CHAPTER

73

ENGINE FUEL AND CONTROL

(LEAP-1B ENGINES)

BOEING

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-EFFECTIVE PAGES		
1 thru 14	Sep 15/2023	
73-CONTENTS		
1	Sep 15/2021	
2	Jan 15/2023	
3	Sep 15/2021	
O 4	Sep 15/2023	
O 5	Sep 15/2023	
6	May 15/2022	
7	Sep 15/2021	
8	Sep 15/2021	
9	May 15/2022	
10	May 15/2022	
11	May 15/2022	
12	Sep 15/2021	
73-00-00		
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503	Jan 15/2022	
504	Jan 15/2023	
505	Jan 15/2022	
506	Jan 15/2023	
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73-00-00		
901	Sep 15/2021	
R 902	Sep 15/2023	
O 903	Sep 15/2023	
904	BLANK	
73-11-00		
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602	Jan 15/2023	
603	Sep 15/2021	
604	Sep 15/2021	
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606	Sep 15/2021	
607	Sep 15/2021	
608	Sep 15/2021	
73-11-00 (cont)		
609	Sep 15/2021	
610	Sep 15/2021	
73-11-01		
401	May 15/2023	
402	Jan 15/2023	
403	May 15/2022	
404	May 15/2022	
405	May 15/2022	
406	Sep 15/2021	
407	Sep 15/2021	
408	Sep 15/2021	
409	Sep 15/2021	
410	Sep 15/2021	
411	May 15/2023	
412	May 15/2022	
413	May 15/2022	
414	Sep 15/2021	
415	Sep 15/2021	
416	BLANK	
73-11-02		
401	May 15/2023	
402	May 15/2023	
403	Sep 15/2022	
404	Jan 15/2022	
405	Sep 15/2022	
406	Jan 15/2022	
407	Jan 15/2022	
408	May 15/2023	
409	May 15/2023	
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73-11-03		
401	Jan 15/2023	
402	Sep 15/2021	
403	Sep 15/2021	
404	Sep 15/2021	
73-11-03 (cont)		
405	Sep 15/2021	
406	Sep 15/2021	
407	May 15/2023	
408	Sep 15/2021	
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73-11-04		
401	May 15/2023	
402	Jan 15/2023	
403	Sep 15/2021	
404	Sep 15/2021	
405	May 15/2023	
406	Sep 15/2021	
407	Sep 15/2021	
408	BLANK	
73-11-04		
601	Sep 15/2021	
602	BLANK	
73-11-04		
701	Sep 15/2021	
702	Sep 15/2021	
73-11-05		
R 401	Sep 15/2023	
402	Sep 15/2021	
403	Jan 15/2023	
R 404	Sep 15/2023	
R 405	Sep 15/2023	
406	Sep 15/2021	
R 407	Sep 15/2023	
R 408	Sep 15/2023	
R 409	Sep 15/2023	
R 410	Sep 15/2023	
R 411	Sep 15/2023	
R 412	Sep 15/2023	
R 413	Sep 15/2023	
R 414	Sep 15/2023	
R 415	Sep 15/2023	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-11-05 (cont)		
R 416	Sep 15/2023	
R 417	Sep 15/2023	
R 418	Sep 15/2023	
R 419	Sep 15/2023	
R 420	Sep 15/2023	
R 421	Sep 15/2023	
R 422	Sep 15/2023	
R 423	Sep 15/2023	
R 424	Sep 15/2023	
R 425	Sep 15/2023	
R 426	Sep 15/2023	
R 427	Sep 15/2023	
R 428	Sep 15/2023	
R 429	Sep 15/2023	
R 430	Sep 15/2023	
R 431	Sep 15/2023	
R 432	Sep 15/2023	
R 433	Sep 15/2023	
R 434	Sep 15/2023	
R 435	Sep 15/2023	
R 436	Sep 15/2023	
R 437	Sep 15/2023	
R 438	Sep 15/2023	
R 439	Sep 15/2023	
R 440	Sep 15/2023	
R 441	Sep 15/2023	
R 442	Sep 15/2023	
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R 444	Sep 15/2023	
R 445	Sep 15/2023	
R 446	Sep 15/2023	
R 447	Sep 15/2023	
448	Sep 15/2021	
R 449	Sep 15/2023	
R 450	Sep 15/2023	
R 451	Sep 15/2023	
73-11-05 (cont)		
R 452	Sep 15/2023	
R 453	Sep 15/2023	
R 454	Sep 15/2023	
R 455	Sep 15/2023	
R 456	Sep 15/2023	
R 457	Sep 15/2023	
R 458	Sep 15/2023	
459	Sep 15/2021	
R 460	Sep 15/2023	
R 461	Sep 15/2023	
R 462	Sep 15/2023	
R 463	Sep 15/2023	
R 464	Sep 15/2023	
R 465	Sep 15/2023	
R 466	Sep 15/2023	
R 467	Sep 15/2023	
R 468	Sep 15/2023	
R 469	Sep 15/2023	
R 470	Sep 15/2023	
R 471	Sep 15/2023	
R 472	Sep 15/2023	
R 473	Sep 15/2023	
R 474	Sep 15/2023	
R 475	Sep 15/2023	
R 476	Sep 15/2023	
R 477	Sep 15/2023	
R 478	Sep 15/2023	
R 479	Sep 15/2023	
R 480	Sep 15/2023	
R 481	Sep 15/2023	
R 482	Sep 15/2023	
R 483	Sep 15/2023	
R 484	Sep 15/2023	
R 485	Sep 15/2023	
R 486	Sep 15/2023	
R 487	Sep 15/2023	
73-11-05 (cont)		
R 488	Sep 15/2023	
R 489	Sep 15/2023	
R 490	Sep 15/2023	
R 491	Sep 15/2023	
R 492	Sep 15/2023	
R 493	Sep 15/2023	
R 494	Sep 15/2023	
495	Sep 15/2021	
496	Sep 15/2021	
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498.3	Sep 15/2021	
498.4	Sep 15/2021	
498.5	Sep 15/2021	
498.6	Sep 15/2021	
498.7	Sep 15/2021	
498.8	Sep 15/2021	
498.9	Sep 15/2021	
498.10	Sep 15/2021	
498.11	Sep 15/2021	
498.12	Sep 15/2021	
498.13	Sep 15/2021	
498.14	Sep 15/2021	
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498.19	Sep 15/2021	
498.20	Sep 15/2021	
498.21	Sep 15/2021	
498.22	Sep 15/2021	
498.23	Sep 15/2021	
498.24	Sep 15/2021	
498.25	Sep 15/2021	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
73-11-05 (cont)			73-11-05 (cont)			73-11-05 (cont)		
498.26	Sep 15/2021		498.62	Sep 15/2021		498.98	Sep 15/2021	
498.27	Sep 15/2021		498.63	Sep 15/2021		498.99	Sep 15/2021	
498.28	Sep 15/2021		498.64	Sep 15/2021		498.100	Sep 15/2021	
498.29	Sep 15/2021		498.65	Sep 15/2021		498.101	Sep 15/2021	
498.30	Sep 15/2021		498.66	Sep 15/2021		498.102	Sep 15/2021	
498.31	Sep 15/2021		498.67	Sep 15/2021		498.103	Sep 15/2021	
498.32	Sep 15/2021		498.68	Sep 15/2021		498.104	Sep 15/2021	
498.33	Sep 15/2021		498.69	Sep 15/2021		498.105	Sep 15/2021	
498.34	Sep 15/2021		498.70	Sep 15/2021		498.106	Sep 15/2021	
498.35	Sep 15/2021		498.71	Sep 15/2021		498.107	Sep 15/2021	
498.36	Sep 15/2021		498.72	Sep 15/2021		498.108	Sep 15/2021	
498.37	Sep 15/2021		498.73	Sep 15/2021		498.109	Sep 15/2021	
498.38	Sep 15/2021		498.74	Sep 15/2021		498.110	Sep 15/2021	
498.39	Sep 15/2021		498.75	Sep 15/2021		498.111	Sep 15/2021	
498.40	Sep 15/2021		498.76	Sep 15/2021		498.112	Sep 15/2021	
498.41	Sep 15/2021		498.77	Sep 15/2021		498.113	Sep 15/2021	
498.42	Sep 15/2021		498.78	Sep 15/2021		498.114	Sep 15/2021	
498.43	Sep 15/2021		498.79	Sep 15/2021		498.115	Sep 15/2021	
498.44	Sep 15/2021		498.80	Sep 15/2021		498.116	Sep 15/2021	
498.45	Sep 15/2021		498.81	Sep 15/2021		498.117	Sep 15/2021	
498.46	Sep 15/2021		498.82	Sep 15/2021		498.118	Sep 15/2021	
498.47	Sep 15/2021		498.83	Sep 15/2021		498.119	Sep 15/2021	
498.48	Sep 15/2021		498.84	Sep 15/2021		498.120	Sep 15/2021	
498.49	Sep 15/2021		498.85	Sep 15/2021		498.121	Sep 15/2021	
498.50	Sep 15/2021		498.86	Sep 15/2021		498.122	Sep 15/2021	
498.51	Sep 15/2021		498.87	Sep 15/2021		498.123	Sep 15/2021	
498.52	Sep 15/2021		498.88	Sep 15/2021		498.124	Sep 15/2021	
498.53	Sep 15/2021		498.89	Sep 15/2021		498.125	Sep 15/2021	
498.54	Sep 15/2021		498.90	Sep 15/2021		498.126	Sep 15/2021	
498.55	Sep 15/2021		498.91	Sep 15/2021		498.127	Sep 15/2021	
498.56	Sep 15/2021		498.92	Sep 15/2021		498.128	Sep 15/2021	
498.57	Sep 15/2021		498.93	Sep 15/2021		498.129	Sep 15/2021	
498.58	Sep 15/2021		498.94	Sep 15/2021		498.130	Sep 15/2021	
498.59	Sep 15/2021		498.95	Sep 15/2021		498.131	Sep 15/2021	
498.60	Sep 15/2021		498.96	Sep 15/2021		498.132	Sep 15/2021	
498.61	Sep 15/2021		498.97	Sep 15/2021		498.133	Sep 15/2021	

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-11-05 (cont)		
498.134	Sep 15/2021	
498.135	Sep 15/2021	
498.136	Sep 15/2021	
498.137	Sep 15/2021	
498.138	Sep 15/2021	
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498.142	Sep 15/2021	
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498.166	Sep 15/2021	
498.167	Sep 15/2021	
498.168	Jan 15/2023	
498.169	May 15/2023	
73-11-05 (cont)		
498.170	May 15/2023	
498.171	May 15/2023	
498.172	Jan 15/2023	
498.173	Jan 15/2023	
498.174	Jan 15/2023	
498.175	Jan 15/2023	
498.176	Jan 15/2023	
498.177	Jan 15/2023	
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498.180	Jan 15/2023	
498.181	Jan 15/2023	
498.182	Jan 15/2023	
498.183	Jan 15/2023	
498.184	Jan 15/2023	
498.185	Jan 15/2023	
498.186	Jan 15/2023	
498.187	Jan 15/2023	
498.188	May 15/2023	
498.189	Jan 15/2023	
498.190	Jan 15/2023	
498.191	Jan 15/2023	
498.192	Jan 15/2023	
498.193	Jan 15/2023	
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498.195	Jan 15/2023	
498.196	Jan 15/2023	
498.197	Jan 15/2023	
498.198	Jan 15/2023	
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498.200	Jan 15/2023	
498.201	Jan 15/2023	
498.202	Jan 15/2023	
498.203	Jan 15/2023	
498.204	Jan 15/2023	
498.205	Jan 15/2023	
73-11-05 (cont)		
498.206	Jan 15/2023	
498.207	Jan 15/2023	
498.208	Jan 15/2023	
498.209	Jan 15/2023	
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498.213	Jan 15/2023	
498.214	Jan 15/2023	
498.215	Jan 15/2023	
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498.234	Sep 15/2021	
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498.238	Sep 15/2021	
498.239	Sep 15/2021	
498.240	Sep 15/2021	
498.241	Sep 15/2021	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-11-05 (cont)		
498.242	Sep 15/2021	
498.243	Sep 15/2021	
498.244	Sep 15/2021	
498.245	Sep 15/2021	
498.246	Sep 15/2021	
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498.275	Sep 15/2021	
498.276	Sep 15/2021	
498.277	Sep 15/2021	
73-11-05 (cont)		
498.278	Sep 15/2021	
498.279	Sep 15/2021	
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498.297	Sep 15/2021	
498.298	Jan 15/2023	
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498.312	Jan 15/2023	
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73-11-05 (cont)		
498.314	Jan 15/2023	
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498.348	Jan 15/2023	
498.349	Jan 15/2023	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-11-05 (cont)		
498.350	Jan 15/2023	
498.351	Jan 15/2023	
498.352	Jan 15/2023	
498.353	Jan 15/2023	
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73-11-05 (cont)		
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498.387	Jan 15/2023	
498.388	Jan 15/2023	
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498.396	Jan 15/2023	
498.397	May 15/2023	
R 498.398	Sep 15/2023	
498.399	Jan 15/2023	
R 498.400	Sep 15/2023	
R 498.401	Sep 15/2023	
R 498.402	Sep 15/2023	
498.403	Jan 15/2023	
498.404	Jan 15/2023	
R 498.405	Sep 15/2023	
R 498.406	Sep 15/2023	
498.407	Jan 15/2023	
498.408	Jan 15/2023	
498.409	Jan 15/2023	
498.410	Jan 15/2023	
R 498.411	Sep 15/2023	
R 498.412	Sep 15/2023	
R 498.413	Sep 15/2023	
R 498.414	Sep 15/2023	
498.415	Jan 15/2023	
498.416	Jan 15/2023	
498.417	Jan 15/2023	
498.418	Jan 15/2023	
73-11-05		
601	May 15/2022	
602	Jan 15/2023	
603	Sep 15/2021	
604	Sep 15/2021	
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421	Sep 15/2021	
422	Sep 15/2021	
423	May 15/2023	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-11-06 (cont)		
424	Jan 15/2023	
425	Sep 15/2021	
426	May 15/2022	
427	May 15/2022	
428	Sep 15/2021	
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73-11-09		
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73-11-10		
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73-11-11		
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73-11-12		
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412	Sep 15/2021	
73-11-12		
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603	Sep 15/2021	
604	Sep 15/2021	
73-21-00		
R 201	Sep 15/2023	
R 202	Sep 15/2023	
R 203	Sep 15/2023	
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R 206	Sep 15/2023	
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215	Jan 15/2022	
216	Jan 15/2022	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-21-00 (cont)		
217	Jan 15/2022	
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230	Jan 15/2022	
231	Sep 15/2021	
232	Sep 15/2021	
R 233	Sep 15/2023	
O 234	Sep 15/2023	
O 235	Sep 15/2023	
O 236	Sep 15/2023	
R 237	Sep 15/2023	
O 238	Sep 15/2023	
O 239	Sep 15/2023	
O 240	Sep 15/2023	
O 241	Sep 15/2023	
O 242	Sep 15/2023	
O 243	Sep 15/2023	
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O 246	Sep 15/2023	
O 247	Sep 15/2023	
O 248	Sep 15/2023	
O 249	Sep 15/2023	
O 250	Sep 15/2023	
O 251	Sep 15/2023	
O 252	Sep 15/2023	

Subject/Page	Date	COC
73-21-00 (cont)		
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O 254	Sep 15/2023	
O 255	Sep 15/2023	
O 256	Sep 15/2023	
O 257	Sep 15/2023	
R 258	Sep 15/2023	
O 259	Sep 15/2023	
O 260	Sep 15/2023	
R 261	Sep 15/2023	
O 262	Sep 15/2023	
O 263	Sep 15/2023	
O 264	Sep 15/2023	
73-21-00		
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73-21-04		
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73-21-04		
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602	Sep 15/2021	
603	Sep 15/2021	
604	Sep 15/2021	

Subject/Page	Date	COC
73-21-05		
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R 202	Sep 15/2023	
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R 210	Sep 15/2023	
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R 212	Sep 15/2023	
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R 220	Sep 15/2023	
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73-21-05		
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409	Sep 15/2021	
410	Sep 15/2021	
411	May 15/2023	
412	May 15/2022	
413	Sep 15/2021	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-21-05 (cont)		
414	May 15/2023	
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417	May 15/2022	
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430	May 15/2023	
73-21-05		
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73-21-06		
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408	May 15/2023	
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410	Sep 15/2021	
73-21-06		
601	Jan 15/2023	
602	Jan 15/2023	
603	Sep 15/2021	

Subject/Page	Date	COC
73-21-06 (cont)		
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73-21-08		
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73-21-08		
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73-21-09		
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73-21-09		
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602	Jan 15/2023	
603	Sep 15/2021	
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608	Sep 15/2021	

Subject/Page	Date	COC
73-21-09 (cont)		
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73-21-10		
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73-21-11		
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73-21-11		
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403	Sep 15/2021	
404	Sep 15/2021	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-21-11 (cont)		
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73-21-63		
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73-22-01		
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436	May 15/2022	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-22-01 (cont)		
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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-22-01 (cont)		
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73-22-01 (cont)		
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498.154	May 15/2022	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC
73-22-01 (cont)		
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637	Sep 15/2021	
638	Sep 15/2021	
639	Sep 15/2021	
640	Sep 15/2021	
641	Sep 15/2021	
642	Sep 15/2021	
643	Sep 15/2021	
73-22-01 (cont)		
644	Sep 15/2021	
645	Sep 15/2021	
646	Sep 15/2021	
647	Sep 15/2021	
648	Jan 15/2023	
649	Jan 15/2023	
650	Sep 15/2021	
651	Sep 15/2021	
652	Sep 15/2021	
653	Sep 15/2021	
654	Sep 15/2021	
655	Sep 15/2021	
656	Sep 15/2021	
73-22-01		
701	Sep 15/2021	
702	Sep 15/2021	
703	Sep 15/2021	
704	Sep 15/2021	
705	Sep 15/2021	
706	BLANK	
73-22-01		
801	Sep 15/2021	
802	May 15/2023	
803	Jan 15/2023	
804	Sep 15/2021	
805	Sep 15/2021	
806	Sep 15/2021	
807	Sep 15/2021	
808	May 15/2023	
809	Jan 15/2023	
810	Sep 15/2021	
811	Sep 15/2021	
812	Sep 15/2021	
813	Sep 15/2021	
814	Sep 15/2021	
815	Sep 15/2021	
816	Sep 15/2021	

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
73-22-01 (cont)								
817	Sep 15/2021							
818	Sep 15/2021							
819	May 15/2023							
820	Jan 15/2023							
821	Sep 15/2021							
822	Sep 15/2021							
823	Sep 15/2021							
824	Sep 15/2021							
825	Sep 15/2021							
826	Sep 15/2021							
827	Sep 15/2021							
828	Sep 15/2021							
829	Sep 15/2021							
830	BLANK							
73-31-00								
601	Jan 15/2023							
602	Sep 15/2021							
73-31-01								
401	Jan 15/2023							
402	Sep 15/2021							
403	Sep 15/2021							
404	Sep 15/2021							
405	Sep 15/2021							
406	May 15/2023							
407	Sep 15/2021							
408	Sep 15/2021							
73-31-01								
601	Jan 15/2023							
602	Sep 15/2021							
603	Sep 15/2021							
604	BLANK							

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73-EFFECTIVE PAGES

ECCN 9E991 BOEING PROPRIETARY - See title page for details

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
ENGINE FUEL AND CONTROL	73-00-00		501	SIA ALL
Scheduled Maintenance Task for Short-Time Fault Interrogation TASK 73-00-00-700-801-G00			501	SIA ALL
Scheduled Maintenance Task for Long-Time Fault Interrogation TASK 73-00-00-700-802-G00			503	SIA ALL
Maintenance Messages Check for EEC Faults TASK 73-00-00-700-803-G00			505	SIA ALL
ENGINE FUEL AND CONTROL - DDG MAINTENANCE PROCEDURES	73-00-00		901	SIA ALL
DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Preparation TASK 73-00-00-040-801-G00			901	SIA ALL
DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Restoration TASK 73-00-00-440-801-G00			902	SIA ALL
FUEL DISTRIBUTION SYSTEM - INSPECTION/CHECK	73-11-00		601	SIA ALL
Engine Fuel Distribution System General Visual Inspection TASK 73-11-00-210-801-G00			601	SIA ALL
Fuel Filter Contamination Detailed Visual Inspection TASK 73-11-00-211-801-G00			607	SIA ALL
MAIN FUEL PUMP - REMOVAL/INSTALLATION	73-11-01		401	SIA ALL
Main Fuel Pump Removal TASK 73-11-01-000-801-G00			401	SIA ALL
Main Fuel Pump Installation TASK 73-11-01-400-801-G00			411	SIA ALL
FUEL FILTER CARTRIDGE - REMOVAL/INSTALLATION	73-11-02		401	SIA ALL
Fuel Filter Cartridge Removal TASK 73-11-02-000-801-G00			401	SIA ALL

73-CONTENTS

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Fuel Filter Cartridge Installation TASK 73-11-02-400-801-G00			408	SIA ALL
MAIN FUEL FILTER HOUSING -REMOVAL/INSTALLATION	73-11-03		401	SIA ALL
Main Fuel Filter Housing Removal TASK 73-11-03-000-801-G00			401	SIA ALL
Main Fuel Filter Housing Installation TASK 73-11-03-400-801-G00			407	SIA ALL
FUEL METERING UNIT STRAINER - REMOVAL/INSTALLATION	73-11-04		401	SIA ALL
Fuel Metering Unit Strainer Removal TASK 73-11-04-000-801-G00			401	SIA ALL
Fuel Metering Unit Strainer Installation TASK 73-11-04-400-801-G00			405	SIA ALL
FUEL METERING UNIT STRAINER - INSPECTION/CHECK	73-11-04		601	SIA ALL
Fuel Metering Unit Strainer Inspection TASK 73-11-04-200-801-G00			601	SIA ALL
FUEL METERING UNIT STRAINER - CLEANING/PAINTING	73-11-04		701	SIA ALL
Fuel Metering Unit Strainer Cleaning TASK 73-11-04-100-801-G00			701	SIA ALL
FUEL NOZZLE - REMOVAL/INSTALLATION	73-11-05		401	SIA ALL
Fuel Nozzle Removal TASK 73-11-05-000-801-G00			401	SIA ALL
Fuel Nozzle Installation TASK 73-11-05-400-801-G00			498.167	SIA ALL
Fuel Nozzle Set Removal TASK 73-11-05-000-802-G00			498.300	SIA ALL
Fuel Nozzle Set Installation TASK 73-11-05-400-802-G00			498.396	SIA ALL
FUEL NOZZLE AND FUEL MANIFOLD - INSPECTION/CHECK	73-11-05		601	SIA ALL
Fuel Nozzle and Fuel Manifold Leak Check TASK 73-11-05-200-801-G00			601	SIA ALL

73-CONTENTS

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
SPLIT CONTROL UNIT - REMOVAL/INSTALLATION	73-11-06		401	SIA ALL
Split Control Unit Removal TASK 73-11-06-000-801-G00			401	SIA ALL
Split Control Unit Installation TASK 73-11-06-400-801-G00			423	SIA ALL
SPLIT CONTROL UNIT - INSPECTION/CHECK	73-11-06		601	SIA ALL
Split Control Unit Inspection TASK 73-11-06-210-801-G00			601	SIA ALL
MAIN FUEL SUPPLY HOSE - REMOVAL/INSTALLATION	73-11-07		401	SIA ALL
Main Fuel Supply Hose Removal TASK 73-11-07-000-801-G00			401	SIA ALL
Main Fuel Supply Hose Installation TASK 73-11-07-400-801-G00			411	SIA ALL
FMU FUEL STRAINER DIFFERENTIAL PRESSURE TRANSDUCER - REMOVAL/INSTALLATION	73-11-09		401	SIA ALL
FMU Fuel Strainer Differential Pressure Transducer Removal TASK 73-11-09-000-801-G00			401	SIA ALL
FMU Fuel Strainer Differential Pressure Transducer Installation TASK 73-11-09-400-801-G00			407	SIA ALL
FMU FUEL STRAINER DIFFERENTIAL PRESSURE TRANSDUCER - INSPECTION/CHECK	73-11-09		601	SIA ALL
FMU Fuel Strainer Differential Pressure Transducer Inspection TASK 73-11-09-210-801-G00			601	SIA ALL
FUEL FILTER DIFFERENTIAL PRESSURE TRANSDUCER - REMOVAL/INSTALLATION	73-11-10		401	SIA ALL
Fuel Filter Differential Pressure Transducer Removal TASK 73-11-10-000-801-G00			401	SIA ALL
Fuel Filter Differential Pressure Transducer Installation TASK 73-11-10-400-801-G00			407	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
FUEL FILTER DIFFERENTIAL PRESSURE TRANSDUCER - INSPECTION/CHECK	73-11-10		601	SIA ALL
Fuel Filter Differential Pressure Transducer Inspection TASK 73-11-10-210-801-G00			601	SIA ALL
SERVO FUEL HEATER - REMOVAL/INSTALLATION	73-11-11		401	SIA ALL
Servo Fuel Heater Removal TASK 73-11-11-000-801-G00			401	SIA ALL
Servo Fuel Heater Installation TASK 73-11-11-400-801-G00			410	SIA ALL
MAIN FUEL/OIL HEAT EXCHANGER DIFFERENTIAL PRESSURE SENSOR - REMOVAL/INSTALLATION	73-11-12		401	SIA ALL
Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Removal TASK 73-11-12-000-801-G00			401	SIA ALL
Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation TASK 73-11-12-400-801-G00			410	SIA ALL
MAIN FUEL/OIL HEAT EXCHANGER DIFFERENTIAL PRESSURE SENSOR - INSPECTION/CHECK	73-11-12		601	SIA ALL
Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection TASK 73-11-12-210-801-G00			601	SIA ALL
FUEL CONTROL SYSTEM - MAINTENANCE PRACTICES	73-21-00		201	SIA ALL
EEC System Configuration Data Functions Check TASK 73-21-00-470-801-G00			201	SIA ALL
EEC Shop Faults Function Check TASK 73-21-00-470-802-G00			204	SIA ALL
EEC Onboard Software Installation TASK 73-21-00-470-803-G00			233	SIA ALL
EEC Software Installation Using a PMAT TASK 73-21-00-470-805-G00			238	SIA ALL
EEC Onboard Software Installation Verification TASK 73-21-00-470-804-G00			258	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
EEC Maintenance Power Selection TASK 73-21-00-800-801-G00			259	SIA ALL
FUEL CONTROL SYSTEM - INSPECTION/CHECK	73-21-00		601	SIA ALL
Fuel Control System Inspection TASK 73-21-00-200-801-G00			601	SIA ALL
FUEL METERING UNIT - REMOVAL/INSTALLATION	73-21-04		401	SIA ALL
Fuel Metering Unit Removal TASK 73-21-04-000-801-G00			401	SIA ALL
Fuel Metering Unit Installation TASK 73-21-04-400-801-G00			409	SIA ALL
FUEL METERING UNIT - INSPECTION/CHECK	73-21-04		601	SIA ALL
Fuel Metering Unit (FMU) Inspection TASK 73-21-04-200-801-G00			601	SIA ALL
ELECTRONIC ENGINE CONTROL (EEC) - MAINTENANCE PRACTICES	73-21-05		201	SIA ALL
Electronic Engine Control (EEC) Data Download (On-Wing)(Selection) TASK 73-21-05-970-803-G00			201	SIA ALL
Electronic Engine Control (EEC) Data Download (On Wing) Using the ONS TASK 73-21-05-970-802-G00			201	SIA ALL
Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT TASK 73-21-05-970-801-G00			206	SIA ALL
Electronic Engine Control (EEC) Data Download (On Wing) Using the Engine Health Management (EHM) Function TASK 73-21-05-970-804-G00			220	SIA ALL
ELECTRONIC ENGINE CONTROL (EEC) - REMOVAL/INSTALLATION	73-21-05		401	SIA ALL
Electronic Engine Control (EEC) Channel A Removal TASK 73-21-05-000-801-G00			401	SIA ALL
Electronic Engine Control (EEC) Channel A Installation TASK 73-21-05-400-801-G00			411	SIA ALL

73-CONTENTS

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Electronic Engine Control (EEC) Channel B Removal TASK 73-21-05-000-802-G00			415	SIA ALL
Electronic Engine Control (EEC) Channel B Installation TASK 73-21-05-400-802-G00			426	SIA ALL
ELECTRONIC ENGINE CONTROL - INSPECTION/CHECK	73-21-05		601	SIA ALL
Electronic Engine Control Inspection TASK 73-21-05-210-801-G00			601	SIA ALL
T12 SENSOR - REMOVAL/INSTALLATION	73-21-06		401	SIA ALL
T12 Sensor Removal TASK 73-21-06-000-801-G00			401	SIA ALL
T12 Sensor Installation TASK 73-21-06-400-801-G00			408	SIA ALL
T12 SENSOR - INSPECTION/CHECK	73-21-06		601	SIA ALL
T12 Sensor Inspection TASK 73-21-06-210-801-G00			601	SIA ALL
PERMANENT MAGNET ALTERNATOR - REMOVAL/INSTALLATION	73-21-08		401	SIA ALL
Permanent Magnet Alternator Removal TASK 73-21-08-000-801-G00			401	SIA ALL
Permanent Magnet Alternator Installation TASK 73-21-08-400-801-G00			409	SIA ALL
PERMANENT MAGNET ALTERNATOR - INSPECTION/CHECK	73-21-08		601	SIA ALL
Permanent Magnet Alternator (PMA) Inspection TASK 73-21-08-210-801-G00			601	SIA ALL
DATA ENTRY PLUG - REMOVAL/INSTALLATION	73-21-09		401	SIA ALL
Data Entry Plug Removal TASK 73-21-09-000-801-G00			401	SIA ALL
Data Entry Plug Installation TASK 73-21-09-400-801-G00			405	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
DATA ENTRY PLUG - INSPECTION/CHECK	73-21-09		601	SIA ALL
Data Entry Plug Configuration Check TASK 73-21-09-700-801-G00			601	SIA ALL
Data Entry Plug Inspection TASK 73-21-09-211-801-G00			611	SIA ALL
ELECTRONIC ENGINE CONTROL (EEC) COOLING BLOWERS - REMOVAL/INSTALLATION	73-21-10		401	SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED
Electronic Engine Control (EEC) Cooling Blowers Removal TASK 73-21-10-000-801-G00			401	SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED
Electronic Engine Control (EEC) Cooling Blowers Installation TASK 73-21-10-400-801-G00			409	SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED
PRESSURE SUB-SYSTEM - MAINTENANCE PRACTICES	73-21-11		201	SIA ALL
Pressure Sub-System and Sense Line Dry Out TASK 73-21-11-160-801-G00			201	SIA ALL
PRESSURE SUB-SYSTEM - REMOVAL/INSTALLATION	73-21-11		401	SIA ALL
Pressure Sub-System Removal TASK 73-21-11-000-801-G00			401	SIA ALL
Pressure Sub-System Installation TASK 73-21-11-400-801-G00			406	SIA ALL
PRESSURE SUB-SYSTEM - INSPECTION/CHECK	73-21-11		601	SIA ALL
Pressure Sub-System Inspection TASK 73-21-11-210-801-G00			601	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
ENGINE CONTROL MODULE - REMOVAL/INSTALLATION	73-21-12		401	SIA ALL
Engine Control Module Removal TASK 73-21-12-000-801-G00			401	SIA ALL
Engine Control Module Installation TASK 73-21-12-400-801-G00			404	SIA ALL
T25 SENSOR - REMOVAL/INSTALLATION	73-21-63		401	SIA ALL
T25 Sensor Removal TASK 73-21-63-000-801-G00			401	SIA ALL
T25 Sensor Installation TASK 73-21-63-400-801-G00			405	SIA ALL
T25 SENSOR - INSPECTION/CHECK	73-21-63		601	SIA ALL
T25 Sensor Inspection TASK 73-21-63-210-801-G00			601	SIA ALL
T3 SENSOR - REMOVAL/INSTALLATION	73-21-64		401	SIA ALL
T3 Sensor Removal TASK 73-21-64-000-801-G00			401	SIA ALL
T3 Sensor Installation TASK 73-21-64-400-801-G00			405	SIA ALL
T3 SENSOR - INSPECTION/CHECK	73-21-64		601	SIA ALL
T3 Sensor Inspection TASK 73-21-64-210-801-G00			601	SIA ALL
FUEL MANIFOLD PRESSURE TRANSDUCER - REMOVAL/INSTALLATION	73-21-67		401	SIA ALL
Fuel Manifold Pressure Transducer Removal TASK 73-21-67-000-801-G00			401	SIA ALL
Fuel Manifold Pressure Transducer Installation TASK 73-21-67-400-801-G00			405	SIA ALL
FUEL MANIFOLD PRESSURE TRANSDUCER - INSPECTION/CHECK	73-21-67		601	SIA ALL
Fuel Manifold Pressure Transducer Inspection TASK 73-21-67-210-801-G00			601	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
ELECTRONIC ENGINE CONTROL (EEC)	73-22-01		201	SIA ALL
ELECTRICAL HARNESSES - MAINTENANCE PRACTICES				
Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap			201	SIA ALL
TASK 73-22-01-390-802-G00				
ELECTRONIC ENGINE CONTROL (EEC)	73-22-01		401	SIA ALL
ELECTRICAL HARNESSES - REMOVAL/INSTALLATION				
Electronic Engine Control (EEC) Electrical Harness (HJ3A) Removal			401	SIA ALL
TASK 73-22-01-000-801-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ3A) Installation			408	SIA ALL
TASK 73-22-01-400-801-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ3B) Removal			411	SIA ALL
TASK 73-22-01-000-802-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ3B) Installation			418	SIA ALL
TASK 73-22-01-400-802-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ5A) Removal			421	SIA ALL
TASK 73-22-01-000-803-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ5A) Installation			458	SIA ALL
TASK 73-22-01-400-803-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ5B) Removal			468	SIA ALL
TASK 73-22-01-000-804-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ5B) Installation			498.5	SIA ALL
TASK 73-22-01-400-804-G00				
Electronic Engine Control (EEC) Electrical Harness (HJ6A) Removal			498.14	SIA ALL
TASK 73-22-01-000-805-G00				

73-CONTENTS

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Electronic Engine Control (EEC) Electrical Harness (HJ6A) Installation TASK 73-22-01-400-805-G00			498.28	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ6B) Removal TASK 73-22-01-000-806-G00			498.32	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ6B) Installation TASK 73-22-01-400-806-G00			498.43	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ7) Removal TASK 73-22-01-000-807-G00			498.47	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ7) Installation TASK 73-22-01-400-807-G00			498.55	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ8A) Removal TASK 73-22-01-000-808-G00			498.58	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ8A) Installation TASK 73-22-01-400-808-G00			498.93	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ8B) Removal TASK 73-22-01-000-809-G00			498.103	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (HJ8B) Installation TASK 73-22-01-400-809-G00			498.133	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (W4A) Removal TASK 73-22-01-000-810-G00			498.141	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (W4A) Installation TASK 73-22-01-400-810-G00			498.147	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (W4B) Removal TASK 73-22-01-000-811-G00			498.149	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
Electronic Engine Control (EEC) Electrical Harness (W4B) Installation TASK 73-22-01-400-811-G00			498.155	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (W2) Removal TASK 73-22-01-000-812-G00			498.158	SIA ALL
Electronic Engine Control (EEC) Electrical Harness (W2) Installation TASK 73-22-01-400-812-G00			498.176	SIA ALL
ENGINE CONTROL ELECTRICAL HARNESSES - INSPECTION/CHECK	73-22-01		601	SIA ALL
Engine Control Electrical Harnesses Inspection TASK 73-22-01-210-801-G00			601	SIA ALL
Engine Control Electrical Harness Connectors Inspection TASK 73-22-01-210-802-G00			648	SIA ALL
ENGINE CONTROL ELECTRICAL HARNESSES - CLEANING/PAINTING	73-22-01		701	SIA ALL
Engine Control Electrical Harness Cleaning TASK 73-22-01-100-801-G00			701	SIA ALL
ENGINE WIRING HARNESS - REPAIRS	73-22-01		801	SIA ALL
Engine Wiring Harness Repair (Application of Silicone Tape Patch) TASK 73-22-01-900-801-G00			801	SIA ALL
Engine Wiring Harness Repair (Application of Stainless Steel Braid) TASK 73-22-01-900-802-G00			808	SIA ALL
Engine Wiring Harness Heat-Shrinkable Boot Repair TASK 73-22-01-900-803-G00			818	SIA ALL
FUEL FLOW INDICATING SYSTEM - INSPECTION/CHECK	73-31-00		601	SIA ALL
Fuel Flow Indicating System Inspection TASK 73-31-00-200-801-G00			601	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CHAPTER 73
ENGINE FUEL AND CONTROL

SUBJECT	CHAPTER SECTION SUBJECT	CONF	PAGE	EFFECT
FUEL FLOW TRANSMITTER-REMOVAL/INSTALLATION	73-31-01		401	SIA ALL
Fuel Flow Transmitter Removal TASK 73-31-01-000-801-G00			401	SIA ALL
Fuel Flow Transmitter Installation TASK 73-31-01-400-801-G00			406	SIA ALL
FUEL FLOW TRANSMITTER - INSPECTION/CHECK	73-31-01		601	SIA ALL
Fuel Flow Transmitter Inspection TASK 73-31-01-210-801-G00			601	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE FUEL AND CONTROL

1. General

A. This procedure has these tasks:

(1) Scheduled Maintenance Task for Short-Time Fault Interrogation

(2) Scheduled Maintenance Task for Long-Time Fault Interrogation

(3) Maintenance Messages Check.

TASK 73-00-00-700-801-G00

2. Scheduled Maintenance Task for Short-Time Fault Interrogation

A. General

(1) This task gives the instructions to interrogate the Scheduled Maintenance Task (SMT) message ENG X EEC C1 for Short Term Dispatch (STD) faults.

(2) For other SMT messages, do this task: Scheduled Maintenance Task (SMT) - Repair Time Limits, TASK 05-00-00-750-801.

(3) Deferral period begins at the point when Electronic Engine Control (EEC) fault is observed/deferred.

(4) The data that follows provide the allowable deferral period of the ENG X EEC C1 fault:

(a) STD Fault Remaining Deferral Period: R = 150 – Q/2, where R is the remaining flight hours and Q is SMT interval.

(b) SMT interval (Q) of 150 hours allows deferral period (R) of 75 hours.

(c) SMT interval (Q) of 70 hours allows deferral period (R) of 115 hours.

B. References

Reference	Title
05-00-00-750-801	Scheduled Maintenance Task (SMT) - Repair Time Limits (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Prepare for the Fault Interrogation

SUBTASK 73-00-00-860-003-G00

(1) Set the GND TESTS switch on the Maintenance BITE Panel, P61-4, to the NORM position.

SUBTASK 73-00-00-860-004-G00

(2) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-00-00-860-005-G00

(3) Make sure that the thrust levers are at the idle and down position.

SUBTASK 73-00-00-860-002-G00

(4) Select the left or right Multi Function Display (MFD).

(a) Push the SYS button on the MFD control panel, P9.

(b) Push the SEL button on SELECTOR knob on the MFD control panel, P9.

SUBTASK 73-00-00-860-058-G00

(5) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

F. Scheduled Maintenance Task for Short-Time Fault Interrogation

SUBTASK 73-00-00-860-008-G00

(1) Use the MFD screen to find if the scheduled maintenance task exists.

