM position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-63-860-018

(3) Move the flap control lever to the 40-unit position.

(a) Make sure that the flaps do not move when you move the flap control lever.

SUBTASK 27-51-63-710-007

(4) Move the ALTERNATE FLAPS control switch to the DOWN position and hold it until the trailing edge flaps stop moving.

SUBTASK 27-51-63-740-002

(5) Use the FSEU to do a check of the position of the trailing edge flaps:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the down arrow until SYNCHRO INPUTS? shows on the display.

(g) Push the YES button to select SYNCHRO INPUTS? from the menu.

(h) Push the down arrow to find the L FL POS and R FL POS indications.

(i) Make sure that the L FL POS and R FL POS indications are in the limit of 259.9 to 270.3.

(j) Push the ON/OFF button on the front panel of the FSEU to turn the front panel display off.

SUBTASK 27-51-63-710-008

(6) Move the ALTERNATE FLAPS ARM switch to the OFF position.

SUBTASK 27-51-63-860-019

(7) Move the flap control lever to the UP position to retract the flaps.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-63-860-020

(1) Remove system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-51-63-940-002

(2) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-51-63-710-801

5. Flaps UP Limit Switch, S1051 Operational Test

(Figure 502)

A. General

(1) This task is applicable to the operational test of the Power Transfer Unit (PTU), related to the TE Flaps UP Limit Switch, S1051.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Operational Test

SUBTASK 27-51-63-010-005

(1) To get access to the Electronic Equipment Center, do this step:

(a) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-51-63-210-001

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Make sure that the flaps are fully UP.

SUBTASK 27-51-63-860-022

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(3) Pressurize the hydraulic reservoirs (TASK 29-09-00-860-801).

SUBTASK 27-51-63-210-002

(4) Make sure that the two Stall Warning Vanes (AOA) are at the ZERO position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-63-860-023

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(5) Pressurize hydraulic system A (TASK 29-11-00-860-801).

SUBTASK 27-51-63-860-024

(6) Put the airplane in the air mode (TASK 32-09-00-860-801).

(a) Make sure that the PTU does not operate.

NOTE: When the airplane is in the air mode, the engines in operation will increase to flight idle speed.

F. Flaps UP Limit Switch, S1051 Operational Test

SUBTASK 27-51-63-440-003

WARNING WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

WARNING MAKE SURE THAT YOU DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(1) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

SUBTASK 27-51-63-860-032

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

SUBTASK 27-51-63-710-009

(3) In the Flight Compartment, on the P5 overhead panel, put the ALTERNATE FLAPS arm switch in the ARM position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-63-710-010

(4) On the P5 overhead panel, hold the ALTERNATE FLAPS control switch to the DOWN position until the flaps position indication shows flaps 1.

NOTE: The Leading Edge (LE) slats will extend to the Full Extend position. The LE flaps will extend to the Extend position.

SUBTASK 27-51-63-860-025

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(5) Move the Flap Control Lever to the 1-unit detent.

SUBTASK 27-51-63-710-011

(6) Put the ALTERNATE FLAPS arm switch in the OFF position.

(a) Make sure that the PTU operates.

NOTE: The LE slats will retract to the Extend position. The LE flaps will remain at the Extend position.

SUBTASK 27-51-63-710-012

(7) Put the ALTERNATE FLAPS arm switch in the ARM position.

SUBTASK 27-51-63-710-013

(8) Move the ALTERNATE FLAPS control switch to the UP position until the TE flaps are fully retracted.

(a) Make sure that the TE flaps are fully retracted.

(b) Make sure that the PTU does not operate.

SUBTASK 27-51-63-710-014

(9) Put the ALTERNATE FLAPS arm switch in the OFF position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-63-860-026

(1) Remove the power from hydraulic system A (TASK 29-11-00-860-805).

SUBTASK 27-51-63-860-027

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Move the Flap Control lever to the 0-unit detent.

SUBTASK 27-51-63-860-028

(3) Pressurize hydraulic system B (TASK 29-11-00-860-801).

(a) Make sure that the LE flaps and LE slats fully retract.

SUBTASK 27-51-63-860-029

(4) Remove power from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-51-63-860-030

(5) Put the airplane in the ground mode (TASK 32-09-00-860-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-63-410-003

(6) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the trailing edge flap control valve

(2) An installation of the trailing edge flap control valve

(3) A removal of the flap load limiter solenoid valve

(4) An installation of the flap load limiter solenoid valve.

B. The trailing edge flap control valve is installed on the flap control unit in the main wheel well.

TASK 27-51-65-000-801

2. Trailing Edge Flap Control Valve Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

C. Prepare for the Removal

SUBTASK 27-51-65-860-001

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-65-860-002

(2) Remove the pressure from the system B hydraulic reservoir, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-51-65-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

D. Trailing Edge Flap Control Valve Removal

SUBTASK 27-51-65-860-003

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-65-010-001

(2) Remove the lower pan [11] from the flap control unit [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the screws [10] and washers [23] that attach the lower pan [11] to the flap control unit [1].

(b) Remove the lower pan [11] from the flap control unit [1].

SUBTASK 27-51-65-480-002

(3) Install the rig pin [14], F70207-116 through the cam follower arm [13] and the valve cam [12]:

SUBTASK 27-51-65-020-001

(4) Remove the flap control valve [6]:

(a) Disconnect hydraulic line [2], hydraulic line [24], tee-fitting [25], and hydraulic line [27] from the flap control valve [6].

1) Install caps on hydraulic line [2], hydraulic line [24], tee-fitting [25], and hydraulic line [27] .

2) Install plugs in the hydraulic ports of the flap control valve [6].

(b) Disconnect the electrical connector [3] from the flap control valve [6].

(c) Disconnect the flap control valve [6] from the cam follower arm [13]:

1) Remove the plug [9] from the forward side of the flap control unit [1].

2) Remove the bolt [15], washer [16], bushings [17], washer [26], and nut [18] that attach the flap control valve [6] to the cam follower arm [13].

(d) Remove the bolts [7] and washers [8] that attach the flap control valve [6] to the flap control unit [1].

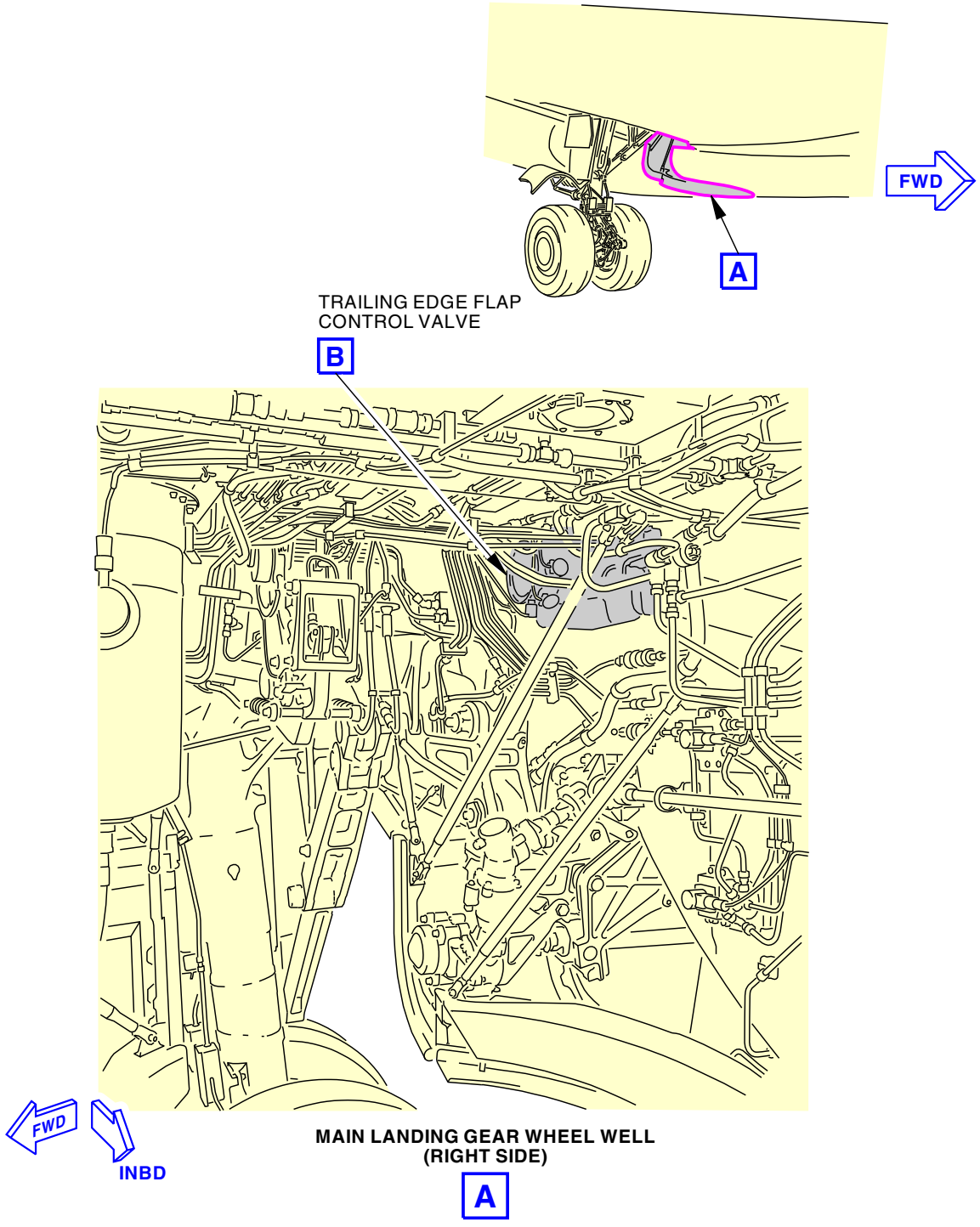
(e) Remove the flap control valve [6] from the flap control unit [1].

SUBTASK 27-51-65-020-002

(5) If a new flap control valve [6] will be installed, remove the union [5], union [28], unions [29], and packings [4].

——— END OF TASK ———

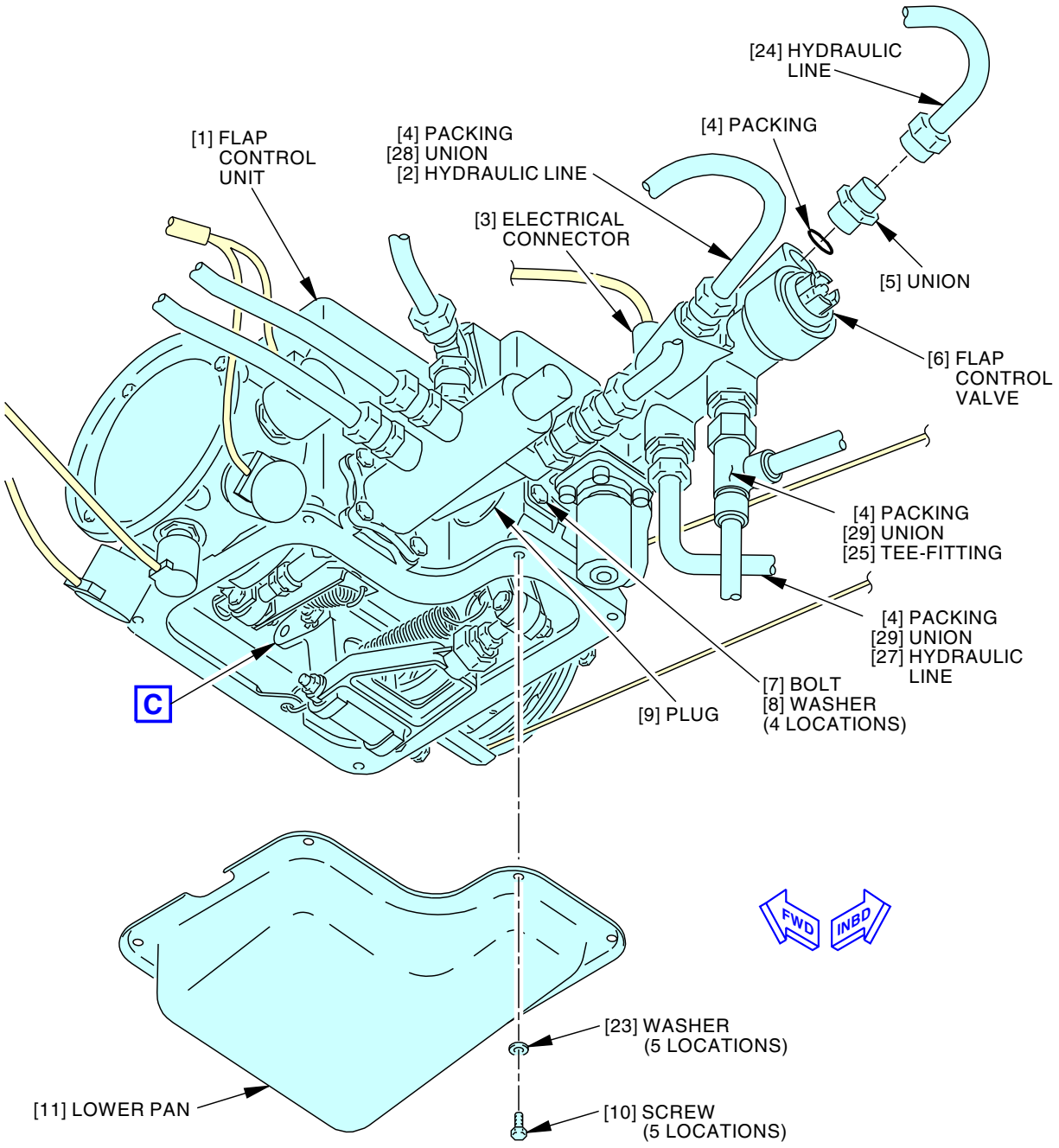
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413089 S00061531844_V1

Trailing Edge Flap Control Valve Installation
Figure 401/27-51-65-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



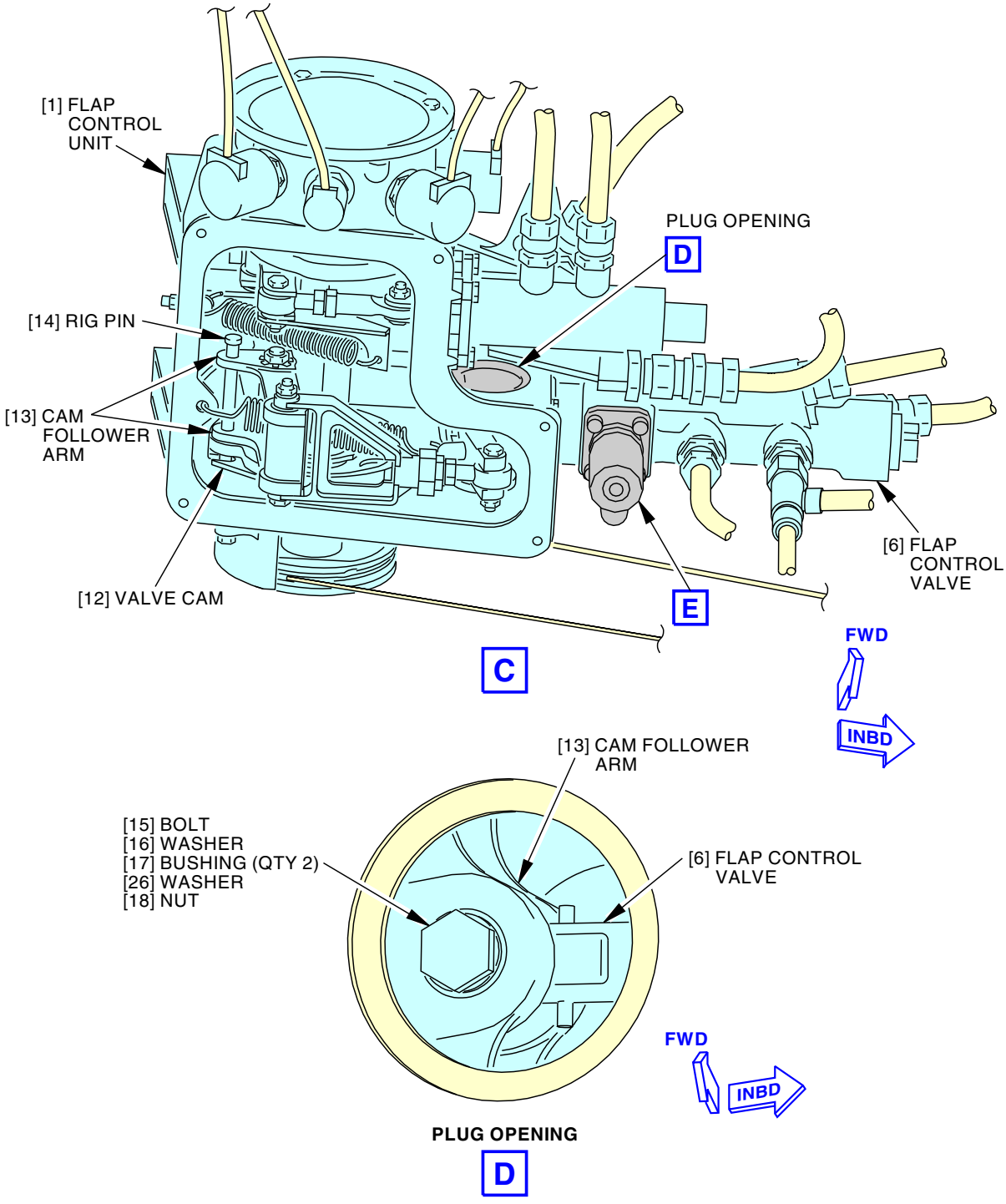
TRAILING EDGE FLAP CONTROL VALVE

B

2413090 S00061531845_V4

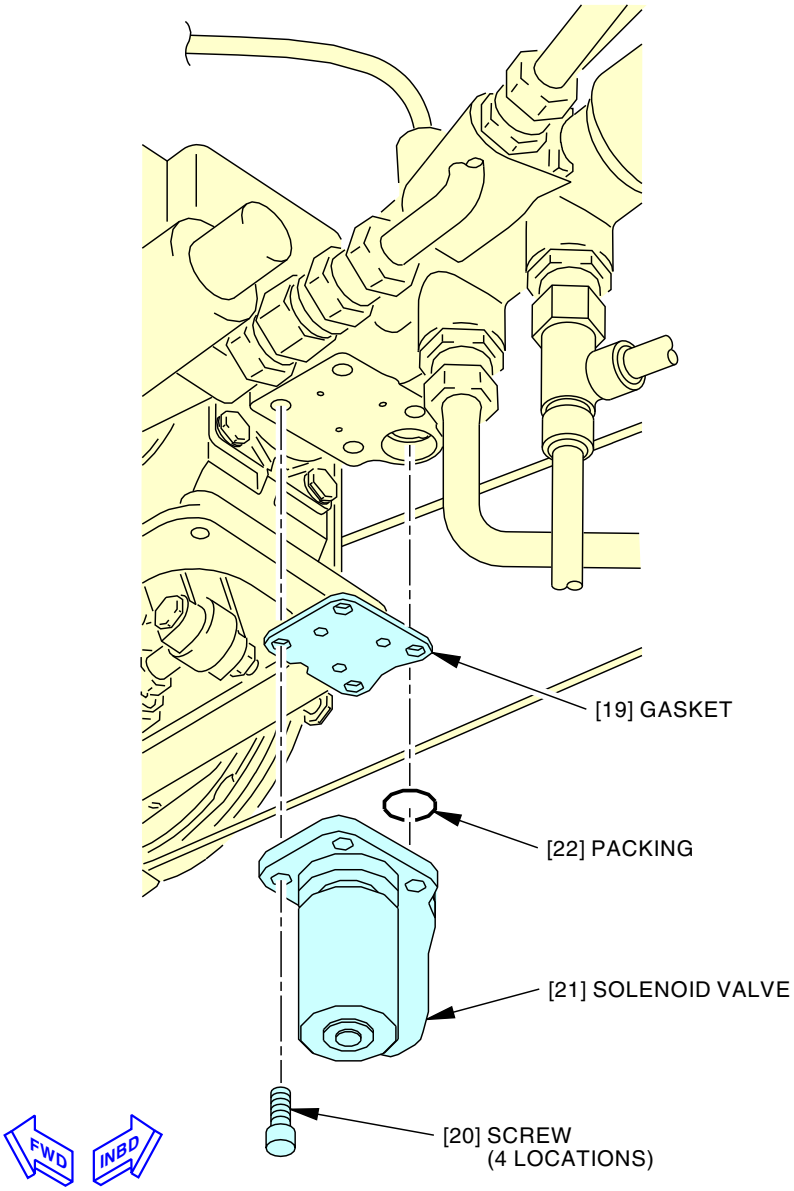
Trailing Edge Flap Control Valve Installation
Figure 401/27-51-65-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control Valve Installation
Figure 401/27-51-65-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SOLENOID VALVE

E

2413092 S00061531847_V3

Trailing Edge Flap Control Valve Installation
Figure 401/27-51-65-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-65-400-801

3. Trailing Edge Flap Control Valve Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-730-801	Trailing Edge Flap System Test (P/B 501)
27-51-00-740-803	Trailing Edge Flap Load Relief System BITE Test (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-65-820-801	Trailing Edge Flap Control Valve Adjustment (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

B. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33
G50170	Compound - Corrosion Inhibiting Compound, Soft Film, Exterior Use - Ardrox AV25	
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap control unit	27-51-61-02A-040	SIA ALL
4	Packing	27-51-61-01A-260	SIA ALL
6	Flap control valve	27-51-61-01A-245	SIA ALL

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Trailing Edge Flap Control Valve Installation

SUBTASK 27-51-65-420-001

(1) If they are not installed, install the union [5], union [28], unions [29], and packings [4] in the ports of the flap control valve [6]:

(a) Apply hydraulic fluid, D00153, or MCS 352B fluid, D00054, to the new packings [4].

(b) Put the packings [4], union [5], union [28], and unions [29] in their location on the flap control valve [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-65-420-002

(2) Install the flap control valve [6] in the flap control unit [1]:

(a) Put the flap control valve [6] in its location on the flap control unit [1].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [7].

(c) Install the bolts [7] and washers [8] to attach the flap control valve [6].

(d) Install lockwire on the bolts [7].

(e) Connect the flap control valve [6] to the cam follower arm [13]:

1) Apply grease, D00633, to the inside of the bushings [17].

2) Install the bushings [17], washer [16], bolt [15], washer [26], and nut [18] that attach the flap control valve [6] to the cam follower arm [13].

3) Install the plug [9] on the forward side of the flap control unit [1].

4) Apply a bead of sealant, A00247, around the plug [9].

(f) Connect hydraulic line [2], hydraulic line [24], tee-fitting [25], and hydraulic line [27] to the flap control valve [6]:

1) Remove the caps from hydraulic line [2], hydraulic line [24], tee-fitting [25], and hydraulic line [27].

2) Remove the plugs from the hydraulic ports on the flap control valve [6].

3) Connect hydraulic line [2] and hydraulic line [27] to the flap control valve [6].

a) Tighten the B-nuts on hydraulic line [2] and hydraulic line [27] to 500 ±25 in-lb (56 ±3 N·m).

4) Connect the tee-fitting [25] to the flap control valve [6].

a) Tighten the tee-fitting [25] to 500 ±25 in-lb (56 ±3 N·m).

5) Connect hydraulic line [24] to the flap control valve [6].

a) Tighten the B-nut on hydraulic line [24] to 280 ±14 in-lb (32 ±2 N·m).

(g) Before you connect the electrical connector [3], examine the connector for corrosion (TASK 20-60-07-910-802).

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(h) Apply D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

(i) Connect the electrical connector [3] to the flap control valve [6].

(j) Apply Ardrox AV25 compound, G50170, to the external surface of the electrical connector [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-65-080-001

(3) Remove the rig pin [14], F70207-116 from the flap control unit [1]:

SUBTASK 27-51-65-860-004

(4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-65-860-005

(5) Use the primary system to extend and retract the trailing edge flaps.

(a) To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-65-210-001

(6) Make sure that there are no hydraulic leaks from the flap control valve [6].

SUBTASK 27-51-65-820-001

(7) Do this task: Trailing Edge Flap Control Valve Adjustment, TASK 27-51-65-820-801.

SUBTASK 27-51-65-820-005

(8) Do this task: Trailing Edge Flap System Test, TASK 27-51-00-730-801.

SUBTASK 27-51-65-820-006

(9) Do this task: Trailing Edge Flap Load Relief System BITE Test, TASK 27-51-00-740-803.

SUBTASK 27-51-65-410-001

(10) Install the lower pan [11] on the flap control unit [1]:

(a) Put the lower pan [11] in its location on the flap control unit [1].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [10].

(c) Install the washers [23] and screws [10] to attach the lower pan [11] to the flap control unit [1].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-65-610-001

(1) Service the system B hydraulic reservoir, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-65-000-802

4. Flap Load Limiter Solenoid Valve Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Consumable Materials

Reference	Description	Specification
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-51-65-860-006

(1) If the trailing edge flaps are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-51-65-860-007

(2) Remove the pressure from the system B hydraulic reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-51-65-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

E. Flap Load Limiter Solenoid Valve Removal

SUBTASK 27-51-65-860-008

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-65-020-003

(2) Remove the solenoid valve [21] from the flap control valve [6]:

(a) Remove the MS20995NC32 lockwire, G50347 and the screws [20] that attach the solenoid valve [21] to the flap control valve [6].

(b) Remove the solenoid valve [21] from the flap control valve [6] with the gasket [19] and packing [22].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-65-400-802

5. Flap Load Limiter Solenoid Valve Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-51-00-740-803	Trailing Edge Flap Load Relief System BITE Test (P/B 501)
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
19	Gasket	27-51-65-01A-020	SIA ALL
21	Solenoid valve	27-51-65-01A-155	SIA ALL
		27-51-65-01A-160	SIA ALL
22	Packing	27-51-65-01A-015	SIA ALL

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Procedure

SUBTASK 27-51-65-420-003

(1) Install solenoid valve [21] in the flap control valve [6]:

(a) Apply hydraulic fluid, D00153, or MCS 352B fluid, D00054 to the new packing [22].

(b) Put the packing [22] and gasket [19] in their locations on the solenoid valve [21].

(c) Put the solenoid valve [21] in its position on the flap control valve [6].

1) Inspect the connector for corrosion, If there is corrosion, refer to the SWPM 20-60-03 to correct the problem.

2) Make sure that the electrical connector on the solenoid valve [21] engages the electrical connector in the flap control valve [6].

(d) Install the screws [20] to attach the solenoid valve [21] to the flap control valve [6].

(e) Tighten the screws [20] to 25 in-lb (2.8 N·m) to 35 in-lb (4.0 N·m).

(f) Install MS20995NC32 lockwire, G50347 on the screws [20].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-65-860-009

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

SUBTASK 27-51-65-860-010

(3) Use the primary system to extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-65-210-002

(4) Make sure that there are no hydraulic leaks from the flap control valve [6].

SUBTASK 27-51-65-720-001

(5) Do this task: Trailing Edge Flap Load Relief System BITE Test, TASK 27-51-00-740-803.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-65-610-002

(1) Service the system B hydraulic reservoir. To service the reservoir, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP CONTROL VALVE - ADJUSTMENT/TEST

1. General

A. Trailing Edge Flap Control Valve Adjustment.

TASK 27-51-65-820-801

2. Trailing Edge Flap Control Valve Adjustment

(Figure 501)

A. References

Reference	Title
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Adjustment

SUBTASK 27-51-65-860-011

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Supply hydraulic power to hydraulic system B (TASK 29-11-00-860-801).

SUBTASK 27-51-65-860-012

(2) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-801).

SUBTASK 27-51-65-860-013

(3) Retract the trailing edge flaps to the UP position (TASK 27-51-00-860-801).

(a) Wait a minimum of 2 minutes before you remove the hydraulic power.

NOTE: The flaps can move a small distance during this time.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-65-860-014

(4) Remove hydraulic power from hydraulic system B (TASK 29-11-00-860-805).

F. Adjustment of the Trailing Edge Flap Control Valve

SUBTASK 27-51-65-010-003

(1) Remove the lower pan [10] from the flap control unit [1]:

(a) Remove the five screws [11] and five washers [21] that attach the lower pan [10] to the flap control unit [1].

(b) Remove the lower pan [10] from the flap control unit [1].

SUBTASK 27-51-65-820-002

(2) Do a check of the adjustment of the flap control valve [4]:

NOTE: This will make sure that the flap power drive unit and flap control unit move to the correct position when you retract the flaps.

(a) Make sure that you can easily install the rig pin [14], F70207-116, from the rigging pin kit, SPL-1585, through the cam follower arm [13] and valve cam [12].

(b) Make sure that the black rig mark on the cable drum [18] for the flap power drive unit [20] extends past the cable guard [19] a minimum of 0.03 in. (0.8 mm) on each side.

SUBTASK 27-51-65-820-003

(3) If you cannot easily install the rig pin [14], F70207-116, from the rigging pin kit, SPL-1585, or if the flap power drive unit [20] is not in the correct position, then adjust the flap control valve [4]:

(a) Remove the, MS20995C32 lockwire, G01048, from the nut [16] and nut [17].

(b) Loosen the nut [16] and nut [17] on the adjustable sleeve [9].

(c) Turn the adjustable sleeve [9] to change the position of the rod end [8].

NOTE: This will change the alignment of the valve slide and the index surface on the flap control valve.

(d) Tighten the nut [16] and nut [17] on the adjustable sleeve [9].

1) Make sure that the distance between the center of the rod end [8] and nut [17] is less than 0.94 in. (23.9 mm).

2) Make sure that the distance between the nut [16] and hex on the adjustable sleeve [9] is less than 0.19 in. (4.8 mm).

CAUTION

MAKE SURE THAT YOU REMOVE THE HYDRAULIC POWER BEFORE YOU DISCONNECT THE ROD END FROM THE SUMMING LEVER. IF YOU DISCONNECT THE ROD END WITH HYDRAULIC POWER ON, YOU CAN CAUSE DAMAGE TO THE FLAP CONTROL UNIT.

(e) If it is necessary, disconnect the rod end [8] from the summing lever [2]:

NOTE: It is necessary to disconnect the rod end if you cannot adjust the flap control valve while the adjustable sleeve is in the limits.

1) Remove the nut [7], washer [6], and bolt [5] that attach the rod end [8] to the summing lever [2].

2) Change the position of the adjustable sleeve [9].

3) Install the bolt [5], washer [6], and nut [7] to attach the rod end [8] to the summing lever [2].

(f) Tighten the nut [16] and nut [17].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Install, MS20995C32 lockwire, G01048, on the nut [16], nut [17] and adjustable sleeve [9].

SUBTASK 27-51-65-080-002

(4) Remove the rig pin [14], rigging pin kit, SPL-1585, from the cam follower arm [13] and valve cam [12].

SUBTASK 27-51-65-860-015

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Supply hydraulic power to hydraulic system B (TASK 29-11-00-860-801).

SUBTASK 27-51-65-860-016

(6) Extend and retract the trailing edge flaps five times (TASK 27-51-00-860-801).

(a) Wait a minimum of 2 minutes before you remove the hydraulic power.

NOTE: The flaps can move a small distance during this time.

SUBTASK 27-51-65-860-017

(7) Remove hydraulic power from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-51-65-820-004

(8) Do a check of the adjustment of the flap control valve [4] again:

(a) Make sure that the black rig mark on the cable drum [18] for the flap power drive unit [20] extends past the cable guard [19] a minimum of 0.03 in. (0.8 mm) on each side.

(b) Make sure that you can easily install the rig pin [14] through the cam follower arm [13] and the valve cam [12].

SUBTASK 27-51-65-480-004

(9) If you cannot easily install the rig pin [14], or if the flap power drive unit [20] is not in the correct position, then adjust the trailing edge flap control valve [4] again.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-65-080-003

(1) Remove the rig pin [14] from the cam follower arm [13] and valve cam [12].

SUBTASK 27-51-65-410-002

(2) Install the lower pan [10] on the flap control unit [1]:

(a) Put the lower pan [10] in its location on the flap control unit [1].

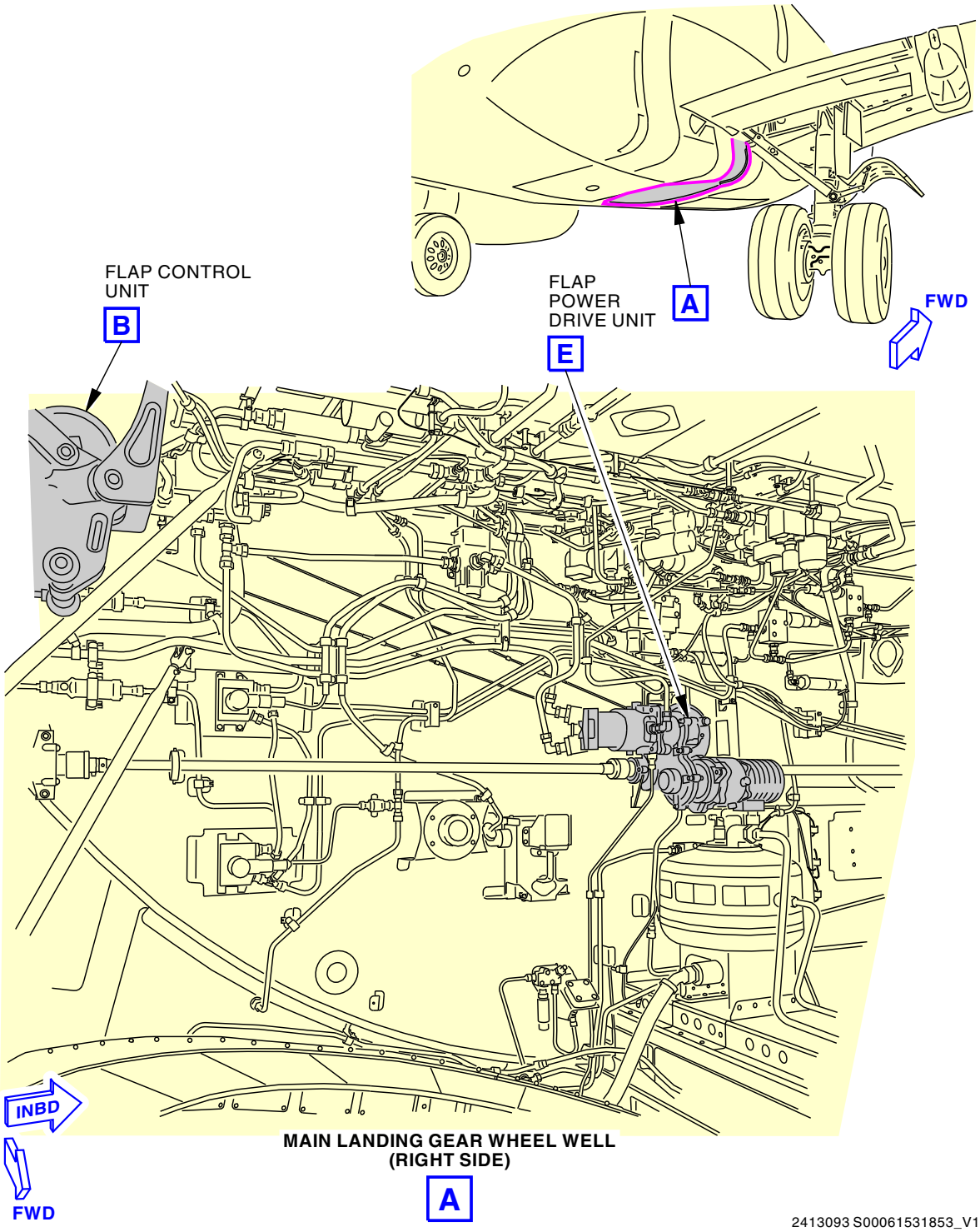
WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply, Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [11].

(c) Install the five washers [21] and five screws [11] to attach the lower pan [10] to the flap control unit [1].

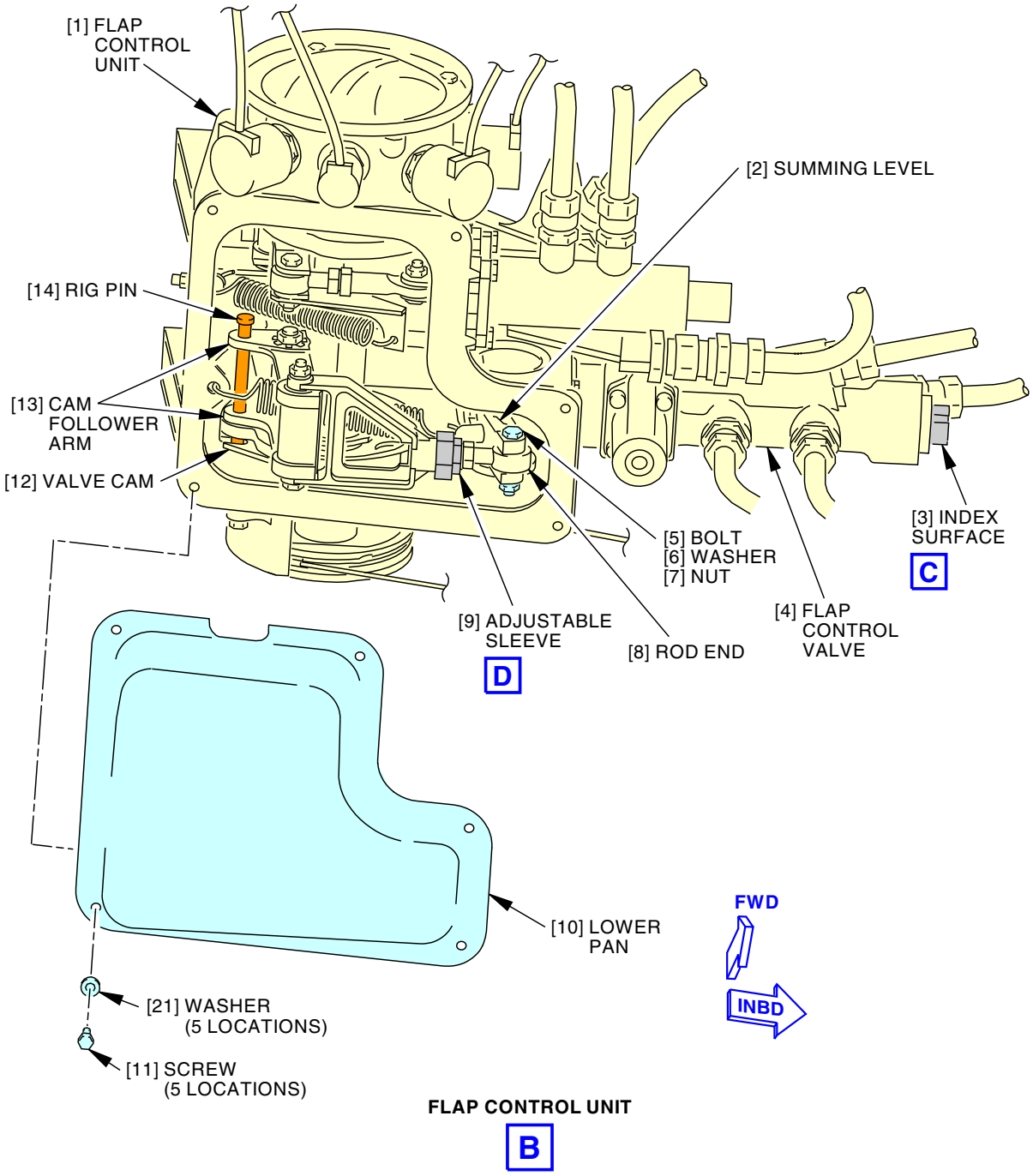
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control Valve Adjustment
Figure 501/27-51-65-990-802 (Sheet 1 of 4)

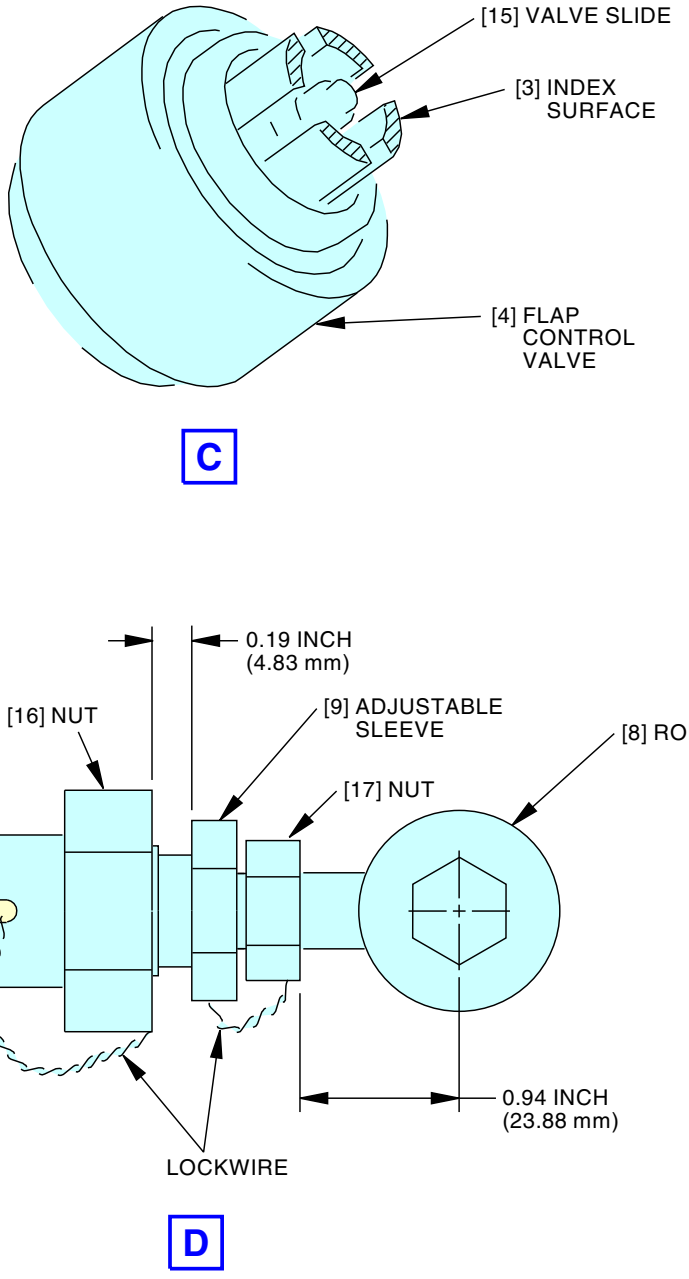
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413094 S00061531854_V2

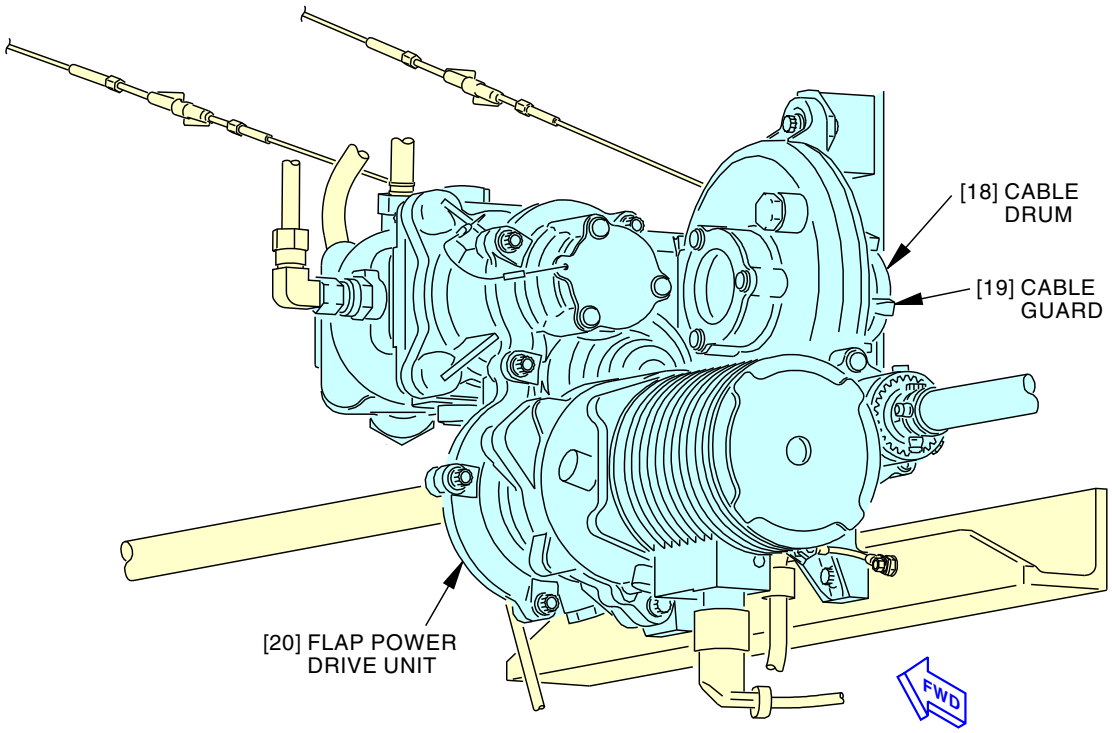
Trailing Edge Flap Control Valve Adjustment
Figure 501/27-51-65-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control Valve Adjustment
Figure 501/27-51-65-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP POWER DRIVE UNIT

E

2413096 S00061531856_V1

Trailing Edge Flap Control Valve Adjustment
Figure 501/27-51-65-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP CONTROL VALVE - REPAIRS

1. General

A. This procedure has this task:

(1) Trailing Edge Flap Control Valve Internal Leakage Repair.

B. You can use this procedure if there is too much internal leakage in the control valve. This procedure can reduce the internal leakage by approximately one-half. It is not necessary to remove the control valve from the airplane to do this procedure.

TASK 27-51-65-360-801

2. Trailing Edge Flap Control Valve Internal Leakage Repair

(Figure 801)

A. References

Reference	Title
27-51-00-860-801	Trailing Edge Flap System Operation With Primary Control (P/B 201)
27-51-65-820-801	Trailing Edge Flap Control Valve Adjustment (P/B 501)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Procedure

SUBTASK 27-51-65-480-005

WARNING MAKE CERTAIN LANDING GEAR DOWNLOCK PINS ARE INSTALLED TO PREVENT INADVERTENT RETRACTION OF LANDING GEAR, AND POSSIBLE INJURY TO PERSONNEL.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-65-860-018

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-65-860-019

(3) Extend the trailing edge flaps to the 40-unit position. To extend the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

SUBTASK 27-51-65-860-020

(4) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

(a) Wait a minimum of 2 minutes before you remove the hydraulic power. The flaps can move a small distance during this time.

SUBTASK 27-51-65-860-021

(5) Remove the pressure from the system B hydraulic reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-51-65-360-001

(6) Turn the sleeve [2] on the flap control valve assembly [3] 45 degrees.

NOTE: This will move the eroded parts of the flap control valve slide [9] with respect to the rectangular slots in the sleeve [2].

SUBTASK 27-51-65-860-022

(7) Move the flap control lever to the 40-unit detent.

SUBTASK 27-51-65-860-023

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(8) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-51-65-860-024

(9) Move the flap control lever to the UP position to retract the flaps.

SUBTASK 27-51-65-720-002

(10) Do this test of the flap control valve assembly [3]:

(a) Fully extend and retract the trailing edge flaps five times. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, TASK 27-51-00-860-801.

1) Wait a minimum of 2 minutes before you remove the hydraulic power. The flaps can move a small distance during this time.

(b) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Remove the lower pan [4] from the flap control unit [1]:

1) Remove the screw [5] that attach the lower pan [4] to the flap control unit [1].

2) Remove the lower pan [4] from the flap control unit [1].

(d) Do a check of the adjustment of the flap control valve assembly [3]:

NOTE: This will make sure that the flap power drive unit [12] and the flap control unit [1] moved to the correct position when you retracted the flaps.

1) Make sure that you can easily install the rig pin [8], F70207-116 from the rigging pin kit, SPL-1585 through the cam follower arm [7] and the valve cam [6].

2) Make sure that the black rig mark on the cable drum [10] for the flap power drive unit [12] extends past the cable guard [11] a minimum of 0.03 in. (0.76 mm) on each side.

(e) If you cannot install the rig pin [8], or if the flap power drive unit [12] is not in the correct position, then, do this task: Trailing Edge Flap Control Valve Adjustment, TASK 27-51-65-820-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-65-080-004

(1) Remove the rig pin [8] from the cam follower arm [7] and the valve cam [6].

SUBTASK 27-51-65-410-003

(2) Install the lower pan [4] on the flap control unit [1]:

(a) Put the lower pan [4] in its location on the flap control unit [1].

WARNING

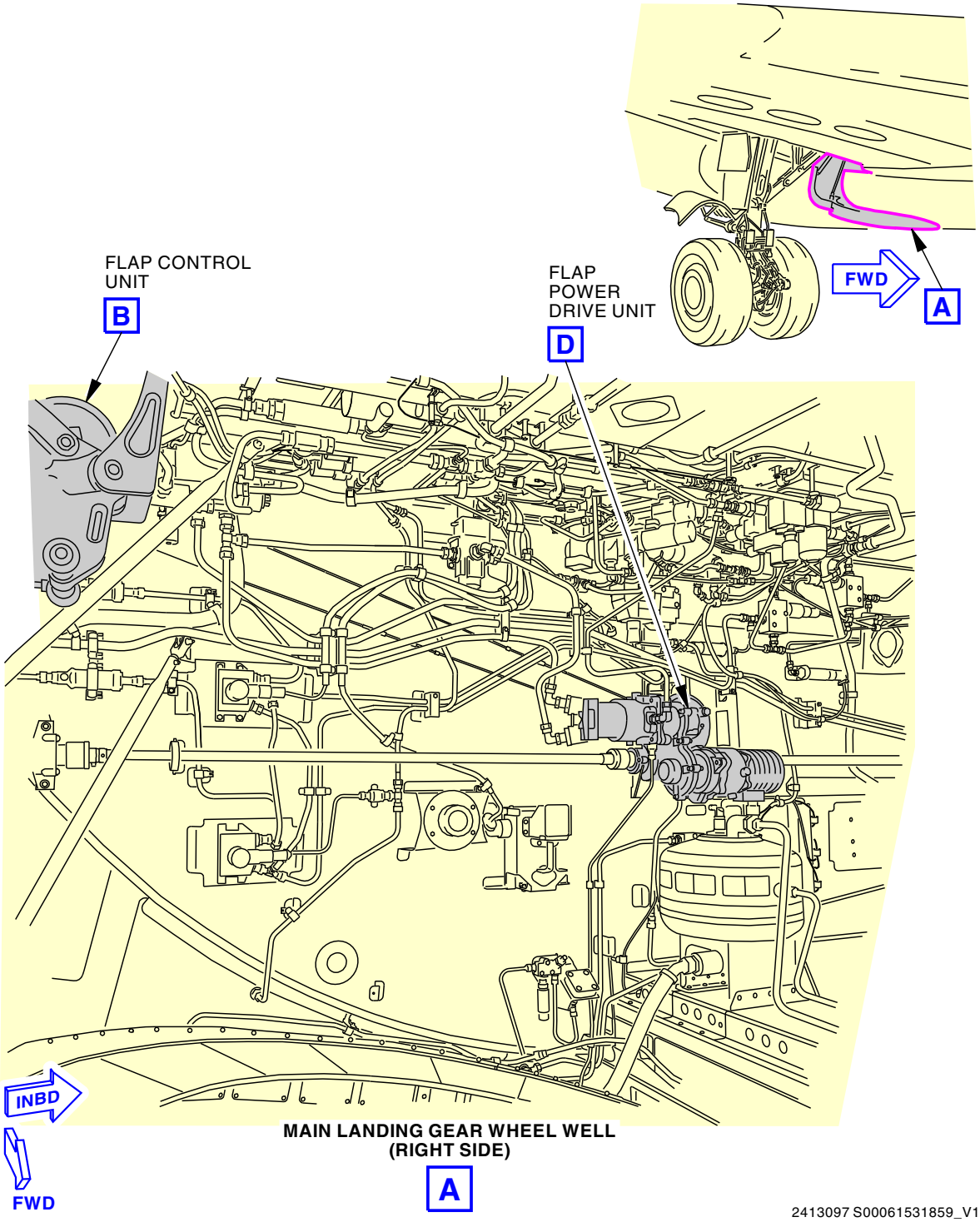
USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the screws [5].

(c) Install the screws [5] to attach the lower pan [4] to the flap control unit [1].

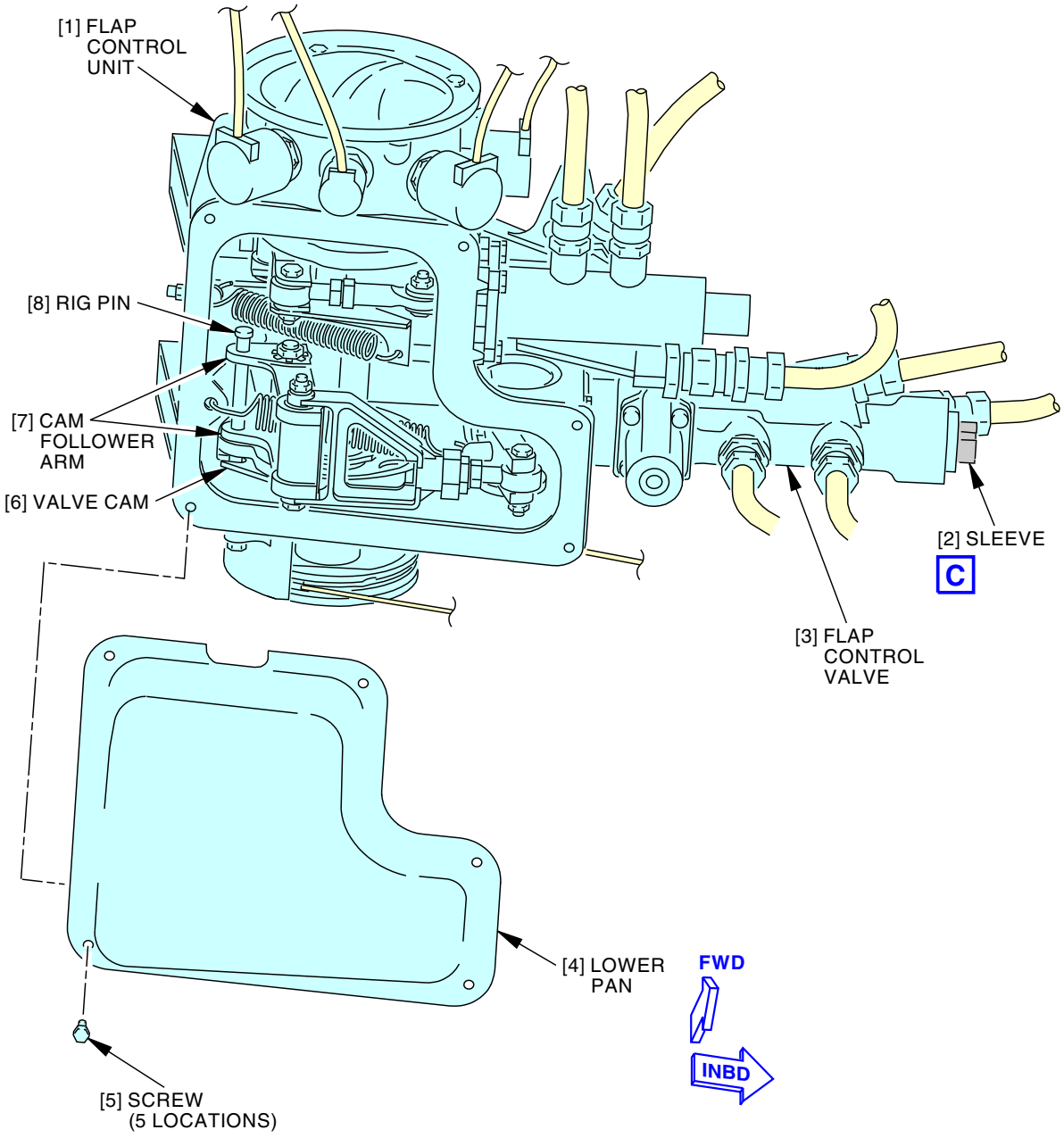
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Control Valve Repair
Figure 801/27-51-65-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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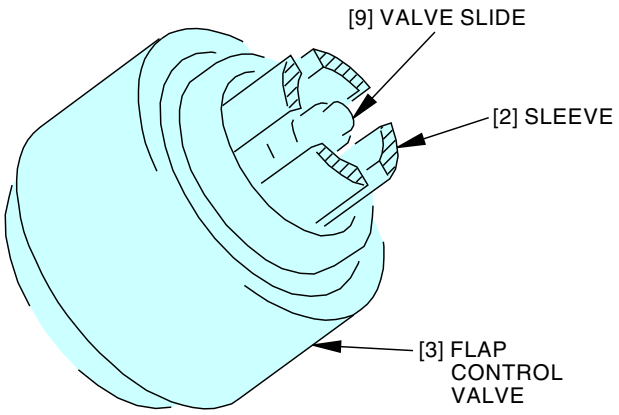
Trailing Edge Flap Control Valve Repair
Figure 801/27-51-65-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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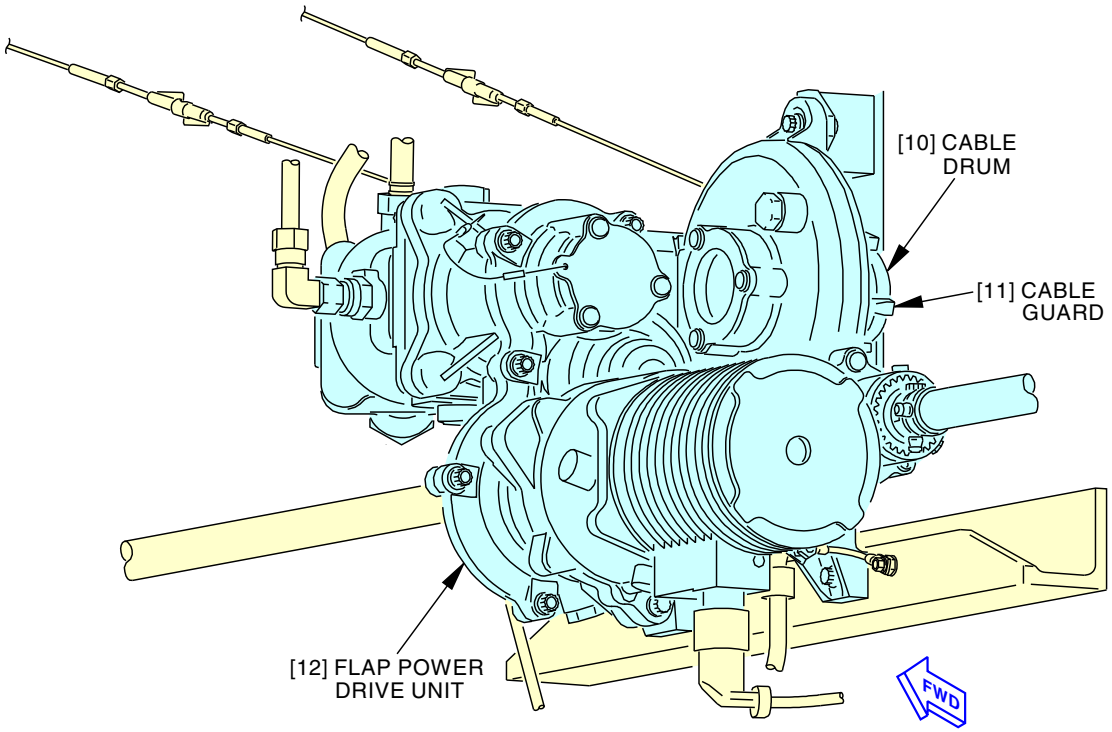

FLAP POWER DRIVE UNIT

D

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Trailing Edge Flap Control Valve Repair
Figure 801/27-51-65-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TRAILING EDGE FLAP FLOW LIMITER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Trailing Edge Flap Flow Limiter Removal

(2) Trailing Edge Flap Flow Limiter Installation.

TASK 27-51-67-000-801

2. Trailing Edge Flap Flow Limiter Removal

Figure 401

A. General

(1) This task includes the steps to remove the flow limiter for the trailing edge flaps.

B. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Prepare for the Removal

SUBTASK 27-51-67-860-001

WARNING OBEY THE PROCEDURE FOR THE INSTALLATION OF THE DOWNLOCK PINS. IF YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO THE UP POSITION, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-51-67-860-002

(2) Make sure that there is no hydraulic power on system B. To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

E. Flap Flow Limiter Removal

SUBTASK 27-51-67-020-001

(1) Remove the flap flow limiter [1]:

(a) Disconnect the hydraulic line [4] from the flap flow limiter [1].

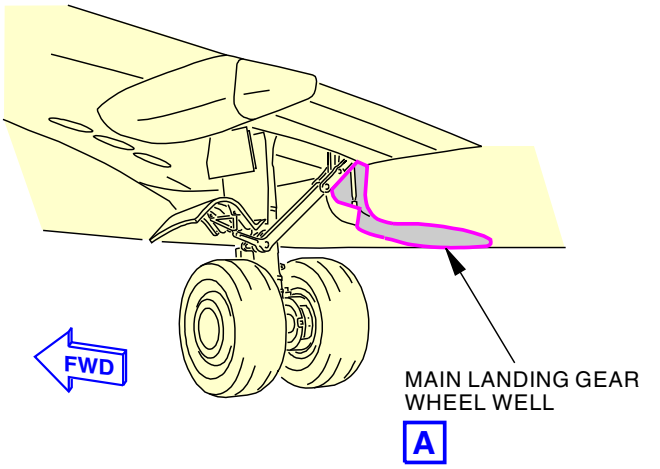
(b) Install caps and plugs on the hydraulic line [4] and ports.

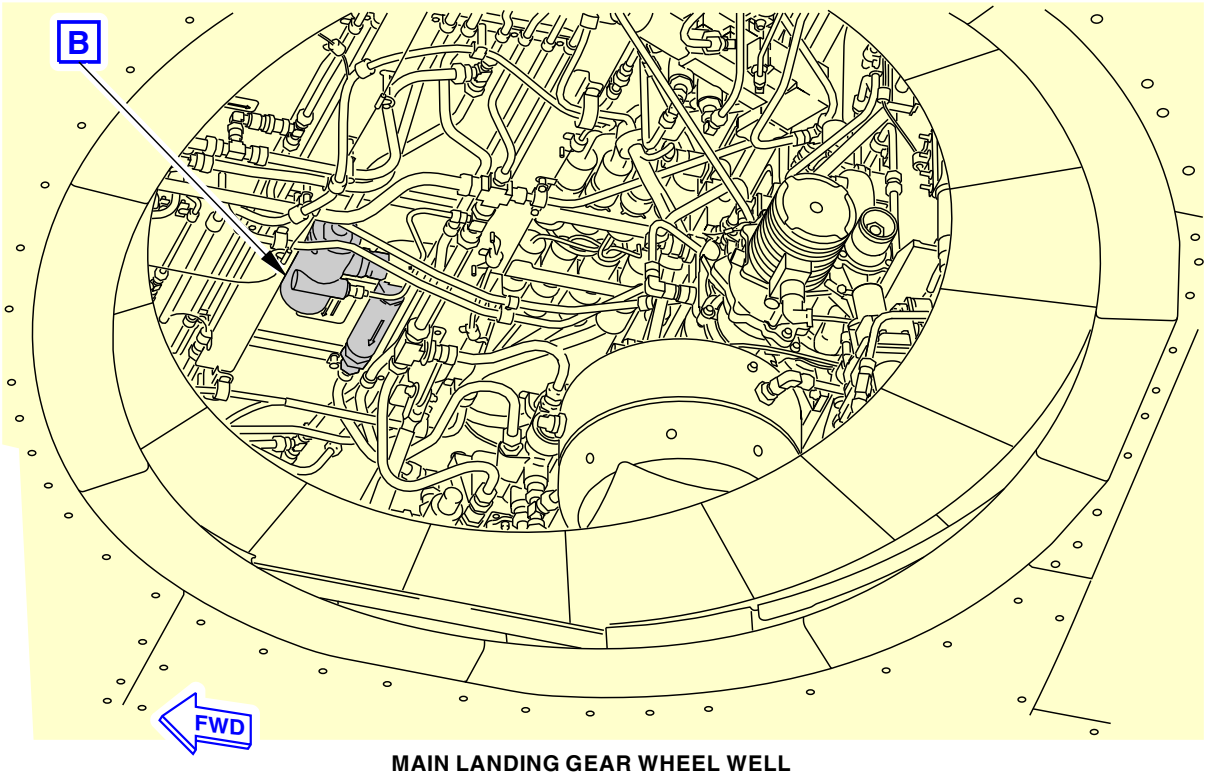
(c) Loosen the nut [3] to disconnect the flap flow limiter [1] on the priority valve [2].

(d) Remove the flap flow limiter [1] from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)

A

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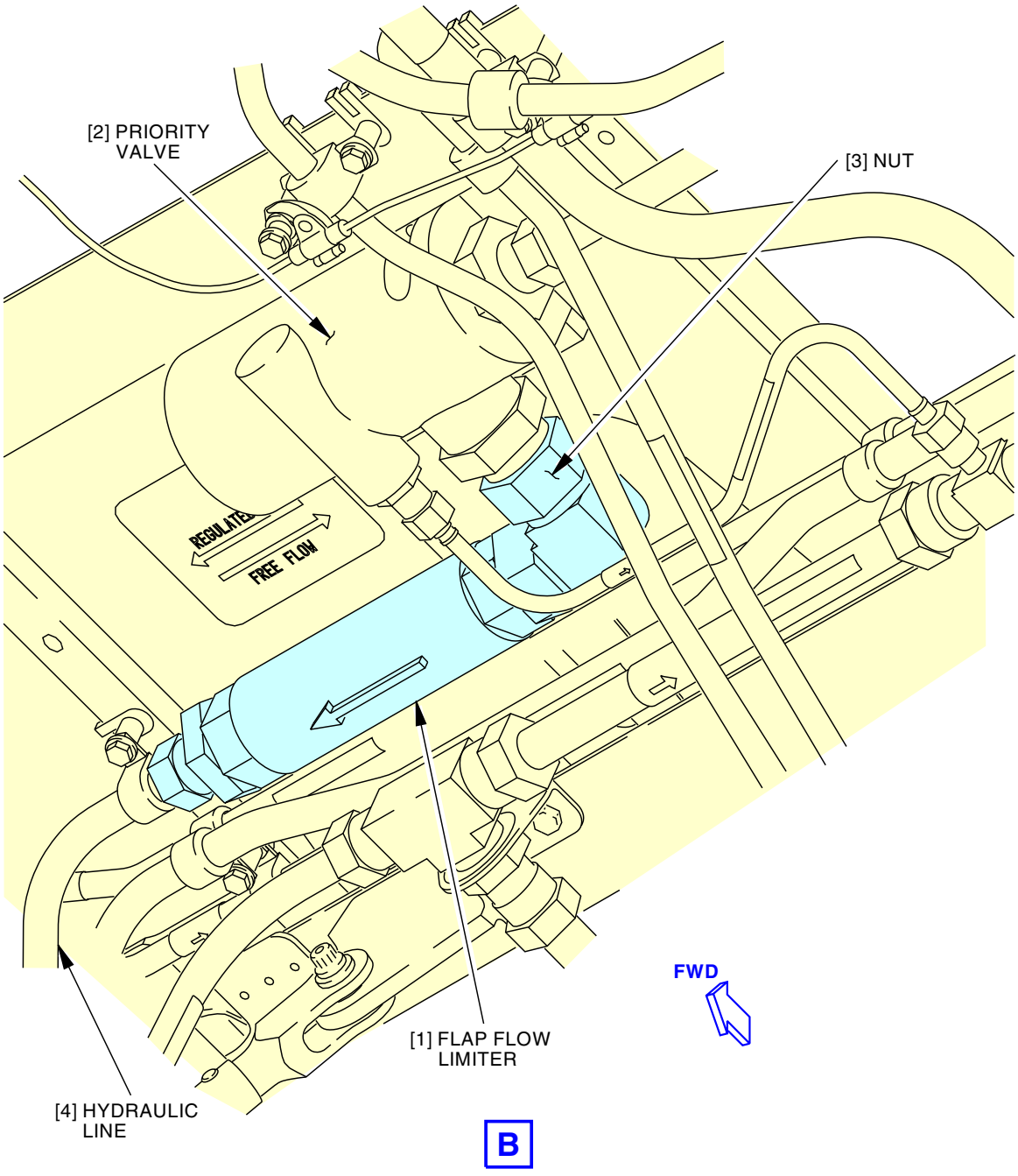
Trailing Edge Flap Flow Limiter Installation
Figure 401/27-51-67-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Trailing Edge Flap Flow Limiter Installation
Figure 401/27-51-67-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-51-67-400-801

3. Trailing Edge Flap Flow Limiter Installation

Figure 401

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flap flow limiter	27-51-67-01-010	SIA ALL

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Trailing Edge Flap Flow Limiter Installation

SUBTASK 27-51-67-420-001

(1) Install the flap flow limiter [1]:

(a) Connect the flap flow limiter [1] to the priority valve [2].

(b) Hold the flap flow limiter [1] and priority valve [2] in their position.

1) The flow direction arrow on the flap flow limiter [1] must agree with the 'REGULATED' arrow on the pressure bulkhead.

(c) Tighten the nut [3] to 900 ±45 in-lb (102 ±5 N·m).

(d) Connect the hydraulic line [4] to the flap flow limiter [1].

(e) Tighten the B-nut on the hydraulic line [4] to 500 ±25 in-lb (56 ±3 N·m).

E. Flap Flow Limiter Post-Installation Test

SUBTASK 27-51-67-710-001

(1) To pressurize hydraulic system B, do this task: (TASK 29-11-00-860-801).

SUBTASK 27-51-67-700-001

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED, AND IN THE STOWED POSITION, OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 40-unit position.

SUBTASK 27-51-67-790-001

(3) Examine the hydraulic fittings of the flap flow limiter [1] for leakage.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-51-67-860-003

(1) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-51-67-860-004

(2) To remove pressure from hydraulic system B, do this task: (TASK 29-11-00-860-805).

SUBTASK 27-51-67-610-001

(3) If it is necessary to service the hydraulic reservoirs, do this task: (TASK 12-12-00-610-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP POSITION TRANSMITTERS AND INDICATORS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Flap Position Indicating System - Deactivation

(2) Flap Position Indicating System - Activation

TASK 27-58-00-040-801

2. Flap Position Indicating System - Deactivation

A. General

(1) This task will deactivate these components in the flap position indicating system:

- Left Flap Position Transmitter
- Right Flap Position Transmitter

B. Location Zones

Zone	Area
212	Flight Compartment - Right
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

C. Flap Position Transmitters and Indicators - Deactivation

SUBTASK 27-58-00-860-002

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Flap Position Transmitters and Indicators - Tryout

NOTE: This tryout is to make sure that the flap position indicating system is in a zero energy state.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-00-860-003

(1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT
C	2	C01042	AFCS SYS B SNSR EXC AC

——— END OF TASK ———

TASK 27-58-00-440-801

3. Flap Position Indicating System - Activation

A. General

(1) This task will activate these components in the flap position indicating system:

- Left Flap Position Transmitter
- Right Flap Position Transmitter

B. Location Zones

Zone	Area
212	Flight Compartment - Right
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

C. Flap Position Transmitters and Indicators - Activation

SUBTASK 27-58-00-860-001

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	6	C01205	SMYD-1 SNSR EXC AC

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT
C	2	C01042	AFCS SYS B SNSR EXC AC

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP POSITION TRANSMITTER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flap position transmitter

(2) An installation of the flap position transmitter.

B. The flap position transmitters are installed on the outboard end of transmissions No. 1 and 8.

C. The flap position transmitters include additional syncros that are used in the autopilot and the stall management systems.

TASK 27-58-01-000-801

2. Flap Position Transmitter Removal

(Figure 401)

A. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

C. Prepare for the Removal

SUBTASK 27-58-01-860-001

(1) Extend the trailing edge flaps to the 40-unit position (TASK 27-51-00-860-803).

SUBTASK 27-58-01-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-58-01-860-003

(3) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

D. Flap Position Transmitter Removal

SUBTASK 27-58-01-860-004

(1) For the left flap position transmitter [2], T427, do this step:

(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-58-01-860-005

(2) For the right flap position transmitter [2], T428, do this step:

(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 27-58-01-980-001

(3) Manually extend the trailing edge flaps until the ballscrew nut [14] touches the downstop [12] on the ballscrew [13] on transmission No. 4 or No. 5 (TASK 27-51-00-980-801).

NOTE: This is the flaps extend overtravel stop position.

NOTE: If a flap position transmitter is inadvertently removed when the flaps are in a position other than at the ballscrew downstop, the flap position transmitter will not be in the rig position. The flap position transmitter is in the rigged (adjusted) position if the rig marks are visible and aligned in both windows of the flap position transmitter.

NOTE: If any components or installations between the torque tubes and transmissions [7] or in the control stand are removed and re-installed or replaced after rigging (adjustment) has been completed, then applicable re-rigging (re-adjustment) is necessary.

SUBTASK 27-58-01-020-001

(4) Disconnect the electrical connector [1] from the flap position transmitter [2].

(a) After the electrical connector [1] disconnection, examine the electrical connector [1] for corrosion.

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES WHERE DEICING FLUID THAT CONTAINS POTASSIUM FORMATE OR POTASSIUM ACETATE IS USED. ALSO, DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTORS ARE IN A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to SWPM 20-60-03 to correct the problem.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-01-020-002

(5) Remove the flap position transmitter [2]:

NOTE: The flap position transmitter is in the rigged (adjusted) position if the rig marks are visible and aligned in both windows of the flap position transmitter.

NOTE: If a flap position transmitter is inadvertently removed when the flaps are in a position other than at the ballscrew downstop, the flap position transmitter will not be in the rig position.

(a) Remove the bolt [3], washer [4], and washer [6] that attaches the jumper wire [5] and flap position transmitter [2] to the transmission [7].

(b) Remove the bolts [11] and washers [10] that attach the flap position transmitter [2] to the transmission [7].

(c) Remove the flap position transmitter [2] from the transmission [7].

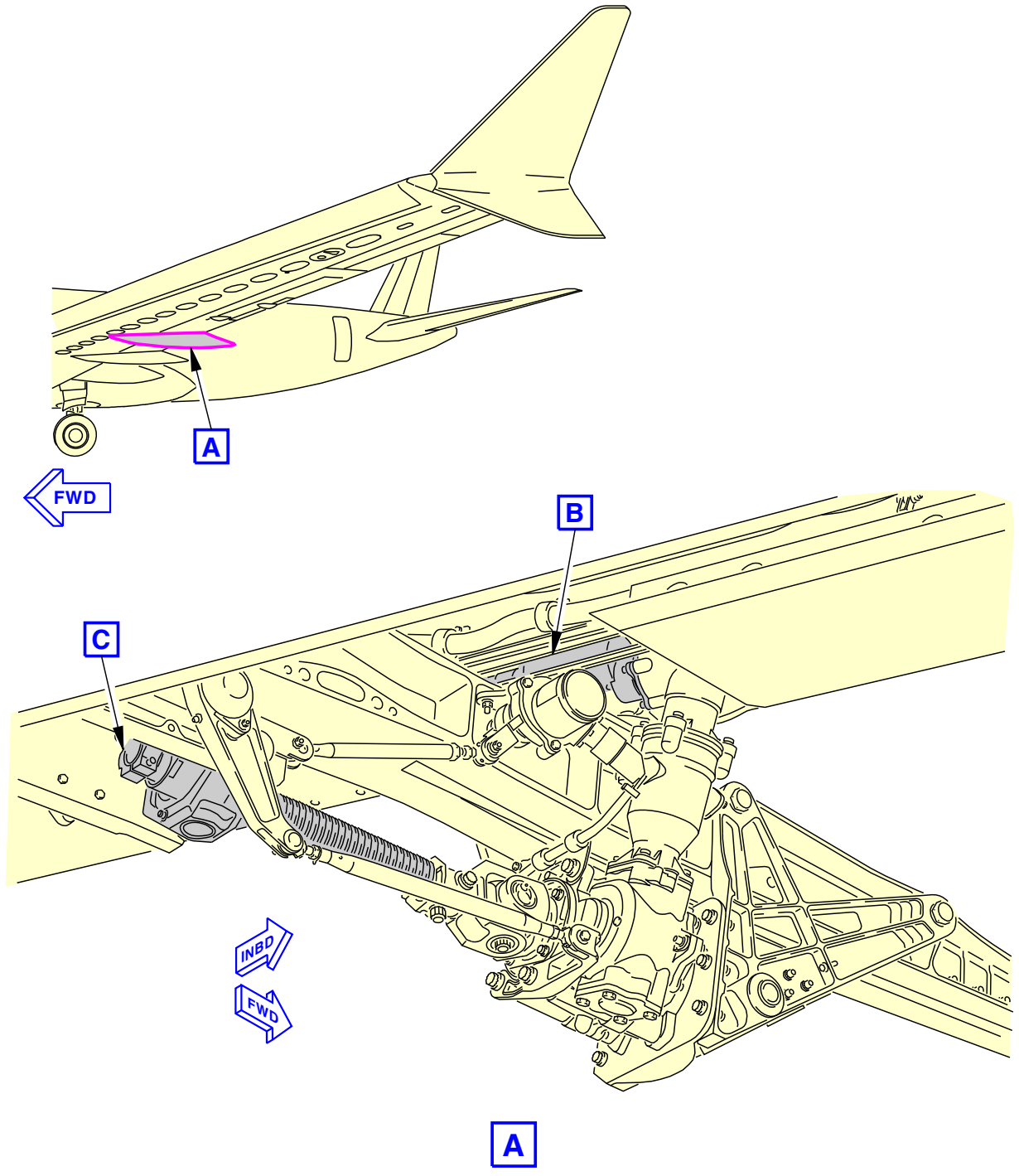
(d) Remove the packing [9] from the transmission [7].

1) Discard the packing [9].

(e) Install the rig lock mechanism to the flap position transmitter [2].

END OF TASK

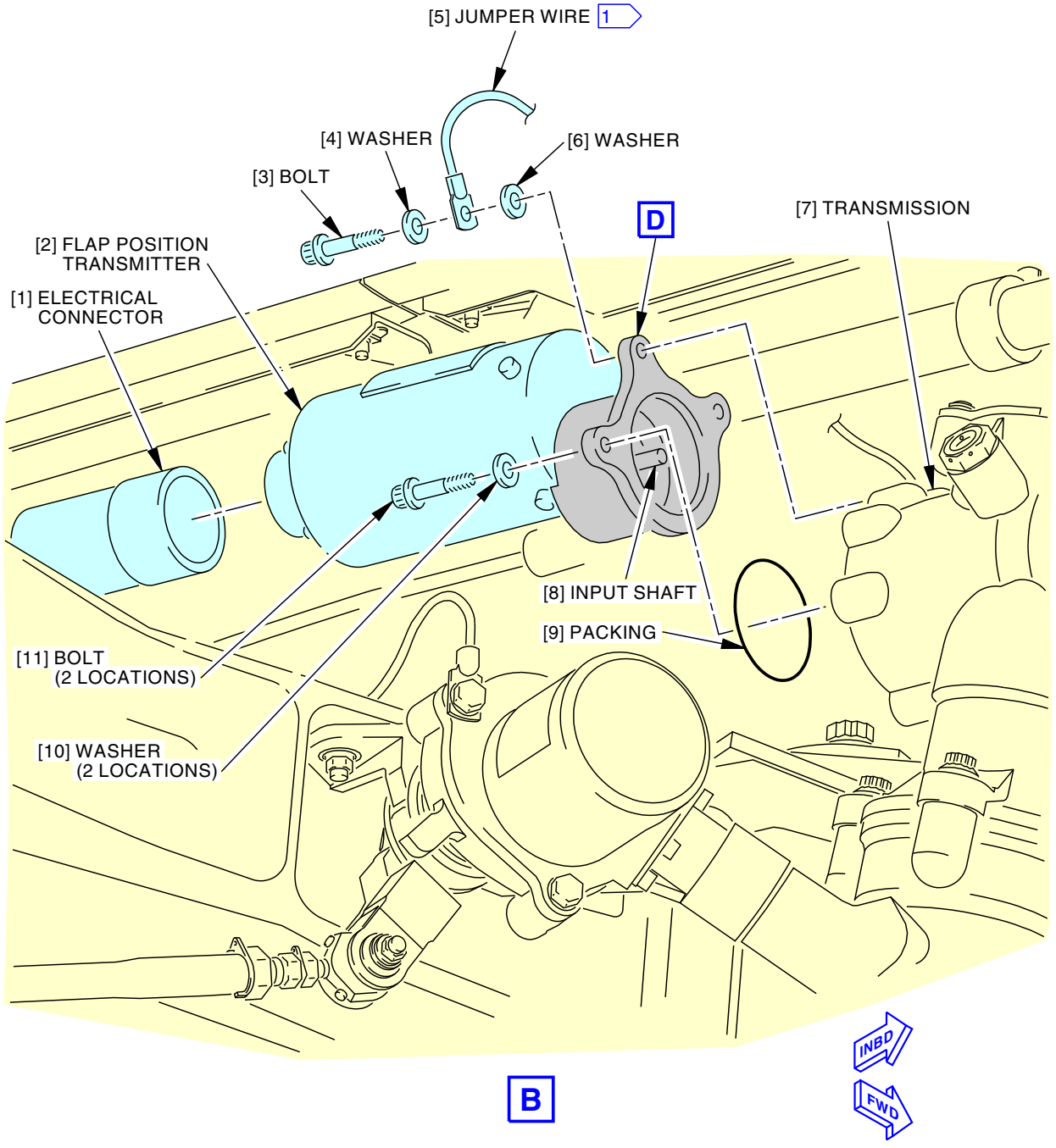
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413102 S00061531875_V1

Flap Position Transmitter Installation
Figure 401/27-58-01-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

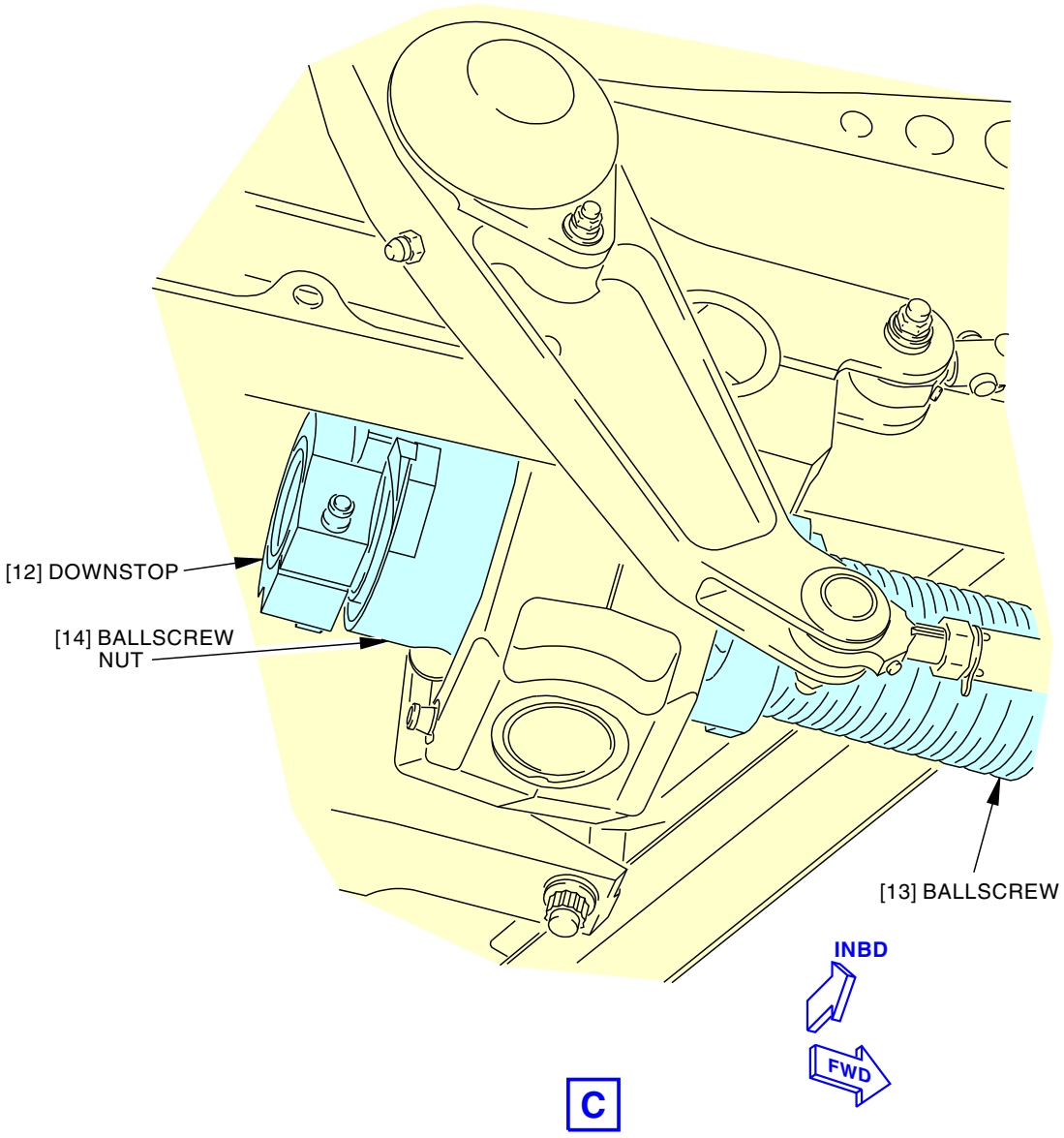


1 MAKE SURE THAT THE JUMPER WIRE DOES NOT TOUCH CABLES, WIRES OR THE STRUCTURE.

2413103 S00061531876_V2

Flap Position Transmitter Installation
Figure 401/27-58-01-990-801 (Sheet 2 of 4)

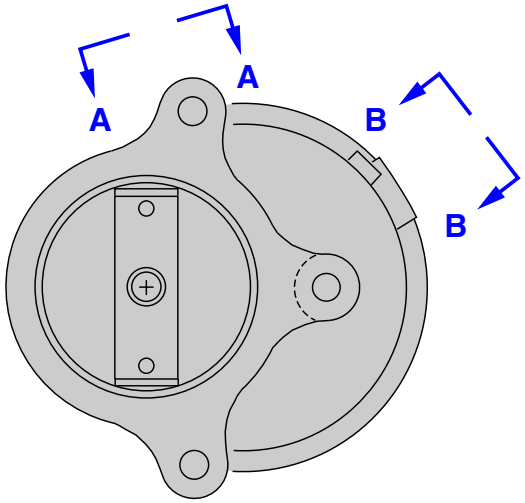
ECCN 9E991 BOEING PROPRIETARY - See title page for details

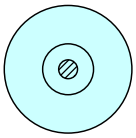


2413104 S00061531877_V1

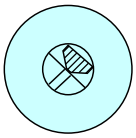
Flap Position Transmitter Installation
Figure 401/27-58-01-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





COARSE RIG MARK
A-A



FINE RIG MARK
B-B

2413105 S00061531878_V1

Flap Position Transmitter Installation
Figure 401/27-58-01-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-58-01-400-801

3. Flap Position Transmitter Installation

(Figure 401)

A. References

Reference	Title
22-11-00-740-804	BITE Library Test (P/B 501)
27-32-00-740-803	Stall Management Yaw Damper (SMYD) BITE Test (P/B 501)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-58-01-820-801	Flap Position Transmitter Adjustment and Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Flap position transmitter	27-58-01-02-165	SIA ALL
9	Packing	27-58-01-02-160	SIA ALL

E. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

F. Flap Position Transmitter Installation

SUBTASK 27-58-01-090-001

(1) Remove the rig lock mechanism from the flap position transmitter [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-01-210-001

(2) Make sure that the ballscrew nut [14] touches the downstop [12] on the ballscrew [13] on transmission No. 4 or No. 5.

NOTE: If a flap position transmitter is inadvertently removed when the flaps are in a position other than at the ballscrew downstop, the flap position transmitter will not be in the rig position. The flap position transmitter is in the rigged (adjusted) position if the rig marks are visible and aligned in both windows of the flap position transmitter.

NOTE: If any components or installations between the torque tubes and transmissions [7] or in the control stand are removed and re-installed or replaced after rigging (adjustment) has been completed, then applicable re-rigging (re-adjustment) is necessary.

(a) If the ballscrew nuts [14] do not touch the downstops [12], manually extend the flaps (TASK 27-51-00-980-801).

SUBTASK 27-58-01-420-001

(3) Install the flap position transmitter [2]:

(a) Do not turn the shaft for the flap position transmitter [2].

NOTE: When the flap position transmitter is not installed, a lock holds the input shaft [8]. The lock is disengaged when you install the flap position transmitter.

(b) Make sure that the two rig marks on the flap position transmitter [2] are visible and aligned in the flap position transmitter [2] window.

NOTE: The alignment marks in the rig indicator windows must align before installation. If they do not, you must push on the shaft lock and turn the shaft until the alignment marks are aligned. To do this, it may be necessary to turn the shaft up to 800 turns (over 4,460 revolutions).

(c) Apply Christo-lube MCG111 grease, D50011, to the new packing [9].

1) Install the new packing [9] in the transmission [7].

(d) Apply Christo-lube MCG111 grease, D50011, to the splines on the input shaft [8] for the flap position transmitter [2].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(e) Apply Cor-Ban 27L Compound, G50237, to the mating surface of the flap position transmitter [2] and the transmission [7].

CAUTION

PUT THE FLAP POSITION TRANSMITTER [2] IN ITS POSITION WITHOUT BINDING OR TURNING THE INPUT SHAFT [8] UNTIL THE MATING SURFACES TOUCH. AFTER THE MATING SURFACES TOUCH, YOU CAN TURN THE TRANSMITTER TO ALIGN THE BOLT HOLES. IF YOU TURN OR BIND THE INPUT SHAFT BEFORE THE MATING SURFACES TOUCH, YOU CAN CAUSE DAMAGE TO THE INPUT SHAFT.

(f) Put the flap position transmitter [2] in its location on the transmission [7].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(g) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [11].

CAUTION MAKE SURE THAT THERE IS NO CLEARANCE BETWEEN THE TRANSMITTER AND THE TRANSMISSION. IF YOU TIGHTEN THE BOLTS WITH CLEARANCE, YOU CAN CAUSE DAMAGE TO THE TRANSMITTER.

(h) Install the bolts [11] and washers [10] that attach the flap position transmitter [2].

(i) Put the jumper wire [5] in its position on the flap position transmitter [2].

(j) Make sure that the jumper wire [5] does not touch cables, wires or the structure.

(k) Install the bolt [3], washer [4], and washer [6] that attach the jumper wire [5] to the flap position transmitter [2].

(l) Measure the electrical bonding resistance between the jumper wire [5] and flap position transmitter [2].

1) Use intrinsically safe approved bonding meter, COM-1550.

2) Make sure that the bonding resistance between the jumper wire [5] and flap position transmitter [2] is less than 0.008 ohm (8 milliohms).

SUBTASK 27-58-01-210-002

(4) If the electrical connector [1] was not examined in the removal task, do these steps:

NOTE: The inspection of the electrical connector can be done after the removal step or before the installation step of the electrical connector. This is an operator option.

(a) Before the electrical connector [1] connection, examine the electrical connector [1] for corrosion.

WARNING DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to SWPM 20-60-03 to correct the problem.

SUBTASK 27-58-01-800-001

(5) Apply D5026NS or ZC-026 compound, G50171, to the electrical connector [1] (SWPM 20-60-03).

SUBTASK 27-58-01-420-002

(6) Connect the electrical connector [1] to the flap position transmitter [2].

SUBTASK 27-58-01-860-006

(7) For the left flap position transmitter [2], T427, do this step:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	4	C01207	SMYD-2 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-58-01-860-007

(8) For the right flap position transmitter [2], T428, do this step:

(a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
C	2	C01042	AFCS SYS B SNSR EXC AC

SUBTASK 27-58-01-440-001

(9) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

G. Flap Position Transmitter Installation Test

SUBTASK 27-58-01-860-009

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-58-01-860-010

(2) Move the flap control lever to the UP position to retract the trailing edge flaps.

(a) Wait for the trailing edge flaps to move to the retracted position.

SUBTASK 27-58-01-210-003

(3) Make sure that the pointers on the flap position indicator are in the UP white band.

SUBTASK 27-58-01-710-001

(4) If it is necessary, do this task: Flap Position Transmitter Adjustment and Test, TASK 27-58-01-820-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-01-700-001

(5) Do the Flight Control Computer (FCC) Built-In-Test Equipment (BITE) library test No.34 - Flaps (TASK 22-11-00-740-804).

NOTE: For the Left Flap Position transmitter perform the test for FCC A and for the Right Flap Position transmitter perform the test for FCC B.

SUBTASK 27-58-01-700-002

(6) Do a check of the flap sensor (TASK 27-32-00-740-803).

NOTE: For the Left Flap Position transmitter perform the test for Stall Management Yaw Damper (SMYD) 2 and for the Right Flap Position transmitter perform the test for SMYD 1.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-58-01-860-011

(1) Remove system B hydraulic power (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP POSITION TRANSMITTER - ADJUSTMENT/TEST

1. General

A. This procedure has a task to adjust the trailing edge flap position transmitters.

B. The flap position transmitters are installed on the outboard end of transmissions No. 1 and 8.

C. The flap position transmitters include additional syncros that are used in the autopilot and the stall management systems.

TASK 27-58-01-820-801

2. Flap Position Transmitter Adjustment and Test

(Figure 501)

A. General

(1) This task uses the Flap/Slat Electronics Unit (FSEU) to adjust the flap position transmitters.

(2) This task should only be used in the situation where the adjustment of a flap position transmitter has been changed during the installation process.

(a) This adjustment is not as accurate as the installation process of a new flap position transmitter due to these reasons:

1) The reliance on the ability of the trailing edge flap drive system to accurately drive the flaps to the 15-unit position.

2) The reliance on the tolerances of the particular flap position transmitter at the 15-unit position.

3) The reliance on the ability of the FSEU to read the flap position transmitter at the 15-unit position.

(b) The flap position transmitter is capable of being used on the left and right wings. Because of this, it is necessary to be careful not to set the position transmitter at the incorrect 15-unit position. If the flap position transmitter is set at the incorrect position for the wing it is on, it will appear to operate backward.

B. References

Reference	Title
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-58-01-000-801	Flap Position Transmitter Removal (P/B 401)
27-58-01-400-801	Flap Position Transmitter Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Adjustment

SUBTASK 27-58-01-860-013

(1) Make sure the system B hydraulic power is off (TASK 29-11-00-860-805).

SUBTASK 27-58-01-420-003

(2) If the flap position transmitter is not installed, then install it (TASK 27-58-01-400-801).

F. Flap Position Transmitter Adjustment

SUBTASK 27-58-01-010-001

(1) To get access to the FSEU in the main equipment center, do this step:

(a) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-58-01-730-001

(2) Use the FSEU to read the sensor inputs from the applicable flap position transmitter to the FSEU:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the down arrow until SYNCRO INPUTS? shows on the display.

(g) Push the YES button to select SYNCHRO INPUTS? from the menu.

(h) Push the down arrow until the applicable L FL POS, or R FL POS shows on the display.

NOTE: The FSEU will continue to show the applicable left or right position transmitter output.

NOTE: If you do not push any buttons for five minutes, the display will turn off. To keep the display active, push the down arrow and then the up arrow buttons occasionally.

SUBTASK 27-58-01-860-014

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(3) Move the ALTERNATE FLAPS ARM switch on the P5 panel to arm the alternate control system.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-01-860-015

CAUTION

WAIT A MINIMUM OF 15 SECONDS AFTER THE FLAPS STOP BEFORE YOU USE THE ALTERNATE SYSTEM TO MOVE THE FLAPS AGAIN. YOU CAN CAUSE DAMAGE TO THE FLAP ALTERNATE MOTOR.

(4) Move the ALTERNATE FLAPS control switch to UP or DOWN to move the trailing edge flaps until the L FL POS or R FL POS indication on the FSEU is approximately 180 degrees.

NOTE: This is an initial position for the flaps. The position of the flaps will be set more accurately in subsequent steps.

SUBTASK 27-58-01-860-016

(5) Move the ALTERNATE FLAPS control switch to DOWN to make sure the indication on the FSEU increases.

(a) If the indication decreases, the flap position transmitter is installed on the wrong wing.

SUBTASK 27-58-01-860-017

(6) Move the trailing edge flaps until the L FL POS or R FL POS indication is at 180.0 ±0.4 degrees.

NOTE: You can use the manual drive on the flap power drive unit, or the alternate flaps control to move the flaps.

(a) To use the manual drive to move the flaps, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

(b) To use the alternate flaps control, move the ALTERNATE FLAPS control switch until the indication is in the limit.

SUBTASK 27-58-01-860-018

(7) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-58-01-860-019

WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(8) Move the ALTERNATE FLAPS ARM switch to the OFF position to disarm the alternate control system.

SUBTASK 27-58-01-020-003

(9) Remove the flap position transmitter from the airplane (TASK 27-58-01-000-801).

NOTE: Do not move the flaps to the extended position to remove the position transmitter. Be careful not to move the shaft on the position transmitter when you remove it.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-58-01-860-020

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(10) Supply system B hydraulic power (TASK 29-11-00-860-801).

NOTE: You can use the ACMP to pressurize the hydraulic system.

SUBTASK 27-58-01-860-021

(11) Move the flap control lever to the 15-unit position to move the trailing edge flaps.

(a) Wait for the trailing edge flaps to move to the 15 unit position.

SUBTASK 27-58-01-860-022

(12) Remove system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-58-01-860-023

(13) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-58-01-420-004

(14) Install the flap position transmitter (TASK 27-58-01-400-801).

NOTE: Do not move the flaps to the extended position to install the position transmitter. Be careful not to move the shaft on the position transmitter more than necessary when you install it.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-58-01-010-002

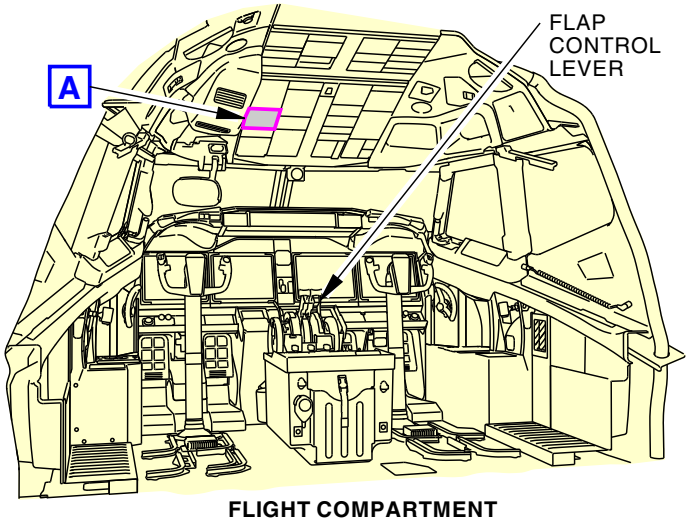
(1) To close the main equipment center, do this step:

(a) Close this access panel:

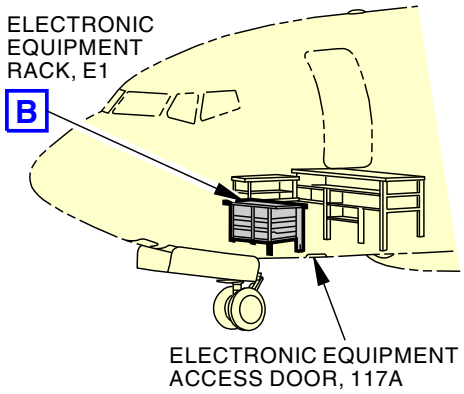
Number	Name/Location
117A	Electronic Equipment Access Door

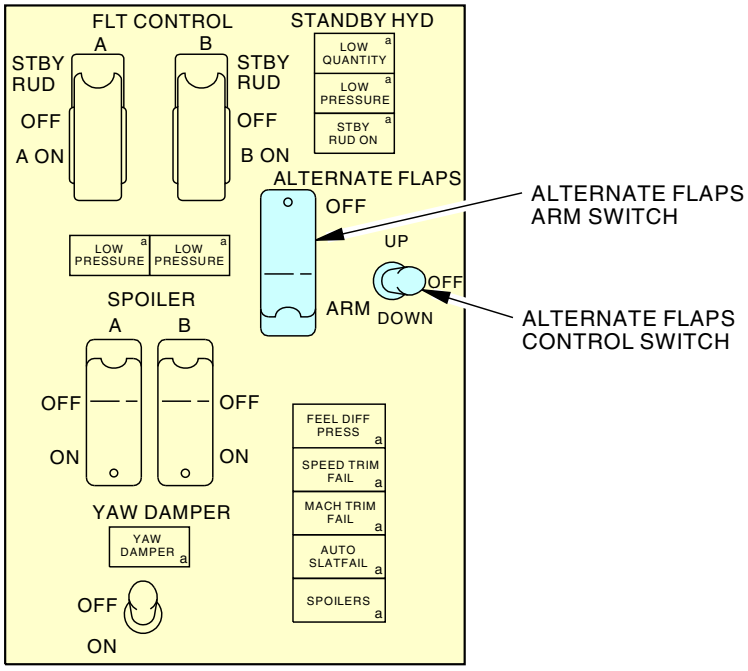
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT





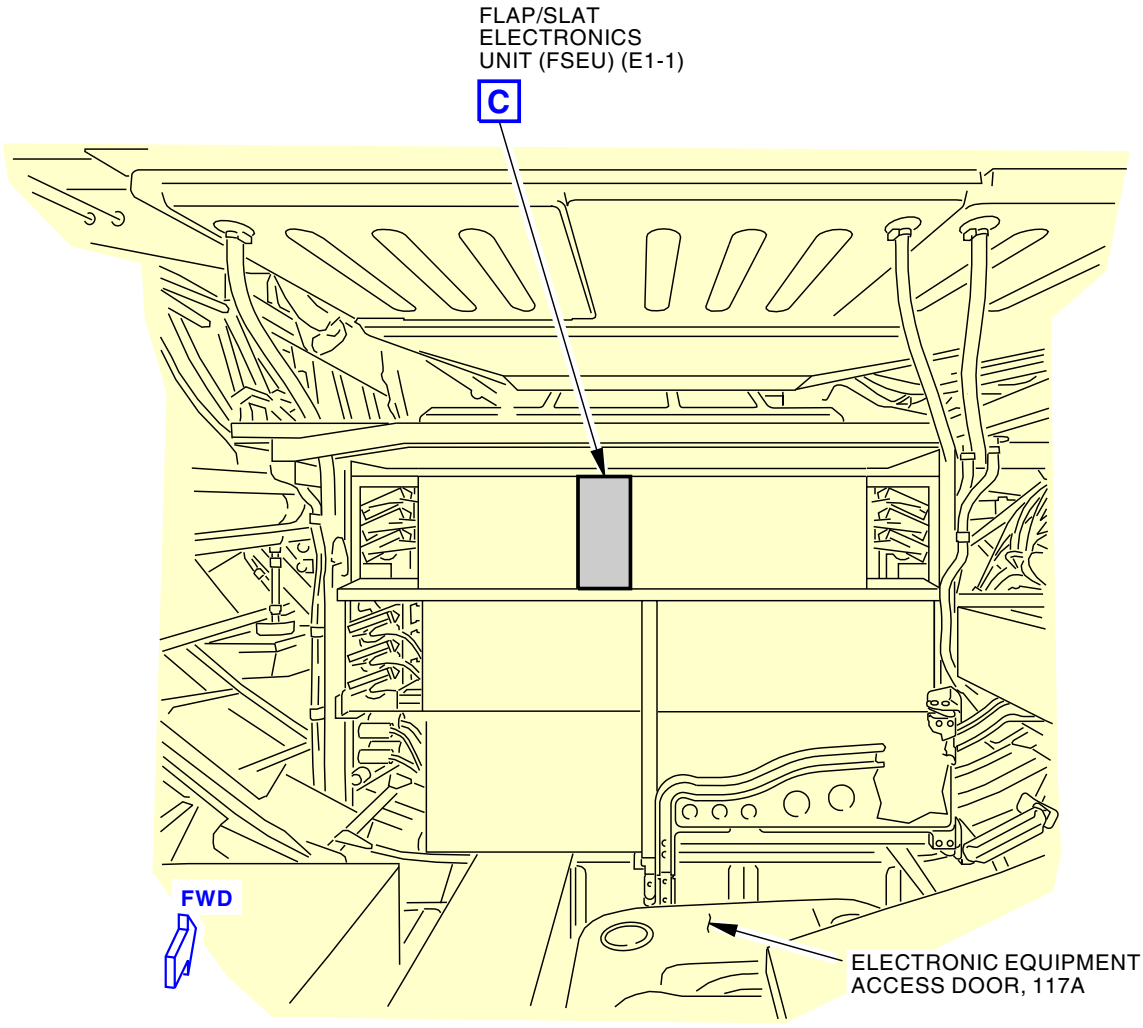
FLIGHT CONTROLS PANEL (P5-3)

A

2413106 S00061531882_V2

Trailing Edge Flap System Controls
Figure 501/27-58-01-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



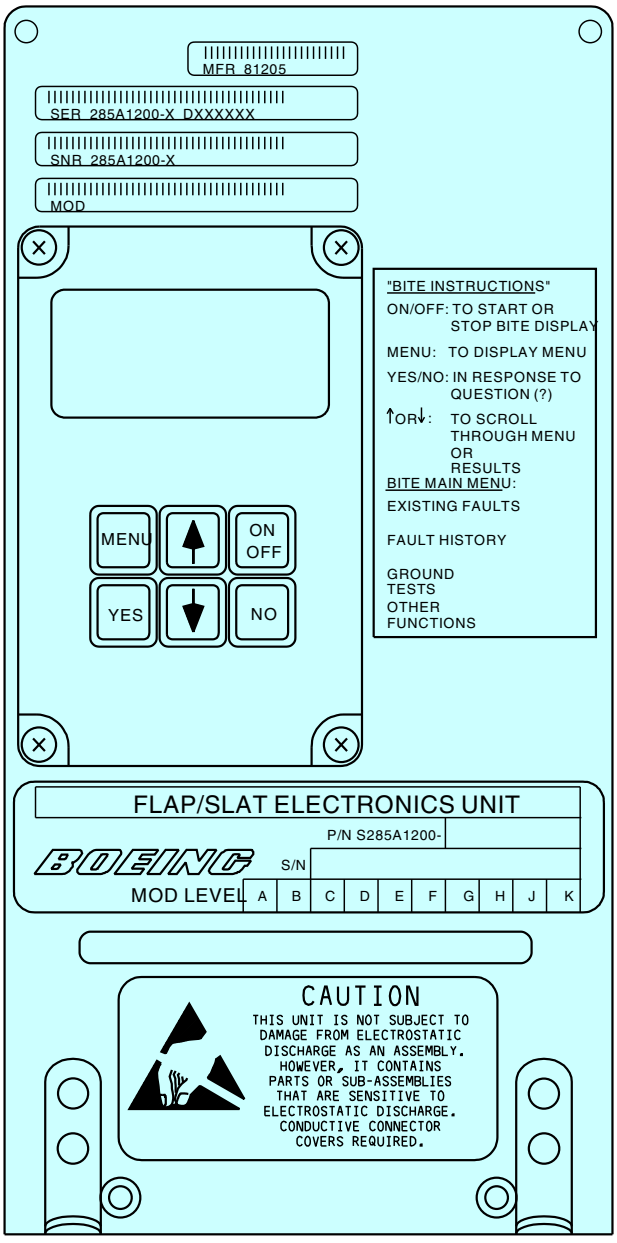
ELECTRONIC EQUIPMENT RACK, E1

B

2413107 S00061531883_V1

Trailing Edge Flap System Controls
Figure 501/27-58-01-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP/SLAT ELECTRONICS UNIT (FSEU)

C

2413108 S00061531884_V1

Trailing Edge Flap System Controls
Figure 501/27-58-01-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP SKEW DETECTION SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) An adjustment of the mechanisms for the flap skew detection system.

(2) A functional test of the flap skew detection system.

TASK 27-59-00-820-801

2. Flap Skew Detection System Adjustment

(Figure 501, Figure 502)

A. General

(1) This task includes the adjustment of the flap skew mechanisms on all of the flap supports.

(2) It is not necessary to install the flap skew sensors on the flap skew mechanism when you do the adjustment.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-51-00-980-801	Trailing Edge Flap System Manual Operation (P/B 201)
27-58-01-000-801	Flap Position Transmitter Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1726	Clamp Set - Trailing Edge Flap Torque Tube Part #: C27022-1 Supplier: 81205
SPL-5384	Wrench - Coupling Sleeve Flap Actuation Part #: C27041-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Sensor input assembly	27-59-01-02-175	SIA ALL
		27-59-01-03-175	SIA ALL
		27-59-01-04-175	SIA ALL
		27-59-01-05-175	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
542	Left Wing - Fairing Flap Support No. 3
543	Left Wing - Fairing Flap Support No. 2
544	Left Wing - Fairing Flap Support No. 1
641	Right Wing - Fairing Flap Support No. 5
642	Right Wing - Fairing Flap Support No. 6
643	Right Wing - Fairing Flap Support No. 7
644	Right Wing - Fairing Flap Support No. 8

G. Prepare for the Adjustment

SUBTASK 27-59-00-480-004

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-59-00-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-00-980-001

(3) Manually extend the flaps until the ballscrew nuts touch the downstops on the ballscrews (Figure 501).

NOTE: The ballscrew nut for transmission No. 4 or 5 will touch first.

(a) To manually extend the flaps, do this task: Trailing Edge Flap System Manual Operation, TASK 27-51-00-980-801.

H. Flap Skew Mechanism Adjustment

SUBTASK 27-59-00-820-001

(1) If the ballscrew nut for the applicable flap support does not touch the downstop, do these steps (Figure 501):

(a) For the flap position transmitters on the left and right wings, do this task: Flap Position Transmitter Removal, TASK 27-58-01-000-801.

NOTE: If you do not remove the flap position transmitters before you disconnect the torque tubes, they will become incorrectly adjusted.

(b) Disconnect the torque tube [3] from the transmission:

1) Install a clamp set, SPL-1726, on a torque tube [3] outboard of the transmission.
2) Remove the screws [2] that attach the coupling sleeve [1] to the splined coupling [4].
3) Move the coupling sleeve [1] off the splined coupling [4].
4) Move the torque tube [3] away from the transmission.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

DO NOT MOVE ONE END OF A FLAP MORE THAN 1.4 INCHES (35.5 MILLIMETERS) OF BALLSCREW TRAVEL MORE THAN THE OTHER END. YOU CAN CAUSE THE FLAP TO SKEW TO MUCH. THIS CAN CAUSE DAMAGE TO THE FLAP.

(c) Use a coupling sleeve wrench, SPL-5384, on one of the couplings on the transmission to extend the transmission until the ballscrew nut touches the downstop on the ballscrew.

SUBTASK 27-59-00-220-001

(2) Measure the mismatch between the crank arm [23] and the flat side of the rigging flange [21] on the sensor input assembly [22] (Figure 502).

SUBTASK 27-59-00-820-002

(3) If the mismatch between the crank arm [23] and the rigging flange [21] is not in the limit of 0.005 in. (0.127 mm) to 0.015 in. (0.381 mm), then adjust the length of the skew control rod [24]:

NOTE: The crank arm [23] must be past the rigging flange [21].

(a) To make a large adjustment to the length of the skew control rod [24], do these steps:

1) Loosen the nut [26].
2) Remove the nut [33], washer [32], bushing [31], washer [30], and the bolt [29] that attach the rod end [34] to the crank arm [23].
3) Turn the adjustment sleeve [27] with the rod end [34] in the skew control rod [24] to adjust the length of the skew control rod [24].

NOTE: Make sure that the threads of the adjustment sleeve [27] cover a minimum of half the inspection hole in the skew control rod [24].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

4) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolt [29].
5) Put the skew control rod [24] in its position in the crank arm [23].
6) Install the bolt [29], washer [30], bushing [31], washer [32], and nut [33] to attach the skew control rod [24] to the crank arm [23].
   a) Install the bolt [29] with the head toward the center of the flap track.

(b) To make a small adjustment to the length of the skew control rod [24], do these steps:

1) Loosen the nut [26] and nut [35].
2) Turn the adjustment sleeve [27] in the skew control rod [24] with the rod end [34] attached to the crank arm [23].
   a) Make sure that the threads of the adjustment sleeve [27] cover a minimum of half the inspection hole in the skew control rod [24].
   b) Make sure that the threads of the rod end [34] cover a minimum of half the inspection hole in the adjustment sleeve [27].

(c) Torque the nut [26] to 125 in-lb (14.1 N·m) - 175 in-lb (19.8 N·m).

(d) Torque the nut [35] to 30 in-lb (3.4 N·m) - 50 in-lb (5.6 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Make sure that the mismatch between the crank arm [23] and the rigging flange [21] is in the limit.

(f) Install MS20995NC32 lockwire, G50347, or optional safety cable between the nut [35] and the locking key [28].

(g) Install MS20995NC32 lockwire, G50347, or optional safety cable between the nut [26] and the locking key [25].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-59-00-820-003

(1) If it was necessary to disconnect the torque tubes from the transmission, adjust the flap drive system (Figure 501).

NOTE: You will connect the torque tube [3] to the transmission and install the flap position transmitters in the adjustment procedure.

(a) To adjust the flap drive system, do this task: Trailing Edge Flap Drive System Adjustment, TASK 27-51-00-820-802.

SUBTASK 27-59-00-440-002

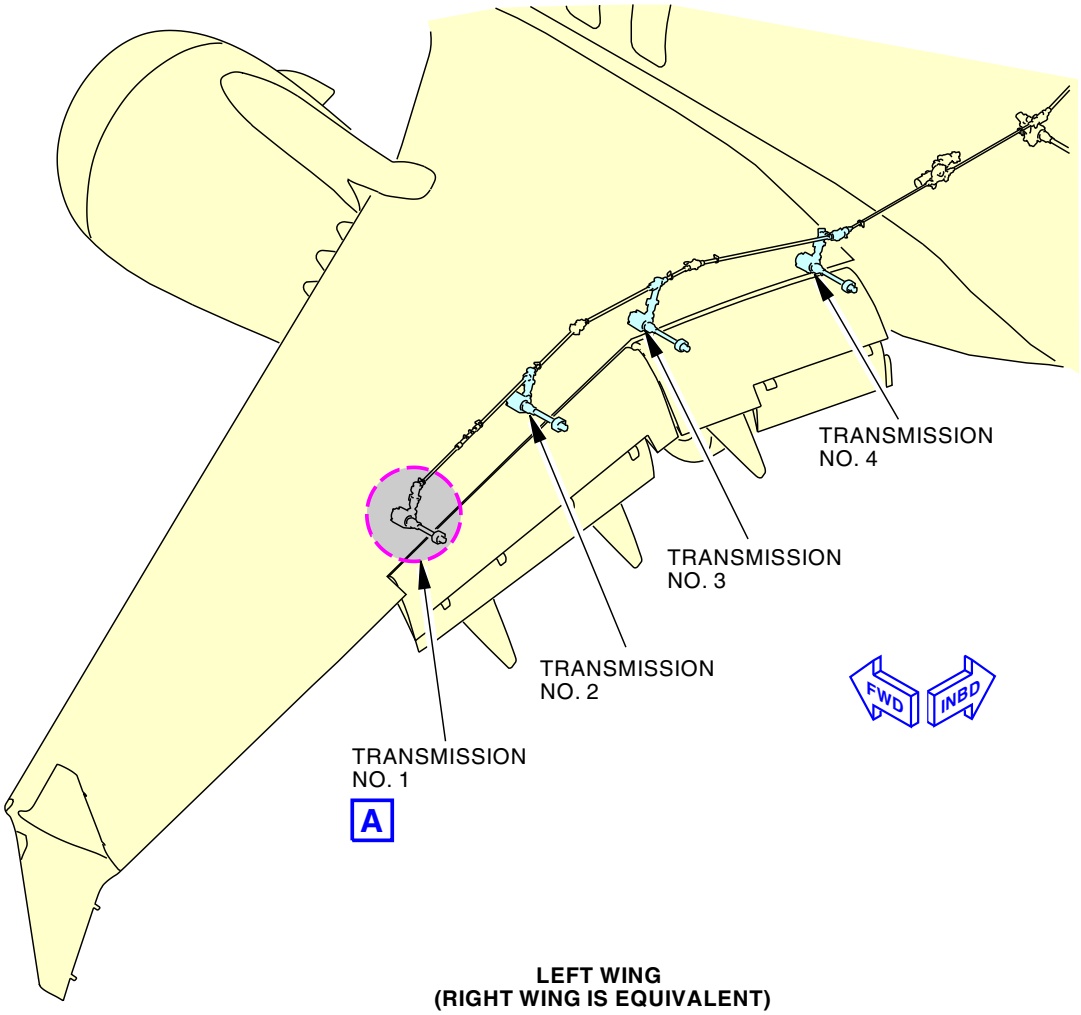
(2) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-00-860-003

(3) Retract the trailing edge flaps to the retracted position. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

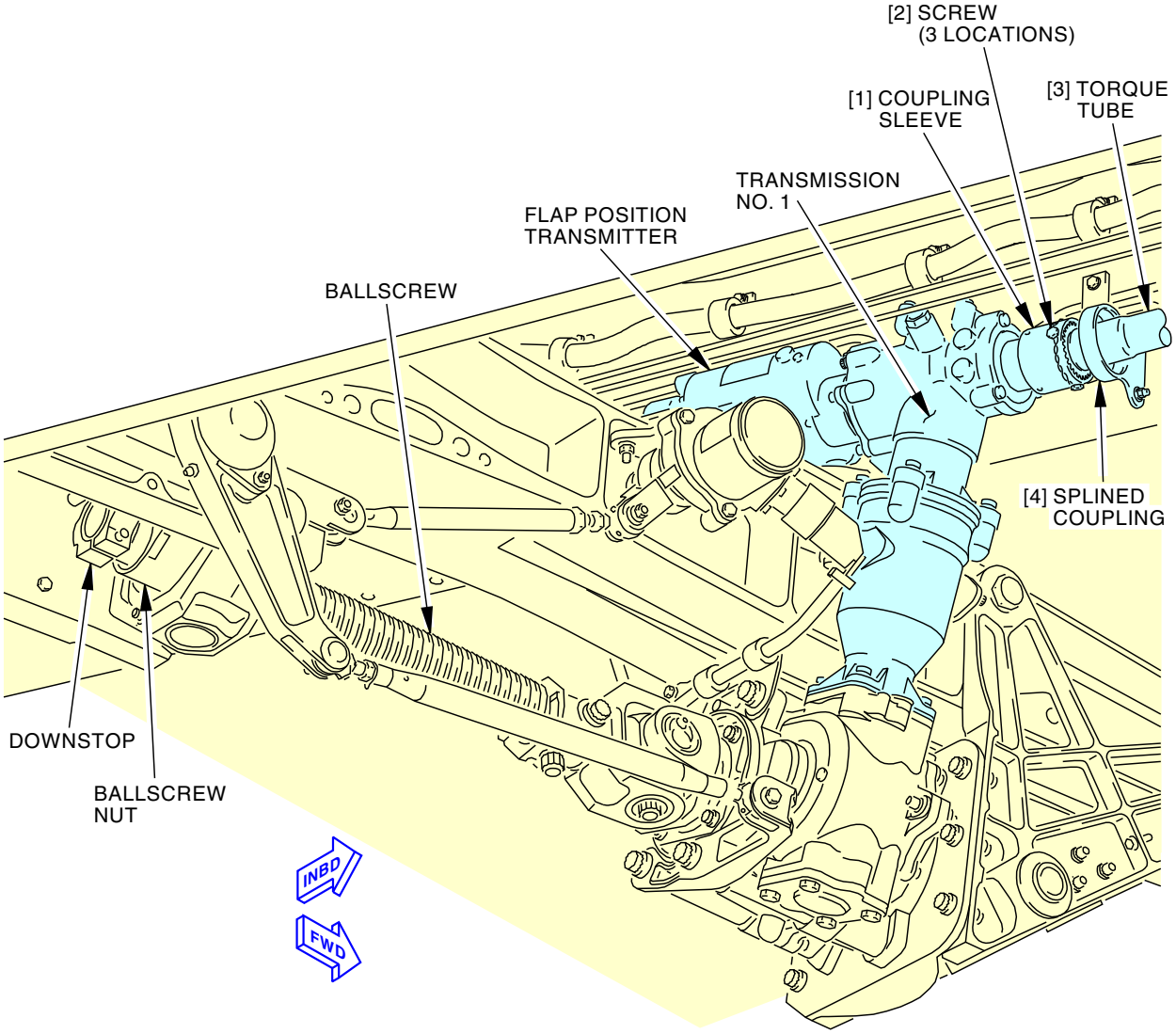


LEFT WING
(RIGHT WING IS EQUIVALENT)

2413110 S00061531897_V1

Trailing Edge Flap Drive System
Figure 501/27-59-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



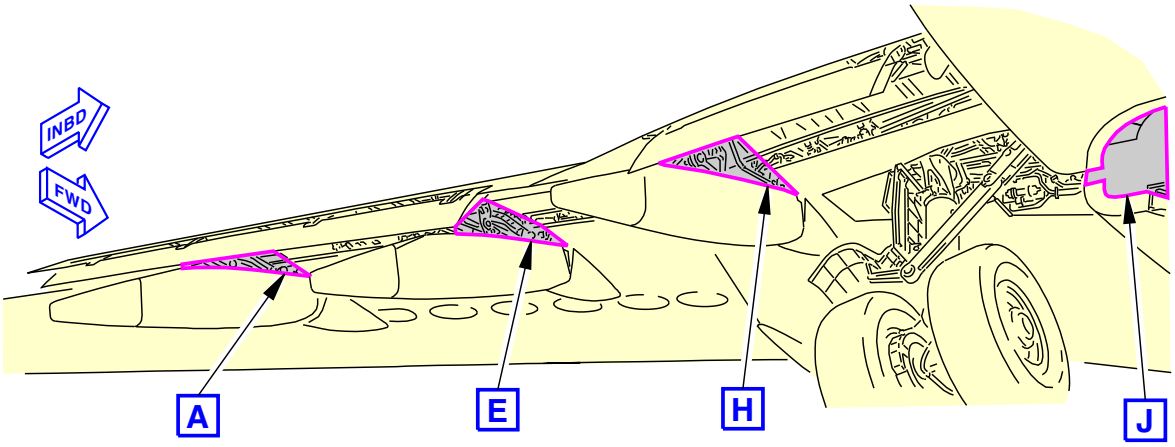
TRANSMISSION NO. 1
(EXAMPLE)

A

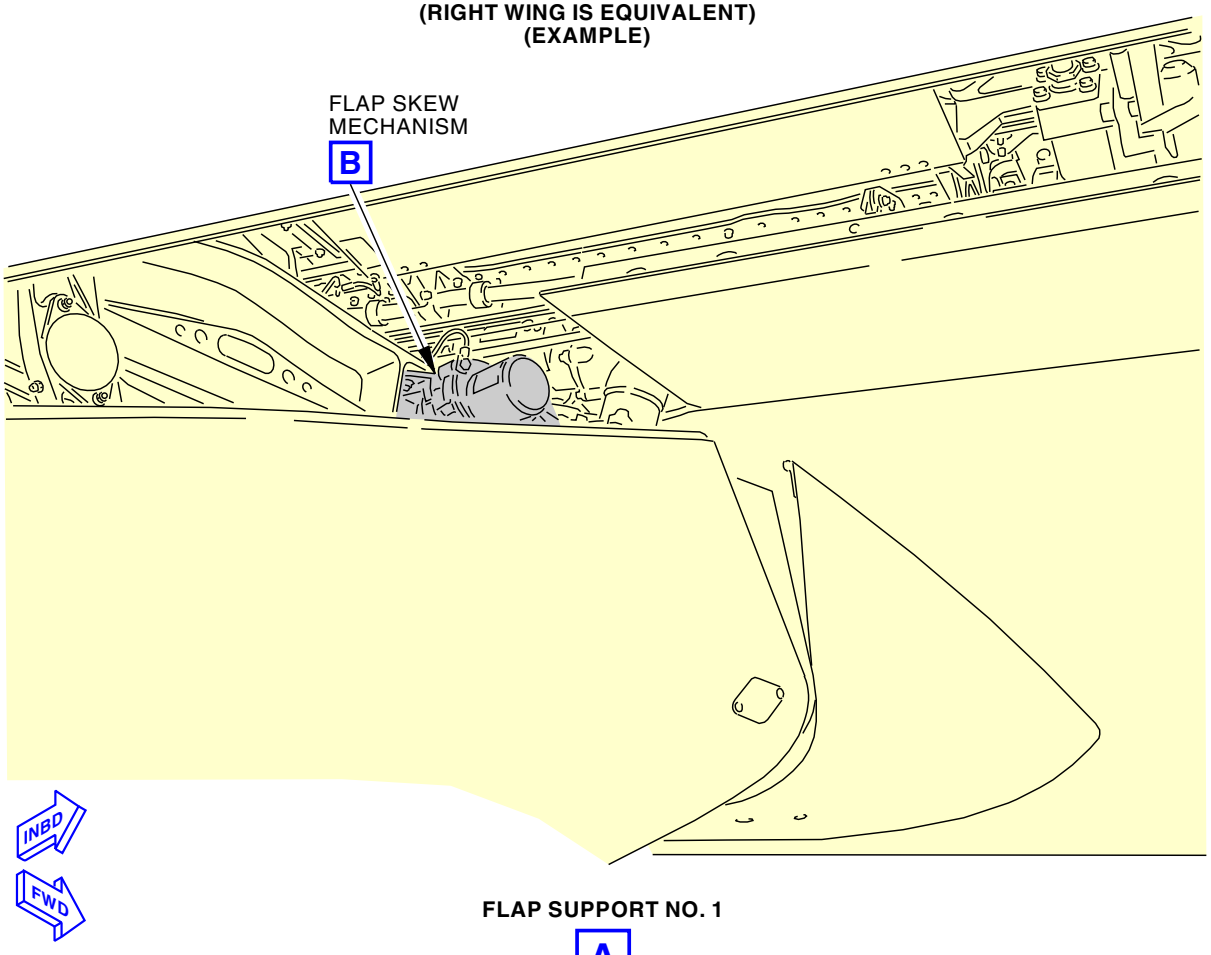
2413111 S00061531898_V1

Trailing Edge Flap Drive System
Figure 501/27-59-00-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING SHOWN
(RIGHT WING IS EQUIVALENT)
(EXAMPLE)

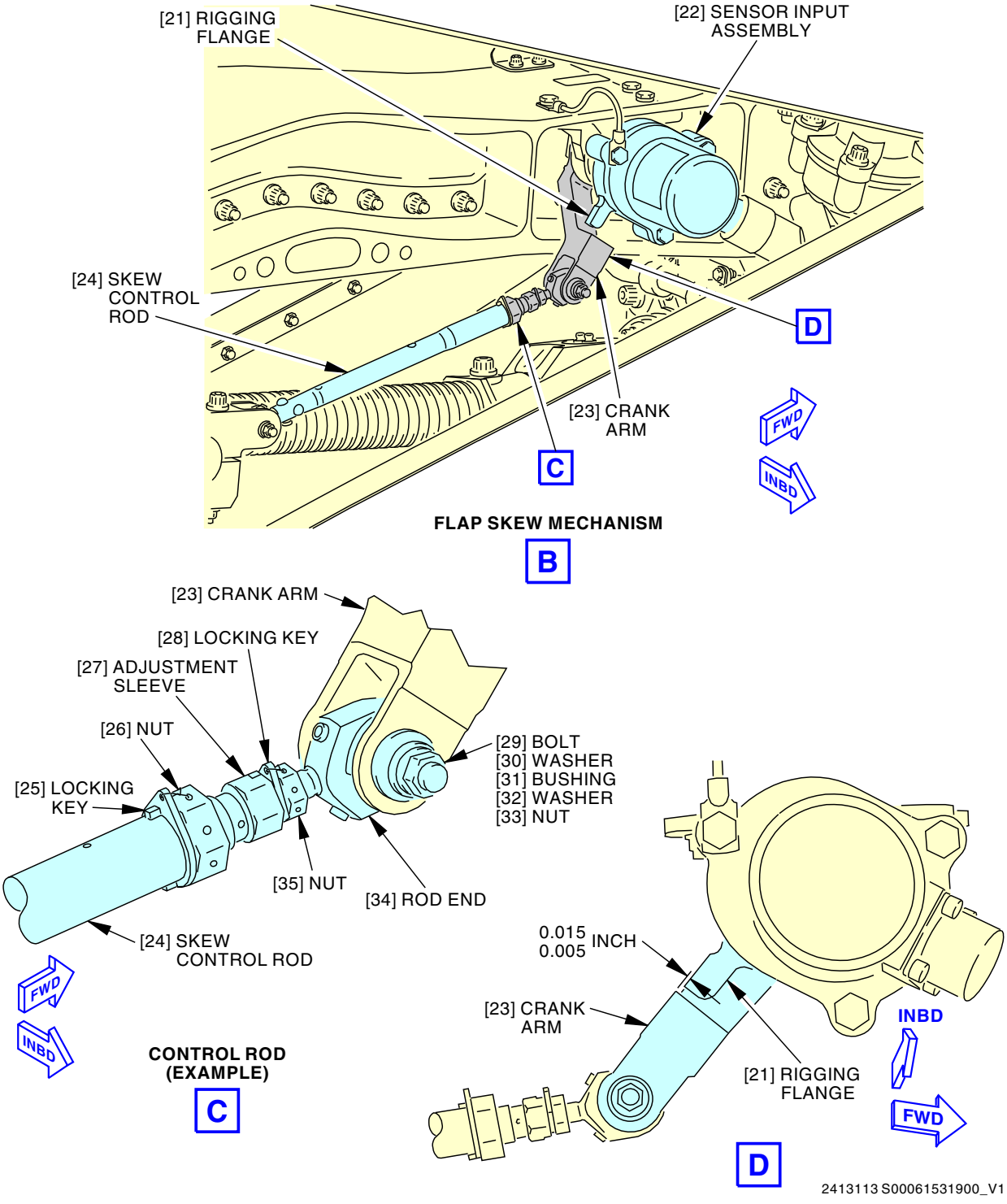


FLAP SUPPORT NO. 1
A

2413112 S00061531899_V2

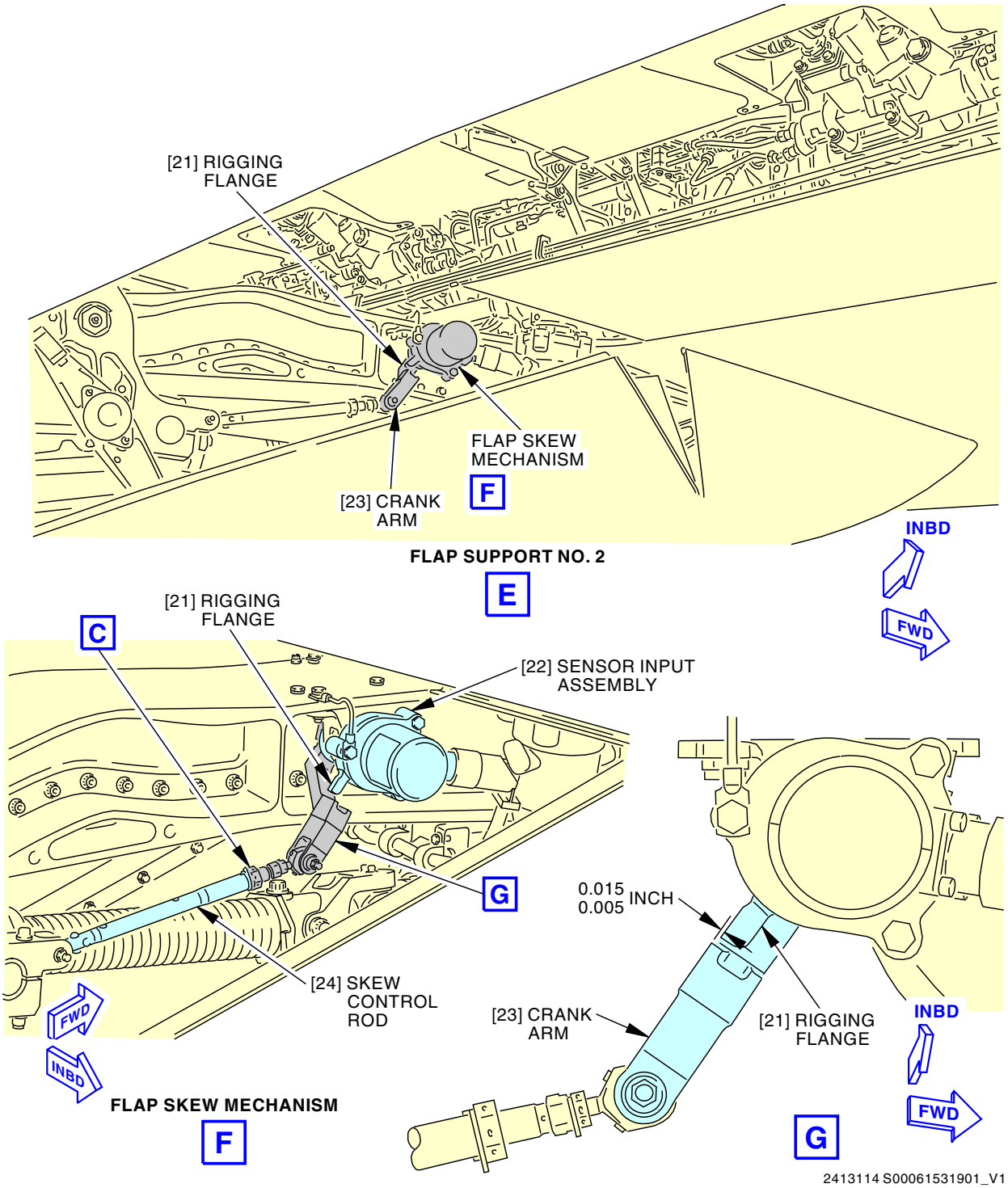
Trailing Edge Flap Skew System Adjustment
Figure 502/27-59-00-990-804 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



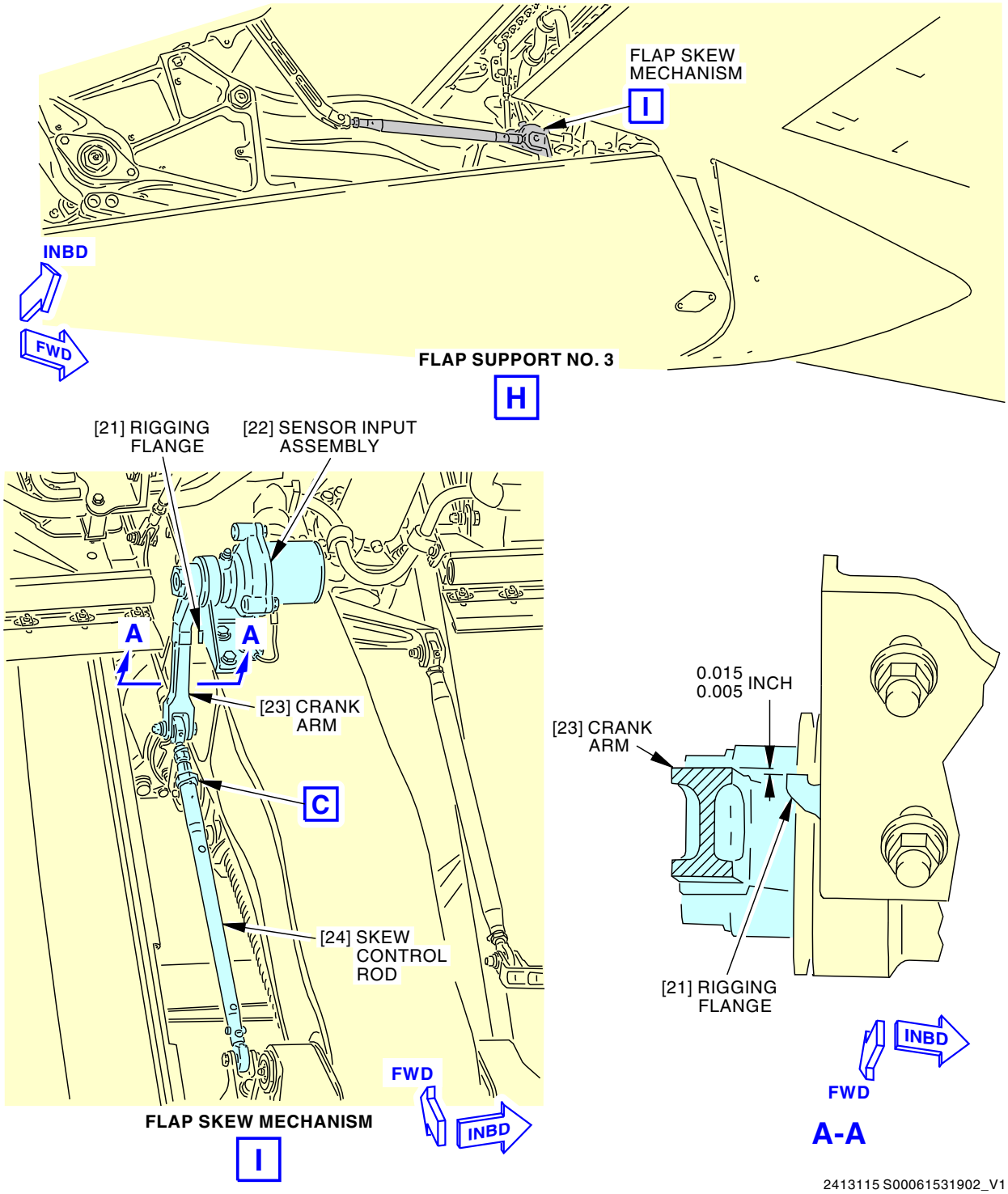
Trailing Edge Flap Skew System Adjustment
Figure 502/27-59-00-990-804 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



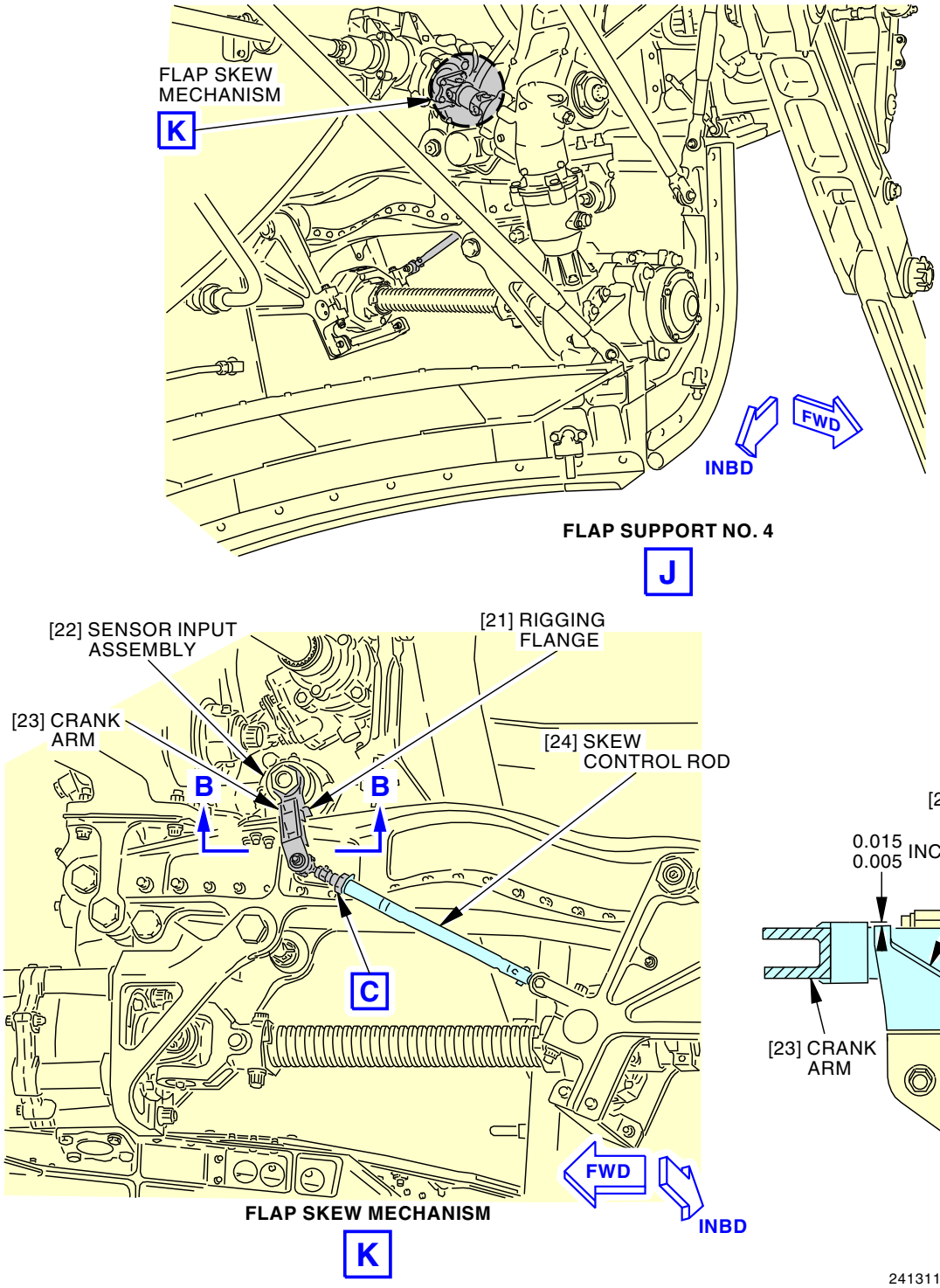
Trailing Edge Flap Skew System Adjustment
Figure 502/27-59-00-990-804 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Skew System Adjustment
Figure 502/27-59-00-990-804 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Skew System Adjustment
Figure 502/27-59-00-990-804 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-00-730-801

3. Flap Skew Detection System Functional Test

(Figure 503)

A. General

(1) This test does a test of the output from the flap skew sensors to the FSEU.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-59-00-010-001

(1) To get access to the main equipment center, do this step:

(a) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Flap Skew Detection System Functional Test

SUBTASK 27-59-00-860-005

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize the hydraulic system B (TASK 29-11-00-860-801).

NOTE: The EMDP will not supply sufficient hydraulic power for the flap retraction time limit.

SUBTASK 27-59-00-860-006

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP-DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the UP position and wait for the flaps to go to the UP position.

(a) Make sure that the pointers on the flap position indicator are in the UP white band.

SUBTASK 27-59-00-730-001

(3) Do a check of the skew sensor inputs to the FSEU:

(a) Do one of these methods to show the skew sensor inputs to the FSEU:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) On the FSEU BITE display (Method 1):
   a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.
      NOTE: The display will show EXISTING FAULTS?
   b) Push the down arrow until OTHER FUNCTNS? shows on the display.
   c) Push the YES button to select OTHER FUNCTNS? on the FSEU.
   d) Push the down arrow until I/O MONITOR? shows on the display.
   e) Push the YES button to select I/O MONITOR? on the menu.
   f) Push the down arrow until SYNCHRO INPUTS? shows on the display.
   g) Push the YES button to select SYNCRO INPUTS? from the menu.
2) On the MAX display system (Method 2):
   a) Push the SYS button on the Multifunction Display Panel (MFP).
   b) Select the Maint button on the MENU bar at the top right of the System Page.
   c) Push the SEL button on the SELECTOR knob.
   d) Turn the SELECTOR knob to select MAINT DATA PGS on the Maintenance menu.
   e) Move the cursor down and then select the ATA 27 FLIGHT CONTROL DISPLAY button below the REAL column on the MAINT DATA PGS menu.

(b) Make sure that the inputs for the skew sensors are in the limits for the UP position (Table 501 or Table 502).
1) For Method 1, push the down arrow key on the FSEU to step through the sensor values.

Table 501/27-59-00-993-804

Display (Sensor)	FSEU Sensor Value Range (Flap Position)		
	UP	15-Units	40-Units
LVR POS	-2.8 to 2.8	61.4 to 68.3	105.4 to 110.9
L FL POS	-3.7 to 1.8	176.1 to 185.0	267.1 to 273.3
R FL POS	-3.7 to 1.8	176.1 to 185.0	267.1 to 273.3
F1 SKEW	295.7 to 311.0	117.8 to 135.6	224.4 to 242.1
F2 SKEW	330.5 to 346.0	171.0 to 188.6	279.2 to 296.9
F3 SKEW	0.0 to 13.2	185.2 to 201.8	288.7 to 305.5
F4 SKEW	332.8 to 346.9	147.3 to 164.6	265.1 to 282.1
F5 SKEW	13.1 to 27.2	195.4 to 212.7	77.9 to 94.9
F6 SKEW	346.8 to 360.0	158.2 to 174.8	54.5 to 71.3
F7 SKEW	14.0 to 29.5	171.4 to 189.0	63.1 to 80.8
F8 SKEW	49.0 to 64.3	224.4 to 242.2	117.9 to 135.6

2) For Method 2, observe the sensor values on the MAX Display System (MDS).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 502/27-59-00-993-806

Display (Sensor)	MDS Sensor Value Range (Flap Position)		
	UP	15-Units	40-Units
LVR POS	-2.8 to 2.8	61.4 to 68.3	105.4 to 110.9
L FL POS	-3.7 to 1.8	176. 1 to 185.0	267.1 to 273.3
R FL POS	-3.7 to 1.8	176. 1 to 185.0	267.1 to 273.3
F1 SKEW	-64.3 to -49	117.8 to 135.6	224.4 to 242.1
F2 SKEW	-29.5 to -14	171.0 to 188.6	279.2 to 296.9
F3 SKEW	0.0 to 13.2	185.2 to 201.8	288.7 to 305.5
F4 SKEW	-27.2 to -13.1	147.3 to 164.6	265.1 to 282.1
F5 SKEW	-27.2 to -13.1	147.3 to 164.6	265.1 to 282.1
F6 SKEW	0.0 to 13.2	185.2 to 201.8	288.7 to 305.5
F7 SKEW	-29.5 to -14	171.0 to 188.6	279.2 to 296.9
F8 SKEW	-64.3 to -49	117.8 to 135.6	224.4 to 242.1

(c) Move the flap control lever to the 15-unit position to extend the flaps.

(d) Make sure that the pointers on the flap position indicator are in the 15-unit white band.

(e) Make sure that the inputs for the skew sensors are in the limits shown in Table 501 or Table 502 for the 15-unit position.

1) For Method 1, push the down arrow key on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(f) Move the flap control lever to the 40-unit position to extend the flaps.

(g) Make sure that the pointers on the flap position indicator are in the 40-unit white band.

(h) Make sure that the inputs for the skew sensors are in the limits shown in Table 501 or Table 502 for the 40-unit position.

1) For Method 1, push the down arrow key on the FSEU to step through the sensor values.

2) For Method 2, observe the sensor values on the MDS.

(i) Move the flap control lever to the 1-unit position to retract the flaps.

(j) For Method 1, push the ON/OFF button on the front panel of the FSEU to turn it off.

(k) For Method 2, push the SYS button on the MFP to put the displays back to normal.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-59-00-860-007

(1) Move the flap control lever to the UP position to retract the flaps.

SUBTASK 27-59-00-410-001

(2) For the main equipment center, do this step:

(a) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

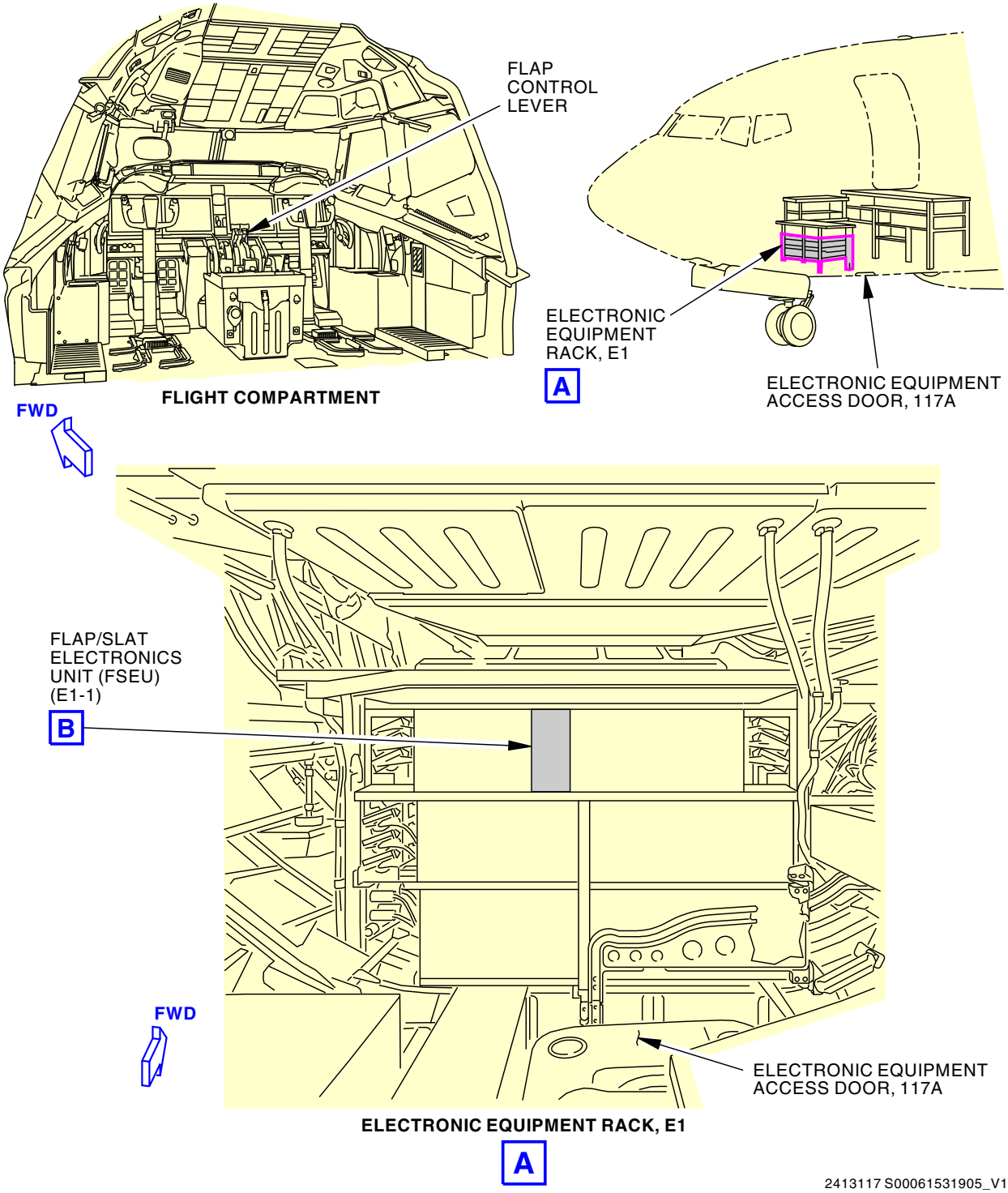
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-59-00-860-008

(3) Remove the pressure from the hydraulic system B (TASK 29-11-00-860-805).

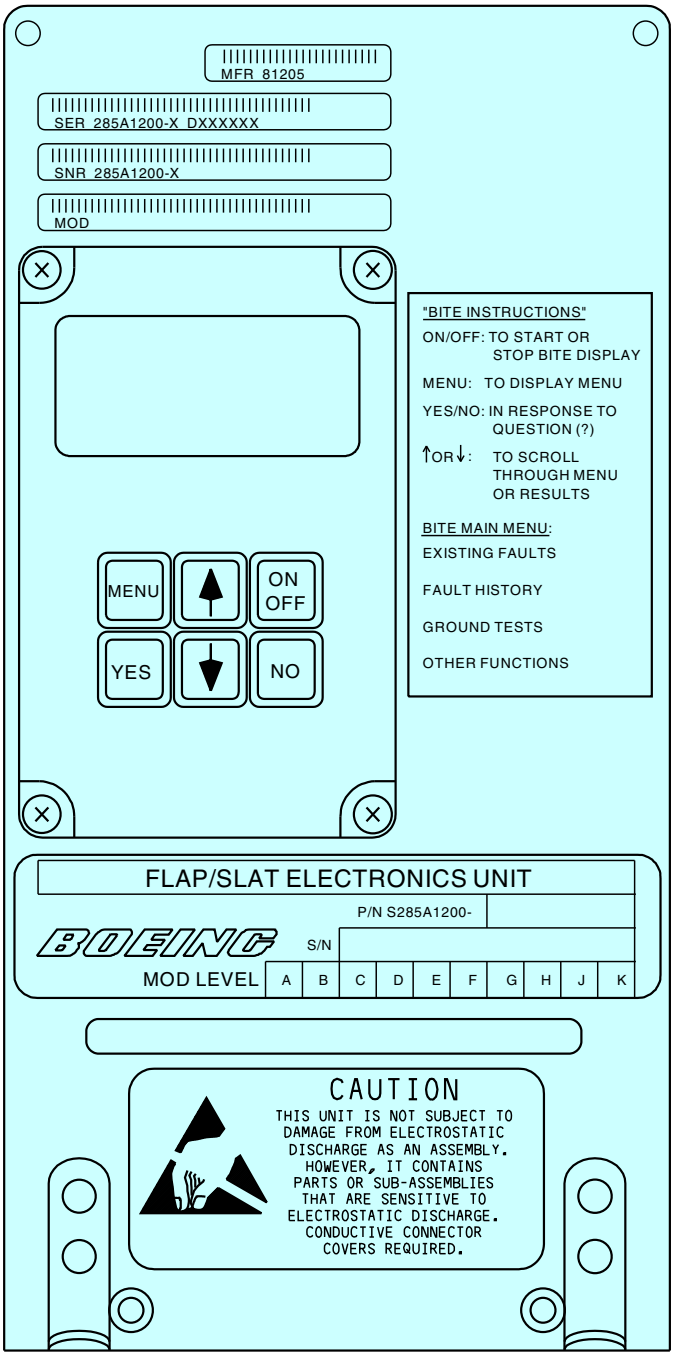
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Trailing Edge Flap Skew Detection System Test
Figure 503/27-59-00-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

2413118 S00061531906_V1

Trailing Edge Flap Skew Detection System Test
Figure 503/27-59-00-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP SKEW SENSORS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Outboard Flap Outboard Skew Sensor Removal

(2) Outboard Flap Outboard Skew Sensor Installation

(3) Outboard Flap Inboard Skew Sensor Removal

(4) Outboard Flap Inboard Skew Sensor Installation

(5) Inboard Flap Outboard Skew Sensor Removal

(6) Inboard Flap Outboard Skew Sensor Installation

(7) Inboard Flap Inboard Skew Sensor Removal

(8) Inboard Flap Inboard Skew Sensor Installation.

B. There are eight flap skew sensors on the trailing edge flaps. One at each of the flap supports.

TASK 27-59-01-000-801

2. Outboard Flap Outboard Skew Sensor Removal

(Figure 201)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Procedure

SUBTASK 27-59-01-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-01-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-01-860-002

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-020-001

(4) Disconnect the electrical connector [8] from the flap skew sensor [5].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-020-002

(5) Remove the flap skew sensor [5]:

(a) Remove the bolt [4], washer [3], and washer [1] that attach the jumper wire [2] to the flap skew sensor [5].

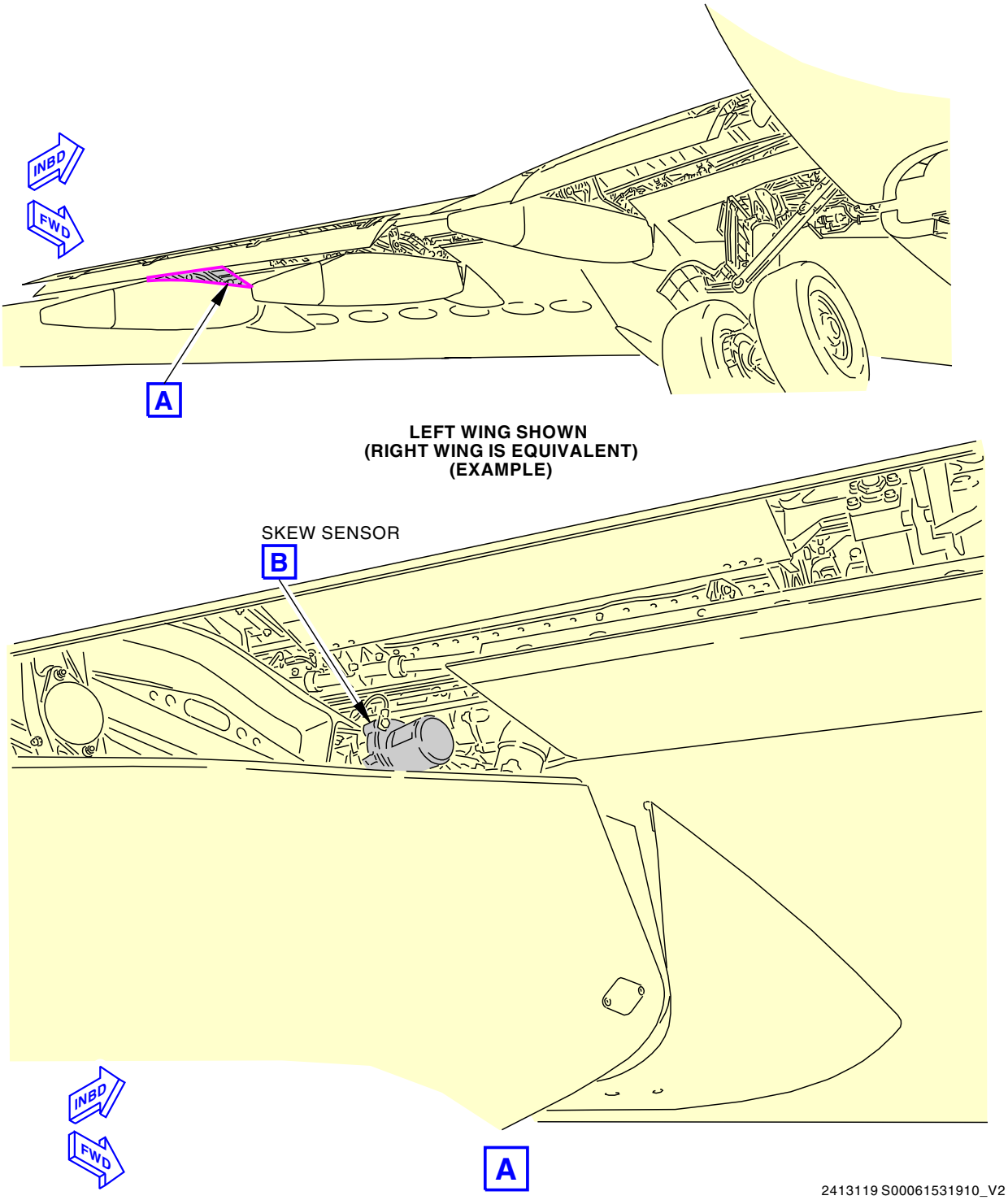
(b) Remove the bolts [6] and washers [7] that attach the flap skew sensor [5] to the sensor input assembly [10].

(c) Remove and discard packing [9].

(d) Remove the flap skew sensor [5] from the sensor input assembly [10].

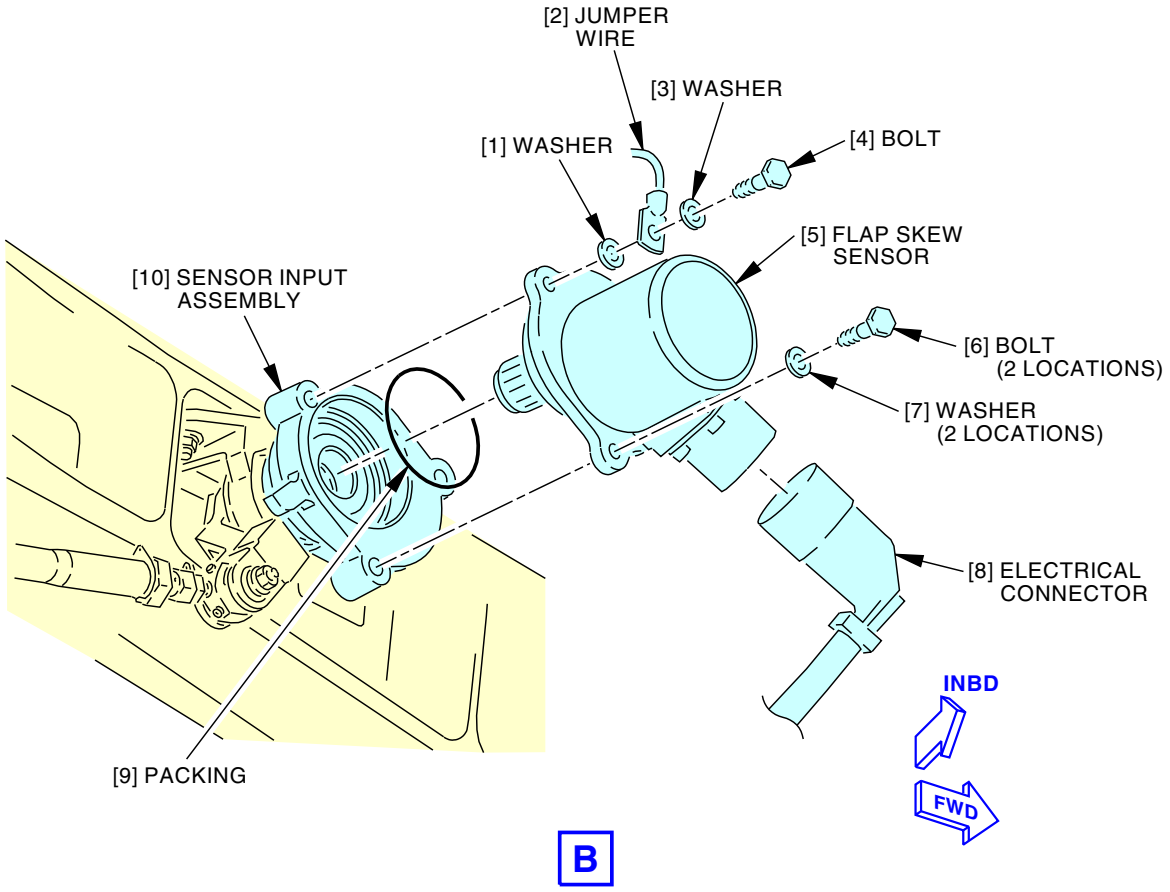
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Skew Sensor Installation
Figure 201/27-59-01-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Flap Outboard Skew Sensor Installation
Figure 201/27-59-01-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-01-400-801

3. Outboard Flap Outboard Skew Sensor Installation

(Figure 201)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Flap skew sensor	27-59-01-05-175	SIA ALL
9	Packing	27-59-01-05-180	SIA ALL

F. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Procedure

SUBTASK 27-59-01-860-003

(1) Make sure that these circuit breakers are open:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-420-001

(2) Install the flap skew sensor [5]:

(a) Apply grease, D00633 to the new packing [9].

(b) Install the new packing [9] on the flap skew sensor [5].

(c) Apply grease, D00633 to the shaft of the flap skew sensor [5] and the splines on the sensor input assembly [10].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the flap skew sensor [5] and the sensor input assembly [10].

(e) Engage the shaft on the flap skew sensor [5] with the sensor input assembly [10].

NOTE: The shaft has a missing tooth on the splines.

(f) Engage the alignment pin on the sensor input assembly [10] with the hole in the flap skew sensor [5].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(g) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [6].

(h) Install the bolts [6] and washers [7] to attach the flap skew sensor [5].

(i) Install the bolt [4], washer [3], and washer [1] to attach the jumper wire [2] to the flap skew sensor [5].

(j) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap skew sensor [5] and the jumper wire [2] is less than 8 Milliohms.

(k) Apply a bead of sealant, A02315 or sealant, A00247 to the head of the bolt [4].

SUBTASK 27-59-01-210-001

(3) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS THAT USE DEICING FLUID WHICH CONTAINS POTASSIUM FORMATE. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-800-001

(4) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-01-420-002

(5) Connect the electrical connector [8] to the flap skew sensor [5].

SUBTASK 27-59-01-860-004

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-440-001

(7) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-01-860-005

(8) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-01-730-001

(9) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

——— END OF TASK ———

TASK 27-59-01-000-802

4. Outboard Flap Inboard Skew Sensor Removal

(Figure 202)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Procedure

SUBTASK 27-59-01-860-006

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-01-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-01-860-007

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-020-003

(4) Disconnect the electrical connector [38] from the flap skew sensor [35].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-020-004

(5) Remove the flap skew sensor [35]:

(a) Remove the bolt [34], washer [33], and washer [31] that attach the jumper wire [32] to the flap skew sensor [35].

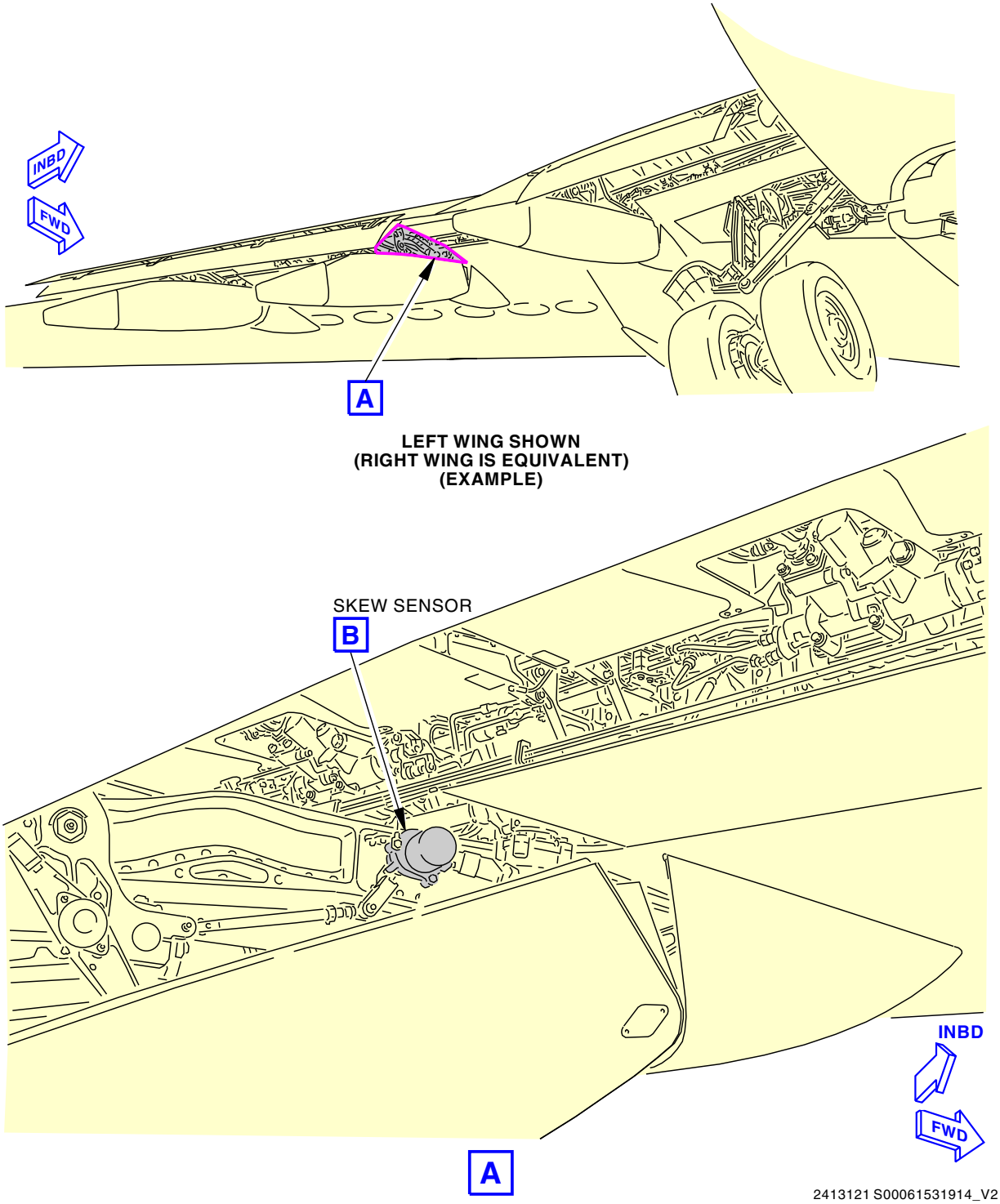
(b) Remove the bolts [36] and washers [37] that attach the flap skew sensor [35] to the sensor input assembly [39].

(c) Remove and discard packing [40].

(d) Remove the flap skew sensor [35] from the sensor input assembly [39].

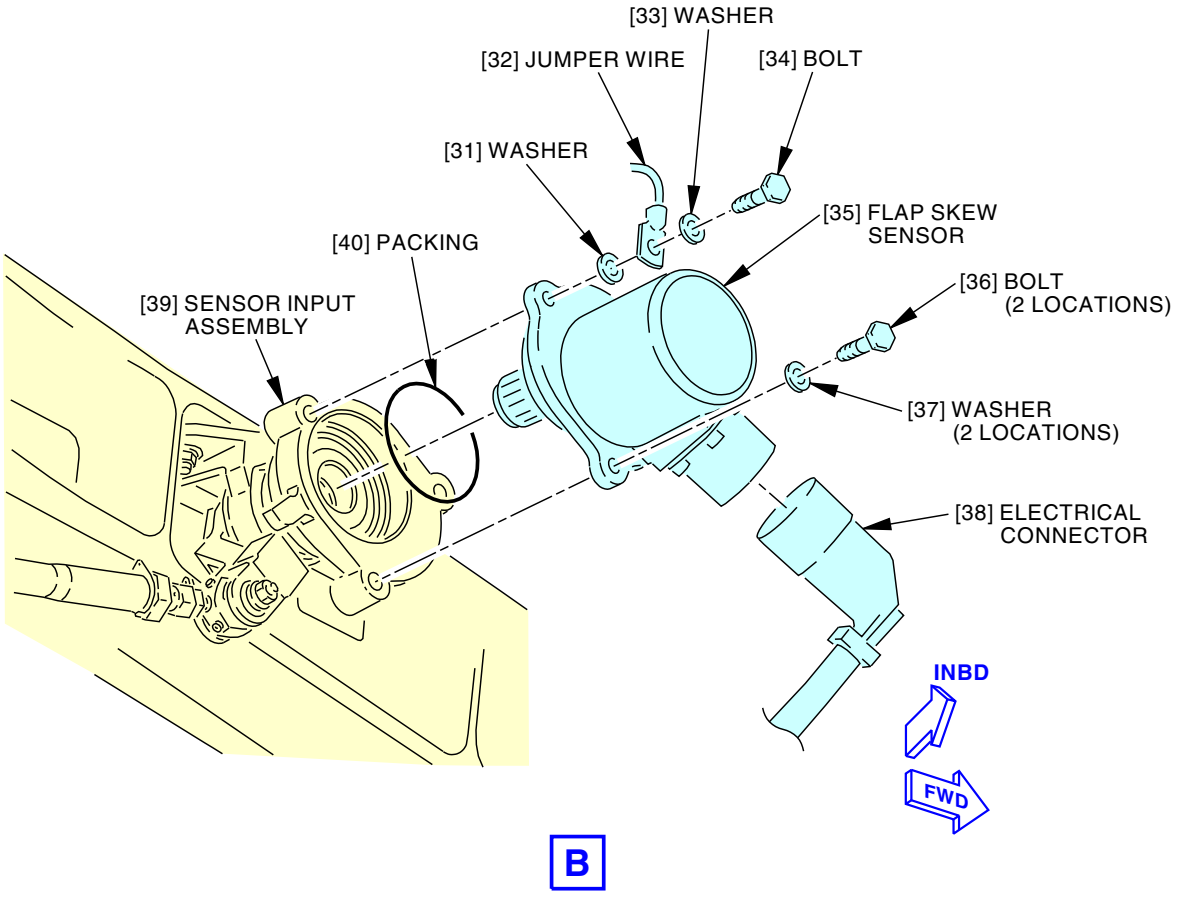
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Inboard Skew Sensor Installation
Figure 202/27-59-01-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Flap Inboard Skew Sensor Installation
Figure 202/27-59-01-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-01-400-802

5. Outboard Flap Inboard Skew Sensor Installation

(Figure 202)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
35	Flap skew sensor	27-59-01-04-175	SIA ALL
40	Packing	27-59-01-04-180	SIA ALL

F. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Procedure

SUBTASK 27-59-01-860-008

(1) Make sure that these circuit breakers are open:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-420-003

(2) Install the flap skew sensor [35]:

(a) Apply grease, D00633 to the new packing [40].

(b) Install the new packing [40] on the flap skew sensor [35].

(c) Apply grease, D00633 to the shaft of the flap skew sensor [35] and the splines on the sensor input assembly [39].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the flap skew sensor [35] and the sensor input assembly [39].

(e) Engage the shaft on the flap skew sensor [35] with the sensor input assembly [39].

NOTE: The shaft has a missing tooth on the splines.

(f) Engage the alignment pin on the sensor input assembly [39] with the hole in the flap skew sensor [35].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(g) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [36].

(h) Install the bolts [36] and washers [37] to attach the flap skew sensor [35].

(i) Install the bolt [34], washer [33], and washer [31] to attach the jumper wire [32] to the flap skew sensor [35].

(j) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap skew sensor [35] and the jumper wire [32] is less than 8 Milliohms.

(k) Apply a bead of sealant, A02315 or sealant, A00247 to the head of the bolt [34].

SUBTASK 27-59-01-210-002

(3) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS THAT USE DEICING FLUID WHICH CONTAINS POTASSIUM FORMATE. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-800-002

(4) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-01-420-004

(5) Connect the electrical connector [38] to the flap skew sensor [35].

SUBTASK 27-59-01-860-009

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-440-002

(7) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-01-860-010

(8) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-01-730-002

(9) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

——— END OF TASK ———

TASK 27-59-01-000-803

6. Inboard Flap Outboard Skew Sensor Removal

(Figure 203)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Procedure

SUBTASK 27-59-01-860-011

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-01-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-01-860-012

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-020-005

(4) Disconnect the electrical connector [62] from the flap skew sensor [67].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-020-006

(5) Remove the flap skew sensor [67]:

(a) Remove the bolt [65], washer [66], and washer [69] that attach the jumper wire [68] to the flap skew sensor [67].

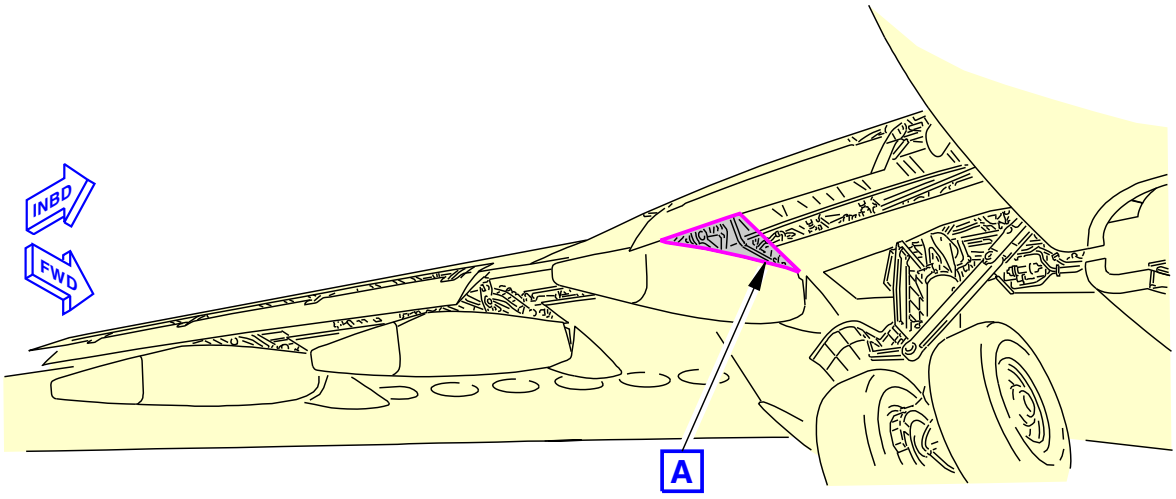
(b) Remove the bolts [64] and washers [63] that attach the flap skew sensor [67] to the sensor input assembly [61].

(c) Remove and discard packing [70].

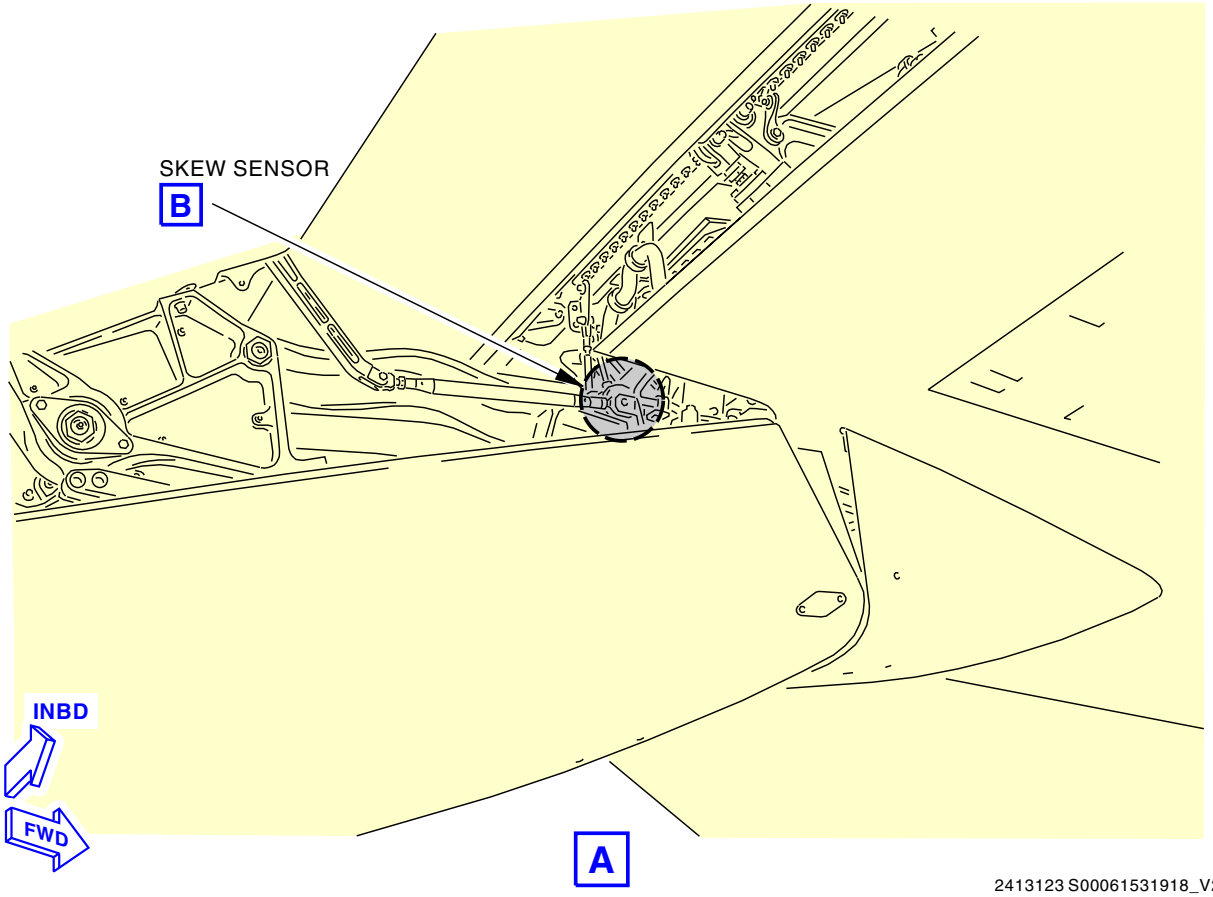
(d) Remove the flap skew sensor [67] from the sensor input assembly [61].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

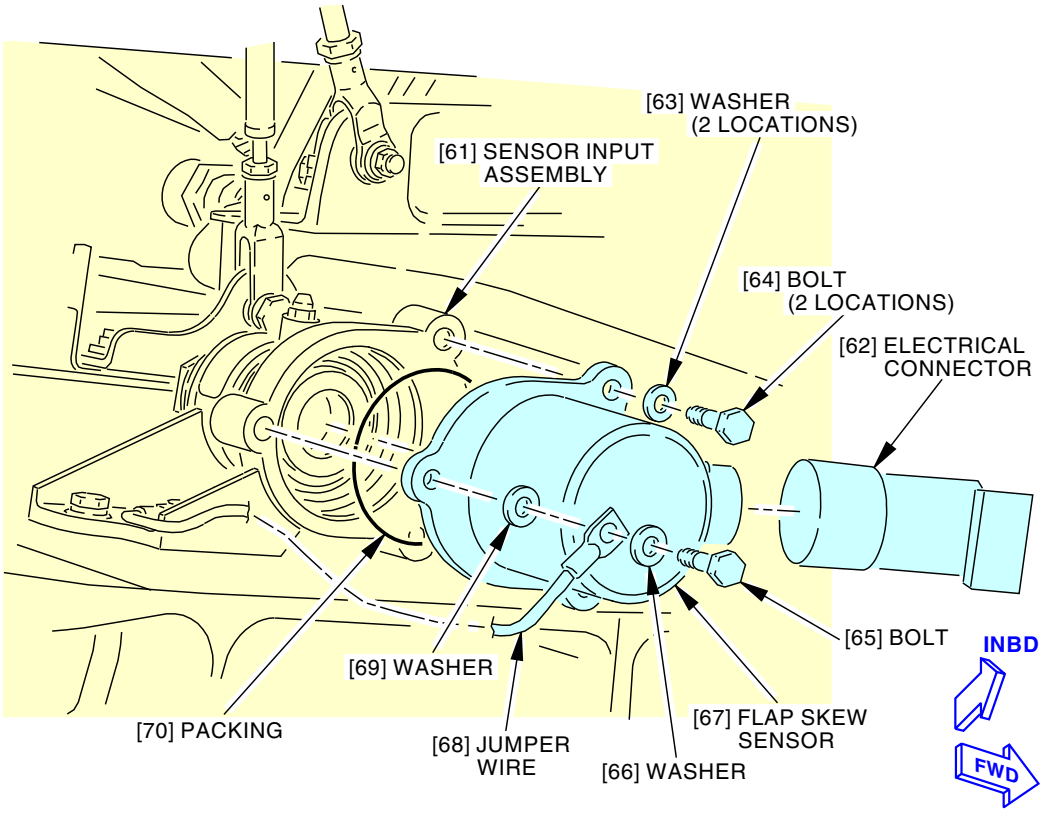


LEFT WING SHOWN
(RIGHT WING IS EQUIVALENT)
(EXAMPLE)



Inboard Flap Outboard Skew Sensor Installation
Figure 203/27-59-01-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Outboard Skew Sensor Installation
Figure 203/27-59-01-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-01-400-803

7. Inboard Flap Outboard Skew Sensor Installation

(Figure 203)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
67	Flap skew sensor	27-59-01-02-175	SIA ALL
70	Packing	27-59-01-02-180	SIA ALL

F. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Procedure

SUBTASK 27-59-01-860-013

(1) Make sure that these circuit breakers are open:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-420-005

(2) Install the flap skew sensor [67]:

(a) Apply grease, D00633 to the new packing [70].

(b) Install the new packing [70] on the flap skew sensor [67].

(c) Apply grease, D00633 to the shaft of the flap skew sensor [67] and the splines on the sensor input assembly [61].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the flap skew sensor [67] and the sensor input assembly [61].

(e) Engage the shaft on the flap skew sensor [67] with the sensor input assembly [61].

NOTE: The shaft has a missing tooth on the splines.

(f) Engage the alignment pin on the sensor input assembly [61] with the hole in the flap skew sensor [67].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(g) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [64].

(h) Install the bolts [64] and washers [63] to attach the flap skew sensor [67].

(i) Install the bolt [65], washer [66], and washer [69] to attach the jumper wire [68] to the flap skew sensor [67].

(j) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap skew sensor [67] and the jumper wire [68] is less than 8 Milliohms.

(k) Apply a bead of sealant, A02315 or sealant, A00247 to the head of the bolt [65].

SUBTASK 27-59-01-210-003

(3) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-800-003

(4) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-01-420-006

(5) Connect the electrical connector [62] to the flap skew sensor [67].

SUBTASK 27-59-01-860-014

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-440-003

(7) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-01-860-015

(8) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-01-730-003

(9) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

——— END OF TASK ———

TASK 27-59-01-000-804

8. Inboard Flap Inboard Skew Sensor Removal

(Figure 204)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
641	Right Wing - Fairing Flap Support No. 5

D. Procedure

SUBTASK 27-59-01-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-59-01-040-004

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-01-860-016

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-020-007

(4) Disconnect the electrical connector [93] from the flap skew sensor [100].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-020-008

(5) Remove the flap skew sensor [100]:

(a) Remove the bolt [99], washer [98], and washer [96] that attach the jumper wire [97] to the flap skew sensor [100].

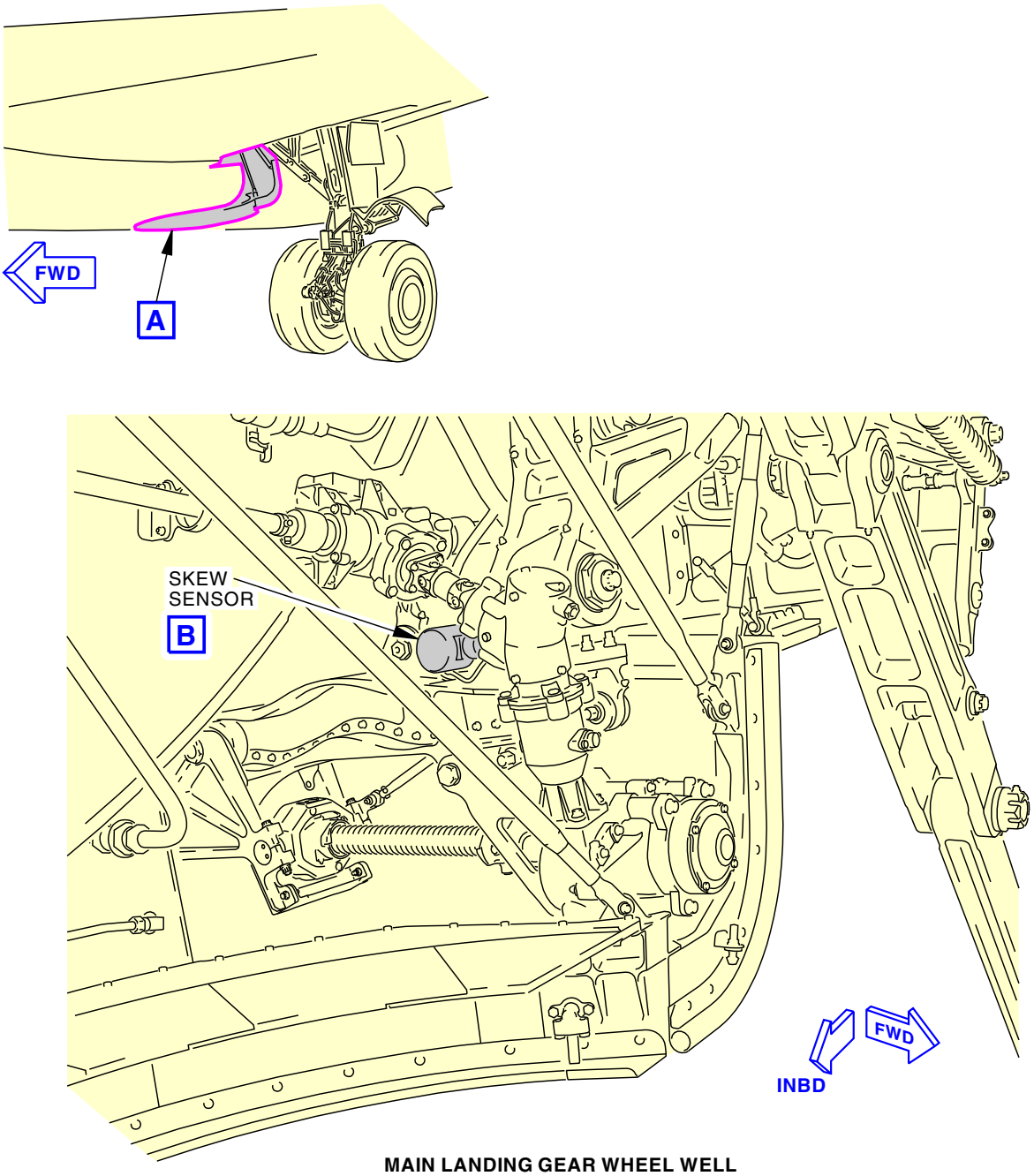
(b) Remove the bolts [91] and washers [92] that attach the flap skew sensor [100] to the sensor input assembly [94].

(c) Remove and discard packing [95].

(d) Remove the flap skew sensor [100] from the sensor input assembly [94].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

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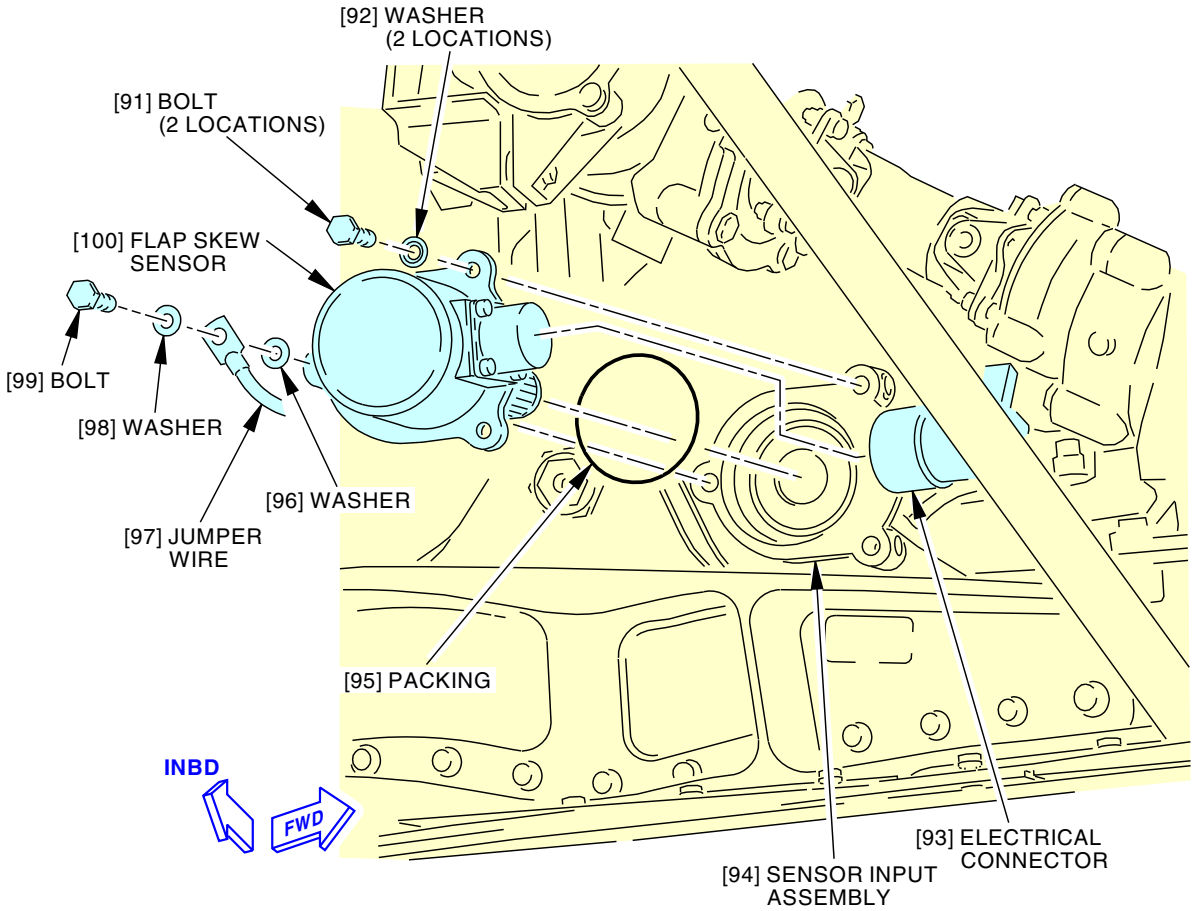
Inboard Flap Inboard Skew Sensor Installation
Figure 204/27-59-01-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Inboard Flap Inboard Skew Sensor Installation
Figure 204/27-59-01-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-01-400-804

9. Inboard Flap Inboard Skew Sensor Installation

(Figure 204)

A. General

(1) This task is applicable to the flap skew sensors installed on flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
D00633	Grease - Aircraft General Purpose	BMS3-33
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
95	Packing	27-59-01-03-180	SIA ALL
100	Flap skew sensor	27-59-01-03-175	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Procedure

SUBTASK 27-59-01-860-017

(1) Make sure that these circuit breakers are open:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-420-007

(2) Install the flap skew sensor [100]:

(a) Apply grease, D00633 to the new packing [95].

(b) Install the new packing [95] on the flap skew sensor [100].

(c) Apply grease, D00633 to the shaft of the flap skew sensor [100] and the splines on the sensor input assembly [94].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(d) Apply a thin layer of Cor-Ban 27L Compound, G50237 to the mating surface of the flap skew sensor [100] and the sensor input assembly [94].

(e) Engage the shaft on the flap skew sensor [100] with the sensor input assembly [94].

NOTE: The shaft has a missing tooth on the splines.

(f) Engage the alignment pin on the sensor input assembly [94] with the hole in the flap skew sensor [100].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(g) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [91].

(h) Install the bolts [91] and washers [92] to attach the flap skew sensor [100].

(i) Install the bolt [99], washer [98], and washer [96] to attach the jumper wire [97] to the flap skew sensor [100].

(j) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap skew sensor [100] and the jumper wire [97] is less than 8 Milliohms.

(k) Apply a bead of sealant, A02315 or sealant, A00247 to the head of the bolt [99].

SUBTASK 27-59-01-210-004

(3) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-01-800-004

(4) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-01-420-008

(5) Connect the electrical connector [93] to the flap skew sensor [100].

SUBTASK 27-59-01-860-018

(6) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-01-440-004

(7) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-01-860-019

(8) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-01-730-004

(9) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLAP SKEW MECHANISM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Outboard Flap Outboard Skew Mechanism Removal

(2) Outboard Flap Outboard Skew Mechanism Installation

(3) Outboard Flap Inboard Skew Mechanism Removal

(4) Outboard Flap Inboard Skew Mechanism Installation

(5) Inboard Flap Outboard Skew Mechanism Removal

(6) Inboard Flap Outboard Skew Mechanism Installation

(7) Inboard Flap Inboard Skew Mechanism Removal

(8) Inboard Flap Inboard Skew Mechanism Installation.

B. There are eight flap skew mechanisms and sensors for the trailing edge flaps. One at each of the flap supports.

C. The flap skew mechanisms include a sensor input assembly and a control rod.

TASK 27-59-02-000-801

2. Outboard Flap Outboard Skew Mechanism Removal

(Figure 201)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 1 and 8.

(2) You can remove the flap skew mechanism with the flap skew sensor [13] either removed or installed. This task shows the removal with the flap skew sensor [13] installed.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

D. Procedure

SUBTASK 27-59-02-860-001

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-02-040-001

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-59-02-860-002

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-020-001

(4) Disconnect the electrical connector [14] from the flap skew sensor [13].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-020-002

(5) Remove the nuts [20], washers [19], bushings [18], washers [17], and bolts [16] that attach the control rod [21] to the crank arm [15] and to the carriage [22].

SUBTASK 27-59-02-020-003

(6) Remove the sensor input assembly [2]:

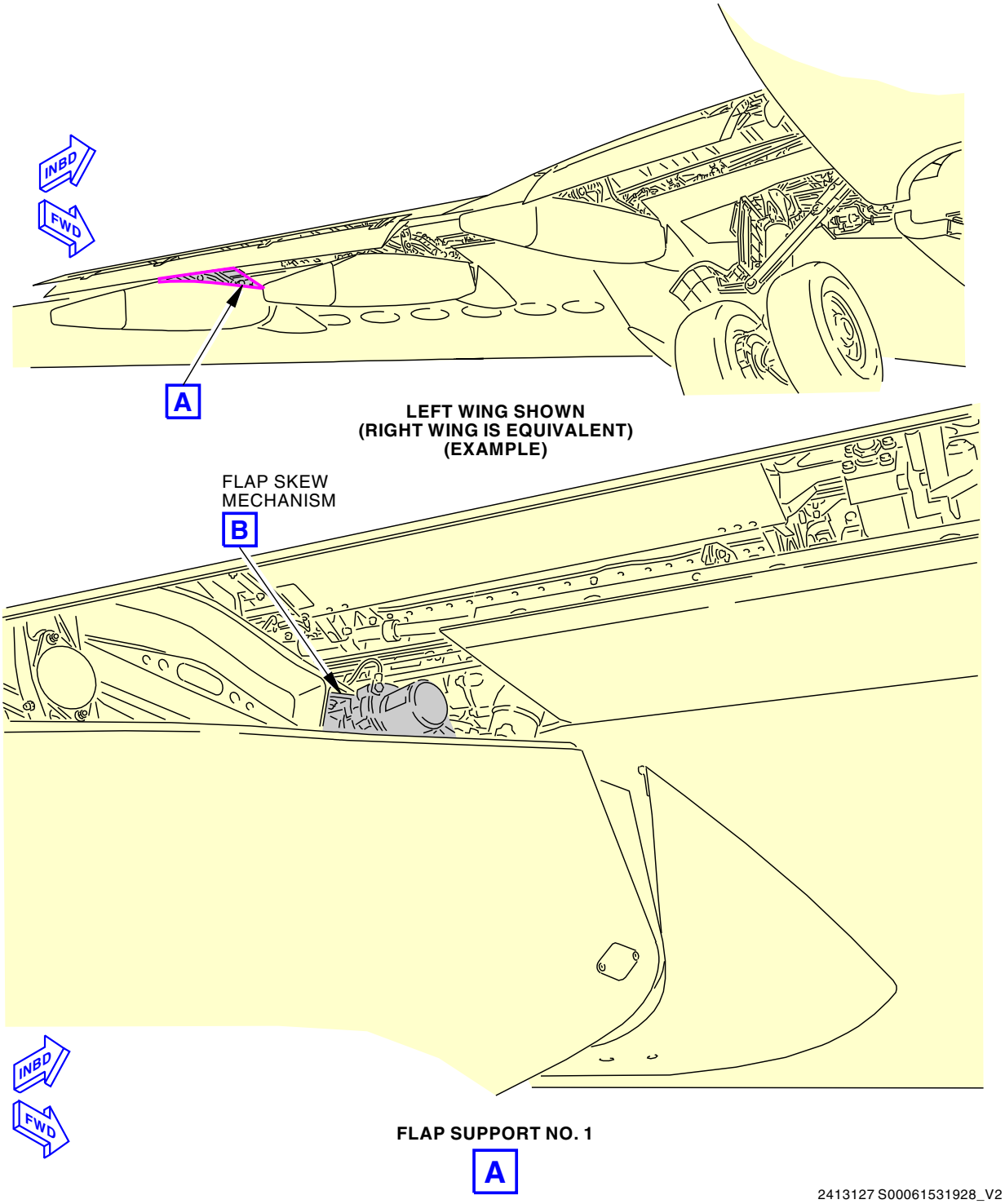
(a) Remove the nut [7], washer [6], washer [5], washer [4], and bolt [3] that attach the sensor input assembly [2] and the jumper wire [8] to the flap track [1].

(b) Remove the nuts [12], washers [11], washers [10], and bolts [9] that attach the sensor input assembly [2] to the flap track [1].

(c) Remove the sensor input assembly [2] from the flap track [1].

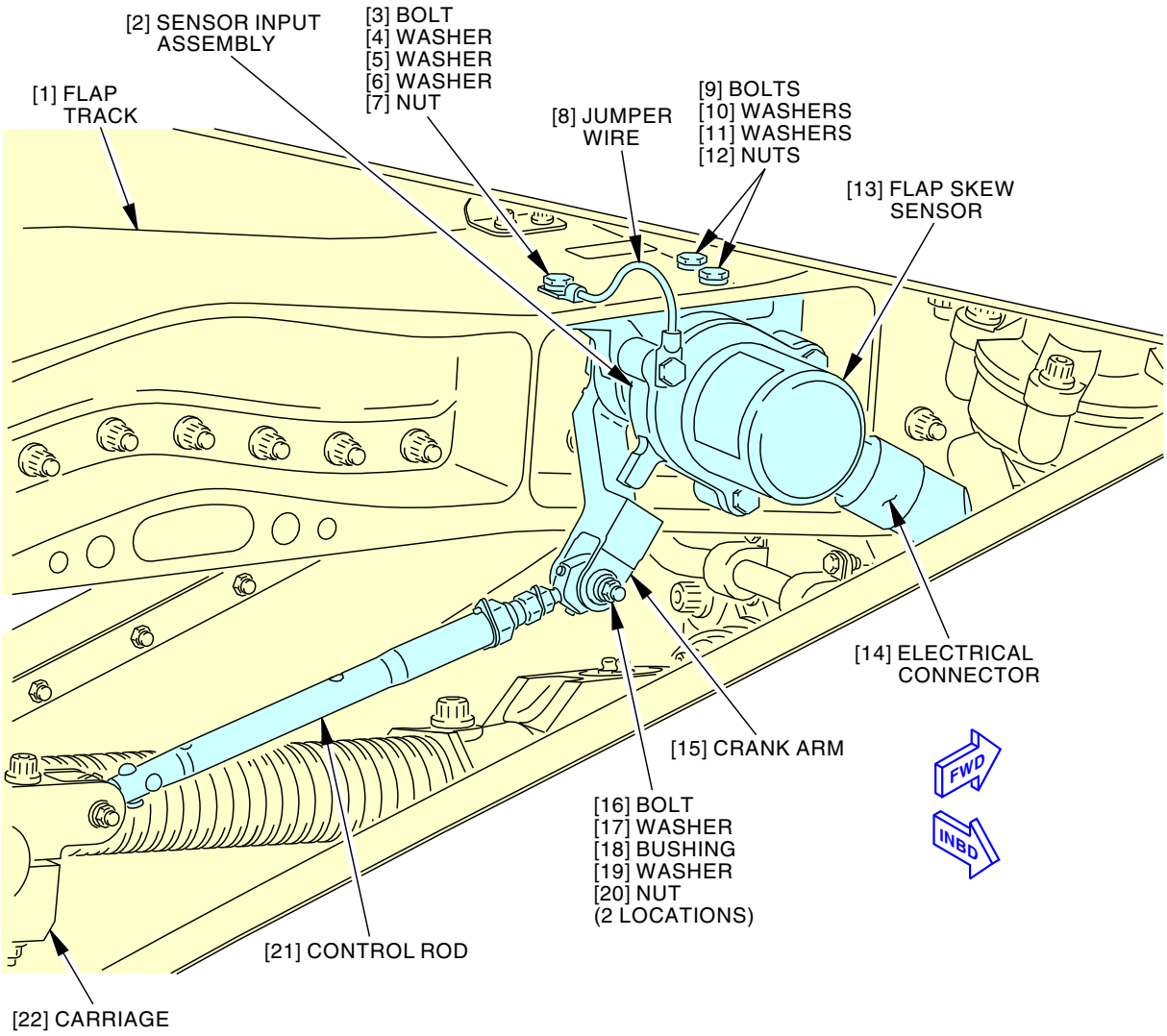
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Flap Outboard Skew Mechanism Installation
Figure 201/27-59-02-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP SKEW MECHANISM

B

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Outboard Flap Outboard Skew Mechanism Installation
Figure 201/27-59-02-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-400-801

3. Outboard Flap Outboard Skew Mechanism Installation

(Figure 201)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 1 and 8.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-01-400-801	Outboard Flap Outboard Skew Sensor Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
13	Flap skew sensor	27-59-01-05-175	SIA ALL
15	Crank arm	27-59-02-03-095	SIA ALL
21	Control rod	27-59-02-05-040	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Location Zones

Zone	Area
544	Left Wing - Fairing Flap Support No. 1
644	Right Wing - Fairing Flap Support No. 8

G. Procedure

SUBTASK 27-59-02-420-001

(1) Install the sensor input assembly [2]:

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a layer of Cor-Ban 27L Compound, G50237 to the mating surface of the sensor input assembly [2] and the flap track [1].

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolt [9].

(c) Put the sensor input assembly [2] in its location on the flap track [1].

(d) Install the bolts [9], washers [10], washers [11], and nuts [12] that attach the sensor input assembly [2] to the flap track [1].

(e) Install the bolt [3], washer [4], washer [5], washer [6], and nut [7] to attach the jumper wire [8] and the sensor input assembly [2] to the flap track [1].

NOTE: Install the washer [5] under the jumper wire [8].

(f) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap track [1] and the jumper wire [8] is less than 8 Milliohms.

(g) Apply a bead of sealant, A02315 or sealant, A00247 around the bolt [3] and the nut [7].

SUBTASK 27-59-02-420-002

(2) Install the control rod [21]:

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [16].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Put the control rod [21] in its position between the carriage [22] and the crank arm [15].

NOTE: Make sure that the adjustable end of the control rod [21] attaches to the crank arm [15].

(c) Install the bolts [16], washers [17], bushings [18], washers [19], and nuts [20] to attach the control rod [21].

NOTE: Install the bolts [16] with the heads toward the center of the flap track [1].

SUBTASK 27-59-02-820-001

(3) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-59-02-420-003

(4) If the flap skew sensor [13] is not installed, do this task: Outboard Flap Outboard Skew Sensor Installation, TASK 27-59-01-400-801.

SUBTASK 27-59-02-210-001

(5) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES WHERE DEICING FLUID THAT CONTAINS POTASSIUM FORMATE OR POTASSIUM ACETATE IS USED. ALSO, DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTORS ARE IN A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-800-001

(6) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-02-420-004

(7) Connect the electrical connector [14] to the flap skew sensor [13].

SUBTASK 27-59-02-860-004

(8) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-440-001

(9) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-02-860-005

(10) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-02-730-001

(11) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-000-802

4. Outboard Flap Inboard Skew Mechanism Removal

(Figure 202)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 2 and 7.

(2) You can remove the flap skew mechanism with the flap skew sensor [53] either removed or installed. This task shows the removal with the flap skew sensor [53] installed.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2
643	Right Wing - Fairing Flap Support No. 7

D. Procedure

SUBTASK 27-59-02-860-006

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-02-040-002

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-02-860-007

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-020-004

(4) Disconnect the electrical connector [54] from the flap skew sensor [53].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-020-005

(5) Remove the nuts [60], washers [59], bushings [58], washers [57], and bolts [56] that attach the control rod [61] to the crank arm [55] and to the carriage [62].

SUBTASK 27-59-02-020-006

(6) Remove the sensor input assembly [42]:

(a) Remove the nut [47], washer [46], washer [45], washer [44], and bolt [43] that attach the sensor input assembly [42] and the jumper wire [48] to the flap track [41].

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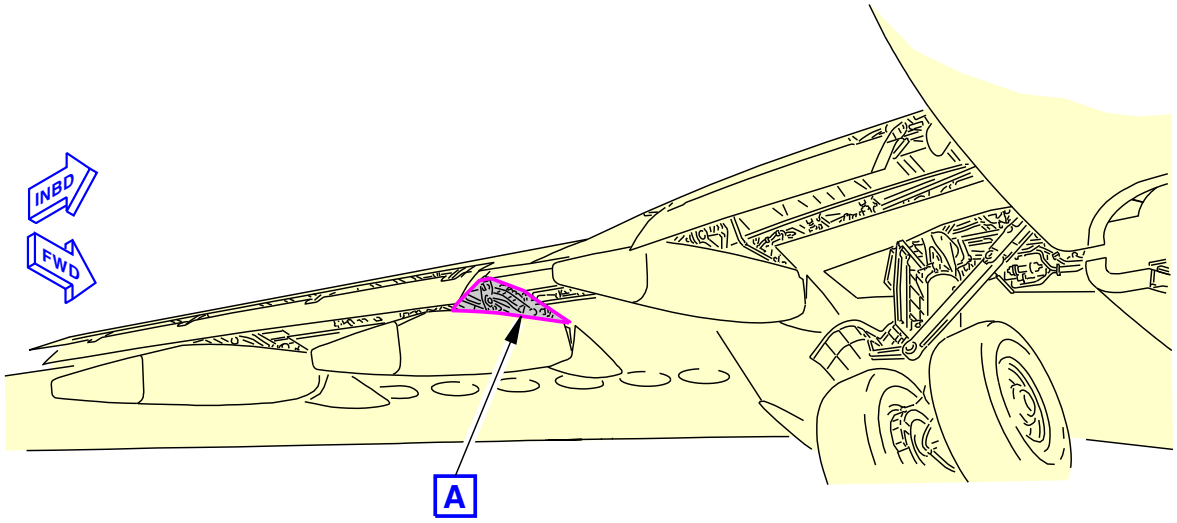
(b) Remove the nuts [52], washers [51], washers [50], and bolts [49] that attach the sensor input assembly [42] to the flap track [41].

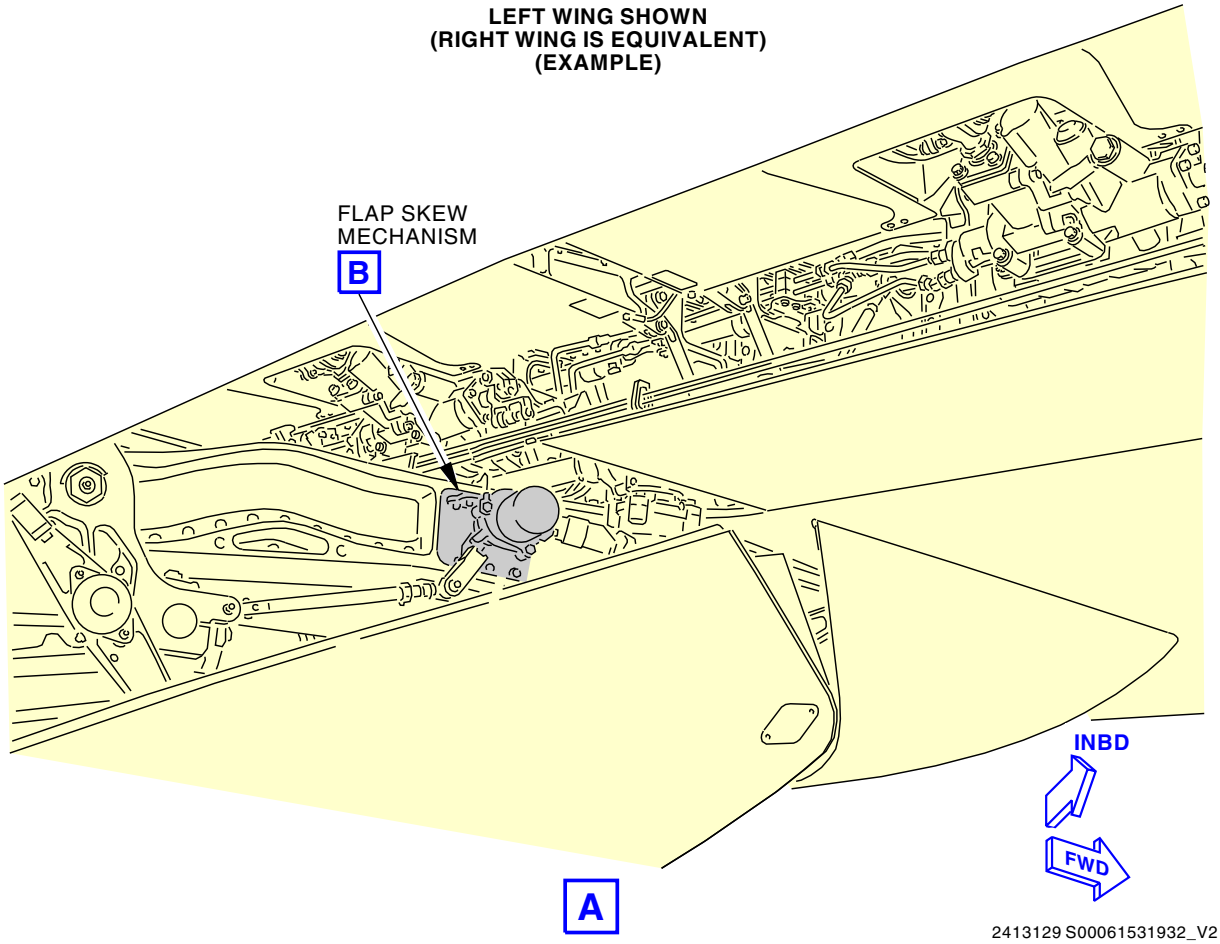
(c) Remove the sensor input assembly [42] from the flap track [41].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

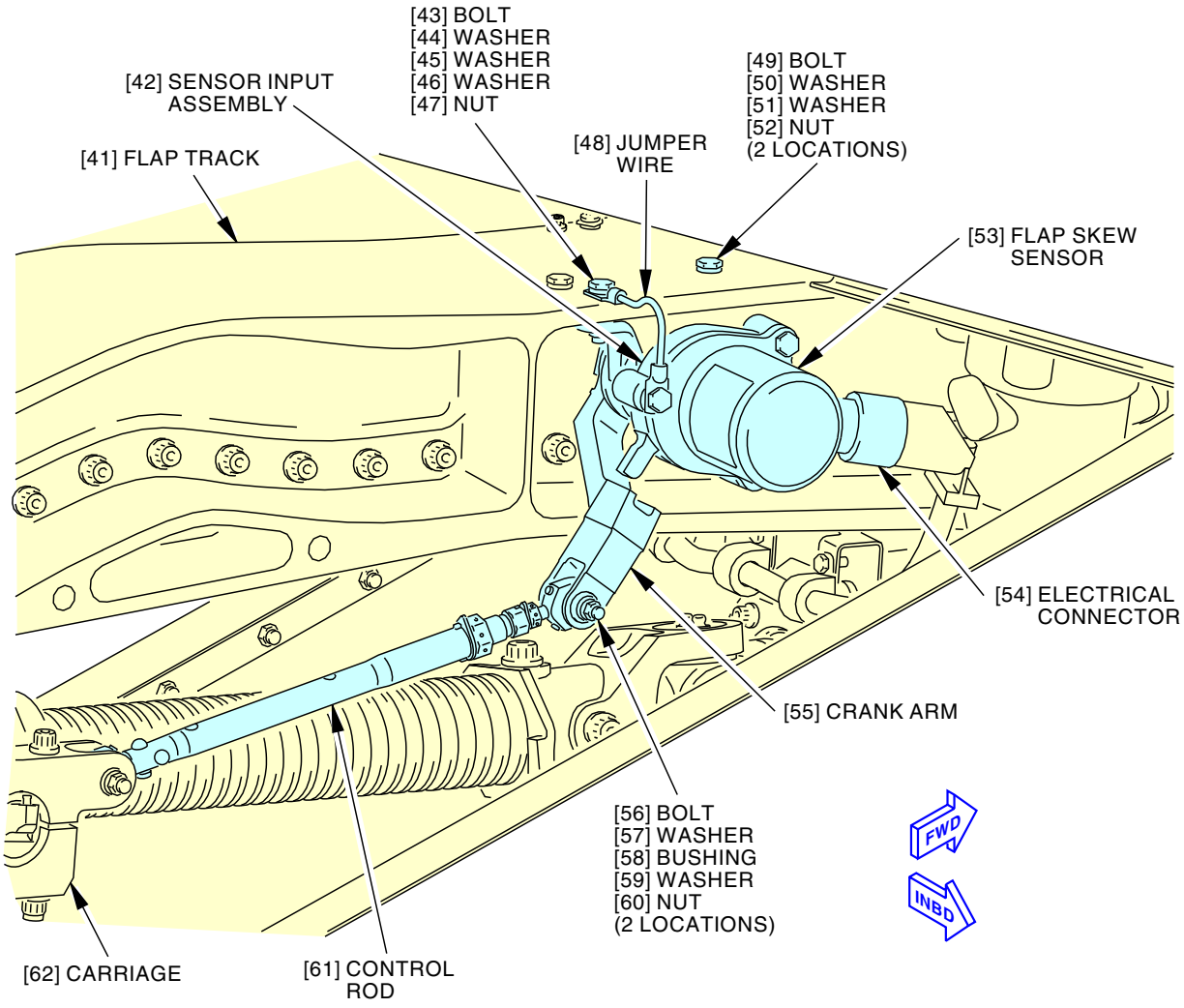


LEFT WING SHOWN
(RIGHT WING IS EQUIVALENT)
(EXAMPLE)



Outboard Flap Inboard Skew Mechanism Installation
Figure 202/27-59-02-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP SKEW MECHANISM

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Outboard Flap Inboard Skew Mechanism Installation
Figure 202/27-59-02-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-400-802

5. Outboard Flap Inboard Skew Mechanism Installation

(Figure 202)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 2 and 7.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-01-400-802	Outboard Flap Inboard Skew Sensor Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
53	Flap skew sensor	27-59-01-04-175	SIA ALL
55	Crank arm	27-59-02-03-095	SIA ALL
61	Control rod	27-59-02-05-040	SIA ALL

F. Location Zones

Zone	Area
543	Left Wing - Fairing Flap Support No. 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
643	Right Wing - Fairing Flap Support No. 7

G. Procedure

SUBTASK 27-59-02-420-005

(1) Install the sensor input assembly [42]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a layer of Cor-Ban 27L Compound, G50237 to the mating surface of the sensor input assembly [42] and the flap track [41].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [49].

(c) Put the sensor input assembly [42] in its location on the flap track [41].

(d) Install the bolts [49], washers [50], washers [51] and nuts [52] that attach the sensor input assembly [42] to the flap track [41].

(e) Install the bolt [43], washer [44], washer [45], washer [46] and nut [47] to attach the jumper wire [48] and the sensor input assembly [42] to the flap track [41].

NOTE: Install the washer [45] under the jumper wire [48].

(f) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap track [41] and the jumper wire [48] is less than 8 Milliohms.

(g) Apply a bead of sealant, A02315 or sealant, A00247 around the bolt [43] and the nut [47].

SUBTASK 27-59-02-420-006

(2) Install the control rod [61]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [56].

(b) Put the control rod [61] in its position between the carriage [62] and the crank arm [55].

NOTE: Make sure that the adjustable end of the control rod [61] attaches to the crank arm [55].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolts [56], washers [57], bushings [58], and nuts [60] to attach the control rods [61].

NOTE: Install the bolts [56] with the heads toward the center of the flap track [41].

SUBTASK 27-59-02-820-002

(3) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-59-02-420-007

(4) If the flap skew sensor [53] is not installed, do this task: Outboard Flap Inboard Skew Sensor Installation, TASK 27-59-01-400-802.

SUBTASK 27-59-02-210-002

(5) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

IF YOU USE THE AIRPLANE IN AREAS WHERE DEICING FLUID (THAT CONTAINS POTASSIUM FORMATE OR POTASSIUM ACETATE) IS NECESSARY, THEN DO THE STEPS BELOW. ALSO, DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTORS ARE IN A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT. IF YOU DO NOT DO THESE STEPS, DAMAGE TO EQUIPMENT OR INJURY CAN OCCUR.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-800-002

(6) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-02-420-008

(7) Connect the electrical connector [54] to the flap skew sensor [53].

SUBTASK 27-59-02-860-009

(8) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-440-002

(9) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-02-860-010

(10) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-02-730-002

(11) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-000-803

6. Inboard Flap Outboard Skew Mechanism Removal

(Figure 203)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 3 and 6.

(2) You can remove the flap skew mechanism with the flap skew sensor [83] either removed or installed. This task shows the removal with the flap skew sensor [83] installed.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3
642	Right Wing - Fairing Flap Support No. 6

D. Procedure

SUBTASK 27-59-02-860-011

(1) Extend the trailing edge flaps to the 40-unit position. To extend them, do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-59-02-040-003

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-02-860-012

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-020-007

(4) Disconnect the electrical connector [82] from the flap skew sensor [83].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-020-008

(5) Remove the nuts [97], washers [96], bushings [95], washers [94] and bolts [93] that attach the control rod [92] to the crank arm [98] and to the carriage [91].

SUBTASK 27-59-02-020-009

(6) Remove the sensor input assembly [81]:

(a) Remove the nut [89], washer [88], washer [87], washer [86] and bolt [85] that attach the sensor input assembly [81] and the jumper wire [84] to the flap track [90].

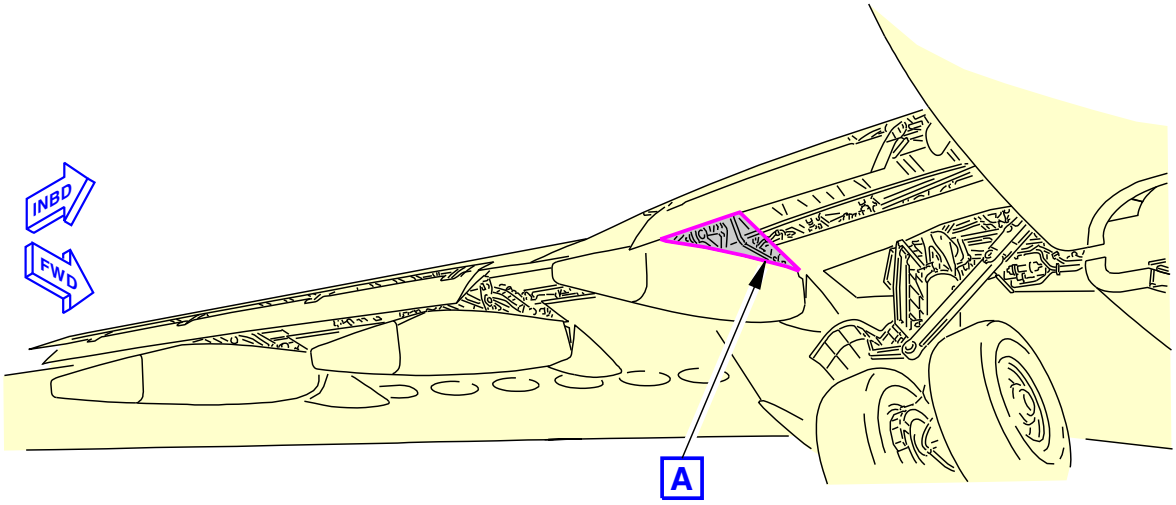
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the nuts [102], washers [101], washers [100] and bolts [99] that attach the sensor input assembly [81] to the flap track [90].

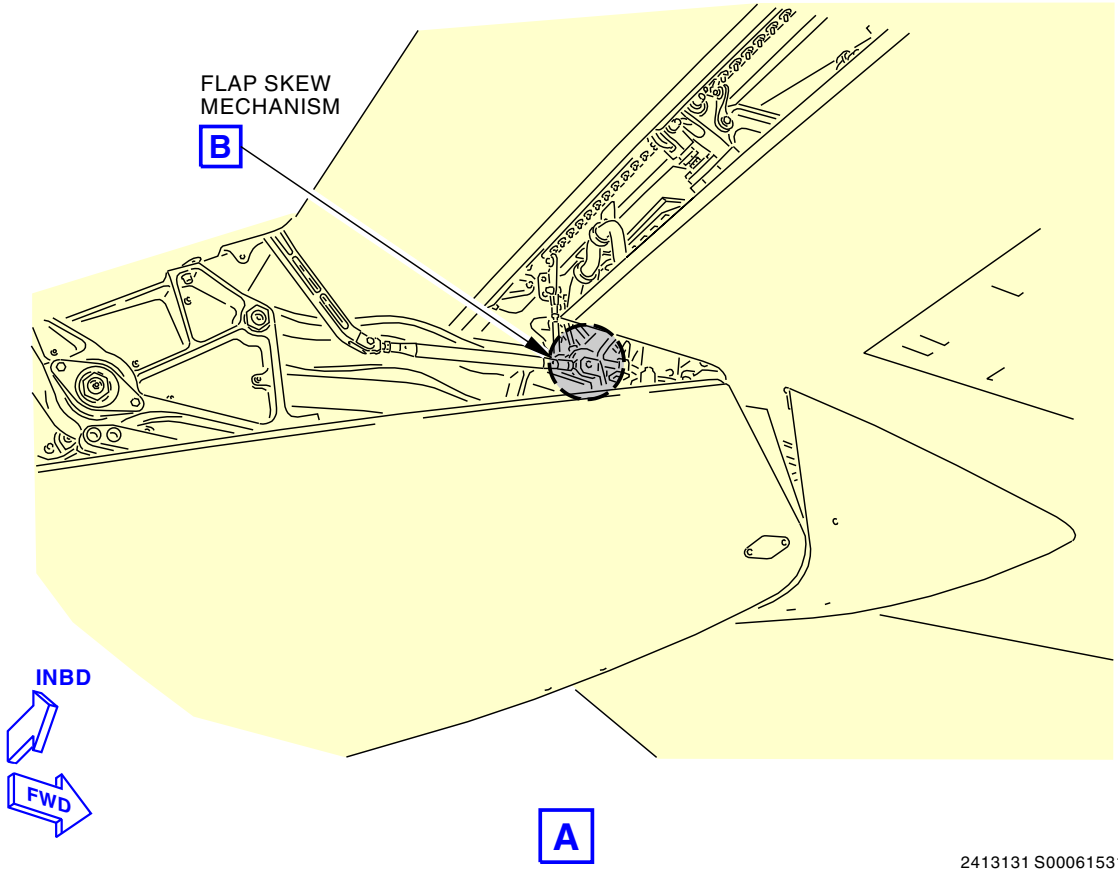
(c) Remove the sensor input assembly [81] from the flap track [90].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING SHOWN
(RIGHT WING IS EQUIVALENT)
(EXAMPLE)



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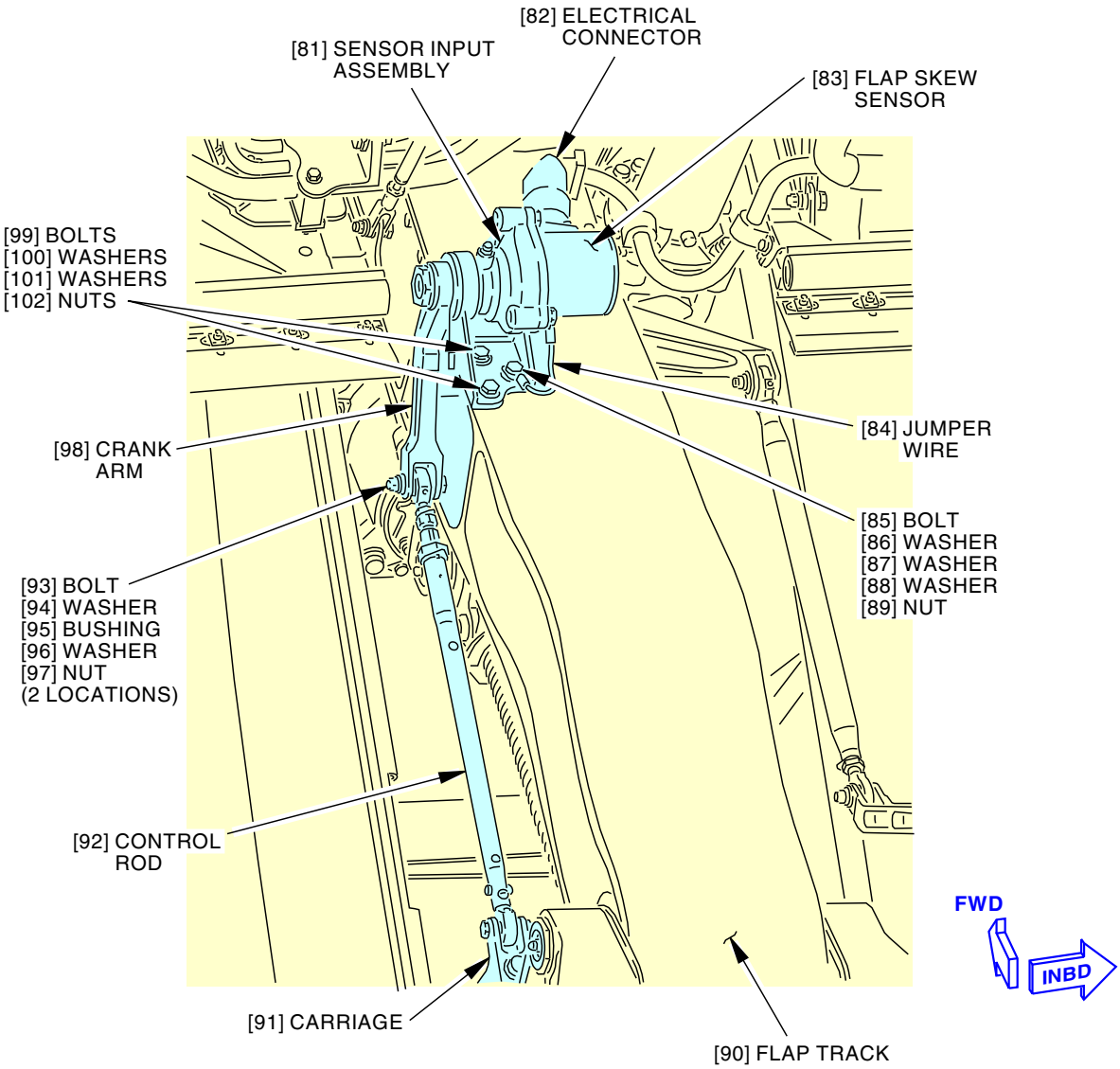
Inboard Flap Outboard Skew Mechanism Installation
Figure 203/27-59-02-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLAP SKEW MECHANISM

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Inboard Flap Outboard Skew Mechanism Installation
Figure 203/27-59-02-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-400-803

7. Inboard Flap Outboard Skew Mechanism Installation

(Figure 203)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 3 and 6.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-01-400-803	Inboard Flap Outboard Skew Sensor Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
83	Flap skew sensor	27-59-01-02-175	SIA ALL
92	Control rod	27-59-02-05-040	SIA ALL
98	Crank arm	27-59-02-03-095	SIA ALL

F. Location Zones

Zone	Area
542	Left Wing - Fairing Flap Support No. 3

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
642	Right Wing - Fairing Flap Support No. 6

G. Procedure

SUBTASK 27-59-02-420-009

(1) Install the sensor input assembly [81]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a layer of Cor-Ban 27L Compound, G50237 to the mating surface of the sensor input assembly [81] and the flap track [90].

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [99].

(c) Put the sensor input assembly [81] in its location on flap track [90].

(d) Install the bolts [99], washers [100], washers [101], and nuts [102] that attach the sensor input assembly [81] to the flap track [90].

(e) Install the bolt [85], washer [87], washer [88], and nut [89] to attach the jumper wire [84] and the sensor input assembly [81] to the flap track [90].

NOTE: Install the washer [87] under the jumper wire [84].

(f) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap track [90] and the jumper wire [84] is less than 8 Milliohms.

(g) Apply a bead of sealant, A02315sealant, A00247 or around the bolt [85] and the nut [89].

SUBTASK 27-59-02-420-010

(2) Install the control rod [92]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [93].

(b) Put the control rod [92] in its position between the carriage [91] and the crank arm [98].

NOTE: Make sure that the adjustable end of the control rod [92] attaches to the crank arm [98].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolts [93], washers [94], bushings [95], washers [96], and nuts [97] to attach the control rod [92].

NOTE: Install the bolt [93] that attaches the control rod [92] to the crank arm with the head toward the center of the flap track [90]. Install the bolt [93] that attaches the control rod [92] to the carriage [91] with the head away from the center of the flap track [90].

SUBTASK 27-59-02-820-003

(3) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-59-02-420-011

(4) If the flap skew sensor [83] is not installed, do this task: Inboard Flap Outboard Skew Sensor Installation, TASK 27-59-01-400-803.

SUBTASK 27-59-02-210-003

(5) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

IF YOU USE THE AIRPLANE IN AREAS WHERE DEICING FLUID (THAT CONTAINS POTASSIUM FORMATE OR POTASSIUM ACETATE) IS NECESSARY, THEN DO THE STEPS BELOW. ALSO, DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTORS ARE IN A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT. IF YOU DO NOT DO THESE STEPS, DAMAGE TO EQUIPMENT OR INJURY CAN OCCUR.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-800-003

(6) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-02-420-012

(7) Connect the electrical connector [82] to the flap skew sensor [83].

SUBTASK 27-59-02-860-014

(8) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-440-003

(9) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-02-860-015

(10) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-02-730-003

(11) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-000-804

8. Inboard Flap Inboard Skew Mechanism Removal

(Figure 204)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 4 and 5.

(2) You can remove the flap skew mechanism with the flap skew sensor [121] either removed or installed. This task shows the removal with the flap skew sensor [121] installed.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

D. Procedure

SUBTASK 27-59-02-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-59-02-040-004

(2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-59-02-860-016

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-59-02-020-010

(4) Disconnect the electrical connector [123] from the flap skew sensor [121].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

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SUBTASK 27-59-02-020-011

(5) Remove the nuts [134], washers [133], bushings [132], washers [131], and bolts [130] that attach the control rod [129] to the crank arm [137] and to the carriage [135].

SUBTASK 27-59-02-020-012

(6) If the flap skew sensor [121] is installed, remove the bolt [138], washer [139], and washer [140] that attach the jumper wire [128] to the flap skew sensor [121].

SUBTASK 27-59-02-020-013

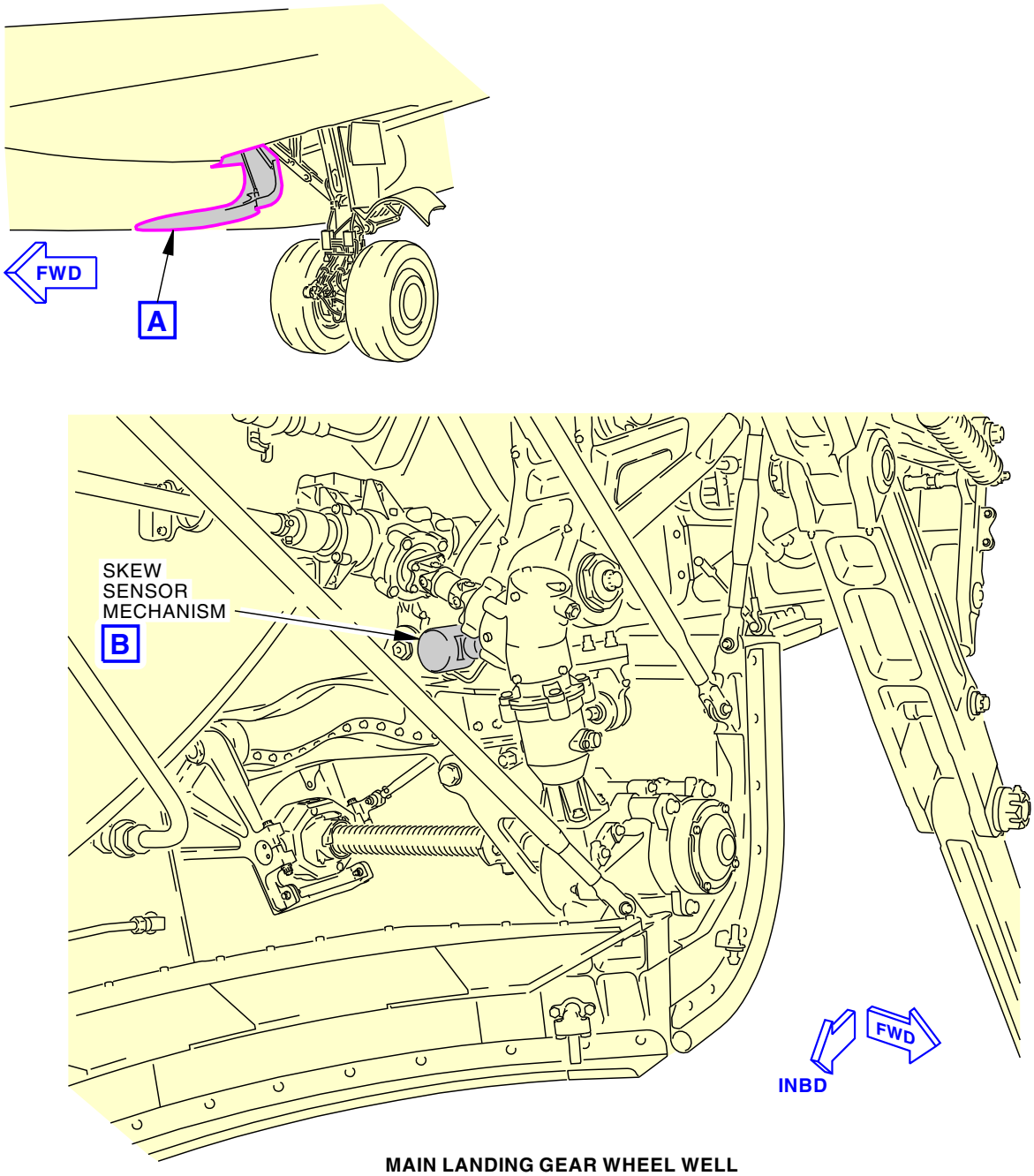
(7) Remove the sensor input assembly [122]:

(a) Remove the nuts [127], washers [126], washers [125], and bolts [124] that attach the sensor input assembly [122] to the flap track [136].

(b) Remove the sensor input assembly [122] from the flap track [136].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



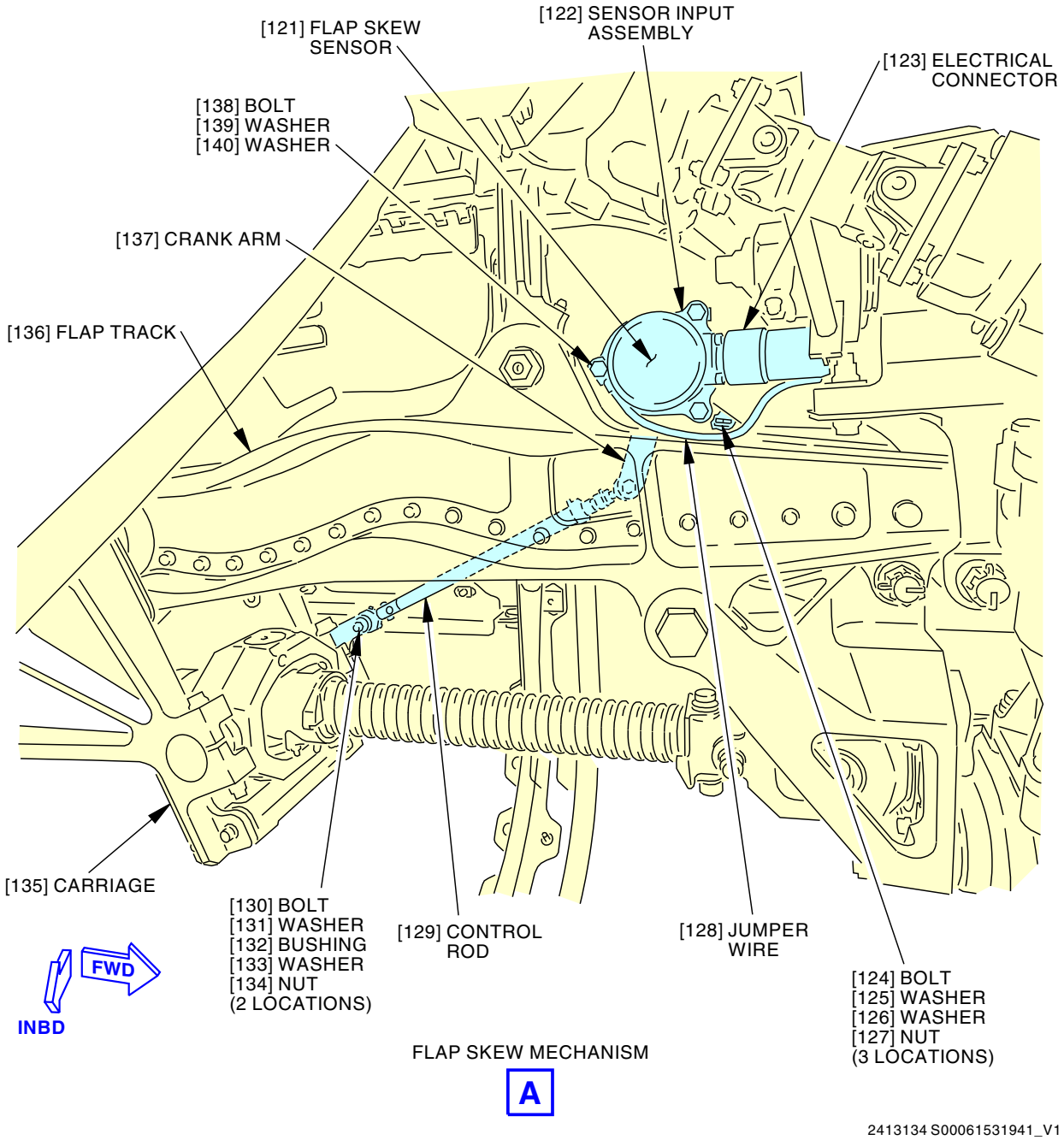
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2413133 S00061531940_V1

Inboard Flap Inboard Skew Mechanism Installation
Figure 204/27-59-02-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Inboard Flap Inboard Skew Mechanism Installation
Figure 204/27-59-02-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-59-02-400-804

9. Inboard Flap Inboard Skew Mechanism Installation

(Figure 204)

A. General

(1) This task is applicable to the flap skew mechanisms installed on flap supports No. 4 and 5.

B. References

Reference	Title
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-59-00-730-801	Flap Skew Detection System Functional Test (P/B 501)
27-59-00-820-801	Flap Skew Detection System Adjustment (P/B 501)
27-59-01-400-804	Inboard Flap Inboard Skew Sensor Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
121	Flap skew sensor	27-59-01-03-175	SIA ALL
129	Control rod	27-59-02-05-040	SIA ALL
137	Crank arm	27-59-02-03-095	SIA ALL

F. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
541	Left Wing - Fairing Flap Support No. 4
641	Right Wing - Fairing Flap Support No. 5

G. Procedure

SUBTASK 27-59-02-420-013

(1) Install the sensor input assembly [122]:

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a layer of Cor-Ban 27L Compound, G50237 to the mating surface of the sensor input assembly [122] and the flap track [136].

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [124].

(c) Put the sensor input assembly [122] in its location on the flap track [136].

(d) Install the bolts [124], washers [125], washers [126], and nuts [127] that attach the sensor input assembly [122] to the flap track [136].

SUBTASK 27-59-02-420-014

(2) Install the control rod [129]:

> **WARNING** USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply Cor-Ban 27L Compound, G50237 to the shank and threads of the bolts [130].

(b) Put the control rod [129] in its position between the carriage [135] and the crank arm [137].

NOTE: Make sure that the adjustable end of the control rod [129] attaches to the crank arm [137].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolts [130], washers [131], bushings [132], washers [133], and nuts [134] to attach the control rod [129].

NOTE: Install the bolt [130] that attaches the control rod [129] to the carriage [135] with the head away from the center of the flap track [136]. You can install the bolt [130] that attaches the control rod [129] to the crank arm [137] with the head in either direction.

SUBTASK 27-59-02-820-004

(3) Do this task: Flap Skew Detection System Adjustment, TASK 27-59-00-820-801.

SUBTASK 27-59-02-020-014

(4) If the flap skew sensor [121] is installed, connect the jumper wire [128] to the flap skew sensor [121].

(a) Install the bolt [138], washer [139], and washer [140] to attach the jumper wire [128] to the flap skew sensor [121].

(b) With the electrical bonding intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the flap skew sensor [121] and the jumper wire [128] is less than 8 Milliohms.

(c) Apply a bead of sealant, A02315 or sealant, A00247 to the head of the bolt [138].

SUBTASK 27-59-02-420-015

(5) If the flap skew sensor [121] is not installed, do this task: Inboard Flap Inboard Skew Sensor Installation, TASK 27-59-01-400-804.

SUBTASK 27-59-02-210-004

(6) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES WHERE DEICING FLUID THAT CONTAINS POTASSIUM FORMATE OR POTASSIUM ACETATE IS USED. ALSO, DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTORS ARE IN A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-59-02-800-004

(7) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

SUBTASK 27-59-02-420-016

(8) Connect the electrical connector [123] to the flap skew sensor [121].

SUBTASK 27-59-02-860-018

(9) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-59-02-440-004

(10) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-59-02-860-019

(11) Retract the trailing edge flaps to the UP position. To retract the flaps, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-59-02-730-004

(12) Do this task: Flap Skew Detection System Functional Test, TASK 27-59-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Apply Pressure to the Spoiler Hydraulic Systems A and B

(2) Shut Down the Spoiler Hydraulic systems A and B

(3) Depressurization of the Spoiler Hydraulic Systems A and B

(4) Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition

TASK 27-61-00-040-801

2. Spoiler Control System - Deactivation

(Figure 201)

A. General

(1) Use this task to deactivate the spoiler control system.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Spoiler Control Deactivation

SUBTASK 27-61-00-860-001

(1) Set the SPOILER A and B switches on the forward overhead panel P5 to the OFF position.

(a) Put the DO NOT OPERATE tag, STD-858, on the SPOILER A and B switches.

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SUBTASK 27-61-00-860-002

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-00-860-003

(4) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel P5 to the OFF position.

SUBTASK 27-61-00-870-001

(5) Operate the rudder pedals to decrease the remaining hydraulic system pressure.

SUBTASK 27-61-00-860-004

(6) If necessary to open a hydraulic line, release pressure from the reservoir for the applicable hydraulic system (TASK 29-09-00-860-802).

SUBTASK 27-61-00-480-001

(7) Install the flight controls lock assembly [2] (Figure 201):

(a) Disconnect the electrical conector [3] from the spoiler shutoff valve at the flight controls hydraulic modules A and B.

(b) After you disconnect the electrical conectors [3], examine them for corrosion (TASK 20-60-07-910-802).

NOTE: The inspection of the electrical conector [3] can be done after the removal step or before the installation step of the electrical conector [3]. This is an operator option.

(c) Put the manual override lever [4] at the two spoiler shutoff valves [1] in the position 2 (OFF position).

(d) Install the locks, SPL-1675, on the two spoiler shutoff valves.

1) Install the detent pin [5].

SUBTASK 27-61-00-210-001

(8) Spoiler Control System - Tryout

NOTE: This tryout is to make sure that the spoiler control system is in zero energy state.

(a) Do these steps to check the spoiler control system:

1) Turn the Captain's control wheel a minimum of 4 units.

2) Make sure that there is no movement from the spoiler and wheel forces are higher than usual.

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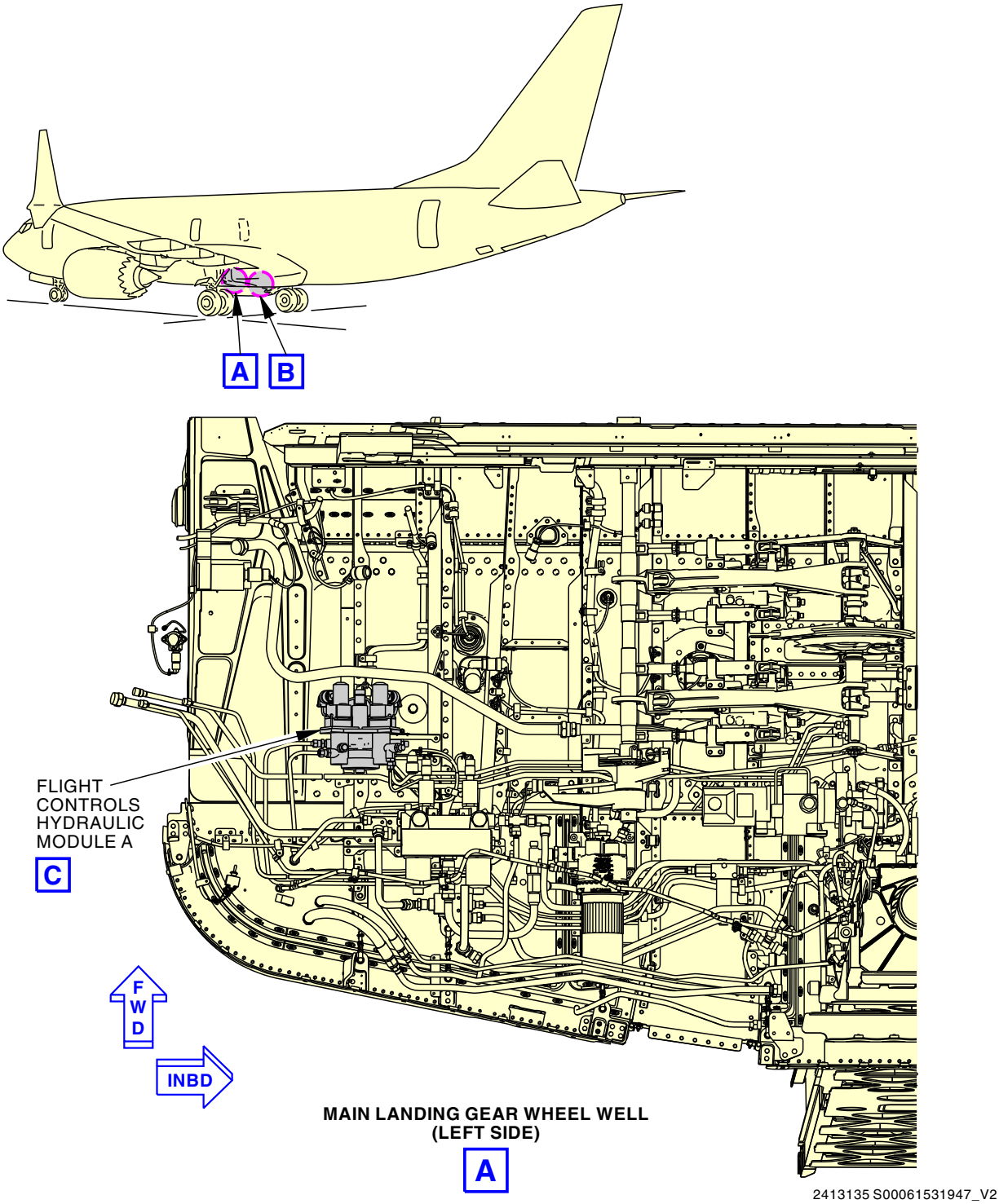
3) Move the Captain's control wheel back to the neutral position.

4) Install DO NOT OPERATE tags, STD-858, on the Captain's and the First Officer's control wheels.

(b) Make sure the locks, SPL-1675, are installed on the two spoiler shutoff valves.

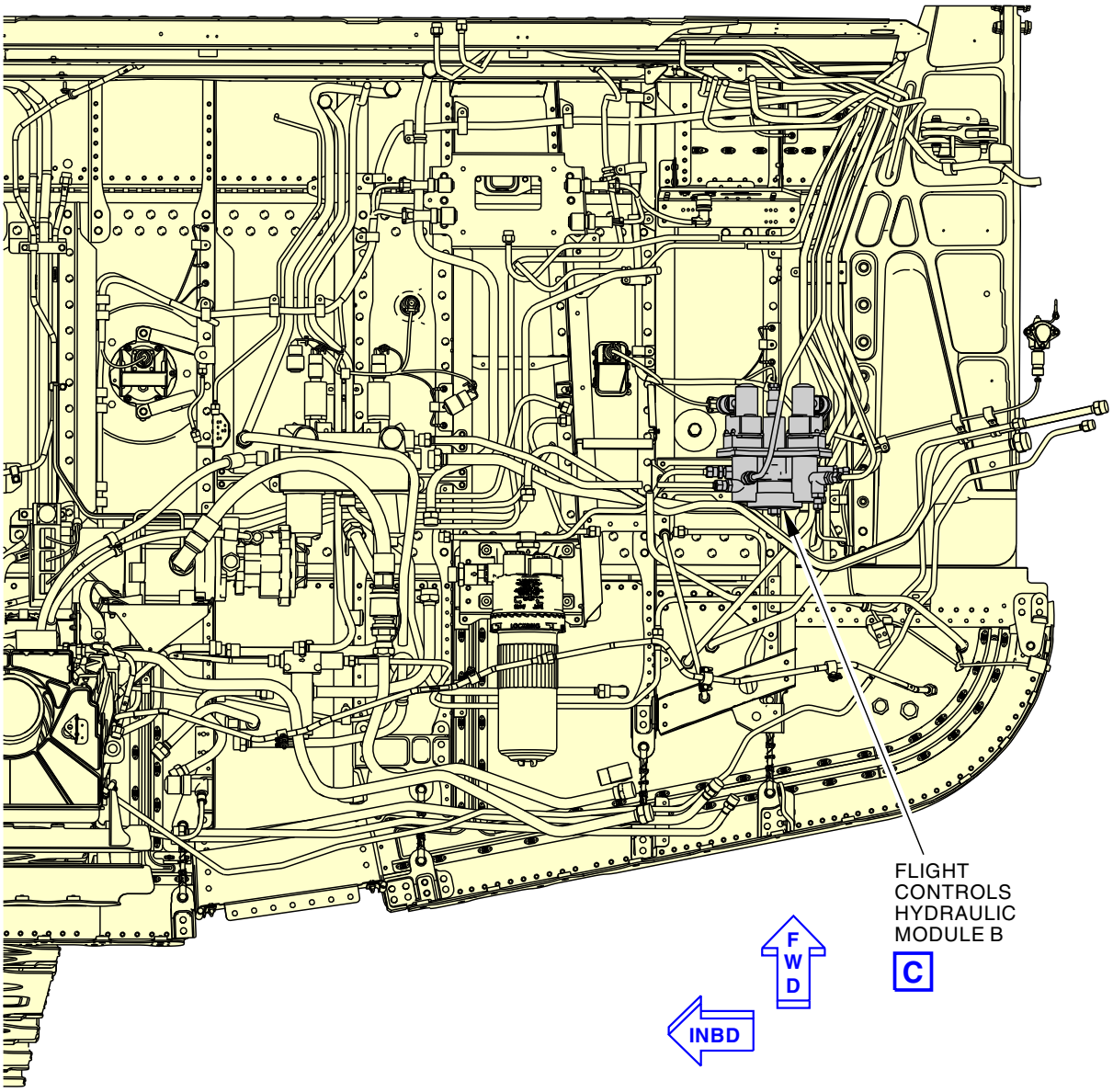
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



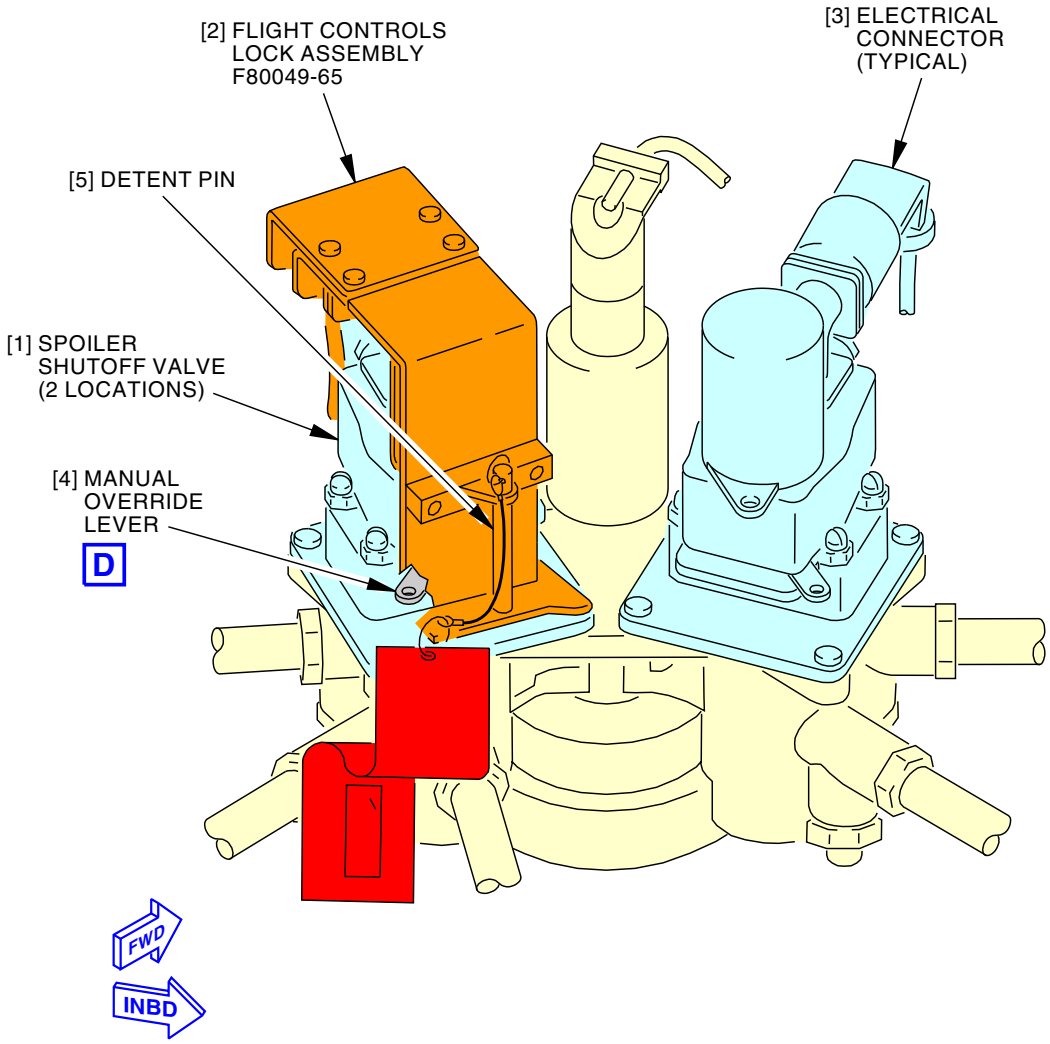
Spoiler Control System Installation
Figure 201/27-61-00-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Spoiler Control System Installation
Figure 201/27-61-00-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



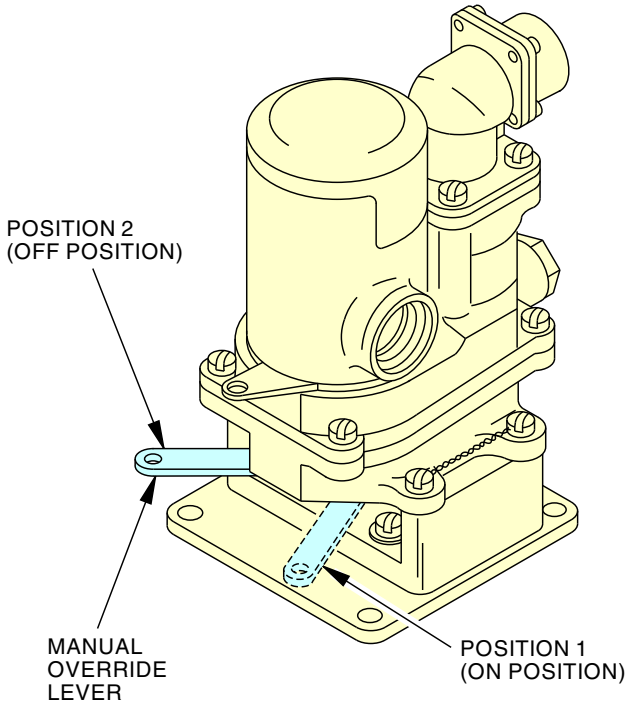
FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2558517 S0000610309_V3

Spoiler Control System Installation
Figure 201/27-61-00-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

D

2844536 S0000662328_V3

**Spoiler Control System Installation
Figure 201/27-61-00-990-801 (Sheet 4 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-440-801

3. Spoiler Control System - Activation

(Figure 201)

A. General

(1) Use this task to activate the spoiler control system.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-61-12-400-803	Spoiler Shutoff Valve Test (P/B 501)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Spoiler Control Activation

SUBTASK 27-61-00-080-001

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-00-010-003

(2) Remove the flight controls hydraulic module locks from the spoiler shutoff valves.

(a) Remove the detent pins.

(b) Remove the lock, SPL-1675, from the two spoiler shutoff valves.

(c) Put the manual override lever at the two spoiler shutoff valves in the position 1 (ON position).

(d) Do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

SUBTASK 27-61-00-410-004

(3) Apply the D5026NS or ZC-026 compound, G50171, to the connector (SWPM 20-60-03).

SUBTASK 27-61-00-410-005

(4) Connect the electrical connector to the spoiler shutoff valve at the spoiler hydraulic modules A and B.

SUBTASK 27-61-00-860-005

(5) Set the SPOILER A and B switches on the forward overhead panel P5 to the ON position.

SUBTASK 27-61-00-860-006

(6) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-00-080-002

(8) Remove the DO NOT OPERATE tag, STD-858, from the Captain's and First Officer's control wheel.

SUBTASK 27-61-00-860-099

(9) If necessary, pressurize the hydraulic reservoirs (TASK 29-09-00-860-801).

SUBTASK 27-61-00-710-012

(10) Do this task: Spoiler Shutoff Valve Test, TASK 27-61-12-400-803.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-800-801

4. Apply Pressure to the Spoiler Hydraulic Systems A and B

(Figure 202)

A. General

(1) This procedure starts the spoiler hydraulic systems A and B and applies pressure to the spoilers.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Procedure

SUBTASK 27-61-00-860-009

CAUTION

DO NOT OPERATE SYSTEM A OR B HYDRAULIC PUMPS FOR MORE THAN TWO MINUTES WITHOUT FUEL IN THE FUEL TANKS. THE NO. 1 (FOR SYSTEM A) AND NO. 2 (FOR SYSTEM B) FUEL TANKS MUST HAVE A MINIMUM OF 250 GALLONS (1675 POUNDS/760 KILOGRAMS) OF FUEL IN THEM. IF THERE IS NOT SUFFICIENT FUEL IN THE FUEL TANKS, THE HYDRAULIC FLUID WILL BECOME TOO HOT.

(1) Make sure the No. 1 and No. 2 fuel tanks each have 250 gallons (1675 pounds/760 kilograms) of fuel in them.

SUBTASK 27-61-00-210-002

(2) Make sure the hydraulic reservoirs are full (TASK 12-12-00-610-801).

SUBTASK 27-61-00-860-010

(3) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-00-860-011

(4) Set the parking brake.

SUBTASK 27-61-00-480-002

WARNING

MAKE SURE THAT YOU INSTALL THE DOWNLOCKS ON THE NOSE AND MAIN LANDING GEAR. WITHOUT THE DOWNLOCKS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE THE EQUIPMENT.

(5) Install the ground lock assemblies in the nose gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-00-860-012

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize the spoiler hydraulic systems A and B:

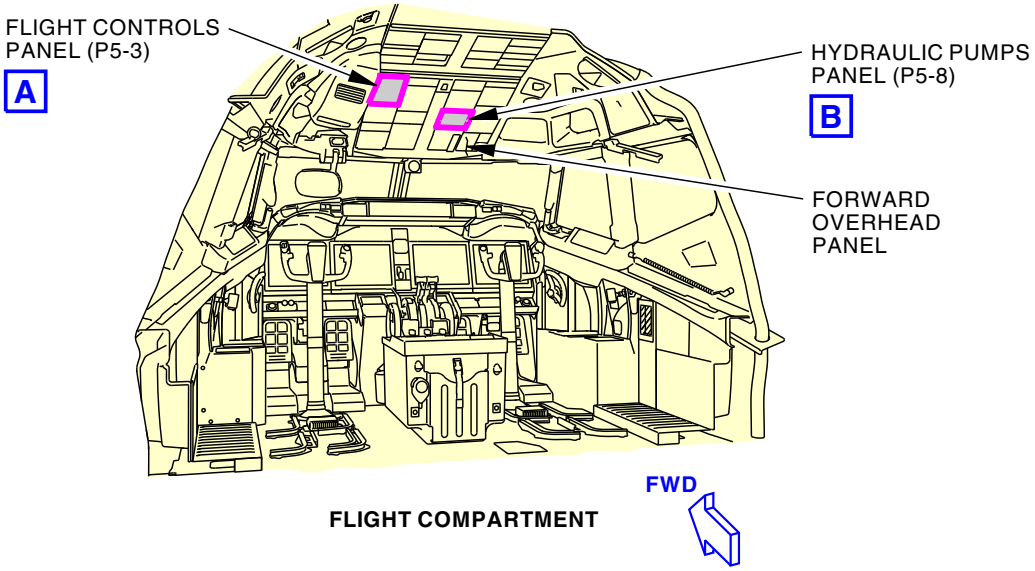
(a) Set the ELEC 2, HYD PUMPS A or ELEC 1, HYD PUMPS B switch on the forward overhead panel to the ON position.

(b) To pressurize the hydraulic system A, set the SPOILER A switch on the forward overhead panel to the ON position.

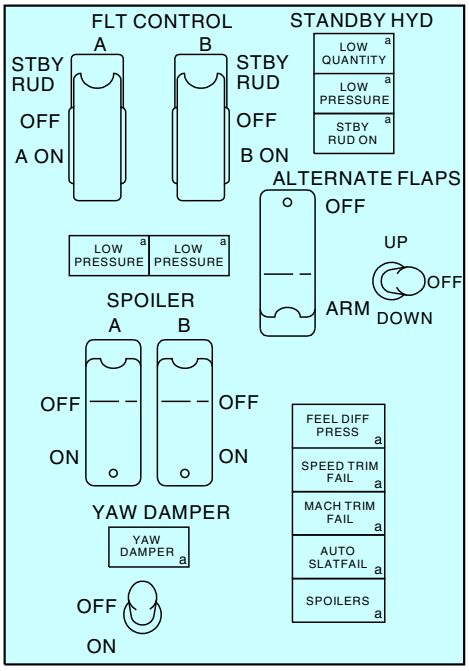
(c) To pressurize the hydraulic system B, set the SPOILER B switch on the forward overhead panel to the ON position.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

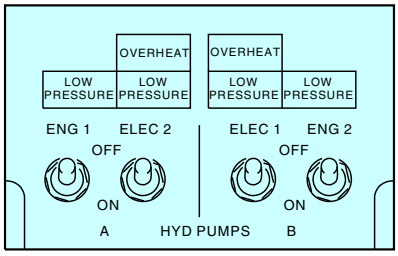


FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A



HYDRAULIC PUMPS PANEL (P5-8)

B

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Spoiler Power Control Switches
Figure 202/27-61-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-840-801

5. Shut Down the Spoiler Hydraulic Systems A and B

(Figure 202)

A. General

(1) This procedure shut downs the spoiler hydraulic systems A and B but does not remove the head pressure.

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

SUBTASK 27-61-00-860-013

(1) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-61-00-860-014

(2) Set the SPOILER A and B switches on the forward overhead panel to the OFF position.

——— END OF TASK ———

TASK 27-61-00-800-802

6. Depressurization of the Spoiler Hydraulic Systems A and B

(Figure 202, Figure 203)

A. General

(1) This procedure removes the head pressure from the spoiler hydraulic systems A and B and locks the system out.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

E. Depressurize the Spoiler Hydraulic Systems A and B

SUBTASK 27-61-00-860-015

(1) Put the SPOILER A and B switches on the forward overhead panel to the OFF position.

(a) Install the DO NOT OPERATE tag, STD-858.

SUBTASK 27-61-00-860-016

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-00-860-017

(3) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-61-00-870-002

(4) Operate the rudder pedals to decrease the remaining hydraulic system pressure.

SUBTASK 27-61-00-860-018

(5) If it is necessary to open a hydraulic line, you must release pressure from the reservoir for the applicable hydraulic system (Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802).

SUBTASK 27-61-00-480-003

(6) Install the flight controls hydraulic module locks (Figure 203):

(a) Disconnect the electrical connector from the spoiler shutoff valve at the flight controls hydraulic modules A and B.

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion (TASK 20-60-07-910-802).

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

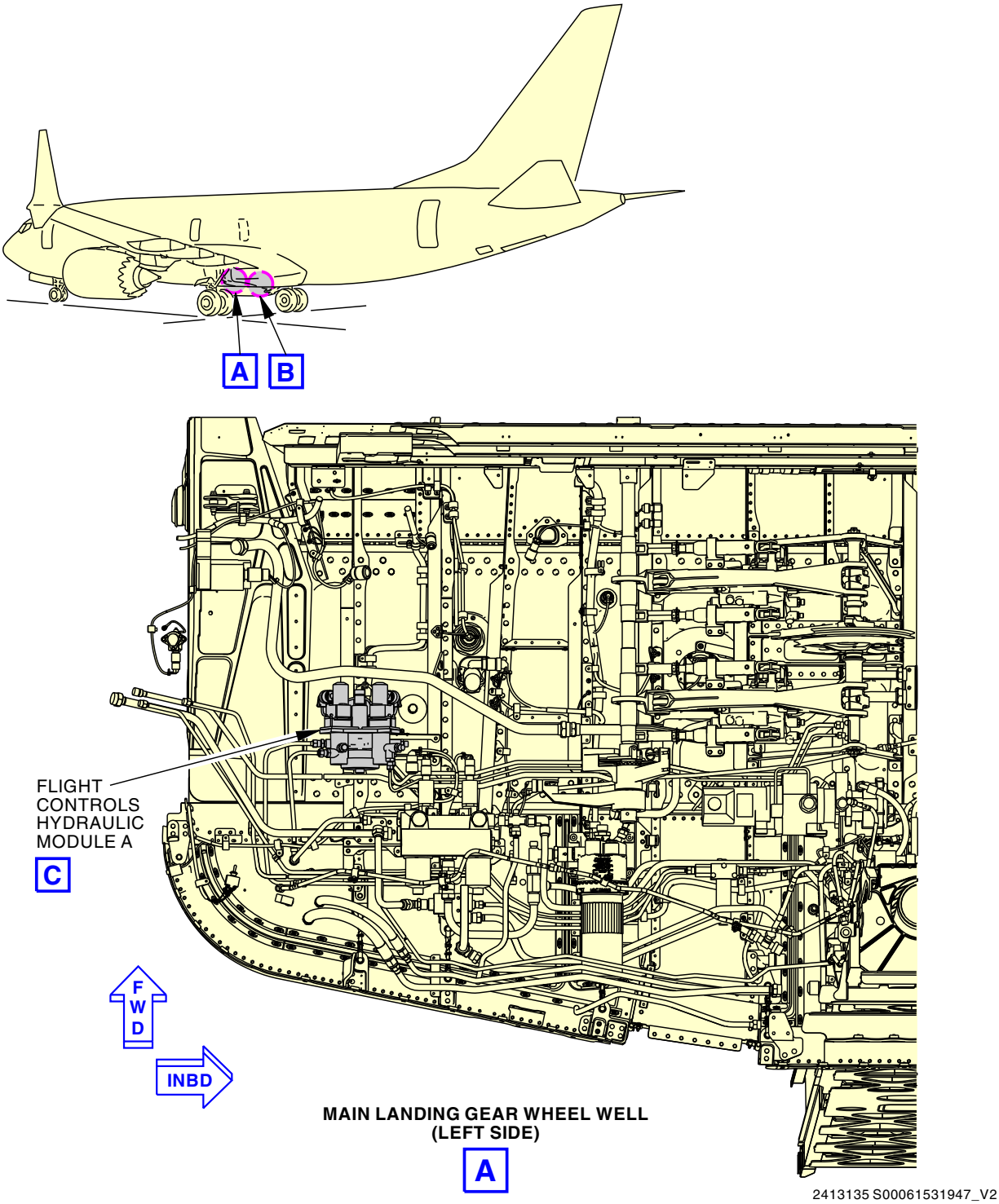
(c) Put the manual override lever at the two spoiler shutoff valves in the position 2 (OFF position).

(d) Install the lock, SPL-1675 on the two spoiler shutoff valves.

1) Install the detent pins.

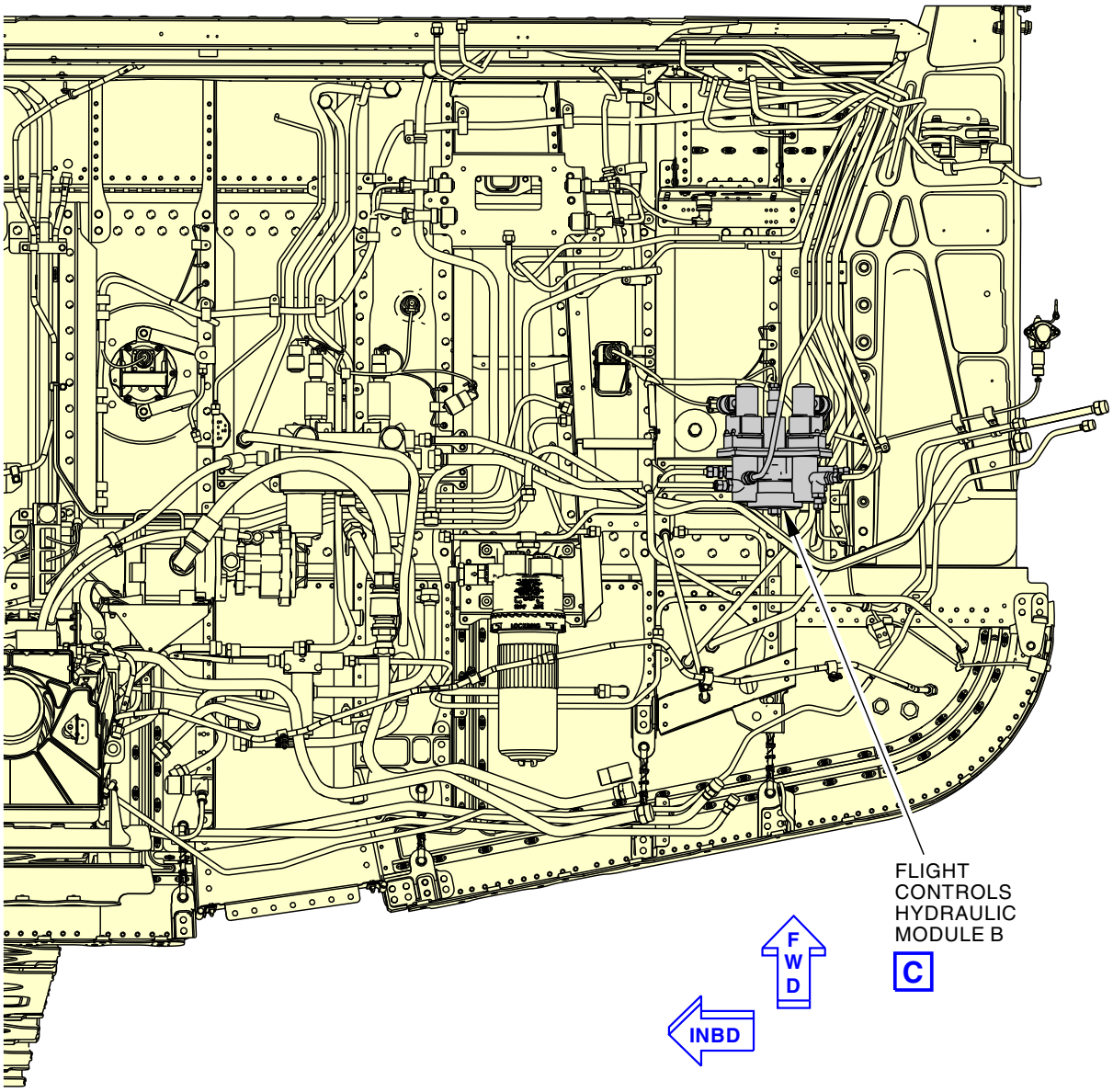
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



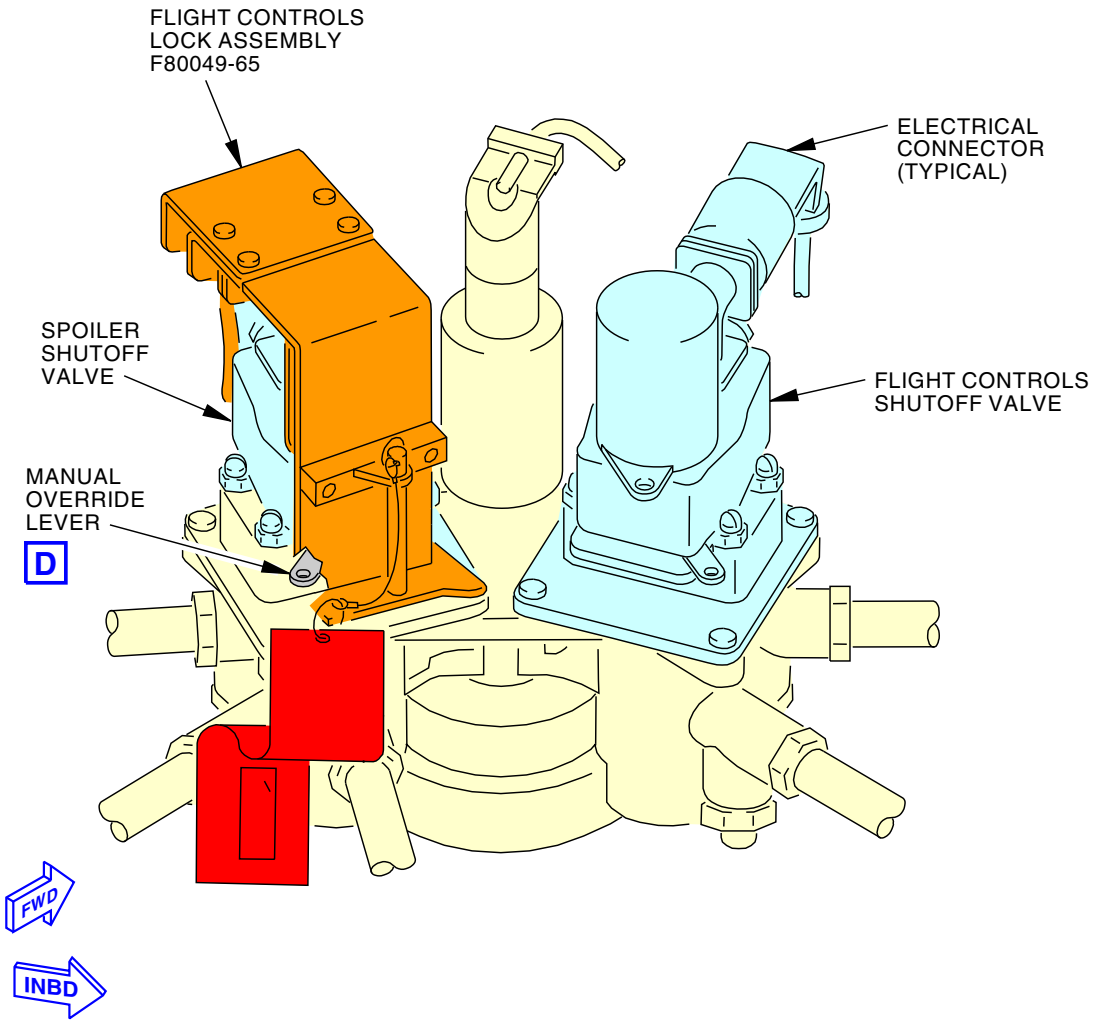
Spoiler Control System
Figure 203/27-61-00-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Spoiler Control System
Figure 203/27-61-00-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

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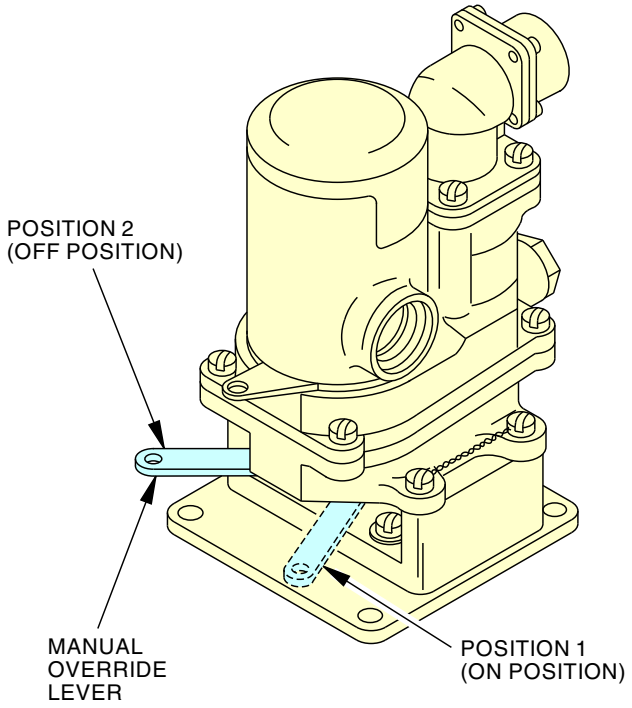
Spoiler Control System
Figure 203/27-61-00-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**MANUAL OVERRIDE LEVER POSITION
(EXAMPLE)**

D

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**Spoiler Control System
Figure 203/27-61-00-990-803 (Sheet 4 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-840-802

7. Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition

(Figure 202, Figure 203)

A. General

(1) This procedure unlocks the spoiler hydraulic systems A and B and applies the hydraulic pressure back to the system.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

F. Procedure

SUBTASK 27-61-00-080-004

(1) Remove the flight controls hydraulic module locks from the spoiler shutoff valves.

(a) Remove the detent pins.

(b) Remove the lock, SPL-1675 from the two spoiler shutoff valves.

(c) Put the manual override lever at the two spoiler shutoff valves in the position 1 (ON position).

(d) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(e) Connect the electrical connector to the spoiler shutoff valve at the spoiler hydraulic modules A and B. (Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-00-860-019

(2) Set the SPOILER A and B switches on the forward overhead panel to the ON position.

(a) Remove the DO NOT OPERATE tag, STD-858.

SUBTASK 27-61-00-860-020

(3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-00-860-021

(4) Pressurize the hydraulic reservoirs (Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- Spoiler Control System Operational Test

NOTE: This test can be used to quickly give the status of the spoiler control system. This test can be done without special tools or equipment

- Flight Spoiler Adjustment

NOTE: This task has the adjustment of the clearance between the flight spoilers and the flaps.

- Flight Spoiler System Test

NOTE: This is a test of the operation of the flight spoilers No. 2, 3, 4, 5, 8, 9, 10, and 11.

- Spoiler Manual Operation Test

B. The Fly-By-Wire spoiler control system gives lateral control and speed brake signals to the flight spoiler actuators through the Spoiler Control Electronics (SCE). The speed brake signals also control the ground spoilers through the Ground Spoiler Control Module (GSCM).

C. You must not use the decals installed on the aileron control wheels during the adjustment or the test of the spoiler control system. The decals are for flight crew use only.

TASK 27-61-00-710-801

2. Spoiler Control System Operational Test

A. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Prepare for the Test

SUBTASK 27-61-00-860-022

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

D. Spoiler Control System Operational Test

SUBTASK 27-61-00-020-001

(1) Turn the captain's aileron control wheel fully clockwise.

(a) Make sure that the No. 8, 9, 10, and 11 flight spoilers move to the up position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-00-020-002

(2) Turn the captain's aileron control wheel fully counterclockwise.

(a) Make sure that the No. 2, 3, 4 and 5 flight spoilers move to the up position.

SUBTASK 27-61-00-020-003

(3) Turn the captain's aileron control wheel to the neutral position.

(a) Make sure that the flight spoilers move to the retracted position.

SUBTASK 27-61-00-020-004

(4) Move the speed brake lever from the DOWN position to the UP position.

(a) Make sure that the flight spoilers and ground spoilers move to the UP position.

SUBTASK 27-61-00-020-005

(5) Move the speed brake lever from the UP position to the DOWN position.

(a) Make sure that the flight spoilers and ground spoilers move to the retracted position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-00-410-001

(1) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

——— END OF TASK ———

TASK 27-61-00-820-802

3. Flight Spoiler Adjustment

(Figure 501, Figure 502)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
B00062	Solvent - Acetone (99.5% Grade)	ASTM D 329 (Supersedes O-A-51)
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

E. Prepare for the Adjustment

SUBTASK 27-61-00-860-025

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

CAUTION DO NOT EXTEND OR RETRACT THE TRAILING EDGE FLAPS WITH THE SPOILERS IN THE DOWN POSITION BEFORE YOU ADJUST THE SPOILER ACTUATORS. DAMAGE MAY OCCUR TO THE TRAILING EDGE FLAPS OR SPOILERS.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-61-00-860-026

(2) Put the speedbrake lever in the UP position.

SUBTASK 27-61-00-860-027

(3) Make sure that the captain's and first officer's control wheels are in the neutral position.

(a) Do not touch or move the captain's and first officer's control wheels with the rig pins installed.

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SUBTASK 27-61-00-480-004

(4) With the flight spoilers [54] up and control wheels at neutral, make sure that you can easily install these rig pins from the rigging pin kit, SPL-1585 (Figure 501):

(a) A/S-4 in the aileron bus drums.

(b) A/S-15 in the aileron trim actuator.

SUBTASK 27-61-00-080-005

(5) Remove all rig pins.

SUBTASK 27-61-00-860-028

(6) Make sure that the trailing edge flaps are in the retracted position.

(a) If they are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-00-860-029

(7) Move the speed brake lever to the DOWN position.

(a) Make sure that the flight spoilers [54] do not run into the flaps.

SUBTASK 27-61-00-040-001

(8) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

SUBTASK 27-61-00-040-002

(9) If the hydraulic power is not available, do these steps to move the flight spoiler Power Control Unit (PCU)s manually:

(a) Push down gently on the flight spoiler [54], to bottom out the flight spoiler PCU.

1) Make sure that apply even pressure along the ribs of the flight spoiler [54] to prevent damage to the spoiler panel.

F. Flight Spoiler Adjustment

SUBTASK 27-61-00-860-030

(1) Measure the clearance (Dimension X) between the trailing edge of the spoiler panels and flaps near the centerline of the flight spoiler actuators [53].

(a) Make sure that the clearance (Dimension X) between the flight spoilers [54] and flaps are within the limits in Table 501:

Table 501/27-61-00-993-808

REDUCED SPOILERS GAPS		
DIMENSION X (Figure 502)		
SPOILERS	MINIMUM	MAXIMUM
2, 11	0.070 in. (1.78 mm)	0.130 in. (3.30 mm)
3, 10	0.080 in. (2.03 mm)	0.140 in. (3.56 mm)
SIA 003		
3	0.080 in. (2.03 mm)	0.142 in. (3.61 mm)
SIA 004, 005		
3	0.080 in. (2.03 mm)	0.260 in. (6.60 mm)

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SIA 004, 005 (Continued)

Table 501/27-61-00-993-808 (Continued)

REDUCED SPOILERS GAPS		
SIA ALL		
4, 9	0.030 in. (0.76 mm)	0.090 in. (2.29 mm)
5, 8	0.030 in. (0.76 mm)	0.090 in. (2.29 mm)

NOTE: Temperature differences between the upper and lower surfaces of the wing can have a significant effect on the spoiler gaps. If the upper surface is warmer, as is often the case when the airplane is sitting in the sun, the gaps will become smaller.

(b) Measure the clearance aft of the actuator rod end [56].

NOTE: A larger or smaller clearance is permitted at other locations along the flight spoiler [54].

SUBTASK 27-61-00-860-031

(2) If the clearances (Dimension X) between the spoiler panels and flaps are not in the limits, adjust the clearance:

(a) Make a record of the clearance.

(b) Lift the flight spoiler [54] and extend the flaps to get access to the flight spoiler actuator [53]:

1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

3) Move the speed brake lever to the UP position to lift the flight spoilers [54].

4) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

5) Move the speed brake lever to the DOWN position.

NOTE: This will release the hydraulic pressure from the spoiler actuators.

6) Move the speed brake lever to the UP position.

NOTE: The speedbrake lever is set to the UP position as a safety precaution.

(c) Loosen the check nut [55] on the actuator rod end [56].

(d) Turn the piston rod on the flight spoiler actuator [53] to adjust the clearance between the flight spoilers [54] and flaps.

NOTE: Turning the piston rod by one serration of the locking device will change the spoiler gap by approximately 0.006 in. (0.152 mm).

(e) Tighten the check nut [55] to 100 in-lb (11.3 N·m) - 200 in-lb (22.6 N·m) temporarily.

(f) Do a check of the adjustment:

1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

3) Slowly move the speed brake lever to the DOWN position.

4) Make sure the clearances between the flight spoilers [54] and flaps are within the tolerances.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If the clearances do not meet the values shown in Table 501, repeat the adjustment steps above.

5) Turn the control wheel fully in the clockwise direction.

a) Make sure that flight spoilers [54] No. 2, 3, 4, and 5 do not move down.

b) If the spoilers move down, go back to the start of the task.

NOTE: You do not need to do a check of the fit of the rig pins a second time.

6) Turn the control wheel back to neutral to retract the flight spoilers [54].

7) Turn the control wheel fully in the counterclockwise direction.

a) Make sure that flight spoilers [54] No. 8, 9, 10, and 11 do not move down.

b) If the flight spoilers [54] move down, go back to the start of the task.

NOTE: You do not need to do a check of the fit of the rig pins a second time.

(g) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

(h) Move the speed brake lever to the full up position to lift the flight spoilers [54].

(i) Clean all grease from the piston rod and actuator rod end [56] threads with solvent, B00062, or solvent, B00184.

(j) Apply a layer of the corrosion preventive D5026NS or ZC-026 compound, G50171, to the threads of the actuator rod end [56].

(k) Tighten the check nut [55] to 275 ±25 in-lb (31.1 ±2.9 N·m) .

(l) Install the MS20995NC32 lockwire, G01912, on the check nut [55] with double twist method (TASK 20-10-44-400-801).

(m) Fully seal the check nut [55] with sealant, A00247.

SUBTASK 27-61-00-820-006

(3) Do this task: Flight Spoiler System Test, TASK 27-61-00-730-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-00-860-032

(1) If it is necessary, move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-61-00-860-033

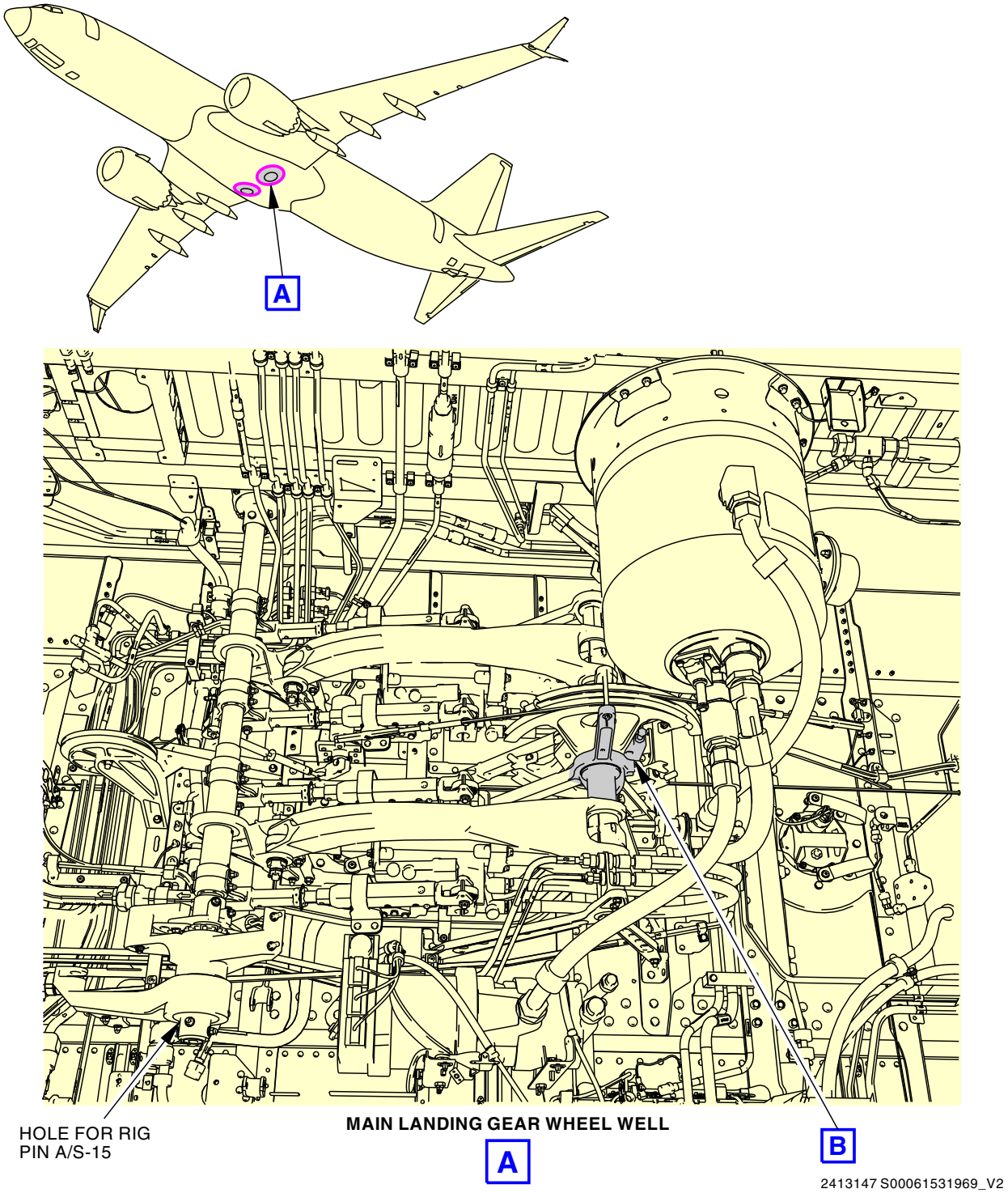
(2) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-00-860-035

(3) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

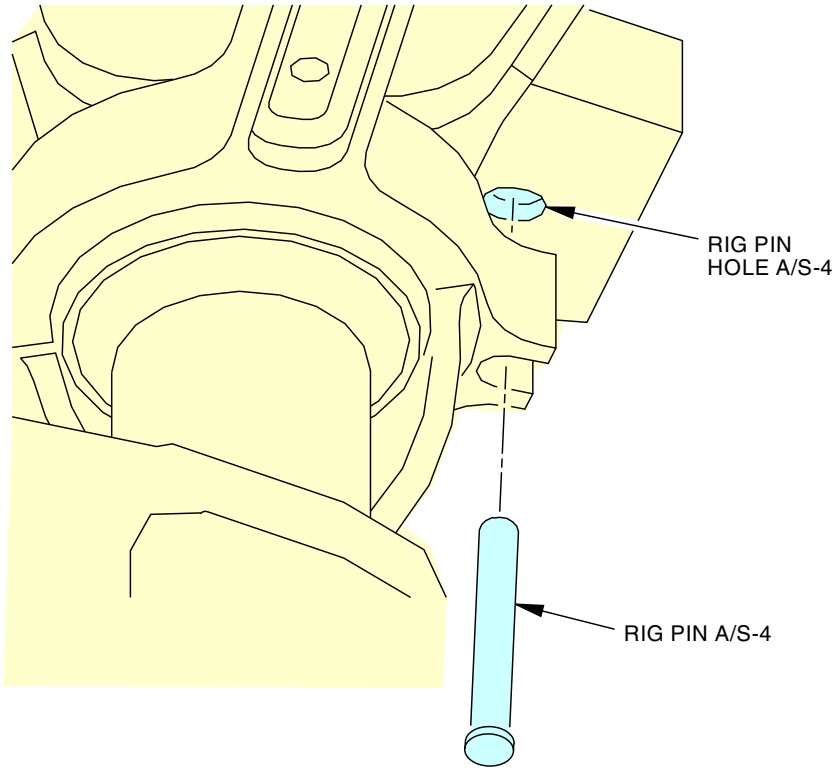
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Adjustment - Rig Pin Installation
Figure 501/27-61-00-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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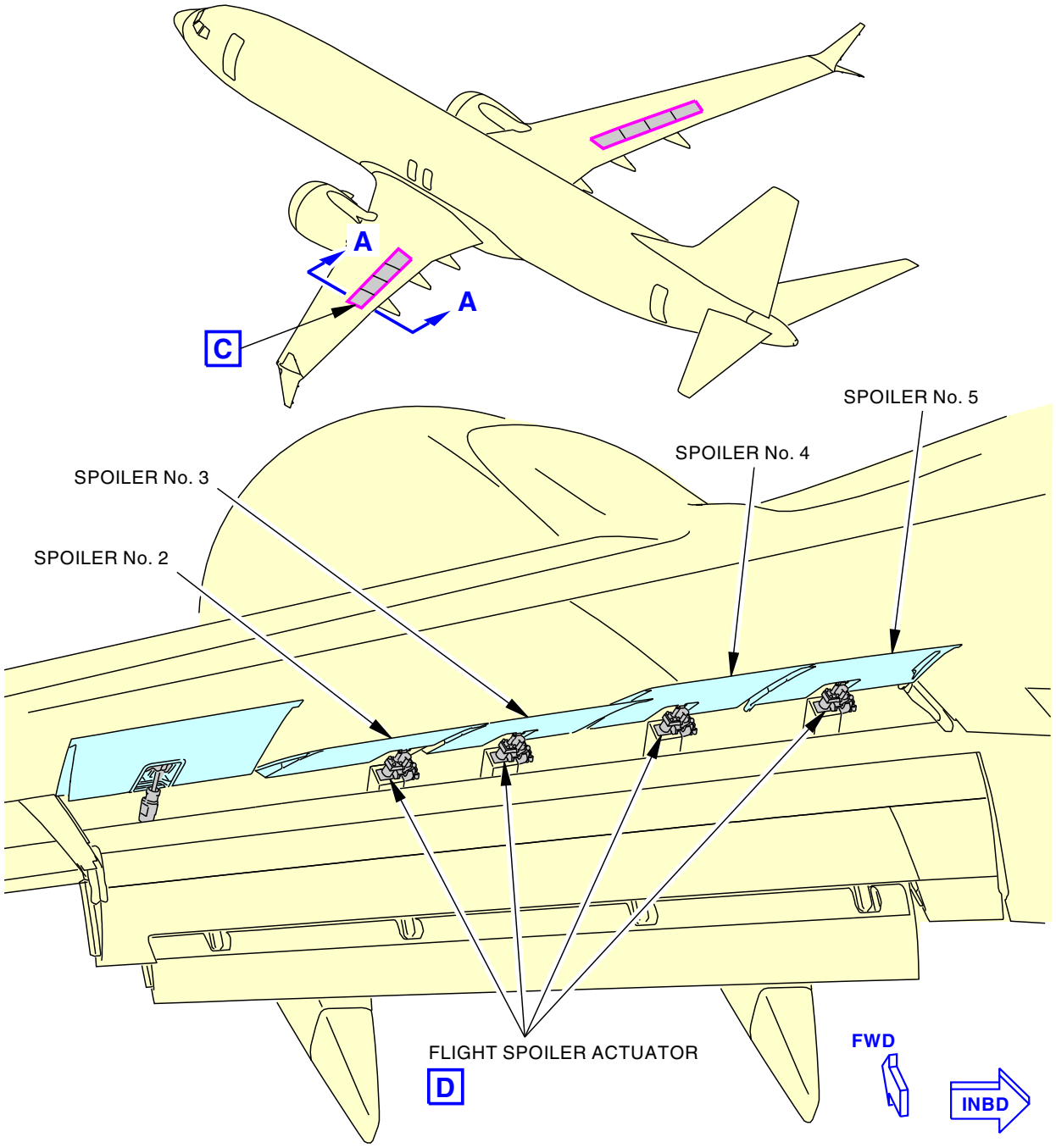
Flight Spoiler Adjustment - Rig Pin Installation
Figure 501/27-61-00-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



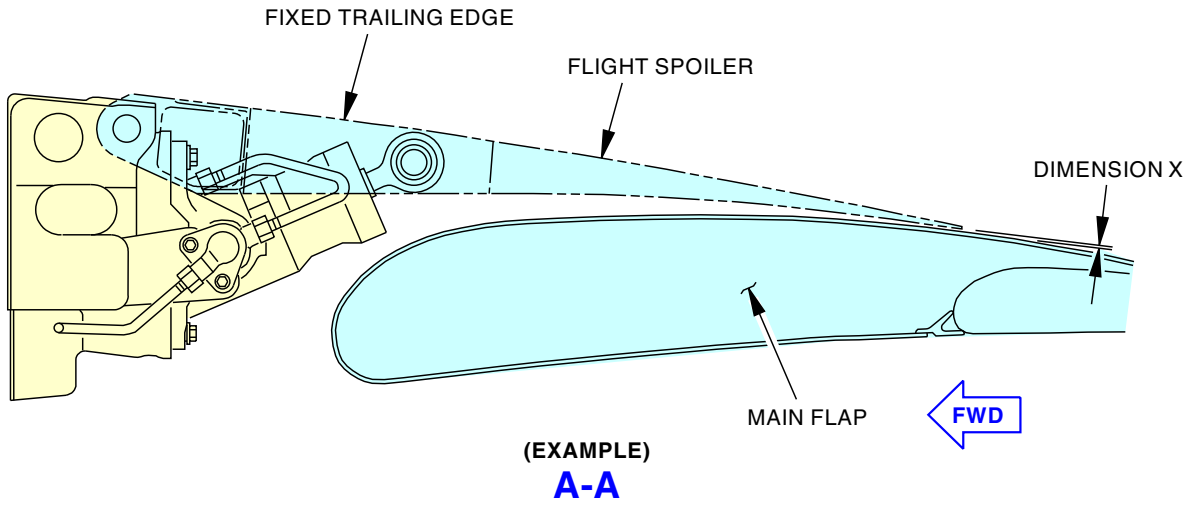
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

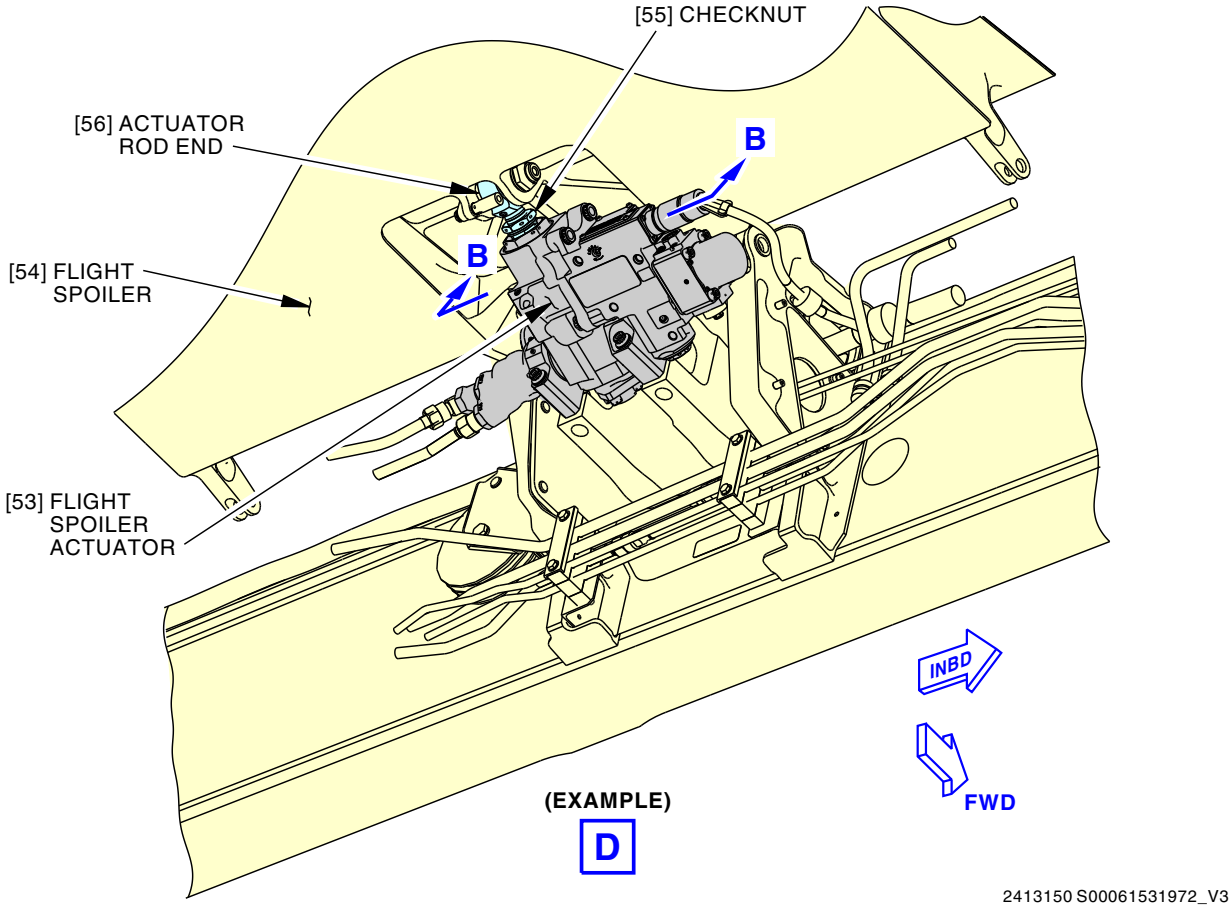
C

2413149 S00061531971_V2

Flight Spoiler Adjustment
Figure 502/27-61-00-990-812 (Sheet 1 of 3)

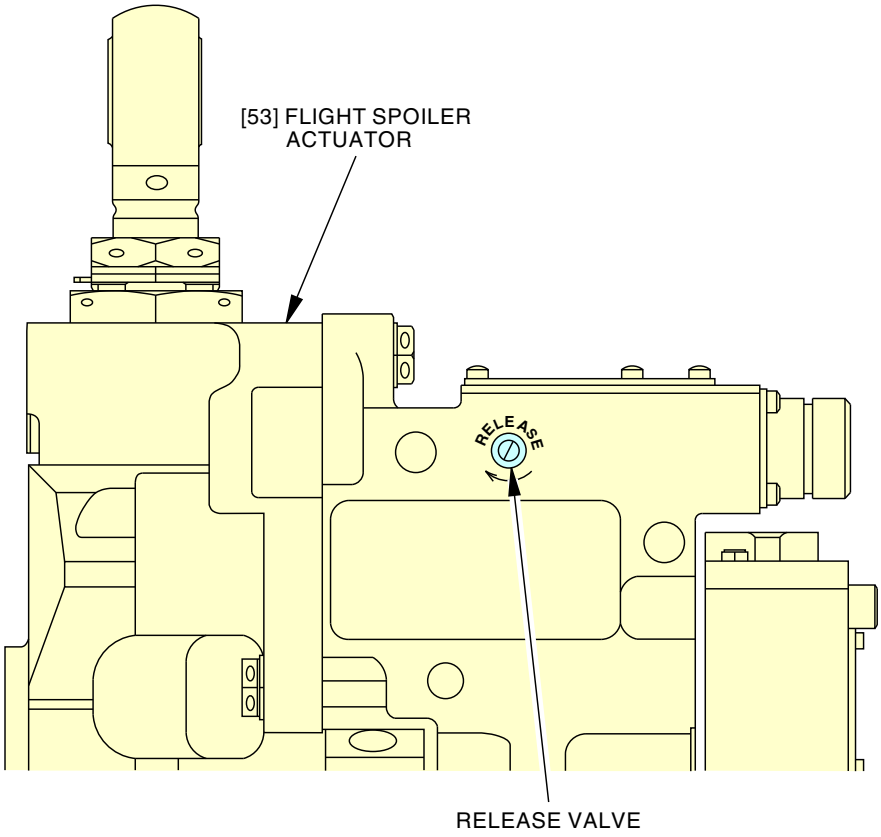
ECCN 9E991 BOEING PROPRIETARY - See title page for details





Flight Spoiler Adjustment
Figure 502/27-61-00-990-812 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



B-B

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Flight Spoiler Adjustment
Figure 502/27-61-00-990-812 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-730-801

4. Flight Spoiler System Test

A. References

Reference	Title
27-11-00-990-803	Figure: Rig Pin Location (P/B 501)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-45-730-805	Flight Spoiler Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-1670	Mount - Control Wheel Protractor Part #: F72790 Supplier: 81205
SPL-1680	Protractor Assembly - Control Column Part #: A27021-29 Supplier: 81205 Part #: G76002-42 Supplier: 81205 Opt Part #: 4MIT65B80307-1 Supplier: 81205 Opt Part #: F52485-500 Supplier: 81205 Opt Part #: G76002-19 Supplier: 81205 Opt Part #: G76002-37 Supplier: 81205

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Test

NOTE: This test may be done for all actuators or for one or more symmetrical pairs (2 & 11, 3 & 10, 4 & 9, or 5 & 8). If a single actuator or panel was replaced, do the test for both actuators in the symmetrical pair. It is not necessary to make measurements or observations for the actuators not being tested.

SUBTASK 27-61-00-480-005

(1) Make sure that the rig pin A/S-15 from the rigging pin kit, SPL-1585, fits freely in the aileron trim actuator located in the Main Landing Gear wheel well (Figure 27-11-00-990-803).

(a) Remove the rig pin A/S-15 from the aileron trim actuator.

SUBTASK 27-61-00-730-001

(2) Do this task: Flight Spoiler Test, TASK 27-61-45-730-805.

SUBTASK 27-61-00-860-037

(3) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-00-860-038

(5) Make sure that the speedbrake lever is in the DOWN position.

SUBTASK 27-61-00-020-015

(6) Remove the map holder assembly from the captain's control wheel.

SUBTASK 27-61-00-820-007

(7) Install the mount, SPL-1670, and the protractor, SPL-1680, on the captain's aileron control wheel.

NOTE: As an alternative to the protractor, SPL-1680, the CAPT CTRL WHL or SCE FO CTRL WHL can be used as readings for the Control Wheel position throughout this test. They are located on the FLIGHT CONTROLS page from the MAINT DATA PGS on the forward display.

SUBTASK 27-61-00-860-039

(8) Adjust the protractor, SPL-1680, to zero.

(a) In addition to the protractor, SPL-1680, use the readings of the FLT SPLRS on the FLIGHT CONTROLS page on the forward display In the subsequent test.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-00-480-006

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-61-00-730-002

(10) Cycle the Captain's control wheel through its full travel at least six times.

(a) Center the Captain's control wheel.

SUBTASK 27-61-00-820-008

(11) Install the protractor, COM-1691, on the flight spoilers 2, 3, 4, 5, 8, 9, 10 and 11.

NOTE: This test may be completed with multiple protractors used to measure the spoiler panel movement. If multiple protractors are used for the spoiler panels, the "zero" measurement must be verified with the spoiler panels DOWN before each measurement.

SUBTASK 27-61-00-820-009

(12) Adjust the protractors, COM-1691, to zero.

E. Flight Spoiler System Test

SUBTASK 27-61-00-820-010

(1) Turn the control wheel to 87 (+10, -1) degrees in the counterclockwise direction and hold.

(a) Make sure that the spoilers No. 4 and No. 5 are up 35-39 degrees.

(b) Make sure that spoiler No. 3 is up 30-34 degrees.

(c) Make sure that the spoiler No. 2 is up 30-34 degrees.

(d) Make sure that the spoilers No. 8, No. 9, No. 10 and No. 11 are in the fully down position.

(e) If the spoiler panel is not within the spoiler position limits stated, adjust the gap for spoiler No. 2, 3, 4 and 5 (TASK 27-61-00-820-802).

SUBTASK 27-61-00-860-040

(2) Do these steps to center the Captain's control wheel:

(a) Turn the Captain's control wheel in the counterclockwise direction to more than 87 degrees.

(b) Slowly turn the Captain's control wheel in the clockwise direction until it is in the neutral or zero position.

(c) Make sure that all flight spoilers are down.

(d) Shake-out and center the Captain's control wheel.

SUBTASK 27-61-00-820-022

(3) Turn the control wheel to 87 (+10, -1) degrees in the clockwise direction and hold.

(a) Make sure that the spoilers No. 8 and No. 9 are up 35-39 degrees.

(b) Make sure that spoiler No. 10 is up 30-34 degrees.

(c) Make sure that the spoiler No. 11 is up 30-34 degrees.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Make sure that the spoilers No. 2, No. 3, No. 4, and No. 5 are in the fully down position.

(e) If the spoiler panel is not within the spoiler position limits stated, adjust the gap for spoiler No. 2, 3, 4 and 5 (Flight Spoiler Adjustment, TASK 27-61-00-820-802).

SUBTASK 27-61-00-820-023

(4) Do these steps to center the Captain's control wheel:

(a) Turn the Captain's control wheel in the clockwise direction to more than 87 degrees.

(b) Slowly turn the Captain's control wheel in the counterclockwise direction until it is in the neutral or zero position.

(c) Make sure that all flight spoilers are down.

(d) Shake-out and center the Captain's control wheel.

SUBTASK 27-61-00-730-003

(5) Do these steps to do a check of the spoiler operation with one system hydraulic power:

(a) Put the SPOILER A switch on the forward overhead panel to the OFF position.

NOTE: This will turn off the pressure from Hydraulic System A.

(b) Move the speedbrake lever to the FULL UP position.

(c) Make sure that the flight spoiler panels No. 3, 5, 8, and 10 are FULL UP.

NOTE: If the Hydraulic System A is still pressurized, the ground spoiler panels No. 1, 6, 7, and 12 will also be in the FULL UP position.

(d) Make sure that the spoiler panels No. 2, 4, 9, and 11 are in the FULL DOWN position.

(e) Move the speedbrake lever to the DOWN position.

(f) On the forward overhead panel, put the SPOILER A switch ON.

(g) On the forward overhead panel, put the SPOILER B switch to OFF.

(h) Move the speedbrake lever to the FULL UP position.

(i) Make sure that the flight spoiler panels No. 2, 4, 9, and 11 are in the FULL UP position.

NOTE: If the Hydraulic System A is still pressurized, the ground spoiler panels No. 1, 6, 7, and 12 will also be in the FULL UP position.

(j) Make sure that the flight spoiler panels No. 3, 5, 8, and 10 are FULL DOWN.

(k) Move the speedbrake lever to the DOWN position.

(l) Make sure that all spoiler panels are in the FULL DOWN position.

(m) On the forward overhead panel, put the SPOILER B switch to ON.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-00-860-041

(1) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-00-420-004

(2) Install the map holder assembly to the captain's control wheel.

SUBTASK 27-61-00-020-008

(3) Remove the mount, SPL-1670, and the protractor, SPL-1680, from the captain's aileron control wheel.

SUBTASK 27-61-00-020-009

(4) Remove the protractor, COM-1691, from the spoilers No. 2, 3, 4, 5, 8, 9, 10 and 11.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-00-000-801

5. Spoiler Manual Operation Test

A. References

Reference	Title
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

D. Prepare for the Test

SUBTASK 27-61-00-860-049

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-00-860-051

(2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-00-860-052

(4) Move the speed brake lever to the DOWN position.

SUBTASK 27-61-00-860-053

(5) Put the ailerons in the neutral position.

SUBTASK 27-61-00-480-011

(6) Install the protractor, COM-1691, on spoilers 1, 6, 7 and 12.

SUBTASK 27-61-00-820-013

(7) Adjust the protractor, COM-1691, to zero.

SUBTASK 27-61-00-860-054

(8) Make sure spoilers No. 1, 6, 7, and 12 are in the fully down position.

E. Spoiler Manual Operation Test

SUBTASK 27-61-00-020-010

(1) Move the speed brake lever aft until spoilers No. 1, 6, 7 and 12 move to the up position.

(a) Make sure the speed lever is 29 +/-2 degrees (2.78 in. (70.61 mm) +/- 0.20 in. (5.08 mm)), measured along the indicator surface aft of the DOWN position.

SUBTASK 27-61-00-020-011

(2) Move the speed brake lever forward until spoilers No. 1, 6, 7 and 12 retract.

(a) Make sure the speed lever is 21 +/-4 degrees (2 in. (50.8 mm) +/- 0.4 in. (10.2 mm)), measured along the indicator surface aft of the DOWN position.

SUBTASK 27-61-00-710-001

(3) Move the speed brake control lever to the DOWN and LOCKED position.

(a) Adjust the protractor, COM-1691, to zero degrees on the spoiler No. 1.

1) Note the position of the protractor on the spoiler panel.

NOTE: The protractor will need to be in the same location when you measure the spoiler panel in the UP position.

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(b) Do not adjust the protractor, COM-1691, measure and record the DOWN position of the spoilers No. 6, 7 and 12.

1) Record the position of the protractor on each spoiler panel.

NOTE: The protractor will need to be in the same location when you measure the spoiler panel in the UP position.

2) Record the +/- value measurement on the protractor, COM-1691.

NOTE: This value will be used to calculate total spoiler panel travel.

SUBTASK 27-61-00-020-012

(4) Move the speed brake control lever to the UP position.

(a) Do not adjust the protractor, COM-1691, measure and record the UP position of the spoilers No. 1, 6, 7 and 12.

1) Place the protractor, COM-1691, on the same location that was used when the DOWN position was measured.

2) Record the +/- value measurement on the protractor, COM-1691.

NOTE: This value will be used to calculate total spoiler panel travel.

(b) To calculate the total travel for spoiler panels No. 1, 6, 7 and 12, do this step:

1) Subtract the DOWN position measurement from the FULL UP measurement.

(c) Make sure that the spoiler No. 1 is up 60 +/-2 degrees.

(d) Make sure that the spoiler No. 6 is up 60 +/-2 degrees.

(e) Make sure that the spoiler No. 7 is up 60 +/-2 degrees.

(f) Make sure that the spoiler No. 12 is up 60 +/-2 degrees.

(g) Make sure that there is no more than 2 degrees difference between spoiler panel No. 1 and 12.

(h) Make sure that there is no more than 2 degrees difference between spoiler panel No. 6 and 7.

(i) Put the speedbrake lever to the DOWN and LOCKED position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-00-860-055

(1) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-00-080-007

(2) Remove the protractor, COM-1691, from the spoilers No. 1, 6, 7, and 12.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT SPOILER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight spoilers

(2) An installation of the flight spoilers.

TASK 27-61-11-000-801

2. Flight Spoiler Removal

(Figure 401)

A. General

(1) This task for the left wing spoilers 2, 3, 4, and 5 is applicable to the right wing spoilers 8, 9, 10, and 11.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-51-000-801	Flight Spoiler Actuator - Removal (P/B 401)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-61-11-860-002

WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF CONTROL SURFACES, CABLES, AND LANDING GEAR AREAS. PRESSURIZATION OF A HYDRAULIC SYSTEM CAN MOVE CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS. MOVEMENT OF CONTROL SURFACES, CABLES, LANDING GEAR, AND LANDING GEAR DOORS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-61-11-860-003

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-61-11-860-004

(3) Put the speed brake lever in the UP position to lift the spoilers.

SUBTASK 27-61-11-480-001

(4) Install the actuator lock set, SPL-14632, on the actuator for the applicable flight spoiler.

SUBTASK 27-61-11-860-005

(5) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

F. Flight Spoiler Removal

SUBTASK 27-61-11-020-001

(1) For the flight spoiler no. 2 [1], do these steps:

(a) Remove the nut [7] and washers [6] to disconnect the bonding jumper [14] from the structure.

1) Discard the nut [7] and washers [6].

(b) Remove the nut [23] and washer [22] to disconnect the bonding jumper [21] from the structure.

1) Discard the nut [23] and washer [22].

(c) Disconnect the spoiler actuator [5] from the spoiler no. 2 [1] (TASK 27-61-51-000-801).

(d) Remove the cotter pin [13], nut [12], washer [11], bushing [10], washer [9], and bolt [8].

(e) Remove the cotter pin [29], nut [28], washer [27], bushings [26], washer [25], and bolt [24].

(f) Remove the cotter pin [20], nut [19], washer [18], bushing [17], washer [16], and bolt [15].

(g) Remove the flight spoiler no. 2 [1] from the airplane.

SUBTASK 27-61-11-020-002

(2) For the flight spoiler no. 3 [2], spoiler no. 4 [3], or spoiler no. 5 [4], do these steps:

(a) Remove the nut [32] and washers [31] to disconnect the bonding jumper [39] from the structure.

1) Discard the nut [32] and washers [31].

(b) Remove the nut [60] and washers [59] to disconnect the bonding jumper [52] from the structure.

1) Discard the nut [60] and washers [59].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Disconnect the spoiler actuator [30] from the spoiler no. 3 [2], spoiler no. 4 [3], or spoiler no. 5 [4] (TASK 27-61-51-000-801).

(d) Remove the cotter pin [38], nut [37], washer [36], bushing [35], washer [34], and bolt [33].

(e) Remove the cotter pin [58], nut [57], washer [56], bushing [55], washer [54], and bolt [53].

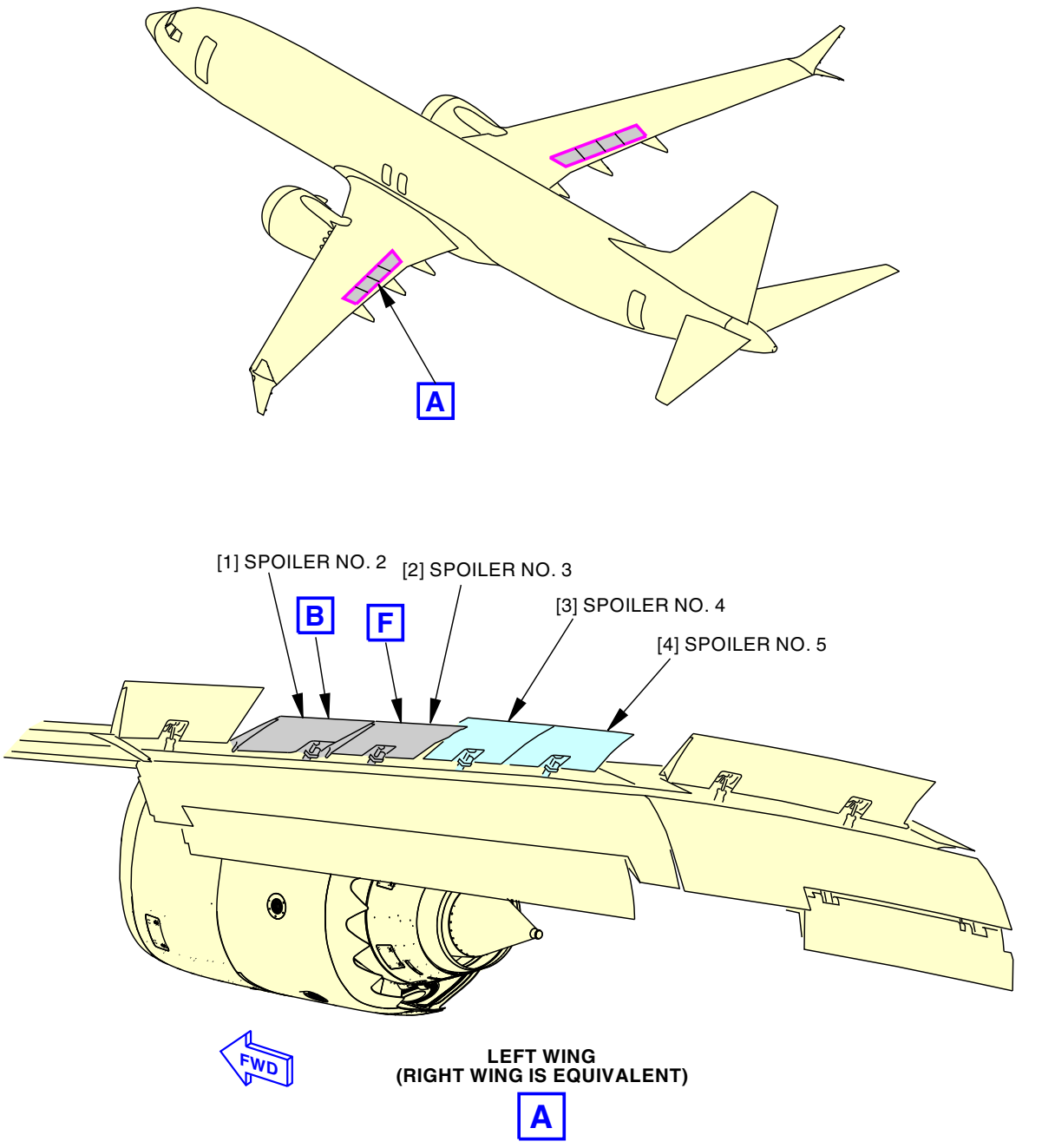
(f) Remove the cotter pin [45], nut [44], washer [43], bushing [42], washer [41], and bolt [40].

(g) Remove the cotter pin [51], nut [50], washer [49], bushings [48], washer [47], and bolt [46].

(h) Remove the flight spoiler no. 3 [2], spoiler no. 4 [3], or spoiler no. 5 [4] from the airplane.

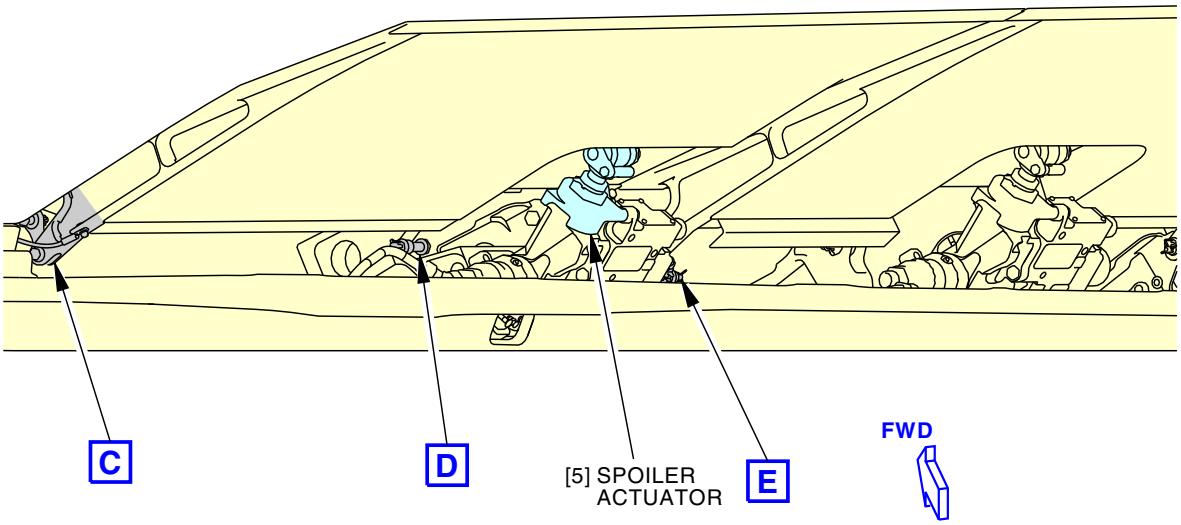
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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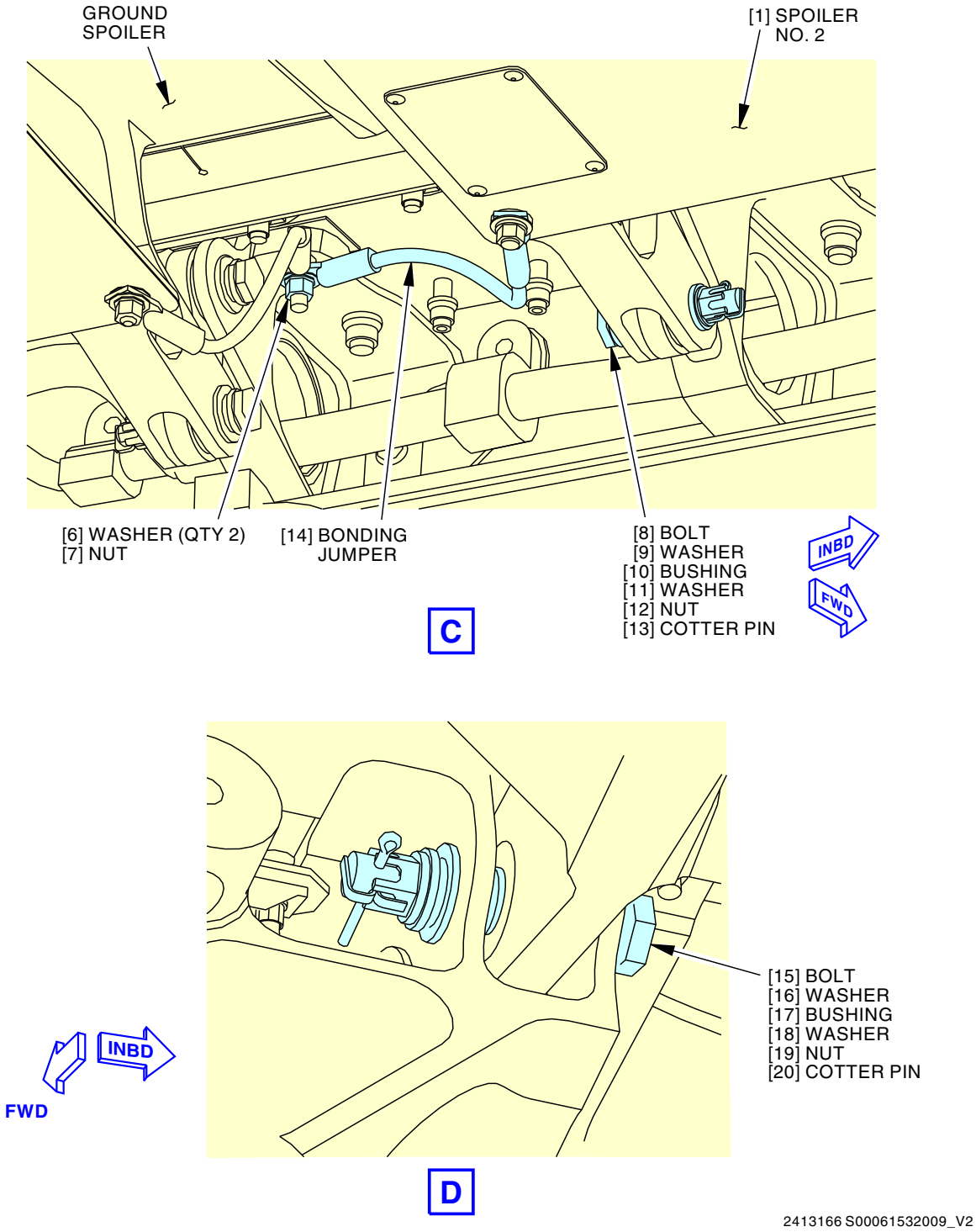
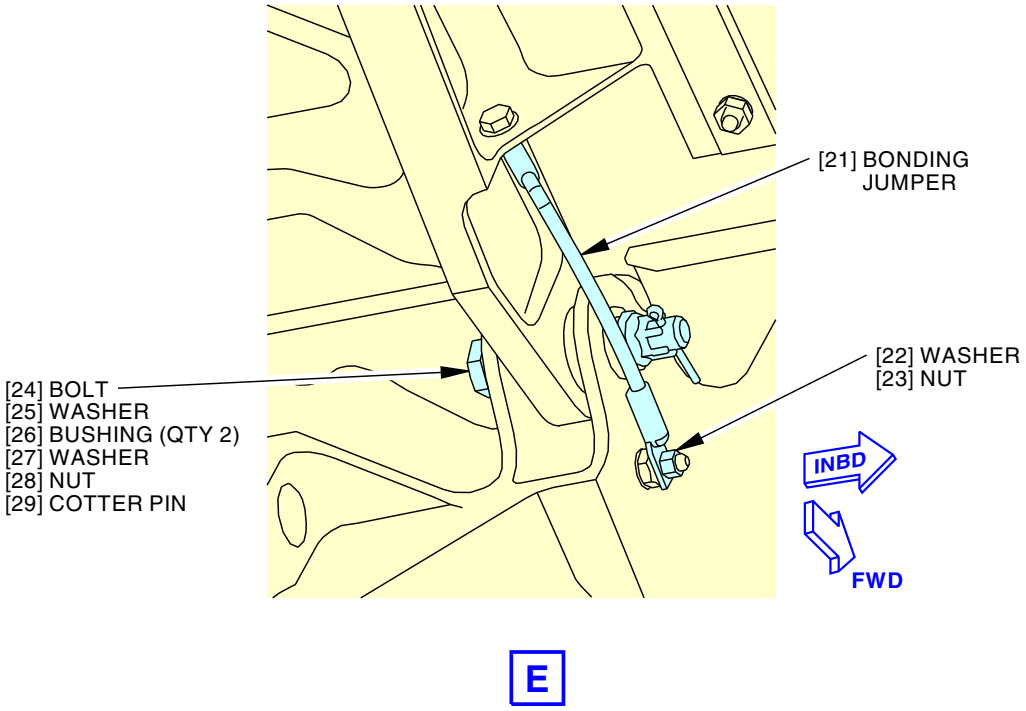
Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 3 of 7)

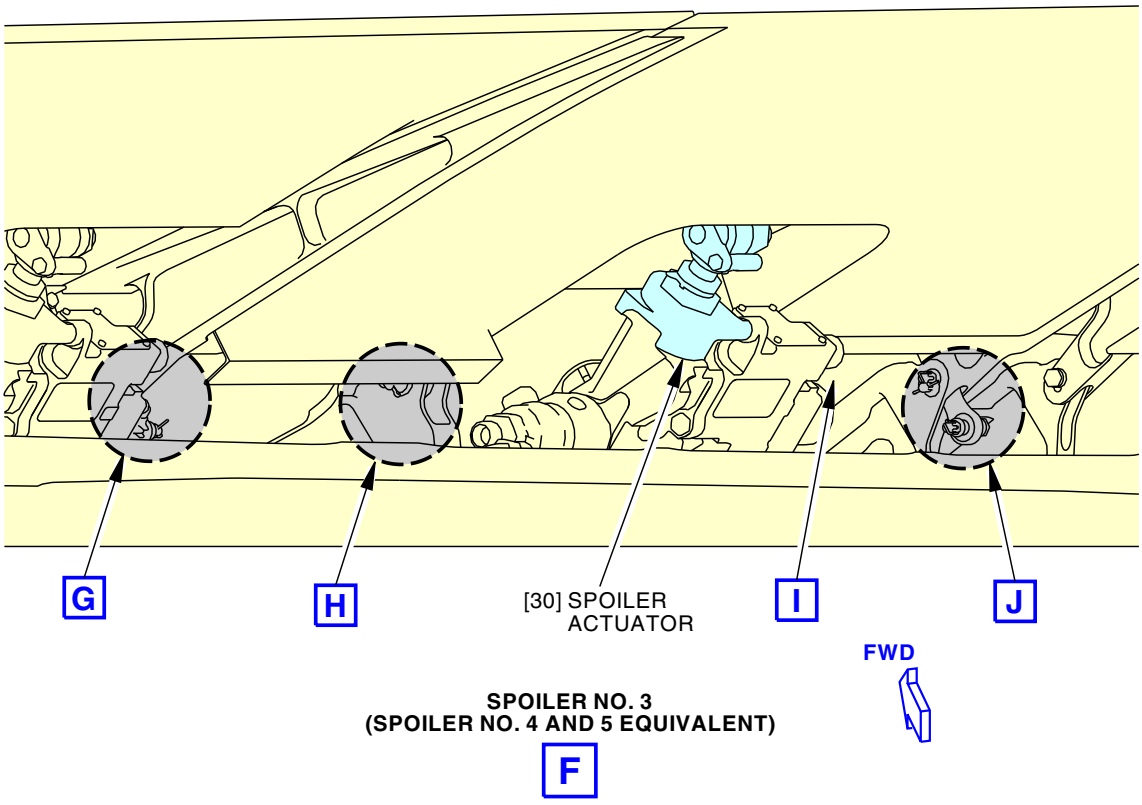
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413167 S00061532010_V4

Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 4 of 7)

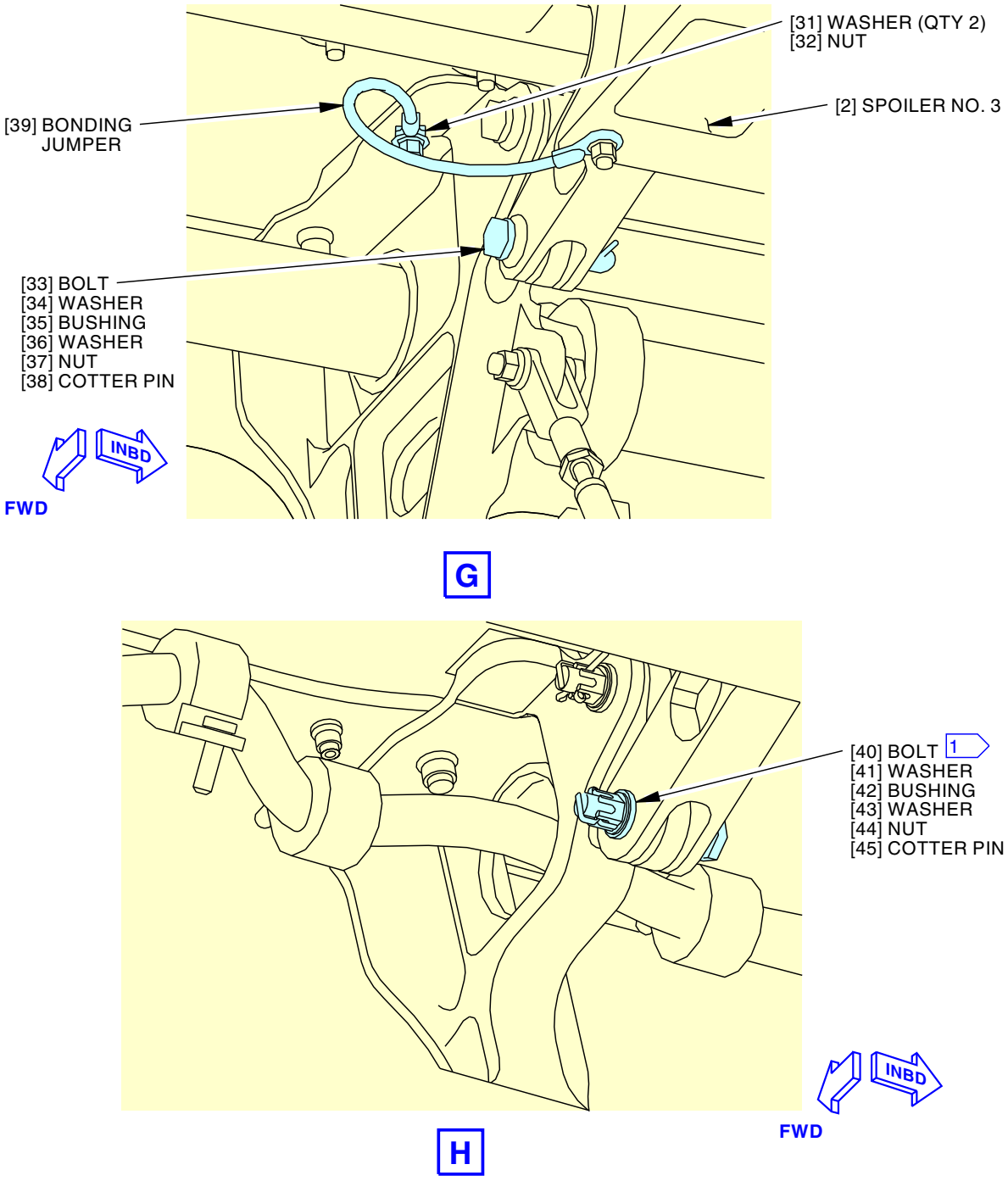
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413168 S00061532011_V2

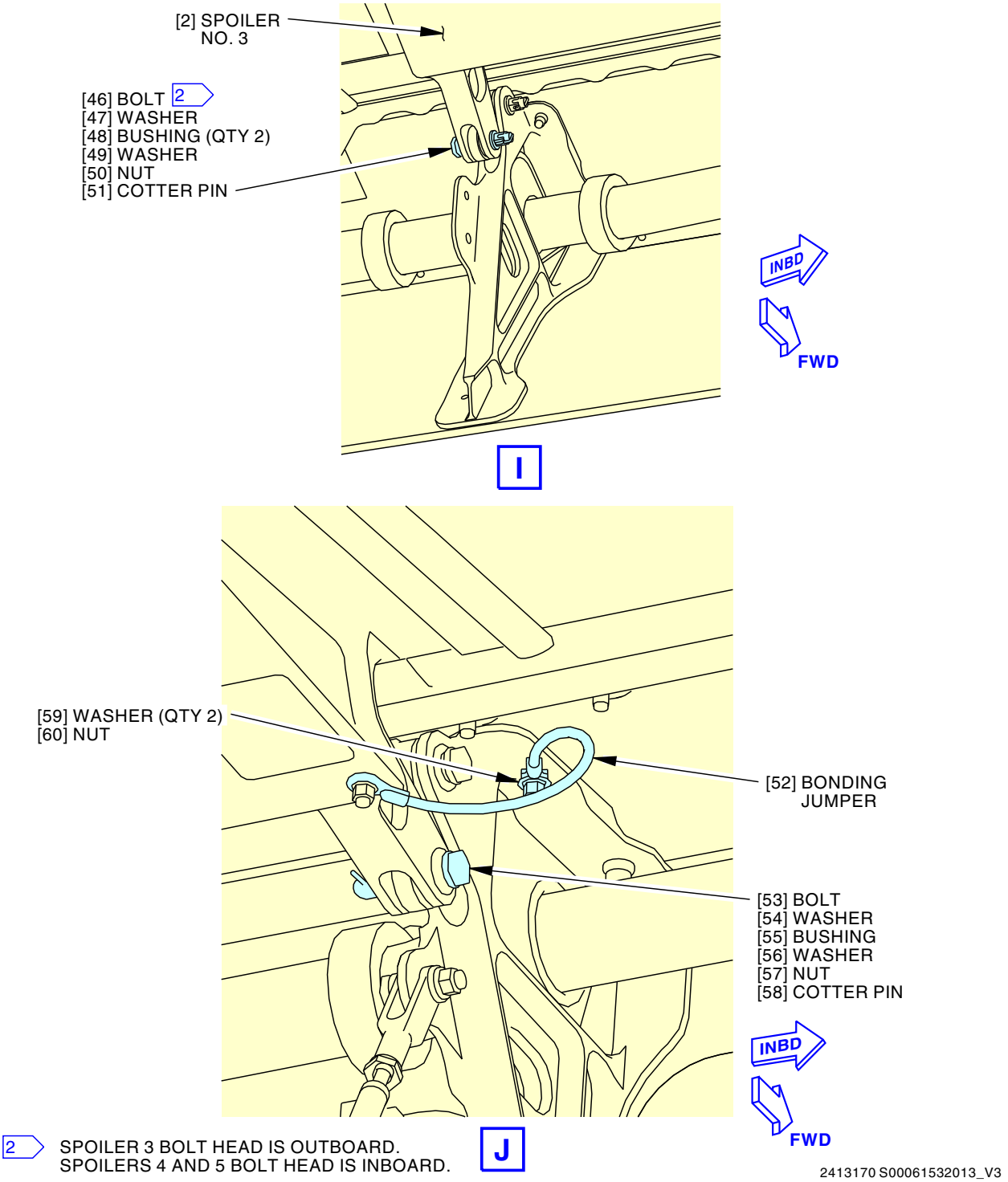
Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Installation
Figure 401/27-61-11-990-801 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-11-400-801

3. Flight Spoiler Installation

(Figure 401)

A. General

(1) This task for the left wing spoilers 2, 3, 4 and, 5 is applicable to the right wing spoilers 8, 9, 10, and 11.

B. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-730-801	Flight Spoiler System Test (P/B 501)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-820-802	Flight Spoiler Adjustment (P/B 501)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-802	Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition (P/B 201)
27-61-45-730-805	Flight Spoiler Test (P/B 501)
27-61-51-400-801	Flight Spoiler Actuator - Installation (P/B 401)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
A50155	Sealant - Fuel Tank	BMS5-45 Class C
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C

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(Continued)

Reference	Description	Specification
A50337	Sealant - Fuel Tank	BMS5-45 Class B
A50359	Sealant - Low Density, Non-Chromate Type	BMS5-142 Type II Class B
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Spoiler no. 2	27-61-11-01-100	SIA ALL
2	Spoiler no. 3	27-61-11-10-100	SIA ALL
3	Spoiler no. 4	27-61-11-20-100	SIA ALL
4	Spoiler no. 5	27-61-11-30-100	SIA ALL
6	Washer	27-62-91-01-020	SIA ALL
7	Nut	27-62-91-01-025	SIA ALL
13	Cotter pin	27-61-11-01-030	SIA ALL
20	Cotter pin	27-61-11-01-035	SIA ALL
22	Washer	27-61-11-01-020	SIA ALL
23	Nut	27-61-11-01-025	SIA ALL
29	Cotter pin	27-61-11-01-035	SIA ALL
31	Washer	27-61-11-10-020	SIA ALL
		27-61-11-20-020	SIA ALL
		27-61-11-30-020	SIA ALL
32	Nut	27-61-11-10-025	SIA ALL
		27-61-11-20-025	SIA ALL
		27-61-11-30-025	SIA ALL
38	Cotter pin	27-61-11-10-030	SIA ALL
45	Cotter pin	27-61-11-10-035	SIA ALL
51	Cotter pin	27-61-11-10-035	SIA ALL
58	Cotter pin	27-61-11-10-030	SIA ALL
59	Washer	27-61-11-10-020	SIA ALL
		27-61-11-20-020	SIA ALL
		27-61-11-30-020	SIA ALL
60	Nut	27-61-11-10-025	SIA ALL
		27-61-11-20-025	SIA ALL
		27-61-11-30-025	SIA ALL

F. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

G. Flight Spoiler Installation

SUBTASK 27-61-11-420-001

(1) To install the flight spoiler no. 2 [1], do these steps (View B, Figure 401), (TASK 20-10-44-400-801):

(a) Put the flight spoiler no. 2 [1] in its position on the airplane.

(b) Install the bolt [15] with head inboard, washer [16], bushing [17], washer [18], nut [19], and cotter pin [20].

(c) Install the bolt [24] with head outboard, washer [25], bushings [26], washer [27], nut [28], and cotter pin [29].

(d) Install the bolt [8] with head outboard, washer [9], bushing [10], washer [11], nut [12], and cotter pin [13].

(e) Connect the rod end of the spoiler actuator [5] to flight spoiler no. 2 [1] (TASK 27-61-51-400-801).

(f) Install the new nut [7] and new washers [6] to connect the bonding jumper [14] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [7], washers [6], and bonding jumper [14].

2) Install the nut [7], washers [6], and bonding jumper [14].

3) Tighten the nut [7] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

4) Measure the electrical resistance between bonding jumper [14] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

5) Apply a fillet seal with sealant, A50337, sealant, A50231, or sealant, A50359, to cover the nut [7], washers [6], and bonding jumper [14].

(g) Install the new nut [23] and new washer [22] to connect the bonding jumper [21] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [23], washer [22], and bonding jumper [21].

2) Apply sealant, A50155, sealant, A50110, sealant, A50296, or sealant, A50231, to the mating surfaces of the ground stud, nut [23], washer [22], and bonding jumper [21].

3) Install the nut [23], washer [22], and bonding jumper [21].

4) Tighten the nut [23] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure that there is squeeze out around all the interfaces of each component.

5) Measure the electrical resistance between bonding jumper [21] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

SUBTASK 27-61-11-420-002

(2) To install the flight spoiler no. 3 [2], spoiler no. 4 [3], or spoiler no. 5 [4], do these steps (View F, Figure 401), (TASK 20-10-44-400-801):

(a) Put the flight spoiler in its position on the airplane.

(b) Install the bolt [46], washer [47], bushings [48], washer [49], nut [50], and cotter pin [51].

NOTE: For the spoiler no. 3 [2], the bolt [46] head is outboard.

NOTE: For the spoiler no. 4 [3] and spoiler no. 5 [4], the bolt [46] head is inboard.

(c) Install the bolt [40], washer [41], bushing [42], washer [43], nut [44], and cotter pin [45].

NOTE: For the spoiler no. 3 [2], the bolt [40] head is inboard.

NOTE: For the spoiler no. 4 [3] and spoiler no. 5 [4], the bolt [40] head is outboard.

(d) Install the bolt [53] (with head inboard), washer [54], bushing [55], washer [56], nut [57], and cotter pin [58].

(e) Install the bolt [33] (with head outboard), washer [34], bushing [35], washer [36], nut [37], and cotter pin [38].

(f) Connect the rod end of the spoiler actuator [30] to flight spoiler no. 3 [2] (TASK 27-61-51-400-801).

(g) Install the new nut [32] and new washers [31] to connect the bonding jumper [39] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [32], washers [31], and bonding jumper [39].

2) Install the nut [32], washers [31], and bonding jumper [39].

3) Tighten the nut [32] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

4) Measure the electrical resistance between bonding jumper [39] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

5) Apply a fillet seal with sealant, A50337, sealant, A50231, or sealant, A50359, to cover the nut [32], washers [31], and bonding jumper [39].

(h) Install the new nut [60] and new washers [59] to connect the bonding jumper [52] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [60], washers [59], and bonding jumper [52].

2) Install the nut [60], washers [31], and bonding jumper [39].

3) Tighten the nut [60] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Measure the electrical resistance between bonding jumper [52] and airplane structure (SWPM 20-20-00).
   a) Use a non-intrinsically safe bonding meter, COM-614.
   b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.
5) Apply a fillet seal with sealant, A50337, sealant, A50231, or sealant, A50359, to cover the mating surface of the nut [60], washers [59], and bonding jumper [52].

SUBTASK 27-61-11-080-001

(3) Remove the actuator lock set, SPL-14632, from the applicable flight spoiler actuator.

SUBTASK 27-61-11-720-002

(4) To unlatch the SPOILER ACTUATOR status message, do this task: Flight Spoiler Test, TASK 27-61-45-730-805.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

H. Flight Spoiler Installation Test

SUBTASK 27-61-11-860-006

(1) Do this task: Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition, TASK 27-61-00-840-802.

SUBTASK 27-61-11-860-007

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-61-11-860-008

(3) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-61-11-860-009

(4) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-11-860-010

(5) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-11-820-001

(6) Do this task: Flight Spoiler Adjustment, TASK 27-61-00-820-802.

SUBTASK 27-61-11-720-001

(7) Do this task: Flight Spoiler System Test, TASK 27-61-00-730-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER SHUTOFF VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the spoiler shutoff valve

(2) An installation of the spoiler shutoff valve

(3) A removal of the spoiler shutoff valve motor

(4) An installation of the spoiler shutoff valve motor.

B. The spoiler shutoff valve and the flight controls shutoff valve are parts of the flight controls hydraulic module.

TASK 27-61-12-000-801

2. Spoiler Shutoff Valve Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the spoiler shutoff valve assembly.

(2) The spoiler shutoff valve assembly contains the spoiler shutoff valve motor [7] and the spoiler shutoff valve [12].

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1154	Container - 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Spoiler Shutoff Valve Removal

SUBTASK 27-61-12-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all of the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-12-860-003

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

F. Spoiler Shutoff Valve Removal

SUBTASK 27-61-12-020-001

(1) Do these steps to remove the spoiler shutoff valve assembly:

(a) Disconnect the electrical connector [1] from the spoiler shutoff valve motor [7].

(b) Remove the lockwire from the bolts [4].

(c) Put a 5 gallon (19 liter) container, STD-1154, below the spoiler shutoff valve assembly to receive hydraulic fluid.

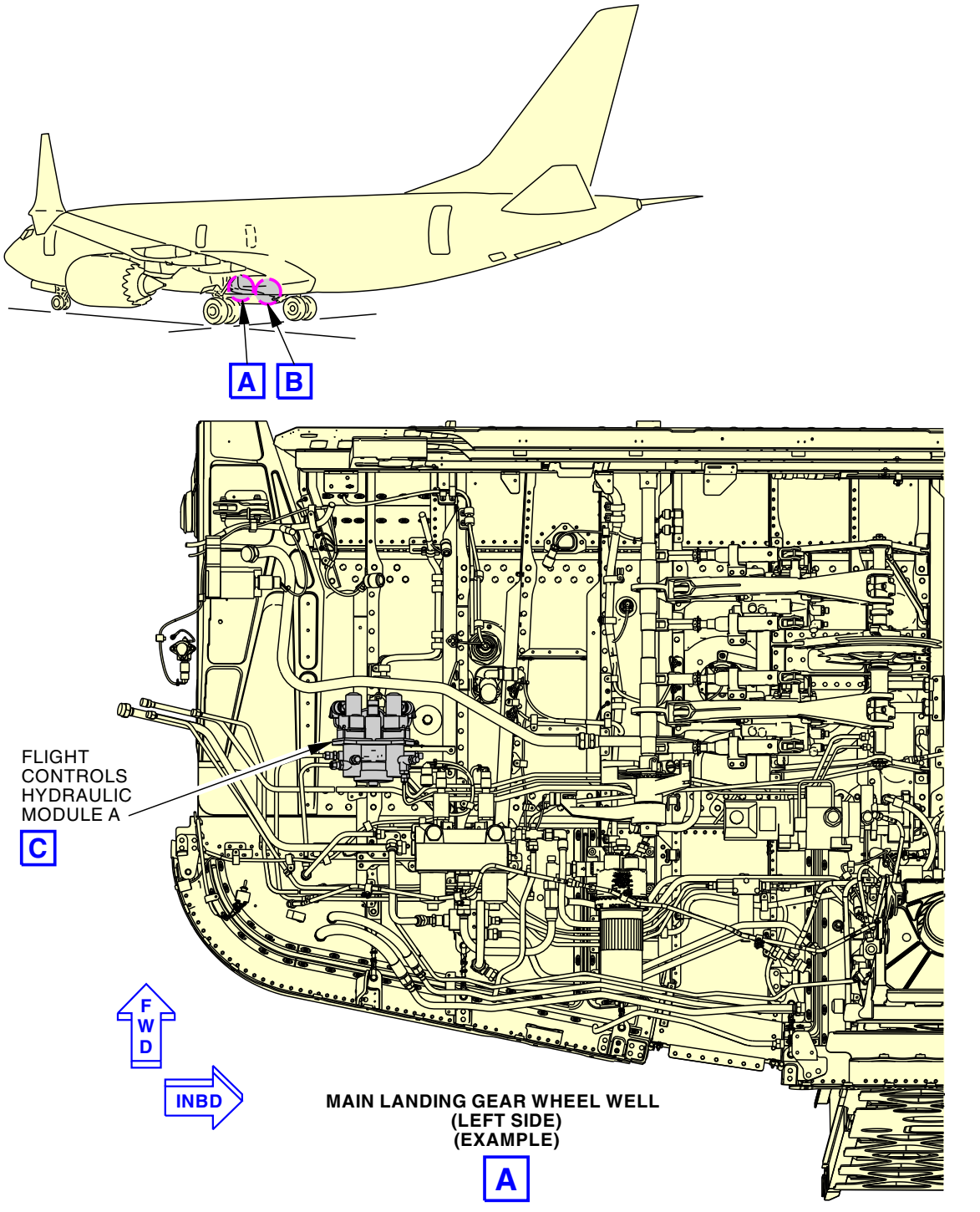
(d) Remove the bolts [4] and washers [5] that attach the spoiler shutoff valve assembly to the flight controls hydraulic module housing [2].

(e) Carefully lift the spoiler shutoff valve assembly directly up to remove it from the flight controls hydraulic module housing [2].

(f) Put a cover on the flight controls hydraulic module housing [2] to keep contamination out of the open valve hole.

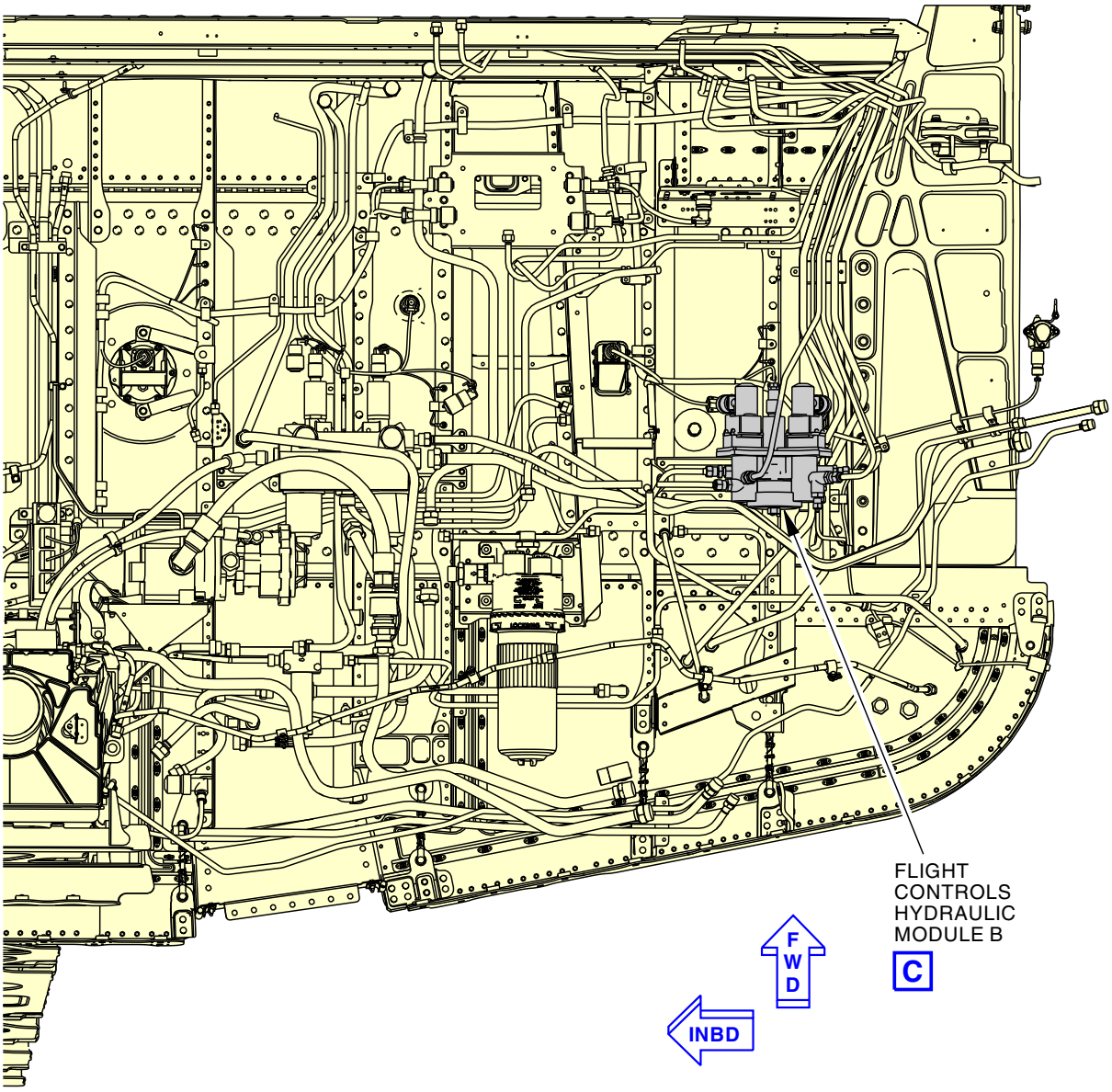
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Spoiler Shutoff Valve Installation
Figure 401/27-61-12-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)
(EXAMPLE)

B

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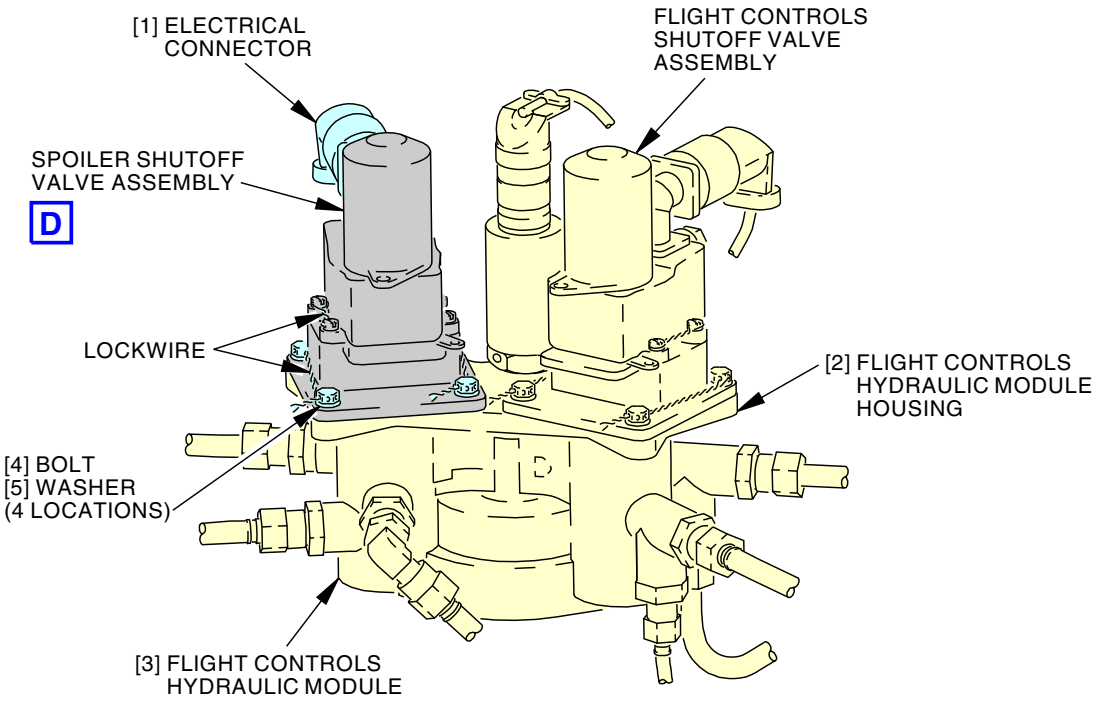
Spoiler Shutoff Valve Installation
Figure 401/27-61-12-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



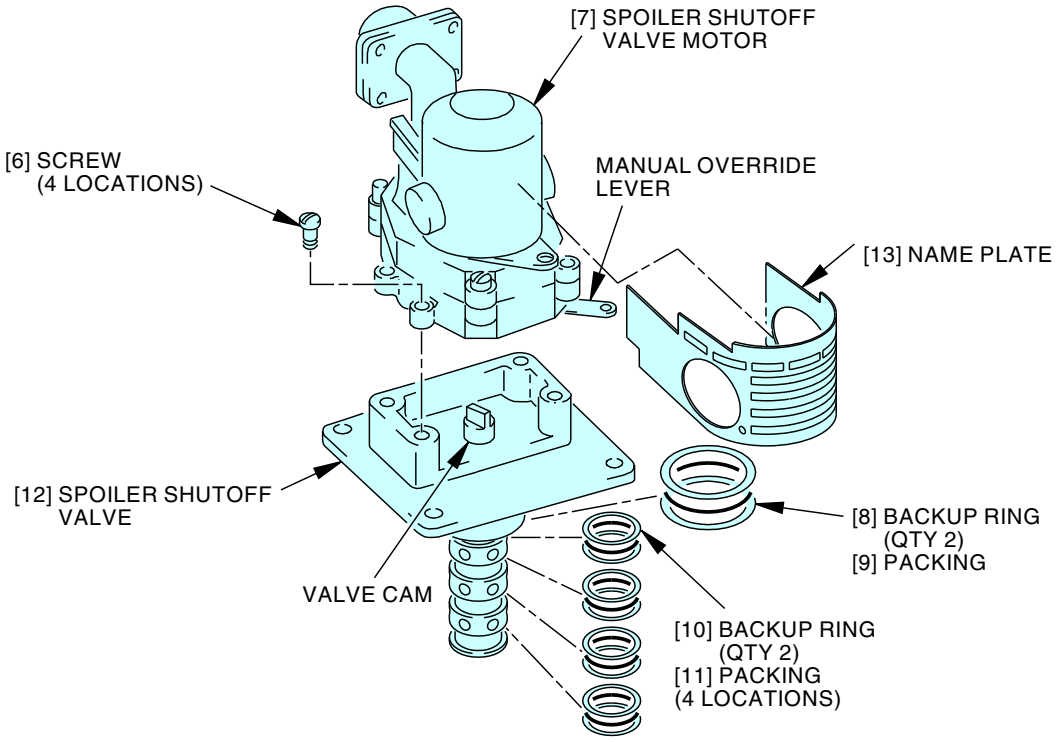
FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2413174 S00061532021_V2

Spoiler Shutoff Valve Installation
Figure 401/27-61-12-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SPOILER SHUTOFF VALVE ASSEMBLY

D

2413175 S00061532022_V2

Spoiler Shutoff Valve Installation
Figure 401/27-61-12-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-12-400-801

3. Spoiler Shutoff Valve Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the spoiler shutoff valve assembly.

(2) The spoiler shutoff valve assembly contains the spoiler shutoff valve motor [7] and the spoiler shutoff valve [12].

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-61-12-400-803	Spoiler Shutoff Valve Test (P/B 501)

C. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Spoiler shutoff valve motor	27-61-12-01-065	SIA ALL
9	Packing	27-61-12-01-055	SIA ALL
11	Packing	27-61-12-01-060	SIA ALL
12	Spoiler shutoff valve	27-09-21-01-125	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Spoiler Shutoff Valve Installation

SUBTASK 27-61-12-420-001

(1) If the spoiler shutoff valve [12] does not have the packing [9], the two backup rings [8], the packing [11], and the two backup rings [10] installed, then do these steps:

(a) Apply hydraulic fluid, D00153, to the packing [9], the two backup rings [8], the packing [11], and the two backup rings [10].

(b) Install the packing [9], the two backup rings [8], the packing [11], and the two backup rings [10] to the spoiler shutoff valve [12].

SUBTASK 27-61-12-420-002

(2) Carefully install the spoiler shutoff valve assembly in the flight controls hydraulic module housing [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Install the four bolts [4] and the four washers [5] to attach the spoiler shutoff valve assembly to the flight controls hydraulic module housing [2].

(b) Tighten each bolt [4] from 30 in-lb (3 N·m) to 40 in-lb (5 N·m).

(c) Install the new MS20995NC32 lockwire, G50347, on the four bolts [4].

(d) Do this task for the electrical connector [1]: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

(e) Connect the electrical connector [1] to the spoiler shutoff valve motor [7].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-12-860-004

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-12-610-001

(2) If it is necessary to do the servicing of the hydraulic reservoirs, then do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-61-12-730-001

(3) Do this task: Spoiler Shutoff Valve Test, TASK 27-61-12-400-803.

——— END OF TASK ———

TASK 27-61-12-000-802

4. Spoiler Shutoff Valve Motor Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the spoiler shutoff valve motor.

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Spoiler Shutoff Valve Motor Removal

SUBTASK 27-61-12-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all of the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-12-860-005

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

E. Spoiler Shutoff Valve Motor Removal

SUBTASK 27-61-12-020-002

(1) Do these steps to remove the spoiler shutoff valve motor [7]:

(a) Disconnect the electrical connector [1] from the spoiler shutoff valve motor [7].

(b) Set the manual override lever on the spoiler shutoff valve motor [7] to position 2.

(c) Remove the lockwire from the screws [6].

(d) Remove the screws [6] that attach the spoiler shutoff valve motor [7] to the spoiler shutoff valve [12].

(e) Remove the spoiler shutoff valve motor [7] from the spoiler shutoff valve [12].

SUBTASK 27-61-12-020-003

(2) If you will install the new spoiler shutoff valve motor [7], remove the name plate [13] from the spoiler shutoff valve motor [7].

(a) Keep the name plate [13] for the subsequent installation.

NOTE: The motor name plate is for the spoiler shutoff valve assembly accountability/traceability and will be installed on a new spoiler shutoff valve motor.

——— END OF TASK ———

TASK 27-61-12-400-802

5. Spoiler Shutoff Valve Motor Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the spoiler shutoff valve motor.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-61-12-400-803	Spoiler Shutoff Valve Test (P/B 501)

C. Consumable Materials

Reference	Description	Specification
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Spoiler shutoff valve motor	27-61-12-01-065	SIA ALL
12	Spoiler shutoff valve	27-09-21-01-125	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Spoiler Shutoff Valve Motor Installation

SUBTASK 27-61-12-420-004

(1) If you replace the spoiler shutoff valve motor [7], install the removed name plate [13] on a new spoiler shutoff valve motor [7].

SUBTASK 27-61-12-420-003

(2) Do these steps to install the spoiler shutoff valve motor [7]:

(a) Make sure that the manual override lever that is on the spoiler shutoff valve motor [7] is set to position 2.

(b) Put the spoiler shutoff valve motor [7] on the spoiler shutoff valve [12].

(c) Engage the spoiler shutoff valve motor [7] with the spoiler shutoff valve [12] cam.

(d) Install the screws [6].

(e) Install the MS20995NC32 lockwire, G50347, on the screws [6].

(f) Do this task for the electrical connector [1]: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

(g) Connect the electrical connector [1] to the spoiler shutoff valve motor [7].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-12-860-006

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-12-730-002

(2) Do this task: Spoiler Shutoff Valve Test, TASK 27-61-12-400-803.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER SHUTOFF VALVE - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) A test of the spoiler shutoff valve.

TASK 27-61-12-400-803

2. Spoiler Shutoff Valve Test

(Figure 501, Figure 502)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Operational Test

SUBTASK 27-61-12-860-008

(1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-12-860-009

(2) To pressurize hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

D. Spoiler Shutoff Valve Test

SUBTASK 27-61-12-720-001

(1) Do the test of the spoiler shutoff valve [1]:

(a) Move the two SPOILER switches, on the P5-3 flights control panel, to the OFF position and then to the ON position (Figure 501).

(b) Make sure that the manual override levers [2] of the two spoiler shutoff valves [1] are in position 1 (Figure 502).

(c) Move one of the two aileron control wheels to bleed the hydraulic system.

(d) Make sure that there is no leakage of hydraulic fluid at the spoiler shutoff valves [1].

(e) Move the aileron control wheel to make sure that the flight spoilers operate correctly.

(f) Set the two SPOILER switches to the OFF position.

(g) Make sure that the manual override levers [2] of the two spoiler shutoff valves [1] are in position 2.

(h) Move the aileron control wheel to make sure that the flight spoilers do not operate.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-12-860-010

(1) Set the SPOILER switches to the ON position.

SUBTASK 27-61-12-820-001

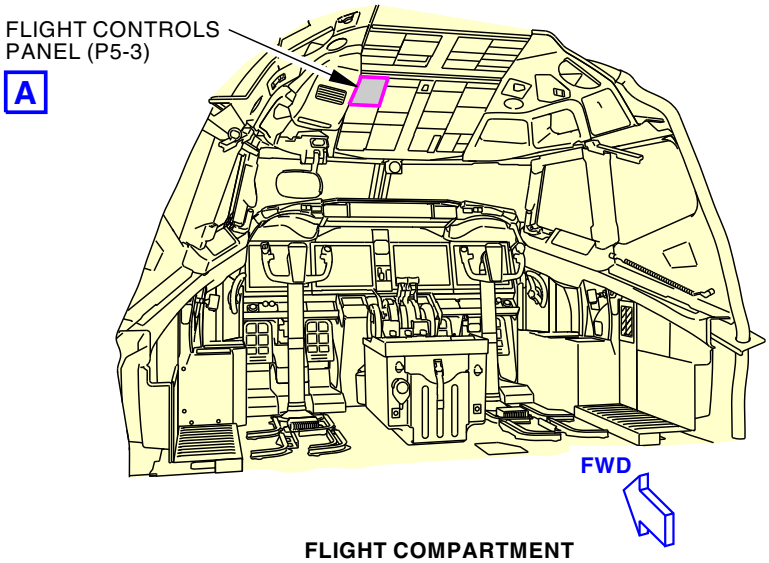
(2) Make sure that the manual override levers [2] of the two spoiler shutoff valves [1] are in position 1 (Figure 502).

SUBTASK 27-61-12-860-011

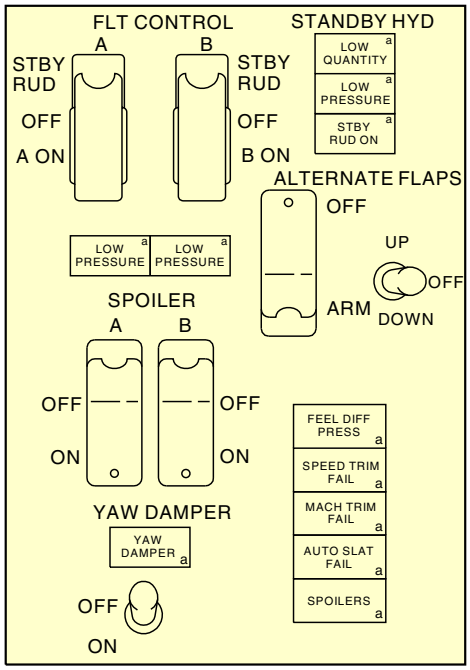
(3) To remove power from hydraulic systems A and B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



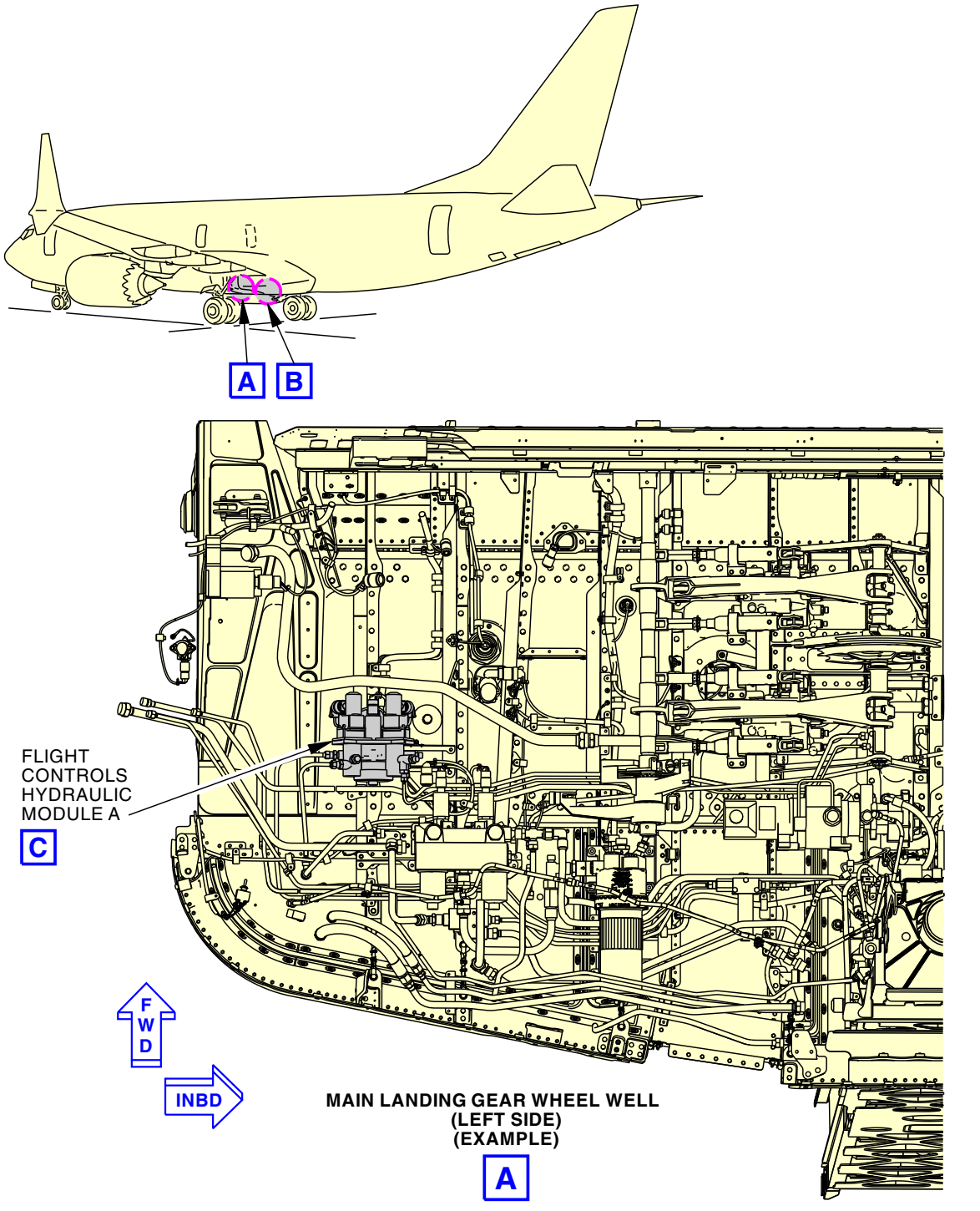
FLIGHT CONTROLS PANEL (P5-3)

A

2413176 S00061532028_V2

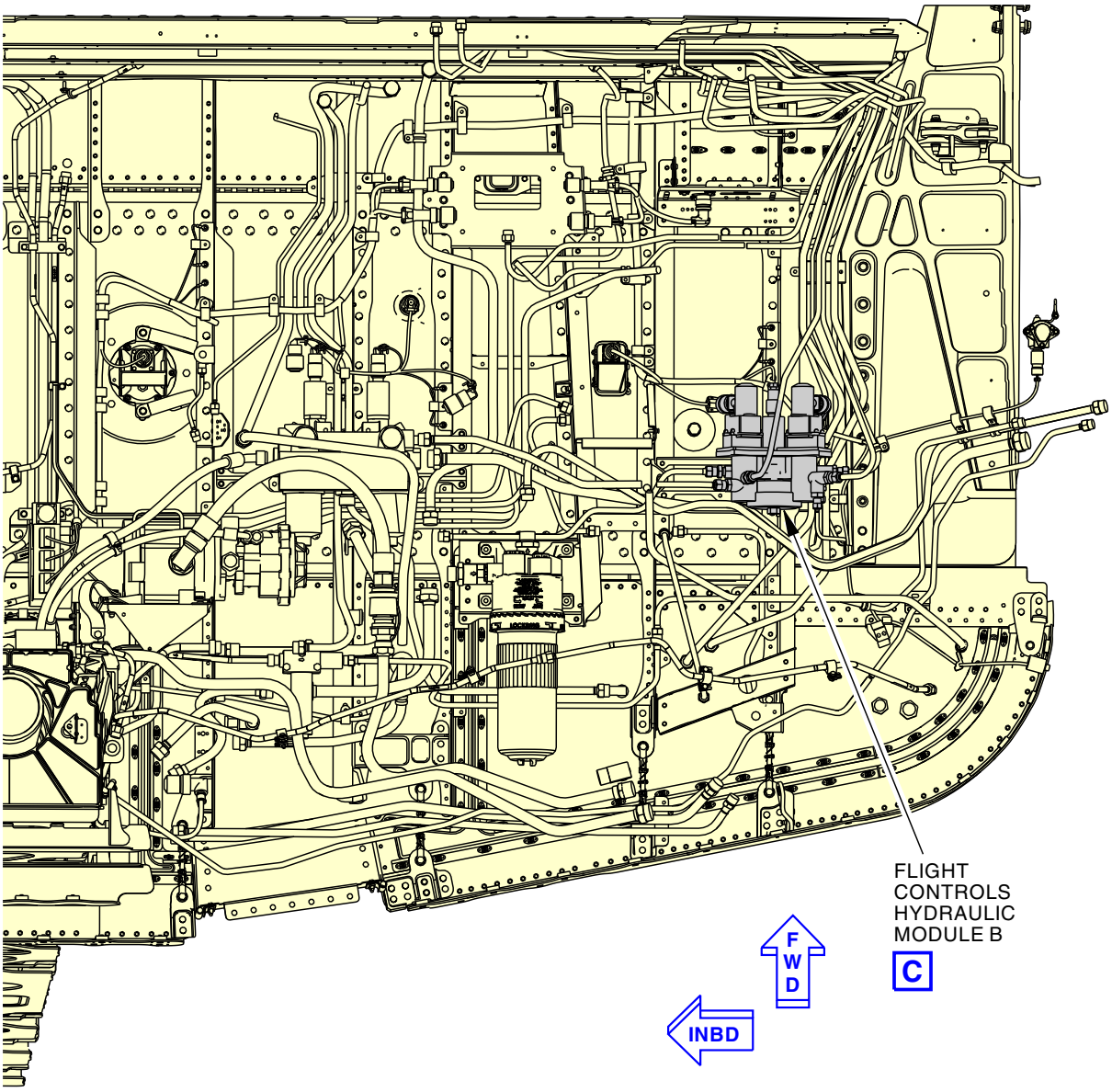
Flight Controls Panel
Figure 501/27-61-12-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Spoiler Shutoff Valve Test
Figure 502/27-61-12-990-803 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



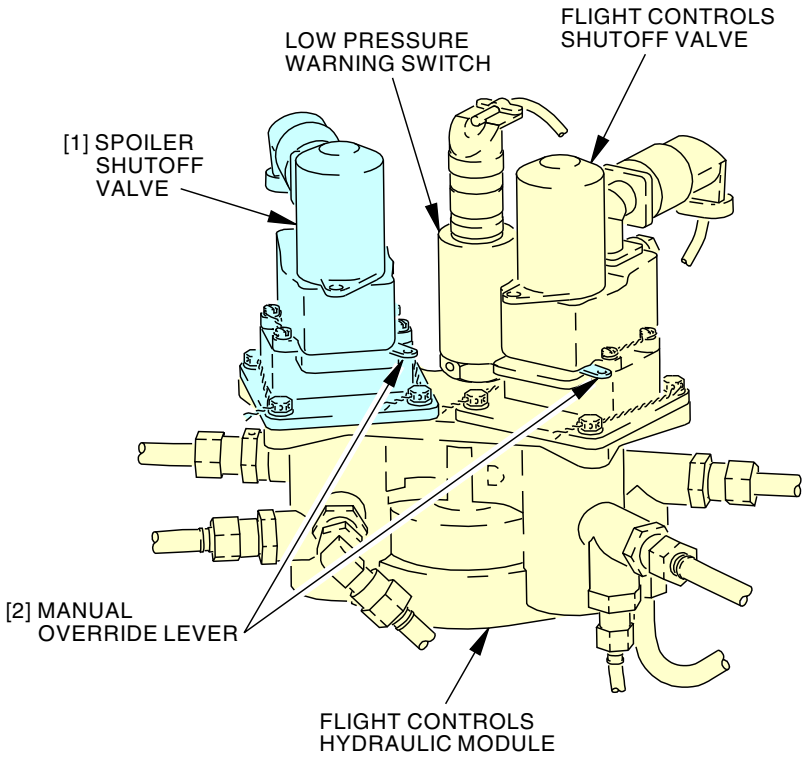
MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)
(EXAMPLE)

B

2413173 S00061532020_V3

Spoiler Shutoff Valve Test
Figure 502/27-61-12-990-803 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2413179 S00061532031_V2

Spoiler Shutoff Valve Test
Figure 502/27-61-12-990-803 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT SPOILER HINGE LINK - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight spoiler hinge links.

(2) An installation of the flight spoiler hinge links.

B. This procedure is applicable to the left and right flight spoiler hinge links.

TASK 27-61-15-000-801

2. Flight Spoiler Hinge Link Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-800-802	Depressurization of the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-11-000-801	Flight Spoiler Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Removal

SUBTASK 27-61-15-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-61-15-860-003

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-61-15-860-004

(3) Put the speed brake lever in the UP position to lift the spoilers.

SUBTASK 27-61-15-480-001

(4) Install the actuator lock set, SPL-14632 on the actuator for the applicable flight spoiler.

SUBTASK 27-61-15-860-005

(5) Do this task: Depressurization of the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 27-61-15-020-001

(6) Do this task: Flight Spoiler Removal, TASK 27-61-11-000-801.

E. Flight Spoiler Hinge Link Removal

SUBTASK 27-61-15-020-002

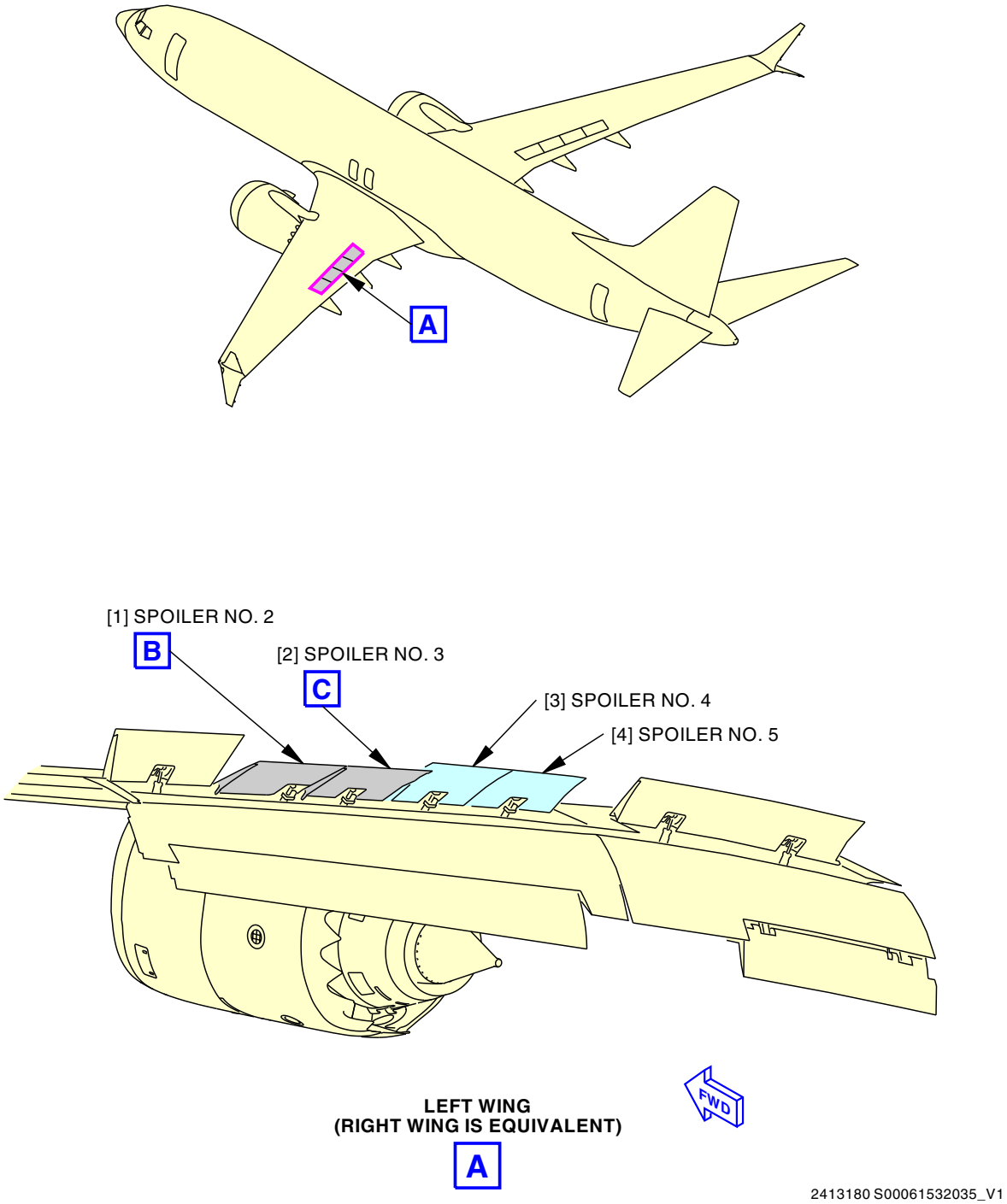
(1) Do these steps to remove the spoiler hinge link [5] from spoiler no. 2 [1], spoiler no. 3 [2], spoiler no. 4 [3] or spoiler no. 5 [4]:

(a) Remove pins [11], nuts [10], washers [9], bushings [8], washers [7] and bolts [6].

(b) Remove the spoiler hinge link [5] from the airplane.

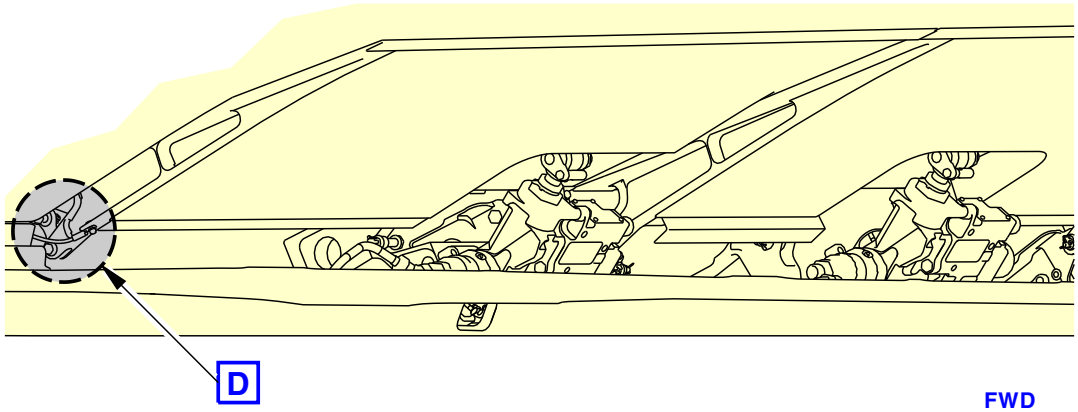
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoilers Hinge Link Installation
Figure 401/27-61-15-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



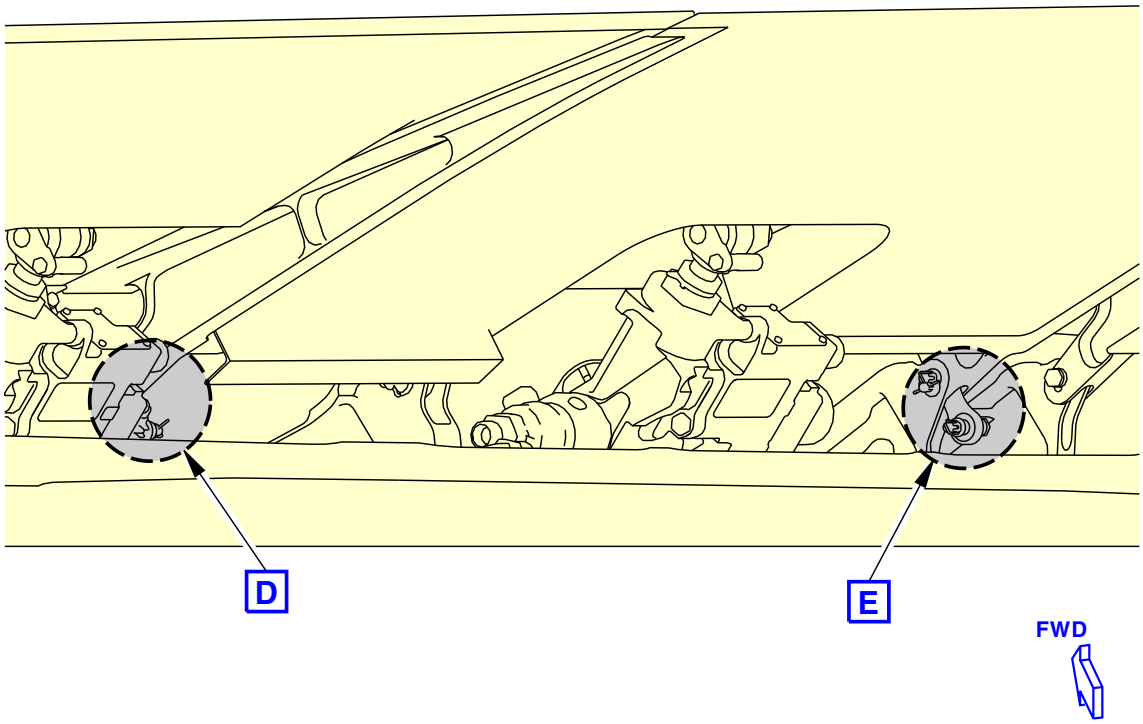
SPOILER NO. 2

B

2413181 S00061532036_V1

Flight Spoilers Hinge Link Installation
Figure 401/27-61-15-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



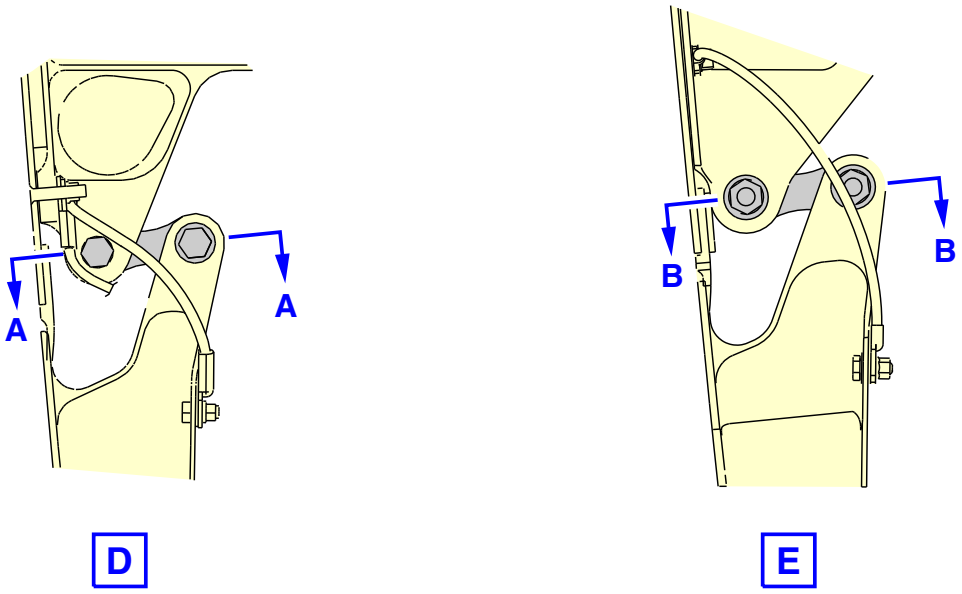
SPOILER NO. 3
(SPOILER NO. 4 AND 5 ARE EQUIVALENT)

C

2413182 S00061532037_V1

Flight Spoilers Hinge Link Installation
Figure 401/27-61-15-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413183 S00061532038_V1

Flight Spoilers Hinge Link Installation
Figure 401/27-61-15-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-15-400-801

3. Flight Spoiler Hinge Link Installation

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-730-801	Flight Spoiler System Test (P/B 501)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-820-802	Flight Spoiler Adjustment (P/B 501)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-802	Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Spoiler hinge link	27-61-15-01-050	SIA ALL
11	Pin	27-61-15-01-020	SIA ALL

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

E. Flight Spoiler Hinge Link Installation

SUBTASK 27-61-15-420-001

(1) Install the bolts [6], washers [7], bushings [8], washers [9], nuts [10] and new pins [11] to install the spoiler hinge link [5].

SUBTASK 27-61-15-860-006

(2) Make sure hydraulic power is not on. To remove it, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-15-080-001

(3) Remove the actuator lock set, SPL-14632 from the applicable flight spoiler actuator.

SUBTASK 27-61-15-860-007

(4) Do this task: Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition, TASK 27-61-00-840-802.

SUBTASK 27-61-15-860-008

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-61-15-860-009

(6) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-61-15-860-010

(7) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-15-860-011

(8) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-15-820-001

(9) Do this task: Flight Spoiler Adjustment, TASK 27-61-00-820-802.

SUBTASK 27-61-15-720-001

(10) Do this task: Flight Spoiler System Test, TASK 27-61-00-730-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONTROL WHEEL POSITION TRANSDUCER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the control wheel position transducer.

(2) An installation of the control wheel position transducer.

TASK 27-61-44-000-801

2. Control Wheel Position Transducer Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
24-22-00-860-802	Remove Electrical Power (P/B 201)
27-11-00-860-801	Pressure from the Aileron Hydraulic Systems A and B - Deactivation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 27-61-44-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all of the landing gear, then do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-61-44-860-001

(2) Do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, TASK 27-11-00-860-801.

SUBTASK 27-61-44-860-002

(3) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

SUBTASK 27-61-44-860-003

(4) Open this access panel:

Number	Name/Location
112A	Forward Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Control Wheel Position Transducer Removal

SUBTASK 27-61-44-020-001

(1) Do these steps to remove the control wheel position transducer [1]:

(a) Remove the bolt [3], the bolt [4], the four washers [5], the two nuts [6], and the three clamps [2].

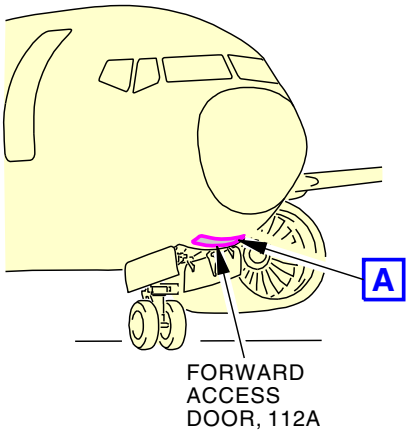
(b) Disconnect the P1 connector, the P2 connector, and the P3 connector.

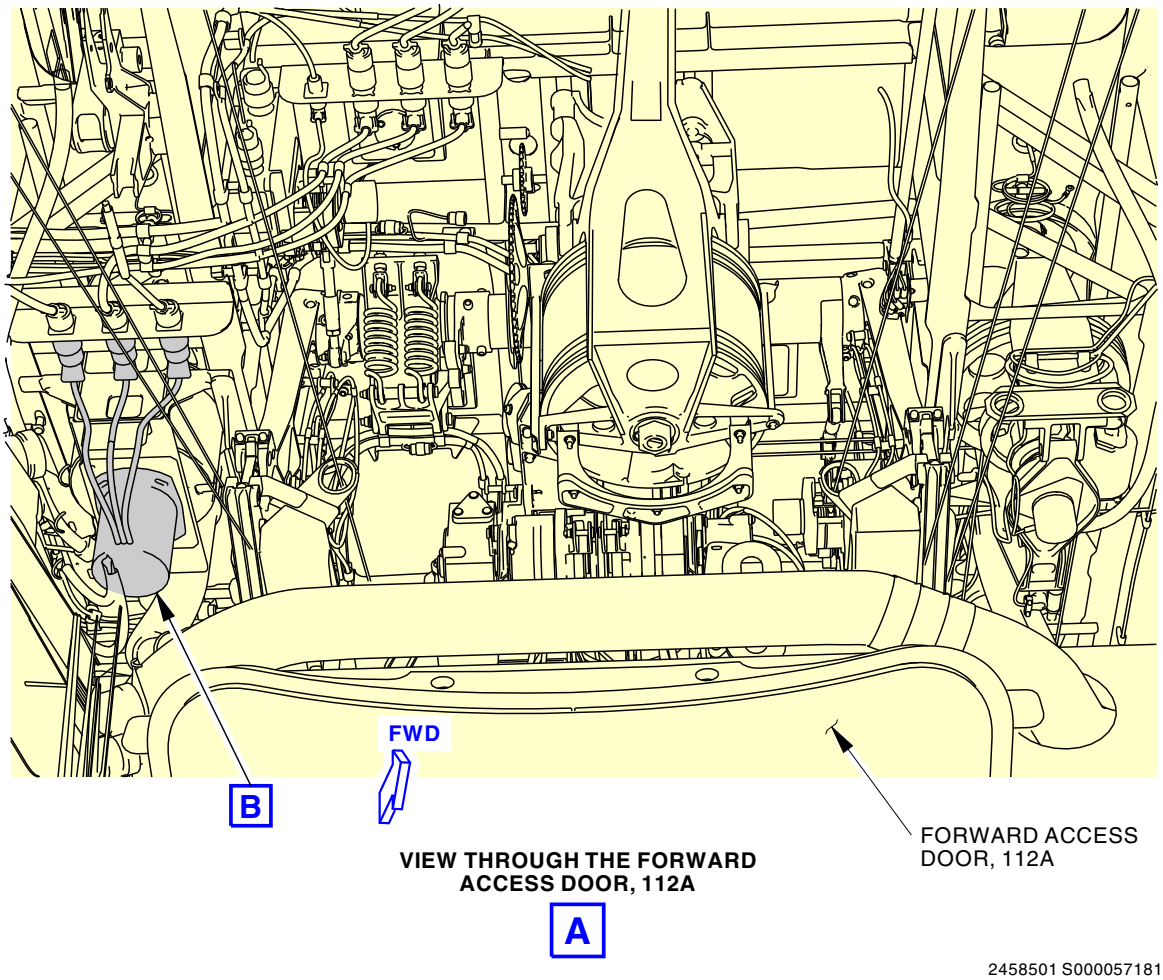
(c) Remove the four nuts [7] and the four washers [8].

(d) Remove the control wheel position transducer [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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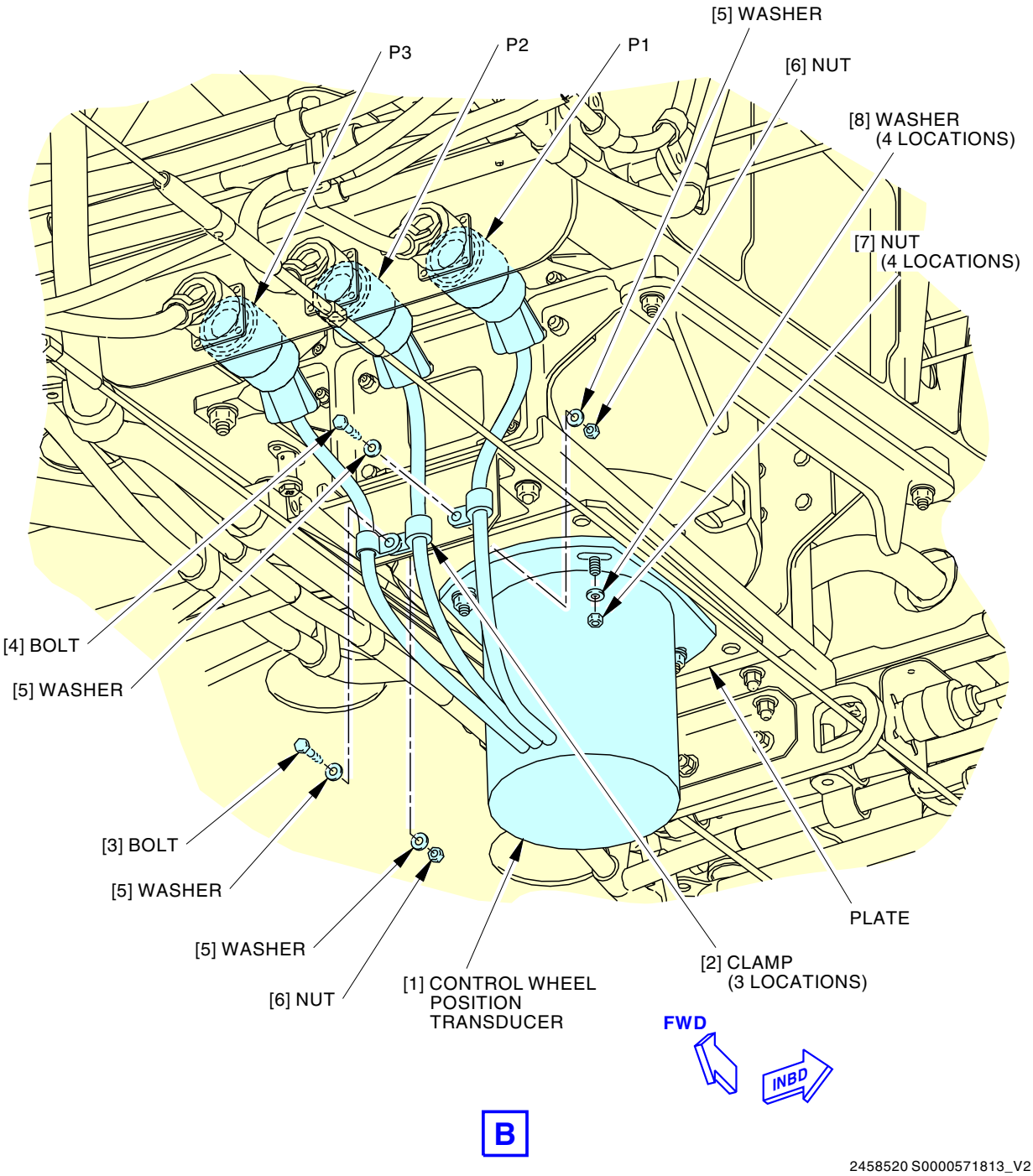
Control Wheel Position Transducer Installation
Figure 401/27-61-44-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Wheel Position Transducer Installation
Figure 401/27-61-44-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-44-400-801

3. Control Wheel Position Transducer Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-11-00-820-801	Aileron Cables Adjustment (P/B 501)
27-61-45-730-803	First Officer's Wheel Transducer Test (P/B 501)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Control wheel position transducer	27-61-44-01-040	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Control Wheel Position Transducer Installation

SUBTASK 27-61-44-420-001

(1) Do these steps to install the control wheel position transducer [1] as follows:

(a) Apply a thin layer of grease, D00633, to the splines of the control wheel position transducer [1].

(b) Align the spline indexes and put the control wheel position transducer [1] in its position.

(c) Install the four washers [8] and the four nuts [7] that attach the control wheel position transducer [1] to the plate.

(d) Tighten the four nuts [7] to 35 ±1 in-lb (4.0 ±0.2 N·m).

(e) For the P1, P2, and P3 connectors, do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

(f) Connect the P1, P2, and P3 connectors to their applicable ports.

(g) Install the bolt [3], the bolt [4], the four washers [5], the two nuts [6], and the three clamps [2].

G. Control Wheel Position Transducer Adjustment

SUBTASK 27-61-44-820-002

(1) Do these steps to adjust the control wheel position transducer [1]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that there are no faults that are related to the first officer wheel position transducer.

1) If there is fault, do this task: First Officer's Wheel Transducer Test, TASK 27-61-45-730-803.

(b) Use the Onboard Maintenance System (OMS) to show the Flight Controls Maintenance Data page (MAINT DATA PGS).

(c) Find the data indications for the SCE FO CTRL WHL, RVDT A, B, and C.

(d) To adjust the aileron system, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

(e) Loosen the four nuts [7] that attach the control wheel position transducer [1] to the plate.

(f) Make sure that you can turn the control wheel position transducer [1] clockwise and counterclockwise.

(g) Turn the control wheel position transducer [1] until the data indications for all three RVDT channels are 0.00 +/-0.5 degrees.

(h) Tighten the four nuts [7] that attach the control wheel position transducer [1] to the plate to 35 ±1 in-lb (4.0 ±0.2 N·m).

(i) Make sure that all three RVDT channels continue to be 0.00 +/-0.5 degrees.

(j) Turn the control wheel clockwise.

1) Make sure that the data indications of the RVDT channels are positive values.

(k) Turn the control wheel counterclockwise.

1) Make sure that the data indications of the RVDT channels are negative values.

(l) Turn the control wheel clockwise and counterclockwise many times.

(m) Put the control wheel in the neutral position.

(n) To adjust the aileron system, do this task: Aileron Cables Adjustment, TASK 27-11-00-820-801.

(o) Make sure that all three RVDT channels are 0.00 +/-0.5 degrees.