(a) Select MAINT CTRL PGS on the MFD.

(b) Select LATCHED MESSAGE ERASE.

(2) If ENG X EEC C1 for EEC STD exists, do one of the steps that follow:

(a) Go to the IFIM and do the applicable procedure(s) to correct the fault.

(b) Continue operation with the fault provided the fault is corrected within remaining deferral period described in the general statement of this procedure.

NOTE: To help with the future maintenance plan to correct the fault, you may want to use the IFIM to determine and record the maintenance message(s) correlated to the ENG X EEC C1 SMT message.

NOTE: All economic faults have no time limits and can be corrected at operator's discretion.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-860-009-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-00-00-860-056-G00

(2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-00-00-700-802-G00

3. Scheduled Maintenance Task for Long-Time Fault Interrogation

A. General

(1) This task gives the instructions to interrogate the Scheduled Maintenance Task (SMT) message ENG X EEC C2 for Long Term Dispatch (LTD) faults.

(2) For other SMT messages, do this task: Scheduled Maintenance Task (SMT) - Repair Time Limits, TASK 05-00-00-750-801.

(3) Deferral period begins at the point when EEC fault is observed/deferred.

(4) The data that follows provide the allowable deferral period of the ENG X EEC C2 fault:

(a) Long Time Dispatch (LTD) Fault Remaining Deferral Period: R = 250 – Q/2, where R is the remaining flight hours and Q is the SMT interval.

(b) SMT interval (Q) of 300 hours allows deferral period (R) of 100 hours.

(c) SMT interval (Q) of 150 hours allows deferral period (R) of 175 hours.

(d) SMT interval (Q) of 70 hours allows deferral period (R) of 215 hours.

(5) It is recommended to check for the 73-4218X FUEL FILTER APPROACHING BYPASS and 79-4288X OIL FILTER APPROACHING BYPASS maintenance messages at the same time as the SMT check for long term dispatch faults.

NOTE: Where X refers to engine position (1-Left or 5-Right).

(a) This check is for maintenance awareness as these maintenance messages are economic and are not indicated by any flight deck effect.

(b) It is not necessary to correct economic faults in the SMT deferral period. Use your airline's best practice for when to take corrective action for the approaching bypass messages.

B. References

Reference	Title
05-00-00-750-801	Scheduled Maintenance Task (SMT) - Repair Time Limits (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Prepare for the Fault Interrogation

SUBTASK 73-00-00-860-012-G00

(1) Set the GRD TESTS switch on Maintenance BITE panel, P61-4, to the NORM position.

SUBTASK 73-00-00-860-013-G00

(2) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-00-00-860-014-G00

(3) Make sure that the thrust levers are at the idle and down position.

SUBTASK 73-00-00-860-011-G00

(4) Select the left or right Multi-Function Display (MFD).

(a) Push the SYS button on the MFD control panel, P9.

(b) Push the SEL button on SELECTOR knob on the MFD control panel, P9.

SUBTASK 73-00-00-860-059-G00

(5) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

F. Scheduled Maintenance Task for Long-Time Fault Interrogation

SUBTASK 73-00-00-860-017-G00

(1) Use the Multi-Function Display (MFD) screen to find if the scheduled maintenance task exists.

(a) Select MAINT CTRL PGS on the Multi-Function Display (MFD).

(b) Select LATCHED MESSAGE ERASE

(2) If ENG X EEC C2 for EEC long term dispatch (LTD) exists, do one of the steps that follow:

(a) Go to the IFIM and do the applicable procedure(s) to correct the fault.

(b) Continue operation with the fault provided the fault is corrected within remaining deferral period described in the general statement of this procedure.

NOTE: To help with the future maintenance plan to correct the fault, you may want to use the IFIM to determine and record the maintenance message(s) correlated to the ENG X EEC C2 SMT message.

SUBTASK 73-00-00-200-003-G00

(3) It is recommended to check for 73-4218X FUEL FILTER APPROACHING BYPASS and 79-4288X OIL FILTER APPROACHING BYPASS maintenance messages at this time.

NOTE: Maintenance messages 73-4218X and 79-4288X are economic faults that do not required corrective action in the SMT deferral period. This check is for maintenance awareness as these maintenance messages are not indicated by any flight deck effect or SMT message. Use your airline's best practice for when to take corrective action for these messages.

NOTE: All economic faults have no time limits and can be corrected at operator's discretion.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-860-018-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-00-00-860-057-G00

(2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

——— END OF TASK ———

TASK 73-00-00-700-803-G00

4. Maintenance Messages Check for EEC Faults

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives instructions to use the Multi Function Display (MFD) to find and read maintenance messages for faults detected by the Electronic Engine Control (EEC). These maintenance messages can be found on the Line Maintenance or the Extended Maintenance pages.

(2) This task can be used to find economic dispatch faults detected by the EEC (EEC Economic faults).

(a) EEC Economic faults are ATA 71-80 maintenance messages which are not correlated to Flight Deck Effect (FDE), STATUS message, or Scheduled Maintenance Task (SMT) message.

NOTE: Maintenance messages which are not correlated to a FDE, STATUS message, or SMT message may also be called uncorrelated or non-correlated maintenance messages.

(b) EEC Economic faults have no time limits and may be corrected at airline discretion.

(3) During this check you may find ATA 71-80 maintenance messages correlated to a FDE, STATUS message, or SMT message.

NOTE: ATA 71-80 maintenance messages correlated to a FDE, STATUS message, or SMT message are not EEC Economic faults and have their own dispatch limitations. Refer to TASK 73-21-00-470-802-G00 for the dispatch group for these maintenance messages.

(a) For ATA 71-80 maintenance messages correlated to the FDE or STATUS message, refer to Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

(b) For ATA 71-80 maintenance messages correlated to the SMT message, refer to the TASK 73-00-00-700-801-G00 for ENG X EEC C1 SMT message and TASK 73-00-00-700-802-G00 for ENG X EEC C2 SMT message.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)
46-13-02-700-804	Present Leg Faults Check (P/B 201)
46-13-02-700-805	Existing Faults Check (P/B 201)
46-13-02-700-806	Fault History Check (P/B 201)
73-21-00-470-802-G00	EEC Shop Faults Function Check (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Prepare for the Check

SUBTASK 73-00-00-860-021-G00

(1) Set the GND TEST switch on the maintenance BITE panel, P61-4, to the NORM position.

SUBTASK 73-00-00-860-022-G00

(2) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-00-00-860-023-G00

(3) Make sure that the thrust levers are at the idle and down position.

SUBTASK 73-00-00-860-020-G00

(4) Select the left or right MFD.

(a) Push the SYS button on the MFD control panel, P9.

(b) Push the SEL button on SELECTOR knob on the MFD control panel, P9.

SUBTASK 73-00-00-860-060-G00

(5) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

F. Maintenance Messages Check for EEC Faults

SUBTASK 73-00-00-200-001-G00

(1) Do this task: Present Leg Faults Check, TASK 46-13-02-700-804.

(a) To check for EEC Economic faults, find any non-correlated (uncorrelated) maintenance messages in ATA 71-80 and make a record of them, if it is necessary.

NOTE: Economic faults detected the EECs are maintenance messages which do not have a correlated FDE, STATUS message, or SMT message.

SUBTASK 73-00-00-860-054-G00

(2) Make sure that the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD is set to the TEST position (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER switch to the TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

SUBTASK 73-00-00-200-002-G00

(3) Do this task: Existing Faults Check, TASK 46-13-02-700-805.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) To check for EEC Economic faults, find any non-correlated (uncorrelated) maintenance messages in ATA 71-80 and make a record of them, if it is necessary.

NOTE: Economic faults detected the EECs are maintenance messages which do not have a correlated FDE, STATUS message, or SMT message.

NOTE: To check for maintenance messages from previous flight legs, refer to TASK 46-13-02-700-806.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-00-00-860-027-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-00-00-860-055-G00

(2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE FUEL AND CONTROL - 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. This procedure has these tasks:

(1) DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Preparation

(2) DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Restoration.

TASK 73-00-00-040-801-G00

2. DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the Engine Valve Closed Indicating System inoperative.

(2) The two ENG VALVE CLOSED lights may be inoperative provided that the High Pressure ShutOff Valves (HPSOV) will operate correctly.

B. References

Reference	Title
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Fuel Control ENG VALVE CLOSED Indicating System Deactivation

SUBTASK 73-00-00-860-050-G00

(1) For the left engine, open this circuit breaker and install a safety lock:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

For the right engine, open this circuit breaker and install a safety lock:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 73-00-00-720-001-G00

(2) Make sure that the applicable engine fuel shutoff valve operates normally.

(a) Start the applicable engine and let it stabilize at ground idle speed (TASK 71-00-00-910-802-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-00-00-860-041-G00

(3) For the left engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-00-00-860-042-G00

(4) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

SUBTASK 73-00-00-860-029-G00

(5) Put the applicable the start lever to the CUTOFF position.

(a) Make sure that the engine immediately begins to decelerate, and continues to decelerate at the usual rate to a complete stop.

NOTE: If the engine does not immediately begin to decelerate, there is a problem in the HPSOV system.

SUBTASK 73-00-00-860-044-G00

(6) For the left engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-00-00-860-045-G00

(7) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

——— END OF TASK ———

TASK 73-00-00-440-801-G00

3. DDG 73-30-01 Fuel Control ENG VALVE CLOSED Indicating System Inoperative - Restoration

A. General

(1) This task puts the airplane back to its usual condition after operation with the engine ENG VALVE CLOSED Indicating System inoperative.

B. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Fuel Control ENG VALVE CLOSED Indicating System Inoperative Activation

SUBTASK 73-00-00-860-051-G00

(1) For the left engine, remove the safety lock and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

For the right engine, remove the safety lock and close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL DISTRIBUTION SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Engine Fuel Distribution System General Visual Inspection

(2) Fuel filter contamination detailed visual inspection.

TASK 73-11-00-210-801-G00

2. Engine Fuel Distribution System General Visual Inspection

A. General

(1) This task provides the instructions on how to examine the engine fuel distribution system.

(2) This task is a scheduled maintenance task.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
70-00-05-200-801-G00	Tube and Hose Inspection Criteria and Damage Limits (P/B 201)
70-43-42-300-802-G00	Blending Procedures - Hand Blending (P/B 201)
71-00-00-700-807-G00	Test No. 31 - Wet Motor Ground Test (P/B 501)
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-01-000-801-G00	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-G00	Main Fuel Pump Installation (P/B 401)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)
73-11-02-400-801-G00	Fuel Filter Cartridge Installation (P/B 401)
73-11-03-000-801-G00	Main Fuel Filter Housing Removal (P/B 401)
73-11-03-400-801-G00	Main Fuel Filter Housing Installation (P/B 401)
73-11-05 P/B 401	FUEL NOZZLE - REMOVAL/INSTALLATION
73-11-05-400-801-G00	Fuel Nozzle Installation (P/B 401)
73-11-05-400-802-G00	Fuel Nozzle Set Installation (P/B 401)
73-11-06-000-801-G00	Split Control Unit Removal (P/B 401)
73-11-06-400-801-G00	Split Control Unit Installation (P/B 401)
73-21-04-000-801-G00	Fuel Metering Unit Removal (P/B 401)
73-21-04-400-801-G00	Fuel Metering Unit Installation (P/B 401)
73-31-01-000-801-G00	Fuel Flow Transmitter Removal (P/B 401)
73-31-01-400-801-G00	Fuel Flow Transmitter Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-11-00-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-00-010-001-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Fuel Distribution System Inspection

SUBTASK 73-11-00-212-001-G00

(1) Examine the main fuel pump:

(a) Look for signs of fuel leaks.

1) If you see fuel leaks, replace the seals (TASK 73-11-01-000-801-G00 and TASK 73-11-01-400-801-G00).

(b) Make sure that the main fuel pump is not loose.

1) If the main fuel pump is loose, tighten the bolts that attach the pump to the AGB (TASK 73-11-01-400-801-G00).

(c) Look for nicks, dents, or scratches on the main fuel pump as follows:

1) Nicks, dents, or scratches are permitted if they are less than 0.010 in. (0.25 mm) in depth after you remove the high metal (TASK 70-43-42-300-802-G00).

2) Damage is not permitted on an edge, small radius, or corners of the pump.

3) The damage is not permitted across mating joints, sealing surfaces or seal grooves.

(d) Look for cracks in the main fuel pump.

1) If you see cracks, replace the main fuel pump (TASK 73-11-01-000-801-G00 and TASK 73-11-01-400-801-G00).

(e) Make sure that the fuel tubes are not loose.

1) If a fuel tube is loose, tighten the bolts that attach it to the pump (TASK 73-11-01-400-801-G00).

2) If the fuel tubes are not loose but there is a fuel leak, replace the fuel tube gasket seal (TASK 73-11-01-000-801-G00 and TASK 73-11-01-400-801-G00).

(f) Make sure that the electrical connectors are not loose (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-00-210-001-G00

(2) Examine the main fuel filter housing for leaks, cracks, dents and loose electrical connectors as follows:

(a) If there is a leak on the fuel filter bowl, tighten the filter bowl (TASK 73-11-02-400-801-G00).

(b) If the leak continues, replace the preformed packings on the fuel filter cartridge (TASK 73-11-02-000-801-G00 and TASK 73-11-02-400-801-G00).

(c) If there is a leak on the fuel filter bowl drain plug, tighten the drain plug to 140.0 in-lb (15.82 N·m) to 150.0 in-lb (16.95 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) If the leak continues, replace the preformed packing on the drain plug (TASK 73-11-02-000-801-G00 and TASK 73-11-02-400-801-G00).

(e) Cracks or dents are not permitted on the main fuel filter housing.

(f) Tighten the nuts on the main fuel filter housing if the main fuel filter housing is loose (TASK 73-11-03-400-801-G00).

(g) If there is a fuel leak between the main fuel filter housing and the fuel tube, do this step:

1) Replace the gasket seal between the main fuel filter housing assembly and the fuel tube (TASK 73-11-03-000-801-G00 and TASK 73-11-03-400-801-G00).

(h) Tighten the electrical connectors that are loose (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-00-212-002-G00

(3) Examine the fuel nozzles as follows:

(a) Look for signs of fuel leaks from the fuel nozzle.

1) If you see fuel leaks, replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

(b) If you cannot identify the location of the leak in the fuel manifold and fuel nozzle circuit, do this task: Test No. 31 - Wet Motor Ground Test, TASK 71-00-00-700-807-G00.

(c) Look for cracks in the mounting flange of the fuel nozzle.

1) If you see cracks, replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

(d) Look for signs of air leaks from the mounting flange.

1) If you see signs of air leaks, replace the fuel nozzle seal ring (PAGEBLOCK 73-11-05/401).

(e) Look for nicks, dents, or scratches.

1) Nicks, dents, or scratches are permitted if they are less than 0.010 in. (0.25 mm) in depth after removal of the high metal (TASK 70-43-42-300-802-G00).

2) Damage across mating joints, sealing surfaces or seal grooves is not permitted.

(f) Make sure that the fuel nozzles are not loose.

1) If you find a loose fuel nozzle, tighten the bolts (TASK 73-11-05-400-801-G00 or TASK 73-11-05-400-802-G00).

2) If the fuel nozzle cannot be tightened due to damage of the threaded insert, do this step:

a) Replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

SUBTASK 73-11-00-212-003-G00

(4) Examine the fuel metering unit as follows:

(a) Look for signs of fuel leaks.

1) If you see a fuel leaks, replace the seals (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

(b) Make sure that the fuel metering unit is not loose.

1) If the fuel metering unit is loose, tighten the bolts that attach the unit to engine (TASK 73-21-04-400-801-G00).

(c) Look for nicks, dents, or scratches on the fuel metering unit.

1) Nicks, dents or scratches are permitted if they are less than 0.010 in. (0.25 mm) in depth after removal of high metal.

2) Damage is not permitted on an edge, small radius, or corners of the unit.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) The damage is not permitted across mating joint, sealing surfaces or seal grooves.

(d) Look for cracks in the fuel metering unit.

1) If you see cracks, replace the fuel metering unit (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

(e) Look for loose electrical connectors and tighten as necessary (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-00-220-001-G00

(5) Examine the fuel flow transmitter as follows:

(a) Look for signs of fuel leaks.

1) If you see fuel leaks, replace the gasket seals (TASK 73-31-01-000-801-G00 and TASK 73-31-01-400-801-G00).

(b) Make sure that the fuel flow transmitter is not loose.

1) If the fuel flow transmitter is loose, tighten the bolts (TASK 73-31-01-400-801-G00).

(c) Look for nicks, dents, or scratches on the fuel flow transmitter as follows:

1) Nicks, dents, or scratches are permitted if they are less than 0.025 in. (0.64 mm) in depth or 0.080 in. (2.03 mm) in width after removal of high metal.

(d) Look for damage on an edge, small radius, or corners of the fuel flow transmitter.

1) Damage is not permitted.

(e) Look for damage across mating joints, sealing surface or seal grooves.

1) Damage is not permitted.

(f) Look for cracks in the fuel flow transmitter.

1) If you see cracks, replace the fuel flow transmitter (TASK 73-31-01-000-801-G00 and TASK 73-31-01-400-801-G00).

(g) Make sure that the electrical connectors are not loose (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-00-868-001-G00

(6) Examine the Split Control Unit (SCU) as follows:

(a) Look for signs of fuel leaks.

1) If you see fuel leaks, replace the gasket seals (TASK 73-11-06-000-801-G00 and TASK 73-11-06-400-801-G00).

(b) Make sure that the SCU is not loose.

1) If the SCU is loose, tighten the bolts that attach the unit to the engine (TASK 73-11-03-400-801-G00).

(c) Look for nicks, dents or scratches on the SCU.

1) Nicks, dents or scratches are permitted if they are less than 0.010 in. (0.25 mm) in depth after you remove the high metal.

(d) Look for damage on an edge, on small radius or corners of the assembly.

1) Damage is not permitted.

(e) Look for damage across mating joints, sealing surfaces or seal grooves.

1) Damage is not permitted.

(f) Look for cracks in the SCU.

1) If you see cracks, replace the SCU (TASK 73-11-06-000-801-G00 and TASK 73-11-06-400-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Make sure that the electrical connectors are not loose (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-00-210-002-G00

(7) Examine all the fuel tubes, hoses, tube-hoses and the manifolds (TASK 70-00-05-200-801-G00).

SUBTASK 73-11-00-360-001-G00

(8) If you find a leak at a location, do these steps:

(a) Make sure that the applicable START LEVER and ENGINE START switch circuit breakers are closed.

(b) Close the applicable thrust reversers (TASK 78-31-00-010-802-G00).

(c) Do this task: Test No. 31 - Wet Motor Ground Test, TASK 71-00-00-700-807-G00.

(d) Do this task: Dry Motor Procedure, TASK 71-00-00-910-808-G00.

(e) Open the applicable thrust reversers (TASK 78-31-00-010-801-G00).

(f) Do the repair of the leaks you find.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-00-410-001-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-00-860-002-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

TASK 73-11-00-211-801-G00

3. Fuel Filter Contamination Detailed Visual Inspection

A. General

(1) This task gives the instructions on how to do a detailed examination of the fuel filter for contamination.

(2) You use one of the following procedures to complete this task:

(a) The preferred procedure is to look for fuel filter bypass maintenance messages on the Onboard Maintenance Function (OMF).

NOTE: If you find the fuel filter approaching bypass maintenance messages, you must replace the fuel filter element. You must also examine and clean (if necessary) the fuel strainer.

(b) The alternate procedure is to replace the fuel filter element and examine and clean (if necessary) the fuel strainer. This procedure is used when the OMF is not available to view the fault history.

B. References

Reference	Title
28-10-00-200-801	Detection Test for Microbial Growth (P/B 201)
28-10-00-600-801	Treatment of Fuel Tanks Contaminated with Microbial Growth (P/B 201)
46-13-02-700-806	Fault History Check (P/B 201)
73-11-01-000-801-G00	Main Fuel Pump Removal (P/B 401)
73-11-01-400-801-G00	Main Fuel Pump Installation (P/B 401)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)
73-11-02-400-801-G00	Fuel Filter Cartridge Installation (P/B 401)
73-11-04-100-801-G00	Fuel Metering Unit Strainer Cleaning (P/B 701)
73-11-04-200-801-G00	Fuel Metering Unit Strainer Inspection (P/B 601)
73-11-05 P/B 401	FUEL NOZZLE - REMOVAL/INSTALLATION
73-11-06-000-801-G00	Split Control Unit Removal (P/B 401)
73-11-06-400-801-G00	Split Control Unit Installation (P/B 401)
73-11-11-000-801-G00	Servo Fuel Heater Removal (P/B 401)
73-11-11-400-801-G00	Servo Fuel Heater Installation (P/B 401)
73-21-04-000-801-G00	Fuel Metering Unit Removal (P/B 401)
73-21-04-400-801-G00	Fuel Metering Unit Installation (P/B 401)
73-31-01-000-801-G00	Fuel Flow Transmitter Removal (P/B 401)
73-31-01-400-801-G00	Fuel Flow Transmitter Installation (P/B 401)
79-21-01-000-801-G00	Main Fuel/Oil Heat Exchanger Removal (P/B 401)
79-21-01-400-801-G00	Main Fuel/Oil Heat Exchanger Installation (P/B 401)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Fuel Filter Cartridge Inspection (Preferred Procedure)

SUBTASK 73-11-00-212-004-G00

(1) Find maintenance messages for the fuel filter bypass as follows:

(a) Do this task: Fault History Check, TASK 46-13-02-700-806.

(b) Look for these maintenance messages in the last three flight legs:

1) 73–42170 FUEL FILTER BYPASS [ENGINE 1]

2) 73–42175 FUEL FILTER BYPASS [ENGINE 2]

3) 73–42180 FUEL FILTER APPROACHING BYPASS [ENGINE 1]

4) 73–42185 FUEL FILTER APPROACHING BYPASS [ENGINE 2]

5) 73–42190 FUEL FILTER IMPENDING BYPASS [ENGINE 1]

6) 73–42195 FUEL FILTER IMPENDING BYPASS [ENGINE 2].

(c) Do the troubleshooting in the Fault Isolation Manual (FIM) for the maintenance message that you find.

NOTE: If you do not find a maintenance message or the messages above, then this inspection task is complete.

(d) If you find one or more of the above maintenance messages, do these steps:

1) Remove the applicable fuel filter cartridge (TASK 73-11-02-000-801-G00).

2) Examine the inner wall of the fuel filter housing, the bottom of the fuel filter bowl, and the fuel filter cartridge for contaminants.

3) Install a new fuel filter cartridge (TASK 73-11-02-400-801-G00).

4) Examine the Fuel Metering Unit (FMU) strainer (TASK 73-11-04-200-801-G00).

5) If it is necessary, clean the FMU strainer (TASK 73-11-04-100-801-G00).

E. Fuel Filter Cartridge Inspection (Alternate Procedure)

SUBTASK 73-11-00-020-001-G00

(1) Remove the applicable fuel filter cartridge (TASK 73-11-02-000-801-G00).

SUBTASK 73-11-00-210-003-G00

(2) Examine the inner wall of the fuel filter housing, the bottom of the fuel filter bowl, and the fuel filter cartridge for contaminants.

SUBTASK 73-11-00-900-001-G00

(3) If it is necessary, install a new fuel filter cartridge (TASK 73-11-02-400-801-G00).

SUBTASK 73-11-00-210-004-G00

(4) Examine the Fuel Metering Unit (FMU) strainer (TASK 73-11-04-200-801-G00).

SUBTASK 73-11-00-170-001-G00

(5) If it is necessary, clean the FMU strainer (TASK 73-11-04-100-801-G00).

SUBTASK 73-11-00-100-001-G00

(6) For contamination by solids in small quantities (dirt, sand, metal particles or sealant particles), do this step:

NOTE: Contamination in small quantities is not a sign of a possible malfunction.

(a) Replace the fuel filter cartridge (TASK 73-11-02-000-801-G00 and TASK 73-11-02-400-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-00-100-002-G00

(7) For contamination by solids in large quantities (dirt, sand, metals or sealant particles but not bronze particles), do these steps:

NOTE: The steps for bronze particles contamination is in another step below.

NOTE: Possible causes are contaminated fuel, contaminated aircraft fuel tanks, damaged aircraft boost pump, damaged engine fuel pump and foreign material.

(a) Replace the fuel filter cartridge (TASK 73-11-02-000-801-G00 and TASK 73-11-02-400-801-G00).

(b) Do this task: Fuel Metering Unit Strainer Inspection, TASK 73-11-04-200-801-G00

(c) If it is necessary, clean the FMU strainer (TASK 73-11-04-100-801-G00)

(d) If the fuel filter bypass alert indication happens again, replace the fuel filter cartridge on the opposite engine (TASK 73-11-02-000-801-G00 and TASK 73-11-02-400-801-G00)

SUBTASK 73-11-00-100-003-G00

(8) For contamination by black sludge or slimy materials (biological contamination, fungus growth):

(a) Do a check the fuel filter cartridge on the opposite engine.

(b) If you find contamination on the filter cartridge, do these steps:

1) Do this task: Detection Test for Microbial Growth, TASK 28-10-00-200-801.

2) If it is necessary, do this task: Treatment of Fuel Tanks Contaminated with Microbial Growth, TASK 28-10-00-600-801.

SUBTASK 73-11-00-100-004-G00

(9) For contamination by bronze particles, do these steps:

NOTE: Bronze particles in the main fuel filter cartridge is a sign of a main fuel pump bearing failure.

(a) If the “FUEL FILTER APPROACHING BYPASS” or “FUEL FILTER IMPENDING BYPASS” message is on, do these steps:

NOTE: When you disconnect the fuel system components, make sure that you fully drain the associated tubes and blow with dry air to remove all bronze particles inside.

1) Replace the main fuel pump (TASK 73-11-01-000-801-G00 and TASK 73-11-01-400-801-G00)

2) Do this task: Fuel Metering Unit Strainer Inspection, TASK 73-11-04-200-801-G00.

3) Do this task: Fuel Metering Unit Strainer Cleaning, TASK 73-11-04-100-801-G00.

(b) If the “FUEL FILTER BYPASS” message is on, do these steps:

NOTE: When you disconnect the fuel system components, make sure that you fully drain the associated tubes and blow with dry air to remove all bronze particles inside.

1) Replace the main fuel pump (TASK 73-11-01-000-801-G00 and TASK 73-11-01-400-801-G00)

2) Replace the FMU (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

3) Replace the main fuel/oil heat exchanger (TASK 79-21-01-000-801-G00 and TASK 79-21-01-400-801-G00).

4) Replace the servo fuel heater (TASK 73-11-11-000-801-G00 and TASK 73-11-11-400-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Replace the Split Control Unit (SCU) (TASK 73-11-06-000-801-G00 and TASK 73-11-06-400-801-G00).

6) Replace the fuel flow transmitter (TASK 73-31-01-000-801-G00 and TASK 73-31-01-400-801-G00).

7) Replace the fuel nozzles (PAGEBLOCK 73-11-05/401).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN FUEL PUMP - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Main Fuel Pump Removal

(2) Main Fuel Pump Installation.

TASK 73-11-01-000-801-G00

2. Main Fuel Pump Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the Main Fuel Pump (MFP).

(2) A minimum of two persons are required to handle the MFP if the jack stand and the MFP adapter support equipment are not used.

B. References

Reference	Title
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14572	Adapter - Main Fuel Pump Part #: 956A3608G01 Supplier: 58828
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	73-11-01-01-070	SIA ALL
7	Preformed packing	73-11-01-01-070	SIA ALL
10	Preformed packing	73-11-01-01-050	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 73-11-01-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-01-860-002-G00

(2) Do these steps to make sure that the fuel control valve and spar valve stay in the closed position:

(a) Make sure that the L (R) START LEVER switch is in the CUTOFF position.

1) Install a DO NOT OPERATE tag, STD-858, on the L (R) START LEVER switch.

(b) Make sure that the applicable SPAR VALVE CLOSED and ENG VALVE CLOSED lights, on the P5 forward overhead panel, are on dimly.

SUBTASK 73-11-01-860-003-G00

(3) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-01-860-004-G00

(4) For the left engine, open these applicable circuit breakers and install safety tags:

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 73-11-01-860-005-G00

(5) For the right engine, open these applicable circuit breakers and install safety tags:

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 73-11-01-010-001-G00

(6) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

I. Main Fuel Pump Removal

SUBTASK 73-11-01-680-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

(1) Drain the MFP [1] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the MFP [1].

(b) Remove the safety cables [5] from the drain plug [3], drain plug [9], and drain plug [6].

(c) Remove the drain plug [3] from the MFP [1] as follows:

1) Remove the drain plug [3] from the MFP [1].

2) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

3) Remove and discard the preformed packing [4] from the drain plug [3].

(d) Remove the drain plug [6] from the MFP [1] as follows:

1) Remove the drain plug [6] from the MFP [1].

2) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

3) Remove and discard the preformed packing [7] from the drain plug [6].

(e) Remove the drain plug [9] from the MFP [1] as follows:

1) Remove the drain plug [9] from the MFP [1].

2) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

3) Remove and discard the preformed packing [10] from the drain plug [9].

(f) Install the drain plug [9] on the MFP [1] as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the drain plug [9] with pure mineral vaseline, D00672 [CP5070].

3) Lubricate the new preformed packing [10] with the pure mineral vaseline, D00672 [CP5070].

4) Install the preformed packing [10] on the drain plug [9].

5) Install the drain plug [9] on its position on the MFP [1].

6) Tighten the drain plug [9] to 13.0 in-lb (1.5 N·m) - 16.0 in-lb (1.8 N·m).

(g) Install the drain plug [3] on the MFP [1] as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Lubricate the threads of the drain plug [3] with pure mineral vaseline, D00672 [CP5070].

3) Lubricate the new preformed packing [4] with pure mineral vaseline, D00672 [CP5070].

4) Install the preformed packing [4] on the drain plug [3].

5) Install the drain plug [3] on its position on the MFP [1].

6) Tighten the drain plug [3] to 190.3 in-lb (21.5 N·m) - 210.0 in-lb (23.7 N·m).

(h) Install the drain plug [6] on the MFP [1] as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the drain plug [6] with pure mineral vaseline, D00672 [CP5070].

3) Lubricate the new preformed packing [7] with pure mineral vaseline, D00672 [CP5070].

4) Install the preformed packing [7] on the drain plug [6].

5) Install the drain plug [6] on its position on the MFP [1].

6) Tighten the drain plug [6] to 190.3 in-lb (21.5 N·m) - 210.0 in-lb (23.7 N·m).

SUBTASK 73-11-01-420-002-G00

(2) Install a safety cable, G50065 [CP8006], on the drain plug [3], drain plug [6], and drain plug [9] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-01-020-001-G00

(3) Remove the bracket [12] from the AGB [2] as follows:

(a) Remove the two bolts [13] that attach the bracket [12] to the AGB [2].

(b) Remove the bracket [12] from the AGB [2].

SUBTASK 73-11-01-020-002-G00

(4) Disconnect the fuel tube [14] from the MFP [1] as follows:

(a) Remove the four bolts [15] from the fuel tube [14].

(b) Disconnect the fuel tube [14] from the MFP [1].

(c) Remove and discard the gasket seal [16].

(d) Install the protective covers on the openings.

SUBTASK 73-11-01-010-002-G00

(5) Disconnect the fuel tube [17] from the MFP [1] as follows:

(a) Remove the four bolts [18] from the fuel tube [17].

(b) Disconnect the fuel tube [17] from the MFP [1].

(c) Remove and discard the gasket seal [19].

(d) Install the protective covers on the openings.

SUBTASK 73-11-01-010-003-G00

(6) Disconnect the fuel tube [20] from the MFP [1] as follows:

(a) Remove the four bolts [21] from the fuel tube [20].

(b) Disconnect the fuel tube [20] from the MFP [1].

(c) Remove and discard the gasket seal [22].

(d) Install the protective covers on the openings.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-01-010-004-G00

(7) Disconnect the fuel tube [23] from the MFP [1] as follows:

(a) Remove the four bolts [24] from the fuel tube [23].

(b) Disconnect the fuel tube [23] from the MFP [1].

(c) Remove and discard the gasket seal [25].

(d) Install the protective covers on the openings.

SUBTASK 73-11-01-490-001-G00

WARNING BE CAREFUL WHEN YOU LIFT THE MAIN FUEL PUMP WITHOUT AID. THE MAIN FUEL PUMP IS HEAVY. IF YOU DO NOT OBEY, INJURIES TO PERSONNEL OR DAMAGE TO THE MAIN FUEL PUMP CAN OCCUR.

CAUTION DO NOT PUT THE WEIGHT OF THE PUMP ON THE DRIVESHAFT SPLINES. THIS WILL PREVENT DAMAGE TO THE SPLINES.

(8) Remove the MFP [1] from the AGB input pad [30] as follows:

NOTE: The MFP weights 34.4 lb (15.6 kg).

(a) Loosen the five bolts [26] that attach the MFP [1] to the AGB input pad [30].

(b) If necessary, attach the adapter, SPL-14572, on the MFP [1].

NOTE: If the two-person alternative method is used, you do not have to install the MFP to the adapter, SPL-14572, and jack stand, SPL-14500.

(c) If necessary, move the jack stand, SPL-14500, to a position that will allow installation of the adapter, SPL-14572.

(d) If necessary, install the adapter, SPL-14572, on the jack stand, SPL-14500.

(e) Remove the five bolts [26] that attach the MFP [1] to the AGB input pad [30].

(f) Move the MFP [1] slowly to prevent damage to the shaft of the MFP [1] and AGB [2].

CAUTION MAKE SURE THAT YOU DO NOT HIT THE TUBES AND BRACKETS WHEN YOU MOVE THE MFP. DAMAGE CAN OCCUR.

(g) Carefully pull the MFP [1] rearward until the splines of the drive shaft [27] disengage from the AGB input pad [30].

(h) Remove and discard the preformed packing [28] from the groove on the MFP [1].

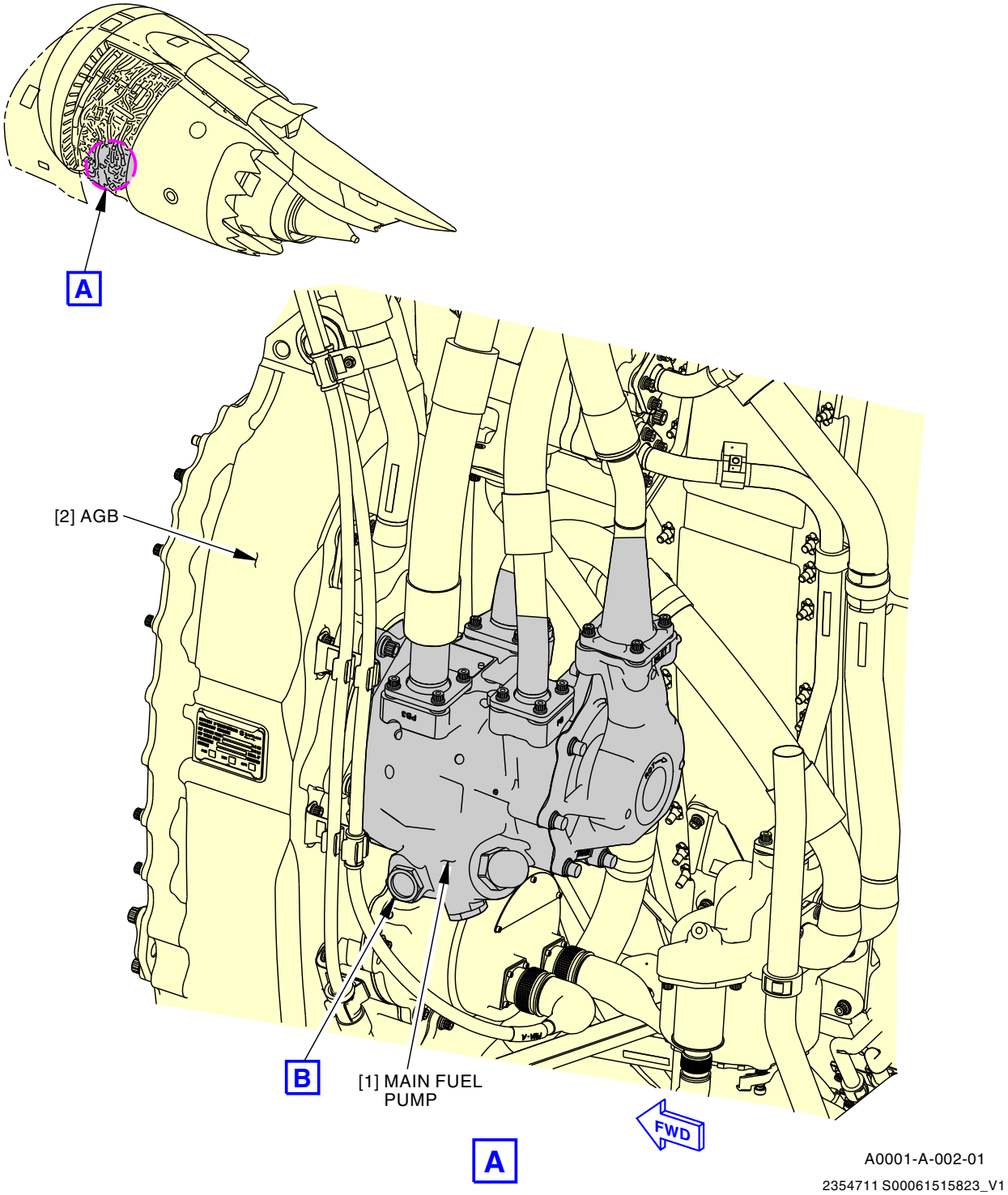
(i) Remove and discard the preformed packing [29] from the groove on the drive shaft [27].

(j) Install the protective covers on the openings.

(k) If necessary, remove the MFP [1] from the adapter, SPL-14572.