H. Control Wheel Position Transducer Test

SUBTASK 27-61-44-730-001

(1) Do this task: First Officer's Wheel Transducer Test, TASK 27-61-45-730-803.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-44-410-001

(1) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER CONTROL ELECTRONICS - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Spoiler Control Electronics (SCE) software installation with the Onboard Network System (ONS)

(2) SCE software configuration check.

TASK 27-61-45-470-801

2. SCE Software Installation with Onboard Network System

A. General

(1) This task gives the steps to install the Operational Program Software (OPS) into the Spoiler Control Electronics (SCE), M02940.

(2) Loading the software to the SCE on the airplane is accomplished in the flight deck by using the Portable Maintenance Device (PMD) or the multifunction display (MFD) to access the Onboard Network System (ONS) load function.

(3) The SCE is made up of 3 independent Digital Processing Lanes (DPL). Each lane (DPL 1, DPL 2 and DPL 3) will require independent enabling in order to load software, only one lane can be loaded at a time.

(4) The airplane must be on the ground with the engines shutdown before you can do the software installation.

B. References

Reference	Title
46-13-00-470-801	LRU Software Parts Installation (P/B 201)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. SCE Software Installation with Onboard Network System

SUBTASK 27-61-45-860-034

(1) Make sure that the SYSTEM SELECT switch on the P61 panel is set to NORMAL.

SUBTASK 27-61-45-470-001

(2) Load the required software into SCE Lanes 1, 2 and 3. Do this task: LRU Software Parts Installation, TASK 46-13-00-470-801.

NOTE: Do not cycle circuit breakers C04032 and C04033 before loading software into Lanes 1, 2 and 3. Cycling of circuit breakers C04032 and C04033 before loading software in all three lanes can result in appearance of an incompatible software fault and SCE removal after three load attempts.

(a) One software part is loaded at a time:

1) For SCE Lane 1, load DPL 1 OPS

2) For SCE Lane 2, load DPL 2 OPS

3) For SCE Lane 3, load DPL 3 OPS

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SUBTASK 27-61-45-710-005

CAUTION

MAKE SURE THAT YOU USE A RELIABLE POWER SOURCE DURING SCE SOFTWARE INSTALLATION. DO NOT DO THE OPS LOAD AT THE SAME TIME WITH OTHER TASKS. SOME TASKS CAN CAUSE A POWER INTERRUPT AND CAN CAUSE OPS LOAD FAILURE. IF THE OPS LOAD TO A SINGLE-LANE FAILS MORE THAN TWICE, REPLACE THE SCE.

(3) If the OPS load to a lane fails twice, look in the display unit for SCE or NSF faults (TASK 46-13-02-710-801).

NOTE: SCE software installation is power sensitive. Power interrupts can cause the OPS load to fail. A failed SCE OPS load attempt occurs when the software upload is in progress and a power interrupt occurs during specific times.

(a) If it is necessary, use the IFIM and do the applicable procedure(s) to troubleshoot and correct any SCE or NSF faults that you find.

SUBTASK 27-61-45-700-001

(4) Do this task to verify the software was loaded: SCE Configuration Check, TASK 27-61-45-750-801.

——— END OF TASK ———

TASK 27-61-45-750-801

3. SCE Configuration Check

A. General

(1) This procedure gives the steps to verify the Operational Program Software (OPS) software installed in each of 3 SCE Lanes.

(2) The aircraft must be on the ground before you can perform this task.

B. References

Reference	Title
46-13-00-710-802	System Configuration Check (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-61-45-700-002

(1) Do a check of the each SCE Lane software. Do this task: System Configuration Check, TASK 46-13-00-710-802.

(a) Record and verify that each software part number is correct.

1) Check SCE Lane 1, SCE Lane 2 and SCE Lane 3.

2) If a software part number is not correct, software installation is required. Do this task: SCE Software Installation with Onboard Network System, TASK 27-61-45-470-801.

3) If all software part numbers are correct, then continue.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER CONTROL ELECTRONICS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The removal of the spoiler control electronics unit.

(2) The installation of the spoiler control electronics unit.

TASK 27-61-45-000-801

2. Spoiler Control Electronics Unit Removal

A. References

Reference	Title
20-10-07-000-801	E/E Box Removal (P/B 401)
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Spoiler Control Electronics (SCE) Unit Removal Procedure

SUBTASK 27-61-45-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-45-010-001

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-45-020-001

CAUTION

DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

(4) Before you touch the spoiler control electronics unit [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 27-61-45-020-002

(5) To remove the spoiler control electronics unit [1], do this task: E/E Box Removal, TASK 20-10-07-000-801.

——— END OF TASK ———

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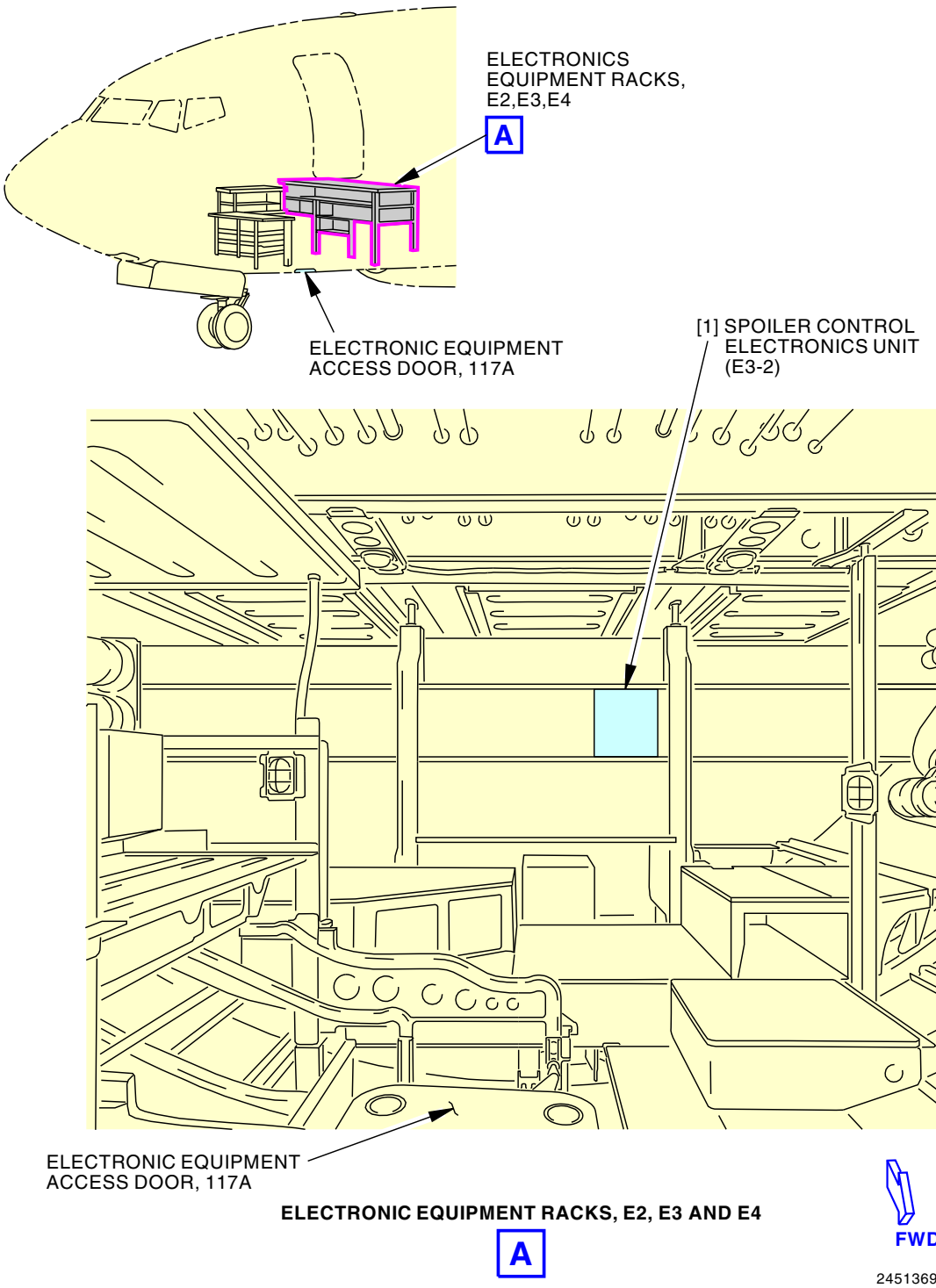

Spoiler Control Electronics Unit
Figure 401/27-61-45-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-45-400-801

3. Spoiler Control Electronics Unit Installation

A. General

(1) The installation test at the end of this procedure makes sure that the spoiler control electronics unit is installed correctly.

B. References

Reference	Title
20-10-07-400-801	E/E Box Installation (P/B 401)
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
27-61-45-730-801	Spoiler Control Electronics Self Test (P/B 501)
27-61-45-730-802	Speedbrake Lever Transducer Test (P/B 501)
27-61-45-730-803	First Officer's Wheel Transducer Test (P/B 501)
27-61-45-730-804	Ground Spoiler Control Module Replacement Test (P/B 501)
27-61-45-730-805	Flight Spoiler Test (P/B 501)
27-61-45-750-801	SCE Configuration Check (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Spoiler control electronics unit	27-61-45-01-010	SIA ALL

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Spoiler Control Electronics (SCE) Unit Installation

SUBTASK 27-61-45-020-003

CAUTION DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

(1) Before you touch the spoiler control electronics unit [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 27-61-45-420-001

(2) To install the spoiler control electronics unit [1], do this task: E/E Box Installation, TASK 20-10-07-400-801.

SUBTASK 27-61-45-860-002

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-45-700-003

(5) Do this task to verify the software was loaded: SCE Configuration Check, TASK 27-61-45-750-801.

SUBTASK 27-61-45-410-001

(6) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

G. Spoiler Control Electronics (SCE) Unit Installation Test

SUBTASK 27-61-45-710-002

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Do this task: Spoiler Control Electronics Self Test, TASK 27-61-45-730-801.

SUBTASK 27-61-45-710-003

(2) Do this task: Speedbrake Lever Transducer Test, TASK 27-61-45-730-802.

SUBTASK 27-61-45-710-004

(3) Do this task: First Officer's Wheel Transducer Test, TASK 27-61-45-730-803.

SUBTASK 27-61-45-730-005

(4) Do this task: Ground Spoiler Control Module Replacement Test, TASK 27-61-45-730-804.

SUBTASK 27-61-45-730-006

(5) Do this task: Flight Spoiler Test, TASK 27-61-45-730-805.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-004

(1) Set the GND TEST switch to NORM.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPOILER CONTROL ELECTRONICS - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Spoiler Control Electronics Self Test

(2) Speedbrake Lever Transducer Test

(3) First Officer's Wheel Transducer Test

(4) Ground Spoiler Control Module Replacement Test

(5) Flight Spoiler Test.

TASK 27-61-45-730-801

2. Spoiler Control Electronics Self Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
34-21-00-710-801	Air Data Inertial Reference System - Operational Test (P/B 501)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-61-45-860-008

(1) Make sure the ADIRU is on and operational (TASK 34-21-00-710-801).

NOTE: Some faults may occur and prevent the test from operating. The ADIRU must be on and operational to reset these faults.

SUBTASK 27-61-45-860-046

(2) Set the LIGHTS switch on the captain's main instrument panel, P1, to BRT.

D. Spoiler Control Electronics (SCE) Self Test

SUBTASK 27-61-45-740-002

(1) Do these steps to do the SCE Self Test (TASK 46-13-02-710-801):

NOTE: When the Onboard Maintenance Function (OMF) instructions call for Hydraulic Power, Hydraulic Power must be controlled at the source, i.e. Pumps or Ground Service. Flight Controls A and B, and Spoilers A and B switches on the P5 panel should remain ON.

NOTE: When the OMF instructions call for the removal of Hydraulic Power, monitor the A & B system pressures, and wait until System A and B pressures drop below 200 psi before continuing.

(a) Set the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

NOTE: If the Speed Brake Lever is in the ARMED, FLIGHT DETENT, or UP positions, the Speed Brake Lever may retract to the DOWN position when starting the ground test.

- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Spoiler Control
- Operational Test
- SCE Test
- CONTINUE

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

(e) Use the SELECTOR on the Multi Function Panel to make this selection:

- START TEST

(f) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to IFIM and do the applicable procedure(s).

2) If you do additional tests on the Multi Function Panel, select the NEW TEST button.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-009

(1) Set the GND TEST switch to NORM.

SUBTASK 27-61-45-860-010

(2) Set the IRS R and IRS L switches on the IRS Mode Select Unit, located on the P5 panel, to the OFF position.

——— END OF TASK ———

TASK 27-61-45-730-802

3. Speedbrake Lever Transducer Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
34-21-00-710-801	Air Data Inertial Reference System - Operational Test (P/B 501)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

B. Location Zones

Zone	Area
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Prepare for the Test

SUBTASK 27-61-45-860-048

(1) Make sure that the airplane has weight on wheels.

SUBTASK 27-61-45-860-013

(2) Make sure the ADIRU is on and operational (TASK 34-21-00-710-801).

NOTE: Some faults may occur and prevent the test from running. The ADIRU must be on and operational to reset these faults.

D. Speedbrake Lever Transducer Test

SUBTASK 27-61-45-730-002

(1) Do these steps to do the speedbrake lever transducer test (TASK 46-13-02-710-801):

NOTE: When the Onboard Maintenance Function (OMF) instructions call for Hydraulic Power, Hydraulic Power must be controlled at the source, i.e. Pumps or Ground Service. Flight Controls A and B, and Spoilers A and B switches on the P5 panel should remain ON.

NOTE: When the OMF instructions call for the removal of Hydraulic Power, monitor the A & B system pressures, and wait until System A and B pressures drop below 200 psi before continuing.

(a) Set the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

NOTE: If the Speed Brake Lever is in the ARMED, FLIGHT DETENT, or UP positions, the Speed Brake Lever may retract to the DOWN position when starting the ground test.

- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Spoiler Control
- Operational Test
- Speedbrake Lever
- CONTINUE

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

(e) Use the SELECTOR on the Multi Function Panel to make this selection:

- CONTINUE
- START TEST

(f) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to IFIM and do the applicable procedure(s).

2) If you do additional tests on the Multi Function Panel, select the NEW TEST button.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-014

(1) Set the GND TEST switch to NORM.

SUBTASK 27-61-45-860-015

(2) Set the IRS R and IRS L switches on the IRS Mode Select Unit, located on the P5 panel, to the OFF position.

——— END OF TASK ———

TASK 27-61-45-730-803

4. First Officer's Wheel Transducer Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
34-21-00-710-801	Air Data Inertial Reference System - Operational Test (P/B 501)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-61-45-860-047

(1) Make sure that the airplane has weight on wheels.

SUBTASK 27-61-45-860-019

(2) Make sure the ADIRU is on and operational (TASK 34-21-00-710-801).

NOTE: Some faults may occur and prevent the test from running. The ADIRU must be on and operational to reset these faults.

D. First Officer's Wheel Transducer Test

SUBTASK 27-61-45-710-001

(1) Do these steps to do the first officers wheel transducer test (TASK 46-13-02-710-801):

NOTE: When the Onboard Maintenance Function (OMF) instructions call for Hydraulic Power, Hydraulic Power must be controlled at the source, i.e. Pumps or Ground Service. Flight Controls A and B, and Spoilers A and B switches on the P5 panel should remain ON.

NOTE: When the OMF instructions call for the removal of Hydraulic Power, monitor the A & B system pressures, and wait until System A and B pressures drop below 200 psi before continuing.

(a) Set the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

NOTE: If the Speed Brake Lever is in the ARMED, FLIGHT DETENT, or UP positions, the Speed Brake Lever may retract to the DOWN position when starting the ground test.

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- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Spoiler Control
- Operational Test
- Control Wheel
- CONTINUE

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

NOTE: During the ground test, you only have to release the control wheel to allow the control wheel transducers to return to the neutral position. The control wheel may not be centred.

(e) Use the SELECTOR on the Multi Function Panel to make these selections:

- START TEST
- CONTINUE

(f) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to IFIM and do the applicable procedure(s).

2) If you do additional tests on the Multi Function Panel, select the NEW TEST button.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-020

(1) Set the GND TEST switch to NORM.

SUBTASK 27-61-45-860-021

(2) Set the IRS R and IRS L switches on the IRS Mode Select Unit, located on the P5 panel, to the OFF position.

——— END OF TASK ———

TASK 27-61-45-730-804

5. Ground Spoiler Control Module Replacement Test

A. References

Reference	Title
34-21-00-710-801	Air Data Inertial Reference System - Operational Test (P/B 501)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

B. Location Zones

Zone	Area
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Prepare for the Test

SUBTASK 27-61-45-860-025

(1) Make sure the ADIRU is on and operational (TASK 34-21-00-710-801).

NOTE: Some faults may occur and prevent the test from running. The ADIRU must be on and operational to reset these faults.

D. Ground Spoiler Control Module Replacement Test

SUBTASK 27-61-45-730-003

(1) Do these steps to do the ground spoiler control module replacement test (TASK 46-13-02-710-801):

NOTE: When the Onboard Maintenance Function (OMF) instructions call for Hydraulic Power, Hydraulic Power must be controlled at the source, i.e. Pumps or Ground Service. Flight Controls A and B, and Spoilers A and B switches on the P5 panel should remain ON.

NOTE: When the OMF instructions call for the removal of Hydraulic Power, monitor the A & B system pressures, and wait until System A and B pressures drop below 200 psi before continuing.

(a) Set the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

NOTE: If the Speed Brake Lever is in the ARMED, FLIGHT DETENT, or UP positions, the Speed Brake Lever may retract to the DOWN position when starting the ground test.

- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Spoiler Control
- System Test
- Ground Spoilers
- CONTINUE

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

(e) Use the SELECTOR on the Multi Function Panel to make these selections:

- CONTINUE
- START TEST

(f) Follow the second set of on-screen instructions and then select the rectangular CONTINUE button.

(g) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to IFIM and do the applicable procedure(s).

2) If you do additional tests on the Multi Function Panel, select the NEW TEST button.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-026

(1) Set the GND TEST switch to NORM.

SUBTASK 27-61-45-860-027

(2) Set the IRS R and IRS L switches on the IRS Mode Select Unit, located on the P5 panel, to the OFF position.

——— END OF TASK ———

TASK 27-61-45-730-805

6. Flight Spoiler Test

A. References

Reference	Title
34-21-00-710-801	Air Data Inertial Reference System - Operational Test (P/B 501)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

B. Location Zones

Zone	Area
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-61-45-860-031

(1) Make sure the ADIRU is on and operational (TASK 34-21-00-710-801).

NOTE: Some faults may occur and prevent the test from running. The ADIRU must be on and operational to reset these faults.

D. Flight Spoiler Test

SUBTASK 27-61-45-730-004

(1) Do these steps to do the flight spoiler test (TASK 46-13-02-710-801):

NOTE: When the Onboard Maintenance Function (OMF) instructions call for Hydraulic Power, Hydraulic Power must be controlled at the source, i.e. Pumps or Ground Service. Flight Controls A and B, and Spoilers A and B switches on the P5 panel should remain ON.

NOTE: When the OMF instructions call for the removal of Hydraulic Power, monitor the A & B system pressures, and wait until System A and B pressures drop below 200 psi before continuing.

(a) Set the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

NOTE: If the Speed Brake Lever is in the ARMED, FLIGHT DETENT, or UP positions, the Speed Brake Lever may retract to the DOWN position when starting the ground test.

- MAINT
- ONBD MAINT
- LINE MAINT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

- GROUND TESTS
- 27 - Spoiler Control
- System Test
- Flight Spoilers
- CONTINUE

(d) Follow the on-screen instructions and then select the rectangular CONTINUE button.

(e) Use the SELECTOR on the Multi Function Panel to make these selections:

- CONTINUE
- START TEST

(f) Make sure that when the test is complete, there are no faults and you see the TEST CONDITION: PASS message.

1) If you see TEST CONDITION: FAILED, go to IFIM and do the applicable procedure(s).

2) If you do additional tests on the Multi Function Panel, select the NEW TEST button.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-45-860-032

(1) Set the GND TEST switch to NORM.

SUBTASK 27-61-45-860-033

(2) Set the IRS R and IRS L switches on the IRS Mode Select Unit, located on the P5 panel, to the OFF position.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT SPOILER ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the flight spoiler actuator.

(2) An installation of the flight spoiler actuator.

(3) A removal of the electrohydraulic servo valve.

(4) An installation of the electrohydraulic servo valve.

B. In this procedure the flight spoiler actuator is referred to as the "actuator".

TASK 27-61-51-000-801

2. Flight Spoiler Actuator - Removal

(Figure 401)

A. General

(1) This task contains these procedures:

- Flight Spoiler Actuator - Removal
- Spoiler Actuator Filter - Removal.

(2) In this task the flight spoiler actuator is referred to as the “actuator”.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-00-800-802	Depressurization of the Spoiler Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-61-51-860-002

(1) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-61-51-860-021

(2) Put the speed brake lever in the UP position to lift the flight spoilers [16].

SUBTASK 27-61-51-480-002

(3) Install the actuator lock set, SPL-14632, on the actuator [15] for the applicable flight spoiler [16].

SUBTASK 27-61-51-860-003

(4) Do this task: Depressurization of the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 27-61-51-862-001

(5) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-51-860-023

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

F. Actuator Removal

SUBTASK 27-61-51-030-001

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. SUDDEN MOVEMENT CAN OCCUR WHEN YOU DISCONNECT THE OPPOSITE SPOILERS PCU-ELECTRICAL-CONNECTOR. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Disconnect the electrical connector [25] from the actuator [15].

SUBTASK 27-61-51-020-001

(2) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, disconnect the hydraulic line [12] and hydraulic line [32] from the actuator [15], do these steps:

(a) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, below the actuator [15] to catch the hydraulic fluid.

(b) Disconnect the hydraulic line [12] and hydraulic line [32] from the actuator [15].

(c) Install plugs in the hydraulic line [12] and hydraulic line [32].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-51-020-017

(3) For the spoiler No.9, disconnect the hydraulic line [37], hydraulic line [38], and hydraulic line [39] from the actuator [15], do these steps:

(a) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, below the actuator [15] to catch the hydraulic fluid.

(b) Disconnection the hydraulic line [37], hydraulic line [38], and hydraulic line [39] from the actuator [15].

(c) Install plugs in the hydraulic line [37], hydraulic line [38], and hydraulic line [39].

SUBTASK 27-61-51-020-002

(4) Disconnect the actuator rod end [17] from the flight spoiler [16], do these steps:

(a) Remove the lockwire [23], bolt [1], washer [2], washer [4], and pin [5] from the rod end [17].

(b) Remove the nut [7], washer [6], and pin [3] that attach the actuator rod end [17] to the flight spoiler [16].

SUBTASK 27-61-51-020-003

(5) Disconnect the actuator [15] from the structure, do these steps:

(a) Remove the bolts [20] and washers [21].

(b) Remove the bolts [18] and washers [19].

SUBTASK 27-61-51-020-004

(6) Remove the actuator [15] from the airplane.

SUBTASK 27-61-51-480-001

(7) If it is necessary, for the spoilers No.2, 3, 4, 5, 8, 10, and 11, remove the elbow [35], elbow [36], union [13], union [33], O-ring [14], and O-ring [34] from the actuator [15].

(a) Install caps in the ports of the actuator [15].

SUBTASK 27-61-51-480-004

(8) If it is necessary, for the spoiler No.9, remove the tee fitting [40], union [41], O-ring [42], union [44], and O-ring [43] from the actuator [15].

(a) Install caps in the ports of the actuator [15].

G. Spoiler Actuator Filter Removal

SUBTASK 27-61-51-020-012

(1) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, do these steps:

(a) Disconnect the hydraulic line [32] from the actuator [15].

1) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, below the flight actuator [15] to catch the hydraulic fluid.

2) Disconnect the hydraulic line [32] from the actuator [15].

3) Install the plug in the hydraulic line [32].

(b) Remove the elbow [36], union [13], and O-ring [14].

(c) Remove the washer [30] and filter [29].

SUBTASK 27-61-51-020-018

(2) For the spoiler No.9, do these steps:

(a) Disconnect the hydraulic line [38] from the actuator [15], do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

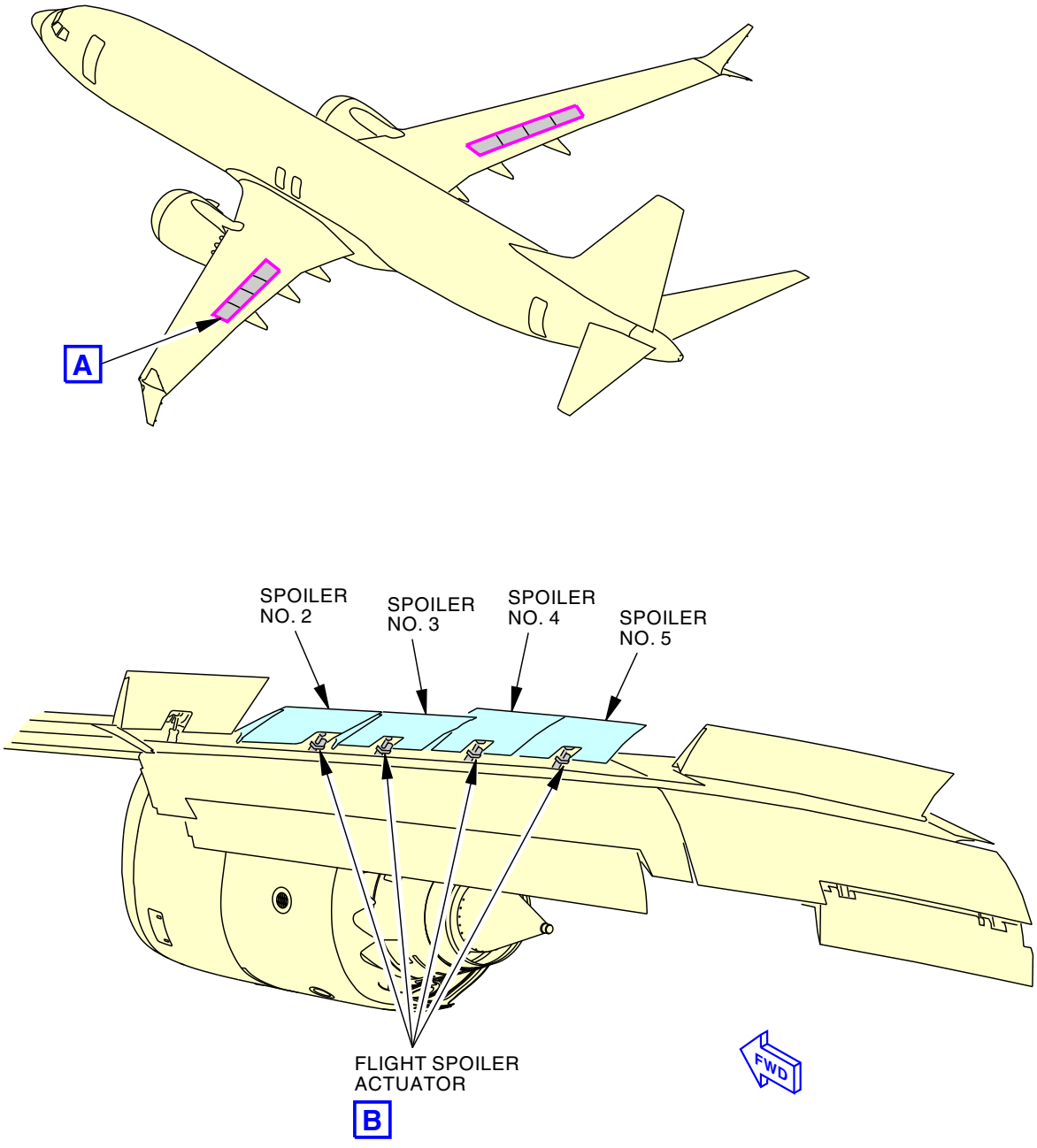
1) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, below the actuator [15] to catch the hydraulic fluid.
2) Disconnect the hydraulic line [38] from the actuator [15].
3) Install the plug in the hydraulic line [38].

(b) Remove the union [44] and O-ring [43].

(c) Remove the washer [46] and filter [45].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

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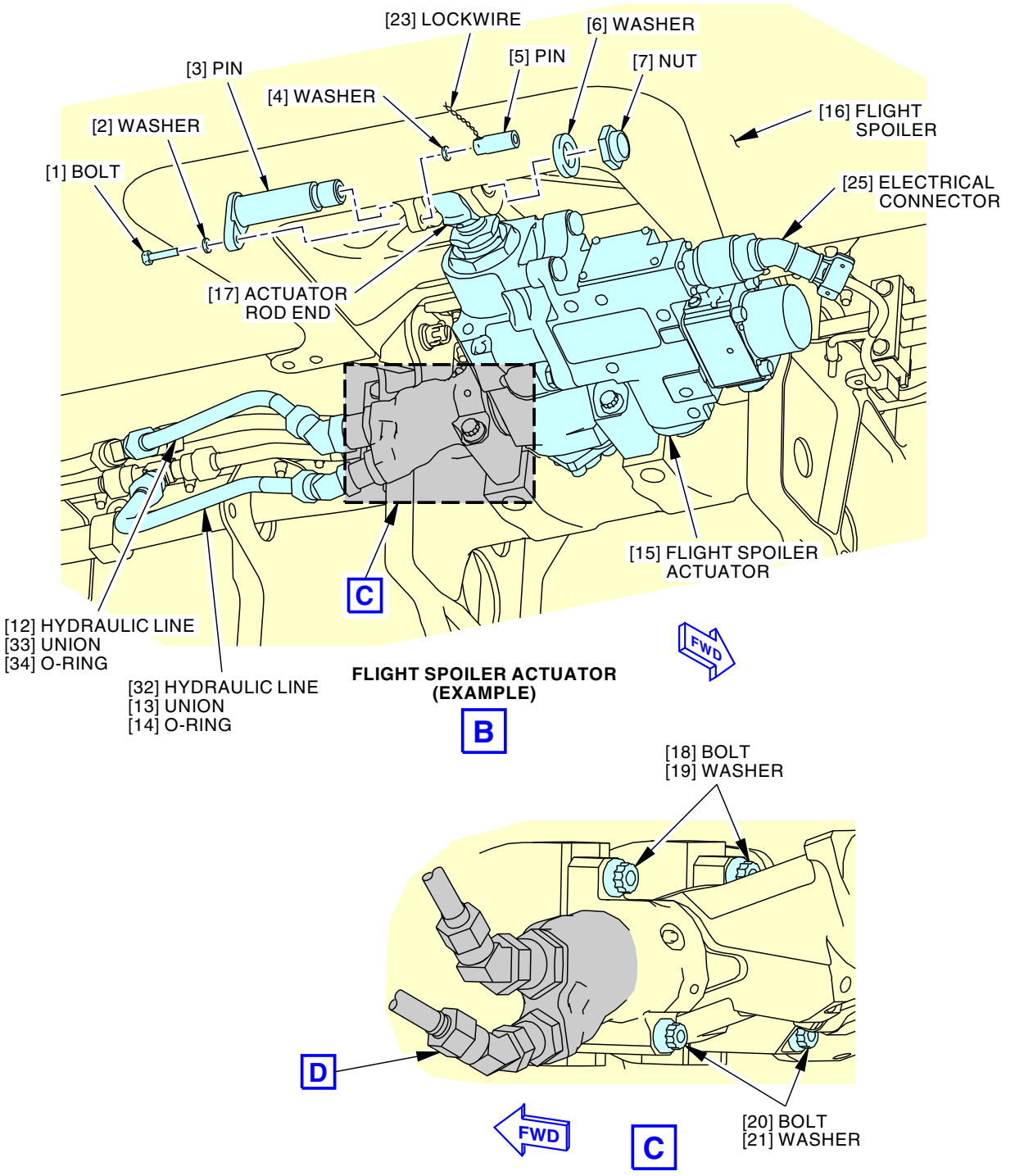
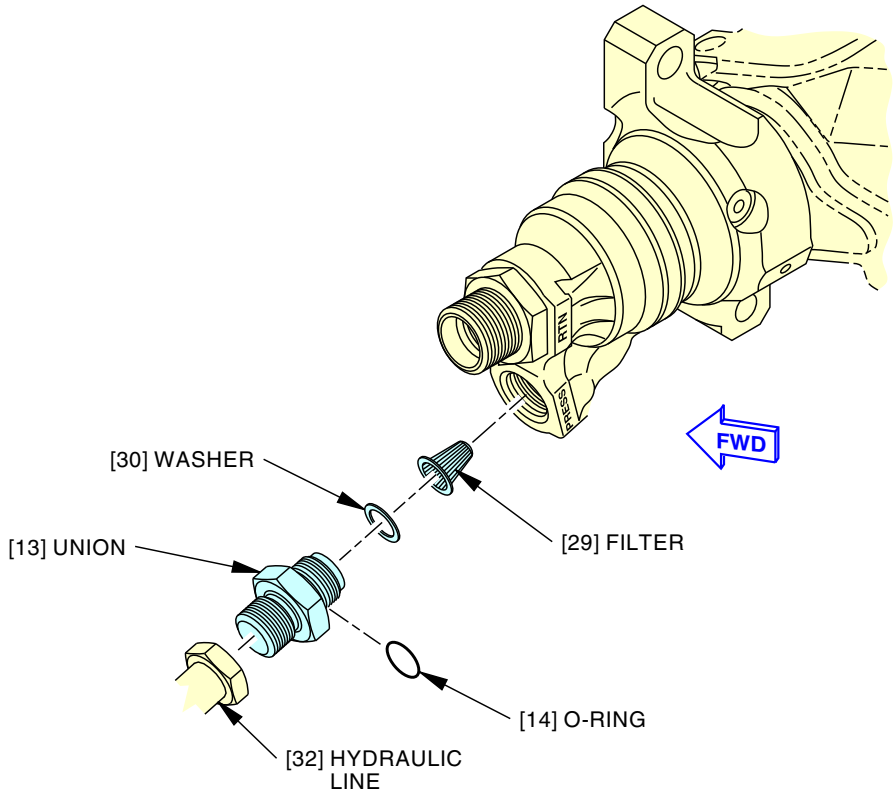
Flight Spoiler Actuator Installation
Figure 401/27-61-51-990-801 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Actuator Installation
Figure 401/27-61-51-990-801 (Sheet 2 of 5)

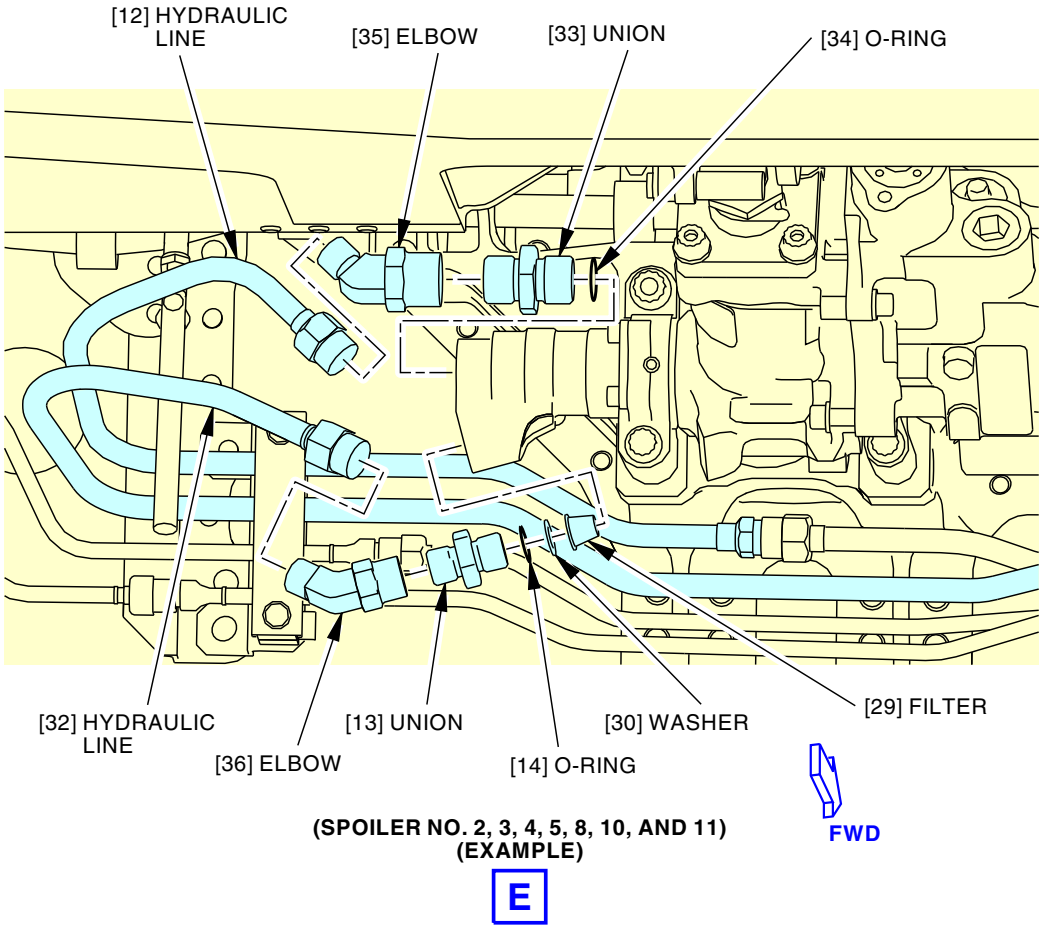
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2540215 S0000602823_V3

Flight Spoiler Actuator Installation
Figure 401/27-61-51-990-801 (Sheet 3 of 5)

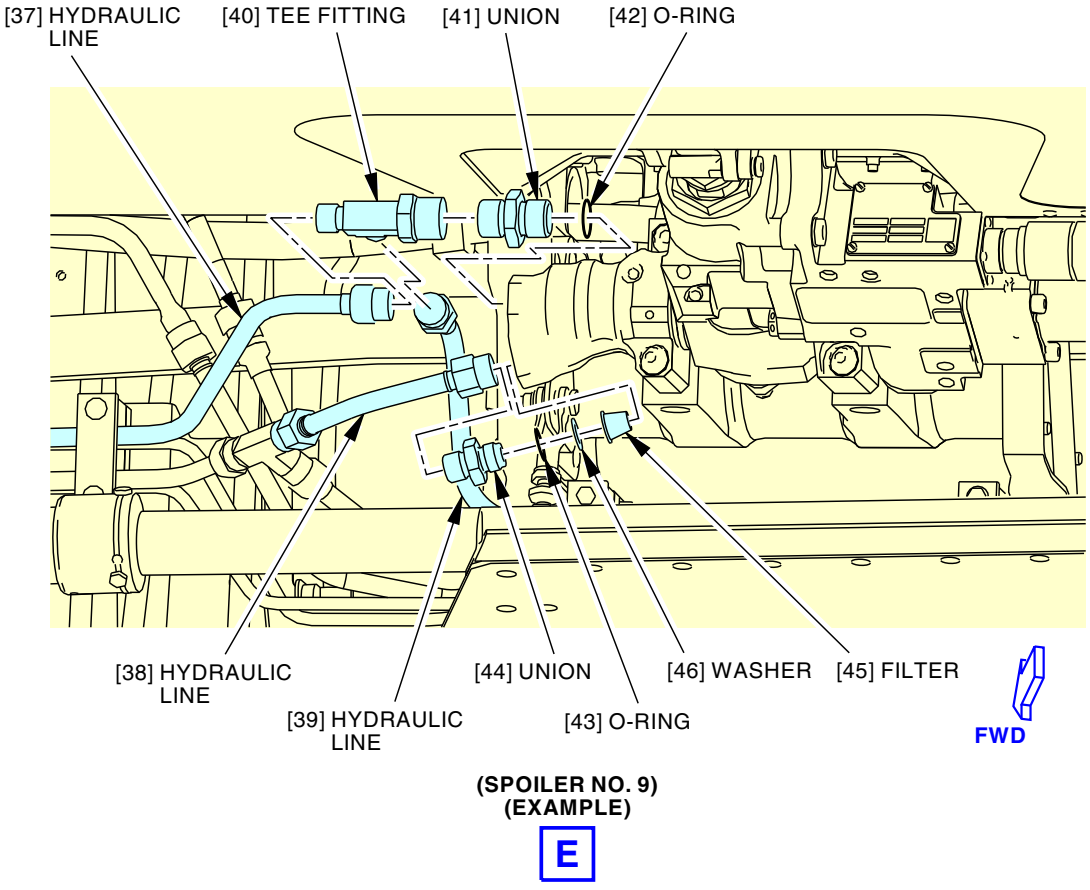
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2985126 S0000763087_V1

Flight Spoiler Actuator Installation
Figure 401/27-61-51-990-801 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(SPOILER NO. 9)
(EXAMPLE)

E

2985136 S0000763088_V1

Flight Spoiler Actuator Installation
Figure 401/27-61-51-990-801 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-51-400-801

3. Flight Spoiler Actuator - Installation

(Figure 401)

A. General

(1) This task contains these procedures:

- Flight Spoiler Actuator - Installation
- Spoiler Actuator Filter - Installation.

(2) In this task the flight spoiler actuator is referred to as the “actuator”.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
12-22-61-600-802	Flight Spoiler Actuator and Rod End Lubrication (P/B 301)
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-730-801	Flight Spoiler System Test (P/B 501)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-820-802	Flight Spoiler Adjustment (P/B 501)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-802	Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
14	O-ring	27-61-51-50-325	SIA ALL
15	Actuator	27-61-51-01-105	SIA ALL
29	Filter	27-61-51-50-315	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
34	O-ring	27-61-51-50-340	SIA ALL

F. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

G. Actuator Installation

SUBTASK 27-61-51-420-001

(1) If it is necessary, for the spoilers No.2, 3, 4, 5, 8, 10, and 11, install the elbow [35], elbow [36], union [13], and union [33] in the actuator [15], do these steps:

(a) Apply hydraulic fluid, D00153, to the new O-ring [14] and O-ring [34].

(b) Remove the caps from the hydraulic ports.

(c) Install the O-ring [14], O-ring [34], union [13], union [33], elbow [35], and elbow [36] in the actuator [15].

SUBTASK 27-61-51-420-014

(2) If it is necessary, for the spoiler No.9, install the tee fitting [40], union [41], O-ring [42], O-ring [43], and union [44] in the actuator [15].

(a) Apply hydraulic fluid, D00153, to the new O-ring [42] and new O-ring [43].

(b) Remove the caps from the hydraulic ports.

(c) Install the tee fitting [40], O-ring [42], O-ring [43], union [41], and union [44] in the actuator [15].

SUBTASK 27-61-51-420-002

(3) Install the actuator [15], do these steps:

(a) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, remove the plugs from the hydraulic line [12] and hydraulic line [32].

(b) For the spoiler No.9, remove the plugs from the hydraulic line [37], hydraulic line [38], and hydraulic line [39].

(c) Put the actuator [15] in its position.

1) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, make sure that the hydraulic line [12] and hydraulic line [32] align with the fittings.

2) For the spoiler No.9, make sure that the hydraulic line [37], hydraulic line [38], and hydraulic line [39] align with the fittings.

(d) For the spoilers No.2, 3, 4, 5, 8, 10 ,and 11, loosely install the hydraulic line [12] and hydraulic line [32] to the actuator [15].

(e) For the spoiler No.9, loosely install the hydraulic line [37], hydraulic line [38], and hydraulic line [39] to the actuator [15].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Connect the actuator [15] to the structure:

1) Install the bolts [20] and washers [21].
2) Install the bolts [18] and washers [19].
3) Tighten the bolts [20] to 225 in-lb (25.4 N·m) - 275 in-lb (31.1 N·m).
4) Tighten the bolts [18] to 450 in-lb (50.8 N·m) - 550 in-lb (62.1 N·m).

(g) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, tighten the B-nut on hydraulic line [12] to 170 ±9 in-lb (19 ±1 N·m).

(h) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, tighten the B-nut on hydraulic line [32] to 270 ±14 in-lb (31 ±2 N·m).

(i) For the spoiler No.9, tighten the B-nut on the hydraulic line [37] and hydraulic line [39] to 170 ±9 in-lb (19 ±1 N·m)

(j) For the spoiler No.9, tighten the B-nut on the hydraulic line [38] to 270 ±14 in-lb (31 ±2 N·m)

(k) Connect the actuator rod end [17] to the flight spoiler [16]:

1) Apply a layer of grease, D00633, to the outer diameter of pin [3].
2) Install the pin [3], washer [6], and nut [7].
3) Tighten the nut [7] to 540 in-lb (61.0 N·m) to 660 in-lb (74.6 N·m).
4) Apply a thin coat of corrosion inhibiting material, G50136, to the shank of the bolt [1].
   a) Make sure that the threads of the bolt [1] are free of corrosion inhibiting material, G50136.
5) Install the bolt [1], washer [2], washer [4], pin [5].
   a) Tighten the bolt [1] to 30 in-lb (3.4 N·m) - 35 in-lb (4 N·m).
6) Install the lockwire [23] (MS20995NC32 lockwire, G50347) on pin [5] with double twist method.

SUBTASK 27-61-51-640-001

(4) Do this task: Flight Spoiler Actuator and Rod End Lubrication, TASK 12-22-61-600-802.

SUBTASK 27-61-51-910-001

(5) Do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

SUBTASK 27-61-51-430-001

(6) Connect the electrical connector [25] to the receptacle on the actuator [15].

H. Spoiler Actuator Filter Installation

SUBTASK 27-61-51-420-003

(1) For the spoilers No.2, 3, 4, 5, 8, 10, and 11, do these steps:

(a) Install the new filter [29] and washer [30].

(b) Install the elbow [36] and union [13] in the actuator [15], do these steps:

1) Apply hydraulic fluid, D00153, to a new O-ring [14].
2) Remove the cap from the hydraulic port.
3) Install the O-ring [14] and union [13] in the actuator [15].
   a) Tighten the union [13] to 215 in-lb (24.3 N·m) - 225 in-lb (25.4 N·m).

(c) Install the hydraulic line [32] to the actuator [15].

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(d) Tighten the B-nut on hydraulic line [32] to 270 ±14 in-lb (31 ±2 N·m).

SUBTASK 27-61-51-420-015

(2) For the spoiler No.9, do these steps:

(a) Install the new filter [45] and washer [46].

(b) Install the O-ring [43] and union [44] in the actuator [15], do these steps:

1) Apply hydraulic fluid, D00153, to a new O-ring [43].

2) Remove the cap from the hydraulic port.

3) Install the O-ring [43] and union [44] in the actuator [15].

a) Tighten the union [44] to 215 in-lb (24.3 N·m) - 225 in-lb (25.4 N·m).

(c) Install the hydraulic line [38] to the actuator [15].

(d) Tighten the B-nut on the hydraulic line [38] to 270 ±14 in-lb (31 ±2 N·m).

I. Flight Spoiler Test

SUBTASK 27-61-51-080-001

(1) Remove the actuator lock set, SPL-14632, from the actuator [15] for the applicable flight spoiler [16].

SUBTASK 27-61-51-860-004

(2) Do this task: Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition, TASK 27-61-00-840-802.

SUBTASK 27-61-51-860-005

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-51-860-024

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-51-860-006

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-51-870-001

(6) Move the speed brake control lever through its full cycle to bleed the spoiler actuators.

SUBTASK 27-61-51-700-001

(7) Make sure that there are no leaks at the hydraulic lines.

SUBTASK 27-61-51-820-001

(8) Do this task: Flight Spoiler Adjustment, TASK 27-61-00-820-802.

SUBTASK 27-61-51-730-001

(9) Do this task: Flight Spoiler System Test, TASK 27-61-00-730-801.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-61-51-860-007

(1) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-51-860-008

(2) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-51-610-001

(3) If it is necessary, service the hydraulic reservoirs (TASK 12-12-00-610-801).

——— END OF TASK ———

TASK 27-61-51-000-802

4. Electrohydraulic Servo Valve (EHSV) - Removal

(Figure 402)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-00-800-802	Depressurization of the Spoiler Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

E. Prepare for the Removal

SUBTASK 27-61-51-860-013

(1) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-61-51-860-022

(2) Put the speed brake lever in the UP position to lift the flight spoilers.

SUBTASK 27-61-51-480-003

(3) Install the actuator lock set, SPL-14632, on the actuator [15] for the applicable flight spoiler.

SUBTASK 27-61-51-860-014

(4) Do this task: Depressurization of the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 27-61-51-860-015

(5) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-51-860-026

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

F. Electrohydraulic Servo Valve (EHSV) Removal

SUBTASK 27-61-51-020-015

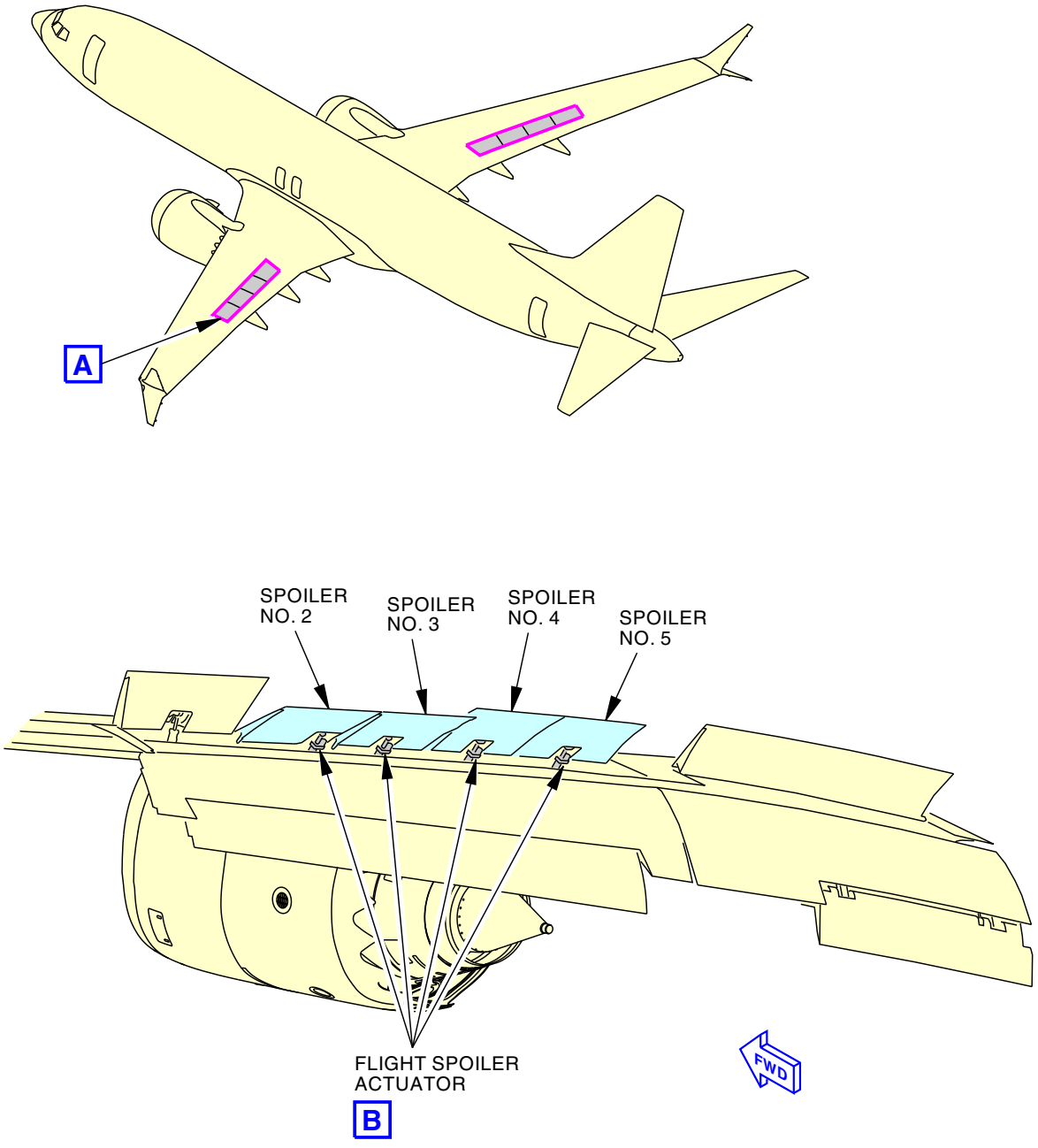
(1) Remove the MS20995C32 lockwire, G01048, and the screws [27].

SUBTASK 27-61-51-020-016

(2) Remove the electrohydraulic servo valve [26], packing [31] and gasket [28].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

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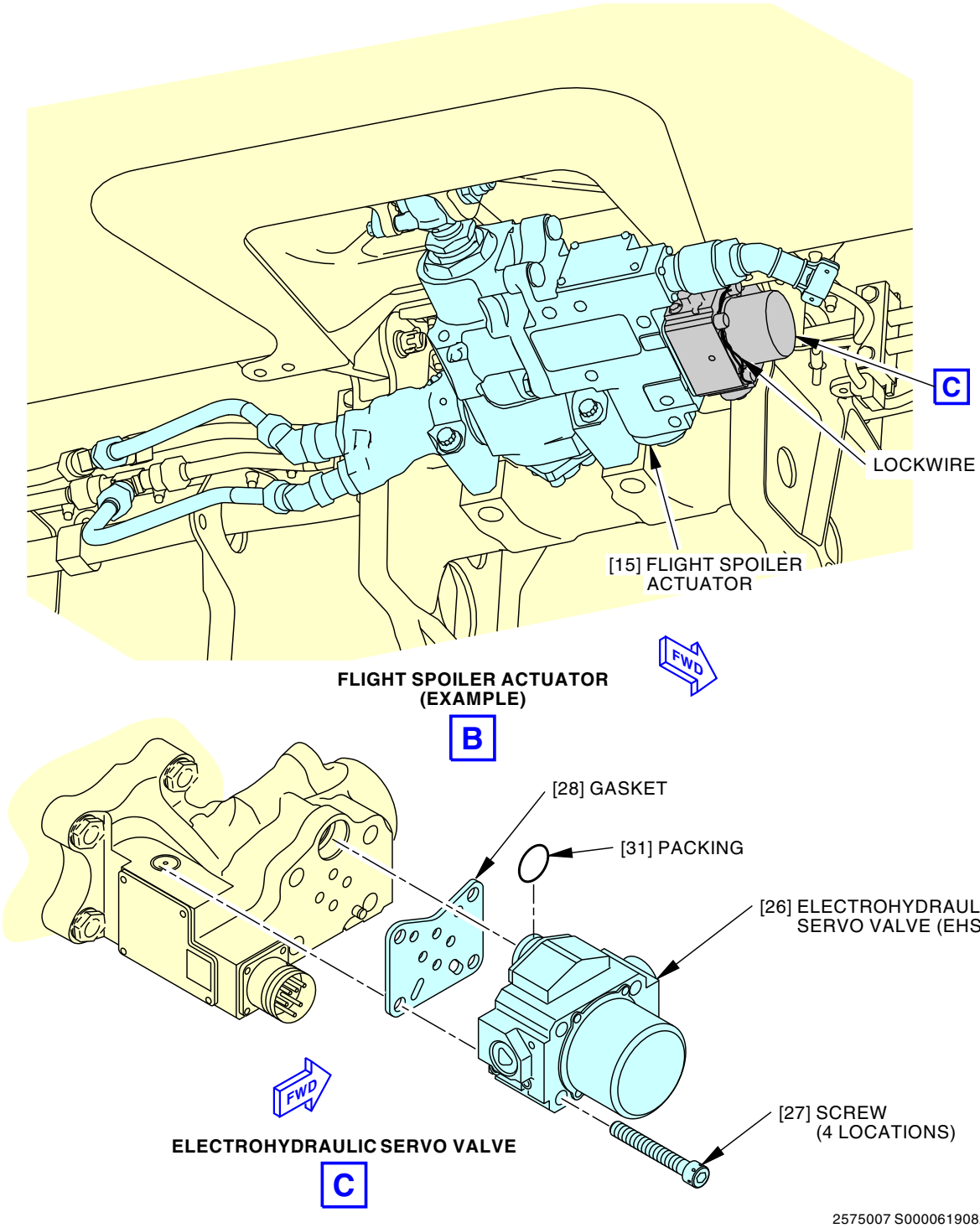
Electrohydraulic Servo Valve Installation
Figure 402/27-61-51-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Electrohydraulic Servo Valve Installation
Figure 402/27-61-51-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-61-51-400-802

5. Electrohydraulic Servo Valve (EHSV) - Installation

(Figure 402)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-730-801	Flight Spoiler System Test (P/B 501)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-802	Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14632	Flight Spoiler Actuator Lock Set Part #: C27107-1 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
26	Electrohydraulic servo valve	27-61-51-50-160	SIA ALL
28	Gasket	27-61-51-50-150	SIA ALL
31	Packing	27-61-51-50-155	SIA ALL

E. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

F. Electrohydraulic Servo Valve (EHSV) Installation

SUBTASK 27-61-51-420-010

(1) Install the electrohydraulic servo valve [26], a new new packing [31] and the new gasket [28].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-61-51-420-011

(2) Install the screws [27] that attach the electrohydraulic servo valve [26].

(a) Tighten the screws [27] to 60 in-lb (6.8 N·m) to 70 in-lb (7.9 N·m).

SUBTASK 27-61-51-420-012

(3) Install the MS20995C32 lockwire, G01048, to the screws [27] (TASK 20-10-44-400-801).

G. Flight Spoiler Test

SUBTASK 27-61-51-080-002

(1) Remove the actuator lock set, SPL-14632, from the actuator [15] for the applicable flight spoiler.

SUBTASK 27-61-51-860-016

(2) Do this task: Pressurization of the Spoiler Hydraulic Systems A and B to its Usual Condition, TASK 27-61-00-840-802.

SUBTASK 27-61-51-860-017

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	11	C04040	GROUND SPOILER CONTROL
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-61-51-860-025

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-61-51-860-018

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-61-51-870-004

(6) Move the speed brake control lever through its full cycle to bleed the spoiler actuators.

SUBTASK 27-61-51-700-002

(7) Make sure that there are no leaks at the electrohydraulic servo valve [26].

SUBTASK 27-61-51-730-004

(8) Do this task: Flight Spoiler System Test, TASK 27-61-00-730-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition.

SUBTASK 27-61-51-860-019

(1) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-61-51-860-020

(2) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-61-51-610-002

(3) Service the hydraulic reservoirs if it is necessary. (TASK 12-12-00-610-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FLIGHT SPOILER ACTUATOR - INSPECTION/CHECK

1. General

A. This task supplies the data for a dimensional inspection of the flight spoiler actuator.

B. This task does not remove or install the flight spoiler actuator, refer to the Flight Spoiler Actuator - Removal/Installation for procedures to remove and install the flight spoiler actuator.

TASK 27-61-51-200-801

2. Flight Spoiler Actuator Inspection

(Figure 601)

A. General

(1) This procedure gives wear limits and repair data for the flight spoiler actuators.

B. References

Reference	Title
27-61-51-000-801	Flight Spoiler Actuator - Removal (P/B 401)
27-61-51-400-801	Flight Spoiler Actuator - Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11

E. Flight Spoiler Actuator Inspection

SUBTASK 27-61-51-020-005

(1) Remove the flight spoiler actuator to inspect it (TASK 27-61-51-000-801).

SUBTASK 27-61-51-020-006

(2) Use these tools to do a check for wear on the parts of the flight spoiler actuator:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-61-51-020-007

(3) Examine the parts of the flight spoiler actuator for worn areas:

(a) Remove the parts to be checked.

(b) Measure the parts as necessary with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Compare the dimensions you measured with the permitted wear dimensions in Table 601.

(d) If the parts are not in the tolerance, replace or repair the parts.

Table 601/27-61-51-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM	MAXIMUM	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.7500 in. (19.050 mm)	0.7515 in. (19.088 mm)	0.7520 in. (19.101 mm)	0.0057 in. (0.145 mm)
#1 PIN	O.D.	0.7475 in. (18.987 mm)	0.7480 in. (18.999 mm)	0.7458 in. (18.943 mm)	
#2 BEARING	I.D.	0.7495 in. (19.037 mm)	0.7500 in. (19.050 mm)	0.7505 in. (19.063 mm)	0.0042 in. (0.107 mm)
#2 PIN	O.D.	0.7475 in. (18.987 mm)	0.7480 in. (18.999 mm)	0.7458 in. (18.943 mm)	

SUBTASK 27-61-51-020-008

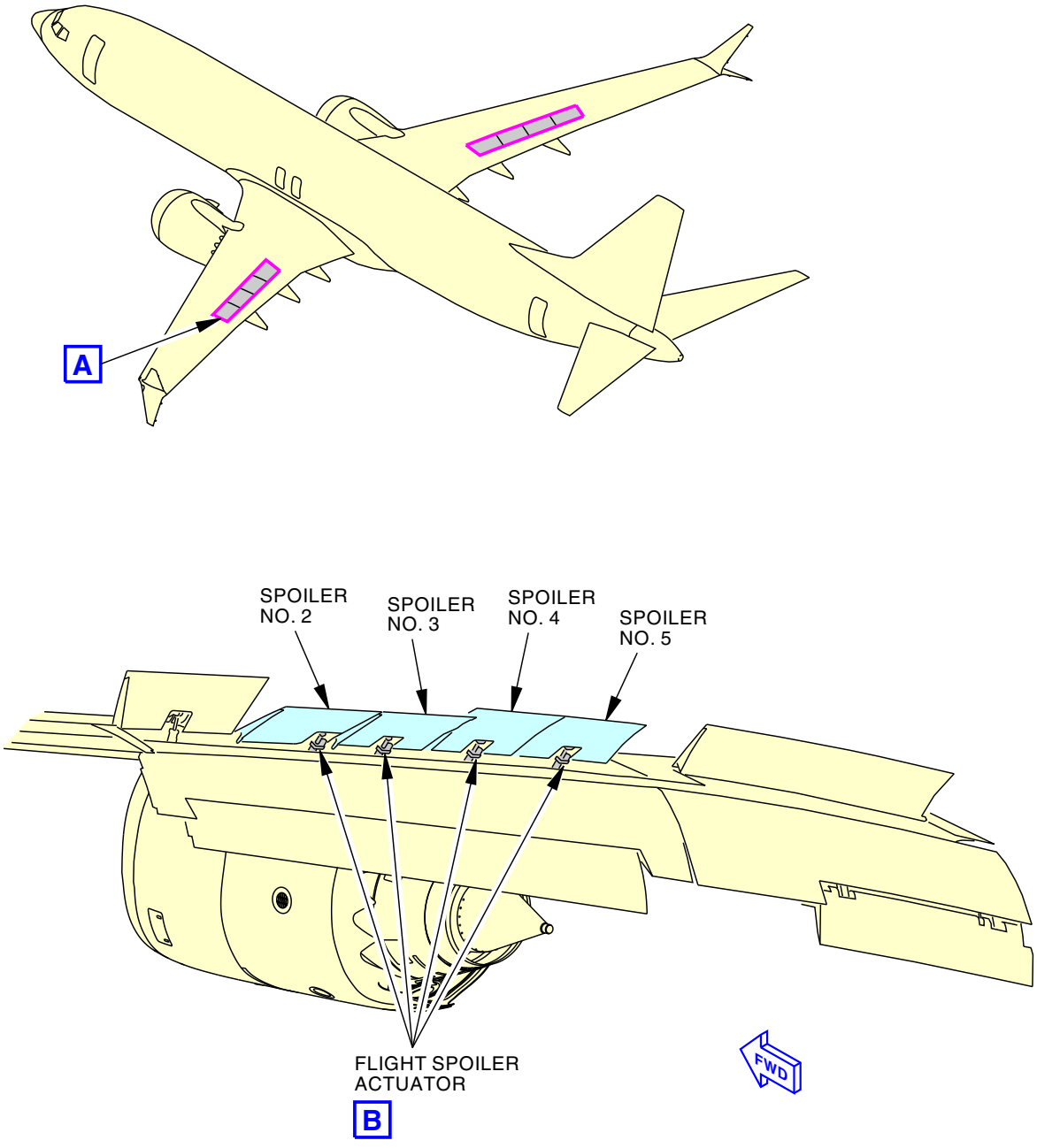
(4) Reassemble the flight spoiler actuator, if it is necessary.

SUBTASK 27-61-51-020-009

(5) Install the flight spoiler actuator (TASK 27-61-51-400-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



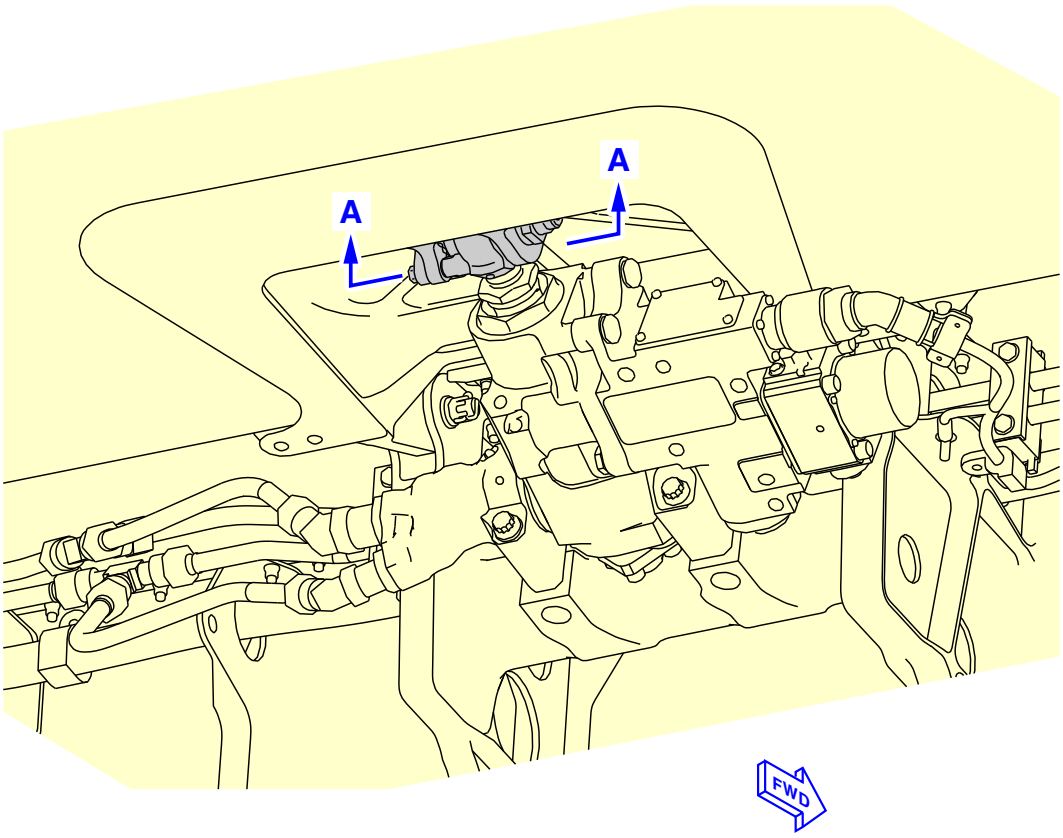
(LEFT WING IS SHOWN, RIGHT WING IS EQUIVALENT)

A

2413205 S00061532086_V1

Flight Spoiler Actuator Wear Limits
Figure 601/27-61-51-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



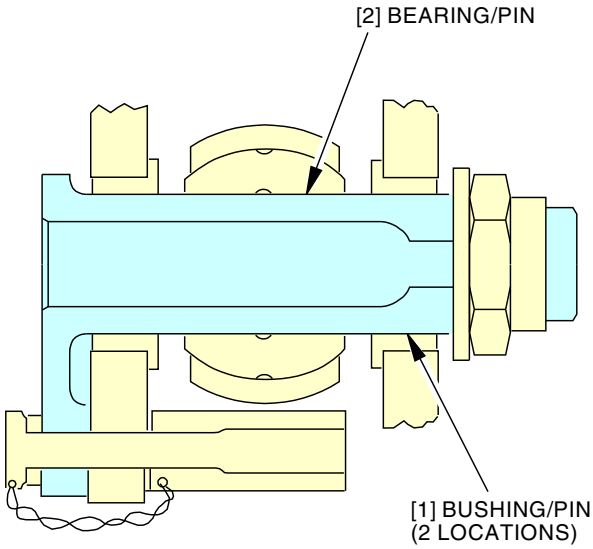
**FLIGHT SPOILER ACTUATOR
(EXAMPLE)**

B

2413206 S00061532087_V1

**Flight Spoiler Actuator Wear Limits
Figure 601/27-61-51-990-802 (Sheet 2 of 3)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A-A

2413207 S00061532088_V2

Flight Spoiler Actuator Wear Limits
Figure 601/27-61-51-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEED BRAKE CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Apply Pressure to the Speed Brake Hydraulic Systems A and B

(2) Shut Down the Speed Brake Hydraulic Systems A and B

(3) Depressurization of the Speed Brake Hydraulic Systems A and B

(4) Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition

TASK 27-62-00-800-801

2. Apply Pressure to the Speed Brake Hydraulic Systems A and B

(Figure 201)

A. General

(1) This procedure starts the speed brake hydraulic systems A and B and applies pressure to the speed brake.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
29-11-00-860-802	Hydraulic System A or B Pressurization with a Portable Hydraulic Cart (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Procedure

SUBTASK 27-62-00-860-010

CAUTION

DO NOT OPERATE SYSTEM A OR B HYDRAULIC PUMPS FOR MORE THAN TWO MINUTES WITHOUT FUEL IN THE FUEL TANKS. THE NO. 1 (FOR SYSTEM A) AND NO. 2 (FOR SYSTEM B) FUEL TANKS MUST HAVE A MINIMUM OF 250 GALLONS (1675 POUNDS/760 KILOGRAMS) OF FUEL IN THEM. IF THERE IS NOT SUFFICIENT FUEL IN THE FUEL TANKS, THE HYDRAULIC FLUID WILL BECOME TOO HOT.

(1) Make sure the No. 1 and No. 2 fuel tanks each have 250 gal (946 l) (1675 lb (760 kg)) of fuel in them.

SUBTASK 27-62-00-210-004

(2) Make sure the hydraulic reservoirs are full (TASK 12-12-00-610-801).

SUBTASK 27-62-00-860-011

(3) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-012

(4) Set the parking brake.

SUBTASK 27-62-00-480-002

WARNING MAKE SURE THAT THE GROUND LOCKS ARE INSTALLED IN ALL THE LANDING GEARS BEFORE YOU PRESSURIZE THE HYDRAULIC SYSTEM. WITHOUT THE GROUND LOCKS, THE LANDING GEARS CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Install the ground lock assemblies in the landing gear (TASK 32-00-01-480-801).

SUBTASK 27-62-00-860-013

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize the speed brake hydraulic systems A and B with one of these methods:

(a) Method 1:

1) Set the ELEC 2, HYD PUMPS A or ELEC 1, HYD PUMPS B switch on the forward overhead panel to the ON position.

2) To pressurize the hydraulic system A, set the SPOILER A switch on the forward overhead panel to the ON position.

3) To pressurize the hydraulic system B, set the SPOILER B switch on the forward overhead panel to the ON position.

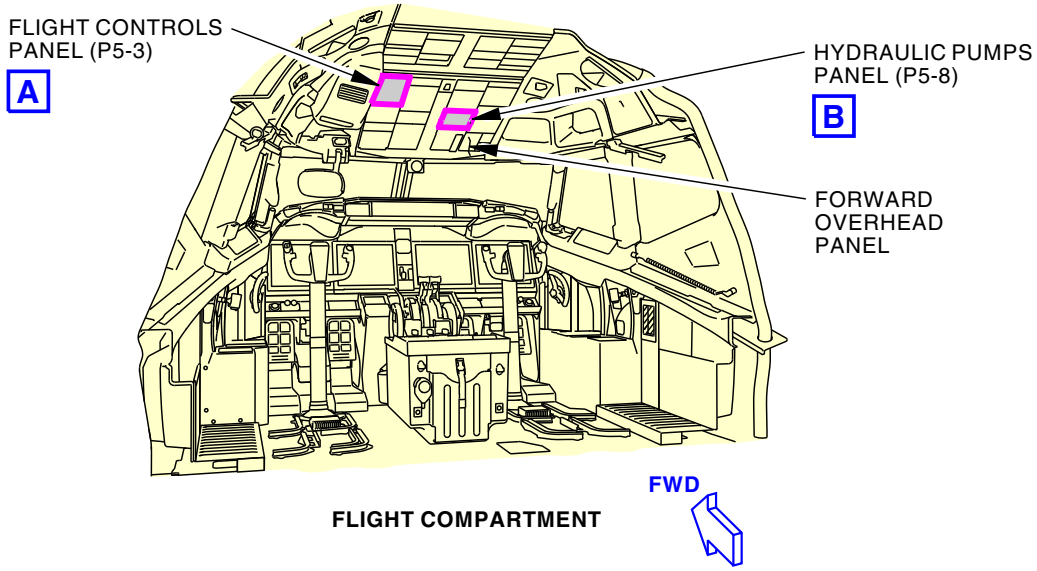
(b) Method 2:

NOTE: The hydraulic cart is a more flexible alternative. It can vary the pressure of the hydraulic fluid. Also, it is not necessary to have a specified quantity of fuel for cooling in tanks.

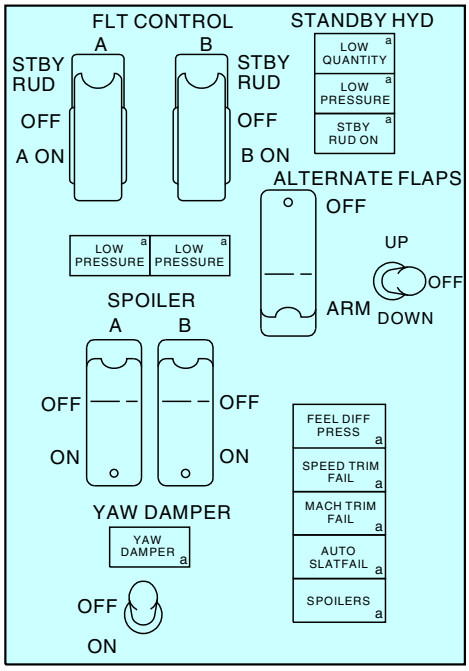
1) Do this task to use a portable hydraulic cart to supply hydraulic pressure: Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, TASK 29-11-00-860-802.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

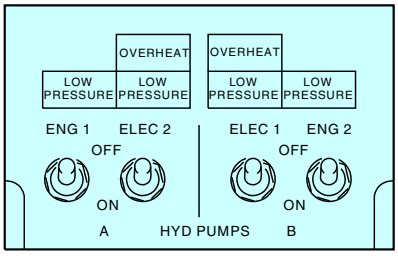


FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A



HYDRAULIC PUMPS PANEL (P5-8)

B

2413138 S00061531952_V1

Spoiler Power Control Switches
Figure 201/27-62-00-990-816

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-840-801

3. Shut Down the Speed Brake Hydraulic Systems A and B

(Figure 201)

A. General

(1) This procedure shut downs the speed brake hydraulic systems A and B but does not remove the head pressure.

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Procedure

SUBTASK 27-62-00-860-014

(1) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-62-00-860-015

(2) Set the SPOILER A and B switches on the forward overhead panel to the OFF position.

——— END OF TASK ———

TASK 27-62-00-800-802

4. Depressurization of the Speed Brake Hydraulic Systems A and B

(Figure 201, Figure 202)

A. General

(1) This procedure removes the head pressure from the speed brake hydraulic systems A and B and locks the system out.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

E. Procedure

SUBTASK 27-62-00-860-016

(1) Set the SPOILER A and B switches on the forward overhead panel to the OFF position.

(a) Install the DO NOT OPERATE tag, STD-858.

SUBTASK 27-62-00-860-017

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-62-00-860-018

(3) Set the ELEC 2, HYD PUMPS A and the ELEC 1, HYD PUMPS B switches on the forward overhead panel to the OFF position.

SUBTASK 27-62-00-870-002

(4) Operate the rudder pedals to decrease the remaining hydraulic system pressure.

SUBTASK 27-62-00-860-019

(5) If it is necessary to open a hydraulic line, you must release pressure from the reservoir for the applicable hydraulic system. To release it, do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-62-00-480-003

(6) Install the flight controls hydraulic module locks (Figure 202):

(a) Disconnect the electrical connector from the spoiler shutoff valve at the flight controls hydraulic modules A and B.

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion (TASK 20-60-07-910-802).

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

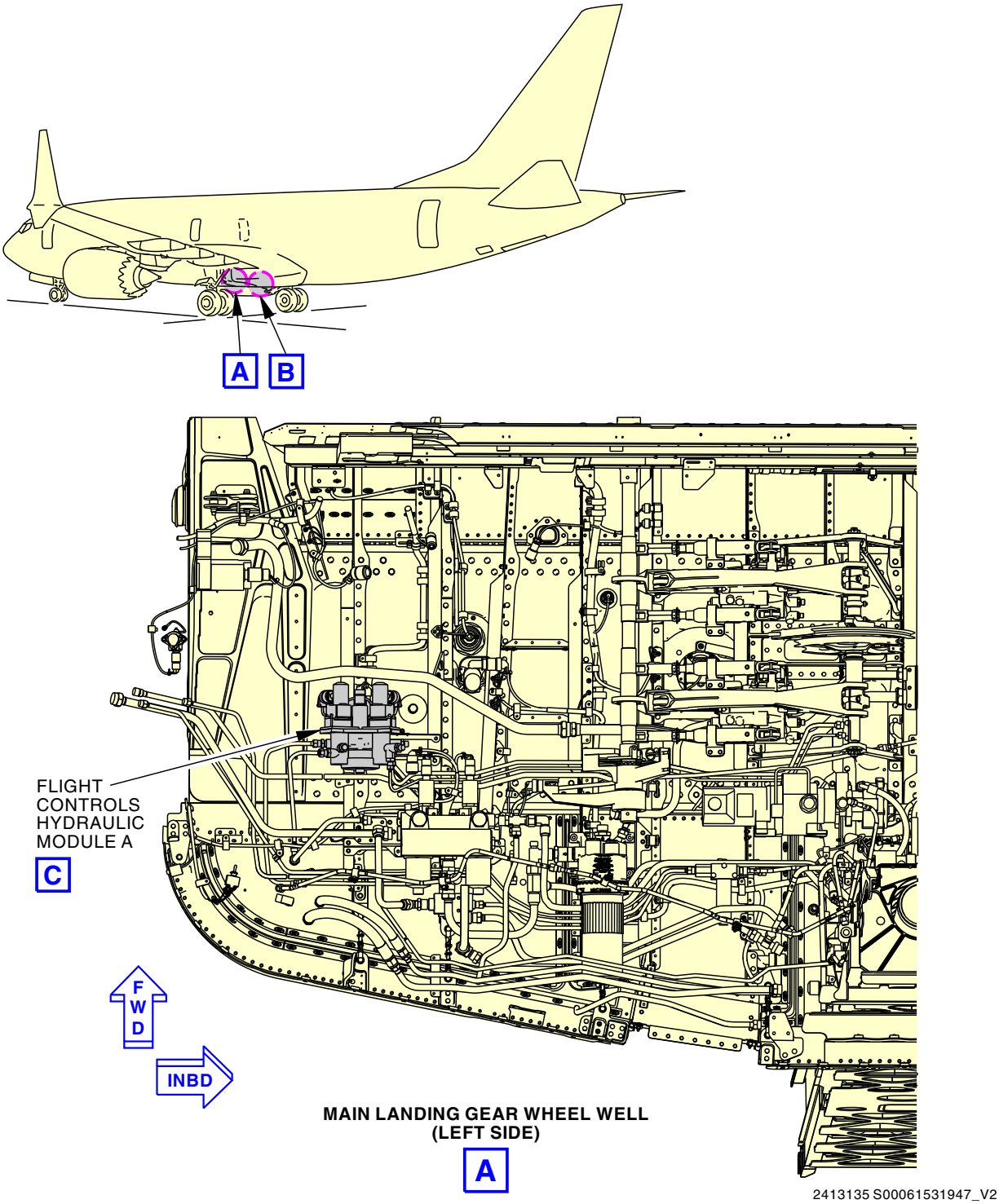
(c) Put the manual override lever at the two spoiler shutoff valves in the position 2 (OFF position).

(d) Install the lock, SPL-1675 on the two spoiler shutoff valves.

1) Install the lockpins.

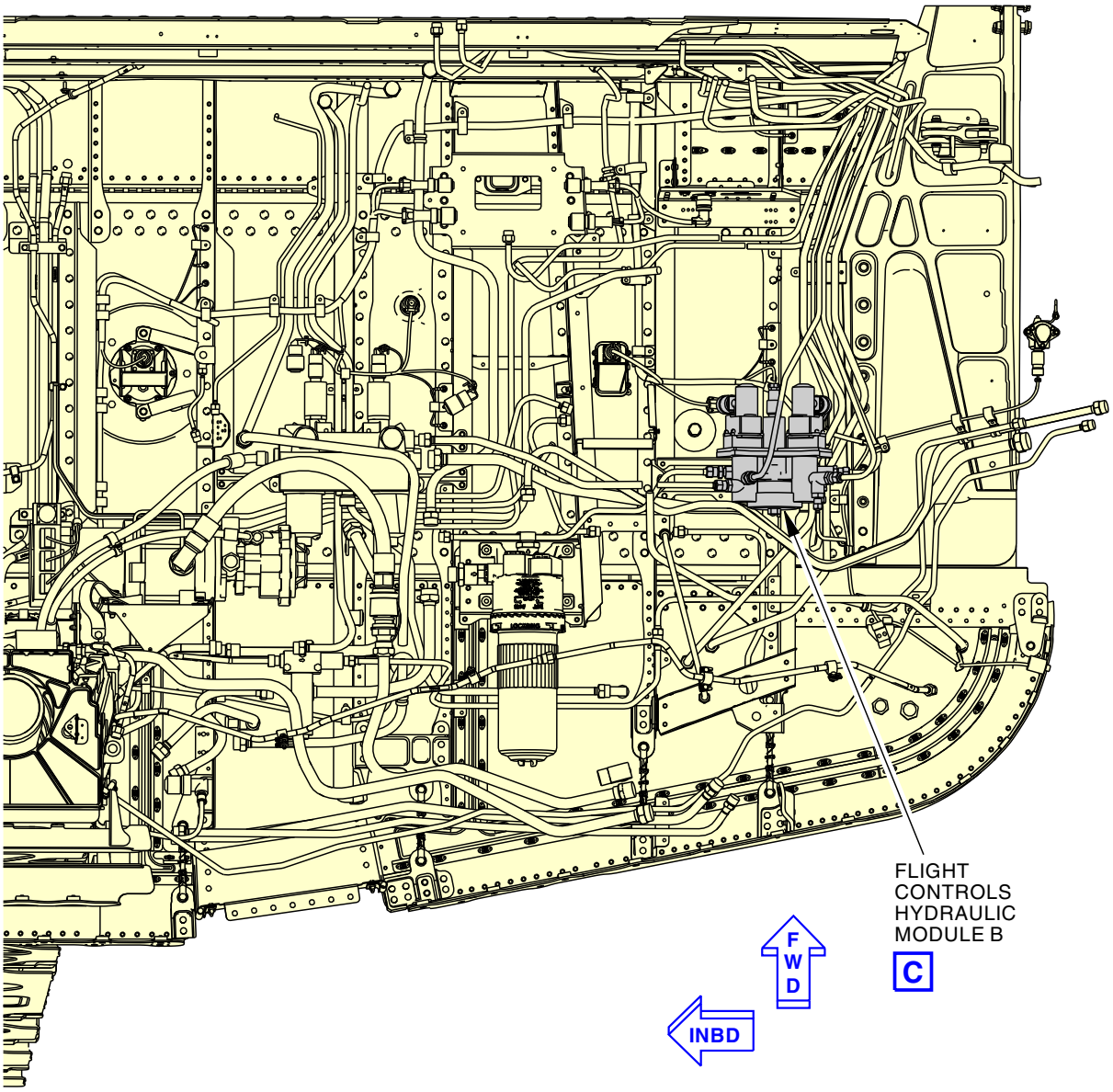
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



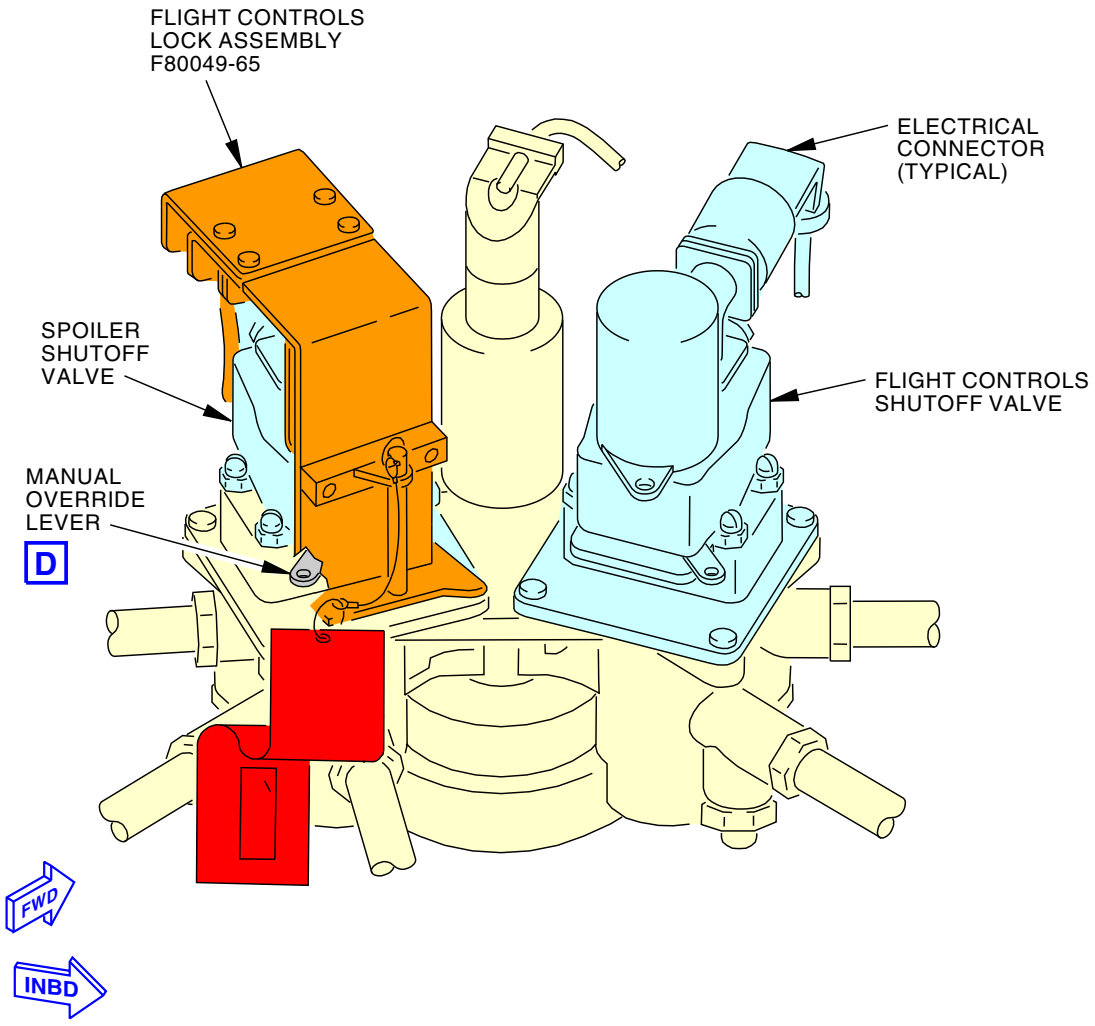
Flight Controls Hydraulic Module Lock Installation
Figure 202/27-62-00-990-804 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Controls Hydraulic Module Lock Installation
Figure 202/27-62-00-990-804 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT CONTROLS HYDRAULIC MODULE A
(MODULE B IS EQUIVALENT)

C

2413137 S00061531949_V3

Flight Controls Hydraulic Module Lock Installation
Figure 202/27-62-00-990-804 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-840-802

5. Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition

(Figure 201, Figure 202)

A. General

(1) This procedure unlocks the speed brake hydraulic systems A and B and applies the hydraulic pressure back to the system.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

F. Procedure

SUBTASK 27-62-00-080-004

(1) Remove the flight controls hydraulic module locks from the spoiler shutoff valves.

(a) Remove the lockpins.

(b) Remove the lock, SPL-1675 from the two spoiler shutoff valves.

(c) Put the manual override lever at the two spoiler shutoff valves in the position 1 (ON position).

(d) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(e) Connect the electrical connector to the spoiler shutoff valve at the spoiler hydraulic modules A and B. (Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-020

(2) Set the SPOILER A and B switches on the forward overhead panel to the ON position.

(a) Remove the DO NOT OPERATE tag, STD-858.

SUBTASK 27-62-00-860-021

(3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER

SUBTASK 27-62-00-860-022

(4) Pressurize the hydraulic reservoirs. Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEED BRAKE CONTROL SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- Speed Brake Control System Operational Test
- Speed Brake Control Lever Adjustment
- Ground Spoiler Adjustment
- Speed Brake Lever Friction Test
- Spoiler Operation Time Test
- Speed Brake Throttle Switch Test
- Engine Throttle Switch (S1) Functional Test
- Speed Brake Antiskid Inoperative Test
- Speed Brake RTO Test
- Speed Brake Extended Light Test

TASK 27-62-00-710-801

2. Speed Brake Control System Operational Test

A. General

(1) Do this test to quickly give the status of the speed brake control system. Special tools or equipment are not necessary.

B. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Procedure

SUBTASK 27-62-00-710-002

(1) Do the speed brake control system operational test:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

NOTE: When operating the speedbrakes on the ground with only the system A and B Electric Motor-Driven Pump (EMDP)s supplying power, the pump low pressure light may momentarily illuminate. This illumination and associated pressure drop should be considered normal as long as the pressure recovers within 10 seconds of initiating movement of the speedbrakes.

(b) Move the speed brake lever from the DOWN position to the UP position.

1) Make sure that the speed brakes move to the UP position.

(c) Move the speed brake lever from the UP position to the DOWN position.

1) Make sure that the speed brakes move to the retracted position.

(d) If necessary, move the flap lever to the FLAPS UP position.

(e) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

——— END OF TASK ———

TASK 27-62-00-820-801

3. Speed Brake Control Lever Adjustment

(Figure 501, Figure 502)

A. General

(1) Use this procedure to adjust the speed brake control lever.

B. References

Reference	Title
27-61-45-730-802	Speedbrake Lever Transducer Test (P/B 501)
46-13-02-700-805	Existing Faults Check (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14768	Rigging Lock - Four Degree Speedbrake Lever Part #: C27095-1 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Speed Brake Control Lever Adjustment

SUBTASK 27-62-00-730-006

(1) Use the Onboard Maintenance Function (OMF) to make sure that there are no faults associated with the Speed Brake Lever Transducer (TASK 27-61-45-730-802).

(a) If there are faults, clear them with the Speed Brake Lever Test from the OMF system.

SUBTASK 27-62-00-730-007

(2) Use the MAX Display System (MDS) to bring up the Flight Controls Maintenance Data page (Figure 501).

NOTE: The Flight Controls Maintenance Data page will be used to do a check of the settings of the RVDT channels A, B and C.

(a) Find the readings for the SCE SPDBRK LVR POSN and the RVDT A, B and C channels.

G. Speed Brake Control Lever Adjustment

SUBTASK 27-62-00-860-201

(1) Do these steps to adjust the speed brake lever:

(a) Put the speed brake lever in the DOWN and LOCKED position.

(b) Make sure that the SPEEDBRAKES EXTENDED and SPEEDBRAKE DO NOT ARM lights do not come on.

(c) Put the speed brake lever to the ARMED position (Figure 502).

NOTE: The ARMED position is approximately 4 degrees aft of the DOWN detent position.

1) Install the rigging lock, SPL-14768, to hold the speed brake lever in the ARMED detent position.

2) Moving the speed brake lever without hydraulic power can latch the GROUND SPOILER CONTROL Status Message.

a) Do this task if the Status Message occurs: Existing Faults Check, TASK 46-13-02-700-805.

(d) Open this access door:

Number	Name/Location
112A	Forward Access Door

(e) Disconnect the actuator rod end bolt from the speed brake mechanical assembly.

(f) Make sure that the cam roller is centered in the ARMED detent position.

(g) Make sure that the speed brake lever is still in the ARMED position.

NOTE: The ARMED position is approximately 4 degrees aft of the DOWN detent position.

(h) Remove the lower cover plate on the control stand to get access to the lower control rod.

1) Remove the screws [2] and washers [3].

(i) Adjust the lower control rod so that all three RVDT channels are within 3.3 degrees and 4.3 degrees.

1) Tighten the checknut on the lower control rod to 65 in-lb (7.34 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the lower control rod end is visible and covers at least 50 percent of the inspection hole.

(j) Make sure that the cam roller is centered in the ARMED detent position.

(k) Make sure that the speed brake lever is still in the ARMED position.

NOTE: The ARMED position is approximately 4 degrees aft of the DOWN detent position.

(l) Make sure that the actuator assembly is in the retracted position.

(m) Adjust the rod end from the actuator assembly until it aligns with the clevis from the speed brake mechanical assembly.

1) Make sure that the rod end bolt can be freely inserted in the rod end and the clevis.

(n) Install and tighten the actuator rod end bolt with the bolt head facing inboard.

(o) Make sure that the cam roller is centered in the ARMED detent position.

(p) Remove the rigging lock, SPL-14768, from the speed brake lever.

(q) Put the speed brake lever in the DOWN and LOCKED position.

(r) Make sure that the roller is not centered in the ARMED detent position.

(s) Make sure that RVDT A, RVDT B and RVDT C channels are within 0.0 ± 1.0 degrees.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-410-004

(1) Close this access door:

Number	Name/Location
112A	Forward Access Door

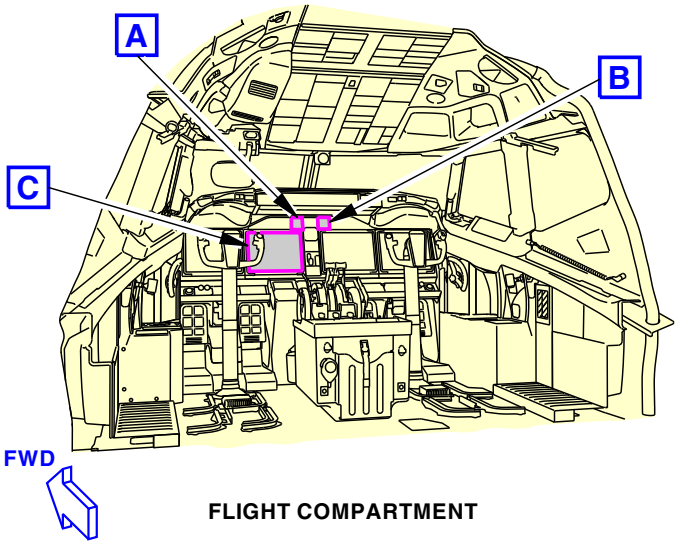
SUBTASK 27-62-00-410-005

(2) Install the lower cover plate on the control stand.

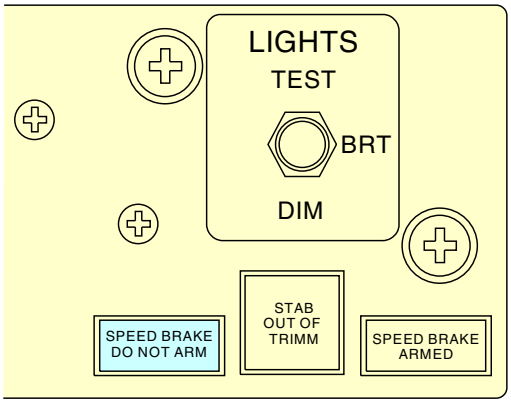
(a) Install the screws [2] and washers [3].

——— END OF TASK ———

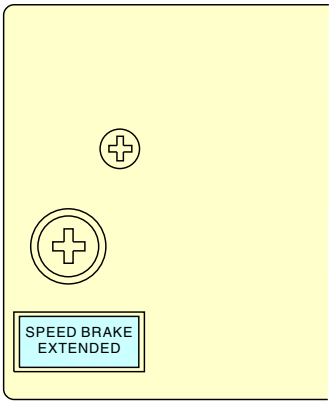
ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



A



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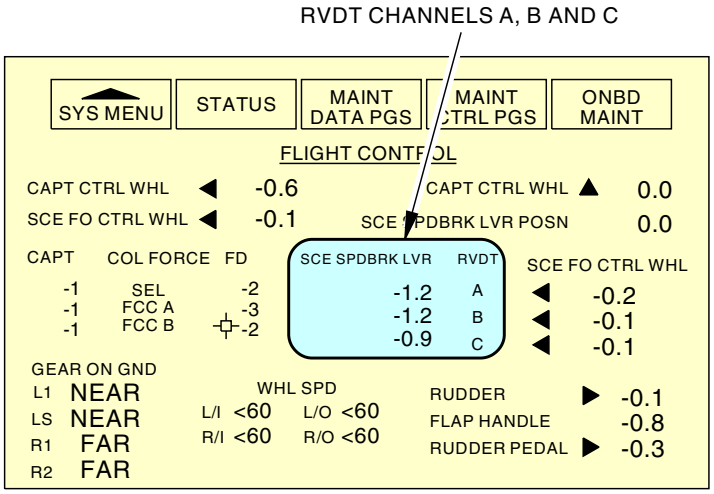


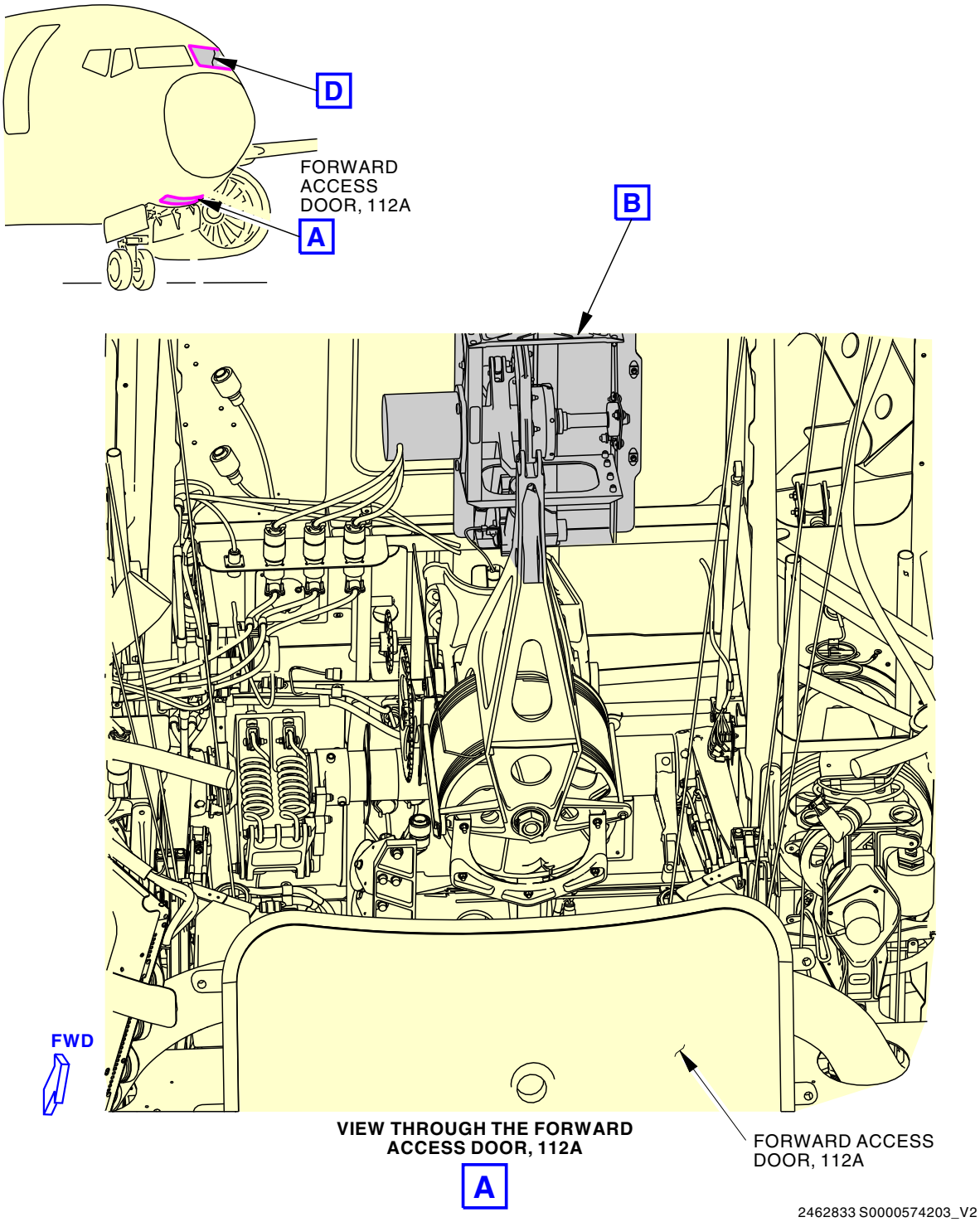
FLIGHT CONTROLS MAINTENANCE DATA PAGE

C

2528148 S0000597705_V2

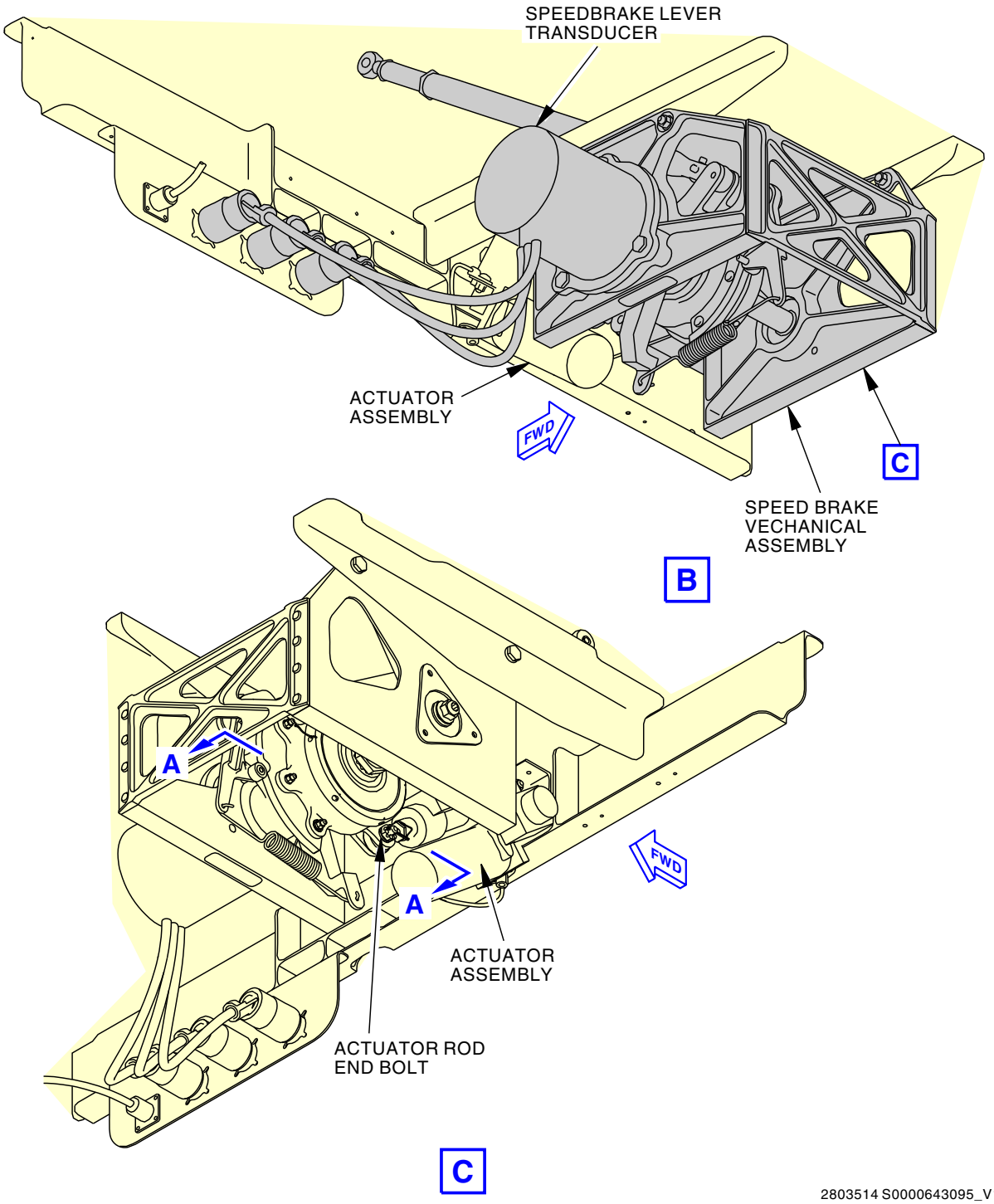
Speedbrake Control Lever Adjustment
Figure 501/27-62-00-990-805

ECCN 9E991 BOEING PROPRIETARY - See title page for details



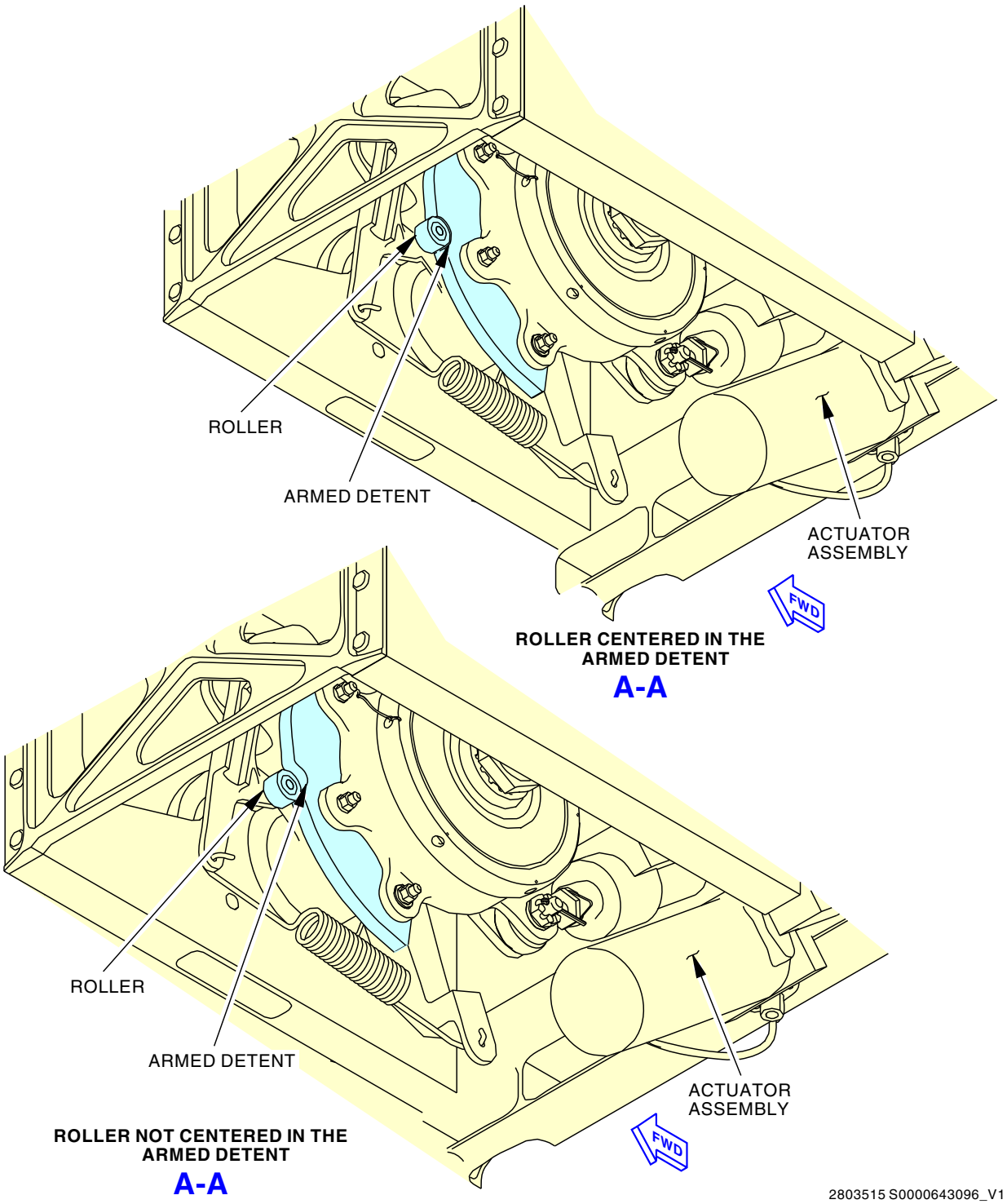
Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



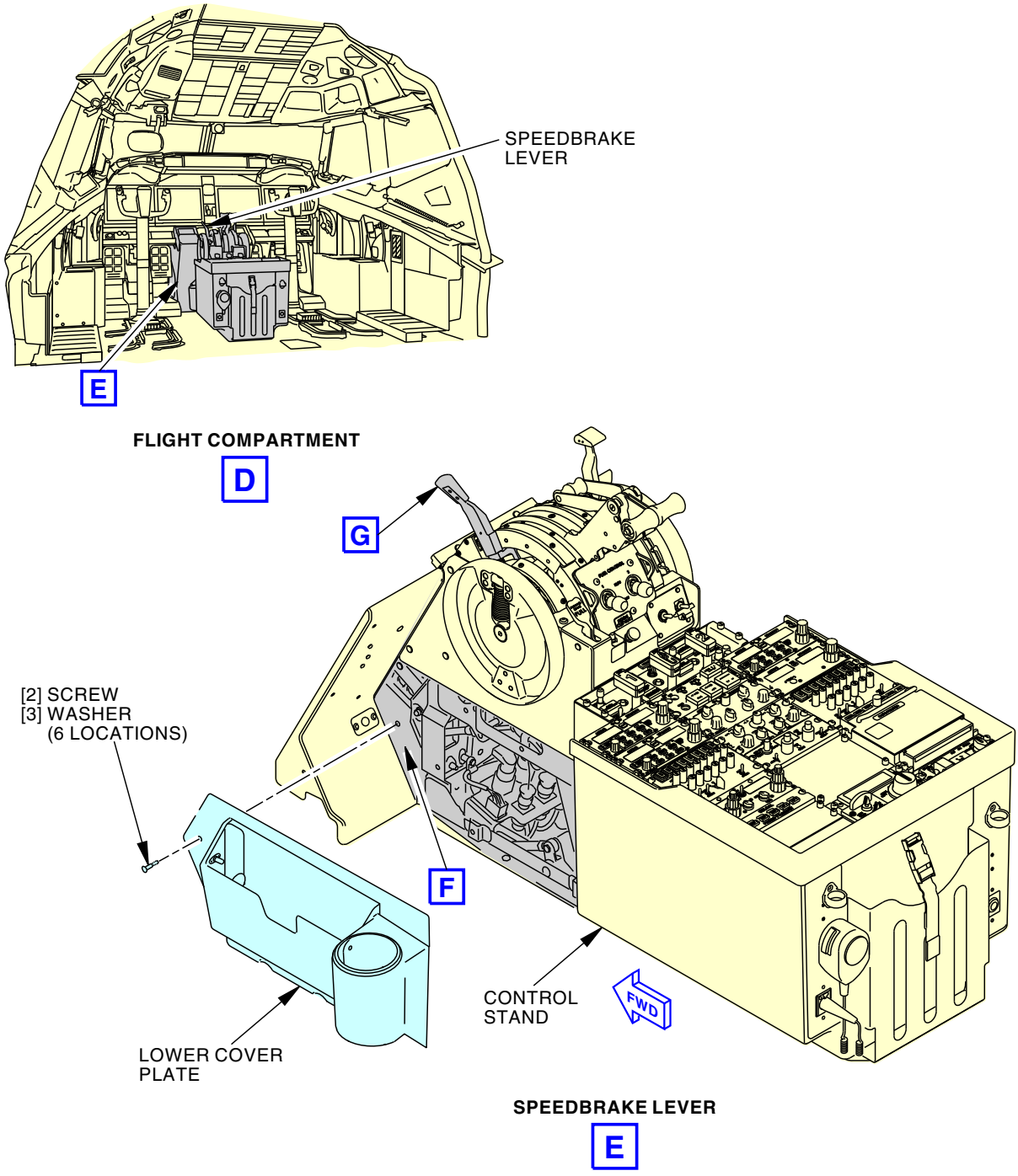
Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 3 of 6)

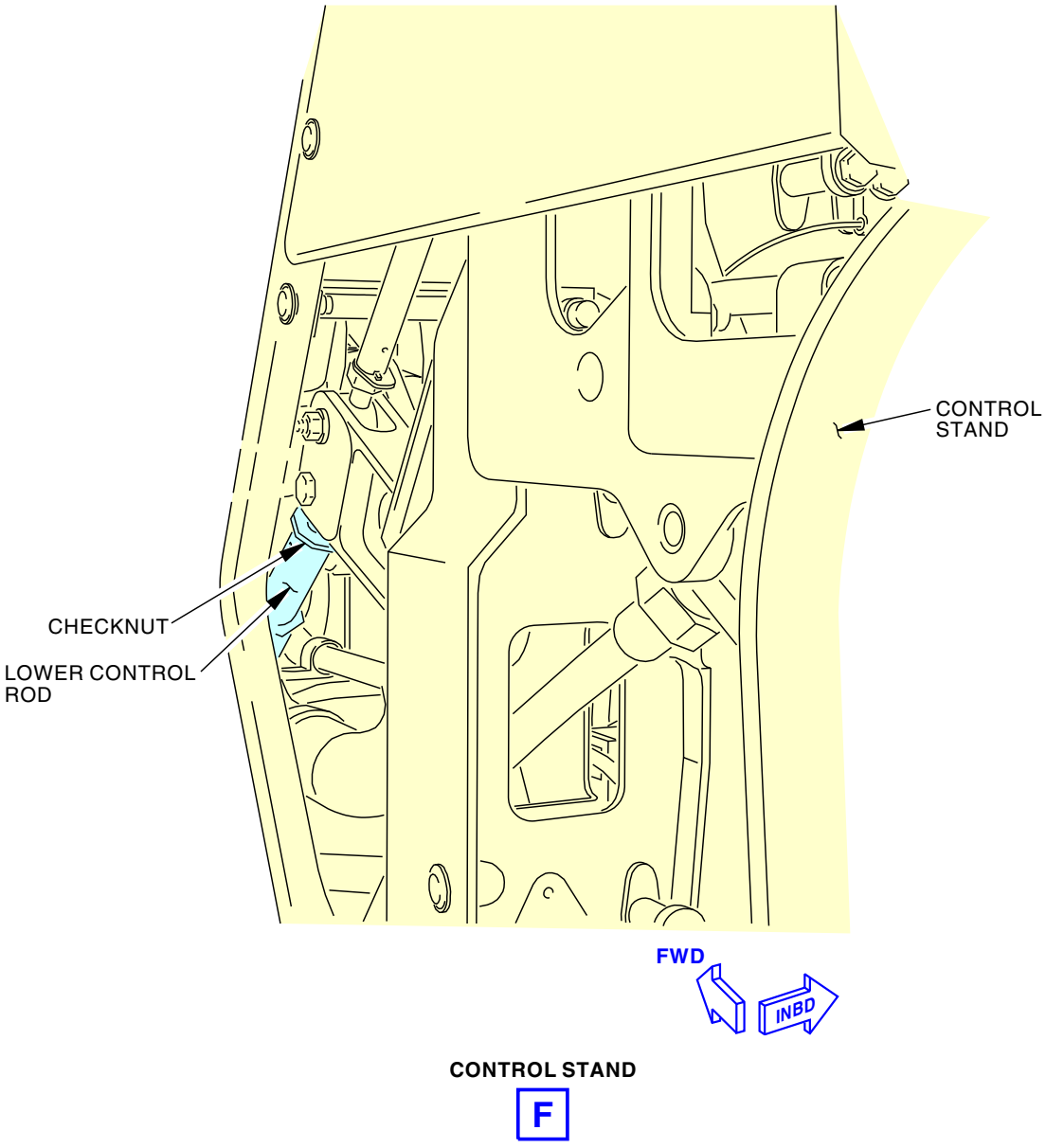
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2803516 S0000643097_V1

Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 4 of 6)

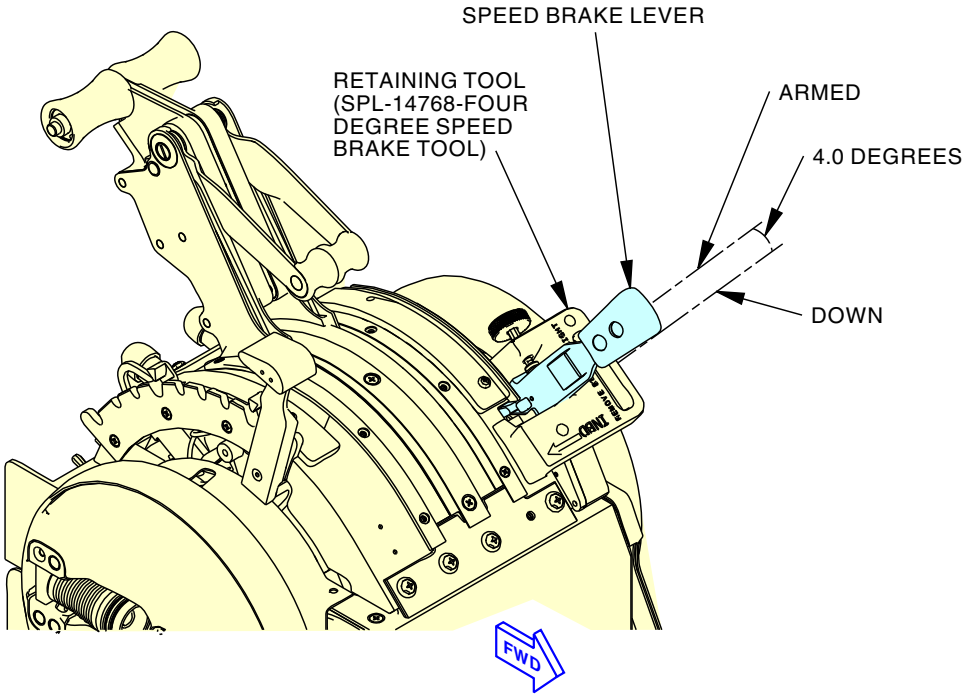
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2803517 S0000643098_V1

Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



G

2803518 S0000643099_V1

Speedbrake Control Lever Adjustment
Figure 502/27-62-00-990-818 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-820-802

4. Ground Spoiler Adjustment

(Figure 503)

A. General

(1) There are two different sets of values for the spoiler gaps.

(a) One set - standard gaps.

(b) The other set - reduced gaps. Reduced gaps are for airplane drag reduction.

(2) You may use either the standard or the reduced gaps for any airplane. However, for each airplane, you must choose which set of values (standard gaps or reduced gaps) to use to adjust the spoilers.

(3) You must use only one set of values for each airplane.

(4) Do not use standard gaps on some spoilers and reduced gaps on other spoilers on the same airplane.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
46-13-02-700-805	Existing Faults Check (P/B 201)

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
566	Left Wing - Spoiler No. 1
652	Right Wing - Spoiler No. 7
666	Right Wing - Spoiler No. 12

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Adjustment

SUBTASK 27-62-00-860-032

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-00-866-003

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-62-00-860-033

(3) Move the speed brake lever to the UP position to lift the spoilers.

SUBTASK 27-62-00-860-034

(4) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-00-860-035

(5) Move the speed brake lever to the DOWN position to lower the ground spoilers.

F. Ground Spoiler Adjustment

SUBTASK 27-62-00-860-036

(1) Measure the clearance (Dimension X) between the trailing edge of the spoiler panels and the flaps near the centerline of the spoiler actuators.

(2) Make sure the clearance (Dimension X) between the spoilers and the flaps are within the limits specified in the Spoilers Gaps Table.

(a) You do not need to check the clearance at the inboard actuator.

(b) Adjust the spoilers for one airplane to the values in only one table.

1) Do not adjust some spoilers to one table and other spoilers on the same airplane to a different table.

STANDARD SPOILERS GAPS		
DIMENSION X Figure 503		
SPOILERS	MINIMUM	MAXIMUM
1, 12	0.020 in. (0.508 mm)	0.120 in. (3.048 mm)
6, 7	0.030 in. (0.762 mm)	0.125 in. (3.175 mm)

REDUCED SPOILERS GAPS		
DIMENSION X Figure 503		
SPOILERS	MINIMUM	MAXIMUM
1, 12	0.030 in. (0.762 mm)	0.130 in. (3.302 mm)
6, 7	0.070 in. (1.78 mm)	0.090 in. (2.286 mm)

(3) Make sure there is clearance between the trailing edge of the spoiler panels and the flaps for the full span of the spoiler.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-037

(4) If the clearances (Dimension X) between the ground spoiler panels and the flaps are not in the limits, adjust the clearance.

(a) Make a record of the clearance.

(b) Lift the spoiler or extend the flaps to get access to the spoiler actuator:

1) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

2) Move the speed brake lever to the UP position to lift the spoilers.

3) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

(c) Loosen the checknut on the rod end of the ground spoiler actuator.

(d) Remove the locking key from the piston rod.

(e) Do these steps to adjust the Outboard Ground Spoilers (No. 1 and 12):

1) Turn the piston rod on the spoiler actuator to adjust the clearance between the spoiler and the flaps to the correct tolerance.

2) Temporarily torque the actuator check nut to 100 in-lb (11.3 N·m) to 200 in-lb (22.6 N·m).

3) Move the speedbrake lever to the UP position.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

4) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

5) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

6) Move the speedbrake lever to the DOWN position.

7) Check the clearance at the trailing edge of the ground spoilers.

a) Make sure the clearance is within the limits (Figure 503).

8) If the clearance of the ground spoiler is not in the limits, do these steps to adjust the actuator.

a) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

b) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

c) Adjust the spoiler actuator again, as necessary.

9) If the clearance of the ground spoiler is in the limits, do these steps:

a) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

b) Move the speed brake lever to the UP position to extend the spoilers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

c) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

d) Clean all grease from the piston rod and the rod end threads with solvent, B00184.

e) Apply a layer of the corrosion preventive D5026NS or ZC-026 compound, G50171, to the threads of the piston rod end.

f) Install the locking key in the actuator rod end.

g) Torque the checknut to 250 in-lb (28.25 N·m) - 300 in-lb (33.90 N·m).

h) Install the MS20995NC32 lockwire, G01912, on the checknut with double twist method.

i) Apply a bead of sealant, A00247, to the rod end checknut.

(f) Do these steps to adjust the Inboard Ground Spoilers (No. 6 and 7):

1) Turn the piston rod on the outboard spoiler actuator to adjust the clearance between the spoiler and the flaps to the correct tolerance.

2) Turn the piston rod on the inboard spoiler actuator until the pin that connects the rod end to the spoiler panel moves freely or is loose.

NOTE: Make sure there is no force fight between the inboard and outboard actuators.

3) Temporarily torque the actuator check nut to 100 in-lb (11.3 N·m) to 200 in-lb (22.6 N·m).

4) Move the speed brake lever to the UP position.

a) Moving the speed brake lever without hydraulic power can latch the GROUND SPOILER CONTROL Status Message.

<1> Do this task if the Status Message occurs: Existing Faults Check, TASK 46-13-02-700-805.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

5) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

6) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

7) Move the speedbrake lever to the DOWN position.

8) Check the clearance at the trailing edge of the ground spoilers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Make sure the clearance is within the limits (Figure 503).

9) If the clearance of the ground spoiler is not in the limits, do these steps to adjust the actuator:

a) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

b) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

c) Adjust the spoiler actuator again, as necessary.

10) If the clearance of the ground spoiler is in the limits, do these steps:

a) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

b) Move the speed brake lever to the UP position to extend the spoilers.

<1> Moving the speed brake lever without hydraulic power can latch the GROUND SPOILER CONTROL Status Message.

<a> Do this task if the Status Message occurs: Existing Faults Check, TASK 46-13-02-700-805.

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

c) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

d) Clean all grease from the piston rod and the rod end threads with solvent, B00184.

e) Apply a layer of the corrosion preventive D5026NS or ZC-026 compound, G50171, to the threads of the piston rod end.

f) Torque the checknut to 600 in-lb (67.79 N·m) - 720 in-lb (81.35 N·m).

g) Install the MS20995NC32 lockwire, G01912, on the checknut with double twist method.

h) Apply a bead of sealant, A00247, to the rod end checknut.

SUBTASK 27-62-00-860-038

(5) If the clearances (Dimension X) between the ground spoiler panels and the flaps are within the limits, then continue.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-039

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-00-860-040

(2) Move the speed brake lever to the DOWN position to lower the spoilers if it is necessary.

SUBTASK 27-62-00-860-041

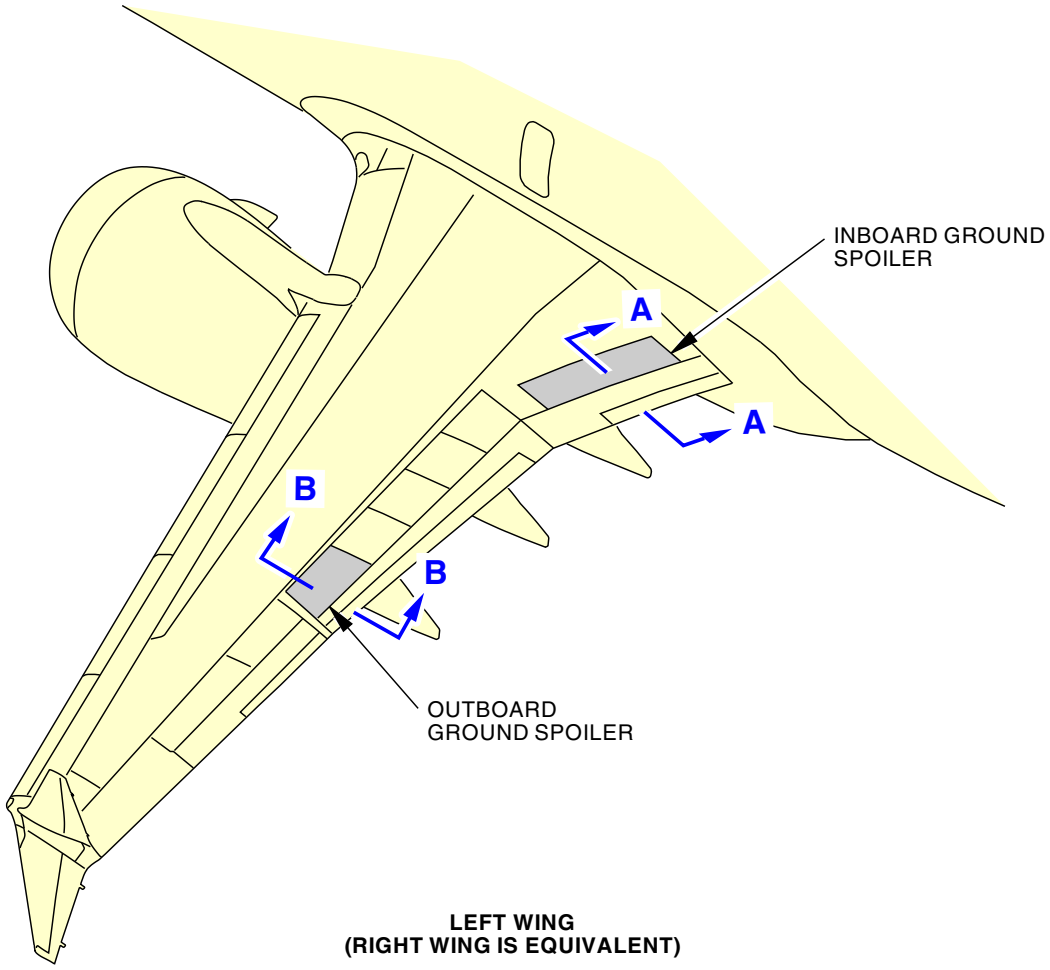
(3) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-00-860-042

(4) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

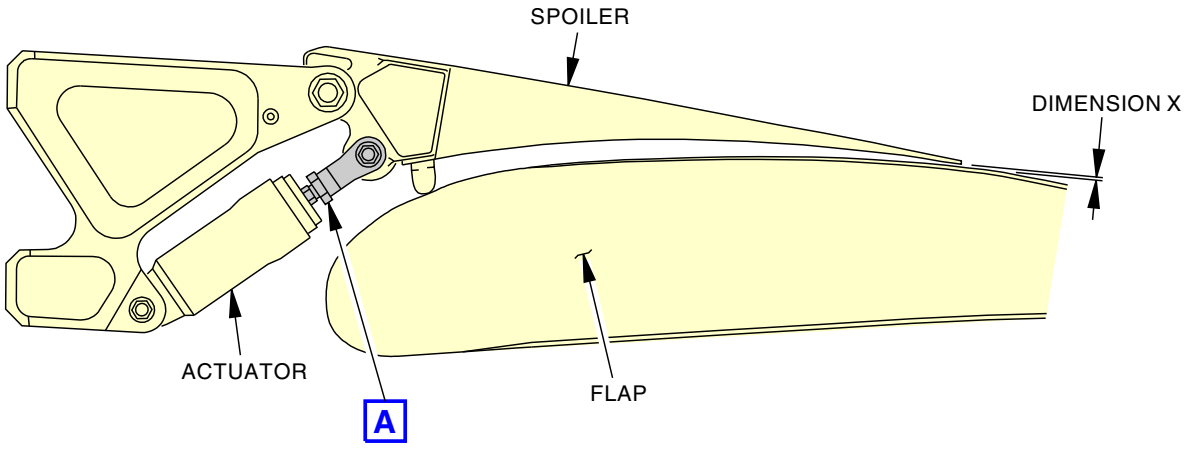


LEFT WING
(RIGHT WING IS EQUIVALENT)

2413230 S00061532134_V1

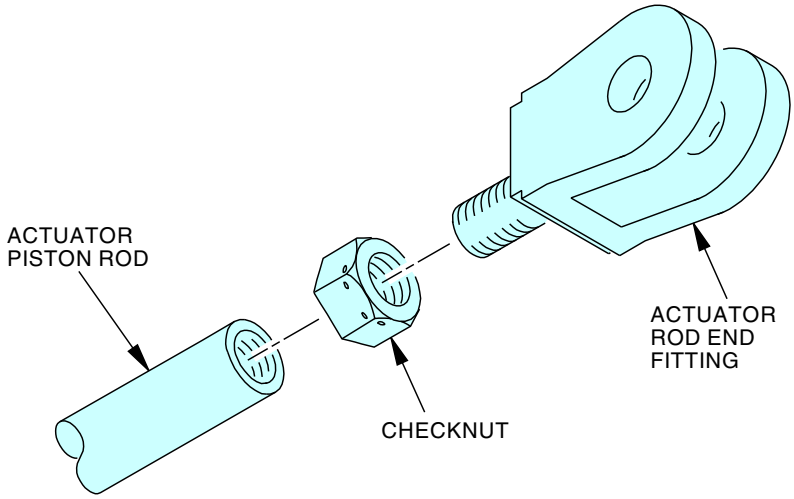
Ground Spoiler Adjustment
Figure 503/27-62-00-990-810 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**INBOARD GROUND SPOILER
(OUTBOARD ACTUATOR)**

A-A



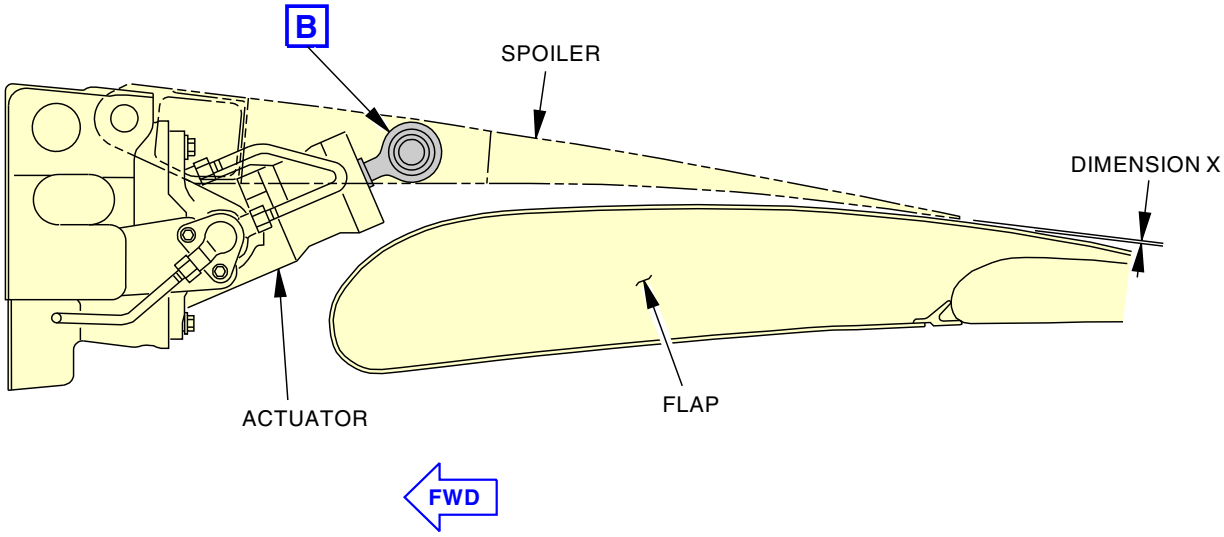
ACTUATOR ROD END

A

2413231 S00061532135_V2

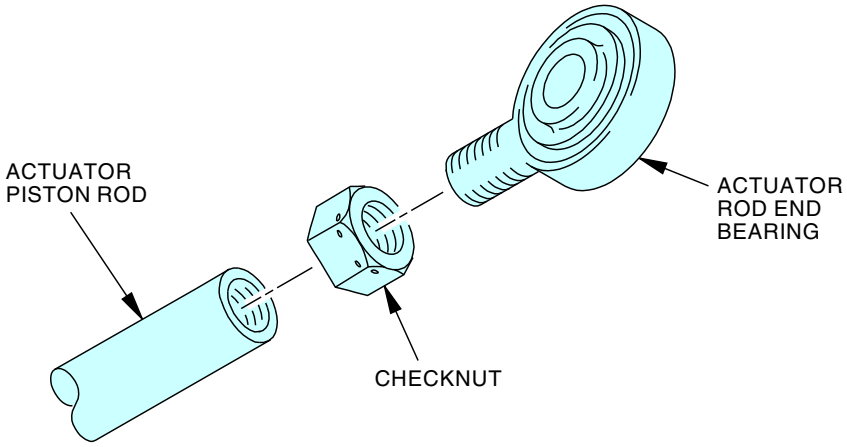
**Ground Spoiler Adjustment
Figure 503/27-62-00-990-810 (Sheet 2 of 3)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD GROUND SPOILER

B-B



ACTUATOR ROD END

B

2413232 S00061532136_V1

Ground Spoiler Adjustment
Figure 503/27-62-00-990-810 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-800-803

5. Speed Brake Lever Friction Test

A. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1557	Gauge - Force Part #: DG-200 Supplier: 92456 Part #: FDIX 100 Supplier: 0BFD9 Part #: FDIX 50 Supplier: 0BFD9 Part #: LG-050 Supplier: 92456 Part #: LG-100 Supplier: 92456 Opt Part #: DPP-500G Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456 Opt Part #: DPPH-200 Supplier: 92456 Opt Part #: DPPH-50 Supplier: 92456 Opt Part #: FDI 100 Supplier: 0BFD9 Opt Part #: FDI 50 Supplier: 0BFD9 Opt Part #: FDV 100 Supplier: 0BFD9 Opt Part #: FDV 50 Supplier: 0BFD9

B. Consumable Materials

Reference	Description	Specification
D50116	Lubricant - Bonded Solid Film	BAC5811 Type 7 Class 1
D50117	Lubricant - Solid Film, Air Cured, Corrosion Inhibiting	MIL-L-23398 Type II

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

D. Prepare for the Speed Brake Lever Friction Test

SUBTASK 27-62-00-860-200

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

E. Speed Brake Lever Friction Test

SUBTASK 27-62-00-710-008

(1) Do these steps for the Speed Brake Lever Friction Test:

(a) Move the speed brake lever through the full range of travel in both directions.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the clearance between the inboard face of the speed brake lever and edge of the light plate is between 0.01 in. (0.25 mm) to 0.10 in. (2.54 mm).

(c) Move the speed brake lever several times through the full range of travel in both directions.

(d) Make sure that the speed brake lever moves freely and there is no sign of binding or roughness between the detent positions.

SUBTASK 27-62-00-866-004

(2) Move the flaps to the FLAPS 1 or greater detent position.

SUBTASK 27-62-00-710-003

(3) Use the force gauge, COM-1557, to measure the fore and aft forces necessary to move the speed brake lever.

(a) Apply the force at the tip of the speed brake lever.

SUBTASK 27-62-00-710-004

(4) Move the speed brake lever to the ARMED DETENT position.

(5) Make sure that the forces necessary to move the speed brake lever are less than these force limits:

(a) From the ARMED DETENT position move the speed brake lever forward - 20 lbf (89 N).

(b) From the ARMED DETENT position move the speed brake lever aft - 20 lbf (89 N).

SUBTASK 27-62-00-710-005

(6) Move the speed brake lever to the FLIGHT DETENT position and make sure that the forces necessary to move the speed brake lever are less than these force limits:

(a) From the FLIGHT DETENT position move the speed brake lever forward - 26 lbf (116 N).

(b) From the FLIGHT DETENT position move the speed brake lever aft - 26 lbf (116 N).

SUBTASK 27-62-00-710-006

(7) Move the speed brake lever to the ARMED DETENT position.

(a) Move the speed brake lever aft to the FLIGHT DETENT position.

1) Make sure that the force necessary to move the speed brake lever does not exceed 20 lbf (89 N).

NOTE: Skewed-roller brake creates speed brake lever forces within the speed brake mechanism assembly. There is no on-airplane adjustment. Supplier must accomplish any adjustment.

SUBTASK 27-62-00-710-007

(8) Move the speed brake lever to the FLIGHT DETENT position.

(a) Move the speed brake lever aft to the UP position.

1) Make sure that the force necessary to move the speed brake lever does not exceed 28 lbf (125 N).

NOTE: Skewed-roller brake creates speed brake lever forces within the speed brake mechanism assembly. There is no on-airplane adjustment. Supplier must accomplish any adjustment.

SUBTASK 27-62-00-640-001

(9) Lubricate the speed brake lever if the forces required to move the speed brake lever are excessive.

(a) Fully extend the affected handle.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION IF YOU DO NOT MASK THE HANDLES CORRECTLY, CONTAMINATION OF ADJACENT COMPONENTS CAN OCCUR. CONTAMINATION CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Mask off the surrounding area to protect from over spray.

(c) Apply lubricant, D50116, or lubricant, D50117, to the sliding part of the speed brake lever.

1) Use an extension straw to allow spray in hard to reach areas.

NOTE: Allow to air dry if possible. The lubricant will dry within minutes; however, the coating will not be cured for several hours depending on the ambient temperature. The lubricant will cure within 6 hours at 77 ±3°F (25 ±2°C). 24 hours gives the best wear and corrosion protection.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-866-005

(1) Move the speed brake lever to the DOWN position.

SUBTASK 27-62-00-080-005

(2) Remove the force gauge, COM-1557, from the speed brake lever.

SUBTASK 27-62-00-860-199

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

END OF TASK

TASK 27-62-00-820-803

6. Spoiler Operation Time Test

(Figure 504)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-62-00-860-048

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Use the Engine Driven Pump (EDP) or a ground service cart to pressurize the Speed Brake Hydraulic Systems A and B (TASK 29-11-00-860-801).

NOTE: The Electric Motor-Driven Pump (EMDP) flow rate is too low for the spoilers to operate in the permitted time.

SUBTASK 27-62-00-860-229

(2) Move the speedbrake lever several times through the complete range of travel at least six times.

SUBTASK 27-62-00-860-230

(3) Move the forward thrust levers No. 1 and 2 to the IDLE position.

SUBTASK 27-62-00-860-231

(4) Make sure that the ground spoilers are in the DOWN position.

SUBTASK 27-62-00-860-232

(5) Make sure that the speed brake lever is in the DOWN and LOCKED position.

SUBTASK 27-62-00-860-233

(6) Move one of the thrust levers to the FULL FORWARD position to retract the auto speed brake actuator.

SUBTASK 27-62-00-860-234

(7) Move the thrust lever to the idle position.

SUBTASK 27-62-00-860-235

(8) Make sure that the ANTI-SKID INOP light, on the P9 multifunction panel, is not on.

SUBTASK 27-62-00-860-236

(9) Set the autobrake select switch, on the P9 multifunction panel, to 1 position.

SUBTASK 27-62-00-860-237

(10) Make sure that the parking brake is released.

SUBTASK 27-62-00-010-007

(11) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Spoiler Operation Time Test

SUBTASK 27-62-00-860-247

(1) Set GND TEST switch, on the P61-4 maintenance bite panel, to the ENABLE position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-238

(2) Set the EEC MAINT ENG 1 POWER switch and EEC MAINT ENG 2 POWER switch to the TEST position.

(a) Do this task: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

SUBTASK 27-62-00-860-248

(3) Make sure that the airplane is in ground mode (TASK 32-09-00-860-802).

SUBTASK 27-62-00-860-239

(4) Move the speedbrake lever to the ARMED position.

SUBTASK 27-62-00-860-240

(5) Move the TEST SELECTOR switch to the OUTBD position on the Antiskid/Autobrake Control Unit (AACU).

SUBTASK 27-62-00-860-241

(6) At the same time that you push and hold the ENABLE/VERIFY button, move the PRESS/TEST toggle switch up to the TEST position on the AACU.

(a) Make sure that the speed brake lever moves to the FULL UP position.

(b) Make sure that the all flight spoilers move from FULL DOWN to FULL UP position in 1.2 seconds or less.

(c) Release the ENABLE/VERIFY button and put the PRESS/TEST toggle switch to the OFF position.

SUBTASK 27-62-00-860-242

(7) Move the TEST SELECTOR switch to the NORM position on the AACU.

SUBTASK 27-62-00-860-243

(8) Move the No. 1 thrust lever to the FULL FORWARD position.

(a) Make sure that speed brake lever moves to the DOWN and LOCKED position.

(b) Make sure that all flight spoilers move from FULL UP to FULL DOWN position in one second or less.

SUBTASK 27-62-00-860-244

(9) Return the No. 1 thrust lever to the IDLE position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-245

(1) Set the EEC MAINT ENG 1 POWER switch and EEC MAINT ENG 2 POWER switch to the NORM position.

(a) Do this task: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

SUBTASK 27-62-00-860-249

(2) Set the GND TEST switch, on the P61-4 maintenance bite panel, to the NORM position.

SUBTASK 27-62-00-410-006

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-62-00-860-246

(4) Move the autobrake select switch, on the P9 multifunction panel, to OFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-866-007

(5) If necessary, move the flap lever to the FLAPS UP position.

SUBTASK 27-62-00-860-054

(6) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-62-00-820-804

7. Speed Brake Throttle Switch Test

(Figure 504)

A. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-62-00-860-209

(1) Apply maintenance power to the Electronic Engine Control (EEC) system. Do this task: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

(a) Make sure that the GND TEST switch on the P61-4 MAINT/BITE panel is set to the ENABLE position.

SUBTASK 27-62-00-860-056

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-207

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-62-00-860-058

(4) Move the thrust levers No. 1 and 2 to the idle position.

SUBTASK 27-62-00-860-059

(5) Check the Flight Controls Maint Data Page (on the MAX Display System) and make sure all four GEAR ON GND say “NEAR”.

SUBTASK 27-62-00-860-208

(6) Make sure that the Radio Altitude (RA) Transceiver's circuit breakers are in and that there are valid RA values on the Primary Flight Display.

(a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
B	4	C01384	RADIO NAVIGATION RADIO ALTM 1

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
A	16	C01385	RADIO NAVIGATION RADIO ALTM 2

SUBTASK 27-62-00-860-060

(7) Make sure that the ground spoilers are in the DOWN position.

SUBTASK 27-62-00-860-061

(8) Make sure that the speed brake lever is in the DOWN position.

SUBTASK 27-62-00-760-001

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(9) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-860-062

(10) Move one of the thrust levers to the full forward position to retract the speed brake actuator.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-063

(11) Move the thrust lever to the idle position.

SUBTASK 27-62-00-860-202

(12) Put the autobrake select switch located on the P9 multifunction panel to 1.

SUBTASK 27-62-00-860-064

(13) Make sure that the parking brake is released.

SUBTASK 27-62-00-010-001

(14) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Speed Brake Throttle Switch Test

SUBTASK 27-62-00-860-065

NOTE: Throughout this test, the Speed Brake “ARMED” and “DO NOT ARM” lights indicate opposing conditions. They should never illuminate simultaneously. Therefore, only one light shall be specified unless both lights are off.

(1) Move the speed brake lever to the ARMED position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-066

(2) Move the TEST SELECTOR switch to the INBD position on the Antiskid/Autobrake Control Unit (AACU).

SUBTASK 27-62-00-860-067

(3) Push the ENABLE/VERIFY button and move the toggle switch to the PRESS/TEST position on the AACU.

(a) Make sure that the spoilers and speed brake lever move to the UP position.

SUBTASK 27-62-00-860-068

WARNING MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(4) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-860-069

(5) Move the No. 1 thrust lever to the full forward position.

(a) Make sure that all spoilers move to the DOWN position.

(b) Make sure that the speed brake lever moves to the DOWN position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that the SPEED BRAKE ARMED and SPEED BRAKE DO NOT ARM lights are off.

SUBTASK 27-62-00-860-070

(6) Move the No. 1 thrust lever back to the idle position.

SUBTASK 27-62-00-860-071

(7) Release the ENABLE/VERIFY button and the PRESS/TEST switch on the AACU.

SUBTASK 27-62-00-860-072

(8) Do the test of the throttle switches again except move the TEST SELECTOR switch to the OUTBD position on the AACU and use the No. 2 thrust lever.

(a) Make sure that results are the same.

SUBTASK 27-62-00-860-073

(9) Move the TEST SELECTOR switch to the NORM position on the AACU.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-210

(1) Remove maintenance power to the EEC system (TASK 73-21-00-800-801-G00).

SUBTASK 27-62-00-860-213

(2) If necessary, move the flap lever to the FLAPS UP position.

SUBTASK 27-62-00-860-074

(3) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-00-860-075

(4) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

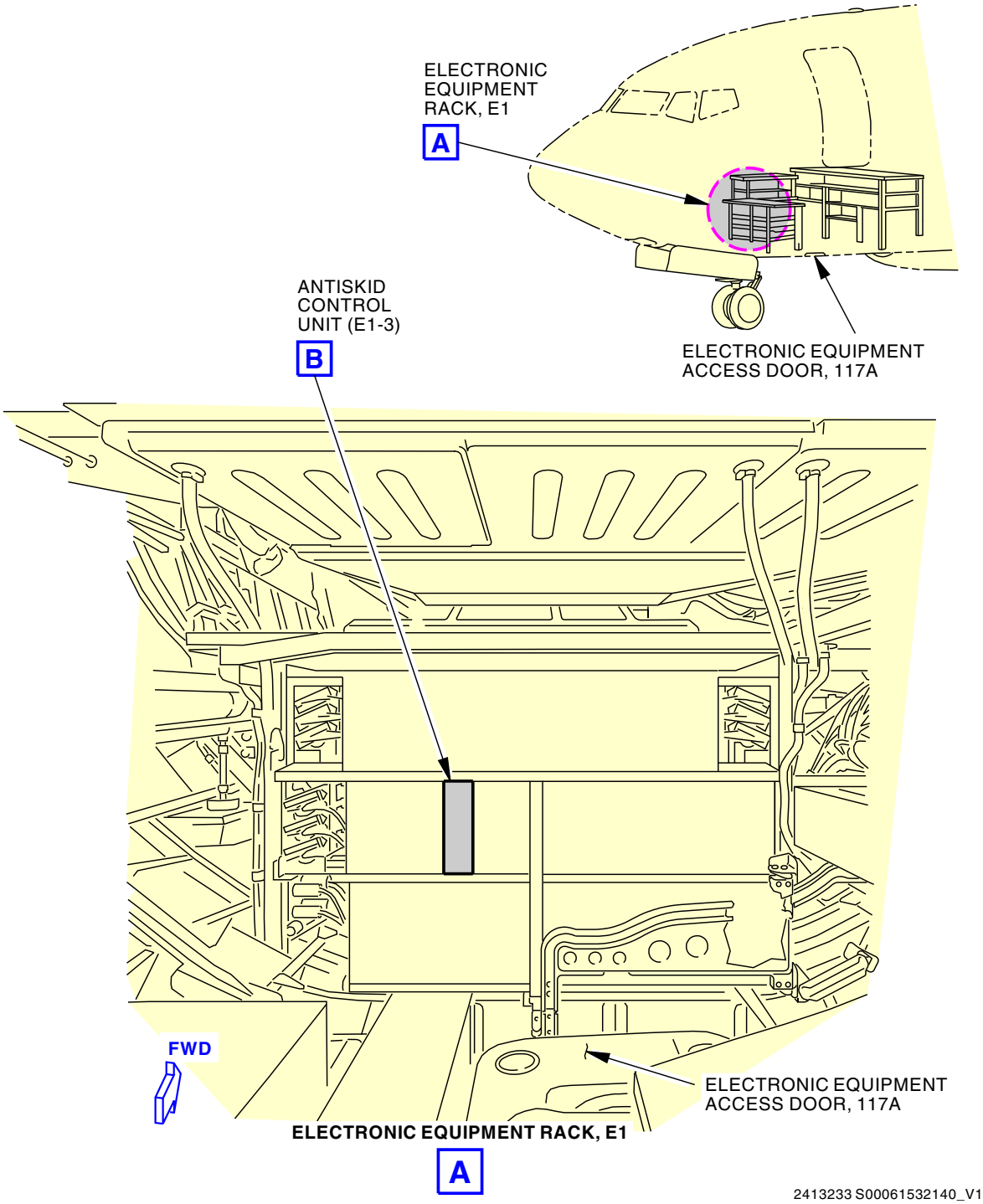
SUBTASK 27-62-00-410-001

(5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

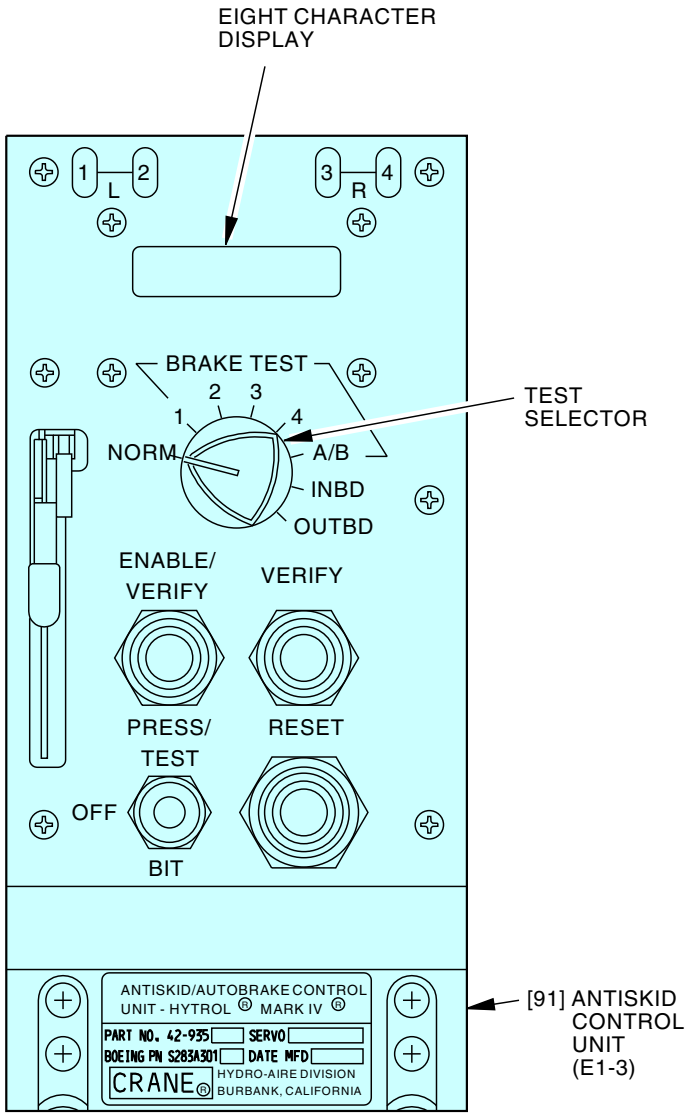
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Antiskid/Autobrake Control Unit Adjustment
Figure 504/27-62-00-990-811 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ANTISKID CONTROL UNIT (E1-3)

B

2413234 S00061532141_V1

Antiskid/Autobrake Control Unit Adjustment
Figure 504/27-62-00-990-811 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-720-801

8. Engine Throttle Switch (S1) - Functional Test

A. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for Test

SUBTASK 27-62-00-860-218

(1) Make sure that the downlock pins are installed on the nose and main landing gear (TASK 32-00-01-480-801).

SUBTASK 27-62-00-860-219

(2) Make sure that the speed brake lever is in the DOWN and locked position.

(3) Make sure that the ground spoilers are in the fully DOWN position.

SUBTASK 27-62-00-860-220

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(4) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-860-221

(5) Set GND TEST switch on the P61-4 maintenance bite panel to ENABLE position.

(6) Set the EEC MAINT ENG 1 POWER switch and EEC MAINT ENG 2 POWER switch to TEST.

(a) Do this task: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

SUBTASK 27-62-00-860-222

(7) Make sure that the airplane is in Ground Mode (TASK 32-09-00-860-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Do a test of the Engine Throttle Switch (S1)

SUBTASK 27-62-00-700-003

(1) Do these steps to activate the auto speed brake system:

WARNING KEEP PERSONS AND EQUIPMENT AWAY FROM ALL CONTROL SURFACES AND THE NOSE GEAR WHEN HYDRAULIC POWER IS SUPPLIED. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, AND THE NOSE GEAR ARE SUPPLIED WITH POWER BY THE HYDRAULIC SYSTEMS. INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR WHEN HYDRAULIC POWER IS SUPPLIED.

(a) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(c) Make sure that the forward thrust levers No. 1 and 2 are in the idle position.

(d) Move one of the forward thrust lever to the full forward position to retract the speed brake actuator.

(e) Move the forward thrust lever back to the idle position.

SUBTASK 27-62-00-860-214

(2) Set autobrake select switch on the P9 Multifunction (MFC) panel to 1.

(3) Verify the that ANTISKID INOP light on the MFC is not on.

SUBTASK 27-62-00-860-215

(4) Verify the parking brake is released.

SUBTASK 27-62-00-860-076

(5) Move the speed brake lever to the ARMED detent position.

NOTE: Throughout this test, the speedbrake “ARMED” and “DO NOT ARM” lights indicate opposing conditions. They should never illuminate simultaneously. Only one light should be specified unless both lights are off.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-077

(6) Do these steps to activate the M162 Antiskid/Autobrake Control Unit (AACU) to simulate wheel speed:

(a) Set the rotary switch on the M162 AACU to INBD position.

NOTE: The M162 AACU is on E1-3 shelf in the Electronic Equipment (EE) compartment.

(b) Push and hold the ENABLE/VERIFY switch on the M162 AACU.

(c) Push and hold the toggle switch on the M162 AACU to the PRESS/TEST position.

NOTE: The “DO NOT ARM” light may come on momentarily if ENABLE/VERIFY switch and toggle switch are not operated simultaneously.

SUBTASK 27-62-00-860-078

(7) Make sure that the flight spoilers and ground spoilers move to the full up position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-700-004

(8) Move the No. 1 forward thrust lever to the fully forward position.

(a) Make sure that the spoilers move to the retracted position.

(b) Make sure that the speed brake lever moves to the DOWN and locked position.

SUBTASK 27-62-00-860-079

(9) Release the ENABLE/VERIFY switch and the toggle switch.

(a) Make sure that the ARMED and the DO NOT ARM lights are off.

SUBTASK 27-62-00-860-081

(10) Move the No. 1 forward thrust lever back to the idle position.

SUBTASK 27-62-00-860-080

(11) Set the rotary switch on the M162 AACU to the NORM position.

SUBTASK 27-62-00-860-082

(12) Move the speed brake lever to the ARMED position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-083

(13) Do these steps to activate the M162 AACU to simulate wheel speed:

(a) Set the rotary switch on the M162 AACU to position OUTBD.

NOTE: The M162 AACU is on E1-3 shelf in the EE compartment.

(b) Push and hold the ENABLE/VERIFY switch on the M162 AACU.

(c) Push and hold the toggle switch on the M162 AACU to the PRESS/TEST position.

NOTE: The “DO NOT ARM” light may come on momentarily if ENABLE/VERIFY switch and toggle switch are not operated simultaneously.

SUBTASK 27-62-00-860-084

(14) Make sure that the flight spoilers and ground spoilers move to the full up position.

SUBTASK 27-62-00-700-005

(15) Move the No. 2 forward thrust lever to the fully forward position.

(a) Make sure that the spoilers move to the retracted position.

(b) Make sure that the speed brake lever moves to the DOWN and locked position.

SUBTASK 27-62-00-860-085

(16) Release the ENABLE/VERIFY switch and the toggle switch.

(a) Make sure that the ARMED and the DO NOT ARM lights are off.

SUBTASK 27-62-00-860-086

(17) Set the rotary switch on the M162 AACU to the NORM position.

SUBTASK 27-62-00-860-087

(18) Move the No. 2 forward thrust lever back to the idle position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-216

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-62-00-860-089

(2) If necessary, move the flap lever to the FLAPS UP position.

SUBTASK 27-62-00-860-090

(3) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-00-860-217

(4) Set EEC MAINT ENG 1 POWER switch and the EEC MAINT ENG 2 POWER switch to NORM.

(a) Do this task: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

(5) Set GND TEST switch on the P61-4 maintenance bite panel to NORM position.

——— END OF TASK ———

TASK 27-62-00-820-805

9. Speed Brake Antiskid Inoperative Test

(Figure 504)

A. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Test

SUBTASK 27-62-00-860-093

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-00-860-095

(2) Move the thrust levers No. 1 and 2 to the IDLE position.

SUBTASK 27-62-00-860-096

(3) Make sure that the airplane is on its landing gear or compress the right main gear strut a minimum of 5 in. (127 mm).

SUBTASK 27-62-00-860-097

(4) Make sure that the ground spoilers are in the DOWN position.

SUBTASK 27-62-00-860-098

(5) Make sure that the speed brake lever is in the DOWN position.

SUBTASK 27-62-00-860-099

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-860-100

(7) Move one of the thrust levers to the full forward position to retract the speed brake actuator.

SUBTASK 27-62-00-860-101

(8) Move the thrust lever to the IDLE position.

SUBTASK 27-62-00-010-002

(9) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-62-00-860-102

(10) Make sure that the parking brake is released.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Speed Brake Antiskid Inoperative Test

SUBTASK 27-62-00-860-103

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	16	C00196	LANDING GEAR ANTISKID INBD

SUBTASK 27-62-00-860-104

NOTE: Throughout this test, the Speed Brake “ARMED” and “DO NOT ARM” lights indicate opposing conditions. They should never illuminate simultaneously. Therefore, only one light shall be specified unless both lights are off.

(2) Move the speed brake lever to the ARMED position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-105

(3) Move the TEST SELECTOR switch to the INBD position on the Antiskid/Autobrake Control Unit (AACU).

SUBTASK 27-62-00-860-106

(4) On the AACU, push the ENABLE/VERIFY button and move the toggle switch to the TEST position and hold for a few seconds.

(a) Make sure that the SPEED BRAKE ARMED light stays on.

(b) Make sure that the spoilers do not move.

SUBTASK 27-62-00-860-108

(5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	16	C00196	LANDING GEAR ANTISKID INBD

SUBTASK 27-62-00-860-109

(6) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	18	C00195	LANDING GEAR ANTISKID OUTBD

SUBTASK 27-62-00-860-110

(7) Make sure that the speed brake lever is in the ARMED position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-111

(8) Move the TEST SELECTOR switch to the OUTBOARD position on the AACU.

SUBTASK 27-62-00-860-204

(9) On the AACU, push the ENABLE/VERIFY button and move the toggle switch to the TEST position and hold for a few seconds.

(a) Make sure that the SPEED BRAKE ARMED light stays on.

(b) Make sure that the spoilers do not move.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-114

(10) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	18	C00195	LANDING GEAR ANTISKID OUTBD

SUBTASK 27-62-00-860-115

(11) Move the speed brake lever to the DOWN position.

SUBTASK 27-62-00-860-116

(12) Move the TEST SELECTOR switch to the NORM position on the AACU.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-117

(1) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-00-860-118

(2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-410-002

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-62-00-820-807

10. Speed Brake RTO Test

(Figure 504)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
118	Electrical and Electronics Compartment - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-62-00-860-224

(1) Supply maintenance power to the Engine Electronic Controller (EEC) (TASK 73-21-00-800-801-G00).

SUBTASK 27-62-00-860-142

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-00-860-144

(3) Move the engine 1 and 2 forward thrust levers to the idle position.

SUBTASK 27-62-00-860-145

(4) Make sure that the airplane is in ground mode (TASK 32-09-00-860-802).

SUBTASK 27-62-00-860-223

(5) Set GND TEST switch, on the P61-4 maintenance bite panel, to the ENABLE position.

SUBTASK 27-62-00-860-146

(6) Make sure that the ground spoilers are in the down position.

SUBTASK 27-62-00-860-147

(7) Make sure the speed brake lever is in the DOWN position.

SUBTASK 27-62-00-860-148

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

(8) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-860-149

(9) Move one of the engine forward thrust levers to the full forward position to retract the auto speed brake actuator.

SUBTASK 27-62-00-860-150

(10) Move the engine forward thrust lever to the idle position.

SUBTASK 27-62-00-860-206

(11) Set the autobrake select switch, on the P9 multifunction panel, to the 1 position.

SUBTASK 27-62-00-210-007

(12) Make sure that the ANTI-SKID INOP light, on the P9 multifunction panel, is not on.

SUBTASK 27-62-00-860-151

(13) Make sure that the parking brake is released.

SUBTASK 27-62-00-010-003

(14) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

E. Speed Brake RTO Test

NOTE: Throughout this test, the Speed Brake ARMED and DO NOT ARM lights show opposing conditions. They should never come on simultaneously. Therefore, only one light shall be specified unless both lights are off.

SUBTASK 27-62-00-860-154

WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Move the engine 1 reverse thrust lever to the reverse thrust position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-155

(2) Set the TEST SELECTOR switch to the INBD position on the antiskid/autobrake control unit (AACU).

SUBTASK 27-62-00-860-156

(3) At the same time that you push and hold the ENABLE/VERIFY button, set the PRESS/TEST switch to the TEST position on the AACU.

NOTE: The SPEED BRAKE DO NOT ARM light will come on momentarily if you do not push the buttons at the same time.

(a) Make sure that the speed brake lever moves to the UP position.

(b) Make sure that the ground and flight spoilers move to the up position.

(c) Make sure that the SPEED BRAKE ARMED light stays on.

SUBTASK 27-62-00-860-250

(4) Release the ENABLE/VERIFY button.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-251

(5) Set the PRESS/TEST switch to the OFF position.

SUBTASK 27-62-00-860-160

(6) Move the engine 1 reverse thrust lever to the retract (stow) position.

SUBTASK 27-62-00-860-205

(7) Move the engine 1 forward thrust lever forward.

(a) Make sure that all the ground spoilers, flight spoilers, and speed brake lever move to the down position.

SUBTASK 27-62-00-860-252

(8) Move the engine 1 forward thrust lever to the idle position.

SUBTASK 27-62-00-860-161

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE AREA AROUND THE THRUST REVERSERS. THE THRUST REVERSERS EXTEND AND RETRACT QUICKLY. INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(9) Move the engine 2 reverse thrust lever to the reverse thrust position.

(a) Make sure that the SPEED BRAKE ARMED light comes on.

SUBTASK 27-62-00-860-253

(10) Make sure that the TEST SELECTOR switch is set to the INBD position on the AACU.

SUBTASK 27-62-00-860-254

(11) At the same time that you push and hold the ENABLE/VERIFY button, set the PRESS/TEST switch to the TEST position on the AACU.

NOTE: The SPEED BRAKE DO NOT ARM light will come on momentarily if you do not push the buttons at the same time.

(a) Make sure that the speed brake lever moves to the UP position.

(b) Make sure that the ground and flight spoilers move to the up position.

(c) Make sure that the SPEED BRAKE ARMED light stays on.

SUBTASK 27-62-00-860-255

(12) Release the ENABLE/VERIFY button.

SUBTASK 27-62-00-860-256

(13) Set the PRESS/TEST switch to the OFF position.

SUBTASK 27-62-00-860-257

(14) Move the engine 2 reverse thrust lever to the retract (stow) position.

SUBTASK 27-62-00-860-258

(15) Move the engine 2 forward thrust lever forward.

(a) Make sure that all the ground spoilers, flight spoilers, and speed brake lever move to the down position.

SUBTASK 27-62-00-860-259

(16) Move the engine 2 forward thrust lever to the idle position.

SUBTASK 27-62-00-860-162

(17) Set the TEST SELECTOR switch to the NORM position on the AACU.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-228

(1) Set the autobrake select switch, on the P9 multifunction panel, to the OFF position.

SUBTASK 27-62-00-860-164

(2) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-00-860-226

(3) Remove maintenance power from the EEC (TASK 73-21-00-800-801-G00).

SUBTASK 27-62-00-860-165

(4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-00-010-004

(5) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

TASK 27-62-00-820-808

11. Speed Brake Extended Light Test

A. General

(1) Ignore the SPEED BRAKE ARMED and SPEED BRAKE DO NOT ARM lights during this test. They may come on.

B. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Test

SUBTASK 27-62-00-860-167

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. THE AILERONS, RUDDER, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-00-860-169

(2) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
B	4	C01384	RADIO NAVIGATION RADIO ALTM 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
A	16	C01385	RADIO NAVIGATION RADIO ALTM 2
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

E. Speed Brakes Extended Light Test

SUBTASK 27-62-00-860-170

(1) Move the flaps to the 15 unit position.

SUBTASK 27-62-00-860-171

(2) Move the speed brake lever to the ARMED position.

NOTE: The spoilers can move up during this step.

SUBTASK 27-62-00-860-172

(3) Make sure the SPEEDBRAKES EXTENDED light is off.

SUBTASK 27-62-00-860-173

(4) Move the speed brake lever 0.6 in. (15.2 mm) aft from the ARMED detent position .

NOTE: The spoilers can move up during this step.

SUBTASK 27-62-00-860-174

(5) Make sure the SPEEDBRAKES EXTENDED light turns on.

SUBTASK 27-62-00-860-175

(6) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-00-860-176

(7) Make sure the SPEEDBRAKES EXTENDED light is off.

SUBTASK 27-62-00-860-185

(8) Move the speed brake lever to the DOWN position.

NOTE: The spoilers can move down during this step.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-186

(9) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-00-860-187

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
B	4	C01384	RADIO NAVIGATION RADIO ALTM 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
A	16	C01385	RADIO NAVIGATION RADIO ALTM 2
C	14	C01008	ADIRU RIGHT AC
C	17	C01010	ADIRU RIGHT DC

SUBTASK 27-62-00-860-188

(2) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEED BRAKE CONTROL SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these inspection tasks:

(1) Speed Brake System Components

(2) Flight Spoiler and Ground Spoiler Actuators

TASK 27-62-00-210-801

2. Speedbrake System Components - Inspection

(Figure 601)

A. References

Reference	Title
27-62-22-000-801	Speedbrake Lever - Removal (P/B 401)
27-62-22-400-801	Speedbrake Lever - Installation (P/B 401)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Speedbrake System Components Inspection

SUBTASK 27-62-00-010-005

(1) To get access to the speedbrake control system components,

Open this access panel:

Number	Name/Location
112A	Forward Access Door

SUBTASK 27-62-00-210-005

(2) Do a general visual inspection of these items:

(a) Speedbrake Lever Assembly

1) Examine the speedbrake control lever for a loose fastener.

2) Remove the left upper side panel and the left lower side panel (Speedbrake Lever - Removal, TASK 27-62-22-000-801).

3) Examine the link assembly for loose fasteners.

4) Examine the attach points of the link assembly for signs that they do not move freely.

5) Make sure that cables or lines do not touch the speedbrake control lever or link assembly during movement.

6) Install the left upper side panel and the left lower side panel (Speedbrake Lever - Installation, TASK 27-62-22-400-801).

(b) Auto Speedbrake Actuator

1) Examine the auto speedbrake actuator and actuator rod end for loose fasteners.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Examine the attach points of the auto speedbrake actuator and actuator rod end for signs that they do not move freely.

(c) Lower Control Rod

1) Examine the lower control rod for loose fasteners.

2) Examine the attach points of the lower control rod for signs that they do not move freely.

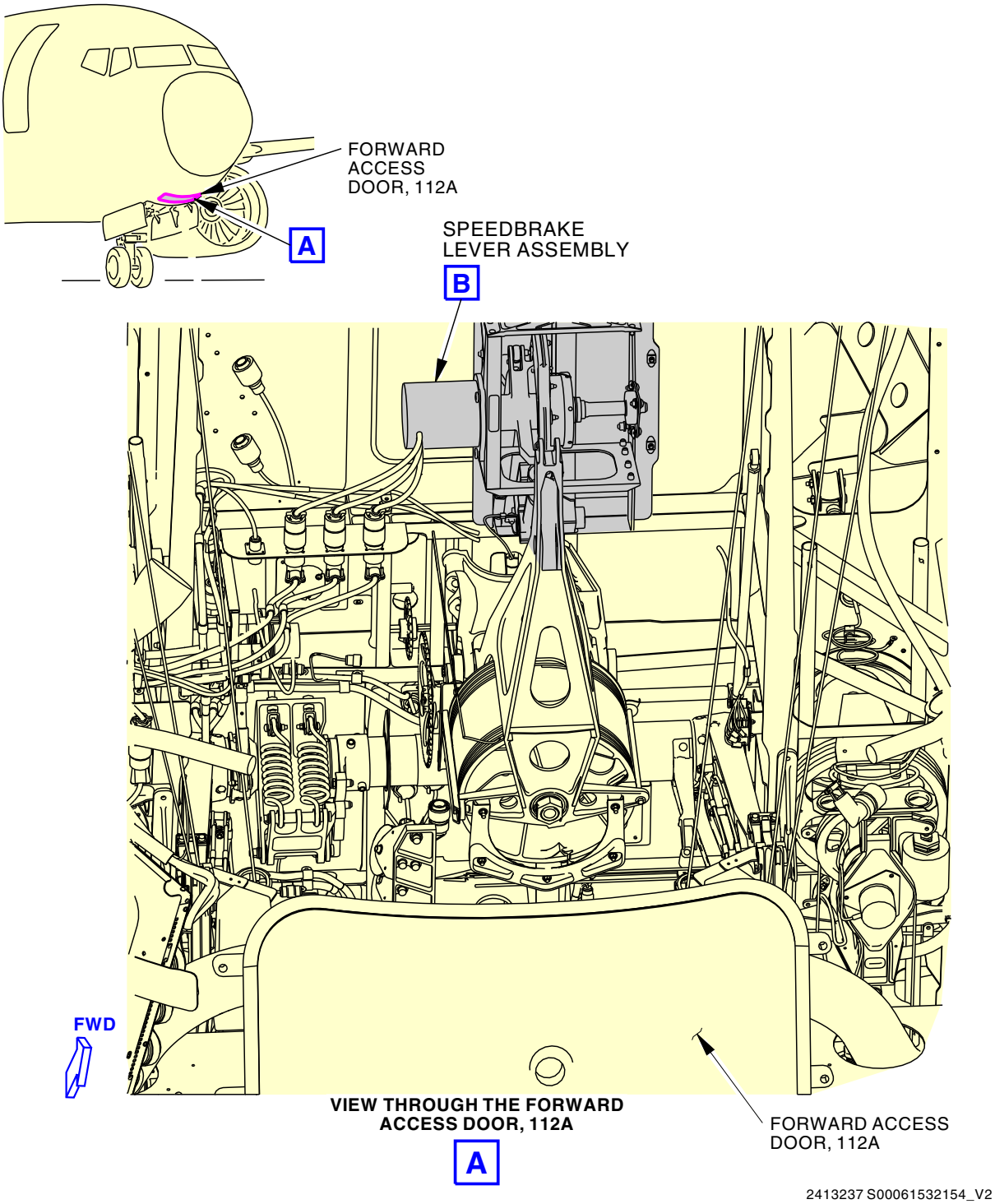
SUBTASK 27-62-00-410-003

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

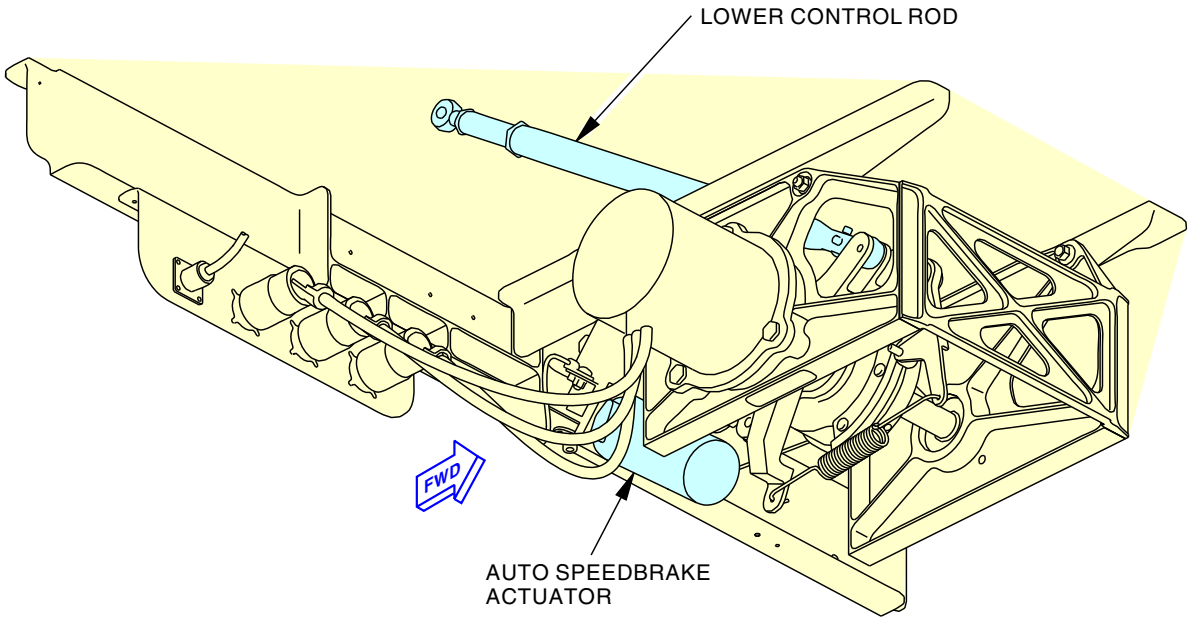
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake System Components Inspection
Figure 601/27-62-00-990-814 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SPEEDBRAKE LEVER ASSEMBLY

B

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Speedbrake System Components Inspection
Figure 601/27-62-00-990-814 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-00-210-802

3. Spoiler Actuator - Inspection

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
562	Left Wing - Spoiler No. 5
563	Left Wing - Spoiler No. 4
564	Left Wing - Spoiler No. 3
565	Left Wing - Spoiler No. 2
566	Left Wing - Spoiler No. 1
652	Right Wing - Spoiler No. 7
662	Right Wing - Spoiler No. 8
663	Right Wing - Spoiler No. 9
664	Right Wing - Spoiler No. 10
665	Right Wing - Spoiler No. 11
666	Right Wing - Spoiler No. 12

D. Spoiler Actuator Inspection

SUBTASK 27-62-00-010-006

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-62-00-860-190

(2) Move the flap control lever to the 30-unit position to extend the flaps.

SUBTASK 27-62-00-860-191

(3) Move the speedbrake lever from the DOWN position to the UP position.

SUBTASK 27-62-00-860-192

(4) Attach a DO NOT OPERATE tag, STD-858, on the flap control lever and speedbrake lever.

SUBTASK 27-62-00-860-193

(5) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-62-00-210-006

(6) Do a general visual inspection of the spoiler actuators (Figure 602).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-00-860-194

(7) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-62-00-860-195

(8) Remove a DO NOT OPERATE tag, STD-858, from the flap control lever and speedbrake lever.

SUBTASK 27-62-00-860-196

(9) Move the flap control lever to the UP position to retract the flaps.

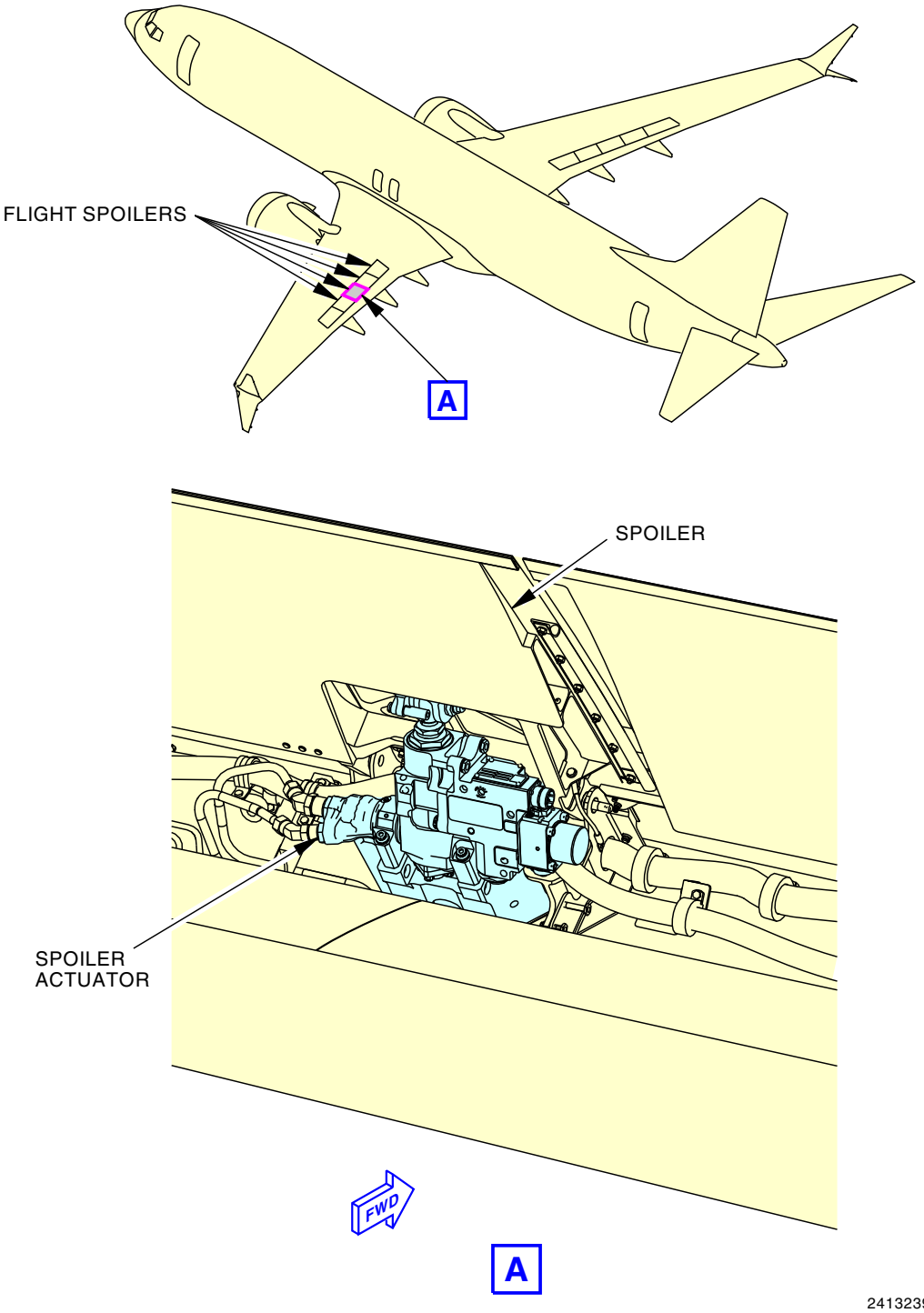
SUBTASK 27-62-00-860-197

(10) Move the speedbrake lever from the UP position to the DOWN position.

(11) If the hydraulic power is not needed, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

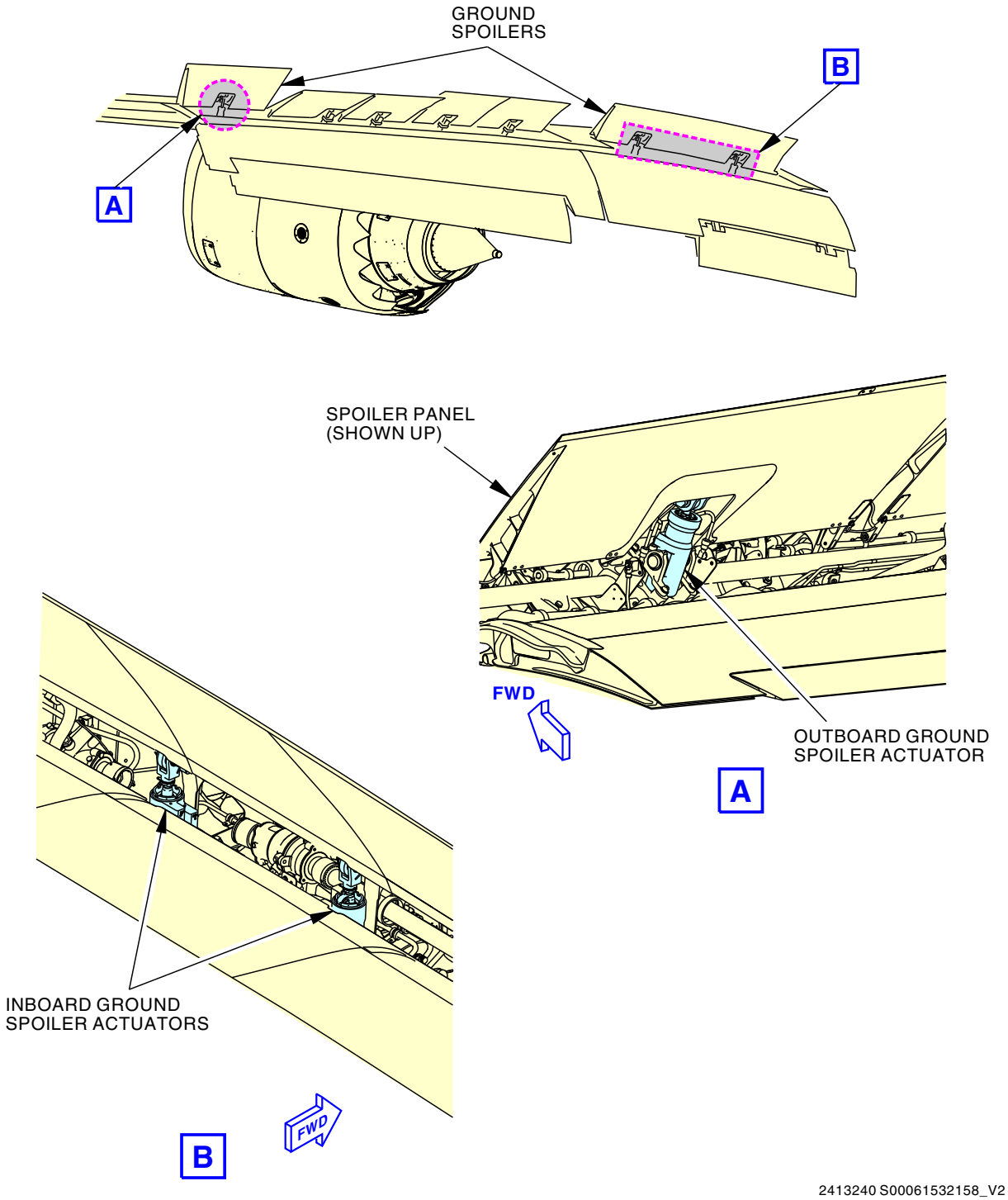
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Actuator
Figure 602/27-62-00-990-815 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flight Spoiler Actuator
Figure 602/27-62-00-990-815 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD GROUND SPOILER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the inboard ground spoiler

(2) An installation of the inboard ground spoiler

(3) A functional test of the inboard ground spoiler.

B. This procedure is applicable to the left and right inboard ground spoilers.

TASK 27-62-12-000-801

2. Inboard Ground Spoiler Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-71-000-801	Inboard Ground Spoiler Actuator Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1744	Set - Lock, Inboard Ground Spoiler Actuator (Contains 4 Lock Assemblies) Part #: C27046-13 Supplier: 81205 Opt Part #: C27046-1 Supplier: 81205

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

D. Prepare for the Removal

SUBTASK 27-62-12-860-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-12-860-002

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-62-12-860-003

(3) Put the SPOILER A and SPOILER B switches to the OFF position to remove the hydraulic power from the flight spoilers.

NOTE: SPOILER A AND SPOILER B switches are on the P5-3 flight control panel.

SUBTASK 27-62-12-860-004

(4) Put the speed brake lever in the UP position to lift the ground spoilers.

SUBTASK 27-62-12-480-001

(5) Install the set, SPL-1744, for the applicable ground spoiler.

SUBTASK 27-62-12-860-005

(6) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

E. Inboard Ground Spoiler Removal

SUBTASK 27-62-12-020-001

(1) Disconnect the left inboard actuator [17] from the inboard ground spoiler [1] (TASK 27-62-71-000-801).

SUBTASK 27-62-12-020-002

(2) Disconnect the right inboard actuator [24] from the inboard ground spoiler [1] (TASK 27-62-71-000-801).

SUBTASK 27-62-12-020-003

(3) Remove the nut [10] and washer [8].

(a) Disconnect the bonding jumper [9] from the structure.

SUBTASK 27-62-12-020-004

(4) Remove the nut [31], washer [32], washer [33], washer [35], and bolt [36].

(a) Disconnect the bonding jumper [34].

SUBTASK 27-62-12-020-005

(5) Remove the inboard ground spoiler [1]:

(a) Remove the cotter pin [7], nut [6], washer [5], bushing [4], washer [3] and bolt [2] to disconnect the outboard hinge fitting.

(b) Remove the cotter pin [30], nut [29], washer [28], bushing [27], washer [26], and bolt [25] to disconnect the inboard hinge fitting.

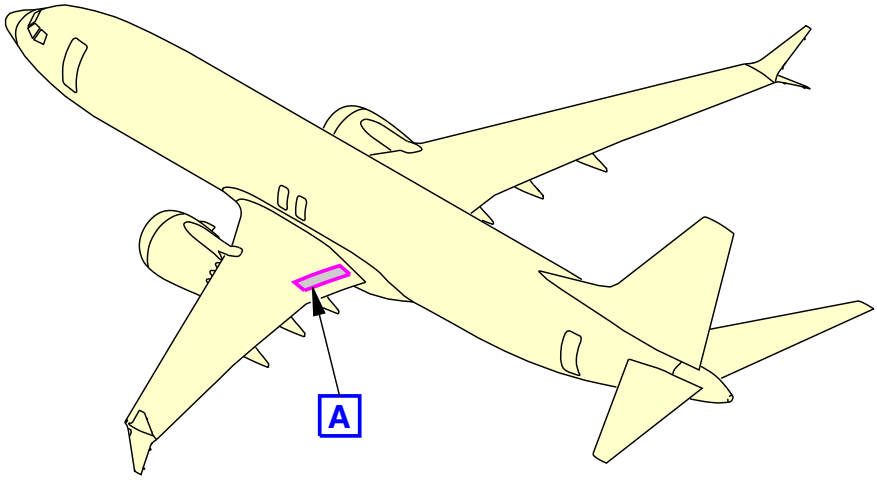
(c) Remove the cotter pin [16], nut [15], washer [14], bushings [13], washer [12], and bolt [11] to disconnect the center left hinge fitting.

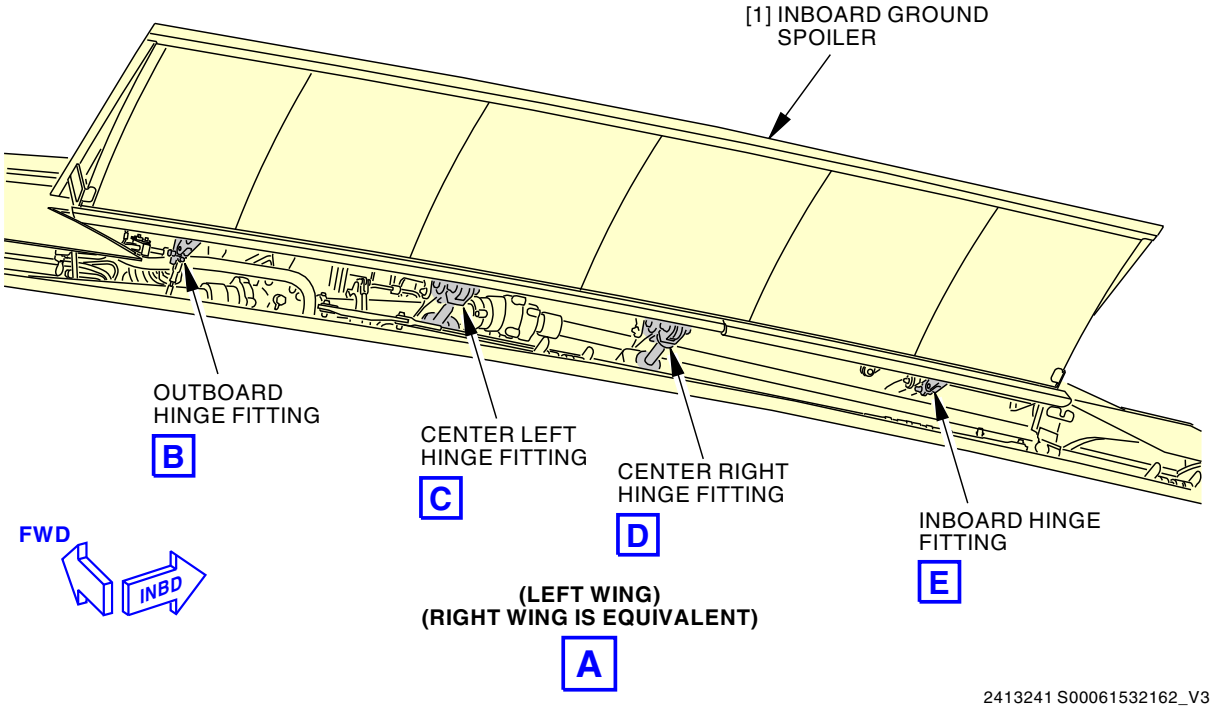
(d) Remove the cotter pin [23], nut [22], washer [21], bushing [20], washer [19], and bolt [18] to disconnect the center right hinge fitting.

(e) Remove the inboard ground spoiler [1] from the airplane.

END OF TASK

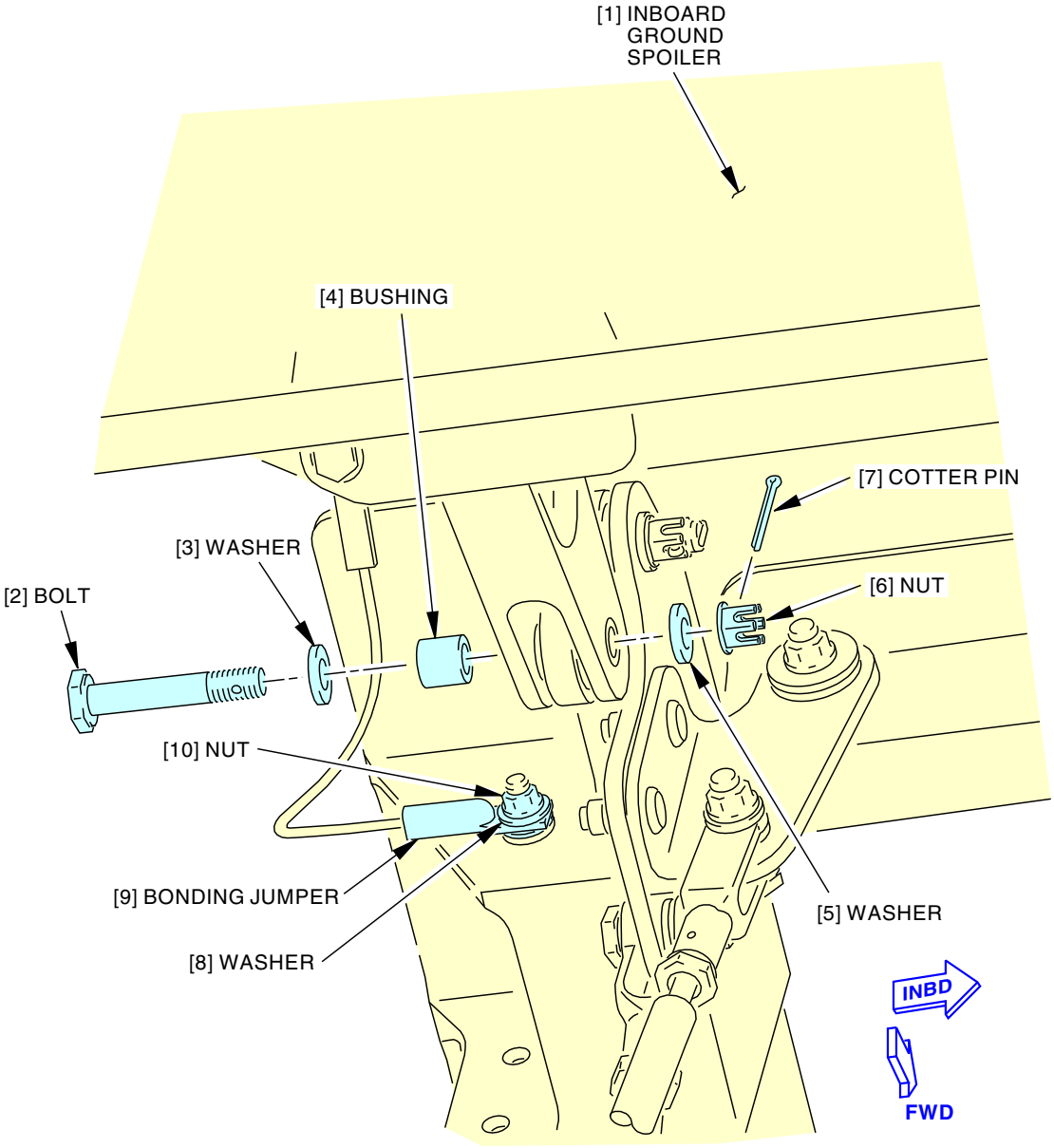
ECCN 9E991 BOEING PROPRIETARY - See title page for details





Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



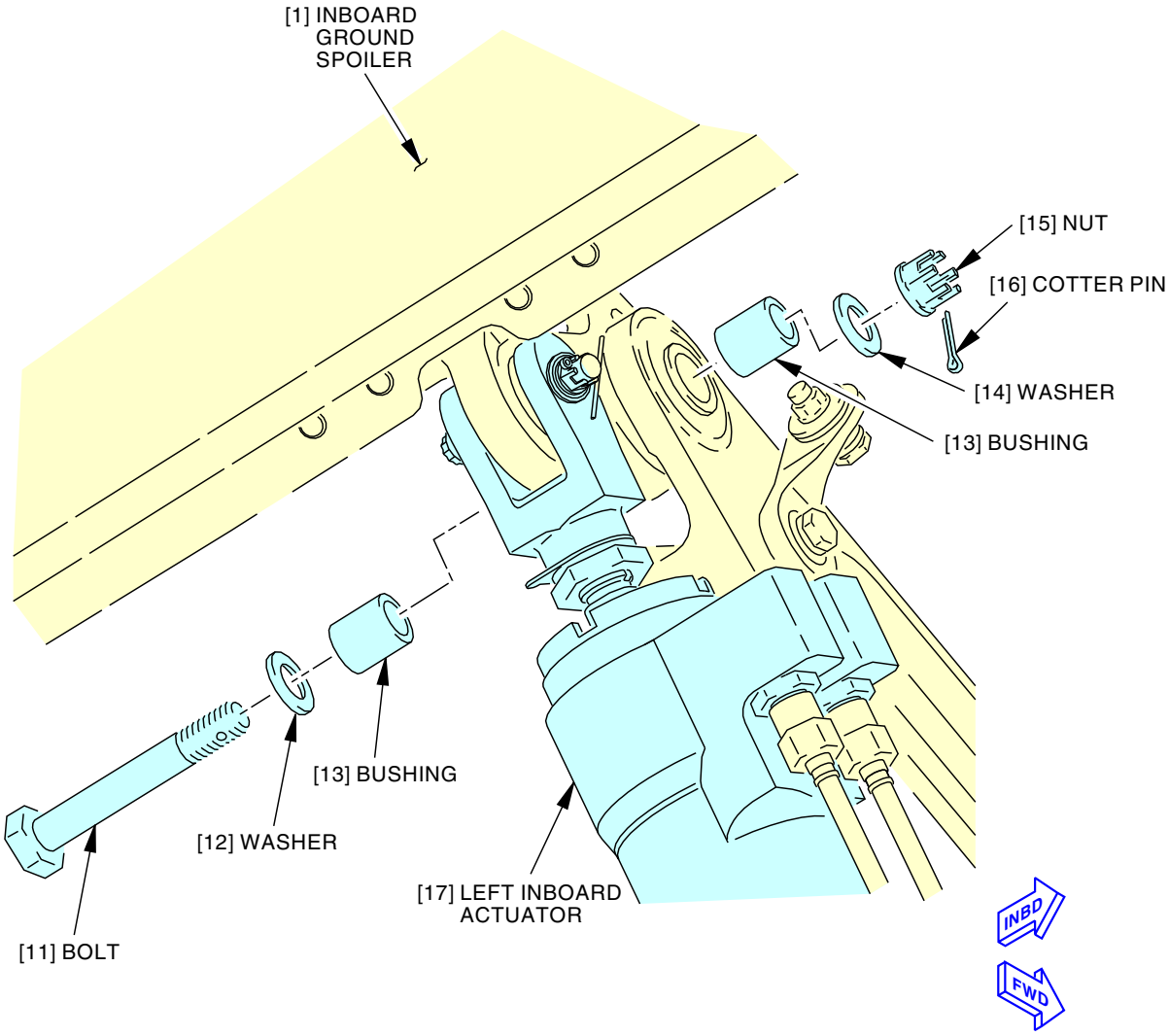
OUTBOARD HINGE FITTING

B

2413242 S00061532163_V2

Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 2 of 6)

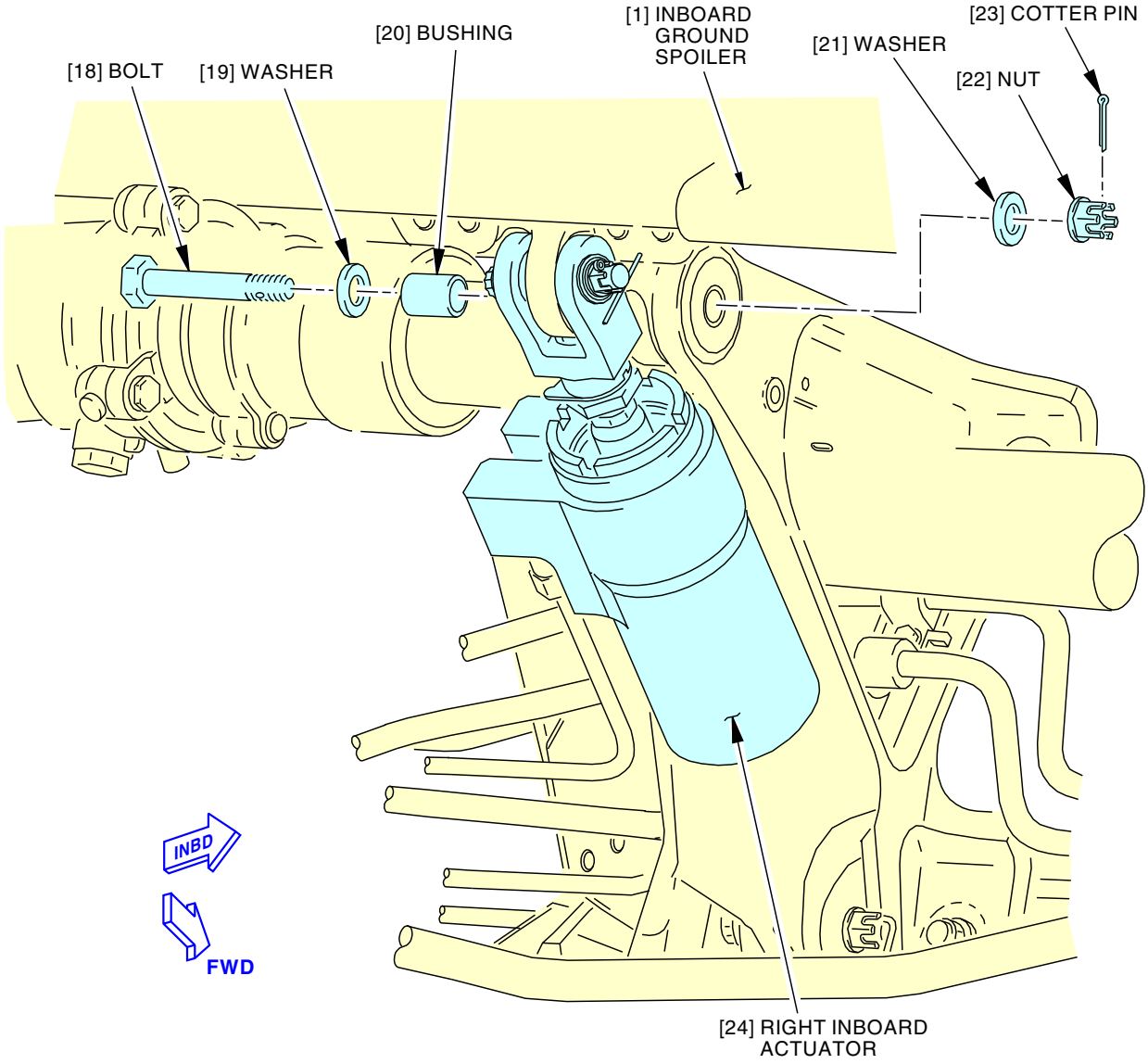
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413243 S00061532164_V2

Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



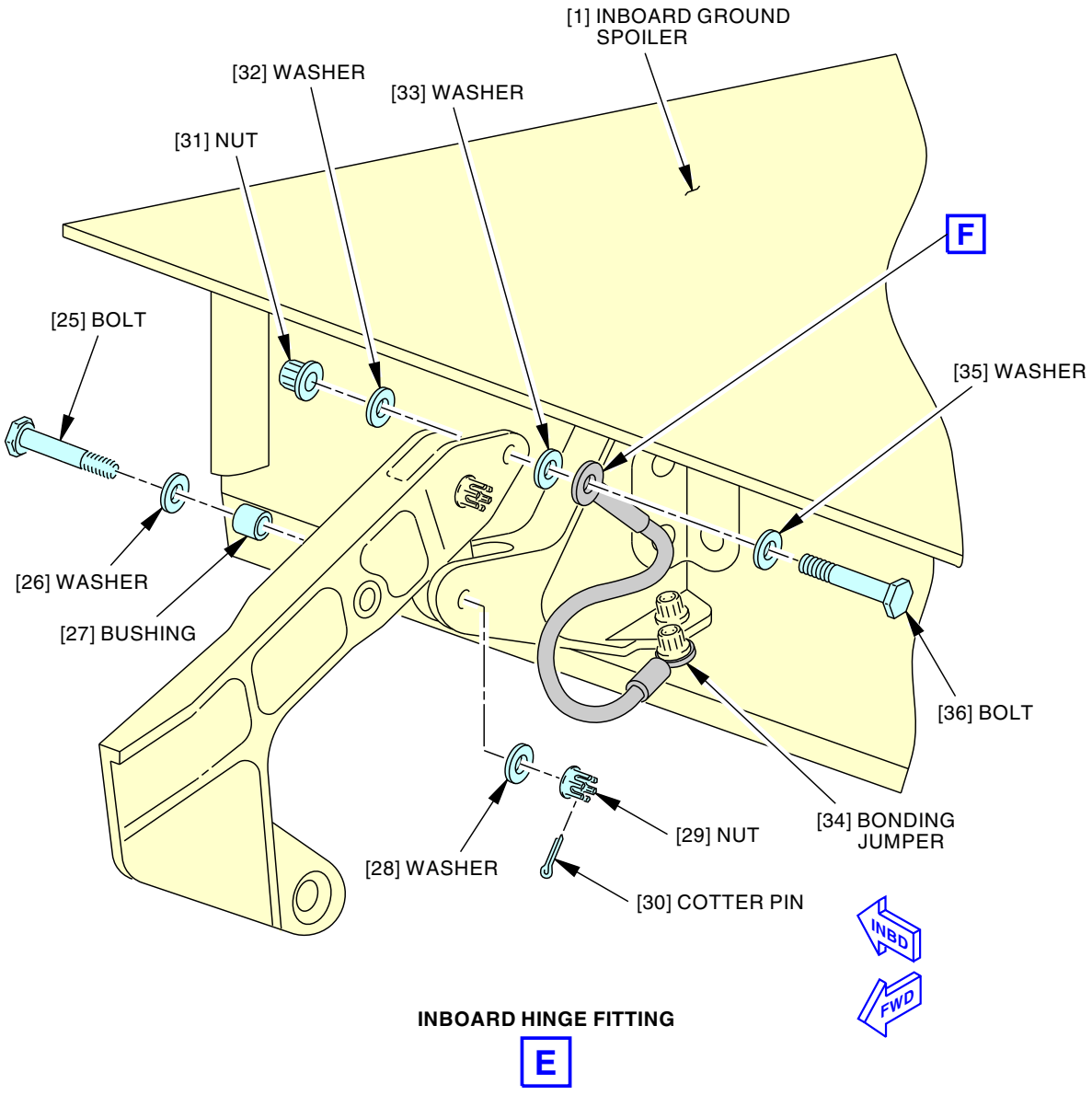
CENTER RIGHT HINGE FITTING

D

2413244 S00061532165_V3

Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 4 of 6)

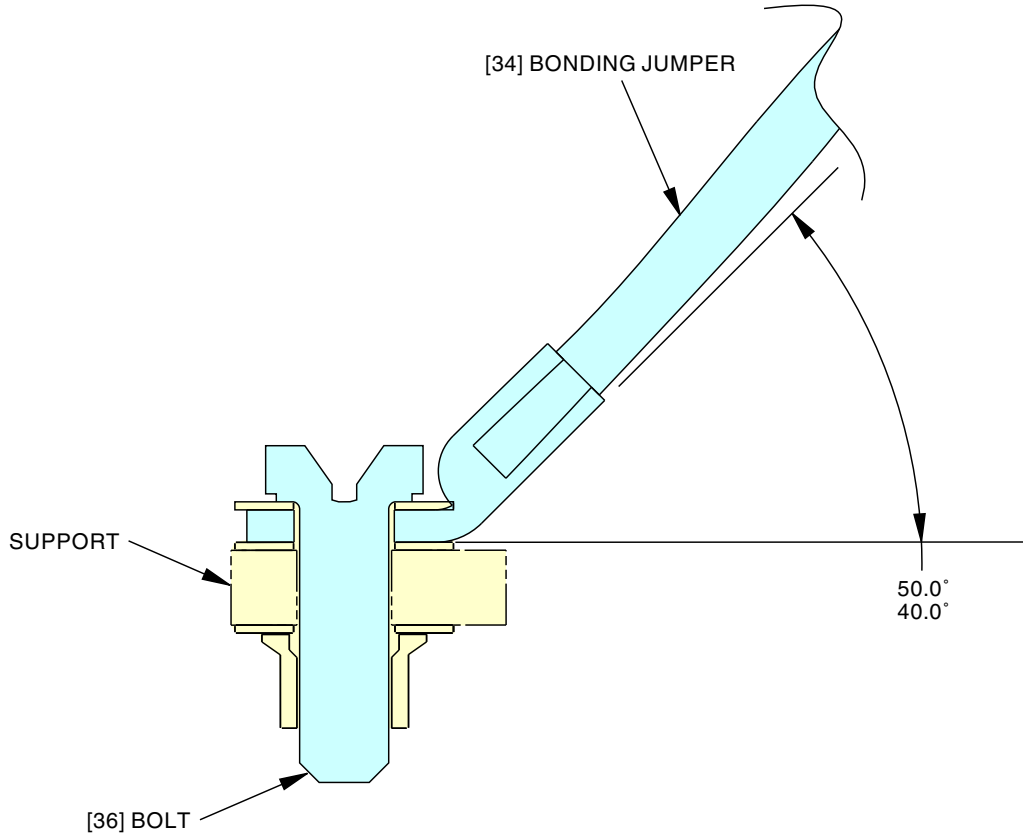
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413245 S00061532166_V3

Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



F

3006849 S0000781270_V1

Inboard Ground Spoiler Installation
Figure 401/27-62-12-990-801 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-12-400-801

3. Inboard Ground Spoiler Installation

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-820-802	Ground Spoiler Adjustment (P/B 501)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
27-62-41-720-801	Ground Spoiler Control Module Functional Test (P/B 401)
27-62-71-400-801	Inboard Ground Spoiler Actuator Installation (P/B 401)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES
SWPM 20-20-00, Paragraph 2A	Cleaning Procedure 1
SWPM 20-20-10 Paragraph 4.C	Category 1 Unsealed and Category 6 Fillet Sealed Pre-Installed Ground Stud Assembly
SWPM 20-20-10 Paragraph 4.D	Category 2 Fay Sealed Pre-Installed Ground Stud Assembly
SWPM 20-20-10 Paragraph 4.E	Category 1 Unsealed and Category 6 Fillet Sealed Direct Ground Stud Assembly
SWPM 20-20-10 Paragraph 4.F	Category 2 Fay Sealed Direct Ground Stud Installation

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
SPL-1744	Set - Lock, Inboard Ground Spoiler Actuator (Contains 4 Lock Assemblies) Part #: C27046-13 Supplier: 81205 Opt Part #: C27046-1 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
A50155	Sealant - Fuel Tank	BMS5-45 Class C
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C
A50337	Sealant - Fuel Tank	BMS5-45 Class B
A50359	Sealant - Low Density, Non-Chromate Type	BMS5-142 Type II Class B
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00175	Primer - Urethane Compatible, Corrosion Resistant	BMS10-79 Type III
C50075	Coating - Protective Enamel (BAC 707 Gray Color)	BMS10-60 Type II
C50315	Coating - Chemical Conversion - Bonderite M-CR 600 Aero (Formerly Alodine 600)	BAC5719 Class A, C or D, MIL-DTL-81706 Type I Class 1A or 3
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Inboard ground spoiler	27-62-12-01-100	SIA ALL
		27-62-12-01-105	SIA ALL
7	Cotter pin	27-62-12-01-035	SIA ALL
16	Cotter pin	27-62-12-01-040	SIA ALL
23	Cotter pin	27-62-12-01-040	SIA ALL
30	Cotter pin	27-62-12-01-035	SIA ALL

E. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

F. Inboard Ground Spoiler Installation

SUBTASK 27-62-12-420-001

(1) Install the inboard ground spoiler [1].

(a) Put the inboard ground spoiler [1] in its position on the airplane.

(b) Install the bolt [18] with the head outboard, washer [19], bushing [20], washer [21], nut [22], and new cotter pin [23] in the center right hinge fitting.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolt [11] with the head outboard, washer [12], bushings [13], washer [14], nut [15], and new cotter pin [16] in the center left hinge fitting.

(d) Install the bolt [25] with the head inboard, washer [26], bushing [27], washer [28], nut [29], and new cotter pin [30] in the inboard hinge fitting.

(e) Install the bolt [2] with the head outboard, washer [3], bushing [4], washer [5], nut [6], and new cotter pin [7] in the outboard hinge fitting.

(f) Install the washer [8] and nut [10] to connect the bonding jumper [9] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [10], bonding jumper [9], and washer [8].

2) Method 1 (preferred). Apply sealant, A50110, or sealant, A50155, or sealant, A50231, or sealant, A50296, to the mating surfaces of the ground stud, nut [10], washer [8], and bonding jumper [9] (SWPM 20-20-10 Paragraph 4.D).

3) Install the bonding jumper [9], washer [8], and nut [10].

4) Tighten the nut [10] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

a) Method 1. Make sure that there is squeeze out around all the interfaces of each component.

5) Measure the electrical resistance between the bonding jumper [9] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

6) Method 2 (optional). Apply a fillet seal with sealant, A50337, or sealant, A50231, or sealant, A50359, to cover the nut [10], washer [8], and bonding jumper [9] (SWPM 20-20-10 Paragraph 4.C).

(g) Install the bolt [36], washer [35], washer [33], washer [32], and nut [31] to connect the bonding jumper [34] to the structure.

1) Clean the surface of the bolt [36], washer [35], bonding jumper [34], washer [33], washer [32], and nut [31] (SWPM 20-20-00, Paragraph 2A).

2) Use cotton wiper, G00034, moist in solvent, B00184, to final clean the mating surfaces of the airplane structure, bolt [36], washer [35], bonding jumper [34], washer [33], washer [32], and nut [31].

3) Method 1 (preferred). Apply sealant, A50110, or sealant, A50155, or sealant, A50231, or sealant, A50296, to the mating surfaces of the bolt [36], washer [35], bonding jumper [34], washer [33], washer [32], and nut [31] (SWPM 20-20-10 Paragraph 4.F).

4) Install the bolt [36], washer [35], bonding jumper [34], washer [33], washer [32], and nut [31] .

5) Tighten the nut [31] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

a) Method 1. Make sure that there is squeeze out around all the interfaces of each component.

6) Measure the electrical resistance between the bonding jumper [34] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

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7) Bend the bonding jumper [34] 45 ±5°arc (0.8 ±0.1 rad) away from the support (View F, Figure 401).

8) Method 2 (optional). Apply a fillet seal with sealant, A50337, or sealant, A50231, or sealant, A50359, to cover the bolt [36], washer [35], bonding jumper [34], washer [33], washer [32], and nut [31] (SWPM 20-20-10 Paragraph 4.E).

9) Manually apply finish with coating, C00064, or Bonderite M-CR 600 Aero coating, C50315.

a) Apply primer, C00175, and coating, C50075.

SUBTASK 27-62-12-980-001

(2) Move the inboard ground spoiler [1] through its full travel.

(a) Make sure that the inboard ground spoiler [1] moves freely.

SUBTASK 27-62-12-420-002

(3) Connect the rod end of the left inboard actuator [17] to the inboard ground spoiler [1] (TASK 27-62-71-400-801).

SUBTASK 27-62-12-420-003

(4) Connect the rod end of the right inboard actuator [24] to the inboard ground spoiler [1] (TASK 27-62-71-400-801).

SUBTASK 27-62-12-080-001

(5) Remove the set, SPL-1744.

SUBTASK 27-62-12-720-002

(6) To unlatch the SPOILER ACTUATOR status message, do this task: Ground Spoiler Control Module Functional Test, TASK 27-62-41-720-801.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

SUBTASK 27-62-12-860-006

(7) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

SUBTASK 27-62-12-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-12-860-008

(9) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-12-860-013

(10) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-12-860-009

(11) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-12-820-001

(12) Adjust the inboard ground spoilers (TASK 27-62-00-820-802).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-12-720-001

(13) Do this task: Inboard Ground Spoiler Functional Test, TASK 27-62-12-720-801.

END OF TASK

TASK 27-62-12-720-801

4. Inboard Ground Spoiler Functional Test

A. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

D. Prepare for the Test

SUBTASK 27-62-12-860-010

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 27-62-12-860-011

WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-12-480-002

(3) Install the protractor, COM-1691 on the inboard ground spoilers 6 and 7.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-12-820-002

(4) Adjust the protractor, COM-1691 to 0°arc (0 rad).

E. Inboard Ground Spoiler Functional Test

SUBTASK 27-62-12-020-006

(1) Move the speed brake lever to the UP position to lift the spoilers.

SUBTASK 27-62-12-020-007

(2) Make sure the spoilers No. 6 and 7 are 60 ±2°arc (1 ±0 rad) up from the retracted position.

SUBTASK 27-62-12-020-008

(3) Make sure the ground spoilers No. 6 and 7 align in the limit of 2°arc (0 rad).

SUBTASK 27-62-12-020-009

(4) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-12-820-003

(5) Make sure the spoilers move to the fully retracted position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-12-860-012

(1) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-62-12-080-002

(2) Remove the protractor, COM-1691 from the spoilers No. 6 and 7.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

GROUND SPOILER HINGE LINK - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) The ground spoiler hinge links removal

(2) The ground spoiler hinge links installation.

B. This procedure is applicable to the left and right ground spoiler hinge links.

TASK 27-62-15-000-801

2. Ground Spoiler Hinge Link Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-800-802	Depressurization of the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-12-000-801	Inboard Ground Spoiler Removal (P/B 401)
27-62-91-000-801	Outboard Ground Spoiler Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1743	Set - Ground Lock, Outboard Spoiler Actuators Part #: C27001-51 Supplier: 81205
SPL-1744	Set - Lock, Inboard Ground Spoiler Actuator (Contains 4 Lock Assemblies) Part #: C27046-13 Supplier: 81205 Opt Part #: C27046-1 Supplier: 81205

C. Location Zones

Zone	Area
552	Left Wing - Spoiler No. 6
566	Left Wing - Spoiler No. 1
652	Right Wing - Spoiler No. 7
666	Right Wing - Spoiler No. 12

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Prepare for the Removal

SUBTASK 27-62-15-860-002

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-62-15-860-003

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-62-15-860-004

WARNING

MAKE SURE THE SPOILER WILL REMAIN IN THE OPEN POSITION DURING INSTALLATION OF THE LOCK-SET. PUT ONE PERSON IN THE FLIGHT COMPARTMENT TO MONITOR THE SPOILER CONTROL LEVER. IF THE SPOILER CONTROL LEVER CHANGES POSITION, THE SPOILER PANEL COULD MOVE AND CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(3) Put the speed brake lever in the UP position to lift the spoilers.

SUBTASK 27-62-15-480-001

(4) Install the set, SPL-1744 or the set, SPL-1743 on the actuator for the applicable ground spoiler.

SUBTASK 27-62-15-860-005

(5) Do this task: Depressurization of the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-802.

SUBTASK 27-62-15-020-001

(6) To remove the outboard ground spoiler hinge link, do this task: Outboard Ground Spoiler Removal, TASK 27-62-91-000-801.

SUBTASK 27-62-15-020-002

(7) To remove the inboard ground spoiler hinge links, do this task: Inboard Ground Spoiler Removal, TASK 27-62-12-000-801.

E. Ground Spoiler Hinge Link Removal

SUBTASK 27-62-15-020-003

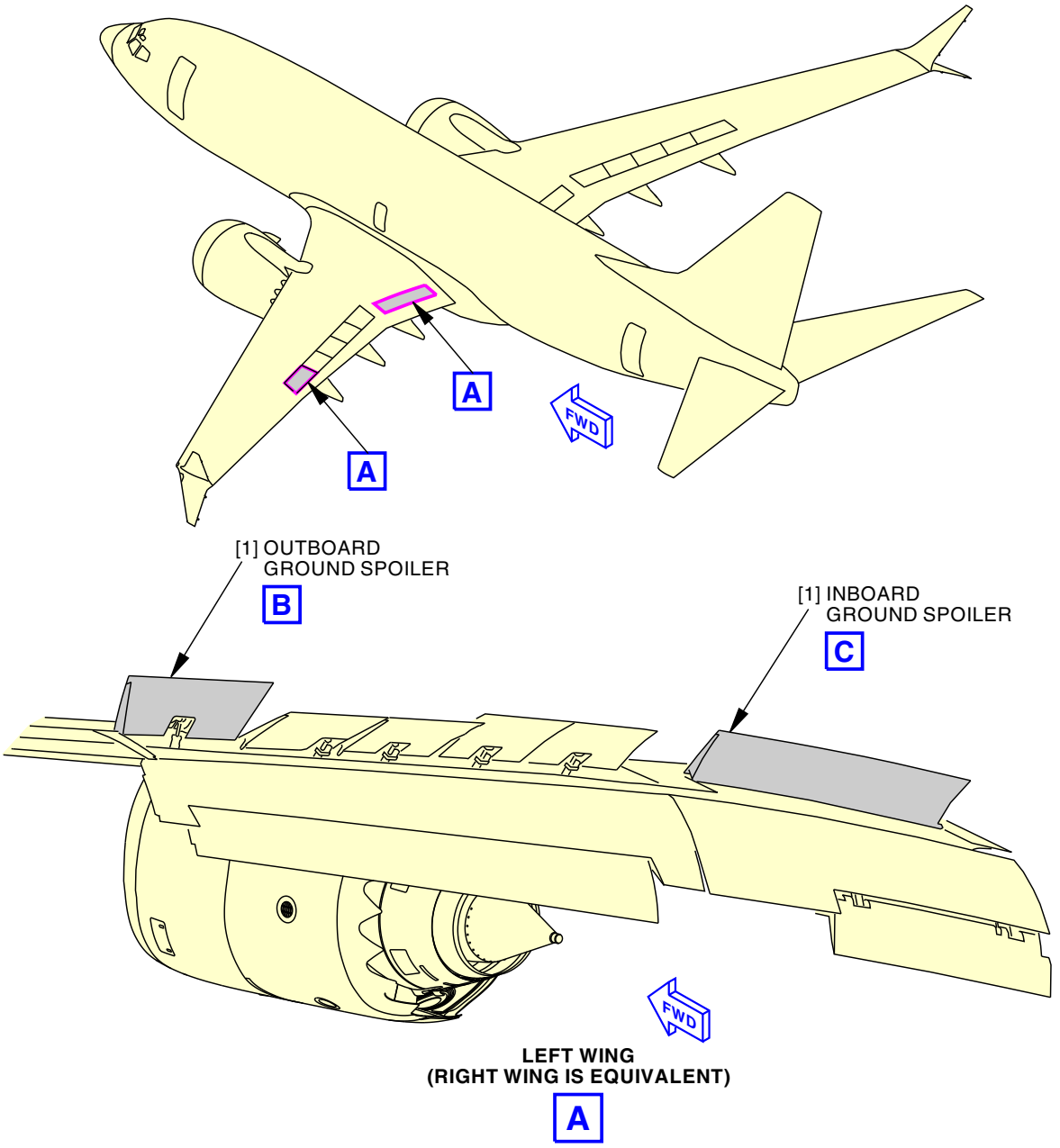
(1) To remove the spoiler hinge link [5], spoiler hinge link [5A], spoiler hinge link [5B] or spoiler hinge link [5C], do these steps:

(a) Remove pins [11], nuts [10], washers [9], bushings [8], washers [7] and bolts [6].

(b) Remove ground spoiler hinge link from the airplane.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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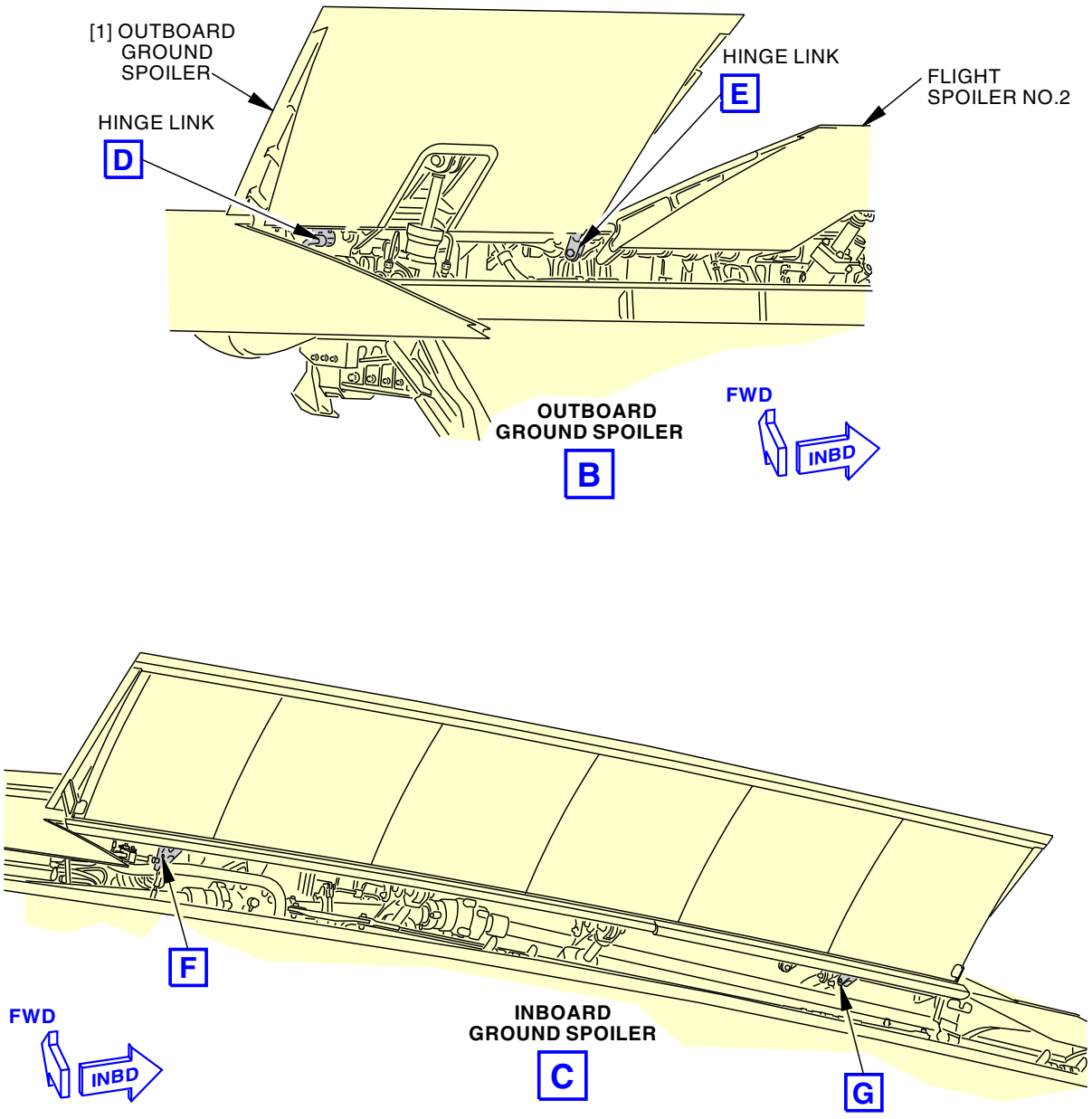
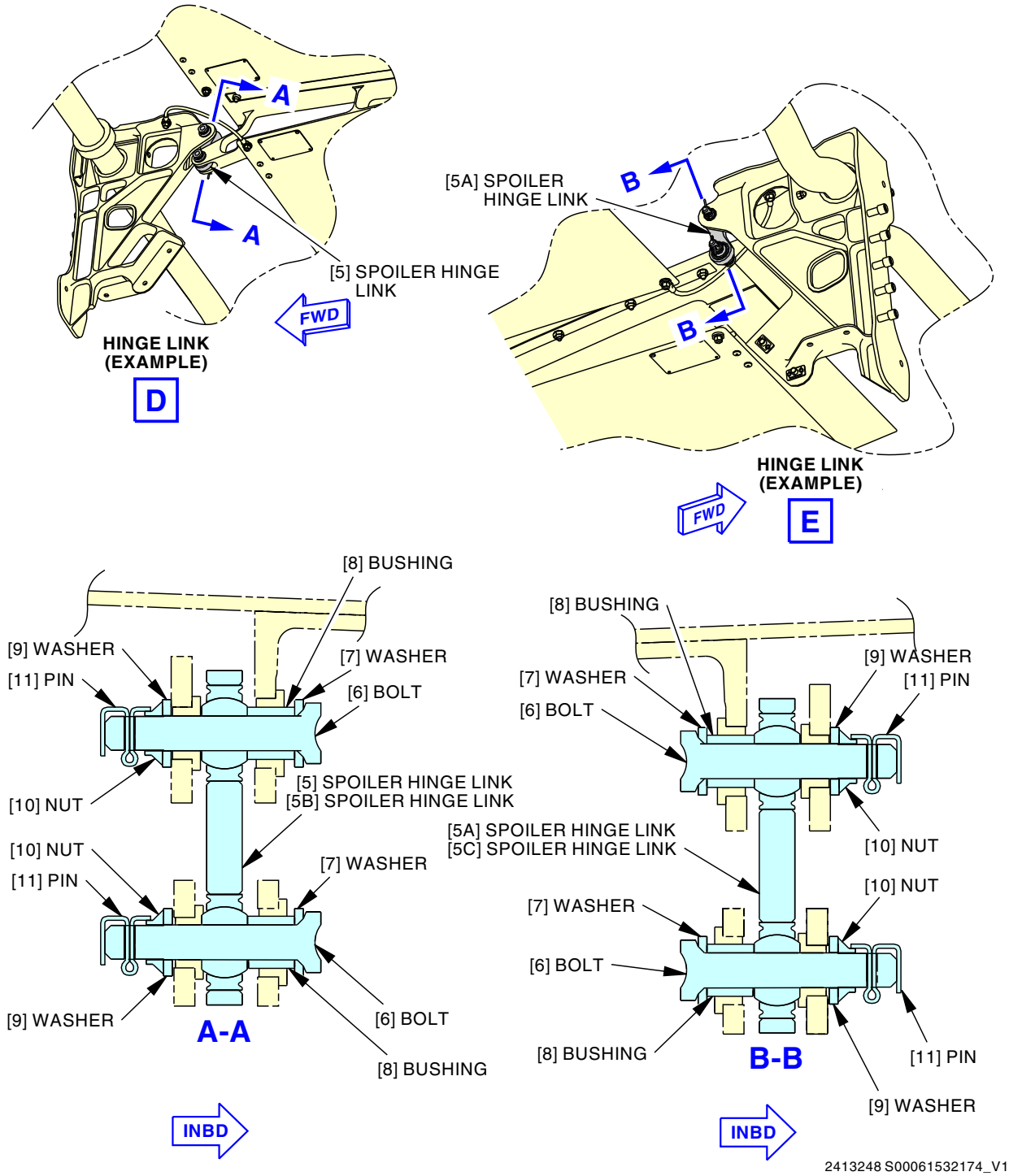
Ground Spoiler Hinge Link Installation
Figure 401/27-62-15-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



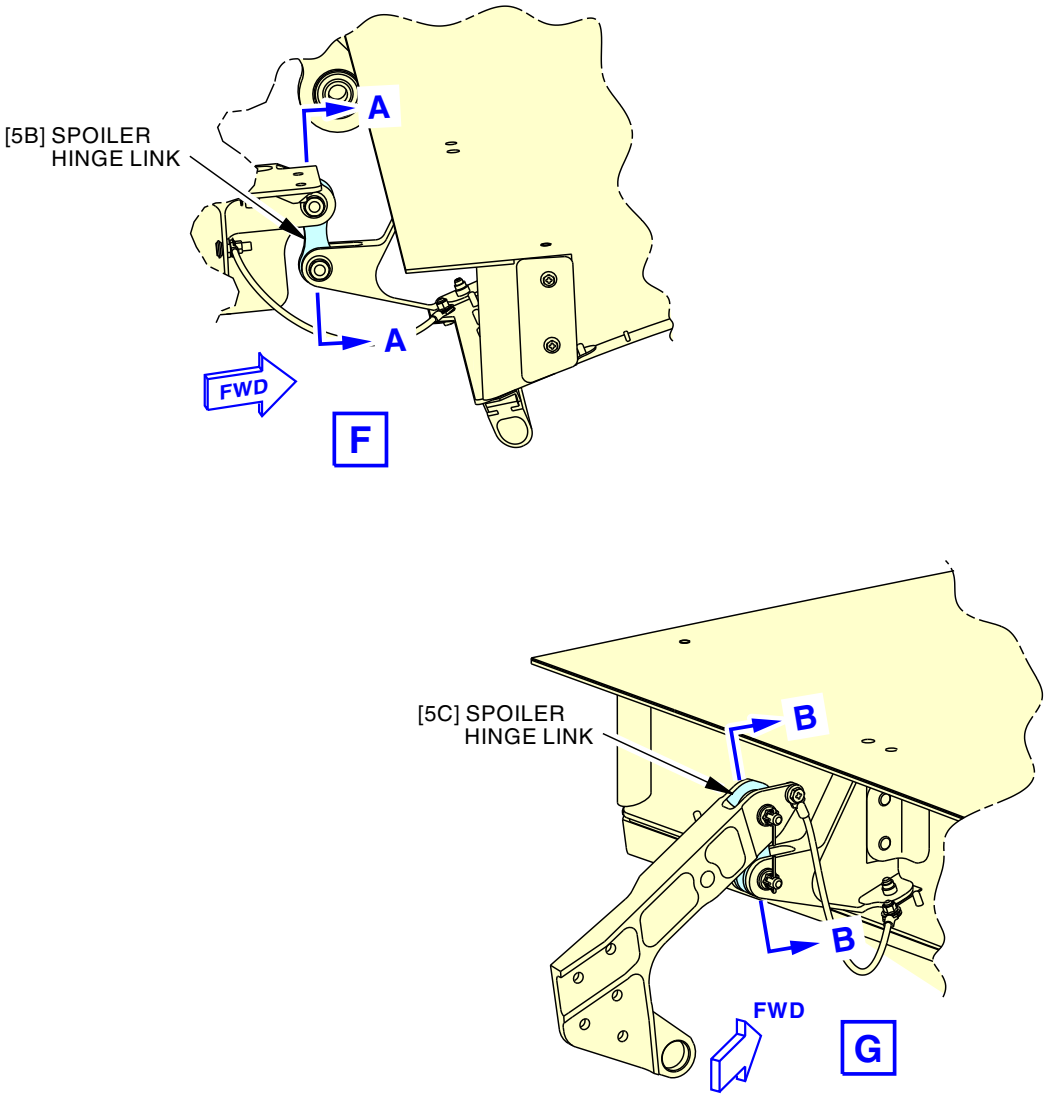
Ground Spoiler Hinge Link Installation
Figure 401/27-62-15-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Ground Spoiler Hinge Link Installation
Figure 401/27-62-15-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Ground Spoiler Hinge Link Installation
Figure 401/27-62-15-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-15-400-801

3. Ground Spoiler Hinge Link Installation

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-61-00-800-801	Apply Pressure to the Spoiler Hydraulic Systems A and B (P/B 201)
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-00-820-802	Ground Spoiler Adjustment (P/B 501)
27-62-12-400-801	Inboard Ground Spoiler Installation (P/B 401)
27-62-41-720-801	Ground Spoiler Control Module Functional Test (P/B 401)
27-62-91-000-802	Outboard Ground Spoiler Test (P/B 401)
27-62-91-400-801	Outboard Ground Spoiler Installation (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1743	Set - Ground Lock, Outboard Spoiler Actuators Part #: C27001-51 Supplier: 81205
SPL-1744	Set - Lock, Inboard Ground Spoiler Actuator (Contains 4 Lock Assemblies) Part #: C27046-13 Supplier: 81205 Opt Part #: C27046-1 Supplier: 81205

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Spoiler hinge link	27-62-15-01-050	SIA ALL
5A	Spoiler hinge link	27-62-15-01-050	SIA ALL
5B	Spoiler hinge link	27-62-15-01-050	SIA ALL
5C	Spoiler hinge link	27-62-15-01-050	SIA ALL
11	Pin	27-62-15-01-020	SIA ALL

D. Location Zones

Zone	Area
552	Left Wing - Spoiler No. 6
566	Left Wing - Spoiler No. 1
652	Right Wing - Spoiler No. 7
666	Right Wing - Spoiler No. 12

E. Ground Spoiler Hinge Link Installation

SUBTASK 27-62-15-020-004

(1) To install the spoiler hinge link [5], spoiler hinge link [5A], spoiler hinge link [5B] or spoiler hinge link [5C], do these steps:

(a) Install the bolts [6], washers [7], bushings [8], washers [9], nuts [10] and new pins [11].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-15-400-001

(2) If you removed the outboard ground spoiler hinge link, do this task: Outboard Ground Spoiler Installation, TASK 27-62-91-400-801.

SUBTASK 27-62-15-400-002

(3) If you removed the inboard ground spoiler hinge links, do this task: Inboard Ground Spoiler Installation, TASK 27-62-12-400-801.

SUBTASK 27-62-15-860-006

(4) Make sure that hydraulic power is not on.

SUBTASK 27-62-15-080-001

(5) Remove set, SPL-1744, or the set, SPL-1743, from the applicable spoiler actuator.

SUBTASK 27-62-15-720-002

(6) Do this task to unlatch the SPOILER ACTUATOR status message: Ground Spoiler Control Module Functional Test, TASK 27-62-41-720-801.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

SUBTASK 27-62-15-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Do this task: Apply Pressure to the Spoiler Hydraulic Systems A and B, TASK 27-61-00-800-801.

SUBTASK 27-62-15-860-008

(8) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-15-860-009

(9) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-15-860-010

(10) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-62-15-820-001

(11) Do this task: Ground Spoiler Adjustment, TASK 27-62-00-820-802.

SUBTASK 27-62-15-720-001

(12) Do this task: Outboard Ground Spoiler Test, TASK 27-62-91-000-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEEDBRAKE MECHANISM - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Speedbrake mechanism removal

(2) Speedbrake mechanism installation.

TASK 27-62-21-000-801

2. Speedbrake Mechanism Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-62-37-000-801	Speedbrake Lever Transducer Removal (P/B 401)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 27-62-21-860-001

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-21-860-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed on all landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-62-21-010-001

(4) Open this access panel:

Number	Name/Location
112A	Forward Access Door

E. Removal Procedure

SUBTASK 27-62-21-020-001

(1) Remove the speedbrake lever transducer [2] (Speedbrake Lever Transducer Removal, TASK 27-62-37-000-801).

SUBTASK 27-62-21-020-003

(2) Remove the pin [4], nut [5], washer [6] and bolt [7] that attach the actuator assembly [3] to the speedbrake mechanism [1].

SUBTASK 27-62-21-020-004

(3) Remove the nut [9], washer [10] and bolt [11] that attach the control rod [8] to the speedbrake mechanism [1].

SUBTASK 27-62-21-020-002

(4) Do these steps to remove the turnbuckle [12]:

(a) Remove the lockwire, nut [13], washer [14], bushing [15], washer [16] and bolt [17].

(b) Remove the nut [18], washer [19], washer [20] and bolt [21].

(c) Remove the turnbuckle [12].

SUBTASK 27-62-21-020-005

(5) Remove the speedbrake mechanism [1]:

(a) Remove the nuts [22], washers [23], washers [24] and bolts [25] that attach the speedbrake mechanism [1] to the structure.

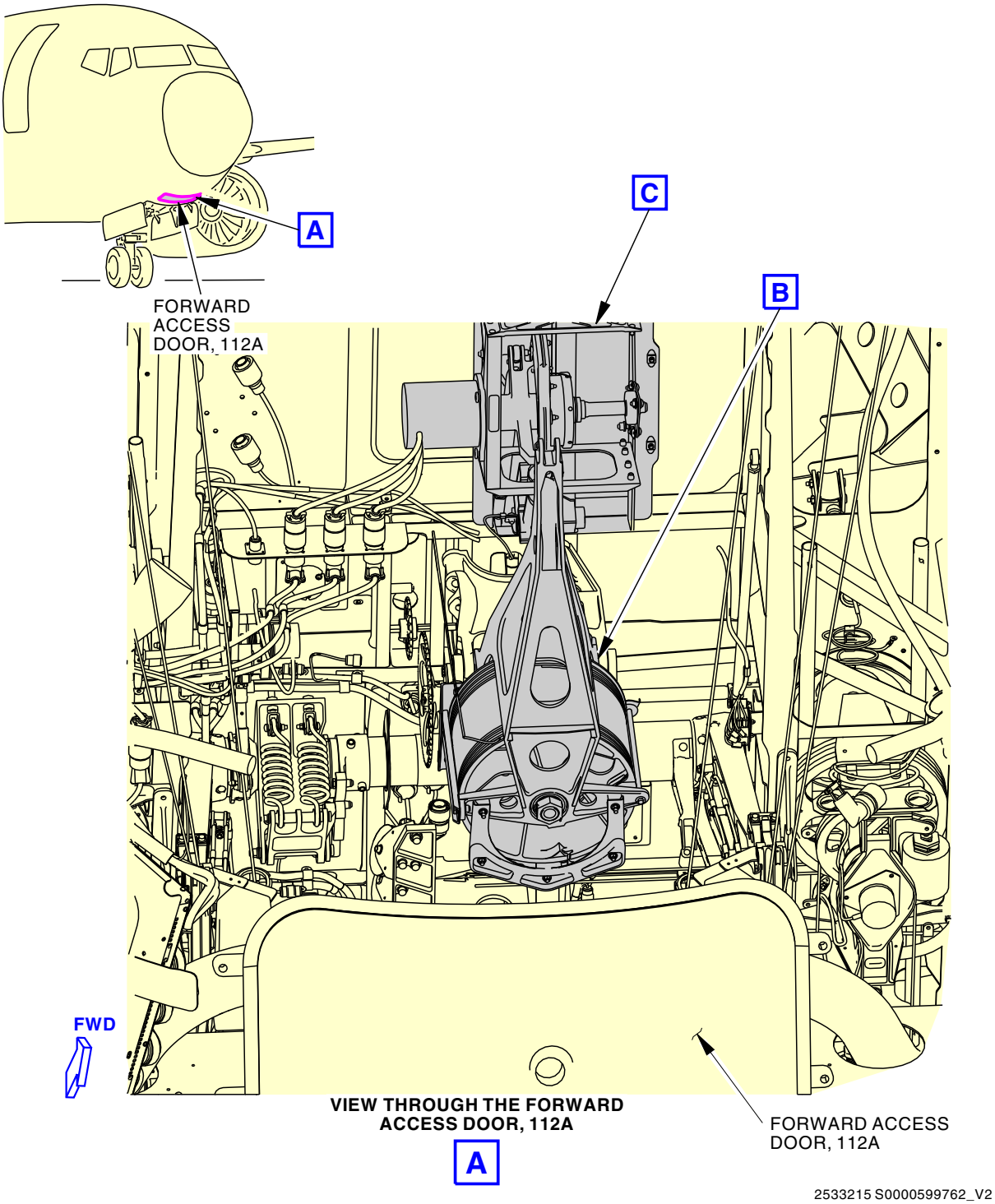
(b) Remove the nuts [26], bushings [27], washers [28] and bolts [29] that attach the speedbrake mechanism [1] to the structure.

(c) Remove the speedbrake mechanism [1].

NOTE: The speedbrake mechanism [1] can be removed on the left side of the cable drum.

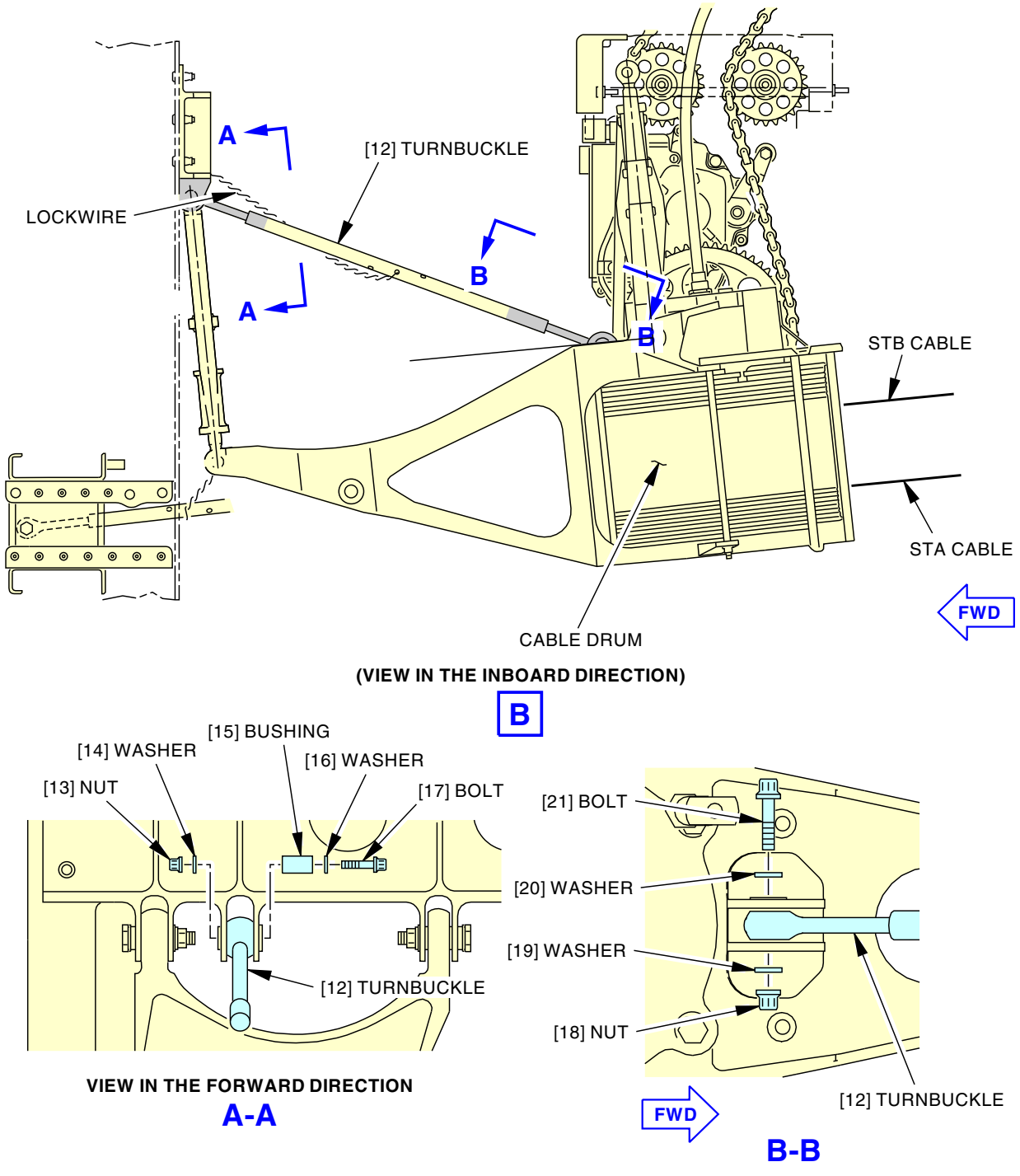
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



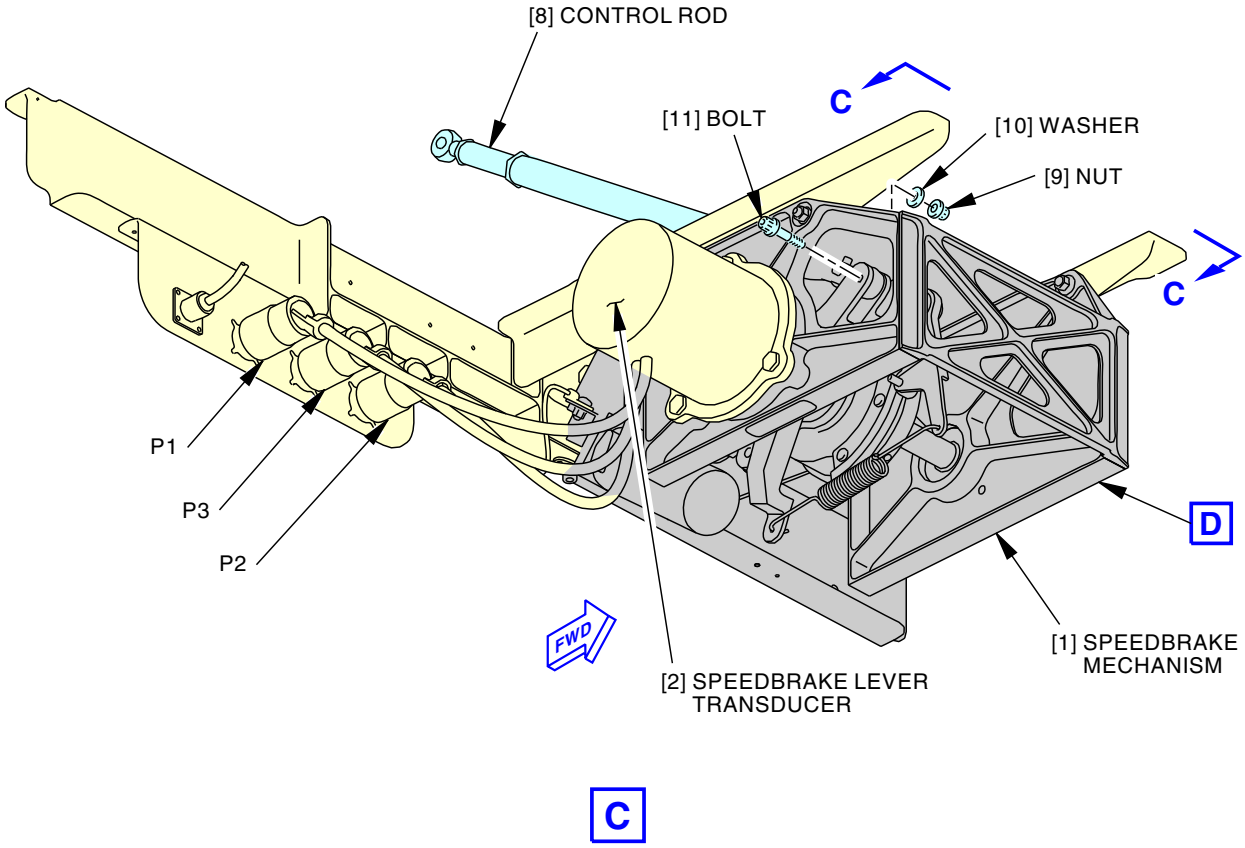
Speedbrake Mechanism Installation
Figure 401/27-62-21-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Mechanism Installation
Figure 401/27-62-21-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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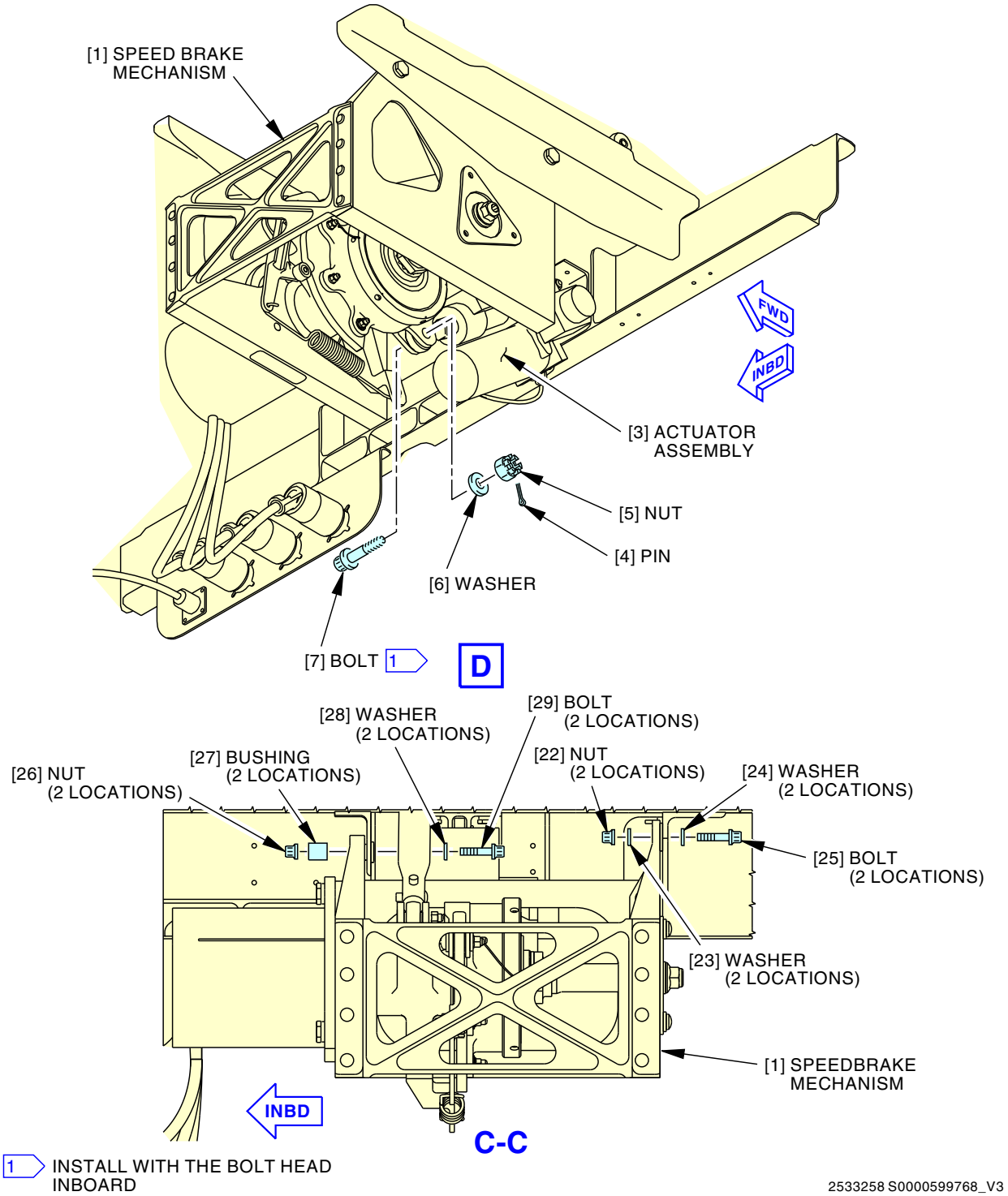
Speedbrake Mechanism Installation
Figure 401/27-62-21-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Mechanism Installation
Figure 401/27-62-21-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-21-400-801

3. Speedbrake Mechanism Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-62-37-400-801	Speedbrake Lever Transducer Installation (P/B 401)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Speedbrake mechanism	27-62-31-01-165	SIA ALL
4	Pin	27-62-31-01-115	SIA ALL

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Speedbrake Mechanism Installation

SUBTASK 27-62-21-420-002

(1) Install the speedbrake mechanism [1]:

(a) Put the speedbrake mechanism [1] in position.

(b) Install the nuts [26], bushings [27], washers [28] and bolts [29] that attach the speedbrake mechanism [1] to the structure.

(c) Install the nuts [22], washers [23], washers [24] and bolts [25] that attach the speedbrake mechanism [1] to the structure.

SUBTASK 27-62-21-420-003

(2) Do these steps to attach the actuator assembly [3] to the speedbrake mechanism [1]:

(a) Put the actuator assembly [3] in its position on the speedbrake mechanism [1].

(b) Install the new pin [4], nut [5], washer [6], and bolt [7] that attach the actuator assembly [3] to the speedbrake mechanism [1].

1) Install bolt [7] with the bolt head inboard.

SUBTASK 27-62-21-420-004

(3) Do these steps to attach the control rod [8] to the speedbrake mechanism [1]:

(a) Put the control rod [8] in its position on the speedbrake mechanism [1].

(b) Install the nut [9], washer [10] and bolt [11] that attach the control rod [8] to the speedbrake mechanism [1].

SUBTASK 27-62-21-420-005

(4) Install the turnbuckle [12]:

(a) Put the aft end of the turnbuckle [12] in its position.

1) Install the bolt [21], washer [20], washer [19], and nut [18].

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(b) Put the forward end of the turnbuckle [12] in its position.

1) Install the bolt [17], washer [16], bushing [15], washer [14], nut [13] and lockwire.

SUBTASK 27-62-21-420-006

(5) Install the speedbrake lever transducer [2] (TASK 27-62-37-400-801).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-21-860-004

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 27-62-21-410-001

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEEDBRAKE LEVER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the speedbrake lever

(2) An installation of the speedbrake lever.

TASK 27-62-22-000-801

2. Speedbrake Lever - Removal

A. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2409	Dowel Set - Thrust Lever, Control Stand Part #: F80195-1 Supplier: 81205
SPL-2411	Tool Set - Control Stand Disassembly Part #: C76002-26 Supplier: 81205
STD-589	Mat - Protective Cover
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-62-22-040-001

(1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 27-62-22-040-002

(2) Make sure that the left and right engine start switches are off and install DO NOT OPERATE tags, STD-858.

SUBTASK 27-62-22-040-003

(3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

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(Continued)

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 27-62-22-040-004

(5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

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SUBTASK 27-62-22-860-001

WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-22-040-005

(7) Deactivate the speedbrakes and control lever on the control stand.

(a) Move the speedbrake control lever [22] to the DOWN position.

SUBTASK 27-62-22-010-001

(8) Do this task: Captain and First Officer Seat Removal, TASK 25-11-01-000-801.

SUBTASK 27-62-22-010-002

(9) Put a protective cover mat, STD-589, on the aft electronics panel P8.

NOTE: This will prevent damage to the switches and glass surfaces of the indicators and displays.

SUBTASK 27-62-22-010-003

(10) Remove control stand lightplates to get access to the speed brake lever (Figure 406).

(a) Remove the first officer stabilizer trim lightplate [60].

1) Remove the screws [64] that attach the first officer stabilizer trim lightplate [60].
2) Remove the nut [68] and lockwasher [69].
3) Remove the terminal lug and washer [70] from the stud on the lightplate.
4) Remove the lightplate.

(b) Remove the captain stabilizer trim lightplate [61].

1) Remove the screws [65] that attach the captain stabilizer trim lightplate [61].
2) Remove the nut [68] and lockwasher [69].
3) Remove the terminal lug and washer [70] from the stud on the lightplate.
4) Remove the lightplate.

(c) Remove the flap lever indicator lightplate [62].

1) Remove the screws [66] that attach the flap lever indicator lightplate [62].
2) Remove the nut [68] and lockwasher [69].
3) Remove the terminal lug and washer [70] from the stud on the lightplate.
4) Remove the lightplate.

(d) Remove the speed brake lightplate [63].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the screws [67] that attach the speed brake lightplate [63].
2) Remove the nut [68] and lockwasher [69].
3) Remove the terminal lug and washer [70] from the stud on the lightplate.
4) Remove the lightplate.

SUBTASK 27-62-22-010-004

(11) Remove seal retainers and seals to get access to the speedbrake lever (Figure 407).

(a) To remove the left seal [80] and seal retainer [82], do the following steps:
1) Remove the screws [83].
2) Remove the seal retainer [82].
3) Remove the left seal [80].
4) Remove the spacer [81].

(b) To remove the right seal [84] and seal retainer [86], do the following steps:
1) Remove the screws [87].
2) Remove the seal retainer [86].
3) Remove the right seal [84].
4) Remove the spacer [85].

SUBTASK 27-62-22-020-001

(12) Remove covers and stops to get access to the control shaft components (Figure 408).

(a) To remove the forward thrust stop [90] and aft thrust stop [91], do the following steps:
1) Remove the fuel control knobs [6] and nuts [98].
2) Remove the screws [92].
3) Remove the forward thrust stop [90].
4) Remove the screws [93].
5) Remove the aft thrust stop [91].

(b) To remove the right side cover assembly [94], do the following steps:
1) Remove the screws [95].
2) Remove the right side cover assembly [94].

(c) To remove the left side cover assembly [96], do the following steps:
1) Remove the screws [97].
2) Remove the left side cover assembly [96].

SUBTASK 27-62-22-010-005

(13) To get access to the speedbrake control lever [22] on the control stand, do the following steps (Figure 401).

(a) Remove the bolt [8], washer [8A], and the right stabilizer trim wheel [7].
1) Keep the left stabilizer trim wheel [11] attached at this time, so you can turn the assembled levers during removal.

(b) Remove the screws [51] and upper right cover [21].

(c) Remove the screws [2] and left upper side panel [1].

(d) Remove the screws [2] and the left lower side panel [5].

(e) Remove the screws [2] and the right upper side panel [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Remove the screws [2] and the right lower side panel [4].

(g) To move the stabilizer trim switch panel [10] from the control stand, do the following steps:

1) Remove screws [9].

2) Apply masking tape to prevent damage to the surface of the stabilizer trim switch panel [10].

3) Move the stabilizer trim switch panel [10] on to the protective cover mat, STD-589.

E. Control Stand Components Removal

SUBTASK 27-62-22-020-002

(1) Disconnect the flap indicator assembly.

(a) Go to the right side of the control stand.

(b) Remove the nut [16], washer [14], and bolt [17] from the lower end of the link assembly [13].

(c) Safety the link assembly [13] to the control stand.

SUBTASK 27-62-22-020-003

(2) Disconnect the flap lever position synchro assembly.

(a) Remove the nut [18] and bolt [19] from the link assembly [20].

(b) Safety the link assembly [13] to the control stand.

SUBTASK 27-62-22-020-004

(3) Disconnect the stabilizer trim controls.

(a) Turn the left trim wheel until you find the link in the trim chain [31] (Figure 402).

NOTE: This will help if it becomes necessary to disconnect the trim chain [31] during installation.

(b) Safety the trim chain [31] to the stabilizer trim sprocket [32].

1) Do not remove the trim chain [31] from the stabilizer trim sprocket [32].

(c) Move to the forward bay below the flight compartment.

1) Release the tension from the stabilizer control chain (TASK 27-41-00-820-801).

SUBTASK 27-62-22-020-005

(4) Do these steps to remove the control shaft components (Figure 401):

(a) Remove the bolt [8], washer [8A], and left stabilizer trim wheel [11].

(b) Remove screws [50] and upper left cover [12].

(c) Carefully move the stabilizer trim stabilizer trim shaft [27] to the left side of the control stand and do these steps at the same time (Figure 402).

1) Remove the bearing [35].

2) Remove the clamp up bushing [36].

3) Catch and remove the bushing [33] and inside bearing [34] as the stabilizer trim shaft [27] is moved to the left.

NOTE: The bushing is between the inside bearing [34] and the stabilizer trim sprocket.

4) Catch and move the stabilizer trim sprocket [32] and trim chain [31].

5) Move the stabilizer trim shaft [27] to the left side until the stabilizer trim sprocket [32] is clear of the stabilizer trim shaft [27].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

6) Move the stabilizer trim sprocket [32] and trim chain [31] to the bottom of the control stand.

(d) If the inside bearing [34] did not fall out with the bushing [33], then reach inside the short shaft [37] from the left side and remove the inside bearing [34].

(e) Remove the stabilizer trim stabilizer trim shaft [27] from the control stand.

1) Remove the bearing [28].

2) Remove the long bushing [29].

3) Remove the clamp up bushing [30].

SUBTASK 27-62-22-020-006

(5) To remove the stabilizer trim chain guard [45], do the following steps (Figure 403):

(a) Remove the flap control switches [99], screws [100], and washers [103].

(b) Remove the clamps [104], screw [101], screw [102], and washers [103].

(c) Go to the opening where the stabilizer trim switch panel [10] for the stabilizer trim cutout is found.

(d) Use the 90 degree screwdriver from the tool set, SPL-2411, to hold the screw [44].

(e) Remove the nut [42], washer [43], and screw [44].

(f) Remove the upper center screw [39] and washer [38].

(g) Remove the forward screw [41] and washer [40].

(h) Remove the stabilizer trim chain guard [45].

F. Speedbrake Lever Removal

SUBTASK 27-62-22-030-001

(1) To disconnect the speedbrake control lever [22] from the link assembly [23], do the following steps (Figure 401):

(a) Remove the bolt [24], washer [25], and nut [26] from the speedbrake control lever [22].

SUBTASK 27-62-22-020-007

(2) To disconnect the lockwasher [47] and nut [48] from the long control shaft [46], do the following steps (Figure 404):

(a) Find the bent tab on the lockwasher [47].

(b) Use the lockwasher removal tool from the tool set, SPL-2411, to bend the tab.

(c) Bend the tab out of the notch in the nut [48].

(d) Put one control shaft wrench from the tool set, SPL-2411, on the left side of the long control shaft [46] to hold it in position.

(e) Put one control shaft nut wrench from the tool set, SPL-2411, in position and remove the nut [48] from the long control shaft [46].

(f) Remove and discard the lockwasher [47].

SUBTASK 27-62-22-020-008

(3) To remove the speedbrake control lever [22], do the following steps (Figure 404):

(a) Put the dowel set, SPL-2409, against the right side end of the long control shaft [46].

(b) Hit lightly (carefully tap) on the dowel.

NOTE: This will move the long control shaft off the control levers.

1) Move the dowel until the speedbrake control lever [22] is on the dowel.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Do not move the long control shaft [46] from this position.

NOTE: More movement will let the speedbrake control lever fall.

(d) Hold the speedbrake control lever [22] and move the dowel from the speedbrake control lever [22].

1) Stop the dowel movement when you can lift up the speedbrake control lever [22].

2) Make sure that the washers [49] are still held by the dowel and long control shaft [46].

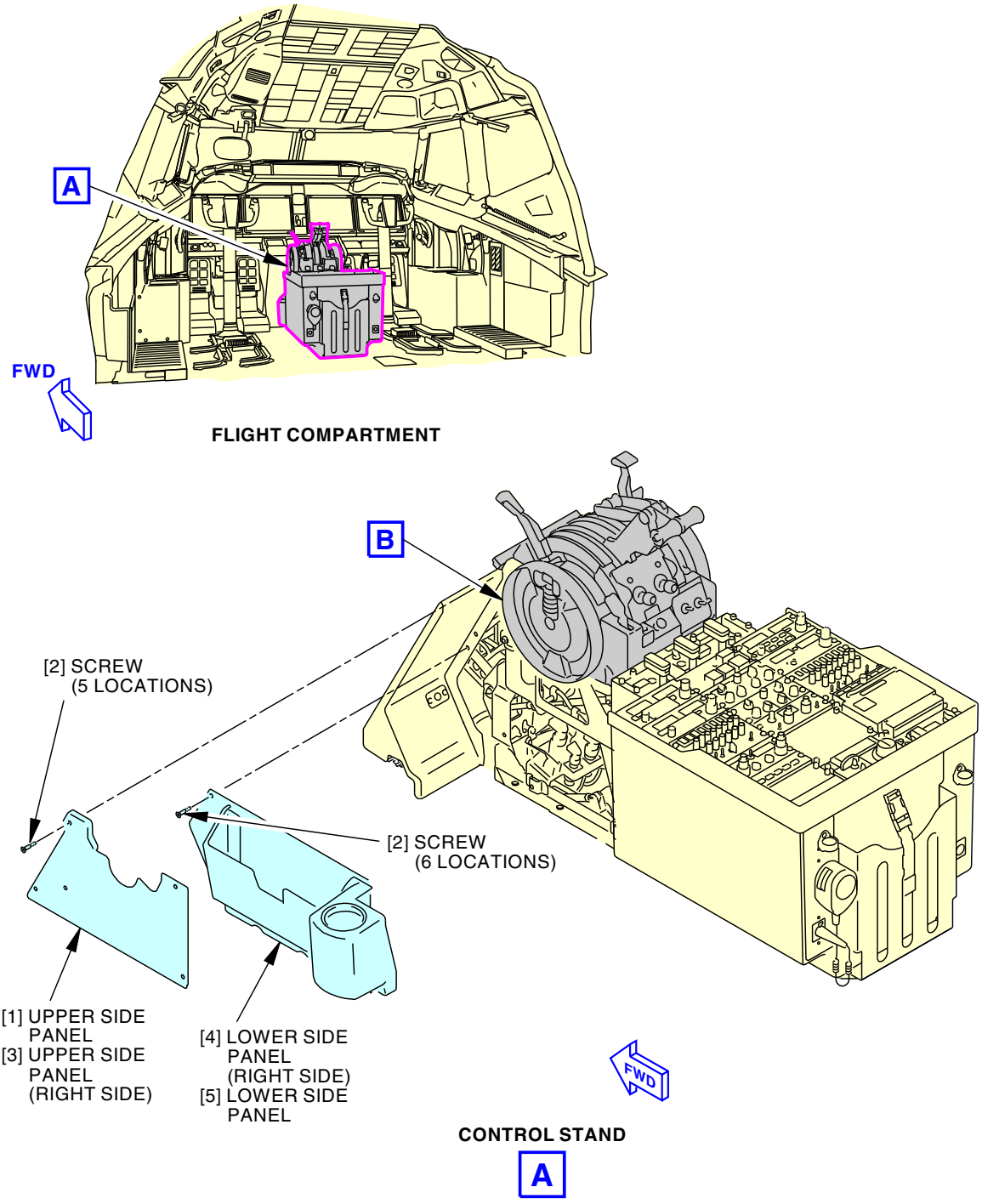
(e) Remove the speedbrake control lever [22] through the top of the control stand.

(f) Make sure that the washers [49] do not fall into the control stand.

(g) Do not move the dowel from this position.

END OF TASK

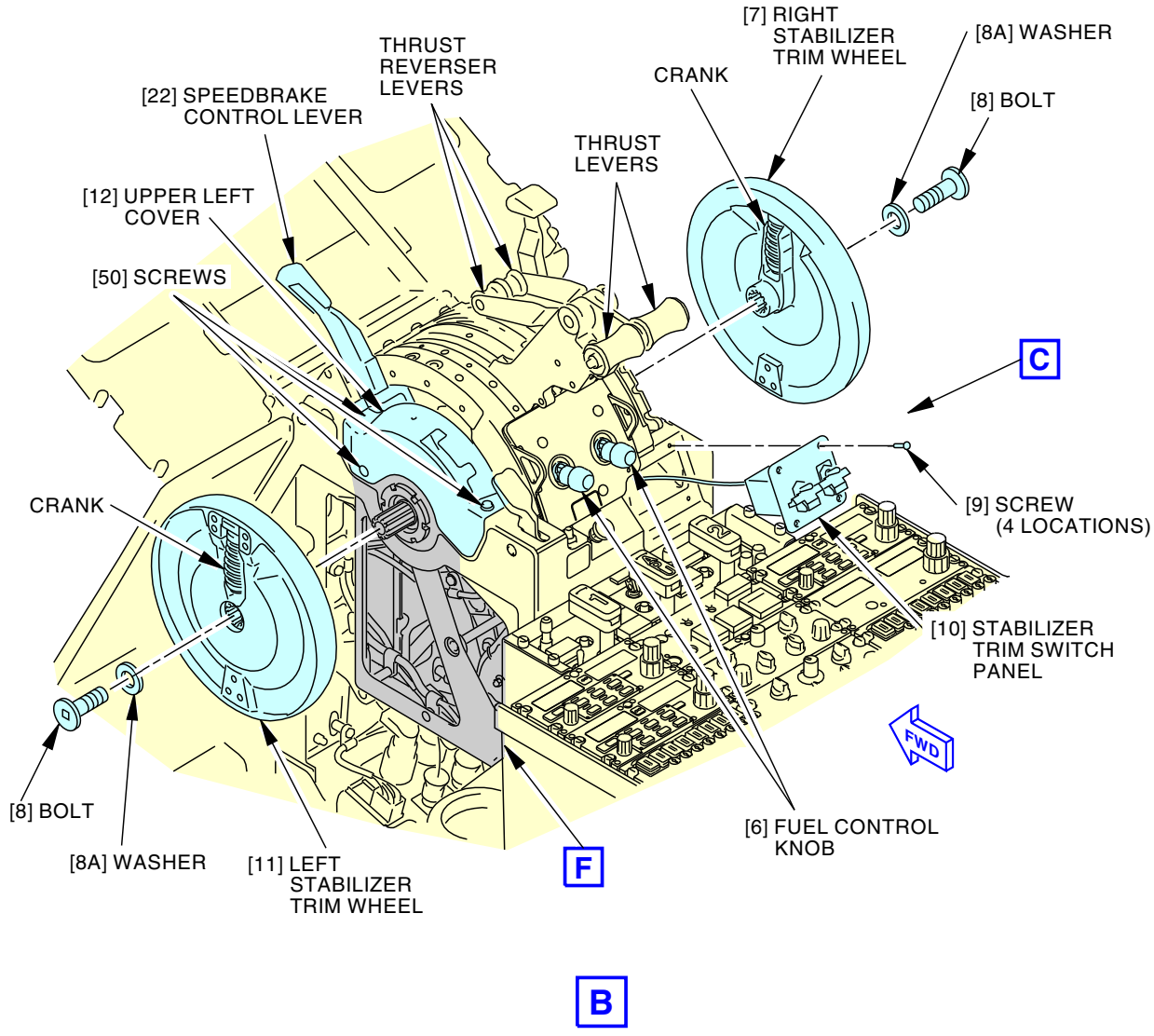
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413251 S00061532185_V1

Control Stand Installation
Figure 401/27-62-22-990-801 (Sheet 1 of 4)

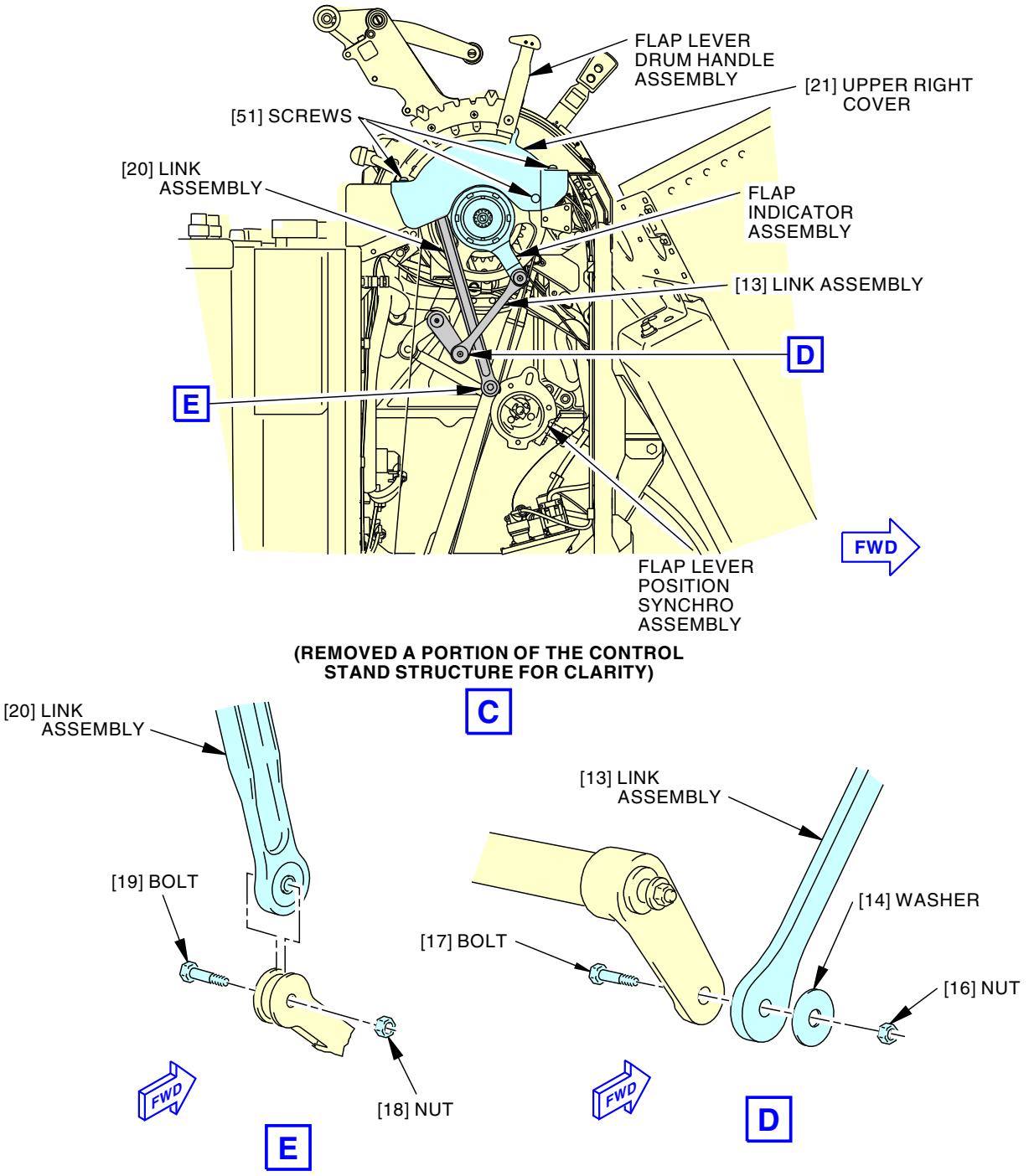
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413252 S00061532186_V2

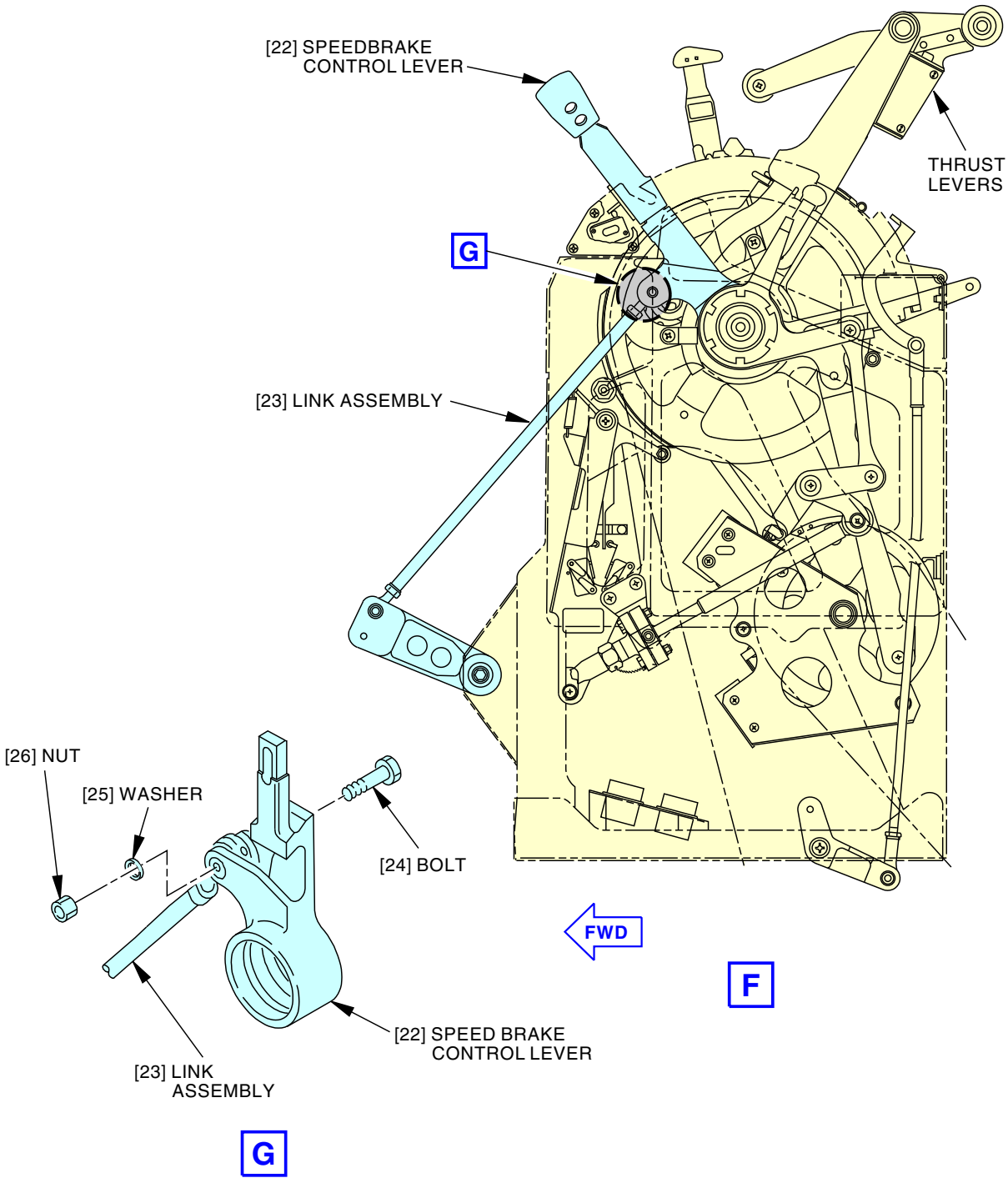
Control Stand Installation
Figure 401/27-62-22-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Stand Installation
Figure 401/27-62-22-990-801 (Sheet 3 of 4)

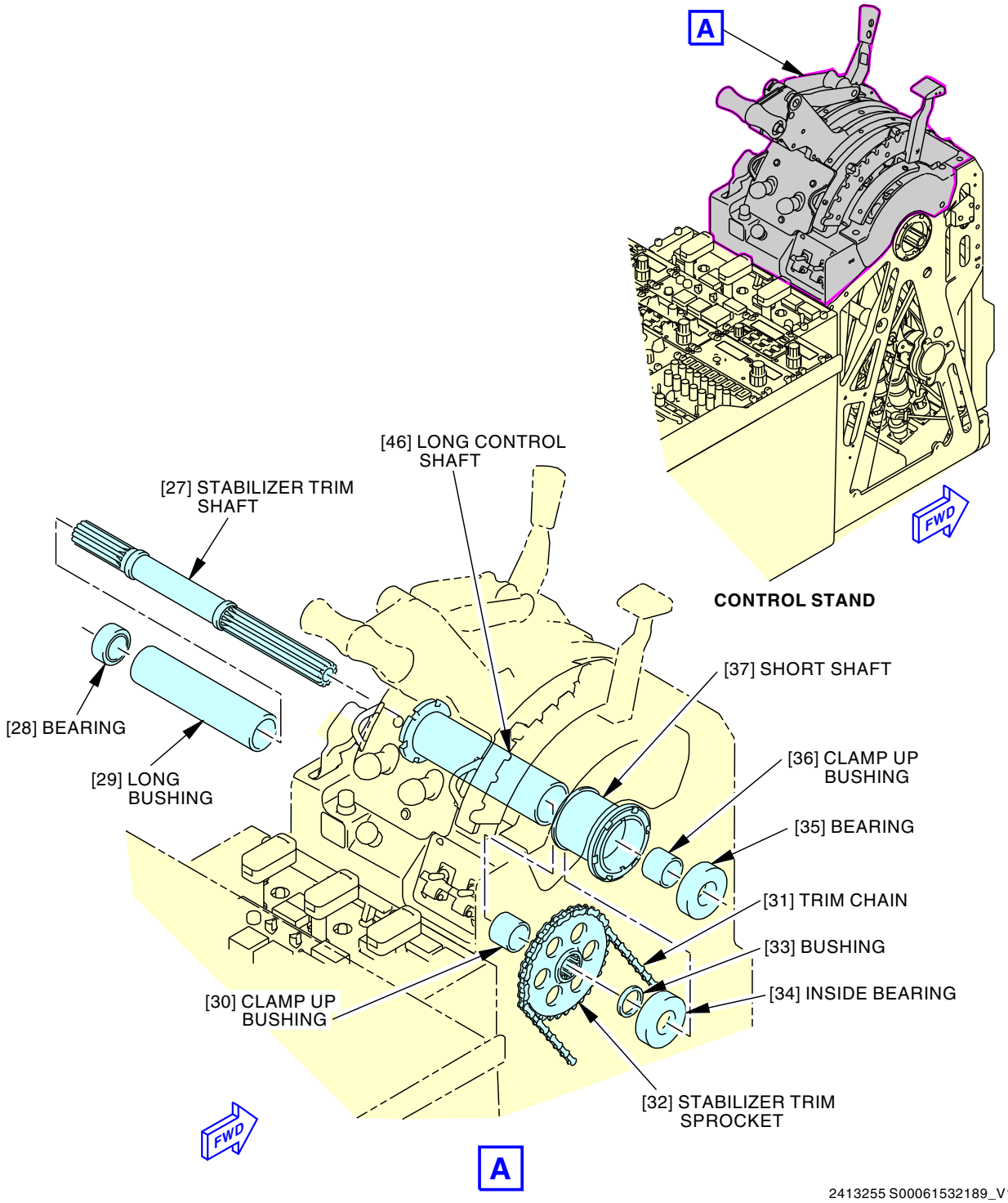
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413254 S00061532188_V1

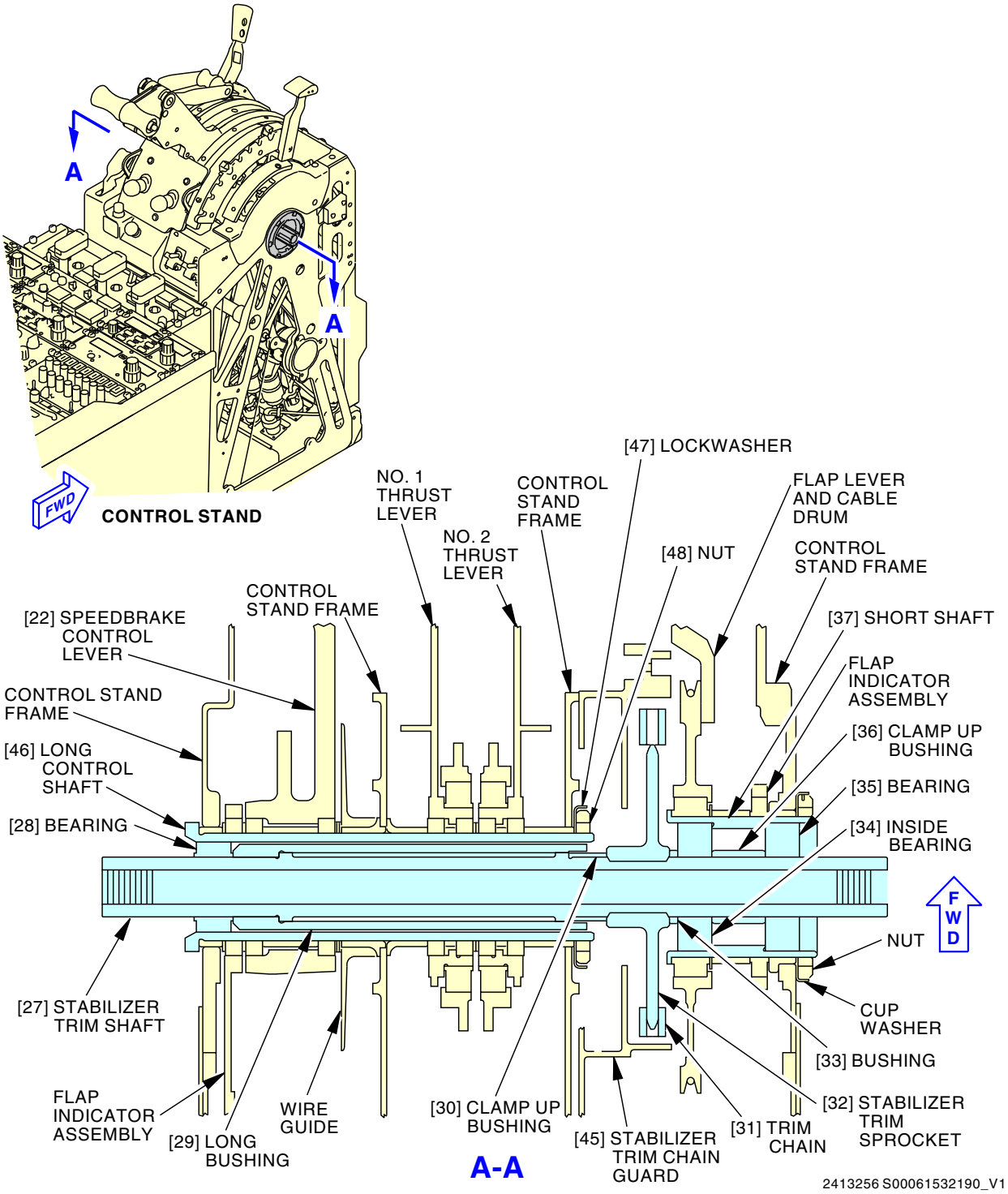
Control Stand Installation
Figure 401/27-62-22-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



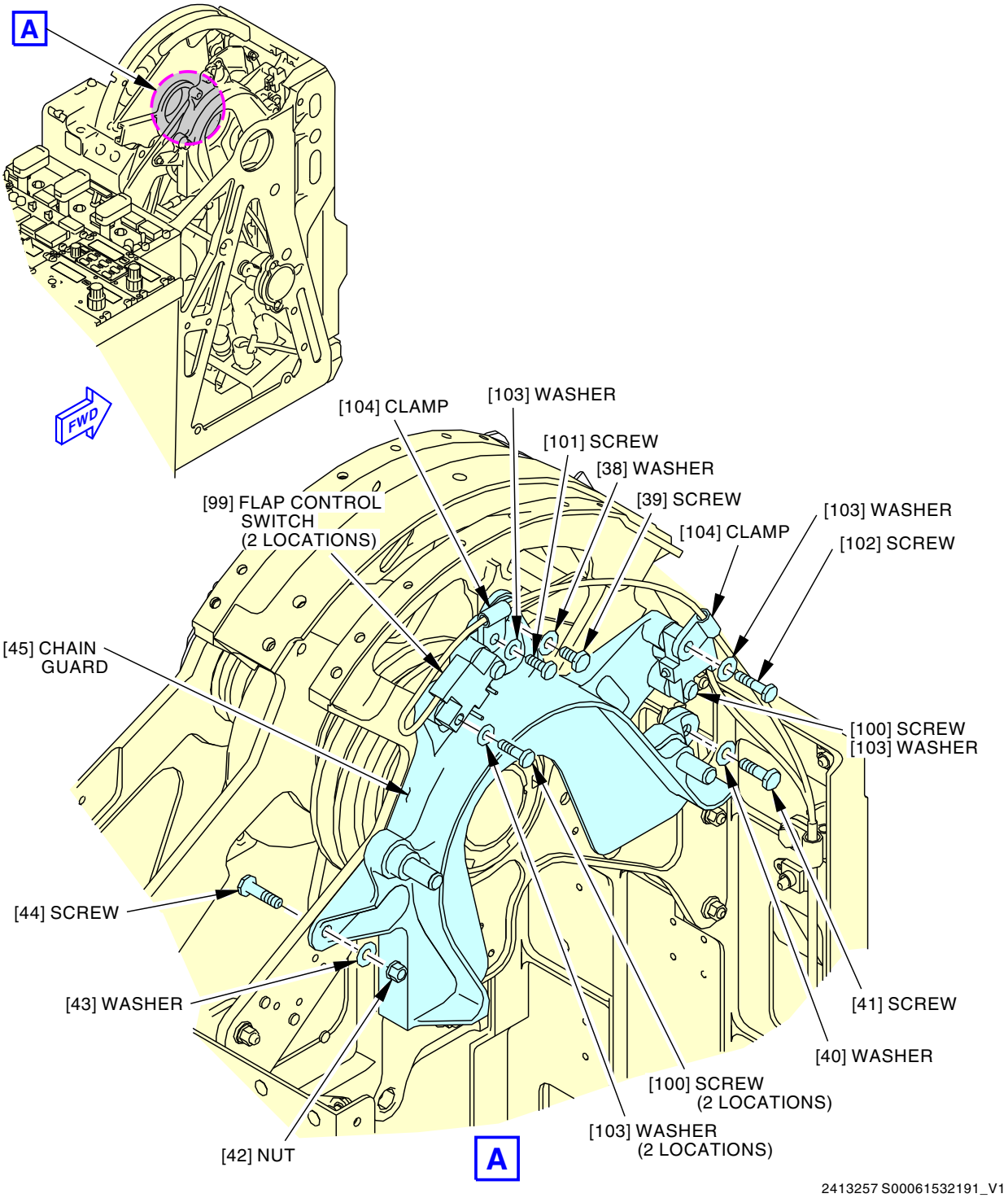
Control Shaft Components Installation
Figure 402/27-62-22-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



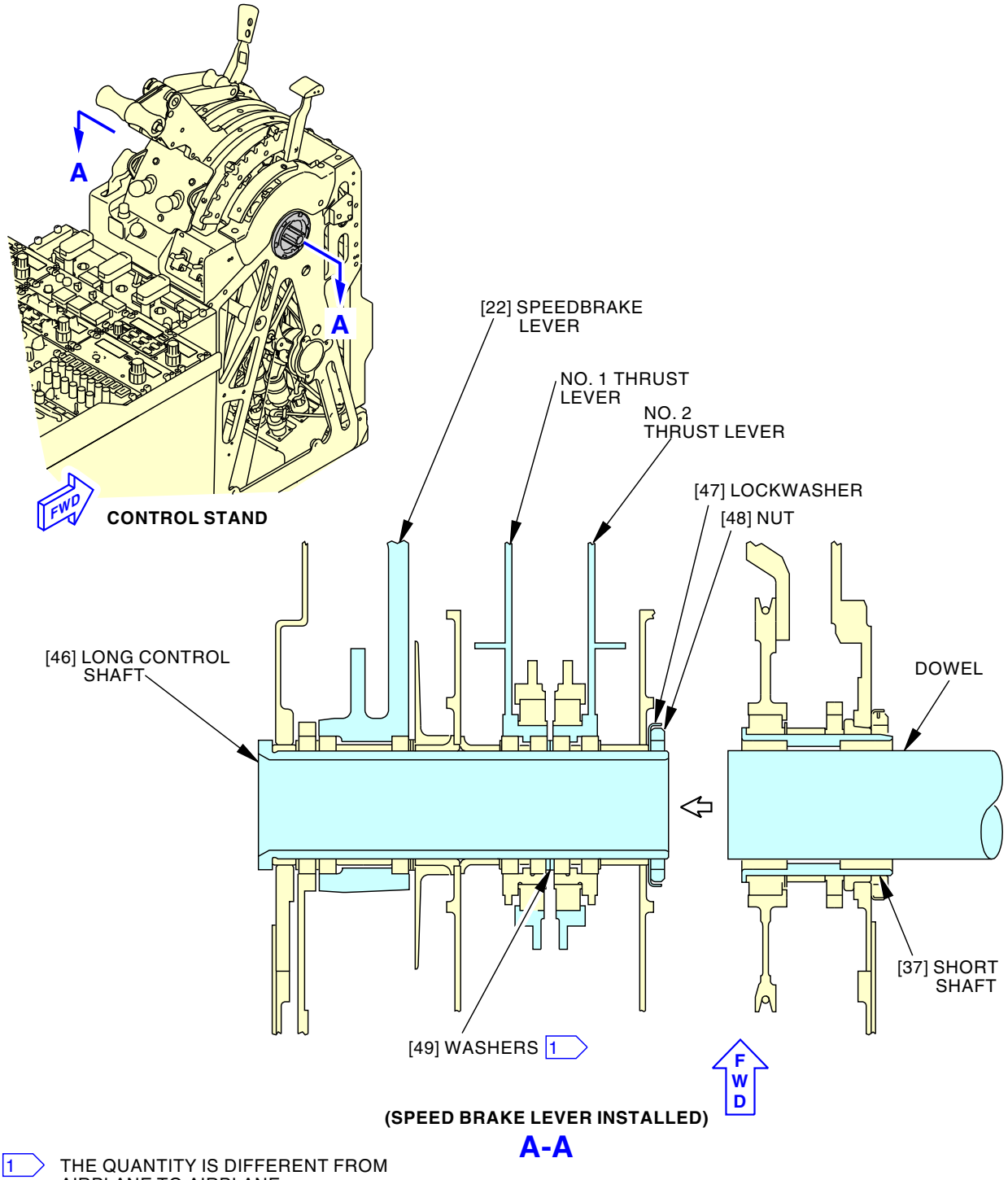
Control Shaft Components Installation
Figure 402/27-62-22-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



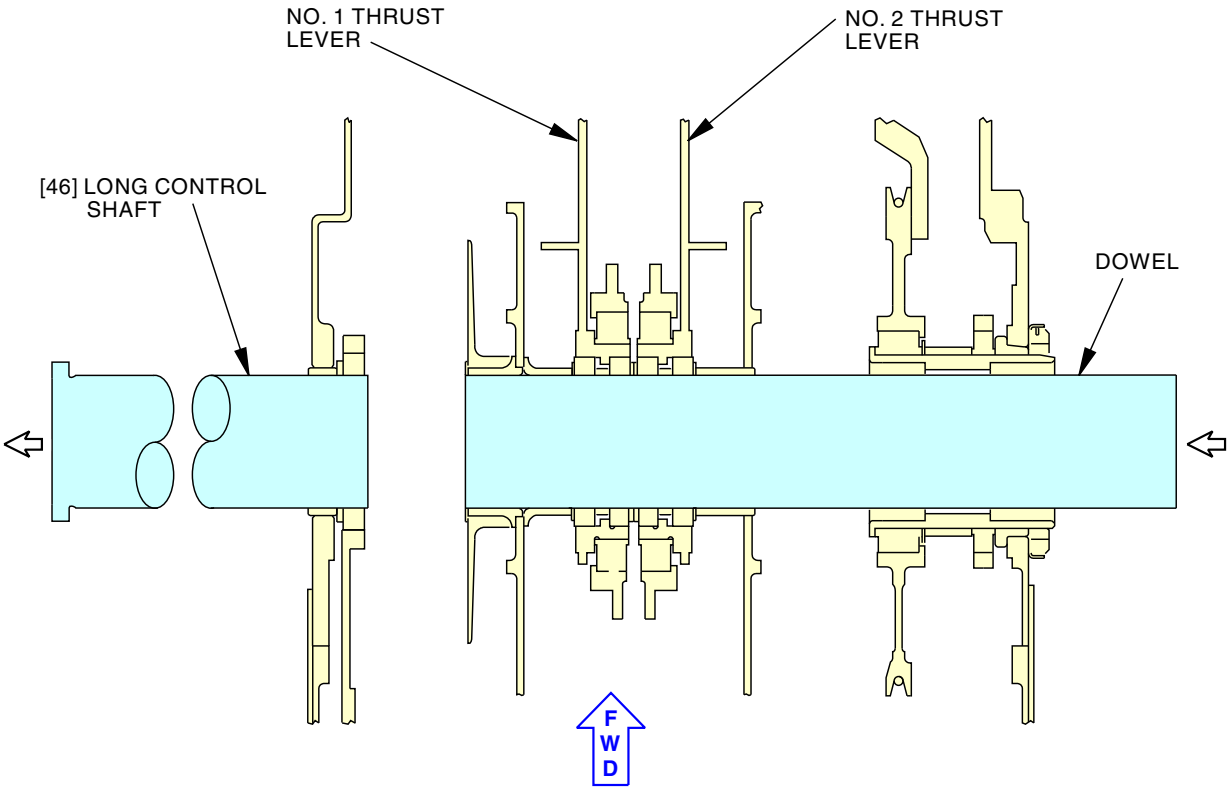
Chain Guard Assembly Installation
Figure 403/27-62-22-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speed Brake Lever Installation
Figure 404/27-62-22-990-804 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



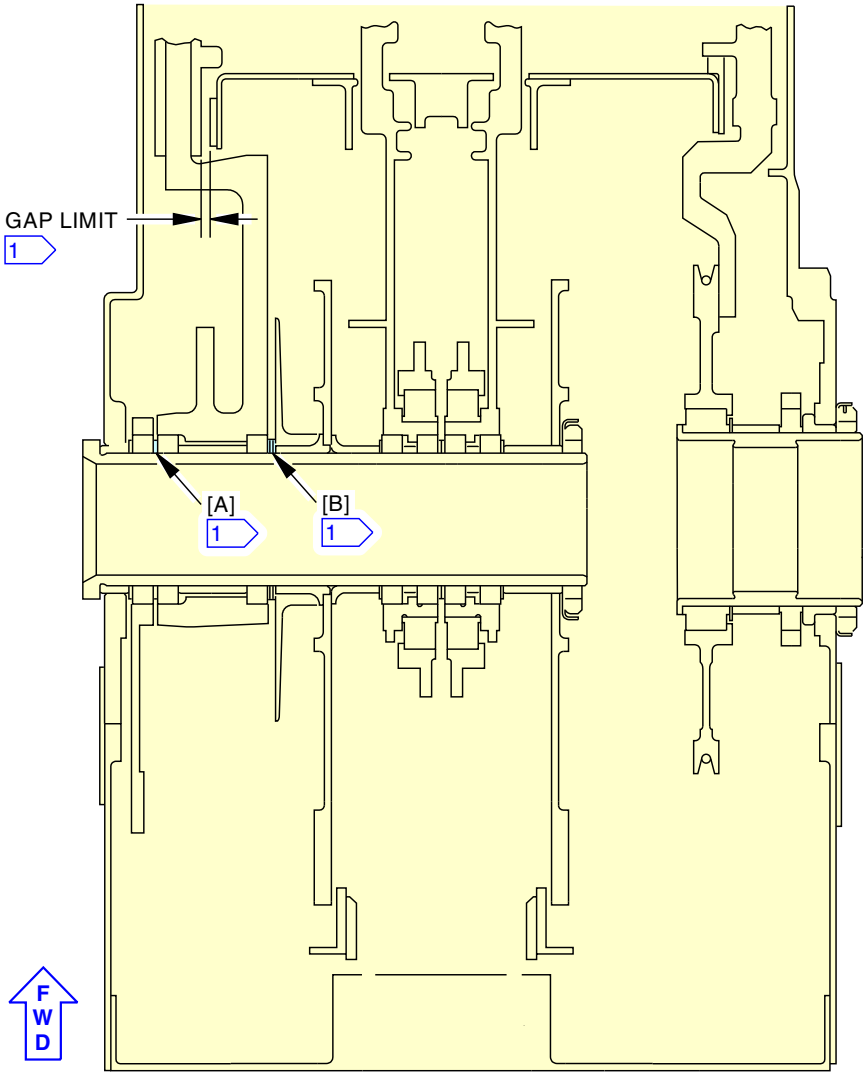
(SPEEDBRAKE LEVER REMOVED)

A-A

2413259 S00061532193_V1

Speed Brake Lever Installation
Figure 404/27-62-22-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 SEE TABLE A - CONTROL SHAFT ADJUSTMENT GAP LIMITS

2413260 S00061532194_V1

Control Shaft Washer (Shim) Limits
Figure 405/27-62-22-990-805 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

GAP LIMIT INCH (mm)	ACTUAL MEASUREMENT INCH (mm)	ADJUSTMENT NECESSARY TO GET GAP LIMIT (REFER TO TABLE B FOR SHIM QUANTITY)
0.030-0.060 (0.762-1.524)	> 0.100 (2.54)	MOVE THREE WASHERS FROM [B] TO [A] 2
	0.080-0.100 (2.032-2.54)	MOVE TWO WASHERS FROM [B] TO [A] 2
	0.060-0.080 (1.524-2.032)	MOVE ONE WASHER FROM [B] TO [A] 2
	< 0.030 (0.762)	MOVE ONE WASHER FROM [A] TO [B] 2

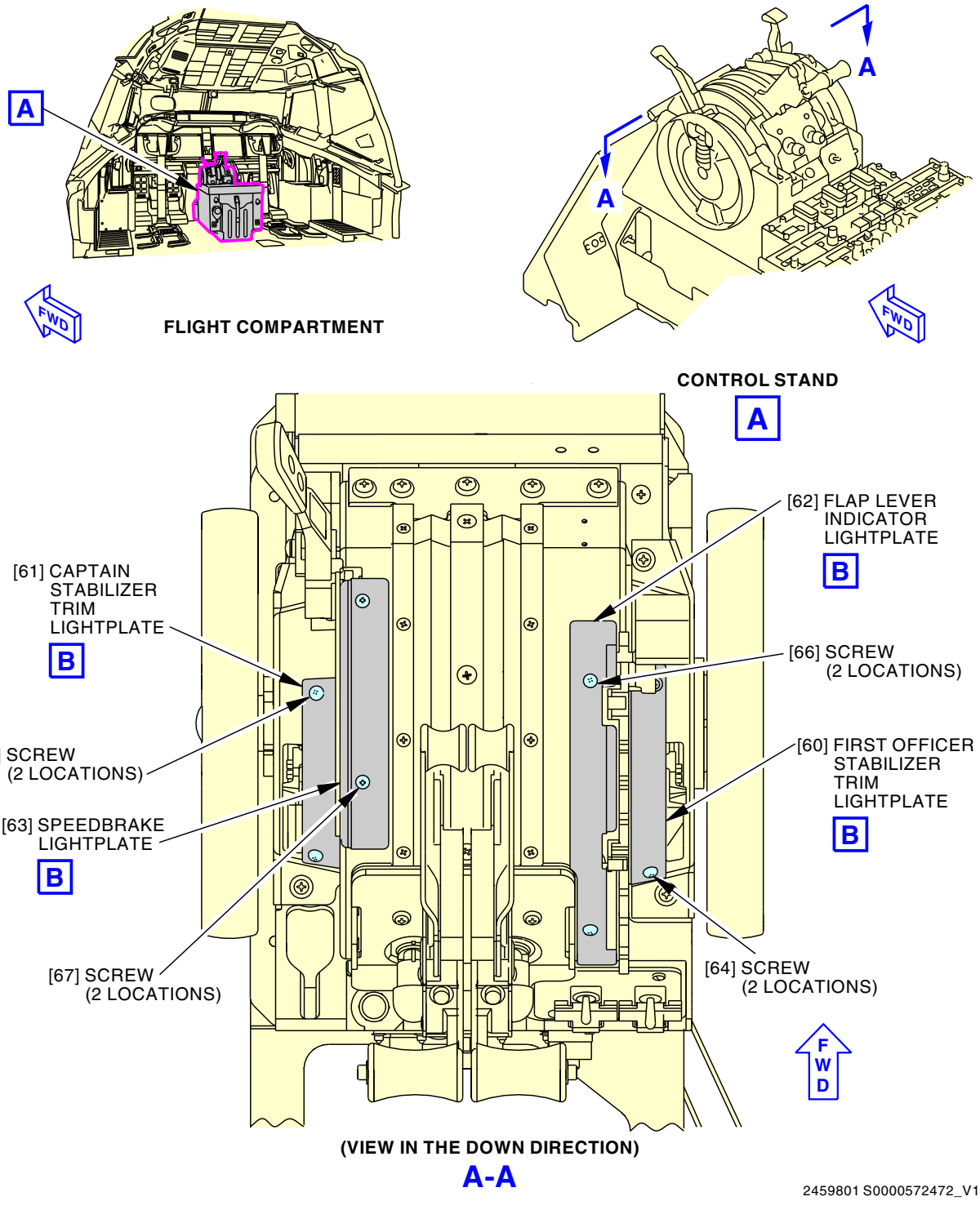
CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A

2 THE MAXIMUM NUMBER OF WASHERS IN LOCATIONS A AND B IS 4.

2413261 S00061532195_V1

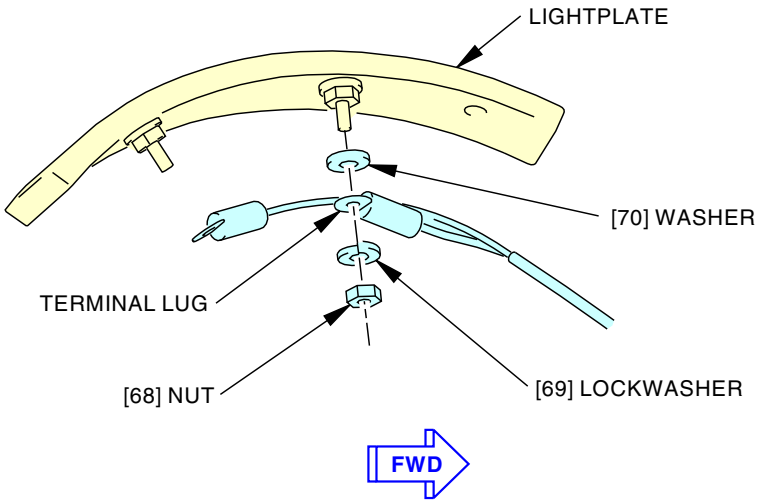
Control Shaft Washer (Shim) Limits
Figure 405/27-62-22-990-805 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Stand Lightplate Installation
Figure 406/27-62-22-990-806 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



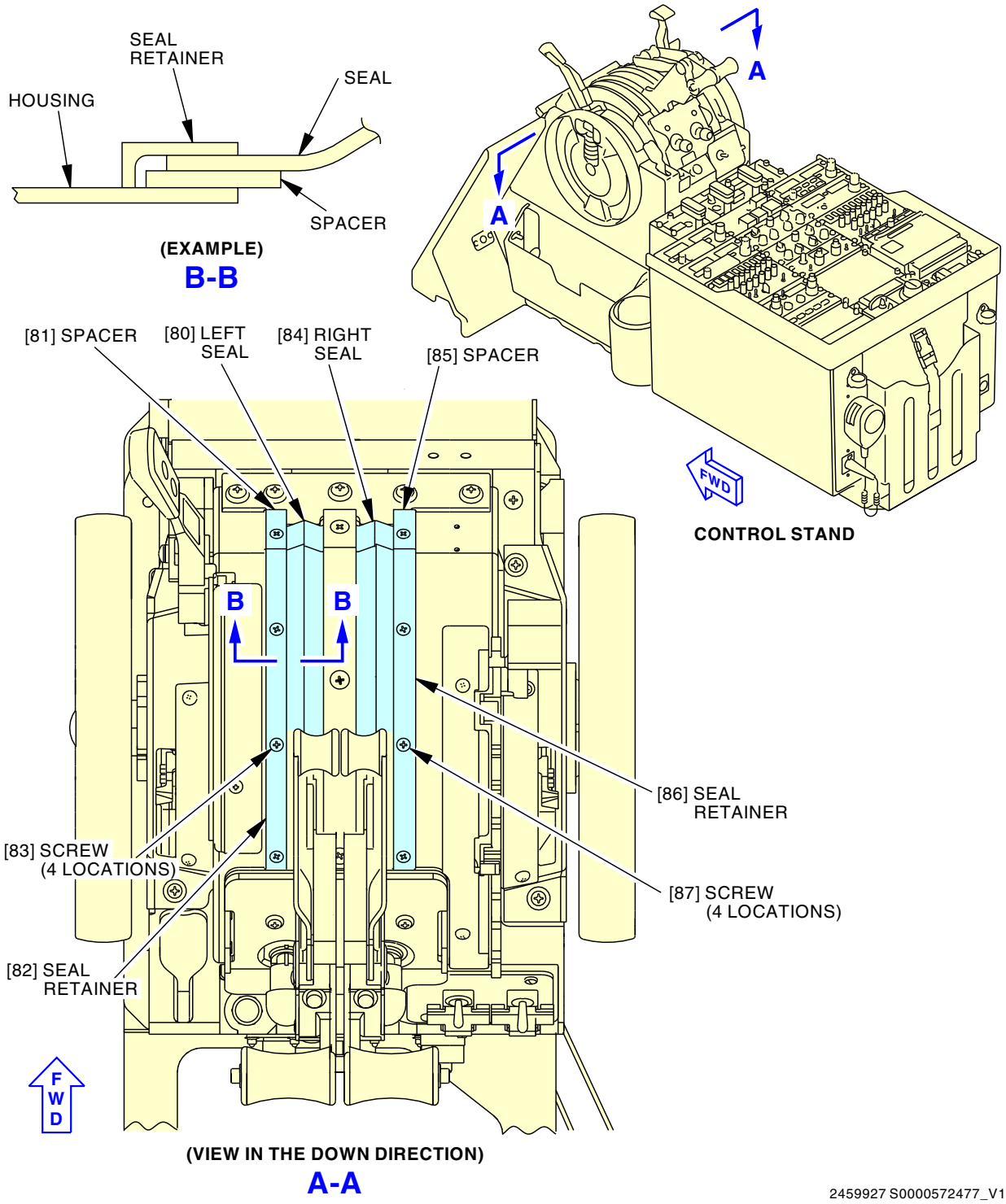
(EXAMPLE - TWO LOCATIONS ON EACH LIGHTPLATE)

B

2459802 S0000572473_V1

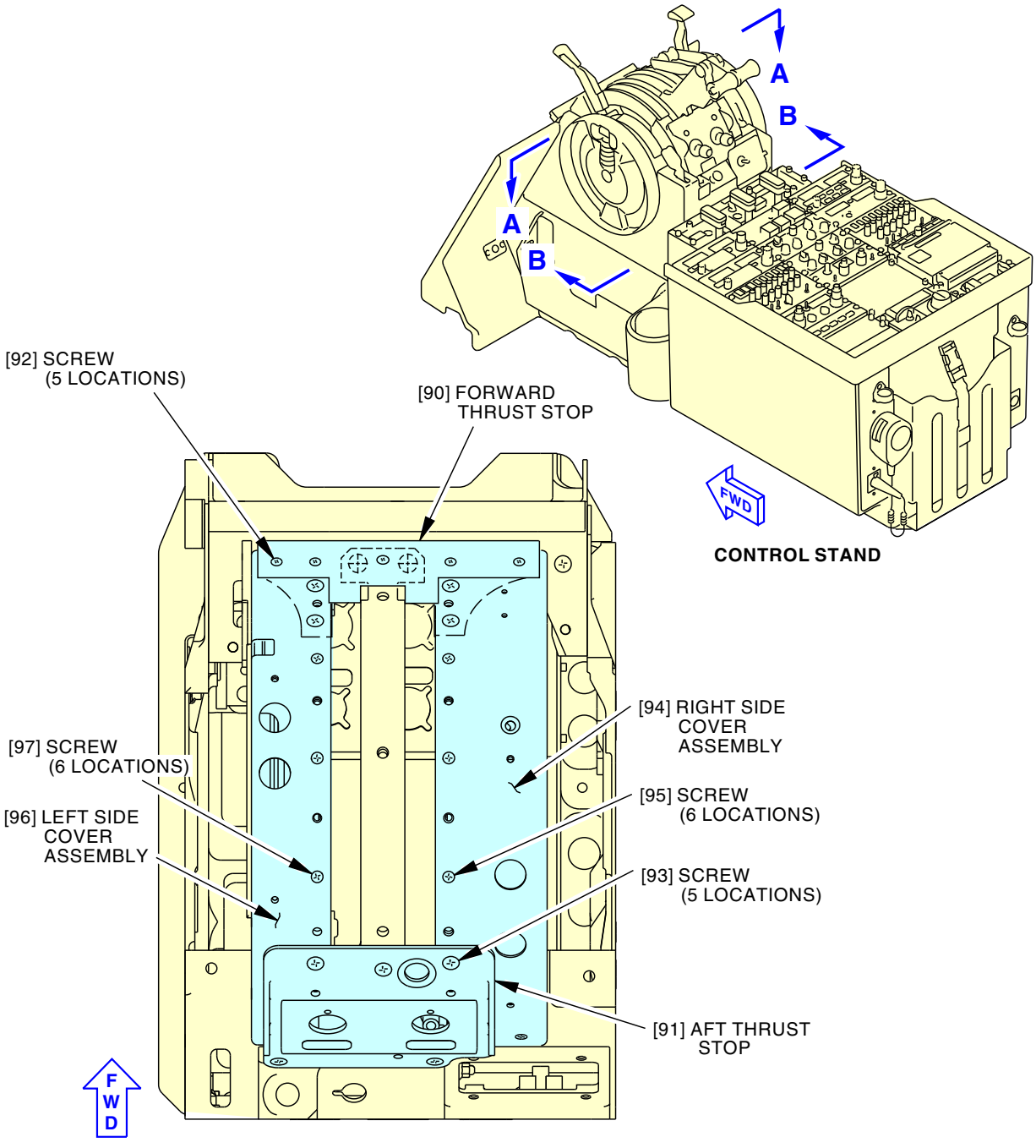
Control Stand Lightplate Installation
Figure 406/27-62-22-990-806 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Control Stand Seal, Spacer and Retainer Installation
Figure 407/27-62-22-990-807

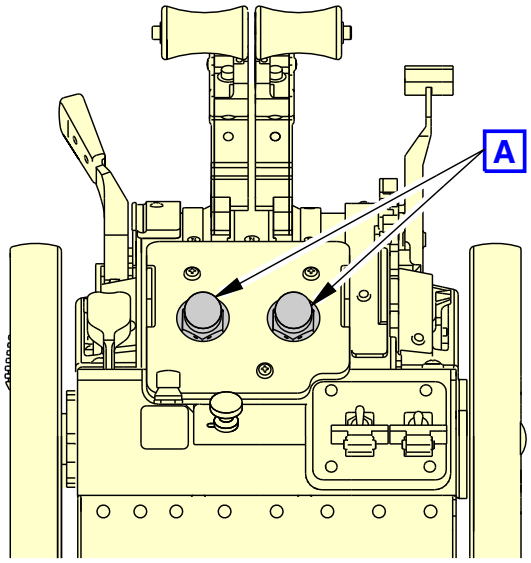
ECCN 9E991 BOEING PROPRIETARY - See title page for details



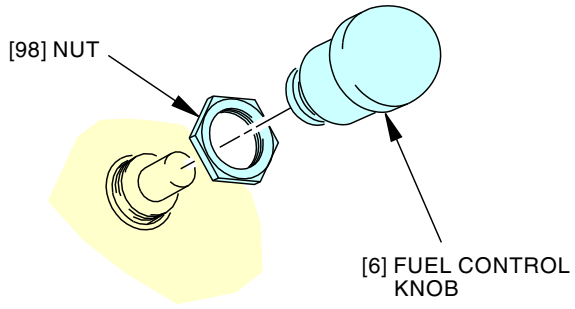
2459932 S0000572478_V1

Control Stand Cover and Stop Installation
Figure 408/27-62-22-990-808 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



B-B



(EXAMPLE)

A

2479326 S0000581419_V1

Control Stand Cover and Stop Installation
Figure 408/27-62-22-990-808 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-22-400-801

3. Speedbrake Lever - Installation

A. References

Reference	Title
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-62-12-720-801	Inboard Ground Spoiler Functional Test (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-2409	Dowel Set - Thrust Lever, Control Stand Part #: F80195-1 Supplier: 81205
SPL-2411	Tool Set - Control Stand Disassembly Part #: C76002-26 Supplier: 81205
STD-589	Mat - Protective Cover
STD-858	Tag - DO NOT OPERATE

C. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
22	Speedbrake control lever	27-62-22-01-050	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door

G. Speedbrake Lever Installation

SUBTASK 27-62-22-420-001

(1) Do these steps to install the speedbrake control lever [22] on the control stand (Figure 404):

(a) Apply grease, D00013, to the inside of the speedbrake control lever [22].

(b) Apply a thin layer of grease, D00013, to each side of the washers [49].

NOTE: The application of grease, D00013, will help hold the washers to the speedbrake control lever.

(c) Hold the speedbrake control lever [22] and washers [49] in the correct position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Move the long control shaft [46] through the speedbrake control lever [22] and washers [49].

(e) Put the long control shaft [46] against the right side end of the dowel set, SPL-2409.

(f) Move the speedbrake control lever [22] forward and aft.

NOTE: The lever and washers must move freely when you move them from the dowel to the long control shaft.

(g) Move the long control shaft [46] and the dowel to the right until all the lever assemblies and washers [49] are on the long control shaft [46].

(h) Remove the dowel.

SUBTASK 27-62-22-420-002

(2) Do these steps to lock the speedbrake control lever [22]:

(a) Set the keyway on the long control shaft [46] at the top.

(b) Install a new lockwasher [47], but do not bend the tab at this time.

1) Align the key tab on the lockwasher [47] with the keyway on the long control shaft [46].

(c) Put one control shaft wrench from the tool set, SPL-2411, on the left side of the long control shaft [46] to hold it in position.

(d) Install the nut [48] as follows:

1) Use one control shaft nut wrench from the tool set, SPL-2411, to tighten the nut [48].

2) Tighten the nut [48] to 100 in-lb (11.3 N·m) - 150 in-lb (16.9 N·m).

SUBTASK 27-62-22-020-009

(3) Measure the gap after the lever is installed as follows (Figure 405):

(a) If the gap is not in the limits, follow the instructions in Table A to get the correct limits:

1) Use the applicable steps in the removal and installation tasks to adjust the washer [49] on the long control shaft [46].

SUBTASK 27-62-22-420-003

(4) After the speedbrake control lever [22] is set correctly, lock the assembly in its position as follows (Figure 404):

(a) Make sure that the nut [48] is tightened to 100 in-lb (11.3 N·m) - 150 in-lb (16.9 N·m).

(b) Bend the rim of the lockwasher [47] into one of the notches on the nut [48].

1) Use a chisel or the lockwasher break tool from the tool set, SPL-2411, to bend the rim of the lockwasher [47].

2) Make sure that the bend in the lockwasher [47] is not more than 0.15 in. (3.8 mm) into the notch on the nut [48].

SUBTASK 27-62-22-420-004

(5) Connect the speedbrake control lever [22] to the link assembly [23] as follows (Figure 401):

(a) Install the bolt [24], washer [25], and nut [26] in the speedbrake control lever [22] and link assembly [23].

H. Control Stand Components Installation

SUBTASK 27-62-22-020-010

(1) Do these steps to install the stabilizer trim chain guard [45] (Figure 403):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Put the stabilizer trim chain guard [45] in its position.

(b) Install the upper center screw [39] and washer [38].

(c) Install the forward screw [41] and washer [40].

(d) Install the screw [44] through the thrust lever opening.

(e) Use the 90 degree screwdriver from the tool set, SPL-2411, to hold the screw [44].

(f) Install the nut [42] and washer [43].

(g) Install the clamps [104], screw [101], screw [102], and washers [103].

(h) Install the flap control switches [99], screws [100], and washers [103].

SUBTASK 27-62-22-020-011

(2) Do these steps to install the control shaft components (Figure 402):

(a) Install the clamp up bushing [30] and long bushing [29] on the stabilizer trim shaft [27].

1) Put the clamp up bushing [30] on the end with the longest splines.

(b) Put the inside bearing [34] into the inside end of the short shaft [37].

(c) Move the stabilizer trim shaft [27] into the control stand from the left side.

1) Put the end of the stabilizer trim shaft [27] with the longest splines in first.

(d) Move the stabilizer trim sprocket [32] and trim chain [31] up from the bottom of the control stand as follows:

1) Put the stabilizer trim sprocket [32] on the splined end of the stabilizer trim shaft [27].

2) Move the stabilizer trim shaft [27] through the stabilizer trim sprocket [32].

(e) Put the bushing [33] on the splined end of the stabilizer trim shaft [27].

1) Move the stabilizer trim shaft [27] through the bushing [33].

(f) Move the stabilizer trim shaft [27] through the inside bearing [34] until the end is moved out through the short shaft [37].

(g) Install the bearing [28] on the left side of the stabilizer trim shaft [27].

(h) Install the clamp up bushing [36] on the right side of the stabilizer trim shaft [27].

(i) Install the bearing [35] on the right side of the stabilizer trim shaft [27].

(j) Lightly tap the stabilizer trim shaft [27] from the left side.

1) Make sure that the assembled parts are tight and in the correct position.

SUBTASK 27-62-22-420-005

(3) Do these steps to activate and adjust the stabilizer trim assembly:

(a) Remove the temporary wire tie from the trim chain [31] and stabilizer trim sprocket [32].

(b) Adjust the stabilizer control chain (TASK 27-41-00-820-801).

SUBTASK 27-62-22-410-001

(4) Do these steps to connect the flap lever position synchro assembly (Figure 401):

(a) Put the link assembly [20] in the clevis for the flap lever position synchro assembly.

(b) Install the nut [18] and bolt [19].

SUBTASK 27-62-22-410-002

(5) Do this step to connect the flap indicator assembly:

(a) Install the bolt [17], washer [14], and nut [16] in the link assembly [13] and flap indicator assembly arm.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-22-420-006

(6) Install these covers on the control stand.

(a) Install the upper left cover [12].

(b) Install the screws [50].

(c) Install the upper right cover [21].

(d) Install the screws [51].

SUBTASK 27-62-22-010-006

(7) Install the control stand access covers.

(a) Install the left upper side panel [1] with the screws [2].

(b) Install the left lower side panel [5] with the screws [2].

(c) Install the right upper side panel [3] with the screws [2].

(d) Install the right lower side panel [4] with the screws [2].

SUBTASK 27-62-22-420-007

(8) Install the stabilizer trim wheel assemblies.

(a) Install the right stabilizer trim wheel [7] as follows.

1) Install the right bolt [8] and washer [8A].

2) Tighten the bolt [8] to 150 in-lb (16.9 N·m) - 170 in-lb (19.2 N·m)

(b) Install the left stabilizer trim wheel [11] as follows:

1) Set the crank of the left stabilizer trim wheel [11] 75 to 105 degrees away from the setting of the crank on the right stabilizer trim wheel [7].

NOTE: This can be set in either direction.

2) Install the left bolt [8] and washer [8A].

3) Tighten the bolt [8] to 150 in-lb (16.9 N·m) - 170 in-lb (19.2 N·m).

SUBTASK 27-62-22-200-001

(9) Do a visual check of the assembly as follows:

(a) Move each control through its usual range.

(b) Make sure that the electrical bundles do not touch parts.

SUBTASK 27-62-22-410-003

(10) Do these steps to install the stabilizer trim switch panel [10] for the stabilizer trim:

(a) Remove the masking tape from the stabilizer trim switch panel [10].

(b) Put the stabilizer trim switch panel [10] on the control stand.

(c) Install the screws [9].

SUBTASK 27-62-22-410-004

(11) Install these covers and stops on the control stand as follows (Figure 408):

(a) Do these steps to install the left side cover assembly [96]:

1) Install the left side cover assembly [96].

2) Install the screws [97].

(b) Do these steps to install the right side cover assembly [94]:

1) Install the right side cover assembly [94].

2) Install the screws [95].

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(c) Do these steps to install the forward thrust stop [90] and aft thrust stop [91]:

1) Install the aft thrust stop [91].
2) Install the screws [93].
3) Install the fuel control knobs [6] and nuts [98].
4) Install the forward thrust stop [90].
5) Install the screws [92].

SUBTASK 27-62-22-410-005

(12) Install these seal retainers and seals on the control stand as follows (Figure 407):

(a) Do these steps to install the left seal [80] and seal retainer [82]:

1) Install the spacer [81].
2) Install the left seal [80].
3) Install the seal retainer [82].
4) Install the screws [83].

(b) Do these steps to install the right seal [84] and seal retainer [86]:

1) Install the spacer [85].
2) Install the right seal [84].
3) Install the seal retainer [86].
4) Install the screws [87].

SUBTASK 27-62-22-410-006

(13) Install these control stand lightplates as follows (Figure 406):

(a) Do these steps to install the first officer stabilizer trim lightplate [60]:

1) Install the washer [70].
2) Connect the terminal lug on the stud attached to the first officer stabilizer trim lightplate [60].
3) Install the nut [68] and lockwasher [69].
4) Install the first officer stabilizer trim lightplate [60] on the control stand.
5) Install the screws [64] that attach the first officer stabilizer trim lightplate [60] to the control stand.

(b) Do these steps to install the captain stabilizer trim lightplate [61]:

1) Install the washer [70].
2) Connect the terminal lug on the stud attached to the captain stabilizer trim lightplate [61].
3) Install the nut [68] and lockwasher [69].
4) Install the captain stabilizer trim lightplate [61] on the control stand.
5) Install the screws [65] that attach the captain stabilizer trim lightplate [61] to the control stand.

(c) Do these steps to install the flap lever indicator lightplate [62]:

1) Install the washer [70].
2) Connect the terminal lug on the stud attached to the flap lever indicator lightplate [62].
3) Install the nut [68] and lockwasher [69].

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4) Install the flap lever indicator lightplate [62] on the control stand.

5) Install the screws [66] that attach the flap lever indicator lightplate [62] to the control stand.

(d) Do these steps to install the speed brake lightplate [63]:

1) Install the washer [70].

2) Connect the terminal lug on the stud attached to the speed brake lightplate [63].

3) Install the nut [68] and lockwasher [69].

4) Install the speed brake lightplate [63] on the control stand.

5) Install the screws [67] that attach the speed brake lightplate [63] to the control stand.

SUBTASK 27-62-22-480-001

(14) Remove the protective cover mat, STD-589, from the aft electronics panel P8.

SUBTASK 27-62-22-410-007

(15) Do this task: Captain and First Officer Seat Installation, TASK 25-11-01-400-801.

I. Speedbrake Lever Installation Test

SUBTASK 27-62-22-720-001

(1) Do this task: Inboard Ground Spoiler Functional Test, TASK 27-62-12-720-801.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-22-860-002

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

SUBTASK 27-62-22-860-003

(2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT

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(Continued)

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 27-62-22-860-004

(3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 27-62-22-040-006

(4) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 27-62-22-860-005

(5) Remove the DO NOT OPERATE tags, STD-858, from the engine start panel.

SUBTASK 27-62-22-410-008

(6) Close this access door:

Number	Name/Location
112A	Forward Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AUTO SPEED BRAKE ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the auto speed brake actuator.

(2) An installation of the auto speed brake actuator.

TASK 27-62-31-000-801

2. Auto Speed Brake Actuator Removal

(Figure 401)

A. References

Reference	Title
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Removal

SUBTASK 27-62-31-860-012

(1) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

SUBTASK 27-62-31-860-013

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-62-31-860-014

(3) Put the speed brake lever in the DOWN position.

SUBTASK 27-62-31-860-015

(4) Set the STAB TRIM PRI Switch, S272, on the aft area of the control stand, to the CUTOUT position.

(a) Attach a DO NOT OPERATE tag, STD-858, to the switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-31-860-016

(5) Attach a DO NOT OPERATE tag, STD-858, to the stabilizer trim wheels.

SUBTASK 27-62-31-010-002

(6) To get access the auto speed brake actuator assembly [16].

Open this access panel:

Number	Name/Location
112A	Forward Access Door

F. Auto Speed Brake Actuator Removal

SUBTASK 27-62-31-020-006

(1) Disconnect the electrical connector [17] from the actuator assembly [16].

SUBTASK 27-62-31-020-007

(2) Remove the bolt [5], washer [6] and nut [8] then disconnect the bonding jumper [7].

SUBTASK 27-62-31-020-008

(3) Remove the pin [13], nut [12], washer [11] and bolt [10] that connect the actuator assembly [16] rod end to the brake housing clevis in the speed brake mechanical assembly [15].

SUBTASK 27-62-31-020-009

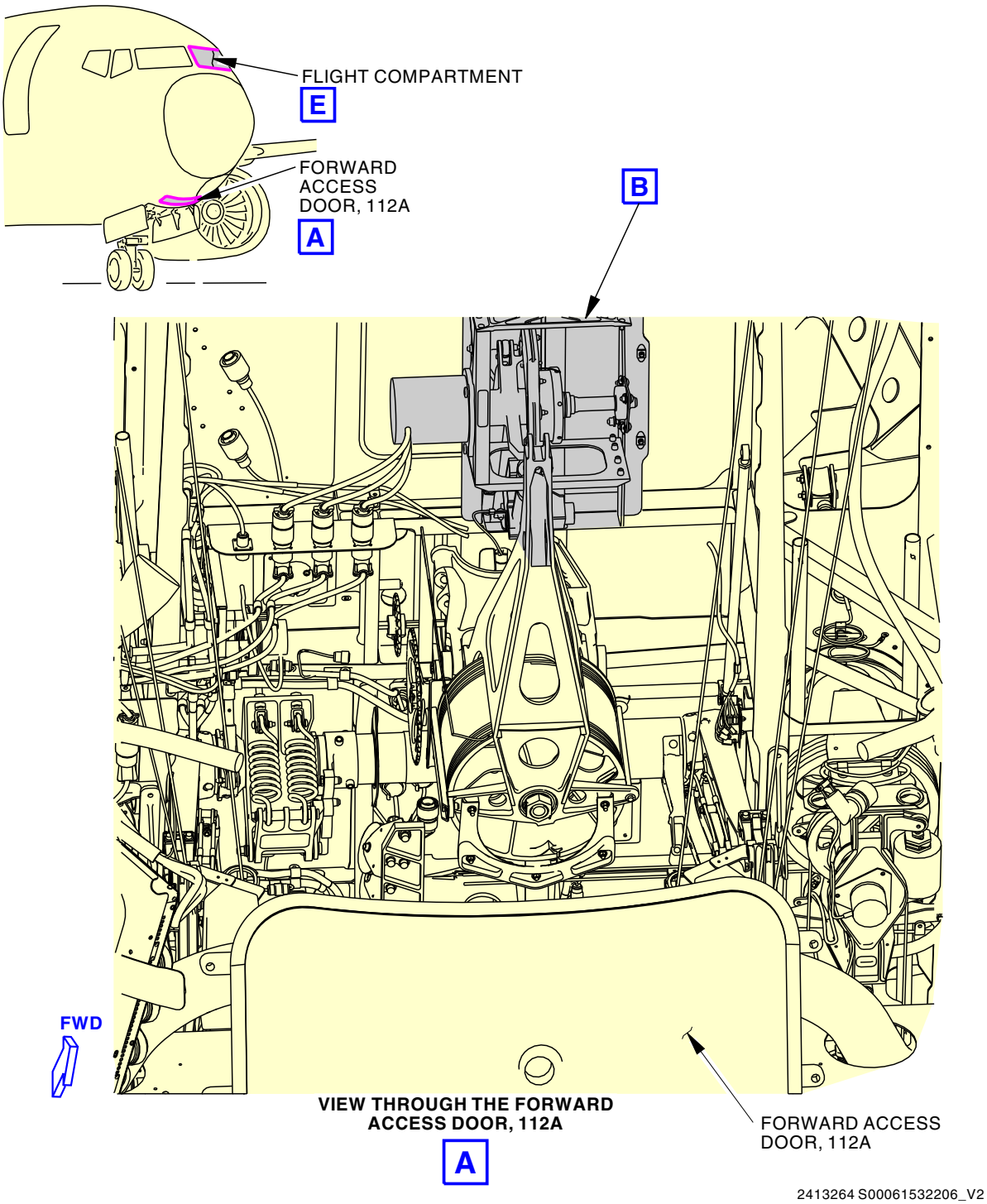
(4) Remove the lockwire or safety cable [3], washer [2] and bolt [1] that connect the actuator assembly [16] to the structure.

SUBTASK 27-62-31-020-010

(5) Remove the actuator assembly [16] from the airplane.

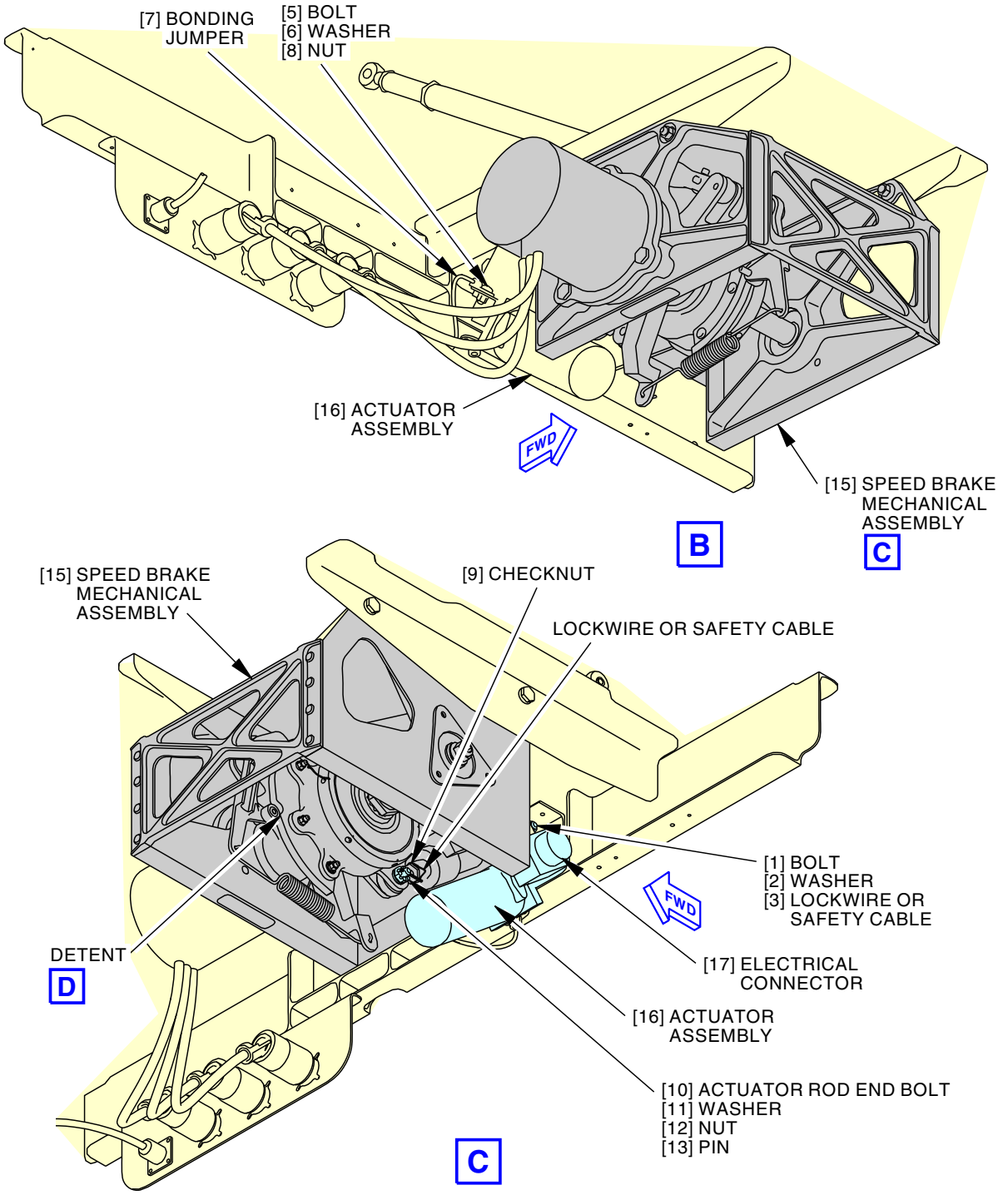
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



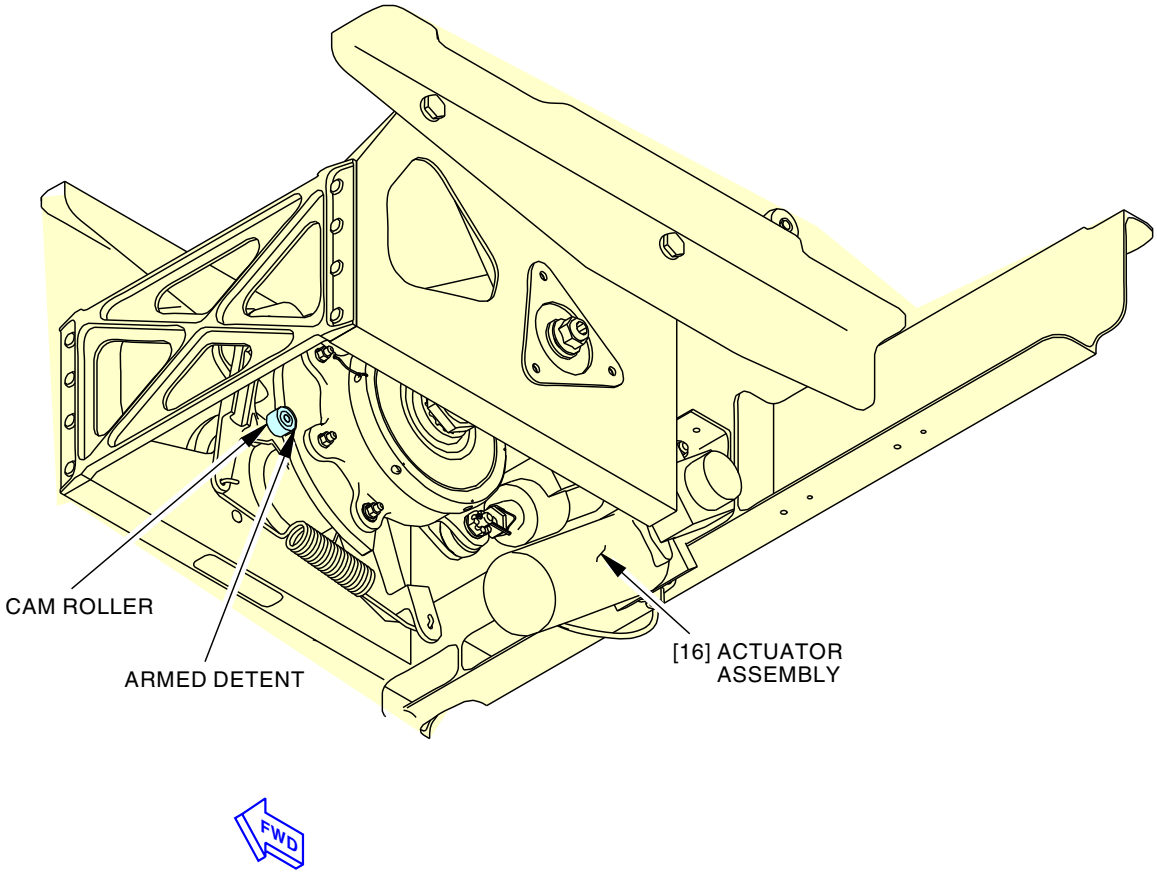
Auto Speedbrake Actuator Installation
Figure 401/27-62-31-990-802 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Auto Speedbrake Actuator Installation
Figure 401/27-62-31-990-802 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ROLLER CENTERED IN THE ARMED DETENT

D

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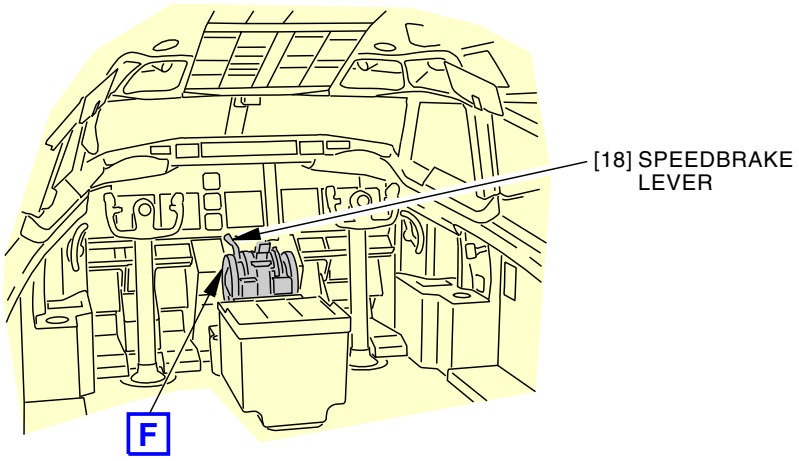
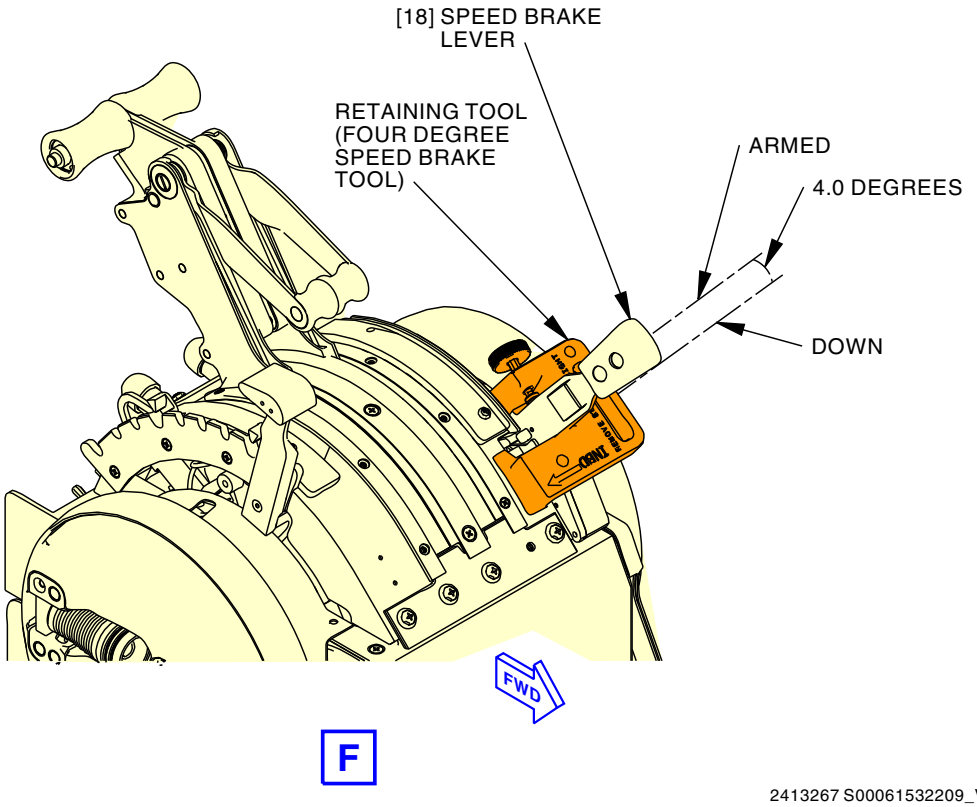
Auto Speedbrake Actuator Installation
Figure 401/27-62-31-990-802 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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Auto Speedbrake Actuator Installation
Figure 401/27-62-31-990-802 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-31-400-801

3. Auto Speed Brake Actuator Installation

(Figure 401)

A. References

Reference	Title
27-62-00-820-804	Speed Brake Throttle Switch Test (P/B 501)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
SPL-14768	Rigging Lock - Four Degree Speedbrake Lever Part #: C27095-1 Supplier: 81205
STD-686	Power Supply - 28 VDC

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
13	Pin	27-62-31-01-115	SIA ALL
16	Actuator assembly	27-62-31-01-145	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Auto Speed Brake Actuator Installation

SUBTASK 27-62-31-860-006

(1) Move the speed brake lever [18] to the flight detent position approximately 4 degrees aft of the DOWN position (Figure 401).

(a) Make sure that the cam roller is centered in the ARMED detent.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-31-480-001

(2) Install the rigging lock, SPL-14768, to hold the speed brake lever [18] at 4 degrees aft of the DOWN position.

SUBTASK 27-62-31-420-001

(3) Install the auto speed brake actuator assembly [16]:

(a) Place the auto speed brake actuator assembly [16] in position.

(b) Install the bolt [1], washer [2], and lockwire or safety cable [3] that attaches the actuator assembly [16] to the structure.

(c) Do these steps to put the actuator assembly [16] in the retracted position:

1) Use 28 VDC power supply, STD-686, or equivalent, to apply 28 VDC, positive to Pin 3 and a ground to Pin 1 in the socket used for electrical connector [17].

NOTE: The recommended electrical current limit value is 10A.

a) Use pin 1 as the ground.

NOTE: The pins on the actuator have numbers.

(d) Adjust the rod end fitting on the actuator assembly [16].

1) Remove the lockwire or safety cable on checknut [9].

2) Loosen the checknut [9] on the actuator assembly [16] rod end.

3) Adjust the actuator assembly [16] rod end until it aligns with the brake housing clevis in the speed brake mechanical assembly [15] to insert the bolt [10] freely.

4) Make sure that the cam roller is centered in the ARMED detent.

5) Install the bolt [10], washer [11], nut [12], and new pin [13] to attach the actuator assembly [16] rod end.

a) Make sure that the head of the bolt [10] is to the inboard side.

6) Tighten the checknut [9] on the actuator assembly [16] rod end to 45 in-lb (5.1 N·m) - 55 in-lb (6.2 N·m).

7) Install the lockwire or safety cable on checknut [9].

SUBTASK 27-62-31-080-001

(4) Remove the rigging lock, SPL-14768, from the speed brake lever [18].

SUBTASK 27-62-31-980-001

(5) Manually move the speed brake lever [18] through the full travel to make sure it moves freely.

SUBTASK 27-62-31-420-002

(6) Install the bonding jumper [7], do these steps:

(a) Clean the surfaces where the bonding jumper [7] will be attached.

(b) Install the bolt [5], washer [6], and nut [8] to attach the bonding jumper [7].

(c) Measure the electrical resistance between the actuator assembly [16] and structure (SWPM 20-20-00, Paragraph 21).

1) Use a non-intrinsically safe bonding meter, COM-614.

2) Make sure that the resistance is 0.0025 ohm (2.5 milliohms) or less.

SUBTASK 27-62-31-080-002

(7) Disconnect the 28 VDC power supply, STD-686, from the actuator assembly [16].

SUBTASK 27-62-31-420-003

(8) Install the electrical connector [17].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Auto Speed Brake Actuator Installation Test

SUBTASK 27-62-31-860-007

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 27-62-31-860-008

(2) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

SUBTASK 27-62-31-720-001

(3) Do this task: Speed Brake Throttle Switch Test, TASK 27-62-00-820-804.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-31-860-009

(1) Set the STAB TRIM PRI Switch, S272, on the aft of the control stand to the NORMAL position.

(a) Remove the DO NOT OPERATE tags from the switch.

SUBTASK 27-62-31-860-010

(2) Remove the DO NOT OPERATE tags from the Stabilizer Trim Wheels.

SUBTASK 27-62-31-410-001

(3) Close this access panel:

Number	Name/Location
112A	Forward Access Door

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEED BRAKE REFUSED TAKEOFF (RTO) SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the speed brake refused takeoff (RTO) switch S650.

(2) An installation of the speed brake refused takeoff (RTO) switch S650.

B. The speed brake refused takeoff switch (RTO) is installed in the left forward part of the control stand.

C. The speed brake refused takeoff switch (RTO) is operated by the movement of the reverse thrust levers in a reverse thrust direction. The RTO switch operates with an arm which lifts the speed brake lever out of the down detent to permit automatic extension of the speed brakes.

D. In this procedure the speed brake refused takeoff (RTO) switch is referred to as the "RTO switch".

TASK 27-62-32-000-801

2. Speed Brake Refused Takeoff (RTO) Switch Removal

(Figure 401)

A. Location Zones

Zone	Area
211	Flight Compartment - Left

B. Prepare for the Removal

SUBTASK 27-62-32-860-001

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

C. Speed Brake Refused Takeoff (RTO) Switch Removal

SUBTASK 27-62-32-020-001

(1) Remove screws [1], washers [2] and the cover plate [3] on the control stand to get access to the RTO switch [13].

SUBTASK 27-62-32-020-003

(2) Remove the screw [9] and screw [10] that attach the RTO switch [13] to the structure.

SUBTASK 27-62-32-020-002

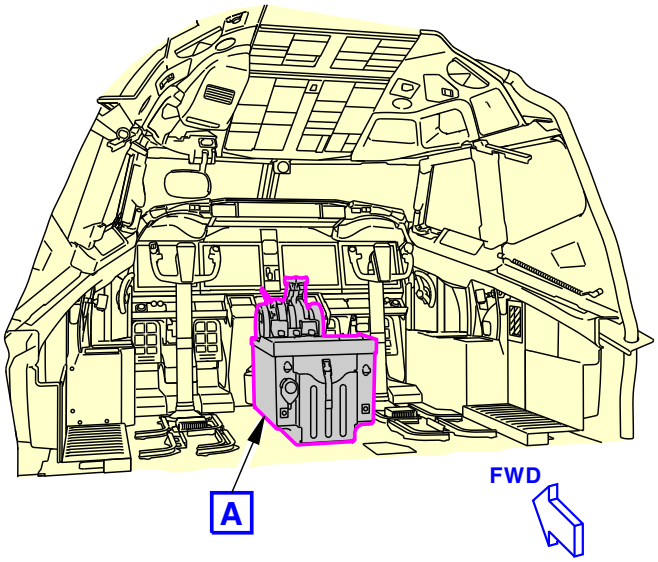
(3) Remove the screws [6] and washers [7] to disconnect the electrical wires [8] from the RTO switch [13].

SUBTASK 27-62-32-020-004

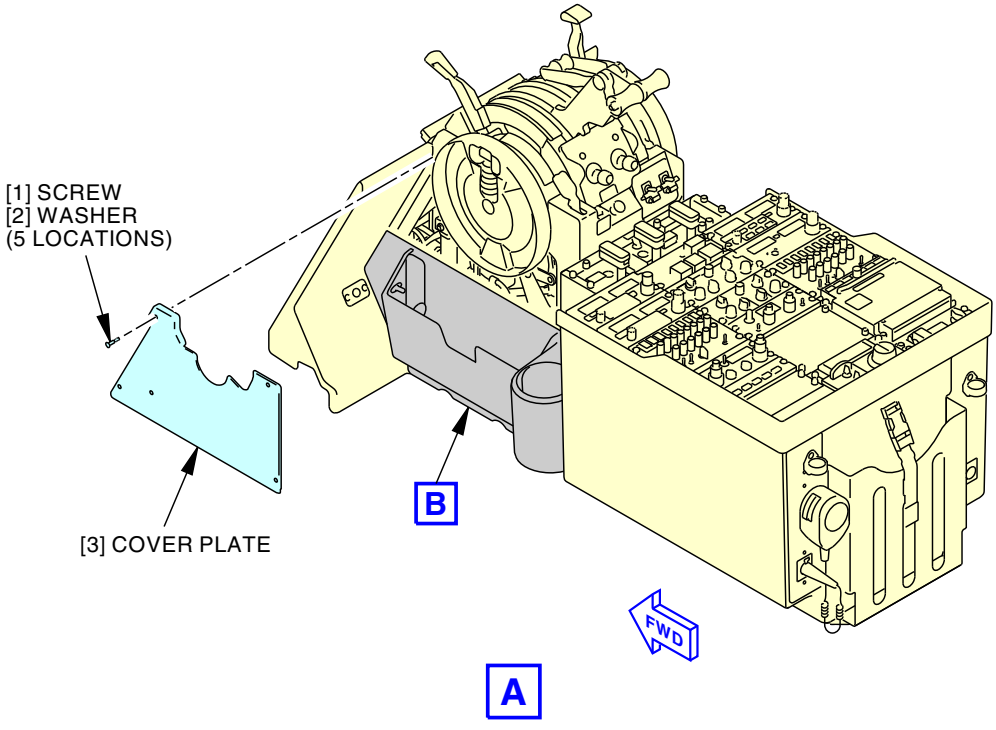
(4) Remove the RTO switch [13].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



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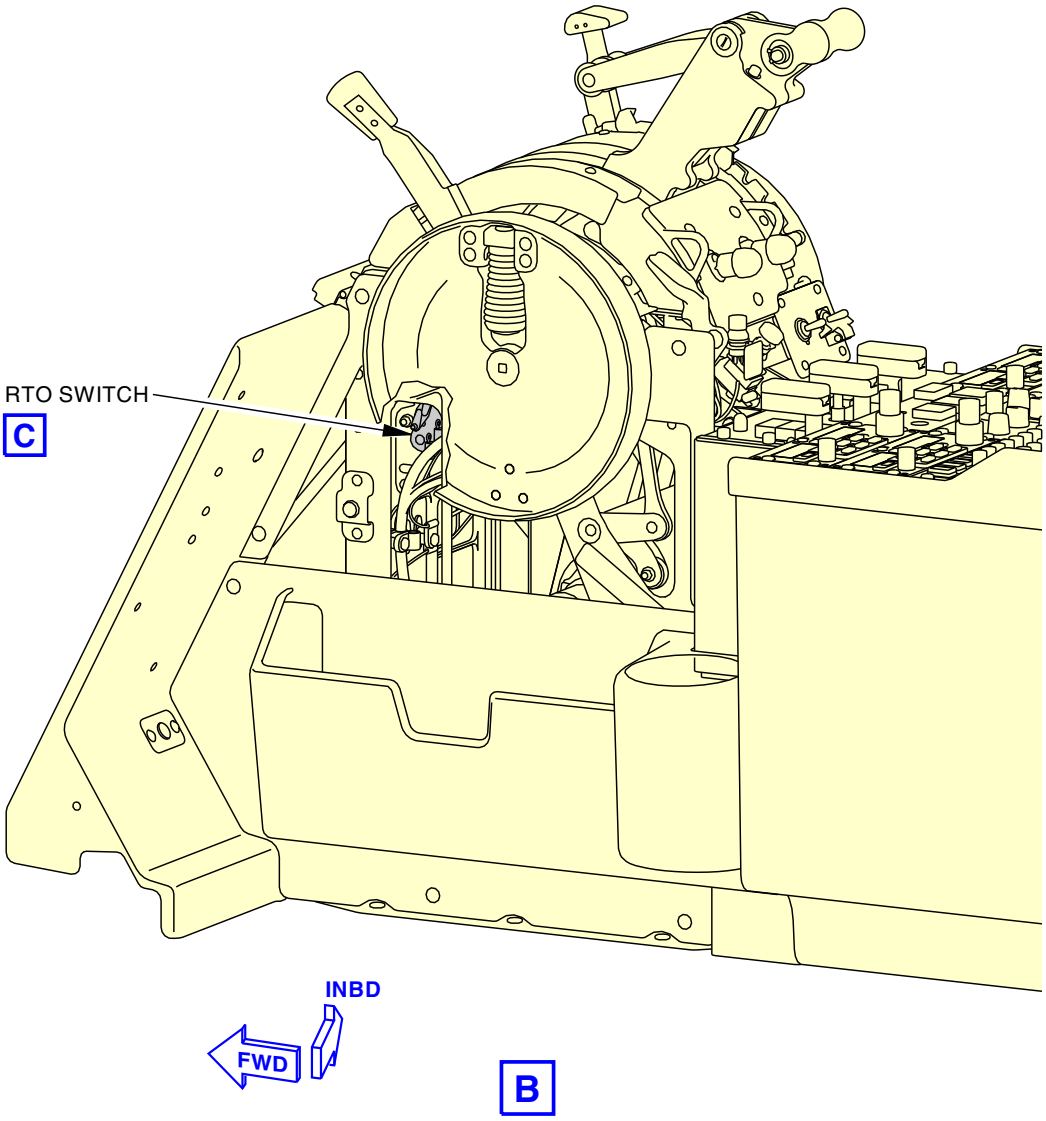
Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 401/27-62-32-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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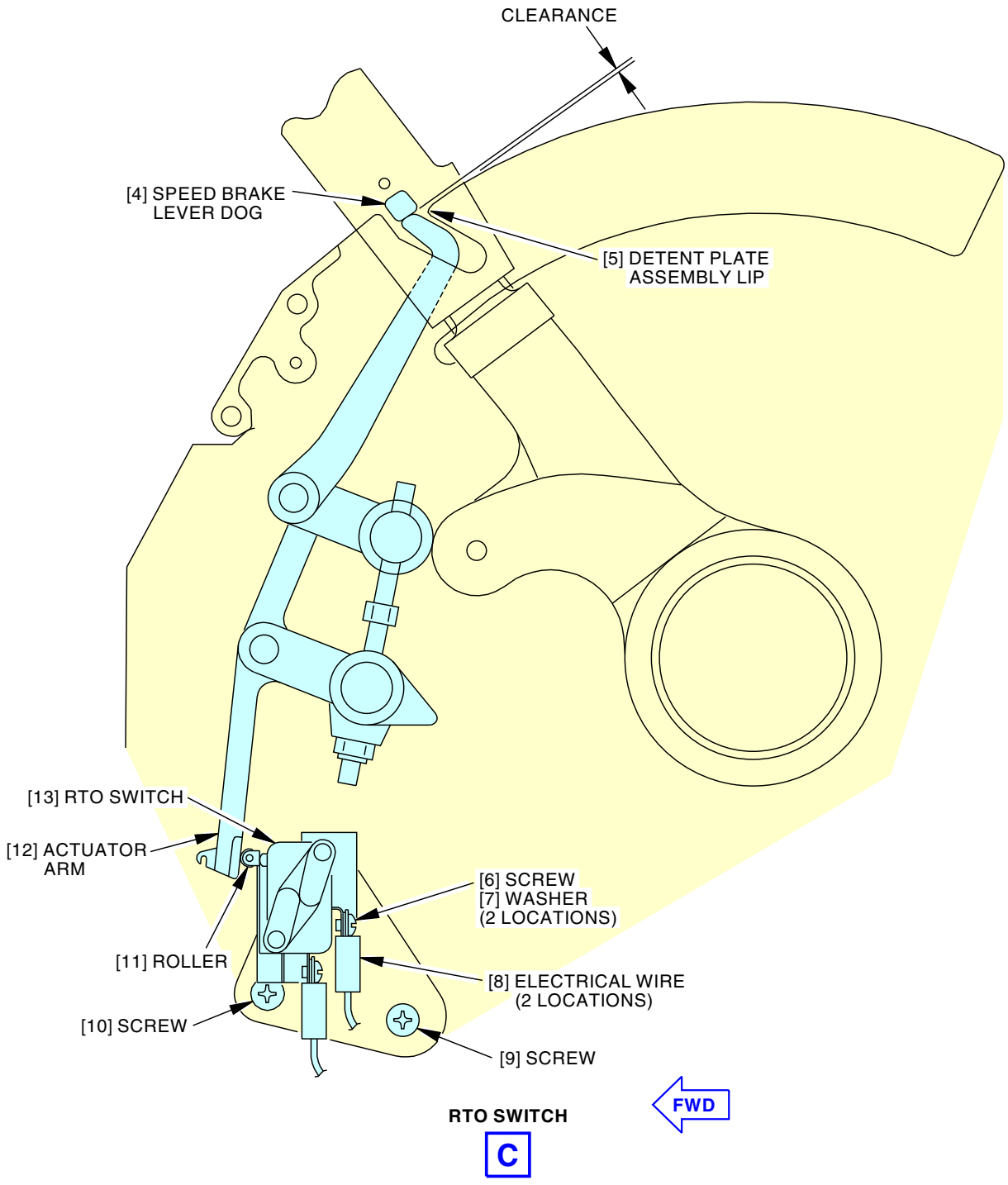
Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 401/27-62-32-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 401/27-62-32-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-32-400-801

3. Speed Brake Refused Takeoff (RTO) Switch Installation

(Figure 401)

A. References

Reference	Title
27-62-00-820-807	Speed Brake RTO Test (P/B 501)
27-62-32-820-801	Speed Brake Refused Takeoff (RTO) Switch Adjustment (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
13	RTO switch	27-62-32-01-005	SIA ALL

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Speed Brake Refused Takeoff (RTO) Switch Installation

SUBTASK 27-62-32-420-001

(1) Install the RTO switch [13]:

(a) Put the RTO switch [13] in its position on the structure.

(b) Install the screw [9] and screw [10] to attach the RTO switch [13] to the structure.

(c) Install the screws [6] and washers [7] to connect the electrical wires [8] to the RTO switch [13].

SUBTASK 27-62-32-860-002

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 27-62-32-820-001

(3) Do this task: Speed Brake Refused Takeoff (RTO) Switch Adjustment, TASK 27-62-32-820-801.

SUBTASK 27-62-32-420-003

(4) Install the screws [1] and washers [2] to attach the cover plate [3] on the control stand.

E. Speed Brake Refused Takeoff (RTO) Switch Installation Test

SUBTASK 27-62-32-700-001

(1) Do this task: Speed Brake RTO Test, TASK 27-62-00-820-807.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEED BRAKE REFUSED TAKEOFF (RTO) SWITCH - ADJUSTMENT/TEST

1. General

A. This procedure has this task:

(1) An adjustment of the speed brake refused takeoff (RTO) switch S650.

TASK 27-62-32-820-801

2. Speed Brake Refused Takeoff (RTO) Switch Adjustment

(Figure 501)

A. Location Zones

Zone	Area
211	Flight Compartment - Left

B. Speed Brake Refused Takeoff (RTO) Switch Adjustment

SUBTASK 27-62-32-820-002

(1) Adjust the RTO switch [13]:

(a) Make sure that the thrust levers are at idle and the reverse thrust levers are down and stowed.

(b) Make sure that the speed brake lever is in the DOWN position.

(c) Loosen screw [9] and screw [10].

(d) Turn the RTO switch [13] as far aft as possible.

(e) Make sure that there is no continuity between pin 8 and 9 of the D5148J connector.

SIA 001, 002

(f) Move the left reverse thrust lever aft until there is a 0.0200 in. (0.5080 mm) to 0.0400 in. (1.0160 mm) clearance between the speed brake lever dog [4] and the detent plate assembly lip [5].

SIA 003-999

(g) Move the left reverse thrust lever aft until there is a 0.0100 in. (0.2540 mm) to 0.0300 in. (0.7620 mm) clearance between the speed brake lever dog [4] and the detent plate assembly lip [5].

SIA ALL

(h) Turn the RTO switch [13] until the roller [11] touches the actuator arm [12] and there is continuity between pins 8 and 9 of the D5148J connector.

(i) Tighten the screw [9] and screw [10].

(j) Slowly move the left thrust lever back to the down and stowed position.

1) Make sure that there is no continuity between pins 8 and 9.

(k) Slowly move the left thrust lever aft until there is continuity between pins 8 and 9.

SIA 001, 002

1) Make sure that the clearance between the speed brake lever dog [4] and the detent plate assembly lip [5] is 0.0200 in. (0.5080 mm) to 0.0400 in. (1.0160 mm).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 003-999

2) Make sure that the clearance between the speed brake lever dog [4] and the detent plate assembly lip [5] is 0.0100 in. (0.2540 mm) to 0.0300 in. (0.7620 mm).

SIA ALL

(l) Slowly move the left reverse thrust lever forward until there is no continuity between pins 8 and 9.

1) Make sure that the speed brake lever dog [4] is 0.0100 in. (0.2540 mm) above the detent plate assembly lip [5].

(m) Move the left reverse thrust lever to the down and stowed position.

1) Make sure that there is no continuity between pins 8 and 9.

(n) Slowly move and the right reverse thrust lever aft until there is continuity between pins 8 and 9.

SIA 001, 002

1) Make sure that the speed brake lever dog [4] is 0.0200 in. (0.5080 mm) to 0.0400 in. (1.0160 mm) above the detent plate assembly lip [5].

SIA 003-999

2) Make sure that the speed brake lever dog [4] is 0.0100 in. (0.2540 mm) to 0.0300 in. (0.7620 mm) above the detent plate assembly lip [5].

SIA ALL

(o) Slowly move the right reverse thrust lever forward until there is no continuity between pins 8 and 9.

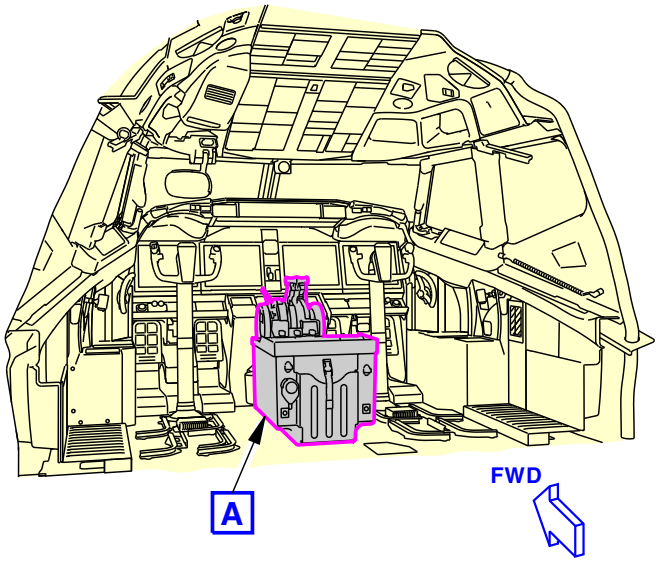
1) Make sure that the speed brake lever dog [4] is 0.0100 in. (0.2540 mm) above the detent plate assembly lip [5].

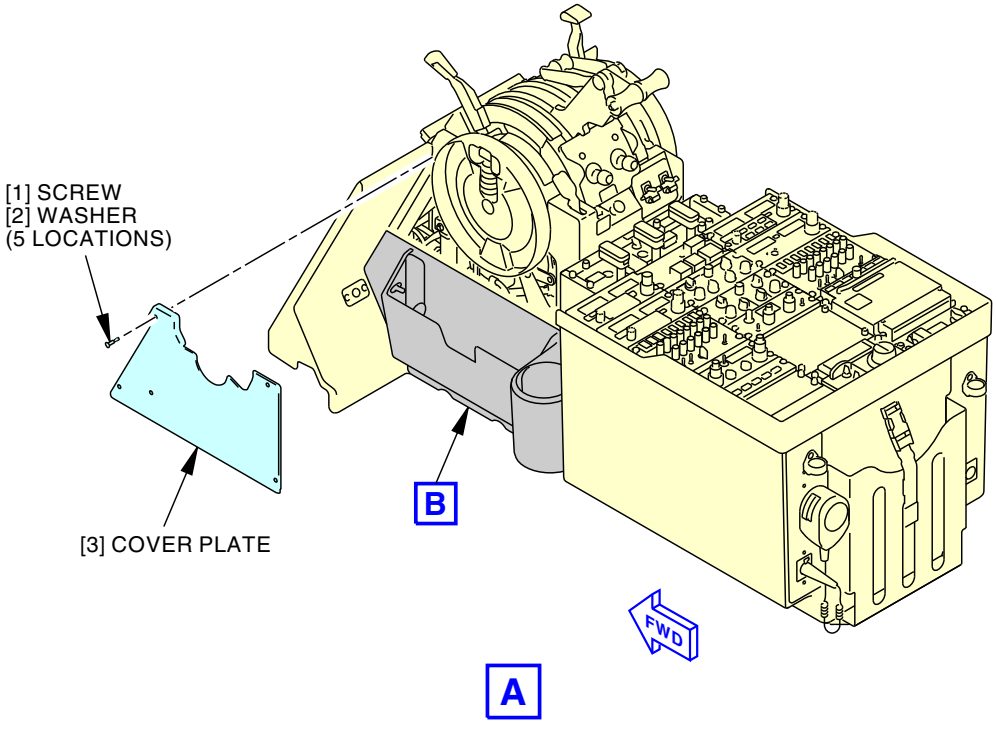
(p) Move the right reverse thrust lever to the down and stowed position.

1) Make sure that there is no continuity between pins 8 and 9.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

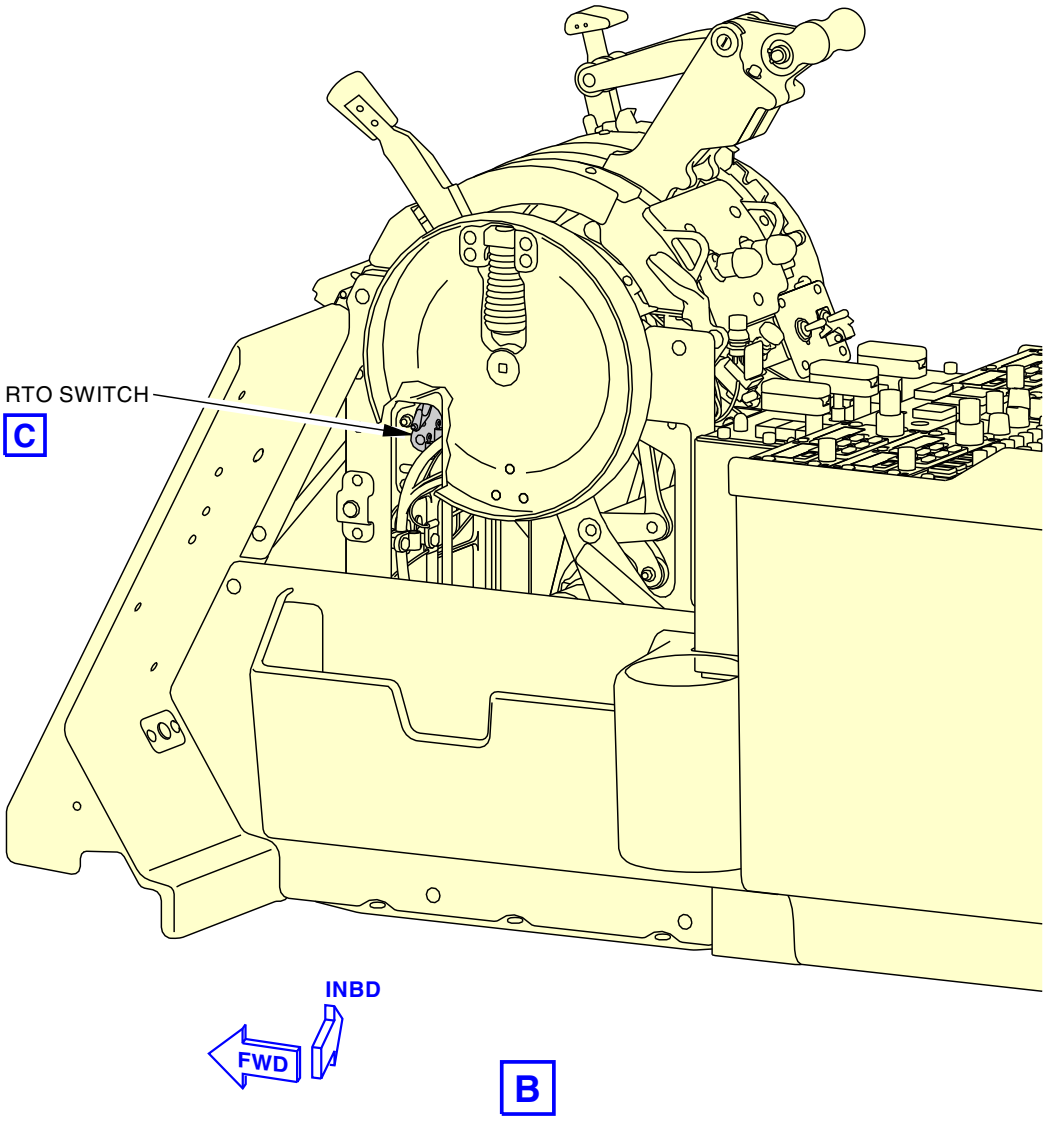




2413269 S00061532215_V2

Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 501/27-62-32-990-802 (Sheet 1 of 3)

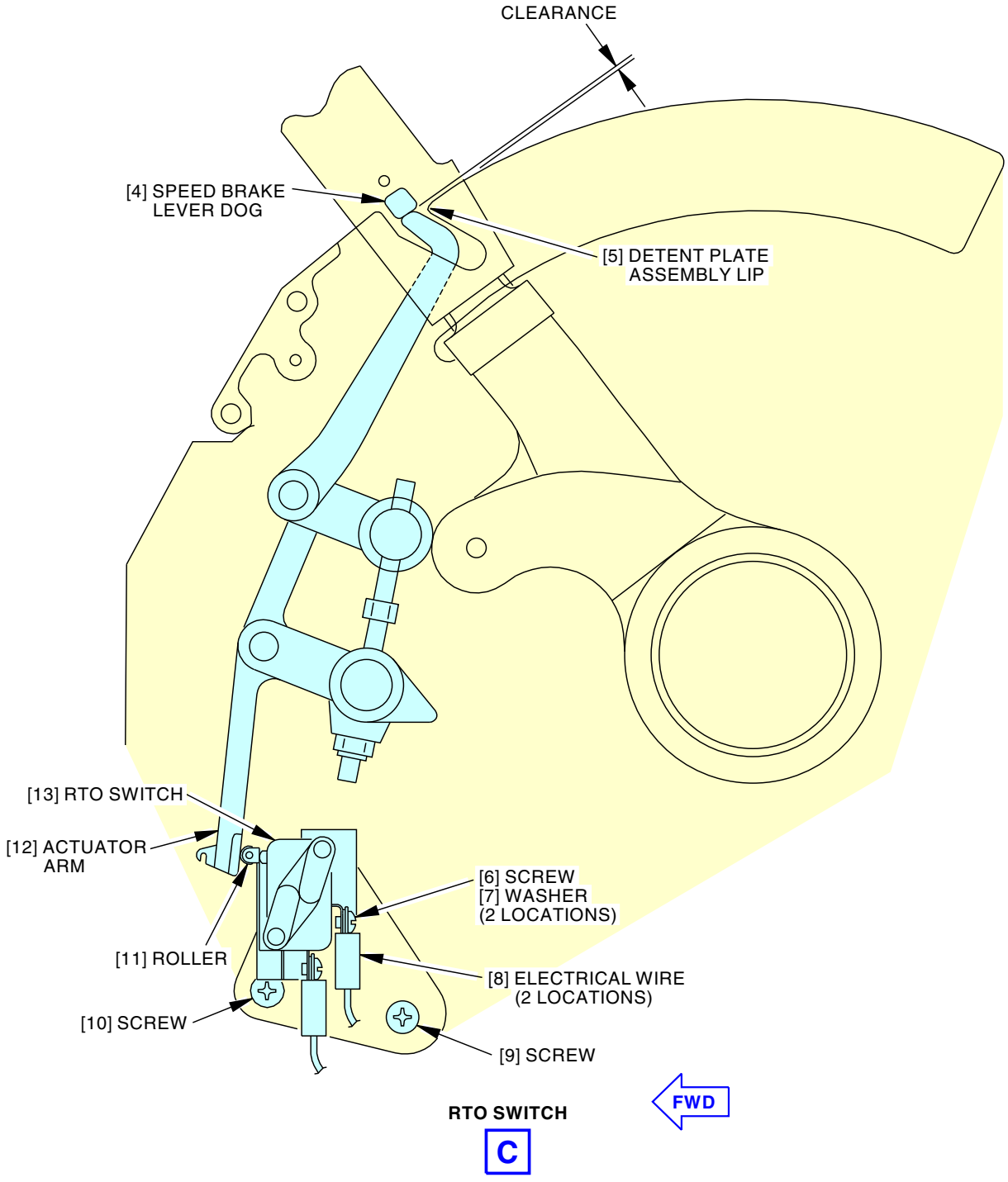
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413270 S00061532216_V2

Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 501/27-62-32-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speed Brake Refused Takeoff (RTO) Switch Installation
Figure 501/27-62-32-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPEEDBRAKE LEVER TRANSDUCER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Speedbrake lever transducer removal.

(2) Speedbrake lever transducer installation.

(3) Speedbrake lever transducer adjustment.

TASK 27-62-37-000-801

2. Speedbrake Lever Transducer Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-40-12-400-803	Conductive Dust Cap and Connector Cover Installation (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
112A	Forward Access Door

D. Prepare for the Removal

SUBTASK 27-62-37-860-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-62-37-860-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed on all landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-37-010-001

(3) Open this access door:

Number	Name/Location
112A	Forward Access Door

E. Speedbrake Lever Transducer Removal

SUBTASK 27-62-37-020-001

(1) Do these steps to remove the speedbrake lever transducer [1]:

(a) Disconnect the P1 connector, P2 connector and P3 connector.

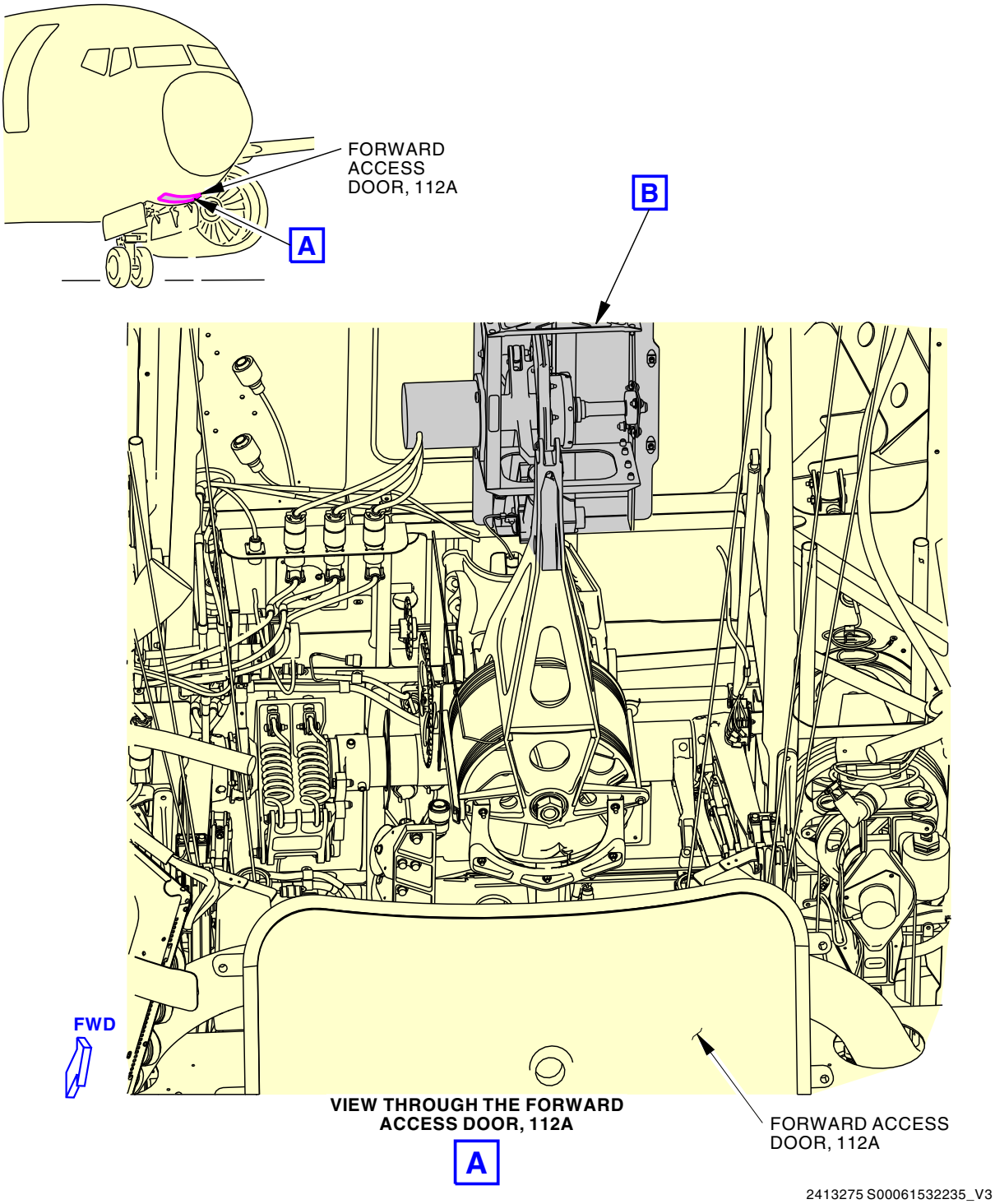
(b) Put dustcaps on the connectors and receptacles (TASK 20-40-12-400-803).

(c) Remove the bolts [2] and washers [3].

(d) Remove the speedbrake lever transducer [1].

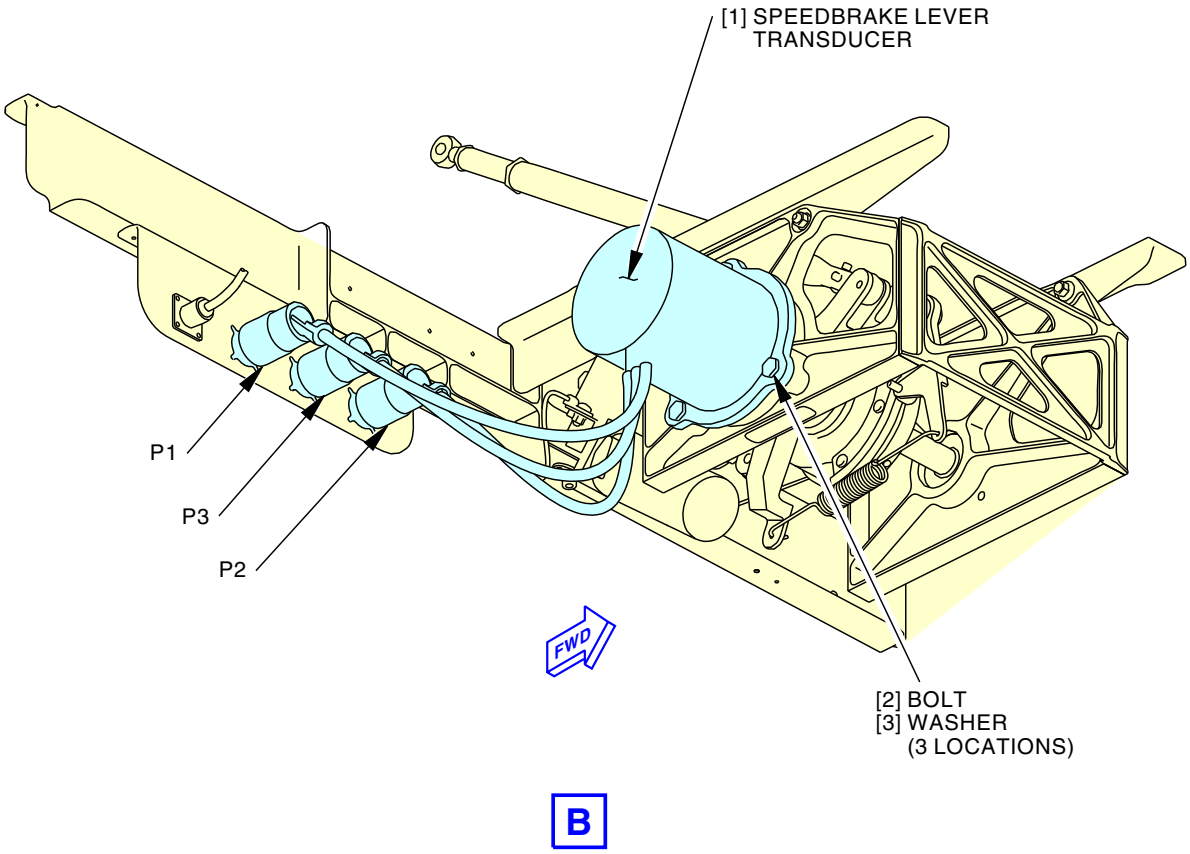
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Lever Transducer Installation
Figure 401/27-62-37-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Speedbrake Lever Transducer Installation
Figure 401/27-62-37-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-37-400-801

3. Speedbrake Lever Transducer Installation

(Figure 401, Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-40-12-000-803	Conductive Dust Cap and Connector Cover Removal (P/B 201)
20-50-11-910-801	Standard Torque Values (P/B 201)

B. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Speedbrake lever transducer	27-62-37-01-010	SIA ALL

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Speedbrake Lever Transducer Installation

SUBTASK 27-62-37-420-001

(1) Do these steps to install the speedbrake lever transducer [1]:

(a) Put the speedbrake lever [4] in the DOWN and LOCKED position.

(b) Put a thin film of grease, D00633, on the splines of the speedbrake lever transducer [1].

(c) Align the spline indexes and put the speedbrake lever transducer [1] in position.

(d) Install the bolts [2] and washers [3] that attach the speedbrake lever transducer [1] (TASK 20-50-11-910-801).

(e) Remove the dustcaps from the connectors and receptacles (TASK 20-40-12-000-803).

(f) Connect the P1 connector, P2 connector and P3 connector.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Speedbrake Lever Transducer Installation Test

SUBTASK 27-62-37-860-013

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-62-37-820-001

(2) Do this task: Speedbrake Lever Transducer Adjustment, TASK 27-62-37-200-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-37-410-001

(1) If it is open, close this access panel:

Number	Name/Location
112A	Forward Access Door

END OF TASK

TASK 27-62-37-200-801

4. Speedbrake Lever Transducer Adjustment

(Figure 402)

A. References

Reference	Title
27-61-45-730-802	Speedbrake Lever Transducer Test (P/B 501)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
34-21-00-820-801	Air Data Inertial Reference System - Alignment from the FMC CDU (P/B 201)
34-21-00-820-802	Air Data Inertial Reference System - Alignment from the ISDU (P/B 201)
34-21-00-820-803	Air Data Inertial Reference System - Automatic Alignment from the IRS MSU (P/B 201)
46-13-02-700-805	Existing Faults Check (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14768	Rigging Lock - Four Degree Speedbrake Lever Part #: C27095-1 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Speedbrake Lever Transducer Adjustment

SUBTASK 27-62-37-860-006

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

SUBTASK 27-62-37-860-007

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) If the downlock pins are not installed on all landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-62-37-010-002

(3) Open this access door:

Number	Name/Location
112A	Forward Access Door

F. Speedbrake Lever Transducer Adjustment

SUBTASK 27-62-37-480-001

(1) Do these steps to retract the actuator assembly:

(a) Place the Speedbrake Lever in the DOWN and LOCKED position.

(b) Make sure that the SPEEDBRAKES EXTENDED light does not come on.

(c) Make sure that the SPEEDBRAKE DO NOT ARM light does not come on.

(d) Move the speedbrake lever to the ARMED position.

NOTE: The ARMED position is approximately 4 degrees aft of the DOWN position.

1) Moving the speedbrake lever without hydraulic power can latch the GROUND SPOILER CONTROL Status Message. Do this task if the Status Message occurs: Existing Faults Check, TASK 46-13-02-700-805.

SUBTASK 27-62-37-480-002

(2) Install the rigging lock, SPL-14768, to hold the speedbrake lever at 4 degrees aft of the DOWN position.

SUBTASK 27-62-37-200-001

(3) Make sure that the roller [10] is centered in the ARMED detent (Figure 402).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-37-820-003

(4) Do these steps to adjust the lower control rod [8] and the three Rotary Variable Displacement Transducer (RVDT) channels:

(a) Use the SEL knob on the Multi Function Panel to make the following selections:

1) MAINT DATA PGS

FLIGHT CONTROL

2) Monitor the RVDT A, B, C readings of the SCE SPDBRK LVR.

3) Adjust the lower control rod [8] so that all three RVDT channels are within 3.8 ± 0.5 degrees:

a) Remove the screws [5], washers [6] and lower cover plate [7] to get access to the lower control rod [8].

b) Loosen the checknut [9] and adjust the length of the lower control rod [8] so that all three RVDT channels are within 3.8 ± 0.5 degrees.

c) Tighten the checknut [9] to 45 in-lb (5 N·m) - 50 in-lb (6 N·m).

4) Make sure that the roller [10] is centered in the ARMED detent.

5) Remove the rigging lock, SPL-14768, from the speedbrake lever [4].

6) Move the speedbrake lever [4] to the Down and locked position.

7) Make sure that the roller [10] is not in the ARMED detent (Figure 402).

8) Make sure that the RVDT-1, RVDT-2 and RVDT-3 channels are within 0.0 ± 1.0 degrees.

9) Install the screws [5], washers [6] and lower cover plate [7].

G. Speedbrake Lever Transducer Adjustment Test

SUBTASK 27-62-37-820-004

(1) Do this task to align the IRU: Air Data Inertial Reference System - Alignment from the ISDU, TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, TASK 34-21-00-820-801 or Air Data Inertial Reference System - Automatic Alignment from the IRS MSU, TASK 34-21-00-820-803.

SUBTASK 27-62-37-750-001

(2) Do the Speedbrake Lever Transducer Test (TASK 27-61-45-730-802).

H. Put the Airplane Back to Its Usual Condition

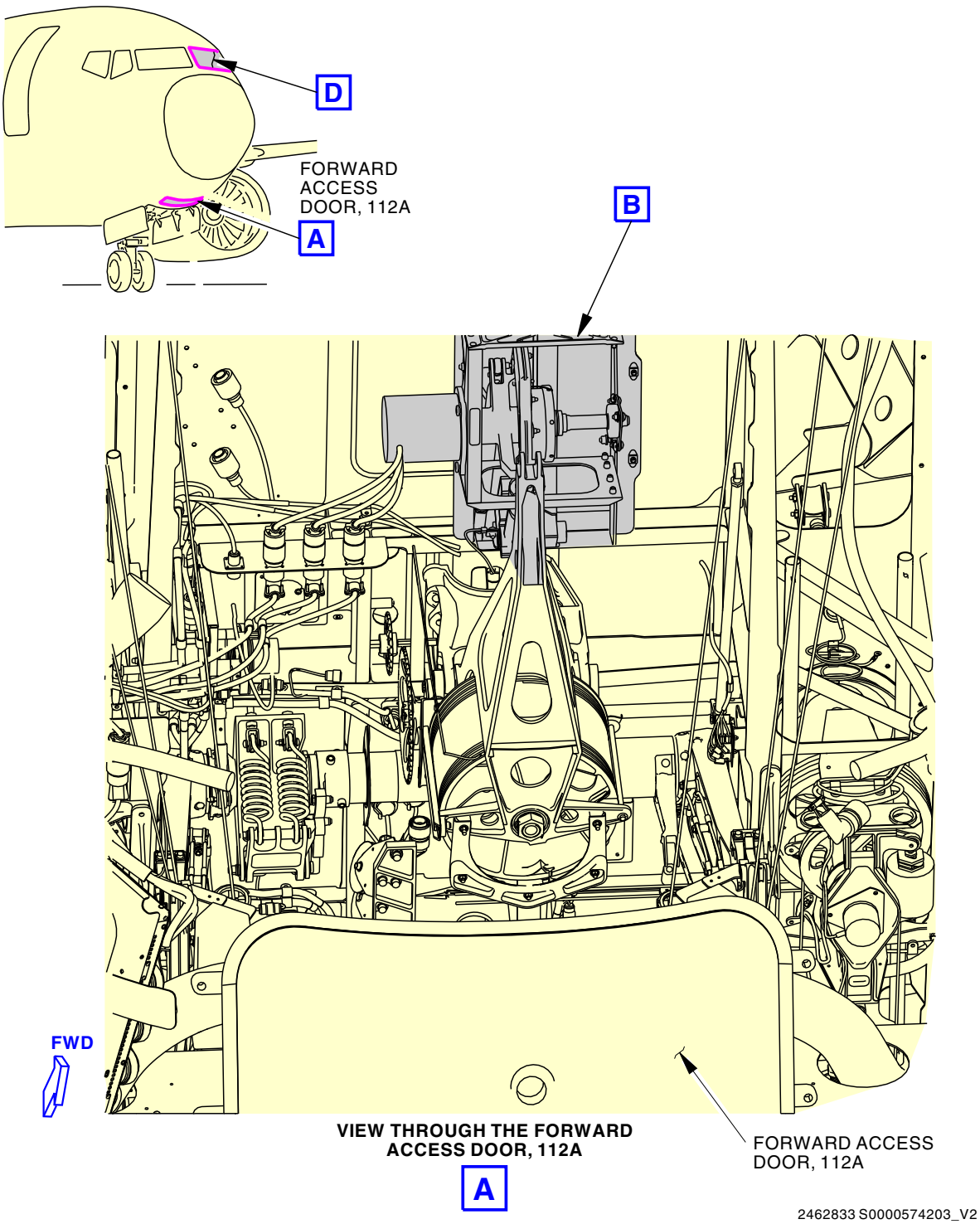
SUBTASK 27-62-37-410-003

(1) If it is open, close this access door:

Number	Name/Location
112A	Forward Access Door

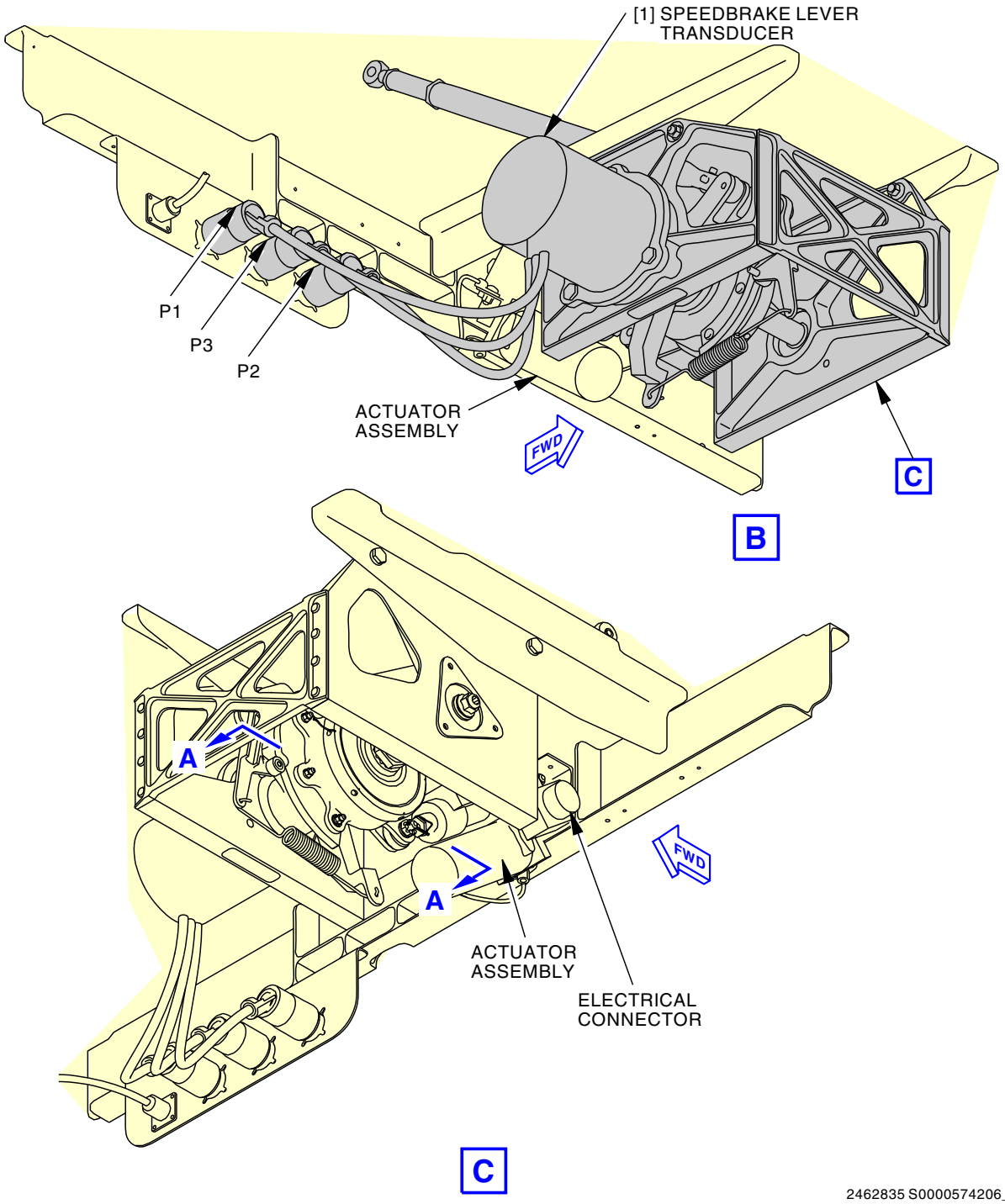
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



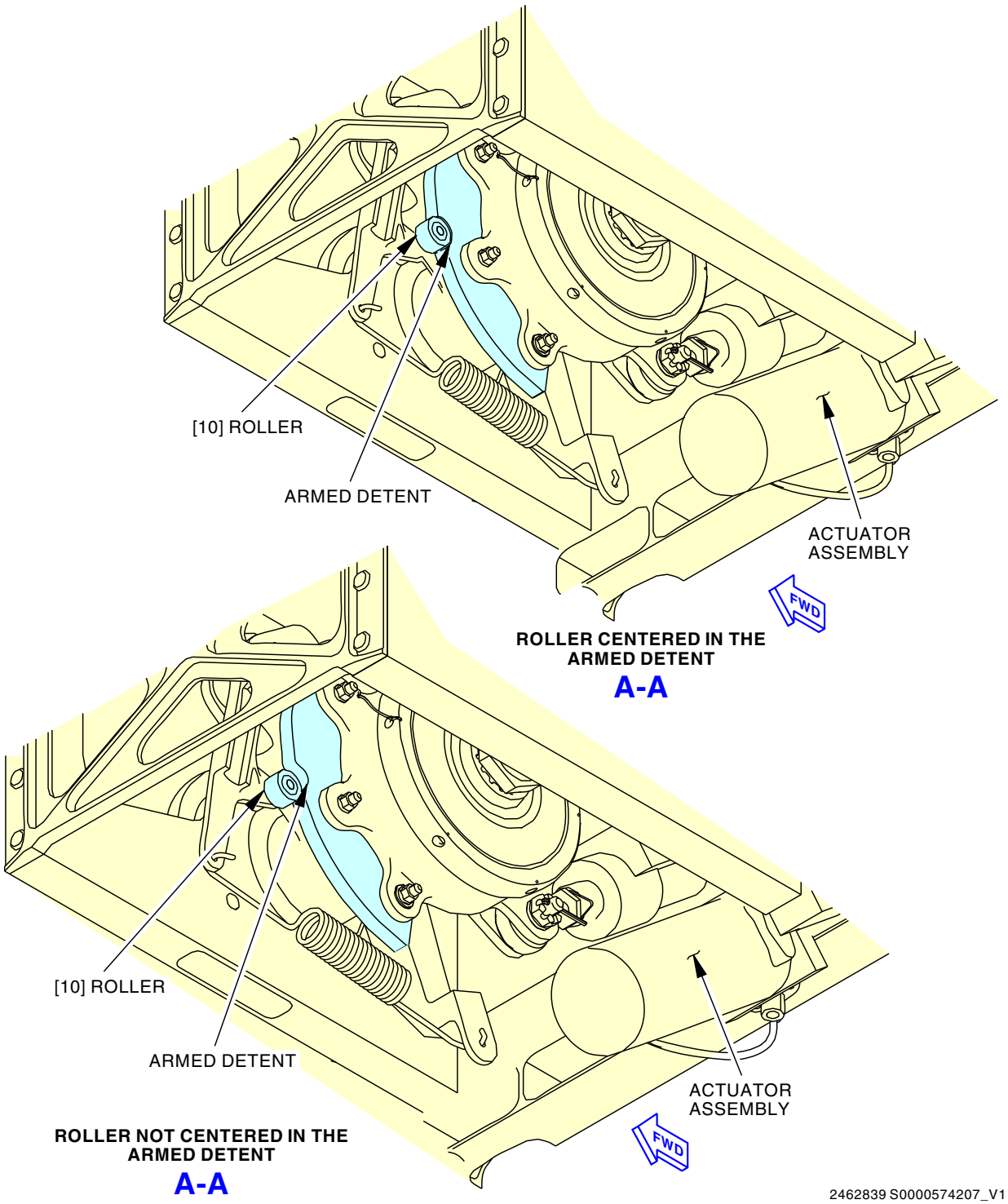
Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



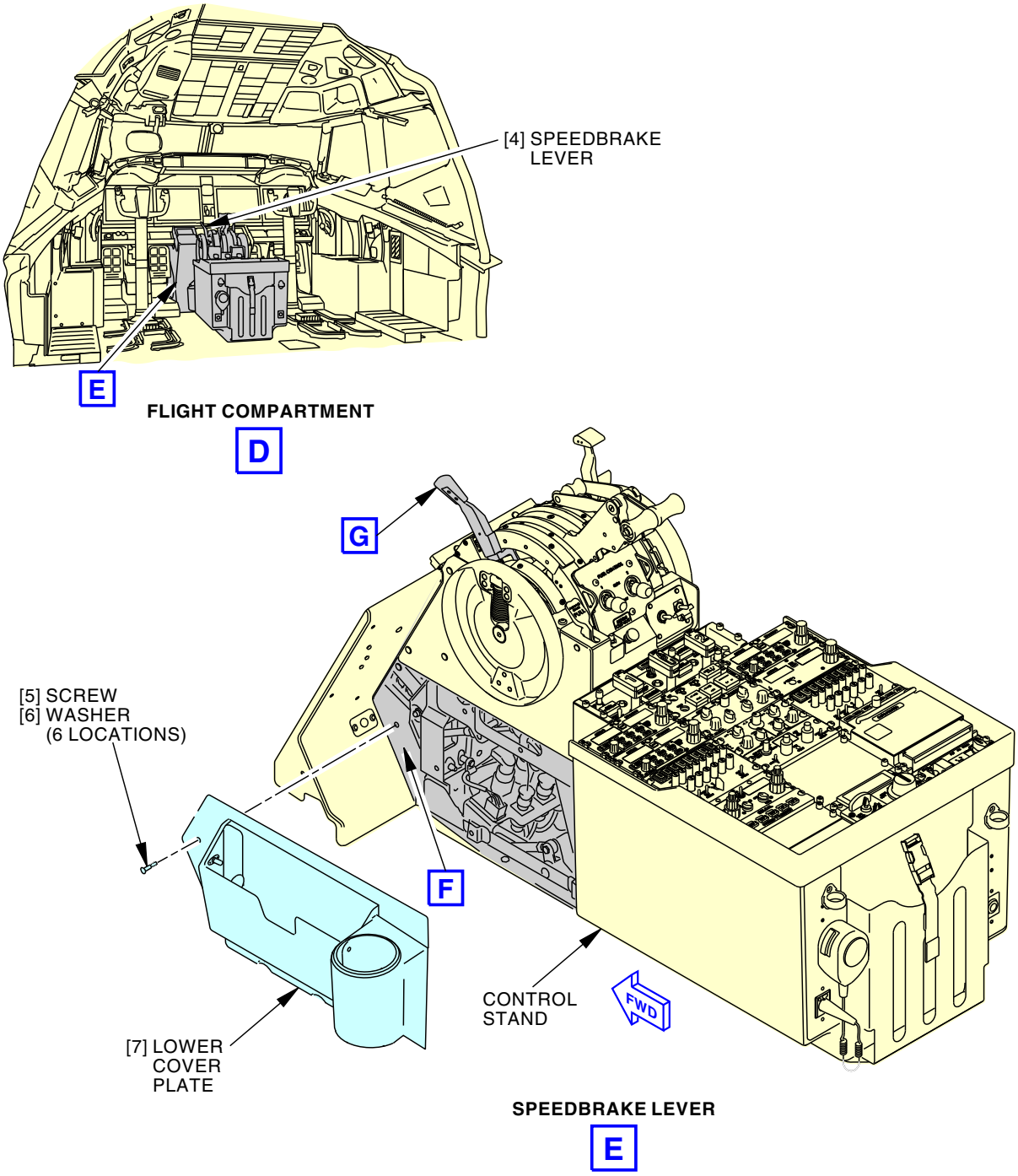
Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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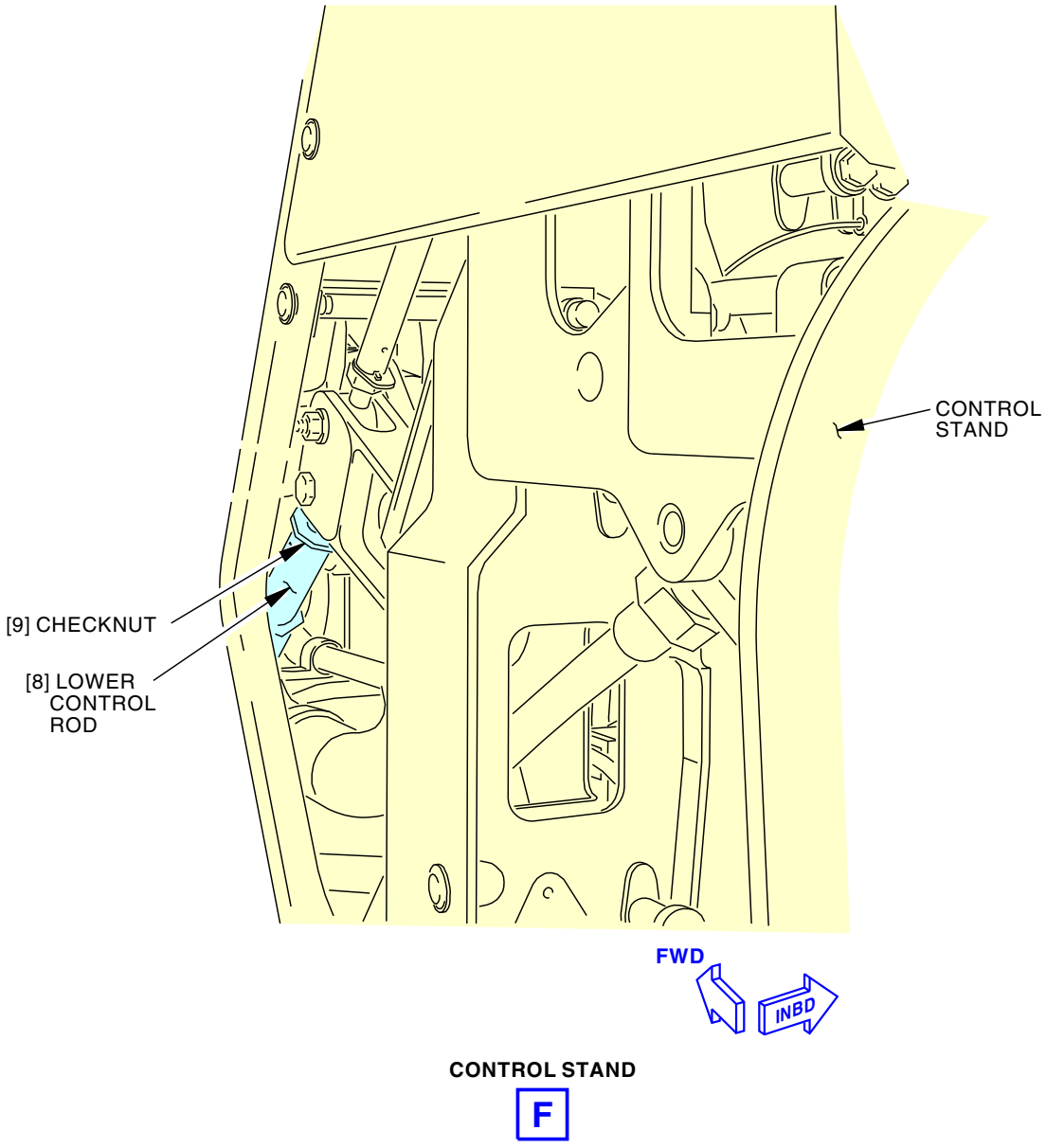
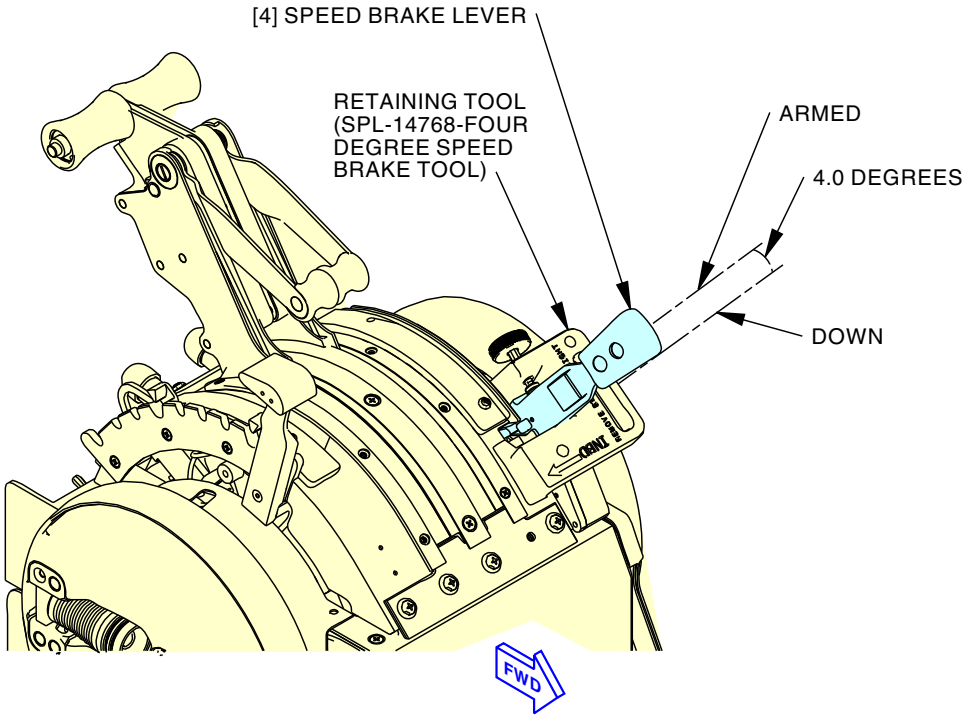
Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Speedbrake Lever Transducer - Adjustment
Figure 402/27-62-37-990-802 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

GROUND SPOILER CONTROL MODULE- REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Ground spoiler control module removal

(2) Ground spoiler control module installation

(3) Ground spoiler control module functional test

B. In this procedure the ground spoiler control valve is referred to as the "valve assy".

TASK 27-62-41-000-801

2. Ground Spoiler Control Module Removal

(Figure 401)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-62-41-860-001

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL

SUBTASK 27-62-41-860-011

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-62-41-860-003

(3) Remove the pressure from the speed brake hydraulic system A (TASK 29-11-00-860-805).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the hydraulic pressure has been removed from the hydraulic pumps and/or portable hydraulic cart.