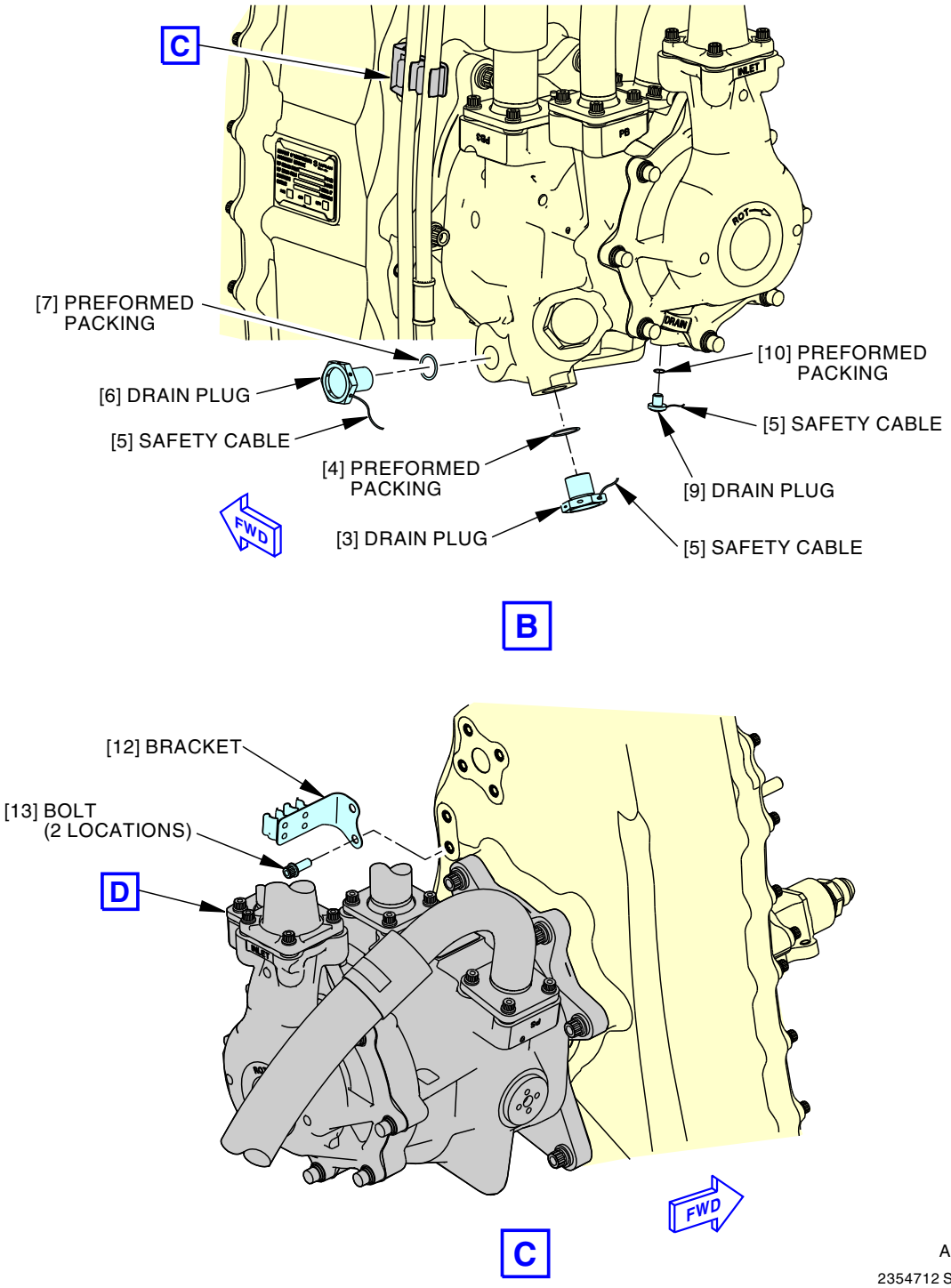
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



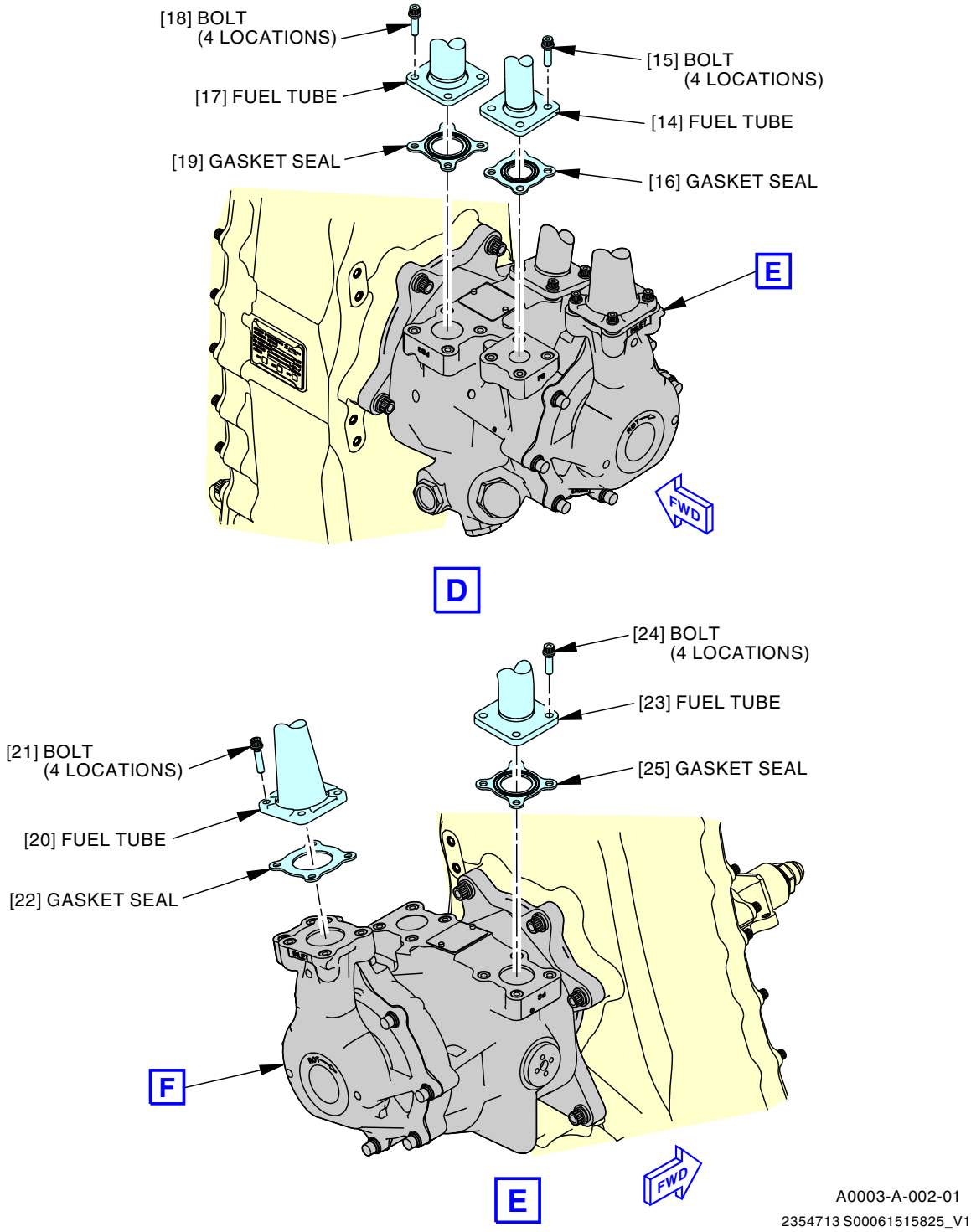
Main Fuel Pump Installation
Figure 401/73-11-01-990-801-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



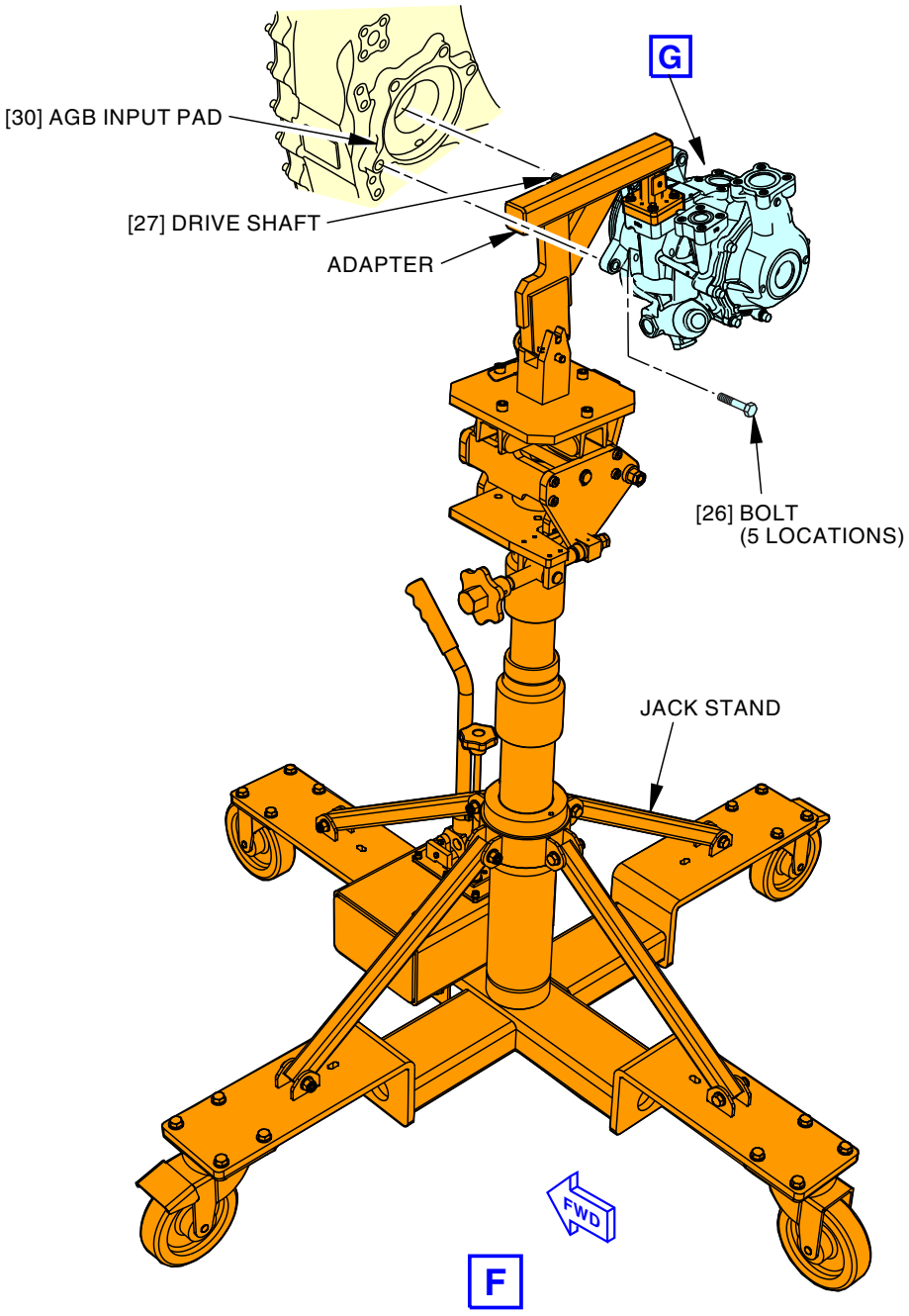
Main Fuel Pump Installation
Figure 401/73-11-01-990-801-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel Pump Installation
Figure 401/73-11-01-990-801-G00 (Sheet 3 of 5)

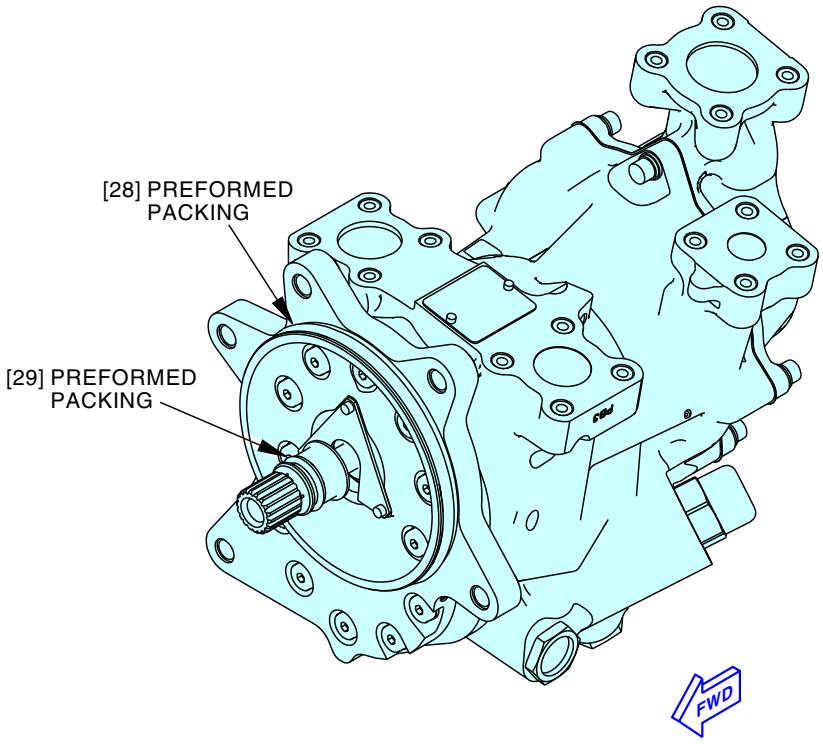
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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2354714 S00061515826_V2

Main Fuel Pump Installation
Figure 401/73-11-01-990-801-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



G

A0009-A-001-01
2403644 S0000556185_V1

Main Fuel Pump Installation
Figure 401/73-11-01-990-801-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-01-400-801-G00

3. Main Fuel Pump Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the Main Fuel Pump (MFP).

(2) A minimum of two persons are required to handle the MFP if the jack stand and the MFP adapter support equipment are not used.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-00-00-910-801-G00	High Pressure Rotor (N2) Turning for Borescope (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14572	Adapter - Main Fuel Pump Part #: 956A3608G01 Supplier: 58828
SPL-14847	Kit, Installation - O-Ring, AGB Part #: 956A8610G01 Supplier: 58828
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	MFP	73-11-01-01-040	SIA ALL
16	Gasket seal	73-11-01-01-160	SIA ALL
19	Gasket seal	73-11-01-01-140	SIA ALL
22	Gasket seal	73-11-51-01-025	SIA ALL
25	Gasket seal	73-11-01-01-120	SIA ALL
28	Preformed packing	73-11-01-01-020	SIA ALL
29	Preformed packing	73-11-01-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Main Fuel Pump Installation

SUBTASK 73-11-01-420-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

WARNING BE CAREFUL WHEN YOU LIFT THE MAIN FUEL PUMP WITHOUT AID. THE MAIN FUEL PUMP IS HEAVY. IF YOU DO NOT OBEY, INJURIES TO PERSONNEL OR DAMAGE TO THE MAIN FUEL PUMP CAN OCCUR.

CAUTION DO NOT CAUSE DAMAGE TO THE PACKING WHEN YOU INSTALL THE MFP. A DAMAGED PACKING CAN CAUSE ENGINE OIL LEAKS. OIL LEAKS CAN CAUSE AN IN-FLIGHT SHUTDOWN

CAUTION DO NOT PUT THE WEIGHT OF THE PUMP ON THE DRIVESHAFT SPLINES. THIS WILL PREVENT DAMAGE TO THE SPLINES.

(1) Install the MFP [1] as follows:

NOTE: The MFP weighs 34.4 lb (15.6 kg).

(a) If necessary, install the MFP [1] on the adapter, SPL-14572.

NOTE: If the two-person alternative method is used, you do not have to install the MFP to the adapter, SPL-14572, and jack stand, SPL-14500.

(b) If necessary, attach the adapter, SPL-14572, to the jack stand, SPL-14500.

(c) Make sure that the mating faces are clean and clear of unwanted materials.

(d) Lubricate the threads of the five bolts [26] and the splines of the drive shaft [27] with engine oil, D00599 [CP2442].

(e) Lubricate the new preformed packing [28] and new preformed packing [29] with engine oil, D00599 [CP2442].

(f) Install the new preformed packing [29] on the groove of the drive shaft [27].

NOTE: If it is necessary, use the O-ring installation kit, SPL-14847.

(g) Install the new preformed packing [28] onto the groove of the MFP [1].

(h) If necessary, move the jack stand, SPL-14500 to align the drive shaft [27] of the MFP [1] with the splines on the AGB [2].

1) If it is necessary, turn the N2 rotor to do the alignment (TASK 72-00-00-910-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE THAT YOU DO NOT HIT THE TUBES AND BRACKETS WHEN YOU MOVE THE MFP. DAMAGE CAN OCCUR.

(i) Carefully push the drive shaft [27] of the MFP [1] into the AGB [2] as follows:

(j) Make sure that the mating flange of the MFP [1] fully engages with the AGB input pad [30].

(k) Install the five bolts [26] on the MFP [1].

(l) Tighten the bolts [26] in a criss-cross pattern as follows:

1) Tighten the bolts to 95.0 in-lb (10.7 N·m) - 105.0 in-lb (11.9 N·m).

2) Tighten the bolts to 190.0 in-lb (21.5 N·m) - 210.0 in-lb (23.7 N·m).

3) Tighten the bolts to 380.0 in-lb (42.9 N·m) - 420.0 in-lb (47.5 N·m).

(m) If necessary, remove the adapter, SPL-14572, from the MFP [1].

(n) If necessary, move the jack stand, SPL-14500, away from the engine.

(o) Connect the fuel tube [23] to the MFP [1] as follows:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Lubricate the threads of the four bolts [24] with graphite mineral vaseline, D00601 [CP2101].

4) Lubricate the new gasket seal [25] with vaseline, D00672 [CP5070].

5) Align the new gasket seal [25] and the fuel tube [23] with the applicable port on the MFP [1].

6) Install the four bolts [24] on the fuel tube [23].

7) Tighten the bolts [24] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

(p) Connect the fuel tube [20] to the MFP [1] as follows:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Lubricate the threads of the four bolts [21] with graphite mineral vaseline, D00601 [CP2101].

4) Lubricate the new gasket seal [22] with vaseline, D00672 [CP5070].

5) Align the new gasket seal [22] and the fuel tube [20] with the applicable port on the MFP [1].

6) Install the four bolts [21] on the fuel tube [20].

7) Tighten the bolts [21] to 51.0 in-lb (5.8 N·m) - 55.0 in-lb (6.2 N·m).

(q) Connect the fuel tube [17] to the MFP [1] as follows:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Lubricate the threads of the four bolts [18] with graphite mineral vaseline, D00601 [CP2101].

4) Lubricate the new gasket seal [19] with vaseline, D00672 [CP5070].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Align the new gasket seal [19] and the fuel tube [17] with the applicable port on the MFP [1].

6) Install the four bolts [18] on the fuel tube [17].

7) Tighten the bolts [18] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

(r) Connect the fuel tube [14] to the MFP [1] as follows:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Lubricate the threads of the four bolts [15] with graphite mineral vaseline, D00601 [CP2101].

4) Lubricate the new gasket seal [16] with vaseline, D00672 [CP5070].

5) Align the new gasket seal [16] and the fuel tube [14] with the applicable port on the MFP [1].

6) Install the four bolts [15] on the fuel tube [14].

7) Tighten the bolts [15] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

(s) Install the bracket [12] on the AGB [2] as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Align the bracket [12] with the applicable position on the AGB [2].

3) Install the two bolts [13] to attach the bracket [12] to the AGB [2].

4) Tighten the bolts [13] to 83.6 in-lb (9.4 N·m) - 92.4 in-lb (10.4 N·m).

(t) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-01-860-006-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-01-860-007-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-01-860-008-G00

(3) For the left engine, remove the safety tags and close these applicable circuit breakers:

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

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-01-860-009-G00

(4) For the right engine, remove the safety tags and close these applicable circuit breakers:

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 73-11-01-410-001-G00

(5) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Main Fuel Pump Installation Test

SUBTASK 73-11-01-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FILTER CARTRIDGE - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel filter cartridge removal

(2) Fuel filter cartridge installation.

TASK 73-11-02-000-801-G00

2. Fuel Filter Cartridge Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the fuel filter cartridge.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Preformed packing	73-11-03-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 73-11-02-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-02-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-02-010-001-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

I. Fuel Filter Cartridge Removal

SUBTASK 73-11-02-680-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Drain the fuel from the main fuel filter housing [2]:

(a) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the fuel filter bowl [3].

(b) Remove the drain plug [4] from the fuel filter bowl [3]:

1) Cut and remove the safety cable [6] or safety wire [6] from the drain plug [4].

2) Remove the drain plug [4] from the fuel filter bowl [3].

3) Remove and discard the preformed packing [5] from the groove of the drain plug [4].

4) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(c) Install the drain plug [4] on the fuel filter bowl [3]:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the new preformed packing [5] with vaseline, D00672 [CP5070].

3) Install the preformed packing [5] on the groove of the drain plug [4].

CAUTION MAKE SURE THAT YOU INSTALL THE PREFORMED PACKING AND DRAIN PLUG. IF YOU DO NOT INSTALL THE PACKING AND DRAIN PLUG, FUEL CAN LEAK FROM THE BOWL AND CAN CAUSE A SHUTDOWN OF THE ENGINE.

4) Install the drain plug [4] on the fuel filter bowl [3].

5) Tighten the drain plug [4] to 140.0 in-lb (15.82 N·m) - 150.0 in-lb (16.95 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

6) Install the safety cable [6] (cable, G50065 [CP8006]) or safety wire [6] (safety wire, G02345 [CP8001]) on the drain plug [4].

NOTE: It is acceptable to wait to install lockwire until after the filter bowl has been removed and installed again so that a socket can be used on the filter bowl boss to make removal and installation easier.

(d) Remove the fuel filter cartridge [1]:

1) Make sure that you drain all the fuel from the fuel filter bowl [3].

CAUTION

DO NOT LET THE FUEL FILTER BOWL FALL. DAMAGE TO THE FUEL FILTER BOWL CAN OCCUR.

2) Carefully push the latch [7] to remove the fuel filter bowl [3] from the main fuel filter housing [2].

NOTE: The latch will remain in the open position.

NOTE: Be careful, the latch is very easy to break.

3) Make sure that you hold the fuel filter bowl [3] vertically.

4) Turn the fuel filter bowl [3] to remove it from the main fuel filter housing [2].

NOTE: It is acceptable to use a wrench or socket on the filter bowl boss to remove the filter bowl if it is difficult to remove by hand.

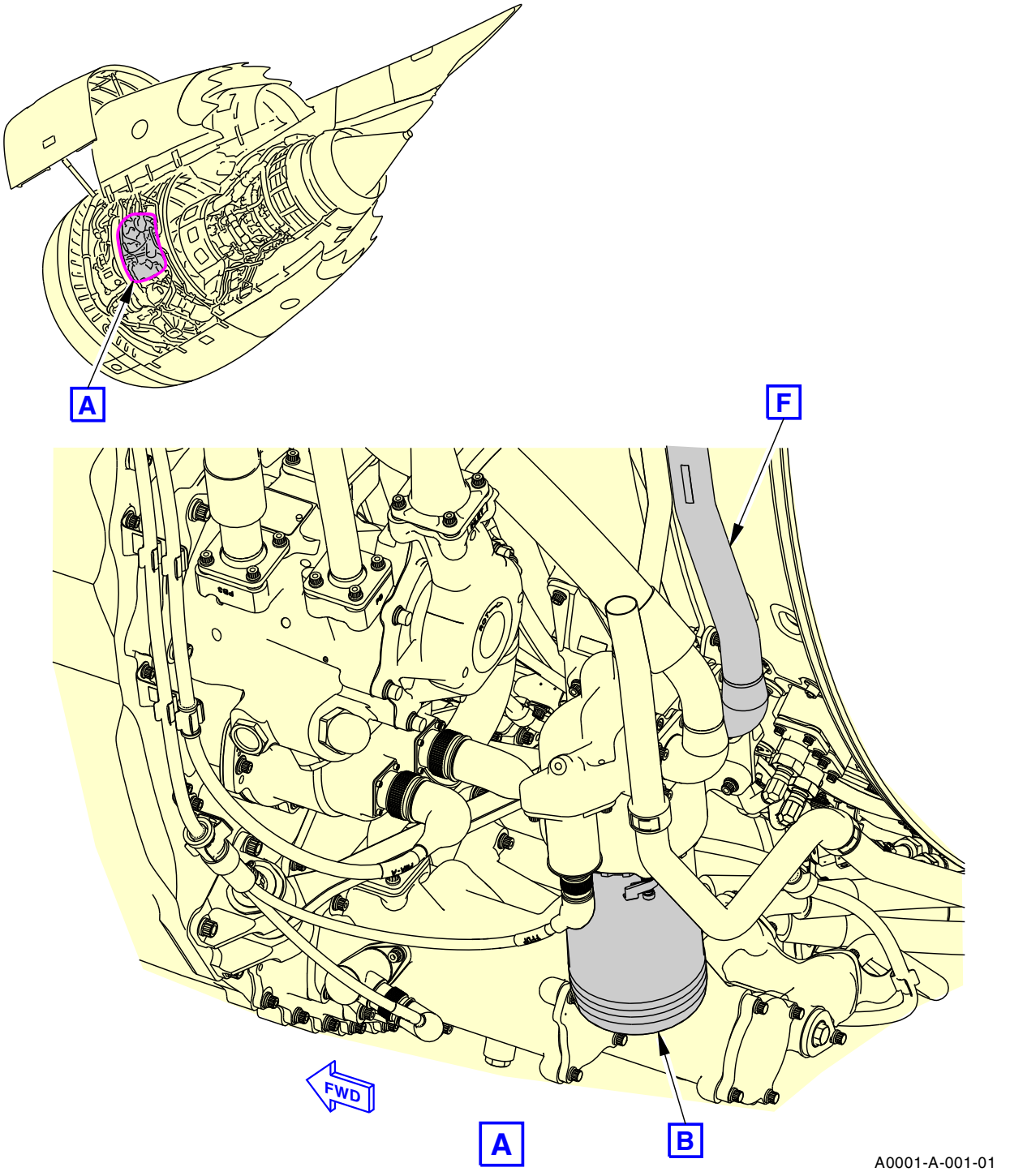
5) Remove and discard the fuel filter cartridge [1].

6) Remove and discard the preformed packing [9] and two back-up rings [8] from the groove of the main fuel filter housing [2].

(e) Install the protective covers on the main fuel filter housing [2] and fuel filter bowl [3].

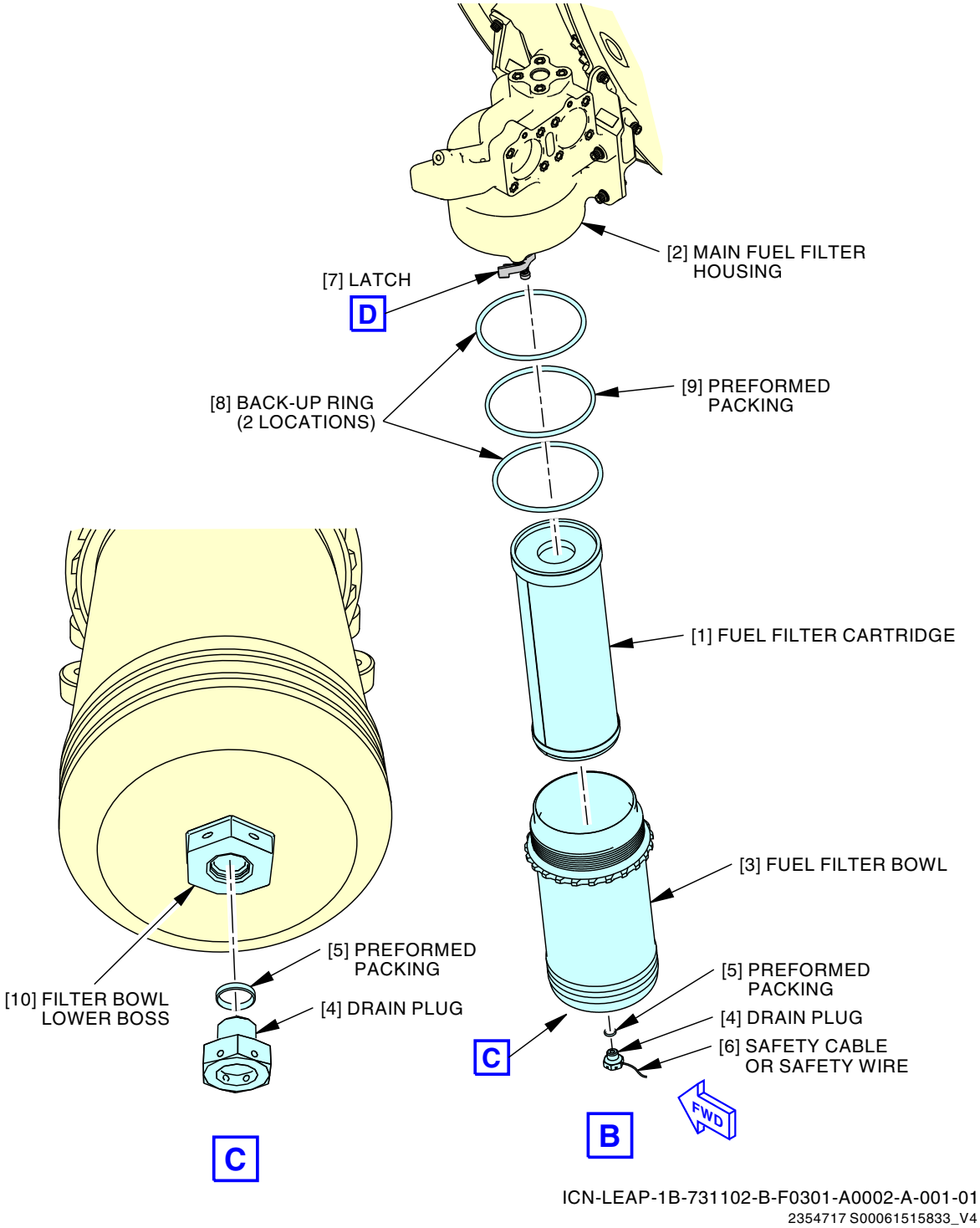
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



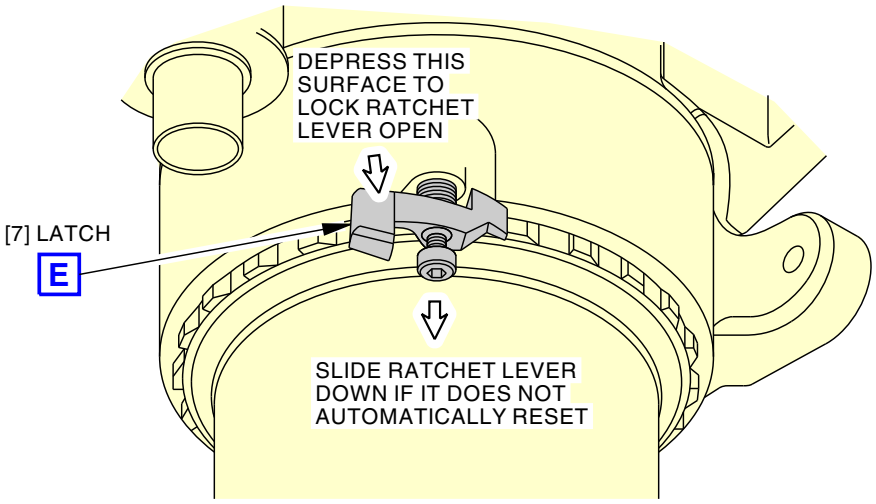
Fuel Filter Cartridge Installation
Figure 401/73-11-02-990-801-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

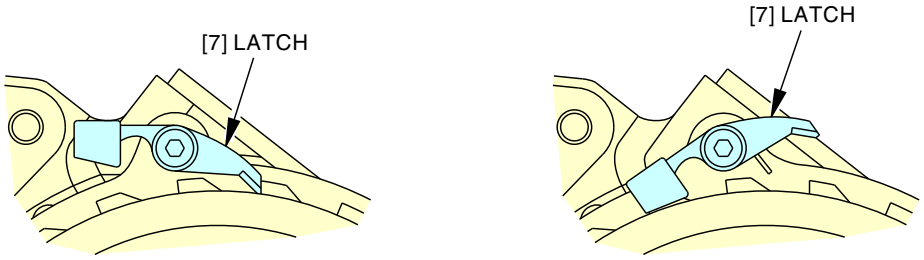


Fuel Filter Cartridge Installation
Figure 401/73-11-02-990-801-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LATCH
D



RATCHET LEVER LOCKED CLOSED

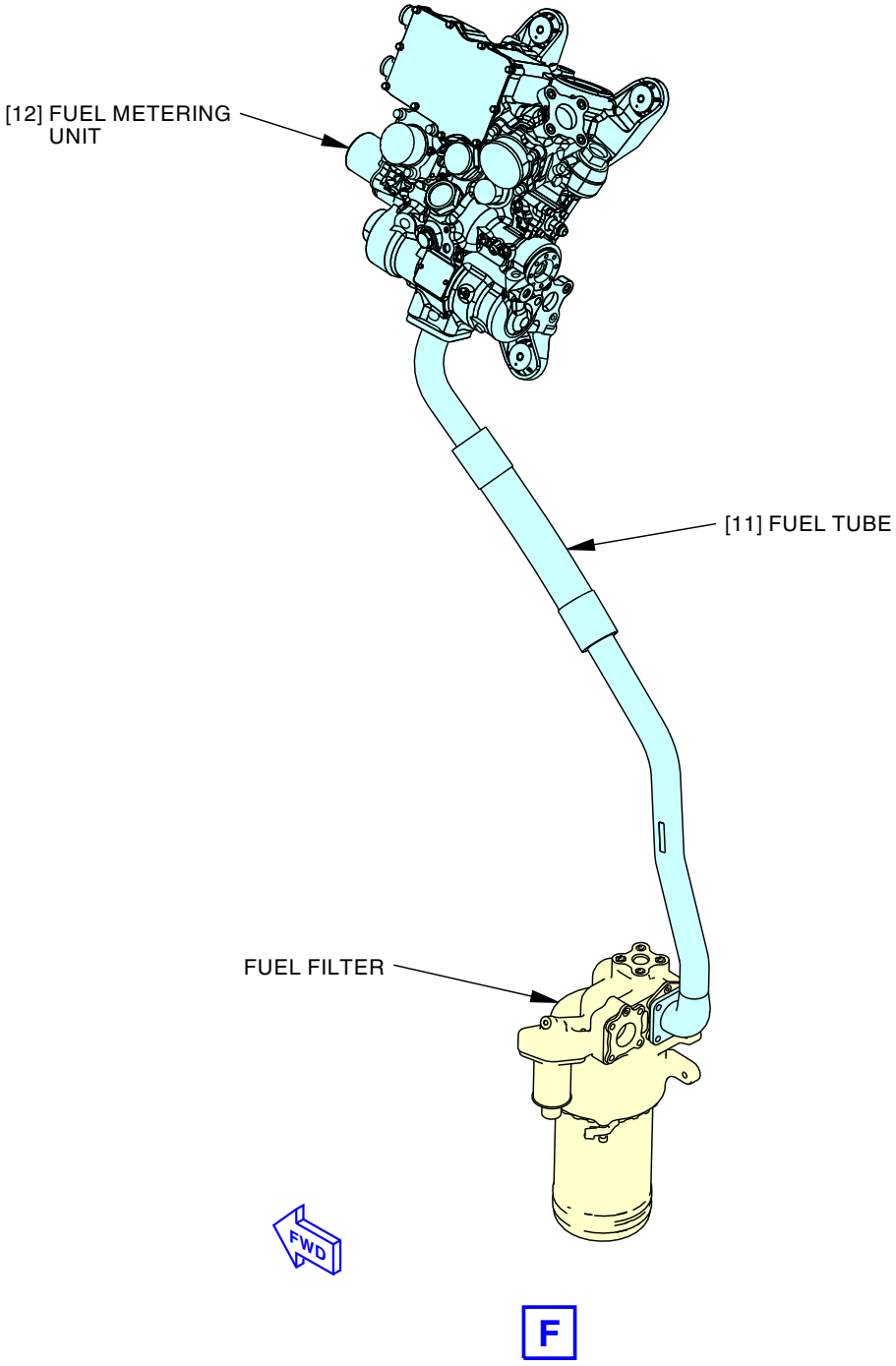
RATCHET LEVER LOCKED OPEN

LATCH
(VIEW IN THE UP DIRECTION)
E

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Fuel Filter Cartridge Installation
Figure 401/73-11-02-990-801-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Filter Cartridge Installation
Figure 401/73-11-02-990-801-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-02-400-801-G00

3. Fuel Filter Cartridge Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the fuel filter cartridge.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-04-000-801-G00	Fuel Metering Unit Removal (P/B 401)
73-21-04-400-801-G00	Fuel Metering Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel filter cartridge	73-11-03-01-050	SIA ALL
8	Back-up ring	73-11-03-01-060	SIA ALL
9	Preformed packing	73-11-03-01-070	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Fuel Filter Cartridge Installation

SUBTASK 73-11-02-420-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Install the fuel filter cartridge [1]:

(a) Remove the protective covers from the main fuel filter housing [2] and fuel filter bowl [3].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the two new back-up rings [8] and new preformed packing [9] with vaseline, D00672 [CP5070].

(d) Install a new preformed packing [9] and two back-up rings [8] onto the groove of the main fuel filter housing [2].

1) Make sure that the preformed packing [9] and two back-up rings [8] are correctly installed and fully seated in the main fuel filter housing [2] groove.

NOTE: Use of an inspection mirror is recommended.

(e) Lubricate the extremities of the new fuel filter cartridge [1] with vaseline, D00672 [CP5070].

(f) Make sure that the preformed packing [9] installed in the fuel filter cartridge [1] is sufficiently lubricated.

NOTE: Preformed packing may be removed and reinstalled to help with lubrication.

(g) Put the new fuel filter cartridge [1] into position on the main fuel filter housing [2].

NOTE: It is acceptable to install the filter cartridge into either the main fuel filter housing or fuel filter bowl.

(h) Lubricate the upper section of the fuel filter bowl [3] with vaseline, D00672 [CP5070], but do not lubricate the threads.

NOTE: It is optional, but not necessary, to lubricate the threads with oil, D00599 [CP2442], to aid installation.

(i) Make sure that the latch [7] is open.

(j) Align the fuel filter bowl [3] in a correct position on the main fuel filter housing [2].

(k) Turn the fuel filter bowl [3] in a clockwise direction with your hands to engage the fuel filter bowl [3] with the threads in the port in the main fuel filter housing [2].

(l) Turn the fuel filter bowl [3] until it is not easy to turn with your hands.

NOTE: It will become harder to turn the fuel filter bowl as the preformed packings engage the main fuel filter housing.

(m) Install a wrench or socket over the filter bowl boss [10] on the bottom of the bowl.

CAUTION

DO NOT USE MORE TORQUE THAN 600 INCH-POUNDS (68 NEWTON-METERS) WHEN YOU INSTALL THE FUEL FILTER BOWL. IF YOU DO, DAMAGE CAN OCCUR.

CAUTION

MAKE SURE TO APPLY TORQUE TO THE FUEL FILTER BOWL CAREFULLY. IF THERE IS DAMAGE TO THE PACKING'S O-RINGS OR INSTALLATION NOT DONE CORRECTLY, FUEL LEAKAGE FROM THE FUEL FILTER BOWL OR CONTAMINATION IN THE FUEL SYSTEM CAN OCCUR. IF YOU DO NOT OBEY, DAMAGE TO ENGINE COMPONENTS CAN OCCUR.

(n) If a sudden decrease in torque occurs when the fuel filter bowl [3] is installed, do these steps:

NOTE: When a sudden decrease in torque is noticed, it can be accompanied by snapping noise. It is possible that the preformed packing moved. The packing must be examined for damage.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Remove the fuel filter bowl [3].
2) Examine the preformed packing [9] and back-up rings [8] for damage.
   a) Remove all unwanted material from the fuel filter bowl [3] and main fuel filter housing [2].
   b) Lubricate the new back-up rings [8] and new preformed packing [9] with vaseline, D00672 [CP5070].
   c) Install the preformed packing [9] and back-up rings [8] onto the groove of the main fuel filter housing [2].
3) Do an inspection of the fuel tube [11] between the fuel filter and fuel metering unit [12].
   a) Remove all unwanted material from the fuel tube [11].
4) Replace the fuel metering unit [12] (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

(o) Turn the fuel filter bowl [3] in a clockwise direction to fully install the fuel filter bowl [3] into the main fuel filter housing [2].
1) Pull the latch [7] down in the direction of the filter bowl drain plug and release it.