E. Ground Spoiler Control Module Removal

SUBTASK 27-62-41-020-001

(1) Do these steps to disconnect the hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5] from the ground spoiler control module [1]:

(a) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110, below the ground spoiler control module [1] to catch the hydraulic fluid.

(b) Disconnect the hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5] from the ground spoiler control module [1].

(c) Install the plugs on the hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5].

(d) Install the caps on the applicable hydraulic ports.

SUBTASK 27-62-41-020-002

(2) Disconnect connector [6], connector [7], connector [8], and connector [9].

SUBTASK 27-62-41-020-003

(3) Remove the bolts [12] and washers [13] that attach the ground spoiler control module [1].

SIA 008-999

SUBTASK 27-62-41-020-008

(4) Remove the bolt [22], washer [23], flat washer [24], bonding jumper [25], and flat washer [26].

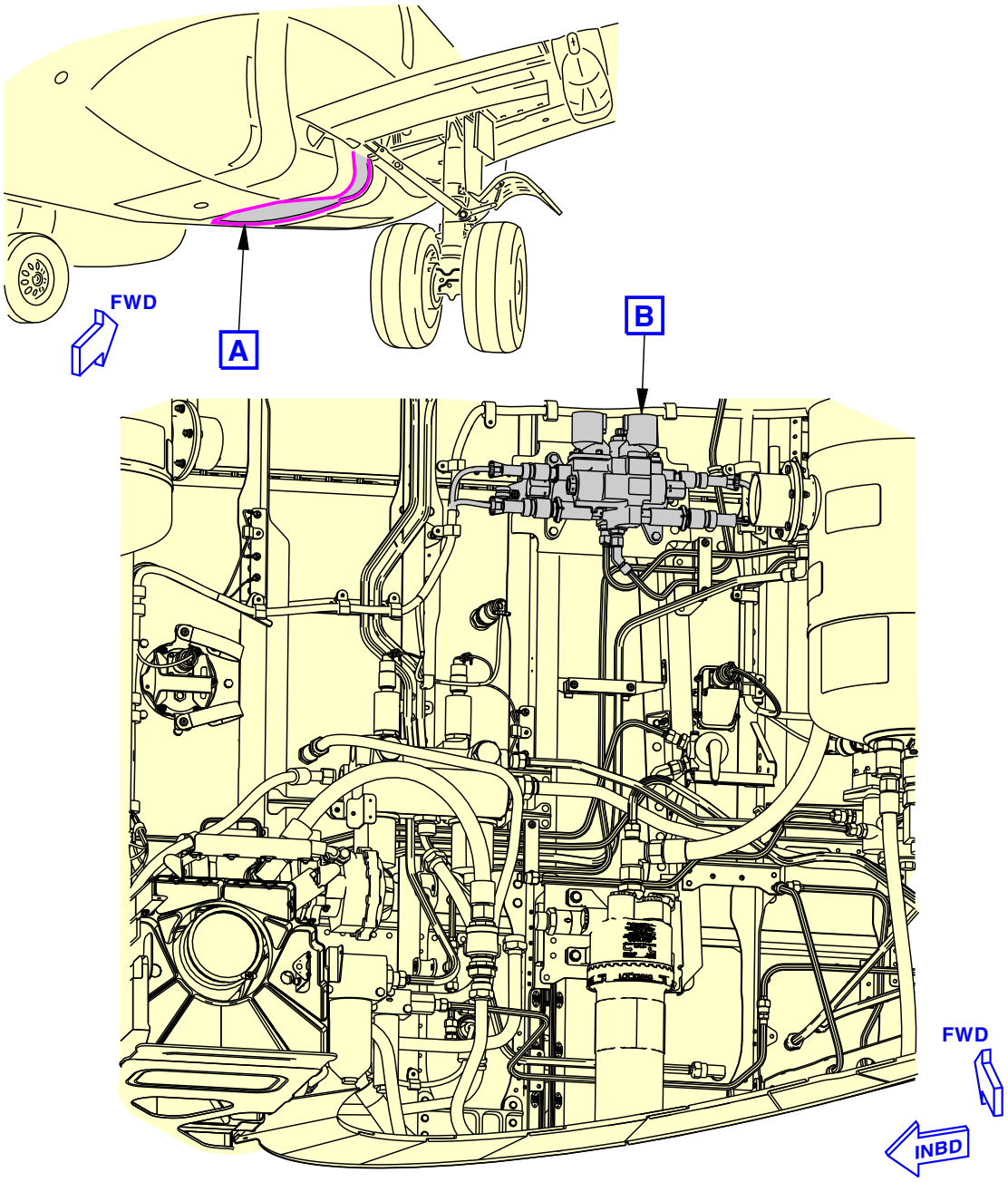
SIA ALL

SUBTASK 27-62-41-020-004

(5) Remove the ground spoiler control module [1] from the airplane.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



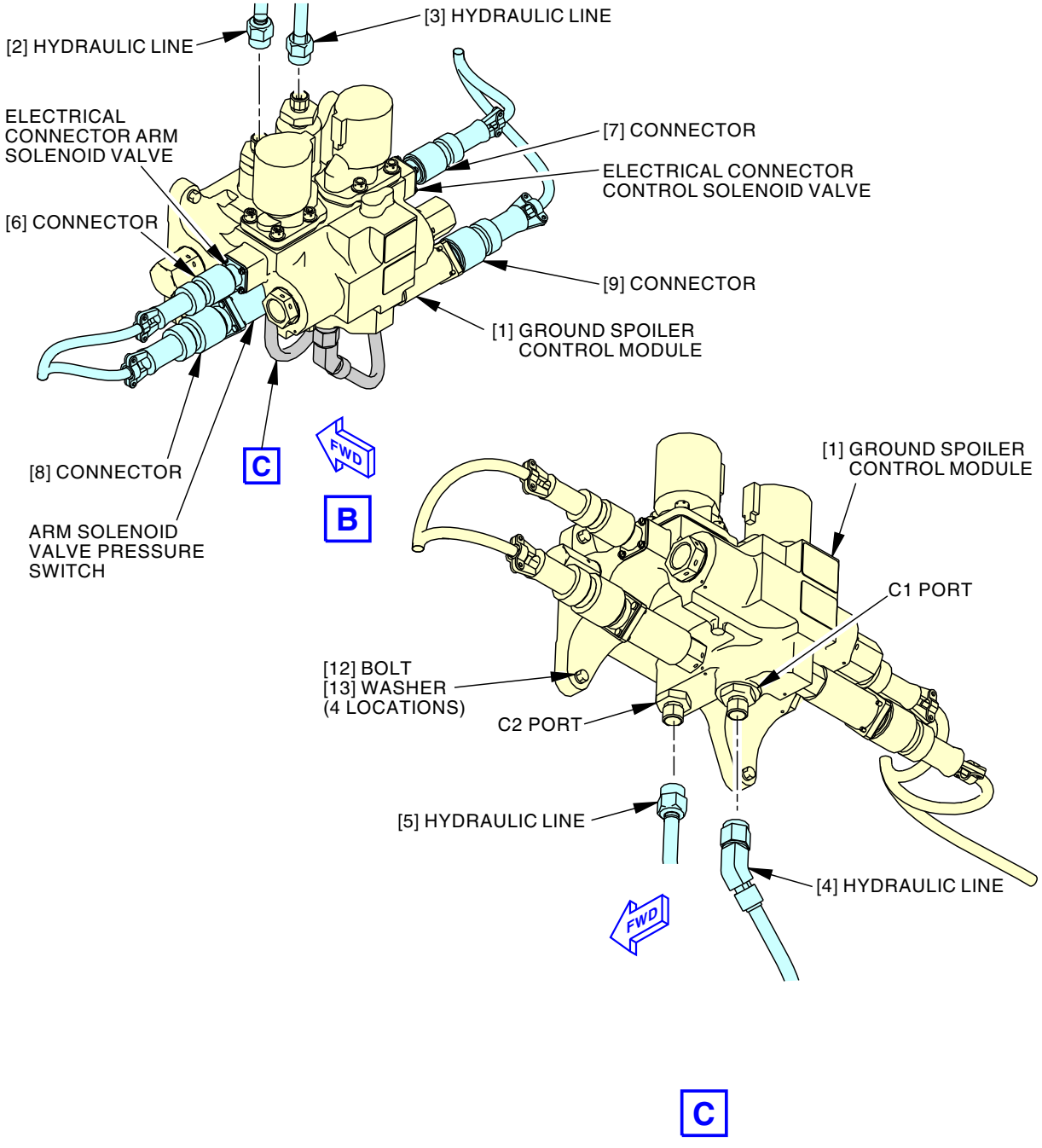
MAIN LANDING GEAR WHEEL WELL
(RIGHT SIDE)

A

2413277 S00061532242_V1

Ground Spoiler Control Module Installation
Figure 401/27-62-41-990-801 (Sheet 1 of 3)

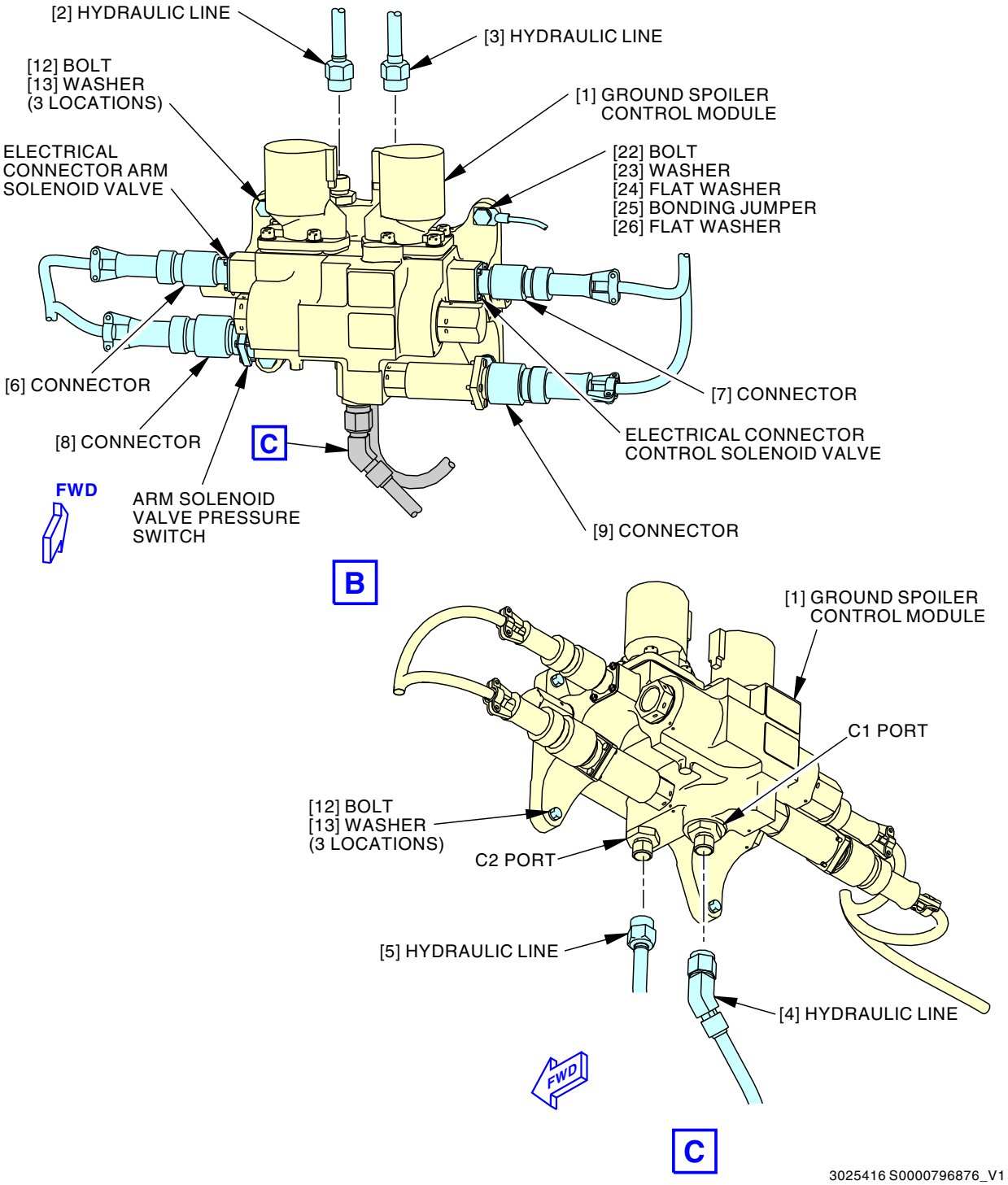
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413278 S00061532243_V2

Ground Spoiler Control Module Installation
Figure 401/27-62-41-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Ground Spoiler Control Module Installation
Figure 401/27-62-41-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-41-400-801

3. Ground Spoiler Control Module Installation

(Figure 401)

A. References

Reference	Title
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES
SWPM 20-20-00, Paragraph 2A	Cleaning Procedure 1

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426

C. Consumable Materials

Reference	Description	Specification
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
A50155	Sealant - Fuel Tank	BMS5-45 Class C
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00175	Primer - Urethane Compatible, Corrosion Resistant	BMS10-79 Type III
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C50315	Coating - Chemical Conversion - Bonderite M-CR 600 Aero (Formerly Alodine 600)	BAC5719 Class A, C or D, MIL-DTL-81706 Type I Class 1A or 3

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Ground spoiler control module	27-62-41-01-005	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

F. Ground Spoiler Control Module Installation

SUBTASK 27-62-41-420-001

(1) Do these step to install the ground spoiler control module [1]:

SIA 001-007

(a) Clean the surface of the mating surfaces of the airplane structure, bolts [12], washers [13], and ground spoiler control module [1] (SWPM 20-20-00, Paragraph 2A).

(b) Use cotton wiper, G00034, moist in solvent, B00184, to final clean the mating surfaces of the airplane structure, bolts [12], washers [13], and ground spoiler control module [1].

(c) Apply sealant, A50110, or sealant, A50155, or sealant, A50231, or sealant, A50296, to the mating surfaces of the bolts [12], washers [13], and ground spoiler control module [1].

(d) Put the ground spoiler control module [1] in its position.

(e) Install the bolts [12] and washers [13].

1) Make sure that there is squeeze out around all the interfaces of each component.

(f) Measure the electrical resistance between the ground spoiler control module [1] and airplane structure (SWPM 20-20-00).

1) Use a non-intrinsically safe bonding meter, COM-614.

2) Make sure that the electrical bonding resistance is 0.0005 ohms (0.5 milliohms) or less.

(g) Manually apply finish with Bonderite M-CR 600 Aero coating, C50315.

1) Apply two coats of primer, C00259.

(h) Make sure that all components are covered by sealant or finishes.

SIA 008-999

(i) Apply primer, C00175, to the mating surfaces of the ground spoiler control module [1] pads.

1) Do not force dry at temperature exceeding 160°F (71°C).

(j) Apply corrosion inhibiting material, G50136, on the mating surfaces of the mounting bracket.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 008-999 (Continued)

(k) Clean the bolt [22], washer [23], flat washer [24], bonding jumper [25], flat washer [26], and ground spoiler control module [1] (SWPM 20-20-00, Paragraph 2A).

(l) Use cotton wiper, G00034, moist in solvent, B00184, to final clean the bolt [22], washer [23], flat washer [24], bonding jumper [25], flat washer [26], and ground spoiler control module [1].

(m) Apply sealant, A50110, or sealant, A50155, or sealant, A50231, or sealant, A50296, to the mating surfaces of the bolt [22], washer [23], flat washer [24], bonding jumper [25], flat washer [26], and ground spoiler control module [1].

(n) Apply a thin coat of corrosion inhibiting material, G50136, to the shank and threads of the bolts [12].

(o) Put the ground spoiler control module [1] in its position.

(p) Install the bolt [22], washer [23], flat washer [24], bonding jumper [25], flat washer [26], bolts [12], and washers [13].

(q) Tighten the bolt [22] to 63 in-lb (7 N·m) - 77 in-lb (9 N·m).

1) Make sure that there is squeeze out around all the interfaces of each component.

(r) Measure the electrical resistance between the ground spoiler control module [1] and airplane structure (SWPM 20-20-00).

1) Use a non-intrinsically safe bonding meter, COM-614.

2) Make sure that the electrical bonding resistance is 0.001 ohm (1 milliohm) or less.

(s) Manually apply finish with coating, C00064.

SIA ALL

(t) Remove the caps from the ports in the ground spoiler control module [1].

(u) Remove the plugs from the hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5].

(v) Install the hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5] to the ground spoiler control module [1].

1) Put the bundle/wire to get 0.5 in. (12.7 mm) minimum separation between wire and hydraulic tubing.

NOTE: The 0.5 in. (12.7 mm) minimum separation will prevent wear and fraying between the wire/bundle and hydraulic tubing.

(w) Tighten the B-nuts on hydraulic line [2], hydraulic line [3], hydraulc line [4], and hydraulic line [5] to 270 ±14 in-lb (31 ±2 N·m).

(x) Connect the connector [6], connector [7], connector [8], and connector [9] to the ground spoiler control module [1].

G. Ground Spoiler Control Module Installation Test

SUBTASK 27-62-41-720-002

(1) Do this task: Ground Spoiler Control Module Functional Test, TASK 27-62-41-720-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-41-860-004

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	11	C04040	GROUND SPOILER CONTROL

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT SPOILERS. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU OPEN/CLOSE THESE CIRCUIT BREAKERS. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
C	10	C04032	SPOILER CONTROL ELEC PWR A
C	12	C04033	SPOILER CONTROL ELEC PWR B

SUBTASK 27-62-41-860-005

(3) Put the speed brake system A back to the condition before the pressure removal (TASK 27-62-00-840-802).

END OF TASK

TASK 27-62-41-720-801

4. Ground Spoiler Control Module Functional Test

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
46-13-02-710-801	Onboard Maintenance Function Ground Test (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50

C. Ground Spoiler Control Module Functional Test

SUBTASK 27-62-41-860-008

(1) Pressurize speed brake hydraulic system A (TASK 29-11-00-860-801).

SUBTASK 27-62-41-210-001

(2) Examine the hydraulic connections on the ground spoiler control module [1] for leakage.

SUBTASK 27-62-41-860-009

(3) Remove the pressure from the speed brake hydraulic system A (TASK 29-11-00-860-805).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-41-730-001

(4) Do these steps for the ground spoiler test (Onboard Maintenance Function Ground Test, TASK 46-13-02-710-801):

(a) Put the GND TEST switch on the P61-4 panel to ENABLE.

(b) Push the SYS button in the MFD section of the Multi Function Panel.

(c) Use the SELECTOR on the Multi Function Panel to make these selections:

- MAINT
- ONBD MAINT
- LINE MAINT
- GROUND TESTS
- 27 - Spoiler Control
- System Test
- Ground Spoilers
- CONTINUE
- CONTINUE
- START TEST
- CONTINUE

(d) Follow the on-screen instructions and then select the CONTINUE button.

(e) Follow the second set of on-screen instructions and then select the CONTINUE button to complete the test.

SUBTASK 27-62-41-210-002

(5) Examine the hydraulic connections on the ground spoiler control module [1] for leakage.

SUBTASK 27-62-41-610-001

(6) Make sure that the hydraulic reservoirs are full (Hydraulic Reservoir Servicing, TASK 12-12-00-610-801).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

INBOARD GROUND SPOILER ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Inboard ground spoiler actuator removal

(2) Inboard ground spoiler actuator installation

(3) Inboard ground spoiler actuator functional test.

B. In this procedure, the inboard ground spoiler actuator is referred to as the "actuator".

C. This procedure is applicable to the left and right inboard ground spoiler actuators.

TASK 27-62-71-000-801

2. Inboard Ground Spoiler Actuator Removal

(Figure 401)

A. General

(1) This task has the steps to remove the inboard ground spoiler actuator.

B. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

E. Prepare for the Removal

SUBTASK 27-62-71-860-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-71-860-003

(2) Put the SPOILER A and B switches in the OFF position to remove the hydraulic power from the flight spoilers.

NOTE: SPOILER A and B switches are on the flight control panel (P5-3).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-71-860-004

(3) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

SUBTASK 27-62-71-860-005

(4) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

F. Inboard Ground Spoiler Actuator Removal

SUBTASK 27-62-71-020-001

(1) Do these steps to disconnect the hydraulic lines [10] from the actuator [17]:

(a) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110 below the actuator [17] to catch the hydraulic fluid.

(b) Disconnect the hydraulic lines [10] from the actuator [17].

(c) Install the plugs in the hydraulic lines [10].

SUBTASK 27-62-71-020-002

(2) Remove the pin [7], nut [6], washer [3], bushing [4], washer [5] and bolt [2] that attach the actuator [17] to the inboard ground spoiler [1].

SUBTASK 27-62-71-020-003

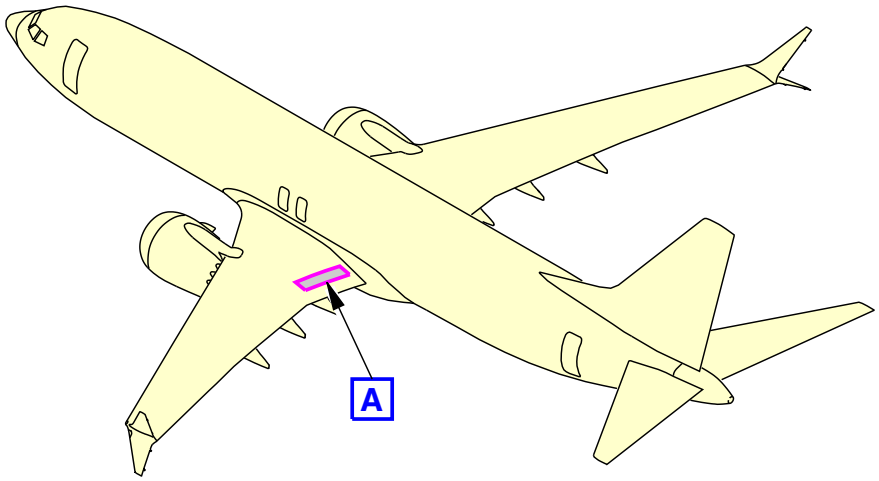
(3) Remove the pin [16], nut [15], washer [14], bushing [13], washer [12] and bolt [11] that attaches the actuator [17] to the structure.

SUBTASK 27-62-71-480-001

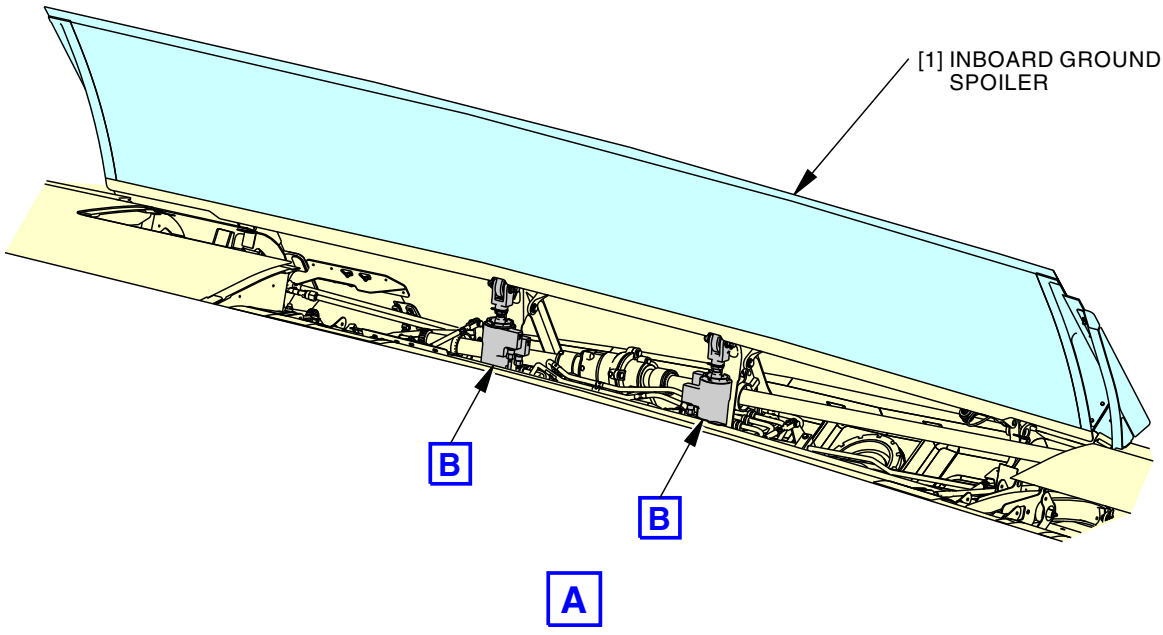
(4) Install caps in the hydraulic ports of the actuator [17].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS EQUIVALENT)



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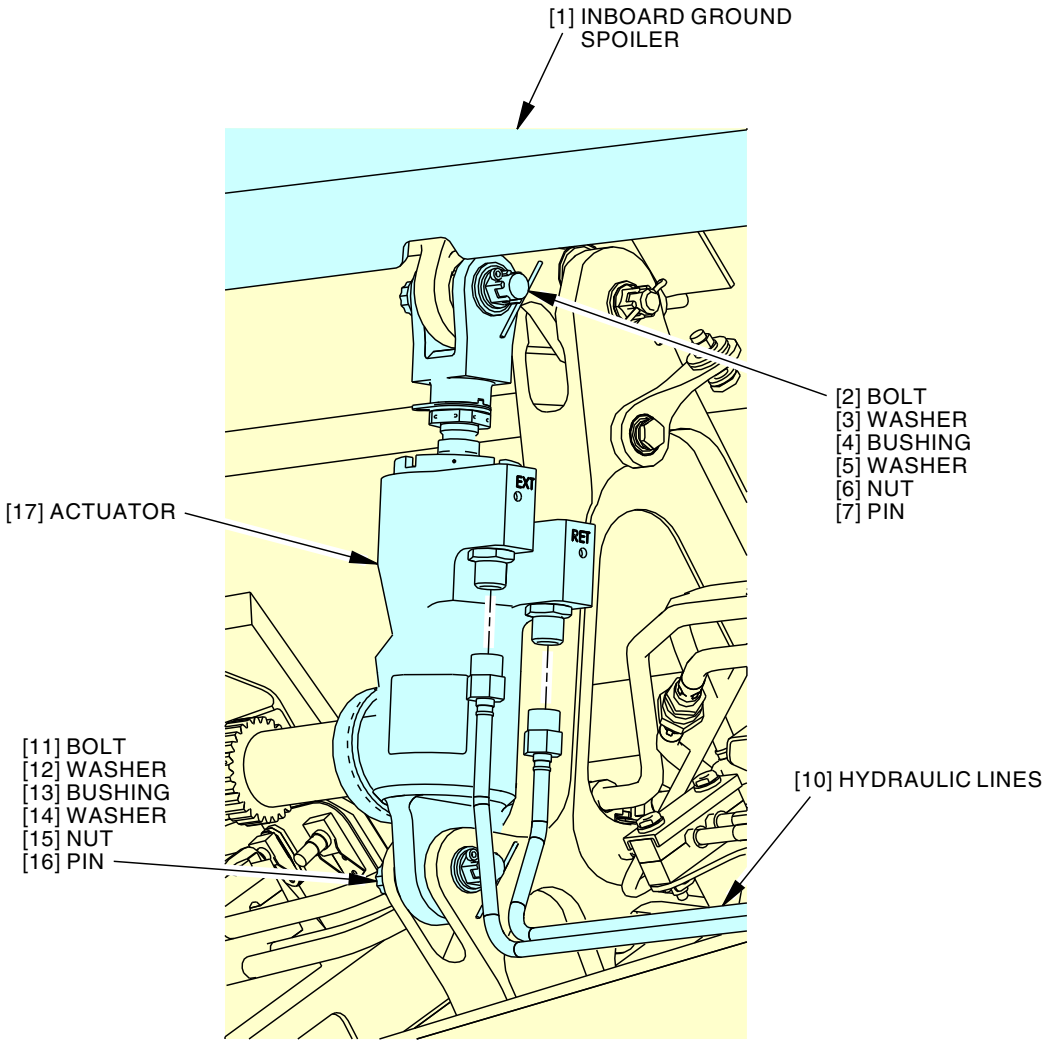
Inboard Ground Spoiler Actuator Installation
Figure 401/27-62-71-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



B

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Inboard Ground Spoiler Actuator Installation
Figure 401/27-62-71-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-71-400-801

3. Inboard Ground Spoiler Actuator Installation

(Figure 401)

A. General

(1) This task has the steps to install the inboard ground spoiler actuator.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-820-802	Ground Spoiler Adjustment (P/B 501)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)

C. Consumable Materials

Reference	Description	Specification
D00633	Grease - Aircraft General Purpose	BMS3-33

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Pin	27-62-71-01-195	SIA ALL
16	Pin	27-62-71-01-195	SIA ALL
17	Actuator	27-62-71-01-225	SIA ALL

E. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

F. Inboard Ground Spoiler Actuator Installation

SUBTASK 27-62-71-420-001

(1) Install the actuator [17]:

(a) Remove the caps from the hydraulic ports of the actuator [17].

(b) Put the actuator [17] in its position and make sure that the hydraulic lines [10] align with the fittings.

(c) Connect the actuator [17] rod end to the inboard ground spoiler [1]:

1) Apply grease, D00633 to the bolt [2].

2) Install bolt [2] with the head outboard, washer [3], bushing [4], washer [5], nut [6] and pin [7].

3) Tighten nut to 450 in-lb (51 N·m) to 690 in-lb (78 N·m).

(d) Connect the actuator [17] to the structure:

1) Apply grease, D00633 to the bolt [11].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Install bolt [11] with the head outboard, washer [12], bushing [13], washer [14], nut [15] and pin [16].

3) Tighten nut to 450 in-lb (51 N·m) to 690 in-lb (78 N·m).

SUBTASK 27-62-71-420-002

(2) Connect the hydraulic lines [10] to the actuator [17]:

(a) Remove the plugs from the hydraulic lines [10].

(b) Connect the hydraulic lines [10] to the actuator [17].

(c) Tighten the B-nuts on the hydraulic lines [10] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-62-71-860-006

(3) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

SUBTASK 27-62-71-860-007

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-71-870-001

(5) Move the speed brake control lever through its full cycle to bleed the spoiler actuators.

SUBTASK 27-62-71-700-001

(6) Make sure there are no leaks at the hydraulic lines.

SUBTASK 27-62-71-860-008

(7) Do the adjustment of the inboard ground spoiler actuator: Ground Spoiler Adjustment, TASK 27-62-00-820-802.

G. Inboard Ground Spoiler Actuator Installation Test

SUBTASK 27-62-71-820-001

(1) Do this task: Inboard Ground Spoiler Actuator Functional Test, TASK 27-62-71-700-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-71-860-009

(1) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-71-860-010

(2) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-71-860-011

(3) Put the SPOILER A and B switches in the ON position.

SUBTASK 27-62-71-610-001

(4) Fill the hydraulic reservoirs if it is necessary. To fill, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-71-700-801

4. Inboard Ground Spoiler Actuator Functional Test

A. General

(1) This task has the steps to do a functional test of the inboard ground spoiler actuator.

B. References

Reference	Title
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
552	Left Wing - Spoiler No. 6
652	Right Wing - Spoiler No. 7

E. Prepare for the Test

SUBTASK 27-62-71-860-013

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-71-480-002

(2) Install the protractor, COM-1691, on the outboard edge of the inboard ground spoilers 6 and 7.

SUBTASK 27-62-71-820-002

(3) Adjust the protractor, COM-1691, to zero.

F. Inboard Ground Spoiler Actuator Functional Test

SUBTASK 27-62-71-020-004

(1) Move the speed brake lever to the UP position to lift the spoilers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-71-020-005

(2) Make sure the spoilers No. 6 and 7 are 60 +/-2 degrees up from the retracted position.

SUBTASK 27-62-71-020-006

(3) Make sure the ground spoilers No. 6 and 7 align in the limit of 2 degrees.

SUBTASK 27-62-71-020-007

(4) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-71-820-003

(5) Make sure the spoilers move to the fully retracted position.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-71-860-014

(1) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

SUBTASK 27-62-71-080-001

(2) Remove the protractor, COM-1691, from the spoilers No. 6 and 7.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD GROUND SPOILER - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the outboard ground spoilers

(2) An installation of the outboard ground spoilers

(3) A functional test of the outboard ground spoilers.

B. This procedure is applicable to the left and right outboard ground spoilers.

TASK 27-62-91-000-801

2. Outboard Ground Spoiler Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-94-000-801	Outboard Ground Spoiler Actuator Removal (P/B 401)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1743	Set - Ground Lock, Outboard Spoiler Actuators Part #: C27001-51 Supplier: 81205

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

D. Prepare for the Removal

SUBTASK 27-62-91-860-002

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-91-860-003

(2) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-91-860-004

(3) Put the SPOILER A and SPOILER B switches to the OFF position to remove the hydraulic power from the flight spoilers.

NOTE: SPOILER A AND SPOILER B switches are on the P5-3 flight control panel.

SUBTASK 27-62-91-860-005

(4) Put the speed brake lever in the UP position to lift the ground spoilers.

SUBTASK 27-62-91-480-001

(5) Install the set, SPL-1743, for the applicable ground spoiler.

SUBTASK 27-62-91-860-006

(6) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

E. Outboard Ground Spoiler Removal

SUBTASK 27-62-91-020-001

(1) Disconnect the rod end of the spoiler actuator assembly [33] from the outboard ground spoiler [1] (TASK 27-62-94-000-801).

SUBTASK 27-62-91-020-002

(2) Remove the nut [2] and washer [3] to disconnect the bonding jumper [10] from the structure.

SUBTASK 27-62-91-020-003

(3) Remove the nut [30], washers [29], and bonding jumper [31] to disconnect the bonding jumper [32] from the structure.

(a) Discard the nut [30] and washers [29].

SUBTASK 27-62-91-020-009

(4) If it is necessary, loosen the skin panel fasteners above the center hinge bolt [11] and bolt [17].

SUBTASK 27-62-91-020-004

(5) Remove the outboard ground spoiler [1]:

(a) Remove the cotter pin [9], nut [8], washer [7], bushing [6], washer [5], and bolt [4] to disconnect the outboard hinge fitting.

(b) Remove the cotter pin [28], nut [27], washer [26], bushing [25], washer [24], and bolt [23] to disconnect the inboard hinge fitting.

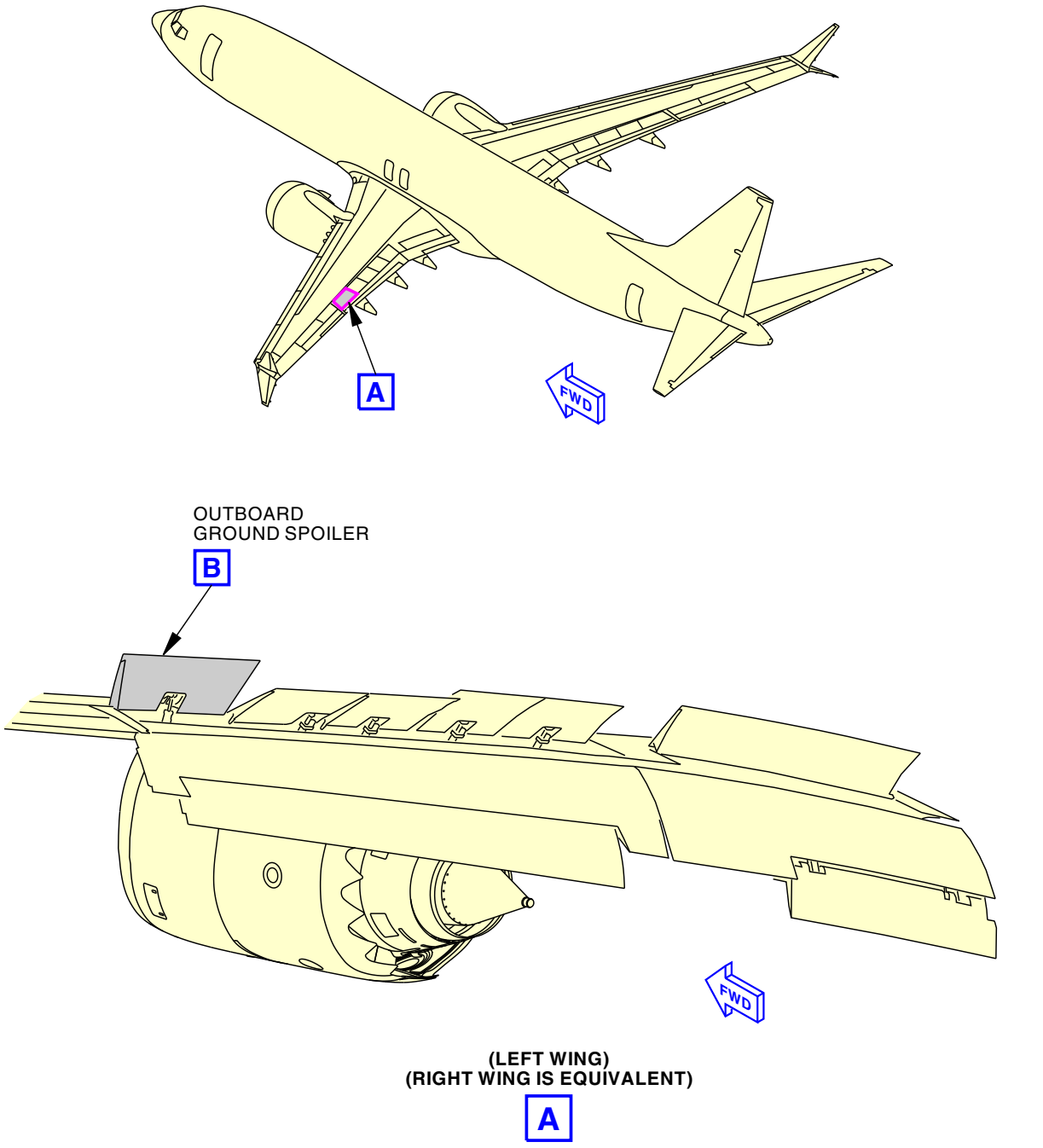
(c) Remove the cotter pin [16], nut [15], washer [14], bushing [13], washer [12], and bolt [11] to disconnect the center outboard hinge fitting.

(d) Remove the cotter pin [22], nut [21], washer [20], bushings [19], washer [18], and bolt [17] to disconnect the center inboard hinge fitting.

(e) Remove the outboard ground spoiler [1] from the airplane.

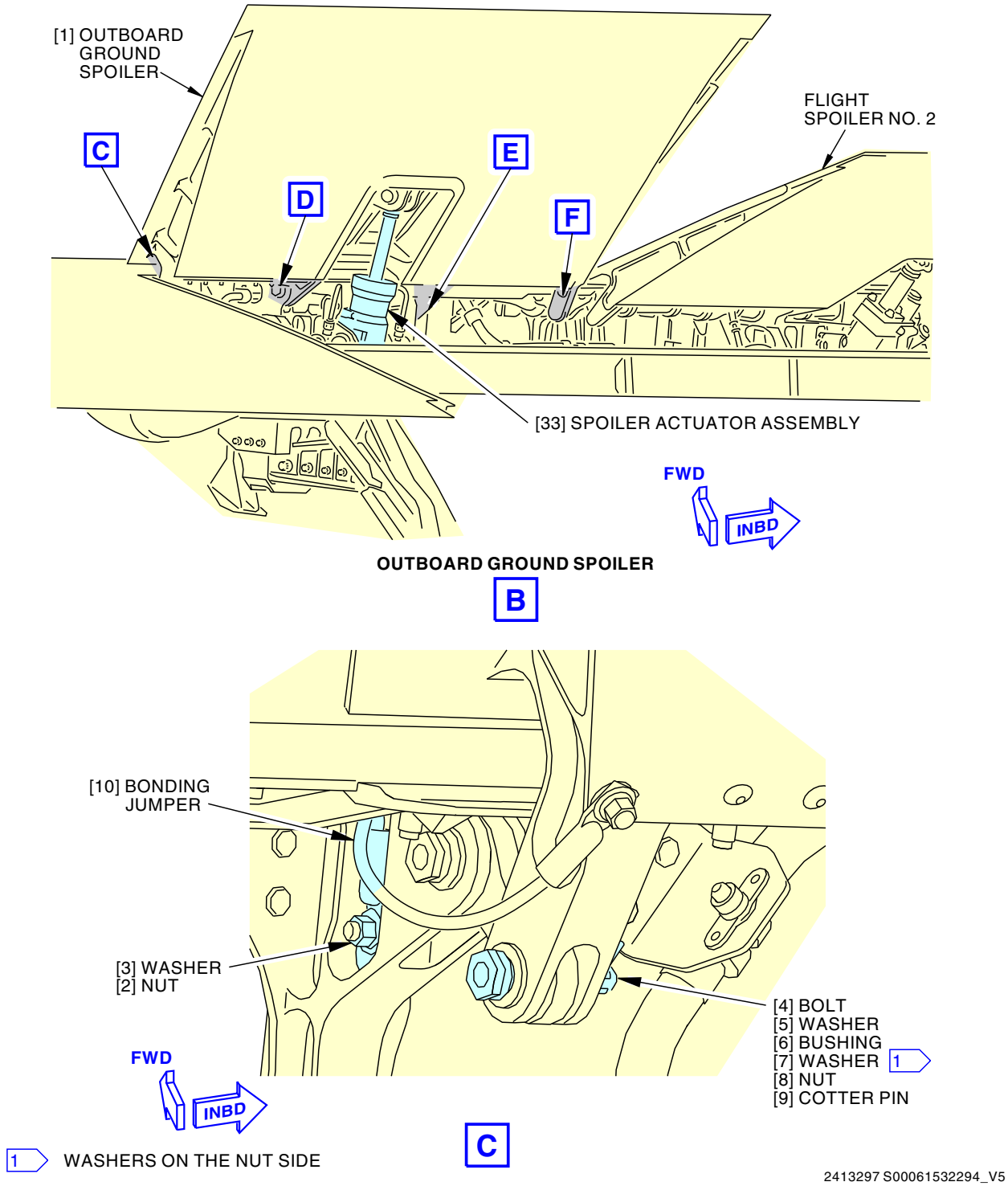
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



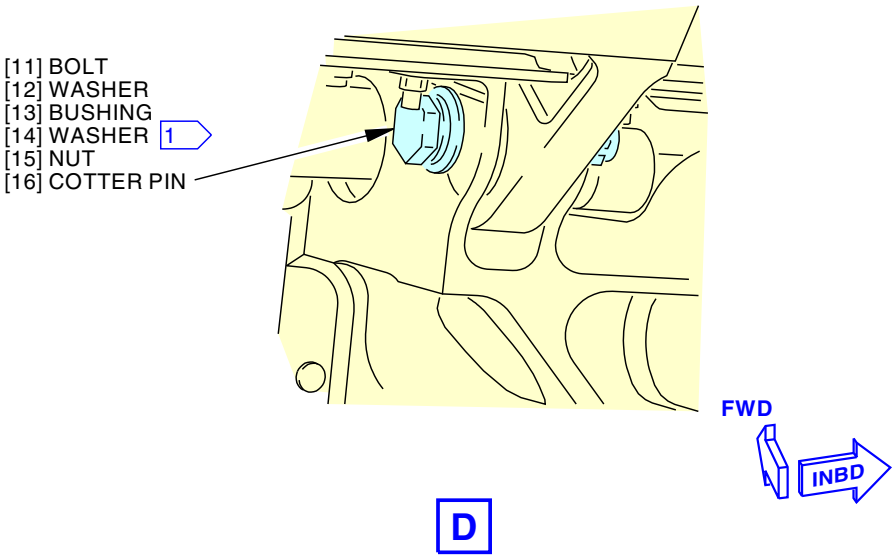
Outboard Ground Spoiler Installation
Figure 401/27-62-91-990-801 (Sheet 1 of 4)

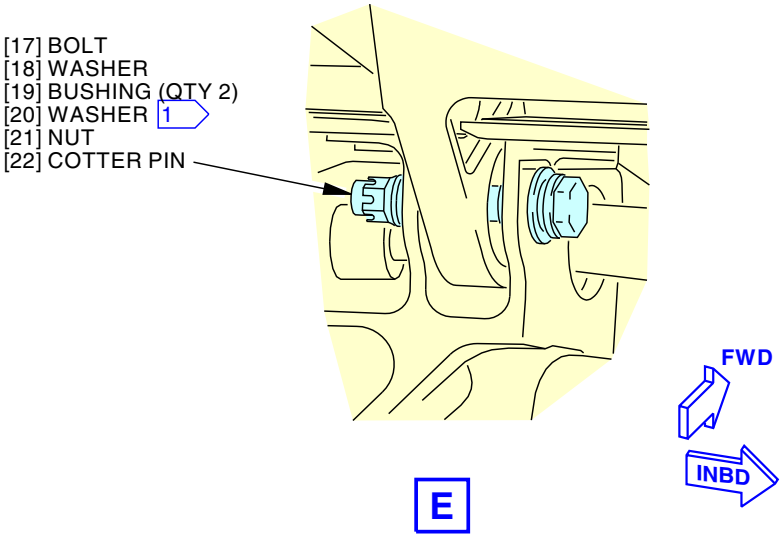
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Ground Spoiler Installation
Figure 401/27-62-91-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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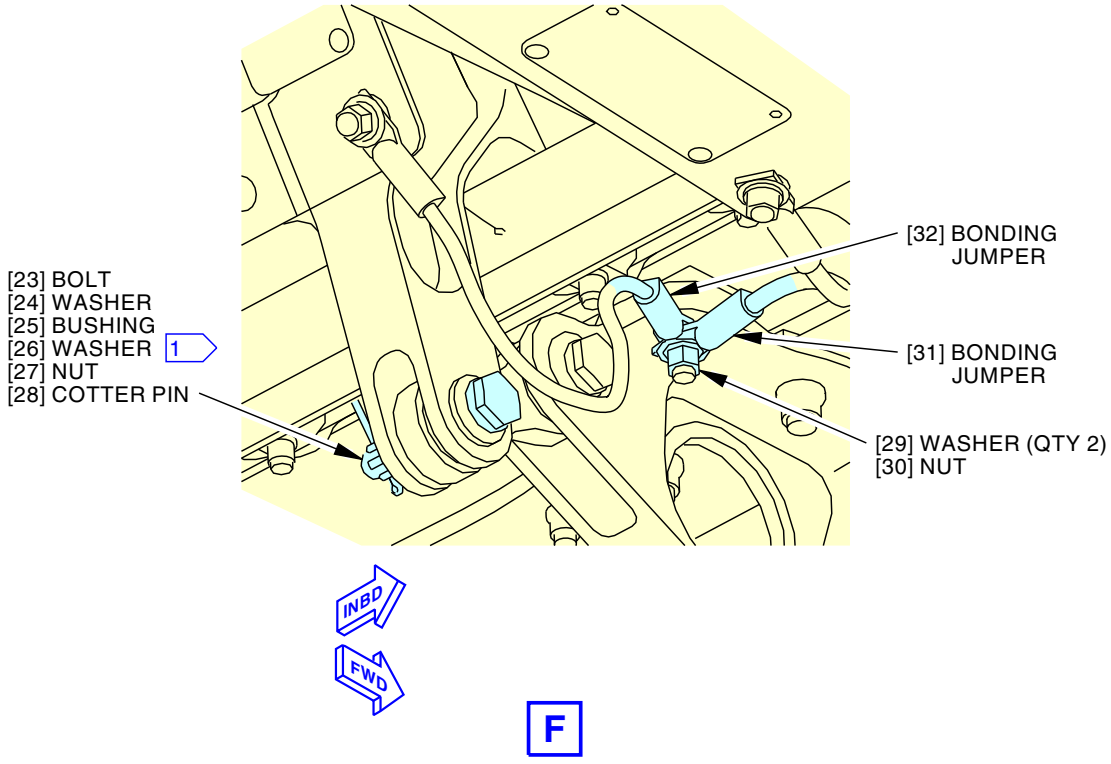
Outboard Ground Spoiler Installation
Figure 401/27-62-91-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Ground Spoiler Installation
Figure 401/27-62-91-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-91-400-801

3. Outboard Ground Spoiler Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-820-802	Ground Spoiler Adjustment (P/B 501)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
27-62-41-720-801	Ground Spoiler Control Module Functional Test (P/B 401)
27-62-94-400-801	Outboard Ground Spoiler Actuator Installation (P/B 401)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES
SWPM 20-20-10 Paragraph 4.C	Category 1 Unsealed and Category 6 Fillet Sealed Pre-Installed Ground Stud Assembly
SWPM 20-20-10 Paragraph 4.D	Category 2 Fay Sealed Pre-Installed Ground Stud Assembly
SWPM 20-20-10 Paragraph 4.E	Category 1 Unsealed and Category 6 Fillet Sealed Direct Ground Stud Assembly

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-614	Bonding Meters - Non-Intrinsically Safe (For use in outside Class I, Divisions I & II non-hazardous locations. For hazardous locations, use COM-1550). Part #: 247000 Supplier: 00426 Part #: 620LK Supplier: 1CRL2 Part #: BLR-0003-XX Supplier: KC432 Part #: BT51 Supplier: 00426 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659 Opt Part #: 247001 Supplier: 00426
SPL-1743	Set - Ground Lock, Outboard Spoiler Actuators Part #: C27001-51 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A50110	Sealant - Fuel Tank	BMS5-45 Class B-2
A50155	Sealant - Fuel Tank	BMS5-45 Class C
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B

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(Continued)

Reference	Description	Specification
A50296	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class C
A50337	Sealant - Fuel Tank	BMS5-45 Class B
A50359	Sealant - Low Density, Non-Chromate Type	BMS5-142 Type II Class B
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
C00175	Primer - Urethane Compatible, Corrosion Resistant	BMS10-79 Type III
C50075	Coating - Protective Enamel (BAC 707 Gray Color)	BMS10-60 Type II
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Outboard ground spoiler	27-62-91-01-100	SIA ALL
		27-62-91-01-105	SIA ALL
9	Cotter pin	27-62-91-01-030	SIA ALL
16	Cotter pin	27-62-91-01-035	SIA ALL
22	Cotter pin	27-62-91-01-035	SIA ALL
28	Cotter pin	27-62-91-01-030	SIA ALL
29	Washer	27-62-91-01-020	SIA ALL
30	Nut	27-62-91-01-025	SIA ALL

E. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

F. Outboard Ground Spoiler Installation

SUBTASK 27-62-91-420-001

(1) Install the outboard ground spoiler [1]:

(a) If it is necessary, use this task during installation: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(b) Put the outboard ground spoiler [1] in its position on the airplane.

(c) Install the bolt [17] with the head inboard, washer [18], bushings [19], washer [20], nut [21], and cotter pin [22] in the center inboard hinge fitting.

(d) Install the bolt [11] with the head outboard, washer [12], bushing [13], washer [14], nut [15], and cotter pin [16] in the center outboard hinge fitting.

(e) Install the bolt [23] with the head inboard, washer [24], bushing [25], washer [26], nut [27], and cotter pin [28] in the inboard hinge.

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(f) Install the bolt [4] with the head outboard, washer [5], bushing [6], washer [7], nut [8], and cotter pin [9] in the outboard hinge fitting.

(g) Install the washer [3] and nut [2] to connect the bonding jumper [10] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to clean the mating surfaces of the airplane structure, nut [2], washer [3], and bonding jumper [10].

2) Method 1 (preferred). Apply sealant, A50110, sealant, A50155, sealant, A50231, or sealant, A50296, to the mating surfaces of the ground stud, nut [2], washer [3], and bonding jumper [10] (SWPM 20-20-10 Paragraph 4.D).

3) Install the bonding jumper [10], washer [3], and nut [2].

4) Tighten the nut [2] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

a) Method 1. Make sure that there is squeeze out around all the interfaces of each component.

5) Measure the electrical resistance between the bonding jumper [10] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

6) Method 2 (optional). Apply a fillet seal with sealant, A50337, sealant, A50231, or sealant, A50359, to cover the nut [2], washer [3], and bonding jumper [10] (SWPM 20-20-10 Paragraph 4.C).

(h) Install the new washers [29] and new nut [30] to connect the bonding jumper [31] and bonding jumper [32] to the structure.

1) Use cotton wiper, G00034, moist in solvent, B00184, to final clean the mating surfaces of the airplane structure, nut [30], washers [29], bonding jumper [31], and bonding jumper [32].

2) Install the nut [30], washers [29], bonding jumper [31], and bonding jumper [32].

3) Tighten the nut [30] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

4) Measure the electrical resistance between the bonding jumper [32] and airplane structure (SWPM 20-20-00).

a) Use a non-intrinsically safe bonding meter, COM-614.

b) Make sure that the electrical bonding resistance is 0.001 ohm (1.0 milliohm) or less.

5) Apply a fillet seal with sealant, A50337, sealant, A50231, or sealant, A50359, to cover the nut [30], washers [29], bonding jumper [31], and bonding jumper [32] (SWPM 20-20-10 Paragraph 4.E).

6) Apply finish with primer, C00175, and coating, C50075.

SUBTASK 27-62-91-420-003

(2) If it is necessary, tighten the skin panel fasteners above the center hinge bolt [11] and bolt [17].

(a) Rotate the bolt [11] and bolt [17] to check the clearances between the cotter pin [16], cotter pin [22], and skin panel fasteners.

(b) If the cotter pin [16] and cotter pin [22] contact skin panel fasteners, flatten the head of the cotter pin [16] and cotter pin [22] as required to achieve the clearances.

NOTE: Visible defects in the cotter pins are acceptable.

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SUBTASK 27-62-91-980-001

(3) Move the outboard ground spoiler [1] through its full travel.

(a) Make sure that the outboard ground spoiler [1] moves freely.

SUBTASK 27-62-91-420-002

(4) Connect the rod end for the spoiler actuator assembly [33] to the outboard ground spoiler [1] (TASK 27-62-94-400-801).

SUBTASK 27-62-91-860-007

(5) Make sure that hydraulic power is off.

SUBTASK 27-62-91-080-001

(6) Remove the set, SPL-1743.

(a) Inspect the lockwire and locking key for damage after the spoiler tool is removed.

SUBTASK 27-62-91-720-002

(7) Unlatch the SPOILER ACTUATOR status message, do this task: Ground Spoiler Control Module Functional Test, TASK 27-62-41-720-801.

NOTE: The SPOILER ACTUATOR status message can be latched when the spoilers are locked in the up position.

SUBTASK 27-62-91-860-008

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

SUBTASK 27-62-91-860-014

(9) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-91-860-009

(10) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-91-860-013

(11) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-91-860-010

(12) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-91-820-001

(13) Do this task: Ground Spoiler Adjustment, TASK 27-62-00-820-802.

SUBTASK 27-62-91-720-001

(14) Do this task: Outboard Ground Spoiler Test, TASK 27-62-91-000-802.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-91-000-802

4. Outboard Ground Spoiler Test

A. References

Reference	Title
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

D. Prepare for the Test

SUBTASK 27-62-91-860-012

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-91-480-002

(2) Install the protractor, COM-1691 on the outboard ground spoilers 1 and 12.

SUBTASK 27-62-91-820-002

(3) Adjust the protractor, COM-1691 to 0°arc (0 rad).

E. Outboard Ground Spoiler Functional Test

SUBTASK 27-62-91-020-005

(1) Move the speed brake lever to the UP position to lift the spoilers.

SUBTASK 27-62-91-020-006

(2) Make sure the spoilers No. 1 and 12 are 60 ±2°arc (1 ±0 rad) up from the retracted position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-91-020-007

(3) Make sure the ground spoilers No. 1 and 12 align in the limit of 2°arc (0 rad).

SUBTASK 27-62-91-020-008

(4) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-91-820-003

(5) Make sure the spoilers move to the fully retracted position.

SUBTASK 27-62-91-410-001

(6) Put the Airplane Back to Its Usual Condition

(a) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

(b) Remove the protractor, COM-1691 from the spoilers No. 1 and 12.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD GROUND SPOILER ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the outboard ground spoiler actuator.

(2) An installation of the outboard ground spoiler actuator.

B. In this procedure the outboard ground spoiler actuator is referred to as the "actuator".

TASK 27-62-94-000-801

2. Outboard Ground Spoiler Actuator Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-803	Extend the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-800-802	Depressurization of the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1110	Container - Hydraulic Fluid Resistant, 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

D. Prepare for the Removal

SUBTASK 27-62-94-860-002

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-94-860-003

(2) Put the SPOILER A and B switches to the OFF position to remove the hydraulic power from the flight spoilers.

NOTE: SPOILER A and B switches are on the flight control panel (P5-3).

SUBTASK 27-62-94-860-004

(3) Put the speed brake lever in the UP position to lift the spoilers.

SUBTASK 27-62-94-860-005

(4) Do this task: Extend the Trailing Edge Flaps, TASK 27-51-00-860-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-94-860-006

(5) Do this task: Depressurization of the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-802.

E. Actuator Removal

SUBTASK 27-62-94-020-001

(1) Disconnect the piston rod end of the actuator [10] from the outboard ground spoiler [1]:

(a) Remove the pin [8], nut [7], washer [6], bushing [5], bushing [4], washer [19], washer [3] and the bolt [2] from the piston rod end.

SUBTASK 27-62-94-020-002

(2) Disconnect the hydraulic lines [9] from the actuator [10].

(a) Put a 5 gallon (19 liter) hydraulic fluid resistant container, STD-1110 below the actuator [10] to catch the hydraulic fluid.

(b) Disconnect the hydraulic lines [9] from the actuator [10].

(c) Turn the hydraulic lines [9] at the swivel joints to access the actuator [10].

(d) Install the plugs in the hydraulic lines [9].

SUBTASK 27-62-94-020-003

(3) Remove the bolts [13], washers [14], pillow blocks [11], and split ball bearings [12] from the structure.

SUBTASK 27-62-94-020-004

(4) Remove the actuator [10] from the airplane.

SUBTASK 27-62-94-860-001

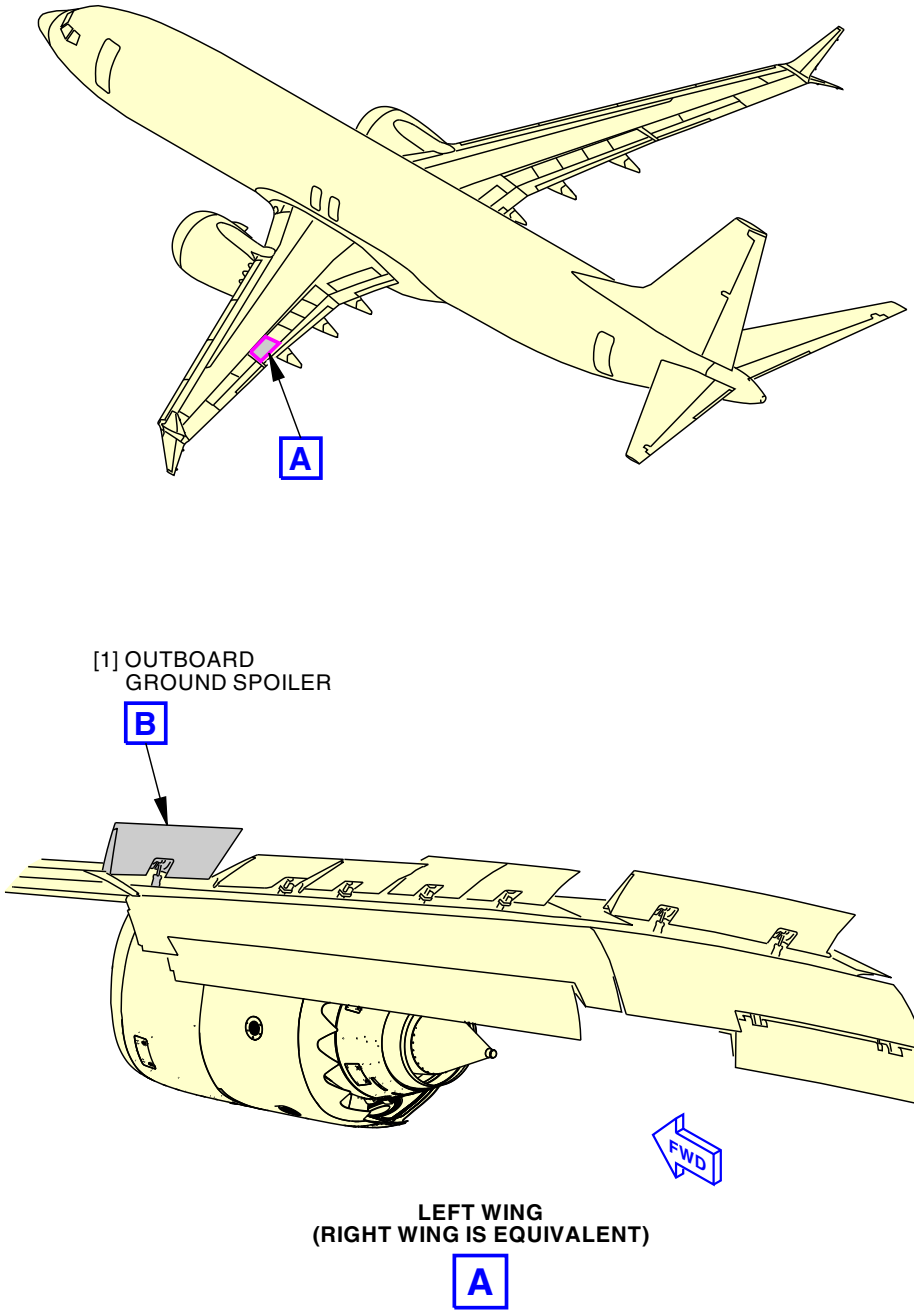
(5) Remove the restrictor [18], packing [17], union [15] and packing [16] from the hydraulic ports of the actuator [10].

SUBTASK 27-62-94-480-001

(6) Install caps in the hydraulic ports of the actuator [10].

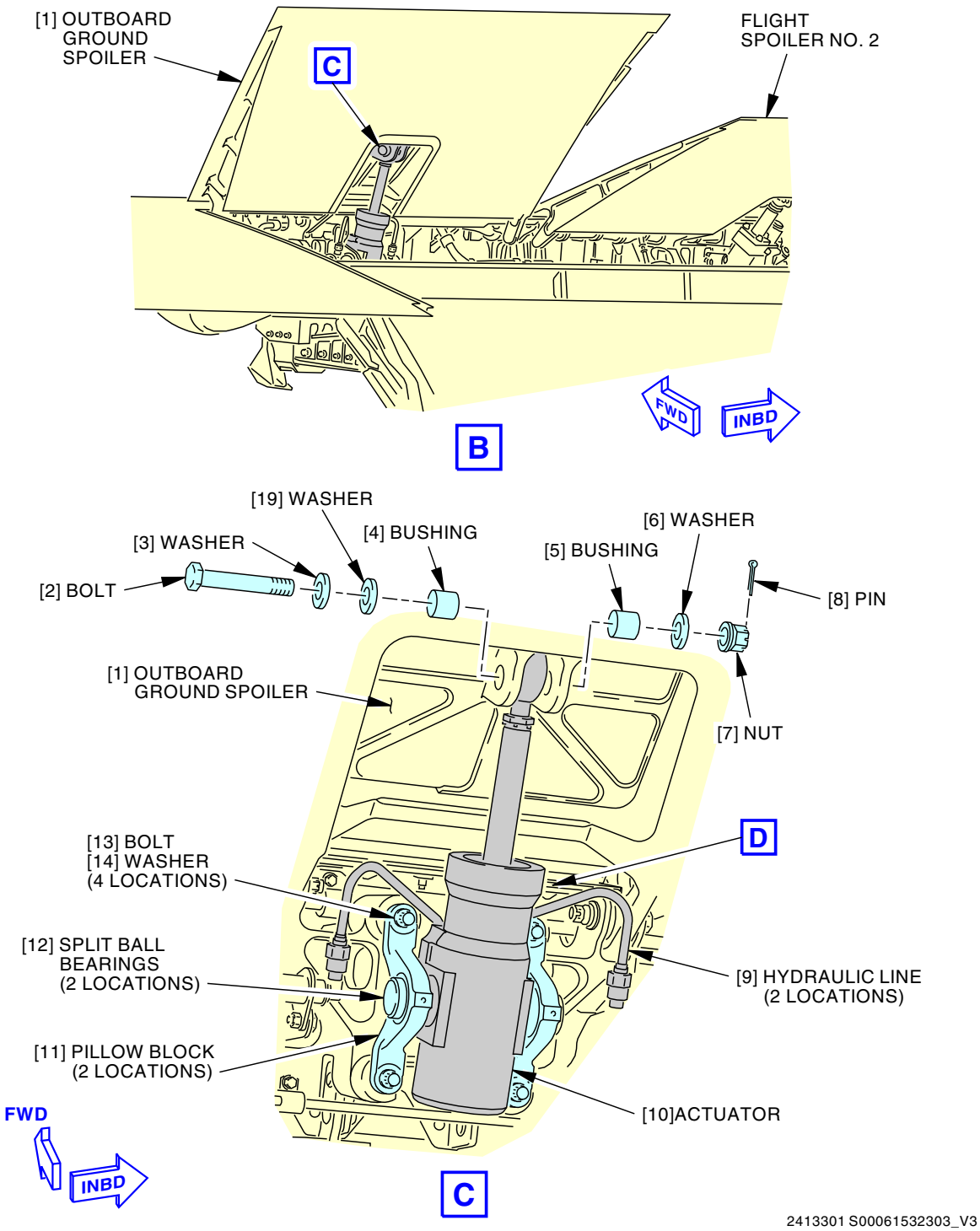
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



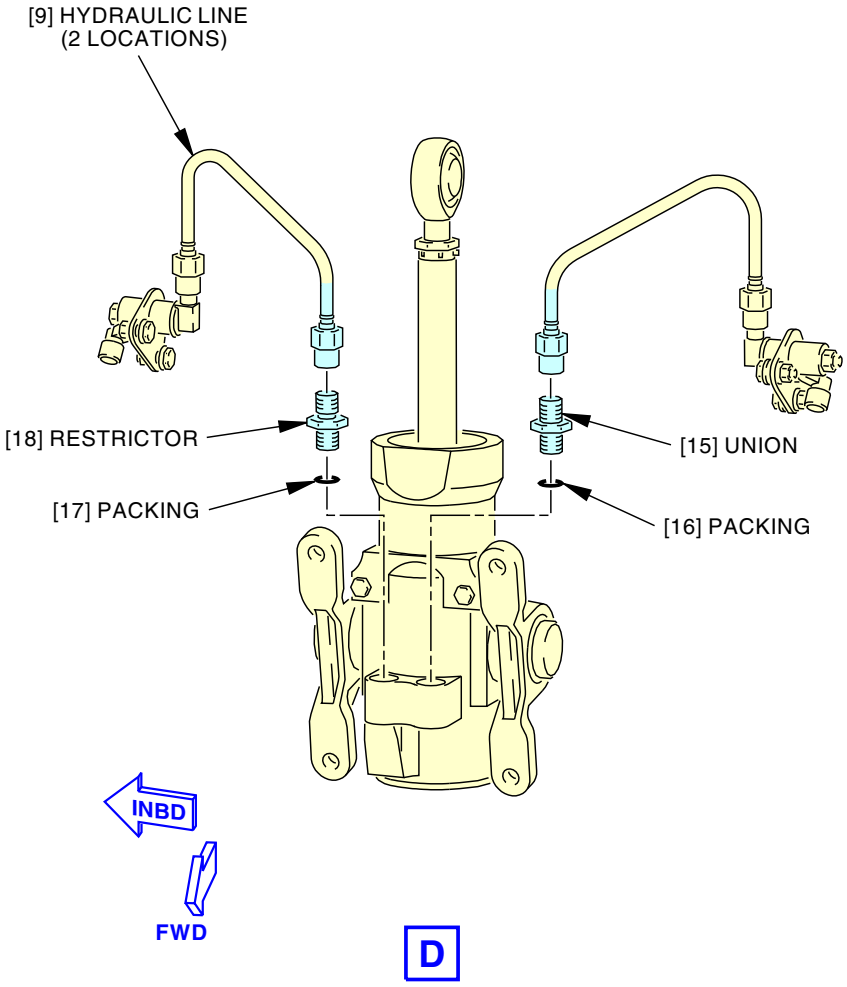
Outboard Ground Spoiler Actuator Installation
Figure 401/27-62-94-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Outboard Ground Spoiler Actuator Installation
Figure 401/27-62-94-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Outboard Ground Spoiler Actuator Installation
Figure 401/27-62-94-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-62-94-400-801

3. Outboard Ground Spoiler Actuator Installation

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-820-802	Ground Spoiler Adjustment (P/B 501)
27-62-00-840-801	Shut Down the Speed Brake Hydraulic Systems A and B (P/B 201)
27-62-00-840-802	Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition (P/B 201)
27-62-91-000-802	Outboard Ground Spoiler Test (P/B 401)

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
D00633	Grease - Aircraft General Purpose	BMS3-33
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Pin	27-62-94-01-125	SIA ALL
10	Actuator	27-62-94-01-155	SIA ALL
16	Packing	27-62-94-01-180	SIA ALL
17	Packing	27-62-94-01-180	SIA ALL

D. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

E. Actuator Installation

SUBTASK 27-62-94-420-001

(1) Remove the caps from the hydraulic ports.

SUBTASK 27-62-94-640-001

(2) Apply MCS 352B fluid, D00054 or hydraulic fluid, D00153 to the packing [16], packing [17], union [15] and restrictor [18].

SUBTASK 27-62-94-420-004

(3) Install the packing [16], packing [17], union [15], and restrictor [18] in the hydraulic ports at the actuator [10].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-62-94-420-002

(4) Install the actuator [10]:

NOTE: Make sure that the actuator is installed with the actuator ports connected to the hydraulic lines that face towards the spoiler panel.

(a) Put the actuator [10] in its position and make sure the hydraulic lines [9] align with the fittings.

(b) Install pillow blocks [11] on the actuator [10]:

1) Apply grease, D00633 to the split ball bearings [12].

2) Assemble the split ball bearings [12].

3) Install split ball bearings [12] in pillow blocks [11].

4) Make sure the split ball bearings [12] move freely.

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

5) Apply Cor-Ban 27L Compound, G50237 to the bolts [13].

6) Install the bolts [13] and washers [14].

7) Tighten the bolts [13] to 141 in-lb (15.9 N·m) - 172 in-lb (19.4 N·m).

(c) Connect the piston rod to the ground outboard ground spoiler [1]:

1) Apply grease, D00633 to all surfaces of the bolt [2], bushing [4] and bushing [5].

2) Install the bolt [2], washer [3], washer [19], bushing [4], bushing [5], washer [6], nut [7], and pin [8] in the piston rod.

3) Tighten the nut [7] to 660 in-lb (74.6 N·m) - 780 in-lb (88.1 N·m).

SUBTASK 27-62-94-420-003

(5) Connect the hydraulic lines [9] to the actuator [10]:

(a) Remove the plugs from the hydraulic lines [9].

(b) Apply hydraulic fluid, D00153 or MCS 352B fluid, D00054 to the hydraulic fittings.

(c) Connect the hydraulic lines [9] to the union [15] and restrictor [18] on the actuator [10].

(d) Tighten the B-nuts on the hydraulic lines [9] to 140 ±7 in-lb (16 ±1 N·m).

SUBTASK 27-62-94-860-007

(6) Do this task: Pressurization of the Speed Brake Hydraulic Systems A and B to its Usual Condition, TASK 27-62-00-840-802.

SUBTASK 27-62-94-860-008

(7) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-94-870-001

(8) Move the speed brake control lever to bleed the spoiler actuators.

SUBTASK 27-62-94-700-001

(9) Make sure there is no leakage of hydraulic fluid at the actuator [10].

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SUBTASK 27-62-94-820-001

(10) Do this task: Ground Spoiler Adjustment, TASK 27-62-00-820-802.

SUBTASK 27-62-94-820-002

(11) Do this task: Outboard Ground Spoiler Test, TASK 27-62-91-000-802.

F. Put the Airplane Back to Its Usual Condition.

SUBTASK 27-62-94-860-009

(1) Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-62-94-860-010

(2) Move the speed brake lever to the DOWN position to the lower the spoilers.

SUBTASK 27-62-94-860-011

(3) Do this task: Shut Down the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-840-801.

SUBTASK 27-62-94-860-012

(4) Put the SPOILER A and B switches in the ON position.

——— END OF TASK ———

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OUTBOARD GROUND SPOILER ACTUATOR - ADJUSTMENT/TEST

1. General

A. This Procedure has this task:

(1) A functional test of the outboard ground spoiler actuator.

TASK 27-62-94-720-801

2. Outboard Ground Spoiler Actuator Test

A. References

Reference	Title
27-61-00-840-801	Shut Down the Spoiler Hydraulic Systems A and B (P/B 201)
27-62-00-800-801	Apply Pressure to the Speed Brake Hydraulic Systems A and B (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245

C. Location Zones

Zone	Area
210	Subzone - Control Compartment - Body Station 178.00 to Body Station 259.50
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

D. Prepare for the Test

SUBTASK 27-62-94-860-014

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Do this task: Apply Pressure to the Speed Brake Hydraulic Systems A and B, TASK 27-62-00-800-801.

SUBTASK 27-62-94-480-002

(2) Install the protractor, COM-1691 on the outboard ground spoilers 1 and 12.

SUBTASK 27-62-94-820-003

(3) Adjust the protractor, COM-1691 to zero.

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E. Outboard Ground Spoiler Actuator Functional Test

SUBTASK 27-62-94-020-005

(1) Move the speed brake lever to the UP position to lift the spoilers.

SUBTASK 27-62-94-020-006

(2) Make sure the spoilers No. 1 and 12 are 60 +/-2 degrees up from the retracted position.

SUBTASK 27-62-94-020-007

(3) Make sure the ground spoilers No. 1 and 12 align in the limit of 2 degrees.

SUBTASK 27-62-94-020-008

(4) Move the speed brake lever to the DOWN position to lower the spoilers.

SUBTASK 27-62-94-820-004

(5) Make sure the spoilers move to the fully retracted position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-62-94-410-001

(1) Do this task: Shut Down the Spoiler Hydraulic Systems A and B, TASK 27-61-00-840-801.

(2) Remove the protractor, COM-1691 from the spoilers No. 1 and 12.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

OUTBOARD GROUND SPOILER ACTUATOR - INSPECTION/CHECK

1. General

A. This task supplies the data for a dimensional inspection of the outboard ground spoiler actuator.

B. This task does not remove or install the outboard ground spoiler actuator, refer to the Outboard Ground Spoiler Actuator - Removal/Installation for procedures to remove and install the outboard ground spoiler actuator.

TASK 27-62-94-200-801

2. Outboard Ground Spoiler Actuator Inspection

(Figure 601)

A. General

(1) This procedure gives wear limits and repair data for the outboard ground spoiler actuator.

B. References

Reference	Title
27-62-94-000-801	Outboard Ground Spoiler Actuator Removal (P/B 401)
27-62-94-400-801	Outboard Ground Spoiler Actuator Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
566	Left Wing - Spoiler No. 1
666	Right Wing - Spoiler No. 12

E. Procedure

SUBTASK 27-62-94-020-009

(1) Remove the outboard ground spoiler actuator. To remove it, do this task: Outboard Ground Spoiler Actuator Removal, TASK 27-62-94-000-801.

SUBTASK 27-62-94-020-010

(2) Use these tools to check for wear on the parts of the outboard ground spoiler actuator:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097

SUBTASK 27-62-94-020-011

(3) Examine the parts of the outboard ground spoiler actuator for worn areas:

(a) Remove the parts to be checked.

(b) Measure the bolts, bearing, and bushings as necessary with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions that follow.

(d) If the parts are not in the tolerance, replace the part as required.

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Table 601/27-62-94-993-801 WEAR LIMITS TABLE

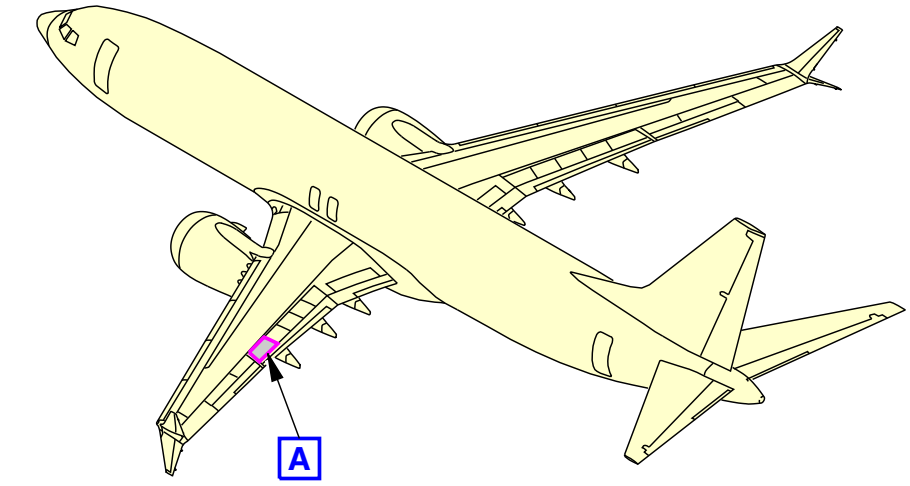
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.7500 in 19.05 mm	0.7515 in 19.09 mm	0.7535 in 19.14 mm	0.0050 in 0.13 mm
#1 BUSHING	O.D.	0.7485 in 19.01 mm	0.7490 in 19.02 mm	0.7470 in 18.97 mm	
#2 BUSHING	I.D.	0.6245 in 15.86 mm	0.6250 in 15.88 mm	0.6255 in 15.89 mm	0.0025 in 0.06 mm
#2 BOLT	O.D.	0.6230 in 15.82 mm	0.6240 in 15.85 mm	0.6226 in 15.81 mm	
#3 BEARING	I.D.	0.6245 in 15.86 mm	0.6250 in 15.88 mm	0.6255 in 15.89 mm	0.0025 in 0.06 mm
#3 BOLT	O.D.	0.6230 in 15.82 mm	0.6240 in 15.85 mm	0.6226 in 15.81 mm	

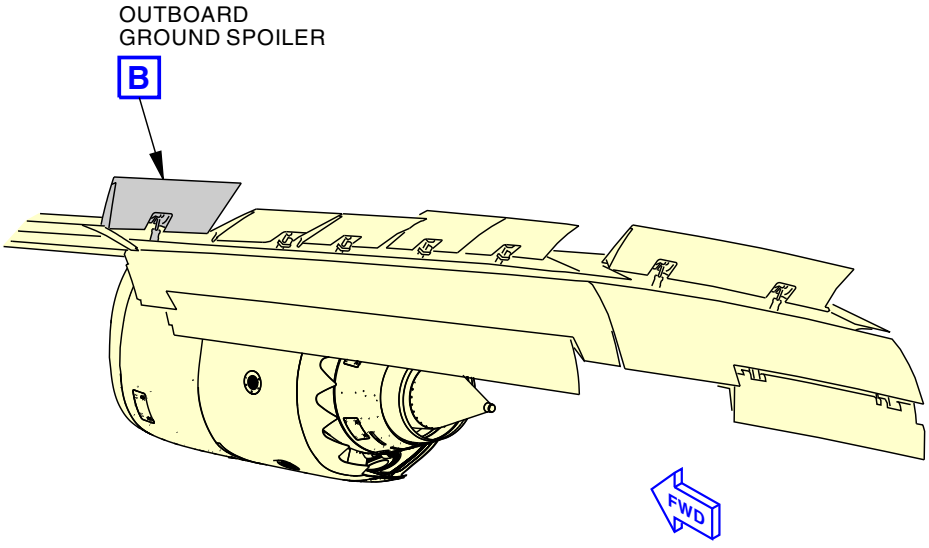
SUBTASK 27-62-94-020-012

(4) Install the outboard ground spoiler actuator. To install it, do this task: Outboard Ground Spoiler Actuator Installation, TASK 27-62-94-400-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details





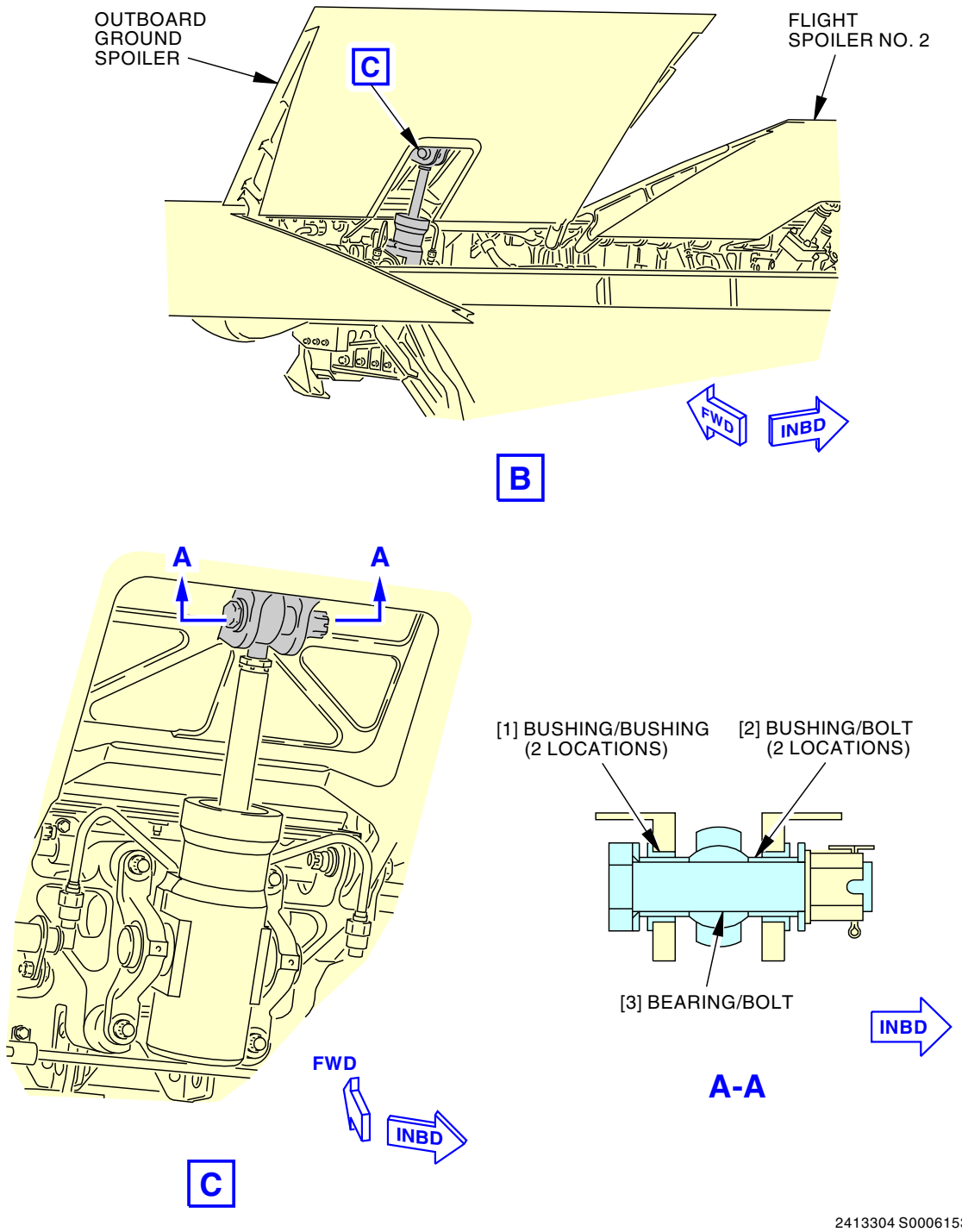
LEFT WING
(RIGHT WING IS EQUIVALENT)

A

2413303 S00061532309_V1

Outboard Ground Spoiler Actuator Wear Limits
Figure 601/27-62-94-990-802 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413304 S00061532310_V1

Outboard Ground Spoiler Actuator Wear Limits
Figure 601/27-62-94-990-802 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure contains these tasks for the leading edge (LE) flap and slat control system:

(1) A task to deactivate the leading edge flaps and slats

(2) A task to reactivate the leading edge flaps and slats

(3) A task to operate the leading edge flaps and slats with primary control

(4) A task to operate the leading edge flaps and slats with alternate control

(5) A task to extend the leading edge flaps and slats

(6) A task to retract the leading edge flaps and slats

(7) A task to install the leading edge flap and slat locks

(8) A task to remove the leading edge flap and slat locks

TASK 27-81-00-040-801

2. Leading Edge Flaps and Slats - Deactivation

(Figure 201, Figure 202, Figure 203)

A. General

WARNING	MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION	MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Before you do maintenance on the leading edge flaps and slats, you must deactivate the leading edge control surfaces. This is to prevent injury to persons and damage to equipment because of accidental operation of the leading edge control surfaces.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
29-21-00-000-802	Standby Hydraulic System Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

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(Continued)

Reference	Title
SWPM 20-60-03	Special Protection of Electrical Connectors

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205
SPL-1746	Pin - Lockout, L.E. Cruise Depressurization Valve Part #: C27038-6 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

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F. Prepare for the Deactivation

SUBTASK 27-81-00-480-001

WARNING MAKE SURE THAT THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONS, AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed in the nose and main landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801

SUBTASK 27-81-00-860-001

(2) Make sure the trailing edge flaps and the leading edge flaps and slats are in the retracted position. If they are not in the retracted position, do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-81-00-860-002

(3) If hydraulic systems A and B are pressurized, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-00-860-003

(4) If the standby hydraulic system is pressurized, do this task: Standby Hydraulic System Power Removal, TASK 29-21-00-000-802.

(5) Make sure the PSEU (Proximity Sensor Electronic Unit) is in GROUND MODE (Return the Airplane to the Ground Mode, TASK 32-09-00-860-802).

G. Deactivate the Leading Edge Flaps and Slats in the Retract (UP) Position

SUBTASK 27-81-00-860-004

(1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-81-00-860-005

(2) Make sure the ALTERNATE FLAPS ARM switch is in the OFF position.

SUBTASK 27-81-00-210-001

(3) Attach a DO-NOT-OPERATE tag on the flap control lever and the ALTERNATE FLAPS switches.

SUBTASK 27-81-00-860-006

(4) Move the manual override lever (handle) on the LE cruise depressurization valve to the OFF position (Figure 201):

(a) If the valve has a tab, then cut the tab from the valve (SB 27-1242). This will prevent possible personnel injury.

(b) Remove the lockwire from the manual override lever on the LE cruise depressurization valve.

(c) Move the manual override lever on the LE cruise depressurization valve to the OFF position.

NOTE: Do not force movement of the lever with tools.

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1) If you cannot move the manual override lever, use the FSEU to operate the LE cruise depressurization valve:

NOTE: Two persons will be necessary when the FSEU is used to operate the LE cruise depressurization valve.

a) To get access to the main equipment center, do this step:

Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

b) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

c) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

d) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

e) Push the NO button until OTHER FUNCTNS? shows on the display.

f) Push the YES button to select OTHER FUNCTNS? on the FSEU.

g) Push the YES button to select SET OUTPUTS? from the OTHER FUNCTNS? menu.

h) Push the YES button to select LE DEPR VALVE? from the SET OUTPUTS? menu.

WARNING MAKE SURE THAT YOU MOVE THE MANUAL OVERRIDE HANDLE TO THE OFF POSITION AND INSTALL THE RIG PIN IN LESS THAN 75 SECONDS. THE FSEU WILL AUTOMATICALLY CHANGE THE POSITION OF THE VALVE AND THE OVERRIDE HANDLE AFTER 75 SECONDS. THE MANUAL OVERRIDE HANDLE CAN MOVE SUDDENLY AND CAUSE INJURY TO PERSONS.

i) Push the YES button at the SET ON? display.

NOTE: This will drive the valve to the closed position.

j) Move the manual override lever (handle) on the LE cruise depressurization valve to the OFF position.

NOTE: Do not force movement of the lever with tools.

k) If you still cannot move the manual override lever (handle) on the LE cruise depressurization valve, then do these steps :

<1> Move the flaps and slats to the fully retracted position, if necessary.

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WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

<2> Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

<3> Move the flap control lever to the UP position to retract the flaps and slats (if not retracted).

<4> Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

<5> Use the FSEU to operate the valve again.

(d) Install the lockout pin, SPL-1746 in the manual override lever (handle) of the cruise depressurization valve to keep the handle in the OFF position.

(e) Attach a DO-NOT-REMOVE tag on the rig pin or lockout pin, SPL-1746.

SUBTASK 27-81-00-480-002

(5) Install the lock, SPL-1675 on the standby hydraulic module to prevent LE devices extension by the standby hydraulic system. Do the steps that follow:

(a) Disconnect the electrical connector from the leading edge standby drive shutoff valve.

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion (TASK 20-60-07-910-802).

NOTE: The inspection of the electrical connector (s) can be done after the removal step or before the installation step of the electrical connector (s). This is an operator option.

(c) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

WARNING MAKE SURE THAT THE MANUAL OVERRIDE LEVER IS IN POSITION 1 TO PREVENT THE MOVEMENT OF THE LEADING EDGE SLATS. IF THE LEADING EDGE SLATS MOVE, DAMAGE TO AN OPEN THRUST REVERSER AND INJURIES TO PERSONNEL CAN OCCUR.

(d) Make sure the manual override lever (handle) at the leading edge standby drive shutoff valve is in the Position 1 (standby hydraulic power OFF).

NOTE: If the manual override lever at the leading edge standby drive shutoff valve is in position 2 and the standby hydraulic system is then pressurized, the leading edge slats will move to the full extend position. If the leading edge slats move damage to an open thrust reverser and injuries to personnel can occur.

WARNING MAKE SURE TO INSTALL THE GROUND LOCK ON THE STANDBY HYDRAULIC MODULE TO PREVENT ACCIDENTAL STANDBY SYSTEM OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Install the lock, SPL-1675 on the standby hydraulic module.

(f) Install the lockpin.

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H. Deactivate the Leading Edge Flaps and Slats in the Extend (Intermediate) Position

SUBTASK 27-81-00-860-007

(1) If the Leading Edge Flaps and Slats are not in the extend (intermediate) position, do any of these tasks to extend the leading edge devices, as needed: Per the Table 201 of the Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801, or the Leading Edge Flap and Slat System Operation With Alternate Control, TASK 27-81-00-860-802, or the Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 27-81-00-860-008

(2) Remove hydraulic system power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-00-210-002

(3) Attach a DO-NOT-OPERATE tag on the flap control lever and the ALTERNATE FLAPS switches.

SUBTASK 27-81-00-080-001

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Install the lockout set, lockout set, SPL-1734 on the extended actuators of the leading edge flaps and slats.

SUBTASK 27-81-00-080-002

(5) Remove the lockwire from the manual override lever (handle) on the LE cruise depressurization valve (located in the main landing gear wheel well).

SUBTASK 27-81-00-860-009

(6) Move the manual override lever (handle) on the LE cruise depressurization valve to the OFF position.

NOTE: Do not force movement of the lever with tools. The lever should move with very little force. If the lever is tight, you may need hydraulic pressure and the FSEU (Flaps and Slats Electronic Unit) to relieve the pressure on the LE cruise depressurization valve.

SUBTASK 27-81-00-480-004

(7) Install the lockout pin, SPL-1746 in the manual override lever (handle) of the LE cruise depressurization valve to keep the lever in the OFF position.

(a) If the tool can not be easily installed then it is necessary to supply system B hydraulic power and then use the FSEU to relieve the pressure on the LE depressurization valve.

1) Use the FSEU procedure below but replace the selection of the LE UCM shutoff valve for the LE DEPR valve.

(b) Attach a DO-NOT-REMOVE tag on the lockout pin, SPL-1746 after installed in the LE cruise depressurization valve.

SUBTASK 27-81-00-010-001

(8) Remove this panel to get access to the LE UCM (uncommanded motion) shutoff valve.

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Open this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 27-81-00-480-005

(9) Remove the lockwire from the manual override lever (handle) on the LE UCM shutoff valve (Figure 203).

(10) Move the manual override lever on the LE UCM shutoff valve to the UP (OFF) position.

NOTE: The lever should move with very little force. If the lever is tight, you may need hydraulic pressure and the FSEU (Flaps and Slats Electronic Unit) to release the pressure on the LE UCM SHUTOFF VALVE.

(a) If necessary, do the steps that follow:

1) Supply system B hydraulic power by doing this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

2) Use the FSEU to release the pressure on the LE UCM shutoff valve, as follows:

NOTE: Two persons will be necessary when the FSEU is used to release the pressure on the LE UCM shutoff valve.

a) Push the ON/OFF button.

b) EXISTING FAULTS.....press NO.

c) Press NO until OTHER FUNCTIONS.

d) OTHER FUNCTIONS....press YES.

e) SET OUTPUTS.....press YES.

f) Press NO until LE UCM SHUTOFF VALVE.

g) LE UCM SHUTOFF VALVE....press YES.

h) SET ON.....press YES.

i) Remove system B hydraulic power by doing this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Move the LE UCM shutoff valve up.

1) Install the lockout pin, SPL-1746 through the lever (handle). The tool will keep the handle in the UP (OFF) position.

NOTE: You have 75 seconds to pin the valve from the time when the last YES was pushed on the FSEU.

(c) Attach a DO-NOT-REMOVE tag on the lockout pin, SPL-1746.

I. Deactivate the Leading Edge Flaps and Slats in the Full Extend Position

SUBTASK 27-81-00-480-006

(1) Install the lockout set, SPL-1734 on the actuators of the slats and flaps to prevent retraction of the leading edge devices with the steps that follow:

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) If the leading edge flaps and slats are not in the full extend (30-unit) position, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

WARNING

MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Install the lockout set, SPL-1734 on the extended actuators of the leading edge flaps and slats.

J. Leading Edge Flaps and Slats - Tryout

NOTE: This tryout is to make sure the leading edge flaps and slats are in a zero energy state.

SUBTASK 27-81-00-860-011

(1) Move the flap control lever to the ONE detent position.

(a) Make sure that the leading edge flap or slat does not move.

SUBTASK 27-81-00-860-012

(2) Move the flap control lever back to its initial flap position.

SUBTASK 27-81-00-860-103

(3) Put the ALTERNATE FLAPS ARM switch in the ARM position.

SUBTASK 27-81-00-860-013

(4) Move the ALTERNATE FLAPS CONTROL switch to the UP position for approximately one second and then to the DOWN position for approximately one second.

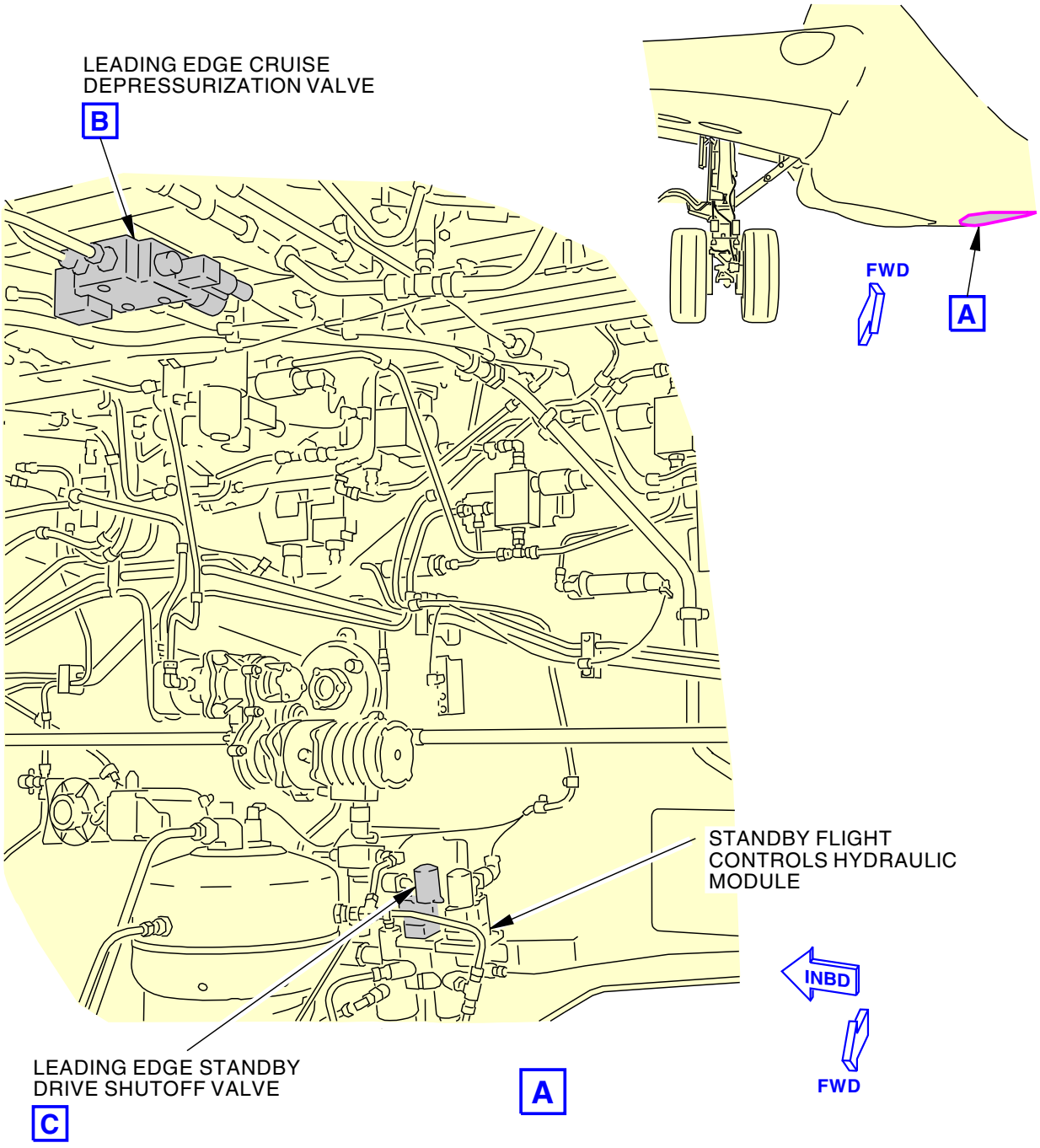
(a) Make sure that the leading edge flap or slat does not move.

SUBTASK 27-81-00-420-011

(5) Install the DO NOT OPERATE tag, STD-858 to the flap control lever and the ALTERNATE FLAPS control switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

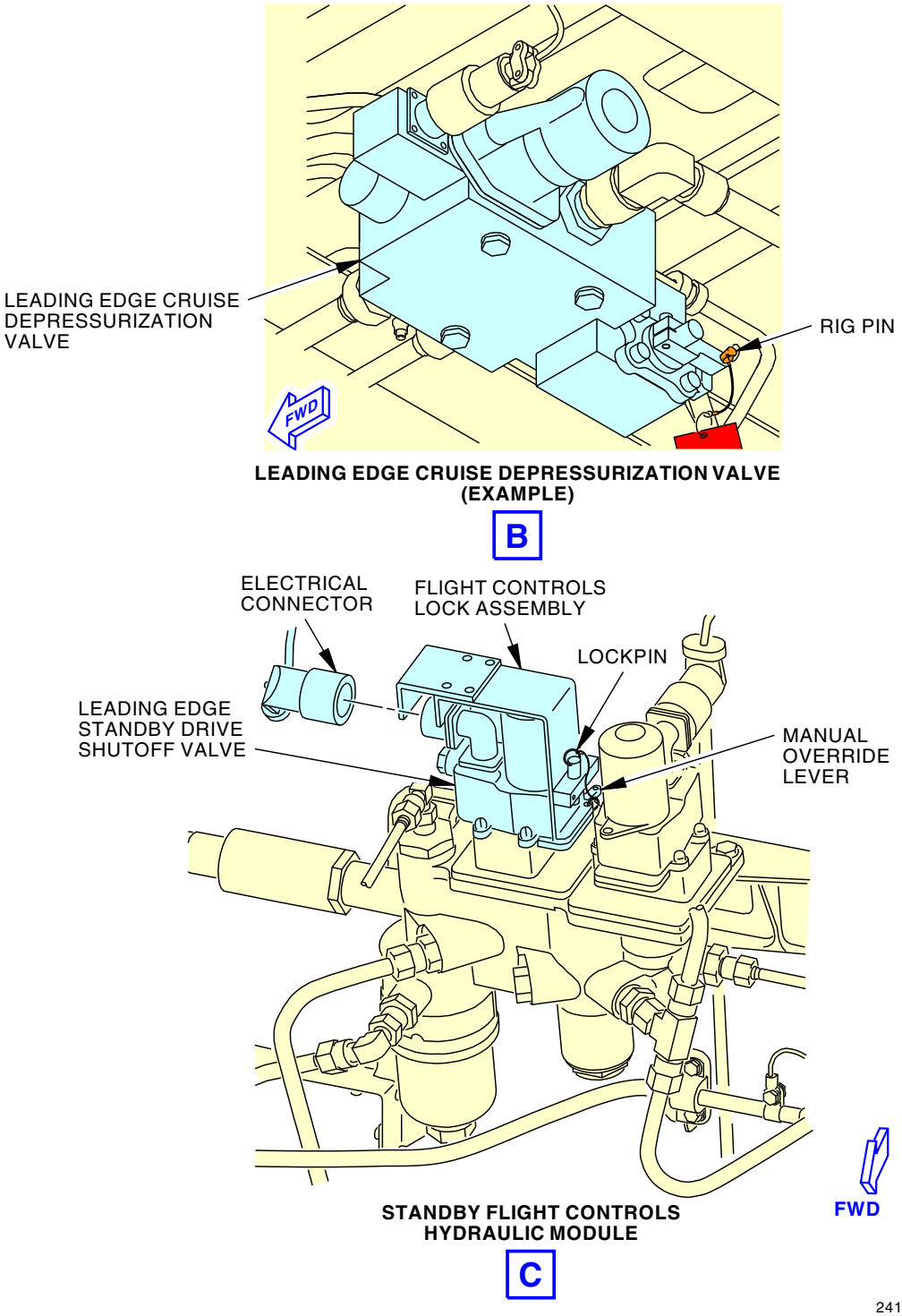


**LEADING EDGE CRUISE DEPRESSURIZATION VALVE
(MAIN LANDING GEAR WHEEL WELL)**

2413305 S00061532315_V2

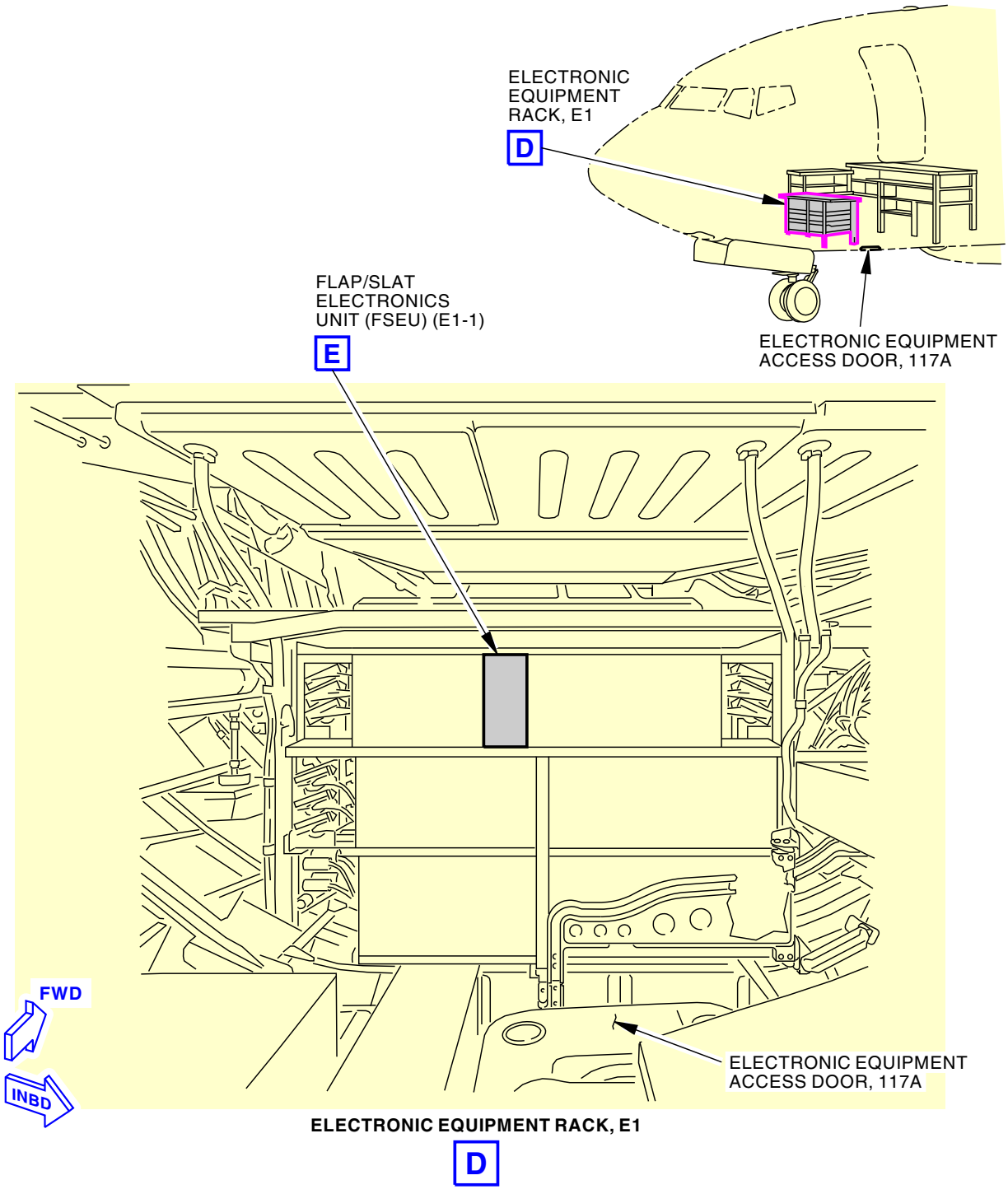
**Leading Edge Cruise Depressurization Valve and FSEU
Figure 201/27-81-00-990-801 (Sheet 1 of 4)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details



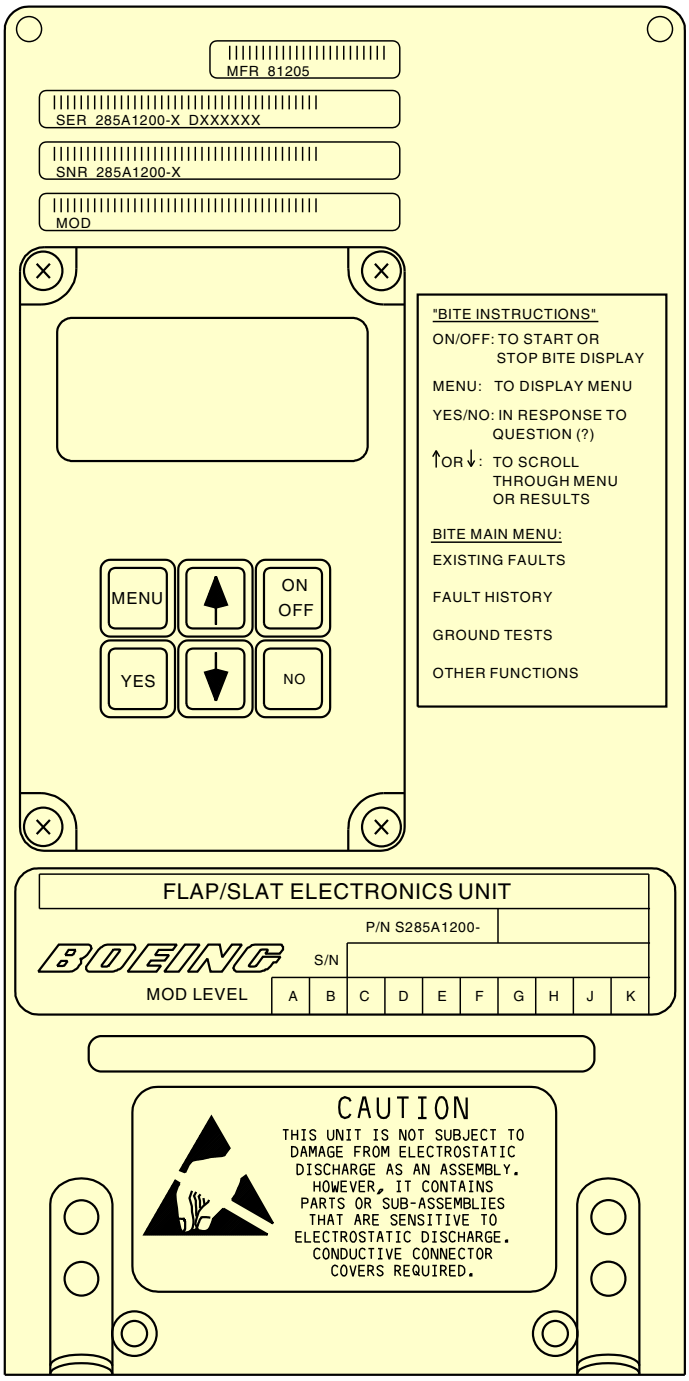
Leading Edge Cruise Depressurization Valve and FSEU
Figure 201/27-81-00-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Cruise Depressurization Valve and FSEU
Figure 201/27-81-00-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



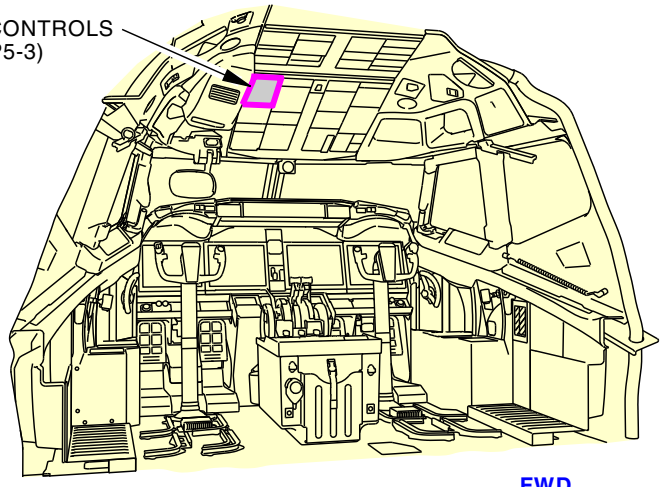
FLAP/SLAT ELECTRONICS UNIT (FSEU)

E

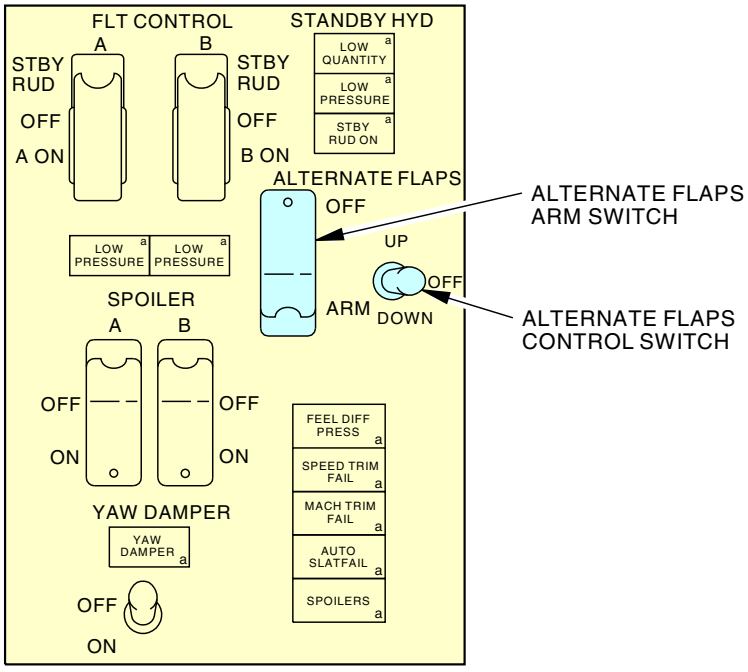
2413308 S00061532318_V2

Leading Edge Cruise Depressurization Valve and FSEU
Figure 201/27-81-00-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



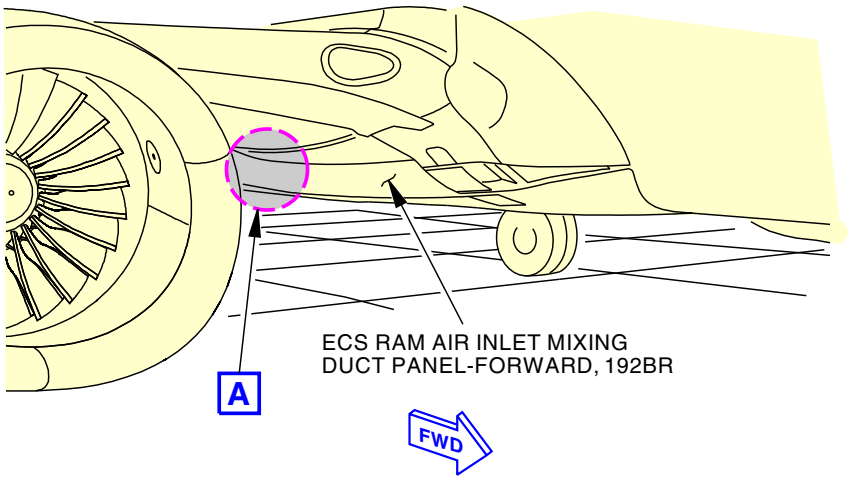
FLIGHT CONTROLS PANEL (P5-3)

A

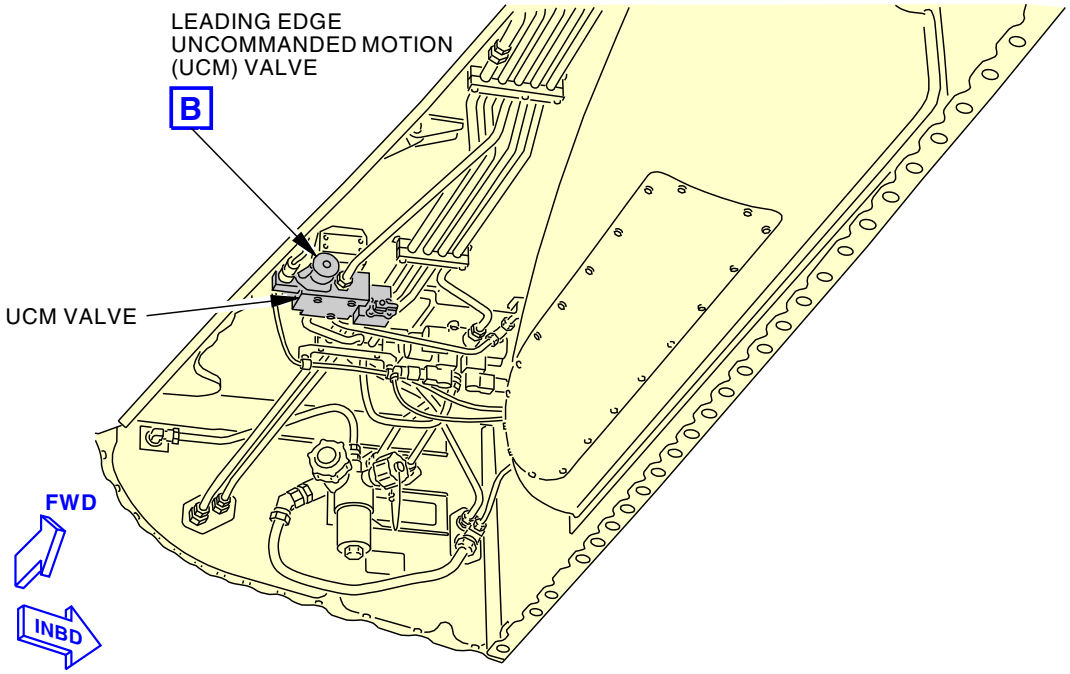
2412724 S00061531225_V1

Leading Edge Flap and Slat Controls
Figure 202/27-81-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(EXAMPLE)



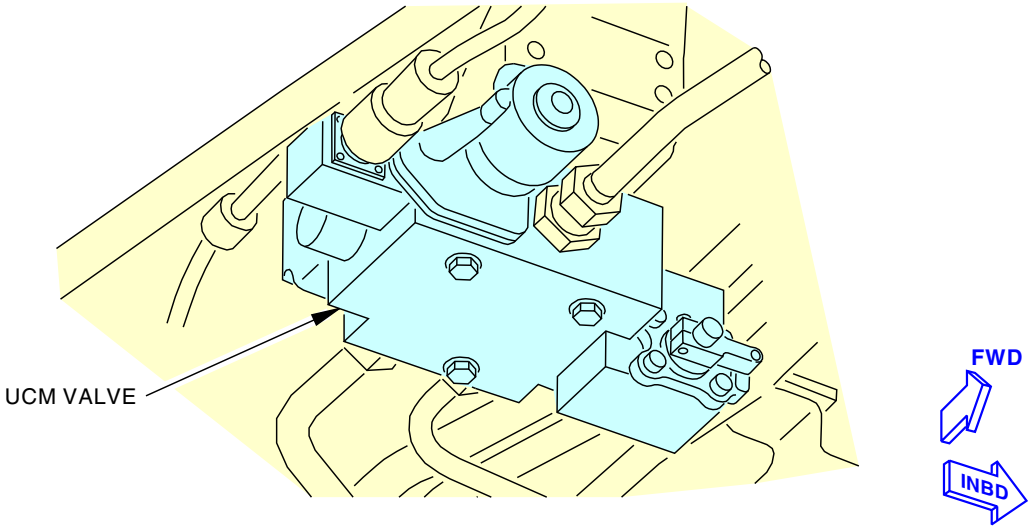
VIEW THROUGH THE ECS RAM AIR INLET MIXING DUCT PANEL - FORWARD, 192BR (EXAMPLE)

A

2500192 S0000586198_V2

Leading Edge Uncommanded Motion (UCM) Valve
Figure 203/27-81-00-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEADING EDGE UNCOMMANDED MOTION (UCM) VALVE

B

2500197 S0000586199_V1

Leading Edge Uncommanded Motion (UCM) Valve
Figure 203/27-81-00-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-440-801

3. Leading Edge Flaps and Slats - Activation

(Figure 201)

A. General

(1) If you do the deactivation procedure with the leading edge flaps and slats in the retract position, then do the steps to reactivate the leading edge flaps and slats in the retract position.

(2) If you do the deactivation procedure with the leading edge flaps and slats in the full extend position, then do the steps to reactivate the leading edge flaps and slats in the full extend position.

B. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-81-00-710-801	Leading Edge Flap and Slat System Standby Actuation Operational Test (P/B 501)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205
SPL-1746	Pin - Lockout, L.E. Cruise Depressurization Valve Part #: C27038-6 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Reactivate the Leading Edge Flaps and Slats In the Retract (UP) Position

SUBTASK 27-81-00-020-008

(1) Remove the DO NOT OPERATE tag, STD-858 from the flap control lever and the ALTERNATE FLAPS control switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-080-003

(2) Remove the lock, SPL-1675 from the standby hydraulic module Figure 201:

(a) Remove the lockpin.

(b) Remove the lock, SPL-1675 from the standby hydraulic module.

(c) Make sure the override lever at the leading edge standby drive shutoff valve is in the position 1.

(d) Do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(e) Connect the electrical connector to the leading edge standby drive shutoff valve.

(f) Remove the DO-NOT-OPERATE tag from the ALTERNATE FLAPS arm switch.

SUBTASK 27-81-00-020-001

(3) Remove the DO-NOT-REMOVE tag with the lockout pin, SPL-1746 in the manual override lever on the LE cruise depressurization valve (Figure 201).

(a) Make sure the manual override lever moves from the OFF position to the ON position.

(b) Install lockwire on the manual override lever.

SUBTASK 27-81-00-020-003

(4) Remove the DO-NOT-OPERATE tags from the flap control lever and the ALTERNATE FLAPS switches.

SUBTASK 27-81-00-410-001

(5) If it is open, close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-710-001

(6) Do this task: Leading Edge Flap and Slat System Standby Actuation Operational Test, TASK 27-81-00-710-801

NOTE: The Leading Edge Flap and Slat System Standby Actuation Operational Test will make sure that the alternate control system is working correctly.

G. Reactivate the Leading Edge Flaps and Slats in the Extend (intermediate) Position

SUBTASK 27-81-00-020-004

(1) Remove the DO-NOT-REMOVE tag with the lockout pin, SPL-1746 in the manual override lever (handle) on the LE cruise depressurization valve(Figure 201).

NOTE: Do not force movement of the lever (handle) with tools. The lever should move with very little force. If the lever is tight, you may need hydraulic pressure and the FSEU (Flaps and Slats Electronic Unit) to relieve the pressure on the LE CRUISE DEPRESSURIZATION VALVE.

(a) If the lockout pin, SPL-1746 will not come out easily, then do the steps that follow:

1) If necessary, supply system B hydraulic power and then use the FSEU to relieve the pressure on the LE depressurization valve.

a) Use the FSEU procedure below but replace the selection of the LE UCM SHUTOFF VALVE for the LE DEPR VALVE.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Move the (LE cruise depressurization valve) manual override lever from the OFF position to the ON position.

(c) Install lockwire on the manual override lever on the LE cruise depressurization valve.

SUBTASK 27-81-00-020-005

(2) Remove the DO-NOT-REMOVE tag with the lockout pin, SPL-1746 in the manual override lever (handle) on the LE uncommanded motion (UCM) shutoff valve.

(a) Move the manual override lever on the UCM shutoff valve to the down (ON) position.

NOTE: The lever (handle) should move with very little force. If the handle is tight, you may need hydraulic pressure and the FSEU (Flaps and Slats Electronic Unit) to relieve the pressure on the LE UCM SHUTOFF VALVE.

(3) If the lockout pin, SPL-1746 will not come out easily, then do the steps that follow:

(a) Supply system B hydraulic power by doing this task: Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801.

(b) Use the FSEU to relieve the pressure on the LE UCM SHUTOFF VALVE, as follows:

1) Push the ON/OFF button.
2) EXISTING FAULTS.....press NO.
3) Press NO until OTHER FUNCTIONS.
4) OTHER FUNCTIONS....press YES.
5) SET OUTPUTS.....press YES.
6) Press NO until LE UCM SHUTOFF VALVE.
7) LE UCM SHUTOFF VALVE....press YES.
8) SET ON.....press YES.

(c) Remove the lockout pin, SPL-1746 from the LE UCM shutoff valve within 75 seconds of pushing YES on the FSEU.

1) If the pin will not come out easily, then repeat the steps above pressurizing the hydraulic system B before operating the FSEU.
2) Remove the B pressure after the valve has moved.

(d) Wait for the LE UCM shutoff valve lever (handle) to move down.

(e) Install the lockwire (per double twist method) when the LE UCM shutoff lever is in the down position.

SUBTASK 27-81-00-080-004

WARNING REMOVE THE LOCK FROM LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) Remove the lockout set, SPL-1734 from the extended actuators of the leading edge flaps and slats per Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

H. Reactivate the Leading Edge Flaps and Slats In the Full Extend Position

SUBTASK 27-81-00-080-005

(1) Remove the lockout set, SPL-1734 from the leading edge devices:

(a) If the hydraulic system B is pressurized, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING REMOVE THE LOCK FROM LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(b) Remove the lockout set, SPL-1734 from the extended actuators of the leading edge flaps and slats per Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

(c) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-014

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

END OF TASK

TASK 27-81-00-860-801

4. Leading Edge Flap and Slat System Operation With Primary Control

A. General

(1) The primary control system uses the hydraulic system B to move the flaps and slats.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-81-00-860-015

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-00-860-017

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE MOVED AWAY FROM THE CONTROL SURFACES BEFORE YOU START MOVEMENT. THIS WILL PREVENT INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the applicable detent position (Table 201).

Table 201/27-81-00-993-801 Leading Edge (LE) Flap and Slat Position

Flap Control Lever Detent Position	LE Flap Position	LE Slat Position
UP	Retract	Retract
1 thru 25	Full Extend	Extend
30 thru 40	Full Extend	Full Extend

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-018

(1) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-81-00-860-802

5. Leading Edge Flap and Slat System Operation With Alternate Control

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The alternate control system uses electrical power to power the standby hydraulic system which moves the leading edge slats and flaps.

B. References

Reference	Title
24-22-00-860-801	Supply Electrical Power (P/B 201)
24-22-00-860-802	Remove Electrical Power (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-81-00-860-019

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-020

WARNING	KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION	MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the ALTERNATE FLAPS ARM switch on the P5 panel to the ARM position.

SUBTASK 27-81-00-860-021

(3) Move the ALTERNATE FLAPS control switch to the DOWN position to extend the flaps and slats.

NOTE: The leading edge flaps and slats will not retract with alternate control.

SUBTASK 27-81-00-860-022

(4) Move the ALTERNATE FLAPS control switch to the OFF position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-023

WARNING	MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Move the ALTERNATE FLAPS control switch until the flaps and slats are in the same position as the flap control lever or move the flap control lever to the position of the flaps and slats.

SUBTASK 27-81-00-860-024

(2) Move the ALTERNATE FLAPS control switch to the OFF position.

SUBTASK 27-81-00-860-025

(3) Move the ALTERNATE FLAPS ARM switch to the OFF position to disarm the alternate control system.

SUBTASK 27-81-00-860-026

(4) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

END OF TASK

TASK 27-81-00-860-803

6. Leading Edge Flaps and Slats Extension

A. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Procedure

SUBTASK 27-81-00-860-027

(1) Do one of these tasks to extend the leading edge flaps and slats:

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) To extend the flaps and slats with primary control, do this task: Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(b) To extend the flaps and slats with alternate control, do this task: Leading Edge Flap and Slat System Operation With Alternate Control, TASK 27-81-00-860-802.

END OF TASK

TASK 27-81-00-860-804

7. Leading Edge Flaps and Slats Retraction

A. General

(1) The leading edge flaps and slats will not retract with alternate control.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 27-81-00-860-028

(1) To retract the flaps and slats with primary control, do this task: Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801.

——— END OF TASK ———

TASK 27-81-00-480-801

8. Leading Edge Flap and Slat Locks Installation

(Figure 201)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Leading Edge Flap and Slat Locks Installation

SUBTASK 27-81-00-860-100

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) If the leading edge flaps and slats are not in the full extend (30-unit) position, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 27-81-00-860-101

(2) Make sure that the hydraulic power is removed (TASK 29-11-00-860-805).

SUBTASK 27-81-00-480-008

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Install the lock, SPL-1675, to prevent the movement of the leading edge devices by the standby hydraulic system (Figure 201).

(a) Make sure that the ALTERNATE FLAP ARM switch is in the OFF position.

(b) Attach the DO NOT OPERATE tag, STD-858, on the ALTERNATE FLAPS ARM switch.

(c) Disconnect the electrical connector from the leading edge standby drive shutoff valve.

(d) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(e) If there was corrosion, correct the problem (SWPM 20-60-03).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING MAKE SURE THAT THE MANUAL OVERRIDE LEVER IS IN POSITION 1 TO PREVENT THE MOVEMENT OF THE LEADING EDGE SLATS. IF THE LEADING EDGE SLATS MOVE, DAMAGE TO AN OPEN THRUST REVERSER AND INJURIES TO PERSONNEL CAN OCCUR.

(f) Make sure that the override lever at the leading edge standby drive shutoff valve is in the Position 1 (standby hydraulic power OFF).

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(g) Install the lock, SPL-1675, on the standby hydraulic module.

(h) Install the lockpin.

SUBTASK 27-81-00-480-007

(4) Install the lockout set, SPL-1734, to prevent retraction of the leading edge devices.

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Install the lockout set, SPL-1734, on the extended actuators of the leading edge flaps and slats.

END OF TASK

TASK 27-81-00-080-801

9. Leading Edge Flap and Slat Locks Removal

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1675	Assembly - Lock, Flight Controls (used on valve p/n 10-60581-2 and 10-60581-3) Part #: F80049-65 Supplier: 81205 Opt Part #: F80049-56 Supplier: 81205
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

E. Leading Edge Flap and Slat Locks Removal

SUBTASK 27-81-00-080-006

(1) Remove the lockout set, SPL-1734 from the leading edge devices:

(a) If the hydraulic system B is pressurized, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Remove the lockout set, SPL-1734 from the extended actuators of the leading edge flaps and slats.

(c) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-81-00-080-007

(2) Remove the lock, SPL-1675 from the standby hydraulic module (Figure 201):

(a) Remove the lockpin.

(b) Remove the lock, SPL-1675 from the standby hydraulic module.

(c) Make sure the override lever at the leading edge standby drive shutoff valve is in the position 1.

(d) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

(e) Apply the D5026NS or ZC-026 compound, G50171 to the connector (SWPM 20-60-03).

(f) Connect the electrical connector to the leading edge standby drive shutoff valve.

(g) Remove the DO-NOT-OPERATE tag from the ALTERNATE FLAPS arm switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) An adjustment of the leading edge flaps

(2) An adjustment of the leading edge actuators

(3) An adjustment of the leading edge slats

(4) An operational test of the leading edge flaps and slats in primary mode

(5) A timing test of the leading edge flaps and slats in primary mode

(6) An operational test of the leading edge flaps and slats in standby mode

(7) A timing test of the leading edge flaps and slats in standby mode

(8) A test of the leading edge cruise depressurization system

(9) A test of the leading edge uncommanded motion protection system

(10) A test of the standby hydraulic system leading edge uncommanded motion

TASK 27-81-00-820-801

2. Leading Edge Flaps Adjustment

(Figure 501)

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Consumable Materials

Reference	Description	Specification
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

E. Prepare for the Adjustment

SUBTASK 27-81-00-860-029

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-00-860-030

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 1-unit detent position to extend the leading edge flaps.

SUBTASK 27-81-00-860-031

(3) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-00-480-009

WARNING INSTALL THE LOCK ON LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT THE ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) Install the lockout set, SPL-1734 on all the adjacent flaps that you will not adjust. To install the lockout set, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Leading Edge Flaps Adjustment

SUBTASK 27-81-00-860-032

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the UP detent to retract the leading edge flaps.

SUBTASK 27-81-00-220-001

(2) Do a check of the full extend angle of the leading edge flap 1 [1] and leading edge flap 2 [2].

(a) Attach a protractor, COM-1691 to the inboard edge of the leading edge flap 1 [1] or outboard edge of the leading edge flap 2 [2].

(b) Set the protractor, COM-1691 to zero with the leading edge flaps retracted.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(c) Move the flap control lever to the 1-unit detent to extend the leading edge flap.

(d) Make sure the full extend angle of the leading edge flap 1 [1] or leading edge flap 2 [2] is 98 +/- 0.5 degrees.

1) If the full extend angle is out of tolerance, do these steps to adjust the rod end [8] of the flap actuator [7]:

a) Remove the pin [15], nut [14], washer [13], bushing [12], washer [11], and bolt [10] to disconnect the flap actuator [7] from the leading edge flap 1 [1] or leading edge flap 2 [2].

b) Loosen the nut [9] on the flap actuator [7].

c) Adjust the rod end [8] until you get the correct full extend angle.

NOTE: The limit for maximum adjustment is two full turns.

(e) Remove the protractor, COM-1691 from the inboard edge of the leading edge flap.

SUBTASK 27-81-00-220-002

(3) Make sure the mismatch between the inboardleading edge flap 2 [2] and the outboardleading edge flap 1 [1] is 0.000 ±0.040 in. (0.0 ±1.0 mm).

SUBTASK 27-81-00-860-033

(4) Apply preload at the flap bullnose to the leading edge flap 1 [1] or leading edge flap 2 [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure the flap bullnose touches the leading edge flap 1 [1] or leading edge flap 2 [2].

NOTE: To apply the correct preload, the flap bullnose must first touch the leading edge flap.

1) If the flap bullnose does not touch the leading edge flap 1 [1] or leading edge flap 2 [2], adjust the length of the flap rod.

(b) Adjust the flap rod an additional 1/2 turn to apply the correct preload at the flap bullnose to the leading edge flap 1 [1] or leading edge flap 2 [2].

(c) Install MS20995NC32 lockwire, G01912 on the flap rod.

SUBTASK 27-81-00-860-034

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-81-00-220-003

(6) Do a check of the mismatch at the forward edge of the leading edge flap 1 [1] or leading edge flap 2 [2].

(a) Make sure the mismatch is 0.000 +0.062 / -0.071 in. (0.0 +1.6 / -1.8 mm).

1) If it is necessary, adjust the mismatch dimension.

a) Loosen the nuts [3] to adjust the seal [4].

b) Adjust the seal [4] until you get the correct mismatch requirement.

c) Tighten the nuts [3].

SUBTASK 27-81-00-220-004

(7) Do a check of the gap and mismatch at the aft edge of the leading edge flap 1 [1] or leading edge flap 2 [2].

(a) Make sure the gap is 0.050 in. (1.3 mm) to 0.240 in. (6.1 mm).

(b) Make sure the mismatch is 0.000 +0.040 / -0.072 in. (0.0 +1.0 / -1.8 mm).

1) If the mismatch is out of tolerance, adjust the rod end [8] of the flap actuator [7] again.

SUBTASK 27-81-00-420-001

(8) If you made adjustment to the rod end [8] of the flap actuator [7], do these steps:

(a) Install the bolt [10], washer [11], bushing [12], washer [13] and nut [14] to connect the flap actuator [7] to the leading edge flap 1 [1] or leading edge flap 2 [2].

(b) Tighten the nut [14] to 660 in-lb (74.6 N·m) - 980 in-lb (110.7 N·m).

(c) Install the pin [15].

(d) Tighten the nut [9] to 550 in-lb (62.1 N·m) - 650 in-lb (73.4 N·m).

(e) Install the MS20995NC32 lockwire, G01912 on the nut [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-035

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(9) Extend the leading edge flaps to the 1-unit detent position with hydraulic power. To extend the leading edge flaps, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 27-81-00-860-036

(10) Do a check of the flap panel clearances.

(a) For all but the aft 5 in. (127 mm) of the flap, make sure the gap between the outboard leading edge flap 1 [1] and the inboard leading edge flap 2 [2] is 0.060 in. (1.52 mm) to 0.150 in. (3.81 mm).

(b) For the aft 5 in. (127 mm) of the flap, make sure the gap between the outboard leading edge flap 1 [1] and the inboard leading edge flap 2 [2] is 0.06 in. (1.5 mm) to 0.25 in. (6.4 mm).

SUBTASK 27-81-00-210-003

(11) If the flap panel clearances are out of tolerance, do a check of the wing and flap panel for damage or deformation.

NOTE: This check is to make sure that the flap and the wing align correctly. There is no adjustment that you can do.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-080-008

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the lockout set, SPL-1734 from the leading flaps. To remove the lockout set, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

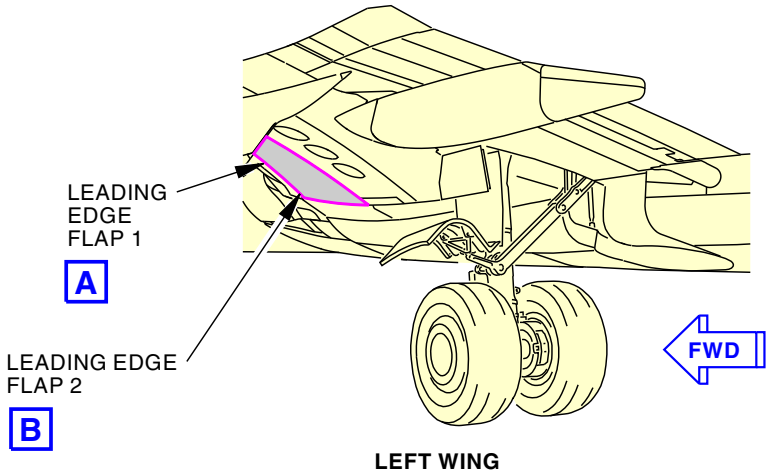
SUBTASK 27-81-00-860-037

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

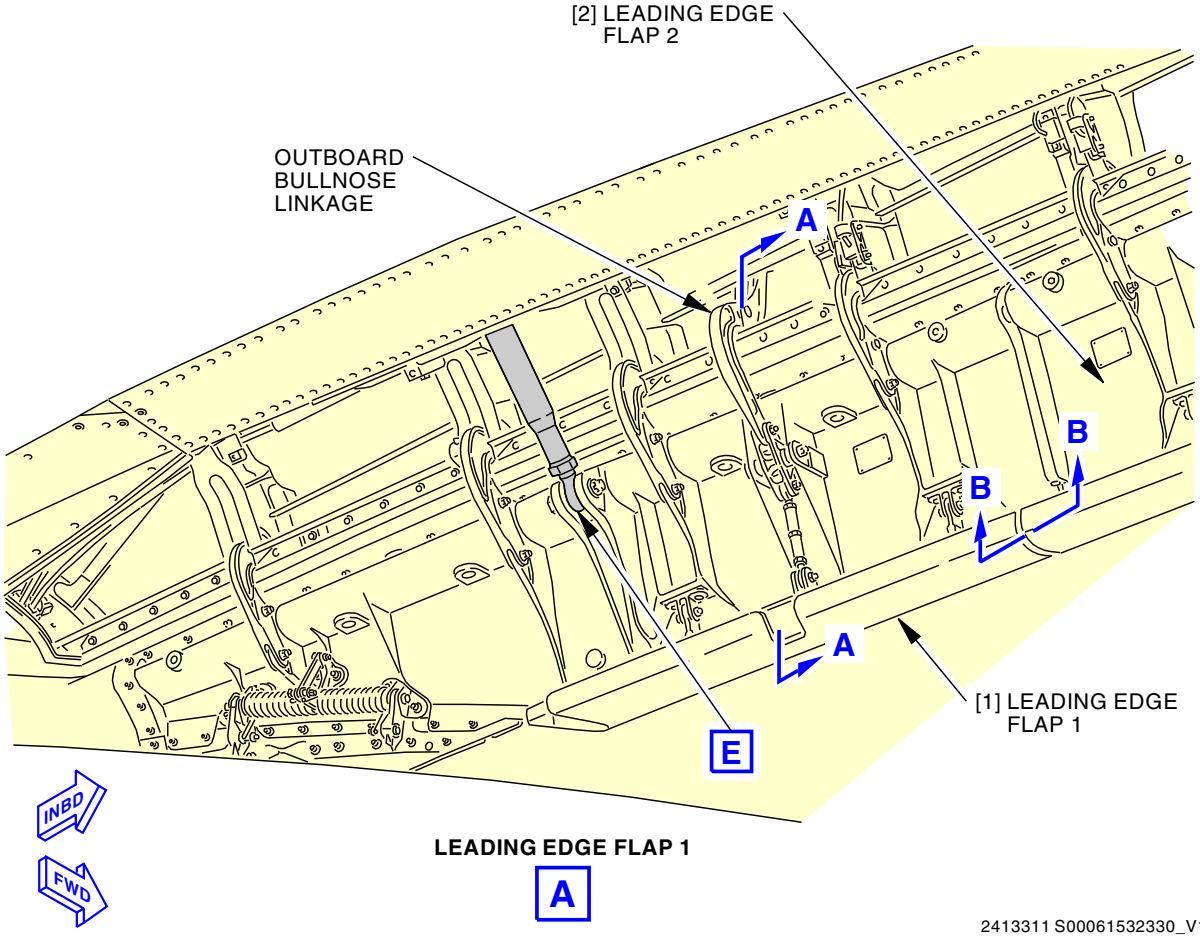
(2) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS OPPOSITE)



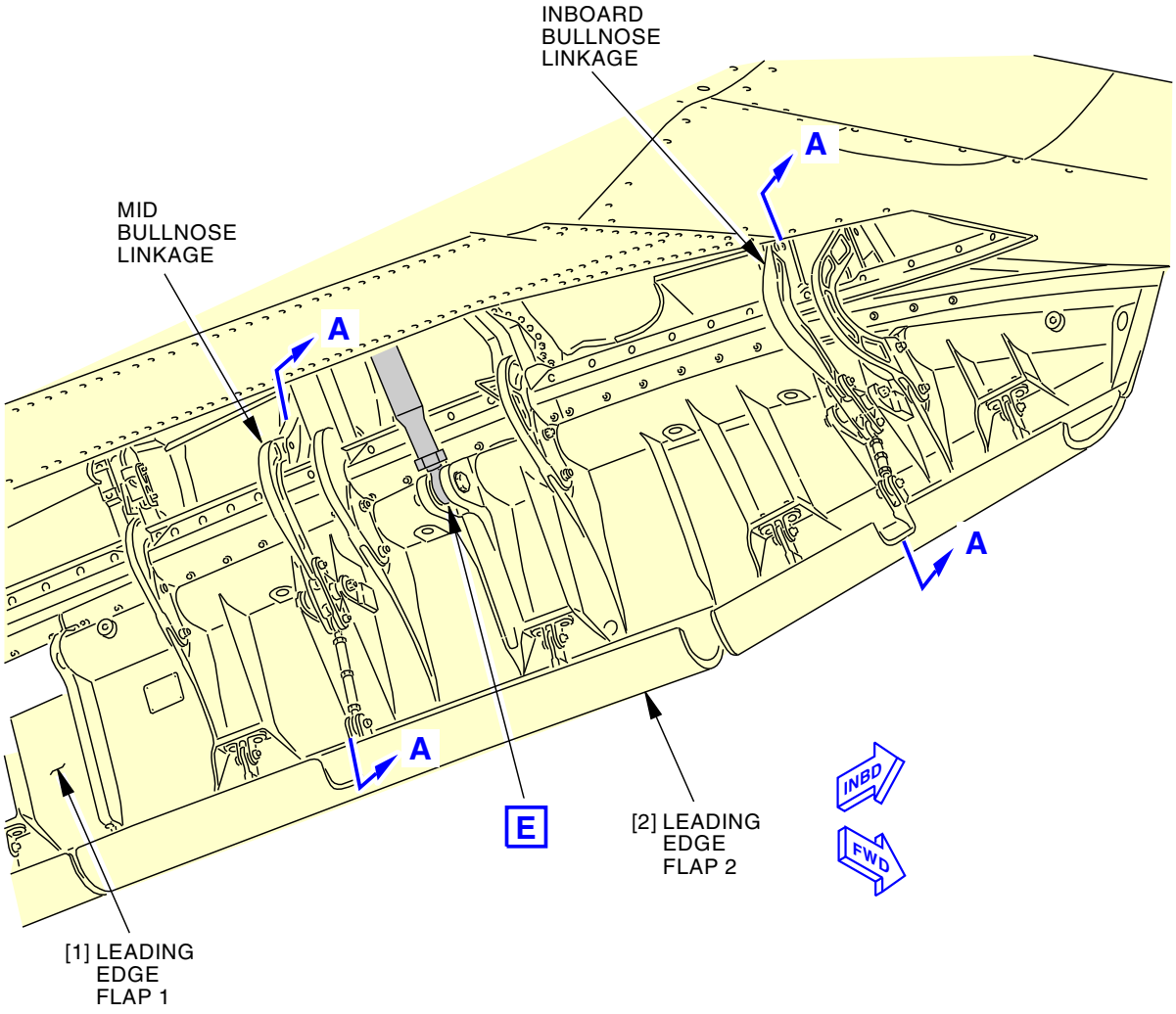
LEADING EDGE FLAP 1

A

2413311 S00061532330_V1

Leading Edge Flap Adjustment
Figure 501/27-81-00-990-804 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



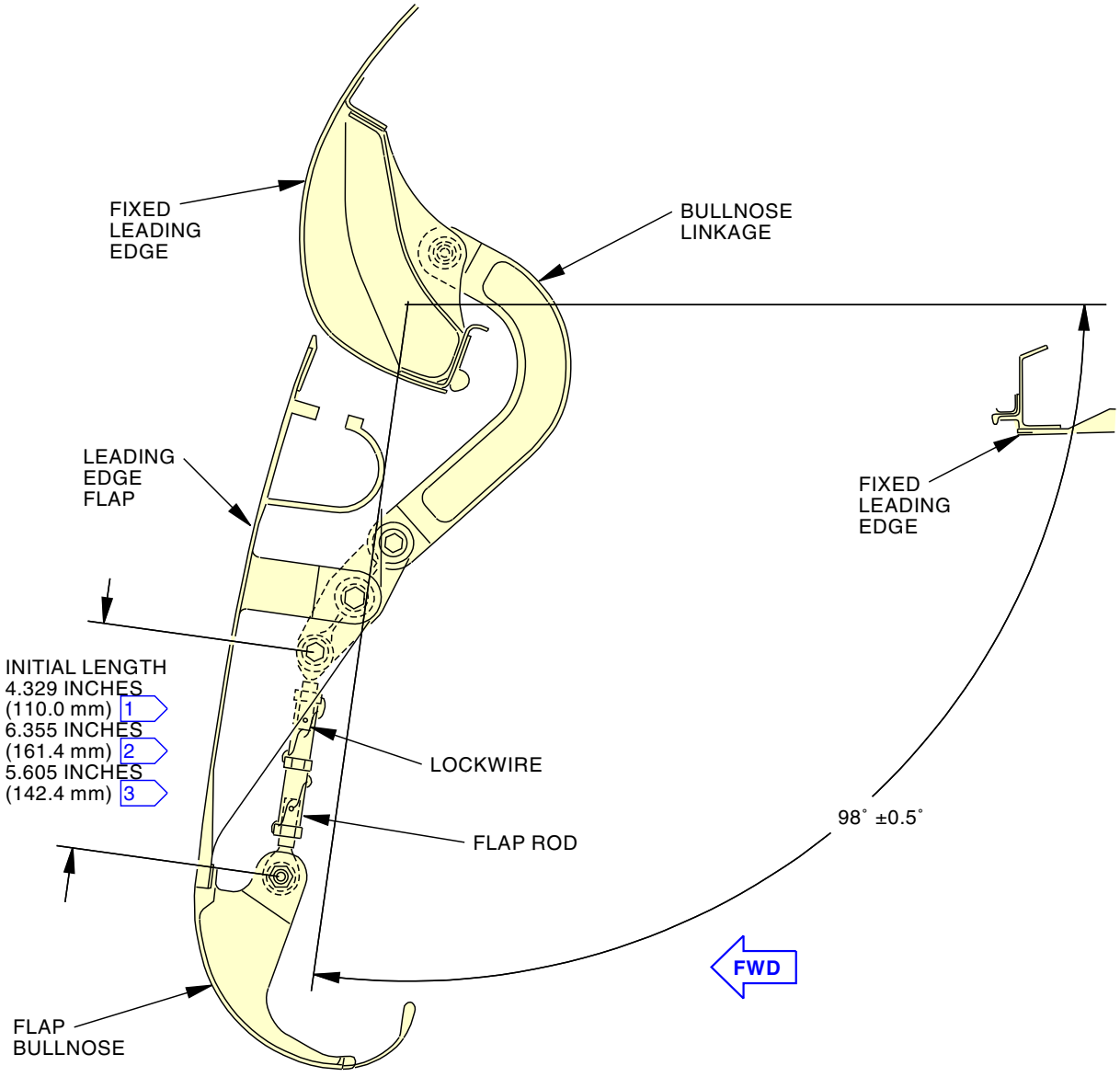
LEADING EDGE FLAP 2

B

2413312 S00061532331_V1

Leading Edge Flap Adjustment
Figure 501/27-81-00-990-804 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD BULLNOSE LINKAGE
(MID AND INBOARD BULLNOSE LINKAGES ARE EQUIVALENT)
(FLAP IS SHOWN EXTENDED)

A-A

1 INBOARD BULLNOSE LINKAGE

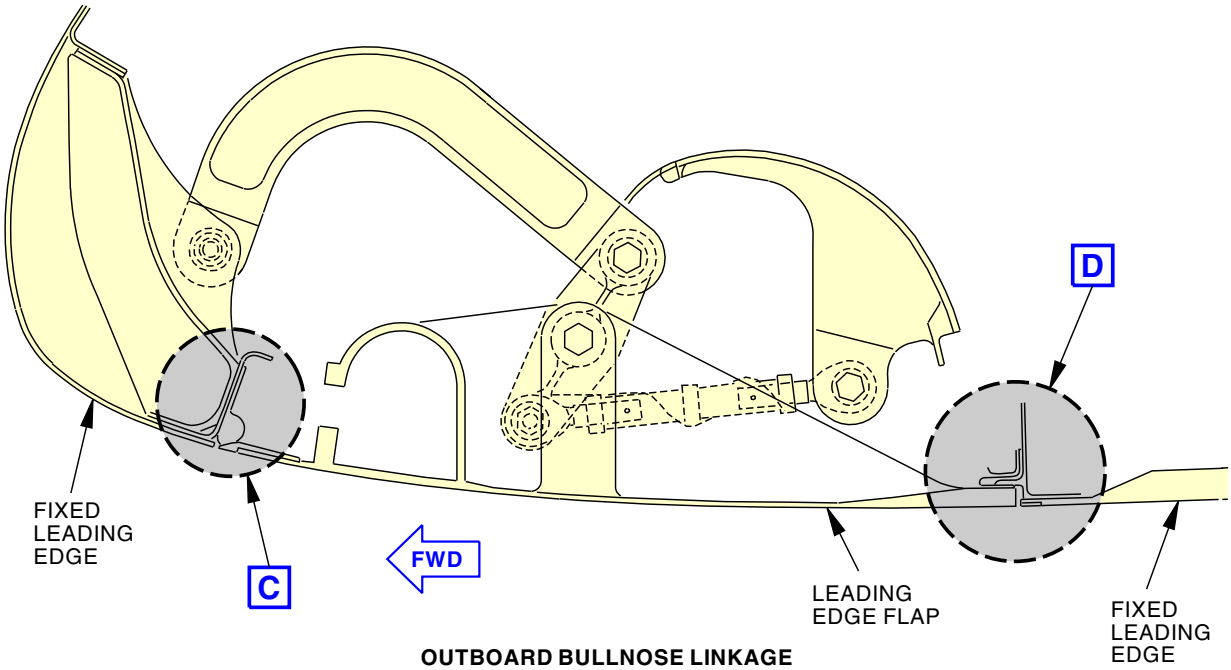
2 MID BULLNOSE LINKAGE

3 OUTBOARD BULLNOSE LINKAGE

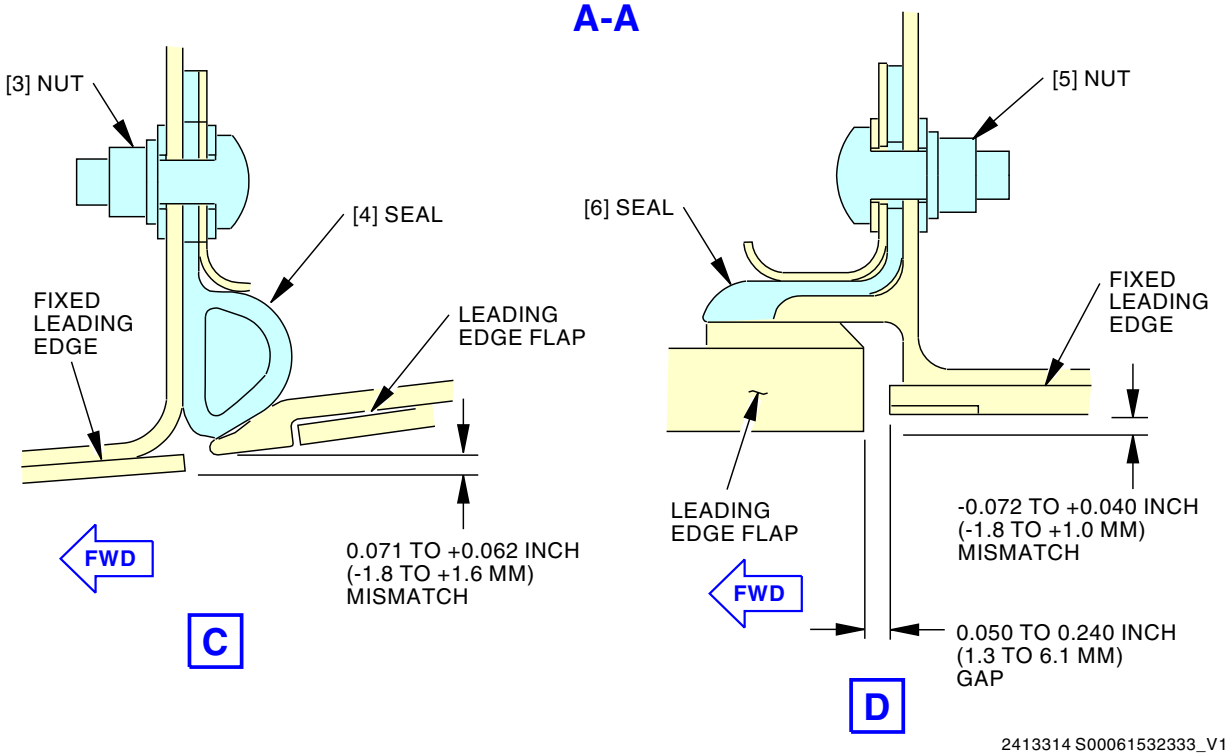
2413313 S00061532332_V1

Leading Edge Flap Adjustment
Figure 501/27-81-00-990-804 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



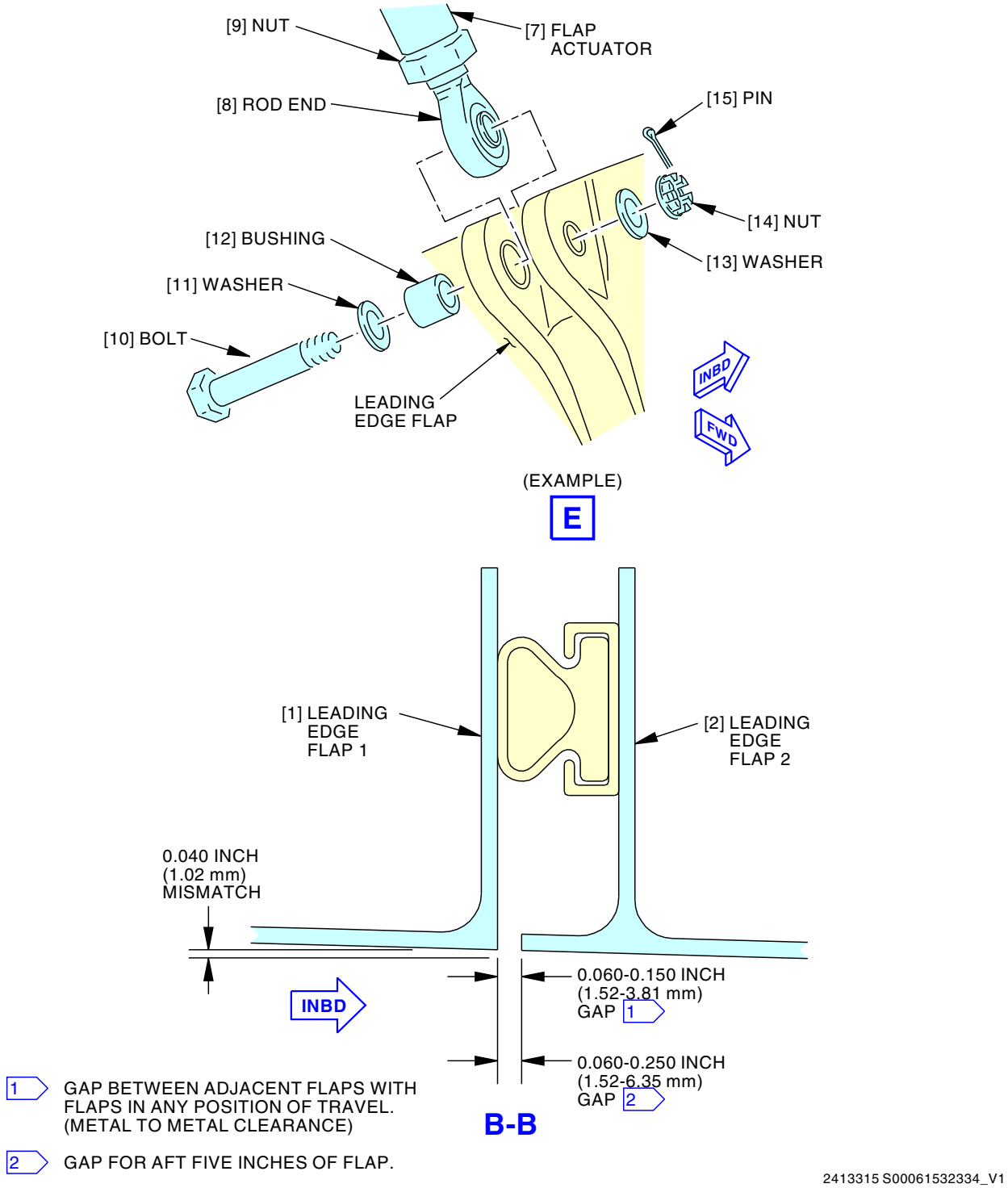
OUTBOARD BULLNOSE LINKAGE
(MID AND INBOARD BULLNOSE LINKAGES ARE EQUIVALENT)
(FLAP IS SHOWN RETRACTED)



2413314 S00061532333_V1

Leading Edge Flap Adjustment
Figure 501/27-81-00-990-804 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413315 S00061532334_V1

Leading Edge Flap Adjustment
Figure 501/27-81-00-990-804 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-820-802

3. Leading Edge Slat Actuator Adjustment

(Figure 502)

A. General

(1) You must adjust the leading edge slats with the wing unsupported outboard of the engine nacelle. You can adjust the leading edge slats with the airplane on the gear or on jacks inboard of the engine nacelle. The airplane must not have fuel on the outboard wing.

B. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
27-81-21-400-801	Leading Edge Slat Installation (P/B 401)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

E. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Slat Actuator Adjustment

SUBTASK 27-81-00-860-038

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-00-860-039

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 30-unit position to extend the leading edge slats to the full extend position.

SUBTASK 27-81-00-480-010

WARNING

INSTALL LEADING EDGE SLAT ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(3) Install the lockout set, SPL-1734 on the adjacent leading edge slats. Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 27-81-00-860-040

(4) Move the flap control lever to the 1-unit position to retract the leading edge slat to the extend position.

NOTE: If the leading edge slat [31] is in the full extend position, the slat actuator [40] will be preloaded against the leading edge slat [31].

SUBTASK 27-81-00-860-041

(5) Remove power from hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-00-200-001

WARNING

DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(6) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD) at all times.

SUBTASK 27-81-00-020-006

(7) Remove the slat actuator door [39] from the slat actuator [40]:

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(a) Remove the bolts [35], washers [36], washers [37], and nuts [38] that attach the slat actuator door [39] to the slat actuator [40].

(b) Remove the bolts [32], washers [33] and nuts [34] that attach the slat actuator door [39] and the bracket to the slat actuator [40].

(c) Remove the slat actuator door [39].

(d) Temporarily install the bolts [32], washers [33] and nuts [34] to attach the bracket to the slat actuator [40].

SUBTASK 27-81-00-020-007

(8) Disconnect the slat actuator [40] from the leading edge slat [31]:

(a) Remove the bolts [46] and washers [47] that attach the bolt retainer [48] to the leading edge slat [31].

(b) Remove the bolt retainer [48] from the leading edge slat [31].

WARNING MAKE SURE YOU HOLD THE LEADING EDGE SLAT IN ITS POSITION. THE LEADING EDGE SLAT CAN FALL TO THE FULL EXTEND POSITION. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(c) Hold the leading edge slat [31] while you remove the nut [43], washer [42], bushing [41], washer [49] and bolt [50].

SUBTASK 27-81-00-860-042

(9) Carefully let the leading edge slat [31] move down to the full extend position.

SUBTASK 27-81-00-200-002

(10) Make sure the downstop assembly is installed on the main tracks. (See Leading Edge Slat Installation, TASK 27-81-21-400-801)

SUBTASK 27-81-00-860-043

(11) Use hydraulic power to retract the slat actuator [40] to the extend position:

NOTE: This will permit you to install the bolt [50].

(a) Pressurize hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Move the flap control lever to the 1-unit detent position to retract the slat actuator to the extend position.

(c) Remove power from hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-00-420-002

(12) Connect the slat actuator [40] to the leading edge slat [31]:

(a) Move the leading edge slat [31] until it aligns with the slat actuator [40].

(b) Install the bushing [41], bolt [50], washer [49], washer [42] and nut [43] to attach the slat actuator [40] to the leading edge slat [31].

1) The head of the bolt [50] must be on the outboard side of the slat actuator [40].

(c) Tighten the nut [43] to a setpoint of 820 in-lb (92.6 N·m) or the bolt [50] to a setpoint of 980 in-lb (110.7 N·m).

NOTE: The recommended method is to tighten the nut.

The optional method is to tighten the bolt.

(d) Install the bolt retainer [48]:

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1) Apply compound, C00528 to the shank and threads of the bolts [46].

2) Install the bolts [46] and washers [47] to attach the bolt retainer [48].

SUBTASK 27-81-00-220-005

(13) With the slats correctly adjusted (rigged), do the step that follow:

(a) Apply hand load to the end of each slat assembly (as necessary) to make sure that preload exists.

(b) If no preload exists, do as follow:

1) Make sure that the possible under-travel dimension of the slat actuator does not exceed 0.0200 in. (0.5080 mm) maximum between the attach point at the rod end of the slat actuator and the clevis bores of the slat attach fittings.

NOTE: The under-travel dimension of the slat actuator indicates that there is no preload of the slat actuator in relationship to the slat actuator attach fitting.

a) If the dimension is greater than 0.0200 in. (0.5080 mm), make sure that the part numbers of the main track assemblies are correct.

NOTE: When the slat main tracks are incorrectly installed visual cues (excessive mismatches, misalignment, skew, etc.) will sometimes indicate a problem in advance depending on which slat is affected.

SUBTASK 27-81-00-420-003

(14) Install the slat actuator door [39] on the slat actuator [40]:

(a) Put the slat actuator door [39] in its position on the slat actuator [40].

(b) Remove the bolts [32], washers [33] and nuts [34] that attach the bracket to the slat actuator [40].

(c) Put the slat actuator door [39] in its position on the slat actuator [40].

(d) Install the bolt [32], washers [33] and nuts [34] that attach the slat actuator door [39] and bracket to the slat actuator [40].

(e) Install the bolts [35], washers [36], washers [37] and nuts [38] that attach the slat actuator door [39] to the slat actuator [40].

SUBTASK 27-81-00-200-003

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(15) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD) at all time.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-080-009

WARNING REMOVE LEADING EDGE ACTUATOR LOCKS. LEADING EDGE SLATS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

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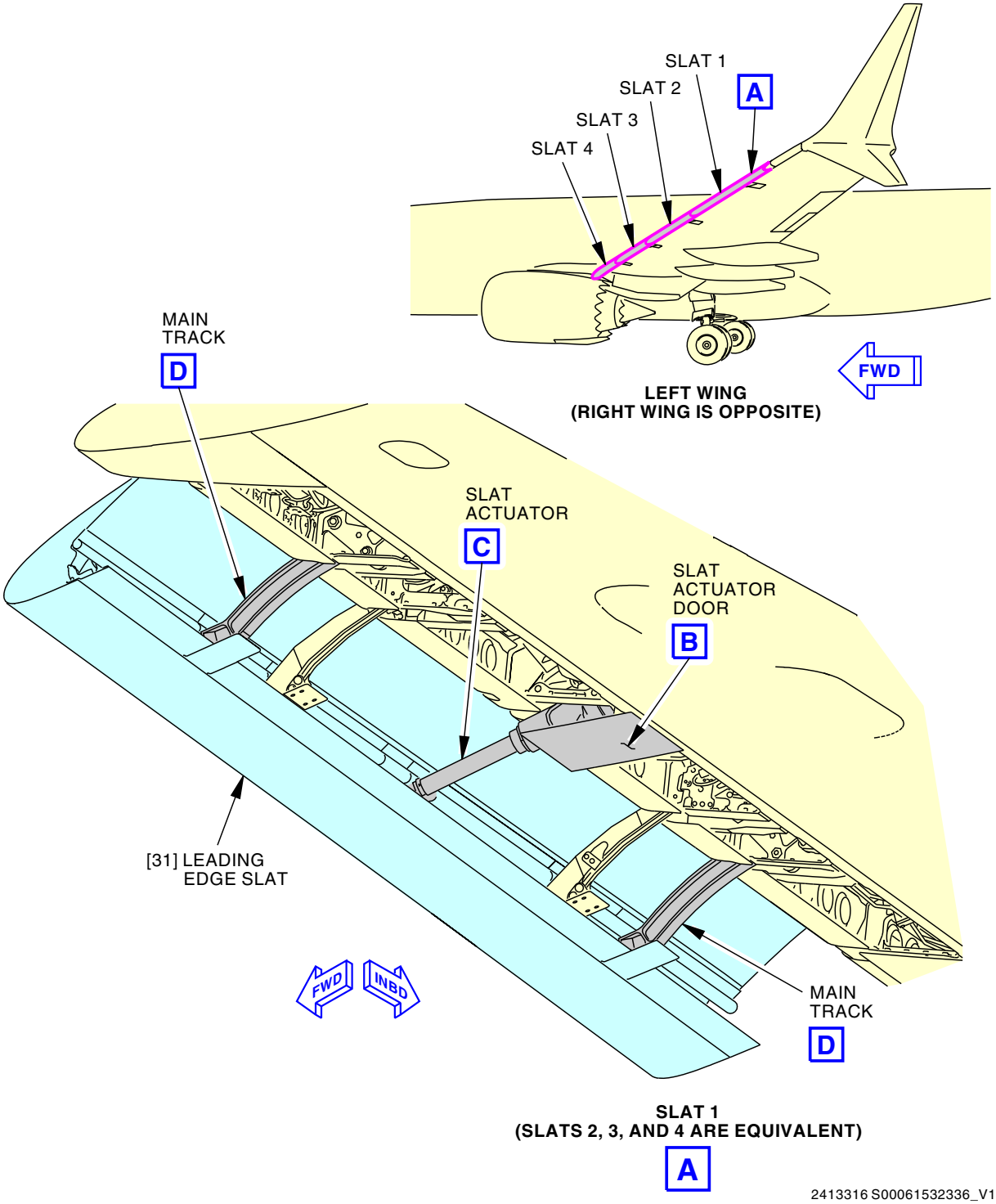
SUBTASK 27-81-00-860-044

(2) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

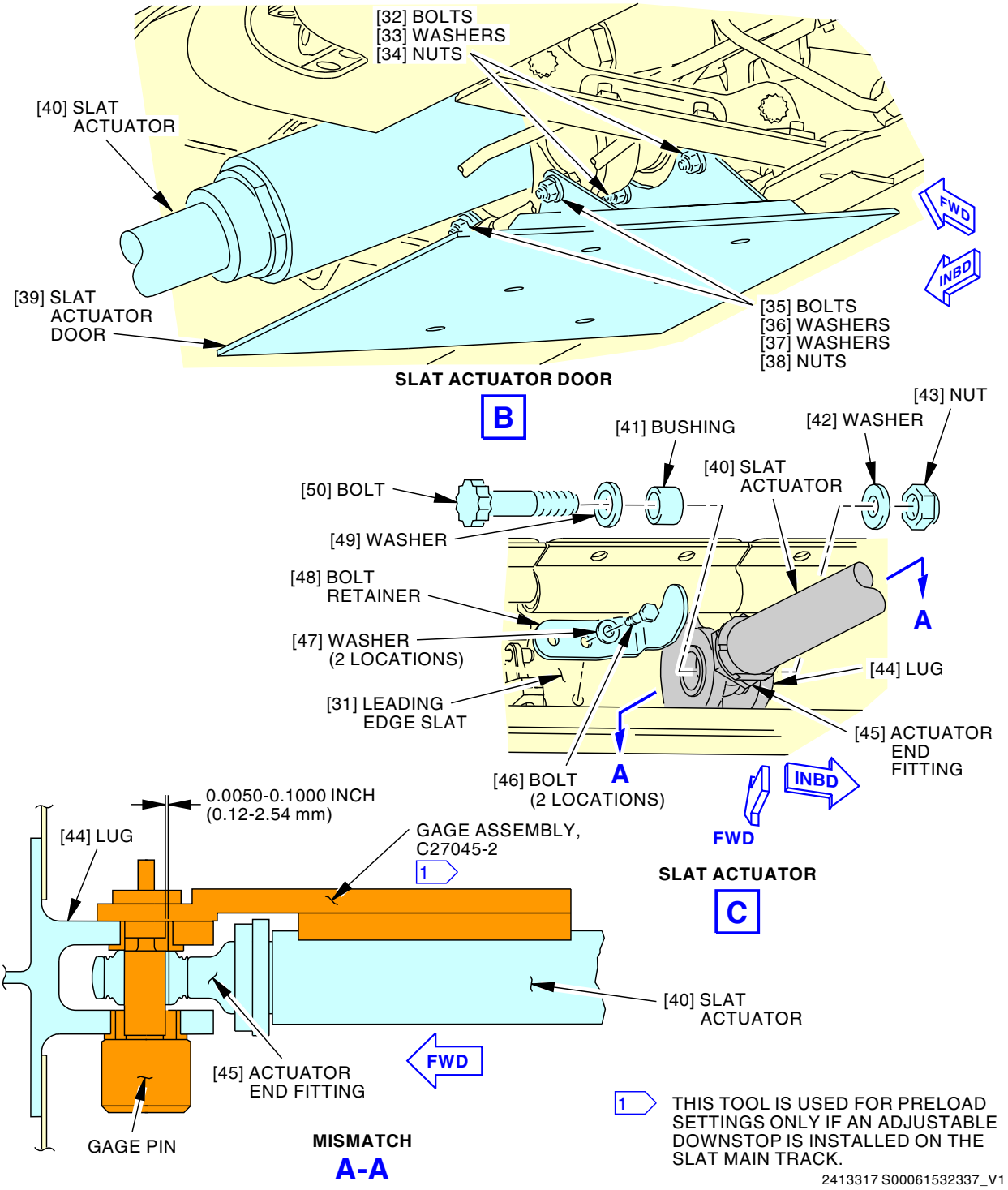
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



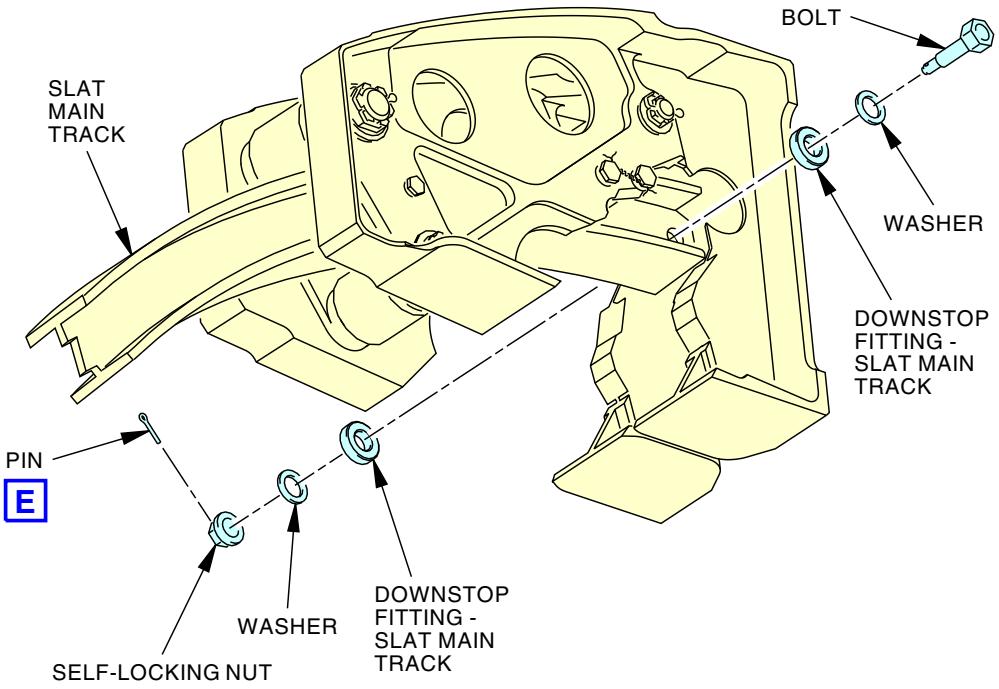
Leading Edge Slat Actuator Adjustment
Figure 502/27-81-00-990-805 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



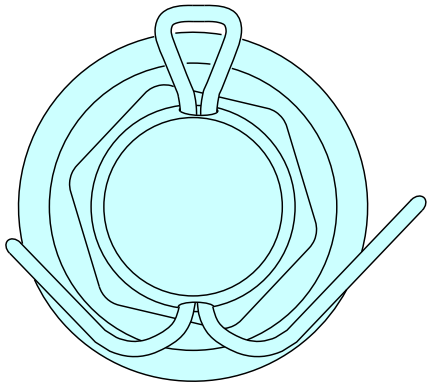
Leading Edge Slat Actuator Adjustment
Figure 502/27-81-00-990-805 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



TYPICAL NON-ADJUSTABLE DOWNSTOP INSTALLATION

D



E

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Leading Edge Slat Actuator Adjustment
Figure 502/27-81-00-990-805 (Sheet 3 of 3)

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TASK 27-81-00-820-803

4. Leading Edge Slats Adjustment

(Figure 503, Figure 504, and Figure 505)

A. General

(1) You must adjust the leading edge slats with the wing unsupported outboard of the engine nacelle. You can adjust the leading edge slats with the airplane on the gear or on jacks inboard of the engine nacelle. The airplane must not have fuel on the outboard wing.

(2) It is recommended that you do all the steps in this task, the full slat adjustment, for the most consistent and lowest drag adjustment.

(3) Where time and/or airplane condition do not support the use of the full slat adjustment, a minimum slat adjustment is permitted. Use of this minimum slat adjustment can result in increased drag compared with the full slat adjustment. In this task, all the steps that are not necessary for a minimum slat adjustment will be identified.

B. References

Reference	Title
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
27-88-11 P/B 401	LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - REMOVAL/INSTALLATION
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1739	Kit - Slat Rigging Tools Part #: C27045-1 Supplier: 81205
STD-755	Scale - Spring, Push/Pull Type, 0 - 150lbs (0 - 68kg) Capacity

D. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5

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(Continued)

Zone	Area
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

F. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

G. Prepare for the Adjustment

SUBTASK 27-81-00-010-002

(1) Remove the applicable access panels (TASK 57-41-02-000-801):

(a) For the left wing, remove these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, remove these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

SUBTASK 27-81-00-200-004

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(2) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD) at all time.

SUBTASK 27-81-00-820-001

(3) Do a preliminary adjustment of the auxiliary track forward support:

(a) Install the preload shim assembly, that is part of the kit, SPL-1739, at the forward supports for the auxiliary tracks.

1) Remove the nuts [74] and washers [75] from the clevis [76].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Lift the auxiliary track [72] with the clevis [76] through the auxiliary track support.

3) Install the preload shim assembly, which is part of the kit, SPL-1739, and shim [77] on the clevis [76].

4) Put the clevis [76] back in its position on the auxiliary track support.

5) Install the washers [75] and nuts [74] on the clevis [76].

6) Make sure that two BACW10P390TF, Polytetraflouroethylene (Teflon) (PTFE) washers are installed in the clevis/auxiliary track/detent arm joint, if you disconnected it. Use the applicable Illustrated Part Catalog for the required washers at this location.

NOTE: If the washers are damaged or missing, stabilization of the detent arm is reduced and it is possible for the detent arm to be deflected laterally during slat extension or retraction and the possibility of misalignment between the detent arm and the detent roller increases.

NOTE: If the washers are damaged or missing, it may be possible for the roller to come out of the detent arm track, thus affecting the operation of the detent system. Also extreme misalignment of the slat roller attachment could move the slat down sensor target, causing fault indications or physical damage to the sensor itself.

SUBTASK 27-81-00-820-002

(4) Do a preliminary adjustment of the auxiliary track aft support:

NOTE: If a minimum slat adjustment is done, preliminary adjustment of the auxiliary track aft support is not necessary.

(a) Loosen the nut [90] on the locking bolt [91] at the upper aft auxiliary track.

(b) Loosen the jamnut [82].

(c) Loosen the nut [80] on the locking bolt [79].

(d) Turn the adjustment nut [81] of the auxiliary track aft support to get the required trailing edge clearance until the dimension A is as specified (Table 501).

NOTE: Optional. In order to adjust the auxiliary track aft support to the dimensions given in the table below, adjust the auxiliary track up until the slot in the aft upper corner of the track touches the locking bolt [91] at the upper aft auxiliary track

Table 501/27-81-00-993-802

Location	Dimension A	Dimension B (reference)
Slat 1 and 8 (Outbd)	0.830 in. (21.08 mm)	2.380 in. (60.45 mm)
Slat 1 and 8 (Inbd)	0.950 in. (24.13 mm)	2.500 in. (63.50 mm)
Slat 2 and 7 (Outbd)	0.950 in. (24.13 mm)	2.500 in. (63.50 mm)
Slat 2 and 7 (Inbd)	1.450 in. (36.83 mm)	3.000 in. (76.20 mm)
Slat 3 and 6 (Outbd)	1.450 in. (36.83 mm)	3.000 in. (76.20 mm)
Slat 3 and 6 (Inbd)	1.450 in. (36.83 mm)	3.000 in. (76.20 mm)
Slat 4 and 5 (Outbd)	1.500 in. (38.10 mm)	3.050 in. (77.47 mm)
Slat 4 and 5 (Inbd)	2.100 in. (53.34 mm)	3.650 in. (92.71 mm)

(e) Tighten the nut [80] by hand on the locking bolt [79].

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(f) Temporarily tighten the jamnut [82].

NOTE: Do not install lockwire on the jam nut.

(g) Temporarily tighten the upper aft auxiliary track locking bolt [91].

SUBTASK 27-81-00-820-003

(5) Do a preliminary adjustment of the upstop pad (View C, Figure 503):

(a) Remove the retainers [85], nuts [86], and bolts [89].

(b) Add shims [87] under each of the stop pads [88].

NOTE: The total shim thickness will be 0.060 +0.005 / -0.002 in. (1.52 +0.13 / -0.05 mm).

(c) Install the bolts [89], nuts [86], and retainers [85].

SUBTASK 27-81-00-820-004

(6) Do a preliminary adjustment of the endstop pad (View C, Figure 503):

NOTE: If you do a minimum slat adjustment, preliminary adjustment of the endstop pad is not necessary.

(a) Remove the retainers [85], nuts [86], and bolts [89].

(b) Add shims [87] under each of the stop pads [88].

NOTE: The total shim thickness will be 0.060 +0.005 / -0.002 in. (1.52 +0.13 / -0.05 mm).

(c) Apply Cor-Ban 27L Compound, G50237, or corrosion inhibiting material, G50136, to the bolts [89].

(d) Install the bolts [89], nuts [86], and retainers [85].

1) Tighten the bolts [89] to 16 in-lb (1.8 N·m) - 20 in-lb (2.3 N·m).

SUBTASK 27-81-00-820-005

(7) Do a preliminary adjustment of the detent arm preload (Views C-C and D-D, Figure 503):

NOTE: If you do a minimum slat adjustment, preliminary adjustment of the detent arm preload is not necessary.

NOTE: When measuring the 0.100 in. (2.54 mm) minimum clearance between the torsion rod [109] and shoulder bolt [105], the detent arm [78] must be flush and in contact with the shoulder bolt [105]. This dimension only applies during the initial measurement of the torsion rod [109]. This dimension will not apply after the torsion rod [109] is preloaded during the slat adjustment.

(a) Make sure that three (CRES material, 0.063 in. (1.60 mm) nominal thickness) washers are installed in the detent roller/track/arm/sensor target joint (one washer under the bolt head and two washers installed on both sides of the auxiliary arm) per the applicable Illustrated Part Catalog.

NOTE: If the washers are thinner than 0.063 in. (1.60 mm), the lateral location of the roller bearing will be changed and it will no longer align with the centerline of the detent arm.

NOTE: The thinner washers will not support the torque preload and operating load imposed on the joint. As the thinner washers deform, the fastener torque preload is lost, and the joint may move under normal operating loads, inducing additional misalignment of the bearing. This joint holds the slat sensor target, so a loosened bolt will permit the sensor target to move. Target movement could lead to sensor indication problems, and the loose target could physically contact the sensor as the slat moves and cause additional damage.

(b) Adjust all preload on the detent arm to 0 lb (0 kg).

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1) Turn the detent arm preload adjustment bolt [73] clockwise to increase preload or counterclockwise to reduce preload (View D-D, Figure 503).

2) Adjust the preload on all the detent arms [78] to 0 lb (0 kg).

SUBTASK 27-81-00-860-046

(8) Make sure that the bolts [102] on the skin tab [92] are loose on the slat auxiliary arms (View F, Figure 503).

NOTE: This is to prevent damage to the fixed leading edge when the slat is retracted during the adjustment.

H. Leading Edge Slats Adjustment

NOTE: The following operations may require slat position change to complete the adjustment requirements and may result in dimensional changes when moving the slats.

SUBTASK 27-81-00-200-005

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD) at all times.

SUBTASK 27-81-00-820-006

(2) Do the initial adjustment of the leading edge slat in the (intermediate) extend position:

NOTE: If you do a minimum slat adjustment, initial adjustment of the slat in the (intermediate) extend position is not necessary.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Extend the leading edge slat to the (intermediate) extend (1-unit detent) position with hydraulic power, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

(b) Align the noses of the slats to get a mismatch of 0.000 in. (0.00 mm) to 0.060 in. (1.52 mm) between the adjacent slats.

1) Dimension may apply at any one point within the 1.0000 in. (25.40 mm) band width (Figure 505).

NOTE: This dimension is normal to the skin surface where the measurement is taken. Vertical mismatch is permissible.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Adjust the forward support of the auxiliary track [72] (View A-A, Figure 503).

1) Make sure that two BACW10P390TF, PTFE washers are installed in the clevis/auxiliary track/detent arm joint, if you disconnected it. Use the applicable Illustrated Part Catalog for the required washers at this location.

NOTE: If the washers are damaged or missing, stabilization of the detent arm is reduced and it is possible for the detent arm to be deflected laterally during slat extension or retraction and the possibility of misalignment between the detent arm and the detent roller increases.

NOTE: If the washers are damaged or missing, it may be possible for the roller to come out of the detent arm track, thus affecting the operation of the detent system. Also extreme misalignment of the slat roller attachment could move the slat down sensor target, causing fault indications or physical damage to the sensor itself.

2) Remove the nut [74] and washer [75] from the clevis [76].

3) Lift the auxiliary track [72] with the clevis [76] through the auxiliary track support.

4) Add or remove the shims [77] until the gap between the slat and fixed leading edge is 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm).

a) Measure the clearance at the tightest point, within 2.00 in. (50.8 mm) on either side of the each auxiliary track centerline.

b) Measure the clearance to a depth of 0.40 in. (10.16 mm) to 0.60 in. (15.24 mm).

5) Move the slat, if required, to remove shims [77].

6) Make sure that the total shim thickness is 0.030 in. (0.76 mm) to 0.270 in. (6.86 mm).

7) Re-align the noses of the slats to get a mismatch of 0.000 in. (0.00 mm) to 0.060 in. (1.52 mm) between the adjacent slats, if/as required.

8) Put the clevis [76] back in its positions on the auxiliary track support.

9) Install the washer [75] and nut [74] on the clevis [76].

(d) Adjust the cam plate [83].

NOTE: The cam plates are located on the forward end of the detent arm and are used to align and hold the slats in the extend position.

1) Loosen the two nuts [84] that attach the cam plate [83] to the detent arm [78].

a) Adjust the cam plates to the dimension (Views B-B and C-C, Figure 503).

<1> If the cam plate serrations do not mate with corresponding serrations on the detent arm when located per the required dimension then move the cam plate aft into the next available serration.

2) Move the cam plate [83] forward or aft, as required, until you get these conditions:

a) Engage the serrations in the required position and tighten the nuts [84] to a setpoint of 85 in-lb (9.6 N·m) (preferred method) or bolts [103] to a setpoint of 100 in-lb (11.3 N·m) (optional method).

NOTE: The recommended method is to tighten the nuts.

NOTE: The optional method is to tighten the bolts.

b) The detent roller touch the root of each detent arm [78].

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c) Make sure that the clearance between the detent roller and aft surface of the cam plate is 0.000 in. (0.00 mm) to 0.030 in. (0.76 mm).

3) Cycle the slats and make sure that the 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm) clearance is kept.

4) Adjust if/as required the alignment of the slat noses and detent arm cam plates.

(e) Move the slat from the extend position until the detent roller is completely clear of the detent arm [78] and cam plate [83].

(f) On slats 1, 4, 5 and 8, adjust the detent arm preload to 80 ±5 lbf (355.9 ±22.3 N), measured with a spring scale, STD-755, at the throat of the cam plate [83], and 0.100 +0.060 / -0.040 in. (2.54 +1.52 / -1.02 mm) dimension at the lower portion of the detent arm [78].

NOTE: The detent arm preload adjustment bolt [73] is located next to the auxiliary tracks at the far end of the torsion rod [109] and is used to change the preload tension of the torsion rod [109] and detent arm [78]. Adjust the preload by rotating the detent arm preload adjustment bolt [73] clockwise for increased preload and counterclockwise for reduced preload.

1) If it is necessary, remove the nut at the lower auxiliary track attach bolt to see this clearance.

(g) On slats 2, 3, 6 and 7, adjust the detent arm preload to 50 ±5 lbf (222.4 ±22.3 N), measured with a spring scale, STD-755, at the throat of the cam plate [83], and 0.100 +0.060 / -0.040 in. (2.54 +1.52 / -1.02 mm) dimension at the lower portion of the detent arm [78].

(h) Make sure that there is 0.010 in. (0.2540 mm) minimum clearance between the torsion rod [109] and shoulder bolt [104], if not, do the steps that follow (View D-D, Figure 503):

NOTE: The shoulder bolt [104] is installed through both of the flanges of the auxiliary track support clevis.

NOTE: The clearance measurement is taken where the torsion rod [109] exits the shoulder bolt [104] on the detent preload side of the mechanism.

1) Remove the preload from the detent arm [78].

2) Adjust the detent arm preload adjustment bolt [73] with the steps that follow:

a) Re-align the torsion rod [109] by backing off the nut [108] and adjusting the shoulder bolt [105] up or down in the slotted hole in the torsion rod support bracket assembly.

b) Tighten the nut [108] to 450 in-lb (51 N·m) - 600 in-lb (68 N·m).

3) Adjust the detent arm [78] preload.

a) Adjust the preload by rotating the detent arm preload adjustment bolt [73] clockwise for increased preload and counterclockwise for reduced preload.

b) After final adjustment fasten the detent arm preload adjustment bolt [73] to its lower trunnion with safety wire (single wire method permissible).

4) Make sure that it is a correct clearance between the torsion rod [109] and shoulder bolt [104].

SUBTASK 27-81-00-820-007

(3) Do the initial adjustment of the leading edge slat in the retract position:

NOTE: If a minimum slat adjustment is done, initial adjustment of the slat in the retract position is not necessary.

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(a) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

(b) Position the ends of the slats using the end stop pad adjustments to get a 0.000 in. (0.00 mm) to 0.050 in. (1.27 mm) fair between all adjacent slat ends; between the outboard end of slats 1 and 8 and on the adjacent fixed leading edge; and between the inboard end of slat 4 and 5 and adjacent fixed leading edge.

NOTE: The end stops are located near both ends of each slat and can be used to adjust the trailing edge clearance near the slat center, clearance and misfair of the flex skin to the lower fixed leading edge panels, and misfair at the slat ends. Each stop location has a horizontal and vertical pad. To adjust each stop pad, add or subtract in any combination of 0.010 in. (0.25 mm), 0.020 in. (0.51 mm), 0.040 in. (1.02 mm) and 0.063 in. (1.60 mm) thick solid shims. The total permitted shim thickness is 0.000 in. (0.00 mm) to 0.128 in. (3.25 mm) and must be such that the slat flex skin keeps solid contact with the fixed leading edge.

(c) Make sure that the slat upstops touch the horizontal and vertical stop pads.

NOTE: The upstop pads are located 5.3 in. (135 mm) on either side of each actuator and can be used to adjust the trailing edge clearance near the slat center, clearance and misfair of the flex skin to the lower fixed leading edge panels, and misfair at the slat ends. Each stop location has a horizontal and vertical pad.

(d) If the slat upstops do not touch the horizontal and vertical stop pads, adjust the stop pad:

NOTE: Use these stops to adjust the slat nose to match the adjacent slats.

1) Remove the retainers [85], nuts [86], and bolts [89].
2) Add or remove shims [87] as it is necessary until the slat fairs with the adjacent slat.

NOTE: Add or remove only a minimum amount of shim necessary for the slat upstop to touch the stop pad. To adjust each stop pad, add or subtract in any combination of 0.010 in. (0.25 mm), 0.020 in. (0.51 mm), 0.040 in. (1.02 mm) and 0.063 in. (1.60 mm) thick solid shims. The total permitted shim thickness is 0.000 in. (0.00 mm) to 0.128 in. (3.25 mm) and must be such that the slat flex skin keeps solid contact with the fixed leading edge.

3) Install the bolts [89], nuts [86], and retainers [85].

(e) Adjust the aft support of the auxiliary track [72] (Views C-C and D-D, Figure 503):

1) Loosen the nut [90] on the locking bolt [91] at the upper aft auxiliary track.
2) Loosen the jamnut [82].
3) Loosen the nut [80] on the locking bolt [79].
4) Turn the adjustment nut [81] until the clearance between the slat and fixed leading edge is 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm) (View D, Figure 503).

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NOTE: For a half-slat span, a clearance of 0.002 +0.019 / -0.000 in. (0.051 +0.483 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

NOTE: For a one-slat span, a clearance of 0.002 +0.012 / -0.000 in. (0.051 +0.305 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

SIA ALL

a) Measure the clearance at the tightest point, within 2.00 in. (50.8 mm) on either side of the each auxiliary track centerline.

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b) Measure the clearance to a depth of 0.40 in. (10.2 mm) to 0.60 in. (15.2 mm).

5) Temporarily tighten the locking bolt [79].

6) Temporarily tighten the jamnut [82].

7) Temporarily tighten the locking bolt [91] at the upper aft auxiliary track .

(f) Measure and calculate the weighted average misfair.

1) Measure the misfair at six locations for each specified gap (Figure 504, Table 502):

NOTE: There will be a total of 30 locations on each wing that you will need to measure.

a) The gap between all adjacent slat ends.

b) The clearance between the outboard end of slats 1 and 8 and adjacent fixed leading edge.

c) The clearance between the inboard end of slats 4 and 5 and adjacent fixed leading edge.

Table 502/27-81-00-993-803

Point	Location	Value
F1	Outbd slat 1/8	
F2	Outbd slat 1/8	
F3	Outbd slat 1/8	
F4	Outbd slat 1/8	
F5	Outbd slat 1/8	
F6	Outbd slat 1/8	
F11	Inbd slat 1/8	
F12	Inbd slat 1/8	
F13	Inbd slat 1/8	
F14	Inbd slat 1/8	
F15	Inbd slat 1/8	
F16	Inbd slat 1/8	
F21	Inbd slat 2/7	
F22	Inbd slat 2/7	
F23	Inbd slat 2/7	
F24	Inbd slat 2/7	
F25	Inbd slat 2/7	
F26	Inbd slat 2/7	
F31	Inbd slat 3/6	
F32	Inbd slat 3/6	
F33	Inbd slat 3/6	
F34	Inbd slat 3/6	
F35	Inbd slat 3/6	

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Table 502/27-81-00-993-803 (Continued)

Point	Location	Value
F36	Inbd slat 3/6	
F41	Inbd slat 4/5	
F42	Inbd slat 4/5	
F43	Inbd slat 4/5	
F44	Inbd slat 4/5	
F45	Inbd slat 4/5	
F46	Inbd slat 4/5	

2) Multiply all negative fair measurements by -0.5.

3) Add all the misfair values (positive and negative misfairs).

4) Divide the total misfair value by 6.

5) Make sure that the result is 0.000 in. (0.00 mm) to 0.050 in. (1.27 mm).

(g) Make sure that the slat endstops touch the horizontal and vertical stop pads.

(h) If the slat endstops do not touch the horizontal and vertical stop pads, adjust the stop pad:

1) Remove the retainers [85], nuts [86], and bolts [89].

2) Add or remove shims [87] as it is necessary until the slat fairs with the adjacent slat.

a) Add or remove only a minimum amount of shim necessary for the slat upstop to touch the stop pad.

NOTE: Add or remove only a minimum amount of shim necessary for the slat upstop to touch the stop pad. To adjust each stop pad, add or subtract in any combination of 0.010 in. (0.25 mm), 0.020 in. (0.51 mm), 0.040 in. (1.02 mm) and 0.063 in. (1.60 mm) thick solid shims. The total permitted shim thickness is 0.000 in. (0.00 mm) to 0.128 in. (3.25 mm) and must be such that the slat flex skin keeps solid contact with the fixed leading edge.

3) Apply Cor-Ban 27L Compound, G50237, or corrosion inhibiting material, G50136, to the bolts [89].

4) Install the bolts [89], nuts [86], and retainers [85].

a) Tighten the bolts [89] to 16 in-lb (1.8 N·m) - 20 in-lb (2.3 N·m).

SUBTASK 27-81-00-820-008

(4) Do the final adjustment of the leading edge slat in the (intermediate) extend position:

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

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(WARNING PRECEDES)

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(a) To extend the leading edge slat to the (intermediate) extend (1-unit detent) position, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

(b) Align the noses of the slats to get a mismatch of 0.000 in. (0.00 mm) to 0.060 in. (1.52 mm) between the adjacent slats.

1) Dimension may apply at any one point within the 1.0000 in. (25.40 mm) band width (Figure 505).

NOTE: This dimension is normal to the skin surface where the measurement is taken. Vertical mismatch is permissible.

(c) Make sure that the detent roller touch the root of each detent arm.

(d) Make sure that the clearance between the detent roller and aft surface of the cam plate is 0.000 in. (0.00 mm) to 0.030 in. (0.76 mm).

(e) If the detent roller does not touch the root of the detent arm and the gap between the detent roller and cam plate [83] is out of tolerance, adjust the cam plate [83]:

1) Loosen the two nuts [84] that attach the cam plate [83] to the detent arm [78].

2) Move the cam plate [83] forward or aft as it is necessary.

3) Temporarily tighten the two nuts [84].

(f) Make sure that the clearance between the slat and fixed leading edge is 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm) (View D, Figure 503).

1) Measure the clearance at the tightest point, within 2.00 in. (50.8 mm) on either side of each auxiliary track centerline.

2) Measure the clearance to a depth of 0.40 in. (10.2 mm) to 0.60 in. (15.2 mm).

(g) If the clearance between the slat and fixed leading edge is not 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm), adjust the forward support of the auxiliary track:

1) Remove the nut [74] and washer [75] from the clevis [76].

2) Lift the auxiliary track [72] with the clevis [76] through the auxiliary track support.

3) Add or remove the shims [77] to a total thickness of 0.030 in. (0.76 mm) to 0.270 in. (6.86 mm).

4) Put the clevis [76] back in its position on the auxiliary track support.

5) Install the washer [75] and nut [74] on the clevis [76].

(h) Remove the preload shim assembly, which is part of the kit, SPL-1739, at the forward supports for the auxiliary tracks:

1) Remove the nut [74] and washer [75] from the clevis [76].

2) Lift the auxiliary track [72] with the clevis [76] through the auxiliary track support.

3) Remove the preload shim assembly.

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4) Put the clevis [76] back in its position on the auxiliary track support.

5) Install the washer [75] and nut [74] on the clevis [76].

(i) Make sure that the minimum clearance at these locations is 0.20 in. (5.1 mm):

1) The clearance between all adjacent slat ends.

2) The clearance between the outboard end of slats 1 and 8 and adjacent fixed leading edge.

3) The clearance between the inboard end of slats 4 and 5 and adjacent fixed leading edge.

(j) Extend the slat until the detent roller is completely clear of the detent arm [78] and cam plate [83].

(k) On slats 1, 4, 5 and 8, make sure that the detent arm preload is 80 ±5 lbf (355.9 ±22.3 N), measured with a spring scale, STD-755, at the throat of the cam plate [83], and 0.100 +0.060 / -0.040 in. (2.54 +1.52 / -1.02 mm) dimension at the lower portion of the detent arm [78].

(l) On slats 2, 3, 6 and 7, make sure that the detent arm preload is 50 ±5 lbf (222.4 ±22.3 N), measured with a spring scale, STD-755, at the throat of the cam plate [83], and 0.100 +0.060 / -0.040 in. (2.54 +1.52 / -1.02 mm) dimension at the lower portion of the detent arm [78].

1) If it is necessary, turn the detent arm preload adjustment bolt [73] clockwise to increase the preload or counterclockwise to reduce the preload.

2) Install MS20995C32 lockwire, G01048, on the detent arm preload adjustment bolt [73].

(m) Make sure that the gap at the lower portion of the detent arm slot is 0.100 +0.060 / -0.040 in. (2.54 +1.52 / -1.02 mm).

SUBTASK 27-81-00-820-009

(5) Do the final adjustment of the leading edge slat in the retract position:

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

(b) Make sure that the slat upstops touch the horizontal and vertical stop pads.

(c) If the slat upstops do not touch the horizontal and vertical stop pads, adjust the stop pad:

1) Remove the retainers [85], nuts [86], and bolts [89].

2) Add or remove shims [87] as it is necessary until the slat fairs with the adjacent slat.

NOTE: Add or remove only a minimum amount of shim necessary for the slat upstop to touch the stop pad. To adjust each stop pad, add or subtract in any combination of 0.010 in. (0.25 mm), 0.020 in. (0.51 mm), 0.040 in. (1.02 mm) and 0.063 in. (1.60 mm) thick solid shims. The total permitted shim thickness is 0.000 in. (0.00 mm) to 0.128 in. (3.25 mm) and must be such that the slat flex skin keeps solid contact with the fixed leading edge.

3) Install the bolts [89], nuts [86], and retainers [85].

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(d) Make sure that the clearance between the slat and fixed leading edge is 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm) (View D, Figure 503).

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NOTE: For a half-slat span, a clearance of 0.002 +0.019 / -0.000 in. (0.051 +0.483 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

NOTE: For a one-slat span, a clearance of 0.002 +0.012 / -0.000 in. (0.051 +0.305 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

SIA ALL

1) Measure the clearance at the tightest point, within 2.00 in. (50.8 mm) on either side of each auxiliary track centerline.
2) Measure the clearance to a depth of 0.40 in. (10.2 mm) to 0.60 in. (15.2 mm).