NOTE: The latch must return to the closed position and make contact with the fuel filter bowl. The latch can sit at any position along the lock ring either on top of the teeth or in the grooves.

2) Do not tighten or loosen the fuel filter bowl [3] to change the alignment.

(p) Install the safety cable [6] (cable, G50065 [CP8006]) or safety wire [6] (safety wire, G02345 [CP8001]) on the drain plug [4] if not already installed.

(q) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-02-410-001-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-11-02-860-006-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-02-860-008-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

J. Fuel Filter Cartridge Installation Test

SUBTASK 73-11-02-710-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN FUEL FILTER HOUSING -REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Main Fuel Filter Housing Removal

(2) Main Fuel Filter Housing Installation.

TASK 73-11-03-000-801-G00

2. Main Fuel Filter Housing Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the main fuel filter housing.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)
73-11-10-000-801-G00	Fuel Filter Differential Pressure Transducer Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-11-03-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-03-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-03-860-005-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Main Fuel Filter Housing Removal

SUBTASK 73-11-03-860-006-G00

(1) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the main fuel filter housing.

SUBTASK 73-11-03-680-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(2) Remove the main fuel filter housing [1]:

(a) Remove the fuel filter cartridge (TASK 73-11-02-000-801-G00).

(b) Remove the main fuel filter pump differential pressure transducer sensor [2] (TASK 73-11-10-000-801-G00).

(c) Disconnect the fuel tube [7] from the main fuel filter housing [1]:

1) Remove the four bolts [9] with integrated washers from the fuel tube [7].

2) Disconnect the fuel tube [7] from the main fuel filter housing [1].

3) Remove and discard the gasket seal [10].

(d) Disconnect the fuel tube [11] from the main fuel filter housing [1]:

1) Remove the four bolts [12] from the fuel tube [11].

2) Disconnect the fuel tube [11] from the main fuel filter housing [1].

3) Remove and discard the gasket seal [13].

(e) Disconnect the fuel tube [14] from the main fuel filter housing [1]:

1) Remove the four bolts [15] from the fuel tube [14].

2) Disconnect the fuel tube [14] from the main fuel filter housing [1].

3) Remove and discard the gasket seal [16].

(f) Remove the main fuel filter housing [1] from the mounting bracket [19]:

1) Remove the four bolts [17] with integrated washers that attach the main fuel filter housing [1] to the mounting bracket [19].

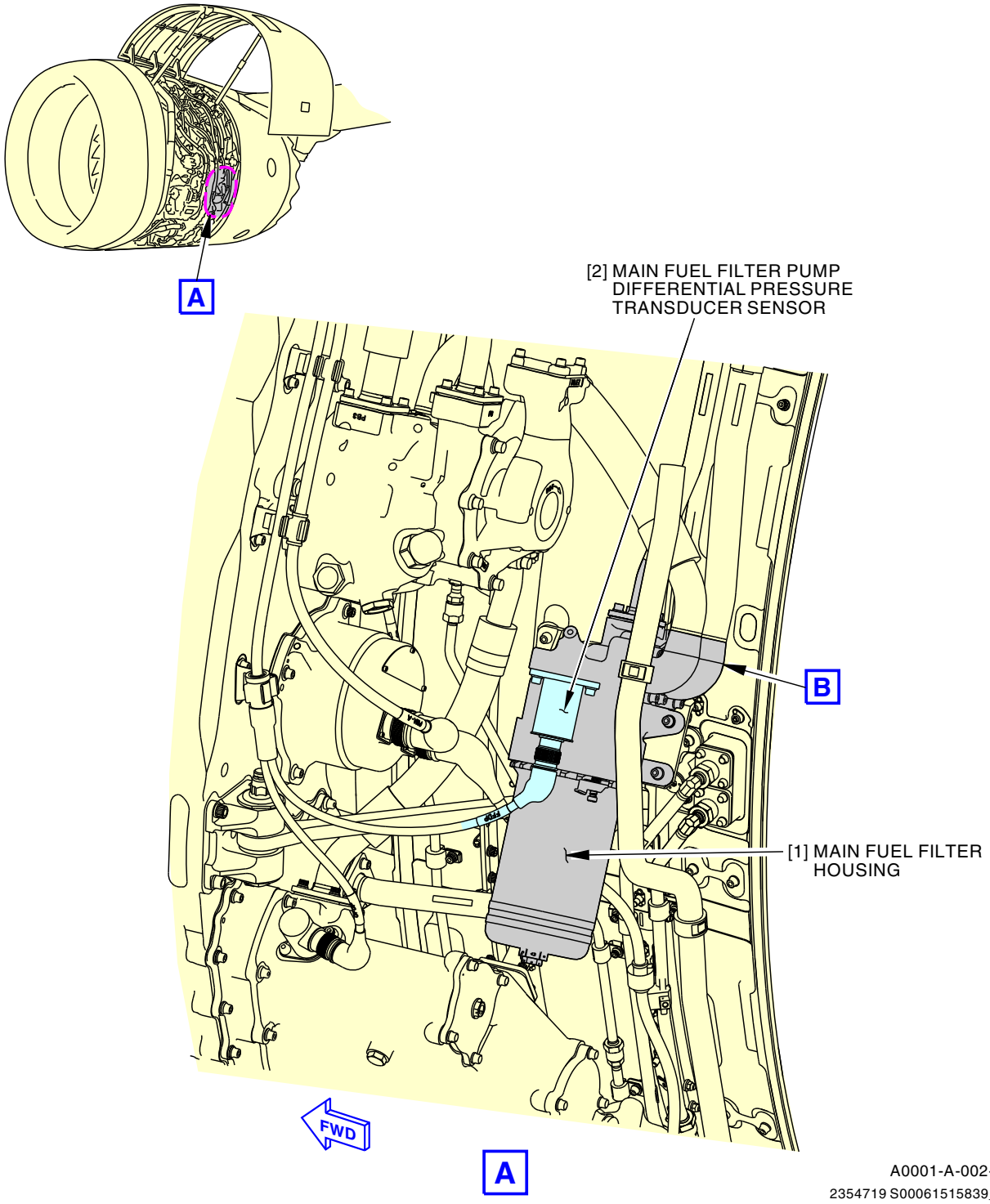
2) Remove the main fuel filter housing [1] from the mounting bracket [19].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Install the protective covers and caps on all openings.

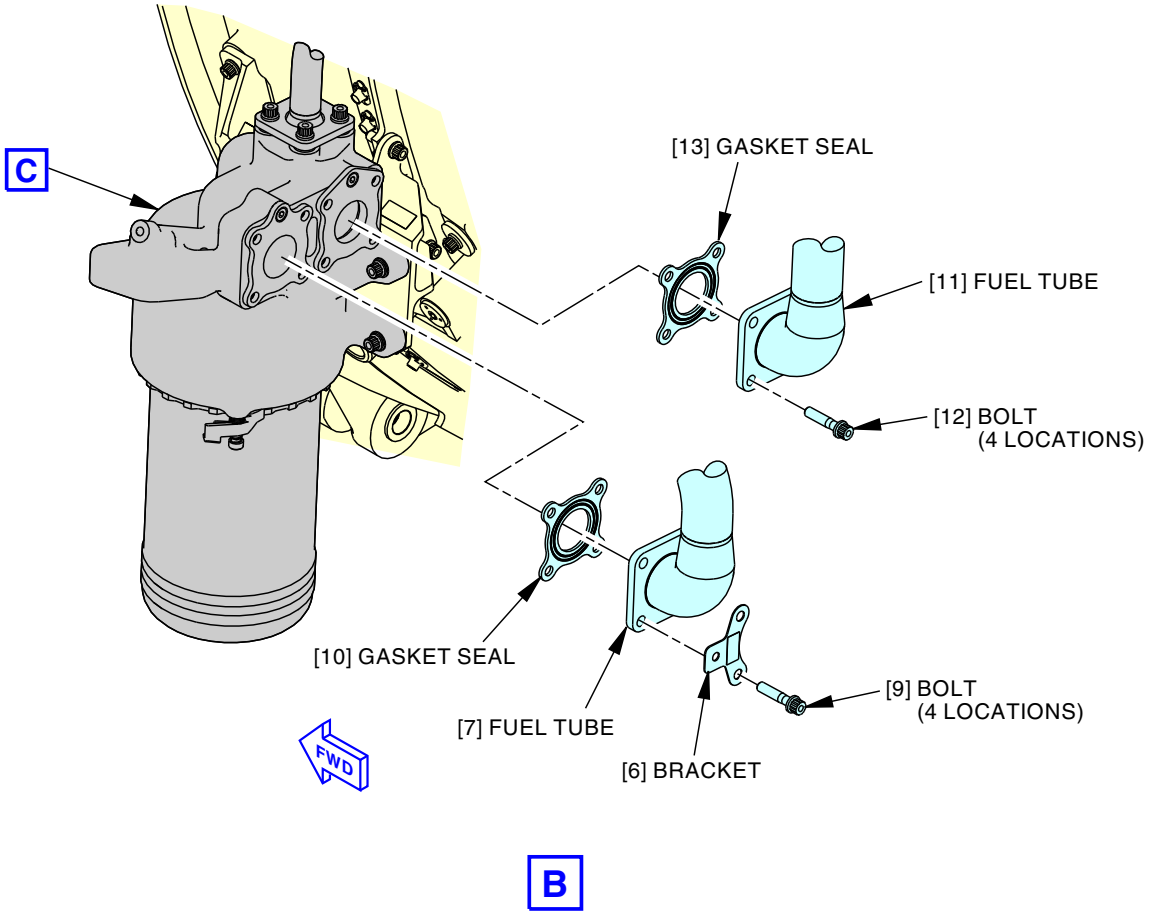
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel Filter Housing Installation
Figure 401/73-11-03-990-801-G00 (Sheet 1 of 3)

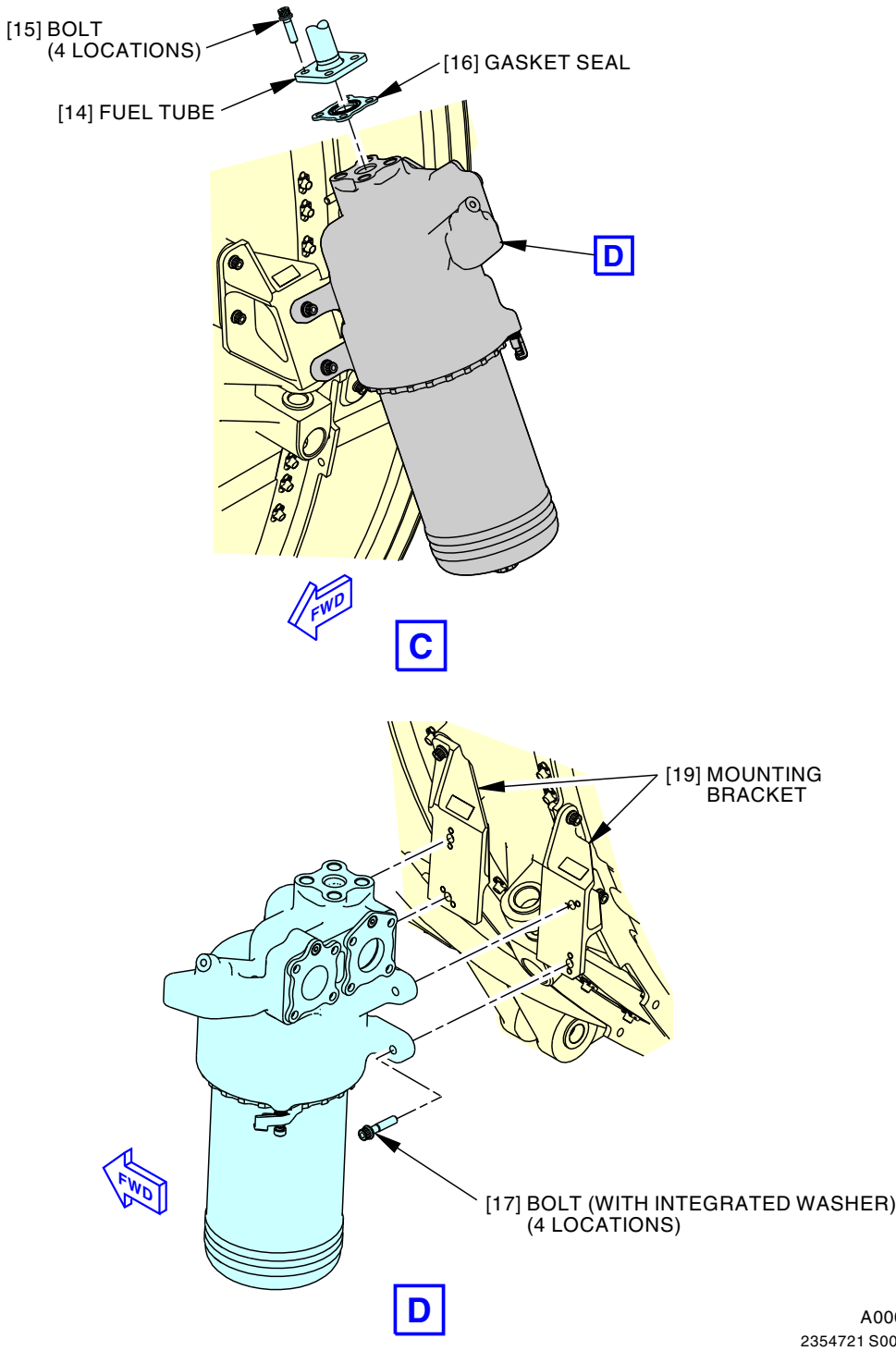
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Main Fuel Filter Housing Installation
Figure 401/73-11-03-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel Filter Housing Installation
Figure 401/73-11-03-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-03-400-801-G00

3. Main Fuel Filter Housing Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the main fuel filter housing.

(2) You must do the tests that are listed in the power plant test reference table after you install the main fuel filter housing.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-02-400-801-G00	Fuel Filter Cartridge Installation (P/B 401)
73-11-10-400-801-G00	Fuel Filter Differential Pressure Transducer Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
D50271 [C02-033]	Lubricant - Petrolatum, Soft	VV-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Main fuel filter housing	73-11-03-01-010	SIA ALL
10	Gasket seal	73-11-03-01-110	SIA ALL
13	Gasket seal	73-11-03-01-090	SIA ALL
16	Gasket seal	73-11-03-01-130	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Main Fuel Filter Housing Installation

SUBTASK 73-11-03-420-001-G00

(1) Install the main fuel filter housing [1]:

(a) Remove the protective covers and caps from the openings.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Install the main fuel filter housing [1] on the mounting bracket [19]:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Lubricate the threads of the four bolts [17] with the oil, D00599 [CP2442].
2) Install the main fuel filter housing [1] on the mounting bracket [19].
3) Install the four bolts [17] with integrated washers on the mounting bracket [19].
4) Tighten the bolts [17] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

(d) Connect the fuel tube [14] to the main fuel filter housing [1]:
1) Lubricate the threads of the four bolts [15] and with the graphite mineral vaseline, D00601 [CP2101].
2) Lubricate the new gasket seal [16] with the soft petrolatum, D50271 [C02-033].
3) Install the new gasket seal [16] and fuel tube [14] on the main fuel filter housing [1].
4) Install the four bolts [15] on the fuel tube [14].
5) Tighten the bolts [15] to 109.25 in-lb (12.3 N·m) - 120.27 in-lb (13.6 N·m).

(e) Connect the fuel tube [11] to the main fuel filter housing [1]:
1) Lubricate the threads of the four bolts [12] with the graphite mineral vaseline, D00601 [CP2101].
2) Lubricate the new gasket seal [13] with the soft petrolatum, D50271 [C02-033].
3) Install the new gasket seal [13] and fuel tube [11] on the main fuel filter housing [1].
4) Install the four bolts [12] on the fuel tube [11].
5) Tighten the bolts [12] to 109.25 in-lb (12.3 N·m) - 120.27 in-lb (13.6 N·m).

(f) Connect the fuel tube [7] to the main fuel filter housing [1]:
1) Lubricate the threads of the four bolts [9] with the graphite mineral vaseline, D00601 [CP2101].
2) Lubricate the new gasket seal [10] with the soft petrolatum, D50271 [C02-033].
3) Install the new gasket seal [10] and fuel tube [7] on the main fuel filter housing [1].
4) Put the bracket [6] in position on the fuel tube [7].
5) Install the four bolts [9] that attach the bracket [6] and fuel tube [7] to the main fuel filter housing [1].
6) Tighten the bolts [9] to 109.25 in-lb (12.3 N·m) - 120.27 in-lb (13.6 N·m).

(g) If not already done, install the fuel filter cartridge (TASK 73-11-02-400-801-G00).

(h) Install the main fuel filter pump differential pressure transducer sensor [2] (TASK 73-11-10-400-801-G00).

(i) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-03-860-007-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-03-860-008-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-03-410-001-G00

(3) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Main Fuel Filter Housing Installation Test

SUBTASK 73-11-03-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL METERING UNIT STRAINER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel metering unit strainer removal

(2) Fuel metering unit strainer installation.

TASK 73-11-04-000-801-G00

2. Fuel Metering Unit Strainer Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the fuel metering unit strainer.

(2) The fuel metering unit strainer is referred to as the FMU strainer.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-04-200-801-G00	Fuel Metering Unit Strainer Inspection (P/B 601)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	73-21-04-01-023	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Prepare for the Removal

SUBTASK 73-11-04-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-04-040-001-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-04-860-002-G00

(3) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 73-11-04-860-003-G00

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-11-04-860-004-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

I. Fuel Metering Unit Strainer Removal

SUBTASK 73-11-04-680-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(1) Drain the fuel from the FMU [1] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the FMU [1].

(b) Remove the drain plug [2] from the FMU [1].

1) Let the fuel drain from the FMU [1] into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(c) Remove and discard the preformed packing [3] from the drain plug [2].

(d) Lubricate the new preformed packing [3] with engine oil, D00599 [CP2442].

(e) Install the preformed packing [3] on the drain plug [2].

(f) Put graphite mineral vaseline, D00601 [CP2101] on the threads and under the heads of the drain plug [2].

(g) Make sure that the mating faces are clean and clear of unwanted materials.

(h) Install the drain plug [2] on the FMU [1].

(i) Tighten the drain plug [2] to 32.0 - 35.0 inch-pounds (3.6 - 4.0 Newton-meters).

SUBTASK 73-11-04-020-001-G00

(2) Remove the FMU strainer [4] as follows:

(a) Remove the four bolts [6] and the four washers [5] that attach the FMU strainer [4] to the FMU [1].

(b) Remove the FMU strainer [4] from the FMU [1].

NOTE: Do not disassemble the FMU strainer [4]. It is not necessary to disassemble the FMU strainer [4] to clean it.

(c) Remove and discard the preformed packing [7] and the preformed packing [8].

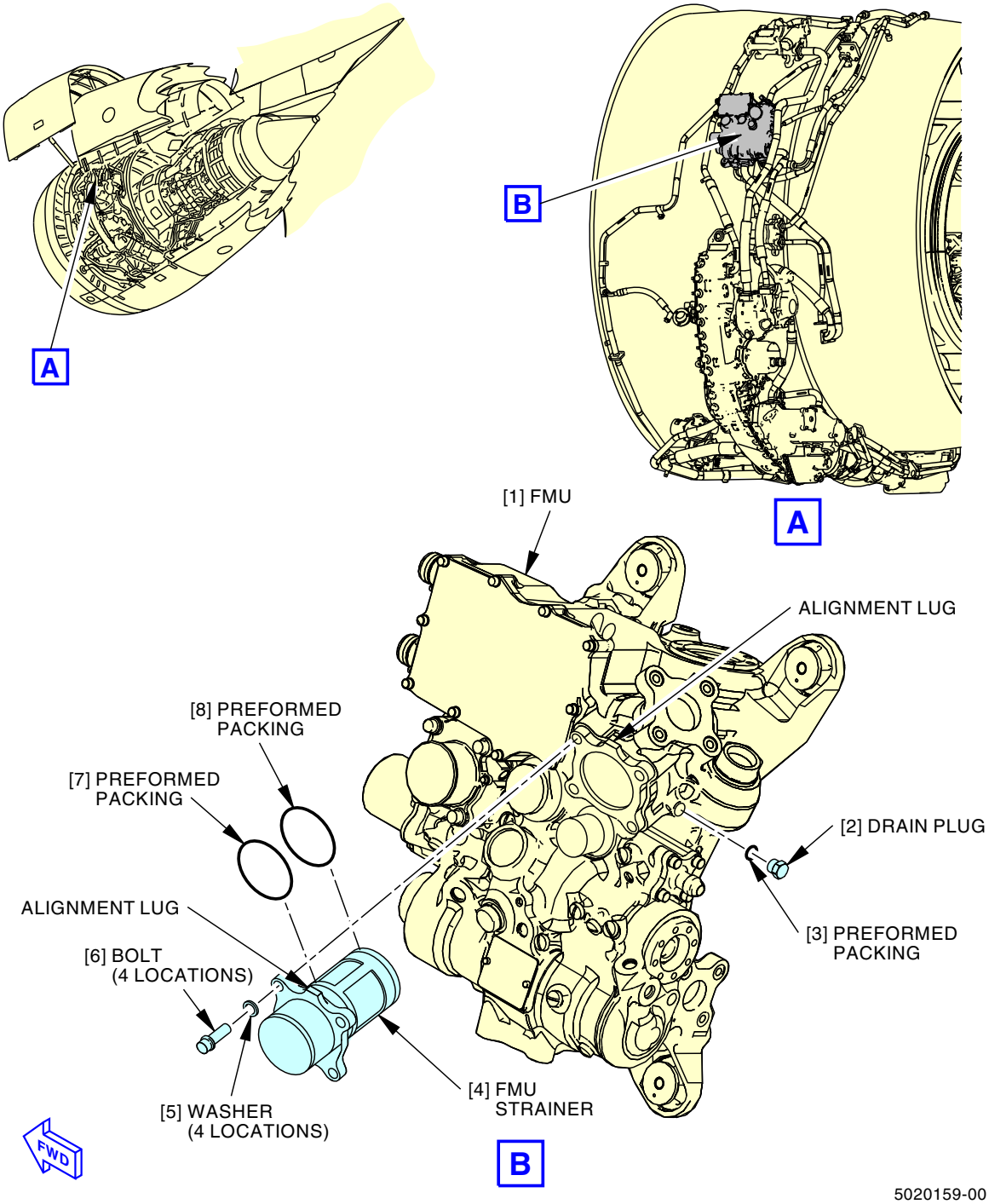
(d) Install the protective cover on the FMU strainer [4] port on the FMU [1].

SUBTASK 73-11-04-200-001-G00

(3) Do an inspection of the FMU strainer [4] (TASK 73-11-04-200-801-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Metering Unit Strainer Installation
Figure 401/73-11-04-990-801-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-04-400-801-G00

3. Fuel Metering Unit Strainer Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the fuel metering unit strainer.

(2) The fuel metering unit strainer is referred to as the FMU strainer.

(3) You must do the tests that are listed in the power plant test reference table after you install the FMU strainer.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Preformed packing	73-21-04-01-030	SIA ALL
8	Preformed packing	73-21-04-01-050	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Fuel Metering Unit Strainer Installation

SUBTASK 73-11-04-420-001-G00

(1) Install the FMU strainer [4] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the protective cover from the FMU strainer port on the FMU [1]

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the new new preformed packing [7] and the new preformed packing [8] with the engine oil, D00599 [CP2442].

(d) Install the preformed packing [7] and the preformed packing [8] onto the packing grooves of the FMU strainer [4].

(e) Apply the graphite graphite mineral vaseline, D00601 [CP2101] on the threads and below the heads of the bolts [6].

(f) Align the alignment lug on the FMU strainer [4] to the alignment lug on the FMU [1] housing, and apply firm hand pressure to seat it.

NOTE: To avoid damage to the FMU strainer [4], it is important to make sure that it is correctly aligned and seated in the FMU housing before tightening the four bolts. The correct alignment and seating is indicated by 360 degree contact/engagement of the preformed packings with little or no visible gap between the strainer flange and the mating surface of the housing.

(g) Install the four bolts [6] and the four washers [5] that attach the FMU strainer [4] to the FMU [1].

(h) Tighten the bolts [6] in one quarter turn increments, one at a time, in a crisscross pattern to 73.0 - 87.0 pound-inches (8.2 - 9.8 Newton-meters).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-04-860-005-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-04-860-006-G00

(2) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-04-440-001-G00

(3) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-04-860-007-G00

(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Fuel Metering Unit Strainer Installation Test

SUBTASK 73-11-04-710-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL METERING UNIT STRAINER - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel metering unit strainer inspection.

TASK 73-11-04-200-801-G00

2. Fuel Metering Unit Strainer Inspection

A. General

(1) This task provides the instructions on how to do the inspection on the fuel metering unit strainer.

(2) The fuel metering unit strainer is referred to as the FMU strainer.

B. References

Reference	Title
73-11-04-000-801-G00	Fuel Metering Unit Strainer Removal (P/B 401)
73-11-04-100-801-G00	Fuel Metering Unit Strainer Cleaning (P/B 701)
73-11-04-400-801-G00	Fuel Metering Unit Strainer Installation (P/B 401)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Prepare for the Inspection

SUBTASK 73-11-04-010-001-G00

(1) Do this task: Fuel Metering Unit Strainer Removal, TASK 73-11-04-000-801-G00.

E. Fuel Metering Unit Strainer Inspection

SUBTASK 73-11-04-212-001-G00

(1) Do the inspection of the FMU strainer as follows:

(a) Do a visual check of the FMU strainer for the contamination material that is caught by the strainer.

1) If you find the material that is caught by the strainer, do these steps:

a) Record the type and quantity of the contamination material that you find on a record sheet.

b) Do this task: Fuel Metering Unit Strainer Cleaning, TASK 73-11-04-100-801-G00.

2) Do a visual check on the inlet screen.

a) If you see the damage, replace the FMU strainer (TASK 73-11-04-000-801-G00 and TASK 73-11-04-400-801-G00).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-04-410-001-G00

(1) Do this task: Fuel Metering Unit Strainer Installation, TASK 73-11-04-400-801-G00.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL METERING UNIT STRAINER - CLEANING/PAINTING

1. General

A. This procedure has one task:

(1) Fuel metering unit strainer cleaning.

TASK 73-11-04-100-801-G00

2. Fuel Metering Unit Strainer Cleaning

A. General

(1) This task provides the instructions on how to clean the Fuel Metering Unit strainer.

(2) The Fuel Metering Unit strainer is referred to as the FMU strainer.

B. References

Reference	Title
73-11-04-000-801-G00	Fuel Metering Unit Strainer Removal (P/B 401)
73-11-04-400-801-G00	Fuel Metering Unit Strainer Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-128	Brush - Paint

D. Consumable Materials

Reference	Description	Specification
B00074	Solvent - Degreasing	MIL-PRF-680 (Supersedes P-D-680)
B00130	Alcohol - Isopropyl	TT-I-735

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Prepare for the Cleaning

SUBTASK 73-11-04-010-002-G00

(1) Do this task: Fuel Metering Unit Strainer Removal, TASK 73-11-04-000-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Fuel Metering Unit Strainer Cleaning

SUBTASK 73-11-04-110-001-G00

WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. PUT ON A RESPIRATOR, PROTECTIVE SPLASH GOGGLES, AND GLOVES WHEN YOU USE SOLVENTS. KEEP THE SOLVENTS AWAY FROM SPARKS, FLAME, AND HEAT. SOLVENTS ARE POISONOUS AND FLAMMABLE. SOLVENTS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(1) Clean the fuel metering unit (FMU) strainer in solvent, B00074 or alcohol, B00130 with a paint brush, STD-128.

NOTE: Keep the material that you remove from the FMU strainer. This material is necessary to troubleshoot the fuel system.

NOTE: Do not disassemble the Fuel Metering Unit strainer assembly when you clean it. If you disassemble the Fuel Metering Unit (FMU) strainer assembly, you can cause damage to it.

(a) Let the FMU strainer assembly dry fully.

SUBTASK 73-11-04-212-002-G00

(2) Examine the FMU strainer assembly for damage.

(a) Replace the FMU strainer assembly if you find damage.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-04-410-002-G00

(1) Do this task: Fuel Metering Unit Strainer Installation, TASK 73-11-04-400-801-G00.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL NOZZLE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Fuel Nozzle Removal

(2) Fuel Nozzle Installation

(3) Fuel Nozzle Set Removal

(4) Fuel Nozzle Set Installation.

TASK 73-11-05-000-801-G00

2. Fuel Nozzle Removal

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406, Figure 407, Figure 408, Figure 409, Figure 410, Figure 411, Figure 412, Figure 413, Figure 414, Figure 415, Figure 416, Figure 417, Figure 418, Figure 419, Figure 420, Figure 421, Figure 422, and Figure 423)

A. General

(1) This task gives the instructions to remove one or more fuel nozzles.

(2) There are eighteen fuel nozzles installed on the combustion case.

(3) The fuel nozzle position numbers are in a CW (Clockwise) sequence Aft Looking Forward (ALF).

NOTE: The offset hole on the combustion case aft flange is the TVCL (Top Vertical Centerline). The first fuel nozzle clockwise, aft looking forward, from the TVCL is No. 1.

(4) The task is divided into eighteen removal topics.

(5) You can remove a fuel nozzle individually per given instructions in the individual topic.

(6) It is recommended to dry motor the engine up to 5 minutes to help cool down the engine (Dry Motor Procedure, TASK 71-00-00-910-808-G00).

(a) Make sure that the Exhaust Gas Temperature (EGT) is below 150°F (66°C).

NOTE: The dry motoring will help to cool down the engine to start the work of the fuel nozzle [1] replacement.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
36-11-01-000-801	Engine Pneumatic Duct Removal (P/B 401)
36-11-04-000-801	PRSOV Removal (P/B 401)
36-11-07-000-801	HPSOV Removal (P/B 401)
36-12-01-000-802	Bleed Air Precooler Removal with Engine Installed (P/B 401)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-21-64-000-801-G00	T3 Sensor Removal (P/B 401)
74-21-02-000-801-G00	Left Igniter Plug Removal (P/B 401)
74-21-02-000-802-G00	Right Igniter Plug Removal (P/B 401)
75-23-02-000-801-G00	Left Modulated Turbine Cooling (MTC) Valve Removal (P/B 401)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
75-23-02-000-802-G00	Right Modulated Turbine Cooling (MTC) Valve Removal (P/B 401)
75-24-01-000-801-G00	Low Pressure Turbine Active Clearance Control (LPTACC) Valve Removal (P/B 401)
75-24-04-000-801-G00	High Pressure Turbine Active Clearance Control (HPTACC) Valve Removal (P/B 401)
77-21-04-000-801-G00	Exhaust Gas Temperature Sensor Harness 1 Removal (P/B 401)
77-21-05-000-801-G00	Exhaust Gas Temperature Sensor Harness 2 Removal (P/B 401)
77-31-06-000-801-G00	Turbine Center Frame Accelerometer Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-200	Container - Fuel Resistant, 10 gallon (38 l)
STD-562	Lens - Magnifying, 10x
STD-858	Tag - DO NOT OPERATE
STD-1242	Hammer - Standard
STD-1285	Container - Fuel Resistant, 10 Gallon (38 Liter)
STD-3842	Punch - Drift
STD-6847	Ratchet

D. Consumable Materials

Reference	Description	Specification
D50186 [CP2691]	Fluid - Penetrating - Aerokroil	
G00834	Cloth - Lint-free Cotton	
G51403 [CP2166]	Tape - Polyester-Backed, Adhesive	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Prepare for the Removal

SUBTASK 73-11-05-860-019-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-05-860-020-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-05-860-023-G00

(3) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 73-11-05-860-024-G00

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-11-05-860-021-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 73-11-05-710-001-G00

(6) Read and obey the recommendation, while you do this procedure:

(a) Use good lighting and a 10x magnifying lens, STD-562, to help you see the left and right engine core areas.

(b) Catch the fuel that will drain from the combustor area in a 10 gallon (38 liter) fuel resistant container, STD-1285.

(c) Use lint-free cloth, G00834, or rags around the combustion case [5].

SUBTASK 73-11-05-000-034-G00

CAUTION BE PREPARED TO REPLACE DAMAGED INSERTS WHEN REMOVING FUEL NOZZLES AND CASE MOUNTED COMPONENTS. IF THE DAMAGED INSERTS ARE NOT REPAIRED OR REPLACED, DAMAGE TO THE ENGINE CAN OCCUR.

(7) To prevent broken bolts and damaged inserts during the removal process, do the following steps:

NOTE: The steps below apply to the 72 fuel nozzle pad bolts, and any bolts that can be removed from the engine cases to get access to the fuel nozzle pads (i.e., ECS pad, TBV pad, and/or 7th stage air manifolds). This is done to keep the possible risk of broken bolts and damaged inserts to a minimum.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

(a) Identify all the fuel nozzles that you will remove and do an initial soak of the fuel nozzle bolts with penetrating fluid, D50186 [CP2691], at the start of the job.

1) Let the lubricant soak into the threads for a one hour.

2) Let the capillary action of penetrating fluid, D50186 [CP2691], penetrate while you remove the external hardware at the same time before you break the torque of the fuel nozzle bolts.

(b) If it is necessary, identify all the case pad bolts that you will remove and do an initial soak of all the case pad bolts listed below at the very start of the job.

1) At the fuel nozzle [1] position 2.

a) The four bolts [22] that attach the transient bleed air tube [19] to the case (View D, Figure 403).

2) At the fuel nozzle [1] position 3.

a) The four bolts [66] that attach the 4th-stage cooling air manifold [58] to the compressor case [65] (View E, Figure 404).

3) At the fuel nozzle [1] position 4.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) The four bolts [91] that attach the 7th-stage air tube [90] to the HPT case [94] (View C, Figure 405).

b) The four bolts [99] that attach the 7th-stage air tube [90] to the HPC extension case [101] (View E, Figure 405).

4) At the fuel nozzle [1] position 7.

a) The four bolts [225] that attach the start bleed tube [224] to the HPC extension case [101] (View F, Figure 408).

b) The two bolts [220] that attach the start bleed tube [224] to the combustion case [5] (View E, Figure 408).

5) At the fuel nozzle [1] position 8.

a) The four bolts [225] that attach the start bleed tube [224] to the HPC extension case [101] (View F, Figure 408).

b) The two bolts [220] that attach the start bleed bracket [219] to the combustion case [5] (View E, Figure 408).

c) The four bolts [260] that attach the ECS middle flange [262] on the combustion case [5].

6) At the fuel nozzle [1] position 9.

a) The four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

7) At the fuel nozzle [1] position 10.

a) The four bolts [311] that attach the 7-th stage air tube [310] to the compressor case [65].

b) The four bolts [316] that attach the 7-th stage air tube [310] to the HPT port [318].

c) The four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

8) At the fuel nozzle [1] position 12.

a) The four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

9) At the fuel nozzle [1] position 13.

a) The four bolts [453] that attach the 7th-stage air manifold [452] to the compressor case [65].

b) The four bolts [457] that attach the 7th-stage air manifold [452] to the compressor case [65].

10) At the fuel nozzle [1] position 17.

a) The four bolts [561] that attach the 4th-stage cooling air manifold [560] to the compressor case [65].

b) The four bolts [575] that attach the 7th-stage air tube [574] to the HPC extension case [101].

c) The four bolts [579] that attach the 7th-stage air tube [574] to the HPT port [581].

(c) Let the application soak for one hour.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-035-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(8) Loosen the fuel manifolds B-nuts as follows and do these steps to drain the three fuel manifold sections as follows:

NOTE: There are no fuel manifold drain plugs on the engine. The three fuel manifold sections are drained by decreasing the fuel pressure and draining each fuel manifold tube. Each fuel manifold tube is independent and must be drained at its lowest connection point on each manifold section. Each manifold section has two separate manifold tubes.

NOTE: Both fuel manifold section tubes that supply the fuel nozzle to be removed must be drained before the fuel nozzle removal. The fuel manifolds can have a small amount of pressure remaining after the fuel manifold tube is drained.

(a) Remove the thrust reverser rod No. 2.

(b) Put the 10 gallon (38 l) fuel resistant container, STD-200, below the fuel manifold drain point of the fuel nozzle [1] you will remove.

(c) Remove all the safety wire from the fuel nozzle B-nuts [4] where the fuel manifolds are drained.

(d) Loosen the fuel manifold B-nuts [4] at the lower 6 o'clock position.

1) Fully remove the B-nuts [4] from the fuel nozzle [1].

(e) Loosen the fuel manifold B-nuts [4] at the upper 12 o'clock position.

1) Fully remove the B-nuts [4] from the fuel nozzle [1].

(f) Drain all the fuel into 10 gallon (38 l) fuel resistant container, STD-200.

(g) Loosen the remaining B-nuts [4] from the engine.

SUBTASK 73-11-05-020-196-G00

CAUTION BE PREPARED TO REPLACE DAMAGED INSERTS WHEN REMOVING FUEL NOZZLES AND CASE MOUNTED COMPONENTS. IF THE DAMAGED INSERTS ARE NOT REPAIRED OR REPLACED, DAMAGE TO THE ENGINE CAN OCCUR.

(9) If you will remove multiple or the full set of fuel nozzles at the same time, it is preferential to remove the nozzles in sets:

NOTE: It may be necessary to loosen and partially remove an adjacent fuel nozzle in order to provide access to rotate the fuel nozzle out of the combustion case during fuel nozzle removal. Replace the fuel nozzle seal assembly if you loosen three or more fuel nozzle bolts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124

NOTE: The left side Modulated Turbine Cooling (MTC) valve and actuator (ALF) are removed.

SIA ALL

NOTE: The right side MTC valve is installed between Fuel nozzles 3 & 4 and left side MTC valve is installed between Fuel nozzles 12 & 13. Nozzle removal in sets may avoid MTC valve removal.

NOTE: The fuel nozzle removal sequence is for reference only and may be changed as necessary.

(a) Fuel Nozzle (FN) at positions 1, 2, 3, 18, and 17 (removed at the 1:30 o'clock position)

NOTE: FN 2 and FN 3 need to be turned right to get FN 1 removed.

1) The FN 1 turn to the RIGHT and out of the case.
2) The FN 2 turn to the LEFT and out of the case.
3) The FN 3 turn to the LEFT and out of the case.
4) The FN 18 turn to the RIGHT and out of the case.
5) The FN 17 turn to the RIGHT and out of the case.

(b) FN 4, 5, 6, 7, 8, and 9 (removed at the 3 to 5 o'clock position)

NOTE: FN 5 and FN 6 need to be turned right to get FN 4 removed.

1) The FN 4 turn DOWN and out of the case.
2) The FN 5 turn UP and out of the case.
3) The FN 6 turn UP and out of the case.
4) The FN 7 turn UP and out of the case.
5) The FN 8 turn to the RIGHT and out of the case.
6) The FN 9 turn to the RIGHT and out of the case.

(c) The FN 11, 10, and 12 (removed at the 7 to 8 o'clock position)

NOTE: FN 12 needs to be turned up to get FN 11 removed.

1) The FN 11 turn UP and out of the case.
2) The FN 10 turn LEFT and out of the case.
3) The FN 12 turn DOWN and out of the case.

(d) FN 16, 15, 14, and 13 (removed at the 9 o'clock position).

NOTE: FN 15 and FN 14 need to be turned down to get FN 16 removed.

1) The FN 16 turn DOWN and out of the case.
2) The FN 15 turn UP and out of the case.
3) The FN 13 turn UP and out of the case.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Fuel Nozzle Removal (Position 1)

SUBTASK 73-11-05-010-003-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) If necessary to gain access, do this task: Bleed Air Precooler Removal with Engine Installed, TASK 36-12-01-000-802.

NOTE: It is possible to remove fuel nozzles in positions 1 and 18 without disconnecting the bleed air precooler but access is limited. If additional access is desired, disconnect the bleed air precooler.

SUBTASK 73-11-05-000-036-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(2) Remove the fuel nozzle [1] (position 1) as follows (View C, Figure 402):

(a) Disconnect the pilot primary main (PPM) and pilot secondary (PS) B-nuts [4] from the fuel nozzle [1] (position 1).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 1).

CAUTION

BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [2] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [2] with half a turn counterclockwise.

WARNING

REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [2] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [2].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [2].
   a) Use a ratchet to turn the bolts [2] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [2] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [2] slowly.

      NOTE: If you remove the fuel nozzle bolts [2] too fast, they can get hot and seize.

   b) Turn the machine bolts [2] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [2] again.
   e) If the bolts [2] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [2].
7) Discard the fuel nozzle bolts [2].

(d) Remove the fuel nozzle [1] (position 1) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 1) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 1) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 1) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(e) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(f) Remove and discard the seal [3] from the fuel nozzle [1] (position 1) or the combustion case [5].

(g) Install protective covers on the fuel nozzle [1], fuel nozzle ports, PS and PPM fuel manifold connections.

(h) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(i) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(k) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(l) Make a record of the engine TSN and CSN.

(m) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.
Customer Support
7777 North Glen Harbor Blvd.
Glendale, AZ 85307
Phone: (623) 872-6160
U.S.A.

I. Fuel Nozzle Removal (Position 2)

SUBTASK 73-11-05-010-004-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the engine crossover duct assembly between the bleed air precooler at the 12:00 o'clock position and Pressure Regulating and Shutoff Valve (PRSOV) at the 2:30 o'clock position (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-037-G00

(2) Remove the transient bleed air tube [19] as follows (View C and D, Figure 403):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0229

(a) Remove the three bolts [18] that attach the transient bleed air tube [19] to support bracket [20].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0229

(b) Remove the two bolts [18] that attach the transient bleed air tube [19] to support bracket [20].

SIA ALL

(c) Remove the coupling clamp [21] from the transient bleed valve [47].

(d) Remove and discard the seal [21A] from the transient bleed air tube [19].

(e) Remove the four bolts [22] that attach transient bleed air tube [19] to the combustion case [5].

(f) Remove the transient bleed air tube [19] and discard the metal seal ring [23] from the combustion case [5].

SUBTASK 73-11-05-000-038-G00

(3) Remove the booster anti-ice tube [37A] as follows (View E, Figure 403):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the four bolts [42A] and two strap clamps [43A] that attach the booster anti-ice tube [37A] to the support brackets.

(b) Remove the coupling clamp [46A] and seal [45A] from the booster anti-ice tube [38A].

(c) Remove the coupling clamp [46A] and seal [45A] from the booster anti-ice tube [39A].

(d) Discard the seals [45A].

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0144; PRE LEAP-1B SERVICE BULLETIN 72-0144

(e) Remove the bolt [47A] that attaches the loop clamp [48] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(f) Remove the two bolts [47A] that attach the strap clamp [43A] to the support bracket.

SIA ALL

(g) Remove the coupling clamp [40A] and seal [41A] from the booster anti-ice tube [44A].

1) Discard the seal [41A].

(h) Remove the booster anti-ice tube [37A].

SUBTASK 73-11-05-000-124-G00

(4) Remove the booster anti-ice tube [44A] as follows (View G, Figure 403):

(a) Remove the two bolts [50A] and clamp [49A] that attach the booster anti-ice tube [44A] to the support bracket.

(b) Remove the two bolts [53A] and clamp [49A] that attach the booster anti-ice tube [44] to the support bracket.

(c) Remove the coupling clamp [51A] and seal [52A] that attach the booster anti-ice tube [44A] to the SBV valve.

1) Discard the seal [52A].

(d) Remove the booster anti-ice tube [44] from the engine.

SUBTASK 73-11-05-000-039-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(5) Remove the fuel nozzle [1] (position 2) as follows (View N, Figure 403):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 2).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 2).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [40] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [40] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [40] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [40].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [40].

a) Use a ratchet to turn the bolts [40] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [40] must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [40] slowly.

NOTE: If you remove the fuel nozzle bolts [40] too fast, they can get hot and seize.

b) Turn the machine bolts [40] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [40] again.

e) If the bolts [40] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [40].

7) Discard the fuel nozzle bolts [40].

(d) Remove the booster anti-ice tube bracket [45] as follows:

NOTE: The booster anti-ice bracket [45] is two brackets assembled together that span across the fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

1) Remove the bolt [46] that attaches the bracket [45] to the fuel nozzle [1] (position 3).

(e) Remove the fuel nozzle [1] (position 2) from the combustion case [5] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Hold the fuel nozzle [1] (position 2) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 2) and move the mounting flange aft and down.

3) Turn the fuel nozzle [1] (position 2) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Remove and discard the seal [41] from the fuel nozzle [1] (position 2) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

J. Fuel Nozzle Removal (Position 3)

SUBTASK 73-11-05-020-197-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the engine crossover duct assembly between the bleed air precooler at the 12:00 o'clock position and PRSOV at the 2:30 o'clock position (TASK 36-11-01-000-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-040-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(2) Remove the booster anti-ice tube [37A] as follows (View E, Figure 403):

(a) Remove the four bolts [42A] and two strap clamps [43A] that attach the booster anti-ice tube [37A] to the support brackets.

(b) Remove the coupling clamp [46A] and seal [45A] from the booster anti-ice tube [38A].

(c) Remove the coupling clamp [46A] and seal [45A] from the booster anti-ice tube [39A].

(d) Discard the seals [45A].

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0144; PRE LEAP-1B SERVICE BULLETIN 72-0144

(e) Remove the bolt [47A] that attaches the loop clamp [48] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(f) Remove the two bolts [47A] that attach the strap clamp [43A] to the support bracket.

SIA ALL

(g) Remove the coupling clamp [40A] and seal [41A] from the booster anti-ice tube [44A].

1) Discard the seal [41A].

(h) Remove the booster anti-ice tube [37A].

SUBTASK 73-11-05-000-125-G00

(3) Remove the booster anti-ice tube [44A] as follows (View G, Figure 403):

(a) Remove the two bolts [50A] and clamp [49A] that attach the booster anti-ice tube [44A] to the support bracket.

(b) Remove the two bolts [53A] and clamp [49A] that attach the booster anti-ice tube [44] to the support bracket.

(c) Remove the coupling clamp [51A] and seal [52A] that attach the booster anti-ice tube [44A] to the SBV valve.

1) Discard the seal [52A].

(d) Remove the booster anti-ice tube [44] from the engine.

SUBTASK 73-11-05-020-198-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

CAUTION

BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

(4) Remove the 4th-stage cooling air manifold [58] as follows (View C, D, and E, Figure 404):

(a) Disconnect the LPT air supply tube [59] from the 4th-stage cooling air manifold [58].

(b) Remove the coupling clamp [61] that attaches the 4th-stage cooling air manifold [58] to the air supply adapter tube [62].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0004

(c) Remove the two bolts [64] that attach the 4th-stage cooling air manifold [58] to the air tube bracket [63].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0004

(d) Remove the two bolts [634] and strap clamp [635] that attach the 4th-stage cooling air manifold [58] to the air tube bracket [63].

SIA ALL

(e) Remove the four bolts [66] that attach the 4th-stage cooling air manifold [58] to the compressor case [65].

(f) Remove the 4th-stage cooling air manifold [58] and discard the seal ring [67] from the 4th-stage cooling air manifold [58] or the compressor case [65].

(g) Discard the seal [60] from the 4th-stage cooling air manifold [58] or the air supply adapter tube [62].

SUBTASK 73-11-05-860-022-G00

(5) If it is necessary, remove the right MTC valve (TASK 75-23-02-000-802-G00).

SUBTASK 73-11-05-000-041-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(6) Remove the fuel nozzle [1] (position 3) as follows (View G, Figure 404):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 3).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle position 3).

CAUTION

BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [69] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [69] with half a turn counterclockwise.

WARNING

REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [69] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [69].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [69].
   a) Use a ratchet to turn the bolts [69] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [69] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [69] slowly.

      NOTE: If you remove the fuel nozzle bolts [69] too fast, they can get hot and seize.

   b) Turn the machine bolts counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [69] again.
   e) If the bolts [69] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [69].
7) Discard the fuel nozzle bolts [69].

(d) Remove the booster anti-ice tube bracket [74] as follows:

NOTE: The booster anti-ice bracket [74] is two brackets assembled together that span across the fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

1) Remove the two bolts [68] that attach the bracket [74] to the fuel nozzle [1] (position 2).

(e) Remove the bolts [76] that attach the loop clamps [77], fuel manifold [71], and fuel manifold [73] to the bracket [75].

(f) Remove the bracket [75] from the engine core.

(g) Remove the fuel nozzle [1] (position 3) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 3) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 3) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 3) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(i) Remove and discard the seal [70] from the fuel nozzle [1] (position 3) or the combustion case [5].

(j) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and PS and PPM fuel manifold connections.

(k) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(l) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(m) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(n) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(o) Make a record of the engine TSN and CSN.

(p) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

K. Fuel Nozzle Removal (Position 4)

SUBTASK 73-11-05-000-042-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the engine crossover duct assembly between the bleed air precooler at the 12:00 o'clock position and PRSOV at the 2:30 o'clock position (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-043-G00

(2) Remove the PRSOV at the 2:30 o'clock position (TASK 36-11-04-000-801).

SUBTASK 73-11-05-020-199-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(3) Remove the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

(a) Remove the four bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(b) Remove the bolt [87] and loop clamp [88] that attaches the air tube [89] to the bracket [93].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(c) Remove the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

(d) Remove the two bolts [95] that attach the 7th-stage air tube [90] flange to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(e) Remove the two bolts [95] that attach the 7th-stage air tube [90] flange to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0005

(f) Remove the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(g) Remove the bolts [99] that attach the 7th-stage air tube [90] to the HPC extension case [101].

(h) Remove the 7th-stage air tube [90] from the HPC extension case [101] and discard the seal ring [100].

(i) Remove the 7th-stage air tube [90] from the engine and discard the seal ring [92] and seal ring [100].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-020-200-G00

(4) Remove the bracket [98] as follows (Figure 406):

(a) Remove the two bolts [126] that attach the SBV TBV manifold [125] to the bracket [98] (View J, Figure 406).

(b) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98] (View S, Figure 406).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-044-G00

(5) Remove the bracket [98] as follows (Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98]

(b) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(c) Remove the two bolts [191] that attach the strap clamp [191A] and BAI air tube [27] to the bracket [98].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(d) Remove the bolt [197] that attaches loop clamp [205] and drain tube [208] to the bracket [98].

(e) Remove the two bolts [206] that attach the bracket [98] to the support bracket [207].

SIA ALL

SUBTASK 73-11-05-010-005-G00

(6) If it is necessary, remove the right MTC valve (TASK 75-23-02-000-802-G00).

SUBTASK 73-11-05-000-045-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(7) Remove the fuel nozzle [1] (position 4) as follows (View G, Figure 405):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 4).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 4).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [102] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [102] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [102] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [102].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [102].
   a) Use a ratchet to turn the bolts [102] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [102] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [102] slowly.

      NOTE: If you remove the fuel nozzle bolts [102] too fast, they can get hot and seize.

   b) Turn the machine bolts [102] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts [102] shaft and in the bolt holes.
   d) Loosen the bolts [102] again.
   e) If the bolts [102] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [102].
7) Discard the fuel nozzle bolts [102].

(d) Remove the fuel nozzle [1] (position 4) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 4) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 4) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 4) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(e) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(f) Remove and discard the seal [103] from the fuel nozzle [1] (position 4) or the combustion case [5].

(g) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and PS and PPM fuel manifold connections.

(h) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(i) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(j) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(k) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(l) Make a record of the engine TSN and CSN.

(m) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

ECCN 9E991 BOEING PROPRIETARY - See title page for details

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

L. Fuel Nozzle Removal (Position 5)

SUBTASK 73-11-05-010-006-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the Environmental Control System (ECS) valves and ducts as necessary to get access:

(a) Remove the PRSOV (TASK 36-11-04-000-801).

(b) Remove the engine mix manifold duct (TASK 36-11-01-000-801).

SUBTASK 73-11-05-020-201-G00

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(2) Disconnect the HJ8A harness [118] as follows (View E, F, and G, Figure 406):

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(a) Remove the bolt [119] that attaches the HJ8A harness [118] wye to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the bolt [119] that attaches the HJ8A harness [118] wye to the bracket [202].

SIA ALL

(c) Remove the bolt [121] that attaches loop clamp [122] to the CCC air manifold [120].

(d) Remove the HJ8A harness [118] from the push clamp [178] on the CCC air manifold [120].

(e) Disconnect the electrical connector [116] and electrical connector [117] of the HJ8A harness [118] from the TBV valve [123] and SBV valve [124] (TASK 70-00-01-910-803-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-046-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(3) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-047-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(4) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-000-048-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the bolts [129] that attach the two loop clamps [130] to the bracket [202].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valves [124] (View CC).

(h) Remove the two bolts [134] and two bolts [131A] that attach the four loop clamps [135] to the manifold bracket [133].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold brackets [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-049-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

(a) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(b) Remove the two bolts [153] that attach the strap clamp [154] to the bracket [155].

(c) Remove the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(d) Remove the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(e) Loosed the hose clamp [163] that attaches the upper end of rubber bellows [161] to the CCC air manifold [120].

(f) Remove the two bolts [209] that attach the CCC air manifold [120] to the CCC duct support bracket [210].

(g) Loosen the hose clamp [180] that attaches the aft end of the flexible duct [162] to the CCC air manifold [120].

(h) Remove the CCC air manifold [120] from the rubber bellows [161] and flexible duct [162].

(i) Remove the bracket [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-050-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(a) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(b) Remove the two bolts [153] that attach the strap clamp [154] to the bracket [155].

(c) Remove the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(d) Remove the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(e) Loosen the hose clamp [163] that attaches the upper end of rubber bellows [161] to the CCC air manifold [120].

(f) Loosen the hose clamp [180] that attaches the aft end of flexible duct [162] to the CCC air manifold [120].

SIA ALL; ALL 737 MAX, PRE LEAP-1B SERVICE BULLETIN 72-0050 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(g) Remove the two bolts [209] that attaches the CCC air manifold [120] to the CCC duct support bracket [210].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(h) Remove the bolt [189] that attaches the bracket [155] to the fuel nozzle [1] (position 6) (View C, Figure 407).

(i) Remove the CCC air manifold [120] from the rubber bellows [161] and flexible duct [162].

(j) Remove the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

NOTE: Engines not having POST 72-0217 hardware do not require removal of the CCC air manifold [120].

SUBTASK 73-11-05-010-007-G00

(8) Do these steps to remove the bracket [202] (View C, Figure 406):

(a) Remove two bolts [131A] and bolt [189] from nozzle position 6.

(b) Remove the bracket [202] from the engine core.

SIA ALL

SUBTASK 73-11-05-000-051-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(9) Remove the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

(a) Remove the four bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(b) Remove the bolt [87] and loop clamp [88] that attaches the air tube [89] to the bracket [93].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(c) Remove the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

(d) Remove the two bolts [95] that attach the 7th-stage air tube [90] flange to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(e) Remove the two bolts [95] that attach the 7th-stage air tube [90] flange to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0005

(f) Remove the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(g) Remove the bolts [99] that attach the 7th-stage air tube [90] to the HPC extension case [101].

(h) Remove the 7th-stage air tube [90] from the HPC extension case [101] and discard the seal ring [100].

(i) Remove the 7th-stage air tube [90] from the engine and discard the seal ring [92] and seal ring [100].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-052-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(10) Remove the PS3 tube [164] as follows (View Y, Z, AA, and BB, Figure 406):

(a) Remove the bolt [167] that attaches the loop clamp [168] to the support bracket [166].

(b) Remove the bolt [169] that attaches the loop clamp [170] to the tube bracket [171].

(c) Disconnect the PS3 tube [164] from the PS3 port fitting [165] on the combustion case [5].

(d) Disconnect the PS3 tube [164] from the PS3 sense line [172].

(e) Remove the PS3 tube [164].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-053-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(11) Remove the PS3 tube [164] as follows (View Y, Z, AA, BB, and DD, Figure 406):

(a) Remove the bolt [167] that attaches the loop clamp [168] to the support bracket [166].

(b) Remove the bolt [169] that attaches the loop clamp [170] to the tube bracket [171].

(c) Disconnect the PS3 tube [164] from the PS3 port fitting [165] on the combustion case [5].

(d) Disconnect the PS3 tube [164] from the PS3 sense line [172].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(e) Remove the bolt [185] that attaches the loop clamp [186] and PS3 tube [164] to the support bracket [181].

(f) Remove the PS3 tube [164].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-000-054-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(12) Remove the PS3 tube [164] as follows (View Y, Z, AA, and BB, Figure 406):

(a) Remove the bolt [636] that attaches the loop clamp [637] to the support bracket [638].

(b) Remove the bolt [639] that attaches the loop clamp [640] to the support bracket [641].

(c) Remove the bolt [642] that attaches the loop clamp [643] to the tube bracket [171].

(d) Disconnect the PS3 tube [164] from the PS3 port fitting [165] on the combustion case [5].

(e) Disconnect the PS3 tube [164] from the PS3 sense line [172].

(f) Remove the PS3 tube [164].

SIA ALL

SUBTASK 73-11-05-000-055-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(13) Remove the fuel nozzle [1] (position 5) as follows (View C, Figure 406):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 5).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 5).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [173] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Loosen the torque of the fuel nozzle bolts [173] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [173] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [173].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [173].
   a) Use a ratchet to turn the bolts [173] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [173] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [173] slowly.

      NOTE: If you remove the fuel nozzle bolts [173] too fast, they can get hot and seize.

   b) Turn the machine bolts [173] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [173] again.
   e) If the bolts [173] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [173].
7) Discard the fuel nozzle bolts [173].

(d) Remove the bracket [202A] from the engine core (View C, Figure 406).

(e) Remove the fuel nozzle [1] (position 5) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 5) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 5) and move the mounting flange aft and down
3) Turn the fuel nozzle [1] (position 5) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Remove and discard the seal [175] from the fuel nozzles [1] (position 5) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzles [1].

(k) Place the removed fuel nozzles [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzles [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzles [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

M. Fuel Nozzle Removal (Position 6)

SUBTASK 73-11-05-010-008-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the ECS valves and ducts as necessary to get access:

(a) Remove the High Pressure Shutoff Valve (HPSOV) (TASK 36-11-07-000-801).

(b) Remove the engine mix manifold duct (TASK 36-11-01-000-801).

SUBTASK 73-11-05-020-202-G00

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(2) Disconnect the HJ8A harness [118] as follows (View E, F, and G, Figure 406):

SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0050 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

(a) Remove the bolt [119] that attaches the HJ8A harness [118] wye to the CCC air manifold [120].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the bolt [119] that attaches the HJ8A harness [118] wye to the bracket [202].

SIA ALL

(c) Remove the bolt [121] that attaches loop clamp [122] to the CCC air manifold [120].

(d) Remove the HJ8A harness [118] from the push clamp [178] on the CCC air manifold [120].

(e) Disconnect the electrical connector [116] and electrical connector [117] of the HJ8A harness [118] from the TBV valve [123] and SBV valve [124] (TASK 70-00-01-910-803-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-056-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(3) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-057-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(4) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-000-058-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the bolts [129] that attach the two loop clamps [130] to the bracket [202].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217 (Continued)

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valves [124] (View CC).

(h) Remove the two bolts [134] and two bolts [131A] that attach the four loop clamps [135] to the manifold bracket [133].

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold brackets [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-059-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

(a) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(b) Remove the two bolts [153] that attach the strap clamp [154] to the bracket [155].

(c) Remove the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(d) Remove the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(e) Loosed the hose clamp [163] that attaches the upper end of rubber bellows [161] to the CCC air manifold [120].

(f) Remove the two bolts [209] that attaches the CCC air manifold [120] to the CCC duct support bracket [210].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(g) Loosen the hose clamp [180] that attaches the aft end of the flexible duct [162] to the CCC air manifold [120].

(h) Remove the CCC air manifold [120] from the rubber bellows [161] and flexible duct [162].

(i) Remove the bracket [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-060-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

(a) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(b) Remove the two bolts [153] that attach the strap clamp [154] to the bracket [155].

(c) Remove the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(d) Remove the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(e) Loosen the hose clamp [163] that attaches the upper end of rubber bellows [161] to the CCC air manifold [120].

(f) Loosen the hose clamp [180] that attaches the aft end of flexible duct [162] to the CCC air manifold [120].

SIA ALL; ALL 737 MAX, PRE LEAP-1B SERVICE BULLETIN 72-0050 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(g) Remove the two bolts [209] that attaches the CCC air manifold [120] to the CCC duct support bracket [210].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(h) Remove the bolt [189] that attaches the bracket [155] to the fuel nozzle [1] (position 6) (View C, Figure 407).

(i) Remove the CCC air manifold [120] from the rubber bellows [161] and flexible duct [162].

(j) Remove the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

NOTE: Engines not having POST 72-0217 hardware do not require removal of the CCC air manifold [120].

SUBTASK 73-11-05-000-061-G00

(8) Do these steps to remove the bracket [202] (View C, Figure 406):

(a) Remove two bolts [131A] and bolt [189] from nozzle position 6.

(b) Remove the bracket [202] from the engine core.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-062-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(9) Remove the CCC air manifold [120] as follows (View R, S, T, U, V, W, DD, and X, Figure 406):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(a) Remove the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(b) Remove the two bolts [153] that attach the strap clamp [154] to the bracket [155].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(c) Remove the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(d) Remove the bolt [159] that attaches the CCC air manifold [120] to the support brackets [160].

(e) Loosen the hose clamp [163] that attaches the upper end of rubber bellows [161] to the CCC air manifold [120].

(f) Loosen the hose clamp [180] that attaches the aft end of flexible duct [162] to the CCC air manifold [120].

(g) Remove the two bolts [209] that attach the CCC air manifold [120] to the CCC duct support bracket [210].

(h) Remove the bolt [189] that attach the bracket [155] to the fuel nozzle [1] (position 6) (View C, Figure 407).

(i) Remove the CCC air manifold [120] from the rubber bellows [161] and flexible duct [162].

(j) Remove the CCC air manifold [120].

SIA ALL

SUBTASK 73-11-05-000-063-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(10) Remove the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

(a) Remove the four bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(b) Remove the bolt [87] and loop clamp [88] that attaches the air tube [89] to the bracket [93].

(c) Remove the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

(d) Remove the two bolts [95] that attach the 7th-stage air tube [90] flange to the 7th-stage air tube bracket [96].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(e) Remove the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(f) Remove the bolts [99] that attach the 7th-stage air tube [90] to the HPC extension case [101].

(g) Remove the 7th-stage air tube [90] from the HPC extension case [101] and discard the seal ring [100].

(h) Remove the 7th-stage air tube [90] from the engine and discard the seal ring [92] and seal ring [100].

SUBTASK 73-11-05-000-064-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(11) Remove the fuel nozzle [1] (position 6) as follows (View C and D, Figure 407):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 6).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 6).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the fuel nozzle bolt [189] and three bolts [193] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts again.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts.

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts.

a) Use a ratchet to turn the bolts slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts slowly.

NOTE: If you remove the fuel nozzle bolts too fast, they can get hot and seize.

b) Turn the machine bolts counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts again.

e) If the bolts cannot be removed, repeat the steps above.

6) Remove the fuel nozzle bolt [189] and three bolts [193].

7) Discard the fuel nozzle bolt [189] and bolts [193].

(d) Remove the two bolts [201] that attach the loop clamps [199] to the bracket [194].

(e) Remove the fuel nozzle [1] (position 6) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 6) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 6) and move the mounting flange aft and down

3) Turn the fuel nozzle [1] (position 6) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Remove and discard the seal [195] from the fuel nozzle [1] (position 6) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzles [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Advanced Atomization Technologies L.L.C.
Customer Support
7777 North Glen Harbor Blvd.
Glendale, AZ 85307
Phone: (623) 872-6160
U.S.A.

N. Fuel Nozzle Removal (Position 7)

SUBTASK 73-11-05-010-009-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the ECS valves and ducts as necessary to get access:

(a) Remove the HPSOV (TASK 36-11-07-000-801).

(b) Remove the lower CDP duct assembly [23] (TASK 36-11-01-000-801).

SUBTASK 73-11-05-020-203-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(2) Remove the start bleed tube [224] as follows (View F, Figure 408):

(a) Remove the four bolts [225] that attaches the start bleed tube [224] to the HPC extension case [101].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0134

(b) Remove the two bolts [223] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0134

(c) Remove the two bolts [223] and start bleed clamp [610] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL

(d) Remove the coupling clamp [227] and seal [222] that attaches the start bleed tube [224] to the SBV valve [124].

1) Discard the seal [222].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Remove and discard the seal [226] from the start bleed tube [224] or the HPC extension case [101].

SUBTASK 73-11-05-020-204-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(3) Remove the fuel nozzle [1] (position 7) as follows (View C, Figure 408):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 7).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 7).

(c) Remove the bolts [220] that attaches the start bleed bracket [219] to the combustion case [5].

CAUTION

BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(d) Remove the two fuel nozzle bolts [213] and two bolts [383] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts with half a turn counterclockwise.

WARNING

REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION

DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts.

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts.

a) Use a ratchet to turn the bolts slowly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts slowly.

NOTE: If you remove the fuel nozzle bolts too fast, they can get hot and seize.

b) Turn the machine bolts counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts again.

e) If the bolts cannot be removed, repeat the steps above.

6) Remove the two fuel nozzle bolts [213] and two bolts [383].

7) Discard the fuel nozzle bolts [213] and bolts [383].

(e) Remove the two bolts [384] that attach the brackets [385] to the support bracket [214].

(f) Remove the support bracket [214] for clearance.

(g) Remove the two bolts [217] that attach the loop clamps [216] to the support bracket [215].

(h) Remove the bolt [218] that support bracket [215] to the bracket [203].

(i) Remove the fuel nozzle [1] (position 7) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 7) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 7) and move the mounting flange aft and down

3) Turn the fuel nozzle [1] (position 7) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(j) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(k) Remove and discard the seal [221] from the fuel nozzles [1] (position 7) or the combustion case [5].

(l) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(m) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(n) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(o) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(p) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(q) Make a record of the engine TSN and CSN.

(r) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Customer Support
7777 North Glen Harbor Blvd.
Glendale, AZ 85307
Phone: (623) 872-6160
U.S.A.

O. Fuel Nozzle Removal (Position 8)

SUBTASK 73-11-05-010-010-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the lower CDP duct assembly [23] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-020-205-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(2) Remove the start bleed tube [224] as follows (View F, Figure 408):

(a) Remove the four bolts [225] that attach the start bleed tube [224] to the HPC extension case [101].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0134

(b) Remove the two bolts [223] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0134

(c) Remove the two bolts [223] and start bleed clamp [610] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL

(d) Remove the coupling clamp [227] and seal [222] that attaches the start bleed tube [224] to the SBV valve [124].

1) Discard the seal [222].

(e) Remove and discard the seal [226] from the start bleed tube [224] or the HPC extension case [101].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-020-206-G00

CAUTION: BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

(3) Remove the start bleed bracket [219] as follows (View E, Figure 408):

(a) Remove the two bolts [220] that attach the start bleed bracket [219] to the combustion case [5].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-020-207-G00

CAUTION: MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(4) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-020-208-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-020-209-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the bolts [129] that attach the two loop clamps [130] to the bracket [202].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217 (Continued)

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valves [124] (View CC).

(h) Remove the two bolts [134] and two bolts [131A] that attach the four loop clamps [135] to the manifold bracket [133].

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold brackets [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL

SUBTASK 73-11-05-020-210-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the ECS middle flange [262] as follows (View E, Figure 409):

(a) Disconnect the sense lines manifold [277] B-nut from the ECS middle flange [262].

(b) Remove the four bolts [260] that attach the ECS middle flange [262] on the combustion case [5].

(c) Remove and discard the metal ring seal [261].

(d) Remove the ECS middle flange [262] from the engine.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-020-211-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(8) Remove the fuel nozzle [1] (position 8) as follows (View C, Figure 409):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 8).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 8).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [2] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [2] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [2] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [2].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [2].

a) Use a ratchet to turn the bolts [2] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [2] must be discarded during the removal process.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [2] slowly.

NOTE: If you remove the fuel nozzle bolts [2] too fast, they can get hot and seize.

b) Turn the machine bolts [2] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [2] again.

e) If the bolts [2] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [2].

7) Discard the fuel nozzle bolts [2].

(d) Remove the fuel nozzle [1] (position 8) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 8) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 8) and move the mounting flange aft and down

3) Turn the fuel nozzle [1] (position 8) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(e) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(f) Remove and discard the seal [3] from the fuel nozzle [1] (position 8) or the combustion case [5].

(g) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(h) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(i) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(j) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(k) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(l) Make a record of the engine TSN and CSN.

(m) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

P. Fuel Nozzle Removal (Position 9)

SUBTASK 73-11-05-010-011-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the lower CDP duct assembly [23] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-020-212-G00

CAUTION BE CAREFUL WHEN YOU ENGAGE AND DISENGAGE THE IGNITION LEAD CONNECTORS. YOU MUST USE AN AXIAL FORCE ONLY TO PUSH OR PULL THE LEAD. DO NOT SHAKE THE IGNITION LEAD CONNECTORS. IF YOU DO NOT FOLLOW THIS PROCEDURE, YOU CAN CAUSE DAMAGE TO THE EQUIPMENT.

(2) Disconnect the ignition leads [296] as follows (View F, Figure 410):

(a) Remove the two bolts [297] that attaches the two loop clamps [298] to the sense line bracket [397].

(b) Remove the igniter cooling shroud halves and left ignition lead from the igniter (TASK 74-21-02-000-801-G00).

(c) Remove the igniter cooling shroud halves and right ignition lead from the igniter (TASK 74-21-02-000-802-G00).

SUBTASK 73-11-05-000-065-G00

(3) Loosen the bifurcation drain manifold [265] as follows (View D, E, F, and R, Figure 410):

WARNING THE OIL SUPPLY MANIFOLD IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL OR INSTALLATION TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Disconnect the B-nut on anti-ice drain tube [269].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(b) Disconnect the B-nut [303] at the ACC valve drain tube [291].

(c) Remove the two bolts [266] that attach the strap clamp [267] and bifurcation drain manifold [265] to the support bracket [268].

(d) Disconnect the bifurcation drain manifold [265] at four locations in the TCF/HPT area [304] and B-nuts at the FWD end of the manifold (View D, Figure 410).

(e) Remove the bolt [309] that attaches the bifurcation drain manifold [265] to the bracket [308].

(f) Remove the bolt [481] that attaches the clamp [482] to the bifurcation drain manifold [265].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(g) Remove the two bolts [266] that attach the block clamp [651], drain tube [652], drain tube [653], drain tube [654], drain tube [655] to the support bracket [268].

SIA ALL

(h) Remove the two bolts [297] that attach the two loop clamps [298] and ignition lead [296] to the sense line bracket [397].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(i) Disconnect the drain tube [652], drain tube [653], drain tube [654], and drain tube [655] from the bifurcation drain manifold [265] and from the AFT end that connects the drain tubes to the auxiliary drain oil tube [305], C drain oli tube [306], and B drain oil tube [307].

SIA ALL

SUBTASK 73-11-05-000-066-G00

(4) Do these steps to remove the ACC valve drain tube [291] :

(a) Loosen the B-nut [303] on the ACC valve drain tube [291] at the bifurcation drain manifold [265].

(b) Remove the bolt [292] that attaches the loop clamp [293] to the fuel manifold bracket [142].

(c) Remove the bolt [294] that attaches the loop clamp [295] to the tube bracket [148].

(d) Disconnect the drain tube [435] B-nut from the ACC valve drain tube [291].

SUBTASK 73-11-05-000-067-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the 4th stage air manifold [419] as follows (View E, X, Y, and Z, Figure 411):

(a) Disconnect the Low Pressure Turbine (LPT) air supply tube B-nut [425] from the 4th stage air manifold [419].

(b) Remove the coupling clamp [422] that attaches the 4th stage air manifold [419] to the air adapter [426].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(c) Remove the two bolts [420] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(d) Remove the two bolts [615A] and strap clamp [616A] that attach the 4th stage air manifold [419] to the bracket [617A].

SIA ALL

(e) Remove the four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

(f) Discard the seal [415] from the 4th stage air manifold [419] or the compressor case [65].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Discard the seal [423] from the 4th stage air manifold [419] or the air adapter [426].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-000-068-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the oil tube [662] as follows (View A, S, T, U, V, W, X, and Y, Figure 410):

(a) Disconnect the oil tube [662] at its FWD end from the oil tube [664] and oil tube [663].

(b) Disconnect the oil tube [662] at the TCF area from the air adapter [426].

(c) Remove the bolt [668] from the clamp [669] that attaches the oil tube [662] to the support bracket [670].

(d) Remove the bolt [668] from the clamp [669] that attaches the oil tube [662] to the support bracket [671].

(e) Remove the bolts [668] from the clamp [669] that attach the oil tube [662] to the bracket [674].

(f) Remove the bolt [668] from the clamp [669] that attaches the oil tube [662] to the bracket [675] .

(g) Remove the bolt [668] from the clamp [669] that attaches the oil tube [662] to the bracket [676].

(h) Remove the bolt [668] from the clamp [669] that attaches the oil tube [662] to the bracket [677].

SIA ALL

SUBTASK 73-11-05-000-069-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the oil tube [661] as follows (View A, S, T, U, V, W, and X, Figure 410):

(a) Disconnect the oil tube [661] at the FWD end from the oil tube [666].

(b) Disconnect the oil tube [661] at the AFT end from tube from the oil tube [678].

(c) Remove the bolt [672] from the clamp [673] that attaches the oil tube [661] to the support bracket [671].

(d) Remove the bolts [672] from the clamps [673] that attach the oil tube [661] to the bracket [674].

(e) Remove the bolt [672] from the clamp [673] that attaches the oil tube [661] to the bracket [675].

(f) Remove the bolt [672] from the clamp [673] that attaches the oil tube [661] to the bracket [676].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-070-G00

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(8) Remove the fuel manifold [376] and fuel manifold [377] from the fuel nozzle [1] (positions 7, 8, and 10) (View G, Figure 410).

(a) Disconnect the fuel manifold [376] from the fuel nozzle [1] (positions 7, 8, and 10).

(b) Disconnect the fuel manifold [377] from the fuel nozzle [1] (positions 7, 8, and 10).

(c) Disconnect the B-nuts [395] that connect the fuel hose [376A] to fuel manifold [376] and fuel manifold [377] to fuel manifold [377A].

(d) Remove the two bolts [373] from the two loop clamps [374] that attach the fuel manifold [377] to the bracket [396].

(e) Remove the two bolts [373] from the two loop clamps [374] that attach the fuel manifold [376] to the bracket [396].

SUBTASK 73-11-05-000-071-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(9) Remove the fuel nozzle [1] (position 9) as follows (View C, Figure 410):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 9).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle position 9).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [2] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [2] with half a turn counterclockwise.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [2] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [2].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [2].
   a) Use a ratchet to turn the bolts [2] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [2] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [2] slowly.

      NOTE: If you remove the fuel nozzle bolts [2] too fast, they can get hot and seize.

   b) Turn the machine bolts [2] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [2] again.
   e) If the bolts [2] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [2].
7) Discard the fuel nozzle bolts [2].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(d) Remove the bracket [650].

SIA ALL

(e) Remove the fuel nozzle [1] (position 9) from the combustion case [5] as follows:
   1) Hold the fuel nozzle [1] (position 9) with your hand and move the mounting flange aft and down.

      NOTE: This will let you disengage the tip of the fuel nozzle [1] .from the combustor radial mixer (cup).

   2) Lift the fuel nozzle [1] (position 9) and move the mounting flange aft and down
   3) Turn the fuel nozzle [1] (position 9) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Remove and discard the seal [3] from the fuel nozzle [1] (position 9) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

Q. Fuel Nozzle Removal (Position 10)

SUBTASK 73-11-05-010-012-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the upper CDP duct assembly [25] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-072-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(2) Remove the 7-th stage air tube [310] as follows (View E, F, G, and H, Figure 411):

(a) Remove the four bolts [311] that attach the 7-th stage air tube [310] to the compressor case [65].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(b) Remove the four bolts [315] that attach the 7-th stage air tube [310] to the support bracket [313] and support bracket [314].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(c) Remove the bolts [611] that attach the block clamp [612] to the bracket [613].

(d) Remove the two bolts [614] that attach the bracket [613] to the support bracket [313].

(e) Remove the bracket [613].

(f) Remove the two bolts [615] and strap clamps [616] that attach the 7-th stage air tube [310] to the brackets [617].

SIA ALL

(g) Remove the four bolts [316] that attach the 7-th stage air tube [310] to the HPT port [318].

(h) Remove and discard the seal [312] from the 7-th stage air tube [310] or the compressor case [65].

(i) Remove and discard the seal [317] from the 7-th stage air tube [310] or the HPT port [318].

SUBTASK 73-11-05-000-073-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(3) Remove the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the HPT ACC valve drain tube [352] that you will remove (View W, Figure 411).

(b) Disconnect the HPT ACC valve drain tube [352] and B-nut [361] from the drain tube [436] and let the fuel drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Remove the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142] and fuel manifold bracket [144].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(d) Remove the bolt [362] that attaches the loop clamp [363] to the tube tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the bolt [362] that attaches the loop clamp [363] to the tube bracket [147].

SIA ALL

(f) Disconnect the B-nut [365] that attaches the HPT ACC valve drain tube [352] to the LPT ACC valve tube [364].

(g) Remove the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

(h) Remove the bolt [356] that attaches the loop clamp [357] to the ACC drain tube [358].

(i) Disconnect the B-nut [380] that attaches the HPT ACC valve drain tube [352] to the ACC valve [379].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-074-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(4) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-075-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-000-076-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the bolts [129] that attach the two loop clamps [130] to the bracket [202].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valves [124] (View CC).

(h) Remove the two bolts [134] and two bolts [131A] that attach the four loop clamps [135] to the manifold bracket [133].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold brackets [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL

SUBTASK 73-11-05-000-077-G00

(7) Remove the fuel manifold bracket [142] as follows (View N, Figure 406):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(a) Remove the three bolts [140] that attach the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143] with the three hinged loop clamps [141].

(b) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(c) Remove the two bolts [140] that attach the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143] with the two hinged loop clamps [141].

(d) Remove the bolt [140A] that attaches the SBV TBV manifold [125] to the fuel manifold bracket [142] with a hinged loop clamps [141].

(e) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Remove the two bolts [140] that attach the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144] with the two hinged loop clamps [141].

(g) Remove the bolt [140] that attaches the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143] with a hinged loop clamps [141].