(e) If the clearance between the slat and fixed leading edge is not in tolerance, adjust the aft support of the auxiliary track:

1) Loosen the nut [90] on the locking bolt [91] at the upper aft auxiliary track.
2) Loosen the jamnut [82].
3) Loosen the nut [80] on the locking bolt [79].
4) Turn the adjustment nut [81] until the clearance between the slat and fixed leading edge is 0.002 +0.006 / -0.000 in. (0.05 +0.15 / -0.00 mm) (View D, Figure 503).

SIA 012, 013

NOTE: For a half-slat span, a clearance of 0.002 +0.019 / -0.000 in. (0.051 +0.483 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

NOTE: For a one-slat span, a clearance of 0.002 +0.012 / -0.000 in. (0.051 +0.305 / -0.000 mm) is permitted between the slat 4 and the fixed leading edge.

SIA ALL

5) Temporarily tighten the nut [80] on the locking bolt [79].
6) Temporarily tighten the jamnut [82].

(f) Reduce the dimension A by 0.021 ±0.003 in. (0.53 ±0.08 mm) to preload the slat trailing edge:

1) Loosen the jamnut [82].
2) Loosen the nut [80] to loosen the locking bolt [79].
3) Turn the adjustment nut [81] 180 ±30 degrees clockwise, viewed from below.

(g) Temporarily tighten the locking bolt [79].

(h) Temporarily tighten the jamnut [82].

(i) Make sure that the weighted average misfair is 0.000 in. (0.00 mm) to 0.050 in. (1.27 mm).

(j) Make sure that the slat endstops touch the horizontal and vertical stop pads.

(k) If the slat endstops do not touch the horizontal and vertical stop pads, adjust the stop pad:

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1) Remove the retainers [85], nuts [86], and bolts [89].
2) Add or remove shims [87] as it is necessary until the slat fairs with the adjacent slat.

NOTE: Add or remove only a minimum amount of shim necessary for the slat upstop to touch the stop pad. To adjust each stop pad, add or subtract in any combination of 0.010 in. (0.25 mm), 0.020 in. (0.51 mm), 0.040 in. (1.02 mm) and 0.063 in. (1.60 mm) thick solid shims. The total permitted shim thickness is 0.000 in. (0.00 mm) to 0.128 in. (3.25 mm) and must be such that the slat flex skin keeps solid contact with the fixed leading edge.

3) Apply Cor-Ban 27L Compound, G50237, or corrosion inhibiting material, G50136, to the bolts [89].
4) Install the bolts [89], nuts [86], and retainers [85].
   a) Tighten the bolts [89] to 16 in-lb (1.8 N·m) - 20 in-lb (2.3 N·m).

(l) Measure and write down the misfairs at six locations for each of these gaps (Figure 504, Table 502):
1) The clearance between all adjacent slat ends
2) The clearance between the outboard end of slats 1 and 8 and adjacent fixed leading edge
3) The clearance between the inboard end of slats 4 and 5 and adjacent fixed leading edge.

(m) Measure the slat end clearance at three locations for each slat (Figure 504, Table 503).

Table 503/27-81-00-993-804

Point	Location	Value
G1	Outbd slat 1/8	
G2	Outbd slat 1/8	
G3	Outbd slat 1/8	
G11	Inbd slat 1/8	
G12	Inbd slat 1/8	
G13	Inbd slat 1/8	
G21	Inbd slat 2/7	
G22	Inbd slat 2/7	
G23	Inbd slat 2/7	
G31	Inbd slat 3/6	
G32	Inbd slat 3/6	
G33	Inbd slat 3/6	
G41	Inbd slat 4/5	
G42	Inbd slat 4/5	
G43	Inbd slat 4/5	

1) Make sure that the clearance between all adjacent slat ends is 0.260 +0.150 / -0.060 in. (6.60 +3.81 / -1.53 mm).

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2) Make sure that the clearance between the slat ends and the adjacent fixed leading edge is 0.250 +0.150 / -0.060 in. (6.35 +3.81 / -1.52 mm).

SUBTASK 27-81-00-860-047

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(6) To extend the leading edge slats to the full extend (30-unit detent) position, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 27-81-00-220-006

(7) Make sure that the minimum clearance at these locations is 0.20 in. (5.1 mm):

(a) The clearance between all adjacent slat ends.

(b) The clearance between the outboard end of slats 1 and 8 and adjacent fixed leading edge.

(c) The clearance between the inboard end of slats 4 and 5 and adjacent fixed leading edge.

SUBTASK 27-81-00-860-048

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(8) To extend the leading edge slats to the (intermediate) extend (1-unit detent) position, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

SUBTASK 27-81-00-820-010

(9) Make sure that the detent roller touch the root of each detent arm.

NOTE: It is possible to manually apply load to the slats to help the slats meet the requirement.

SUBTASK 27-81-00-820-011

(10) Align the noses of the slats to get a mismatch of 0.000 in. (0.00 mm) to 0.060 in. (1.52 mm) between the adjacent slats.

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(a) Dimension may apply at any one point within the 1.0000 in. (25.40 mm) band width (Figure 505).

NOTE: This dimension is normal to the skin surface where the measurement is taken. Vertical mismatch is permissible.

(b) Measure the clearance between the detent roller and aft surface of the cam plate.

(c) Make sure that the sum of all of the clearances is 0.000 in. (0.00 mm) to 0.060 in. (1.52 mm).

SUBTASK 27-81-00-420-004

(11) Tighten the nut [80] on the locking bolt [79] for the auxiliary track aft support to 65 in-lb (7.3 N·m) - 100 in-lb (11.3 N·m).

SUBTASK 27-81-00-420-005

(12) Tighten the jamnut [82] on the auxiliary track aft support.

(a) Finger tight until the jamnut [82] touches the support shaft and tighten an additional quarter turn.

1) As an option, it is possible to tighten the jamnut [82] to a setpoint of 65 in-lb (7.3 N·m).

NOTE: There is no lockwire required on the jamnut [82].

SUBTASK 27-81-00-420-006

(13) Tighten the nut [90] on the locking bolt [91] at the upper aft auxiliary track to 130 in-lb (14.7 N·m) - 200 in-lb (22.6 N·m).

SUBTASK 27-81-00-420-007

(14) Tighten the nut [74] on the auxiliary track forward support to a setpoint of 530 in-lb (59.9 N·m).

SUBTASK 27-81-00-420-008

(15) Tighten the nuts [84] on the cam plate to a setpoint of 85 in-lb (9.6 N·m) (preferred method) or the bolts [103] to a setpoint of 100 in-lb (11.3 N·m) (optional method).

NOTE: The recommended method is to tighten the nuts.

NOTE: The optional method is to tighten the bolts.

SUBTASK 27-81-00-420-009

(16) Install MS20995C32 lockwire, G01048, between the holes in the shims [77] of the auxiliary track forward support.

SUBTASK 27-81-00-420-010

(17) Install MS20995C32 lockwire, G01048, on the detent arm preload adjustment bolt [73].

SUBTASK 27-81-00-220-007

(18) Make sure that the clearances between the slat proximity sensors and slat auxiliary track targets are correct and adjust any out of adjustment clearance if necessary (LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - REMOVAL/INSTALLATION, PAGEBLOCK 27-88-11/401).

SUBTASK 27-81-00-200-006

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(19) Keep the housing (can) assemblies of the slat main tracks clean and free of all unwanted objects (FOD) at all times.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-049

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-81-00-410-002

(2) Install the applicable access panels (TASK 57-41-02-400-801):

NOTE: At the main track locations, the clearance between the access panel and flex tab must be 0.100 +0.080 / -0.040 in. (2.54 +2.03 / -1.02 mm).

(a) For the left wing, install these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, install these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-820-012

(3) Adjust the auxiliary arm skin tabs [92] at the auxiliary track locations:

(a) Adjust the skin tab [92] to get the correct gap to the flex skin and access panels [93]:

1) Loosen the nuts [95] on the bolts [102].

2) Adjust the position of the skin tab [92] to get a gap of 0.100 in. (2.54 mm) between the skin tab [92] and flex skin.

3) Adjust the position of the skin tab [92] to get a gap of 0.100 +0.080 / -0.040 in. (2.54 +2.03 / -1.02 mm) between the skin tab [92] and access panels [93].

4) Tighten the nuts [95].

(b) Adjust the position of the skin tab [92] on the skin tab support [96] and skin tab support [97] to get the correct misfair:

1) Loosen the nuts [101] on the bolts [98].

2) Adjust the position of the skin tab [92] until these misfairs are between the slat and skin tab [92]:

a) -0.010 ±0.020 in. (-0.25 ±0.51 mm) for a minimum of 75 percent of the slat span.

b) -0.010 ±0.040 in. (-0.25 ±1.02 mm) for a maximum of 25 percent of the slat span.

3) Tighten the nuts [101].

SUBTASK 27-81-00-220-008

(4) With the slats completely adjusted (rigged), do the step that follow:

(a) Apply hand load to the end of each slat assembly (as necessary) to make sure that preload exists.

(b) If no preload exists, do these steps:

1) Make sure that the possible under-travel dimension of the slat actuator does not exceed 0.020 in. (0.51 mm) maximum between the attach point at the rod end of the slat actuator and clevis bores of the slat attach fittings.

NOTE: The under-travel dimension of the slat actuator indicates that there is no preload of the slat actuator in relationship to the slat actuator attach fitting.

a) If the dimension is greater than 0.020 in. (0.51 mm), make sure that the part numbers of the main track assemblies are correct.

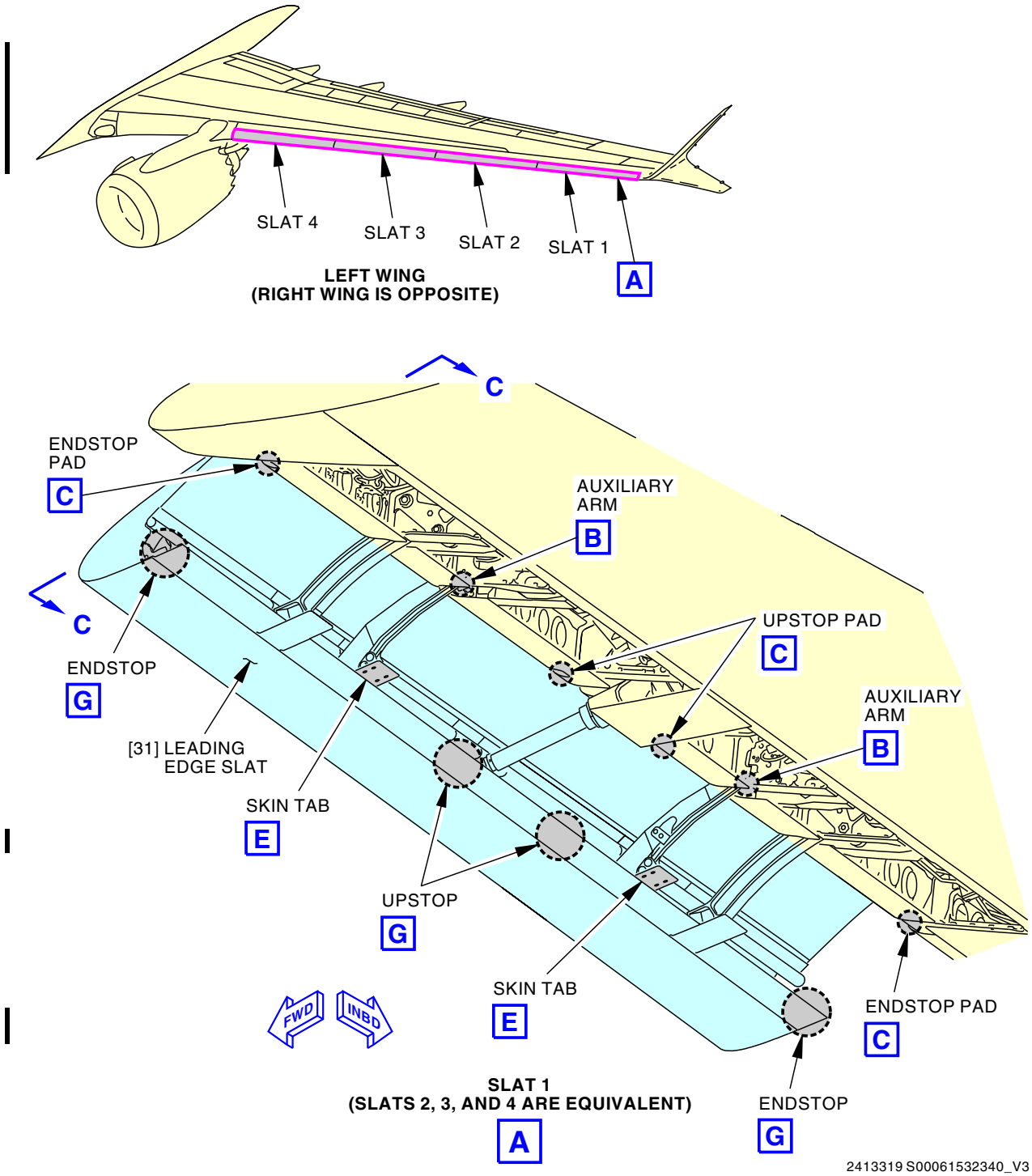
NOTE: When the slat main tracks are incorrectly installed visual cues (excessive mismatches, misalignment, skew, etc.) will sometimes indicate a problem in advance depending on which slat is affected.

SUBTASK 27-81-00-710-005

(5) Do this task: Leading Edge Flap and Slat Operational Test in Primary Mode, TASK 27-81-00-700-801.

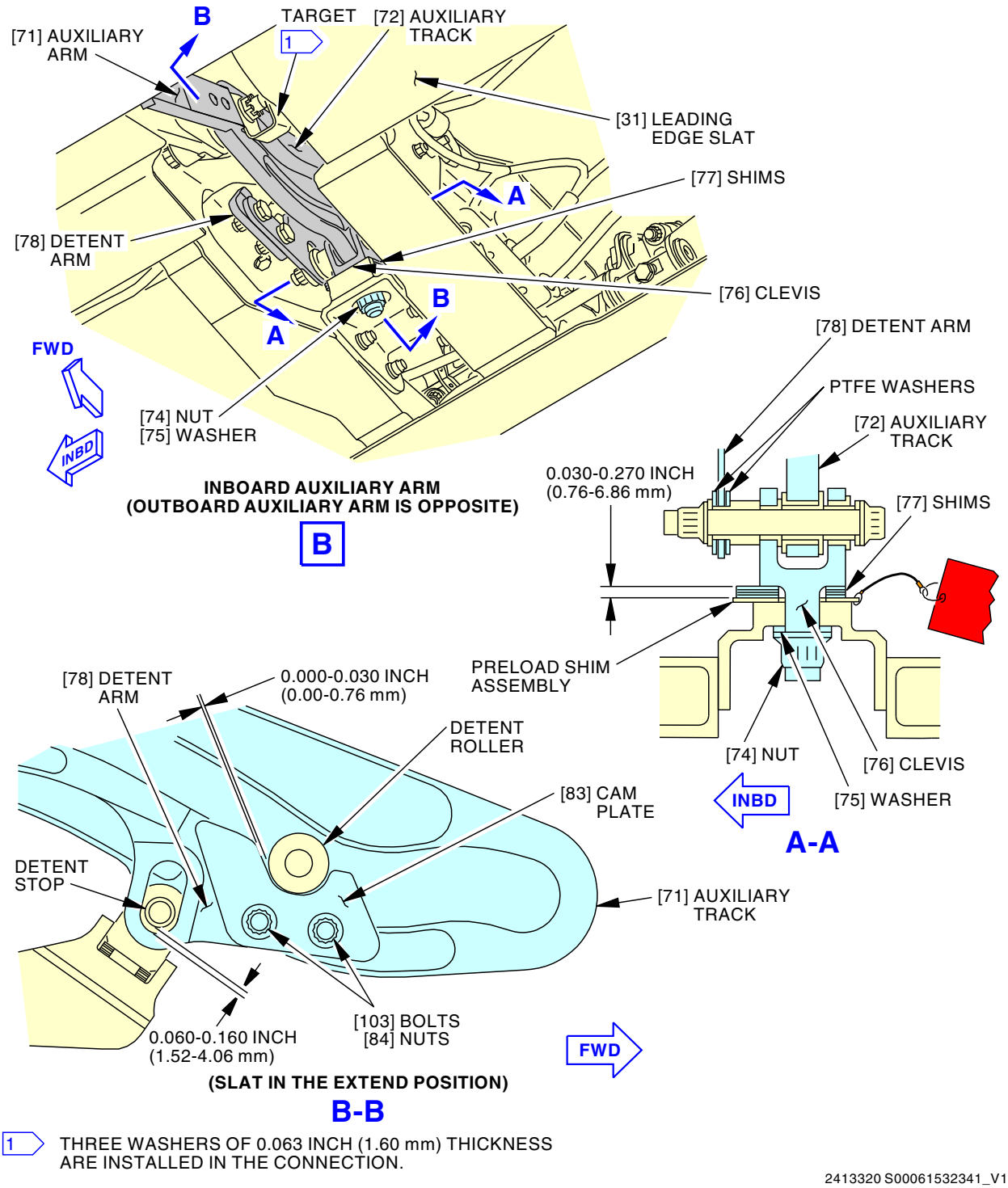
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Adjustment
Figure 503/27-81-00-990-806 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

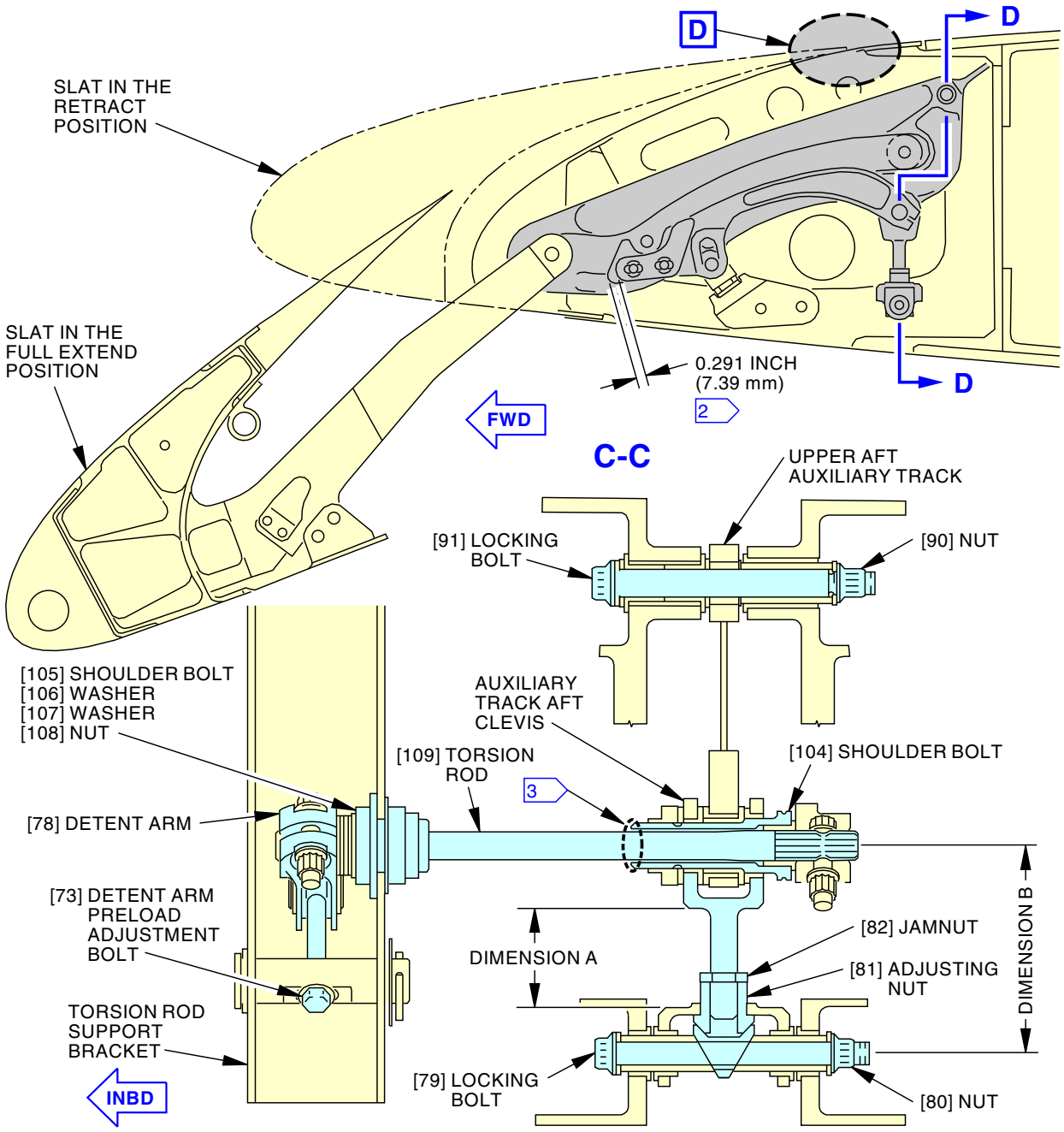


1 THREE WASHERS OF 0.063 INCH (1.60 mm) THICKNESS ARE INSTALLED IN THE CONNECTION.

2413320 S00061532341_V1

Leading Edge Slat Adjustment
Figure 503/27-81-00-990-806 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



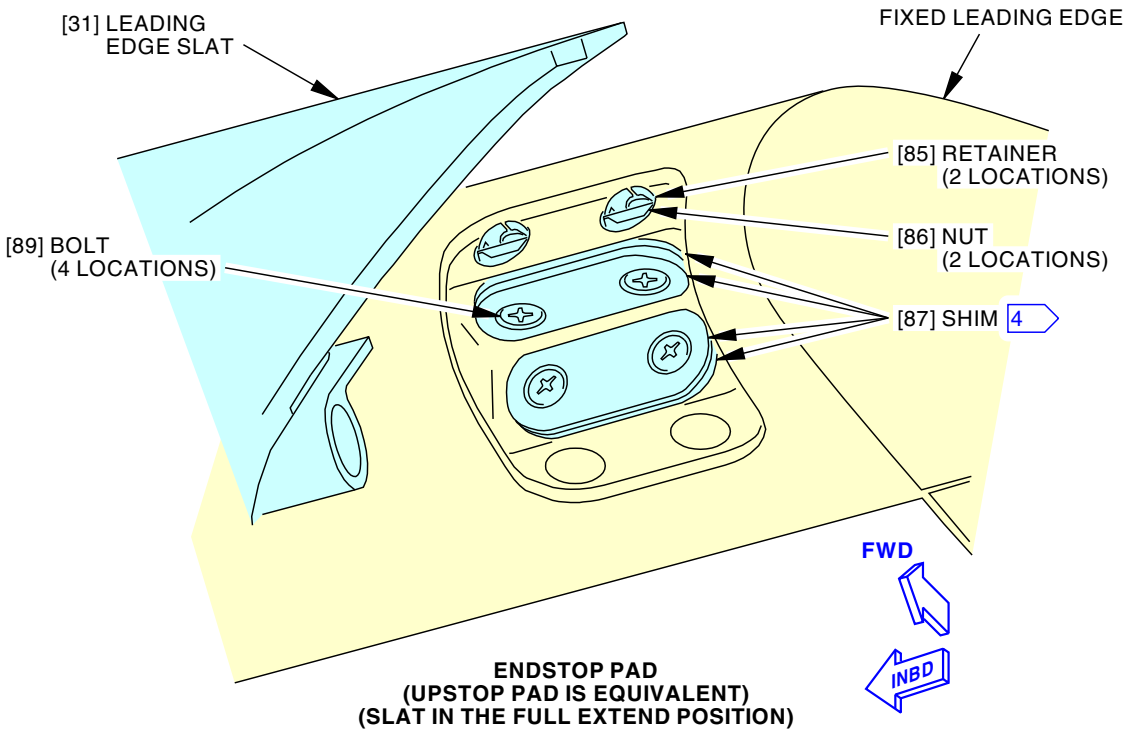
2 PRELIMINARY CAM PLATE SETTING DIMENSIONS ON SLATS 4 AND 5 AT 2 LOCATIONS PER SLAT.

3 0.010 INCH (0.25 mm) CLEARANCE REQUIRED IN THIS AREA. THIS DIMENSION ONLY APPLIES DURING INITIAL TORSION ROD INSTALLATION.

2413321 S00061532342_V3

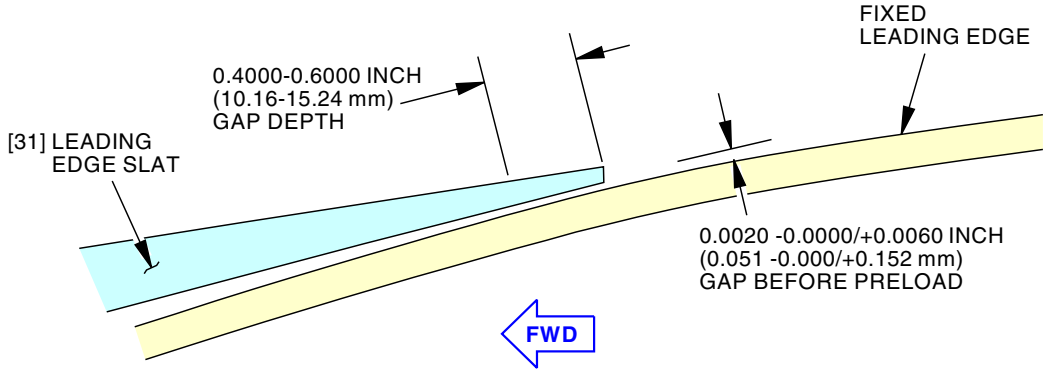
Leading Edge Slat Adjustment
Figure 503/27-81-00-990-806 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ENDSTOP PAD
(UPSTOP PAD IS EQUIVALENT)
(SLAT IN THE FULL EXTEND POSITION)

C



(SLAT SHOWN IN RETRACT POSITION,
THE INTERMEDIATE POSITION IS DIMENSIONALLY EQUIVALENT)

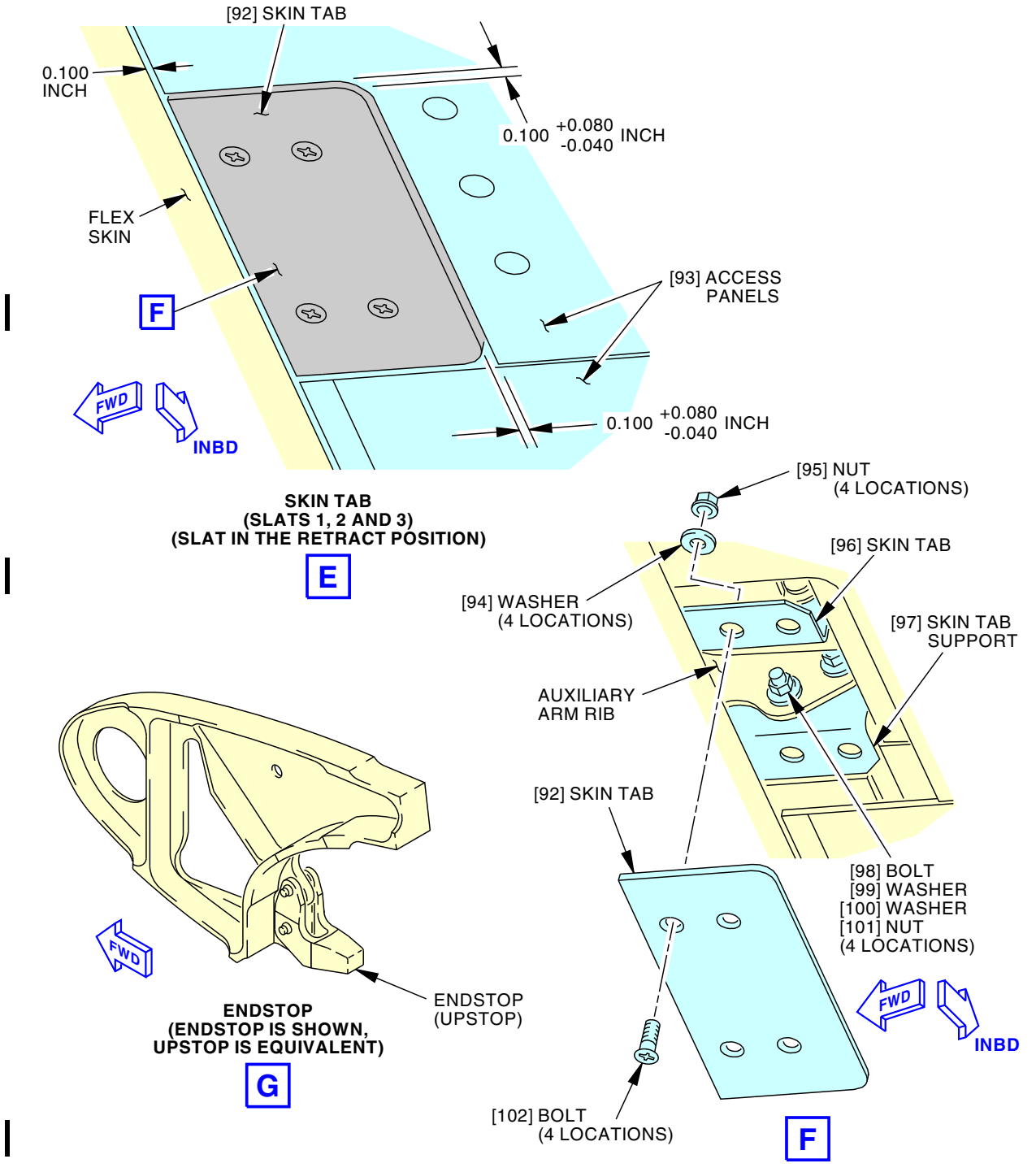
D

4 THE TOTAL SHIM THICKNESS AFTER THE FINAL ADJUSTMENT SHALL BE 0.0000-0.1280 INCH (0.000 - 3.251 mm) AND SHALL BE SUCH THAT THE SLAT FLEX SKIN MAINTAINS SOLID CONTACT WITH THE FORWARD LEADING EDGE.

2413322 S00061532343_V3

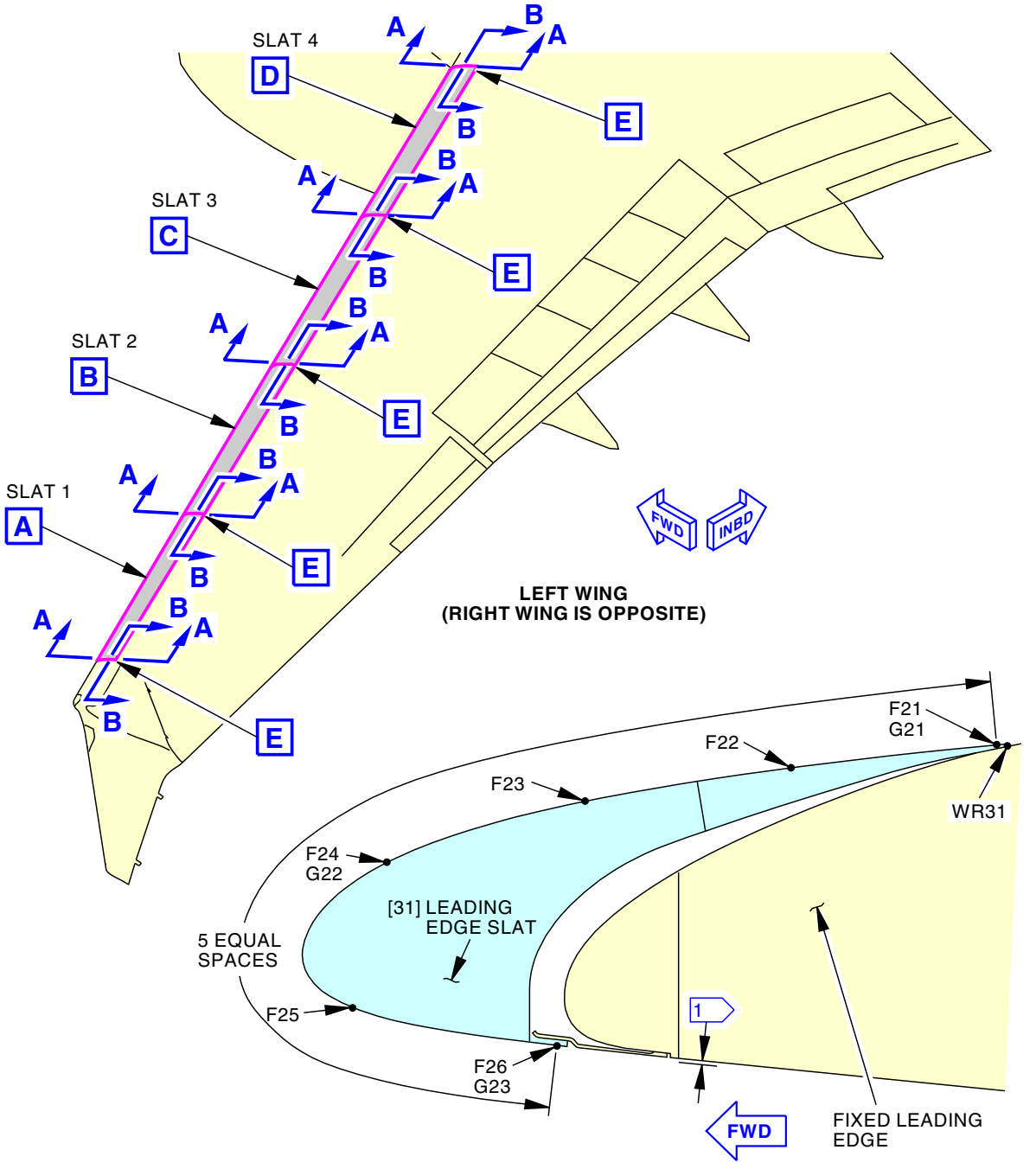
Leading Edge Slat Adjustment
Figure 503/27-81-00-990-806 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Adjustment
Figure 503/27-81-00-990-806 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

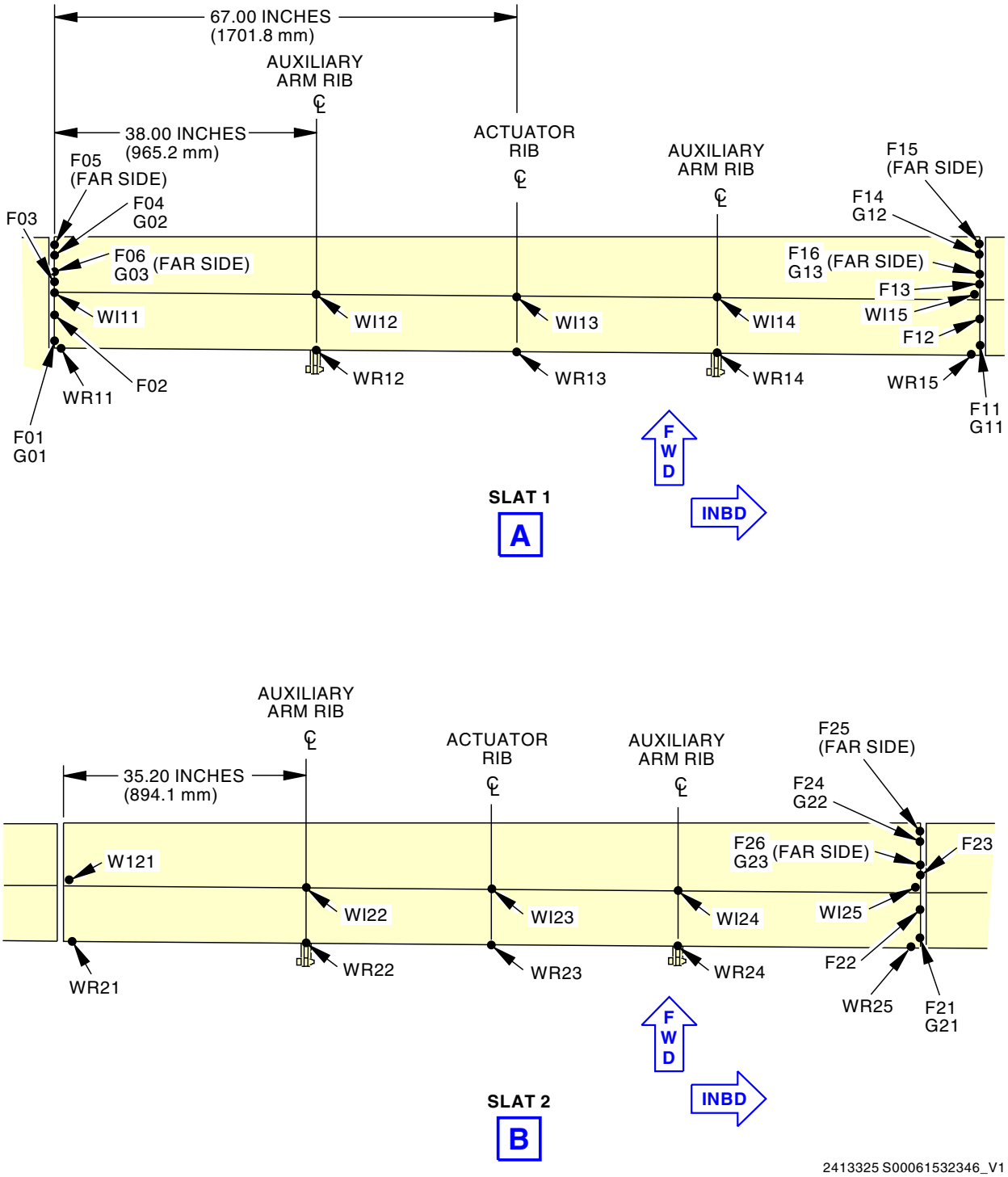


1 PERMITTED MISMATCH IS:
0.010 ±0.020 INCH FOR MINIMUM OF 75% SPAN.
0.010 ±0.040 INCH FOR MAXIMUM OF 25% SPAN.

2413324 S00061532345_V2

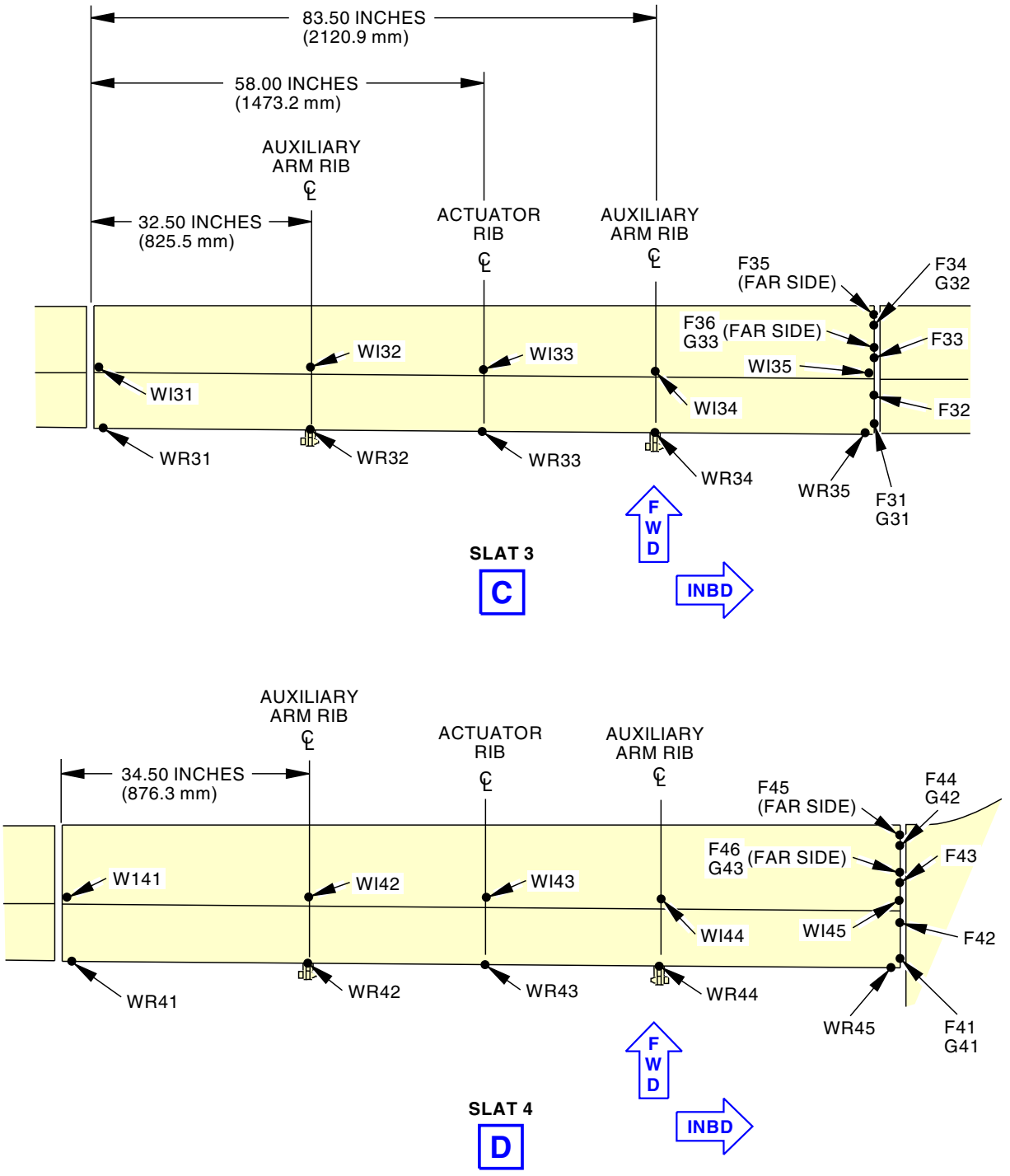
Leading Edge Slat Adjustment Points
Figure 504/27-81-00-990-811 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Adjustment Points
Figure 504/27-81-00-990-811 (Sheet 2 of 4)

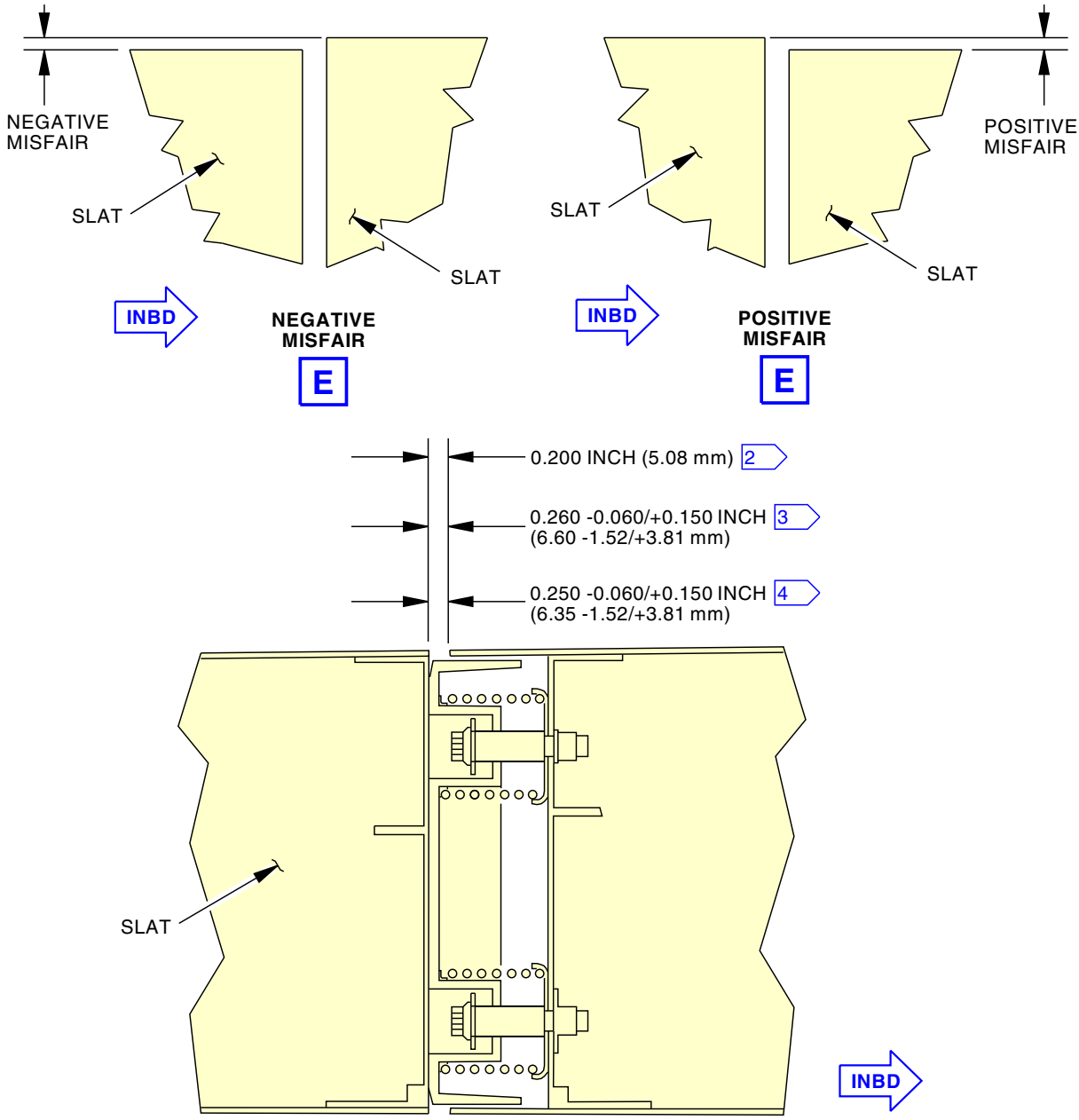
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413326 S00061532347_V1

Leading Edge Slat Adjustment Points
Figure 504/27-81-00-990-811 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



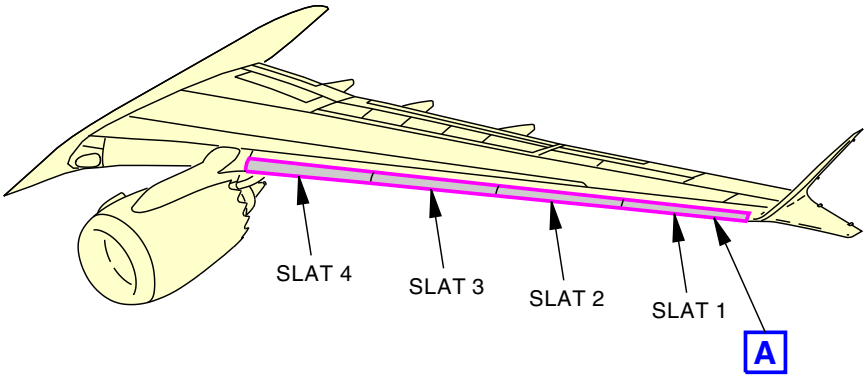
B-B

2 MIN FOR SLAT EXTEND AND FULL EXTEND POSITIONS.
3 SLAT TO SLAT
4 SLAT TO FIXED LEADING EDGE.

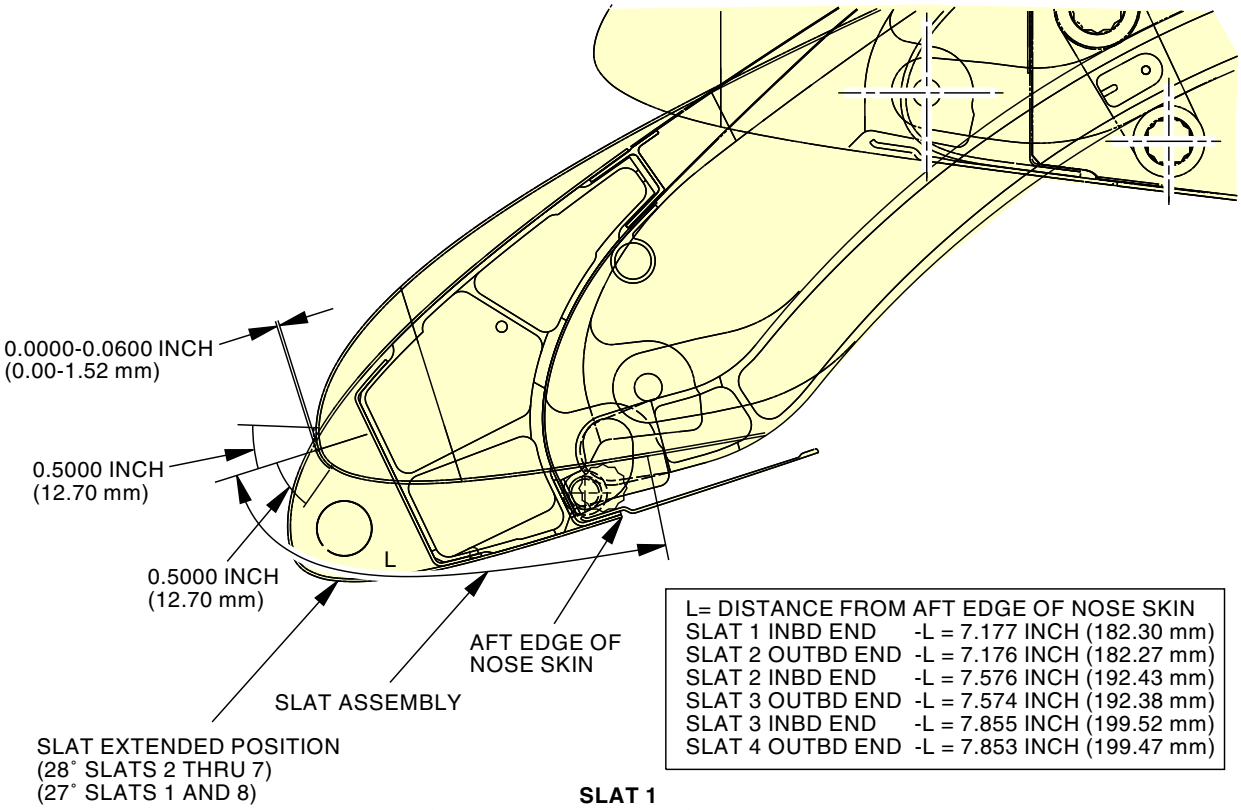
2413327 S00061532348_V1

Leading Edge Slat Adjustment Points
Figure 504/27-81-00-990-811 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS OPPOSITE)



SLAT 1
(SLAT 2, 3 AND 4 ARE EQUIVALENT)

A

2789765 S0000634505_V2

Leading Edge Slat Adjustment within the Band Width
Figure 505/27-81-00-990-812

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-700-801

5. Leading Edge Flap and Slat Operational Test in Primary Mode

(Figure 506, Figure 507)

A. General

(1) The leading edge slat sequence for the 737-8 and 737-9 are the same. The leading edge slats move to the extend position for flap lever positions 1-unit detent through 25-unit detent. The leading edge slats move to the full extend position at the 30-unit detent flap lever position.

B. References

Reference	Title
27-51-00-740-801	FSEU Display and Existing Faults Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right
500	Left Wing
600	Right Wing

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Test

SUBTASK 27-81-00-860-051

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-00-860-052

(2) If the flap control lever is not in the UP position, do these steps:

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Move the flap control lever to the UP position.

(b) Let the leading edge flaps and slats and the trailing edge flaps move to the retract position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-010-003

(3) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Leading Edge Flap and Slat Operational Test in Primary Mode

SUBTASK 27-81-00-740-001

(1) Do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-81-00-730-001

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Do a test of the leading edge flap and slat operational test in primary mode:

(a) Use the FSEU front panel to do a check of the position of the leading edge flaps and slats (Figure 506):

1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

2) Push the down arrow until OTHER FUNCTNS? shows on the display.

3) Push the YES button to select OTHER FUNCTNS? on the FSEU.

4) Push the down arrow until I/O MONITOR? shows on the display.

5) Push the YES button to select I/O MONITOR? from the menu.

6) Push the YES button to select PROX SENSORS? from the I/O MONITOR? menu.

(b) Push the down arrow to step through the proximity sensor states at the leading edge flaps and slats UP position.

(c) Make sure these displays and the proximity sensor states show on the FSEU (FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS RETRACTED (FLAP UP)/Table 504):

Table 504/27-81-00-993-805 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS RETRACTED (FLAP UP)

Display	State
S1 OUTBD	GAP NEAR
S1 INBD	GAP NEAR
S2 OUTBD	GAP FAR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 504/27-81-00-993-805 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS RETRACTED (FLAP UP) (Continued)

Display	State
S2 INBD	GAP FAR
S2 RETR	GAP NEAR
S3 OUTBD	GAP FAR
S3 INBD	GAP FAR
S3 RETR	GAP NEAR
S4 OUTBD	GAP FAR
S4 INBD	GAP FAR
S4 RETR	GAP NEAR
S5 OUTBD	GAP FAR
S5 INBD	GAP FAR
S5 RETR	GAP NEAR
S6 OUTBD	GAP FAR
S6 INBD	GAP FAR
S6 RETR	GAP NEAR
S7 OUTBD	GAP FAR
S7 INBD	GAP FAR
S7 RETR	GAP NEAR
S8 OUTBD	GAP NEAR
S8 INBD	GAP NEAR
F1 RETR	GAP NEAR
F1 EXT	GAP FAR
F2 RETR	GAP NEAR
F2 EXT	GAP FAR
F3 RETR	GAP NEAR
F3 EXT	GAP FAR
F4 RETR	GAP NEAR
F4 EXT	GAP FAR

(d) Move the flap control lever to the 1-unit detent position.

(e) Make sure that the leading edge flaps 1 to 4 move to the extend position.

(f) Make sure that the leading edge slats 1 to 8 move to the extend position.

(g) When the leading edge flaps and slats start to move to the commanded 1-unit detent position, look for these conditions(Figure 507):

1) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, comes on.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure these lights come on in the leading edge flap/slat position annunciator, P5-12, on the aft overhead panel.
   a) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, comes on.
   b) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, comes on.

(h) When the leading edge flaps and slats stop at the commanded 1-unit detent position, look for these conditions:
   1) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, goes off.
   2) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, comes on.
   3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, go off.
   4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, go off.
   5) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, come on.
   6) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, come on.
   7) Make sure that the leading edge flaps 1 through 4 are at the extend position.
   8) Make sure that the leading edge slats 1 through 8 are at the extend position.

(i) Push the down arrow on the FSEU to step through the proximity sensor states.
   1) Make sure these displays and the proximity sensor states show on the FSEU (FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS EXTEND (1-UNIT DETENT)/Table 505):

Table 505/27-81-00-993-806 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS EXTEND (1-UNIT DETENT)

Display	State
S1 OUTBD	GAP FAR
S1 INBD	GAP NEAR
S2 OUTBD	GAP FAR
S2 INBD	GAP NEAR
S2 RETR	GAP FAR
S3 OUTBD	GAP FAR
S3 INBD	GAP NEAR
S3 RETR	GAP FAR
S4 OUTBD	GAP FAR
S4 INBD	GAP NEAR
S4 RETR	GAP FAR
S5 OUTBD	GAP FAR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 505/27-81-00-993-806 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS EXTEND (1-UNIT DETENT) (Continued)

Display	State
S5 INBD	GAP NEAR
S5 RETR	GAP FAR
S6 OUTBD	GAP FAR
S6 INBD	GAP NEAR
S6 RETR	GAP FAR
S7 OUTBD	GAP FAR
S7 INBD	GAP NEAR
S7 RETR	GAP FAR
S8 OUTBD	GAP FAR
S8 INBD	GAP NEAR
F1 RETR	GAP FAR
F1 EXT	GAP NEAR
F2 RETR	GAP FAR
F2 EXT	GAP NEAR
F3 RETR	GAP FAR
F3 EXT	GAP NEAR
F4 RETR	GAP FAR
F4 EXT	GAP NEAR

(j) Move the flap control lever to the 30-unit detent position.

1) Make sure that the leading edge flaps 1 to 4 remain at the extend position.

2) Make sure that the leading edge slats 1 to 8 move to the full extend position.

(k) Do these checks while the leading edge slats move to the commanded 30-unit detent position (Figure 507):

1) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, go off.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, come on.

(l) Do these checks when the leading edge slats stop at the commanded 30-unit detent position:

1) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, comes on.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, are on.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, go off.

5) Make sure the annunciator LE DEVICES SLATS 1 through 8, green FULL EXT lights, come on.

(m) Push the down arrow on the FSEU to step through the proximity sensor states.

1) Make sure these displays and the proximity sensor states show on the FSEU (FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS FULL EXTEND (30-UNIT DETENT)/Table 506):

Table 506/27-81-00-993-807 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS FULL EXTEND (30-UNIT DETENT)

Display	State
S1 OUTBD	GAP NEAR
S1 INBD	GAP FAR
S2 OUTBD	GAP NEAR
S2 INBD	GAP FAR
S2 RETR	GAP FAR
S3 OUTBD	GAP NEAR
S3 INBD	GAP FAR
S3 RETR	GAP FAR
S4 OUTBD	GAP NEAR
S4 INBD	GAP FAR
S4 RETR	GAP FAR
S5 OUTBD	GAP NEAR
S5 INBD	GAP FAR
S5 RETR	GAP FAR
S6 OUTBD	GAP NEAR
S6 INBD	GAP FAR
S6 RETR	GAP FAR
S7 OUTBD	GAP NEAR
S7 INBD	GAP FAR
S7 RETR	GAP FAR
S8 OUTBD	GAP NEAR
S8 INBD	GAP FAR
F1 RETR	GAP FAR
F1 EXT	GAP NEAR
F2 RETR	GAP FAR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 506/27-81-00-993-807 FSEU DISPLAY AND PROXIMITY SENSOR STATE - LE FLAPS AND SLATS FULL EXTEND (30-UNIT DETENT) (Continued)

Display	State
F2 EXT	GAP NEAR
F3 RETR	GAP FAR
F3 EXT	GAP NEAR
F4 RETR	GAP FAR
F4 EXT	GAP NEAR

(n) Push the ON/OFF button on the front panel of the FSEU to turn the display off.

NOTE: The FSEU will turn itself off after 75 seconds.

SUBTASK 27-81-00-860-053

(3) Move the flap control lever to the UP position.

(a) Make sure that the leading edge flaps 1 to 4 retract to the up position.

(b) Make sure that the leading edge slats 1 to 8 retract to the up position.

(c) Look for these conditions as the leading edge flaps and slats move to the retract position.

1) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, goes off.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, goes off.

5) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, come on.

6) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, come on.

(d) Look for these conditions when the leading edge flaps and slats stop at the retract position:

1) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, goes off.

2) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, goes off.

3) Make sure that all annunciator lights are off.

4) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, goes off.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-410-003

(1) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

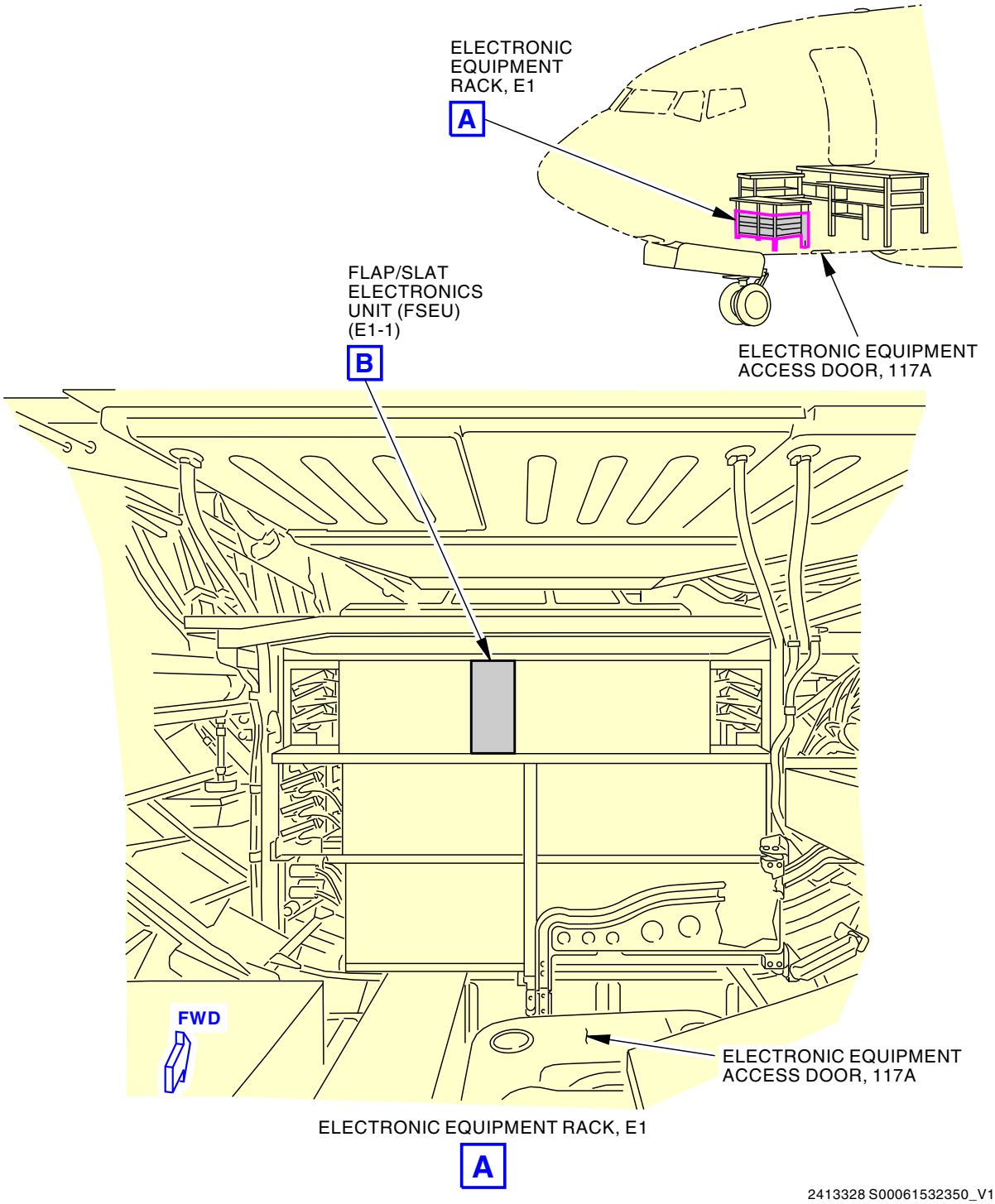
ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-054

(2) Remove hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

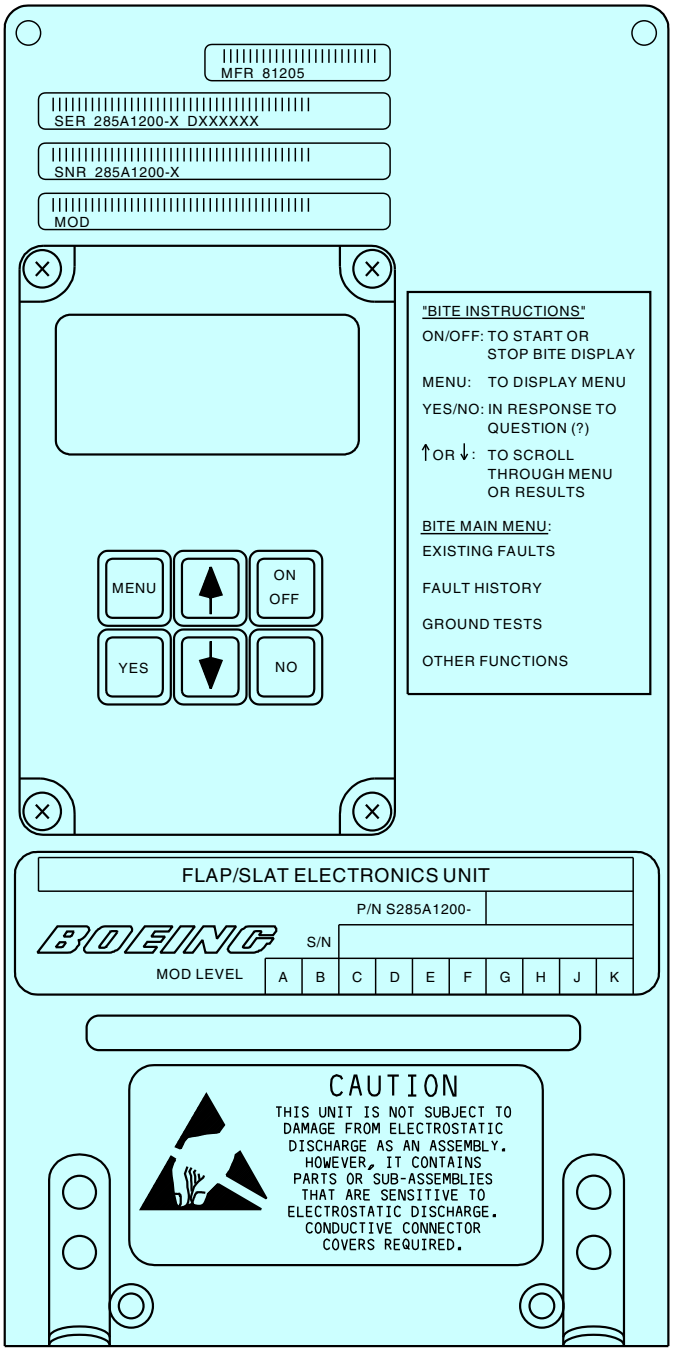
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Flap/Slat Electronics Unit
Figure 506/27-81-00-990-807 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



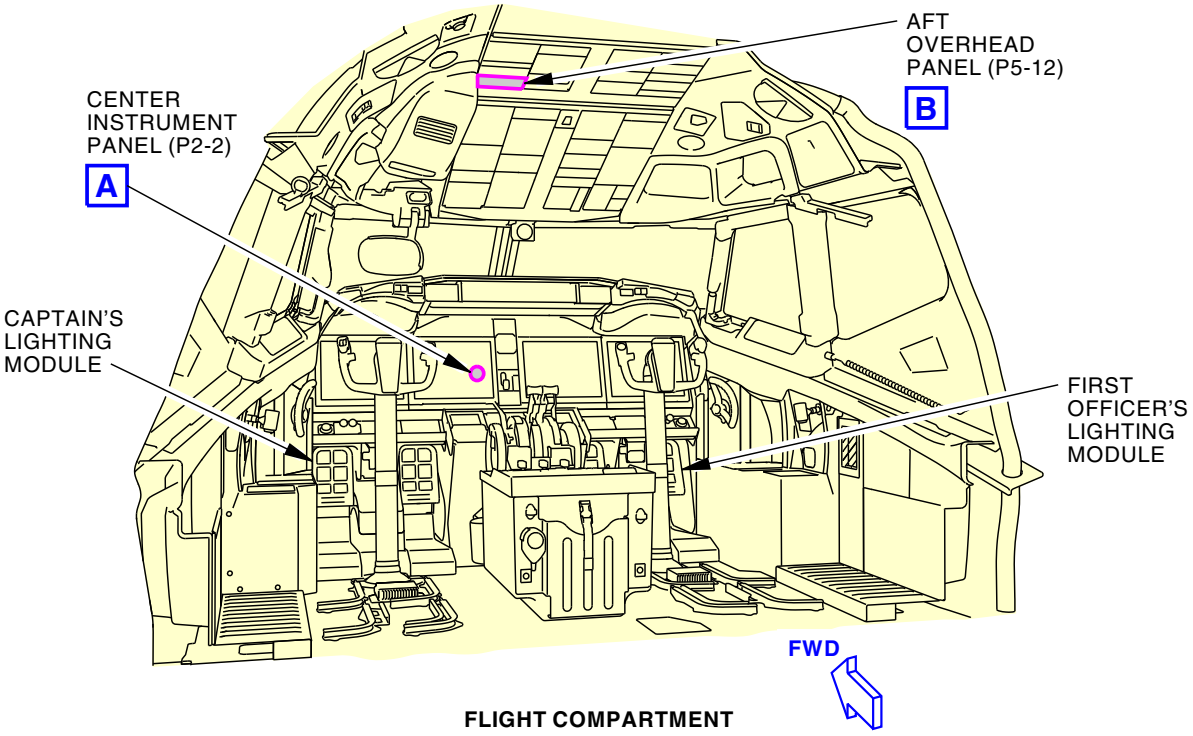
FLAP/SLAT ELECTRONICS UNIT (FSEU)

B

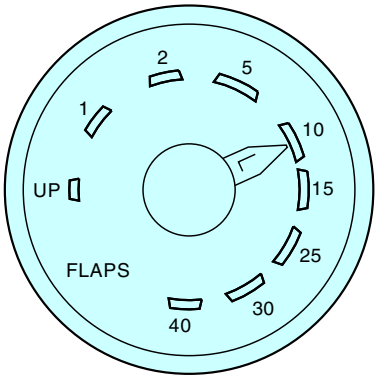
2413329 S00061532351_V1

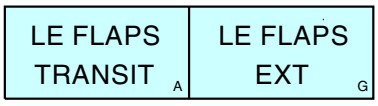
Flap/Slat Electronics Unit
Figure 506/27-81-00-990-807 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



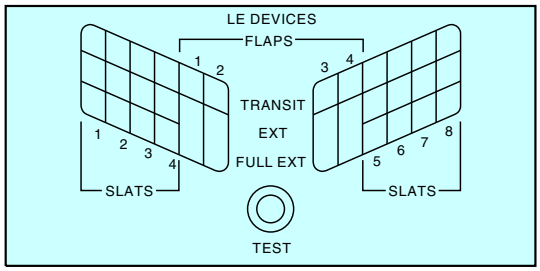
FLIGHT COMPARTMENT





CENTER INSTRUMENT PANEL (P2-2)

A



AFT OVERHEAD PANEL (P5-12)

B

2413330 S00061532352_V1

Leading Edge Flap and Slat Position Indicator
Figure 507/27-81-00-990-808

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-700-802

6. Leading Edge Flap and Slat Timing Test in Primary Mode

(Figure 507)

A. General

(1) The leading edge slat sequence for the 737-8 and 737-9 are the same. The leading edge slats move to the extend position at the 25-unit detent. flap lever position. The leading edge slats move to the full extend position at the 30-unit detent flap lever position.

B. References

Reference	Title
29-11-00-860-802	Hydraulic System A or B Pressurization with a Portable Hydraulic Cart (P/B 201)
29-11-00-860-804	Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP) (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test

SUBTASK 27-81-00-860-056

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), TASK 29-11-00-860-804 or Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, TASK 29-11-00-860-802.

E. Leading Edge Flap and Slat Timing Test in Primary Mode

SUBTASK 27-81-00-720-001

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Do a timing test of the leading edge flap and slat control system in primary mode:

NOTE: Measure the time intervals between the time the surfaces start to move to the time the surfaces stop moving.

(a) If the flap control lever is not in the UP position, do these steps:

1) Move the flap control lever to the UP position.

2) Let the leading edge flaps and slats and the trailing edge flaps move to the retract position.

(b) Move the flap control lever to the 25-unit detent position. Do one of the following steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Using hydraulic system A or B pressurization with a portable hydraulic cart:
   a) Make sure the leading edge flaps extend fully in 5.5 to 7.5 seconds.
   b) Make sure the leading edge slats move to the extend position in 7.5 to 9.5 seconds.
2) Using hydraulic system A or B pressurization with an Engine-Driven Pump (EDP):
   a) Make sure the leading edge flaps extend fully in 7.0 to 9.0 seconds.
   b) Make sure the leading edge slats move to the extend position in 9.0 to 11.0 seconds.

(c) Move the flap control lever to the 30-unit detent. Do one of the following steps:
1) Using hydraulic system A or B pressurization with a portable hydraulic cart:
   a) Make sure the leading edge slats move to the full extend position in 2.0 to 3.5 seconds.
2) Using hydraulic system A or B pressurization with an Engine-Driven Pump (EDP):
   a) Make sure the leading edge slats move to the full extend position in 3.5 to 5.5 seconds.

(d) Make sure the LE indication flaps EXTEND and slats FULL EXTEND lights on the aft overhead panel are on (Figure 507).

(e) Move the flap control lever to the 1-unit detent position. Do one of the following steps:
1) Using hydraulic system A or B pressurization with a portable hydraulic cart:
   a) Make sure the leading edge slats move to the extend position in 3.5 to 5.5 seconds.
2) Using hydraulic system A or B pressurization with an Engine-Driven Pump (EDP):
   a) Make sure the leading edge slats move to the extend position in 4.5 to 6.5 seconds.
3) Let the trailing edge flaps move to the correct position.

(f) Move the flap control lever to the UP detent position. Do one of the following steps:
1) Using hydraulic system A or B pressurization with a portable hydraulic cart:
   a) Make sure the leading edge flaps move to the retract position in 7.0 to 9.0 seconds.
   b) Make sure the leading edge slats move to the retract position in 6.5 to 8.5 seconds.
2) Using hydraulic system A or B pressurization with an Engine-Driven Pump (EDP):
   a) Make sure the leading edge flaps move to the retract position in 8.0 to 10.0 seconds.
   b) Make sure the leading edge slats move to the retract position in 7.0 to 9.0 seconds.

(g) Make sure the LE indication flaps and slats TRANSIT, EXTEND and FULL EXTEND lights on the aft overhead panel are off.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-057

(1) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-710-801

7. Leading Edge Flap and Slat System Standby Actuation Operational Test

(Figure 507, Figure 508)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) The alternate control system uses electrical power to power the standby hydraulic system which moves the leading edge slats and flaps.

B. References

Reference	Title
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Operational Test

SUBTASK 27-81-00-860-059

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the leading edge flaps and slats are not in the retract position, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

E. Leading Edge Standby System Operational Test

SUBTASK 27-81-00-860-060

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Move the ALTERNATE FLAPS ARM switch on the P5 panel to the ARM position (Figure 508).

NOTE: The standby hydraulic pump motor will operate when the ALTERNATE FLAPS ARM switch is in the ARM position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-061

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 30-unit position.

NOTE: This will decrease the load on the flap electric motor. The leading edge and trailing edge surfaces will not move when you move the flap control lever.

SUBTASK 27-81-00-710-002

(3) Move the ALTERNATE FLAPS control switch to the DOWN position to extend the leading edge flaps and slats to the full extend position.

NOTE: It is not necessary to extend the trailing edge flaps beyond the 30-unit position.

(a) When the flaps and slats start to extend, make sure all the LE indication flaps and slats TRANSIT lights, on the aft overhead panel, P5, come on (Figure 507).

(b) Do these checks of the aft overhead lights when the leading edge flaps and slats are in the full extend position:

1) Make sure all the TRANSIT lights go off.

2) Make sure the flaps EXT lights come on.

3) Make sure the slats FULL EXT lights come on.

SUBTASK 27-81-00-860-062

(4) Move the ALTERNATE FLAPS control switch to the OFF position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-063

WARNING

MAKE SURE THE POSITION OF THE FLAPS AGREES WITH THE POSITION OF THE FLAP CONTROL LEVER. WHEN YOU SUPPLY HYDRAULIC POWER, THE FLAPS AND SLATS WILL MOVE AUTOMATICALLY TO THE POSITION OF THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure the flap control lever is in the same position as the trailing edge flaps and leading edge flaps and slats.

SUBTASK 27-81-00-860-064

(2) Move the ALTERNATE FLAPS ARM switch to the OFF position to disarm the alternate control system.

SUBTASK 27-81-00-860-065

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-066

(4) Move the flap control lever to the UP position to retract the leading edge flaps and slats and the trailing edge flaps.

NOTE: The leading edge flaps and slats will not retract with alternate control.

SUBTASK 27-81-00-860-067

(5) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-81-00-700-803

8. Leading Edge Flap and Slat Timing Test in the Standby Mode

(Figure 508)

A. References

Reference	Title
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Test

SUBTASK 27-81-00-860-069

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the leading edge flaps and slats are not in the retract position, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

D. Leading Edge Flap and Slat Timing in the Standby Mode

SUBTASK 27-81-00-710-003

(1) Do the leading edge flap and slat timing test in the standby mode:

NOTE: The leading edge flaps and slats do not retract in the standby mode.

(a) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the ARM position (Figure 508).

(b) Move the ALTERNATE FLAPS control switch to the DOWN position for 5 seconds, then release.

(c) When the flaps and slats start to extend, make sure all the LE indication flaps and slats TRANSIT lights, on the aft overhead panel, P5, come on.

(d) Make sure that the leading edge flaps extend in 29 to 37 seconds.

(e) Make sure that the leading edge slats extend in 43 to 55 seconds.

(f) Do these checks of the lights on the Aft Overhead Panel, P5-12, when the leading edge flaps and slats are in the full extended position(Figure 507);

1) Make sure that all the TRANSIT lights go off.

2) Make sure that the flaps EXT lights come on.

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3) Make sure that the slats FULL EXT lights come on.

(g) Put the ALTERNATE FLAPS arm switch, on the overhead panel, P5, in the OFF position (Figure 508).

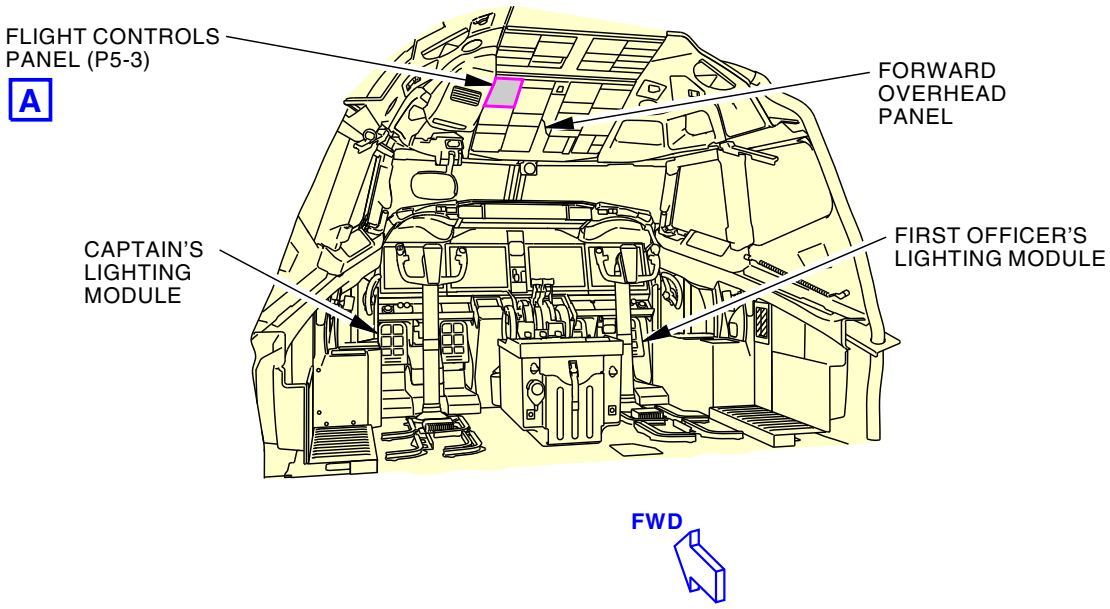
E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-070

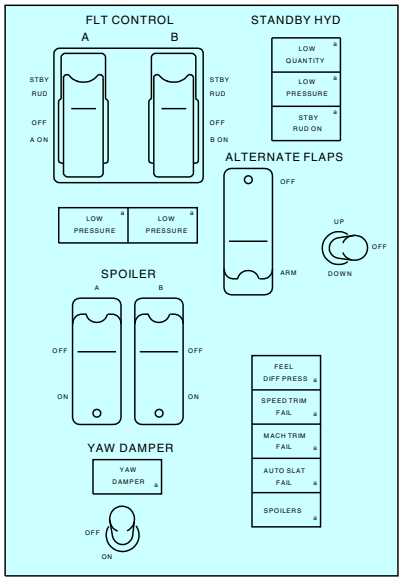
(1) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A

2413331 S00061532356_V1

Flight Control Switches
Figure 508/27-81-00-990-809

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-730-801

9. Leading Edge Cruise Depressurization Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-81-00-010-004

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-860-072

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) To pressurize the hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Leading Edge Cruise Depressurization Test

SUBTASK 27-81-00-860-073

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the 5-unit position to extend the leading edge flaps and slats and the trailing edge flaps.

SUBTASK 27-81-00-740-002

(2) Do this test of the leading edge cruise depressurization valve:

(a) Make sure that the FLT CONTROL and ALTERNATE FLAPS switches on the P5 Fwd Overhead panel are in the OFF position.

(b) Move the ALTERNATE FLAPS ARM switch on the P5-3 panel to the ARM position.

(c) Move flap control lever to the UP position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(e) Use the FSEU to operate the leading edge cruise depressurization valve:

1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

2) Push the NO button until OTHER FUNCTNS? shows on the display.

3) Push the YES button to select OTHER FUNCTNS? on the FSEU.

4) Push the YES button to select SET OUTPUTS? from the OTHER FUNCTNS? menu.

5) Push the YES button to select LE DEPR VALVE? from the menu.

6) Push the YES button to select SET ON? on the display.

7) Press YES switch on the FSEU.

(f) Make sure the leading edge flaps and slats do not move.

(g) Wait until the FSEU display shows LE DEPR VALVE?.

NOTE: This will take approximately 75 seconds from pressing YES button to SET ON?.

(h) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(i) Push the YES button on the FSEU to display SET ON?.

1) Make sure the trailing edge flaps remain stationary.

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(j) Push the YES button to select SET ON? on the display.

(k) Make sure the leading edge slats retract and that the trailing edge flaps stay extended.

NOTE: The LE FLAPS TRANSIT lights will stay on.

(l) Wait until the FSEU display shows LE DEPR VALVE? and the leading edge surfaces extend to the extend position.

NOTE: This will take approximately 75 seconds.

(m) Move the flap control lever to the 1-unit position.

NOTE: The flap position indicator stays at the 5-unit position when the flaps and slats move to the 1-unit position.

(n) Push the YES button on the FSEU to display SET ON?.

(o) Push the YES button to select SET ON? on the display.

(p) Make sure the flaps and slats don't move.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(q) Move the ALTERNATE FLAPS ARM switch to the OFF position.

NOTE: The leading edge and trailing edge flaps will move to the 1-unit position.

F. Put the Airplane Back to Its Usual Condition.

SUBTASK 27-81-00-860-074

(1) Push the ON/OFF button on the front panel of the FSEU to turn the display off.

SUBTASK 27-81-00-860-075

(2) Move the flap control lever to the UP position to retract the flaps and slats.

SUBTASK 27-81-00-410-004

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-860-076

(4) To remove pressure from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-81-00-700-804

10. Leading Edge Uncommanded Motion Protection Test

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-81-00-010-005

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-00-860-078

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

E. Leading Edge Uncommanded Motion Protection Test

SUBTASK 27-81-00-860-079

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Move the flap control lever to the UP position.

SUBTASK 27-81-00-720-002

(2) Do this test of the leading edge UCM shutoff valve:

(a) Make sure that the flap control lever is in the UP detent position.

(b) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(c) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

(d) Push the down arrow until OTHER FUNCTNS? shows on the display.

(e) When OTHER FUNCTNS? shows, press YES.

(f) When SET OUTPUTS? shows, press YES.

(g) When LE DEPR VALVE? shows, press NO.

(h) When LE UCM SHUTOFF? shows, press YES.

(i) When SET ON? shows, press YES and move the flap control lever to the 1-unit detent position within 10 seconds.

NOTE: If you do not move the lever within 10 seconds, the test will not work.

(j) Make sure that the leading edge flaps and slats extend before the TE flap indicator needles are inside the 1-unit detent indicator (View A, Figure 507).

(k) Make sure that the leading edge indication flaps EXTEND light on the aft overhead panel is on (View B, Figure 507).

NOTE: The Amber LE FLAPS TRANSIT indication stays ON and then turns OFF when the Green LE FLAPS EXT indication shows.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(l) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(m) Wait until the FSEU display shows LE UCM SHUTOFF?.

NOTE: This will take approximately 75 seconds.

(n) Push the YES button on the FSEU to display SET ON?.

(o) When SET ON? shows, press YES and move the flap control lever to the UP detent position within 10 seconds.

NOTE: If you do not move the lever within 10 seconds, the test will not work.

(p) Make sure that the leading edge indication flaps and slats EXTEND lights on the aft overhead panel are on (View B, Figure 507).

(q) Make sure that the leading edge flaps and slats move to the UP position.

NOTE: This will take approximately 75 seconds from pressing YES button to SET ON?.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-080

(1) Push the ON/OFF button on the front panel of the FSEU to turn the display off.

SUBTASK 27-81-00-860-081

(2) Move the flap control lever to the UP position to retract the flaps and slats.

SUBTASK 27-81-00-410-005

(3) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-860-082

(4) To remove pressure from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

TASK 27-81-00-710-802

11. Standby Hydraulic System Leading Edge Uncommanded Motion Test

(Figure 508)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

D. Prepare for the Test

SUBTASK 27-81-00-860-084

(1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

SUBTASK 27-81-00-010-011

(2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-860-102

WARNING WHEN YOU OPEN THE P91 AND P92 PANELS, MAKE SURE THAT THE OUTER DOOR STAYS AS OPEN AS POSSIBLE. IF THE OUTER DOOR TURNS IN, THE ATTACHED DOOR COMPONENTS COULD TOUCH THE INNER DOOR COMPONENTS. THIS CAN CAUSE AN ARC CONDITION WHEN YOU SUPPLY POWER. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND INJURY TO PERSONNEL CAN OCCUR.

WARNING MAKE SURE THAT YOU DO NOT TOUCH THE CONDUCTORS IN THE P91 AND P92 PANELS. BE CAREFUL WHEN YOU GET ACCESS TO THE CIRCUIT BREAKERS ON THE INNER SIDE OF THE P91 AND P92 PANELS (ROW F). IF IT IS POSSIBLE, REMOVE AIRPLANE ELECTRICAL POWER FIRST. THE P91 AND P92 PANELS HAVE HIGH VOLTAGES AND CURRENTS. ELECTRICAL VOLTAGE AND CURRENT CAN KILL YOU OR CAUSE INJURIES.

(3) Make sure that this circuit breaker is closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

SUBTASK 27-81-00-410-009

(4) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-81-00-860-085

(5) Make sure that the leading edge flaps and slats, and trailing edge flaps are in the retracted position:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Move the flap control lever to the UP position to move the leading edge flaps and slats, and trailing edge flaps to the retracted position.

(c) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

E. Standby Hydraulic System Leading Edge Uncommanded Motion Test

SUBTASK 27-81-00-720-003

(1) Pressurize the standby hydraulic system:

(a) Set the ALTERNATE FLAPS, on the P5 forward overhead panel, to the ARM position.

NOTE: This will start the standby hydraulic pump.

(b) Make sure that the STANDBY HYD LOW PRESSURE light, on the P5 panel, comes on and quickly goes out.

NOTE: This makes sure that the standby system is pressurized.

SUBTASK 27-81-00-210-004

(2) Observe the leading edges on both the left and right wings:

(a) Make sure that the leading edges do not move when you pressurize the standby hydraulic system.

NOTE: The leading edge flaps can slowly extend because of gravity.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-860-086

(1) Move the ALTERNATE FLAPS ARM switch on the forward overhead panel to the OFF position.

NOTE: This will turn off the standby hydraulic system.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT CONTROL SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Inspection of the Wing Leading Edge Flap and Slat Actuators and Leading Edge Flap and Slat Actuation Mechanism.

(2) Internal Hydraulic Leakage Check of the Wing Leading Edge Flap and Slat System.

TASK 27-81-00-210-801

2. Leading Edge Flap and Slat Actuators and Actuation Mechanism - Inspection

(Figure 601)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

B. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

C. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

D. Prepare for the Inspection

SUBTASK 27-81-00-010-006

(1) Extend the leading edge flaps and slats (TASK 27-81-00-860-803).

SUBTASK 27-81-00-040-001

(2) If it is necessary, do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 27-81-00-010-009

(3) If it is necessary, remove the applicable lower leading edge access panels for the left wing (TASK 57-41-02-000-801).

(a) Open these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-00-010-010

(4) If it is necessary, remove the applicable lower leading edge access panels for the right wing (TASK 57-41-02-000-801).

(a) Open these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

E. Leading Edge Flap and Slat Actuators and Actuation Mechanism Inspection

SUBTASK 27-81-00-210-005

(1) For the left wing inspection:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Do a general visual inspection of the left wing leading edge flap and slat actuators and the leading edge flap and slat actuation mechanism (main and auxiliary tracks and rollers).

SUBTASK 27-81-00-210-006

(2) For the right wing inspection:

(a) Do a general visual inspection of the right wing leading edge flap and slat actuators and the leading edge flap and slat actuation mechanism (main and auxiliary tracks and rollers).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-410-007

(1) If it is necessary, install the applicable lower leading edge access panels on the left wing (TASK 57-41-02-400-801).

(a) Close these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-00-410-008

(2) If it is necessary, install the applicable lower leading edge access panels on the right wing (TASK 57-41-02-400-801).

(a) Close these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-00-440-001

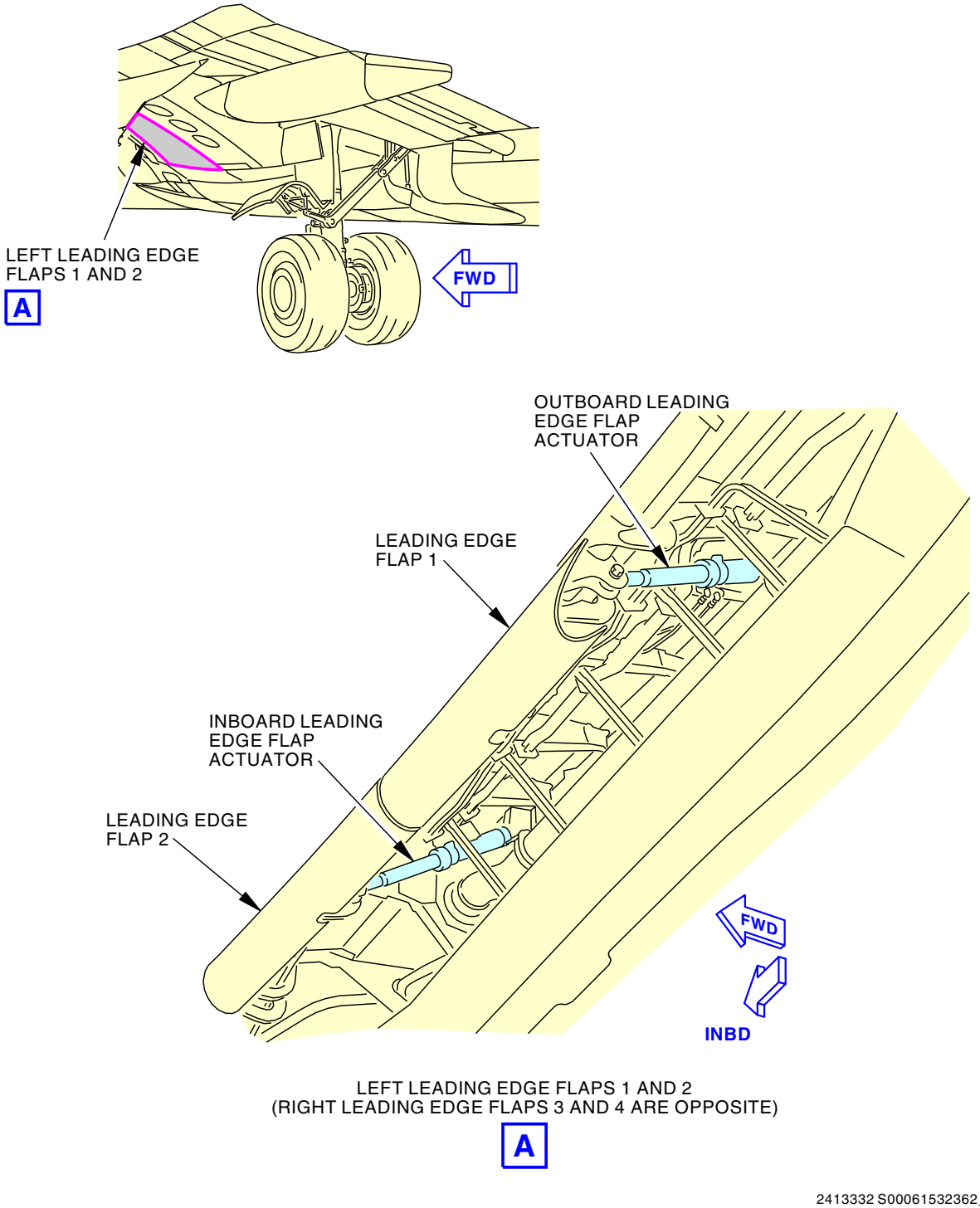
(3) If it is necessary, do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 27-81-00-010-007

(4) Retract the leading edge flaps and slats (TASK 27-81-00-860-804).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



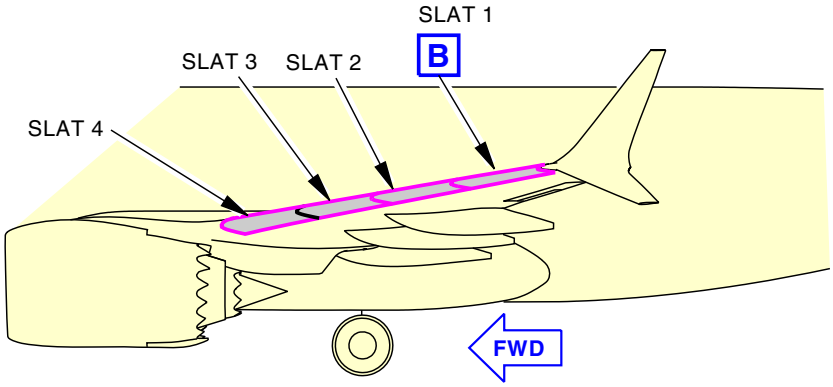
LEFT LEADING EDGE FLAPS 1 AND 2
(RIGHT LEADING EDGE FLAPS 3 AND 4 ARE OPPOSITE)

A

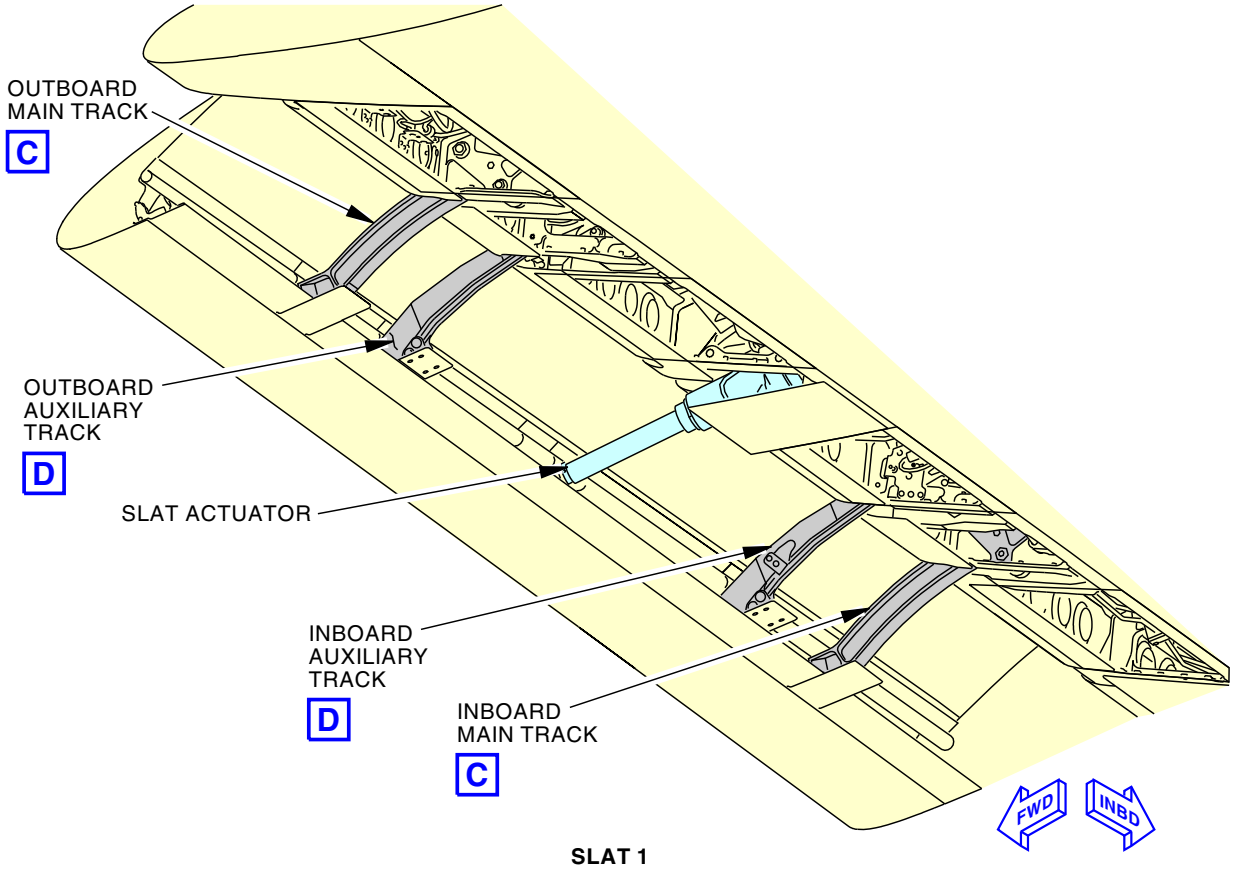
2413332 S00061532362_V1

Leading Edge Flap and Slat Actuators and Actuation Mechanism Inspection
Figure 601/27-81-00-990-810 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS EQUIVALENT)



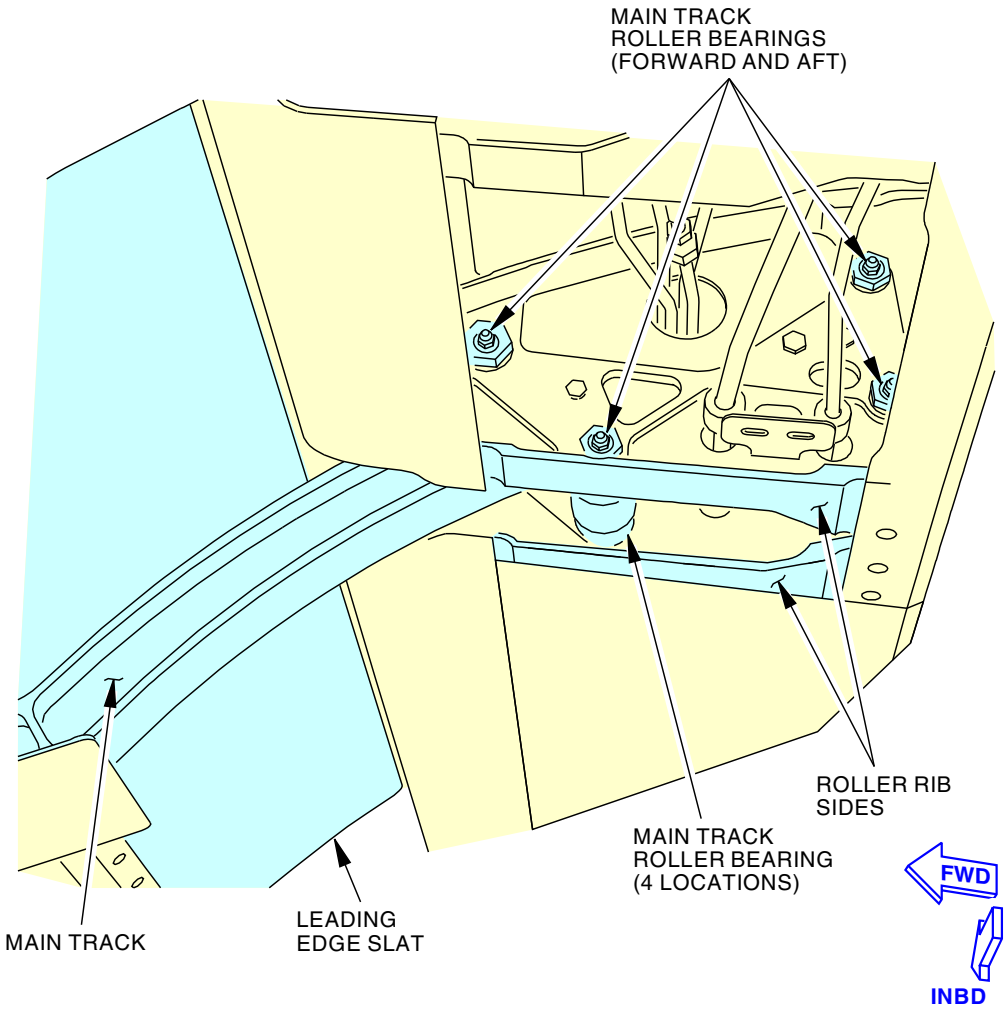
SLAT 1
(SLATS 2, 3, AND 4 ARE EQUIVALENT)

B

2413333 S00061532363_V2

Leading Edge Flap and Slat Actuators and Actuation Mechanism Inspection
Figure 601/27-81-00-990-810 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



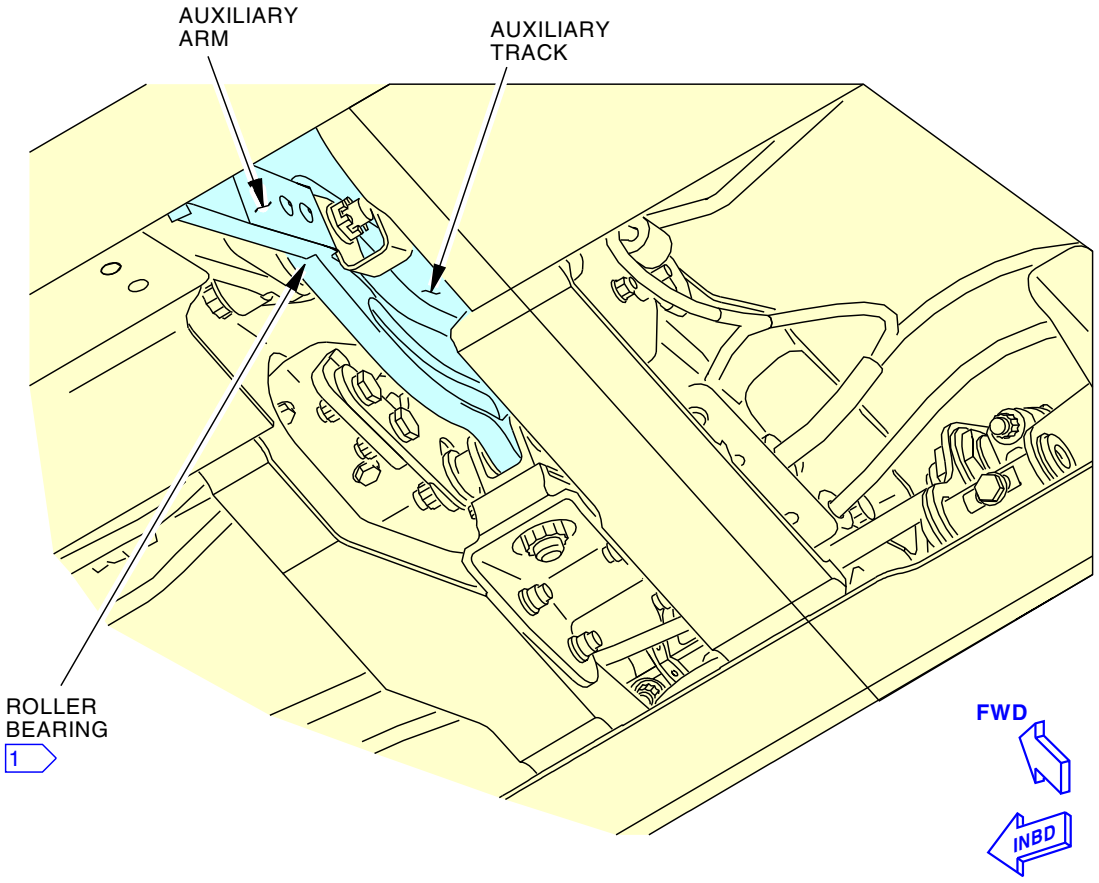
INBOARD MAIN TRACK
(OUTBOARD MAIN TRACK IS OPPOSITE)
(SLAT 1 IS SHOWN, SLATS 2, 3, AND 4 ARE EQUIVALENT)

C

2413334 S00061532364_V2

Leading Edge Flap and Slat Actuators and Actuation Mechanism Inspection
Figure 601/27-81-00-990-810 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



INBOARD AUXILIARY TRACK
(OUTBOARD AUXILIARY TRACK IS OPPOSITE)

D

1 INSTALLED BETWEEN THE ARM AND TRACK CONNECTION.

2413335 S00061532365_V2

Leading Edge Flap and Slat Actuators and Actuation Mechanism Inspection
Figure 601/27-81-00-990-810 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-00-790-801

3. Leading Edge Flap and Slat System Internal Hydraulic Leakage Check

A. General

(1) This procedure does an internal hydraulic leakage check for the leading edge flap and slat valves. The purpose of this leakage test is to identify the total leakage value at the retracted and full extended position.

(2) You must measure the amount of leakage of hydraulic fluid during different conditions of operation to measure the fluid flow rate. It will be necessary to disconnect the return hydraulic lines.

(3) Hydraulic pressure that pushes the hydraulic fluid to blow past the internal O-ring seals in the valves and actuators is internal hydraulic leakage. This is an indication of an internal seal problem. Large internal leakage can cause slow actuation times.

(4) Normal system operation uses the hydraulic system B to move the leading edge (LE) flaps and slats.

(5) Hydraulic pressure goes through the LE cruise depressurization valve to the LE flap and slat control valve. The LE flap and slat control valve sends extend pressure to the LE flap and slat actuators. This causes the LE flaps and slats to move to the extend position. The hydraulic fluid goes through hydraulic fuses in the lines.

(6) The leading edge flap and slat system connects to the hydraulic system return at these three locations: the leading edge standby line, the return line on the LE flap and slat control valve, and the return line for the autoslat module and LE UCM shutoff valve.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
24-22-00-860-801	Supply Electrical Power (P/B 201)
27-81-00-700-801	Leading Edge Flap and Slat Operational Test in Primary Mode (P/B 501)
27-81-00-860-801	Leading Edge Flap and Slat System Operation With Primary Control (P/B 201)
27-81-52-000-801	LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal (P/B 401)
27-81-52-400-801	LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation (P/B 401)
27-81-81-000-801	Leading Edge Flap and Slat Control Valve Removal (P/B 401)
27-81-81-400-801	Leading Edge Flap and Slat Control Valve Installation (P/B 401)
27-81-91-000-801	Leading Edge Standby Shutoff Valve Removal (P/B 201)
27-81-91-400-801	Leading Edge Standby Shutoff Valve Installation (P/B 201)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Tools/Equipment

Reference	Description
STD-6338	Container - Graduated - 1000 ml measuring flask
STD-14686	Fittings - Hydraulic, Caps/Plugs (ref. AMM 20-10-XX)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Location Zones

Zone	Area
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right
192	Lower Wing-To-Body Fairing - Under Wing Box
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

F. Prepare for the Internal Leakage Check

SUBTASK 27-81-00-860-087

(1) Supply electrical power (TASK 24-22-00-860-801).

SUBTASK 27-81-00-010-008

(2) To get access to the autoslat control valve, do this step:

(a) Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

G. Retracted LE Flap and Slat System Internal Hydraulic Leakage Check

SUBTASK 27-81-00-860-088

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-81-00-860-089

(2) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

SUBTASK 27-81-00-860-090

(3) Make sure the flap control lever is at the FLAP UP position to do the leakage check at the retracted position.

SUBTASK 27-81-00-860-091

(4) Remove the pressure from the system B reservoir (TASK 29-09-00-860-802).

NOTE: It is necessary to remove the pressure from the reservoir. When you disconnect a hydraulic line below the level of the reservoir, all the hydraulic fluid will flow and drain out of the reservoir if pressure is applied.

SUBTASK 27-81-00-860-092

(5) Remove the system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-81-00-790-001

(6) Do a check of the LE flap and slat control valve for hydraulic fluid leakage:

(a) Put a graduated container, STD-6338, under the LE flap and slat control valve.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Disconnect the return line from the LE flap and slat control valve (TASK 27-81-81-000-801).

NOTE: Only do the applicable steps in the task.

(c) Install a cap/plug, STD-14686, on the hydraulic line that goes to the hydraulic reservoir.

(d) Supply system B hydraulic power (TASK 29-11-00-860-801).

(e) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

(f) Measure and make a record of the leakage rate of the hydraulic fluid from the LE flap and slat control valve.

(g) Remove the pressure from the system B reservoir (TASK 29-09-00-860-802).

(h) Remove the system B hydraulic power (TASK 29-11-00-860-805).

(i) Remove the cap/plug, STD-14686, from the hydraulic line.

(j) Reconnect the return line to the LE flap and slat control valve (TASK 27-81-81-400-801).

NOTE: Only do the applicable steps in the task.

SUBTASK 27-81-00-790-002

(7) Do a check of the LE standby shutoff valve for hydraulic fluid leakage:

(a) Put a graduated container, STD-6338, under the leading edge standby shutoff valve.

(b) Disconnect the return line from the leading edge standby shutoff valve (TASK 27-81-91-000-801).

NOTE: Only do the applicable steps in the task.

(c) Install a cap/plug, STD-14686, on the hydraulic line that goes to the hydraulic reservoir.

(d) Supply system B hydraulic power (TASK 29-11-00-860-801).

(e) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

(f) Measure and make a record of the leakage rate of the hydraulic fluid from the leading edge standby shutoff valve.

(g) Remove the pressure from the system B reservoir (TASK 29-09-00-860-802).

(h) Remove the system B hydraulic power (TASK 29-11-00-860-805).

(i) Remove the cap/plug, STD-14686, from the hydraulic line.

(j) Re-connect the return line to the leading edge standby shutoff valve (TASK 27-81-91-400-801).

NOTE: Only do the applicable steps in the task.

SUBTASK 27-81-00-790-003

(8) Do a check of the LE uncommanded movement (UCM) shutoff valve and the autoslat valve for hydraulic fluid leakage:

(a) Put a graduated container, STD-6338, under the tee for the return line on the LE UCM shutoff valve and the autoslat valve.

(b) Disconnect the return line from the tee (TASK 27-81-52-000-801).

NOTE: Only do the applicable steps in the task.

(c) Install a cap/plug, STD-14686, on the hydraulic line that goes to the hydraulic reservoir.

(d) Supply system B hydraulic power (TASK 29-11-00-860-801).

(e) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

(f) Measure and make a record of the leakage rate of the hydraulic fluid from the tee.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Remove the pressure from the system B reservoir (TASK 29-09-00-860-802).

(h) Remove the system B hydraulic power (TASK 29-11-00-860-805).

(i) Remove the cap/plug, STD-14686, from the hydraulic line.

(j) Re-connect the return line to the tee (TASK 27-81-52-400-801).

NOTE: Only do the applicable steps in the task.

SUBTASK 27-81-00-790-004

(9) Calculate the internal hydraulic leakage for the retracted leading edge flap and slats:

(a) Add the three leakage rates together to find the total leakage rate with the leading edge flaps and slats in the retracted position.

(b) If the total leakage rate is more than 0.1 gal (0.4 l) per minute, then there is excessive leakage in the leading edge system.

NOTE: The hydraulic fuse will set when the leakage rate is more than 0.6 gal (2.3 l) per minute. When the leakage rate is between 0.1 gal (0.4 l) per minute and 0.6 gal (2.3 l) per minute, the fuse could set.

(c) If the total leakage rate is 0.1 gal (0.4 l) per minute or less, then continue to find the total leakage rate for the leading edge flaps and slats in the full extended position.

NOTE: A hydraulic fuse that sets at a leakage rate less than 0.1 gal (0.4 l) per minute should be replaced.

H. Extended LE Flap and Slat System Internal Hydraulic Leakage Check

SUBTASK 27-81-00-860-093

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power (TASK 29-11-00-860-801).

SUBTASK 27-81-00-860-094

(2) Pressurize the system B hydraulic reservoir (TASK 29-09-00-860-801).

SUBTASK 27-81-00-860-095

(3) Extend the leading edge flaps and slats (TASK 27-81-00-860-801).

(a) Move the flap control lever to the 1-unit position to move the leading edge flaps to the full extend position and leading edge slats to the extend position.

SUBTASK 27-81-00-790-005

(4) Do these procedures to make a record of the leakage rate with the leading edge flaps at the full extend position and leading edge slats at the extend position.

(a) Do a check of the LE flap and slat control valve for hydraulic fluid leakage.

(b) Do a check of the LE standby shutoff valve for hydraulic fluid leakage.

(c) Do a check of the LE uncommanded movement (UCM) shutoff valve and the autoslat valve for hydraulic fluid leakage.

SUBTASK 27-81-00-860-096

(5) Extend the leading edge flaps and slats (TASK 27-81-00-860-801).

(a) Move the flap control lever to the 30-unit position to move the leading edge flaps and leading edge slats to the full extend position.

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SUBTASK 27-81-00-790-006

(6) Do these steps to make a record of the leakage rate with the leading edge flaps and leading edge slats at the full extend position.

(a) Do a check of the LE flap and slat control valve for hydraulic fluid leakage.

(b) Do a check of the LE standby shutoff valve for hydraulic fluid leakage.

(c) Do a check of the LE uncommanded movement (UCM) shutoff valve and the autoslat valve for hydraulic fluid leakage.

SUBTASK 27-81-00-860-097

(7) Remove the pressure from the system B reservoir (TASK 29-09-00-860-802).

SUBTASK 27-81-00-860-098

(8) Remove the system B hydraulic power (TASK 29-11-00-860-805).

SUBTASK 27-81-00-790-007

(9) Calculate the Internal Hydraulic Leakage for the Full Extended Leading Edge Flap and Slats.

(a) Add the three leakage rates together to find the total leakage rate with the leading edge in the full extended position.

(b) If the total leakage rate is more than 0.1 gal (0.4 l) per minute, then there is excessive leakage in the leading edge system.

NOTE: The hydraulic fuse will set when the leakage rate is more than 0.6 gal (2.3 l) per minute. When the leakage rate is between 0.1 gal (0.4 l) per minute and 0.6 gal (2.3 l) per minute, the fuse could set.

SUBTASK 27-81-00-790-008

(10) If the total leakage rate is 0.1 gal (0.4 l) per minute or less, then there can be a problem with the hydraulic fuses.

NOTE: A hydraulic fuse that sets at a leakage rate less than 0.1 gal (0.4 l) per minute should be replaced.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-00-610-001

(1) If it is necessary to service the hydraulic reservoir, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-81-00-710-004

(2) Do an operational test of the LE flaps and slats (TASK 27-81-00-700-801).

SUBTASK 27-81-00-790-009

(3) Make sure there are no hydraulic fluid leaks at the LE flap and slat control valve, LE standby shutoff valve, LE Uncommanded Movement (UCM) shutoff valve and autoslat control valve.

SUBTASK 27-81-00-410-006

(4) Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

SUBTASK 27-81-00-860-099

(5) Remove the hydraulic power (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAPS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the leading edge flaps.

(2) An installation of the leading edge flaps.

B. This procedure applies to the inboard and outboard leading edge flaps.

TASK 27-81-11-000-801

2. Leading Edge Flap Removal

(Figure 401)

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

D. Prepare for the Removal

SUBTASK 27-81-11-860-001

WARNING KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Pressurize hydraulic system B (TASK 29-11-00-860-801).

SUBTASK 27-81-11-860-002

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLAPS AND SLATS. THE FLAPS AND SLATS CAN ACCIDENTALLY MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION

DO NOT EXTEND THE LEADING EDGE FLAPS AND SLATS UNTIL YOU CLOSE THE THRUST REVERSER, AND FAN DUCT COWL. THE LEADING EDGE FLAPS AND SLATS WILL HIT THE THRUST REVERSER, OR FAN DUCT COWL IF THEY ARE OPEN. IF THEY HIT, DAMAGE TO EQUIPMENT WILL OCCUR.

(2) Move the flap control lever to the 1-unit detent to extend the leading edge flaps.

SUBTASK 27-81-11-860-003

(3) Remove power from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-81-11-480-001

WARNING

INSTALL THE LOCK ON LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT THE ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) Install the lockout set, SPL-1734, on the actuator of the adjacent leading edge flap (TASK 27-81-00-480-801).

E. Leading Edge Flap Removal

SUBTASK 27-81-11-020-001

(1) Disconnect the flap actuator [4] from the leading edge flap [2] or leading edge flap [1]:

(a) Remove the pin [6], nut [7], washer [8], washer [5], bushing [11], washer [10], and bolt [9] to disconnect the flap actuator [4] from the outboard leading edge flap [1].

(b) Remove the pin [15], nut [16], washer [17], washer [18], bushing [12], washer [13], and bolt [14] to disconnect the flap actuator [4] from the inboard leading edge flap [2].

SUBTASK 27-81-11-020-002

(2) Do these steps to remove the outboard leading edge flap [1] from the fixed leading edge:

(a) Disconnect the outboard bullnose linkage [53] from the fixed leading edge flap.

1) Remove the pin [55], nut [54], washer [56], anti-rotation washers [41], bushing [44], washer [43], and bolt [42].

(b) Remove the nut [32], washers [31], and bolt [30] to disconnect the bonding jumper [29] from the fixed leading edge.

(c) Disconnect hinges 1 through 4 on the leading edge flap [1] from the fixed leading edge.

1) At hinges 1 and 4, remove the pins [21], nuts [22], washers [20], bushings [19], washers [24], and bolts [23].

2) At hinges 2 and 3, remove the pins [34], nuts [33], washers [25], bushings [26], washers [28], and bolts [27].

(d) Remove the leading edge flap [1] from the wing.

SUBTASK 27-81-11-020-003

(3) Do these steps to remove the inboard leading edge flap [2] from the fixed leading edge:

(a) Disconnect the mid and inboard bullnose linkages [53] from the fixed leading edge flap.

1) Remove the pin [55], nut [54], washer [56], anti-rotation washers [41], bushing [44], washer [43], and bolt [42].

(b) Remove the nut [32], washers [31], and bolt [30] to disconnect the bonding jumper [29] from the leading edge flap [2].

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(c) Disconnect hinges 5 through 8 on the leading edge flap [2] from the fixed leading edge flap.

1) At hinge 5, remove the pin [21], nut [22], washer [20], bushing [19], washer [24], and bolt [23].

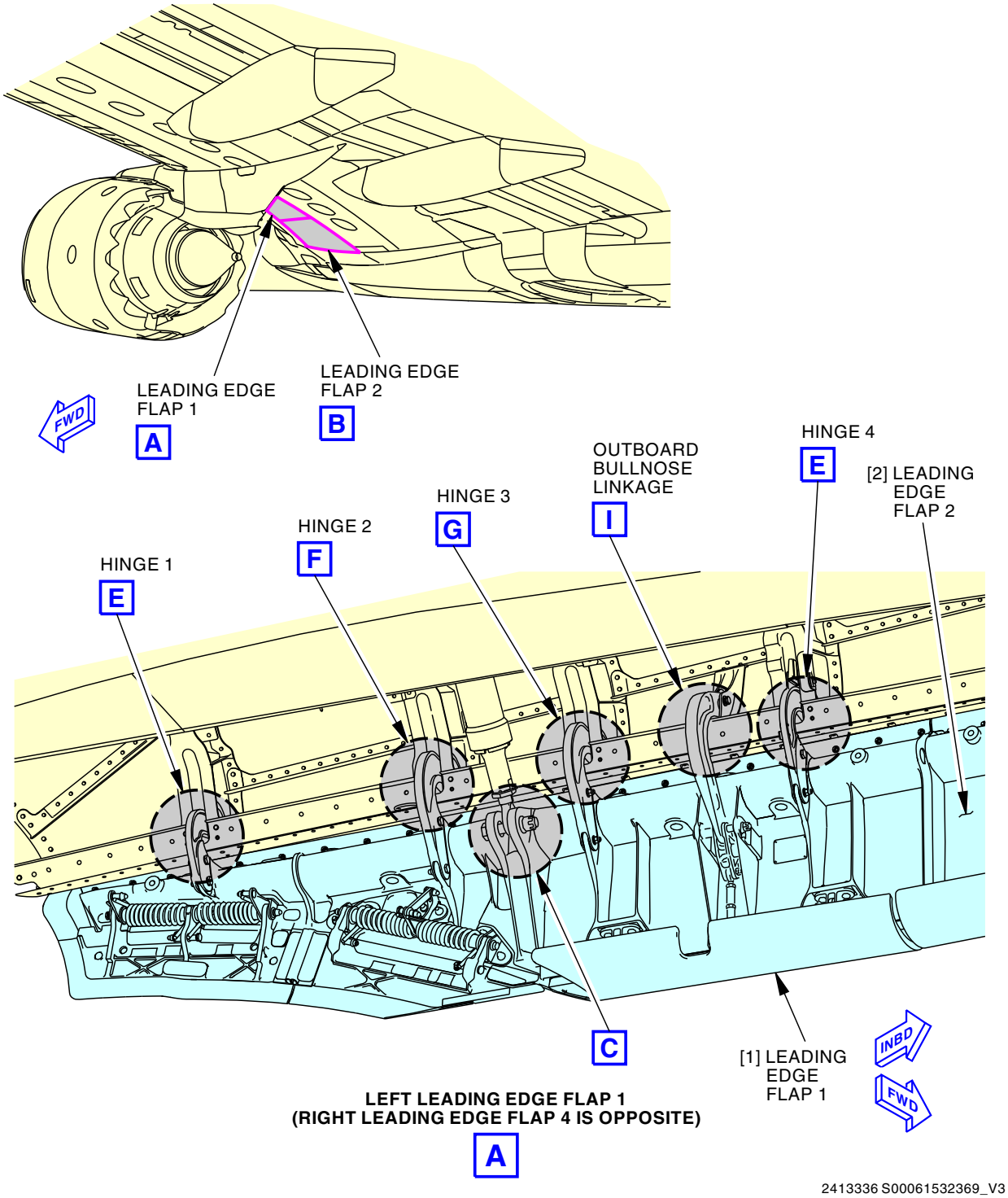
2) At hinges 6 and 7, remove the pins [34], nuts [33], washers [25], bushings [26], washers [28], and bolts [27].

3) At hinge 8, remove the pin [40], nut [39], washer [35], bushing [38], washer [36], and bolt [37].

(d) Remove the leading edge flap [2] from the wing.

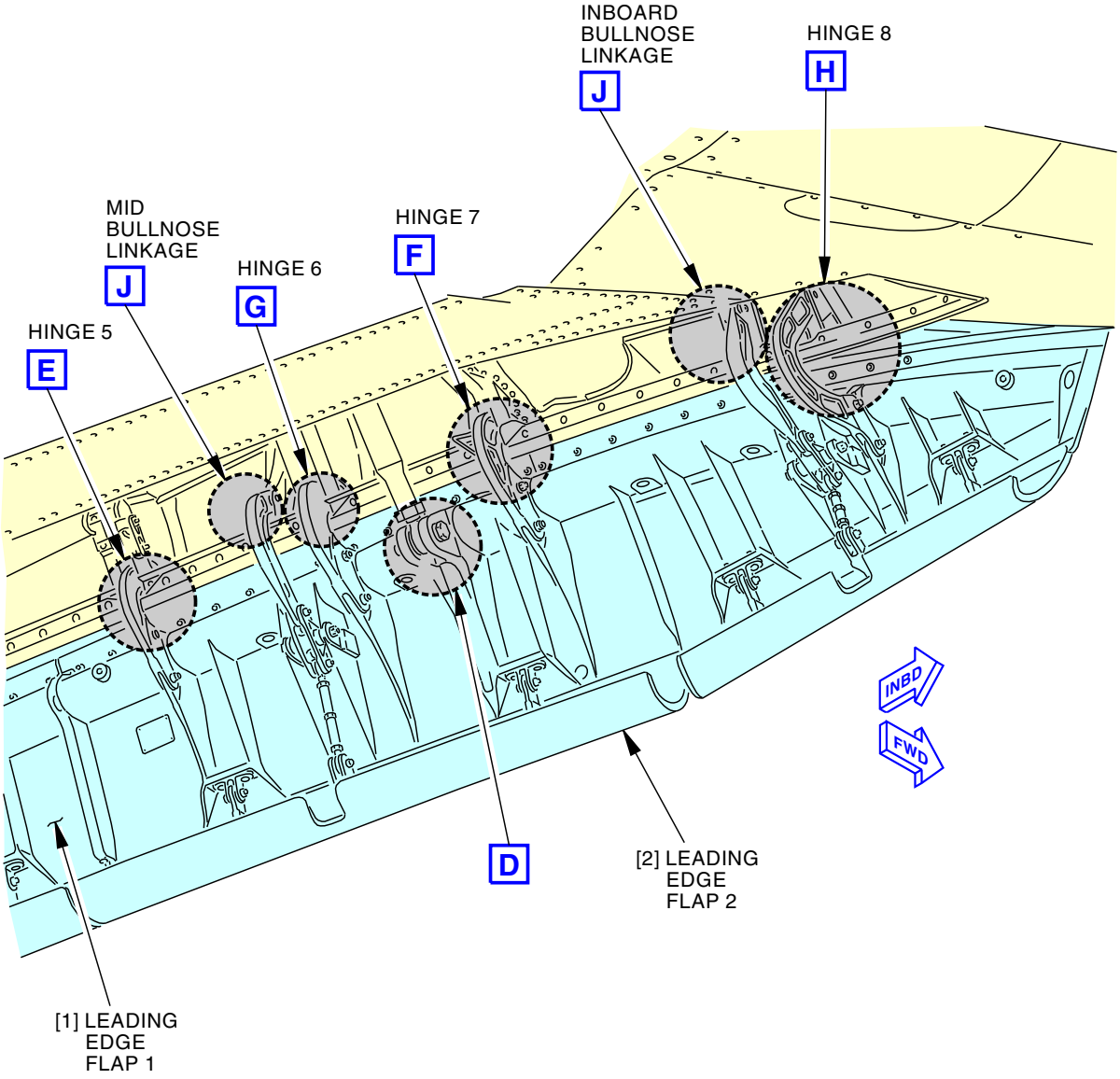
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



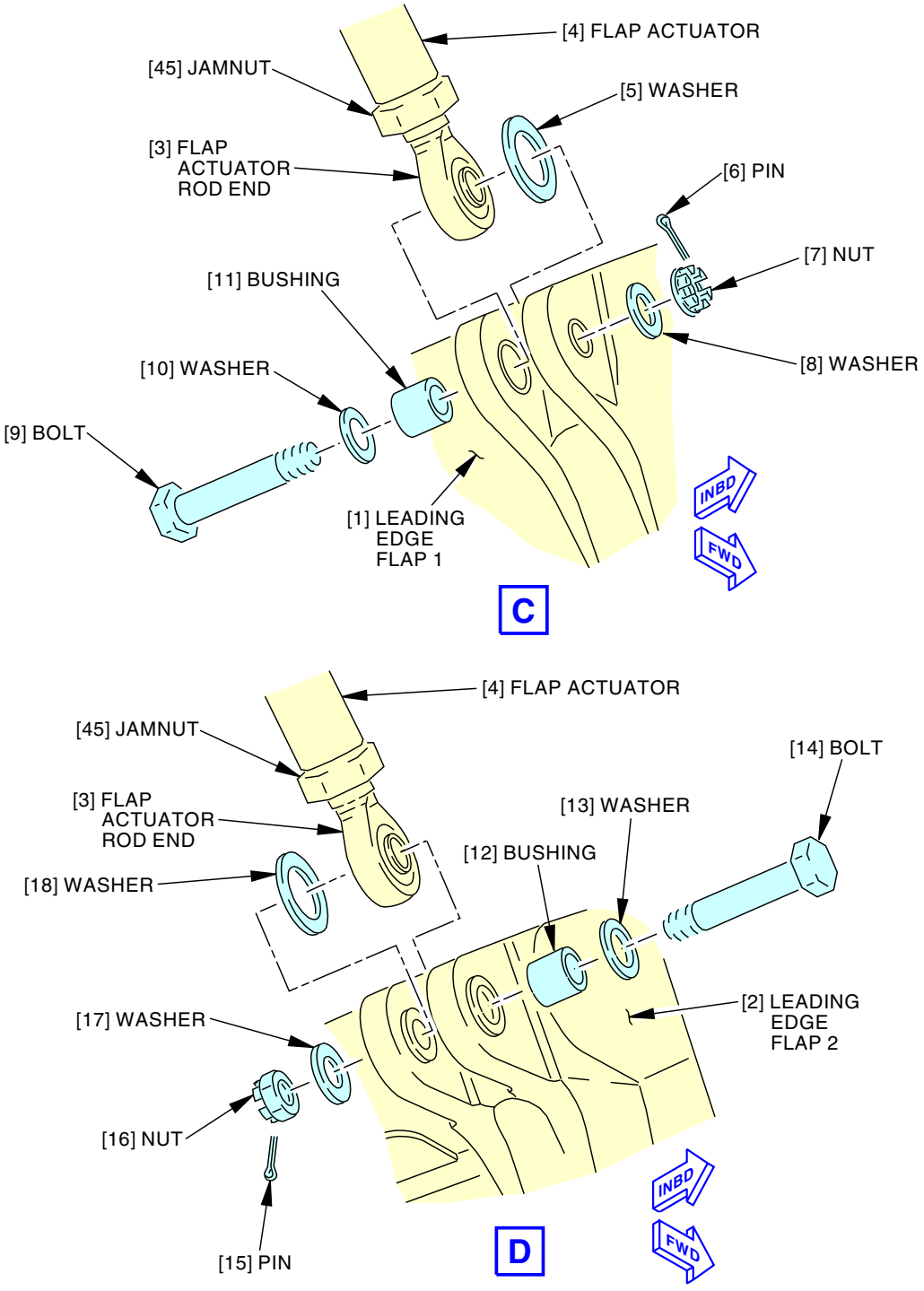
LEFT LEADING EDGE FLAP 2
(RIGHT LEADING EDGE FLAP 3 IS OPPOSITE)

B

2413337 S00061532370_V2

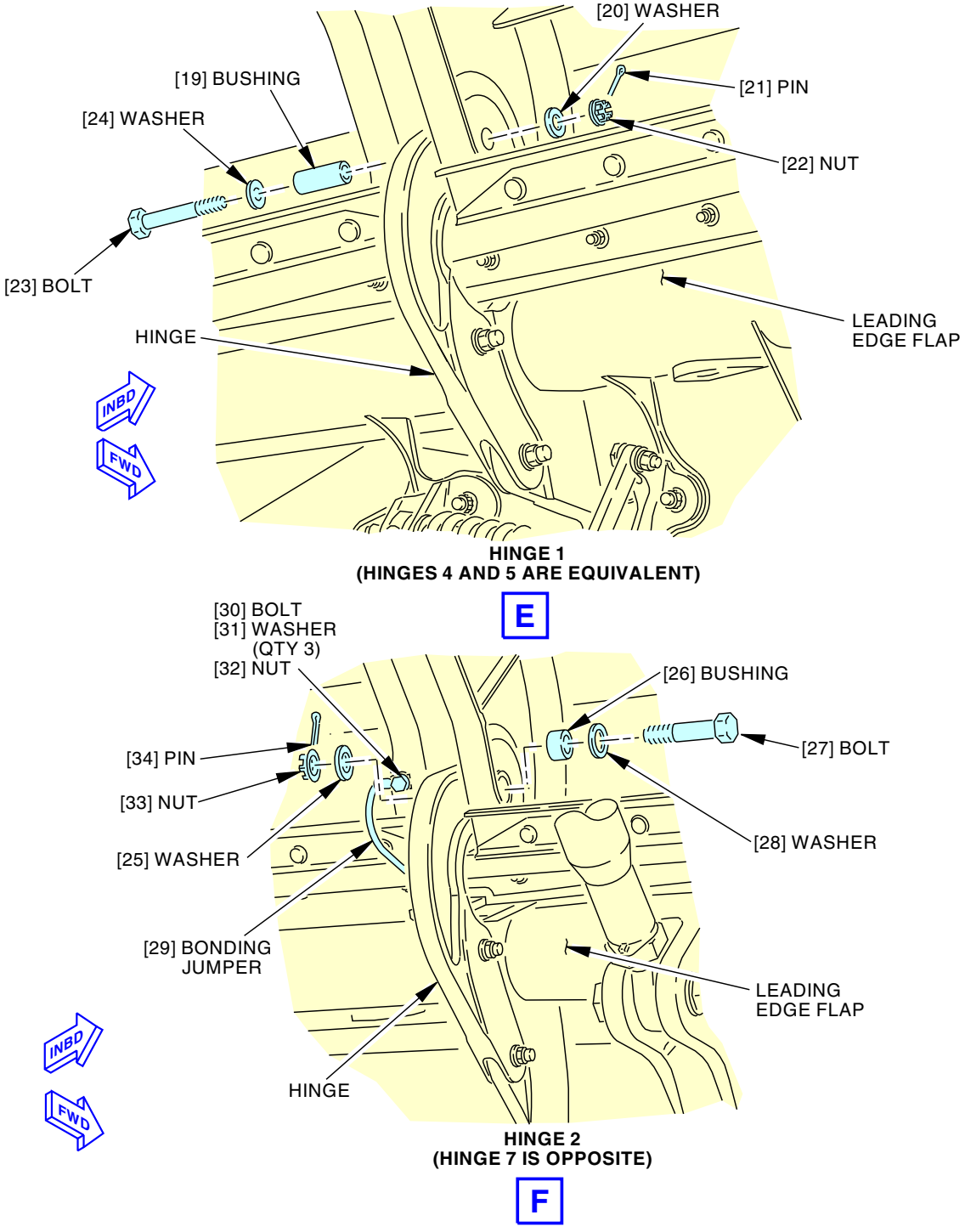
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



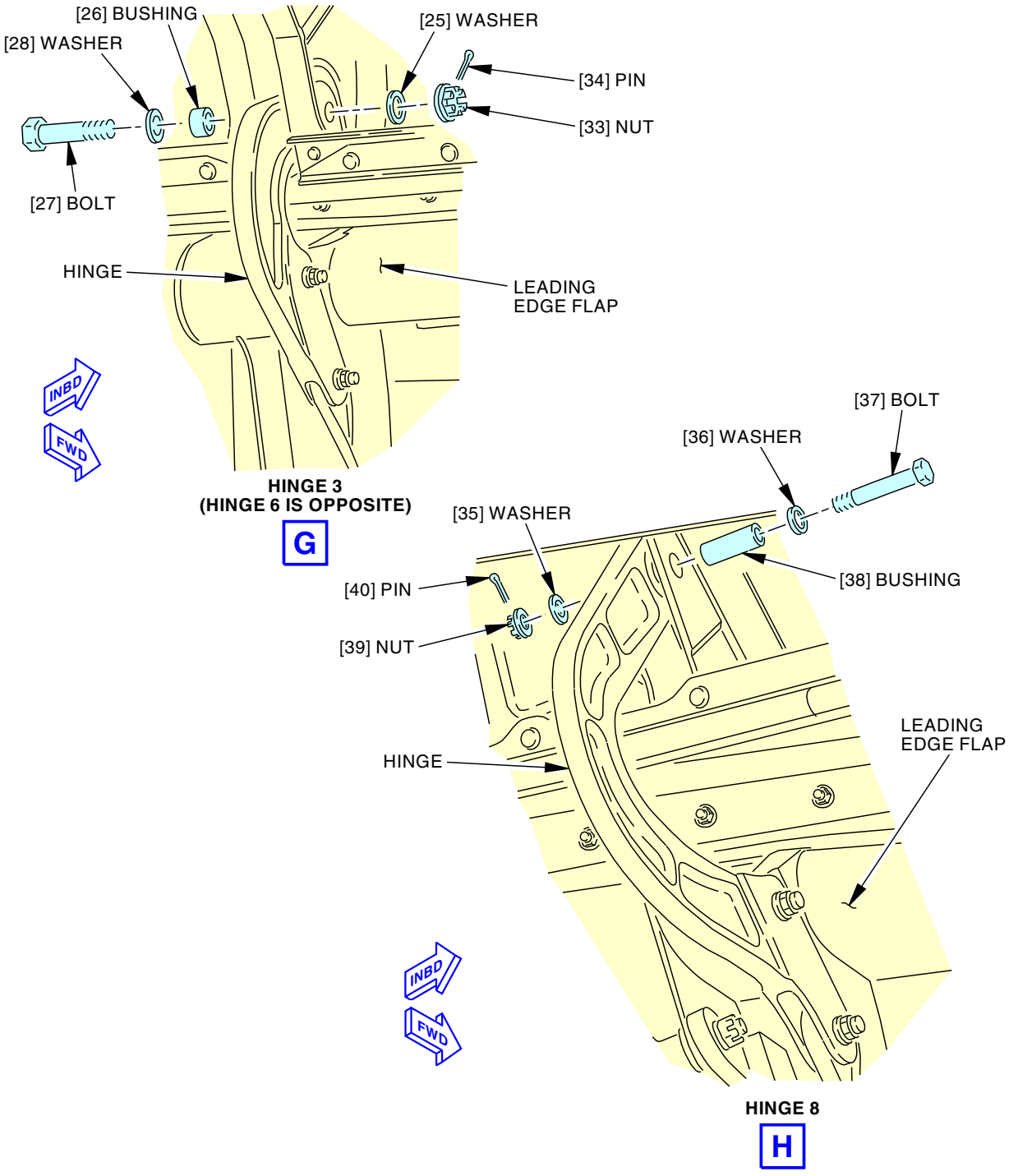
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



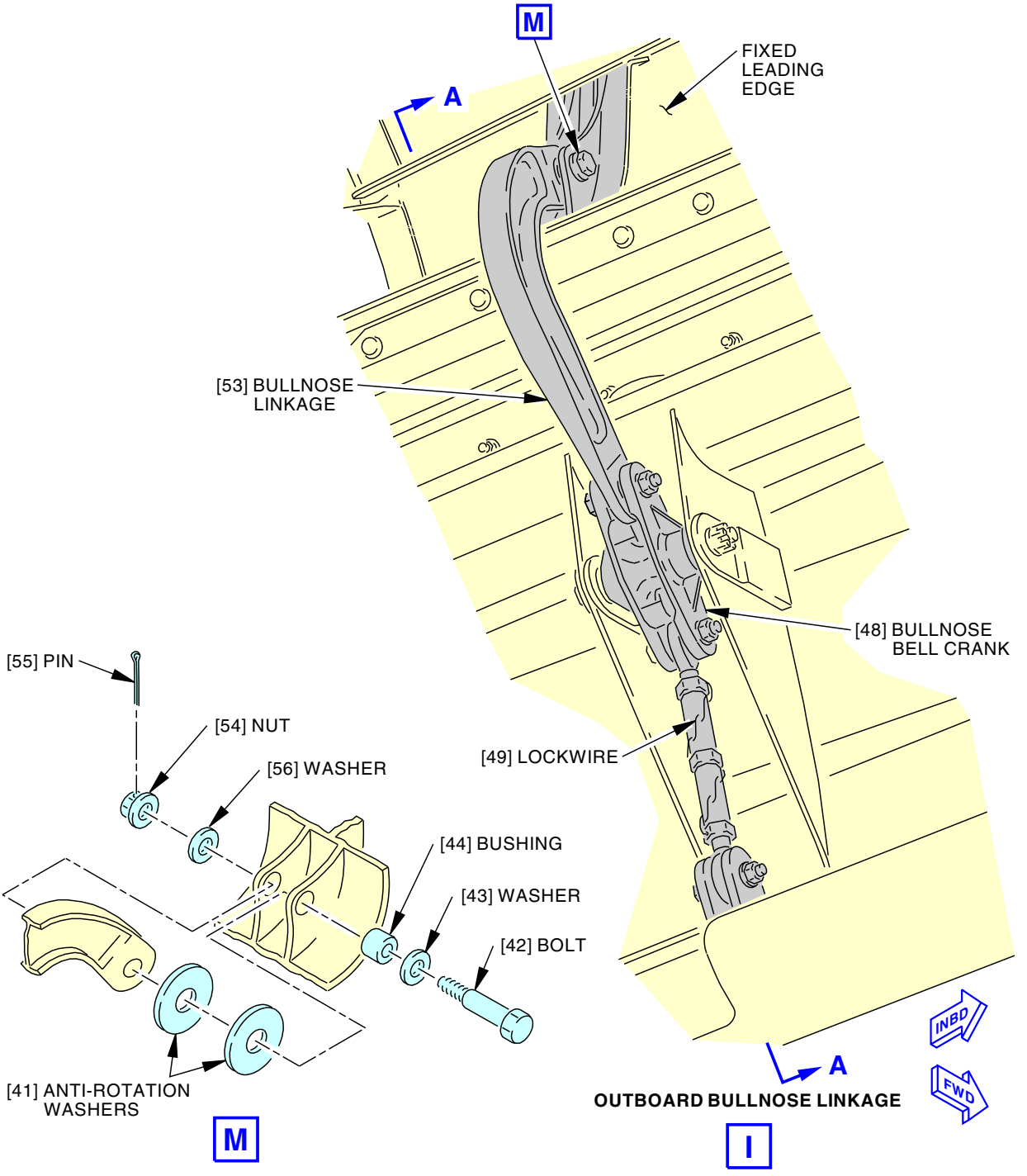
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



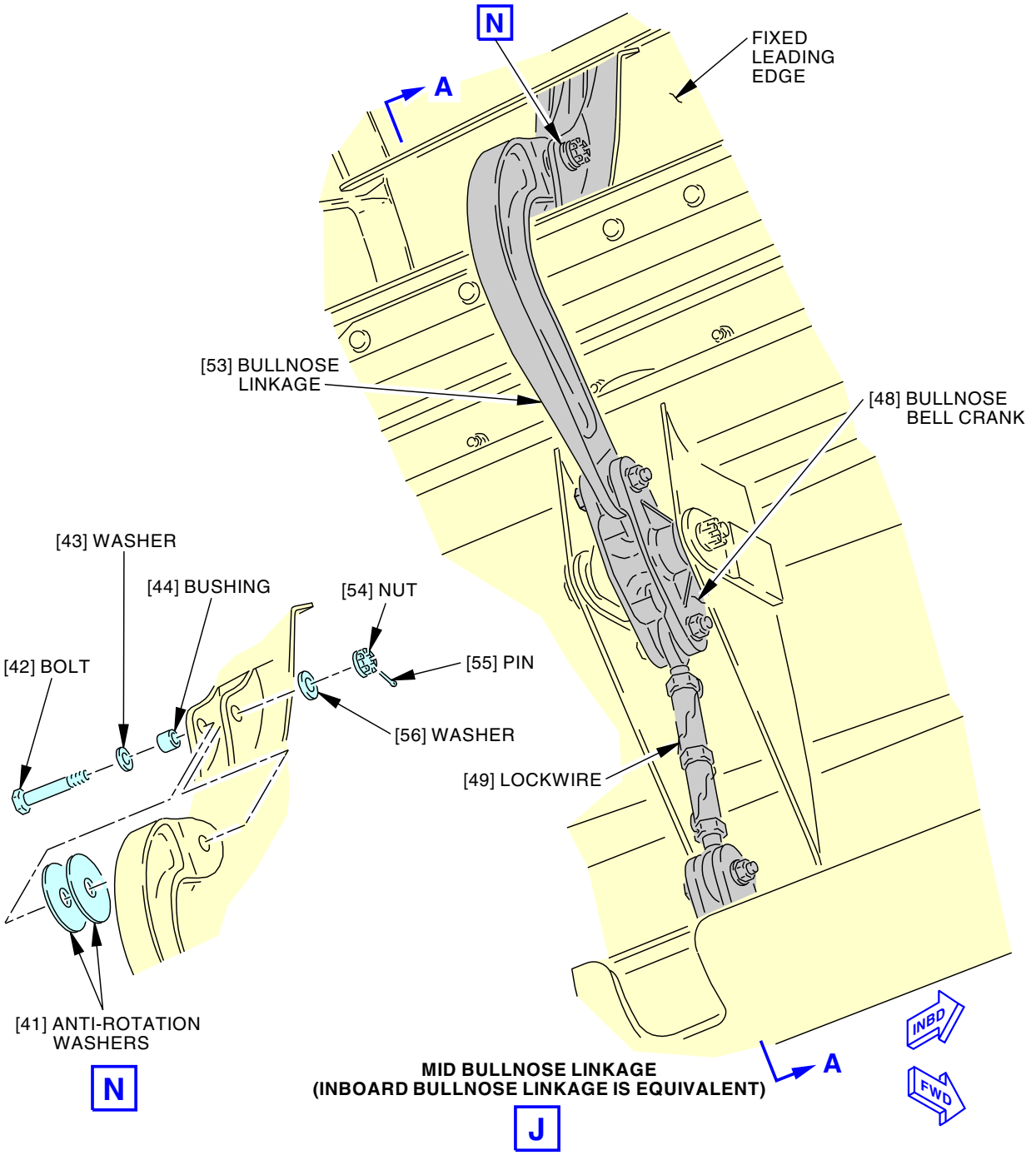
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



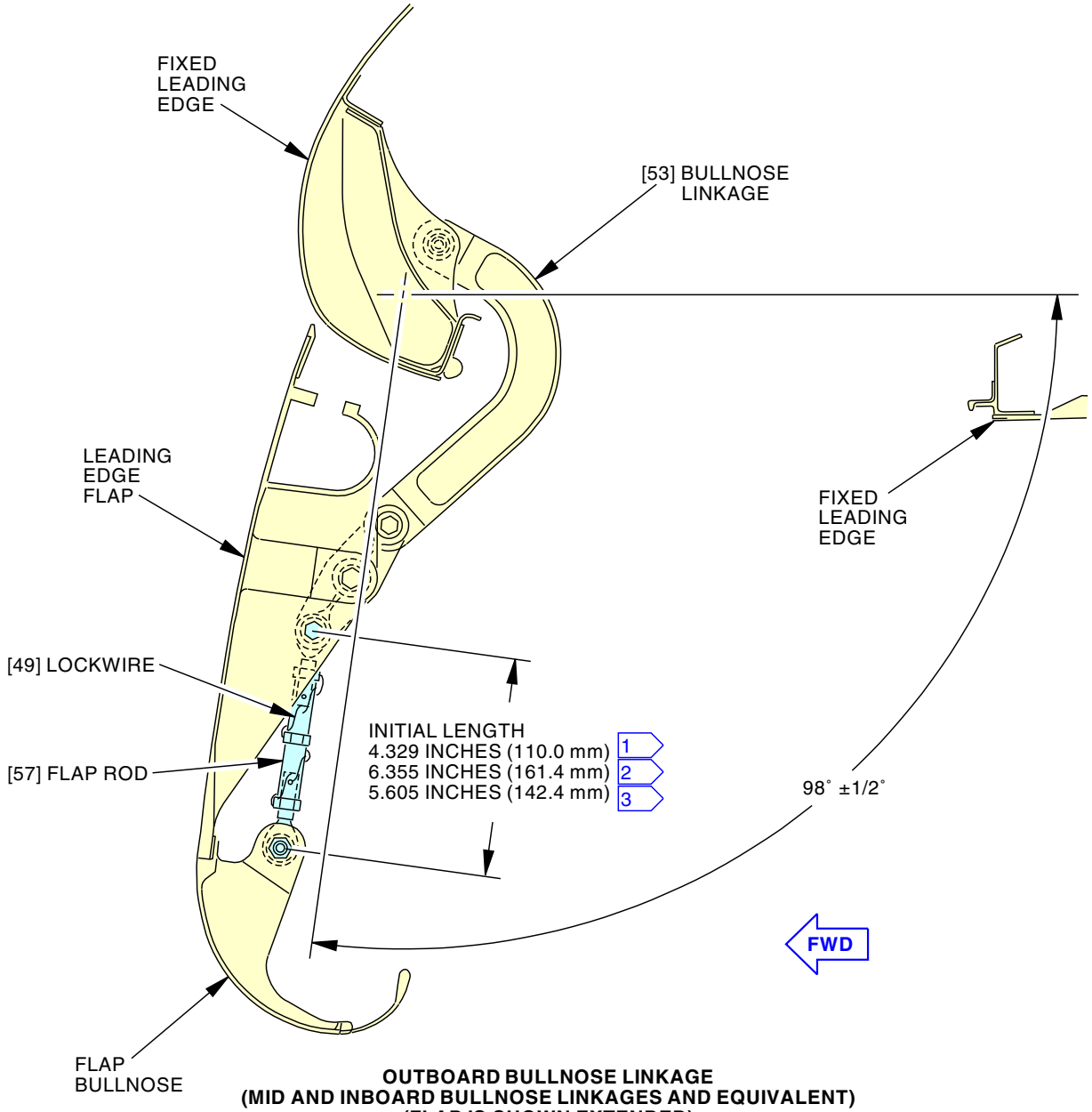
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD BULLNOSE LINKAGE
(MID AND INBOARD BULLNOSE LINKAGES AND EQUIVALENT)
(FLAP IS SHOWN EXTENDED)

A-A

1 INBOARD BULLNOSE LINKAGE

2 MID BULLNOSE LINKAGE

3 OUTBOARD BULLNOSE LINKAGE

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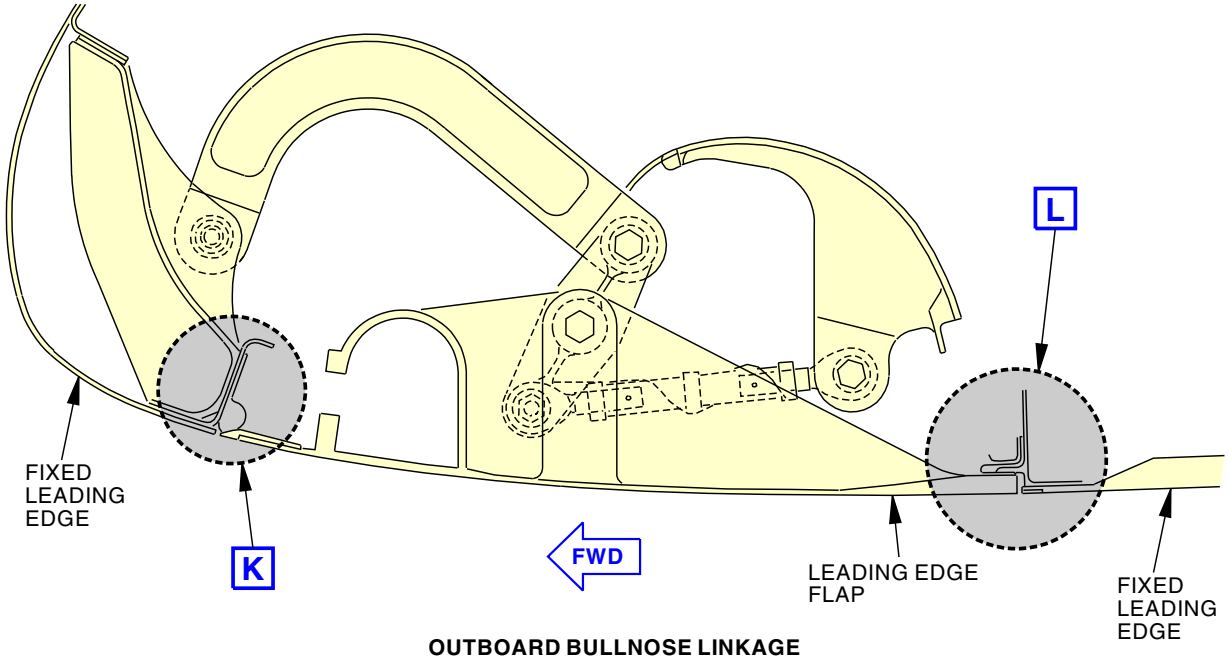
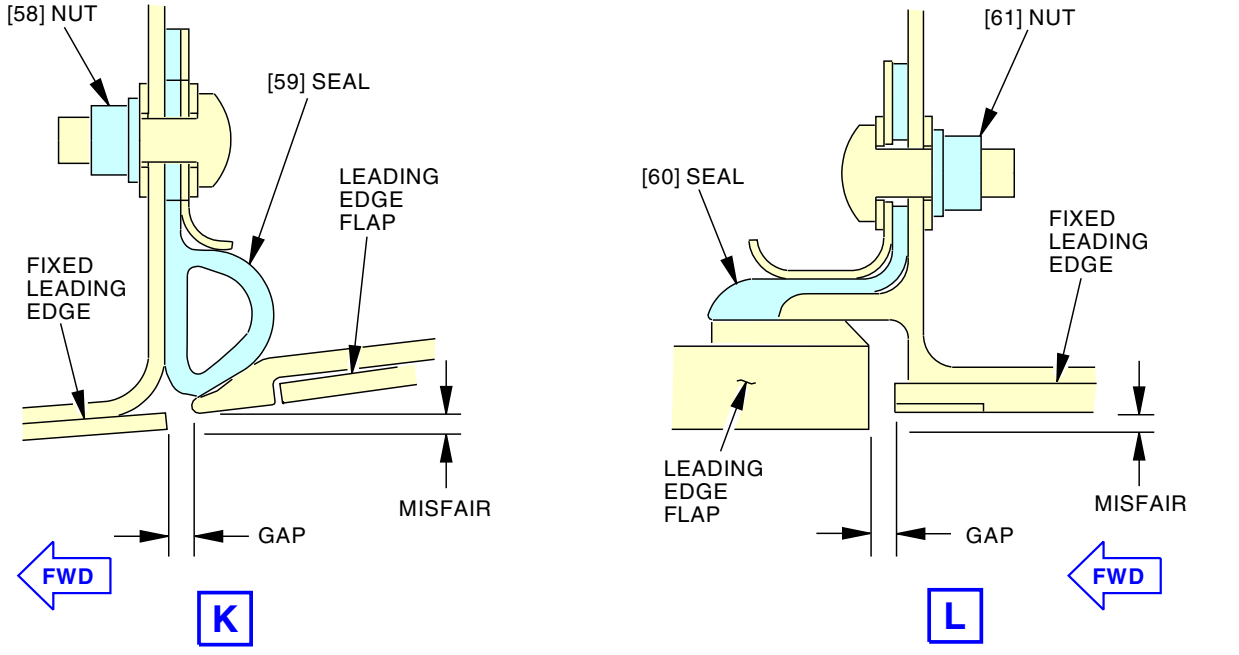
Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD BULLNOSE LINKAGE
(MID AND INBOARD BULLNOSE LINKAGES AND EQUIVALENT)
(FLAP IS SHOWN RETRACTED)

A-A



2413344 S00061532377_V2

Leading Edge Flap Installation
Figure 401/27-81-11-990-801 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-11-400-801

3. Leading Edge Flap Installation

(Figure 401, Figure 402)

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-11-200-801	Leading Edge Flap Inspection (P/B 601)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
51-22-00-160-801	Prepare For Sealing (P/B 201)
SWPM 20-20-00	ELECTRICAL BONDING PROCESSES

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659
COM-1691	Protractor - Digital, Vertical or Horizontal Part #: 21465A82 Supplier: 3A054 Part #: 31-038-3 (Model Pro 360) Supplier: 1X822 Part #: 31-040-9 (Model Pro 3600) Supplier: 1X822 Part #: 950-317 (Model Pro 360) Supplier: 01EP7 Part #: 950-318 (Model Pro 3600) Supplier: 01EP7 Part #: KS5549 Supplier: 75245 Part #: KS6005 Supplier: 75245
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A00767	Sealant - Fuel Tank	BMS5-45
A50231	Sealant - Pressure And Environmental - Chromate Type	BMS5-95 Class B
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Leading edge flap	27-81-11-01-185	SIA ALL
2	Leading edge flap	27-81-11-01-195	SIA ALL
6	Pin	27-62-94-01-125	SIA ALL
15	Pin	27-81-11-01-135	SIA ALL
21	Pin	27-81-11-01-020	SIA ALL
34	Pin	27-81-11-01-025	SIA ALL
40	Pin	27-81-11-01-020	SIA ALL
55	Pin	27-81-11-01-085	SIA ALL

E. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

F. Leading Edge Flap Installation

SUBTASK 27-81-11-220-001

(1) If you install used bearings, bushings, and bolts, do this task: Leading Edge Flap Inspection, TASK 27-81-11-200-801.

SUBTASK 27-81-11-420-001

(2) If you removed the outboard leading edge flap [1], connect the outboard leading edge flap [1] to the fixed leading edge:

(a) Connect hinges 1 through 4 on the leading edge flap [1] to the fixed leading edge.

1) Apply grease, D00633, on the mating surfaces of the bolts [23] and bolts [27].

2) At hinges 1 and 4, install the bolts [23], washer [24], bushings [19], washers [20], and nuts [22].

a) Install the bolts [23] with the head outboard.

3) Tighten the nuts [22] to 60 in-lb (6.8 N·m) - 95 in-lb (10.7 N·m).

4) Install the new pins [21].

5) At hinges 2 and 3, install the bolts [27], washers [28], bushings [26], washers [25], and nuts [33].

a) At hinge 2, install the bolt [27] with the head inboard.

b) At hinge 3, install the bolt [27] with the head outboard.

6) Tighten the nuts [33] to 290 in-lb (32.8 N·m) - 510 in-lb (57.6 N·m).

7) Install the new pins [34].

(b) Connect the bonding jumper [29] to the fixed leading edge.

1) Install the bolt [30], washers [31], and nut [32] to attach the bonding jumper [29].

2) Tighten the nut [32] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

3) Measure the electrical bonding resistance between the bonding jumper [29] and the fixed leading edge.

a) Use an intrinsically safe approved bonding meter, COM-1550.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Make sure that the resistance is less than 0.001 ohms.

4) Do these steps to make a fay seal (SWPM 20-20-00):

a) Clean the area before you apply the sealant (TASK 51-22-00-160-801).

b) Apply sealant, A00767, or sealant, A50231, around the bolt [30], washers [31], nut [32] and end of the bonding jumper [29].

(c) Connect the outboard bullnose linkage [53] to the fixed leading edge.

1) Install the bolt [42], washer [43], bushing [44], anti-rotation washers [41], washer [56], and nut [54].

a) Install the bolt [42] with the head inboard.

2) Tighten the nut [54] to 30 in-lb (3.4 N·m) - 50 in-lb (5.6 N·m).

3) Install the new pin [55].

SUBTASK 27-81-11-420-002

(3) If you removed the inboard leading edge flap [2], connect the inboard leading edge flap [2] to the fixed leading edge:

(a) Connect hinges 5 through 8 on the leading edge flap [2] to the fixed leading edge.

1) Apply grease, D00633, on the mating surfaces of the bolts [23] and bolts [27].

2) At hinge 5, install the bolt [23], washer [24], bushing [19], washer [20], and nut [22].

a) Install the bolt [23] with the head outboard.

b) Tighten the nut [22] to 60 in-lb (6.8 N·m) - 95 in-lb (10.7 N·m).

c) Install the new pin [21].

3) At hinges 6 and 7, install the bolts [27], washers [28], bushings [26], washers [25], and nuts [33].

a) At hinge 6, install the bolt [27] with the head inboard.

b) At hinge 7, install the bolt [27] with the head outboard.

c) Tighten the nuts [33] to 290 in-lb (32.8 N·m) - 510 in-lb (57.6 N·m).

d) Install the new pins [34].

4) At hinge 8, install the bolt [37], washer [36], bushing [38], washer [35], and nut [39].

a) Install the bolt [37] with the head inboard.

b) Tighten the nut [39] to 60 in-lb (6.8 N·m) - 95 in-lb (10.7 N·m).

c) Install the new pin [40].

(b) Connect the bonding jumper [29] to the fixed leading edge.

1) Install the bolt [30], washers [31], and nut [32] to attach the bonding jumper [29].

2) Tighten the nut [32] to 28 in-lb (3 N·m) - 35 in-lb (4 N·m).

3) Measure the electrical bonding resistance between the bonding jumper [29] and the fixed leading edge.

a) Use an intrinsically safe approved bonding meter, COM-1550.

b) Make sure that the resistance is less than 0.001 ohms.

4) Do these steps to make a fay seal (SWPM 20-20-00):

a) Clean the area before you apply the sealant (TASK 51-22-00-160-801).

b) Apply sealant, A00767, or sealant, A50231, around the bolt [30], washers [31], nut [32] and end of the bonding jumper [29]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Connect the mid and inboard bullnose linkages [53] to the fixed leading edge.

1) Install the bolt [42], washer [43], bushing [44], anti-rotation washers [41], washer [56], and nut [54].

a) Install the bolt [42] with the heads outboard.

2) Tighten the nut [54] to 30 in-lb (3.4 N·m) - 50 in-lb (5.6 N·m).

3) Install the new pin [55].

SUBTASK 27-81-11-210-001

(4) Do a check of the clearances between the leading edge flap [1] or leading edge flap [2] and the fixed leading edge:

(a) Extend the flap actuator [4] until you can temporarily install the bolt [14] in the rod end [3].

(b) Fully extend the flap actuator [4].

1) Make sure that the flap bullnose can move freely.

(c) Adjust the flap rod [57] until the flap bullnose touches the leading edge flap [1] or leading edge flap [2].

(d) Remove the bolt [14] from the rod end [3].

(e) Retract the flap actuator [4].

(f) Do this check while you retract the leading edge flap [2] or leading edge flap [1] by hand:

1) Make sure that there is sufficient clearance between the leading edge flap [2] or leading edge flap [1] and the fixed leading edge.

SUBTASK 27-81-11-420-003

(5) Connect the flap actuator [4] to the leading edge flap [1] or leading edge flap [2].

(a) Apply grease, D00633, on the mating surfaces of the bolt [14] or bolt [9].

(b) For the outboard leading edge flap [1], install the bolt [9], washer [10], bushing [11], washer [5], washer [8], and nut [7].

NOTE: You can bond the washer [5] to the leading edge flap [1] with sealant, A00247, for easier installation.

(c) For the inboard leading edge flap [2], install the bolt [14], washer [13], bushing [12], washer [18], washer [17], and nut [16].

NOTE: You can bond the washer [18] to the leading edge flap [2] with sealant, A00247, for easier installation.

(d) Tighten the nut [7] or nut [16] to 660 in-lb (74.6 N·m) - 980 in-lb (110.7 N·m).

(e) Install the new pin [6] or new pin [15].

SUBTASK 27-81-11-860-004

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize hydraulic system B (TASK 29-11-00-860-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-11-860-005

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLAPS AND SLATS. THE FLAPS AND SLATS CAN ACCIDENTALLY MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(7) Move the flap control lever to the UP detent to retract the leading edge flaps.

SUBTASK 27-81-11-220-002

(8) Measure the full extend angle of the leading edge flap [1] or leading edge flap [2].

(a) Attach a protractor, COM-1691, to the inboard edge of the outboard leading edge flap [1] or the outboard edge of the inboard leading edge flap [2].

(b) Set the protractor, COM-1691, to zero with the leading edge flaps retracted.

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLAPS AND SLATS. THE FLAPS AND SLATS CAN ACCIDENTALLY MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(c) Move the flap control lever to the 1-unit detent to extend the leading edge flaps.

(d) Make sure that the full extend angle of the leading edge flap [1] or leading edge flap [2] is 98 ±0.5 degrees.

1) If the extend angle is out of tolerance, adjust the length of the flap actuator [4].

a) Loosen the jamnut [45] on the rod end [3].

b) Turn the rod end [3] until you get the correct full extend angle.

NOTE: The limit for maximum adjustment is two full turns.

c) Tighten the jamnut [45] to 550 in-lb (62.1 N·m) - 650 in-lb (73.4 N·m).

d) Install MS20995NC32 lockwire, G01912, on the jamnut [45].

(e) Remove the protractor, COM-1691.

SUBTASK 27-81-11-220-003

(9) Make sure that the mismatch between the inboard leading edge flap [2] and the outboard leading edge flap [1] is 0.000 ±0.040 in. (0.0 ±1.0 mm).

SUBTASK 27-81-11-860-006

(10) Apply preload at the flap bullnose to the leading edge flap [1] or leading edge flap [2].

(a) Make sure the flap bullnose touches the leading edge flap [1] or leading edge flap [2].

NOTE: To apply the correct preload, the flap bullnose must first touch the leading edge flap [1] or leading edge flap [2].

1) If the flap bullnose does not touch the leading edge flap [1] or leading edge flap [2], adjust the flap rod [57].

(b) Adjust the flap rod [57] an additional 1/2 turn to apply the correct preload at the flap bullnose to the leading edge flap [1] or leading edge flap [2].

(c) Install MS20995NC32 lockwire, G01912, on the flap rod [57].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-11-860-007

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLAPS AND SLATS. THE FLAPS AND SLATS CAN ACCIDENTALLY MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(11) Move the flap control lever to the UP detent to retract the leading edge flaps.

SUBTASK 27-81-11-220-004

(12) Do a check of the gap at the edge of the leading edge flap [1] or leading edge flap [2].

(a) Do a check of the gap at location 1-4, 6-10, and 13-18 (Figure 402).

1) If all the measurements taken at locations 1-4, 6-10, 13-18 are less than 0.240 in. (6.1 mm), then the gap is satisfactory.

2) If one or more of the gap measurements exceeds 0.240 in. (6.1 mm), convert each of the measurements into a Net Effect Value (NEV) (Figure 402).

3) Add the NEV measurements together and divide by the total number of measurements.

NOTE: This gives the total NEV.

NOTE: For 85% of the Krueger flap trailing edge length, the gap cannot exceed ±0.300 in. (7.620 mm). For the remaining 15% of the Krueger flap trailing edge interface, the fair cannot exceed ±0.450 in. (11.430 mm).

4) Make sure that the calculated total NEV is less than 1.0 (the Net Effect Limit (NEL) for this measurement).

SUBTASK 27-81-11-220-005

(13) Do a check of the mismatch at the forward edge of the leading edge flap [1] and the leading edge flap [2] (Figure 401).

(a) Do a check of the mismatch at the forward edge of the leading edge flap [1] and leading edge flap [2] at locations 1-4 and 6-10 (Figure 402).

1) If all the measurements taken at locations 1-4 and 6-10 are within the range 0.000 +0.062 / -0.071 in. (0.00 +1.57 / -1.80 mm), the misfair at the forward edge of the Krueger flap is acceptable as is without any additional adjustments.

NOTE: See Figure 402 for definition of negative and positive misfair measurements.

2) If one or more of the misfair measurements is outside the range 0.000 +0.062 / -0.071 in. (0.00 +1.57 / -1.80 mm), convert each of the measurements into a NEV (Figure 402).

3) Add the NEV measurements together and divide by the total number of measurements.

NOTE: This gives the total NEV.

NOTE: For 75% of the Krueger flap leading edge length, the fair cannot exceed ±0.100 in. (2.540 mm). For the remaining 25% of the Krueger flap leading edge interface, the fair cannot exceed ±0.130 in. (3.302 mm).

4) Make sure that the calculated total NEV is less than 1.0 (the NEL for this measurement).

5) If it is necessary, adjust the mismatch dimension.

a) Loosen the jamnut [45] on the rod end [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Turn the rod end [3] to adjust the length of the flap actuator [4] until you get the correct mismatch.

NOTE: The limit for maximum adjustment is two full turns.

c) Tighten the jamnut [45] to 550 in-lb (62.1 N·m) - 650 in-lb (73.4 N·m).

d) Install MS20995NC32 lockwire, G01912, on the jamnut [45].

SUBTASK 27-81-11-220-006

(14) Do a check of the mismatch at the aft edge of the leading edge flap [1] and leading edge flap [2] (Figure 401).

(a) Do a check of the mismatch at the aft edge of the leading edge flap [1] and leading edge flap [2] at locations 13-18 (Figure 402).

1) If all the measurements taken at locations 13-18 are within the range 0.000 +0.040 / -0.072 in. (0.00 +1.02 / -1.83 mm), the misfair at the aft edge of the Krueger flap is acceptable as is without any additional adjustments.

NOTE: See Figure 402 for definition of negative and positive misfair measurements.

2) If one or more of the misfair measurements is outside the range 0.000 +0.040 / -0.072 in. (0.00 +1.02 / -1.83 mm), convert each of the measurements into a NEV (Figure 402).

3) Add the NEV measurements together and divide by the total number of measurements.

NOTE: This gives the total NEV.

NOTE: For 70% of the Krueger flap trailing edge length, the fair cannot exceed ±0.080 in. (2.032 mm). For the remaining 30% of the Krueger flap trailing edge interface, the fair cannot exceed ±0.100 in. (2.540 mm).

4) Make sure that the calculated total NEV is less than 1.0 (the NEL for this measurement).

5) If the mismatch dimension is out of tolerance for the outboard leading edge flap [1], do these steps:

a) Remove the nut [7], washer [8], washer [5], bushing [11], washer [10], and bolt [9] to disconnect the flap actuator [4] from the leading edge flap [1].

b) Loosen the jamnut [45] on the rod end [3].

c) Turn the rod end [3] to adjust the length of the flap actuator [4] until you get the specified mismatch dimension.

NOTE: The limit for maximum adjustment is two full turns. The full extend angle of the leading edge flap [1] must still be 98 ±0.5 degrees while you make this adjustment.

d) Tighten the jamnut [45] to 550 in-lb (62.1 N·m) - 650 in-lb (73.4 N·m).

e) Install the MS20995NC32 lockwire, G01912, on the jamnut [45].

f) Connect the flap actuator [4] to the leading edge flap [1] with bolt [9], washer [10], bushing [11], washer [5], washer [8], and nut [7].

6) If the mismatch dimension is out of tolerance for the inboard leading edge flap [2], do these steps:

a) Remove the nut [16], washer [17], washer [18], bushing [12], washer [13], and bolt [14] to disconnect the flap actuator [4] from the leading edge flap [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Loosen the jamnut [45] on the rod end [3].

c) Turn the rod end [3] to adjust the length of the flap actuator [4] until you get the specified mismatch dimension.

NOTE: The limit for maximum adjustment is two full turns. The full extend angle of the leading edge flap [2] must still be 98 ±0.5 degrees while you make this adjustment.

d) Tighten the jamnut [45] to 550 in-lb (62.1 N·m) - 650 in-lb (73.4 N·m).

e) Install the MS20995NC32 lockwire, G01912, on the jamnut [45].

f) Connect the flap actuator [4] to the leading edge flap [2] with bolt [14], washer [13], bushing [12], washer [18], washer [17], and nut [16].

SUBTASK 27-81-11-420-004

(15) Tighten the nut [7] or nut [16] to 660 in-lb (74.6 N·m) - 980 in-lb (110.7 N·m).

SUBTASK 27-81-11-420-005

(16) Install the new pin [6] or new pin [15].

SUBTASK 27-81-11-860-008

(17) Move the flap control lever to the 1-unit detent position to extend the leading edge flaps.

G. Leading Edge Flap Installation Test

SUBTASK 27-81-11-080-001

WARNING REMOVE THE LOCK FROM LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Remove the lockout set, SPL-1734, from the actuator of the leading edge flap (TASK 27-81-00-080-801).

SUBTASK 27-81-11-860-009

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLAPS AND SLATS. THE FLAPS AND SLATS CAN ACCIDENTALLY MOVE AND CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the FLAP UP detent to retract the leading edge flaps.

SUBTASK 27-81-11-860-010

(3) Do a check of the flap panel clearances.

(a) For all but the aft 5 in. (127 mm) of the flap, make sure the gap between the inboard leading edge flap [2] and the outboard leading edge flap [1] is 0.060 in. (1.52 mm) - 0.150 in. (3.81 mm).

(b) For the aft 5 in. (127 mm) of the flap, make sure the gap between the inboard leading edge flap [2] and the outboard leading edge flap [1] is 0.060 in. (1.52 mm) - 0.250 in. (6.35 mm).

SUBTASK 27-81-11-210-002

(4) If the flap panel clearances are out of tolerance, do a check of the wing and flap panel for damage or warping.

NOTE: This check is to make sure that the flap and the wing align correctly. There is no adjustment that you can do.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

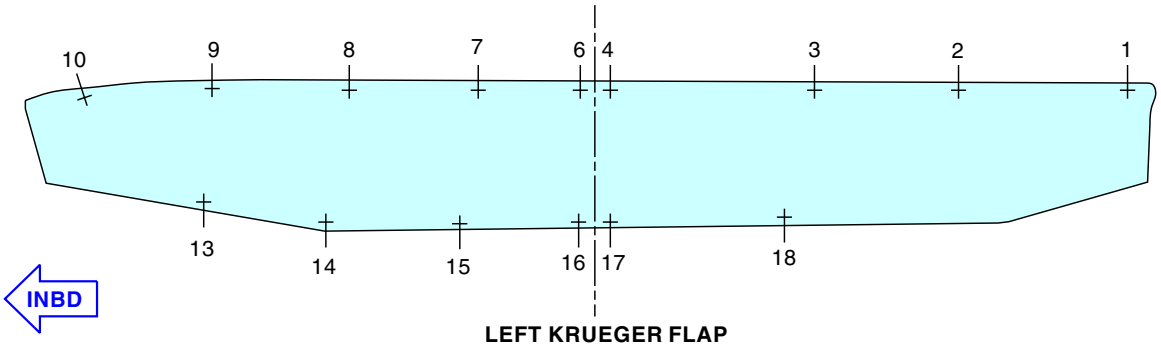
H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-11-860-011

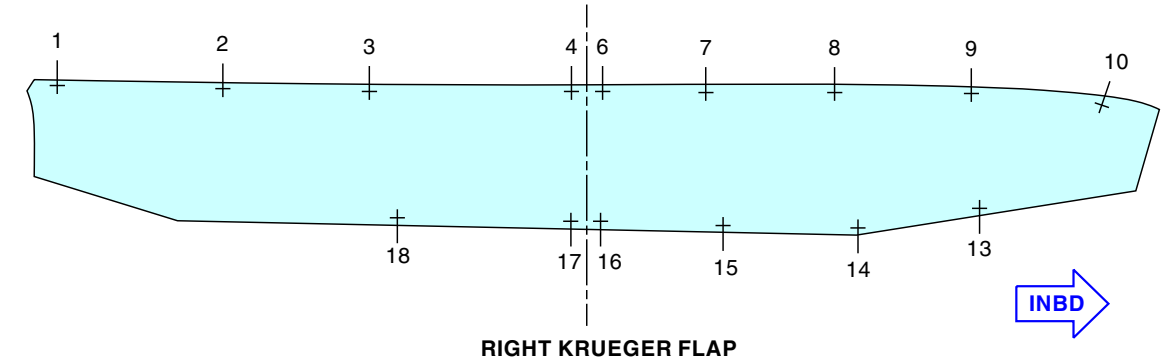
(1) Remove power from hydraulic system B (TASK 29-11-00-860-805).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT KRUEGER FLAP
(VIEW IN THE AFT DIRECTION)



RIGHT KRUEGER FLAP
(VIEW IN THE AFT DIRECTION)

POINT	DISTANCE FROM K-FLAP CENTERLINE, INCH (mm) 1
1	56.59 (1437.38)
2	32.77 (832.35)
3	20.78 (527.81)
4	1.31 (33.27)
6	-1.06 (-26.92)
7	-19.98 (-507.49)
8	-33.89 (-860.80)
9	-51.17 (-1299.71)
10	-63.04 (-1601.21)

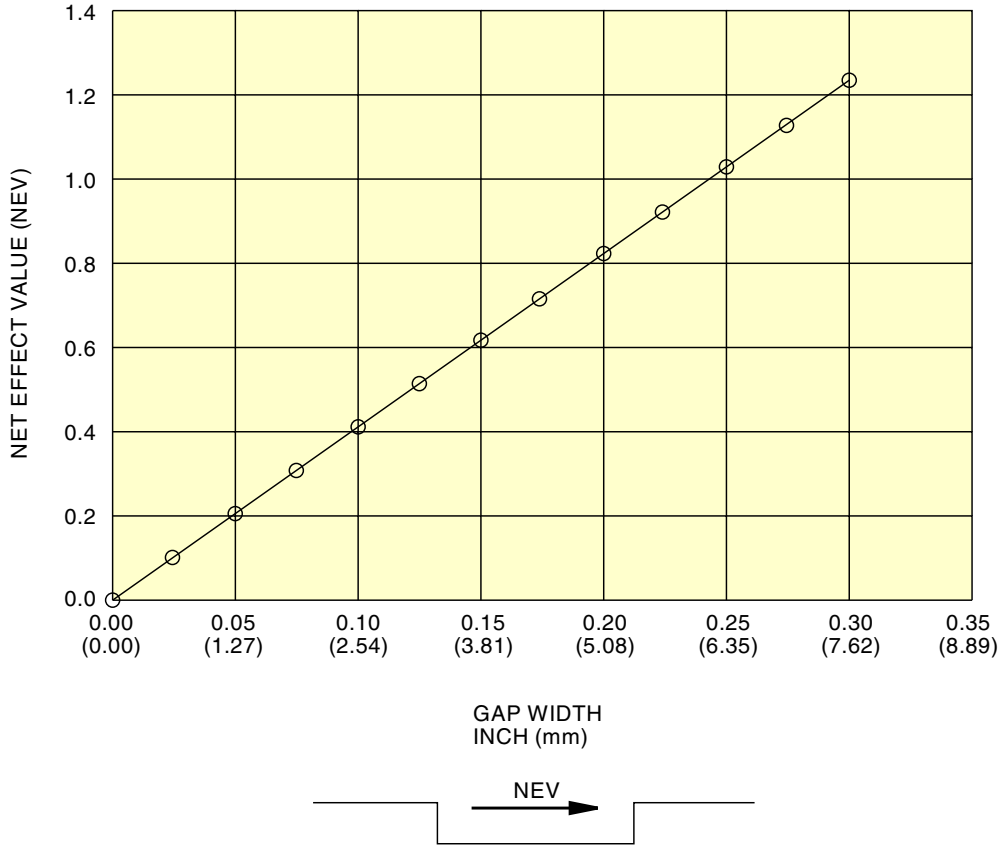
POINT	DISTANCE FROM K-FLAP CENTERLINE, INCH (mm) 1
13	-52.02 (-1321.30)
14	-37.76 (-959.10)
15	-23.76 (-603.50)
16	-1.06 (-26.92)
17	1.18 (29.97)
18	16.66 (423.16)

1 OUTBD DISTANCE ARE POSITIVE (+), INBOARD DISTANCES ARE NEGATIVE (-)

2413345 S00061532379_V2

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NET EFFECT VALUE CHART
KRUEGER FLAP - TRAILING EDGE GAPS

NOTE:

THE NET EFFECT LIMIT (N.E.L.) FOR THIS ITEM IS 1.0

IF ALL MEASURED GAP VALUES FOR THIS ITEM ARE LESS THAN 0.240 INCH (6.09 mm)
THEN PASSAGE OF N.E.L. IS ASSURED AND AN ACTUAL N.E.L. CALCULATION IS NOT REQUIRED.

2413346 S00061532380_V3

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

GAP (IN)	GAP (mm)	NET EFFECT VALUE (NEV)
0.000	0.000	0.000
0.025	0.635	0.105
0.050	1.270	0.209
0.075	1.905	0.314
0.100	2.540	0.418
0.125	3.175	0.523
0.150	3.810	0.621
0.175	4.445	0.725
0.200	5.080	0.830
0.225	5.715	0.935
0.250	6.350	1.039
0.275	6.985	1.144
0.300	7.620	1.248

NET EFFECT VALUE TABLE
KRUEGER FLAP - TRAILING EDGE GAPS

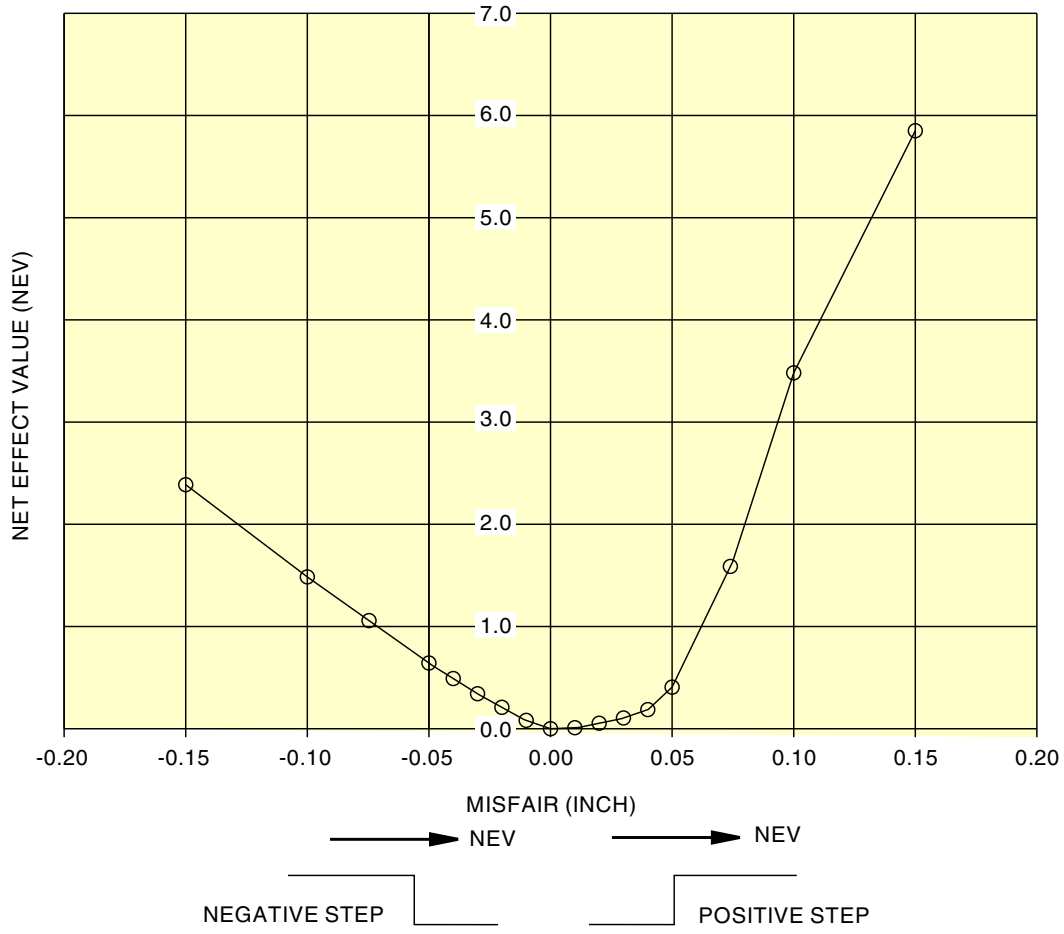
NOTE:

N.E.V. OF 1.0 CORRESPONDS TO GAP OF 0.240 INCH (6.09 mm)

2413347 S00061532381_V2

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NET EFFECT VALUE CHART
KRUEGER FLAP - LEADING EDGE MISFAIR ONLY

NOTE:

THE NET EFFECT LIMIT (N.E.L.) FOR THIS ITEM IS 1.0

IF ALL MEASURED MISFAIR VALUES FOR THIS ITEM ARE BETWEEN -0.07 INCH (-1.80 mm) AND + 0.062 INCH (+1.57 mm) THEN PASSAGE OF N.E.L. IS ASSURED AND AN ACTUAL N.E.L. CALCULATION IS NOT REQUIRED.

2413348 S00061532382_V3

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STEP HEIGHT (IN)	STEP HEIGHT (mm)	NET EFFECT VALUE (NEV)
-0.150	-3.810	2.401
-0.100	-2.540	1.491
-0.075	-1.905	1.066
-0.050	-1.270	0.653
-0.040	-1.016	0.497
-0.030	-0.762	0.347
-0.020	-0.508	0.216
-0.010	-0.254	0.090
0.000	0.000	0.000
0.010	0.254	0.012
0.020	0.508	0.054
0.030	0.762	0.108
0.040	1.016	0.192
0.050	1.270	0.407
0.075	1.905	1.641
0.100	2.540	3.491
0.150	3.810	5.844

NET EFFECT VALUE TABLE
KRUEGER FLAP - LEADING EDGE MISFAIR ONLY

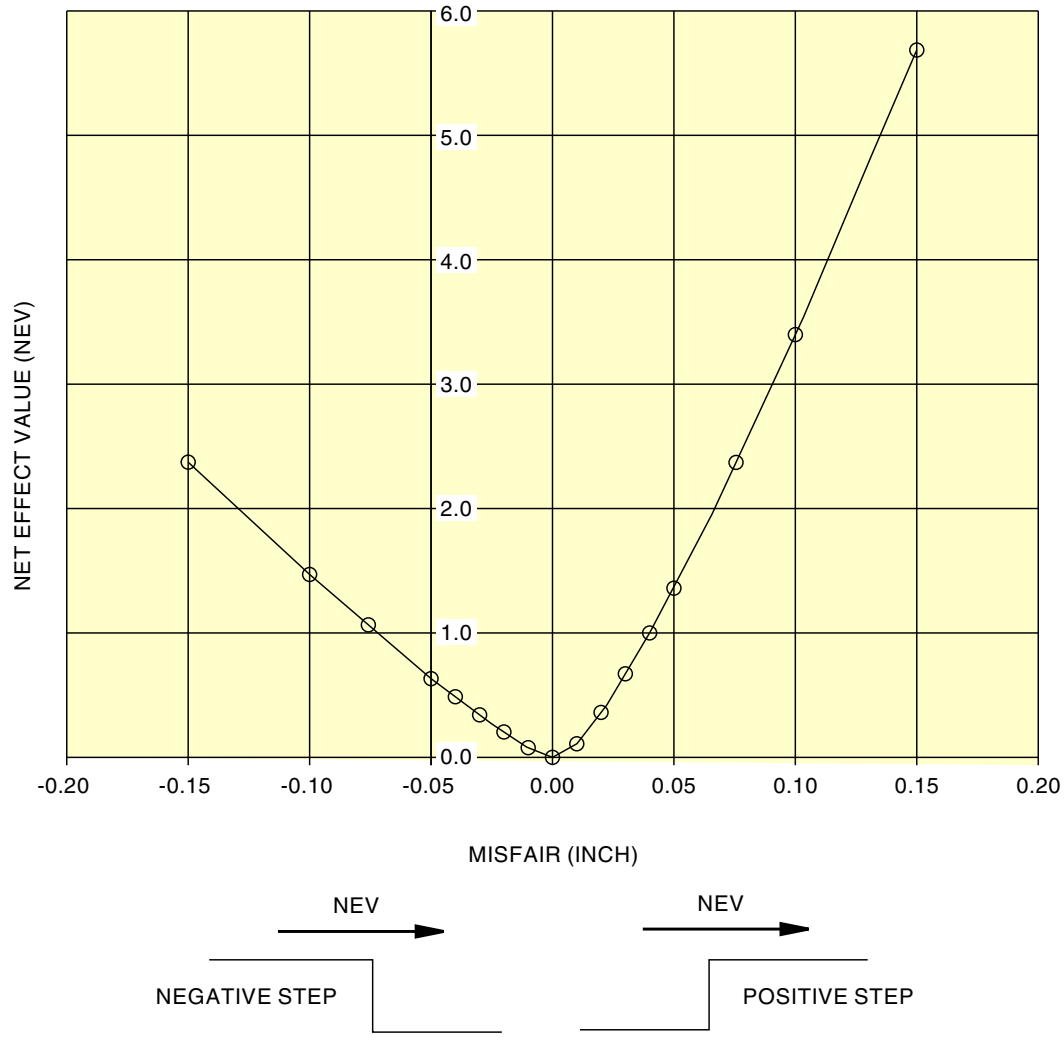
NOTE:

A NEGATIVE STEP HEIGHT INDICATES AN AFT FACING STEP.
N.E.V. OF 1.0 CORRESPONDS TO MISFAIR OF -0.071 INCH (-1.80 mm)
AND +0.062 INCH (+1.57 mm)

2413349 S00061532383_V2

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NET EFFECT VALUE CHART
KRUEGER FLAP - ALL EDGES EXCEPT LEADING (FORWARD) EDGE MISFAIR

NOTE:

THE NET EFFECT LIMIT (N.E.L.) FOR THIS ITEM IS 1.0

IF ALL MEASURED STEP VALUES FOR THIS ITEM ARE BETWEEN -0.072 INCH (-1.83 mm) AND +0.040 INCH (+1.02 mm) THEN PASSAGE OF N.E.L. IS ASSURED AND AN ACTUAL N.E.L. CALCULATION IS NOT REQUIRED.

2413350 S00061532384_V3

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STEP HEIGHT (IN)	STEP HEIGHT (mm)	NET EFFECT VALUE (NEV)
-0.150	-3.810	2.387
-0.100	-2.540	1.482
-0.075	-1.905	1.051
-0.050	-1.270	0.646
-0.040	-1.016	0.493
-0.030	-0.762	0.347
-0.020	-0.508	0.208
-0.010	-0.254	0.088
0.000	0.000	0.000
0.010	0.254	0.113
0.020	0.508	0.365
0.030	0.762	0.668
0.040	1.016	1.000
0.050	1.270	1.361
0.075	1.905	2.336
0.100	2.540	3.394
0.150	3.810	5.686

NET EFFECT VALUE TABLE
KRUEGER FLAP - ALL EDGES EXCEPT LEADING (FORWARD) EDGE MISFAIR

NOTE:

A NEGATIVE STEP HEIGHT INDICATES AN AFT FACING STEP.
N.E.V. OF 1.0 CORRESPONDS TO MISFAIR OF -0.072 INCH (-1.83 mm) AND +0.040 INCH (+1.02 mm)

2413351 S00061532385_V2

Leading Edge Gap/Misfair Measurement
Figure 402/27-81-11-990-802 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP - INSPECTION/CHECK

1. General

A. This procedure contains the task to do an inspection of the leading edge flap.

TASK 27-81-11-200-801

2. Leading Edge Flap Inspection

(Figure 601, Table 601)

A. General

(1) This task gives wear limits and repair data for the leading edge flap inspection.

B. References

Reference	Title
27-81-11-000-801	Leading Edge Flap Removal (P/B 401)
27-81-11-400-801	Leading Edge Flap Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

E. Procedure

SUBTASK 27-81-11-020-004

(1) Do this task: Leading Edge Flap Removal, TASK 27-81-11-000-801.

SUBTASK 27-81-11-020-005

(2) Use these tools to do a check for wear on the parts of the leading edge flap:

(a) micrometer (0-1 inch, readable to 1/1000 inch), STD-1096

(b) vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

SUBTASK 27-81-11-020-006

(3) Examine the parts of the leading edge flap for worn areas:

NOTE: The Nomex cloth common to the leading edge (krueger) flap seals can be frayed provided there is no damage to the silicon rubber portion of the seal. If the silicon rubber portion is damaged then the seal should be repaired or replaced. Contact Boeing for repair instructions for the seal.

(a) Remove the parts you want to do a check.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions you measured with the permitted wear dimensions in Table 601.

(d) If the parts are out of tolerance, replace or repair the parts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-81-11-993-801 Diameter Design and Wear Limits

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.3125 in 7.938 mm	0.3130 in 7.950 mm	0.3150 in 8.000 mm	0.0030 in 0.076 mm
#1 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.924 mm	0.3100 in 7.874 mm	
#2 BUSHING	I.D.	0.3125 in 7.938 mm	0.3136 in 7.965 mm	0.3159 in 8.023 mm	0.0039 in 0.099 mm
#2 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.924 mm	0.3097 in 7.866 mm	
#3 BEARING	I.D.	0.4375 in 11.113 mm	0.4385 in 11.137 mm	0.4400 in 11.175 mm	0.0030 in 0.076 mm
#3 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.099 mm	0.4350 in 11.061 mm	
#4 BUSHING	I.D.	0.4375 in 11.113 mm	0.4386 in 11.140 mm	0.4402 in 11.180 mm	0.0032 in 0.081 mm
#4 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.099 mm	0.4354 in 11.059 mm	
#5 BUSHING	I.D.	0.5000 in 12.700 mm	0.5007 in 12.717 mm	0.5004 in 12.710 mm	0.0033 in 0.083 mm
#5 BOLT	O.D.	0.4985 in 12.662 mm	0.4995 in 12.687 mm	0.4974 in 12.634 mm	
#6 BUSHING	I.D.	0.6870 in 17.450 mm	0.6877 in 17.467 mm	0.6891 in 17.503 mm	0.0026 in 0.066 mm
#6 BUSHING	O.D.	0.6860 in 17.424 mm	0.6865 in 17.437 mm	0.6851 in 17.401 mm	
#7 BUSHING	I.D.	0.5000 in 12.700 mm	0.5005 in 12.712 mm	0.5025 in 12.763 mm	0.0030 in 0.076 mm
#7 BOLT	O.D.	0.4985 in 12.662 mm	0.4995 in 12.687 mm	0.4975 in 12.636 mm	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-81-11-993-801 Diameter Design and Wear Limits (Continued)

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#8 BEARING	I.D.	0.5000 in 12.700 mm	0.5005 in 12.712 mm	0.5025 in 12.763 mm	0.0030 in
#8 BOLT	O.D.	0.4985 in 12.662 mm	0.4995 in 12.687 mm	0.4975 in 12.636 mm	0.076 mm
#9 BUSHING	I.D.	0.3125 in 7.938 mm	0.3136 in 7.965 mm	0.3159 in 8.023 mm	0.0039 in
#9 BOLT	O.D.	0.3110 in 7.899 mm	0.3120 in 7.924 mm	0.3097 in 7.866 mm	0.099 mm
#10 BUSHING	I.D.	0.3125 in 7.938 mm	0.3130 in 7.950 mm	0.3150 in 8.000 mm	0.0030 in
#10 BOLT	O.D.	0.3110 in 7.899	0.3120 in 7.924 mm	0.3100 in 7.874 mm	0.076 mm
#11 BUSHING	I.D.	0.4375 in 11.113 mm	0.4386 in 11.140 mm	0.4402 in 11.180 mm	0.0032 in
#11 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.099 mm	0.4354 in 11.059 mm	0.081 mm
#12 BEARING	I.D.	0.4375 in 1.113 mm	0.4385 in 11.137 mm	0.4400 in 11.175 mm	0.0030 in
#12 BUSHING	O.D.	0.4365 in 11.087 mm	0.4370 in 11.099 mm	0.4355 in 11.061 mm	0.076 mm
#13 BUSHING	I.D.	0.2500 in 6.350 mm	0.2505 in 6.362 mm	0.2525 in 6.340 mm	0.0030 in
#13 BOLT	O.D.	0.2485 in 6.312 mm	0.2495 in 6.337 mm	0.2475 in 6.286 mm	0.076 mm
#14 BUSHING	I.D.	0.2500 in 6.350 mm	0.2505 in 6.362 mm	0.2525 in 6.413 mm	0.0030 in
#14 BOLT	O.D.	0.2485 in 6.312 mm	0.2495 in 6.337 mm	0.2475 in 6.286 mm	0.076 mm

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-81-11-993-801 Diameter Design and Wear Limits (Continued)

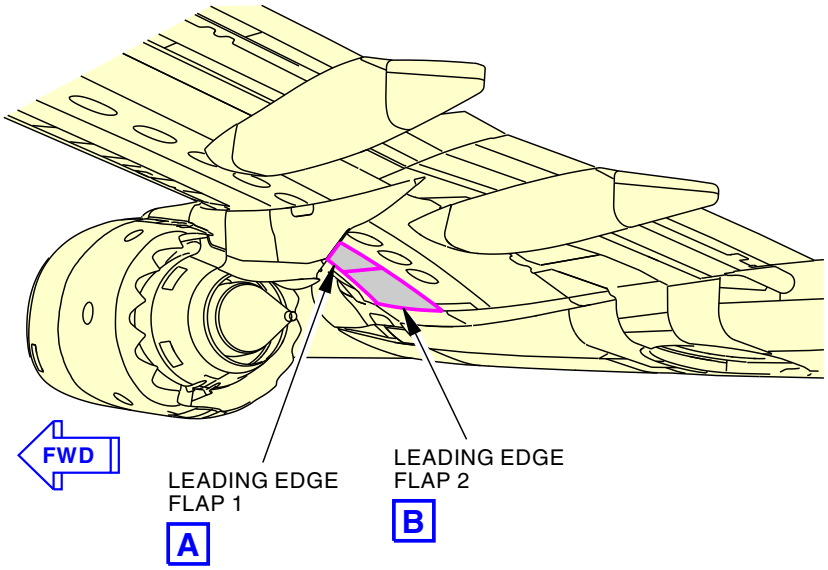
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#15 BUSHING	I.D.	0.3750 in 9.525 mm	0.3756 in 9.540 mm	0.3769 in 9.572 mm	0.0024 in 0.060 mm
#15 BUSHING	O.D.	0.3740 in 9.500 mm	0.3745 in 9.512 mm	0.3732 in 9.480 mm	
#16 BEARING	I.D.	0.2500 in 6.350 mm	0.2505 in 6.362 mm	0.2525 in 6.413 mm	0.0030 in 0.076 mm
#16 BOLT	O.D.	0.2485 in 6.311 mm	0.2495 in 6.337 mm	0.2475 in 6.286 mm	

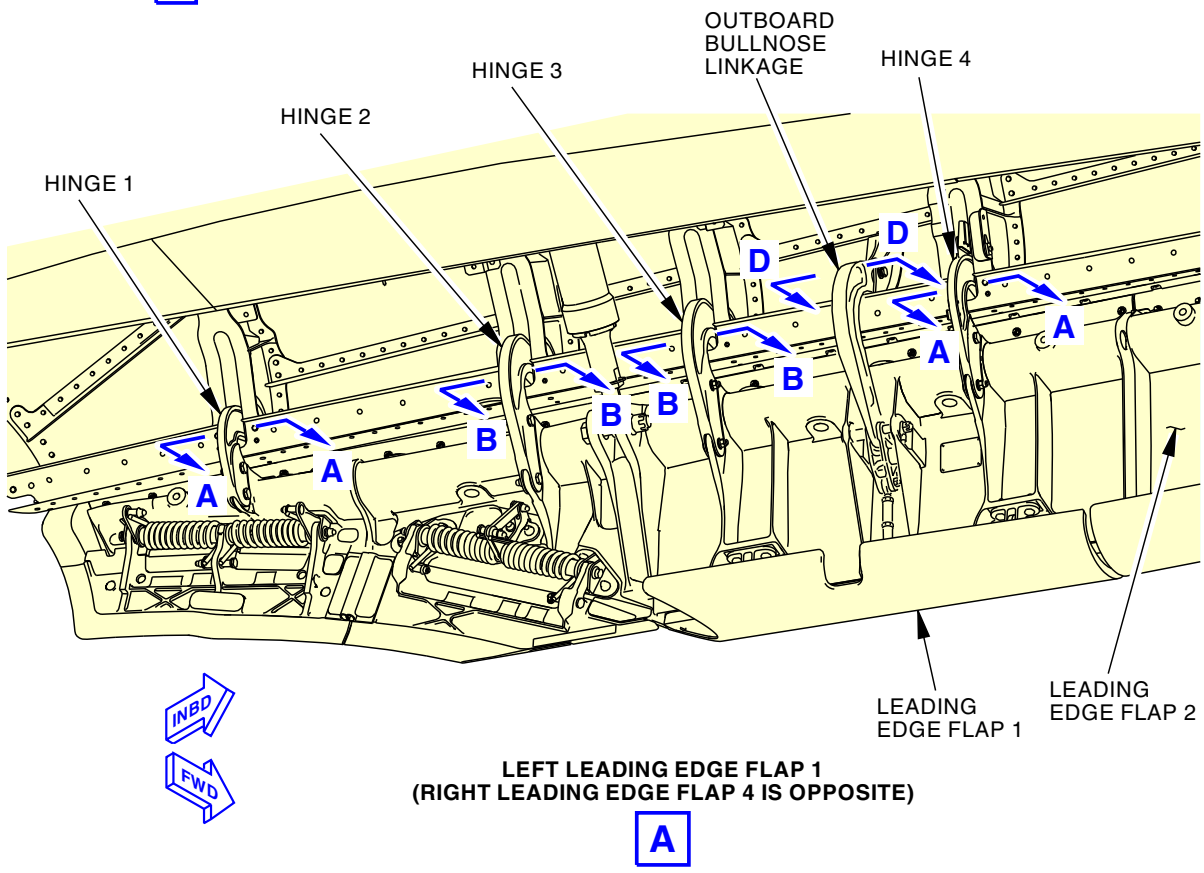
SUBTASK 27-81-11-420-006

(4) Do this task: Leading Edge Flap Installation, TASK 27-81-11-400-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





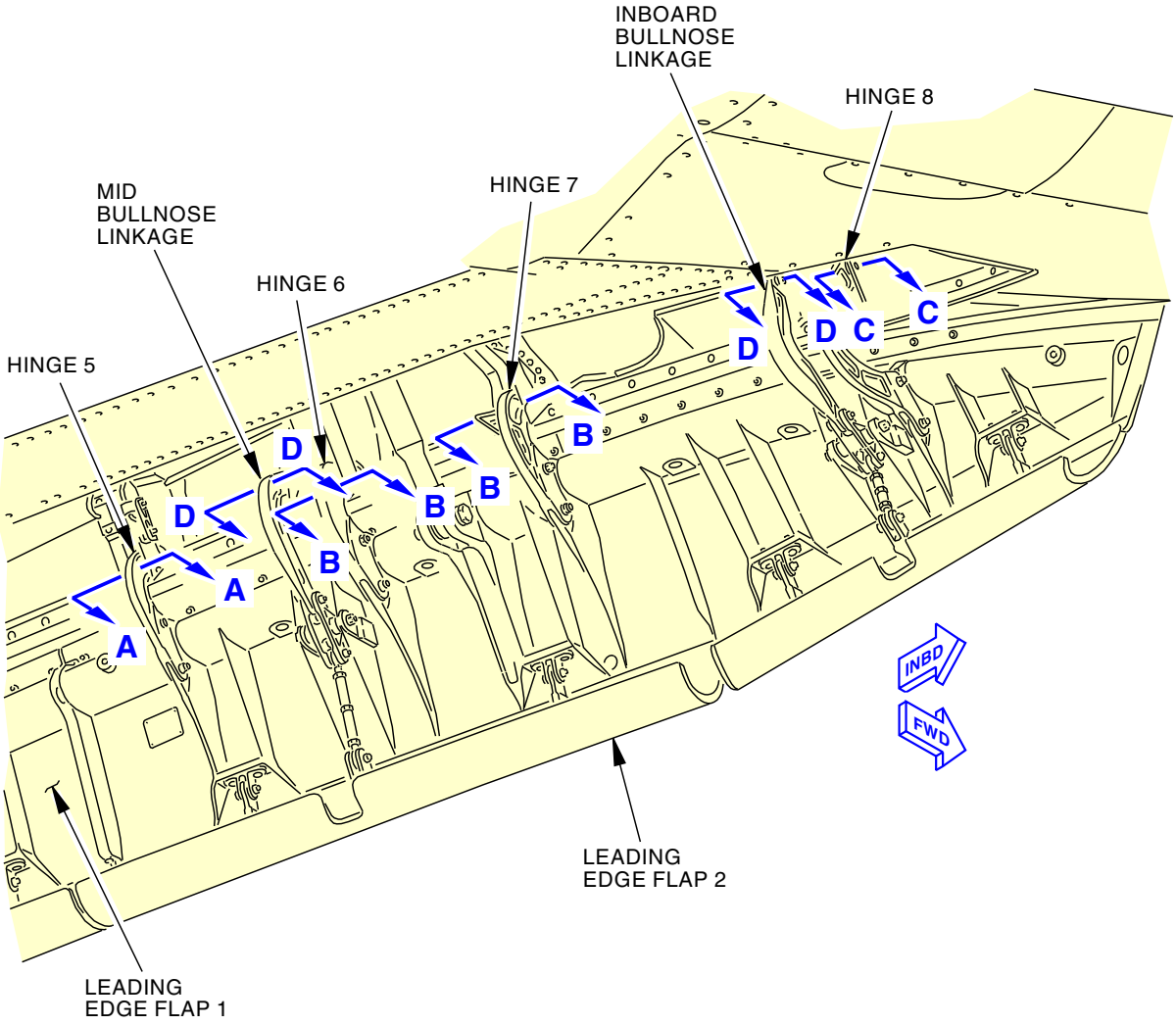
LEFT LEADING EDGE FLAP 1
(RIGHT LEADING EDGE FLAP 4 IS OPPOSITE)

A

2413352 S00061532388_V3

Leading Edge Flap Wear Limits
Figure 601/27-81-11-990-803 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT LEADING EDGE FLAP 2
(RIGHT LEADING EDGE FLAP 3 IS OPPOSITE)

B

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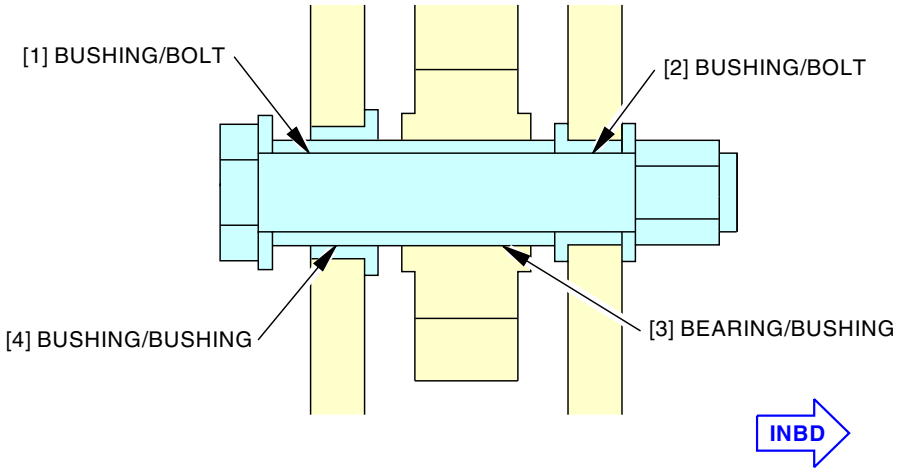
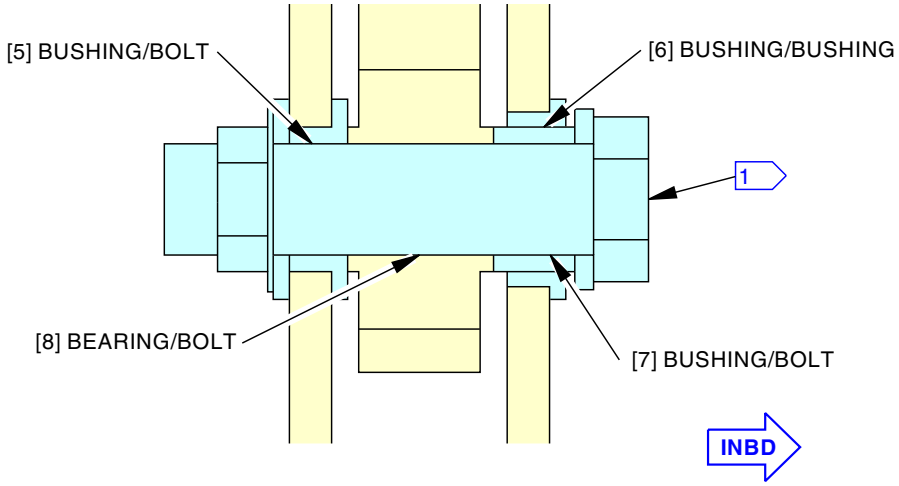
Leading Edge Flap Wear Limits
Figure 601/27-81-11-990-803 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HINGE 1
(HINGES 4 AND 5 ARE EQUIVALENT)

A-A



HINGE 2
(HINGES 3, 6 AND 7 ARE EQUIVALENT)

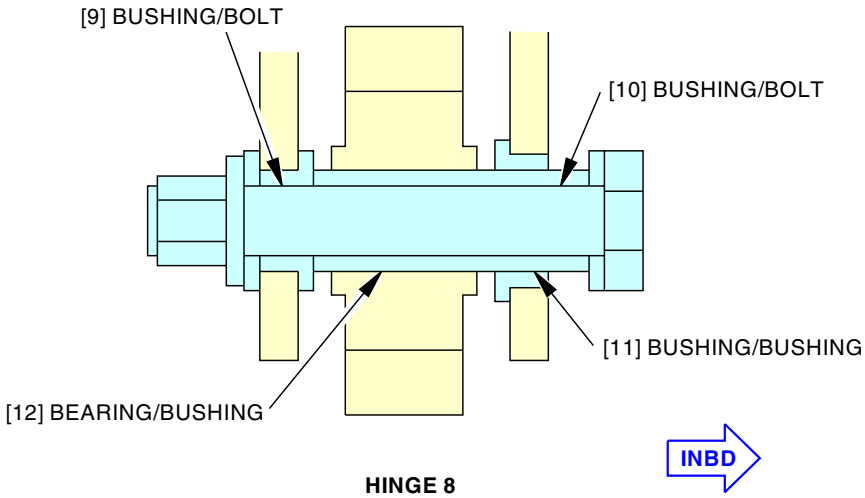
B-B

1 THE BOLT HEAD IS INBOARD AT HINGES 2 AND 6, AND OUTBOARD AT HINGES 3 AND 7.

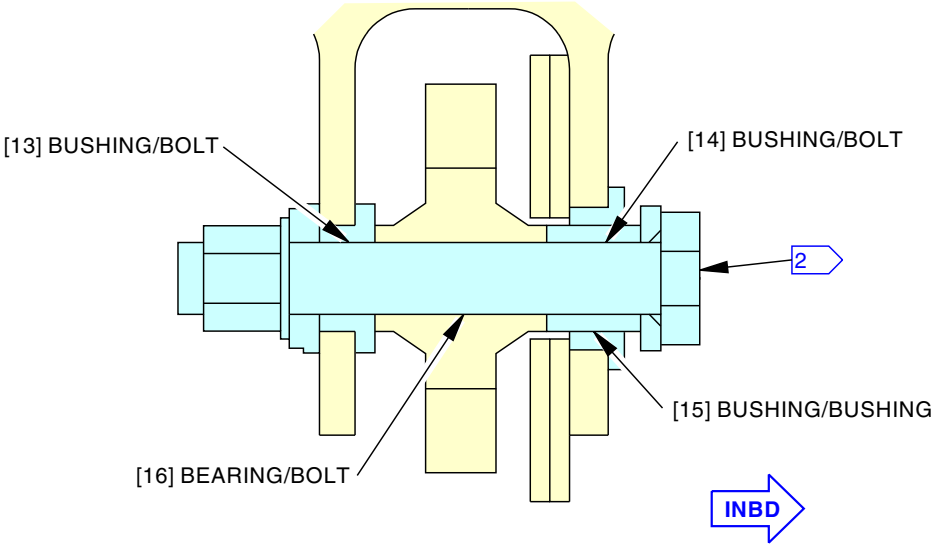
2413354 S00061532390_V2

Leading Edge Flap Wear Limits
Figure 601/27-81-11-990-803 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HINGE 8
C-C



OUTBOARD BULLNOSE LINKAGE
(MID AND INBOARD BULLNOSE LINKAGES ARE EQUIVALENT)
D-D

2 THE BOLT HEAD IS OUTBOARD AT THE MID AND INBOARD BULLNOSE LIKAGES.

2413355 S00061532391_V2

Leading Edge Flap Wear Limits
Figure 601/27-81-11-990-803 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE SLAT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Leading Edge Slat Removal

(2) Leading Edge Slat Installation

(3) Leading Edge Slat Main Track Removal

(4) Leading Edge Slat Main Track Installation.