(h) Remove the bolt [179] that attaches the fuel manifold bracket [142] with a hinged loop clamps [141].

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-078-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(8) Remove the fuel nozzle [1] (position 10) as follows (View C, Figure 411):

(a) If the fuel nozzles are difficult to remove, these steps are recommended for easy removal:

NOTE: Fuel nozzles installed in positions 10, 11, and 12 can be difficult to remove. The steps that follow are recommended to help in the removal of the fuel nozzles.

1) Turn the fuel nozzle [1] (position 10) towards the right side (aft looking forward) of the engine and partially remove from the combustion case [5] by moving it towards the fuel nozzle [1] (position 9).

NOTE: You will not be able to remove the fuel nozzle [1] (position 10) completely at this time, but it is necessary to move to get access to the fuel nozzle [1] (position 11).

2) Remove the fuel nozzle [1] (position 11) from the combustion case [5] by turning it in the direction of the right side (aft looking forward) of the engine and moving it in the direction of the fuel nozzle [1] (position 10).

3) Move the fuel nozzle [1] (position 10) to its installed position on the combustion case [5].

4) Turn the fuel nozzle [1] (position 10) in the direction of the left side (ALF) of the engine and remove it from the combustion case [5] completely.

5) Remove the fuel nozzle [1] (position 12) from the combustion case [5] by turning it in the direction of the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 10).

(b) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 10).

(c) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 10).

(d) Remove the two bolts [373] that attach the loop clamps [374] to the support bracket [372].

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(e) Remove the four fuel nozzle bolts [366] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with the standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [366] with half a turn counterclockwise.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [366] again.
   a) Let the lubricant soak into the threads for another hour.
      NOTE: Do not use power tools when you remove the bolts [366].
4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [366].
   a) Use a ratchet to turn the bolts [366] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.
   NOTE: Exposed seals and removed fuel nozzle bolts [366] must be discarded during the removal process.
   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [366] slowly.
      NOTE: If you remove the fuel nozzle bolts [366] too fast, they can get hot and seize.
   b) Turn the machine bolts [366] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [366] again.
   e) If the bolts [366] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [366].
7) Discard the fuel nozzle bolts [366].

(f) Remove the fuel nozzle [1] (position 10) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 10) with your hand and move the mounting flange aft and down.
   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).
2) Lift the fuel nozzle [1] (position 10) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 10) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(g) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(h) Remove and discard the seal [378] from the fuel nozzles [1] (position 10) or the combustion case [5].

(i) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(k) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(l) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(m) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(n) Make a record of the engine TSN and CSN.

(o) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

R. Fuel Nozzle Removal (Position 11)

SUBTASK 73-11-05-010-013-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the upper CDP duct assembly [25] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-079-G00

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(2) Disconnect the electrical connector [438] from the fuel manifold pressure sensor [437] (TASK 70-00-01-910-803-G00) (View K, Figure 411).

SUBTASK 73-11-05-000-080-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(3) Remove the fuel manifold hose [329] as follows (View K, Figure 411):

NOTE: The fuel manifold hose [329] can also be identified as pilot primary and main enriched (PPMe) fuel manifold.

(a) Disconnect the fuel manifold hose [329] and B-nut [331] from the SCU [151]

(b) Remove the bolt [328] that attaches the loop clamp [330] and fuel manifold hose [329] to the support bracket [326].

SUBTASK 73-11-05-000-081-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(4) Remove the fuel tube hose [319] as follows (View K, Figure 411):

NOTE: The fuel tube hose [319] can also be identified as pilot secondary (Psec) fuel manifold.

(a) Disconnect the fuel tube hose [319] and B-nut [322] from the SCU [151].

(b) Remove the bolt [320] that attaches the loop clamp [321] and fuel tube hose [319] to the support bracket [326].

SUBTASK 73-11-05-000-082-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(5) Remove the fuel hose manifold [323] as follows (View J, K, M, and N, Figure 411):

NOTE: The fuel hose manifold [323] can also be identified as pilot primary and main non-enriched (PPMne) fuel manifold.

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below fuel hose manifold [323] you will remove.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Disconnect the fuel hose manifold [323] and B-nut [327] at the SCU [151] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Remove the bolt [324] that attaches the loop clamp [325] to the support bracket [326].

(d) Remove the bolt [338] that attaches the loop clamp [339] to the support bracket [340].

(e) Remove the bolt [341] that attaches the loop clamp [342] to the support bracket [343].

(f) Disconnect the fuel hose manifold [323] B-nut at the left primary fuel manifold [344] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Disconnect the fuel hose manifold [323] and B-nut [346] at the fuel tube [347] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

SUBTASK 73-11-05-000-083-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(6) Remove the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the HPT ACC valve drain tube [352] to be removed (View W).

(b) Disconnect the HPT ACC valve drain tube [352] and B-nut [361] from the drain tube [436] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Remove the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142] and fuel manifold bracket [144].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(d) Remove the bolt [362] that attaches the loop clamp [363] to the tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the bolt [362] that attaches the loop clamp [363] to the tube bracket [147].

SIA ALL

(f) Disconnect the B-nut [365] that attaches the HPT ACC valve drain tube [352] to the LPT ACC valve tube [364].

(g) Remove the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

(h) Remove the bolt [356] that attaches the loop clamp [357] to the ACC drain tube [358].

(i) Disconnect the B-nut [380] that attaches the HPT ACC valve drain tube [352] to the ACC valve [379].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-084-G00

CAUTION

MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-085-G00

(8) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-000-086-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(9) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the bolts [129] that attach the two loop clamps [130] to the bracket [202].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valves [124] (View CC).

(h) Remove the two bolts [134] and two bolts [131A] that attach the four loop clamps [135] to the manifold bracket [133].

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold brackets [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL

SUBTASK 73-11-05-000-087-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(10) Remove the fuel nozzle [1] (position 11) as follows (View C, Figure 412):

(a) If the fuel nozzles are difficult to remove, these steps are recommended for easy removal:

NOTE: Fuel nozzles installed in positions 10, 11, and 12 can be difficult to remove. The steps that follow are recommended to help in the removal of the fuel nozzles.

1) Turn the fuel nozzle [1] (position 10) towards the right side (aft looking forward) of the engine and partially remove from the combustion case [5] by moving it towards the fuel nozzle [1] (position 9).

NOTE: You will not be able to remove the fuel nozzle [1] (position 10) completely at this time, but it is necessary to move to get access to the fuel nozzle [1] (position 11).

2) Remove the fuel nozzle [1] (position 11) from the combustion case [5] by turning it in the direction of the right side (aft looking forward) of the engine and moving it in the direction of the fuel nozzle [1] (position 10).

3) Move the fuel nozzle [1] (position 10) to its installed position on the combustion case [5].

4) Turn the fuel nozzle [1] (position 10) in the direction of the left side (aft looking forward) of the engine and remove it from the combustion case [5] completely.

5) Remove the fuel nozzle [1] (position 12) from the combustion case [5] by turning it in the direction of the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 10).

(b) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 10).

(c) Remove the safety wire from the B-nuts [4] (at the fuel nozzle position 10).

(d) Remove the bolt [443] that attaches the loop clamps [442] and fuel manifold [440] to the fuel supply bracket [391].

(e) Remove the bolt [444] that attaches the loop clamp [441] and fuel manifold [439] to the fuel supply bracket [391].

(f) Remove the bolt [393] that attaches the fuel manifold bracket [394] to the fuel supply bracket [391].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(g) Remove the bolt [390] that attaches the tube bracket [147] to the fuel nozzle [1] (position 12).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(h) Remove the bolt [390] that attaches the tube bracket [147A] to the fuel nozzle [1] (position 12).

(i) Remove the bolt [390A] that attaches the tube bracket [147A] to the tube bracket [147].

SIA ALL

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(j) Remove the four fuel nozzle bolts [390] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [390] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [390] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [390].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [390].

a) Use a ratchet to turn the bolts [390] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [390] slowly.

NOTE: If you remove the fuel nozzle bolts [390] too fast, they can get hot and seize.

b) Turn the machine bolts [390] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

d) Loosen the bolts [390] again.

e) If the bolts [390] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [390].

7) Discard the fuel nozzle bolts [390].

(k) Remove the fuel nozzle [1] (position 11) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 11) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 11) and move the mounting flange aft and down.

3) Turn the fuel nozzle [1] (position 11) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(l) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(m) Remove and discard the seal [392] from the fuel nozzles [1] (position 11) or the combustion case [5].

(n) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(o) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(p) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(q) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(r) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(s) Make a record of the engine TSN and CSN.

(t) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

S. Fuel Nozzle Removal (Position 12)

SUBTASK 73-11-05-010-014-G00



WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the upper CDP duct assembly [25] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-088-G00

(2) Disconnect the electrical connector [438] from the fuel manifold pressure sensor [437] (TASK 70-00-01-910-803-G00), (View K, Figure 411).

SUBTASK 73-11-05-000-089-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(3) Remove the fuel tube hose [319] as follows (View K, N, and M, Figure 411):

NOTE: The fuel tube hose [319] can also be identified as pilot secondary (Psec) fuel manifold.

(a) Disconnect the fuel tube hose [319] and B-nut [322] at the SCU [151].

(b) Remove the bolt [320] that attaches loop clamp [321] and fuel tube hose [319] to the support bracket [326].

(c) Disconnect the fuel tube hose [319] at the fuel tube [382] and B-nut [381].

(d) Disconnect the fuel tube hose [319] and B-nut [348] from the fuel manifold [351].

(e) Remove the bolt [341] that attaches the loop clamp [342] and fuel tube hose [319] to the support bracket [343].

SUBTASK 73-11-05-000-090-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(4) Remove the fuel manifold hose [329] as follows (View K, Figure 411):

NOTE: The fuel manifold hose [329] can also be identified as pilot primary and main enriched (PPMe) fuel manifold.

(a) Disconnect the fuel manifold hose [329] and B-nut [331] from the SCU [151]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the bolt [328] that attaches the loop clamp [330] and fuel manifold hose [329] to the support bracket [326].

SUBTASK 73-11-05-000-091-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(5) Remove the fuel hose manifold [323] as follows (View K, N, and M, Figure 411):

NOTE: The fuel hose manifold [323] can also be identified as pilot primary and main non-enriched (PPMne) fuel manifold.

(a) Disconnect the fuel hose manifold [323] and B-nut [327] from the SCU [151].

(b) Remove the bolt [324] that attaches the loop clamp [325] and fuel hose manifold [323] to the support bracket [326].

(c) Disconnect the left primary fuel manifold [344] and B-nut [375] from the fuel hose manifold [323].

(d) Disconnect the fuel hose manifold [323] and B-nut [346] from the fuel tube [347].

(e) Remove the bolt [341] that attaches the loop clamps [342] and fuel hose manifold [323] to the support bracket [343].

(f) Remove the bolt [338] that attaches the loop clamp [339] and fuel hose manifold [323] to the support bracket [340].

SUBTASK 73-11-05-000-092-G00

(6) Remove the LPT ACC valve tube [364] as follows (View D, Figure 413):

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the LPT ACC valve tube [364] that you will remove.

(b) Disconnect the B-nut [430] from the HPT ACC valve drain tube [352] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Disconnect the B-nut [410] from the LPT ACC fuel manifold [469] and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(d) Remove the bolt [411] that attaches the loop clamp [412] to the drain tube bracket [413].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-093-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(7) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] that attach the two loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the tube bundle bracket [138] to the support bracket [139].

(h) Remove the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold brackets [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube brackets [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-000-094-G00

(8) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

(c) Remove the two bolts [131] that attach the loop clamps [132] to the CCC air manifold [120].

(d) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(e) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(f) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(g) Remove the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(h) Remove the two bolts [140] and bolt [140A] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(i) Remove the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(j) Remove the four bolts [145] that attach the four hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(k) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(l) Remove and discard the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-000-095-G00

(9) Remove the SBV TBV manifold [125] as follows (View J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Remove the two bolts [126] that attach the two loop clamps [127] to the bracket [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [129] that attach the two loop clamps [130] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(c) Remove the two bolts [129] that attach the two loop clamps [130] to the bracket [202].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the two bolts [131] that attach the two loop clamps [132] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(e) Remove the two bolts [131] that attach the two loop clamps [132] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the TBV valve [123] (View CC).

(g) Disconnect the two B-nuts that attach the SBV TBV manifold [125] to the SBV valve [124] (View CC).

(h) Remove the two bolts [134] and two bolts [134A] that attach the four loop clamps [135] to the manifold bracket [133].

(i) Remove the three bolts [137] and bolt [137A] that attach the four loop clamps [136B] to the support bracket [139].

(j) Remove the two bolts [140] that attach the two hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(k) Remove the bolt [140] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142].

(l) Remove the bolt [179] that attaches the hinged loop clamp [141] to the fuel manifold bracket [142] to the fuel manifold bracket [143].

(m) Remove the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(n) Remove the bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(o) Remove the seal gasket [150] from the SBV TBV manifold [125] or the SCU [151].

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-096-G00

(10) Remove the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the HPT ACC valve drain tube [352] to be removed (View W, Figure 411).

(b) Disconnect the HPT ACC valve drain tube [352] and B-nut [361] from the drain tube [436] and drain into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Remove the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142] and fuel manifold bracket [144].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(d) Remove the bolt [362] that attaches the loop clamp [363] to the tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the bolt [362] that attaches the loop clamp [363] to the tube bracket [147].

SIA ALL

(f) Remove the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

(g) Remove the bolt [356] that attaches the loop clamp [357] to the ACC drain tube [358].

(h) Disconnect the B-nut [380] that attaches the HPT ACC valve drain tube [352] to the ACC valve [379].

SUBTASK 73-11-05-020-213-G00

(11) If it is necessary, remove the left MTC valve (TASK 75-23-02-000-801-G00).

SUBTASK 73-11-05-000-097-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(12) Remove the fuel nozzle [1] (position 12) as follows (View C, Figure 413):

NOTE: Fuel nozzles installed in positions 10, 11, and 12 can be difficult to remove. The steps that follow are recommended for easy removal:

(a) If the fuel nozzles are difficult to remove, these steps are recommended for easy removal:

NOTE: Fuel nozzles installed in positions 10, 11, and 12 can be difficult to remove. The steps that follow are recommended to help in the removal of the fuel nozzles.

1) Turn the fuel nozzle [1] (position 10) towards the right side (aft looking forward) of the engine and partially remove from the combustion case [5] by moving it towards the fuel nozzle [1] (position 9).

NOTE: You will not be able to remove the fuel nozzle [1] (position 10) completely at this time, but it is necessary to move to get access to the fuel nozzle [1] (position 11).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Remove the fuel nozzle [1] (position 11) from the combustion case [5] by turning it in the direction of the right side (aft looking forward) of the engine and moving it in the direction of the fuel nozzle [1] (position 10).

3) Move the fuel nozzle [1] (position 10) to its installed position on the combustion case [5].

4) Turn the fuel nozzle [1] (position 10) in the direction of the left side (aft looking forward) of the engine and remove it from the combustion case [5] completely.

5) Remove the fuel nozzle [1] (position 12) from the combustion case [5] by turning it in the direction of the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 10).

(b) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 12).

(c) Remove the safety wire from the B-nuts [4] (at the fuel nozzle position 12).

(d) Remove the bolt [427] that attaches the tube bracket [147] to the fuel nozzle [1] (position 11).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the bolt [427] that attaches the tube bracket [147] to the fuel nozzle [1] (position 12).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(f) Remove the bolt [427] that attaches the tube bracket [147A] to the fuel nozzle [1] (position 12).

(g) Remove the bolt [390A] that attaches the tube bracket [147A] to the tube bracket [147].

SIA ALL

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(h) Remove the four fuel nozzle bolts [427] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [427] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [427] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [427].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [427].
   a) Use a ratchet to turn the bolts [427] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [427] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [427] slowly.

      NOTE: If you remove the fuel nozzle bolts [427] too fast, they can get hot and seize.

   b) Turn the machine bolts [427] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [427] again.
   e) If the bolts [427] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [427].
7) Discard the fuel nozzle bolts [427].

(i) Remove the fuel nozzle [1] (position 12) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 12) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 12) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 12) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(j) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(k) Remove and discard the seal [429] from the fuel nozzle [1] (position 12) or the combustion case [5].

(l) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(m) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(n) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(o) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(p) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(q) Make a record of the engine TSN and CSN.

(r) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

ECCN 9E991 BOEING PROPRIETARY - See title page for details

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

T. Fuel Nozzle Removal (Position 13)

SUBTASK 73-11-05-020-214-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the upper CDP duct assembly [25] to get access (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-098-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

(2) Remove the 4th stage air manifold [419] as follows (View E, F, G, H, and J, Figure 413):

(a) Disconnect the LPT air supply tube [424] and B-nut [425] from the 4th stage air manifold [419].

(b) Remove the coupling clamp [422] that attaches the 4th stage air manifold [419] to the air adapter [426].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0006

(c) Remove the two bolts [420] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0006

(d) Remove the two bolts [628] and strap clamp [629] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

SIA ALL

(e) Remove the two bolts [416] that attach the strap clamp [417] to the support bracket [418].

(f) Remove the four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

(g) Discard the seal [415] from the 4th stage air manifold [419] or the compressor case [65].

(h) Discard the seal [423] from the 4th stage air manifold [419] or air adapter [426].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-099-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

(3) Remove the 7th-stage air manifold [452] as follows (View D, E, F, G, H, and J, Figure 414):

(a) Disconnect the air tube [460] and B-nut [461] from the 7th-stage air manifold [452].

(b) Remove the four bolts [453] that attach the 7th-stage air manifold [452] to the compressor case [65].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(c) Remove the two bolts [450] that attach the 7th-stage air manifold [452] to the support bracket [451].

(d) Remove the two bolts [455] that attach the 7th-stage air manifold [452] to the support bracket [456].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(e) Remove the two bolts [624] and strap clamp [625] that attach the 7th-stage air manifold [452] to the support bracket [451].

(f) Remove the two bolts [626] and strap clamp [627] that attach the 7th-stage air manifold [452] to the support bracket [456].

SIA ALL

(g) Remove the four bolts [457] that attach the 7th-stage air manifold [452] to the HPT port [459].

(h) Discard the seal [454] from the 7th-stage air manifold [452] or the compressor case [65].

(i) Discard the seal [458] from the 7th-stage air manifold [452] or the HPT port [459].

SUBTASK 73-11-05-000-100-G00

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(4) Remove the LPT ACC valve tube [364] as follows (View D, Figure 413):

(a) Remove the bolt [411] that attaches the loop clamp [412] to the drain tube bracket [413].

(b) Disconnect the LPT ACC valve tube [364] and B-nut [430] that attaches the LPT ACC valve tube [364] to the HPT ACC valve drain tube [352].

(c) Disconnect the LPT ACC valve tube [364] and B-nut [410] from the LPT ACC fuel manifold [469].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-101-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the LPT ACC fuel manifold [469] as follows (View K, L, and M, Figure 414):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(a) Remove the two bolts [466] that attach the loop clamps [467] to the support bracket [468].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(b) Remove the two bolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

SIA ALL

(c) Disconnect the LPT ACC valve tube [364] and B-nut [465] from the LPT ACC fuel manifold [469].

(d) Disconnect the LPT ACC fuel manifold [469] and B-nut [463] from the hydraulic fuel manifold [462].

(e) Remove the four bolts [470] that attach the LPT ACC fuel manifold [469] to the ACC valve [472].

(f) Remove and discard the flange seal gasket [471].

SUBTASK 73-11-05-020-215-G00

(6) If it is necessary, remove the left MTC valve (TASK 75-23-02-000-801-G00).

SUBTASK 73-11-05-000-102-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(7) Remove the fuel nozzle [1] (position 13) as follows (View C, Figure 414):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 13).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 13).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [474] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [474] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [474] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [474].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [474].

a) Use a ratchet to turn the bolts [474] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [474] must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [474] slowly.

NOTE: If you remove the fuel nozzle bolts [474] too fast, they can get hot and seize.

b) Turn the machine bolts [474] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [474] again.

e) If the bolts [474] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [474].

7) Discard the fuel nozzle bolts [474].

(d) Remove the bolt [474] that attaches the drain tube bracket [428] to the fuel nozzle [1] (position 12).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Remove the fuel nozzle [1] (position 13) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 13) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 13) and move the mounting flange aft and down

3) Turn the fuel nozzle [1] (position 13) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Remove and discard the seal [475] from the fuel nozzle [1] (position 13) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

U. Fuel Nozzle Removal (Position 14)

SUBTASK 73-11-05-020-216-G00

WARNING THE ECS DUCT IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the upper CDP duct assembly [25] to get access (TASK 36-11-01-000-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-103-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(2) Remove the LPT ACC fuel manifold [469] as follows (View K, L, and M, Figure 414):

(a) Disconnect the LPT ACC valve tube [364] and B-nut [473] from the LPT ACC fuel manifold [469].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(b) Remove the two bolts [466] that attach the loop clamps [467] to the support bracket [468].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(c) Remove the two bolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

SIA ALL

(d) Disconnect the LPT ACC fuel tube [464] and B-nut [465] from the LPT ACC fuel manifold [469].

(e) Disconnect the LPT ACC fuel manifold [469] and B-nut [463] from the hydraulic fuel manifold [462].

(f) Remove the four bolts [470] that attach the LPT ACC fuel manifold [469] to the ACC valve [472].

(g) Remove and discard the flange seal gasket [471].

SUBTASK 73-11-05-000-104-G00

(3) Remove the Low Pressure Turbine Active Clearance Control (LPTACC) valve (TASK 75-24-01-000-801-G00).

SUBTASK 73-11-05-000-105-G00

(4) Remove the ACC wye duct (TASK 75-24-01-000-801-G00).

SUBTASK 73-11-05-000-106-G00

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(5) Remove the 7th-stage air manifold [452] as follows (View D, E, F, G, H, and J, Figure 414):

(a) Disconnect the air tube [460] and B-nut [461] from the 7th-stage air manifold [452].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the four bolts [453] that attach the 7th-stage air manifold [452] to the compressor case [65].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(c) Remove the two bolts [450] that attach the 7th-stage air manifold [452] to the support bracket [451].

(d) Remove the two bolts [455] that attach the 7th-stage air manifold [452] to the support bracket [456].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(e) Remove the two bolts [624] and strap clamp [625] that attach the 7th-stage air manifold [452] to the support bracket [451].

(f) Remove the bolts [626] and strap clamp [627] that attach the 7th-stage air manifold [452] to the support bracket [456].

SIA ALL

(g) Remove the four bolts [457] that attach the 7th-stage air manifold [452] to the HPT port [459].

(h) Discard the seal [454] from the 7th-stage air manifold [452] or the compressor case [65].

(i) Discard the seal [458] from the 7th-stage air manifold [452] or the HPT port [459].

SUBTASK 73-11-05-000-107-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(6) Remove the fuel nozzle [1] (position 14) as follows (View C, Figure 415):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 14).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 14).

(c) Remove the two bolts [502] that attach the two loop clamps [503] to the support bracket [501].

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(d) Remove the four fuel nozzle bolts [500] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [500] with half a turn counterclockwise.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [500] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [500].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [500].
   a) Use a ratchet to turn the bolts [500] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [500] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [500] slowly.

      NOTE: If you remove the fuel nozzle bolts [500] too fast, they can get hot and seize.

   b) Turn the machine bolts [500] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [500] again.
   e) If the bolts [500] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [500].
7) Discard the fuel nozzle bolts [500].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the two bolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

SIA ALL

(f) Remove the fuel nozzle [1] (position 14) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 14) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 14) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 14) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(h) Remove and discard the seal [506] from the fuel nozzle [1] (position 14) or the combustion case [5].

(i) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(j) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(k) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(l) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(m) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(n) Make a record of the engine TSN and CSN.

(o) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

V. Fuel Nozzle Removal (Position 15)

SUBTASK 73-11-05-000-108-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the two bolts [525A] that attach the LPTACC valve [526B] to the support bracket [526] and support bracket [526A] (View E, Figure 416).

SUBTASK 73-11-05-000-109-G00

(2) Remove the High Pressure Turbine Active Clearance Control (HPTACC) valve (TASK 75-24-04-000-801-G00.

SUBTASK 73-11-05-000-110-G00

(3) Remove the ACC wye duct (TASK 75-24-01-000-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-111-G00

(4) Remove the bolt [525] that attaches the support bracket [526] to the support bracket [527] (View E, Figure 416).

(a) Remove the support bracket [526] from the engine.

SUBTASK 73-11-05-000-112-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(5) Remove the fuel nozzle [1] (position 15) as follows (View C, Figure 416):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 15).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 15).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [520] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [520] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [520] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [520].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [520].

a) Use a ratchet to turn the bolts [520] slowly.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [520] must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [520] slowly.

NOTE: If you remove the fuel nozzle bolts [520] too fast, they can get hot and seize.

b) Turn the machine bolts [520] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [520] again.

e) If the bolts [520] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [520].

7) Discard the fuel nozzle bolts [520].

(d) Remove the support bracket [468] with the support bracket [521] and support bracket [522] attached.

(e) Remove the fuel nozzle [1] (position 15) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 15) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 15) and move the mounting flange aft and down.

3) Turn the fuel nozzle [1] (position 15) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Remove and discard the seal [524] from the fuel nozzle [1] (position 14) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

W. Fuel Nozzle Removal (Position 16)

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

SUBTASK 73-11-05-000-113-G00

(1) Remove the HPTACC valve (TASK 75-24-04-000-801-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

SUBTASK 73-11-05-000-114-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(2) Disconnect the fuel hydraulic manifold [447] as follows (View D, E, F, G, and H, Figure 417):

(a) Remove the four bolts [448] that attach the fuel hydraulic manifold [447] to the SCU [151].

(b) Disconnect the fuel hydraulic manifold [447] B-nut from the ACC fuel tube [446].

(c) Disconnect the fuel hydraulic manifold [447] B-nut from the hydraulic fuel tube [529].

(d) Disconnect the hydraulic fuel tube [528]B-nut from the fuel hydraulic manifold [447].

(e) Disconnect the LPT ACC fuel manifold [469] B-nut from the fuel hydraulic manifold [447].

(f) Disconnect the fuel hydraulic manifold [447] B-nut from the fuel manifold [588].

(g) Disconnect the fuel manifold [588] B-nut from the fuel hydraulic manifold [447].

(h) Remove the three bolts [478] that attach the three loop clamps [477] and fuel hydraulic manifold [447] to the support bracket [445].

(i) Remove the bolt [530] that attaches the loop clamp [531] and fuel hydraulic manifold [447] to the support bracket [532].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124 (Continued)

(j) Remove the bolt [549] that attaches the loop clamp [548] and fuel hydraulic manifold [447] to the support bracket [550].

(k) Remove the bolt [538] that attaches the loop clamp [539] and fuel hydraulic manifold [447] to the support bracket [550].

(l) Remove the bolt [536] that attaches the loop clamp [537] and fuel hydraulic manifold [447] to the support bracket [533].

(m) Remove the bolt [534] that attaches the loop clamp [535] and fuel hydraulic manifold [447] to the support bracket [533].

(n) Remove the bolt [552] that attaches the loop clamp [551] and fuel hydraulic manifold [447] to the support bracket [533].

(o) Remove the bolt [555] that attaches the loop clamp [554] and fuel hydraulic manifold [447] to the support bracket [533].

(p) Remove the bolt [557] that attaches the loop clamp [556] and fuel hydraulic manifold [447] to the support bracket [587].

(q) Remove the bolt [559] that attaches the loop clamp [558] and fuel hydraulic manifold [447] to the support bracket [587].

(r) Remove the bolt [592] that attaches the loop clamp [593] and fuel hydraulic manifold [447] to the support bracket [594].

(s) Remove the bolt [590] that attaches the loop clamp [591] and fuel hydraulic manifold [447] to the support bracket [594].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(t) Remove the bolt [589] that attaches the fuel hydraulic manifold [447] to the compressor case [65].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 AND PRE LEAP-1B SERVICE BULLETIN 75-0004

(u) Remove the bolt [589] that attaches the loop clamp [597A] and fuel hydraulic manifold [447] to the support bracket [599].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0004

(v) Remove the bolt [589] that attaches the loop clamp [597A] and fuel hydraulic manifold [447] to the support bracket [599A].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

(w) Remove the two bolts [598] that attach the two loop clamps [597] and fuel hydraulic manifold [447] to the support bracket [599].

(x) Remove and discard the gasket seal [476] from between the fuel hydraulic manifold [447] and SCU [151].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124

SUBTASK 73-11-05-000-115-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(3) Disconnect the fuel hydraulic manifold [447] as follows (View D, E, F, and G, Figure 417):

(a) Remove the four bolts [448] that attach the fuel hydraulic manifold [447] to the SCU [151].

(b) Disconnect the fuel hydraulic manifold [447] B-nut from the ACC fuel tube [446].

(c) Disconnect the fuel hydraulic manifold [447] B-nut from the hydraulic fuel tube [528].

(d) Disconnect the fuel hydraulic manifold [447] B-nuts from the hydraulic fuel tube [529] at two locations.

(e) Remove the two bolts [478] that attach the fuel hydraulic support block [477], fuel hydraulic manifold [447], and ACC fuel tube [446] to the support bracket [445].

(f) Remove the bolt [538] that attaches the loop clamp [539] and fuel hydraulic manifold [447] to the support bracket [550].

(g) Remove the two bolts [534] that attach the two loop clamps [535] and fuel hydraulic manifold [447] to the support bracket [533].

(h) Remove and discard the gasket seal [476] from between the fuel hydraulic manifold [447] and SCU [151].

SIA ALL

SUBTASK 73-11-05-000-116-G00

(4) Remove the T3 sensor (TASK 73-21-64-000-801-G00).

SUBTASK 73-11-05-000-117-G00

(5) Disconnect the EGT sensor harness 1 and 2 as follows (TASK 77-21-04-000-801-G00 and TASK 77-21-05-000-801-G00):

(a) Disconnect the EGT sensor harness 1 and 2 at the connectors.

(b) Remove the EGT sensor harnesses from the mounting bracket.

SUBTASK 73-11-05-000-118-G00

(6) Disconnect the turbine center frame accelerometer at the connector and remove the turbine center frame accelerometer from the mounting bracket as follows:

(a) Do the applicable steps in this task: Turbine Center Frame Accelerometer Removal, TASK 77-31-06-000-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-119-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(7) Remove the fuel nozzle [1] (position 16) as follows (View C and J, Figure 417):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 16).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 16).

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(c) Remove the four fuel nozzle bolts [540] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [540] with half a turn counterclockwise.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [540] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [540].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [540].

a) Use a ratchet to turn the bolts [540] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [540] must be discarded during the removal process.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [540] slowly.

NOTE: If you remove the fuel nozzle bolts [540] too fast, they can get hot and seize.

b) Turn the machine bolts [540] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [540] again.

e) If the bolts [540] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [540].

7) Discard the fuel nozzle bolts [540].

(d) Remove the two bolts [543] that attach EGT harness [542] and two loop clamps [544] to the support bracket [541].

(e) Remove the bolt [545] that attaches the loop clamp [546] and T3 sensor [595] to the support bracket [541].

(f) Remove the bolt [545A] that attaches the loop clamp [546A] and TCF accelerometer cable [595A] to the support bracket [541].

(g) Remove the two bolts [596] that attach the support bracket [541] to the support bracket [584].

(h) Remove the fuel nozzle [1] (position 16) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 16) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 16) and move the mounting flange aft and down.

3) Turn the fuel nozzle [1] (position 16) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(i) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(j) Remove and discard the seal [547] from the fuel nozzle [1] (position 14) or the combustion case [5].

(k) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(l) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(m) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(n) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(o) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(p) Make a record of the engine TSN and CSN.

(q) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Customer Support
7777 North Glen Harbor Blvd.
Glendale, AZ 85307
Phone: (623) 872-6160
U.S.A.

X. Fuel Nozzle Removal (Position 17)

SUBTASK 73-11-05-000-120-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

(1) Remove the 4th-stage cooling air manifold [560] as follows (View D, E, F, G, H, and J, Figure 418):

(a) Disconnect the 4th-stage cooling air manifold [560] at the 4th-stage air tube [570] and B-nut [569].

(b) Remove the bolt [566] that attaches the loop clamp [567] to the support bracket [568].

(c) Remove the coupling clamp [571] that attaches the 4th-stage cooling air manifold [560] to the adapter [573].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0008

(d) Remove the two bolts [564] that attach the 4th-stage cooling air manifold [560] to the support bracket [565].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0008

(e) Remove the two bolts [620] and strap clamp [621] that attach the 4th-stage cooling air manifold [560] to the support bracket [565].

SIA ALL

(f) Remove the two bolts [561] that attach the support bracket [562] and 4th-stage cooling air manifold [560] to the compressor case [65].

(g) Remove the remaining two bolts [561] that attach the 4th-stage cooling air manifold [560] to the compressor case [65].

(h) Remove the seal [563] from the 4th-stage cooling air manifold [560] or the compressor case [65].

(i) Remove the seal [572] from the 4th-stage cooling air manifold [560] or the adapter.

SUBTASK 73-11-05-000-121-G00

(2) Remove the 7th-stage air tube [574] as follows (View D, K, L, M, and N, Figure 418):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the four bolts [579] that attach the 7th-stage air tube [574] to the support bracket [578] and HPT port [581].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0008

(b) Remove the two bolts [577] that attach the 7th-stage air tube [574] to the support bracket [565].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0008

(c) Remove the two bolts [623] and strap clamp [622] that attach the 7th-stage air tube [574] to the support bracket [565].

SIA ALL

(d) Remove the four bolts [575] that attach the 7th-stage air tube [574] to the compressor case extension.

(e) Remove the seal [576] from the 7th-stage air tube [574] or the HPC extension case [101].

(f) Remove the seal [580] from the 7th-stage air tube [574] or the HPT port [581].

SUBTASK 73-11-05-000-122-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(3) Remove the fuel nozzle [1] (position 17) as follows (View C, Figure 418):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 17).

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 17).

(c) Remove the two bolts [582] that attach the two loop clamps [583] to the support bracket [581A].

(d) Remove the two bolts [596] that attach the support bracket [541] to the support bracket [584].

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(e) Remove the four fuel nozzle bolts [585] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [585] with half a turn counterclockwise.

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WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [585] again.
   a) Let the lubricant soak into the threads for another hour.

      NOTE: Do not use power tools when you remove the bolts [585].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [585].
   a) Use a ratchet to turn the bolts [585] slowly.
5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

   NOTE: Exposed seals and removed fuel nozzle bolts [585] must be discarded during the removal process.

   a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [585] slowly.

      NOTE: If you remove the fuel nozzle bolts [585] too fast, they can get hot and seize.

   b) Turn the machine bolts [585] counterclockwise for 3 revolutions.
   c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.
   d) Loosen the bolts [585] again.
   e) If the bolts [585] cannot be removed, repeat the steps above.
6) Remove the four fuel nozzle bolts [585].
7) Discard the fuel nozzle bolts [585].

(f) Remove the fuel nozzle [1] (position 17) from the combustion case [5] as follows:
1) Hold the fuel nozzle [1] (position 17) with your hand and move the mounting flange aft and down.

   NOTE: This will let you disengage the tip of the fuel nozzle [1] from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 17) and move the mounting flange aft and down.
3) Turn the fuel nozzle [1] (position 17) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(g) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(h) Remove and discard the seal [586] from the fuel nozzle [1] (position 14) or the combustion case [5].

(i) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(k) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(l) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(m) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(n) Make a record of the engine TSN and CSN.

(o) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

Y. Fuel Nozzle Removal (Position 18)

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

SUBTASK 73-11-05-010-015-G00

(1) If necessary to get access, do this task: Bleed Air Precooler Removal with Engine Installed, TASK 36-12-01-000-802.

NOTE: It is possible to remove fuel nozzles in position 1 and 18 without disconnecting the bleed air precooler but access is limited. If additional access is desired, disconnect the bleed air precooler.

SUBTASK 73-11-05-000-123-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(2) Remove the fuel nozzle [1] (position 18) as follows (View C, Figure 419):

(a) Disconnect the PPM and PS B-nuts [4] from the fuel nozzle [1] (position 18).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the safety wire from the B-nuts [4] (at the fuel nozzle [1] position 18).

(c) Remove the two bolts [602] that attach the B-nuts [4] and two loop clamps [603] to the bracket [601].

CAUTION

BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(d) Remove the four fuel nozzle bolts [600] as follows:

1) After one hour passes, carefully shock the fuel nozzle bolt heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

2) Loosen the torque of the fuel nozzle bolts [600] with half a turn counterclockwise.

WARNING

REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION

DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

3) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts [600] again.

a) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts [600].

4) After the second hour of the second soak, start the removal of the fuel nozzle bolts [600].

a) Use a ratchet to turn the bolts [600] slowly.

5) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts [600] must be discarded during the removal process.

a) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts [600] slowly.

NOTE: If you remove the fuel nozzle bolts [600] too fast, they can get hot and seize.

b) Turn the machine bolts [600] counterclockwise for 3 revolutions.

c) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt holes.

d) Loosen the bolts [600] again.

e) If the bolts [600] cannot be removed, repeat the steps above.

6) Remove the four fuel nozzle bolts [600].

7) Discard the fuel nozzle bolts [600].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Remove the fuel nozzle [1] (position 18) from the combustion case [5] as follows:

1) Hold the fuel nozzle [1] (position 18) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle from the combustor radial mixer (cup).

2) Lift the fuel nozzle [1] (position 18) and move the mounting flange aft and down

3) Turn the fuel nozzle [1] (position 18) 180 degrees to remove the fuel nozzle [1] from the combustion case port.

(f) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(g) Remove and discard the seal [604] from the fuel nozzle [1] (position 14) or the combustion case [5].

(h) Install protective covers on the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(i) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case [5].

(j) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzle [1].

(k) Place the removed fuel nozzle [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(l) Make a record of the serial number and related cup position of the removed fuel nozzle [1].

(m) Make a record of the engine TSN and CSN.

(n) Send the removed fuel nozzle [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

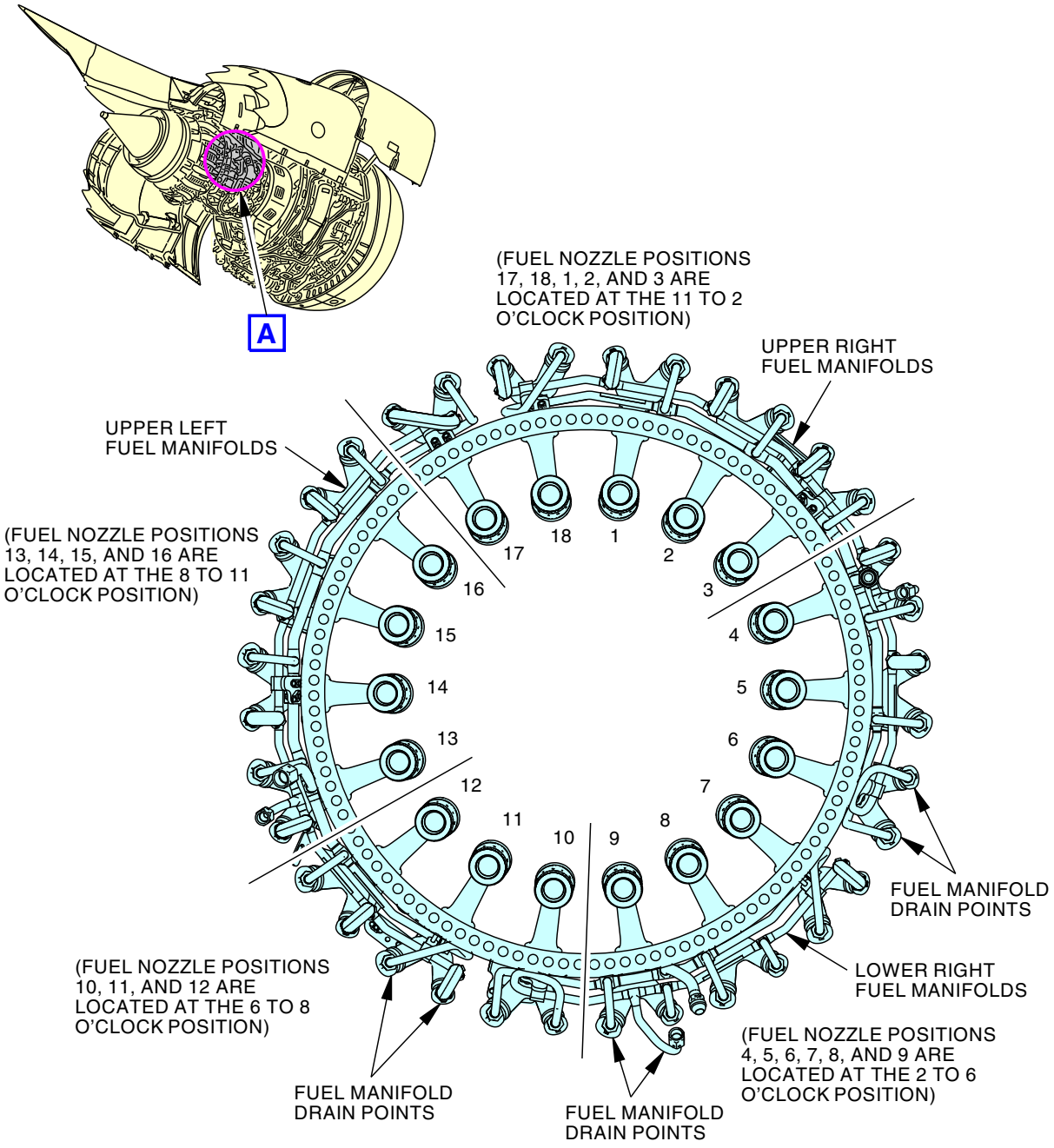
Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

——— END OF TASK ———

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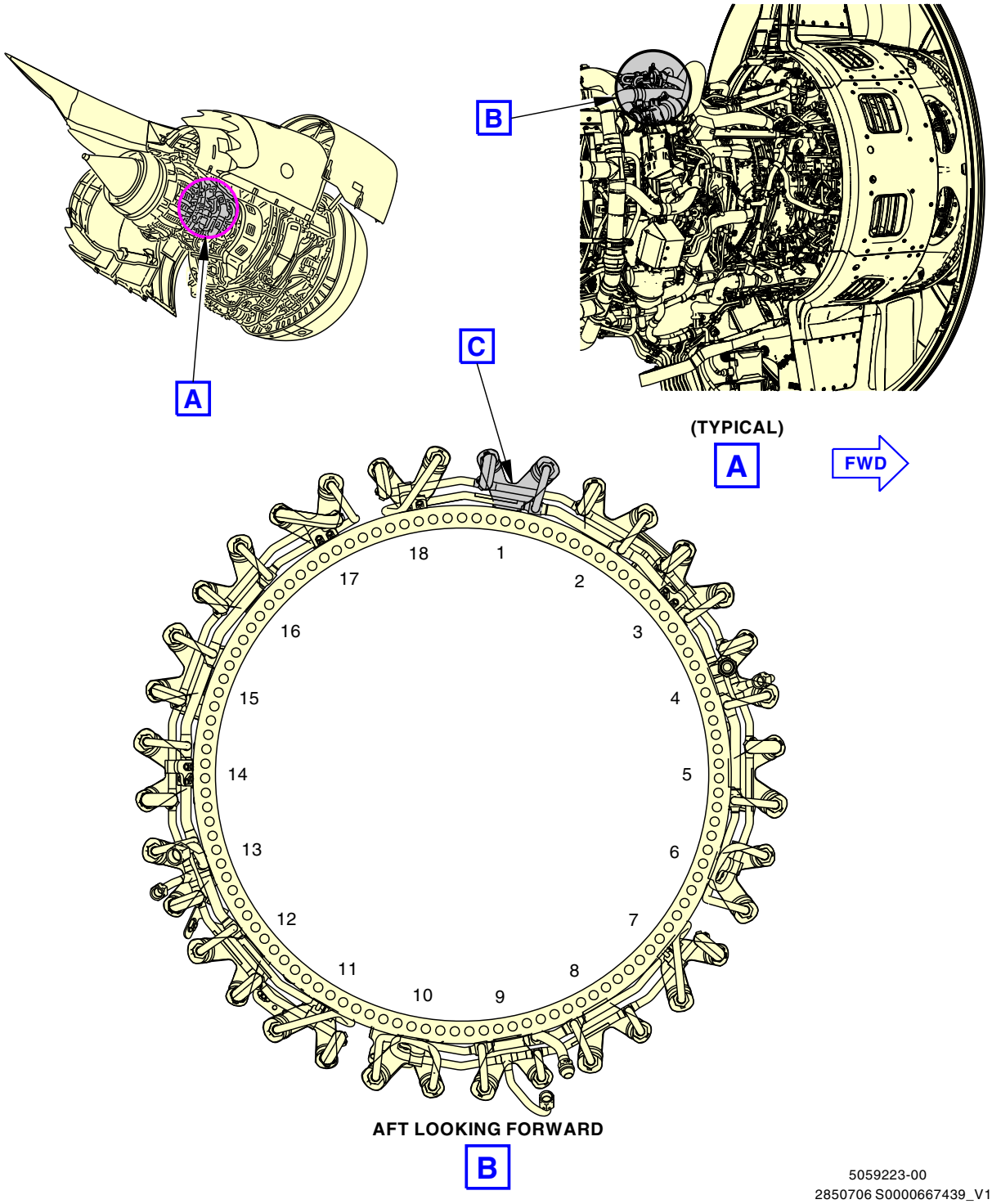


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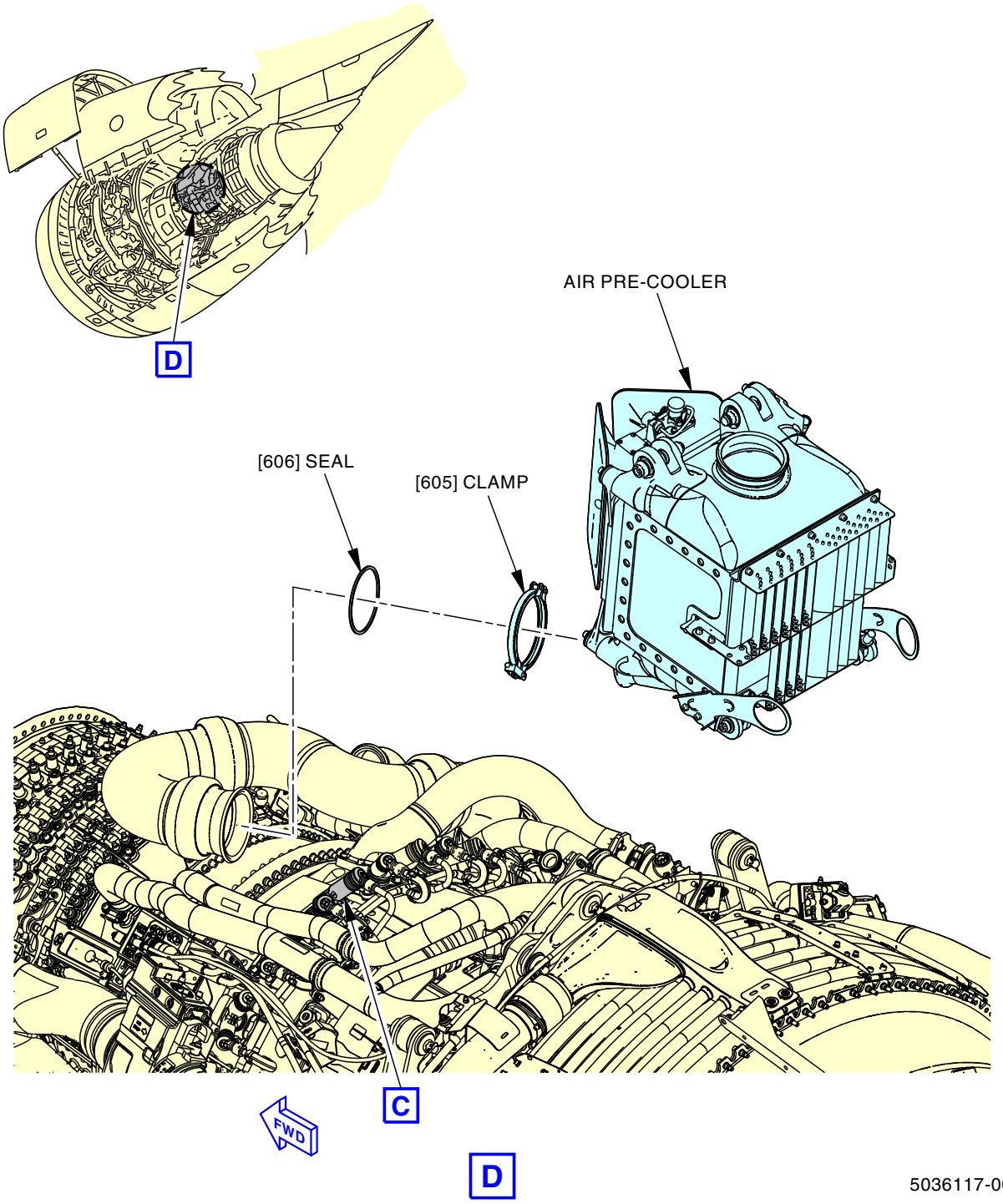
Fuel Nozzle Positions and Fuel Manifold Drain Points
Figure 401/73-11-05-990-887-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



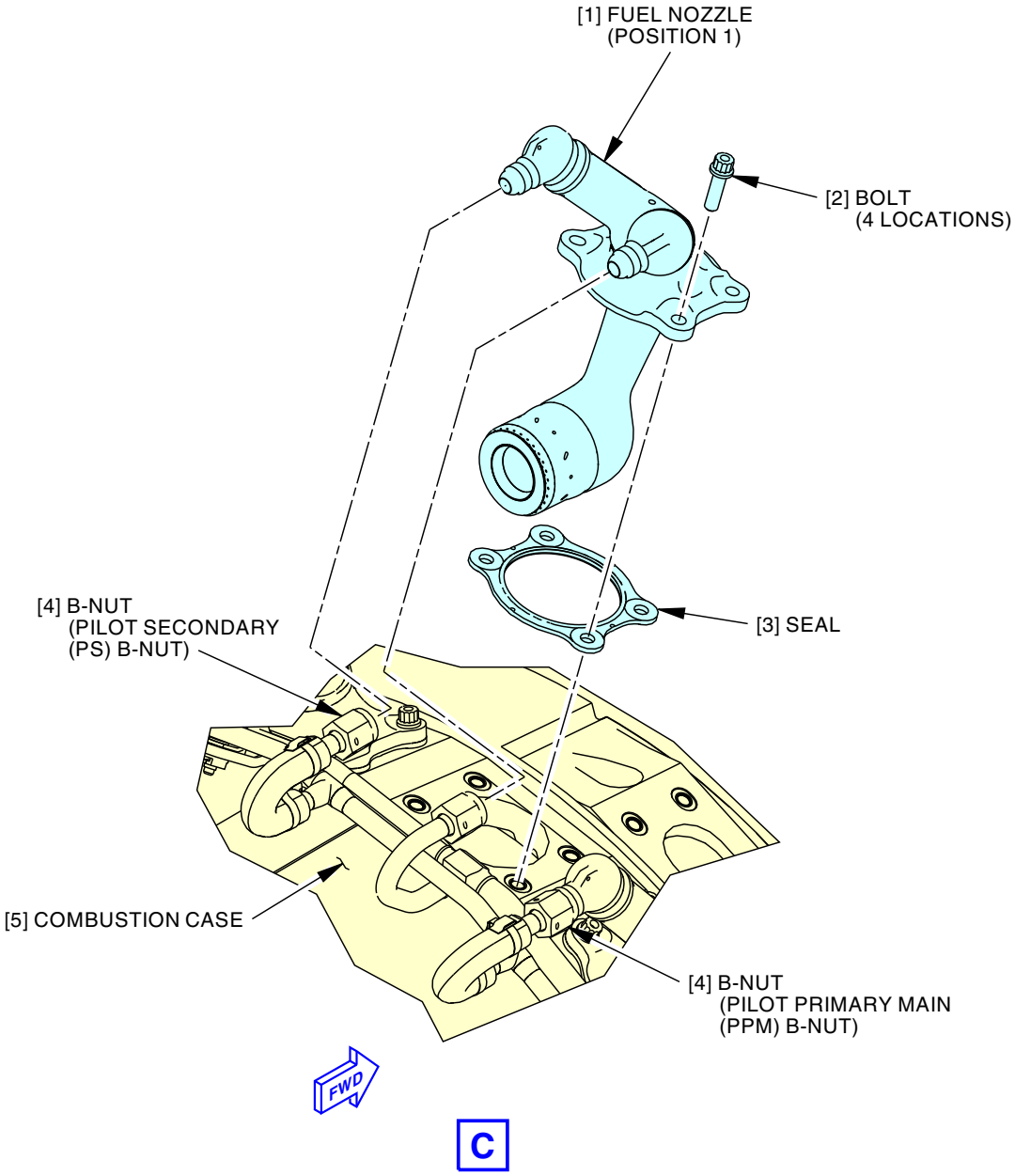
Fuel Nozzle (Position 1) Installation
Figure 402/73-11-05-990-888-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



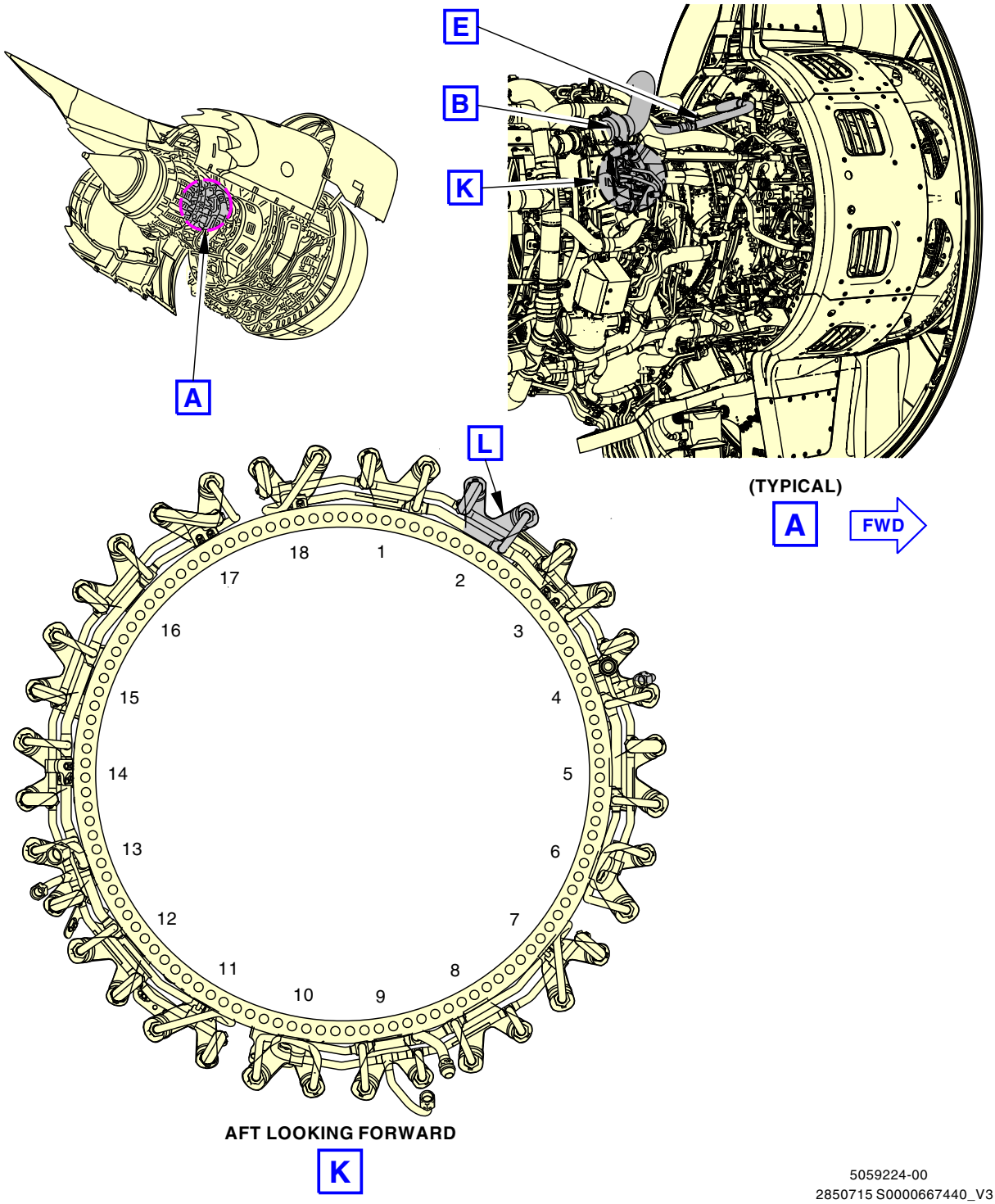
Fuel Nozzle (Position 1) Installation
Figure 402/73-11-05-990-888-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



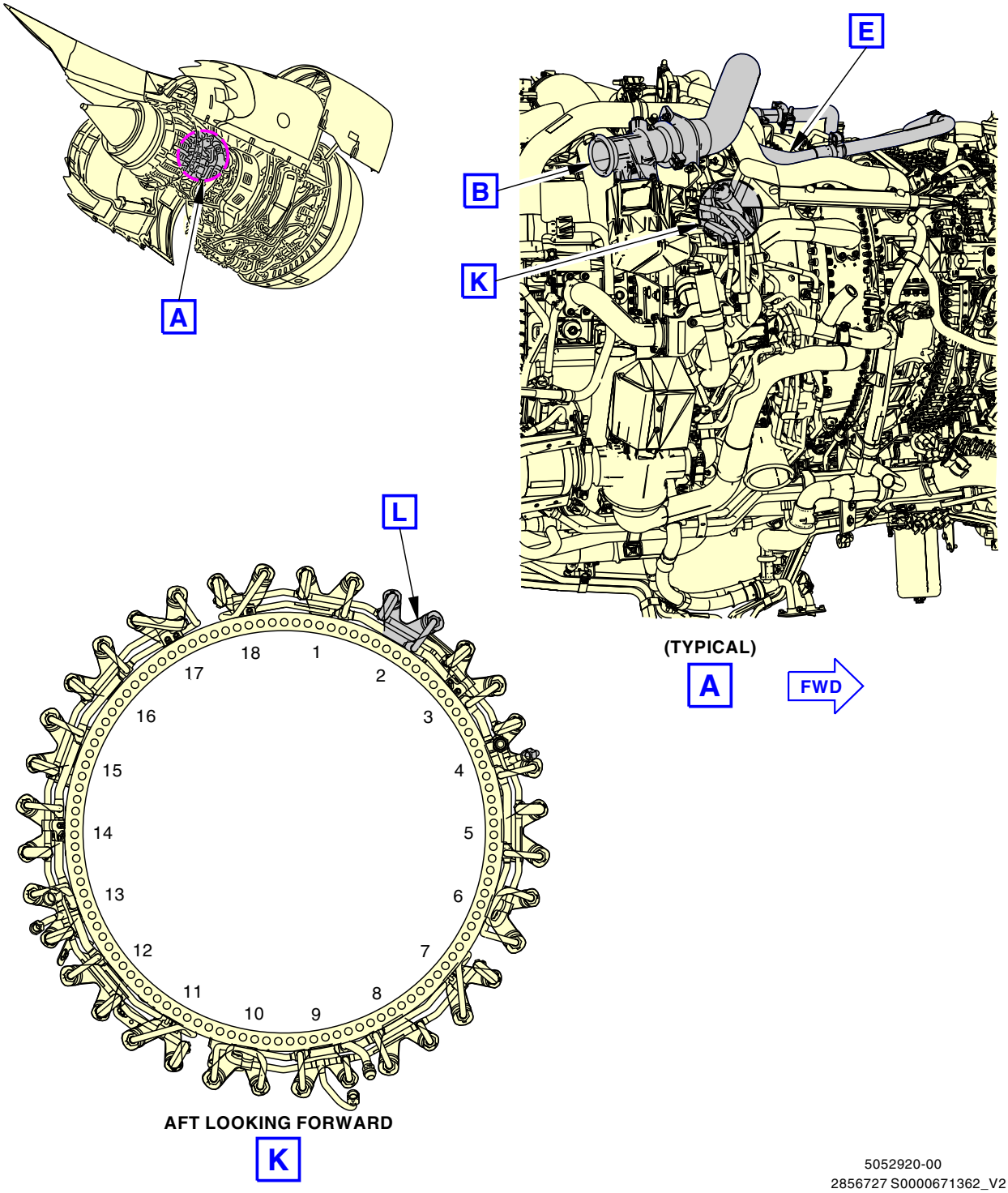
Fuel Nozzle (Position 1) Installation
Figure 402/73-11-05-990-888-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



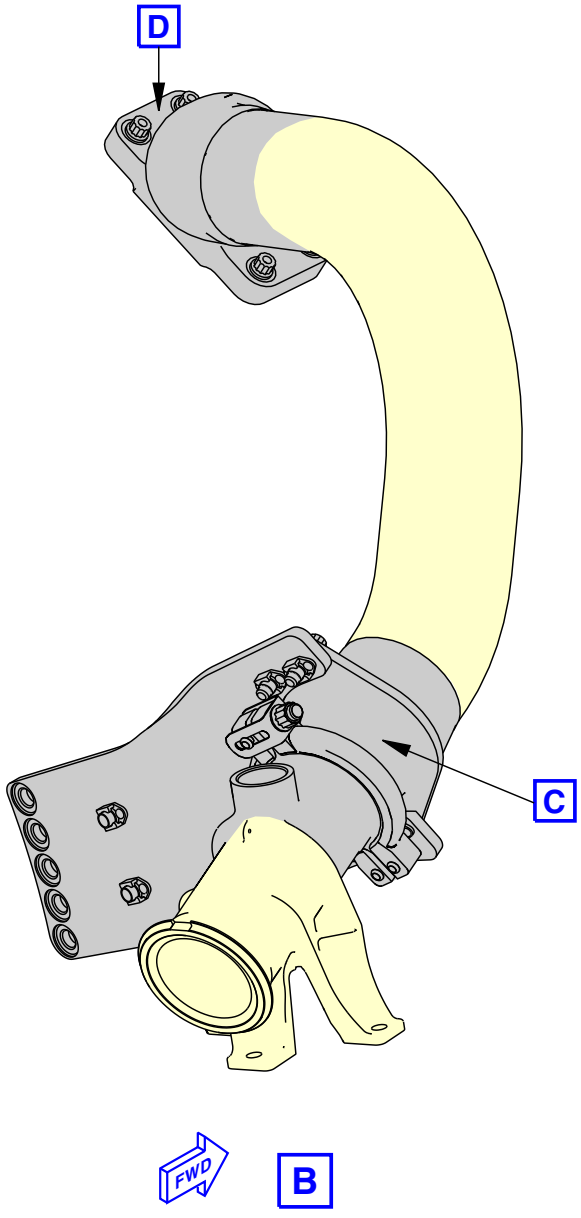
Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 1 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 2 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

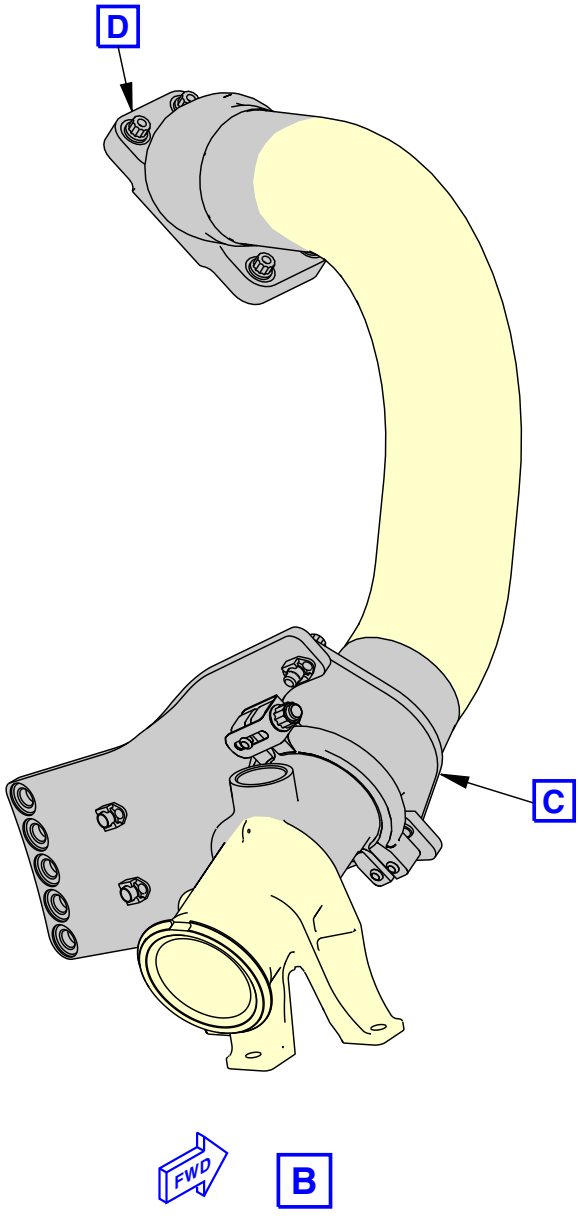


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Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 3 of 11)

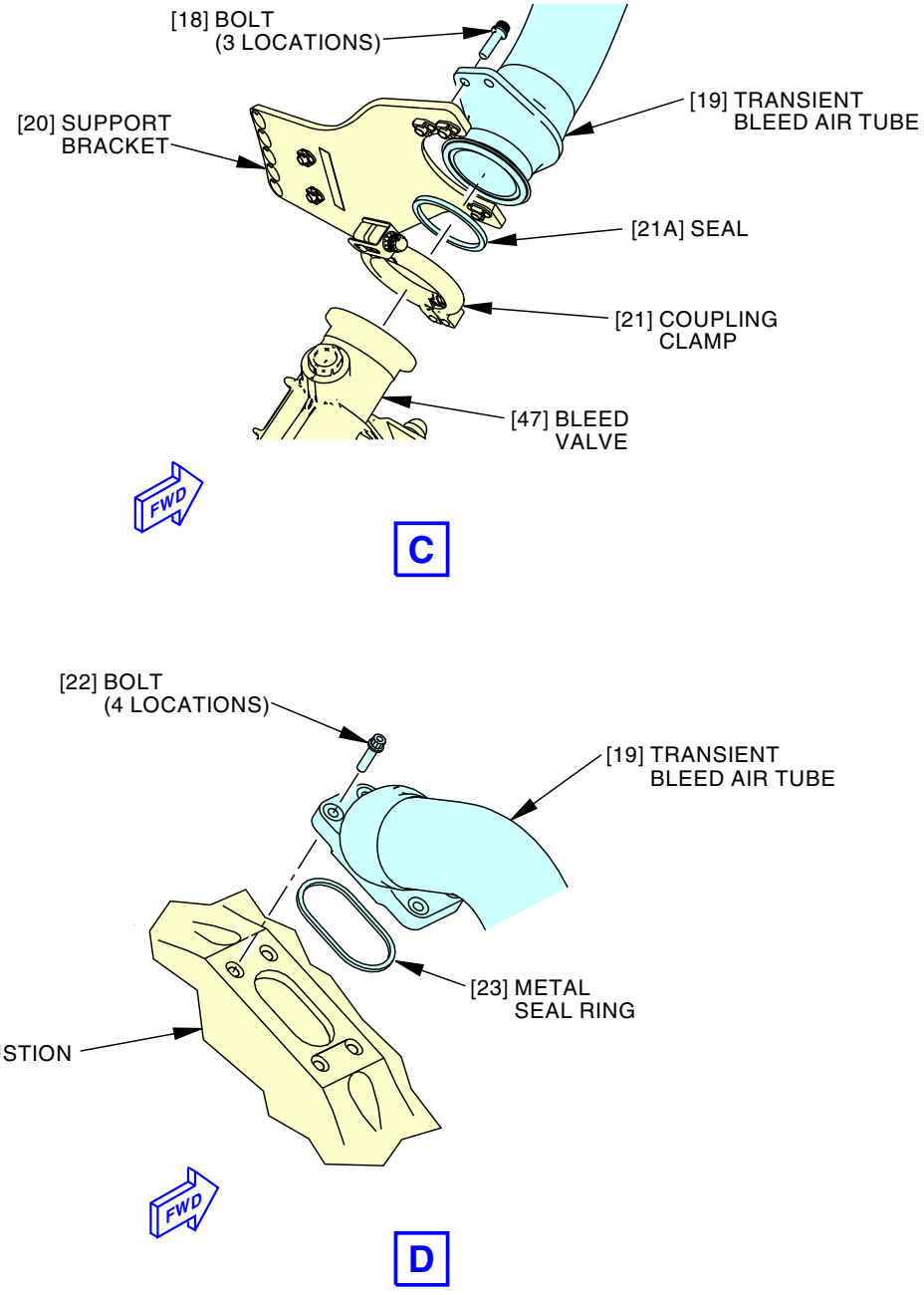
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 4 of 11)

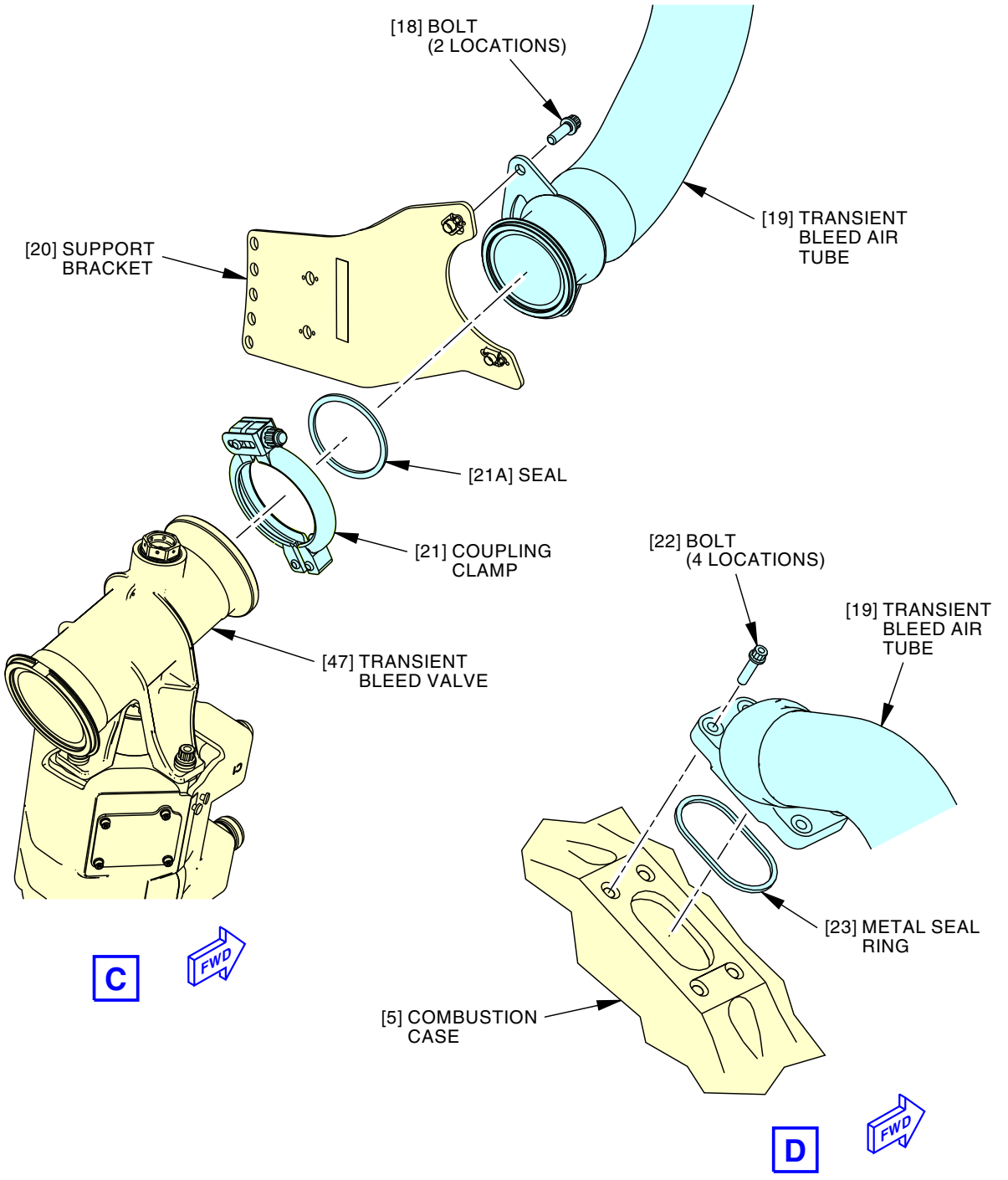
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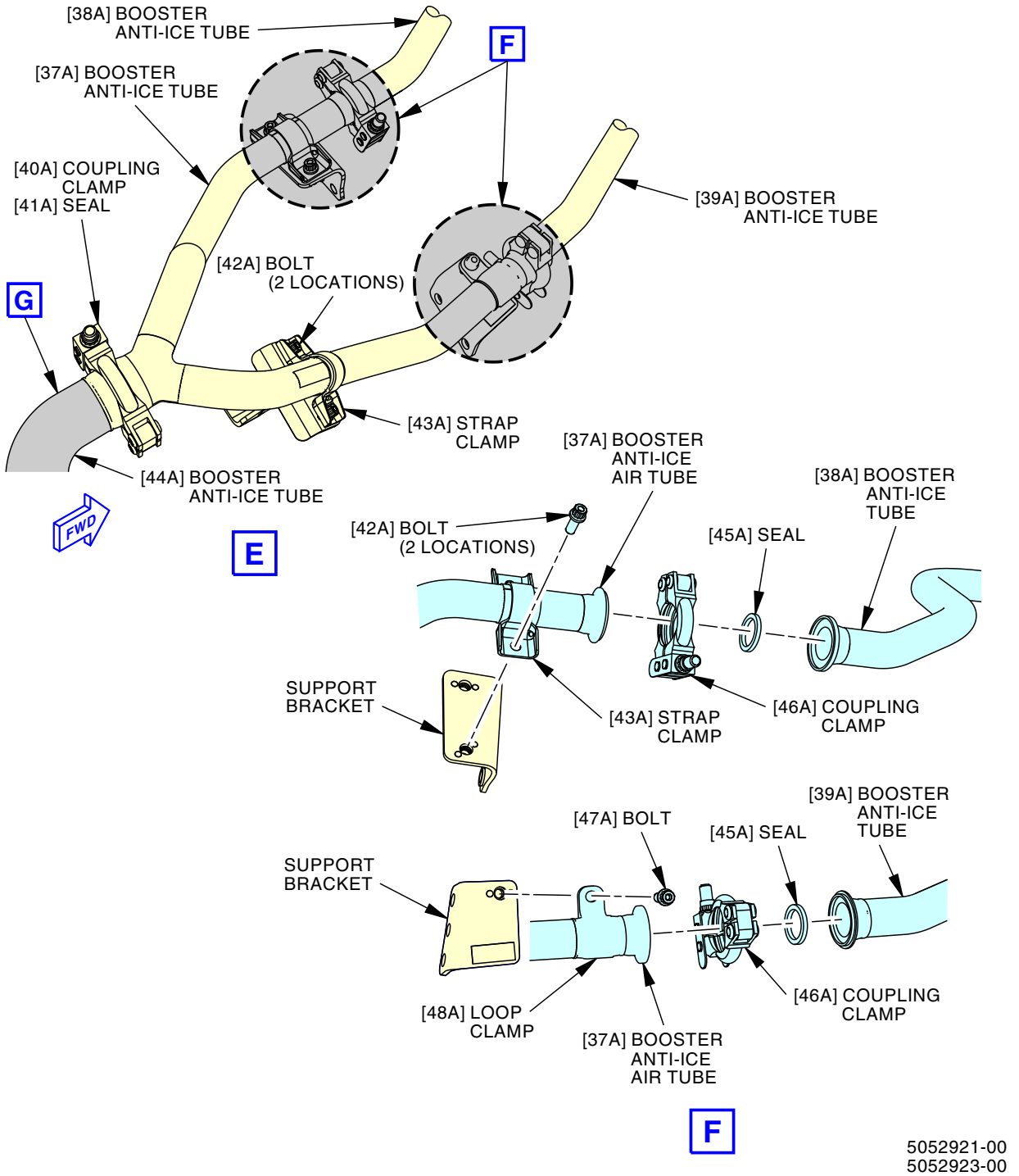
Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



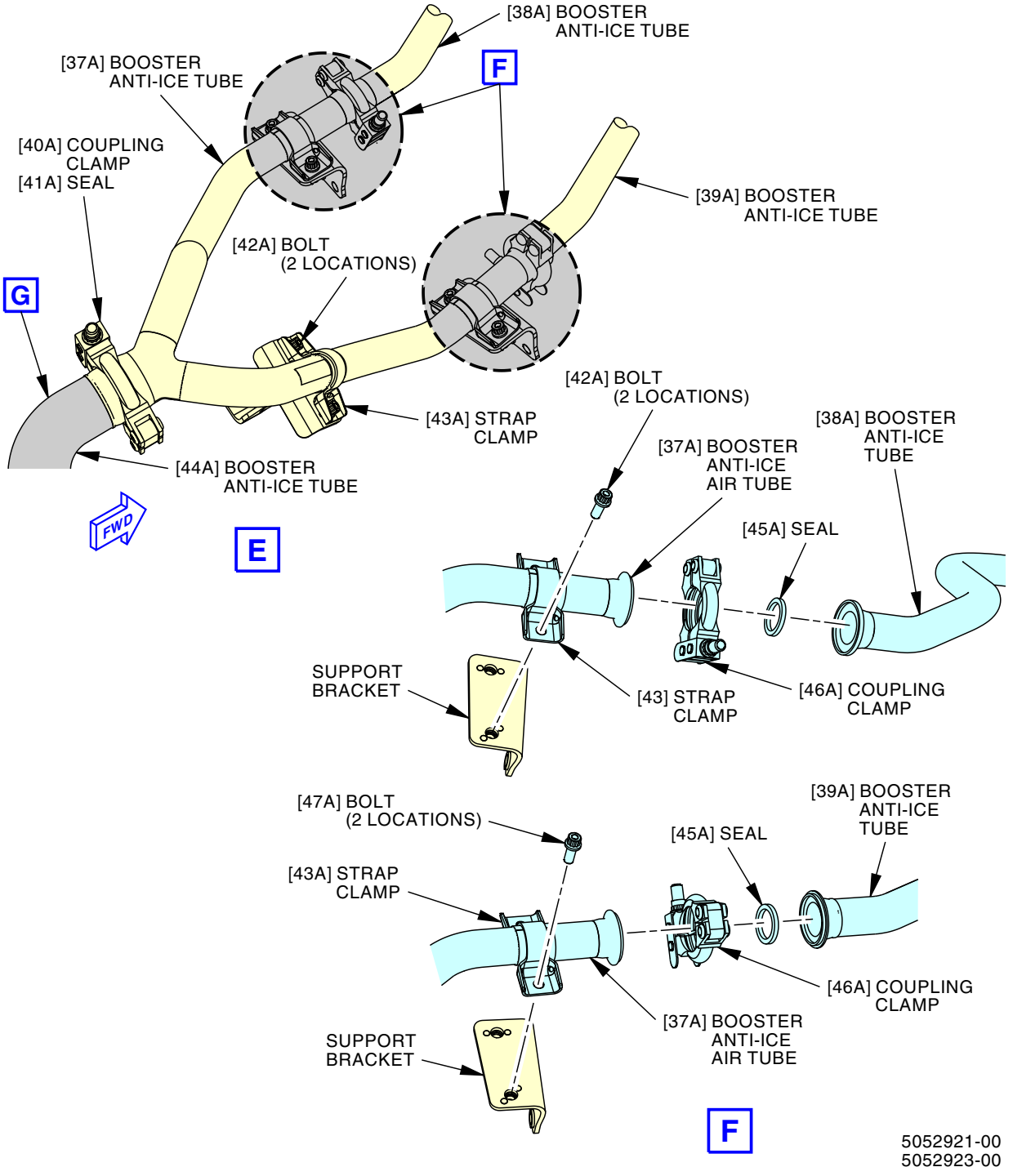
Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 6 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