B. There are four slats on each wing. This procedure is applicable for the leading edge slats 1 thru 8.

C. You can do this procedure with the airplane on jacks or off jacks, but the wing should not be supported outboard of the engines.

TASK 27-81-21-000-801

2. Leading Edge Slat Removal

(Figure 401, Figure 402)

A. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
30-11-31-000-801	Wing Anti-Ice Telescoping Duct Seal Removal (P/B 401)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205
SPL-2041	Sling - Leading Edge Slat Removal/Installation Part #: C27056-35 Supplier: 81205 Opt Part #: C27056-19 Supplier: 81205

C. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Access Panels

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621AAB	Lower Leading Edge Access Panel - Slat Station 524.31
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470
621ZB	Lower Leading Edge Access Panel - Slat Station 479

E. Prepare for the Removal

SUBTASK 27-81-21-010-002

(1) Remove these access panels from the lower surface of the fixed leading edge (TASK 57-41-02-000-801):

(a) For the left wing, open these access panels:

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, open these access panels:

Number	Name/Location
621AAB	Lower Leading Edge Access Panel - Slat Station 524.31
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-21-860-001

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Supply hydraulic power to system B (TASK 29-11-00-860-801).

SUBTASK 27-81-21-860-002

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(3) Move the flap control lever to the 30-unit detent to extend the leading edge slats to the full extended position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-21-480-001

WARNING INSTALL THE LOCK ON LEADING EDGE FLAP ACTUATOR CAREFULLY TO PREVENT THE ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) Install the lockout set, SPL-1734, on the actuators of the adjacent leading edge slats (TASK 27-81-00-480-801).

SUBTASK 27-81-21-860-003

(5) Move the flap control lever to the 1-unit detent to retract the leading edge slat.

NOTE: If the slat is in the full extend position, the slat actuators will be preloaded against the leading edge slat. When you put the flap control lever to the 1-unit detent it removes the preload, which makes it easier removal of the slat actuator.

SUBTASK 27-81-21-860-004

(6) Remove power from hydraulic system B (TASK 29-11-00-860-805).

SUBTASK 27-81-21-200-001

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(7) Keep clean and free of all Foreign Object Damage (FOD), the housing (can) assemblies of the slat main tracks, at all time.

F. Leading Edge Slat Removal

SUBTASK 27-81-21-020-001

(1) Disconnect the slat actuator [9] from the leading edge slat [17] (Figure 401).

(a) Remove the bolt retainer [18] from the leading edge slat [17].

1) Remove the bolts [15] and washers [16] that attach the bolt retainer [18] to the leading edge slat [17].

2) Remove the bolt retainer [18] from the leading edge slat [17].

WARNING MAKE SURE YOU HOLD THE LEADING EDGE SLAT IN ITS POSITION. THE LEADING EDGE SLAT CAN FALL TO THE FULL EXTEND POSITION. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Hold the leading edge slat [17] while you remove the nut [12], washer [11], bushing [10], washer [19], and bolt [20].

SUBTASK 27-81-21-980-001

(2) Carefully let the leading edge slat [17] move down to the full extend position.

SUBTASK 27-81-21-860-005

(3) Use hydraulic power to retract the slat actuator [9] (TASK 27-81-00-860-804).

NOTE: The slat actuator can hang from the upper fitting.

SUBTASK 27-81-21-040-001

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-21-480-002

(5) If you use the sling, SPL-2041, to help with the removal of the leading edge slat [17], do these steps to install the sling, SPL-2041, on the leading edge slat [17] (Figure 402):

(a) Remove the stowage A/P fastener (shown in the placard of the sling tool box) from the holes of the slat structure that you will use to install the screws [64] and screws [67] of the sling, SPL-2041, kit.

(b) Attach the wedges [69] on the trailing edge of the leading edge slat [17] where they will line up with the main tracks [21].

(c) Attach the strap assembly [61] to the bottom of the leading edge slat [17] with screws [64], washers [65] and nuts [66].

(d) Attach the end fittings [63] to the leading edge slat [17] with screws [67] and washers [68].

(e) Attach the strap assembly [61] to the end fittings [63], wedges [69] and spreader bar [62].

SUBTASK 27-81-21-480-003

(6) Connect the overhead hoist to the sling, SPL-2041.

SUBTASK 27-81-21-020-002

(7) Remove the leading edge slat [17] (Figure 401).

(a) Disconnect the auxiliary arms [28] from the auxiliary tracks [29].

1) Remove the pins [40], nuts [41], washers [42], targets [43], spacers [48], detent arm roller bearings [45], washers [47], and bolts [46].

2) Move the auxiliary arms [28] away from the auxiliary tracks [29].

NOTE: The auxiliary arms will remain attached to the leading edge slat structure.

3) Remove the auxiliary arm roller bearings [44] from the auxiliary tracks [29].

4) Disconnect the leading edge slat [17] from the main tracks [21].

NOTE: The main track will remain attached to the fixed leading edge structure.

a) Remove the bolt retainer [70] (attached to the leading edge slat [17] structure) by removing two adjustable bolts [76] and two washers [77] at each of the main track [21] attach locations.

b) Remove the nut [75], washer [74], plain bushing [73], washer [72] from the bolt [71] at each of the main track attach locations.

(b) Remove the main tracks [21] from the fixed leading edge structure, as necessary.

1) Manually move the main track [21] until the downstops [22] on the main tracks [21] align with the access holes in the track ribs.

2) Remove the cotter pins [53], nuts [52], washers [51], stop fittings [49], and bolts [50].

SUBTASK 27-81-21-020-003

(8) If you remove slats No. 2, 3, 4, 5, 6 or 7, disconnect the thermal anti-icing duct from the leading edge slat [17] (TASK 30-11-31-000-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

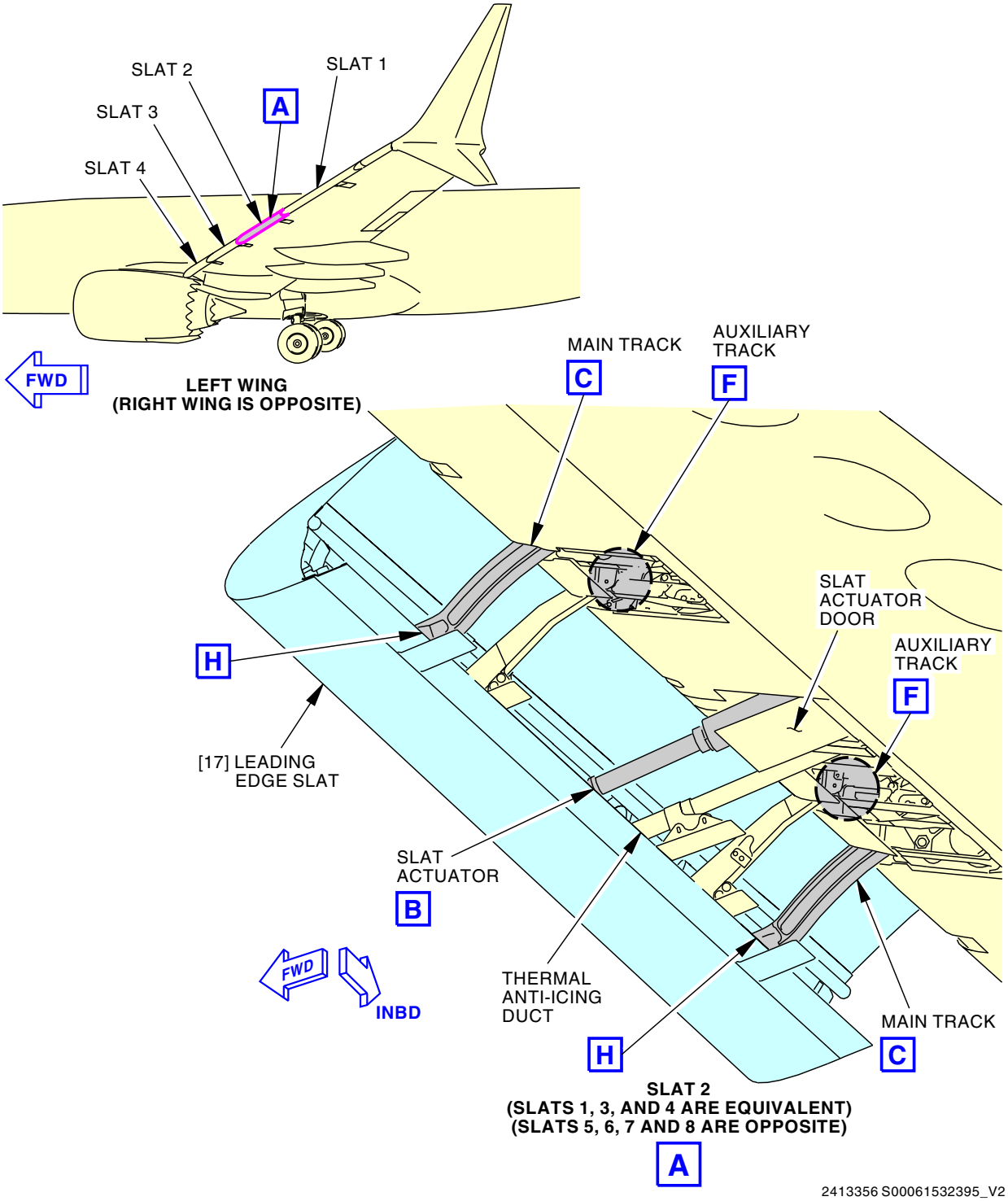
SUBTASK 27-81-21-200-002

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(9) Keep clean and free of all FOD, the housing (can) assemblies of the slat main tracks, at all time.

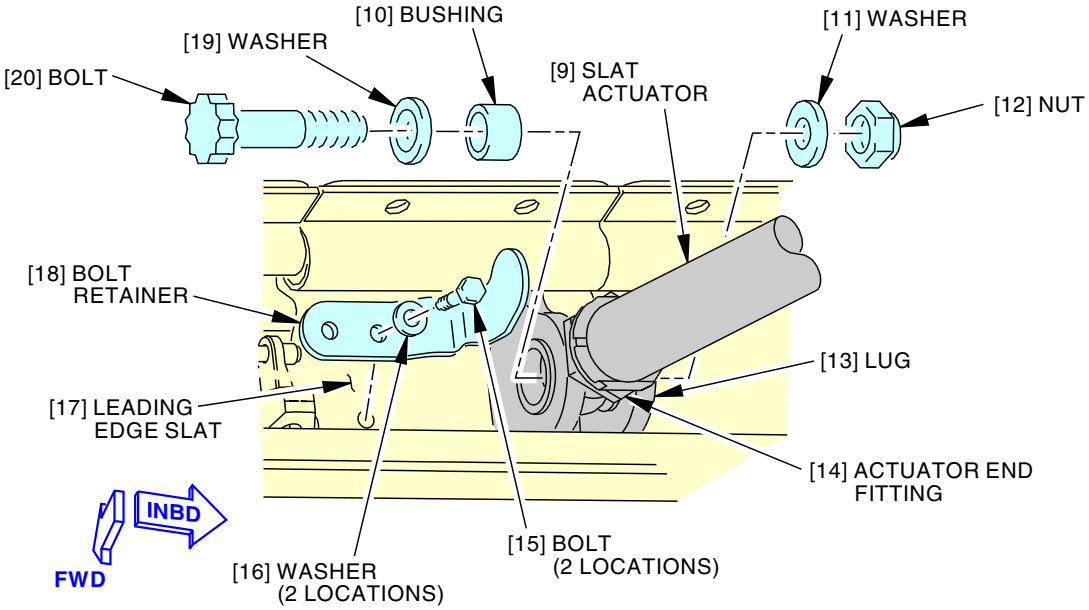
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 1 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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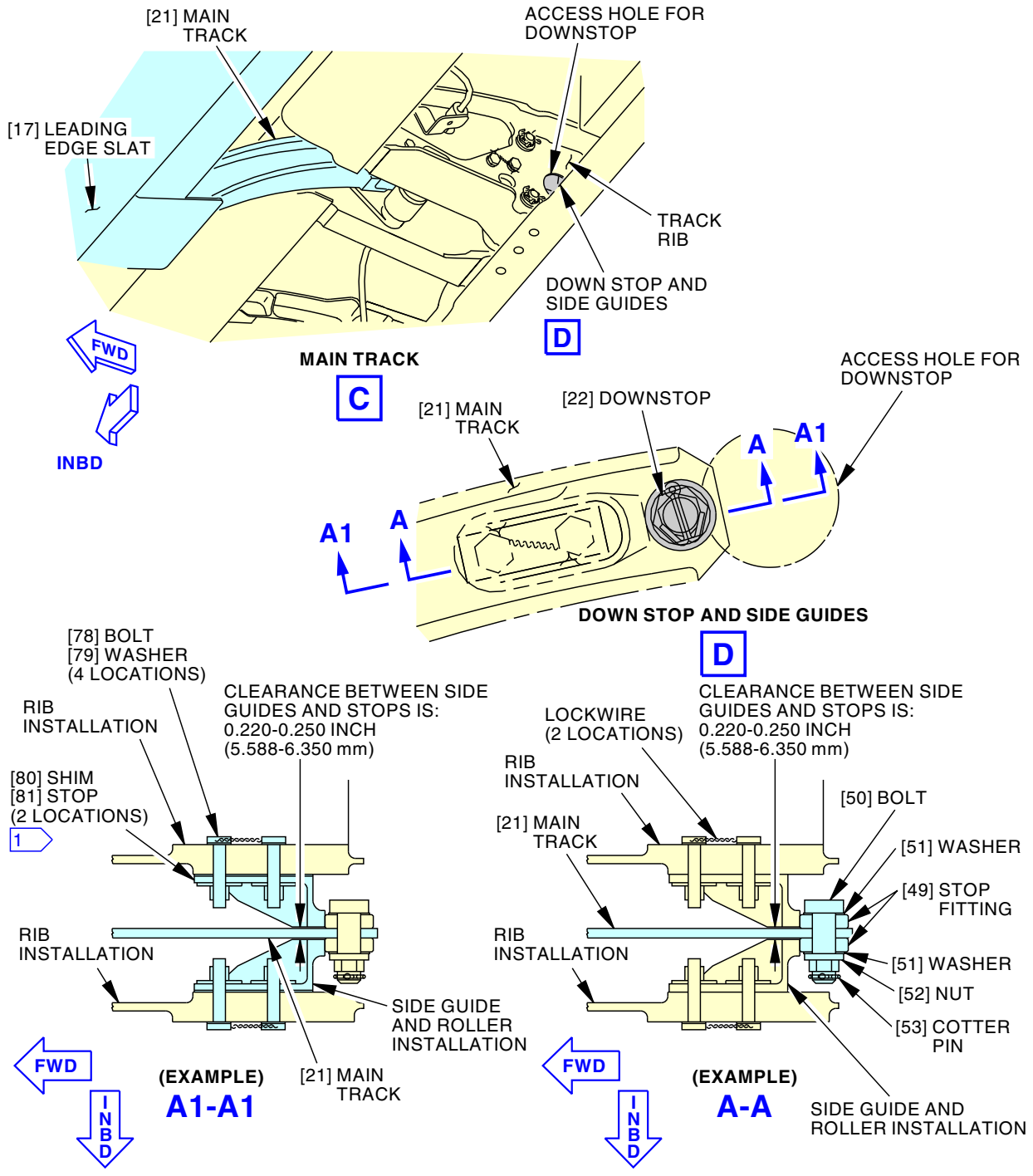
Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 2 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

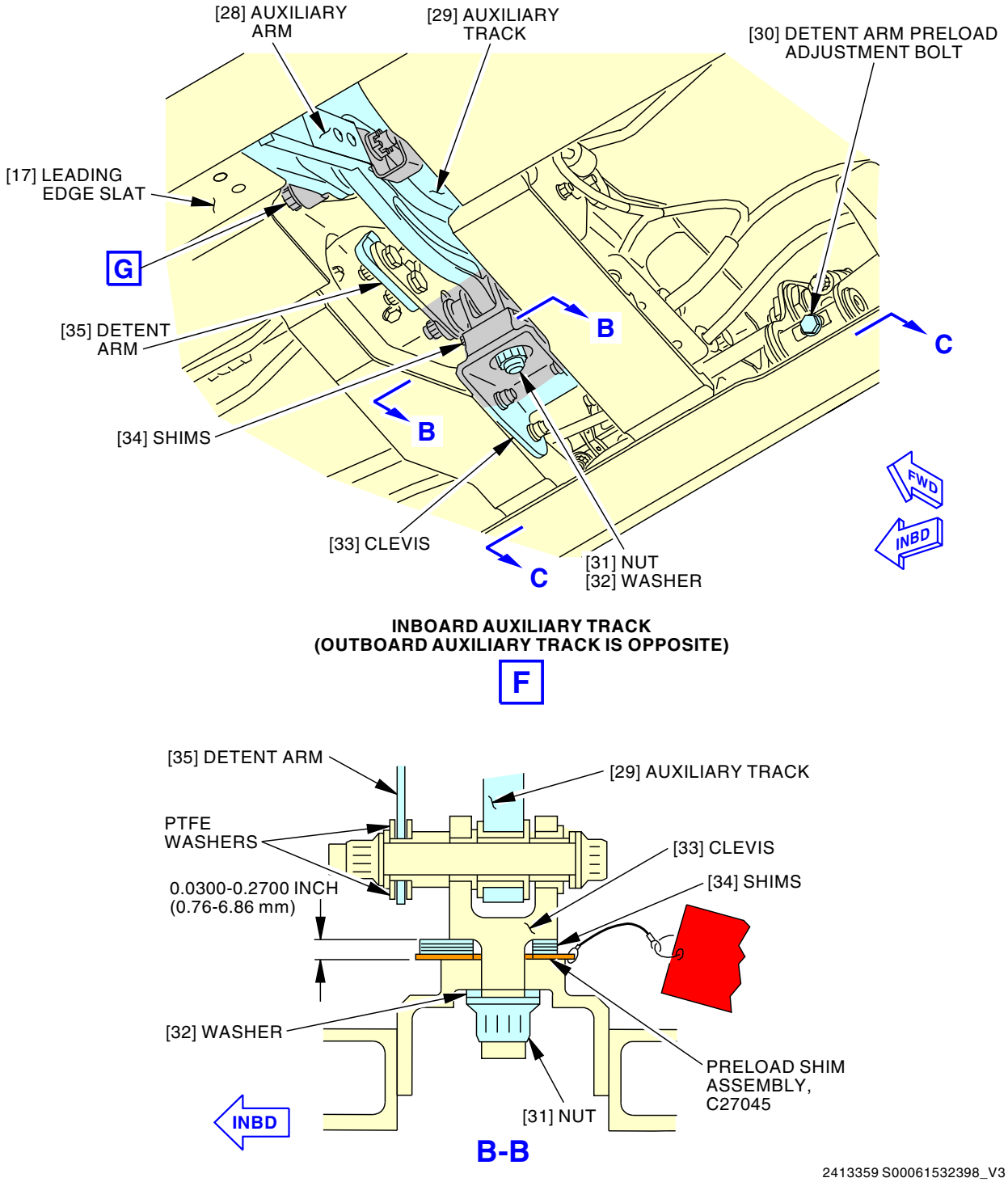


1 SHIM BOTH SIDES EQUALLY IF AND AS REQUIRED TO MAINTAIN THE CLEARANCE.

2413358 S00061532397_V3

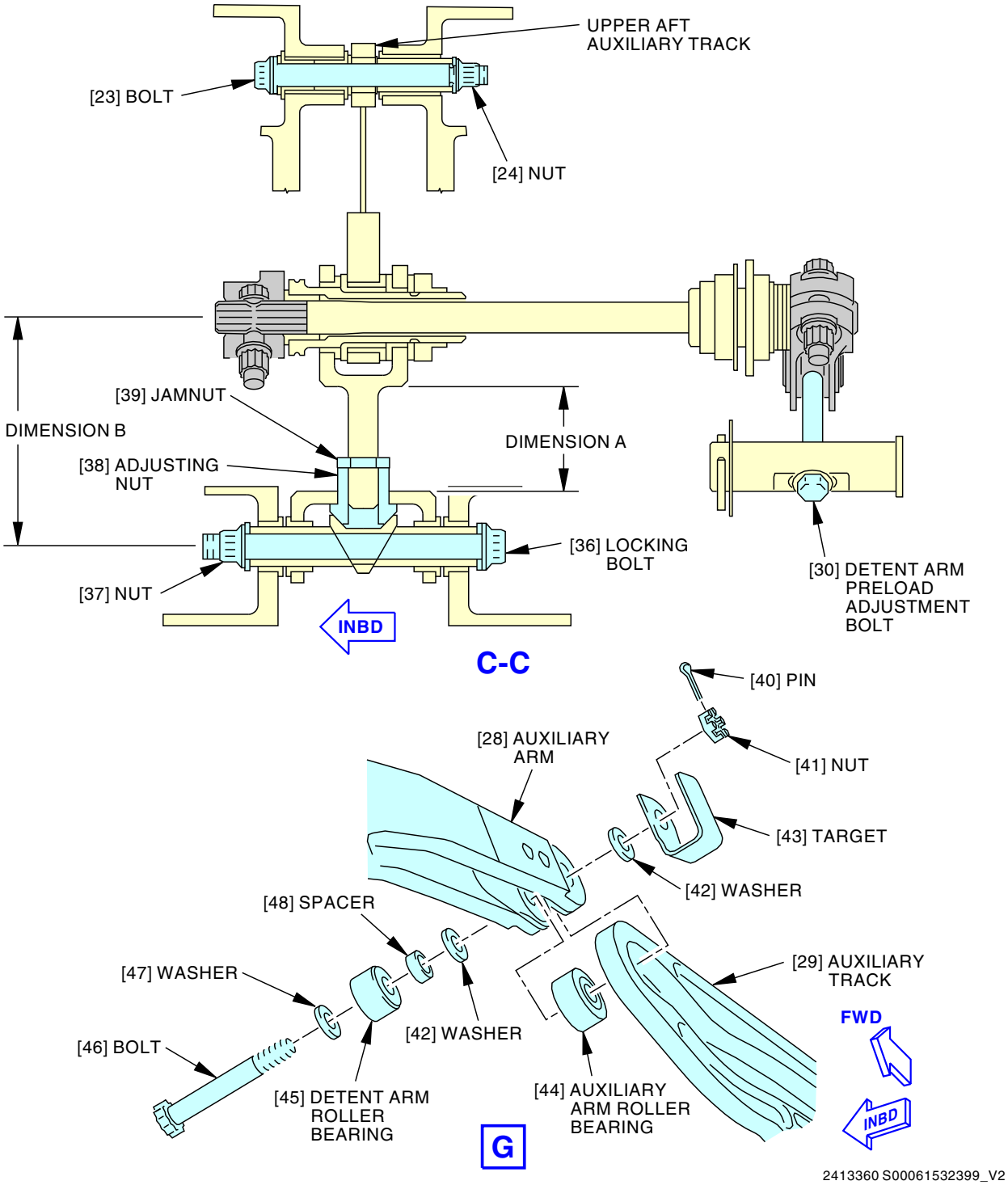
Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



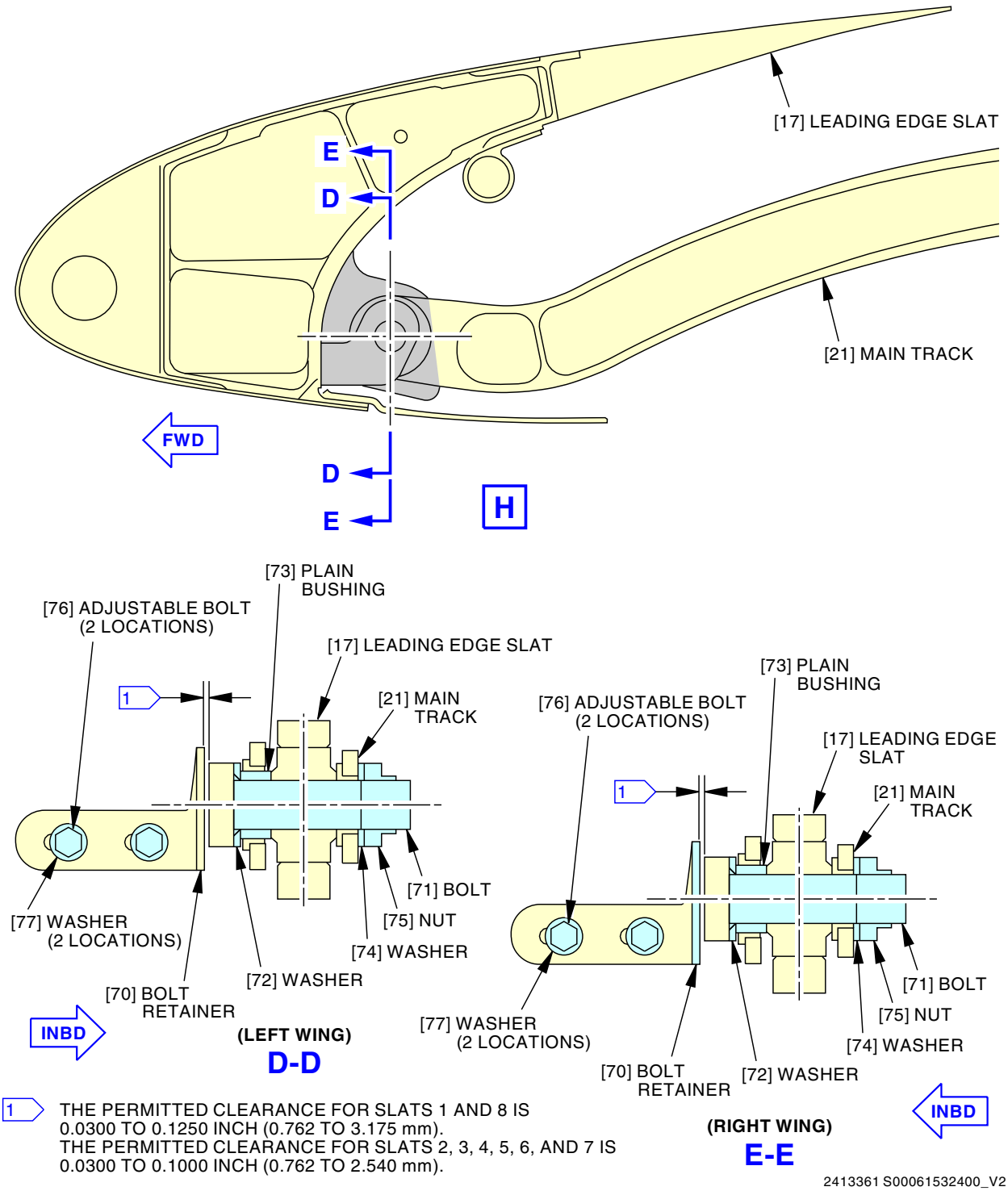
Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



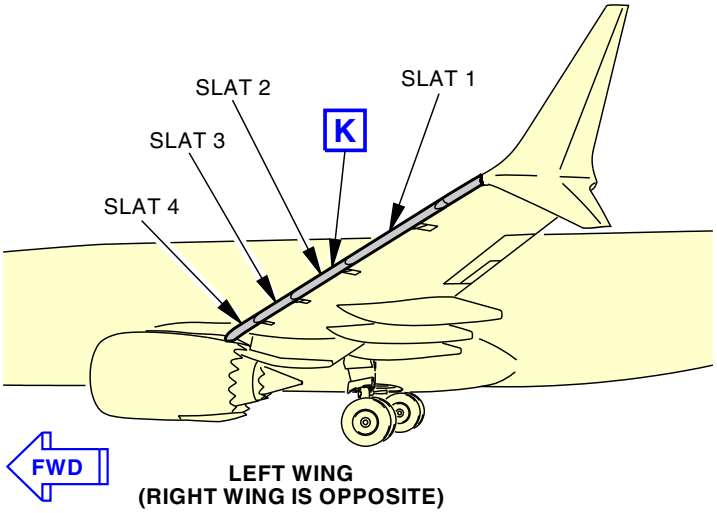
Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

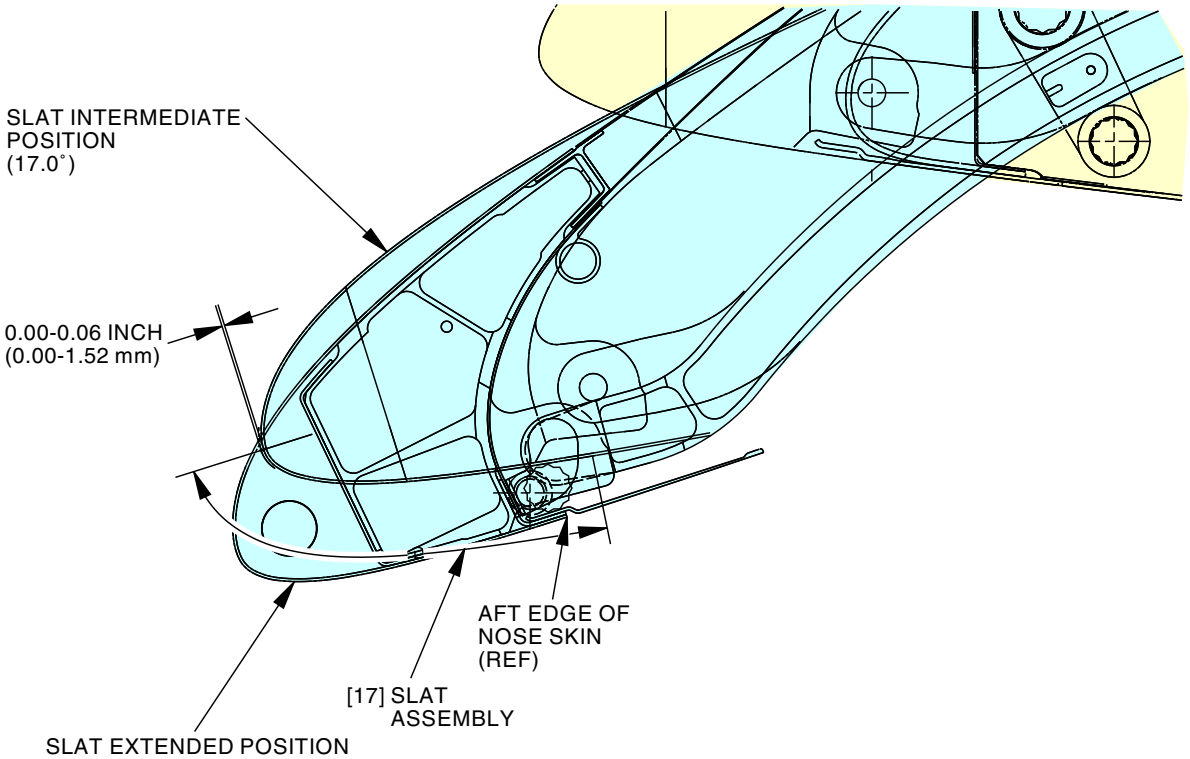


Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS OPOSITE)

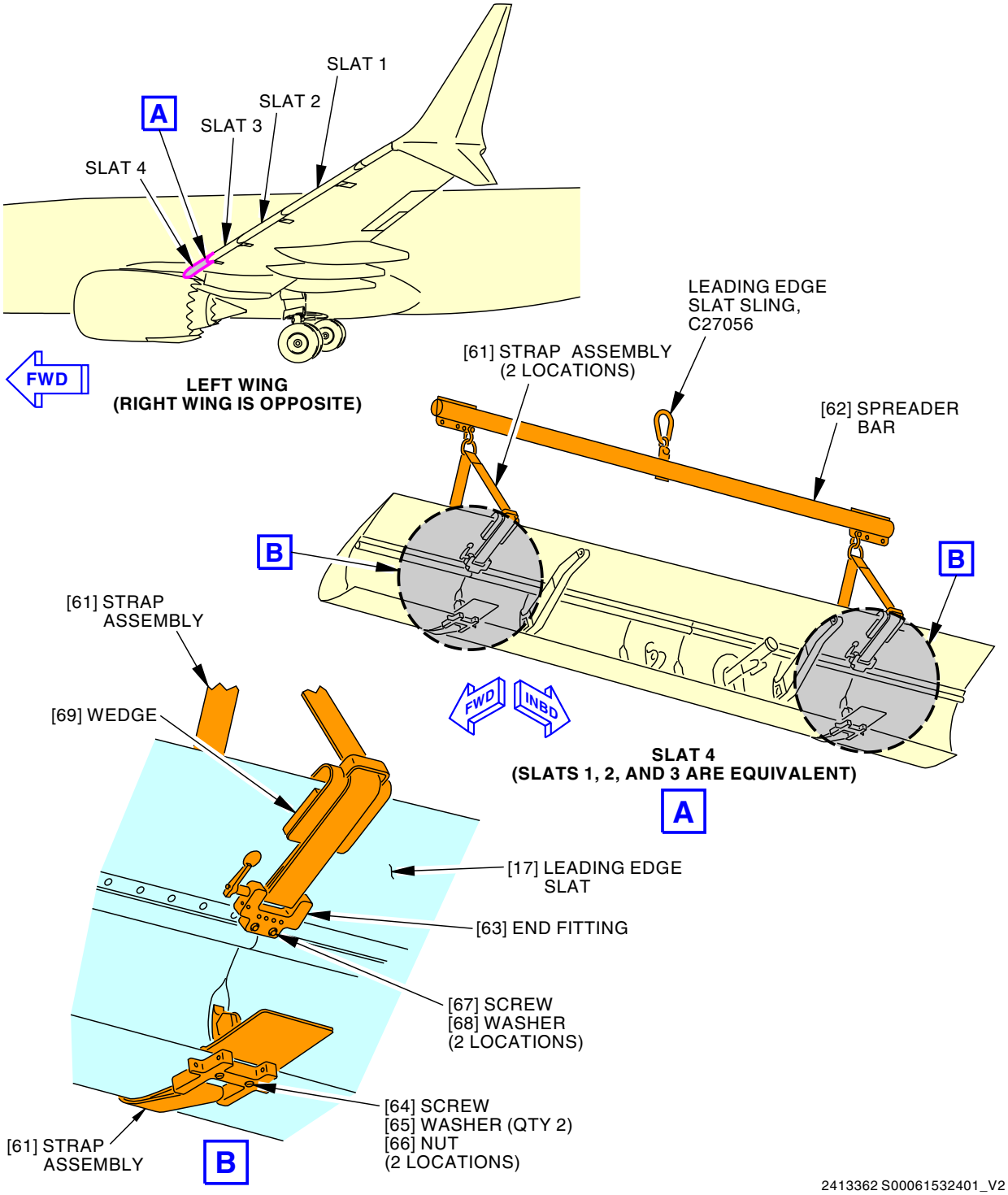


SLAT 1, 2, 3 AND 4

2796995 S0000639073_V1

Leading Edge Slat Installation
Figure 401/27-81-21-990-801 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Sling Installation
Figure 402/27-81-21-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-21-400-801

3. Leading Edge Slat Installation

(Figure 401, Figure 402)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-820-803	Leading Edge Slats Adjustment (P/B 501)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
30-11-31-400-801	Wing Anti-Ice Telescoping Duct Seal Installation (P/B 401)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205
SPL-1739	Kit - Slat Rigging Tools Part #: C27045-1 Supplier: 81205
SPL-2041	Sling - Leading Edge Slat Removal/Installation Part #: C27056-35 Supplier: 81205 Opt Part #: C27056-19 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Slat actuator	27-81-31-02-105	SIA ALL
17	Leading edge slat	27-81-21-20-190	SIA ALL
53	Cotter pin	27-81-21-05-010	SIA ALL

E. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4

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(Continued)

Zone	Area
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

F. Access Panels

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621AAB	Lower Leading Edge Access Panel - Slat Station 524.31
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179

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(Continued)

Number	Name/Location
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470
621ZB	Lower Leading Edge Access Panel - Slat Station 479

G. Leading Edge Slat Installation

SUBTASK 27-81-21-200-003

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 27-81-21-860-006

(2) Prepare the auxiliary tracks [29] and the detent arm [35] for the installation:

NOTE: If you will install the same slat that you removed, it is recommended that you do these steps, but is not necessary.

(a) Adjust the aft support for the auxiliary tracks [29] (View C-C, Figure 401).

1) Loosen nut [24] on the bolt [23] at the upper aft auxiliary track.

2) Loosen the jamnut [39].

3) Loosen the nut [37] to loosen the locking bolt [36].

4) Turn the adjusting nut [38] of the auxiliary track aft support to get the necessary trailing edge clearance until the dimension A is as specified in Table 401.

a) Optional. In order to adjust the auxiliary track aft support to the dimensions given in the table below, adjust the auxiliary track [29] up until the slot in the aft upper corner of the track touches the bolt [23] at the upper aft auxiliary track.

Table 401/27-81-21-993-802

Location	Dimension A	Dimension B (reference)
Slat 1 and 8 (Outbd)	0.830 in. (21.08 mm)	2.38 in. (60.5 mm)
Slat 1 and 8 (Inbd)	0.950 in. (24.13 mm)	2.50 in. (63.5 mm)
Slat 2 and 7 (Outbd)	0.950 in. (24.13 mm)	2.50 in. (63.5 mm)

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Table 401/27-81-21-993-802 (Continued)

Location	Dimension A	Dimension B (reference)
Slat 2 and 7 (Inbd)	1.450 in. (36.83 mm)	3.00 in. (76.2 mm)
Slat 3 and 6 (Outbd)	1.450 in. (36.83 mm)	3.00 in. (76.2 mm)
Slat 3 and 6 (Inbd)	1.450 in. (36.83 mm)	3.00 in. (76.2 mm)
Slat 4 and 5 (Outbd)	1.500 in. (38.10 mm)	3.05 in. (77.5 mm)
Slat 4 and 5 (Inbd)	2.100 in. (53.34 mm)	3.65 in. (92.7 mm)

5) Temporarily tighten the nut [37] on the locking bolt [36].

NOTE: You will apply final torque on the locking bolt during the completion of the slat adjustment (TASK 27-81-00-820-803).

6) Finger tighten the jamnut [39] until in contact with the adjusting nut [38] of the aft support.

7) Tighten the jamnut [39] an additional quarter turn.

8) Temporarily tighten the nut [24] on the bolt [23] at the upper aft auxiliary track.

NOTE: You will apply final torque on the nut during the completion of the slat adjustment (TASK 27-81-00-820-803).

There is no lockwire required on the jamnut.

(b) Adjust the preload on the detent arm [35] to zero:

NOTE: It is recommended that you do these steps, but it is not necessary.

1) Turn the preload adjustment bolt [30] in the clockwise direction to increase preload or in the counterclockwise direction to reduce preload.

2) Adjust the preload on all the detent arm [35] to zero pound.

SUBTASK 27-81-21-480-004

(3) If you disconnected the clevis [33]/auxiliary track [29]/detent arm [35] then install the preload shim assembly, which is part of the kit, SPL-1739, at the forward supports for the auxiliary tracks [29] (View B-B, Figure 401):

NOTE: This step is necessary to make sure that the leading edge slat is not preloaded against the fixed leading edge.

(a) Loosen the nut [31] on the clevis [33].

(b) Lift the auxiliary track [29] with the clevis [33] through the auxiliary track support.

(c) Install the preload shim assembly, which is part of the kit, SPL-1739, with the shims [34] on the clevis [33].

(d) Put the clevis [33] back in its position on the auxiliary track support.

(e) Tighten the nut [31] on the clevis [33].

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(f) Make sure that two polytetrafluoroethylene (PTFE) washers are installed in the clevis/auxiliary track/ detent arm joint, if they were disconnected.

NOTE: If the washers are damaged or missing, stabilization of the detent arm is reduced and it is possible for the detent arm to be deflected laterally during slat extension or retraction and the possibility of misalignment between the detent arm and the detent roller increases.

NOTE: If the washers are damaged or missing, it may be possible for the roller to come out of the detent arm track, thus affecting the operation of the detent system. Also extreme misalignment of the slat roller attachment could move the slat down sensor target, causing fault indications or physical damage to the sensor itself.

SUBTASK 27-81-21-020-004

(4) If you removed slats No. 2, 3, 4, 5, 6 or 7, connect the thermal anti-icing duct to the leading edge slat [17] (TASK 30-11-31-400-801).

SUBTASK 27-81-21-420-001

CAUTION

MAKE SURE THAT THE LOWER SURFACE OF THE SLAT TRAILING EDGE AND THE UPPER SKIN PANELS OF THE FIXED LEADING EDGE ARE SMOOTH BEFORE YOU INSTALL THE LEADING EDGE SLATS. MAKE SURE THAT THE SURFACE AND PANELS ARE ALSO CLEAN AND FREE OF CONTAMINATIONS, NICKS, OR BURRS. DAMAGE TO EQUIPMENT CAN OCCUR IF THE SURFACE AND PANELS ARE NOT SMOOTH AND THERE ARE CONTAMINATIONS.

(5) Install the leading edge slat [17] with the steps that follow:

WARNING

DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(a) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

(b) If you removed them, install the main tracks [21] on the fixed leading edge structure (View A-A, Figure 401):

1) Make sure that the clearance between the side guides and stops is 0.2200 in. (5.59 mm) - 0.2500 in. (6.35 mm).

a) If the clearance is not within the specified limit, adjust the shims [80], as necessary (View A1-A1, Figure 401).

<1> Remove and discard the lockwire from the bolts [78].

<2> Remove the bolts [78], washers [79], and stops [81] as necessary to adjust the shims [80].

<3> Apply primer, C00259, to all areas of the holes where the bolts [78] will be installed.

<4> Apply compound, C00528, to all areas of the holes where the bolts [78] will be installed.

<5> Install the stops [81], washers [79], and bolts [78].

<6> Install MS20995NC32 lockwire, G01912, on the bolts [78] (TASK 20-10-44-400-801).

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2) Apply a layer of grease, D00633, to the vertical web surfaces of the main tracks [21] that contact the side guides.

NOTE: It is not necessary to grease the rolling surface, only the side guide contact surface.

3) Install the stop fittings [49] to the main tracks [21]:

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

CAUTION INSTALL THE WASHERS CORRECTLY. IF YOU DO NOT, THE MAIN TRACK/STRUCTURE JOINT CAN BECOME LOOSE AND THE DOWNSTOP ASSEMBLY CAN FALL. THIS CAN CAUSE DAMAGE TO THE SLAT TRACK HOUSING.

a) Get access to the stop fittings [49] through the access holes in the track ribs.

b) Do a check on the fit of the down stop assembly bolt in the hole in the slat main track.

<1> If the bolt will not enter the hole in the main track [21] using hand pressure (because the hole diameter is less than the bolt's shank diameter) , then do the steps that follow:

<a> Ream the hole up to a maximum of 0.4375 in. (11.1125 mm). If necessary, remove the slat.

<b> Clean the area as necessary.

<c> Apply Cor-Ban 27L Compound, G50237, corrosion inhibiting material to the reamed hole.

<2> If the bolt has side-to-side play in the hole, then do the steps that follow:

<a> Measure the hole and if the hole diameter is 0.4421 in. (11.2293 mm) - 0.5005 in. (12.7127 mm), then install a bushing.

<b> If the hole diameter is greater than 0.5005 in. (12.7127 mm), then replace the slat main track [21].

c) Coat the shank of the bolt [50] and the face of the first stop fitting [49] with Cor-Ban 27L Compound, G50237, and all the surface of the hole in the main track [21].

d) Install one washer [51] under the bolt head and the first stop fitting [49] on the bolt [50].

NOTE: If it is necessary, an additional washer is permitted under the bolt head.

e) Install the bolt [50] attached to the washer [51] and the first stop fitting [49] to the main track [21].

NOTE: The down stop assembly can be installed with the bolt head on either the inboard side or the outboard side of the slat main track.

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f) Install the second stop fitting [49], one washer [51], and the nut [52] on the shank of the bolt [50] that you have it installed on the main track [21].

NOTE: No grip length increase is permitted on the bolt.

<1> Tighten the nut [52] (recommended) or the bolt [50] (optional) to 180 in-lb (20 N·m) - 200 in-lb (23 N·m).

NOTE: The recommended method is to tighten the nuts.

The optional method is to tighten the bolts.

g) Install the new cotter pin [53].

<1> Wrap the cotter pin [53] around the shank of the bolt [50].

h) Make sure by the visual inspection that the bolts [50], washers [51], stop fittings [49], nuts [52], and cotter pins [53] are all installed correctly.

i) Make sure that the slat main track housing (can) is free of unwanted material.

(c) Lift the leading edge slat [17] into its position.

NOTE: On slats No. 2, 3, 4, 5, 6 or 7, engage the thermal anti-ice duct with the leading edge slat.

(d) Attach the main tracks [21] to the leading edge slat [17] at each of the main track [21] locations with the steps that follow (View D-D, Figure 401):

1) Apply grease, D00633, to the shank and threads before the installation of the bolts [71].

2) Install the plain bushing [73] in the main track [21].

3) Install the bolt [71], washer [72], washer [74], and the nut [75].

NOTE: The slats 1 and 8 are attached with 0.500 in. (12.700 mm) nominal diameter bolts. The slats 2 through 7 are attached with 0.625 in. (15.875 mm) nominal diameter bolts.

a) Tighten the nut [75] to 388 in-lb (43.8 N·m) - 412 in-lb (46.5 N·m) for slats 1 and 8.

b) Tighten the nut [75] to 795 in-lb (89.8 N·m) - 845 in-lb (95.5 N·m) for slats 2 through 7.

4) Install the bolt retainer [70] with two adjustable bolts [76] and two washers [77] on the leading edge slat [17] structure.

a) Make sure that there is a permitted clearance dimension between the bolt retainer [70] and the head of the bolt [71].

b) If it is necessary, adjust the clearance by loosening the two adjustable bolts [76], moving the bolt retainer [70] along the slotted holes and tightening the two adjustable bolts [76].

(e) Attach the auxiliary arms [28] to the auxiliary tracks [29] (View G, Figure 401):

1) Apply a layer of grease, D00633, to the auxiliary tracks [29] and the side guards on the auxiliary arms [28].

2) Lift the leading edge slat [17] partially for better access to the roller attachment location.

3) Install the auxiliary arm roller bearings [44] to the auxiliary tracks [29].

4) Install the bolts [46], washers [47], detent arm roller bearings [45], spacers [48], washers [42], targets [43], and nuts [41].

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a) Make sure that three washers (CRES material, 0.063 in. (1.60 mm) nominal thickness) are installed in the detent roller/track/arm/sensor target joint (one washer [47] under the bolt head and two washers [42] installed on both sides of the auxiliary arm).

NOTE: If the washers are thinner than 0.063 in. (1.6 mm), the lateral location of the roller bearing will be changed and it will no longer align with the centerline of the detent arm.

NOTE: The thinner washers will not support the torque preload and operating load imposed on the joint. As the thinner washers deform, the fastener torque preload is lost, and the joint may move under normal operating loads, inducing additional misalignment of the bearing. This joint holds the slat sensor target, so a loosened bolt will permit the sensor target to move. Target movement could lead to sensor indication problems, and the loose target could physically contact the sensor as the slat moves and cause additional damage.

b) Make sure that the flat edges of the target detail aligns with the corresponding face on the auxiliary arm, otherwise the target detail can be damaged during the movement of the slat.

NOTE: The target are “U” shaped and are oriented as such with the base facing down.

c) Add the washer [42] under the nut [41] if and as it is necessary to align the cotter pin hole in the bolt [46] with the slot in the nut [41].

d) Make sure that the BACB30LT6DK35 bolt [46] head clears the fixed LE structure (auxiliary ribs) on slats 1 and 8.

<1> If clearance is limited, make sure that the auxiliary track support is fully adjusted up.

5) Tighten the nuts [41] (recommended) to 95 in-lb (10.7 N·m) - 160 in-lb (18.1 N·m), or the bolts [46] (optional) to 144 in-lb (16.3 N·m) - 176 in-lb (19.9 N·m).

NOTE: The recommended method is to tighten the nuts.

The optional method is to tighten the bolts.

NOTE: It is recommended to orient the bolt for better access to the hole for the pin.

6) Install the pins [40].

(f) Manually extend and retract the leading edge slat [17] to make sure that it moves freely on the tracks.

(g) Make sure that the main tracks [21] move parallel with each other and non-binding between main tracks [21] and side guides.

1) Make sure that the BACB30LT6DK35 bolt head clears the fixed LE structure (auxiliary ribs) on slats 1and 8.

a) If clearance is limited, make sure that the auxiliary track aft support is fully adjusted up.

SUBTASK 27-81-21-440-001

(6) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

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SUBTASK 27-81-21-860-007

(7) Use hydraulic power to retract the slat actuator [9] to the 1-unit position (TASK 27-81-00-860-804).

NOTE: This will permit you to install the bolt.

SUBTASK 27-81-21-710-001

(8) Manually retract the leading edge slat.

SUBTASK 27-81-21-420-002

(9) Connect the slat actuator [9] to the leading edge slat [17] (View B, Figure 401):

(a) Move the leading edge slat [17] until it aligns with the slat actuator [9].

(b) Install the bushing [10], bolt [20], washer [19], washer [11], and nut [12] to attach the slat actuator [9] to the leading edge slat [17].

1) Make sure that the head of the bolt is on the outboard side of the slat actuator.

2) Tighten the nut [12] (recommended) to 660 in-lb (74.6 N·m) - 980 in-lb (110.7 N·m) or the bolt [20] (optional) to 882 in-lb (99.7 N·m) - 1078 in-lb (121.8 N·m).

NOTE: The recommended method is to tighten the nuts.

The optional method is to tighten the bolts.

(c) Install the bolt retainer [18]:

1) Apply compound, C00528, to the shank and threads of the bolts [15].

2) Install the bolts [15] and washers [16] to attach the bolt retainer [18].

SUBTASK 27-81-21-080-001

(10) If you installed the sling, SPL-2041, remove the sling, SPL-2041, from the leading edge slat [17] (Figure 402):

(a) Hold and remove the spreader bar [62] from the overhead hoist.

(b) Remove the strap assembly [61] from end fittings [63] and the wedges [69].

(c) Remove the screws [67] and washers [68] to remove the end fittings [63].

(d) Remove the nuts [66], washers [65], and screws [64] to remove the strap assembly [61] from bottom of the leading edge slat [17].

(e) Remove the wedges [69] from the leading edge slat [17].

(f) Install the stowage A/P fastener (shown in the placard of the tool box) in the holes of the slat structure that you use to install the screws [64] and screws [67] of the sling, SPL-2041, kit.

SUBTASK 27-81-21-211-001

(11) Visually check all leading edge slat bull-noses to make sure that they align within 0 in. (0 mm) - 0.060 in. (1.52 mm) when in the extended intermediate position (View K, Figure 401).

(a) If they do not, make sure that all main tracks [21] are correctly installed.

NOTE: The part number of the main track is located on the forward lower non-wear surface.

SUBTASK 27-81-21-820-001

(12) Do this task: Leading Edge Slats Adjustment, TASK 27-81-00-820-803.

SUBTASK 27-81-21-211-002

(13) With the slats correctly adjusted (rigged), do the steps that follow:

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(a) If necessary, apply a hand load to the end of each slat assembly to make sure that preload exists.

(b) If no preload exists, do as the steps that follow:

1) Make sure that the possible under-travel dimension of the slat actuator [9] is 0.0200 in. (0.5080 mm) or less between the attach point at the rod end of the slat actuator and the clevis bores of the slat attach fittings.

NOTE: The under-travel dimension of the slat actuator shows that there is no preload of the slat actuator in relationship to the slat actuator attach fitting.

a) If the dimension is more than 0.0200 in. (0.5080 mm), make sure that the part numbers of the main track assemblies are correct.

NOTE: When the slat main tracks are incorrectly installed visual cues (excessive mismatches, misalignment, skew, etc.) will sometimes show a problem in advance depending on which slat is affected.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-21-080-002

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the lockout set, SPL-1734, from the actuators of the adjacent leading edge slats (TASK 27-81-00-480-801).

SUBTASK 27-81-21-200-004

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(2) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 27-81-21-940-001

(3) Install these access panels on the lower surface of the fixed leading edge (TASK 57-41-02-400-801):

(a) For the left wing, close these access panels:

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208

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(Continued)

Number	Name/Location
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, close these access panels:

Number	Name/Location
621AAB	Lower Leading Edge Access Panel - Slat Station 524.31
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-21-860-008

(4) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

END OF TASK

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TASK 27-81-21-000-802

4. Leading Edge Slat Main Track Removal

(Figure 401)

A. General

(1) This procedure contains steps to remove one main track.

(2) You can remove only one main track per slat at a time.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-801	Leading Edge Flap and Slat System Operation With Primary Control (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Access Panels

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621ABB	Lower Leading Edge Access Panel-Slat Station 519
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27

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(Continued)

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

E. Leading Edge Slat Main Track Removal

SUBTASK 27-81-21-860-010

(1) Extend the slats to the full extend position (TASK 27-81-00-860-801).

SUBTASK 27-81-21-040-003

(2) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 27-81-21-010-004

(3) Remove the applicable access panels (TASK 57-41-02-000-801):

(a) Open these access panels:

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) Open these access panels:

Number	Name/Location
621ABB	Lower Leading Edge Access Panel-Slat Station 519
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50

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(Continued)

Number	Name/Location
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

SUBTASK 27-81-21-020-009

(4) Disconnect the leading edge slat [17] from the main tracks [21].

(a) Remove the bolt retainer [70] attached to the structure of the leading edge slat [17].

1) Remove two adjustable bolts [76] and two washers [77] at each of the main track [21] attach location.

(b) Remove the nut [75], washer [74], bolt [71], washer [72], and plain bushing [73] at each of the main track [21] attach location.

SUBTASK 27-81-21-020-010

(5) Remove the cotter pin [53], nut [52], washer [51], stop fittings [49], and bolt [50] from the aft end of the main track [21].

SUBTASK 27-81-21-020-011

(6) Remove the main track [21] from the housing assembly.

(a) Carefully lift the slat manually to give clearance to remove the main track.

NOTE: The bolt [20] can be removed to give additional clearance for the main track removal.

(b) Remove the main track [21].

NOTE: The weight of the slat on the auxiliary tracks can cause an inadvertent movement in the assembly. This can cause the slat to be out of rig.

——— END OF TASK ———

TASK 27-81-21-400-802

5. Leading Edge Slat Main Track Installation

(Figure 401)

A. General

(1) This procedure contains steps to install one main track.

(2) You can remove only one main track per slat at a time.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
27-81-00-820-803	Leading Edge Slats Adjustment (P/B 501)

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(Continued)

Reference	Title
27-81-00-860-801	Leading Edge Flap and Slat System Operation With Primary Control (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

C. Consumable Materials

Reference	Description	Specification
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III
D00633	Grease - Aircraft General Purpose	BMS3-33
D50180	Grease - Aircraft General Purpose (AeroShell Grease 33)	BMS3-33, MIL-PRF-23827
D50306	Grease - Synthetic Aircraft Grease (Mobilgrease 33)	BMS3-33 Type 1, MIL-PRF-23827 Type 1
G50136	Compound - Corrosion Inhibiting, Non-drying Paste	BMS3-38
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

E. Access Panels

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365

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(Continued)

Number	Name/Location
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621ABB	Lower Leading Edge Access Panel-Slat Station 519
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

F. Leading Edge Slat Main Track Installation

SUBTASK 27-81-21-160-001

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Make sure that the housing assemblies and parts of the slat main tracks are clean and free of unwanted materials.

SUBTASK 27-81-21-210-001

(2) Do a check on the fit of the bolt [50] in the aft hole in the main track [21].

(a) If the bolt will not enter the hole in the main track [21] using hand pressure, then do the steps that follow:

1) Ream the hole up to a maximum of 0.4375 in. (11.1125 mm).

2) Clean the area as necessary.

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

3) Apply Cor-Ban 27L Compound, G50237 (preferred) or corrosion inhibiting material, G50136 (alternate) to the reamed hole.

(b) If the bolt has side-to-side play in the hole, then do the steps that follow:

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1) Measure the hole and if the hole diameter is 0.4421 in. (11.2293 mm) to 0.5005 in. (12.7127 mm), then install a bushing.

2) If the hole diameter is greater than 0.5005 in. (12.7127 mm), then replace the slat main track.

SUBTASK 27-81-21-420-003

(3) Install the new main track [21] in the housing assembly.

(a) Carefully lift the slat manually to give clearance to install the main track.

(b) Install the main track in the housing assembly.

(c) Make sure that the clearance between the side guides and stops is 0.220 in. (5.588 mm) to 0.250 in. (6.350 mm) (Figure 401), View A-A.

1) If the clearance is not within the specified limit, adjust the shims, as necessary.

(d) Apply a layer of grease, D00633 to the vertical web surfaces of the main track [21] that contact the side guides.

NOTE: It is not required to grease the rolling surface, only the side guide contact surface.

(e) Lower the slat to align the main track [21] and the leading edge slat [17].

SUBTASK 27-81-21-420-004

(4) Install the stop fittings [49] to the main track [21]:

(a) Get access to the aft hole of the main track [21] through the access holes in the track ribs.

(b) Coat the shank of the bolt [50], the face of the first stop fitting [49], and all the surface of the hole in the main track [21] with Cor-Ban 27L Compound, G50237 (preferred) or corrosion inhibiting material, G50136 (alternate).

CAUTION

INSTALL THE WASHERS CORRECTLY. IF YOU DO NOT, THE MAIN TRACK/STRUCTURE JOINT CAN BECOME LOOSE AND THE DOWNSTOP ASSEMBLY CAN FALL. THIS CAN CAUSE DAMAGE TO THE SLAT TRACK HOUSING.

(c) Install one washer [51] under the bolt head and the first stop fitting [49] on the bolt [50].

NOTE: An additional washer is permitted under the bolt head, if required.

(d) Install the bolt [50] attached to the washer [51] and the first stop fitting [49] to the main track [21].

NOTE: The down stop assembly can be installed with the bolt head on either the inboard side or the outboard side of the slat main track.

(e) Install the second stop fitting [49], one washer [51] and the nut [52] on the shank of the bolt [50] that is installed on the main track [21].

NOTE: No grip length increase is permitted on the bolt [50].

(f) Tighten the nut [52] (preferred) or the bolt head to the torque range of 180 in-lb (20 N·m) to 200 in-lb (23 N·m).

NOTE: The recommended method is to tighten the nuts.

The optional method is to tighten the bolts.

(g) Install the new cotter pin [53].

1) Wrap the cotter pin [53] around the shank of the bolt [50].

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(h) Make sure by the visual inspection that the bolt [50], washers [51], stop fittings [49], nut [52] and cotter pin [53] are all installed correctly.

(i) Make sure that the slat main track housing (can) is free of unwanted material.

SUBTASK 27-81-21-420-005

(5) Attach the main track [21] to the leading edge slat [17] with the steps that follow:

(a) Apply Mobilgrease 33, D50306 or AeroShell Grease 33, D50180 to the shank and threads of the bolt [71] and outer diameter of plain bushing [73].

(b) Install the plain bushing [73] in the main track [21].

(c) Install the bolt [71], washer [72], washer [74], and the nut [75].

NOTE: The slats 1 and 8 are attached with 0.500 in. (12.700 mm) nominal diameter bolts. The slats 2 through 7 are attached with 0.625 in. (15.875 mm) nominal diameter bolts.

1) Tighten the nut [75] to 388 in-lb (43.8 N·m) - 412 in-lb (46.5 N·m) for slats 1 and 8.

2) Tighten the nut [75] to 795 in-lb (89.8 N·m) - 845 in-lb (95.5 N·m) for slats 2 through 7.

(d) Install the bolt retainer [70] with two bolts [76] and two washers [77] on the leading edge slat [17] structure.

1) Make sure that there is a permitted clearance dimension between the bolt retainer [70] and the head of the bolt [71], per View H, flagnote 1 (Figure 401).

2) If necessary, adjust the clearance by loosening the two bolts [76], moving the bolt retainer [70] along the slotted holes and tightening the two bolts [76].

SUBTASK 27-81-21-420-006

(6) If removed, install the bolt [20] to connect the slat actuator [9] to the leading edge slat [17].

(a) Install the bushing [10], bolt [20], washer [19], washer [11] and nut [12] to attach the slat actuator [9] to the leading edge slat [17].

NOTE: Make sure the head of the bolt [20] is on the outboard side of the slat actuator [9].

(b) Tighten the nut [12] to 660 in-lb (74.6 N·m) to 980 in-lb (110.7 N·m) or the bolt [20] to 882 in-lb (99.7 N·m) to 1078 in-lb (121.8 N·m).

NOTE: The recommended method is to tighten the nuts.

The optional method is to tighten the bolts.

(c) Install the bolt retainer [18]:

1) Apply compound, C00528 to the shank and threads of the bolts [15].

2) Install the bolts [15] and washers [16] to attach the bolt retainer [18].

SUBTASK 27-81-21-210-002

(7) Visually check that all leading edge slat [17] bull-noses align within 0.00 in. (0.00 mm)-0.06 in. (1.52 mm) when in the extended intermediate position.

(a) If not, make sure that all main tracks [21] are correctly installed.

NOTE: The part number of the main track [21] is located on the forward lower non-wear surface.

(b) If necessary, adjust the slat (TASK 27-81-00-820-803).

SUBTASK 27-81-21-210-003

(8) With the slats extended, do these steps:

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(a) Apply hand load to the end of the slat assembly to make sure that preload exists

(b) If no preload exists, do as follow:

1) Make sure that the possible under-travel dimension of the slat actuator does not exceed 0.02 in. (0.508 mm) maximum between the attach point at the rod end of the slat actuator and the clevis bores of the slat attach fittings.

NOTE: The under-travel dimension of the slat actuator indicates that there is no preload of the slat actuator in relationship to the slat actuator attach fitting.

a) If the dimension is greater than 0.02 in. (0.508 mm), make sure that the part numbers of the main track assemblies are correct.

NOTE: When the slat main tracks are incorrectly installed visual cues (excessive mismatches, misalignment, skew, etc.) will sometimes indicate a problem in advance depending on which slat is affected.

(c) If necessary, adjust the slat (TASK 27-81-00-820-803).

SUBTASK 27-81-21-440-002

(9) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 27-81-21-710-002

(10) Do this task: Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-21-410-002

(1) Install the applicable access panels (TASK 57-41-02-400-801):

(a) Close these access panels:

Number	Name/Location
521AAB	Lower Leading Edge Access Panel - Slat Station 497
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
521CB	Lower Leading Edge Access Panel - Slat Station 50
521FB	Lower Leading Edge Access Panel - Slat Station 107
521GB	Lower Leading Edge Access Panel - Slat Station 125
521HB	Lower Leading Edge Access Panel - Slat Station 144
521JB	Lower Leading Edge Access Panel - Slat Station 161
521MB	Lower Leading Edge Access Panel - Slat Station 226
521NB	Lower Leading Edge Access Panel - Slat Station 244
521PB	Lower Leading Edge Access Panel - Slat Station 261
521QB	Lower Leading Edge Access Panel - Slat Station 280
521TB	Lower Leading Edge Access Panel - Slat Station 347
521UB	Lower Leading Edge Access Panel - Slat Station 365
521VB	Lower Leading Edge Access Panel - Slat Station 385
521WB	Lower Leading Edge Access Panel - Slat Station 406
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) Close these access panels:

Number	Name/Location
621ABB	Lower Leading Edge Access Panel-Slat Station 519
621BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 27
621CB	Lower Leading Edge Access Panel - Slat Station 50
621FB	Lower Leading Edge Access Panel - Slat Station 107

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(Continued)

Number	Name/Location
621GB	Refuel Valve Door - Slat Station 125
621JB	Lower Leading Edge Access Panel - Slat Station 161
621MB	Lower Leading Edge Access Panel - Slat Station 226
621NB	Lower Leading Edge Access Panel - Slat Station 244
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621TB	Lower Leading Edge Access Panel - Slat Station 347
621UB	Lower Leading Edge Access Panel - Slat Station 365
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621ZB	Lower Leading Edge Access Panel - Slat Station 479

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the leading edge flap actuator.

(2) An installation of the leading flap actuator.

B. The leading edge flap actuator is referred to as the actuator in this procedure.

TASK 27-81-31-000-801

2. Leading Edge Flap Actuator Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

D. Prepare for the Removal

SUBTASK 27-81-31-040-001

WARNING DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the thrust reversers are activated, then deactivate them. Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

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SUBTASK 27-81-31-860-010

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure that the inboard fan duct cowl and the inboard and outboard thrust reversers are closed in the stowed position or are removed.

SUBTASK 27-81-31-860-011

CAUTION

MAKE SURE THAT THE TRAILING EDGE FLAPS ARE FULLY RETRACTED. IF THEY ARE NOT FULLY RETRACTED, THE ACTUATOR WILL EXTEND. THE ACTUATOR CAN CAUSE DAMAGE TO THE WING RIB.

(3) If the trailing edge flaps are not fully retracted, then retract them. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

SUBTASK 27-81-31-860-002

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

SUBTASK 27-81-31-860-012

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-31-860-003

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Move the flap control lever to the 1-unit position to extend the leading edge flaps.

SUBTASK 27-81-31-860-013

(7) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

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SUBTASK 27-81-31-480-001

WARNING MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Install the lockout set, SPL-1734, on the actuator for the adjacent leading edge flap. Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

E. Leading Edge Flap Actuator Removal

SUBTASK 27-81-31-020-001

(1) Disconnect the leading edge flap actuator from the leading edge flap. Do the steps for the applicable actuator:

(a) If you are removing the outboard leading edge flap actuator, then do these steps (View E, Figure 401):

1) Remove the cotter pin [19].

a) Discard the cotter pin [19].

2) Remove the nut [24] and the washer [23].

3) Remove the bolt [18], the washer [20], and the bushing [21].

4) Remove the actuator [11] and the washer [22] from the leading edge flap [1].

(b) If you are removing the inboard leading edge flap actuator, then do these steps (View F, Figure 401):

1) Remove the cotter pin [26].

a) Discard the cotter pin [26].

2) Remove the nut [30] and the washer [29].

3) Remove the bolt [25], the washer [27], and the bushing [28].

4) Remove the actuator [12] and the washer [22] from the leading edge flap [2].

SUBTASK 27-81-31-860-014

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-31-860-004

(3) Move the flap control lever to the UP position to retract the actuator [11] or the actuator [12].

SUBTASK 27-81-31-860-005

(4) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-31-020-002

(5) Remove the leading edge flap actuator from the airplane. Do these steps (Views B, C, and D, Figure 401):

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(a) Disconnect the three hydraulic lines from the hydraulic fittings. Do these steps:

1) Attach identification tags or labels to the hydraulic lines and to their related hydraulic fittings for correct connections during the installation procedure.

2) Remove the four screws [6], the four nuts [7], and two clamps [5] that attach the hydraulic line [4] to the bracket [8].

3) Disconnect the hydraulic line [4], the hydraulic line [9], and the hydraulic line [10] from the three hydraulic fittings [3].

4) Install plugs in the open ends of the hydraulic lines.

5) Install caps in the three hydraulic fittings [3].

(b) Remove the nut [17] and the washer [16].

(c) Remove the bolt [13], the washer [14], and the bushing [15].

(d) Remove the actuator [11] or the actuator [12] from the structure.

1) Remove the hydraulic line [4], the hydraulic line [9], and the hydraulic line [10] with the actuator [11] or the actuator [12].

SUBTASK 27-81-31-020-003

(6) If you will install a new leading edge flap actuator, then remove the hydraulic lines from the old actuator. Do these steps for the applicable actuator:

(a) Attach identification tags or labels to the hydraulic lines and to their related hydraulic ports for correct connections during the installation procedure.

(b) Remove the hydraulic line [4], the hydraulic line [9], and the hydraulic line [10] from the actuator [11] or the actuator [12].

(c) Install plugs in the open ends of the hydraulic lines.

(d) Install caps in the hydraulic ports that are on the actuator [11] or the actuator [12].

——— END OF TASK ———

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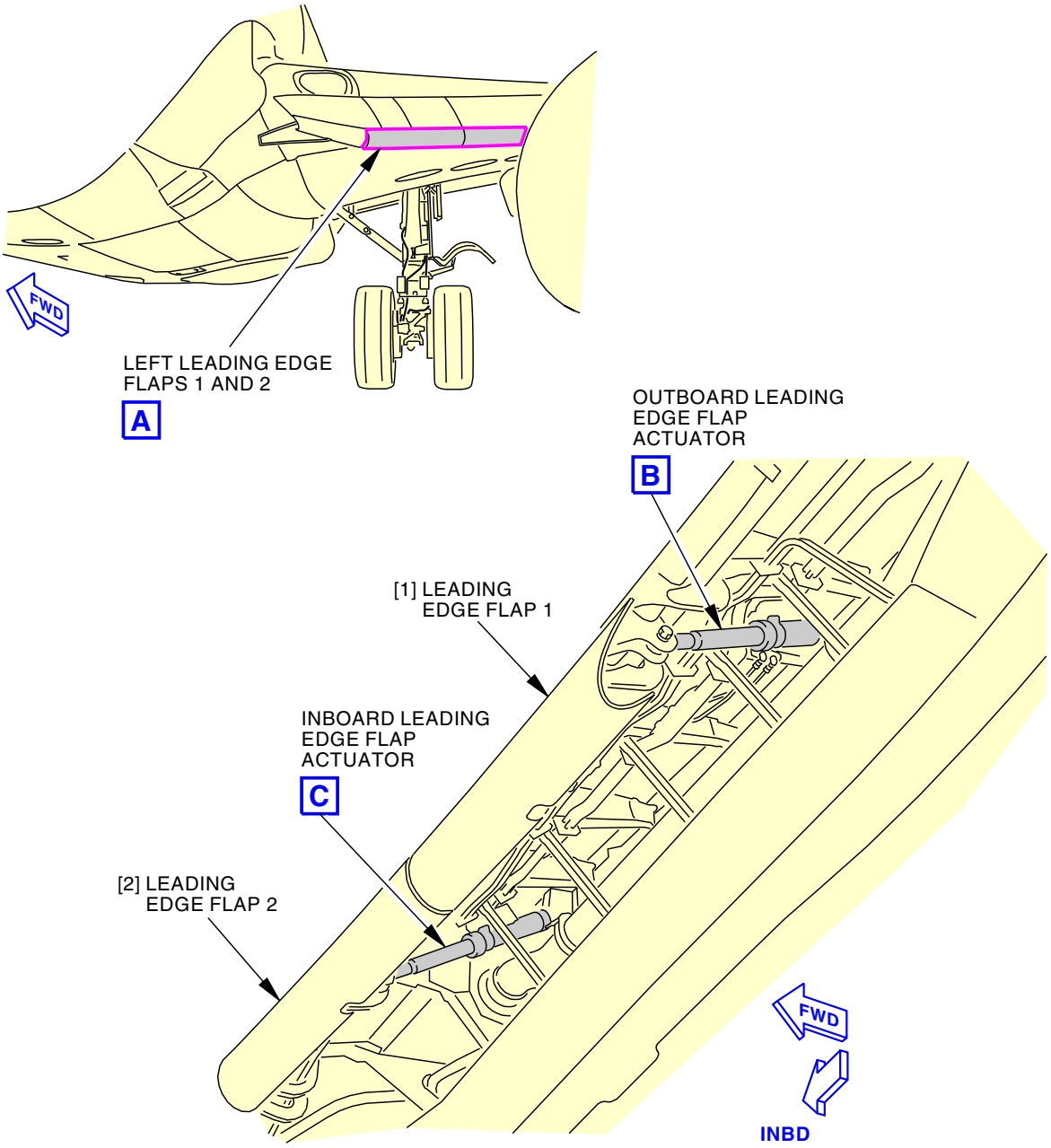
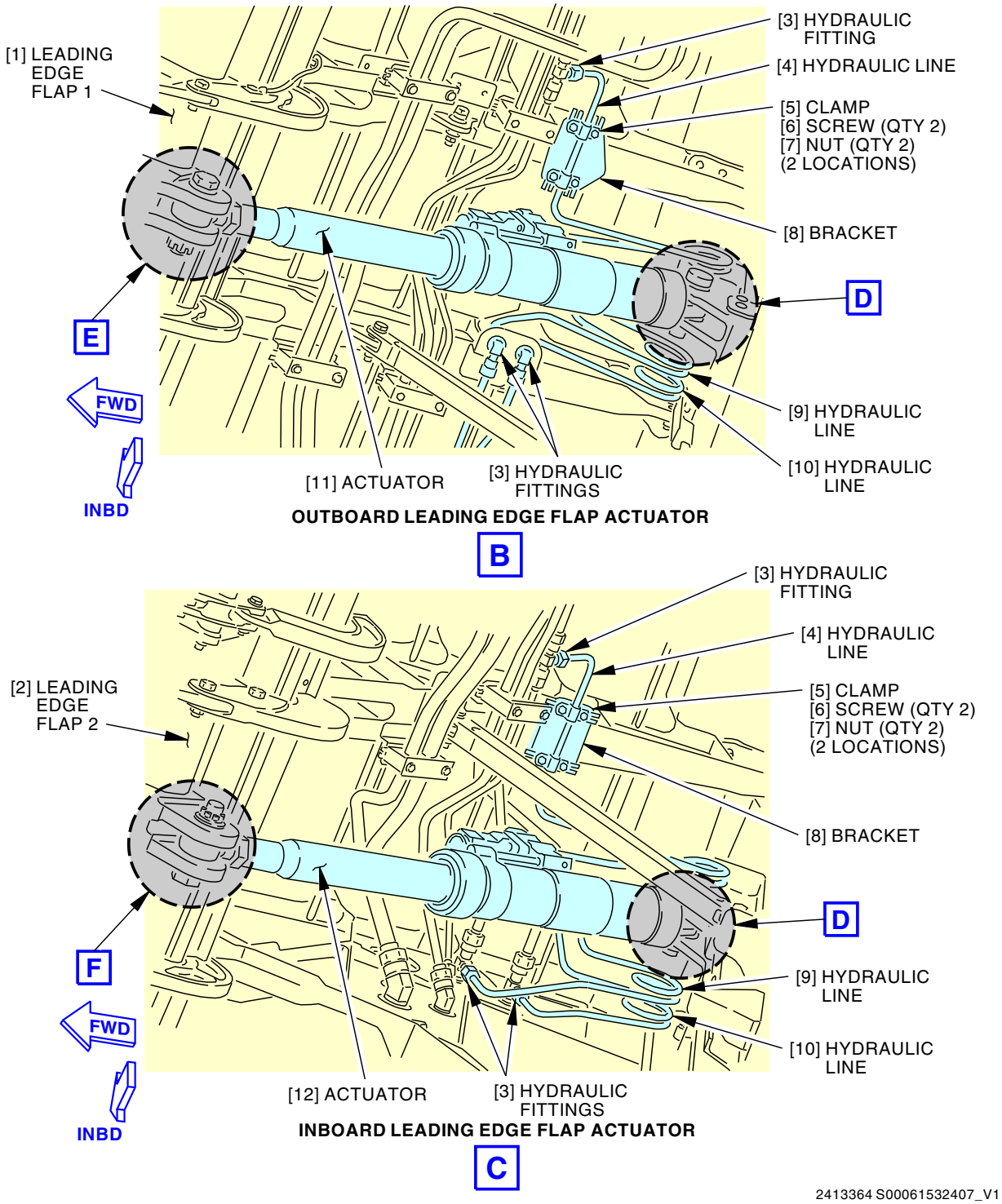


LEFT LEADING EDGE FLAPS 1 AND 2
(RIGHT LEADING EDGE FLAPS 3 AND 4 ARE OPPOSITE)
A

2413363 S00061532406_V2

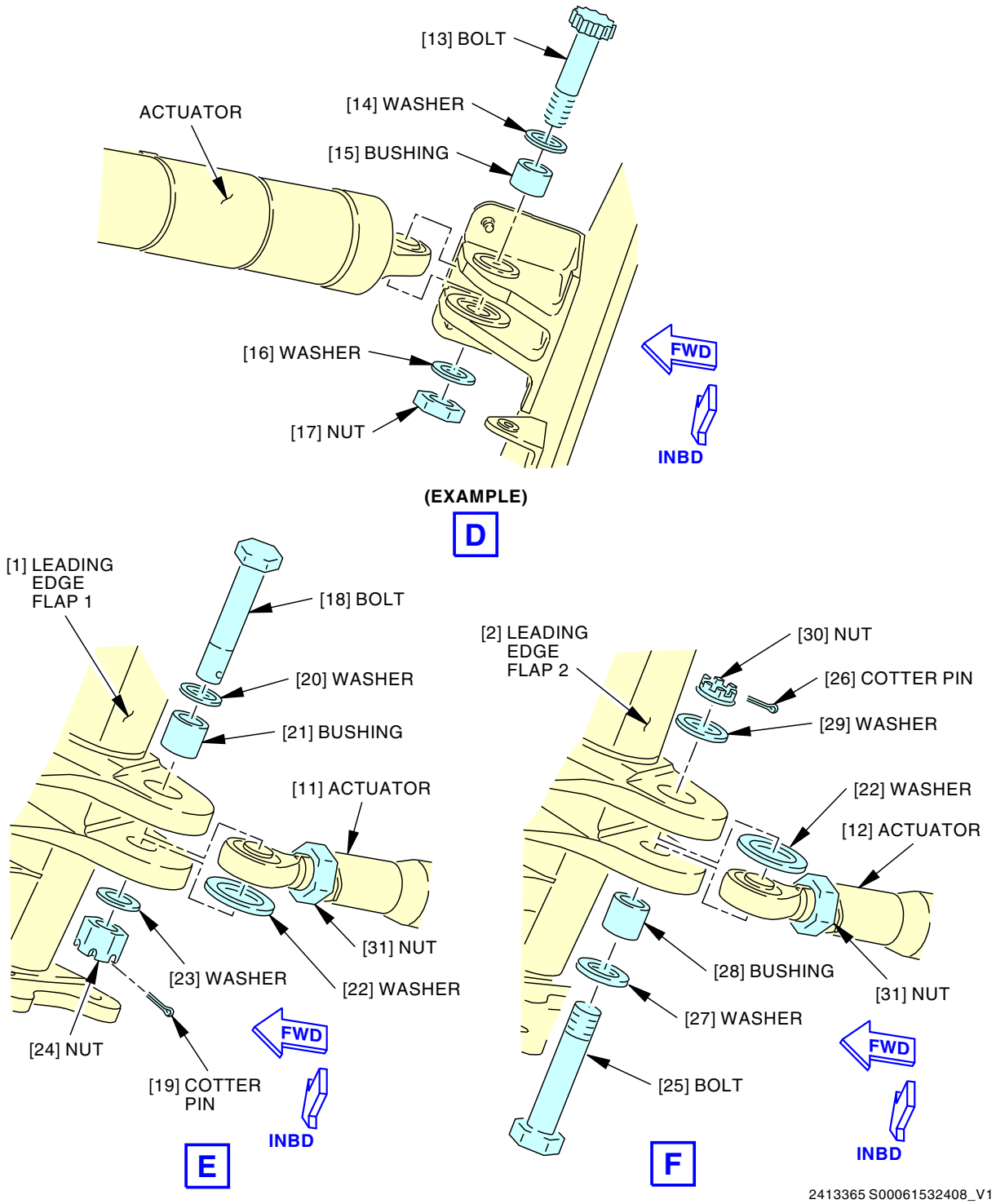
Leading Edge Flap Actuator Installation
Figure 401/27-81-31-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap Actuator Installation
Figure 401/27-81-31-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap Actuator Installation
Figure 401/27-81-31-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-31-400-801

3. Leading Edge Flap Actuator Installation

(Figure 401)

A. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-700-802	Leading Edge Flap and Slat Timing Test in Primary Mode (P/B 501)
27-81-00-710-801	Leading Edge Flap and Slat System Standby Actuation Operational Test (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33
G50347	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
19	Cotter pin	27-81-31-20-025	SIA ALL
26	Cotter pin	27-81-31-20-025	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

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F. Prepare for the Installation

SUBTASK 27-81-31-040-002

WARNING DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the thrust reversers are activated, then deactivate them. Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

SUBTASK 27-81-31-860-015

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure that the inboard fan duct cowl and the inboard and outboard thrust reversers are closed in the stowed position or are removed.

SUBTASK 27-81-31-860-016

CAUTION MAKE SURE THAT THE TRAILING EDGE FLAPS ARE FULLY RETRACTED. IF THEY ARE NOT FULLY RETRACTED, THE ACTUATOR WILL EXTEND. THE ACTUATOR CAN CAUSE DAMAGE TO THE WING RIB.

(3) If the trailing edge flaps are not fully retracted, then retract them. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

G. Leading Edge Flap Actuator Installation

SUBTASK 27-81-31-820-002

(1) Make sure that the rod end of the leading edge flap actuator that you will install is the same length as the rod end of the actuator that you removed.

(a) If the lengths are not the same, then adjust the rod end length of the actuator that you will install. Do these steps:

1) Remove the lockwire from the nut [31].

a) Discard the lockwire.

2) Loosen the nut [31].

3) Adjust the rod end of the actuator [11] or the actuator [12] to the correct length.

4) Tighten the nut [31] from 550 in-lb (62 N·m) to 650 in-lb (73 N·m).

5) Safety the nut [31] with a new MS20995NC32 lockwire, G50347. Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

SUBTASK 27-81-31-420-001

(2) If the hydraulic lines are not installed on the leading edge flap actuator, then connect the hydraulic lines to the actuator. Do these steps:

(a) Remove the caps from the hydraulic ports that are on the actuator [11] or the actuator [12].

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(b) Remove the plugs from the end of each hydraulic line that will attach to the actuator [11] or the actuator [12].

(c) Connect the hydraulic line [4], the hydraulic line [9], and the hydraulic line [10] to the hydraulic ports that are on the actuator [11] or the actuator [12].

(d) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).

(e) Safety each B-nut with a new MS20995NC32 lockwire, G50347. Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(f) Remove the identification tags or labels from the hydraulic lines and from their related hydraulic ports that are on the actuator.

SUBTASK 27-81-31-420-005

(3) Install the leading edge flap actuator. Do these steps (Views B, C, and D, Figure 401):

(a) Put the actuator [11] or the actuator [12] in its position on the fitting that is on the structure.

(b) If you are installing a leading edge flap actuator in the left wing, then do this step:

1) Install the bushing [15], the washer [14], and the bolt [13] on the outboard side of the structure fitting.

(c) If you are installing a leading edge flap actuator in the right wing, then do these steps:

1) Install the bushing [15] on the inboard side of the structure fitting.

2) Install the washer [14] and the bolt [13] on the inboard side or the outboard side of the structure fitting.

NOTE: The washer [14] must be installed next to the head of the bolt [13].

(d) Install the washer [16] and the nut [17].

1) Tighten the nut [17] from 660 in-lb (75 N·m) to 980 in-lb (111 N·m).

SUBTASK 27-81-31-420-006

(4) Connect the hydraulic lines to the hydraulic fittings. Do these steps (Views B and C, Figure 401):

(a) Remove the plugs from the hydraulic lines.

(b) Remove the caps from the three hydraulic fittings [3].

(c) Connect the hydraulic line [4], the hydraulic line [9], and the hydraulic line [10] to the three hydraulic fittings [3].

(d) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).

(e) Safety each B-nut with a new MS20995NC32 lockwire, G50347. Do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-44-400-801.

(f) Remove the identification tags or labels from the hydraulic lines and from their related hydraulic fittings.

SUBTASK 27-81-31-420-007

(5) Attach the hydraulic line [4] to the bracket [8]. Do these steps:

(a) Put the hydraulic line [4] in its position on the bracket [8].

(b) Put the two clamps [5] in their positions on the hydraulic line [4] and the bracket [8].

(c) Install the four screws [6] and the four nuts [7].

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SUBTASK 27-81-31-860-006

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-31-860-007

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Move the flap control lever to the 1-unit position to extend the actuator [11] or the actuator [12].

SUBTASK 27-81-31-860-008

(8) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-31-420-008

(9) Connect the leading edge flap actuator to the leading edge flap. Do the steps for the applicable actuator:

(a) If you are installing the outboard leading edge flap actuator, then do these steps (View E, Figure 401):

1) Apply the grease, D00633, on the mating surfaces of the bolt [18].
2) Put the actuator [11] and the washer [22] in their positions on the fitting of the leading edge flap [1].
a) You can bond the washer [22] to the leading edge flap [1] with the sealant, A00247, for easier installation.
3) Install the bushing [21], the washer [20], and the bolt [18].
4) Install the washer [23] and the nut [24].
a) Tighten the nut [24] from 660 in-lb (75 N·m) to 980 in-lb (111 N·m).
<1> Align a slot that is on the nut [24] with the cotter pin hole that is in the bolt [18].
5) Install a new cotter pin [19] in the bolt [18] hole.

(b) If you are installing the inboard leading edge flap actuator, then do these steps (View F, Figure 401):

1) Apply the grease, D00633, on the mating surfaces of the bolt [25].
2) Put the actuator [12] and the washer [22] in their positions on the fitting of the leading edge flap [2].
a) You can bond the washer [22] to the leading edge flap [2] with the sealant, A00247, for easier installation.
3) Install the bushing [28], the washer [27], and the bolt [25].
4) Install the washer [29] and the nut [30].

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a) Tighten the nut [30] from 660 in-lb (75 N·m) to 980 in-lb (111 N·m).

<1> Align a slot that is on the nut [30] with the cotter pin hole that is in the bolt [25].

5) Install a new cotter pin [26] in the bolt [25] hole.

SUBTASK 27-81-31-080-001

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(10) Carefully remove each lockout set, SPL-1734, that is installed. Do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 27-81-31-790-001

(11) Do a check for hydraulic leaks. Do these steps:

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION CAREFULLY MONITOR THE FLAP-NOSE CLEARANCE AND THE ACTUATOR CLEARANCES DURING THE FLAP EXTENSION AND RETRACTION. IF THERE IS NOT SUFFICIENT CLEARANCE, YOU CAN CAUSE DAMAGE TO THE STRUCTURE.

(b) Operate the leading edge flaps for a minimum of two cycles to bleed air from the system.

1) Leave the flaps in the extended position.

(c) Make sure that there are no hydraulic leaks from the actuator [11] or the actuator [12].

(d) Make sure that there are no hydraulic leaks from the hydraulic lines.

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Move the flap control lever to the UP position to retract the leading edge flaps.

(f) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

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SUBTASK 27-81-31-720-001

(12) Do this task: Leading Edge Flap and Slat Timing Test in Primary Mode, TASK 27-81-00-700-802.

SUBTASK 27-81-31-710-002

(13) Do this task: Leading Edge Flap and Slat System Standby Actuation Operational Test, TASK 27-81-00-710-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-31-860-009

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

SUBTASK 27-81-31-440-001

(2) Activate the thrust reversers. Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

——— END OF TASK ———

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LEADING EDGE FLAP ACTUATOR - INSPECTION/CHECK

1. General

A. This procedure contains the task to do a check of the leading edge flap actuator.

TASK 27-81-31-200-801

2. Leading Edge Flap Actuator Inspection

(Figure 601)

A. General

(1) This task gives the wear limits and the repair data for the leading edge flap actuator inspection.

B. References

Reference	Title
27-81-31-000-801	Leading Edge Flap Actuator Removal (P/B 401)
27-81-31-400-801	Leading Edge Flap Actuator Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

D. Location Zones

Zone	Area
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

E. Procedure

SUBTASK 27-81-31-020-004

(1) Do this task: Leading Edge Flap Actuator Removal, TASK 27-81-31-000-801.

SUBTASK 27-81-31-220-002

(2) Examine the parts of the leading edge flap actuator for worn areas:

(a) Remove the parts that you want to do a check.

(b) Measure the parts with a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096, or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097.

(c) Compare the dimensions that you measured with the permitted wear dimensions that are shown in Table 601.

(d) If the parts are out of tolerance, replace or repair the parts if it is necessary.

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Table 601/27-81-31-993-801

NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#1 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6252 in. (15.880 mm)	0.6258 in. (15.895 mm)	0.0033 in. (0.084 mm)
#1 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#2 BUSHING	I.D.	0.8745 in. (22.212 mm)	0.8753 in. (22.233 mm)	0.8757 in. (22.243 mm)	0.0027 in. (0.069 mm)
#2 BUSHING	O.D.	0.8735 in. (22.187 mm)	0.8740 in. (22.200 mm)	0.8730 in. (22.174 mm)	
#3 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#3 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#4 BEARING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#4 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#5 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#5 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#6 BEARING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#6 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#7 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6252 in. (15.880 mm)	0.6258 in. (15.895 mm)	0.0033 in. (0.084 mm)
#7 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 601/27-81-31-993-801 (Continued)

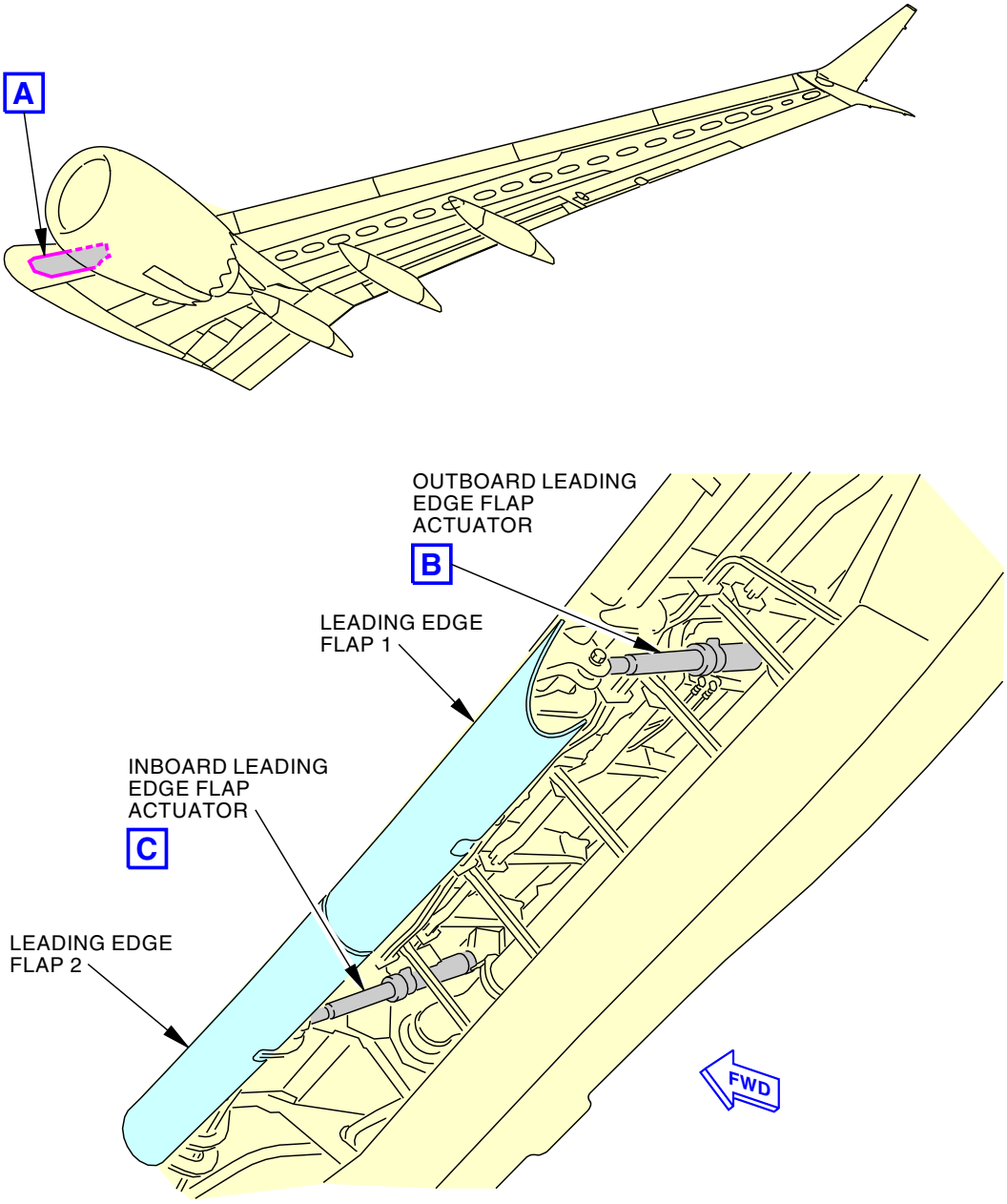
NAME OF THE PARTS THAT ARE IN CONTACT	DIM.	DIAMETER DESIGN LIMITS		WEAR LIMITS	
		MINIMUM inches/mm	MAXIMUM inches/mm	PERMITTED MAXIMUM I.D./ MINIMUM O.D. OF WORN PART	MAXIMUM SERVICE DIAMETRIC CLEARANCE
#8 BUSHING	I.D.	0.8745 in. (22.212 mm)	0.8753 in. (22.233 mm)	0.8757 in. (22.243 mm)	0.0027 in. (0.069 mm)
#8 BUSHING	O.D.	0.8735 in. (22.187 mm)	0.8740 in. (22.200 mm)	0.8730 in. (22.174 mm)	
#9 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6252 in. (15.880 mm)	0.6258 in. (15.895 mm)	0.0033 in. (0.084 mm)
#9 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#10 BUSHING	I.D.	0.8745 in. (22.212 mm)	0.8753 in. (22.233 mm)	0.8757 in. (22.243 mm)	0.0027 in. (0.069 mm)
#10 BUSHING	O.D.	0.8735 in. (22.187 mm)	0.8740 in. (22.200 mm)	0.8730 in. (22.174 mm)	
#11 BUSHING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#11 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	
#12 BEARING	I.D.	0.6245 in. (15.862 mm)	0.6250 in. (15.875 mm)	0.6255 in. (15.888 mm)	0.0030 in. (0.076 mm)
#12 BOLT	O.D.	0.6230 in. (15.824 mm)	0.6240 in. (15.850 mm)	0.6225 in. (15.811 mm)	

SUBTASK 27-81-31-420-004

(3) Do this task: Leading Edge Flap Actuator Installation, TASK 27-81-31-400-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



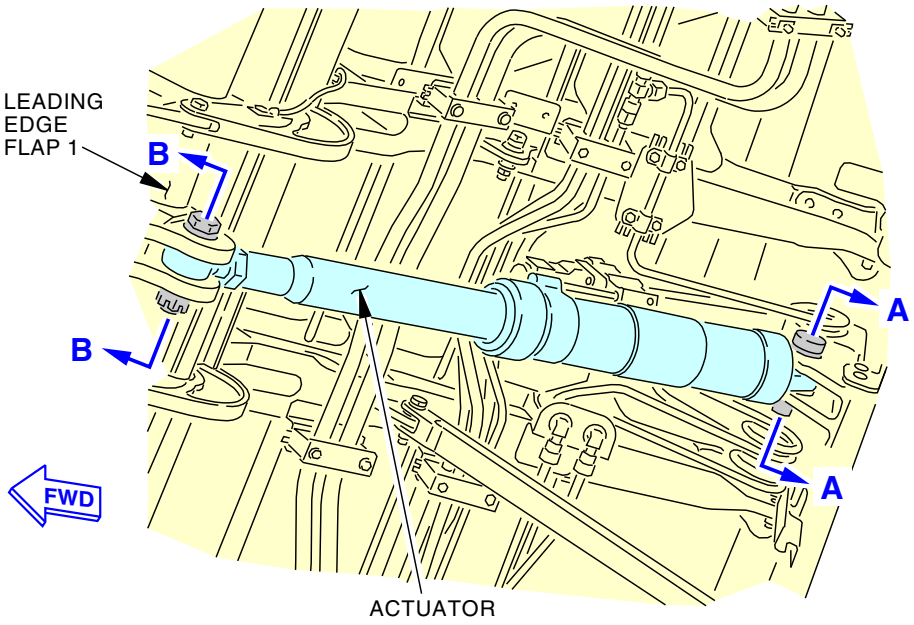
LEFT LEADING EDGE FLAPS 1 AND 2
(RIGHT LEADING EDGE FLAPS 3 AND 4 ARE OPPOSITE)

A

2413366 S00061532412_V1

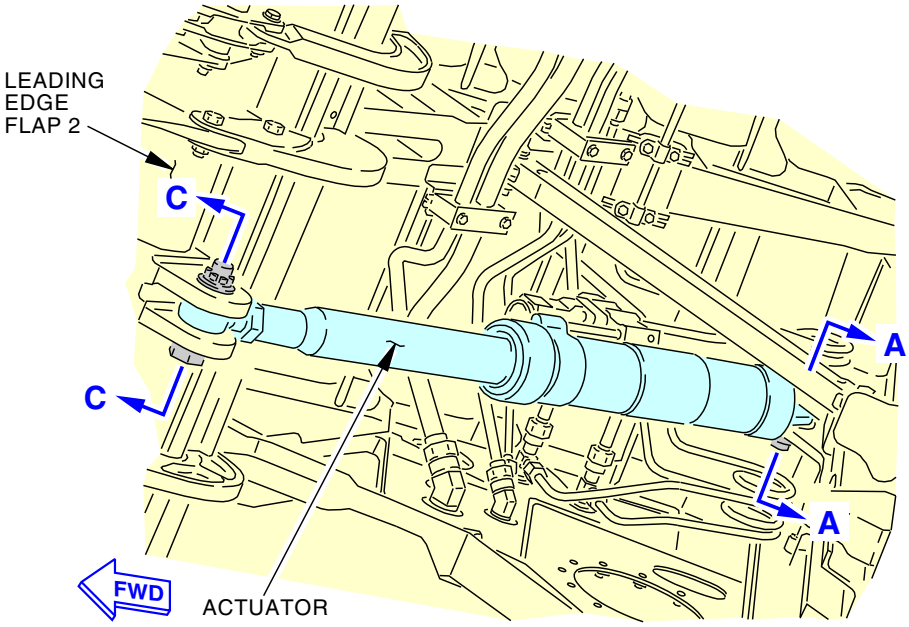
Leading Edge Flap Actuator Wear Limits
Figure 601/27-81-31-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



OUTBOARD LEADING EDGE FLAP ACTUATOR

B



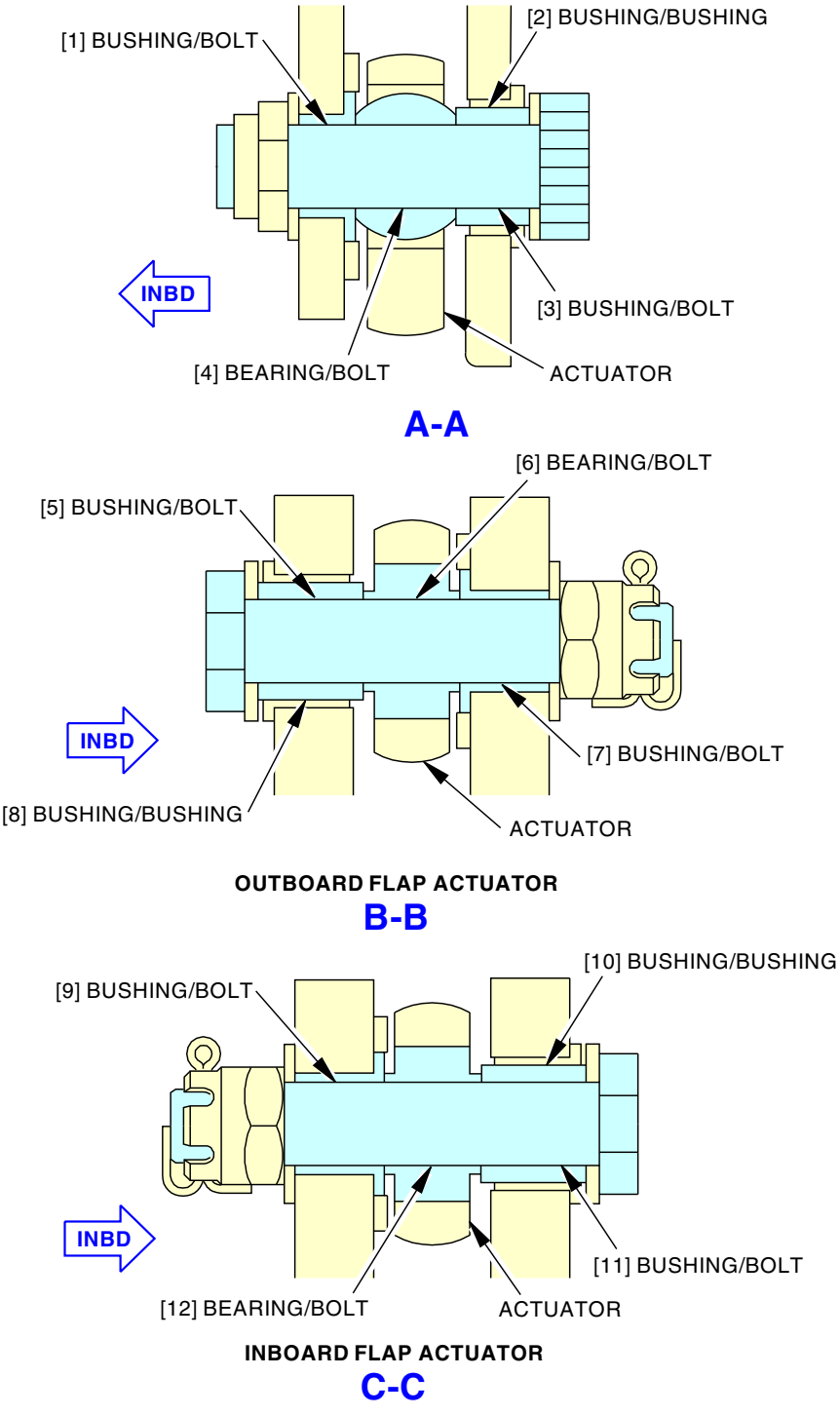
INBOARD LEADING EDGE FLAP ACTUATOR

C

2413367 S00061532413_V2

Leading Edge Flap Actuator Wear Limits
Figure 601/27-81-31-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Leading Edge Flap Actuator Wear Limits
Figure 601/27-81-31-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE SLAT ACTUATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the actuator of the leading edge slat.

(2) An installation of the actuator of the leading edge slat.

TASK 27-81-41-000-801

2. Leading Edge Slat Actuator Removal

(Figure 401)

A. References

Reference	Title
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425

E. Prepare for the Removal

SUBTASK 27-81-41-040-001

WARNING DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the thrust reversers are activated, then deactivate them. Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

SUBTASK 27-81-41-860-013

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure that the inboard fan duct cowl and the inboard and outboard thrust reversers are closed in the stowed position or are removed.

SUBTASK 27-81-41-860-014

CAUTION MAKE SURE THAT THE TRAILING EDGE FLAPS ARE FULLY RETRACTED. IF THEY ARE NOT FULLY RETRACTED, THE ACTUATOR WILL EXTEND. THE ACTUATOR CAN CAUSE DAMAGE TO THE WING RIB.

(3) If the trailing edge flaps are not fully retracted, then retract them. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-41-860-001

(4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

SUBTASK 27-81-41-860-002

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-41-860-003

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(6) Move the flap control lever to the 30-unit position to move the leading edge slats to the full extend position.

SUBTASK 27-81-41-040-004

(7) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-41-480-001

WARNING

MAKE SURE TO INSTALL THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(8) Install the lockout set, SPL-1734, on the leading edge slat actuators that you will not remove. Do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 27-81-41-860-018

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-41-860-004

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(10) Move the flap control lever to the 1-unit position to retract the applicable leading edge slats to the intermediate position.

NOTE: A slat actuator is preloaded against a fully extended slat. You will remove a slat actuator when it is not preloaded.

SUBTASK 27-81-41-040-002

(11) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-41-010-002

(12) Open the applicable access panels that are adjacent to the actuator (TASK 57-41-02-000-801).

(a) For the left wing, open these access panels:

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470

(b) For the right wing, open these access panels:

Number	Name/Location
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425

SUBTASK 27-81-41-200-001

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(13) Keep the housing (can) assemblies of the slat main tracks clean and free of unwanted objects (FOD) at all times.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Leading Edge Slat Actuator Removal

SUBTASK 27-81-41-020-001

(1) Remove the slat actuator door [3] from the slat actuator [2]. Do these steps (Views B and D, Figure 401):

(a) Do this step for slat 1 or slat 8:

1) Remove the two bolts [14], the two washers [15], the two washers [16], and the two nuts [17] that attach the slat actuator door [3] to the slat actuator [2].

(b) Do this step for slat 2, 3, 4, 5, 6, or 7:

1) Remove the two bolts [14], the two washers [15], the two washers [16], and the two nuts [17] that attach the slat actuator door [3] and the clamp [52] to the slat actuator [2].

(c) Remove the two bolts [4], the four washers [5], and the two nuts [6] that attach the slat actuator door [3] and the bracket [32] to the slat actuator [2].

(d) Remove the slat actuator door [3].

(e) Install the two bolts [4], the four washers [5], and two nuts [6] to temporarily attach the bracket [32] to the slat actuator [2].

SUBTASK 27-81-41-020-002

(2) Remove the two dropout links [7]. Do these steps (View B, Figure 401):

(a) Remove the four cotter pins [13].

1) Discard the four cotter pins [13].

(b) Remove the four nuts [12] and the four washers [11].

(c) Remove the four bolts [8], the four washers [9], and the four bushings [10].

(d) Remove the two dropout links [7].

SUBTASK 27-81-41-020-003

(3) Disconnect the slat actuator [2] from the leading edge slat [1]. Do these steps (View C, Figure 401):

(a) Remove the bolt retainer [23] from the leading edge slat [1]. Do these steps:

1) Remove the two bolts [21] and the two washers [22].

2) Remove the bolt retainer [23] from the leading edge slat [1].

WARNING MAKE SURE YOU HOLD THE LEADING EDGE SLAT IN ITS POSITION. THE LEADING EDGE SLAT CAN FALL TO THE FULL EXTEND POSITION. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(b) Remove the slat actuator [2] from the leading edge slat [1]. Hold the leading edge slat [1] while you do these steps:

1) Remove the nut [19] and the washer [20].

2) Remove the bolt [25], the washer [24], and the bushing [18].

3) Carefully let the leading edge slat [1] move down to the 30 (full extend) position while you hold the slat actuator [2].

SUBTASK 27-81-41-980-002

(4) Let the slat actuator [2] hang from the support fitting [46].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-41-020-004

(5) Remove the slat actuator [2]. Do these steps (View D, Figure 401):

(a) Attach identification tags or labels to the hydraulic lines and to their related ports that are on the swivels [31] for correct connections during the installation procedure.

(b) Do this step for slat 1 or slat 8:

1) Disconnect the hydraulic line [29], the hydraulic line [30], the hydraulic line [40], and the hydraulic line [41] from the four swivels [31].

NOTE: The hydraulic lines, the bracket [32], and the clamps are removed from the airplane with the slat actuator [2].

(c) Do this step for slat 2, 3, 4, 5, 6, or 7:

1) Disconnect the hydraulic line [53], the hydraulic line [54], the hydraulic line [40], and the hydraulic line [41] from the four swivels [31].

NOTE: The hydraulic lines, the bracket [32], and the clamps are removed from the airplane with the slat actuator [2].

(d) Install caps on the hydraulic ports that are on the four swivels [31].

(e) Install plugs in the open ends of the hydraulic lines.

(f) Remove the nut [47] and the washer [48] from the bolt [44].

1) Discard the nut [47].

(g) Hold the slat actuator [2] while you remove the bolt [44], the washer [45], and the bushing [43].

(h) Remove the slat actuator [2] from the airplane.

SUBTASK 27-81-41-020-005

(6) If it is necessary, remove the hydraulic lines and the bracket [32] from the slat actuator [2]. Do these steps:

(a) Attach identification tags or labels to the hydraulic lines and to their related ports that are on the slat actuator [2] for correct connections during the installation procedure.

(b) Do this step for slat 1 or slat 8:

1) Disconnect the hydraulic line [29], the hydraulic line [30], the hydraulic line [40], and the hydraulic line [41] from the slat actuator [2].

(c) Do this step for slat 2, 3, 4, 5, 6, or 7:

1) Disconnect the hydraulic line [53], the hydraulic line [54], the hydraulic line [40], and the hydraulic line [41] from the slat actuator [2].

(d) Install caps on the hydraulic ports that are on the slat actuator [2].

(e) Install plugs in the open ends of the hydraulic lines.

(f) Remove the nut [28], the bolt [27], and the two clamps [26] from the hydraulic lines.

(g) Do this step for slat 2, 3, 4, 5, 6, or 7:

1) Remove the clamp [52] from the hydraulic line.

(h) Remove the eight nuts [39], the eight washers [38], the eight bolts [37], and the four clamps [36] that attach the hydraulic lines to the bracket [32].

(i) Remove the two nuts [6], the four washers [5], and the two bolts [4] that attach the bracket [32] to the slat actuator [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

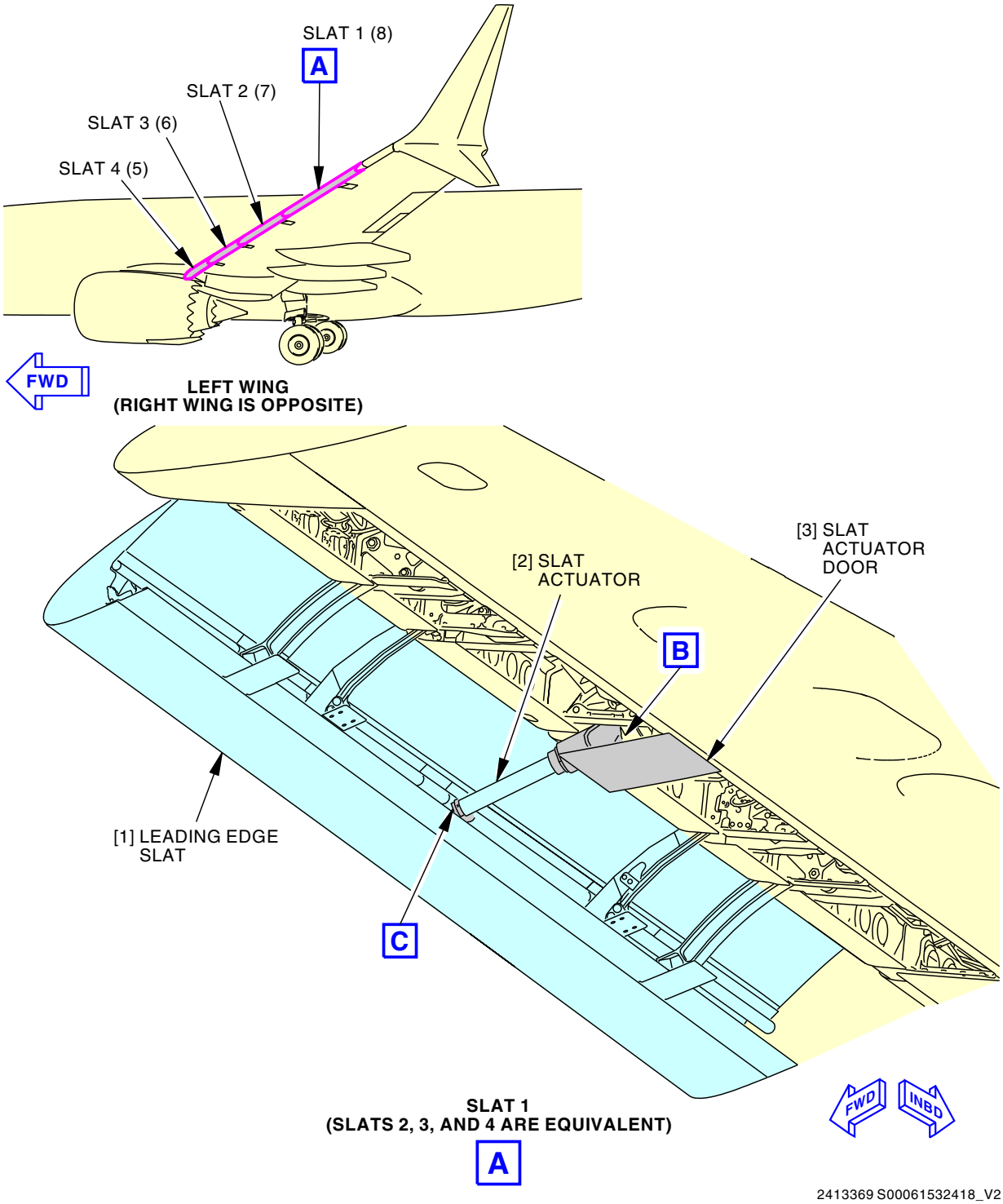
SUBTASK 27-81-41-200-002

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(7) Keep the housing (can) assemblies of the slat main tracks clean and free of unwanted objects (FOD) at all times.

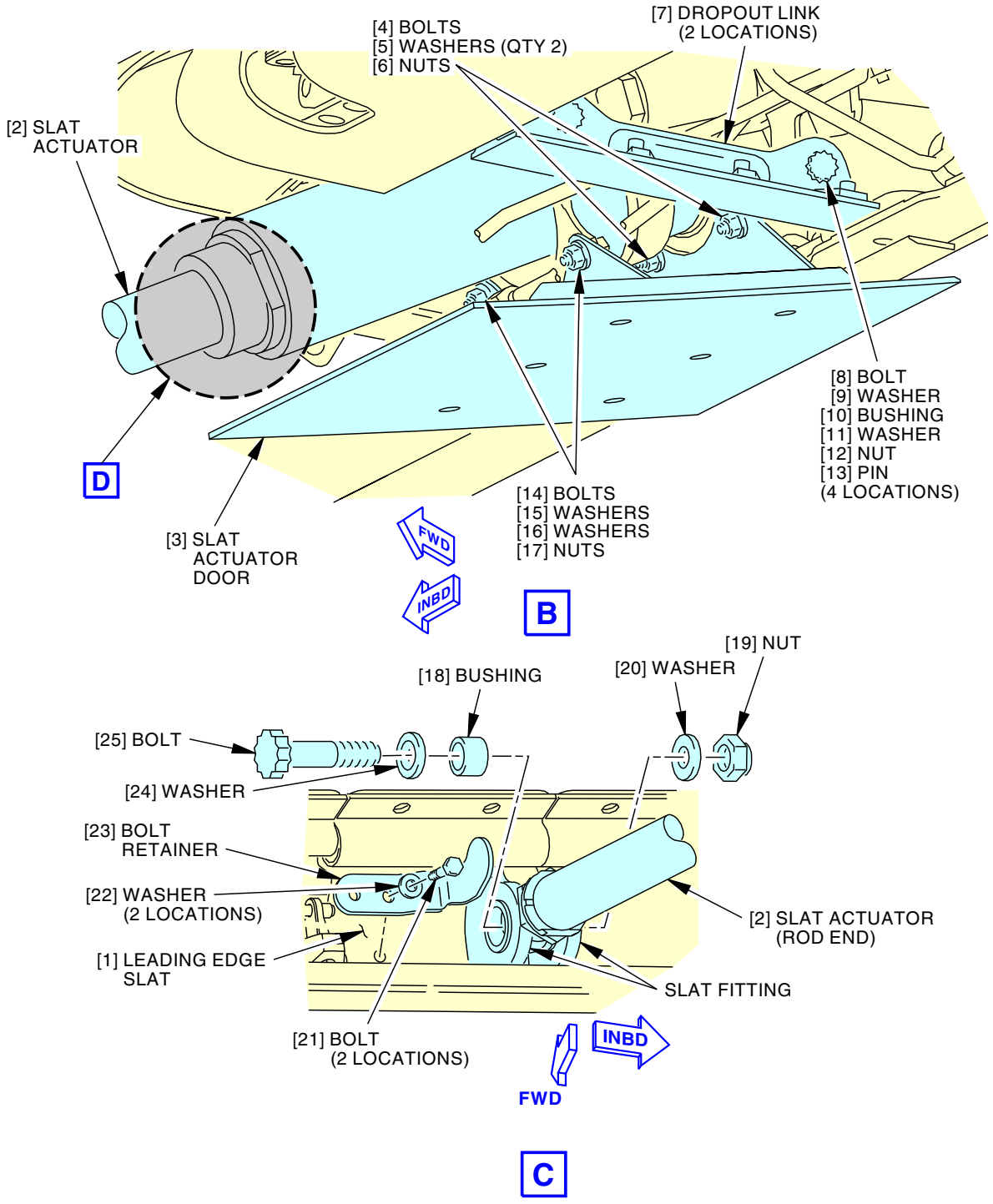
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



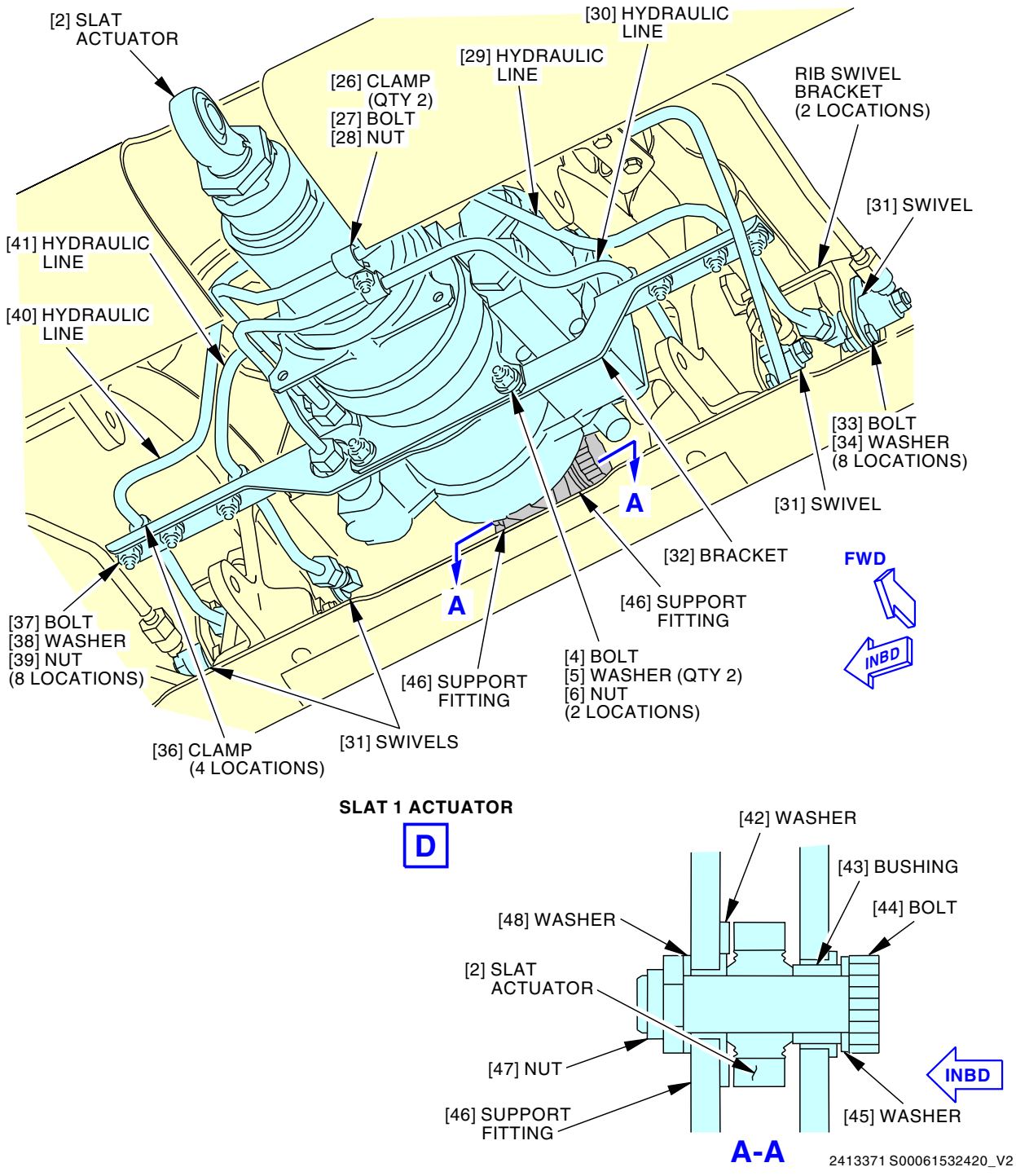
Leading Edge Slat Actuator Installation
Figure 401/27-81-41-990-801 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



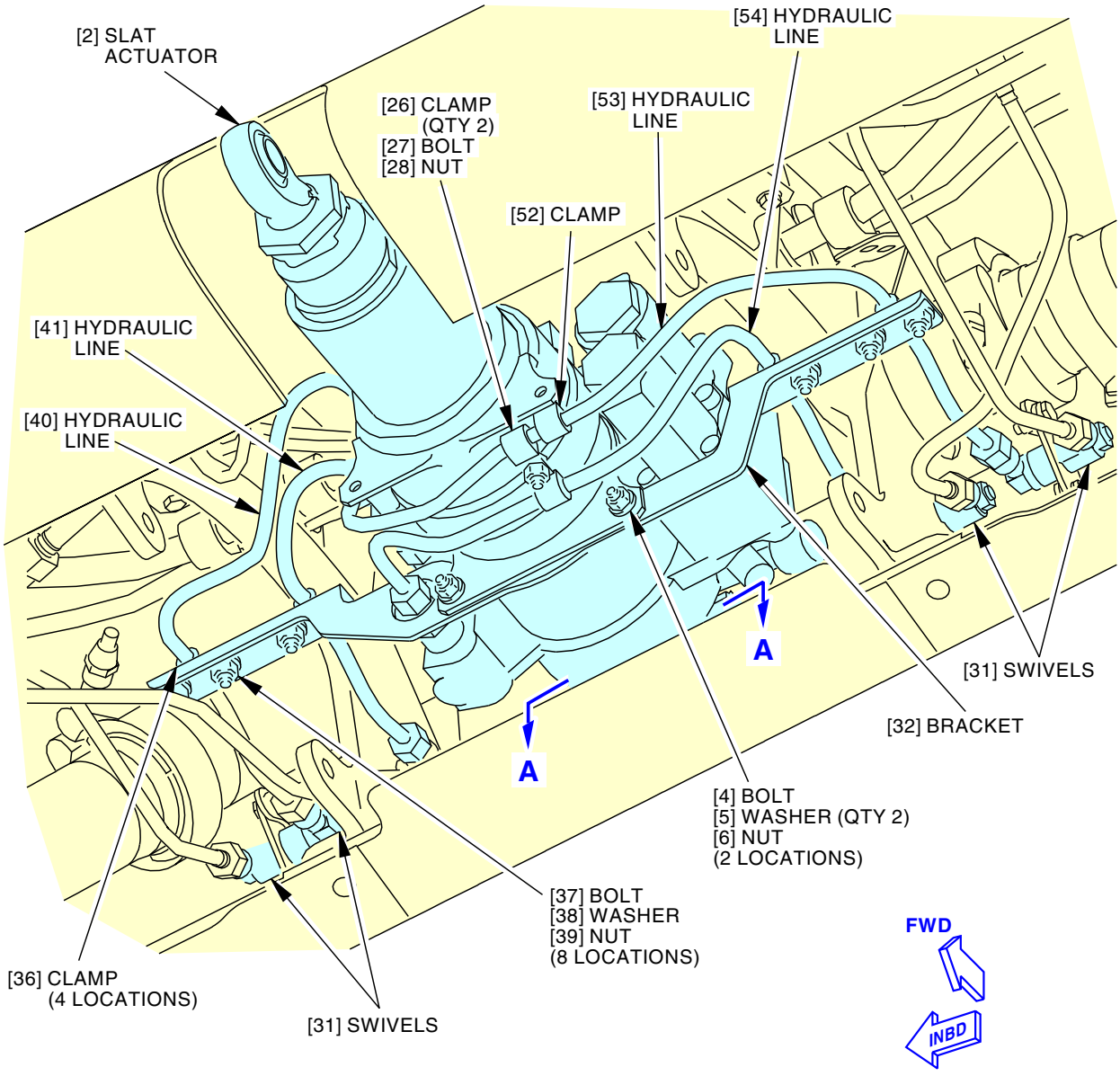
Leading Edge Slat Actuator Installation
Figure 401/27-81-41-990-801 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Actuator Installation
Figure 401/27-81-41-990-801 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SLAT 2 ACTUATOR
(SLAT 3 AND 4 ACTUATORS ARE EQUIVALENT)

D

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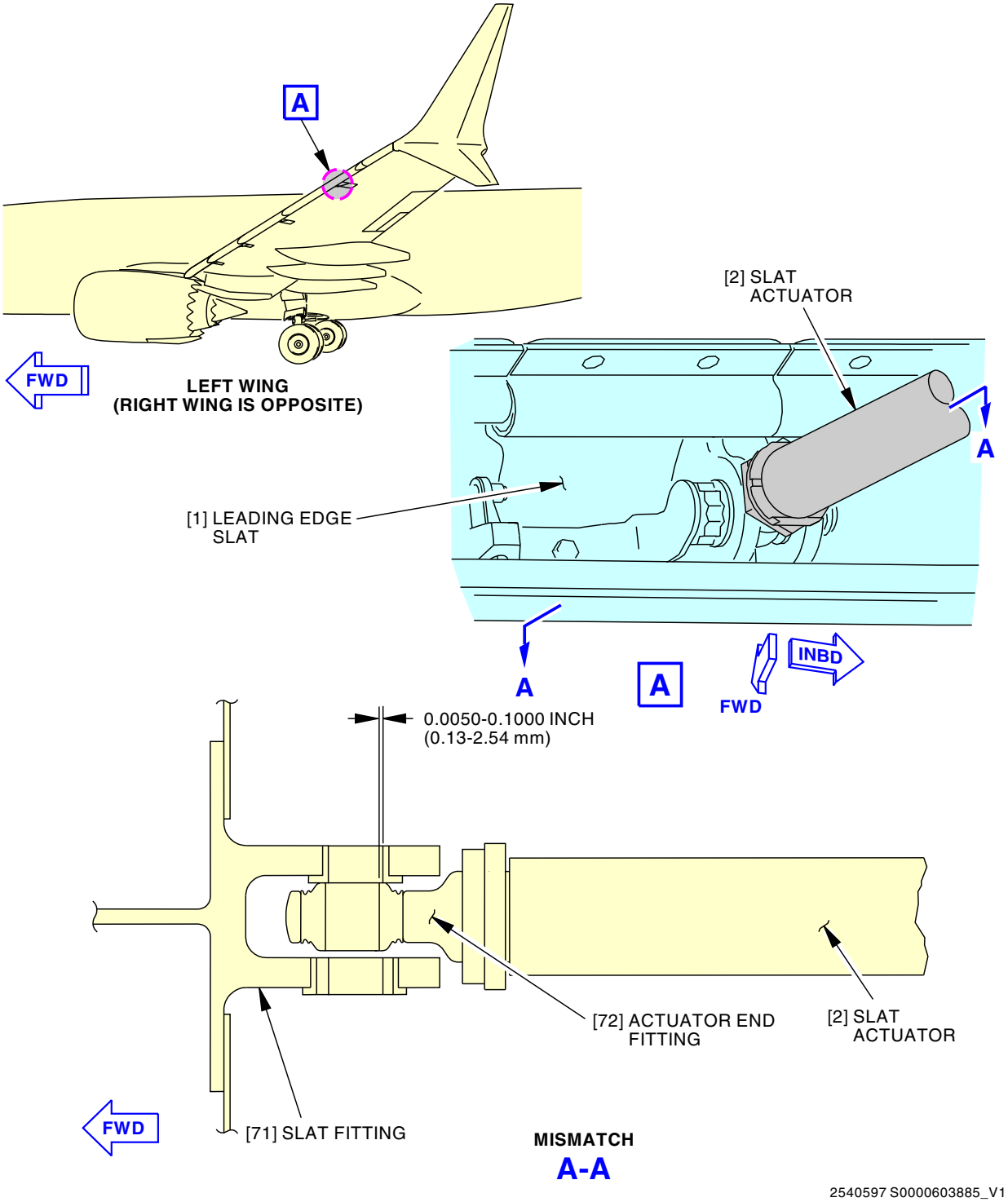
Leading Edge Slat Actuator Installation
Figure 401/27-81-41-990-801 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Actuator Preload Adjustment
Figure 402/27-81-41-990-804

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-41-400-801

3. Leading Edge Slat Actuator Installation

(Figure 401, Figure 402)

A. References

Reference	Title
20-50-11 P/B 201	STANDARD TORQUE VALUES - MAINTENANCE PRACTICES
27-51-00-860-804	Retract the Trailing Edge Flaps (P/B 201)
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-700-802	Leading Edge Flap and Slat Timing Test in Primary Mode (P/B 501)
27-81-00-710-801	Leading Edge Flap and Slat System Standby Actuation Operational Test (P/B 501)
27-81-00-820-803	Leading Edge Slats Adjustment (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
C00528	Compound - Corrosion Preventive, Petroleum Hot Application (Soft Film)	MIL-C-11796 Class III

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Slat actuator	27-81-41-10-095	SIA ALL
		27-81-41-10-100	SIA ALL
47	Nut	27-81-41-10-085	SIA ALL

E. Location Zones

Zone	Area
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

F. Access Panels

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425

G. Prepare for the Installation

SUBTASK 27-81-41-040-003

WARNING DO THE DEACTIVATION PROCEDURE TO PREVENT THE OPERATION OF THE THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the thrust reversers are activated, then deactivate them. Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

SUBTASK 27-81-41-860-015

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Make sure that the inboard fan duct cowl and the inboard and outboard thrust reversers are closed in the stowed position or are removed.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-41-860-016

CAUTION MAKE SURE THAT THE TRAILING EDGE FLAPS ARE FULLY RETRACTED. IF THEY ARE NOT FULLY RETRACTED, THE ACTUATOR WILL EXTEND. THE ACTUATOR CAN CAUSE DAMAGE TO THE WING RIB.

(3) If the trailing edge flaps are not fully retracted, then retract them. Do this task: Retract the Trailing Edge Flaps, TASK 27-51-00-860-804.

H. Leading Edge Slat Actuator Installation

SUBTASK 27-81-41-200-003

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(1) Keep the housing (can) assemblies of the slat main tracks clean and free of unwanted objects (FOD) at all times.

SUBTASK 27-81-41-980-004

(2) Extend the slat actuator [2] that you will install to the same length as the removed slat actuator [2].

NOTE: This step will help to put the actuator in the correct position.

SUBTASK 27-81-41-420-001

(3) If the hydraulic lines and the bracket [32] are not installed on the slat actuator [2], then install them. Do these steps (View D, Figure 401):

(a) Install the bracket [32] on the slat actuator [2]. Do these steps:

1) Put the bracket [32] in its position on the slat actuator [2].
2) Install the two bolts [4], the four washers [5], and the two nuts [6].

(b) Attach the hydraulic lines to the bracket [32]. Do these steps:

1) Put the hydraulic lines in their positions on the bracket [32].
2) Put the four clamps [36] in their positions on the hydraulic lines.
3) Install the eight bolts [37], the eight washers [38], and the eight nuts [39].

(c) Remove the plug from the end of each hydraulic line that will attach to the slat actuator [2].

(d) Remove the caps from the hydraulic ports that are on the slat actuator [2].

(e) Do these steps for slat 1 or slat 8:

1) Connect the hydraulic line [29], the hydraulic line [30], the hydraulic line [40], and the hydraulic line [41] to the hydraulic ports that are on the slat actuator [2].
2) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).
3) Put the two clamps [26] on the hydraulic line [29] and the hydraulic line [30].
4) Install the bolt [27] and the nut [28].

(f) Do these steps for slat 2, 3, 4, 5, 6, or 7:

1) Connect the hydraulic line [53], the hydraulic line [54], the hydraulic line [40], and the hydraulic line [41] to the hydraulic ports that are on the slat actuator [2].
2) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).

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3) Put the two clamps [26] on the hydraulic line [53] and the hydraulic line [54].

4) Install the bolt [27] and the nut [28].

5) Put the clamp [52] on the hydraulic line [53].

(g) Remove the identification tags or labels from the hydraulic lines and from their related hydraulic ports that are on the slat actuator [2].

SUBTASK 27-81-41-980-003

(4) Make sure that the leading edge slat [1] is in the 30-unit (full extend) position.

SUBTASK 27-81-41-420-002

(5) Connect the aft end of the slat actuator [2] to the support fitting [46]. Do these steps (View D, Figure 401):

(a) If the washer [42] is not bonded to the support fitting [46], then do these steps:

1) Make sure that the mating surface of the support fitting [46] is clean.

2) Make sure that the mating surface of the washer [42] is clean.

3) Apply the sealant, A00247, to the mating surface of the washer [42] and to the mating surface of the support fitting [46].

4) Put the washer [42] in its position on the support fitting [46].

(b) Connect the slat actuator [2] to the support fitting [46]. Do these steps:

1) Put the slat actuator [2] in its position on the support fitting [46].

2) Install the bushing [43], the washer [45], and the bolt [44].

a) Make sure that the bushing [43] and the head of the bolt [44] are on the outboard side of the slat actuator [2].

3) Install the washer [48] and the new nut [47].

a) Tighten the nut [47] from 660 in-lb (75 N·m) to 980 in-lb (111 N·m).

<1> Optional method: Tighten the bolt head from 882 in-lb (100 N·m) to 1078 in-lb (122 N·m).

SUBTASK 27-81-41-420-007

(6) If the installation of a repaired/new swivel [31] is necessary, then do these steps for each applicable swivel [31] (View D, Figure 401):

CAUTION

MAKE SURE THAT YOU POSITION THE SWIVEL CORRECTLY TO THE STRUCTURE. MAKE SURE THAT THE MOVEMENT SIDE IS CONNECTED TO THE HYDRAULIC TUBES THAT MOVE WITH THE ACTUATOR. AN INCORRECT REVERSE INSTALLATION OF THE SWIVEL CAN CAUSE TUBE FRACTURE AND HYDRAULIC SYSTEM FLUID LOSS. THIS CAN CAUSE DAMAGE.

(a) Install the repaired/new swivel [31] on the rib swivel bracket. Do these steps:

1) Put the swivel [31] in its position on the rib swivel bracket.

2) Loosely install the two washers [34] and the two bolts [33].

- Do not fully tighten the two bolts [33] at this time.
- If you fully tighten the two bolts [33] at this time, then you can cause damage to the hydraulic lines.
- You must loosely install the two bolts [33] to let the swivel [31] align correctly during the movement of the slats.

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- You will tighten the two bolts [33] with the slats in the fully retracted position at the end of this slat actuator installation task.

SUBTASK 27-81-41-420-008

CAUTION

MAKE SURE THAT YOU SAFELY CONNECT THE HYDRAULIC LINES TO THE CORRECT PORTS AND FITTINGS. IF YOU CONNECT THE HYDRAULIC LINES TO THE INCORRECT PORTS AND FITTINGS, DAMAGE CAN OCCUR. IF YOU DO NOT CONNECT ALL OF THE HYDRAULIC LINES, THEN DAMAGE TO THE ACTUATOR CAN OCCUR.

(7) Connect the hydraulic lines to the swivels [31]. Do these steps:

(a) Remove the caps from the four swivels [31].

(b) Remove the plugs from the hydraulic lines.

(c) Do these steps for slat 1 or slat 8:

1) Connect the hydraulic line [29], the hydraulic line [30], the hydraulic line [40], and the hydraulic line [41] to their related hydraulic ports that are on the four swivels [31].

2) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).

(d) Do these steps for slat 2, 3, 4, 5, 6, or 7:

1) Connect the hydraulic line [53], the hydraulic line [54], the hydraulic line [40], and the hydraulic line [41] to their related hydraulic ports that are on the four swivels [31].

2) Tighten the B-nuts that are on the hydraulic lines to 140 ±7 in-lb (16 ±1 N·m).

(e) Remove the identification tags or labels from the hydraulic lines and from their related hydraulic ports that are on the four swivels [31].

SUBTASK 27-81-41-860-006

(8) Use hydraulic power to extend the slat actuator [2] to the full extend position. Do these steps:

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Move the flap control lever to the 30-unit position to extend the slat actuator [2] to the full extend position.

(c) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-41-820-001

(9) Make sure that the leading edge slat [1] is in the correct position. Do these steps (Figure 402):

NOTE: The slat actuator [2] must be extended farther than the leading edge slat [1]. This permits the slat actuator [2] to be preloaded against the leading edge slat [1] when it is fully extended (View A-A, Figure 402).

(a) Put the actuator end fitting [72] in its position on the slat fitting [71].

(b) Make sure that the mismatch between the actuator end fitting [72] and the slat fitting [71] is from 0.0050 in. (0.1270 mm) to 0.1000 in. (2.5400 mm).

SUBTASK 27-81-41-860-007

(10) Use hydraulic power to retract the slat actuator [2] to the 1-unit (intermediate) position. Do these steps:

NOTE: This will let you install the bolt [25].

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Move the flap control lever to the 1-unit position to retract the slat actuator [2] to the extend (intermediate) position.

(c) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-41-420-003

(11) Connect the slat actuator [2] to the leading edge slat [1]. Do these steps (View C, Figure 401):

WARNING MAKE SURE YOU HOLD THE LEADING EDGE SLAT IN ITS POSITION. THE LEADING EDGE SLAT CAN FALL TO THE FULL EXTEND POSITION. THIS CAN CAUSE INJURY TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Move the leading edge slat [1] until it aligns with the slat actuator [2].

1) Hold the leading edge slat [1] while you install the fasteners.

(b) Install the bushing [18], the washer [24], and the bolt [25].

1) Make sure that the head of the bolt [25] is on the outboard side of the slat actuator [2].

(c) Install the washer [20] and the nut [19].

1) Tighten the nut [19] from 660 in-lb (75 N·m) to 980 in-lb (111 N·m).

a) Optional method: Tighten the bolt head from 882 in-lb (100 N·m) to 1078 in-lb (122 N·m).

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(d) Install the bolt retainer [23]. Do these steps:

1) Put the bolt retainer [23] in its position.

2) Apply the compound, C00528, to the shank and threads of the two bolts [21].

3) Install the two bolts [21] and two washers [22].

(e) At the slat actuator [2] rod end, bend the lockwire tail ends parallel to the actuator rod.

1) Make sure that the lockwire tail ends do not touch the leading edge panel assembly.

NOTE: If the lockwire tail ends touch the leading edge assembly, it can cause chafing and damage to the leading edge panel.

SUBTASK 27-81-41-420-004

(12) Install the two dropout links [7]. Do these steps (View B, Figure 401):

(a) Put the two dropout links [7] in their positions.

(b) Install the four bushings [10], the four washers [9], and the four bolts [8].

(c) Install the four washers [11] and the four nuts [12].

(d) Do these steps for each nut [12] and its related bolt [8]:

1) Tighten the nut [12] to 50 in-lb (6 N·m).

2) Make sure that you align the nut [12] castellations with the bolt [8] hole.

a) If necessary, continue to tighten the nut [12] until the castellations align with the bolt [8] hole.

<1> Do not tighten the nut [12] more than 80 in-lb (9 N·m).

3) Install a new cotter pin [13] in the bolt [8] hole.

SUBTASK 27-81-41-860-017

(13) Use hydraulic power to extend the leading edge slat [1] to the full extend position. Do these steps:

WARNING

MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Move the flap control lever to the 30-unit position to extend the leading edge slat [1] to the full extend position.

(c) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-41-420-005

(14) Install the slat actuator door [3] on the slat actuator [2]. Do these steps (Views B and D, Figure 401):

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(a) Remove the two bolts [4], the four washers [5], and the two nuts [6] that attach the bracket [32] to the slat actuator [2].

1) If there are three washers installed on each bolt [4], then discard the thicker aluminum washers.

(b) Put the slat actuator door [3] and the bracket [32] in their positions on the slat actuator [2].

(c) Install the two bolts [4], the four washers [5], and the two nuts [6] that attach the slat actuator door [3] and the bracket [32] to the slat actuator [2].

(d) Do this step for slat 1 or slat 8:

1) Install the two bolts [14], the two washers [15], the two washers [16], and the two nuts [17] that attach the slat actuator door [3] to the slat actuator [2].

(e) Do this step for slat 2, 3, 4, 5, 6, or 7:

1) Install the two bolts [14], the two washers [15], the two washers [16], and the two nuts [17] that attach the slat actuator door [3] and the clamp [52] to the slat actuator [2].

SUBTASK 27-81-41-820-002

(15) Do this task: Leading Edge Slats Adjustment, TASK 27-81-00-820-803.

SUBTASK 27-81-41-080-001

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP AND SLAT ACTUATORS LOCKOUT SET. THE LEADING EDGE FLAPS AND SLATS CAN MOVE QUICKLY IF YOU DO NOT REMOVE THE LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(16) Carefully remove each lockout set, SPL-1734, that is installed. Do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 27-81-41-720-001

(17) Do this task: Leading Edge Flap and Slat Timing Test in Primary Mode, TASK 27-81-00-700-802.

SUBTASK 27-81-41-710-001

(18) Do this task: Leading Edge Flap and Slat System Standby Actuation Operational Test, TASK 27-81-00-710-801.

SUBTASK 27-81-41-790-001

(19) Do a check for hydraulic leaks. Do these steps:

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Pressurize the hydraulic system B. Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

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WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Operate the leading edge slats for a minimum of two cycles to bleed air from the system.

1) Leave the slats in the extended position.

(c) Make sure that there are no hydraulic leaks from the slat actuator [2] or the hydraulic lines.

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Move the flap control lever to the UP position to retract the leading edge slats.

(e) Remove power from the hydraulic system B. Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-41-420-006

(20) If you installed one or more repaired/new swivels [31], then do these steps:

(a) Apply the final torque to the bolts [33] that attach each applicable swivel [31] to the rib swivel brackets per the STANDARD TORQUE VALUES - MAINTENANCE PRACTICES, PAGEBLOCK 20-50-11/201 or per BAC5009.

(b) Apply the final torque to all of the B-Nuts and fittings that are on the hydraulic tubes per BAC5001.

1) Do not tighten the B-Nuts that are common to the swivels [31] until all of the hydraulic tube assemblies have been tightened.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-41-860-008

(1) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

SUBTASK 27-81-41-200-005

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(2) Keep the housing (can) assemblies of the slat main tracks clean and free of unwanted objects (FOD) at all times.

SUBTASK 27-81-41-410-003

(3) Close the applicable access panels (TASK 57-41-02-400-801).

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(a) For the left wing, close these access panels:

Number	Name/Location
521DB	Lower Leading Edge Access Panel - Slat Station 70
521EB	Lower Leading Edge Access Panel - Slat Station 91
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470

(b) For the right wing, close these access panels:

Number	Name/Location
621DB	Lower Leading Edge Access Panel - Slat Station 70
621EB	Lower Leading Edge Access Panel - Slat Station 91
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425

SUBTASK 27-81-41-440-001

(4) Activate the thrust reversers. Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

——— END OF TASK ———

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LEADING EDGE SLAT ACTUATOR - INSPECTION/CHECK

1. General

A. There is one task in this procedure. The procedure has this task:

(1) A visual check of the leading edge slat actuator lock indicator.

TASK 27-81-41-200-801

2. Leading Edge Slat Actuator Lock Indicator Visual Check

(Figure 601)

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Prepare for the Visual Check

SUBTASK 27-81-41-860-009

WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES. MAKE SURE THAT THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED. THE FLIGHT CONTROL SURFACES CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

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SUBTASK 27-81-41-860-010

WARNING MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 30-unit position.

(a) Make sure that the leading edge slats move to the full extend position.

SUBTASK 27-81-41-480-002

(3) Install the lockout set, SPL-1734 on the adjacent leading edge slats. To install it, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 27-81-41-200-006

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(4) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

E. Leading Edge Slat Actuator Lock Indicator Visual Check

SUBTASK 27-81-41-010-003

(1) Remove the slat actuator door [8] from the slat actuator [9]:

(a) Remove the bolts [4], washers [5], washers [6] and nuts [7] that attach the slat actuator door [8] to the slat actuator [9].

(b) Remove the bolts [1], washers [2] and nuts [3] that attach the slat actuator door [8] and the bracket to the slat actuator [9].

(c) Remove the slat actuator door [8].

(d) Temporarily install the bolts [1], washers [2] and nuts [3] to attach the bracket to the slat actuator [9].

SUBTASK 27-81-41-280-001

(2) Do a visual check of the leading edge slat actuator lock indicator:

(a) Move the flap control lever to the UP detent position to retract the slats.

(b) Make sure that the lock indicator hole is open.

(c) Put a 0.115-0.125 inch (2.92-3.18 millimeters) diameter steel rod in the lock indicator hole.

(d) Move the flap control lever to the 1-unit detent position.

(e) Make sure that the actuator is not locked and extends to the extend position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Remove the steel rod from the lock indicator hole.

(g) Make sure that the lock indicator hole is not open.

SUBTASK 27-81-41-410-002

(3) Install the slat actuator door [8] on the slat actuator [9].

(a) Remove the bolts [1], washers [2] and nuts [3] that attach the bracket to the slat actuator [9].

1) If there are three washers installed on the bolts [1], discard the thicker aluminum washer.

(b) Put the slat actuator door [8] in its position on the slat actuator [9].

(c) Install the bolts [1], washers [2] and nuts [3] that attach the slat actuator door [8] and the bracket to the slat actuator [9].

(d) Install the bolts [4], washers [5], washers [6] and nuts [7] that attach the slat actuator door [8] to the slat actuator [9].

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-41-080-002

(1) To remove the lockout set, SPL-1734 from the adjacent leading edge slats, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 27-81-41-200-007

WARNING DO NOT LET OBJECTS GET IN THE HOUSING ASSEMBLY OF THE SLAT TRACK. THIS WILL HELP PREVENT A PUNCTURE OF THE HOUSING ASSEMBLY THAT COULD CAUSE A FUEL LEAK. THE FUEL LEAK COULD CAUSE A FIRE AND POSSIBLE DEATH OR INJURY TO PERSONNEL.

(2) Keep clean and free of all unwanted objects (FOD), the housing (can) assemblies of the slat main tracks, at all time.

SUBTASK 27-81-41-860-011

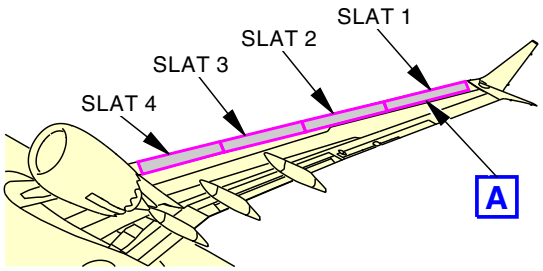
(3) Move the flap control lever to the UP detent position to retract the slats.

SUBTASK 27-81-41-860-012

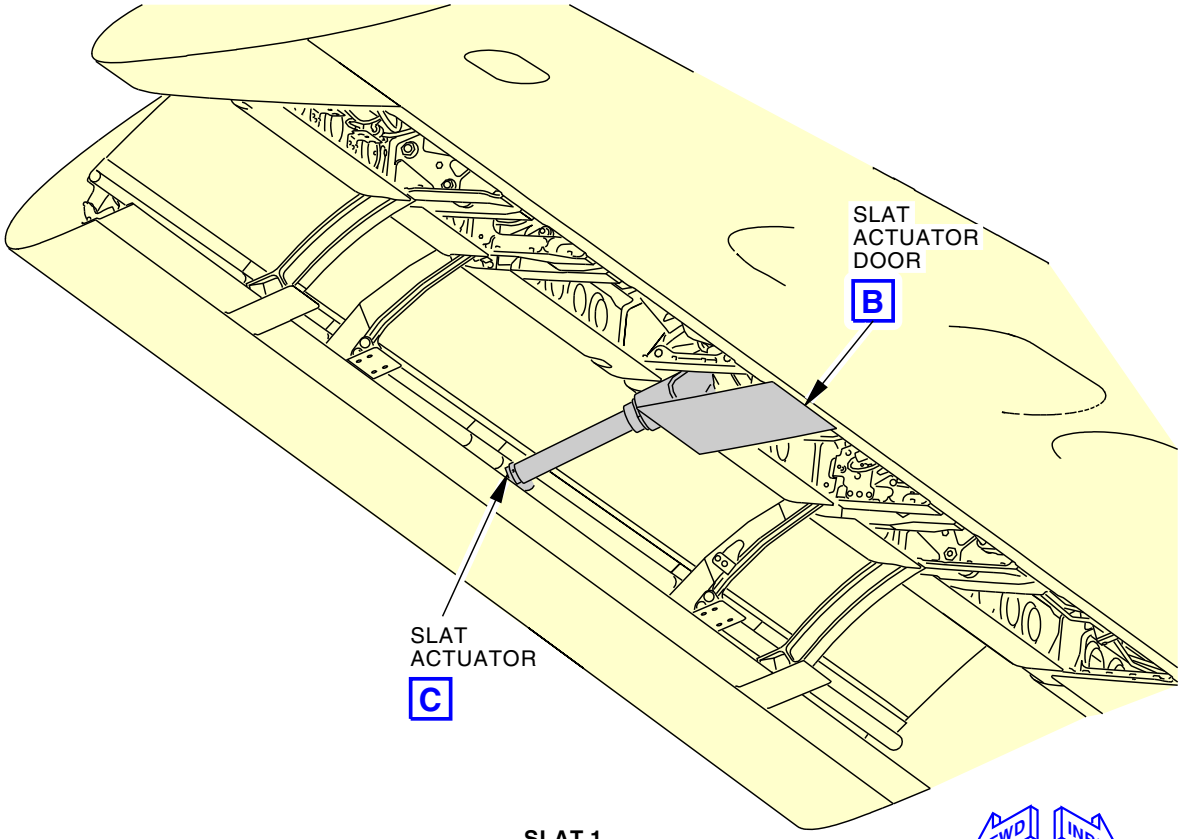
(4) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEFT WING
(RIGHT WING IS OPPOSITE)



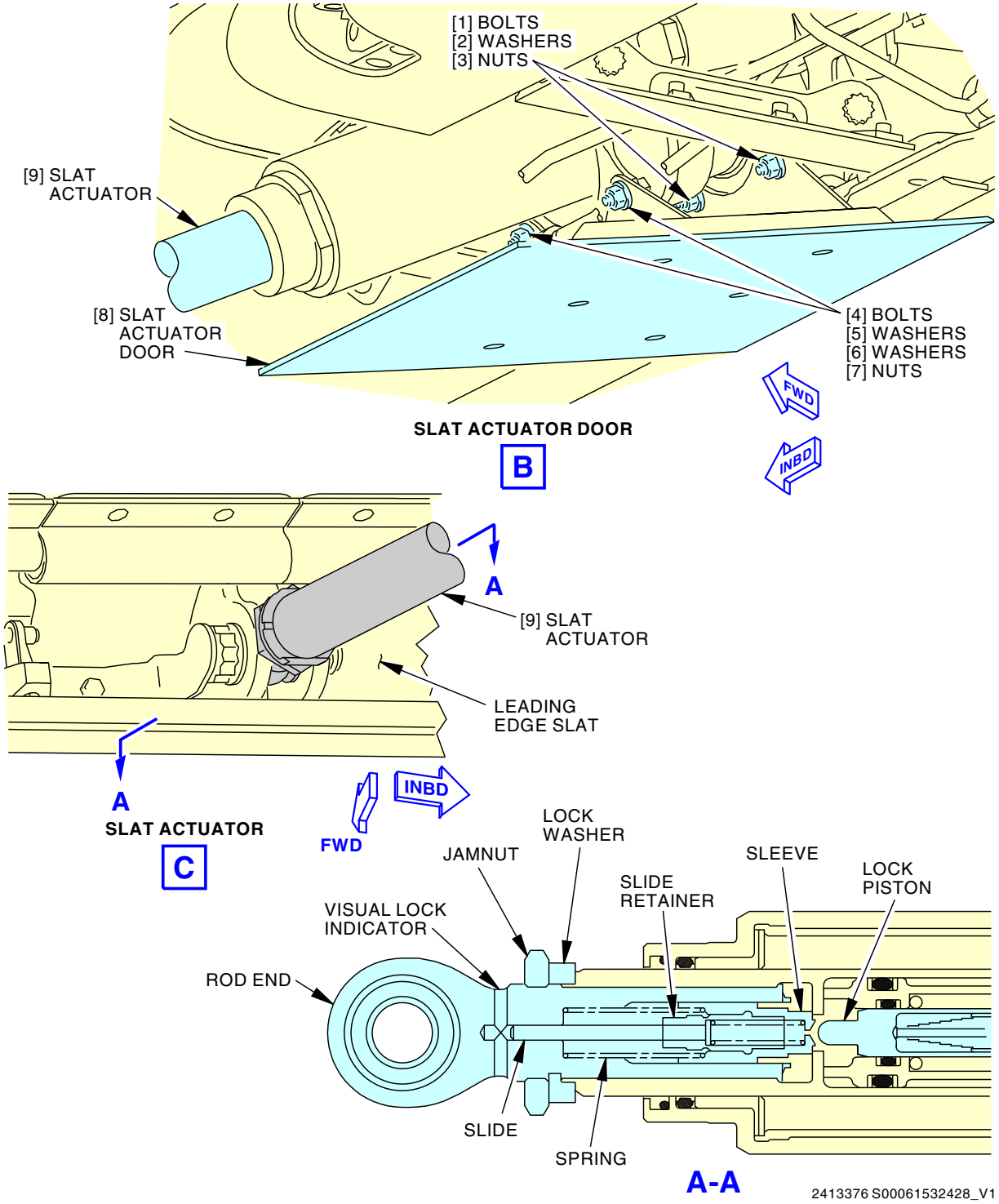
SLAT 1
(SLATS 2, 3, AND 4 ARE EQUIVALENT)

A

2413375 S00061532427_V1

Leading Edge Slat Actuator Lock Indicator Visual Inspection
Figure 601/27-81-41-990-803 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Slat Actuator Lock Indicator Visual Inspection
Figure 601/27-81-41-990-803 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE UNCOMMANDED MOTION (UCM) VALVE AND LEADING EDGE CRUISE DEPRESSURIZATION VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal

(2) LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation.

B. There are two valves installed on the airplane. The Leading Edge (LE) cruise depressurization valve and the LE UCM shutoff valve. This procedure is applicable for the two valves.

C. The leading edge flap and slat uncommanded motion (UCM) or cruise depressurization valve is referred as the valve [3] in this procedure.

D. The LE cruise depressurization valve will be operated each flight to depressurize the leading edge extend at cruise. The LE UCM shutoff valve will be operated only when there is uncommanded motion of the leading edge.

TASK 27-81-52-000-801

2. LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal

(Figure 401)

A. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

C. Location Zones

Zone	Area
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

E. Prepare for the Removal

SUBTASK 27-81-52-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-52-860-001

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-81-52-860-002

(3) If there is hydraulic power on hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-52-010-001

(4) To gain access to the UCM valve, do this step:

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

F. Leading Edge Flap and Slat Valve Removal

SUBTASK 27-81-52-020-001

(1) Remove the valve [3]:

CAUTION DO NOT LET HYDRAULIC FLUID GET ON EQUIPMENT. IF HYDRAULIC FLUID GETS ON EQUIPMENT, IMMEDIATELY CLEAN IT FROM THE EQUIPMENT. HYDRAULIC FLUID CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the valve [3] to catch hydraulic fluid.

(b) Disconnect the hydraulic line [4], hydraulic line [5], and hydraulic line [6] from the valve [3].

1) Install caps on the hydraulic lines.

2) Install plugs in the hydraulic ports of the valve [3].

(c) Disconnect the electrical connectors from the valve [3].

(d) After you disconnect the electrical connector(s), examine the connector(s) for corrosion (TASK 20-60-07-910-802).

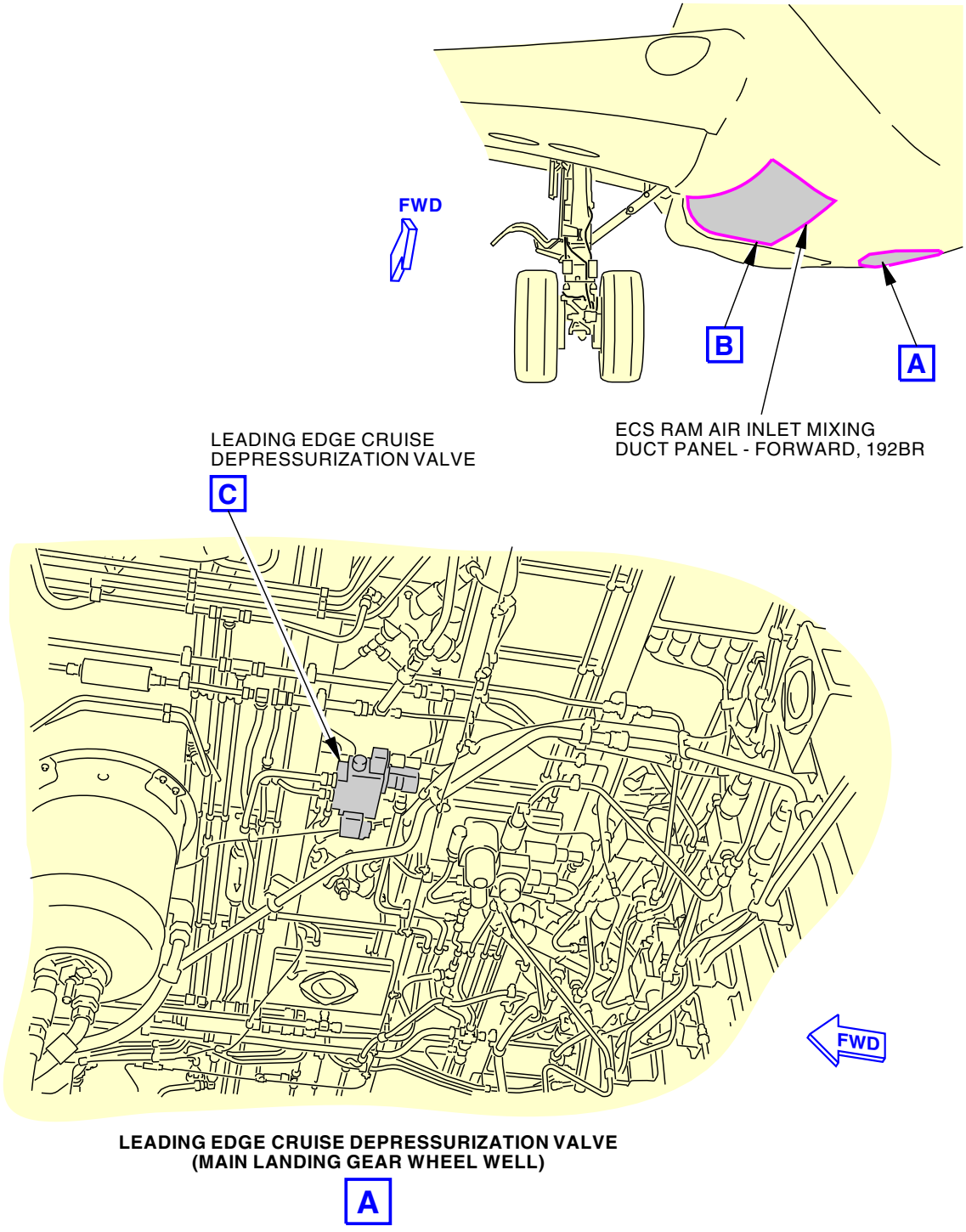
NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(e) Remove the bolts [1] and washers [2].

(f) Remove the valve [3].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



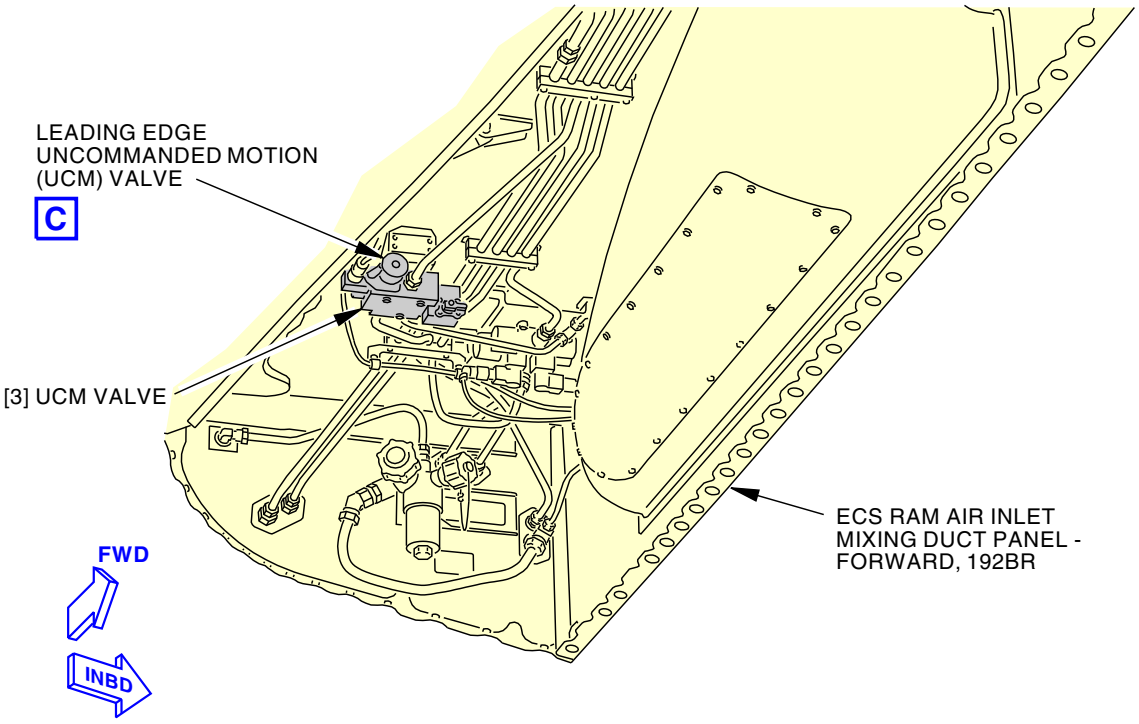
LEADING EDGE CRUISE DEPRESSURIZATION VALVE
(MAIN LANDING GEAR WHEEL WELL)

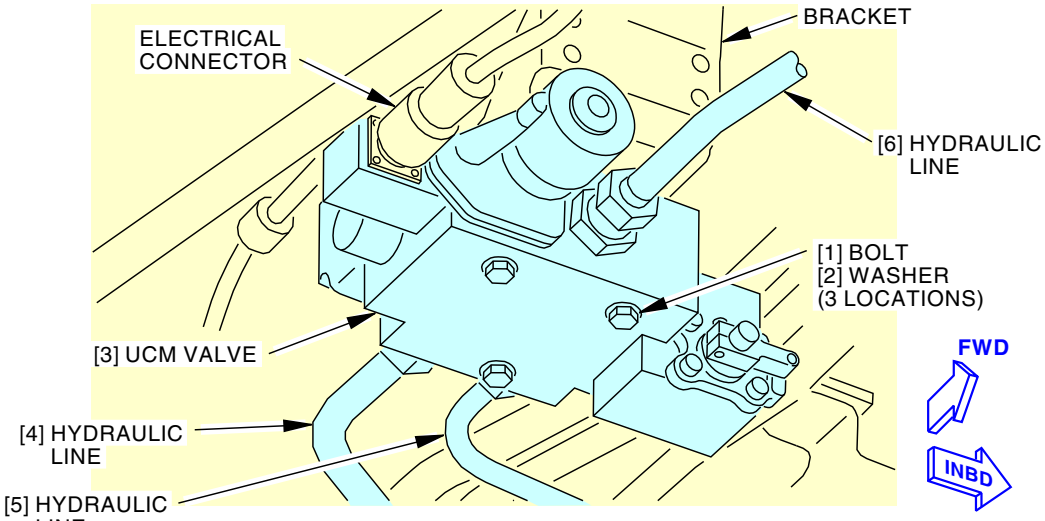
A

2413377 S00061532432_V2

Leading Edge Uncommanded Motion (UCM) Valve Installation
Figure 401/27-81-52-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





**LEADING EDGE UNCOMMANDED MOTION (UCM) VALVE
(LEADING EDGE VALVE IS SHOWN, LEADING EDGE
CRUISE DEPRESSURIZATION VALVE IS EQUIVALENT)**

C

2413378 S00061532433_V2

**Leading Edge Uncommanded Motion (UCM) Valve Installation
Figure 401/27-81-52-990-801 (Sheet 2 of 2)**

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-52-400-801

3. LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation

(Figure 401)

A. References

Reference	Title
20-60-07-910-802	Inspection, Cleaning and Sealing of Electrical Connectors (P/B 201)
27-81-00-700-804	Leading Edge Uncommanded Motion Protection Test (P/B 501)
27-81-00-730-801	Leading Edge Cruise Depressurization Test (P/B 501)
SWPM 20-20-00, Paragraph 2	CLEANING OF FAY SURFACES
SWPM 20-20-00, Section 14-D	Standard Wiring Practices Manual
SWPM 20-20-00, Section 21-A	Resistance of Faying Surface Bonds
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Valve	27-81-52-01-015	SIA 001-014
		27-81-52-02-015	SIA ALL

E. Location Zones

Zone	Area
132	Center Section Wing Box, Body Station 540.00 to Body Station 663.75 - Right
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

G. Leading Edge Flap and Slat Valve Installation

SUBTASK 27-81-52-420-001

(1) Install the valve [3]:

(a) Clean the fay surfaces of the aluminum bracket and valve [3] (CLEANING OF FAY SURFACES, SWPM 20-20-00, Paragraph 2)

(b) Put the valve [3] in its position.

(c) Install the bolts [1] and washers [2].

(d) Apply thin layer of sealant, A00247 along the edges of the joint between the mating surfaces (SWPM 20-20-00, Section 14-D).

(e) Connect the hydraulic lines to the valve [3].

1) Remove the caps from the hydraulic lines.

2) Remove the plugs from the hydraulic ports on the valve [3].

3) Connect the hydraulic line [4] and hydraulic line [6] to the valve [3].

4) Tighten the B-nuts on hydraulic line [4] and hydraulic line [6] to 500 ±25 in-lb (56 ±3 N·m).

5) Connect hydraulic line [5] to the valve [3].

6) Tighten the B-nut on hydraulic line [5] to 270 ±14 in-lb (31 ±2 N·m).

(f) If you did not examine the electrical connector(s) at the removal step, do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

(g) Apply the D5026NS or ZC-026 compound, G50171 to the connectors (SWPM 20-60-03).

(h) If you did not examine the electrical connector(s) at the removal step, do this task: Inspection, Cleaning and Sealing of Electrical Connectors, TASK 20-60-07-910-802.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

SUBTASK 27-81-52-860-003

(2) Use an intrinsically safe approved bonding meter, COM-1550 to measure the resistance between the valve [3] and the bracket (SWPM 20-20-00, Section 21-A).

(a) Make sure the maximum resistance between the valve [3] and the bracket is 0.0025 ohms (2.5 milliohms).

SUBTASK 27-81-52-860-004

(3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-81-52-720-001

(4) If you replace the Leading Edge (LE) cruise depressurization valve, do this task: Leading Edge Cruise Depressurization Test, TASK 27-81-00-730-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-52-720-002

(5) If you replace the LE UCM shutoff valve, do this task: Leading Edge Uncommanded Motion Protection Test, TASK 27-81-00-700-804.

H. Put the plane back to its usual condition.

SUBTASK 27-81-52-940-001

(1) Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE CRUISE DEPRESSURIZATION VALVE - INSPECTION/CHECK

1. General

A. This task does a check for internal hydraulic leakage in the leading edge cruise depressurization valve.

TASK 27-81-52-790-801

2. Leading Edge Cruise Depressurization Valve Hydraulic Internal Leakage Check

A. General

(1) This procedure does an internal hydraulic leakage check for the leading edge cruise depressurization valves. The purpose of this leakage test is to identify a high leakage valve.

(2) You must measure the amount of leakage of hydraulic fluid during different conditions of operation to measure the fluid flow rate. It will be necessary to disconnect the return hydraulic line.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-81-00-730-801	Leading Edge Cruise Depressurization Test (P/B 501)
27-81-52-000-801	LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal (P/B 401)
27-81-52-400-801	LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation (P/B 401)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Tools/Equipment

Reference	Description
STD-6505	Container - Measuring, 500 cc, Calibrated in cc (ml)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Prepare for the Internal Leakage Check

SUBTASK 27-81-52-860-006

(1) If the trailing edge flaps are not in the retracted position, then do these steps:

(a) Supply system B hydraulic power. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Move the flap control lever to the FLAP UP position to retract the trailing edge flaps.

(c) Remove system B hydraulic power. To remove hydraulic power, do this task:
Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-52-860-007

(2) Make sure the flap control lever is at the FLAP UP position.

F. Leading Edge Cruise Depressurization Valve Internal Leakage Check

SUBTASK 27-81-52-790-001

(1) Put a measuring container, STD-6505 under the return line on the cruise depressurization valve.

SUBTASK 27-81-52-790-002

(2) Disconnect the return line from the cruise depressurization valve. Do the applicable steps for this task:

LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, TASK 27-81-52-000-801

NOTE: The return line is the smaller of two hydraulic lines that go forward from the cruise depressurization valve.

SUBTASK 27-81-52-790-003

(3) Install a cap or plug on the hydraulic line that goes to the hydraulic reservoir.

SUBTASK 27-81-52-860-008

(4) Supply system B hydraulic power. To supply hydraulic power, do this task:

Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-81-52-860-009

(5) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task:

Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

SUBTASK 27-81-52-790-004

(6) Measure the leakage from the cruise depressurization valve with the solenoids not energized:

(a) Measure and record the leakage rate from the return port on the cruise depressurization valve.

NOTE: The leakage rate must not be more than 100 cc/minute.

SUBTASK 27-81-52-860-010

(7) Do this task:Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

NOTE: The solenoids on the cruise depressurization valve will be energized three seconds after the PSEU is in air mode. A small amount of hydraulic fluid can leak while the valve moves.

SUBTASK 27-81-52-790-005

(8) Measure the leakage from the cruise depressurization valve with the solenoids energized:

(a) Measure and record the leakage rate from the return port on the cruise depressurization valve.

NOTE: The leakage rate must not be more than 100 cc/minute.

SUBTASK 27-81-52-860-011

(9) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

NOTE: The solenoids on the cruise depressurization valve will be de-energized three seconds after the PSEU is in ground mode. A small amount of hydraulic fluid can leak while the valve moves.

SUBTASK 27-81-52-860-012

(10) Remove the pressure from the system B reservoir. To remove the pressure, do this task:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-81-52-860-013

(11) Remove system B hydraulic power. To remove hydraulic power, do this task:

Hydraulic System A or B Power Removal, TASK 29-11-00-860-805

G. Put the Airplane Back to the Usual Condition

SUBTASK 27-81-52-790-006

(1) Remove the cap or plug from the hydraulic line that goes to the hydraulic reservoir.

SUBTASK 27-81-52-790-007

(2) Re-connect the return line to the leading edge cruise depressurization valve. Do the applicable steps from this task:

LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, TASK 27-81-52-400-801.

SUBTASK 27-81-52-610-001

(3) If it is necessary for the hydraulic reservoir, do this task:

Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-81-52-720-003

(4) Do this task:

Leading Edge Cruise Depressurization Test, TASK 27-81-00-730-801.

SUBTASK 27-81-52-210-001

(5) Make sure there are no hydraulic fluid leaks at the leading edge cruise depressurization valve.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT HYDRAULIC FUSE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the hydraulic fuses of the leading edge flap and slat.

(2) An installation of the hydraulic fuses of the leading edge flap and slat.

B. There are two hydraulic fuses (extend and retract) in the system B and one hydraulic fuse in the standby system. The hydraulic fuses are all located in the airplane main landing gear wheel well.

C. This procedure is applicable for all three hydraulic fuses.

TASK 27-81-61-000-801

2. Leading Edge Flap and Slat Hydraulic Fuse Removal (LE System B or Standby System Fuses)

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
29-21-00-000-802	Standby Hydraulic System Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

C. Leading Edge Flap and Slat Hydraulic Fuse Removal (LE System B or Standby System Fuses)

SUBTASK 27-81-61-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-81-61-860-001

(2) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-61-860-006

(3) To remove power from the standby hydraulic system, do this task: Standby Hydraulic System Power Removal, TASK 29-21-00-000-802.

SUBTASK 27-81-61-020-001

(4) Do these steps to remove the two hydraulic fuses [2] in system B:

(a) Loosen nut [1] and nut [3] to disconnect the hydraulic tubes from the hydraulic fuse [2].

(b) Remove the hydraulic fuse [2].

SUBTASK 27-81-61-020-002

(5) Do these steps to remove the fuse assembly [5] in the standby system:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Loosen nut [6] and nut [7] to disconnect the hydraulic tubes from the fuse assembly [5].

(b) Remove the fuse assembly [5] with the flow limiting valve [4].

(c) Remove the fuse assembly [5] from the flow limiting valve [4].

1) Remove and discard the O-ring packing [8] installed between the fuse assembly [5] and the flow limiting valve [4].

D. Test the LE Hydraulic Fuses

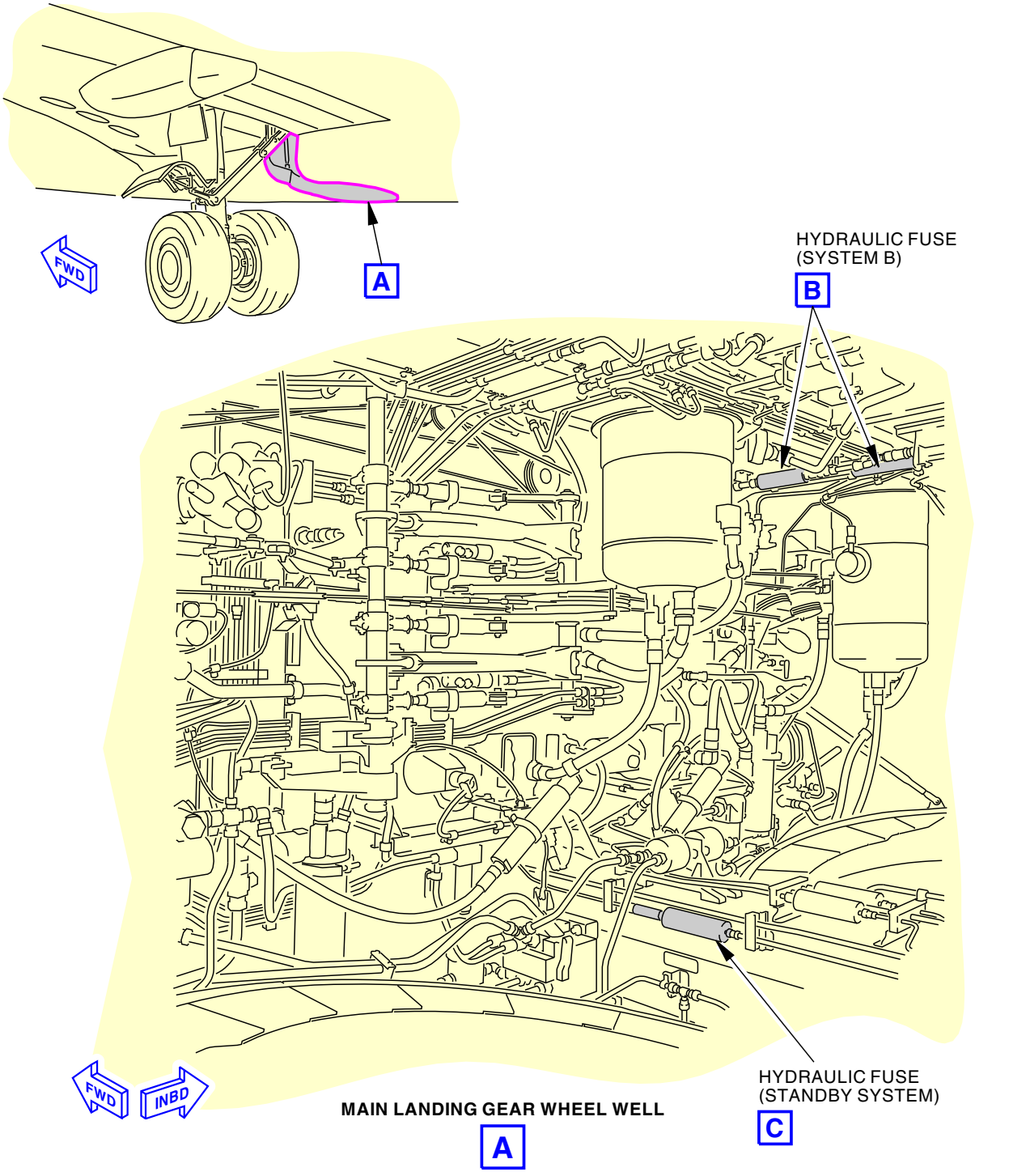
SUBTASK 27-81-61-720-001

(1) Do the functional test of the Leading Edge (LE) hydraulic fuses with the suppliers recommended component maintenance test instructions and test equipment.

NOTE: The suppliers instructions give a reverse flow test, internal leakage test, pressure drop test, volumetric capacity test and reset test for the fuses. This is an off-airplane bench test.

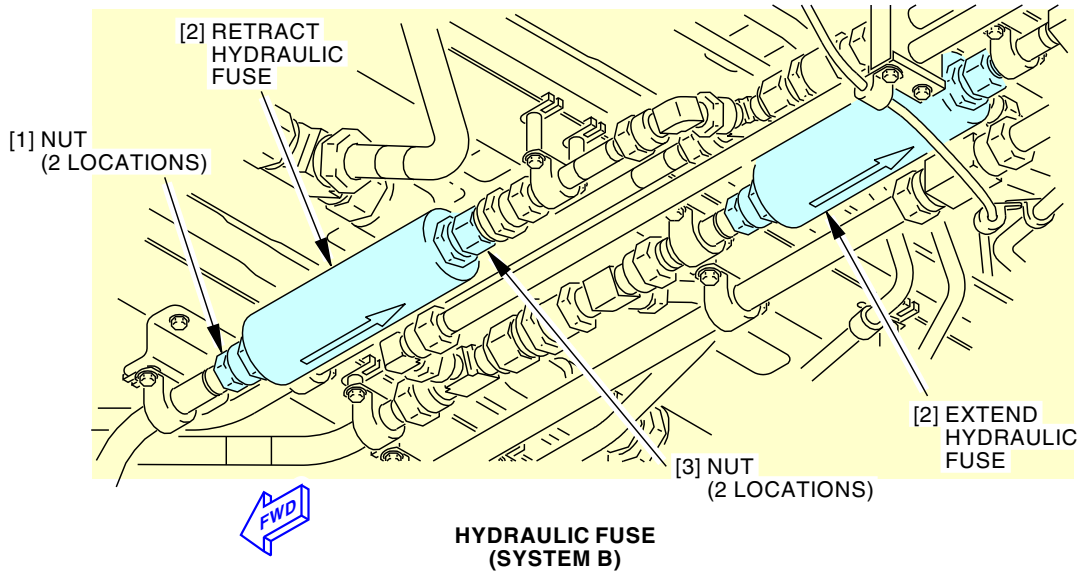
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



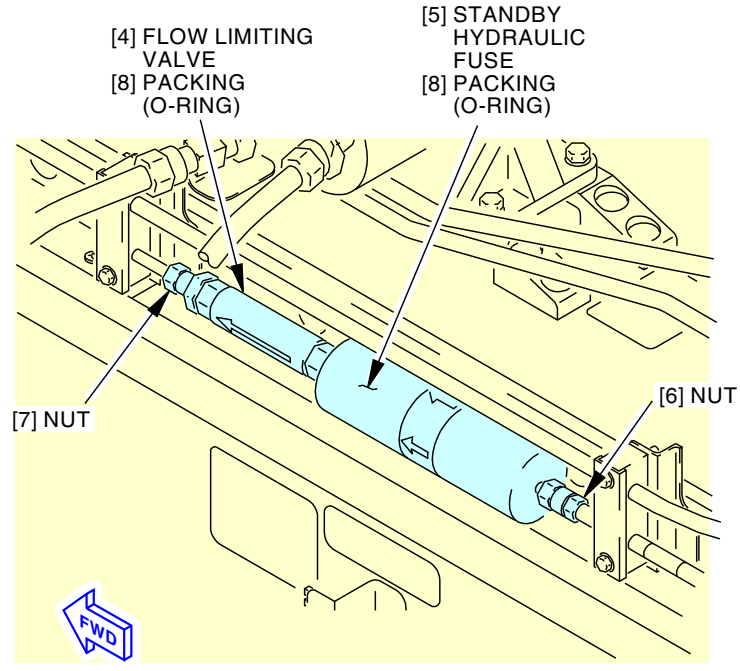
Leading Edge and Slat Hydraulic Fuse Installation
Figure 401/27-81-61-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HYDRAULIC FUSE (SYSTEM B)

B



HYDRAULIC FUSE (STANDBY SYSTEM)

C

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Leading Edge and Slat Hydraulic Fuse Installation
Figure 401/27-81-61-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-61-400-801

3. Leading Edge Flap and Slat Hydraulic Fuse Installation (LE System B or Standby System Fuses)

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-81-00-700-802	Leading Edge Flap and Slat Timing Test in Primary Mode (P/B 501)
27-81-00-700-803	Leading Edge Flap and Slat Timing Test in the Standby Mode (P/B 501)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
29-21-00-000-801	Standby Hydraulic System Pressurization (P/B 201)
29-21-00-000-802	Standby Hydraulic System Power Removal (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Hydraulic fuse	27-81-61-05-010	SIA ALL
5	Fuse assembly	27-81-61-01-010	SIA 001-015
		27-81-61-01-060	SIA 016-999
8	Packing	27-81-61-01-005	SIA 001-015
		27-81-61-01-055	SIA 016-999
		27-81-71-01-010	SIA 001-015
		27-81-71-01-060	SIA 016-999

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Leading Edge Flap and Slat Hydraulic Fuse Installation (LE System B or Standby System Fuses)

SUBTASK 27-81-61-420-001

(1) Do these steps to install the two hydraulic fuses [2] in system B:

(a) Hold the hydraulic fuse [2] in its position.

NOTE: The flow direction arrow on the hydraulic fuse [2] must agree with the arrow on the pressure bulkhead.

(b) Tighten the nut [1] and nut [3] to connect the hydraulic tubes to the hydraulic fuse [2].

SUBTASK 27-81-61-420-002

(2) Do these steps to install the fuse assembly [5] in the standby system:

(a) Install the fuse assembly [5] to the flow limiting valve [4].

1) Install a new O-ring packing [8] between the fuse assembly [5] and the flow limiting valve [4].

(b) Hold the fuse assembly [5] and the flow limiting valve [4] in their position.

NOTE: The flow direction arrow on the fuse assembly [5] and the flow limiting valve [4] must agree with the arrow on the pressure bulkhead.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Tighten the nut [6] and nut [7] to connect hydraulic tubes to the fuse assembly [5] and the flow limiting valve [4].

SUBTASK 27-81-61-860-002

(3) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(a) If you replaced the hydraulic fuse [2], you will need to pressurize the hydraulic system B.

SUBTASK 27-81-61-860-007

(4) To pressurize the standby hydraulic system, do this task: Standby Hydraulic System Pressurization, TASK 29-21-00-000-801.

(a) If you replaced the fuse assembly [5], you will need to pressurize the standby hydraulic system.

SUBTASK 27-81-61-210-001

(5) Do a visual check of the hydraulic fuse [2] or fuse assembly [5] for hydraulic leaks.

SUBTASK 27-81-61-710-001

(6) Do the Leading Edge Flap and Slat Timing Test in Primary Mode, TASK 27-81-00-700-802 for the extend or retract fuse (hydraulic system B fuses).

SUBTASK 27-81-61-710-002

(7) Do the Leading Edge Flap and Slat Timing Test in the Standby Mode, TASK 27-81-00-700-803 for the standby fuse.

SUBTASK 27-81-61-860-003

(8) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-61-860-008

(9) To remove power from the standby hydraulic system, do this task: Standby Hydraulic System Power Removal, TASK 29-21-00-000-802.

SUBTASK 27-81-61-610-001

(10) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

TASK 27-81-61-860-801

4. Flap and Slat Hydraulic Fuses (System B) Reset

Figure 401

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Tools/Equipment

Reference	Description
STD-1154	Container - 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left

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(Continued)

Zone	Area
212	Flight Compartment - Right

D. Procedure

SUBTASK 27-81-61-860-004

(1) Do these steps to reset the hydraulic fuses [2] for system B:

(a) Make sure that the flap control lever is in the UP position.

(b) Make sure that there is no power on hydraulic system B. If it is necessary to remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

(c) Between the retract or extend hydraulic fuse [2] and the check valve upstream, loosen the nut [1] sufficiently to bleed off the hydraulic fluid into a 5 gallon (19 liter) container, STD-1154.

NOTE: The pressure difference across the hydraulic fuse [2] must be less than 5 psi (34.5 kPa) for a minimum of 5 seconds to put the hydraulic fuse [2] back to the open position.

(d) Tighten the nut [1] after you put the hydraulic fuse [2] back to the open position.

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) To pressurize the hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(f) Do a check of the hydraulic fuse [2] for hydraulic leaks.

(g) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

TASK 27-81-61-860-802

5. Flap and Slat Hydraulic Fuse (Standby System) Reset

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Procedure

SUBTASK 27-81-61-860-005

(1) Do these steps to reset the hydraulic fuse for the standby system:

(a) Make sure that the flap control lever is in the UP position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove power from hydraulic system B. To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP FLOW LIMITING VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Leading Edge Flap Flow Limiting Valve Removal

(2) Leading Edge Flap Flow Limiting Valve Installation.

B. The Leading Edge Flap Flow Limiting Valve is referred to as the flow limiting valve in these procedures.

TASK 27-81-71-000-801

2. Leading Edge Flap Flow Limiting Valve Removal

(Figure 401)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

C. Prepare for the Removal

SUBTASK 27-81-71-480-001

WARNING MAKE SURE THAT YOU INSTALL THE DOWNLOCK PINS ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR CAN RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gear, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-81-71-860-001

(2) Do this task to remove power from hydraulic system B: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

D. Leading Edge Flap Flow Limiting Valve Removal

SUBTASK 27-81-71-020-001

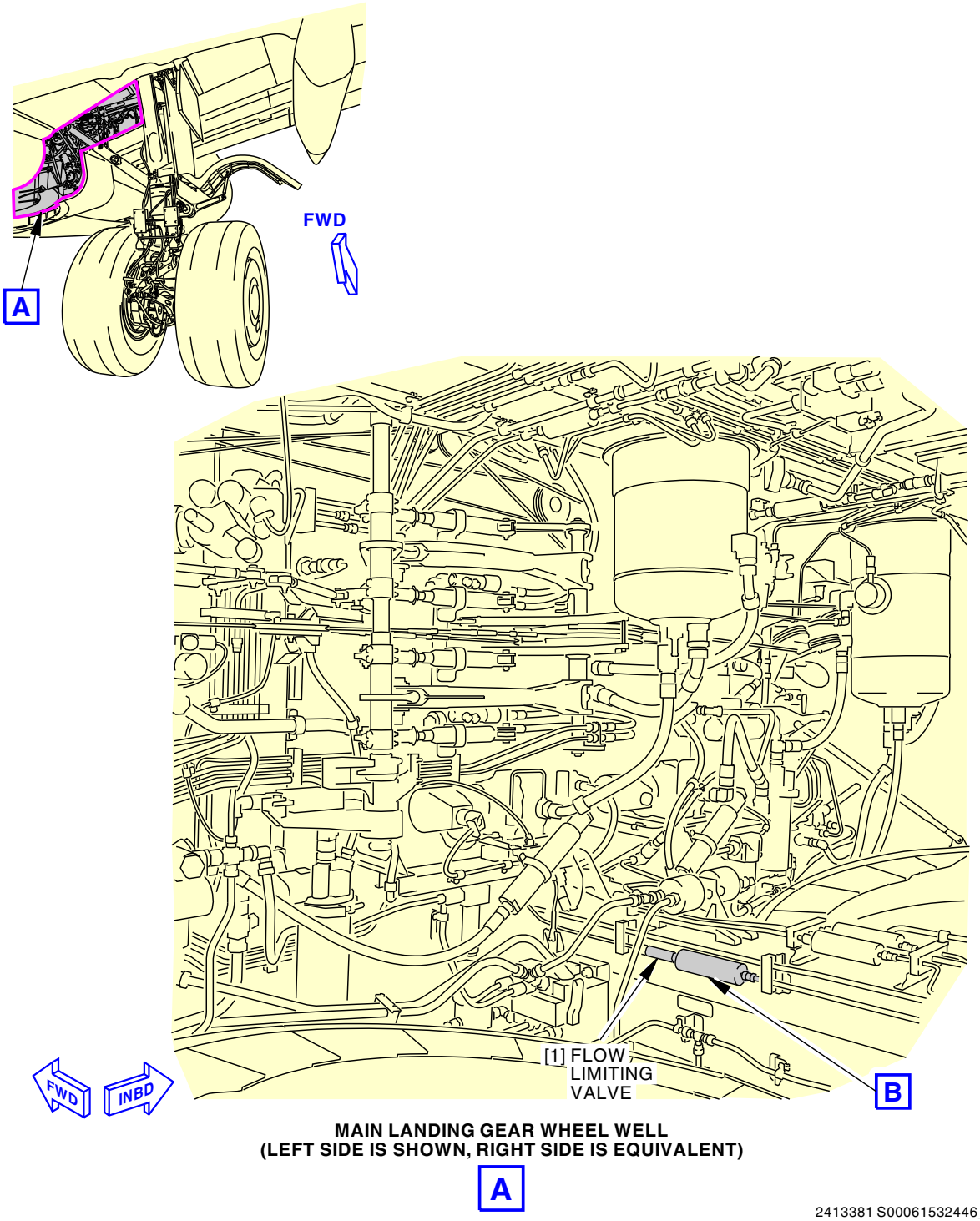
(1) Do these steps to remove the flow limiting valve [1]:

(a) Loosen nut [3] and nut [4] to disconnect the hydraulic tubes from the flow limiting valve [1] and the hydraulic fuse [2].

(b) Remove the flow limiting valve [1] from the hydraulic fuse [2].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



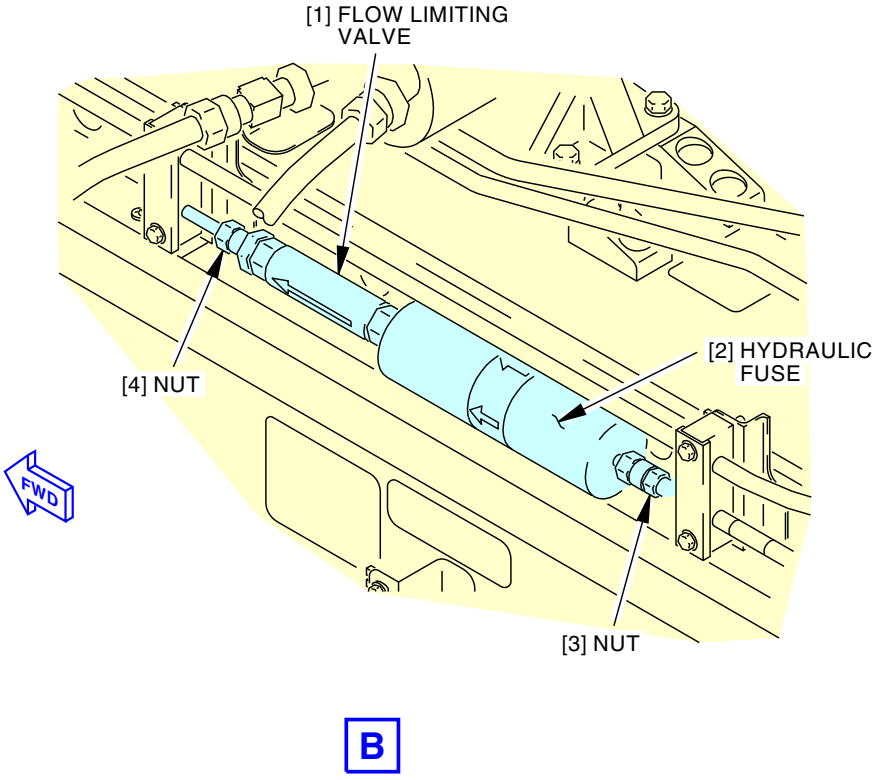
MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

A

2413381 S00061532446_V1

Leading Edge Flap Flow Limiting Valve Installation
Figure 401/27-81-71-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Leading Edge Flap Flow Limiting Valve Installation
Figure 401/27-81-71-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-71-400-801

3. Leading Edge Flap Flow Limiting Valve Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Flow limiting valve	27-81-71-01-015	SIA 001-015
		27-81-71-01-065	SIA 016-999

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left

D. Leading Edge Flap Flow Limiting Valve Installation

SUBTASK 27-81-71-420-001

(1) Do these steps to install the flow limiting valve [1]:

(a) Connect the flow limiting valve [1] to the hydraulic fuse [2].

(b) Hold the flow limiting valve [1] and hydraulic fuse [2] in their position.

1) Make sure that the flow direction arrow on the flow limiting valve [1] and hydraulic fuse [2] agree with the arrow on the pressure bulkhead.

(c) Connect the hydraulic tubes to the flow limiting valve [1] and hydraulic fuse [2].

(d) Tighten nut [3] and nut [4].

SUBTASK 27-81-71-610-001

(2) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-81-71-710-001

(3) Do these steps to test the flap flow limiting valve [1]:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

(b) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(c) If it is necessary, move the flap control lever to the FLAP UP detent position to retract the leading edge flaps and slats.

WARNING MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION

MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(d) Put the alternate flap arm switch in the ARM position.

(e) Put the alternate flap control switch in the DOWN position.

1) Make sure that the leading edge flaps and slats fully extend.

(f) Put the alternate flap control switch in the OFF position.

(g) Put the alternate flap arm switch in the OFF position.

1) Make sure that the leading edge flaps and slats fully retract.

(h) Examine the hydraulic fittings of the flow limiting valve [1] for leakage.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-71-860-002

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

SUBTASK 27-81-71-860-003

(2) Do this task to remove pressure from hydraulic system B: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-71-610-002

(3) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the leading edge flap and slat control valve.

(2) An installation of the leading edge flap and slat control valve.

B. The leading edge flap and slat control valve is attached to the flap control unit forward of the trailing edge flap control valve.

C. The leading edge flap and slat control valve is referred to as the "control valve" in this procedure.

TASK 27-81-81-000-801

2. Leading Edge Flap and Slat Control Valve Removal

(Figure 401)

A. References

Reference	Title
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205
STD-1154	Container - 5 Gallon (19 Liter)

C. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

D. Prepare for the Removal

SUBTASK 27-81-81-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-81-81-860-001

(2) If the leading edge flaps and slats are not in the retracted position, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-81-860-002

(3) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

E. Leading Edge Flap and Slat Control Valve Removal

SUBTASK 27-81-81-020-001

(1) Remove the lower pan [8] from the flap control unit [6].

(a) Remove the screw [7] that attaches the lower pan [8] to the flap control unit [6].

(b) Remove the lower pan [8] from the flap control unit [6].

SUBTASK 27-81-81-480-002

(2) Install the rig pin [16] through the cam follower arm [15] and trailing edge flap control valve cam [14].

(a) Use rig pin, F70207-116, SPL-12421, from the rigging pin kit, SPL-1585.

SUBTASK 27-81-81-020-002

(3) Remove the leading edge flap and slat control valve assembly [1].

CAUTION

DO NOT LET HYDRAULIC FLUID GET ON EQUIPMENT. IF HYDRAULIC FLUID GETS ON EQUIPMENT, IMMEDIATELY CLEAN IT FROM THE EQUIPMENT. HYDRAULIC FLUID CAN CAUSE DAMAGE TO EQUIPMENT.

(a) Put a 5 gallon (19 liter) container, STD-1154, below the leading edge flap and slat control valve assembly [1] to catch hydraulic fluid.

(b) Disconnect the hydraulic lines [3] and hydraulic line [18] from the leading edge flap and slat control valve assembly [1].

1) Install caps on the hydraulic lines [3] and hydraulic line [18].

2) Install plugs in the hydraulic ports of the leading edge flap and slat control valve assembly [1].

(c) Remove the nut [13], washer [12], and bolt [11] that attach the leading edge flap and slat control valve assembly [1] to the leading edge cam link [17].

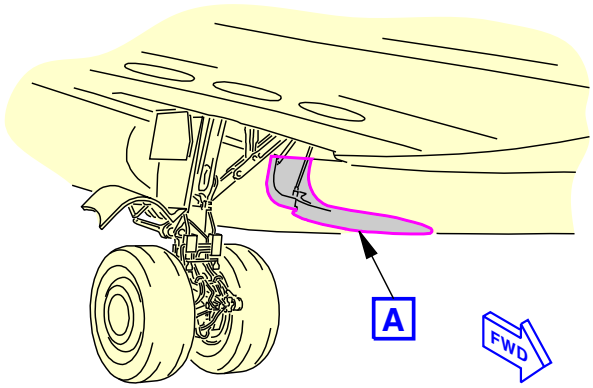
(d) Remove the lockwire or safety cable from the bolts [9].

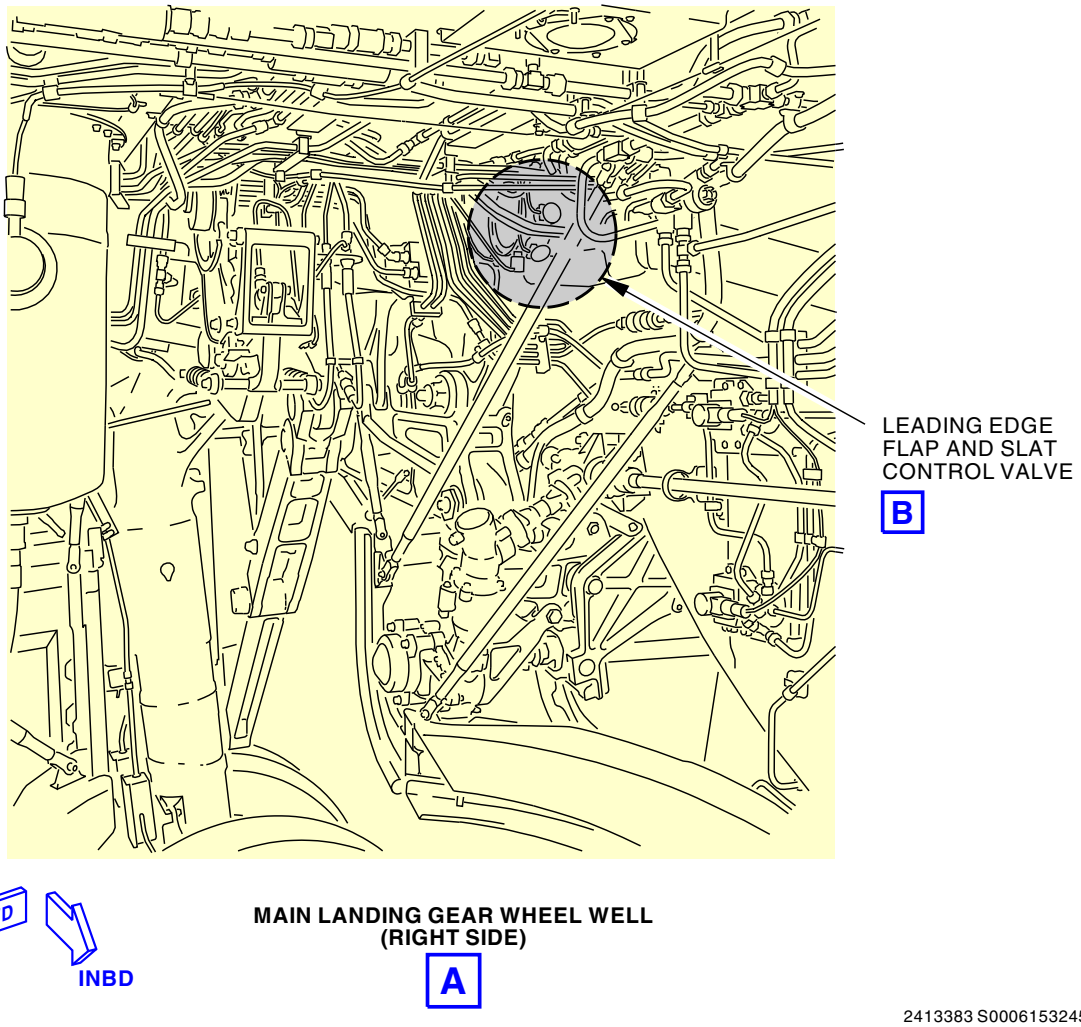
(e) Remove the bolts [9] and washers [10] that attach the leading edge flap and slat control valve assembly [1] to the flap control unit [6].

(f) Carefully remove the leading edge flap and slat control valve assembly [1] from the flap control unit [6].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

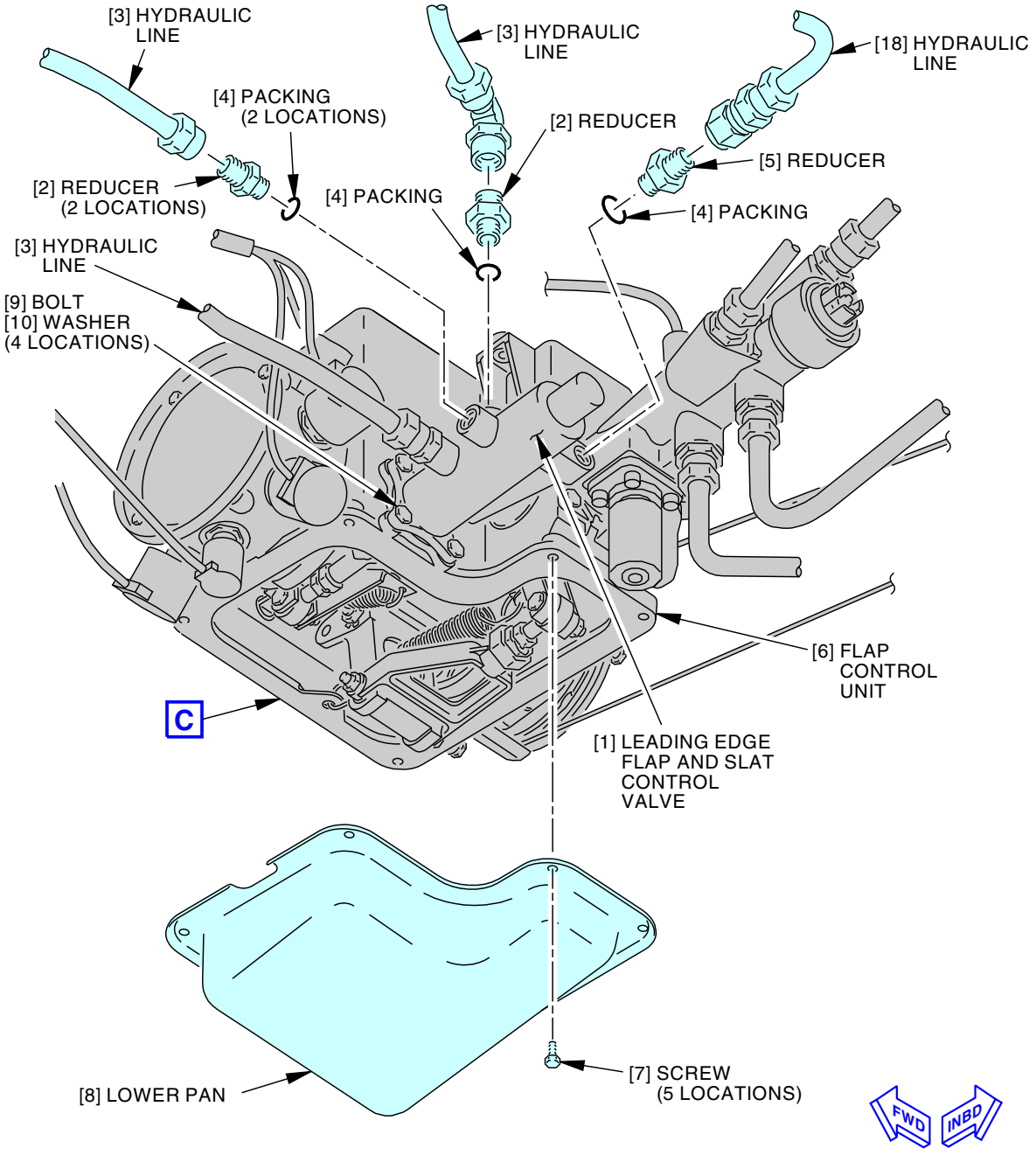




2413383 S00061532452_V2

Leading Edge Flap and Slat Control Valve Installation
Figure 401/27-81-81-990-801 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



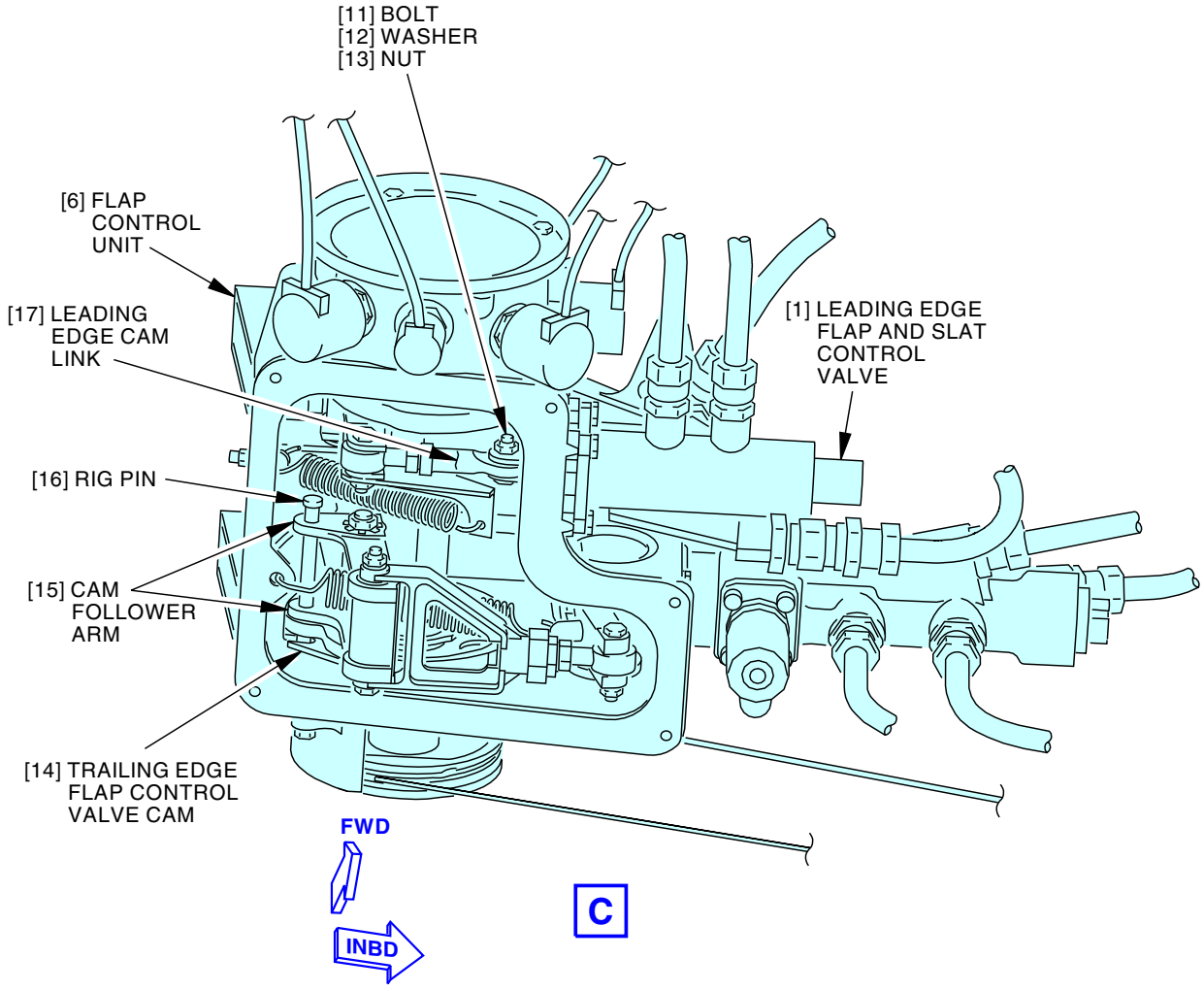
LEADING EDGE FLAP AND SLAT CONTROL VALVE

B

2413384 S00061532453_V4

Leading Edge Flap and Slat Control Valve Installation
Figure 401/27-81-81-990-801 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2413385 S00061532454_V2

Leading Edge Flap and Slat Control Valve Installation
Figure 401/27-81-81-990-801 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-81-400-801

3. Leading Edge Flap and Slat Control Valve Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-81-00-860-801	Leading Edge Flap and Slat System Operation With Primary Control (P/B 201)
27-81-81-820-801	Leading Edge Flap and Slat Control Valve Adjustment (P/B 501)

B. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Leading edge flap and slat control valve assembly	27-81-81-01A-050	SIA ALL
4	Packing	27-81-81-01A-065	SIA ALL

D. Location Zones

Zone	Area
134	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Right

E. Leading Edge Flap and Slat Control Valve Installation

SUBTASK 27-81-81-420-001

(1) If they are not installed, install the packings [4], reducers [2], and reducer [5] in the ports of the leading edge flap and slat control valve assembly [1].

(a) Apply hydraulic fluid, D00153, or MCS 352B fluid, D00054, to the new packings [4].

(b) Put the packings [4], reducers [2], and reducer [5] in their location on the leading edge flap and slat control valve assembly [1].

SUBTASK 27-81-81-420-002

(2) Install the leading edge flap and slat control valve assembly [1] in the flap control unit [6].

(a) Carefully put the leading edge flap and slat control valve assembly [1] on the flap control unit [6].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the bolts [9].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolts [9] and washers [10] to attach the leading edge flap and slat control valve assembly [1] to the flap control unit [6].

(d) Install lockwire or safety cable on the bolts [9].

(e) Connect the leading edge flap and slat control valve assembly [1] to the leading edge cam link [17] with the bolt [11], washer [12], and nut [13].

(f) Connect the hydraulic lines [3] and hydraulic line [18] to the leading edge flap and slat control valve assembly [1].

1) Remove the caps from the hydraulic lines [3] and hydraulic line [18].

2) Remove the plugs from the hydraulic ports on the leading edge flap and slat control valve assembly [1].

3) Connect the hydraulic lines [3] to the leading edge flap and slat control valve assembly [1].

a) Tighten the B-nuts on hydraulic lines [3] to 500 ±25 in-lb (56 ±3 N·m).

b) Tighten the B-nut on hydraulic line [18] to 280 ±14 in-lb (32 ±2 N·m).

SUBTASK 27-81-81-080-001

(3) Remove the rig pin [16] from the flap control unit [6].

SUBTASK 27-81-81-860-003

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Use the primary system to extend and retract the flaps and slats.

(a) To extend and retract the flaps and slats, do this task: Leading Edge Flap and Slat System Operation With Primary Control, TASK 27-81-00-860-801.

SUBTASK 27-81-81-210-001

(5) Examine the hydraulic lines at the control valve for leakage.

SUBTASK 27-81-81-820-001

(6) Do this task: Leading Edge Flap and Slat Control Valve Adjustment, TASK 27-81-81-820-801.

SUBTASK 27-81-81-420-003

(7) Install the lower pan [8] on the flap control unit [6].

(a) Put the lower pan [8] in its location on the flap control unit [6].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [7].

(c) Install the screws [7] to attach the lower pan [8] to the flap control unit [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-81-610-001

(1) If it is necessary to fill the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT CONTROL VALVE - ADJUSTMENT/TEST

1. General

A. This procedure has a task to adjust the leading edge flap and slat control valve.

TASK 27-81-81-820-801

2. Leading Edge Flap and Slat Control Valve Adjustment

(Figure 501)

A. References

Reference	Title
27-81-00-700-802	Leading Edge Flap and Slat Timing Test in Primary Mode (P/B 501)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-12421	Rig Pin, F70207-116 (included in F70207 Kit) Part #: F70207-151 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
G01048	Lockwire - MS20995C32, Corrosion Resistant Steel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Adjustment

SUBTASK 27-81-81-480-003

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-81-860-004

(2) If the leading edge flaps and slats are not in the retract position, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-81-81-010-001

(3) Remove the lower pan [3] from the flap control unit [1].

(a) Remove the screws [4] that attach the lower pan [3] to the flap control unit [1].

(b) Remove the lower pan [3].

SUBTASK 27-81-81-420-004

(4) Install the rig pin [7] through the cam follower arm [6] and the valve cam [5].

(a) Use rig pin, F70207-116, SPL-12421, from the rigging pin kit, SPL-1585.

F. Leading Edge Flap and Slat Control Valve Adjustment

SUBTASK 27-81-81-820-002

(1) Do the adjustment of the leading edge flap and slat control valve [2].

(a) Remove the MS20995C32 lockwire, G01048.

(b) Loosen the jam nut [14].

(c) Remove the nut [10], washer [9], washer [15], and bolt [8].

1) If there is no enough clearance to remove the bolt [8], remove the bolt [16], washer [17], washer [18], and nut [19].

(d) Turn the rod end [13] in 180 degree increments until you can get the valve slide [11] and the index surface [12] to align.

(e) Install the bolt [8] or bolt [16].

(f) Make sure that the valve slide [11] aligns with the index surface [12].

(g) If you installed the bolt [8], install the washer [9], washer [15], and nut [10].

(h) If you installed the bolt [16], install the washer [17], washer [18], and new nut [19].

1) Make sure that the bolt [16] is installed in proper direction.

(i) Make sure that the dimension from the center of the rod end [13] to the jam nut [14] is not more than 1 in. (25.4 mm).

(j) Tighten the jam nut [14] to 55 in-lb (6 N·m).

(k) Install the MS20995C32 lockwire, G01048, with the double twist method.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-81-020-003

(1) Remove the rig pin [7] from the cam follower arm [6] and the valve cam [5].

SUBTASK 27-81-81-410-001

(2) Install the lower pan [3] on the flap control unit [1].

(a) Put the lower pan [3] in its location on the flap control unit [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(b) Apply Cor-Ban 27L Compound, G50237, to the shank and threads of the screws [4].

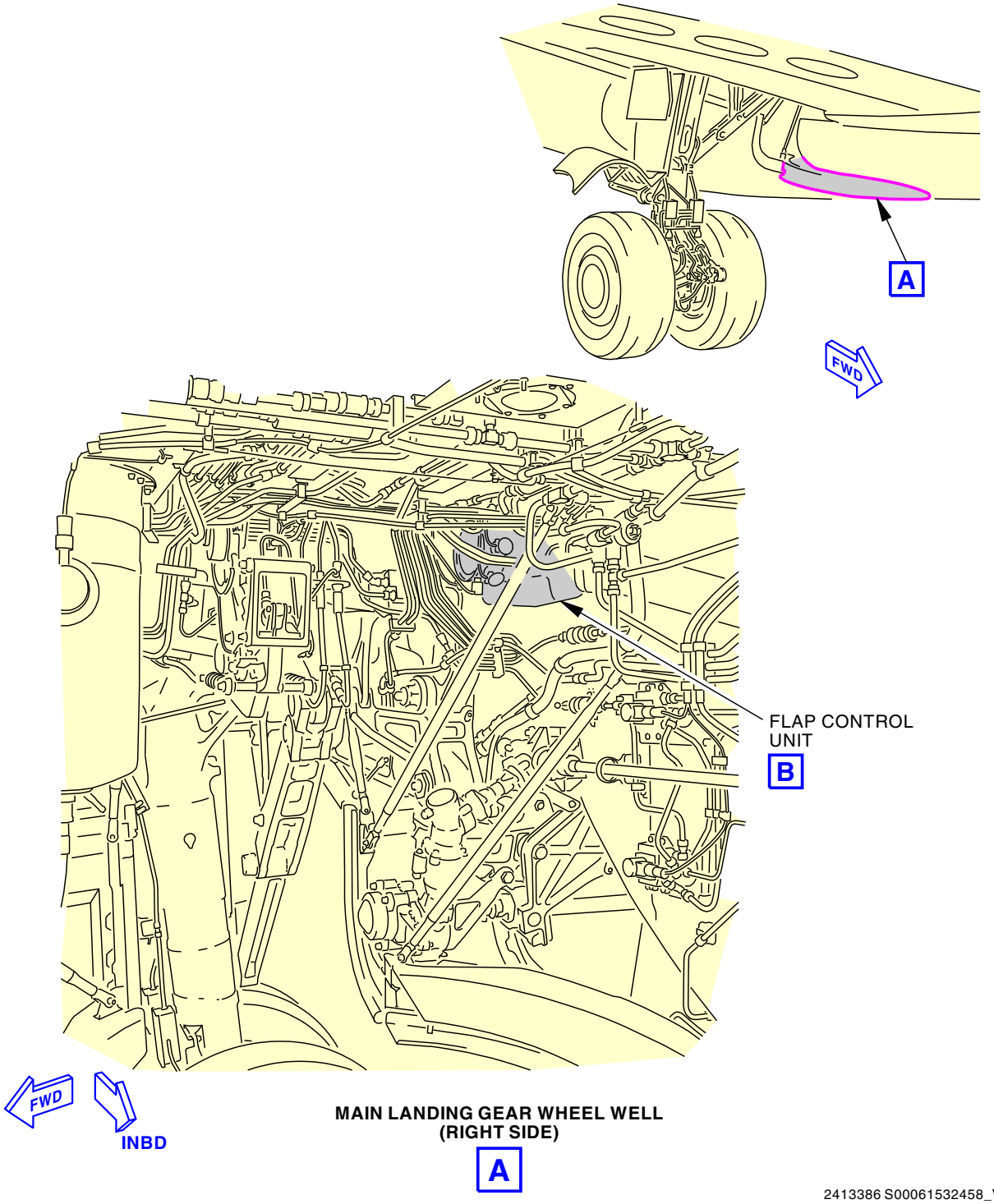
(c) Install the screws [4] that attach the lower pan [3] to the flap control unit [1].

SUBTASK 27-81-81-720-001

(3) Do this task: Leading Edge Flap and Slat Timing Test in Primary Mode, TASK 27-81-00-700-802.

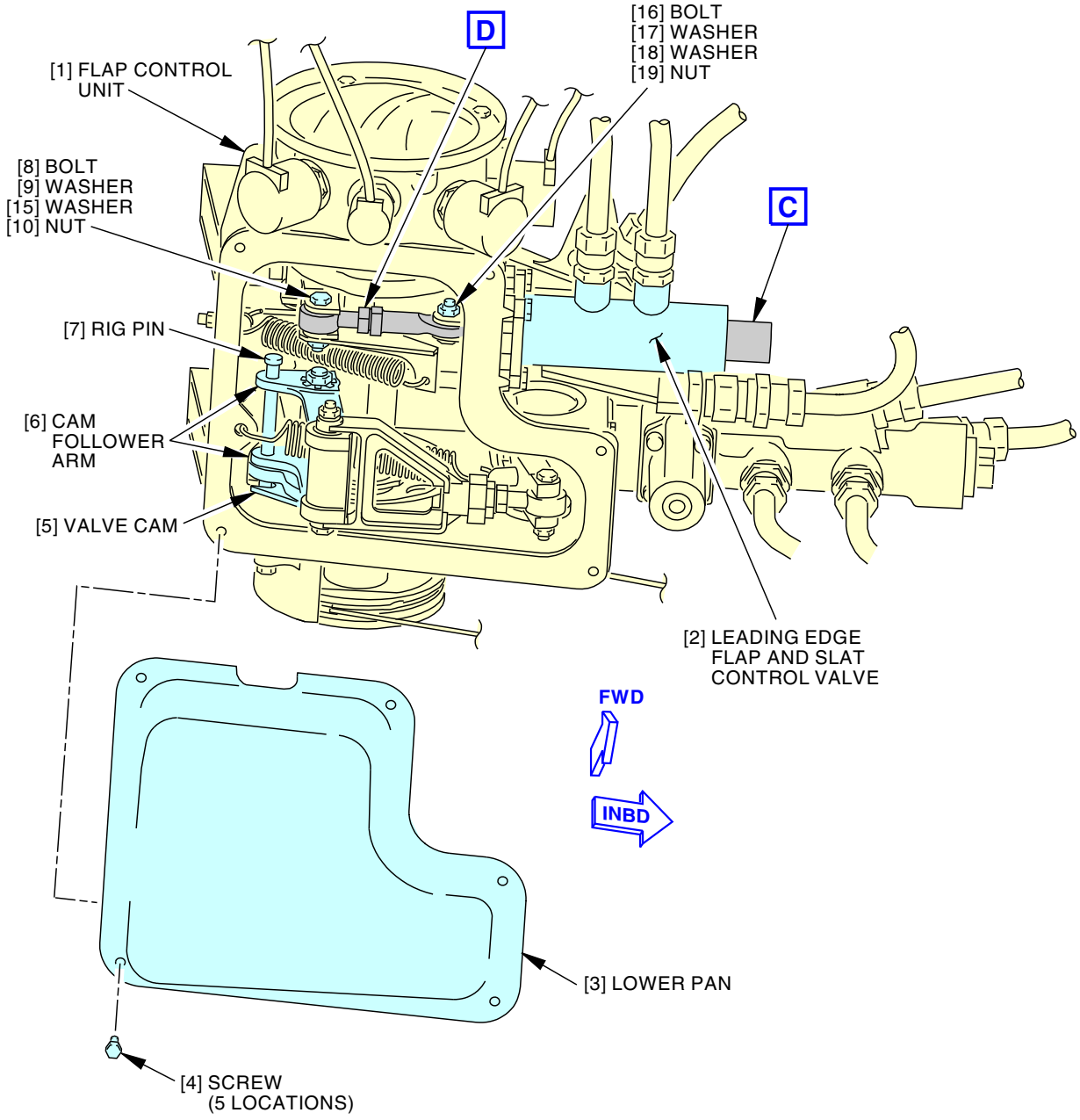
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap and Slat Control Valve Adjustment
Figure 501/27-81-81-990-802 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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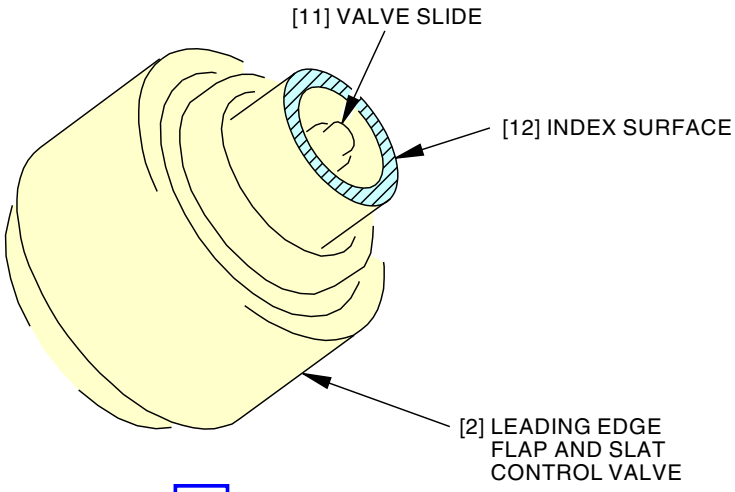
Leading Edge Flap and Slat Control Valve Adjustment
Figure 501/27-81-81-990-802 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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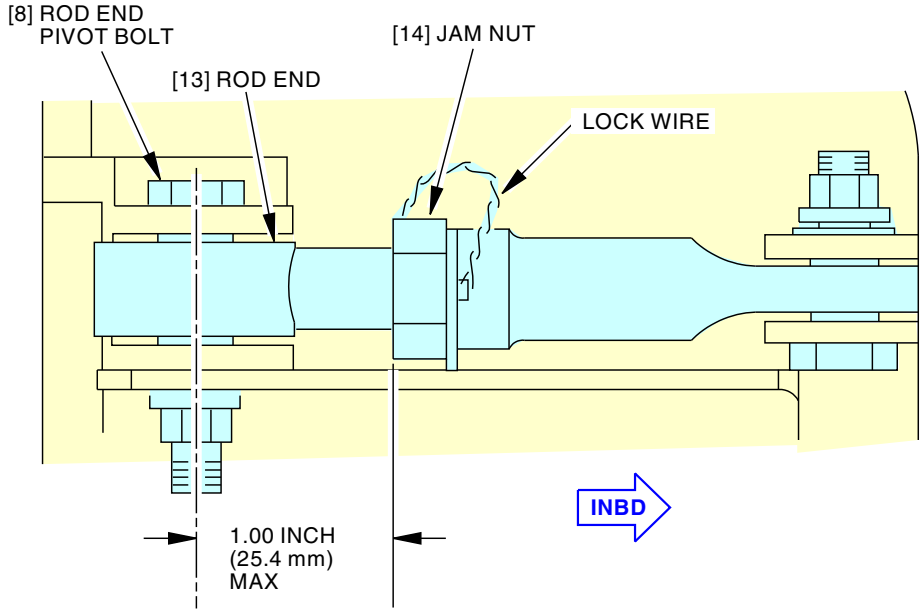

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Leading Edge Flap and Slat Control Valve Adjustment
Figure 501/27-81-81-990-802 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE STANDBY SHUTOFF VALVE - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) Leading edge standby shutoff valve removal

(2) Leading edge standby shutoff valve installation

(3) Standby shutoff valve motor removal

(4) Standby shutoff valve motor installation

(5) Leading edge standby shutoff valve test.

B. The leading edge standby shutoff valve is referred to as the "valve", and the standby shutoff valve motor is referred to as the "valve motor" in this procedure.

C. You can replace the valve motor with the valve installed in the standby flight controls hydraulic module.

TASK 27-81-91-000-801

2. Leading Edge Standby Shutoff Valve Removal

(Figure 201)

A. General

(1) This task gives the steps to remove the leading edge standby shutoff valve [13] assembly from the hydraulic module housing [10].

NOTE: You can remove the leading edge standby shutoff valve with the leading edge standby shutoff valve motor installed with it.

B. References

Reference	Title
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Tools/Equipment

Reference	Description
STD-1154	Container - 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Prepare for the Removal

SUBTASK 27-81-91-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-81-91-860-001

(2) Make sure that there is no power on hydraulic system B. To remove it, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-81-91-860-002

(3) Do this task: Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

SUBTASK 27-81-91-860-003

(4) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

F. Leading Edge Standby Shutoff Valve Removal

SUBTASK 27-81-91-020-001

(1) Remove the leading edge standby shutoff valve [13].

(a) Disconnect the electrical connector [1] from the leading edge standby shutoff valve motor [2].

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(c) If there was corrosion, refer to SWPM 20-60-03, Paragraph 2 to correct the problem.

(d) Remove the lockwire that attaches to the screws [5].

(e) Remove the screws [5] and washers [6] that attach the leading edge standby shutoff valve motor [2] to the hydraulic module housing [10].

(f) Put a 5 gallon (19 liter) container, STD-1154, below the leading edge standby shutoff valve [13] to catch hydraulic fluid that drains from the leading edge standby shutoff valve [13].

(g) Carefully lift the leading edge standby shutoff valve [13] straight up to remove it from the standby flight controls hydraulic module housing [10].

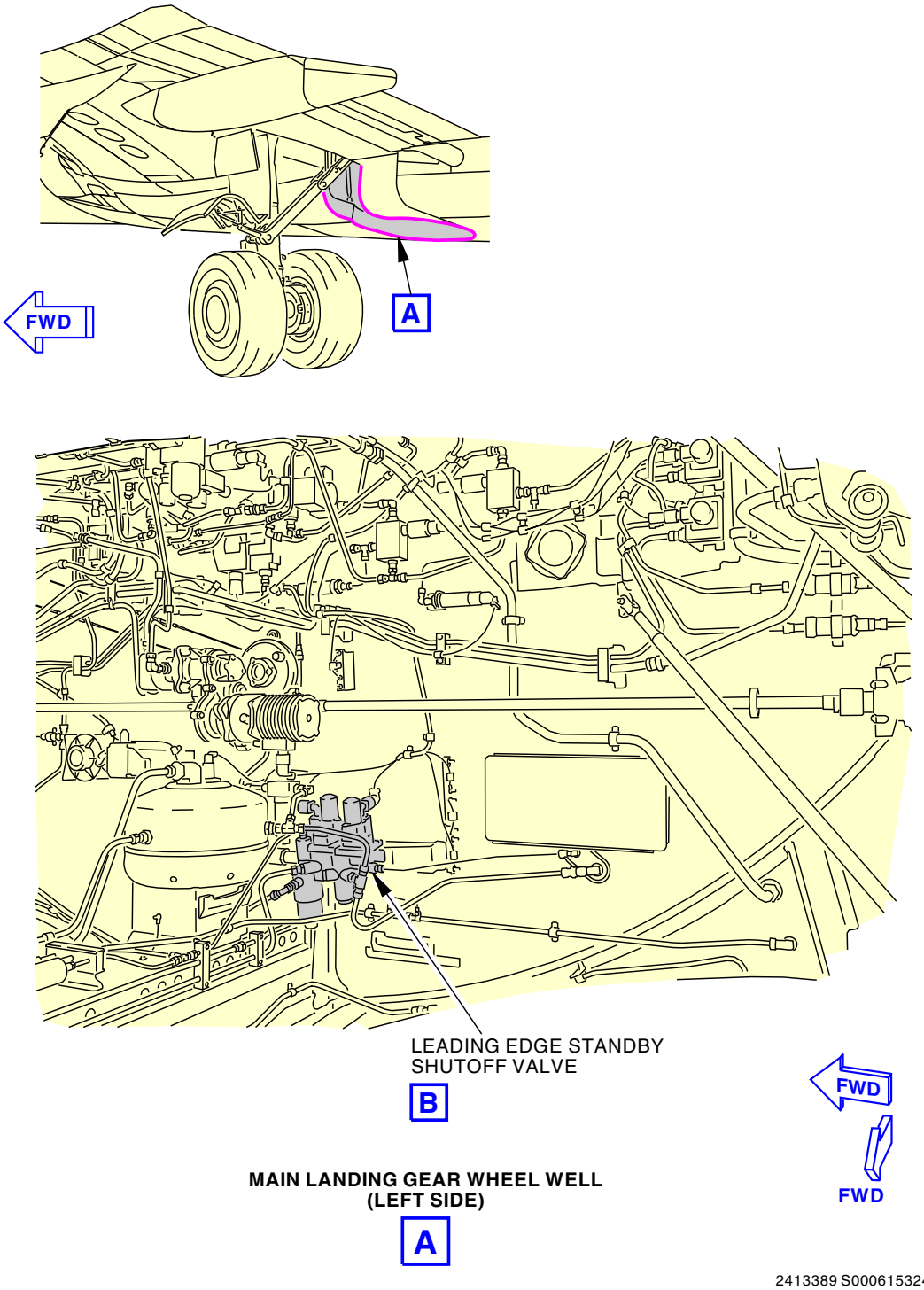
(h) Remove the backup rings [12], O-rings [11], backup rings [8], and O-ring [9] from the leading edge standby shutoff valve [13].

1) Discard the O-ring [9] and O-rings [11].

(i) Put a cover on the hydraulic module housing [10] to keep contamination out of the open leading edge standby shutoff valve motor [2] hole.

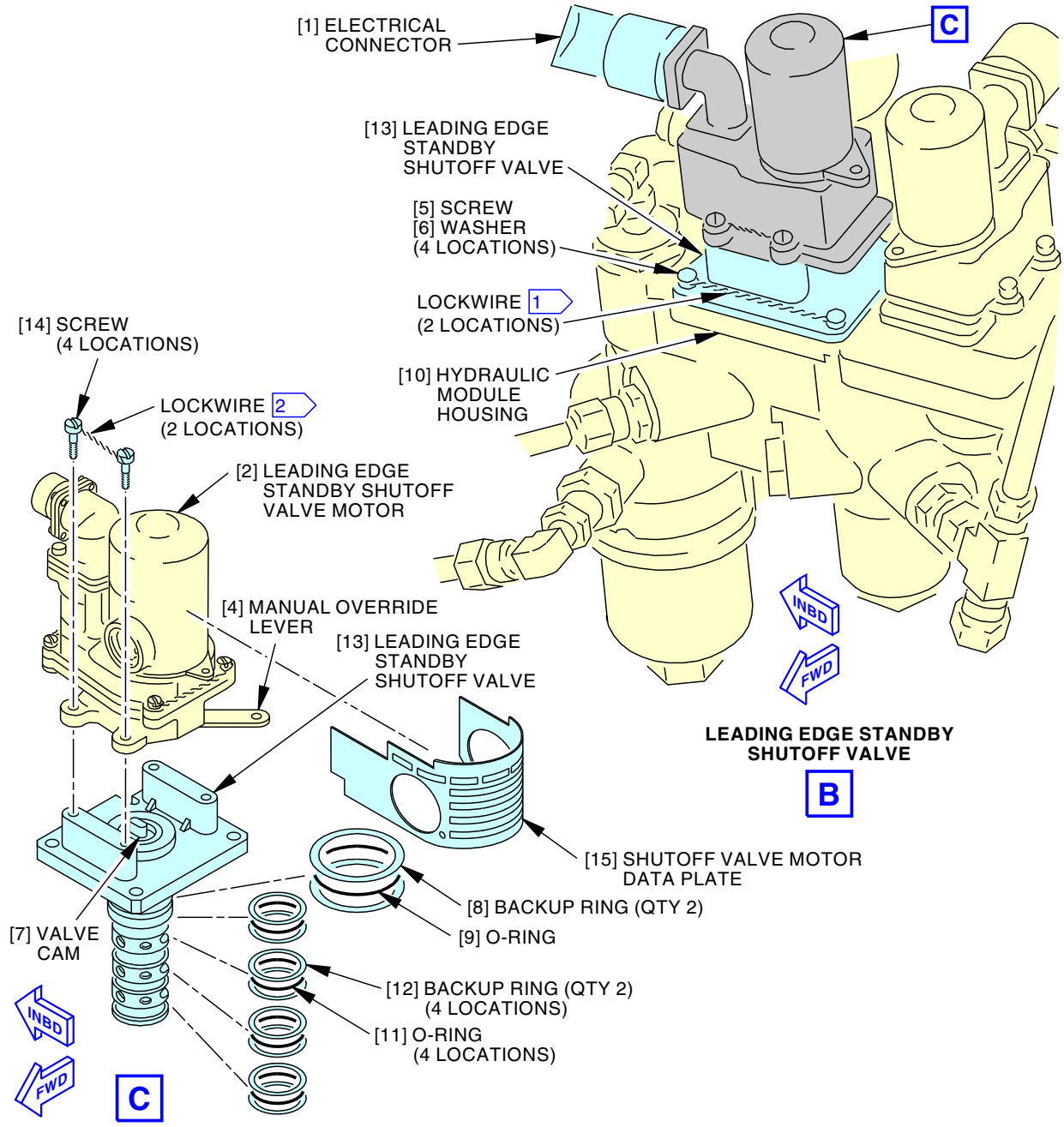
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Standby Shutoff Valve Installation
Figure 201/27-81-91-990-801 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 LOCKWIRE, MS20995NC32, ON FORWARD AND AFT SIDE OF [13] LEADING EDGE STANDBY SHUTOFF VALVE

2 LOCKWIRE, MS20995NC20, ON FORWARD AND AFT SIDE OF [2] LEADING EDGE STANDBY SHUTOFF VALVE MOTOR

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Leading Edge Standby Shutoff Valve Installation
Figure 201/27-81-91-990-801 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-81-91-400-801

3. Leading Edge Standby Shutoff Valve Installation

(Figure 201)

A. General

(1) This task gives the steps to install the leading edge standby shutoff valve [13] to the hydraulic module housing [10].

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Consumable Materials

Reference	Description	Specification
D00054	Fluid - Hydraulic Assembly Lubricant - MCS 352B (Formerly Monsanto MCS 352B)	
D00153	Fluid - Hydraulic Fluid, Fire Resistant (Interchangeable And Intermixable With BMS 3-11 Type V)	BMS3-11 Type IV
G01912	Lockwire - MS20995NC32, Monel - 0.032 Inch (0.8128 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Leading edge standby shutoff valve motor	27-81-91-02-040	SIA ALL
8	Backup ring	27-81-91-02-020	SIA ALL
9	O-ring	27-81-91-02-015	SIA ALL
11	O-ring	27-81-91-02-025	SIA ALL
12	Backup ring	27-81-91-02-030	SIA ALL
13	Leading edge standby shutoff valve	27-81-91-02-035	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Leading Edge Standby Shutoff Valve Installation

SUBTASK 27-81-91-420-001

(1) Install the backup rings [8], O-ring [9], backup rings [12], and O-rings [11] on the leading edge standby shutoff valve [13].

(a) Use new O-ring [9] and O-rings [11].

(b) Apply hydraulic fluid, D00153, or MCS 352B fluid, D00054, to the backup rings [8], O-ring [9], backup rings [12], and O-rings [11].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Use new O-ring [9] and O-rings [11].

SUBTASK 27-81-91-420-002

(2) Install the leading edge standby shutoff valve [13].

(a) Carefully install the leading edge standby shutoff valve [13] in the hydraulic module housing [10].

(b) Install the screws [5] and washers [6] to attach the leading edge standby shutoff valve [13] to the hydraulic module housing [10].

(c) Install the MS20995NC32 lockwire, G01912, on the screws [5] (TASK 20-10-44-400-801).

(d) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, refer to SWPM 20-60-03, Paragraph 2 to correct the problem.

(e) Apply the D5026NS or ZC-026 compound, G50171, to the electrical connector [1] (SWPM 20-60-03, Paragraph 2).

(f) Connect the electrical connector [1] to the leading edge standby shutoff valve motor [2].

NOTE: Corrosion inhibiting compound is applied to the exterior of the mated electrical connectors after the operational test is completed.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-91-860-004

(1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-81-91-610-001

(2) If it is necessary to service the hydraulic reservoirs, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-81-91-720-001

(3) Do this task: Leading Edge Standby Shutoff Valve Test, TASK 27-81-91-720-801.

——— END OF TASK ———

TASK 27-81-91-000-802

4. Standby Shutoff Valve Motor Removal

(Figure 201)

A. General

(1) This task gives the steps to remove the leading edge standby shutoff valve motor [2] from the leading edge standby shutoff valve [13].

B. References

Reference	Title
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 27-81-91-480-002

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) If the downlock pins are not installed on all the landing gears, do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-81-91-860-005

(2) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

E. Standby Shutoff Valve Motor Removal

SUBTASK 27-81-91-020-002

(1) Remove the leading edge standby shutoff valve motor [2].

(a) Disconnect the electrical connector [1] from the leading edge standby shutoff valve motor [2].

(b) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

(c) If there was corrosion, refer to SWPM 20-60-03, Paragraph 2 to correct the problem.

(d) Set the manual override lever [4] on the leading edge standby shutoff valve motor [2] to POSITION 2.

(e) Remove the lockwire that attaches to the screws [14].

(f) Remove the screws [14] that attach the leading edge standby shutoff valve motor [2] to the leading edge standby shutoff valve [13].

(g) Remove the leading edge standby shutoff valve motor [2] from the leading edge standby shutoff valve [13].

(h) If you will not replace the leading edge standby shutoff valve assembly, remove the shutoff valve motor data plate [15] (Figure 201).

1) Keep the shutoff valve motor data plate [15] for the subsequent installation.

NOTE: Data plate is for leading edge standby shutoff valve assembly accountability/traceability and will be installed on new motor.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) If you will replace the leading edge standby shutoff valve assembly, make sure that the shutoff valve motor data plate [15] is maintained with the removed leading edge standby shutoff valve assembly.

——— END OF TASK ———

TASK 27-81-91-400-802

5. Standby Shutoff Valve Motor Installation

(Figure 201)

A. General

(1) This task gives the steps to install the leading edge standby shutoff valve motor [2] to the leading edge standby shutoff valve [13].

NOTE: You can install the leading edge standby shutoff valve motor with theleading edge standby shutoff valve installed in the hydraulic module housing.

B. References

Reference	Title
20-10-44-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
SWPM 20-60-03	SPECIAL PROTECTION OF ELECTRICAL CONNECTORS

C. Consumable Materials

Reference	Description	Specification
G02166	Lockwire - MS20995NC20, Monel - 0.020 Inch (0.508 mm) Diameter	NASM20995
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Leading edge standby shutoff valve motor	27-81-91-02-040	SIA ALL

E. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Standby Shutoff Valve Motor Installation

SUBTASK 27-81-91-420-003

(1) Install the leading edge standby shutoff valve motor [2].

(a) If you did not replace the leading edge standby shutoff valve assembly, install the removed shutoff valve motor data plate [15] (Figure 201).

1) If the leading edge standby shutoff valve assembly has been replaced, install the new shutoff valve motor data plate.

(b) If you replaced the leading edge standby shutoff valve assembly, install the new shutoff valve motor data plate [15].

NOTE: If the shutoff valve motor data plate is maintained with the removed shutoff valve motor you can use it.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Make sure that the manual override lever [4] on the leading edge standby shutoff valve motor [2] is set to POSITION 2.

(d) Set the leading edge standby shutoff valve motor [2] in its position on the leading edge standby shutoff valve [13].

(e) Engage the leading edge standby shutoff valve motor [2] with the valve cam [7].

(f) Install the screws [14] to attach the leading edge standby shutoff valve motor [2].

(g) Tighten the screws [14] to 17 in-lb (1.92 N·m) - 20 in-lb (2.26 N·m).

(h) Install the MS20995NC20 lockwire, G02166, on the screws [14] (TASK 20-10-44-400-801).

(i) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: The inspection of the electrical connector(s) can be done after the removal step or before the installation step of the electrical connector(s). This is an operator option.

1) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

2) If there was corrosion, refer to SWPM 20-60-03, Paragraph 2 to correct the problem.

(j) Apply the D5026NS or ZC-026 compound, G50171, to the electrical connector [1] (SWPM 20-60-03, Paragraph 2).

(k) Connect the electrical connector [1] to the leading edge standby shutoff valve motor [2].

NOTE: Corrosion inhibiting compound is applied to the exterior of the mated electrical connectors after the operational test is completed.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-81-91-860-006

(1) Set the manual override lever [4] on the leading edge standby shutoff valve motor [2] to POSITION 1.

SUBTASK 27-81-91-860-007

(2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

SUBTASK 27-81-91-720-002

(3) Do this task: Leading Edge Standby Shutoff Valve Test, TASK 27-81-91-720-801.

——— END OF TASK ———

TASK 27-81-91-720-801

6. Leading Edge Standby Shutoff Valve Test

(Figure 202)

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. Consumable Materials

Reference	Description	Specification
G50170	Compound - Corrosion Inhibiting Compound, Soft Film, Exterior Use - Ardrox AV25	

C. Location Zones

Zone	Area
133	Main Landing Gear Wheel Well, Body Station 663.75 to Body Station 727.00 - Left
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Leading Edge Standby Shutoff Valve Motor Test

SUBTASK 27-81-91-710-001

(1) Do the test for the leading edge standby shutoff valve [13].

(a) Make sure that the manual override lever [4] is at position 1.

(b) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(c) Make sure that the flap control lever is in the UP detent.

(d) Set the alternate flaps arm switch, on the P5 flight controls panel, to the ARM position.

1) Make sure that the STANDBY HYD LOW PRESSURE light comes on.

2) Make sure that the standby hydraulic pump starts.

3) Make sure that the STANDBY HYD LOW PRESSURE light is off.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS. THE LEADING EDGE SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Set the alternate flaps control switch, on the P5 flight controls panel, to the DOWN position.

1) Make sure that the manual override lever [4] is at position 2.

2) Make sure that the leading edge flaps and slats fully extend.

(f) Set the alternate flaps control switch to the OFF position.

1) Make sure that the leading edge flaps and slats do not move.

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS. THE LEADING EDGE SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(g) Set the alternate flaps arm switch to the OFF position.

1) Make sure that the manual override lever [4] moves to position 1.

2) Make sure that the leading edge flaps and slats fully retract.

NOTE: The leading edge flaps and slats retract because of the pressurization of hydraulic system B.

SUBTASK 27-81-91-210-001

(2) Make sure that there is no hydraulic fluid leakage from the valve hydraulic fittings.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-81-91-860-010

(3) To remove power from hydraulic system B, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

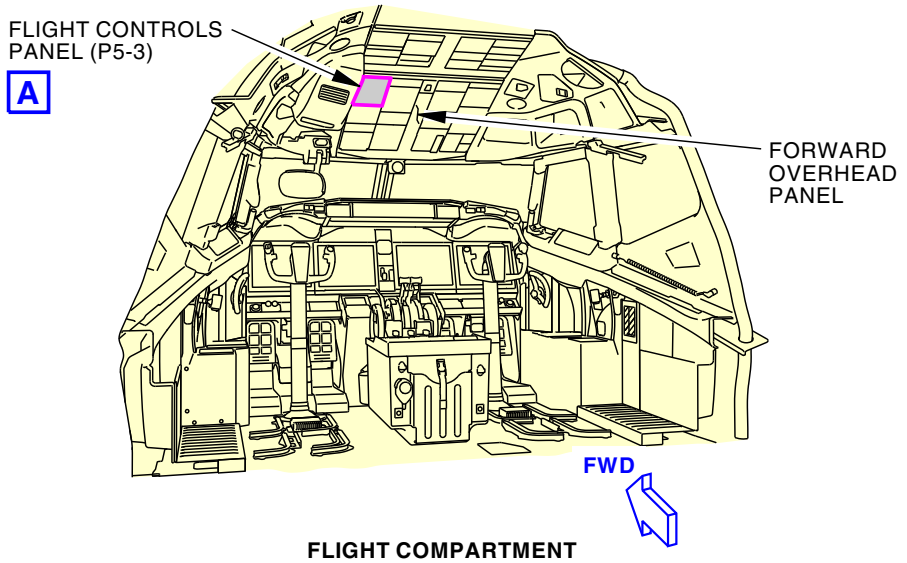
SUBTASK 27-81-91-212-001

(4) Apply the Ardrox AV25 compound, G50170, to the mated electrical connector assembly completely, until the compound drips from the connector.

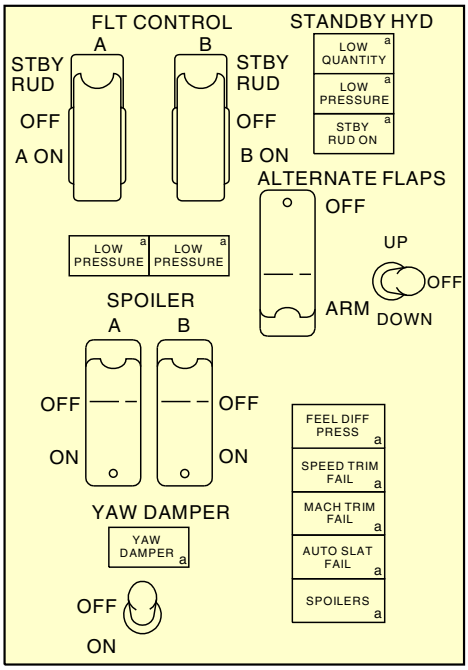
(a) Do not remove the excess corrosion inhibiting compound.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



FLIGHT CONTROLS PANEL (P5-3)

A

2413391 S00061532470_V2

Alternate Flaps Control Switches
Figure 202/27-81-91-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE AUTOSLAT SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

(1) Test of the autoslat system indicator light

(2) Operational test of the leading edge autoslat system.

TASK 27-83-00-720-801

2. Autoslat System Indicator Light - Functional Test

(Figure 501)

A. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

B. Do a test of the autoslat system indicator light

SUBTASK 27-83-00-860-004

(1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	5	C01204	SMYD-1 CMPTR DC

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	5	C01206	SMYD-2 CMPTR DC

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-00-820-001

(2) Make sure that the AUTOSLAT FAIL light, on the P5-3 overhead panel, is off.

SUBTASK 27-83-00-720-001

(3) Push and release the AUTOSLAT FAIL light switch.

(a) Make sure that the AUTOSLAT FAIL light comes on when you push the light switch then it goes off when you release.

SUBTASK 27-83-00-720-002

(4) Put the LIGHTS switch in the TEST position and make sure that these lights come on (Figure 501):

(a) The MASTER CAUTION lights.

(b) The FLT CONT light.

(c) The AUTOSLAT FAIL light.

SUBTASK 27-83-00-860-005

(5) Put the LIGHTS switch in the BRT position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-83-00-720-003

(6) Push the MASTER CAUTION light switch and make sure that these lights go off:

(a) The MASTER CAUTION lights.

(b) The FLT CONT light.

(c) The AUTOSLAT FAIL light.

SUBTASK 27-83-00-720-004

(7) Push the master caution annunciator panel.

(a) Make sure that the AUTOSLAT FAIL light stays off.

SUBTASK 27-83-00-720-005

(8) Make sure that the autoslat fault display works correctly when autoslat 1 is disabled:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(b) Push the master caution annunciator panel and make sure that these lights come on:

1) The MASTER CAUTION lights.

2) The FLT CONT light.

3) The AUTOSLAT FAIL light.

(c) Push the MASTER CAUTION switch light and make sure that these lights go off:

1) The MASTER CAUTION lights.

2) The FLT CONT light.

3) The AUTOSLAT FAIL light.

SUBTASK 27-83-00-720-006

(9) Make sure that the autoslat fault display works correctly when autoslat 1 and 2 are disabled:

(a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

(b) Push the master caution annunciator panel and make sure that these lights come on:

1) The MASTER CAUTION lights.

2) The FLT CONT light.

3) The AUTOSLAT FAIL light.

(c) Push the MASTER CAUTION light switch and make sure that these actions occur:

1) The MASTER CAUTION lights go off.

2) The FLT CONT light goes off.

3) The AUTOSLAT FAIL light stays on.

SUBTASK 27-83-00-720-007

(10) Make sure that the autoslat fault display works properly when autoslat 2 is disabled:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(b) Make sure that the AUTOSLAT FAIL light goes off.

(c) Push the master caution annunciator panel and make sure that these lights come on:

1) The MASTER CAUTION lights.
2) The FLT CONT light.
3) The AUTOSLAT FAIL light.

(d) Push the MASTER CAUTION light switch and make sure that these lights go off:

1) The MASTER CAUTION lights.
2) The FLT CONT light.
3) The AUTOSLAT FAIL light.

SUBTASK 27-83-00-860-006

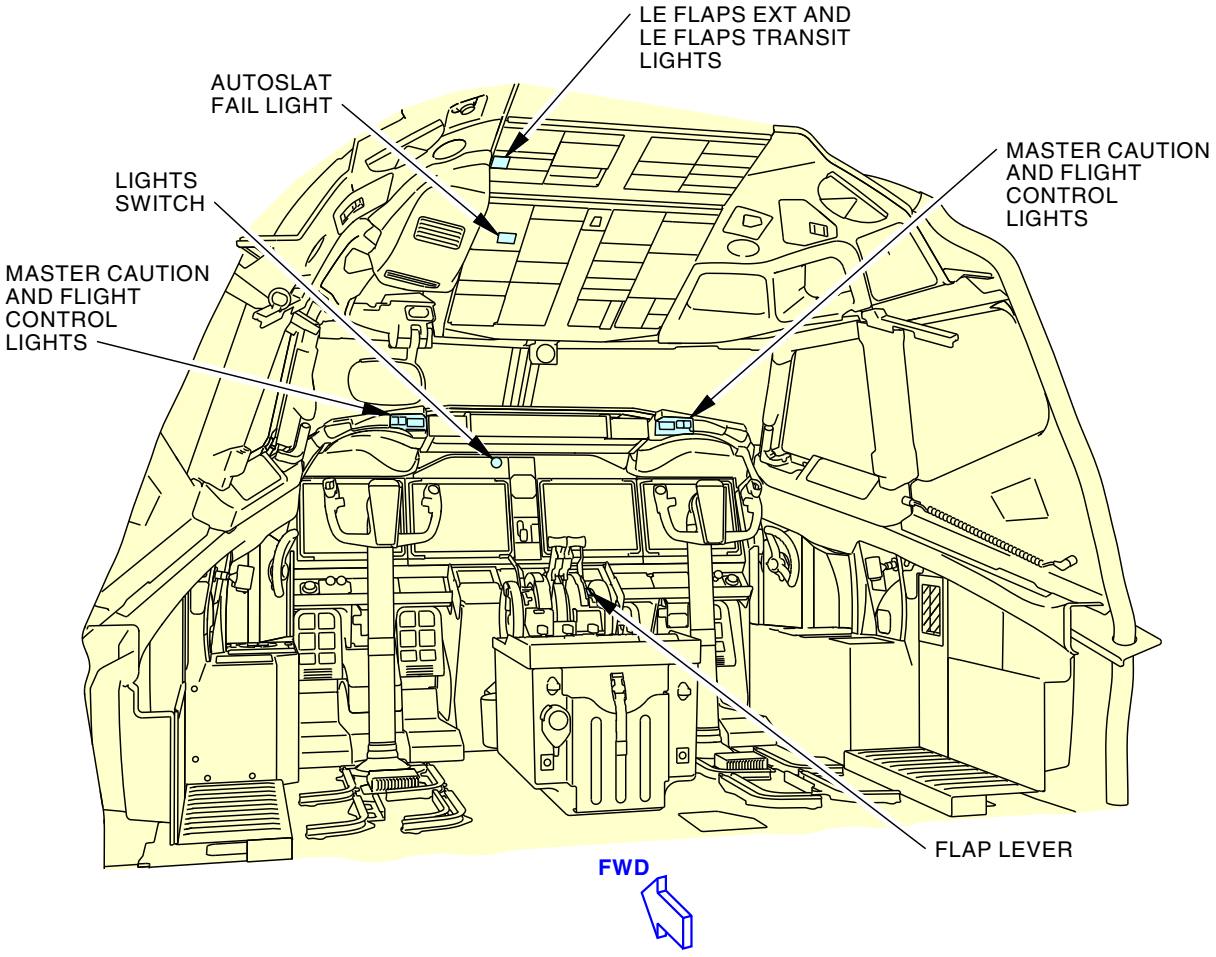
(11) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT

2413392 S00061532478_V2

Leading Edge Autoslat System Test
Figure 501/27-83-00-990-802

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-83-00-710-801

3. Leading Edge Autoslat System - Functional Test

(Figure 502)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-09-00-840-802	Return the Airplane Systems Back to Their Normal on Ground Condition (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1917	Fixture - Test, Angle of Attack Sensor, ROSEMOUNT AOA's Part #: J34002-19 Supplier: 81205 Opt Part #: A34012-19 Supplier: 81205 Opt Part #: A34012-24 Supplier: 81205 Opt Part #: J34002-18 Supplier: 81205

C. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right
211	Flight Compartment - Left
212	Flight Compartment - Right
500	Left Wing
600	Right Wing

D. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

E. Prepare for the Procedure

NOTE: There is no need to simulate airspeed during this test.

SUBTASK 27-83-00-860-007

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

WARNING OBEY THE PROCEDURE THAT PUTS THE AIRPLANE IN THE AIR MODE. IF YOU DO THE PROCEDURE INCORRECTLY, INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) For the hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-83-00-010-001

(2) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

F. Autoslat Operation Test

SUBTASK 27-83-00-860-008

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-00-840-002

WARNING KEEP PERSONS AND EQUIPMENT AWAY FROM THE LEADING EDGE SLATS WHEN OPERATE THIS TEST. THE LEADING EDGE SLATS WILL MOVE. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Make sure that there are no personnel or equipment near the leading edge slats.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-83-00-820-002

WARNING MAKE SURE THAT THE HEATER CIRCUIT BREAKERS ABOVE ARE OPEN AND THE AOA SENSOR HEAT IS OFF BEFORE YOU MOVE THE AOA SENSOR. IF THE HEATER CIRCUIT BREAKERS ARE CLOSED, INJURY TO PERSONS CAN OCCUR.

(3) Turn the Left AOA sensor counterclockwise and the right AOA sensor clockwise to 30 degrees (Figure 502).

NOTE: You can use Method 1 or Method 2 to measure the AOA sensor angle.

NOTE: For the duration of this test, airspeed must not be simulated.

(a) Method 1 to measure the AOA sensor angle:

1) Install the angle of attack probe test fixture, SPL-1917, on the AOA sensor.

NOTE: The test fixture allows for accurate measurement of the AOA sensor angle.

(b) Method 2 to measure the AOA sensor angle:

1) Do these steps on each Stall Management Yaw Damper (SMYD) to determine when the AOA sensor angles show 30 degrees airplane nose up:

a) Push the ON/OFF switch on the SMYD.

b) Push the down arrow switch on the SMYD until the display shows GROUND TESTS?.

c) Push the YES switch.

d) Push the down arrow switch on the SMYD until the display shows ANALOG INPUTS?.

e) Push the YES switch.

<1> Make sure the display shows AOA SENSOR.

f) Push the YES switch.

g) The display will show AOA and the angle of the AOA sensor.

SUBTASK 27-83-00-860-009

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Move the flaps to the 1 position.

(a) Make sure that the leading edge slats move to the flaps 1 (mid-extend) position.

SUBTASK 27-83-00-860-010

(5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-83-00-840-003

WARNING MAKE SURE THAT YOU DO THE STEPS TO PREPARE THE SYSTEMS FOR THE AIR MODE CORRECTLY. IF YOU DO NOT FOLLOW THESE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Make sure that the slats move to the full extend position.

(b) Make sure that LE FLAPS EXT displays and LE FLAPS TRANSIT not displays on the Engine Display of the main instrument panel.

SUBTASK 27-83-00-860-011

(7) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE MOVED AWAY FROM THE CONTROL SURFACES BEFORE YOU START MOVEMENT. THIS WILL PREVENT INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Make sure that the slats move to the flaps 1 (mid-extend) position.

SUBTASK 27-83-00-860-012

(8) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE MOVED AWAY FROM THE CONTROL SURFACES BEFORE YOU START MOVEMENT. THIS WILL PREVENT INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Make sure that the slats move to the full extend position.

(b) Make sure that LE FLAPS EXT displays and LE FLAPS TRANSIT not displays on the Engine Display of the main instrument panel.

SUBTASK 27-83-00-860-013

(9) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Make sure that the slats move to the flaps 1 (mid-extend) position.

SUBTASK 27-83-00-080-003

(10) If installed, remove the angle of attack probe test fixture, SPL-1917, from the AOA sensor.

SUBTASK 27-83-00-820-003

(11) Turn the Left and right AOA sensors to 0 degrees (Figure 502).

SUBTASK 27-83-00-820-004

(12) Put the flap lever in the UP position.

SUBTASK 27-83-00-860-014

(13) Do this task: Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-83-00-840-004

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	4	C01392	STICK SHAKER LEFT

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-00-840-005

(2) Do this task: Return the Airplane Systems Back to Their Normal on Ground Condition, TASK 32-09-00-840-802.

SUBTASK 27-83-00-840-006

(3) Push the ON/OFF switch on the SMYD to turn off the SMYD display.

(a) Push the YES switch to make sure that the display is off.

SUBTASK 27-83-00-840-007

(4) If hydraulic power is not necessary, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

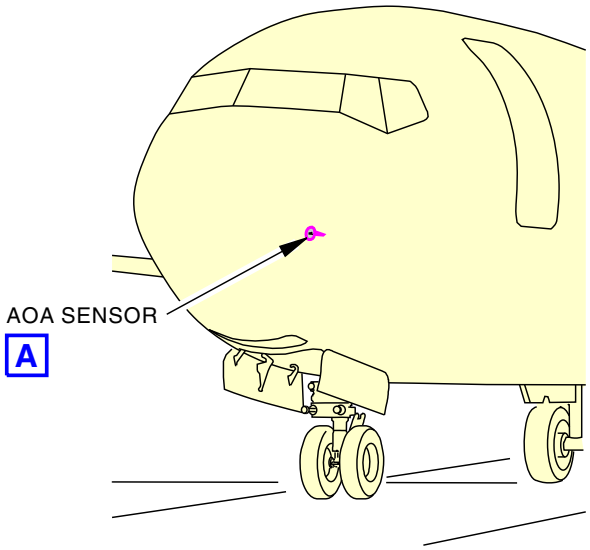
SUBTASK 27-83-00-940-001

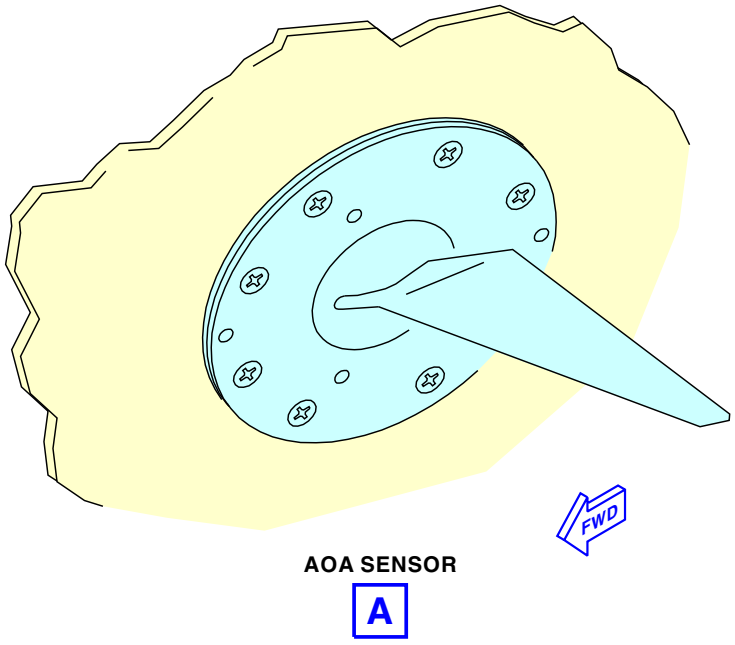
(5) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details





NOTE:
LEFT AOA SENSOR IS SHOWN, RIGHT AOA SENSOR IS OPPOSITE.

2413393 S00061532480_V2

Angle of Attack (AOA) Sensor
Figure 502/27-83-00-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AUTOSLAT CONTROL VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the autoslat control valve

(2) Installation of the autoslat control valve.

B. There are solenoids installed on the autoslat control valve. It is not necessary to remove the solenoids to remove the control valve.

TASK 27-83-21-000-801

2. Autoslat Control Valve Removal

(Figure 401)

A. References

Reference	Title
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

C. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

D. Prepare for the Removal

SUBTASK 27-83-21-480-001

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins installed on the main and nose landing gear. Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-83-21-860-001

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-83-21-010-001

(3) To gain access to the autoslat control valve,

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Autoslat Control Valve Removal

SUBTASK 27-83-21-860-002

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-21-020-001

(2) Disconnect the electrical connector [6] and electrical connector [7] from the autoslat control valve [1].

(a) After you disconnect the electrical connector(s), examine the connector(s) for corrosion.

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-83-21-480-002

(3) Put a bucket or other applicable container to collect hydraulic fluid below the autoslat control valve [1].

SUBTASK 27-83-21-020-002

(4) Disconnect the hydraulic line (C2) [4], hydraulic line [5], hydraulic line (C1) [8], hydraulic line [9], hydraulic line [10], and hydraulic line [11] from the autoslat control valve [1].

SUBTASK 27-83-21-020-003

(5) Remove the bolts [2], washers [3], and the autoslat control valve [1].

SUBTASK 27-83-21-480-003

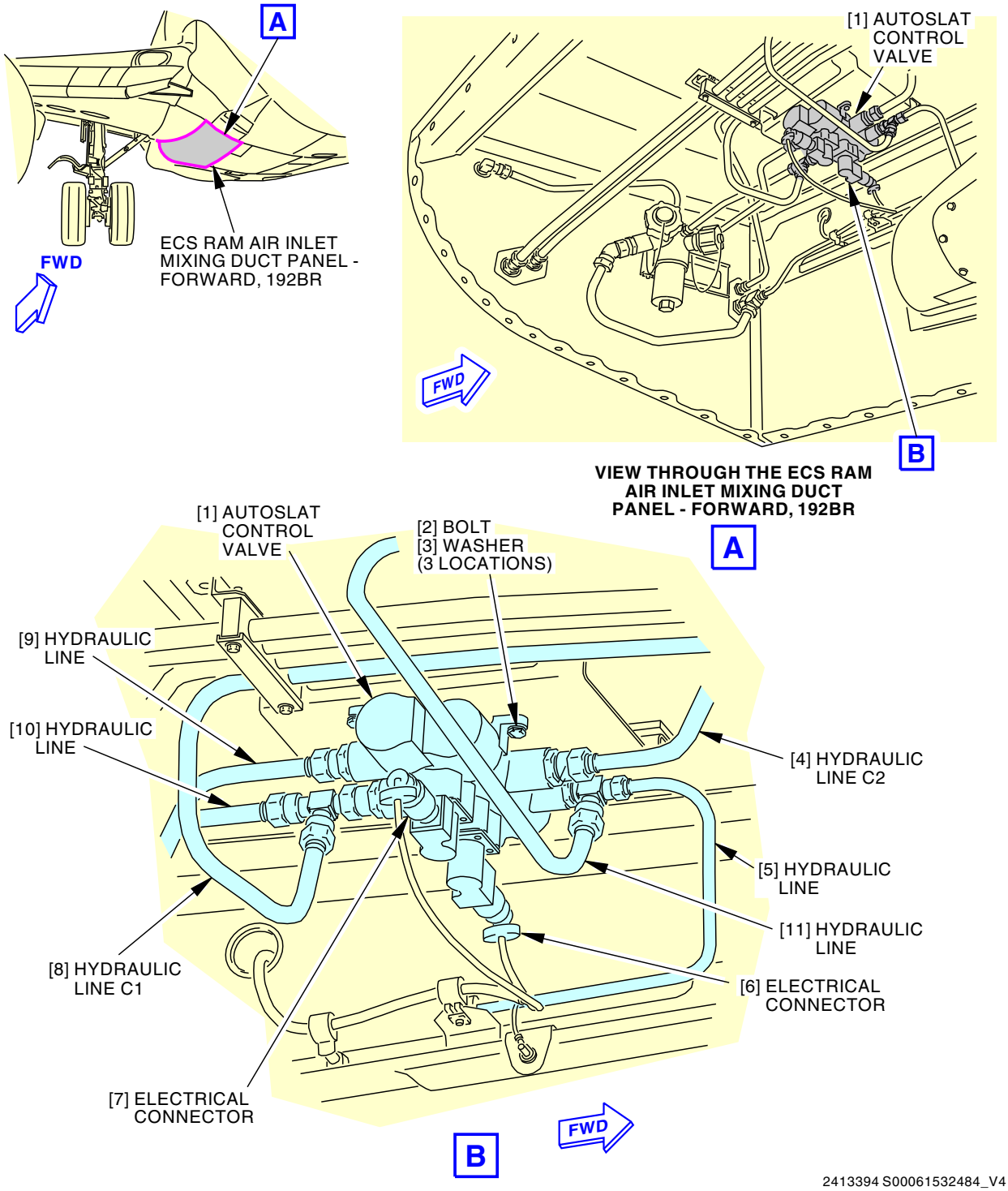
(6) Install caps on the hydraulic line (C2) [4], hydraulic line [5], hydraulic line (C1) [8], hydraulic line [9], hydraulic line [10], and hydraulic line [11].

SUBTASK 27-83-21-480-004

(7) Install plugs in the hydraulic ports on the autoslat control valve [1].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Autoslat Control Valve Installation
Figure 401/27-83-21-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-83-21-400-801

3. Autoslat Control Valve Installation

(Figure 401)

A. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-83-00-710-801	Leading Edge Autoslat System - Functional Test (P/B 501)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-00-01-480-801	Landing Gear Downlock Pins Installation (P/B 201)
SWPM 20-60-03	Special Protection of Electrical Connectors

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1550	Bonding Meter - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: M1B Supplier: 3AD17 Part #: T477W (C15292) Supplier: 06659

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
G50171	Compound - Corrosion Inhibiting Compound, Interior Application - D5026NS or ZC-026	

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Autoslat control valve	27-83-21-01-005	SIA 001-014
		27-83-21-02-005	SIA 015-999

E. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

F. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Installation

SUBTASK 27-83-21-480-005

WARNING MAKE SURE THE DOWNLOCK PINS ARE INSTALLED ON ALL THE LANDING GEAR. WITHOUT THE DOWNLOCK PINS, THE LANDING GEAR COULD RETRACT AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Make sure that the downlock pins installed on the main and nose landing gear. Do this task: Landing Gear Downlock Pins Installation, TASK 32-00-01-480-801.

SUBTASK 27-83-21-860-003

(2) Make sure that there is no hydraulic power. If there is, do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

H. Autoslat Control Valve Installation

SUBTASK 27-83-21-420-001

(1) Install the autoslat control valve [1]:

(a) Make sure that the mating surface of the autoslat control valve [1] and the mounting bracket are clean.

(b) Apply sealant, A00247 on the bolts [2] threads.

(c) Put the autoslat control valve [1] in its position on the bracket.

(d) Install the bolts [2] and washers [3] that attach the autoslat control valve [1].

(e) With the intrinsically safe approved bonding meter, COM-1550, make sure that the bonding resistance between the autoslat control valve [1] and the structure is less than 0.0025 ohms.

(f) Remove the caps from the hydraulic line (C2) [4], hydraulic line [5], hydraulic line (C1) [8], and hydraulic line [9].

(g) Remove the plugs from the ports on the autoslat control valve [1].

SUBTASK 27-83-21-420-002

(2) Connect the hydraulic line (C2) [4], hydraulic line (C1) [8], hydraulic line [9], and hydraulic line [10] to the autoslat control valve [1].

(a) Tighten the B-nuts on hydraulic line (C2) [4], hydraulic line (C1) [8], hydraulic line [9], and hydraulic line [10] to 500 ±25 in-lb (56 ±3 N·m).

SUBTASK 27-83-21-420-004

(3) Connect the hydraulic line [5] and hydraulic line [11] to the autoslat control valve [1].

(a) Tighten the B-nuts on hydraulic line [5] and hydraulic line [11] to 170 ±9 in-lb (19 ±1 N·m).

SUBTASK 27-83-21-210-001

(4) If you did not examine the electrical connector(s) at the removal step, do these steps:

NOTE: You can do the inspection of the electrical connector(s) after the removal or before the installation steps of the electrical connector(s). This is an operator option.

(a) Before you connect the electrical connector(s), examine the connector(s) for corrosion.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

DO THE STEPS BELOW IF THE AIRPLANE OPERATES AT AIRPORTS WHERE DEICING FLUID THAT CONTAIN POTASSIUM FORMATE IS USED. ALSO DO THE STEPS FOR ALL AIRPLANES THAT YOU FOUND CORROSION IN THE ELECTRICAL CONNECTORS IN THE MAIN WHEEL WELL. THE ELECTRICAL CONNECTOR IS PART OF A SYSTEM THAT IS NECESSARY FOR SAFE FLIGHT.

(b) If there was corrosion, refer to (SWPM 20-60-03) to correct the problem.

SUBTASK 27-83-21-800-001

(5) Apply the D5026NS or ZC-026 compound, G50171 to the connectors (SWPM 20-60-03).

SUBTASK 27-83-21-420-003

(6) Connect the electrical connector [6] and electrical connector [7] to the autoslat control valve [1].

SUBTASK 27-83-21-860-004

(7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-21-610-001

(8) If it is necessary for the hydraulic system, do this task: Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-83-21-740-001

(9) Do this task: Leading Edge Autoslat System - Functional Test, TASK 27-83-00-710-801.

SUBTASK 27-83-21-210-002

(10) Make sure that there are no hydraulic fluid leaks at the autoslat control valve [1].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 27-83-21-940-001

(1) Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AUTOSLAT CONTROL VALVE - INSPECTION/CHECK

1. General

A. This task does a check for internal hydraulic leakage in the autoslat valve.

TASK 27-83-21-790-801

2. Autoslat Valve Internal Hydraulic Leakage Check

A. General

(1) This procedure does an internal hydraulic leakage check for the leading edge auto slat valves. The purpose of this leakage test is to identify high leakage valve.

(2) You must measure the amount of leakage of hydraulic fluid during different conditions of operation to measure the fluid flow rate. It will be necessary to disconnect the return hydraulic line.

B. References

Reference	Title
12-12-00-610-801	Hydraulic Reservoir Servicing (P/B 301)
27-83-00-710-801	Leading Edge Autoslat System - Functional Test (P/B 501)
27-83-21-000-801	Autoslat Control Valve Removal (P/B 401)
27-83-21-400-801	Autoslat Control Valve Installation (P/B 401)
29-00-00-800-801	Hydraulic Power System - Deactivation (P/B 201)
29-00-00-800-802	Hydraulic Power System - Activation (P/B 201)
29-09-00-860-801	Hydraulic Reservoirs Pressurization (P/B 201)
29-09-00-860-802	Hydraulic Reservoirs Depressurization (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)
32-09-00-860-801	Put the Airplane in the Air Mode (P/B 201)
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)

C. Tools/Equipment

Reference	Description
STD-6505	Container - Measuring, 500 cc, Calibrated in cc (ml)

D. Location Zones

Zone	Area
192	Lower Wing-To-Body Fairing - Under Wing Box

E. Access Panels

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

F. Prepare for the Internal Leakage Check

SUBTASK 27-83-21-860-006

(1) If the trailing edge flaps are not in the retracted position, then do these steps:

(a) Supply system B hydraulic power. To supply hydraulic power, do this task:
Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

(b) Move the flap control lever to the FLAP UP position to retract the trailing edge flaps.

(c) Remove system B hydraulic power. To remove hydraulic power, do this task:

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Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

SUBTASK 27-83-21-860-007

(2) Make sure the flap control lever is at the FLAP UP position.

SUBTASK 27-83-21-860-008

(3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-21-010-002

(4) To gain access to the autoslat control valve,

Remove this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

G. Autoslat Valve Internal Leakage Check

SUBTASK 27-83-21-860-009

WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Supply system B hydraulic power. To supply hydraulic power, do this task:

Hydraulic Power System - Activation, TASK 29-00-00-800-802

SUBTASK 27-83-21-860-010

(2) Move the flap control lever to the 15-unit detent position to extend the leading and trailing edge flaps and slats.

NOTE: The flap control lever operates the control cable input to the flap control unit. The flap control unit controls the leading edge flap and slat control valve to provide the hydraulic power to the autoslat valve.

SUBTASK 27-83-21-860-011

(3) Remove system B hydraulic power. To remove hydraulic power, do this task:

Hydraulic Power System - Deactivation, TASK 29-00-00-800-801.

SUBTASK 27-83-21-860-012

(4) Remove the pressure from the system B reservoir. To remove the pressure, do this task:

Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

NOTE: It is necessary to remove the pressure from the reservoir. When you disconnect a hydraulic line below the level of the reservoir, all the hydraulic fluid will flow and drain out of the reservoir if pressure is applied.

SUBTASK 27-83-21-790-001

(5) Put a measuring container, STD-6505 under the return line on the autoslat valve.

SUBTASK 27-83-21-020-004

(6) Disconnect the return line from the autoslat valve. Use the applicable steps from this task

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Autoslat Control Valve Removal, TASK 27-83-21-000-801.

NOTE: The return line goes to a tee, with one line to the hydraulic reservoir, and one line to the leading edge UCM valve.

SUBTASK 27-83-21-790-002

(7) Install a cap or plug on the hydraulic line that goes to the tee.

SUBTASK 27-83-21-860-013

(8) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task:

Hydraulic Reservoirs Pressurization, TASK 29-09-00-860-801.

SUBTASK 27-83-21-860-014

(9) Supply system B hydraulic power. To supply hydraulic power, do this task:

Hydraulic Power System - Activation, TASK 29-00-00-800-802.

SUBTASK 27-83-21-790-003

(10) Measure the leakage from the autoslat valve with the solenoids not energized:

(a) Measure and record the leakage rate from the return port on the autoslat valve.

NOTE: The leakage rate must not be more than 40 cc/minute.

SUBTASK 27-83-21-860-015

(11) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

SUBTASK 27-83-21-860-016

(12) Do this task: Put the Airplane in the Air Mode, TASK 32-09-00-860-801.

SUBTASK 27-83-21-860-017

(13) Move the flap control lever to the 30-unit detent position.

NOTE: A small amount of hydraulic fluid will leak from the autoslat valve when the autoslat valve solenoids are energized. The solenoids will be energized for approximately 1/2 second, when the trailing edge flaps are between the 15 and 25 unit positions.

SUBTASK 27-83-21-790-004

(14) Measure the leakage from the autoslat valve after the solenoids have been cycled:

(a) Measure and record the leakage rate from the return port on the autoslat valve again.

NOTE: The leakage rate must not be more than 40 cc/minute.

SUBTASK 27-83-21-860-018

(15) Move the flap control lever to the UP position to retract the leading and trailing edge flaps and slats.

SUBTASK 27-83-21-860-019

(16) Do this task Return the Airplane to the Ground Mode, TASK 32-09-00-860-802.

SUBTASK 27-83-21-860-020

(17) Remove system B hydraulic power. To remove hydraulic power, do this task:

Hydraulic Power System - Deactivation, TASK 29-00-00-800-801

SUBTASK 27-83-21-860-021

(18) Remove the pressure from the system B reservoir. To remove the pressure, do this task:

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Hydraulic Reservoirs Depressurization, TASK 29-09-00-860-802.

H. Return the Airplane to the Usual Condition

SUBTASK 27-83-21-410-001

(1) Remove the cap or plug from the hydraulic line that goes to the hydraulic reservoir.

SUBTASK 27-83-21-410-002

(2) Re-connect the return line to the autoslat valve. Do the applicable steps from this task:
Autoslat Control Valve Installation, TASK 27-83-21-400-801.

SUBTASK 27-83-21-610-002

(3) If it is necessary for the hydraulic reservoir, do this task:
Hydraulic Reservoir Servicing, TASK 12-12-00-610-801.

SUBTASK 27-83-21-720-001

(4) Do this task:
Leading Edge Autoslat System - Functional Test, TASK 27-83-00-710-801.

SUBTASK 27-83-21-210-003

(5) Make sure there are no hydraulic fluid leaks at the autoslat control valve.

SUBTASK 27-83-21-410-003

(6) Install this access panel:

Number	Name/Location
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward

——— END OF TASK ———

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LEADING EDGE FLAP AND SLAT POSITION INDICATING SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure contains an operational test of the leading edge flap and slat position indicating system.

TASK 27-88-00-710-801

2. Leading Edge Flap and Slat Position Indicating System - Operational Test

(Figure 501)

A. General

(1) The leading edge flap and slat position indicating system must be correctly adjusted before you do the operational test. The leading edge proximity sensors and targets are used to find the leading edge flap and slat position.

(2) The leading edge slat sequence for the 737-8 and 737-9 are the same. The leading edge slats move to the extend position for flap lever positions 1-unit detent through 25-unit detent. The leading edge slats move to the full extend position at the 30-unit detent flap lever position.

B. References

Reference	Title
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Prepare for the Operational Test

SUBTASK 27-88-00-860-008

WARNING KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Leading Edge Flap and Slat Position Indicating System - Operational Test

SUBTASK 27-88-00-710-002

(1) Move the flap control lever to the FLAP UP position.

(a) Make sure each flap and slat is in the retract position and align with the wing structure.

(b) Make sure the amber LE FLAPS TRANSIT light and green LE FLAPS EXT light on the engine indication display of the captains inboard display unit (DU) on panel P1, are off.

(c) Make sure all the position lights on the leading edge flap/slat position annunciator, P5-12, on the aft overhead panel are off.

(d) Set the master dim and test lights switch, on the P1 panel, to the DIM position.

(e) Push the TEST switch below the leading edge flap/slat position annunciator, P5-12, on the aft overhead panel.

(f) Make sure all the annunciator lights are on.

(g) Release the TEST switch.

(h) Make sure all the annunciator lights go off.

SUBTASK 27-88-00-710-003

CAUTION

MAKE SURE THAT THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED AND IN THE STOWED POSITION OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN COWL PANEL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(2) Move the flap control lever to the 1-unit detent position.

(a) When the leading edge flaps and slats start to move to the commanded 1-unit detent position, look for these conditions:

1) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, comes on.

2) Make sure these lights come on in the leading edge flap/slat position annunciator, P5-12, on the aft overhead panel.

a) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, comes on.

b) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, comes on.

(b) When the leading edge flaps and slats stop at the commanded 1-unit detent position, look for these conditions:

1) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, go off.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, go off.

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5) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, come on.

6) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, come on.

7) Make sure that the leading edge flaps 1 through 4 are at the extend position.

8) Make sure that the leading edge slats 1 through 8 are at the extend position.

SUBTASK 27-88-00-710-004

(3) Move the flap control lever to the 5-unit detent position.

(a) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, are on.

(b) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, are on.

(c) Make sure leading edge slats 1 through 8 remain at the extend position.

SUBTASK 27-88-00-710-006

(4) Move the flap control lever to the 30-unit detent position.

(a) Do these checks while the leading edge slats move to the commanded 30-unit detent position:

1) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, go off.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, come on.

(b) Do these checks when the leading edge slats stop at the commanded 30-unit detent position:

1) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, are on.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, go off.

5) Make sure the annunciator LE DEVICES SLATS 1 through 8, green FULL EXT lights, come on.

6) Make sure that the leading edge slats 1 through 8 move from the extend position to the full extend position.

SUBTASK 27-88-00-710-007

(5) Move the flap control lever to the 40-unit detent position.

(a) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, remains on.

(b) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, remain on.

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(c) Make sure the annunciator LE DEVICES SLATS 1 through 8, green FULL EXT lights, remain on.

(d) Make sure that the leading edge slats 1 through 8 remain at the full extend position.

(e) Make sure that the leading edge flaps 1 through 4 remain at the extend position.

SUBTASK 27-88-00-710-009

(6) Move the flap control lever to the 30-unit detent position.

(a) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display remains on.

(b) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, remain on.

(c) Make sure the annunciator LE DEVICES SLATS 1 through 8, green FULL EXT lights, remain on.

(d) Make sure that the leading edge slats 1 through 8 remains at the full extend position.

(e) Make sure that the leading edge flaps 1 through 4 remains at the extend position.

SUBTASK 27-88-00-710-011

(7) Move the flap control lever to the 25-unit detent position.

(a) Do these checks while the leading edge slats move to the commanded 25-unit detent position:

1) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, remain on.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, green FULL EXT lights, go off.

5) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, come on.

6) Make sure that the leading edge flaps 1 through 4 remain at the extend position.

7) Make sure that the leading edge slats 1 through 8 move from the full extend position to the extend position.

(b) Do these checks when the leading edge slats stop at the commanded 25-unit detent position:

1) Make sure the amber LE FLAPS TRANSIT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, remain on.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, go off.

5) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, come on.

6) Make sure that the leading edge flaps 1 through 4 remain at the extend position.

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7) Make sure that the leading edge slats 1 through 8 are at the extend position.

SUBTASK 27-88-00-710-012

(8) Move the flap control lever to the 1-unit detent position.

(a) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display remains on.

(b) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, remain on.

(c) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, remain on.

(d) Make sure that the leading edge flaps 1 through 4 remain at the extend position.

(e) Make sure that the leading edge slats 1 through 8 remain at the extend position.

SUBTASK 27-88-00-710-013

(9) Move the flap control lever to the FLAP UP detent position.

(a) Make sure the leading edge flaps and slats move to the retract position.

1) Make sure the green LE FLAPS EXT light, on the captain's inboard DU engine indication display, goes off.

2) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, comes on.

3) Make sure the annunciator LE DEVICES FLAPS 1 through 4, green EXT lights, goes off.

4) Make sure the annunciator LE DEVICES SLATS 1 through 8, green EXT lights, goes off.

5) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, come on.

6) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, come on.

(b) Do these checks when the leading edge flaps and slats are at the retract position:

1) Make sure the annunciator LE DEVICES FLAPS 1 through 4, amber TRANSIT lights, goes off.

2) Make sure the annunciator LE DEVICES SLATS 1 through 8, amber TRANSIT lights, goes off.

3) Make sure that all annunciator lights are off.

4) Make sure the amber LE FLAPS TRANSIT light on the engine indication display of the captain's inboard DU on panel P1, goes off.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-00-860-009

(1) Remove hydraulic power. This is the task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

END OF TASK

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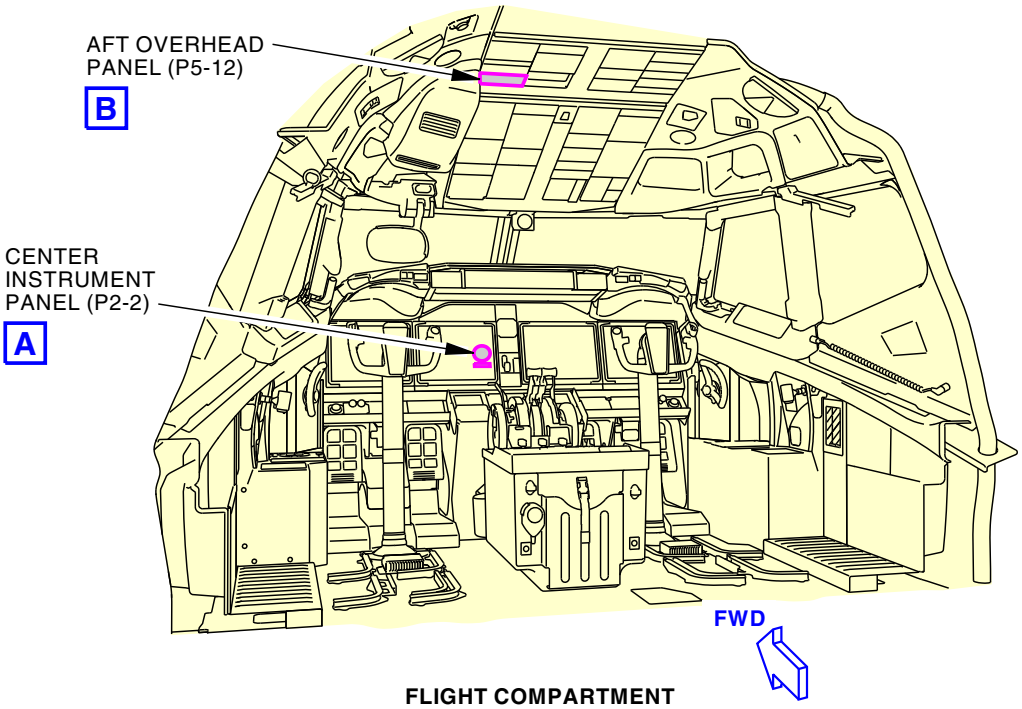
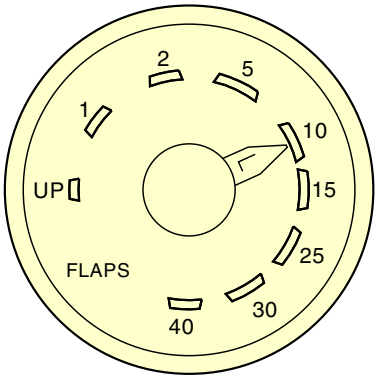


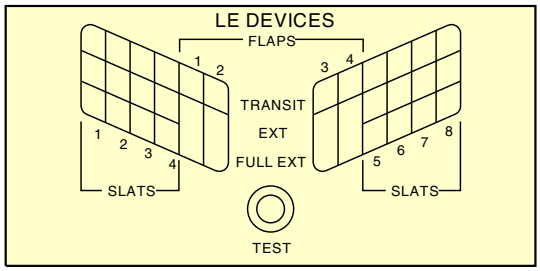
FLIGHT COMPARTMENT



LE FLAPS TRANSIT A	LE FLAPS EXT G

CENTER INSTRUMENT PANEL (P2-2)

A



AFT OVERHEAD PANEL (P5-12)

B

2413395 S00061532493_V2

Leading Edge Flap and Slat Position Indicating Test
Figure 501/27-88-00-990-802

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LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the leading edge slat proximity sensor

(2) An installation of the leading edge slat proximity sensor

(3) A removal of the leading edge flap proximity sensor

(4) An installation of the leading edge flap proximity sensor.

TASK 27-88-11-000-801

2. Leading Edge Slat Proximity Sensor Removal

(Figure 401)

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
57-41-02-000-801	Leading Edge Access Panel Removal (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

D. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179

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(Continued)

Number	Name/Location
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

E. Prepare for the Removal

SUBTASK 27-88-11-010-002

(1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-480-001

CAUTION

CAREFULLY INSTALL OR REMOVE THE LEADING EDGE LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. IF YOU DO NOT FOLLOW INSTRUCTIONS, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Install the lockout set, SPL-1734, on the actuators of the adjacent leading edge slat, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

SUBTASK 27-88-11-010-001

(3) Remove the applicable access panels to get access to the slat proximity sensor [26] (TASK 57-41-02-000-801):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) For the left wing, open these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, open these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

F. Leading Edge Slat Proximity Sensor Removal

SUBTASK 27-88-11-020-002

(1) Do these steps to remove the inboard proximity sensor [26] of the slat (with the slats 1 through 8 in the extended position and/or with the slats 1 and 8 in the retracted position) (View B, Figure 401):

(a) Disconnect the wires at the splice.

(b) For the slats 1 and 8 (in the extended position), remove the two screw [29] that attach the proximity sensor [26] to the rib and remove the shim [27], aluminum spacer [28], and washer [30] that is installed under the nuts [31].

(c) For the slats 2, 3, 6 and 7 (in the extended position), remove the two screws [32] that attach the proximity sensor [26] to the rib and remove the shim [27], aluminum spacer [34], and washer [30] that is installed under the nuts [31].

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1) Measure the thickness of the shim [27] and the thickness of the aluminum spacer [34], and keep record of it for easier completion of the sensor-target clearance required during proximity sensor [26] installation task.

(d) For the slats 4 and 5 (in the extended position), remove the two screws [33] that attach the proximity sensor [26] to the rib and remove the shim [27] and washer [30] that is installed under the nuts [31].

1) Measure the thickness of the shim [27] and keep record of it for easier completion of the sensor-target clearance required during the proximity sensor [26] installation task.

(e) For the slats 1 and 8 (in the retracted position), remove the two screws [29] that attach the proximity sensor [26] to the rib, and the aluminum spacer [28]:

1) Remove the bolt [37], shim [27], washer [35], and nut [36] from the aluminum spacer [34], if necessary.

(f) Remove the inboard proximity sensor [26].

SUBTASK 27-88-11-020-004

(2) Do these steps to remove the outboard aluminum spacer [28] or aluminum spacer [34] of the slats 1 through 8 (in the extended or flap lever 5 position) (View C, Figure 401):

(a) Disconnect the wires at the splice.

(b) For the slat 1 through 8 (in the extended or flap lever 5 position) remove the (aluminum pigmented) cap screws [52]], aluminum shim [27], and aluminum spacer [28] or aluminum spacer [34].

NOTE: The P-clamp [51] gets disconnected when the cap screw [52] are removed.

1) Measure the thickness of the aluminum shim [27] and the thickness of the aluminum aluminum spacer [28] or aluminum spacer [34], and keep record of it for easier completion of the sensor-target clearance required during the proximity sensor [26] installation task.

(c) For the slats 1 and 8 (in the retracted position), remove the cap screw [38] and aluminum spacer [28].

(d) Remove the outboard proximity sensor [26].

SUBTASK 27-88-11-020-005

(3) Do these steps to remove the retract proximity sensor [24] (View D and View E, Figure 401):

NOTE: The retract proximity sensors [24] are installed on slats 2, 3, 4, 5, 6 and 7.

(a) Remove the slat actuator door [23] from the slat actuator to get access to the mid retract proximity sensor [24]:

1) Remove the nuts [19], washers [18], and bolts [17].

2) Remove the nuts [22], washers [21], and bolts [20] that attach the slat actuator door [23] and the bracket to the slat actuator.

3) Remove the slat actuator door [23].

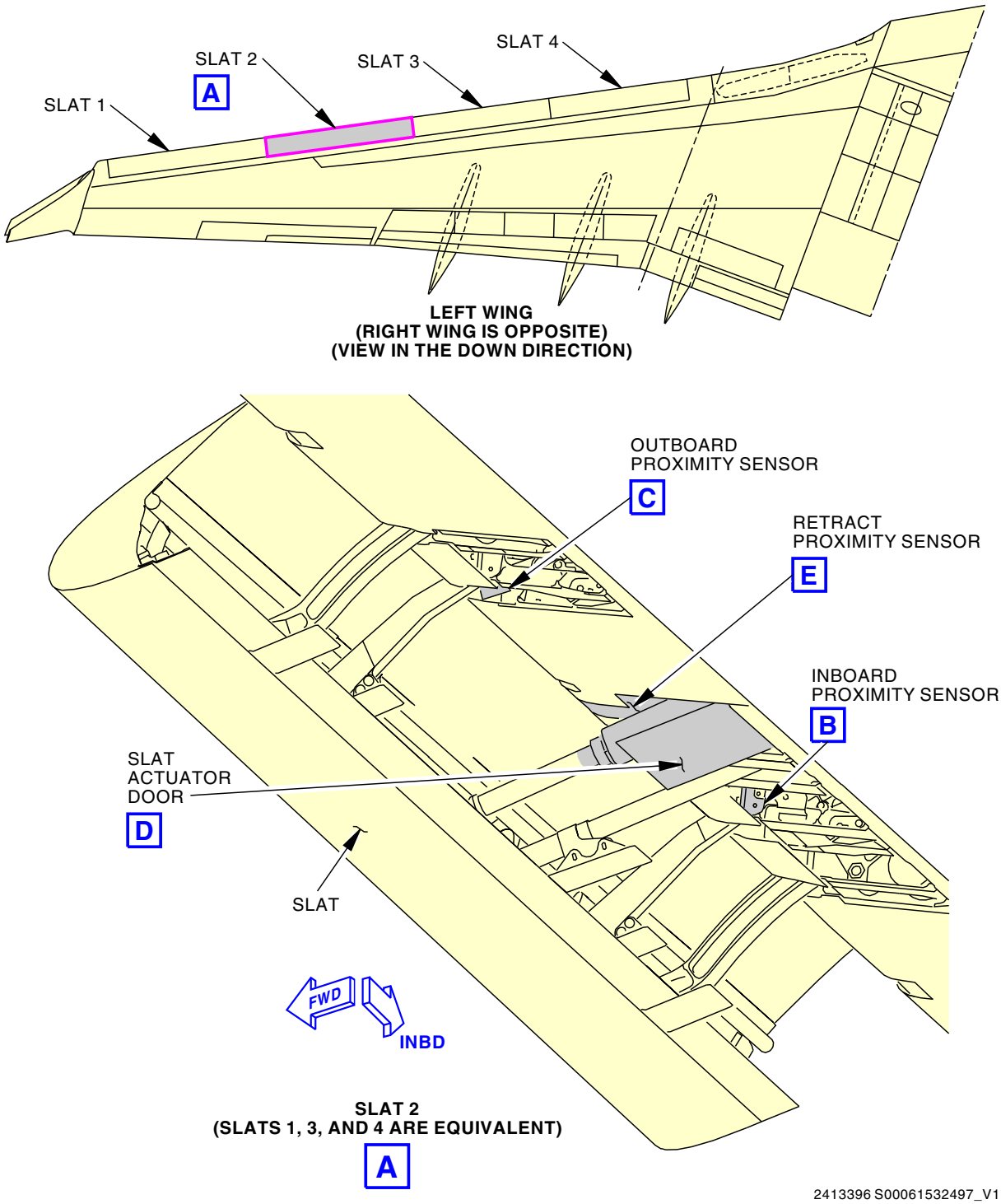
4) Temporarily install the bolts [20], washers [21], and nuts [22] to attach the bracket to the slat actuator.

(b) Disconnect the electrical connector from the retract proximity sensor [24].

(c) Remove the fastener [25] to remove the retract proximity sensor [24].

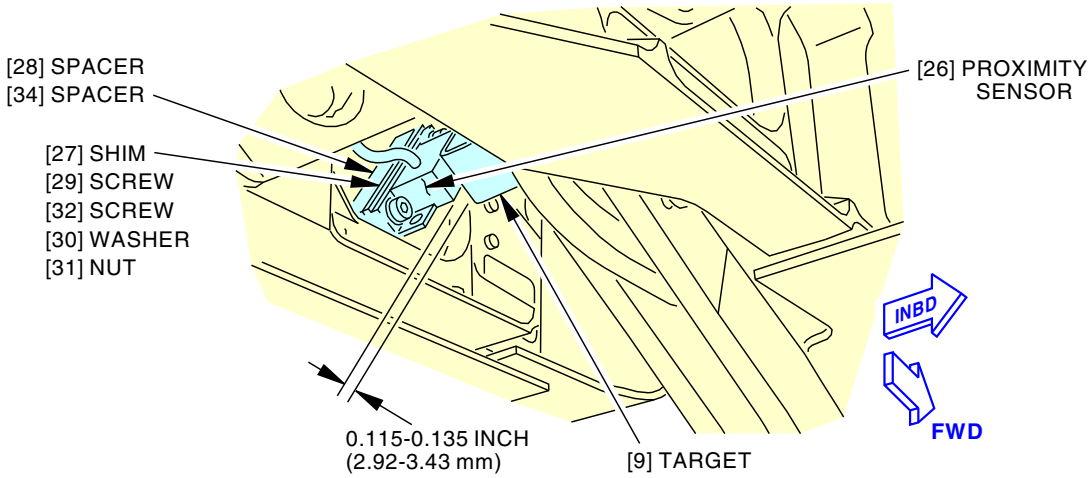
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



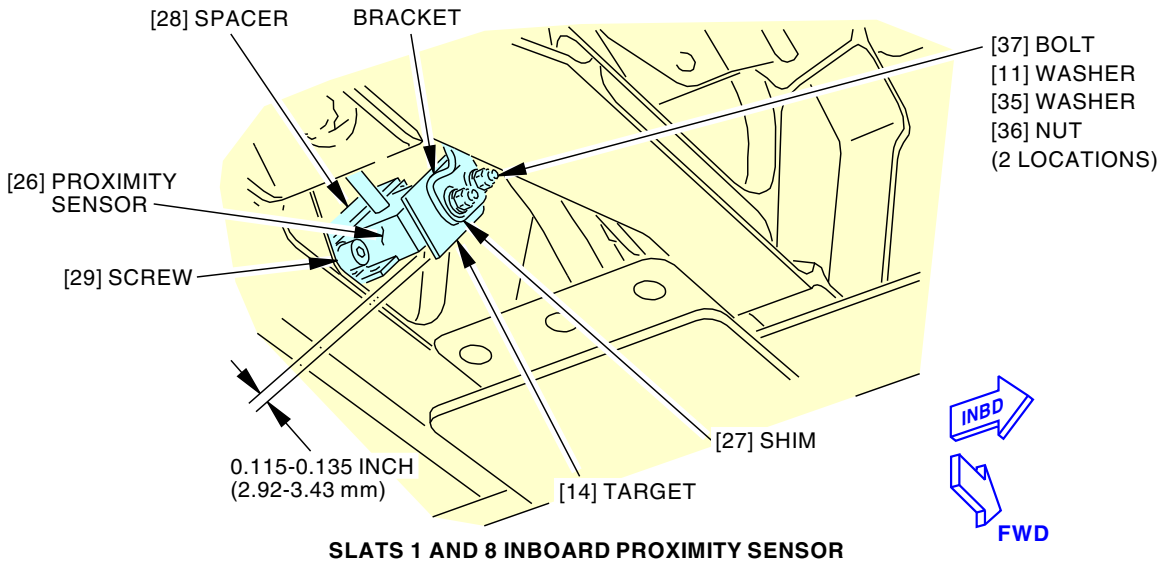
Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SLAT 1 INBOARD PROXIMITY SENSOR
(SLATS 2, 3, 6, 7 AND 8 INBOARD PROXIMITY SENSORS ARE EQUIVALENT)
(SLAT IN THE EXTEND POSITION)

B



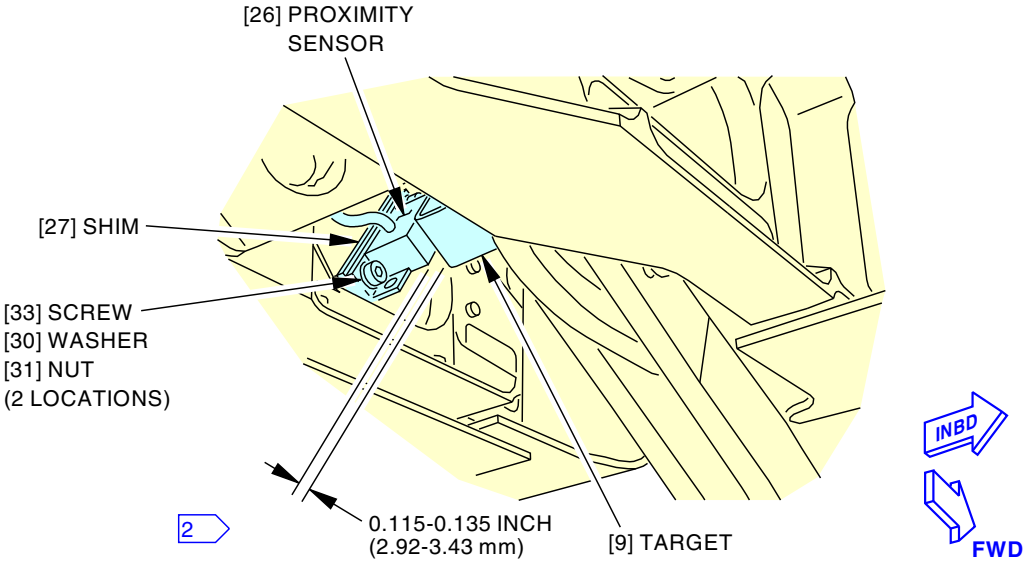
SLATS 1 AND 8 INBOARD PROXIMITY SENSOR
(SLAT IN THE RETRACT POSITION)

B

2413397 S00061532498_V2

Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



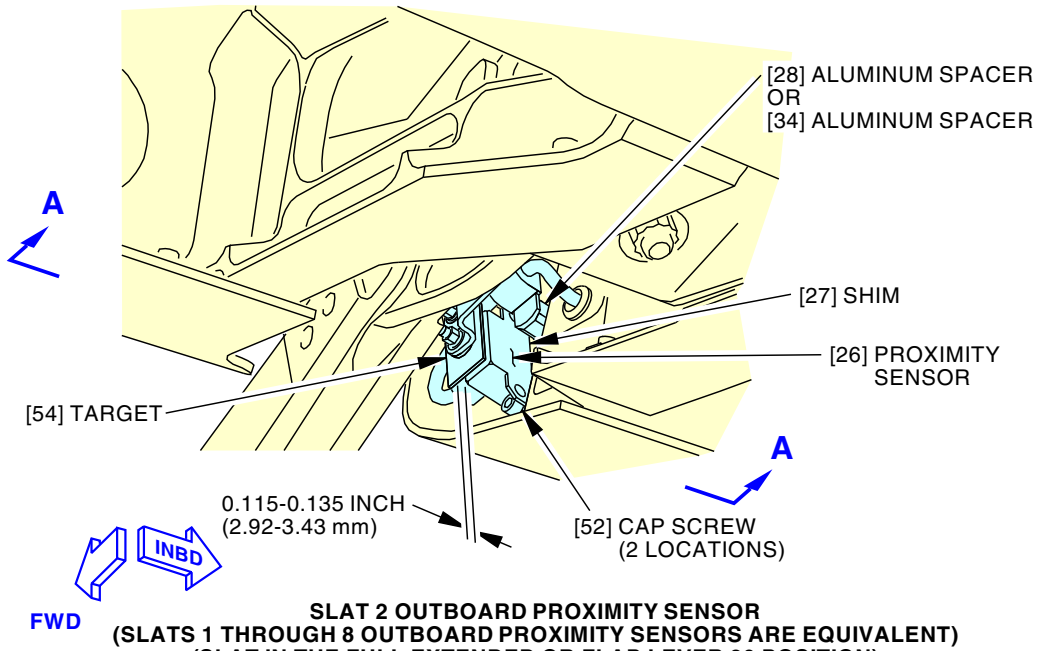
SLATS 4 AND 5 INBOARD PROXIMITY SENSOR
(SLAT IN THE EXTEND POSITION)

B

2413398 S00061532499_V1

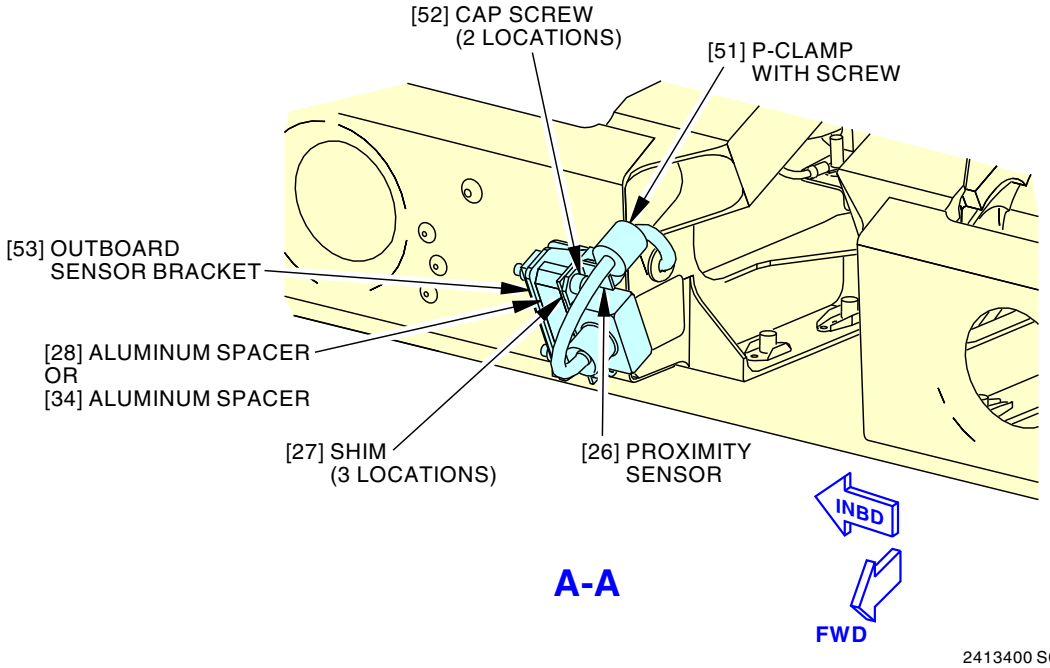
Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



SLAT 2 OUTBOARD PROXIMITY SENSOR
(SLATS 1 THROUGH 8 OUTBOARD PROXIMITY SENSORS ARE EQUIVALENT)
(SLAT IN THE FULL EXTENDED OR FLAP LEVER 30 POSITION)

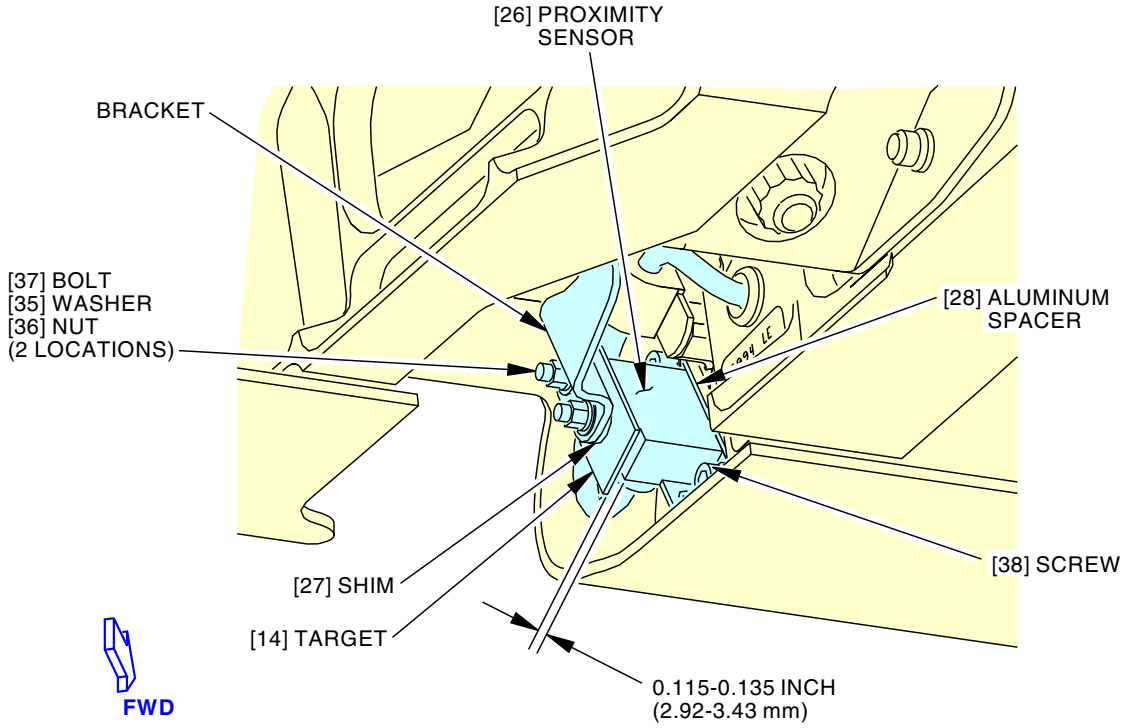
C



2413400 S00061532501_V1

Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



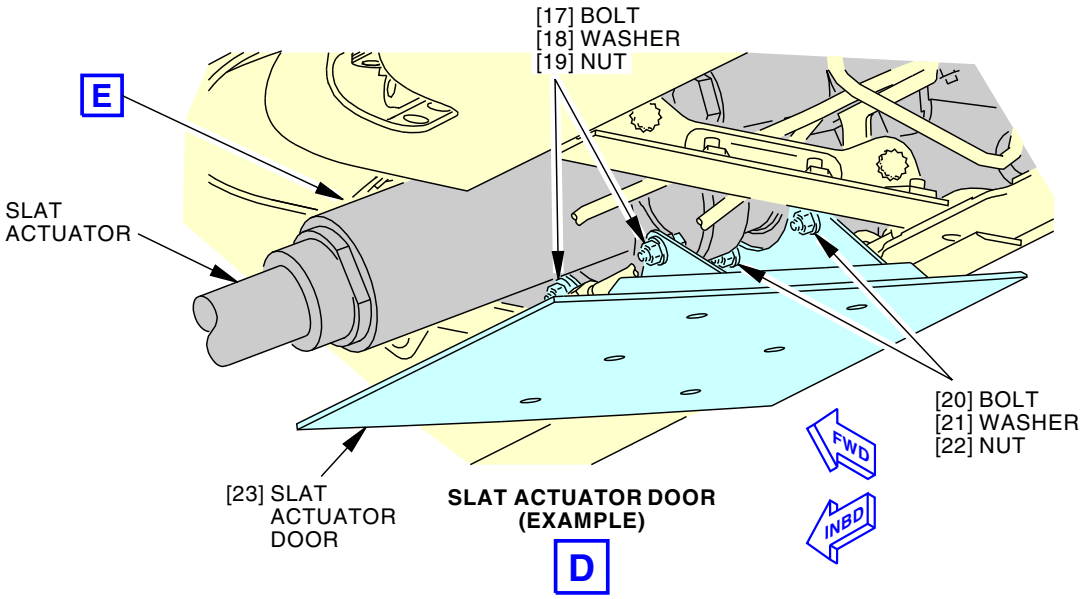
SLATS 1 AND 8 OUTBOARD PROXIMITY SENSOR (SLAT IN THE RETRACT POSITION)

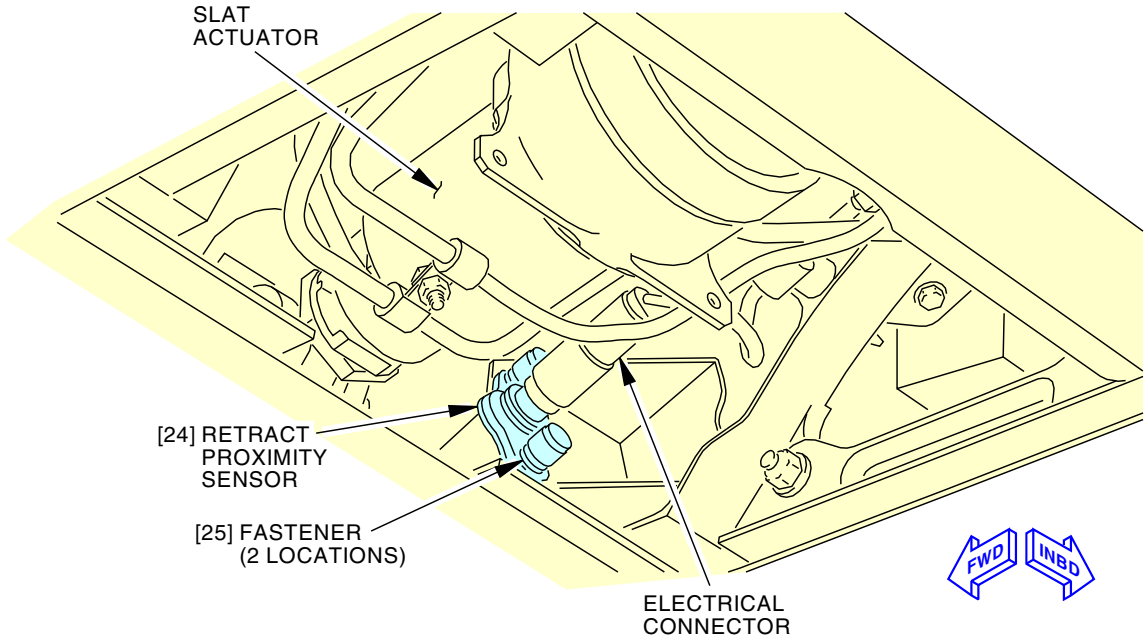
C

2413401 S00061532502_V1

Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





SLAT 2 RETRACT PROXIMITY SENSOR
(SLATS 3, 4, 5, 6 AND 7 RETRACT PROXIMITY SENSORS ARE EQUIVALENT)

E

2413402 S00061532503_V1

Leading Edge Slat Proximity Sensor Installation
Figure 401/27-88-11-990-801 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-88-11-400-801

3. Leading Edge Slat Proximity Sensor Installation

(Figure 401)

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
27-88-11-700-801	Leading Edge Flap and Slat Proximity Sensor Test (P/B 501)
57-41-02-400-801	Leading Edge Access Panel Installation (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A00165	Adhesive - Neoprene	BMS5-7 Type I
A01076	Adhesive - Synthetic Rubber	BAC5010 Type 93 (BMS5-95 Class B)
B00065	Alcohol - Denatured, Ethyl (Ethanol)	AMS 3002 (Supersedes O-A-396)
B50073	Alcohol - Isopropyl	ASTM D 770
C50069	Coating - Chemical And Solvent Resistant Finish - (BAC 702 White Color, Gloss)	BMS10-11 Type II
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50262	Wiper - Cleaning	BMS15-5
G50335	Agent - Non-Peelable Parting (Henkel Loctite - Frekote 44-NC Mold Release).	BAC5000

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
24	Retract proximity sensor	27-88-11-02-060	SIA ALL
26	Proximity sensor	27-88-11-01-060	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
521	Left Wing - Leading Edge to Front Spar
522	Left Wing - Slat No. 4
523	Left Wing - Slat No. 3
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
621	Right Wing - Leading Edge to Front Spar
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

F. Access Panels

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425
621YB	Lower Leading Edge Access Panel - Slat Station 470

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Leading Edge Slat Proximity Sensor Installation

SUBTASK 27-88-11-010-003

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-420-008

(2) Make sure that the lockout set, SPL-1734, is installed on the actuators of the adjacent leading edge flaps and slats (TASK 27-81-00-480-801).

SUBTASK 27-88-11-420-002

(3) Do these steps to install the inboard proximity sensor [26] of the slat (View B, Figure 401):

WARNING USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin coat of Cor-Ban 27L Compound, G50237 (preferred), to the threads of the screws [29] or screw [32] before installation.

1) Use the applicable dry or lube torque value corresponding to the choice of the corrosion inhibitor.

NOTE: Noted series fasteners can be adjusted two additional grip lengths longer or shorter to accommodate the shim variations.

(b) For slat No. 1 or 8 (with the slats in the extended position), install the screws [29], washers [30], shim [27], aluminum spacer [28], and nuts [31] (View B, Figure 401).

1) Use the thickness dimensions of the aluminum shim [27] and aluminum spacer [28] that you recorded during the removal procedure to determine the closest amount of shim [3] you need to install.

a) Use the shim [27], as required, to meet the clearance requirement.

<1> Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Apply coating, C50069, to both sides of aluminum shim [27] (dry before install).

c) Bond the aluminum shim [27] and aluminum spacer [28] to the support bracket as follows:

<1> Lightly sand to remove the gloss from the mating surfaces.

<2> Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

<3> Wipe clean with a cotton wiper, G00034, wiper, G50262, or equivalent.

<4> Mix adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

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<5> Apply two thin, continuous layers of adhesive, A00165, to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

<6> Join the mating surfaces while adhesive, A00165, is tacky.

<7> Apply sufficient pressure to make good contact.

d) Apply adhesive, A01076, for faying surface sealing to the side of the aluminum shim [27] that contacts the proximity sensor [26].

e) Apply adhesive, A01076, to the sensor interface with the aluminum spacer [28] or with the structure, if no aluminum shim [27] is needed.

f) Apply coating, C50069 (dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [26].

2) Find the same color wires and make a splice.

3) Attach the wires together to make a bundle.

4) If the wires between the proximity sensor [26] and the last clamp are loosened during adjustment (rigging), do the steps that follow:

a) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

b) Redistribute the slack back to main bundle.

<1> Adjust the clamp size to accommodate the sheep shank area.

<2> Stitch-tie to prevent riding condition.

c) Reclamp if necessary.

(c) For slats No. 2, 3, 6 or 7 (with the slats in the extended position), install the screws [32], washers [30], shim [27], aluminum spacer [34], and nuts [31] (View B, Figure 401).

1) Use the thickness dimensions of the aluminum shim [27] and aluminum spacer [34] that you recorded during the removal procedure to determine the closest amount of shim [3] that you need to install.

a) Use shim [27], as required, to meet the clearance requirement.

<1> Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Bond the shim [27] and aluminum spacer [34] to the support bracket as follows:

<1> Lightly sand to remove the gloss from the mating surfaces.

<2> Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

<3> Wipe clean with a cotton wiper, G00034, wiper, G50262, or equivalent.

<4> Mix the adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

<5> Apply two thin, continuous layers of the adhesive, A00165, to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

<6> Join the mating surfaces while the adhesive, A00165, is tacky.

<7> Apply sufficient pressure to make good contact.

c) Apply adhesive, A01076, for faying surface sealing to the side of the aluminum shim [27] that contacts the proximity sensor [4].

d) Apply adhesive, A01076, to the sensor interface with the aluminum spacer [34] with the structure, if no aluminum shim [27] is needed.

e) Apply coating, C50069 (dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [26].

2) Find the same color wires and make a splice.

3) Attach the wires together to make a bundle.

4) If the wires between the proximity sensor [26] and the last clamp are loosened during adjustment (rigging), do the steps that follow:

a) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

b) Redistribute the slack back to main bundle.

<1> Adjust the clamp size to accommodate the sheep shank area.

<2> Stitch-tie to prevent riding condition.

c) Re-clamp if necessary.

(d) For slat No. 4 or 5 (with the slats in the extended position), install the screws [33], washers [30], shim [3], and nuts [31] (View B, Figure 401).

1) Use the thickness dimensions of the aluminum shim [27] that you recorded during the removal procedure to determine the closest amount of shim [27] you need to install.

a) Use shim [27], as required, to meet the clearance requirement.

<1> Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Bond the shim [27] to the support bracket as follows:

<1> Lightly sand to remove the gloss from the mating surfaces.

<2> Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

<3> Wipe clean with a cotton wiper, G00034, wiper, G50262, or equivalent.

<4> Mix the adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

<5> Apply two thin, continuous layers of the adhesive, A00165, to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

<6> Join the mating surfaces while the adhesive, A00165,is tacky.

<7> Apply sufficient pressure to make good contact.

c) Apply adhesive, A01076, for faying surface sealing to the side of the aluminum shim [27] that contacts the proximity sensor [26].

d) Apply adhesive, A01076, to the sensor interface with the structure, if no aluminum shim [27] is needed.

e) Apply coating, C50069 (dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [26].

2) Find the same color wires and make a splice.

3) Attach the wires together to make a bundle.

4) If the wires between the proximity sensor [26] and the last clamp are loosened during adjustment (rigging), do the steps that follow:

a) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

b) Redistribute the slack back to main bundle.

<1> Adjust the clamp size to accommodate the sheep shank area.

<2> Stitch-tie to prevent riding condition.

c) Re-clamp if necessary.

(e) For the slats 1 and 8 (with the slats in the retracted position), install the screw [29], aluminum spacer [28], bolts [37], washers [35], and nuts [36] if you removed the shim [27] (View B, Figure 401).

1) Use the thickness dimensions of the aluminum shim [27] and aluminum spacer [28] that you recorded during the removal procedure to determine the closest amount of shim [27] you need to install.

a) Use shim [27], as required, to meet the clearance requirement.

<1> Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Bond the shim [27] and aluminum spacer [28] to the support bracket as follows:

<1> Lightly sand to remove the gloss from the mating surfaces.

<2> Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

<3> Wipe clean with a cotton wiper, G00034, wiper, G50262, or equivalent.

<4> Mix the adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

<5> Apply two thin, continuous layers of the adhesive, A00165, to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

<6> Join the mating surfaces while the adhesive, A00165, is tacky.

<7> Apply sufficient pressure to make good contact.

c) Apply adhesive, A01076, to the sensor interface with the aluminum spacer [28] or with the structure.

d) Apply coating, C50069 (dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [26].

2) Find the same color wires and make a splice.

3) Attach the wires together to make a bundle.

4) If the wires between the proximity sensor [26] and the last clamp are loosened during adjustment (rigging), do the steps that follow:

a) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

b) Redistribute the slack back to main bundle.

<1> Adjust the clamp size to accommodate the sheep shank area.

<2> Stitch-tie to prevent riding condition.

c) Re-clamp if necessary.

SUBTASK 27-88-11-400-001

(4) Install the outboard proximity sensor [26] of the slat with the slat in the extended or flap lever 5 position.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin layer of Cor-Ban 27L Compound, G50237 on the holes of the proximity sensor [26] and on the threads of the (aluminum pigmented) cap screw [52] before you install them.

1) Use applicable dry or lube torque value corresponding to the choice of the corrosion inhibitor.

(b) Use the thickness dimensions of the shim [27] and aluminum spacer [28] or aluminum spacer [34] that you recorded during the removal procedure to determine the closest amount of shim [27] you need to install.

(c) Install the aluminum shim [27] (as many as necessary to get the permitted clearance) between the proximity sensor [26] and the aluminum spacer [28] or aluminum spacer [34] and fasten them to the outboard sensor bracket [53] with the (aluminum pigmented) cap screw [52].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

NOTE: Noted series fasteners can be adjusted two additional grip lengths longer or shorter to accommodate the shim variations.

(d) Apply coating, C50069, to both sides of aluminum shim [27] (dry before install).

(e) Bond the aluminum shim [27] and the aluminum spacer [28] or aluminum spacer [34] to the outboard sensor bracket [53] as follows:

1) Lightly sand to remove the gloss from the mating surfaces.

2) Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

3) Wipe clean with a cotton wiper, G00034, wiper, G50262, or equivalent.

4) Mix the adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

5) Apply two thin, continuous layers of the adhesive, A00165, to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

6) Join the mating surfaces while the adhesive, A00165, is tacky.

7) Apply sufficient pressure to make good contact.

(f) Apply adhesive, A01076, for faying surface sealing to the side of the aluminum shim [27] that contacts the proximity sensor [26].

(g) Apply adhesive, A01076, to the sensor interface with the aluminum spacer [28] or aluminum spacer [34] or with the structure, if no aluminum shim [27] is needed.

(h) Apply coating, C50069(dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [4].

(i) Install the P-clamp [51] with the screw to the aluminum spacer [28] or aluminum spacer [34].

(j) Find the same color wires and make a splice.

(k) Attach the wires together to make a bundle.

(l) If the wires between the proximity sensor [26] and the last clamp are loosened during adjustment (rigging), do the steps that follow:

1) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

2) Redistribute the slack back to main bundle.

a) Adjust the clamp size to accommodate the sheep shank area.

b) Stitch-tie to prevent riding condition.

3) Reclamp if necessary.

(m) For the slats 1 and 8 (with the slats in the retracted position), install the screw [38], aluminum spacer [28], bolt [37], washer [35], and nut [36] if you removed the shim [27] (View B, Figure 401).

1) Use the thickness dimensions of the aluminum shim [27] and aluminum spacer [28] that you recorded during the removal procedure to determine the closest amount of shim [27] you need to install.

a) Use shim [27], as required, to meet the clearance requirement.

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<1> Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Bond the shim [27] and aluminum spacer [28] to the support bracket as follows:

<1> Lightly sand to remove the gloss from the mating surfaces.

<2> Clean the mating surfaces with alcohol, B00065, or alcohol, B50073.

<3> Wipe clean with a cotton wiper, G00034, wiper, G50262 or equivalent.

<4> Mix the adhesive, A00165, fully before you use it.

NOTE: The adhesive must not be used if it is too thick.

<5> Apply two thin, continuous layers of the adhesive, A00165 to each mating surface.

NOTE: The first layer of the adhesive must dry fully before you apply the second layer. The second layer of the adhesive must dry only until it is tacky.

<6> Join the mating surfaces while the adhesive, A00165, is tacky.

<7> Apply sufficient pressure to make good contact.

c) Apply adhesive, A01076, to the sensor interface with the aluminum spacer [28] or with the structure.

d) Apply coating, C50069 (dry before install), and Frekote 44-NC non-peelable parting agent, G50335, to the base of the proximity sensor [26].

2) Find the same color wires and make a splice.

3) Attach the wires together to make a bundle.

4) If the wires between the and the last clamp are loosened during adjustment (rigging), do the steps that follow:

a) Remove all slack from slat sensor wires between the proximity sensor [26] and the last clamping location.

b) Redistribute the slack back to main bundle.

<1> Adjust the clamp size to accommodate the sheep shank area.

<2> Stitch-tie to prevent riding condition.

c) Re-clamp if necessary.

SUBTASK 27-88-11-420-004

(5) Do these steps to install the retract proximity sensor [24]:

NOTE: It is not necessary to adjust a clearance for the retract proximity sensor [24].

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin coat of Cor-Ban 27L Compound, G50237, to the pilot diameter and fay surface of the retract proximity sensor [24].

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(b) Install the retract proximity sensor [24] with the fastener [25].

(c) Connect the electrical connector to the retract proximity sensor [24].

(d) Install the slat actuator door [23] to the slat actuator.

1) Remove the nut [22], washer [21], and bolt [20] that attached the bracket to the slat actuator that attach the bracket to the slat actuator.

a) If there are three washers installed on the bolt [20], discard the thicker aluminum washer.

2) Put the slat actuator door [23] in its position on the slat actuator.

3) Install bolt [20],washer [21], and nut [22] that attach the slat actuator door [23] and the bracket to the slat actuator.

4) Install the bolt [17], washer [18], and nut [19] that attach the slat actuator door [23] to the slat actuator.

SUBTASK 27-88-11-220-001

(6) With the leading edge slat in the full extend position, make sure the clearance between the inboard or outboard proximity sensor [26] and the target [54] is 0.115 in. (2.92 mm)– 0.135 in. (3.43 mm).

(a) If the permitted clearance is out of tolerance, adjust the clearance between the proximity sensor [26] and the target [54].

1) Use the required consumable materials that you used during the installation procedure above for the re-installation of the proximity sensor [26], as necessary

2) Remove the (aluminum pigmented) cap screw [52], shim [27], and aluminum spacer [28] or aluminum spacer [34].

3) Add or remove shim [27] as it is necessary to get the correct clearance between the proximity sensor [26] and the target [54].

a) Adjust the sensor to target clearance by adding or removing shim laminations as required.

NOTE: The clearance dimension applies to both the forward and aft targets.

b) Use the thickness dimensions of shim [27] and aluminum spacer [28] or aluminum spacer [34] that you recorded during the removal procedure to determine the closest amount of shim [27] you need to install.

4) Fasten the proximity sensor [26], shim [27] and aluminum spacer [28] or aluminum spacer [34] to the outboard sensor bracket [53] with the (aluminum pigmented) cap screw [52].

a) Use the applicable dry or lube torque value corresponding to the choice of the corrosion inhibitor.

SUBTASK 27-88-11-860-002

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(7) Retract the leading edge slat to the extend (flap lever 1-unit detent) position with primary control. To do this, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-220-003

(8) With the slat in the 1-unit detent position, make sure the clearance between the inboard and/or outboard proximity sensor [26] and the target [9] for the inboard sensor or target [54] for the outboard sensor is 0.125 ±0.010 in. (3.175 ±0.254 mm).

(a) If the permitted clearance is out of tolerance, adjust the clearance between the proximity sensor [26] and the target [9] or target [54].

1) Remove the screw [29]

or screw [32] for the inboard sensor, or cap screw [52] for the outboard sensors of the slats, washer [30] and nut [31] on the inboard sensor, shim [27] and aluminum spacer [28] or aluminum spacer [34].

2) Add or remove shim [27] as it is necessary to get the correct clearance between the proximity sensor [26] and the target [9] or target [54].

3) Install the screw [29] or screw [32] for the inboard sensors of the slats or cap screw [52] for the outboard sensors of the slats, washer [30] and nut [31] on the inboard slat, and aluminum spacer [28] or aluminum spacer [34].

(b) Bond the shim [27] and aluminum spacer [28] or aluminum spacer [34] to the bracket with adhesive, A00165.

SUBTASK 27-88-11-410-001

(9) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-860-003

WARNING MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE SLATS. THE LEADING EDGE SLATS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(10) Retract the leading edge slats to the retracted (flap lever UP) position with primary control. To do this, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-88-11-220-005

(11) On leading edge slat 1 or 8, make sure that the clearance between the (inboard or outboard) proximity sensor [26] and the target [14] is 0.125 ±0.010 in. (3.175 ±0.254 mm).

(a) If the permitted clearance is out of tolerance, adjust the clearance between the proximity sensor [26] and the target [14].

1) Remove the nut [36], washer [35], shim [27], and bolt [37] to remove the target [14].

2) Add or remove shim [27] as it is necessary to get the correct clearance between the proximity sensor [26] and the target [14].

3) Install the bolt [37],target [14], washer [35], and nut [36].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-080-003

CAUTION

CAREFULLY INSTALL OR REMOVE THE LEADING EDGE LOCKOUT SET TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. IF YOU DO NOT FOLLOW INSTRUCTIONS, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(12) Remove the lockout set, SPL-1734, from the actuators of the leading edge flap and slats. To do this, do this task: Leading Edge Flap and Slat Locks Removal, TASK 27-81-00-080-801.

SUBTASK 27-88-11-710-001

(13) Do this task: Leading Edge Flap and Slat Proximity Sensor Test, TASK 27-88-11-700-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-11-940-001

(1) Install the applicable access panels (TASK 57-41-02-400-801):

(a) For the left wing, close these access panels:

Number	Name/Location
521CB	Lower Leading Edge Access Panel - Slat Station 50
521DB	Lower Leading Edge Access Panel - Slat Station 70
521FB	Lower Leading Edge Access Panel - Slat Station 107
521JB	Lower Leading Edge Access Panel - Slat Station 161
521KB	Lower Leading Edge Access Panel - Slat Station 179
521LB	Lower Leading Edge Access Panel - Slat Station 208
521MB	Lower Leading Edge Access Panel - Slat Station 226
521QB	Lower Leading Edge Access Panel - Slat Station 280
521RB	Lower Leading Edge Access Panel - Slat Station 298
521SB	Lower Leading Edge Access Panel - Slat Station 328
521TB	Lower Leading Edge Access Panel - Slat Station 347
521WB	Lower Leading Edge Access Panel - Slat Station 406
521XB	Lower Leading Edge Access Panel - Slat Station 425
521YB	Lower Leading Edge Access Panel - Slat Station 470
521ZB	Lower Leading Edge Access Panel - Slat Station 479

(b) For the right wing, close these access panels:

Number	Name/Location
621CB	Lower Leading Edge Access Panel - Slat Station 50
621DB	Lower Leading Edge Access Panel - Slat Station 70
621FB	Lower Leading Edge Access Panel - Slat Station 107
621JB	Lower Leading Edge Access Panel - Slat Station 161
621KB	Lower Leading Edge Access Panel - Slat Station 179
621LB	Lower Leading Edge Access Panel - Slat Station 208
621PB	Lower Leading Edge Access Panel - Slat Station 261
621QB	Lower Leading Edge Access Panel - Slat Station 280
621RB	Lower Leading Edge Access Panel - Slat Station 298
621SB	Lower Leading Edge Access Panel - Slat Station 328
621VB	Lower Leading Edge Access Panel - Slat Station 385
621WB	Lower Leading Edge Access Panel - Slat Station 406
621XB	Lower Leading Edge Access Panel - Slat Station 425

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(Continued)

Number	Name/Location
621YB	Lower Leading Edge Access Panel - Slat Station 470

END OF TASK

TASK 27-88-11-000-802

4. Leading Edge Flap Proximity Sensor Removal

(Figure 402)

A. References

Reference	Title
27-81-00-480-801	Leading Edge Flap and Slat Locks Installation (P/B 201)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

D. Prepare for the Removal

SUBTASK 27-88-11-860-004

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) To extend the leading edge flaps, do this task: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-010-004

(2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-480-004

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP ACTUATOR LOCK TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Install the lockout set, SPL-1734 on the actuator of the adjacent leading edge flap. To do this, do this task: Leading Edge Flap and Slat Locks Installation, TASK 27-81-00-480-801.

E. Leading Edge Flap Proximity Sensor Removal

SUBTASK 27-88-11-020-007

(1) Remove the extend proximity sensor [44A] and/or retract proximity sensor [44B] per Figure 402:

(a) Disconnect the wires at the splice.

(b) To remove the retract proximity sensor [44B], remove the nuts [43], washers [42] (installed under the nut), and the (aluminum pigmented) cap screws [49].

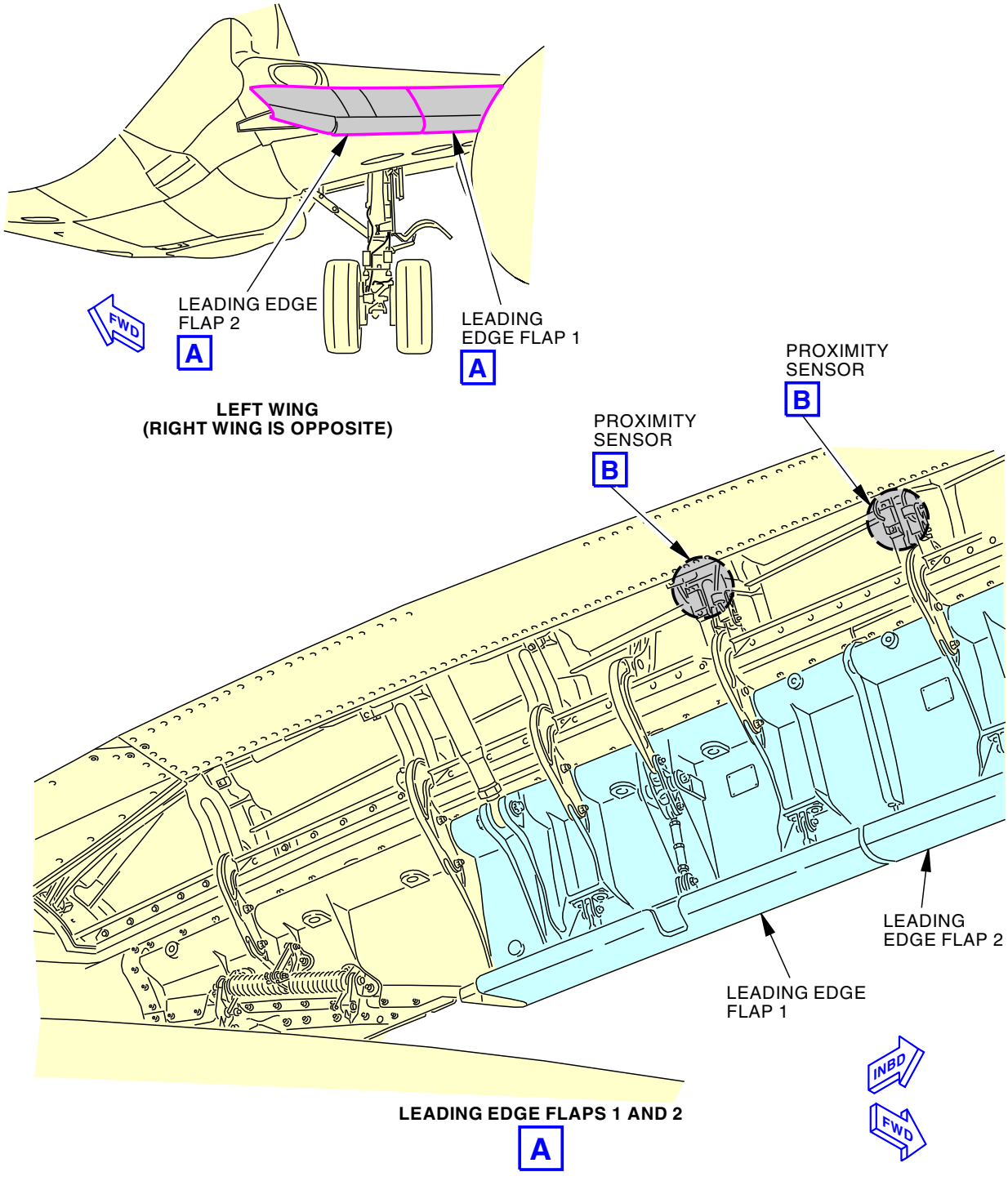
(c) To remove the extend proximity sensor [44A], remove the (aluminum pigmented) cap screws [50] and the shim [46].

1) Measure the thickness of the shim [46] and keep record of it for easier completion of the sensor-target clearance required during the installation task of the extend extend proximity sensor [44A].

(d) Remove the extend proximity sensor [44A] and/or retract proximity sensor [44B].

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Leading Edge Flap Proximity Sensor Installation
Figure 402/27-88-11-990-802 (Sheet 1 of 2)

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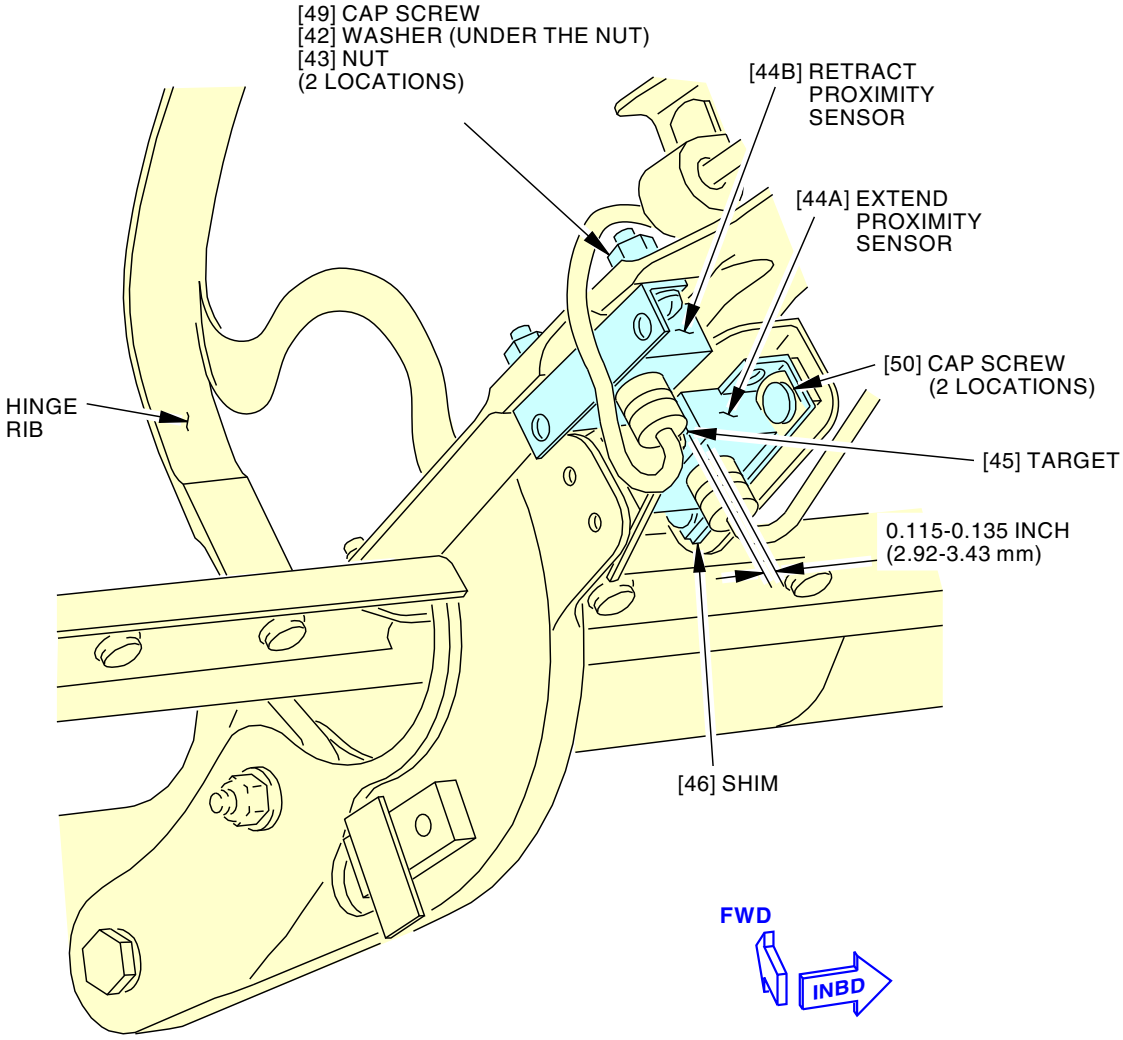

PROXIMITY SENSOR (EXAMPLE)

B

2413405 S00061532508_V1

Leading Edge Flap Proximity Sensor Installation
Figure 402/27-88-11-990-802 (Sheet 2 of 2)

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TASK 27-88-11-400-802

5. Leading Edge Flap Proximity Sensor Installation

(Figure 402)

A. References

Reference	Title
27-81-00-080-801	Leading Edge Flap and Slat Locks Removal (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
27-88-11-700-801	Leading Edge Flap and Slat Proximity Sensor Test (P/B 501)

B. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-1734	Lockout Set - Leading Edge Slats and Krueger Flaps Actuators Part #: C27051-29 Supplier: 81205

C. Consumable Materials

Reference	Description	Specification
A01076	Adhesive - Synthetic Rubber	BAC5010 Type 93 (BMS5-95 Class B)
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C50069	Coating - Chemical And Solvent Resistant Finish - (BAC 702 White Color, Gloss)	BMS10-11 Type II
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38
G50335	Agent - Non-Peelable Parting (Henkel Loctite - Frekote 44-NC Mold Release).	BAC5000

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
44A	Extend proximity sensor	27-88-11-02-060	SIA ALL
44B	Retract proximity sensor	27-88-11-02-060	SIA ALL

E. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4

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F. Leading Edge Flap Proximity Sensor Installation

SUBTASK 27-88-11-010-005

(1) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-800-001

(2) Do these steps to install the flap (titanium) extend proximity sensor [44A] or retract proximity sensor [44B] Figure 402:

NOTE: The titanium sensor installed with applicable hardware and consumable is interchangeable with the stainless steel sensor installed with the applicable hardware and consumable.

WARNING

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.

(a) Apply a thin coat of Cor-Ban 27L Compound, G50237 on the holes of the titanium extend proximity sensor [44A]or , retract proximity sensor [44B], the threads of the (aluminum pigmented) cap screws [49], and cap screws [50].

(b) Apply coating, C50069 (dry before install) or primer, C00259 to the two sides of the aluminum shim [46].

(c) Apply adhesive, A01076 to the faying surface seal on the side that contacts the titanium extend proximity sensor [44A] or retract proximity sensor [44B].

(d) Apply coating, C50069 (dry before install) or primer, C00259 and Frekote 44-NC non-peelable parting agent, G50335 to the base of the titanium extend proximity sensor [44A] or retract proximity sensor [44B].

(e) Install the retract proximity sensor [44B] with the (aluminum pigmented) cap screws [49], washers [42], and nuts [43].

(f) Install the extend proximity sensor [44A] with the (aluminum pigmented) cap screws [50] and shim [46].

(g) Find the same color wires and make a splice.

(h) Attach the wires together to make a bundle.

SUBTASK 27-88-11-800-002

(3) With the flap in the extend position, make sure the clearance dimension between the extend proximity sensor [44A] and the target [45] is 0.125 ±0.010 in. (3.175 ±0.254 mm).

(a) If the clearance dimension is out of tolerance, adjust the clearance dimension between the extend proximity sensor [44A] and the target [45].

NOTE: The sensor-target clearance of the extend proximity sensor [44A] is adjustable. The sensor-target clearance of the retract proximity sensor [44B] is not adjustable.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Use the necessary materials from the above installation to install the extend proximity sensor [44A] after the adjustment.
2) Remove the (aluminum pigmented) cap screws [50] and shim [46].
3) If necessary, add or remove shims [46] to get the correct clearance dimension between the extend proximity sensor [44A] and the target [45].
   a) Use the thickness dimensions of the shims [46] recorded during the removal procedure to find the necessary quantity of shims [46].
4) Install the (aluminum pigmented) cap screws [50].
   a) Use the applicable dry or lube torque value.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-11-080-004

WARNING CAREFULLY REMOVE THE LEADING EDGE FLAP ACTUATOR LOCK TO PREVENT ACCIDENTAL OPERATION OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the lockout set, SPL-1734 from the actuator of the leading edge flap, (TASK 27-81-00-080-801).

SUBTASK 27-88-11-410-002

(2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-11-860-005

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Retract the leading edge flap to the UP position with primary control, (TASK 27-81-00-860-804).

SUBTASK 27-88-11-710-002

(4) Do this task: Leading Edge Flap and Slat Proximity Sensor Test, TASK 27-88-11-700-801

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

LEADING EDGE FLAP AND SLAT PROXIMITY SENSOR - ADJUSTMENT/TEST

1. General

A. This procedure contains the following tasks:

(1) Leading Edge Flap and Slat Proximity Sensor Test

(2) Leading Edge Flap and Slat Proximity Sensor Test Using a LCR Meter

(3) Leading Edge Flap and Slat Proximity Sensor Test Using a Breakout Box and a LCR Meter.

B. These tasks are functional tests of the proximity switch systems sensors.

NOTE: If available, use B737 FSEU Test/Breakout Box MPN 380-026-02 to do the inductance and resistance tests.

C. These tests are intended to determine a proximity sensor(s) health preventing unnecessary replacement of the Flap/Slat Electronics Unit (FSEU).

D. The proximity sensors provide position sensing for the leading edge flaps and slats systems.

E. The proximity sensors remain installed on the airplane during the test.

TASK 27-88-11-700-801

2. Leading Edge Flap and Slat Proximity Sensor Test

(Figure 501)

A. References

Reference	Title
27-51-00-740-801	FSEU Display and Existing Faults Test (P/B 501)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
29-11-00-860-805	Hydraulic System A or B Power Removal (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right
512	Left Wing - Krueger Flap No. 2
513	Left Wing - Krueger Flap No. 1
522	Left Wing - Slat No. 4
524	Left Wing - Slat No. 2
525	Left Wing - Slat No. 1
612	Right Wing - Krueger Flap No. 3
613	Right Wing - Krueger Flap No. 4
622	Right Wing - Slat No. 5
623	Right Wing - Slat No. 6
624	Right Wing - Slat No. 7
625	Right Wing - Slat No. 8

C. Prepare for the Test

SUBTASK 27-88-11-860-006

(1) Make sure that the flap control lever is in the FLAP UP detent position with the leading edge (LE) flaps and slats in the retract position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) If it is necessary, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-88-11-740-001

(2) Do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-88-11-860-008

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

D. Leading Edge Flap and Slat Proximity Sensor Test

SUBTASK 27-88-11-730-001

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS IN THIS TEST. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Do a test of the leading edge flap and slat proximity sensor:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the YES button to select PROX SENSORS? from the I/O MONITOR? menu.

(g) Push the down arrow to step through the proximity sensor states at the LE flaps and slats UP position.

(h) Make sure that these displays and the proximity sensor states show on the FSEU (Table 501):

Table 501/27-88-11-993-801

Display	State
S1 OUTBD	GAP NEAR
S1 INBD	GAP NEAR

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Table 501/27-88-11-993-801 (Continued)

Display	State
S2 OUTBD	GAP FAR
S2 INBD	GAP FAR
S2 RETR	GAP NEAR
S3 OUTBD	GAP FAR
S3 INBD	GAP FAR
S3 RETR	GAP NEAR
S4 OUTBD	GAP FAR
S4 INBD	GAP FAR
S4 RETR	GAP NEAR
S5 OUTBD	GAP FAR
S5 INBD	GAP FAR
S5 RETR	GAP NEAR
S6 OUTBD	GAP FAR
S6 INBD	GAP FAR
S6 RETR	GAP NEAR
S7 OUTBD	GAP FAR
S7 INBD	GAP FAR
S7 RETR	GAP NEAR
S8 OUTBD	GAP NEAR
S8 INBD	GAP NEAR
F1 RETR	GAP NEAR
F1 EXT	GAP FAR
F2 RETR	GAP NEAR
F2 EXT	GAP FAR
F3 RETR	GAP NEAR
F3 EXT	GAP FAR
F4 RETR	GAP NEAR
F4 EXT	GAP FAR

(i) Move the flap control lever to the 1-unit detent position.

1) Make sure that these lights come on during the flaps and slats extension and go off after extension:

a) The LE FLAPS TRANSIT light on the P2-2 center instrument panel.

b) All the LE flaps and slats TRANSIT lights on the P5-12 aft overhead panel.

2) Push the down arrow on the FSEU to step through the proximity sensor states.

3) Make sure that these displays and the proximity sensor states show on the FSEU (Table 502):

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Table 502/27-88-11-993-802

Display	State
S1 OUTBD	GAP FAR
S1 INBD	GAP NEAR
S2 OUTBD	GAP FAR
S2 INBD	GAP NEAR
S2 RETR	GAP FAR
S3 OUTBD	GAP FAR
S3 INBD	GAP NEAR
S3 RETR	GAP FAR
S4 OUTBD	GAP FAR
S4 INBD	GAP NEAR
S4 RETR	GAP FAR
S5 OUTBD	GAP FAR
S5 INBD	GAP NEAR
S5 RETR	GAP FAR
S6 OUTBD	GAP FAR
S6 INBD	GAP NEAR
S6 RETR	GAP FAR
S7 OUTBD	GAP FAR
S7 INBD	GAP NEAR
S7 RETR	GAP FAR
S8 OUTBD	GAP FAR
S8 INBD	GAP NEAR
F1 RETR	GAP FAR
F1 EXT	GAP NEAR
F2 RETR	GAP FAR
F2 EXT	GAP NEAR
F3 RETR	GAP FAR
F3 EXT	GAP NEAR
F4 RETR	GAP FAR
F4 EXT	GAP NEAR

4) Make sure that the LE FLAPS EXT light on the P2-2 center instrument panel is on.

5) Make sure that the LE flaps and slats EXT lights on the P5-12 aft overhead panel are on.

(j) Move the flap control lever to the 30-unit detent position.

1) Make sure that these lights come on during the flaps and slats extension and go off after extension:

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a) The LE FLAPS TRANSIT light on the P2 center instrument panel.

b) All the LE slats TRANSIT lights on the P5-12 aft overhead panel.

2) Push the down arrow on the FSEU to step through the proximity sensor states.

3) Make sure that these displays and the proximity sensor states show on the FSEU (Table 503):

Table 503/27-88-11-993-803

Display	State
S1 OUTBD	GAP NEAR
S1 INBD	GAP FAR
S2 OUTBD	GAP NEAR
S2 INBD	GAP FAR
S2 RETR	GAP FAR
S3 OUTBD	GAP NEAR
S3 INBD	GAP FAR
S3 RETR	GAP FAR
S4 OUTBD	GAP NEAR
S4 INBD	GAP FAR
S4 RETR	GAP FAR
S5 OUTBD	GAP NEAR
S5 INBD	GAP FAR
S5 RETR	GAP FAR
S6 OUTBD	GAP NEAR
S6 INBD	GAP FAR
S6 RETR	GAP FAR
S7 OUTBD	GAP NEAR
S7 INBD	GAP FAR
S7 RETR	GAP FAR
S8 OUTBD	GAP NEAR
S8 INBD	GAP FAR
F1 RETR	GAP FAR
F1 EXT	GAP NEAR
F2 RETR	GAP FAR
F2 EXT	GAP NEAR
F3 RETR	GAP FAR
F3 EXT	GAP NEAR
F4 RETR	GAP FAR
F4 EXT	GAP NEAR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Make sure that the LE FLAPS EXT light on the P2-2 center instrument pane is on.

5) Make sure that the LE flaps EXTEND and slats FULL EXTEND lights on the P5-12 aft overhead panel are on.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-11-860-009

(1) Move the flap control lever to the FLAP UP detent to retract the leading edge flaps and slats.

SUBTASK 27-88-11-860-010

(2) Do this task: Hydraulic System A or B Power Removal, TASK 29-11-00-860-805.

——— END OF TASK ———

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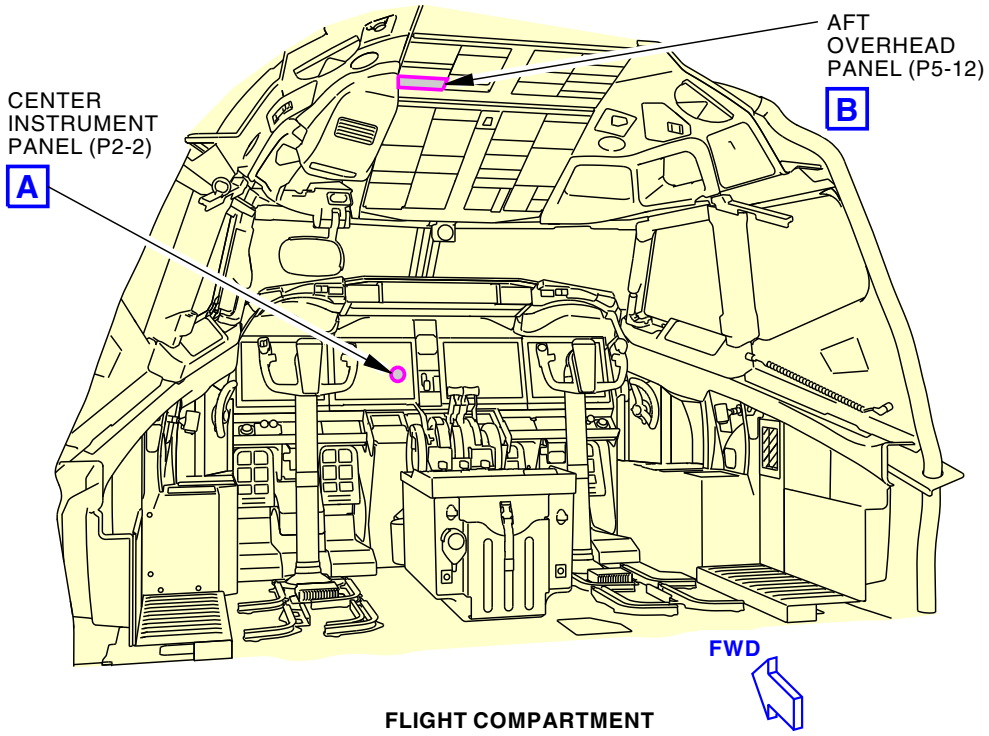
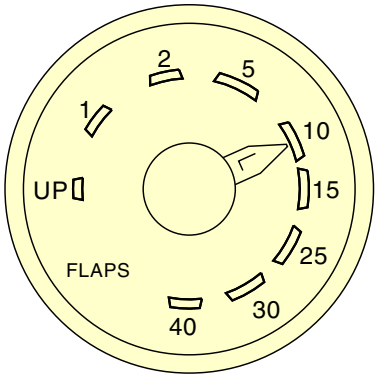
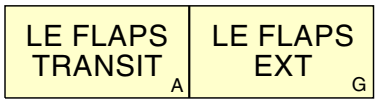


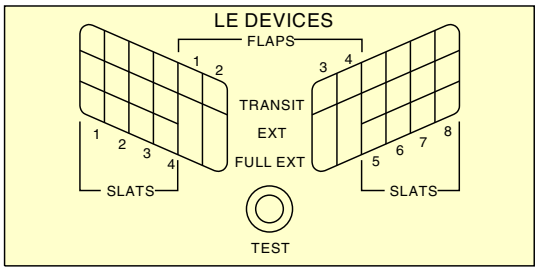
FLIGHT COMPARTMENT





CENTER INSTRUMENT PANEL (P2-2)

A



AFT OVERHEAD PANEL (P5-12)

B

2413406 S00061532512_V2

Leading Edge Flap and Slat Proximity Sensor Test
Figure 501/27-88-11-990-803

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-88-11-760-801

3. Leading Edge Flap and Slat Proximity Sensor Test Using a LCR Meter

(Figure 502)

A. General

(1) This test will measure the resistance and inductance of the 3-wire proximity sensor and wire bundle. And compare the values to a known range. This test also examines the target to the sensor condition.

(2) Obey all applicable warnings, cautions, and maintenance practice instructions when necessary to measure the Proximity Sensor in the test.

(3) Use an LCR meter that has a USB port to record the data with a PC automatically. For example 878B or 879B have a USB port. Use the specified instructions included with the LCR meter.

(4) The Sensor Test Gauge Kit (proximity sensor test set, SPL-1690) consists of six go-gauges, sensor de-actuator tool and an instruction booklet. Use the go-gauges in place of a sensor, if you suspect the sensor is faulty. Refer to 27-88 IFIM if necessary.

B. References

Reference	Title
27-51-00-740-801	FSEU Display and Existing Faults Test (P/B 501)
27-51-01-000-801	Flap/Slat Electronics Unit Removal (P/B 401)
27-51-01-400-801	Flap/Slat Electronics Unit Installation (P/B 401)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)
WDM 27-81-11	Wiring Diagram Manual
WDM 27-81-12	Wiring Diagram Manual
WDM 27-81-21	Wiring Diagram Manual
WDM 27-81-22	Wiring Diagram Manual

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-1741	Meter - LCR (Inductance, Capacitance, Resistance; Use COM-20443 for OH bleed loop testing) Part #: 878B Supplier: 08098 Part #: 879B Supplier: 08098 Part #: 880 Supplier: 08098 Part #: U1733P Supplier: 1LQK8 Opt Part #: 875B Supplier: 08098 Opt Part #: 878A Supplier: 08098 Opt Part #: 879 Supplier: 08098

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(Continued)

Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
SPL-1690	Actuators/Deactuators Set - Proximity Sensor Part #: 8-758-01 Supplier: 08748 Part #: A27092-139 Supplier: 81205 Opt Part #: A27092-106 Supplier: 81205
STD-6481	Voltmeter - Digital

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Prepare for the Test

SUBTASK 27-88-11-860-014

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Make sure that the flaps and slats are in the retracted position.

(a) If the flaps and slats are not retracted, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-740-002

(2) Do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-88-11-860-041

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-88-11-730-003

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS IN THIS TEST. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(4) Do a test of the leading edge flap and slat proximity sensor:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the YES button to select PROX SENSORS? from the I/O MONITOR? menu.

(g) Push the down arrow to step through the proximity sensor states at the LE flaps and slats UP position.

(h) Make sure that these displays and the proximity sensor states show on the FSEU (Table 501).

SUBTASK 27-88-11-860-011

(5) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-010-006

(6) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-88-11-020-008

(7) Do this task to remove the Flap/Slat Electronics Unit (FSEU): Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-210-001

(8) Examine the ARINC connector pins for damage or corrosion.

(a) Repair as necessary.

G. Measure the Proximity Sensor and Wiring Installation Resistance with the Flaps and Slats in the Retracted Position

SUBTASK 27-88-11-760-001

(1) Refer to the applicable WDM (WDM 27-81-11, WDM 27-81-12, WDM 27-81-21,WDM 27-81-22) for the 3-wire sensor to FSEU ARINC connector pin callout.

SUBTASK 27-88-11-760-048

(2) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 (a digital voltmeter, STD-6481, or digital/analog multimeter, COM-1793, may be used to measure the resistance).

(a) First do the Red to Yellow measurement.

(b) Then the Blue to Yellow measurement.

(c) Alternate connections as needed.

SUBTASK 27-88-11-760-050

(3) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

SUBTASK 27-88-11-760-049

(4) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to measure series resistance (Rs) at 120 Hz.

SUBTASK 27-88-11-700-001

(5) Measure the resistance at the ARINC connector pins on the E1-1 rack for each sensor under test and record in the log sheet (Figure 502).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

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(c) Record the resistance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

SUBTASK 27-88-11-760-051

(6) Compare the measured resistance value to Table 505.

Table 504/27-88-11-993-810 GO-GAUGES TABLE

BOEING SENSOR PART NUMBER	CRANE SENSOR PART NUMBER	TARGET NEAR INDUCTANCE (WITH GO-GAUGE)	TARGET FAR INDUCTANCE (WITH GO-GAUGE)	COIL RESISTANCE RED-YELLOW (TARGET FAR)	RESISTANCE BLUE-YELLOW (TARGET FAR)
10-61226-29	1-899-29	38.0 mH minimum	36.0-37.5 mH	27.0-39.0 Ω	344.5-351.5 Ω
10-61226-30	1-899-30	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω
10-61226-45	80-207-01	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω
10-61226-47	80-207-02	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω

SUBTASK 27-88-11-760-053

(7) If the measured resistance value is less than 5.00 ohms, this indicates a short circuit condition.

(a) If there is a short circuit, inspect the associated wiring and connectors for contamination or damage.

SUBTASK 27-88-11-760-054

(8) If the resistance value as measured between the Red and Yellow leads is greater than 100.00 ohms, this indicates a loose contact or wire damage or a defective sensor.

(a) If there is loose contact or wire damage, inspect the associated wiring and connectors for contamination or damage.

SUBTASK 27-88-11-760-055

(9) If the resistance value as measured between the Blue and Yellow leads is greater than 500.00 ohms, this indicates a loose contact or wire damage or a defective sensor.

(a) If there is loose contact or wire damage, inspect the associated wiring and connectors for contamination or damage.

H. Measure the Inductance at the ARINC Connector Pins on the E1-1 Rack for each Sensor Under Test with the Flaps and Slats in the Retracted Position

SUBTASK 27-88-11-760-002

(1) Refer to the applicable WDM (WDM 27-81-11, WDM 27-81-12, WDM 27-81-21,WDM 27-81-22) for the 3-wire sensor to FSEU ARINC connector pin callout.

SUBTASK 27-88-11-760-052

(2) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, for Red to Blue measurement.

SUBTASK 27-88-11-760-056

(3) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-760-057

(4) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-058

(5) Measure the inductance for the targets with the flaps and slats in the retracted position and record in the log sheet for each sensor (Figure 502).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

(e) Compare the measured inductance values to Table 504 only if using GO-GAUGES.

SUBTASK 27-88-11-760-059

(6) Make sure that the inductance value for the sensor under test is within the range of Table 505.

Table 505/27-88-11-993-811 SENSOR'S NOMINAL VALUES

VALUE	SENSOR CONDITION
Three-wire Sensors	
35 mH	Target FAR
40 mH - 50 mH	Correctly rigged NEAR sensor
Greater than 50 mH	Target may be rigged too near to the sensor
Resistance on aircraft (Red-Yellow resistance plus Blue-Yellow resistance): ≤ 390 Ω	

I. Measure the Inductance at the ARINC Connector Pins on the E1-1 Rack for each Sensor Under Test with the Flaps and Slats in the Extended Position

SUBTASK 27-88-11-410-008

(1) Do this task to install the FSEU: Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

(a) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-054

(2) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

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SUBTASK 27-88-11-860-055

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(3) Move the flaps and slats to the extended position for the test.

(a) Do this task to extend the leading edge flaps: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

1) Move the flap control lever to detent position 1, 2, 5, 10, 15, and 25.

2) Stop for 2 seconds at each detent position.

SUBTASK 27-88-11-010-010

(4) Do this task to remove the FSEU: Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-056

(5) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-760-034

(6) Refer to the applicable WDM (WDM 27-81-11, WDM 27-81-12, WDM 27-81-21,WDM 27-81-22) for the 3-wire sensor to FSEU ARINC connector pin callout.

SUBTASK 27-88-11-760-035

(7) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, for Red to Blue measurement.

SUBTASK 27-88-11-760-036

(8) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 27-88-11-760-037

(9) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-038

(10) Measure the inductance for the targets with the flaps and slats in the extended position and record in the log sheet for each sensor (Figure 502).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

(e) Compare the measured inductance value to the range in Table 504 only if using GO-GAUGES.

SUBTASK 27-88-11-760-039

(11) Make sure that the inductance value for the sensor under test is within the range of Table 505.

J. Measure the Inductance at the ARINC Connector Pins on the E1-1 Rack for each Sensor Under Test with the Flaps and Slats in the Full Extended Position

SUBTASK 27-88-11-410-004

(1) Do this task to install the FSEU: Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

(a) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-028

(2) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-860-029

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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(WARNING PRECEDES)

CAUTION

MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(3) Move the flaps and slats to the full extended position for the test.

(a) Do this task to extend the leading edge flaps: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

1) Stop for 2 seconds at each detent position until detent position 30.

SUBTASK 27-88-11-010-008

(4) Do this task to remove the FSEU: Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-030

(5) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-760-003

(6) Refer to the applicable WDM (WDM 27-81-11, WDM 27-81-12, WDM 27-81-21,WDM 27-81-22) for the 3-wire sensor to FSEU ARINC connector pin callout.

SUBTASK 27-88-11-760-040

(7) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, for Red to Blue measurement.

SUBTASK 27-88-11-760-041

(8) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

SUBTASK 27-88-11-760-042

(9) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-043

(10) Measure the inductance for the targets with the flaps and slats in the full extended position and record in the log sheet for each sensor (Figure 502).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

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(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

(e) Compare the measured inductance value to the range in Table 504 only if using GO-GAUGES.

SUBTASK 27-88-11-760-044

(11) Make sure that the inductance value for the sensor under test is within the range of Table 505.

K. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-11-020-009

(1) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-420-006

(2) Do this task to install the FSEU: Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

SUBTASK 27-88-11-860-013

(3) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-730-002

(4) Do this task: Leading Edge Flap and Slat Proximity Sensor Test, TASK 27-88-11-700-801.

SUBTASK 27-88-11-410-010

(5) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

END OF TASK

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	DATE:		LOC:			
	A/C:					
	RESISTANCE OHMS (MEASURE AT 120 HZ)			INDUCTANCE mH (MEAS. AT 1 Khz)		
	LE SLATS POSITION	RETRACTED	RETRACTED	RETRACTED	EXTENDED	FULL EXTENDED
SENSOR EQUIP. NO.	SENSOR INSTALLATION	RED-YELLOW (COILS)	BLUE-YELLOW (TC RESISTOR)	RED-BLUE	RED-BLUE	RED-BLUE
S994	LEFT SLAT 1 OB					
S995	LEFT SLAT 1 IB					
S996	LEFT SLAT 2 OB					
S997	LEFT SLAT 2 IB					
S998	LEFT SLAT 3 OB					
S999	LEFT SLAT 3 IB					
S1000	LEFT SLAT 4 OB					
S1001	LEFT SLAT 4 IB					
S1002	RIGHT SLAT 5 OB					
S1003	RIGHT SLAT 5 IB					
S1004	RIGHT SLAT 6 OB					
S1005	RIGHT SLAT 6 IB					
S1006	RIGHT SLAT 7 OB					
S1007	RIGHT SLAT 7 IB					
S1008	RIGHT SLAT 8 OB					
S1009	RIGHT SLAT 8 IB					
	RESISTANCE OHMS (MEASURE AT 120 HZ)			INDUCTANCE mH (MEAS. AT 1 Khz)		
	LE FLAPS POSITION	RETRACTED	RETRACTED	RETRACTED	EXTENDED	FULL EXTENDED
SENSOR EQUIP. NO.	SENSOR INSTALLATION	RED-YELLOW (COILS)	BLUE-YELLOW (TC RESISTOR)	RED-BLUE	RED-BLUE	RED-BLUE
S168	LEFT FLAP 1 RET					
S169	LEFT FLAP 1 EXT					
S170	LEFT FLAP 2 RET					
S171	LEFT FLAP 2 EXT					
S172	RIGHT FLAP 3 RET					
S173	RIGHT FLAP 3 EXT					
S174	RIGHT FLAP 4 RET					
S175	RIGHT FLAP 4 EXT					

2889565 S0000686667_V2

Proximity Sensor Performance Values - Log Sheet
Figure 502/27-88-11-990-805

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TASK 27-88-11-720-801

4. Leading Edge Flap and Slat Proximity Sensor Test Using a Breakout Box and LCR Meter

(Figure 503, Figure 504)

A. General

CAUTION	THE PROXIMITY SENSOR BREAKOUT BOX IS USED ONLY TO EXAMINE BASIC SENSOR HEALTH AND INSTALLATION. DO NOT USE AS A RIGGING TOOL. RIGGING OF SENSORS AND OTHER MAINTENANCE ACTIONS SHOULD BE DONE ONLY IN ACCORDANCE WITH AIRLINE OPERATING AND MAINTENANCE PROCEDURES, APPROVED MAINTENANCE MANUALS, OR DIRECTIVES OF THE APPROPRIATE CERTIFICATION AGENCY.

(1) The test will measure the inductance and resistance of the 3-wire sensors, sensor wires, and connectors. And compare the values to a known range. This test also examines the target to sensor conditions.

(2) This test uses the Crane Sensor Test System made up of the following parts:

(a) Proximity Sensor Breakout Box (BOB) and a LCR Meter.

(b) Sensors Test Gauge Set.

1) The controls on the face of the proximity sensor BOB are used to select the desired sensor for testing.

a) The proximity sensor BOB does not test two-wire sensors. Two-wire sensors, do not need to be tested.

2) The Sensor Test Gauge Kit (proximity sensor test set, SPL-1690) consists of six go-gauges, sensor de-actuator tool and an instruction booklet. Use the go-gauges in place of a sensor, if you suspect the sensor is faulty. Refer to IFIM 27-88 if necessary.

(3) Obey all applicable warnings, cautions, and maintenance practice instructions when necessary to measure the Proximity Sensor in the test.

(4) Use an LCR meter that has a USB port to record the data with a PC automatically. For example 878B or 879B have a USB port. Use the specified instructions included with the LCR meter. Full instructions are included in the BOB's Sensor Test System.

B. References

Reference	Title
27-51-00-740-801	FSEU Display and Existing Faults Test (P/B 501)
27-51-01-000-801	Flap/Slat Electronics Unit Removal (P/B 401)
27-51-01-400-801	Flap/Slat Electronics Unit Installation (P/B 401)
27-81-00-860-803	Leading Edge Flaps and Slats Extension (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
29-11-00-860-801	Hydraulic System A or B Pressurization (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

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Reference	Description
COM-1741	Meter - LCR (Inductance, Capacitance, Resistance; Use COM-20443 for OH bleed loop testing) Part #: 878B Supplier: 08098 Part #: 879B Supplier: 08098 Part #: 880 Supplier: 08098 Part #: U1733P Supplier: 1LQK8 Opt Part #: 875B Supplier: 08098 Opt Part #: 878A Supplier: 08098 Opt Part #: 879 Supplier: 08098
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
SPL-1690	Actuators/Deactuators Set - Proximity Sensor Part #: 8-758-01 Supplier: 08748 Part #: A27092-139 Supplier: 81205 Opt Part #: A27092-106 Supplier: 81205
SPL-14585	Breakout Box - Proximity Sensor Part #: 380-026-02 Supplier: 08748
STD-6481	Voltmeter - Digital

D. Location Zones

Zone	Area
117	Electrical and Electronics Compartment - Left
118	Electrical and Electronics Compartment - Right

E. Access Panels

Number	Name/Location
117A	Electronic Equipment Access Door

F. Prepare for the Test

SUBTASK 27-88-11-860-015

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

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(WARNING PRECEDES)

CAUTION

MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Make sure that the flaps and slats are in the retracted position.

(a) If the flaps and slats are not retracted, do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 27-88-11-740-003

(2) Do this task: FSEU Display and Existing Faults Test, TASK 27-51-00-740-801.

SUBTASK 27-88-11-860-042

WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do this task: Hydraulic System A or B Pressurization, TASK 29-11-00-860-801.

SUBTASK 27-88-11-730-004

WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION

MAKE SURE THE INBOARD FAN DUCT COWL AND THE INBOARD AND OUTBOARD THRUST REVERSERS ARE CLOSED OR REMOVED BEFORE YOU EXTEND THE LEADING EDGE FLAPS AND SLATS IN THIS TEST. THERE IS NOT SUFFICIENT CLEARANCE FOR THE FLAPS AND SLATS TO EXTEND IF THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS ARE IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(4) Do a test of the leading edge flap and slat proximity sensor:

(a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

(b) Push the down arrow until OTHER FUNCTNS? shows on the display.

(c) Push the YES button to select OTHER FUNCTNS? on the FSEU.

(d) Push the down arrow until I/O MONITOR? shows on the display.

(e) Push the YES button to select I/O MONITOR? from the menu.

(f) Push the YES button to select PROX SENSORS? from the I/O MONITOR? menu.

(g) Push the down arrow to step through the proximity sensor states at the LE flaps and slats UP position.

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(h) Make sure that these displays and the proximity sensor states show on the FSEU (Table 501).

SUBTASK 27-88-11-860-016

(5) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-010-007

(6) Open this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

SUBTASK 27-88-11-020-010

(7) Do this task to remove the FSEU: Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-210-002

(8) Examine the ARINC connector pins for damage or corrosion.

(a) Repair if necessary.

SUBTASK 27-88-11-480-005

(9) Install the proximity sensor breakout box, SPL-14585, in the FSEU location.

(a) Remove the blanking caps from the rear connectors and install the blanking caps on the removed FSEU rear ARINC 629 bus connectors.

NOTE: No calibration or test is necessary for the proximity sensor BOB.

(b) If a fault is suspected in the FSEU, test each pin of the ARINC connector for continuity. and repair as necessary. Set the sensor selector switch to each sensor in its turn. And measure for continuity between the sensor inputs of the ARINC connector and the front panel connectors.

G. Measure the Proximity Sensor and Wiring Installation Resistance with the Flaps and Slats in the Retracted Position

SUBTASK 27-88-11-480-006

(1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, leads to the RED and YELLOW jacks on the front of the proximity sensor breakout box, SPL-14585.

(a) A digital voltmeter, STD-6481, or digital/analog multimeter, COM-1793, may be used to measure the resistance.

SUBTASK 27-88-11-860-018

(2) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to measure series resistance (Rs) at 120 Hz.

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SUBTASK 27-88-11-860-019

(3) Push the L/C/R button to change to resistance mode.

SUBTASK 27-88-11-860-020

(4) Push and hold the LCR meter (Inductance, Capacitance, Resistance), COM-1741, button for more than one second to change to series mode.

(a) SER is shown in the middle-right side of the LCR meter (Inductance, Capacitance, Resistance), COM-1741, display.

SUBTASK 27-88-11-760-006

(5) Measure the resistance for the targets with the flaps and slats in the retracted position (RED to YELLOW) and record in the log sheet for each sensor (Figure 504).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the resistance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

SUBTASK 27-88-11-200-002

(6) Compare the measured resistance values to Table 508.

SUBTASK 27-88-11-860-021

(7) Use the proximity sensor breakout box, SPL-14585, controls to set the next sensor. And again measure the resistance (RED to YELLOW) and record for each of the remaining sensors.

SUBTASK 27-88-11-480-007

(8) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, leads to the BLUE and YELLOW jacks on the front of the proximity sensor breakout box, SPL-14585.

(a) A digital voltmeter, STD-6481, or digital/analog multimeter, COM-1793, may be used to measure the resistance.

SUBTASK 27-88-11-760-007

(9) Measure the resistance for the targets with the flaps and slats in retracted position (BLUE to YELLOW) and record in the log sheet for each sensor (Figure 504).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the resistance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

SUBTASK 27-88-11-210-003

(10) Compare the measured resistance values to Table 508.

SUBTASK 27-88-11-860-032

(11) Use the proximity sensor breakout box, SPL-14585, controls to set the next sensor. And again measure the resistance (BLUE to YELLOW) and record for each of the remaining sensors.

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H. Measure the Inductance (RED to BLUE) for each Sensor Under Test with the Flaps and Slats in the Retracted Position

SUBTASK 27-88-11-420-007

(1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, leads to the RED and BLUE jacks on the front of the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-760-004

(2) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

SUBTASK 27-88-11-720-001

(3) Use Table 506 to set the BOB controls to the appropriate sensor for test.

Table 506/27-88-11-993-806 PROXIMITY SENSOR BREAKOUT BOX (BOB)

SENSOR EQUIP. NO.	PROX SENSOR BOB SETTING	P/N 380-026-02
	SW POSITION	FUNCTION
S1008	1	LE SLAT 8 OUTBD
S994	2	LE SLAT 1 OUTBD
S1009	3	LE SLAT 8 INBD
S995	4	LE SLAT 1 INBD
S1006	5	LE SLAT 7 OUTBD
S996	6	LE SLAT 2 OUTBD
S1007	7	LE SLAT 7 INBD
S997	8	LE SLAT 2 INBD
S1004	9	LE SLAT 6 OUTBD
S998	10	LE SLAT 3 OUTBD
S1005	11	LE SLAT 6 INBD
S999	12	LE SLAT 3 INBD
S1002	13	LE SLAT 5 OUTBD
S1000	14	LE SLAT 4 OUTBD
S1003	15	LE SLAT 5 INBD
S1001	16	LE SLAT 4 INBD
S174	17	LE FLAP 4 RETRACT
S168	18	LE FLAP 1 RETRACT
S175	19	LE FLAP 4 EXTEND
S169	20	LE FLAP 1 EXTEND
S172	21	LE FLAP 3 RETRACT
S170	22	LE FLAP 2 RETRACT
S173	23	LE FLAP 3 EXTEND
S171	24	LE FLAP 2 EXTEND

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SUBTASK 27-88-11-860-017

(4) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-005

(5) Measure the inductance for the targets with the flaps and slats in the retracted position (RED to BLUE) and record in the log sheet for each sensor (Figure 504).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

SUBTASK 27-88-11-760-060

(6) Compare the measured inductance values to Table 507 only if you are using the GO-GAUGE.

Table 507/27-88-11-993-809 GO-GAUGES TABLE

BOEING SENSOR PART NUMBER	CRANE SENSOR PART NUMBER	TARGET NEAR INDUCTANCE (GO SIDE) (WITH GO-GAUGE)	TARGET FAR INDUCTANCE (NO GO SIDE) (WITH GO-GAUGE)	COIL RESISTANCE RED-YELLOW (TARGET FAR)	RESISTANCE BLUE-YELLOW (TARGET FAR)
10-61226-29	1-899-29	38.0 mH minimum	36.0-37.5 mH	27.0-39.0 Ω	344.5-351.5 Ω
10-61226-30	1-899-30	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω
10-61226-45	80-207-01	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω
10-61226-47	80-207-02	38.0 mH minimum	36.0-37.5 mH	27.0-33.0 Ω	344.5-351.5 Ω

SUBTASK 27-88-11-200-001

(7) Make sure that the inductance value for the sensor under test is within the range of Table 508.

Table 508/27-88-11-993-807 SENSOR'S NOMINAL VALUES

VALUE	SENSOR CONDITION
Three-wire Sensors	
35 mH*[1]	Target FAR
40 mH - 50 mH	Correctly rigged NEAR sensor
Greater than 50 mH	Target may be rigged too near to the sensor
Resistance on aircraft (Red-Yellow resistance plus Blue-Yellow resistance): ≤ 390 Ω	

*[1] There is no range (tolerance) for Target FAR. The nominal 35 mH value for Target FAR is left without tolerance because many operator’s fleet will behave differently based on a variety of conditions such as flight cycles, operating climate, age, etc.

SUBTASK 27-88-11-860-022

(8) Use the proximity sensor breakout box, SPL-14585, controls to set the next sensor. And again measure the inductance (RED to BLUE) and record for each of the remaining sensors.

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I. Measure the Inductance (RED to BLUE) for each Sensor Under Test with the Flaps and Slats in the Extended Position

SUBTASK 27-88-11-080-010

(1) Disconnect and remove the LCR meter (Inductance, Capacitance, Resistance), COM-1741, from the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-080-011

(2) Remove the proximity sensor breakout box, SPL-14585, from the FSEU location.

SUBTASK 27-88-11-410-009

(3) Do this task to install the Flap/Slat Electronics Unit (FSEU): Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

(a) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-057

(4) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-860-058

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(5) Move the flaps and slats to the extended position for the test.

(a) Do this task to extend the leading edge flaps: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

1) Move the flap control lever to detent position 1, 2, 5, 10, 15, and 25.

2) Stop for 2 seconds at each detent position.

SUBTASK 27-88-11-020-013

(6) Do this task to remove the FSEU: Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

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(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-059

(7) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-480-012

(8) Install the proximity sensor breakout box, SPL-14585, in the FSEU location.

SUBTASK 27-88-11-480-013

(9) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, leads to the RED and BLUE jacks on the front of the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-860-060

(10) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

SUBTASK 27-88-11-860-061

(11) Use Table 506 to set the BOB controls to the appropriate sensor for test.

SUBTASK 27-88-11-860-062

(12) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-045

(13) Measure the inductance for the targets with the flaps and slats in the extended position (RED to BLUE) and record in the log sheet for each of the sensors (Figure 504).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

SUBTASK 27-88-11-760-046

(14) Compare the measured inductance value to the range in Table 508 if using the Go-Gauge.

SUBTASK 27-88-11-860-063

(15) Make sure that the inductance value for the sensor under test is within the range of Table 508.

SUBTASK 27-88-11-860-064

(16) Use the proximity sensor breakout box, SPL-14585, controls to set the next sensor.

(a) Again measure the inductance (RED to BLUE) and record for each of the remaining sensors.

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J. Measure the Inductance (RED to BLUE) for each Sensor Under Test with the Flaps and Slats in the Full Extended Position

SUBTASK 27-88-11-080-005

(1) Disconnect and remove the LCR meter (Inductance, Capacitance, Resistance), COM-1741, from the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-080-006

(2) Remove the proximity sensor breakout box, SPL-14585, from the FSEU location.

SUBTASK 27-88-11-410-005

(3) Do this task to install the FSEU: Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

(a) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-860-033

(4) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-860-034

WARNING MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES. THE LEADING EDGE AND TRAILING EDGE CONTROL SURFACES CAN EXTEND AND RETRACT QUICKLY. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU CLOSE OR REMOVE THE INBOARD FAN COWL AND THRUST REVERSERS BEFORE YOU RETRACT THE LEADING EDGE FLAPS. THE CLEARANCE IS NOT SUFFICIENT FOR THE FLAPS TO RETRACT WITH THE INBOARD FAN DUCT COWL AND THE THRUST REVERSERS IN THE OPEN POSITION. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

(5) Move the flaps and slats to the full extended position for the test.

(a) Do this task to extend the leading edge flaps: Leading Edge Flaps and Slats Extension, TASK 27-81-00-860-803.

1) Stop for 2 seconds at each detent position until detent position 30.

SUBTASK 27-88-11-020-011

(6) Do this task to remove the FSEU: Flap/Slat Electronics Unit Removal, TASK 27-51-01-000-801.

(a) Keep the FSEU for installation.

(b) Install blanking caps on the removed FSEU rear ARINC 629 bus connectors.

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SUBTASK 27-88-11-860-035

(7) Remove electrical power from the system for the test.

(a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-480-008

(8) Install the proximity sensor breakout box, SPL-14585, in the FSEU location.

SUBTASK 27-88-11-480-009

(9) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741, leads to the RED and BLUE jacks on the front of the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-860-036

(10) Supply power to the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

SUBTASK 27-88-11-860-037

(11) Use Table 506 to set the BOB controls to the appropriate sensor for test.

SUBTASK 27-88-11-860-038

(12) Set the LCR meter (Inductance, Capacitance, Resistance), COM-1741, to read series inductance (Ls) at 1 kHz.

SUBTASK 27-88-11-760-008

(13) Measure the inductance for the targets with the flaps and slats in the full extended position (RED to BLUE) and record in the log sheet for each of the sensors (Figure 504).

(a) The “DATA HOLD” button is used to "capture" your current measured result.

(b) To make a new measurement, the, "DATA HOLD" must be released, by pressing the button once, then the new measurement can be made.

(c) Record the inductance of sensors in the appropriate space on log sheet. Values to be recorded in hundredths (two numbers right of the decimal point), for example XX.XX or XXX.XX.

(d) If you suspect a faulty sensor, use the applicable, Sensor Test Gauge Kit – Go-Gauge (proximity sensor test set, SPL-1690) to simulate a configuration change of the sensors current position to a target FAR or a target NEAR position.

SUBTASK 27-88-11-760-047

(14) Compare the measured inductance value to the range in Table 508 if using the Go-Gauge.

SUBTASK 27-88-11-200-003

(15) Make sure that the inductance value for the sensor under test is within the range of Table 508.

SUBTASK 27-88-11-860-039

(16) Use the proximity sensor breakout box, SPL-14585, controls to set the next sensor.

(a) Again measure the inductance (RED to BLUE) and record for each of the remaining sensors.

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K. Put the Airplane Back to Its Usual Condition

SUBTASK 27-88-11-080-007

(1) Disconnect and remove the LCR meter (Inductance, Capacitance, Resistance), COM-1741, from the proximity sensor breakout box, SPL-14585.

SUBTASK 27-88-11-860-024

(2) Remove the proximity sensor breakout box, SPL-14585, from the FSEU location.

SUBTASK 27-88-11-860-027

(3) Remove the blanking caps on the FSEU rear ARINC 629 bus connectors.

SUBTASK 27-88-11-400-002

(4) Do this task to install the FSEU: Flap/Slat Electronics Unit Installation, TASK 27-51-01-400-801.

SUBTASK 27-88-11-860-026

(5) Restore electrical power.

(a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

SUBTASK 27-88-11-720-002

(6) Do this task: Leading Edge Flap and Slat Proximity Sensor Test, TASK 27-88-11-700-801.

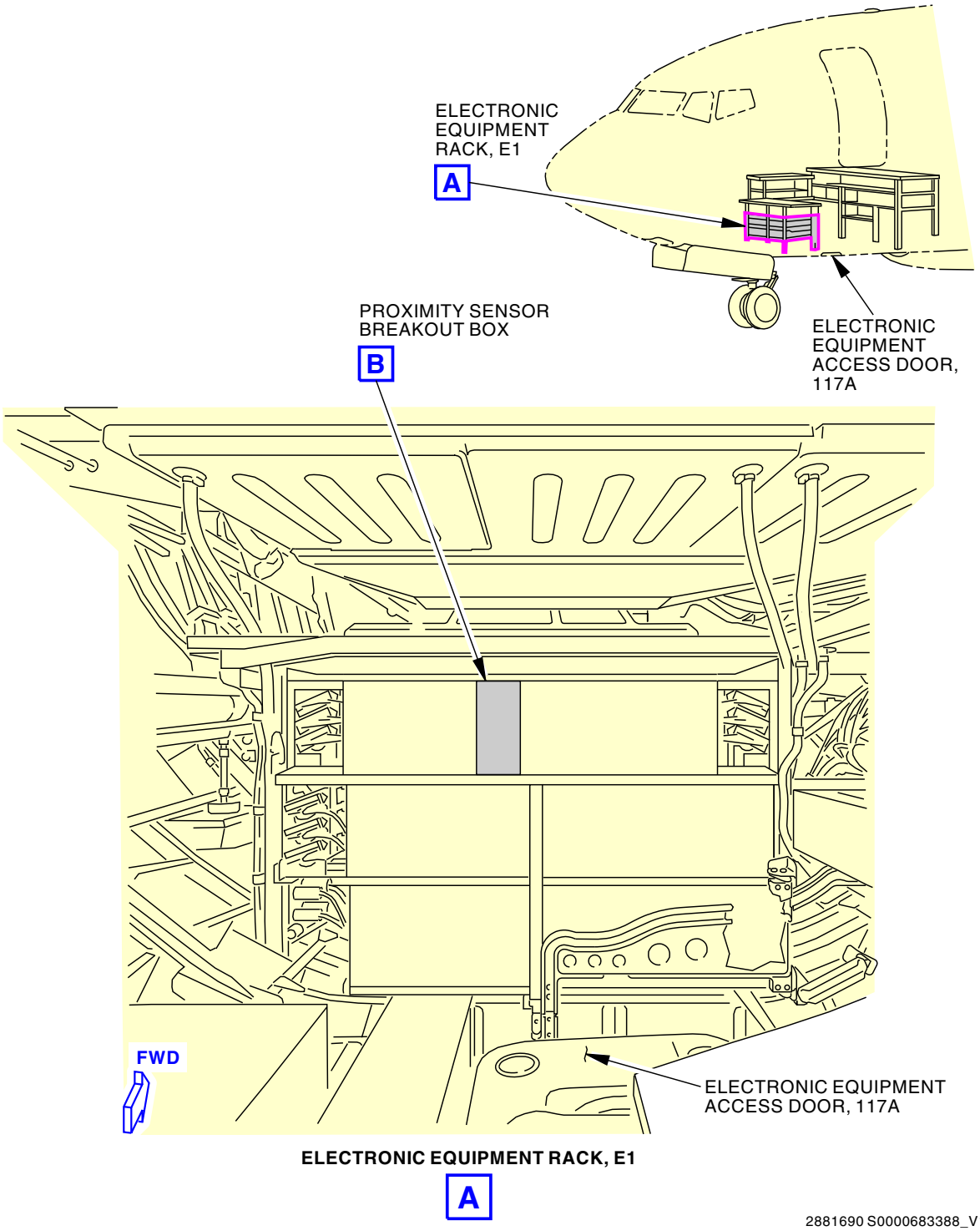
SUBTASK 27-88-11-410-011

(7) Close this access door:

Number	Name/Location
117A	Electronic Equipment Access Door

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Proximity Sensor Breakout Box
Figure 503/27-88-11-990-804 (Sheet 1 of 2)

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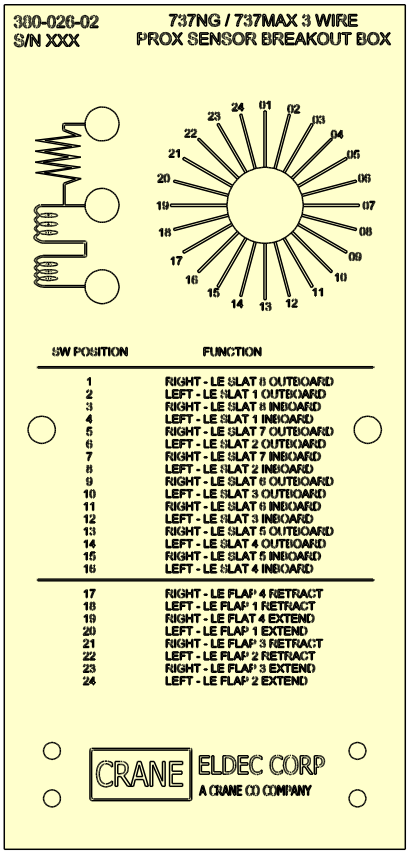

PROXIMITY SENSOR BREAKOUT BOX

B

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Proximity Sensor Breakout Box
Figure 503/27-88-11-990-804 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

		DATE:		LOC:			
		A/C:					
		RESISTANCE OHMS (MEASURE AT 120 HZ)			INDUCTANCE mH (MEAS. AT 1 Khz)		
		LE SLATS POSITION	RETRACTED	RETRACTED	RETRACTED	EXTENDED	FULL EXTENDED
SENSOR EQUIP. NO.	BREAKOUT BOX SWITCH POSITION	SENSOR INSTALLATION	RED-YELLOW (COILS)	BLUE-YELLOW (TC RESISTOR)	RED-BLUE	RED-BLUE	RED-BLUE
S1008	1	RIGHT SLAT 8 OB					
S994	2	LEFT SLAT 1 OB					
S1009	3	RIGHT SLAT 8 IB					
S995	4	LEFT SLAT 1 IB					
S1006	5	RIGHT SLAT 7 OB					
S996	6	LEFT SLAT 2 OB					
S1007	7	RIGHT SLAT 7 IB					
S997	8	LEFT SLAT 2 IB					
S1004	9	RIGHT SLAT 6 OB					
S998	10	LEFT SLAT 3 OB					
S1005	11	RIGHT SLAT 6 IB					
S999	12	LEFT SLAT 3 IB					
S1002	13	RIGHT SLAT 5 OB					
S1000	14	LEFT SLAT 4 OB					
S1003	15	RIGHT SLAT 5 IB					
S1001	16	LEFT SLAT 4 IB					
		RESISTANCE OHMS (MEASURE AT 120 HZ)			INDUCTANCE mH (MEAS. AT 1 Khz)		
		LE FLAPS POSITION	RETRACTED	RETRACTED	RETRACTED	EXTENDED	FULL EXTENDED
SENSOR EQUIP. NO.	BREAKOUT BOX SWITCH POSITION	SENSOR INSTALLATION	RED-YELLOW (COILS)	BLUE-YELLOW (TC RESISTOR)	RED-BLUE	RED-BLUE	RED-BLUE
S174	17	RIGHT FLAP 4 RET					
S168	18	LEFT FLAP 1 RET					
S175	19	RIGHT FLAP 4 EXT					
S169	20	LEFT FLAP 1 EXT					
S172	21	RIGHT FLAP 3 RET					
S170	22	LEFT FLAP 2 RET					
S173	23	RIGHT FLAP 3 EXT					
S171	24	LEFT FLAP 2 EXT					

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Proximity Sensor Performance Values - Log Sheet
Figure 504/27-88-11-990-806

ECCN 9E991 BOEING PROPRIETARY - See title page for details

P5-12 OVERHEAD LEADING EDGE DEVICE ANNUNCIATOR PANEL - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Removal of the P5-12 Overhead Leading Edge Device Annunciator Panel.

(2) Installation of the P5-12 Overhead Leading Edge Device Annunciator Panel.

TASK 27-88-21-000-801

2. P5-12 Overhead Leading Edge Device Annunciator Panel Removal

(Figure 401)

A. General

(1) This task includes the steps to remove the P5-12 Annunciator Panel.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 27-88-21-860-001

(1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. P5-12 Annunciator Panel Removal

SUBTASK 27-88-21-020-001

(1) Do these steps to remove the P5-12 annunciator panel [1]:

(a) Release the fasteners [2] on the front of the P5-12 annunciator panel [1].

CAUTION

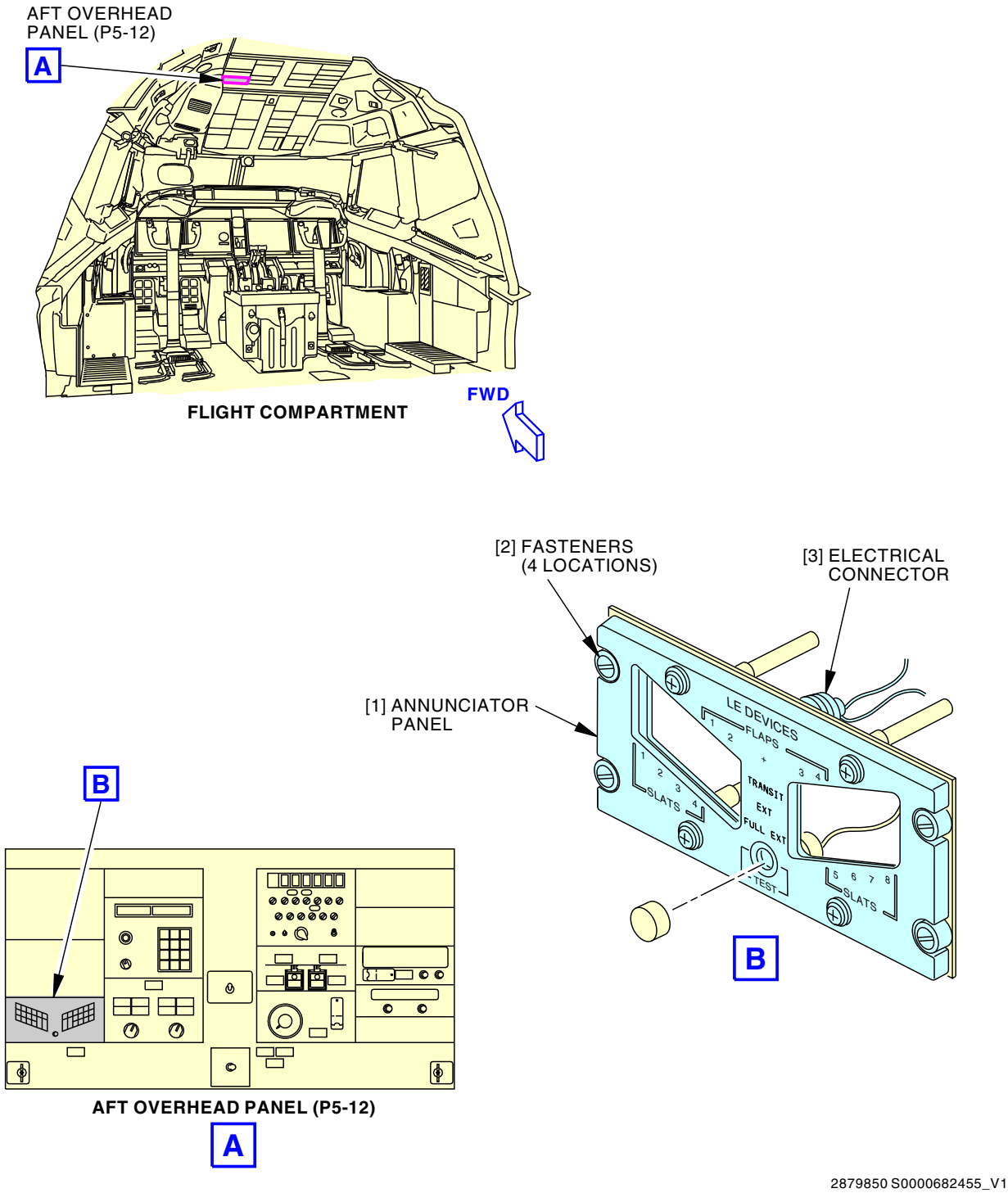
DO NOT APPLY TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO EQUIPMENT.

(b) Carefully lower the P5-12 annunciator panel [1] until you can get to the electrical connector [3].

(c) Disconnect the electrical connector [3] from the rear of the panel.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Leading Edge Device Annunciator Panel Installation
Figure 401/27-88-21-990-801

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 27-88-21-400-801

3. P5-12 Overhead Leading Edge Device Annunciator Panel Installation

Figure 401

A. General

(1) This task includes the steps to install the P5-12 Annunciator Panel.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. P5-12 Annunciator Panel Installation

SUBTASK 27-88-21-420-001

(1) Do these steps to Install the P5-12 annunciator panel [1]:

(a) Connect the electrical connector [3] to the rear of the P5-12 annunciator panel [1].

CAUTION

DO NOT APPLY TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO EQUIPMENT.

(b) Carefully install the P5-12 annunciator panel [1] into the pilot's P5 Overhead Panel.

(c) Lock the fasteners [2] on the front of the P5-12 annunciator panel [1].

D. P5-12 Annunciator Panel Installation Test

SUBTASK 27-88-21-860-002

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

SUBTASK 27-88-21-710-001

(2) Push test button on P5-12 annunciator panel [1].

(a) Make sure all indicator lights are on.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details