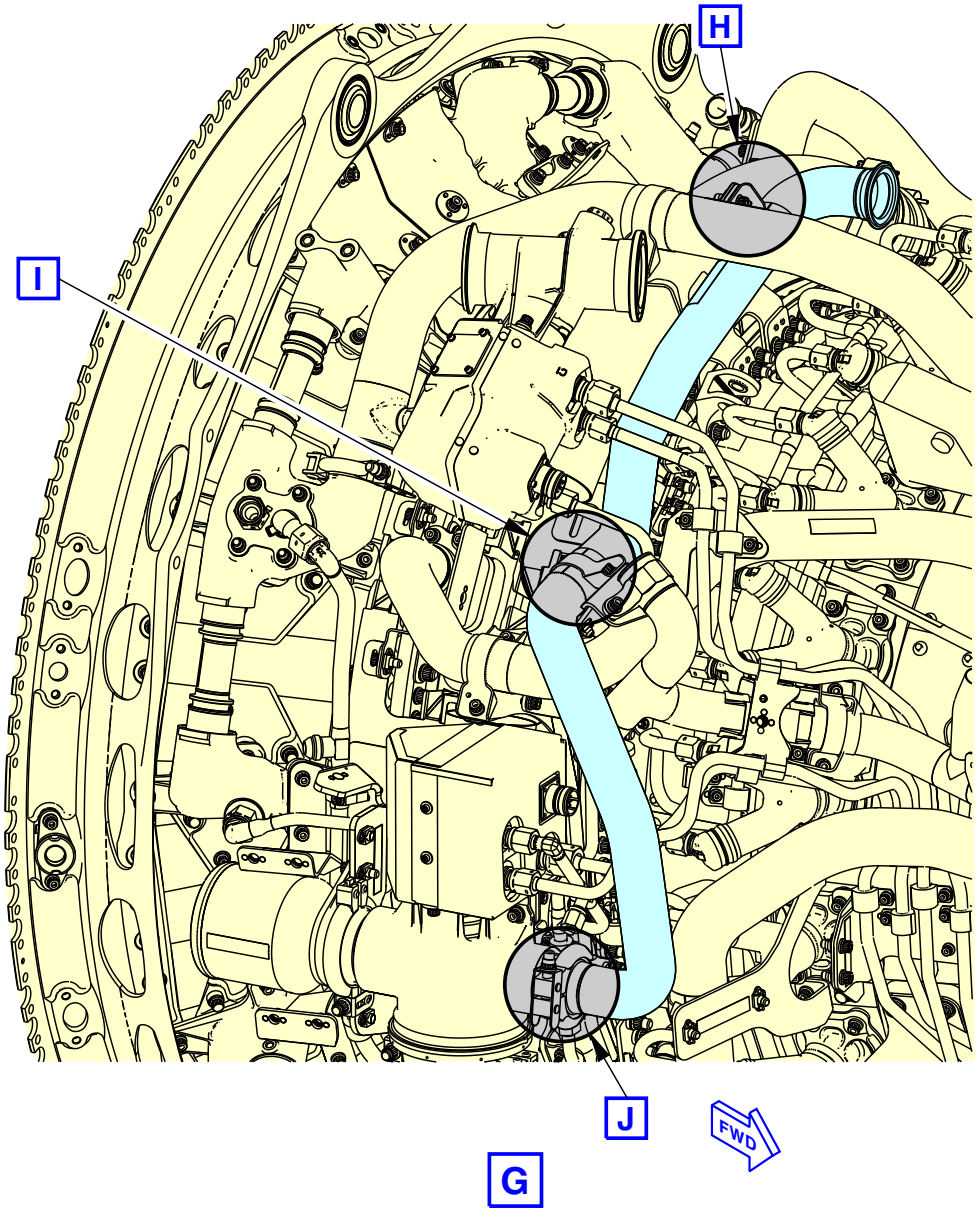
Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 7 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 8 of 11)

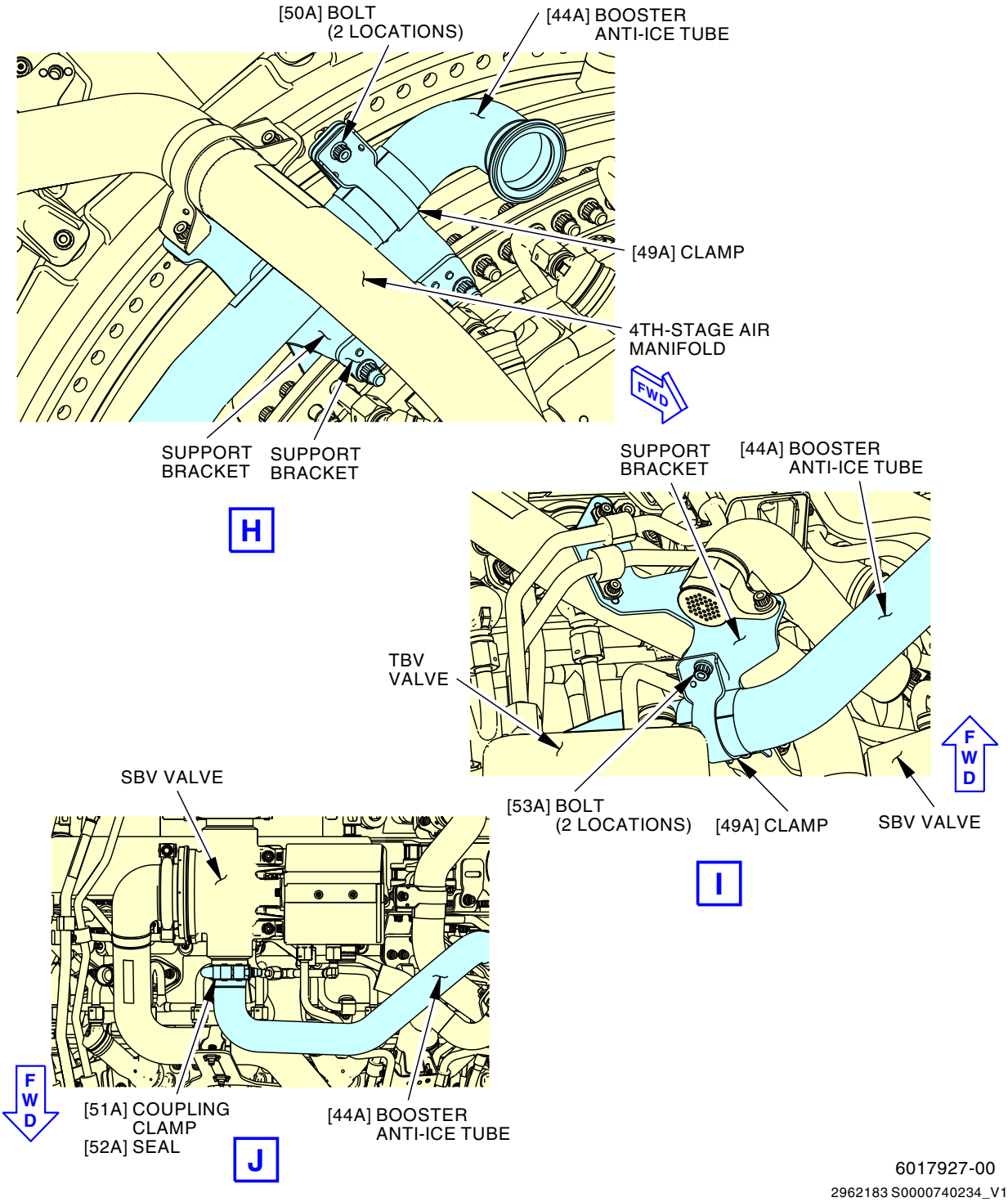
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Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 9 of 11)

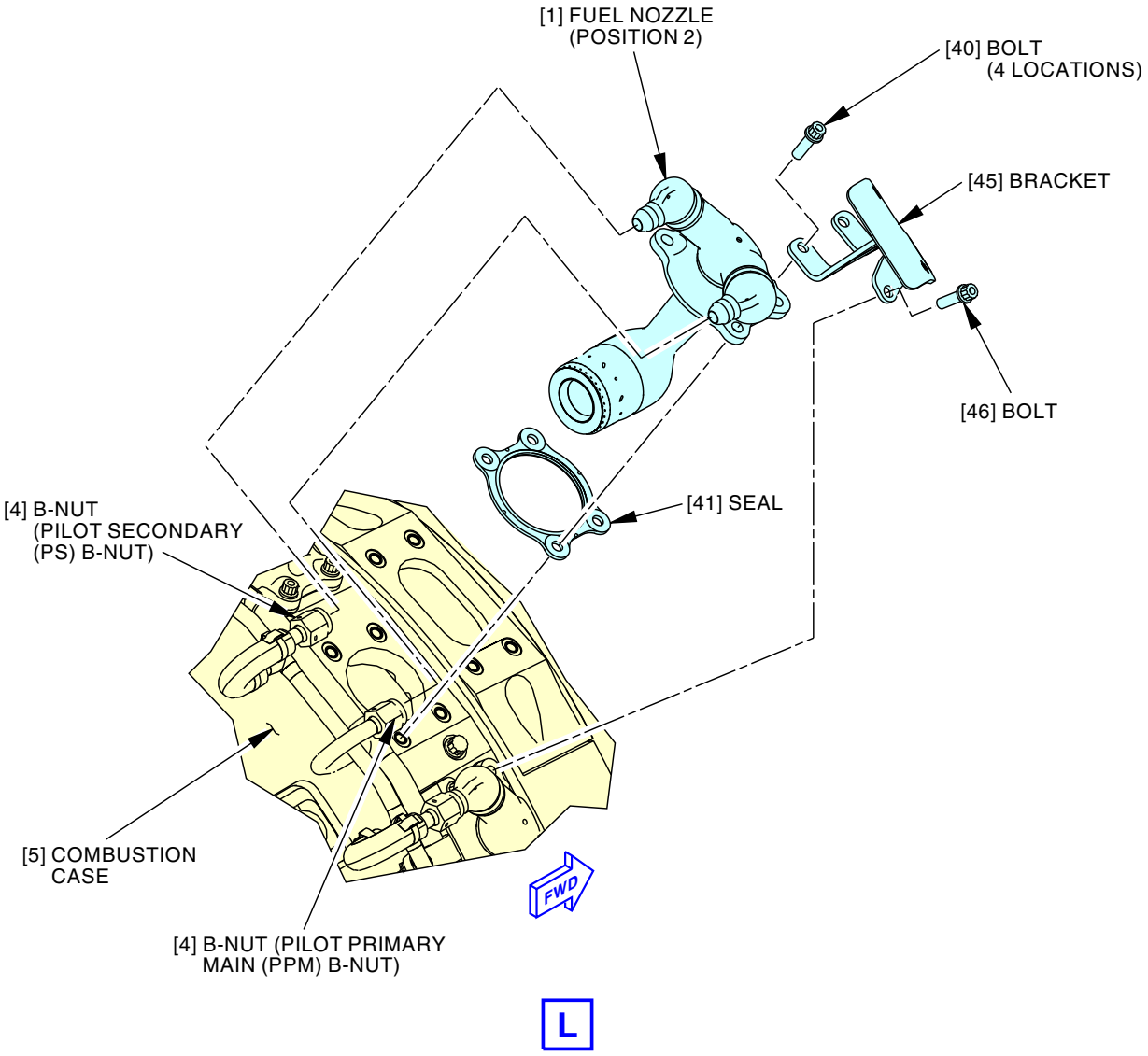
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Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

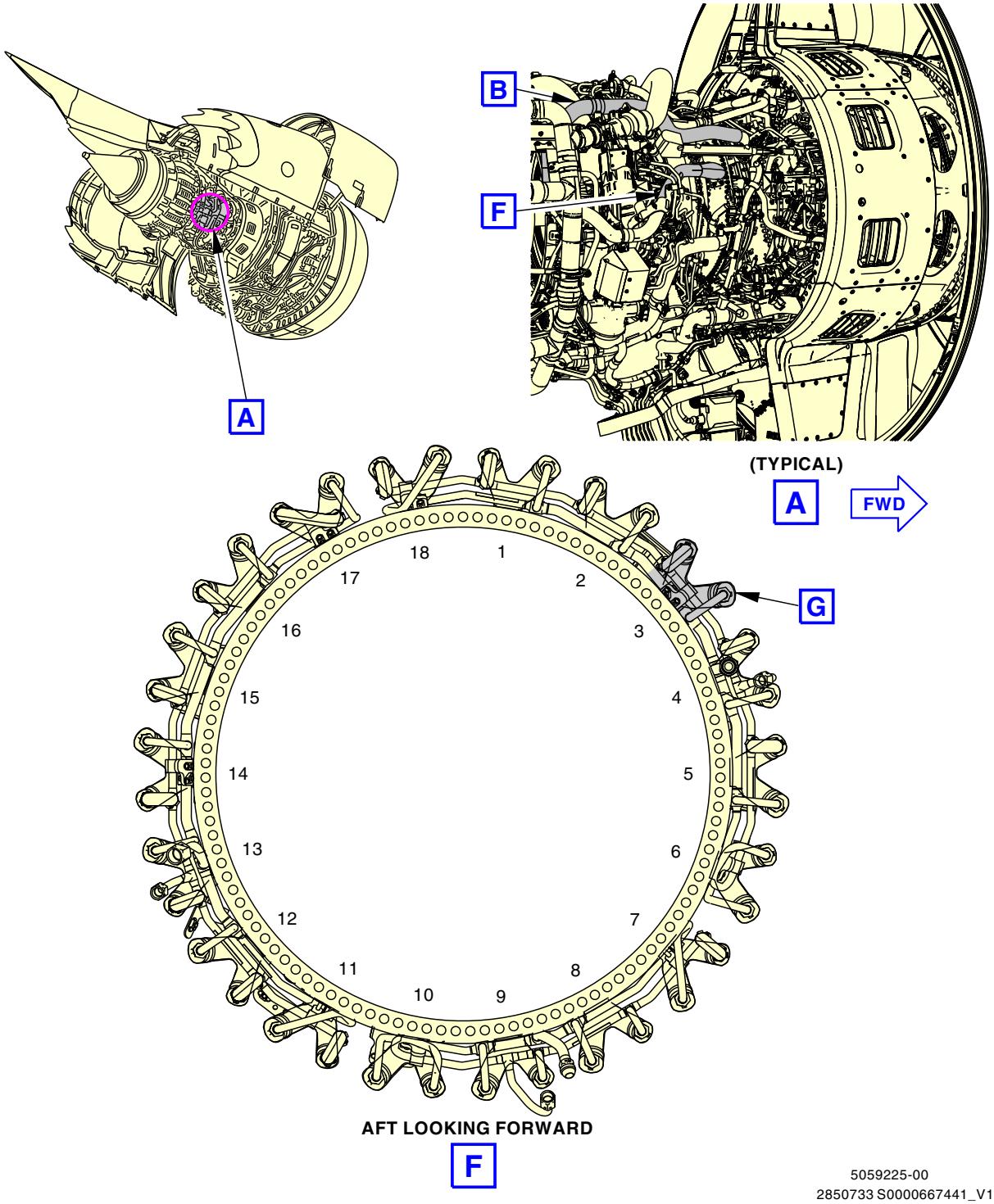


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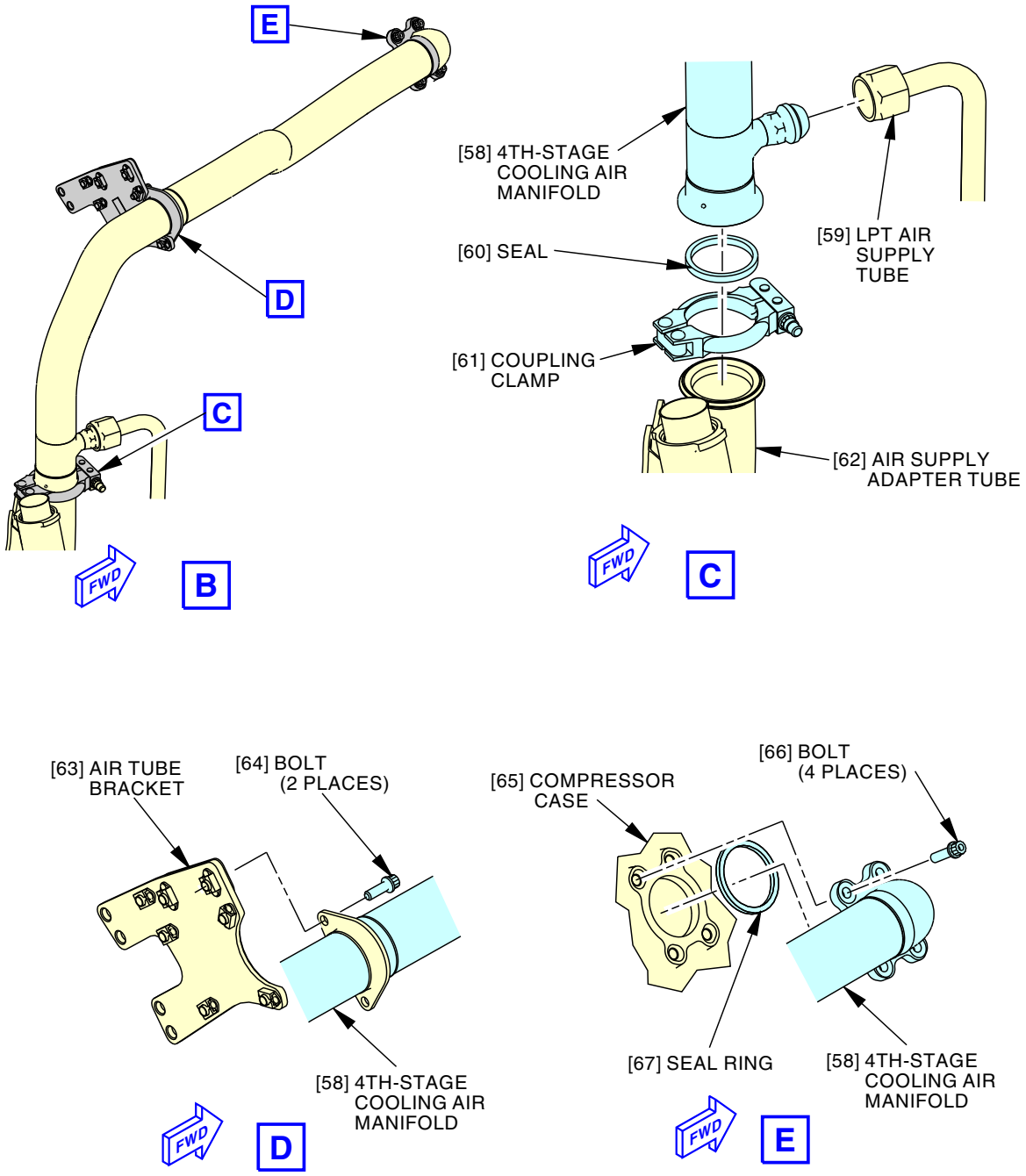
Fuel Nozzle (Position 2) Installation
Figure 403/73-11-05-990-889-G00 (Sheet 11 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 3) Installation
Figure 404/73-11-05-990-890-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

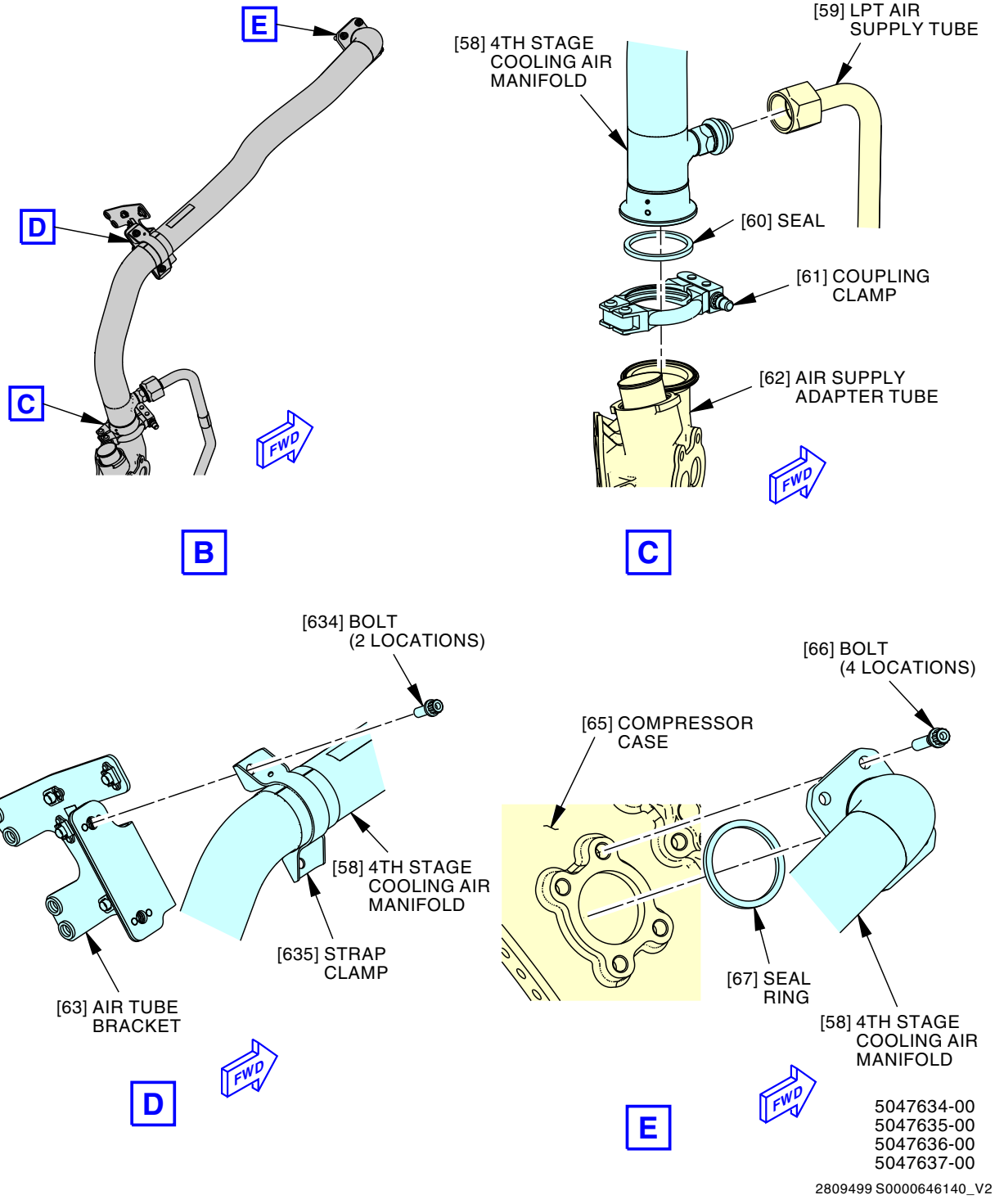


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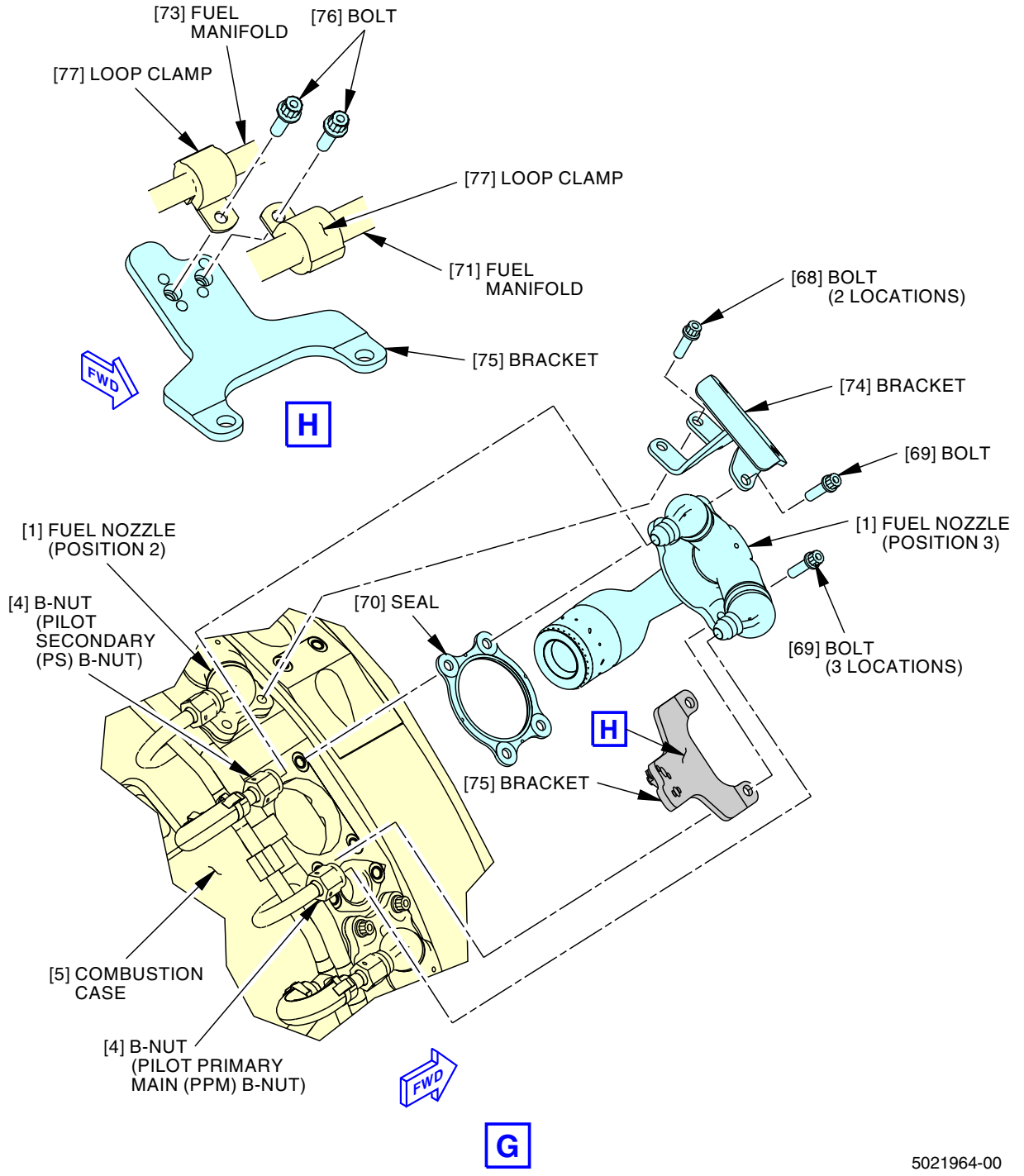
Fuel Nozzle (Position 3) Installation
Figure 404/73-11-05-990-890-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



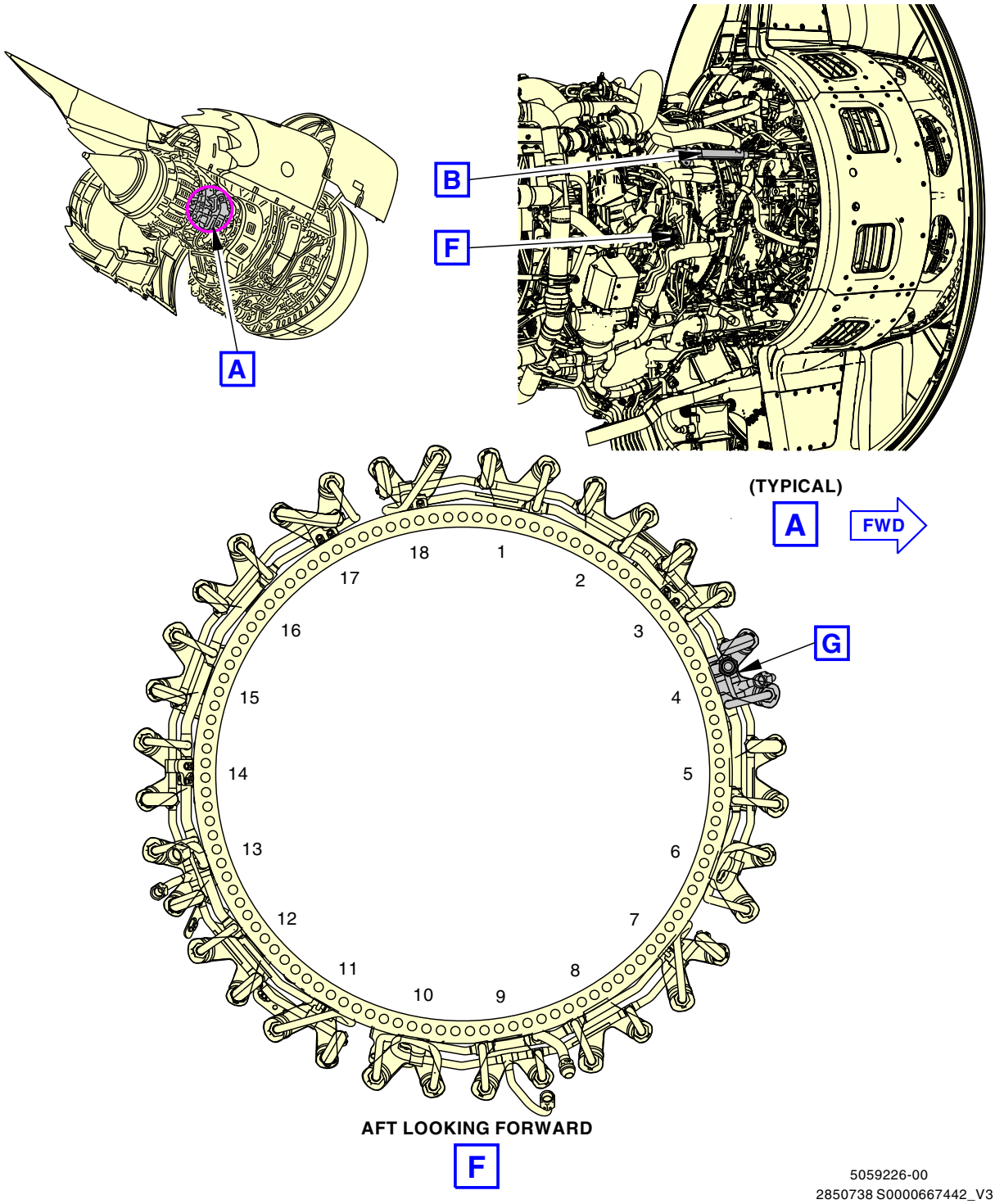
Fuel Nozzle (Position 3) Installation
Figure 404/73-11-05-990-890-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



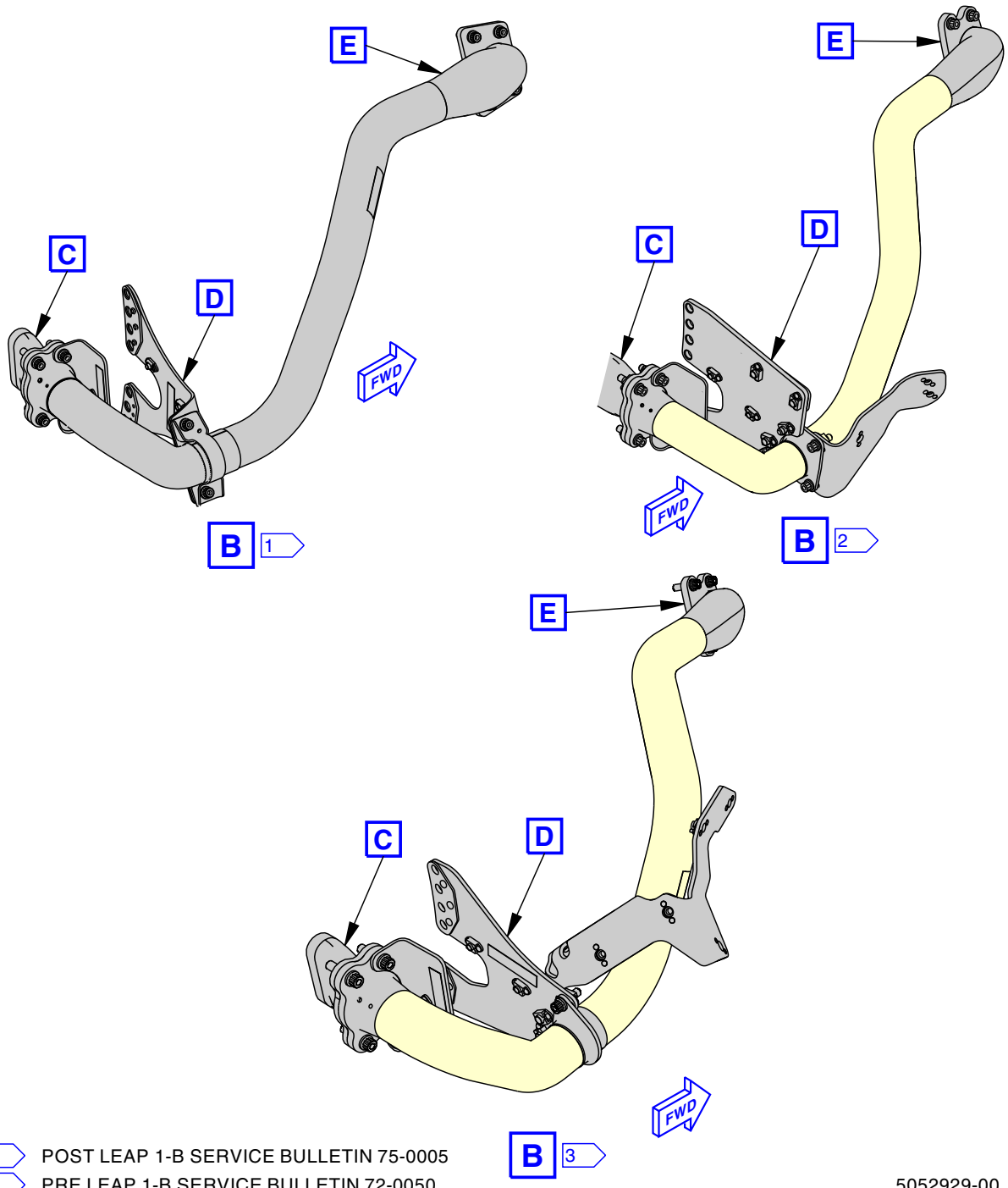
Fuel Nozzle (Position 3) Installation
Figure 404/73-11-05-990-890-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



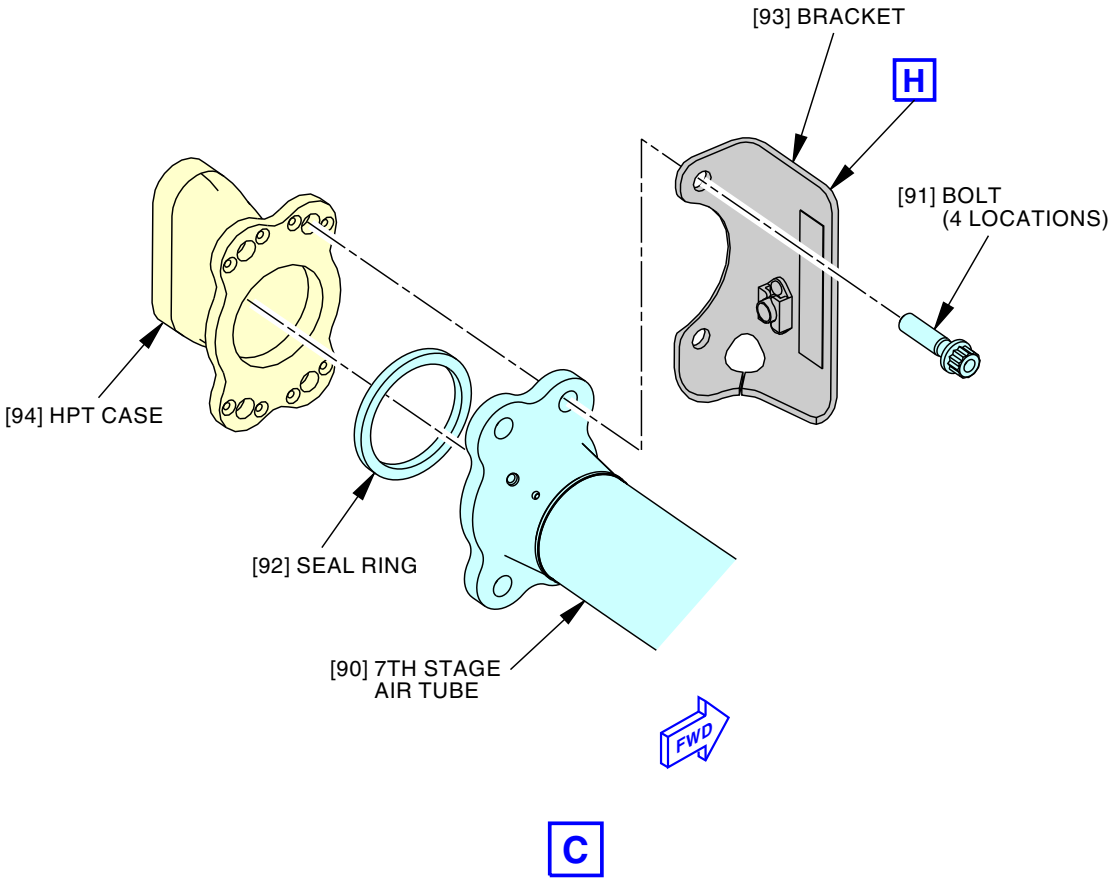
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2 PRE LEAP 1-B SERVICE BULLETIN 72-0050
3 POST LEAP 1-B SERVICE BULLETIN 72-0050

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Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

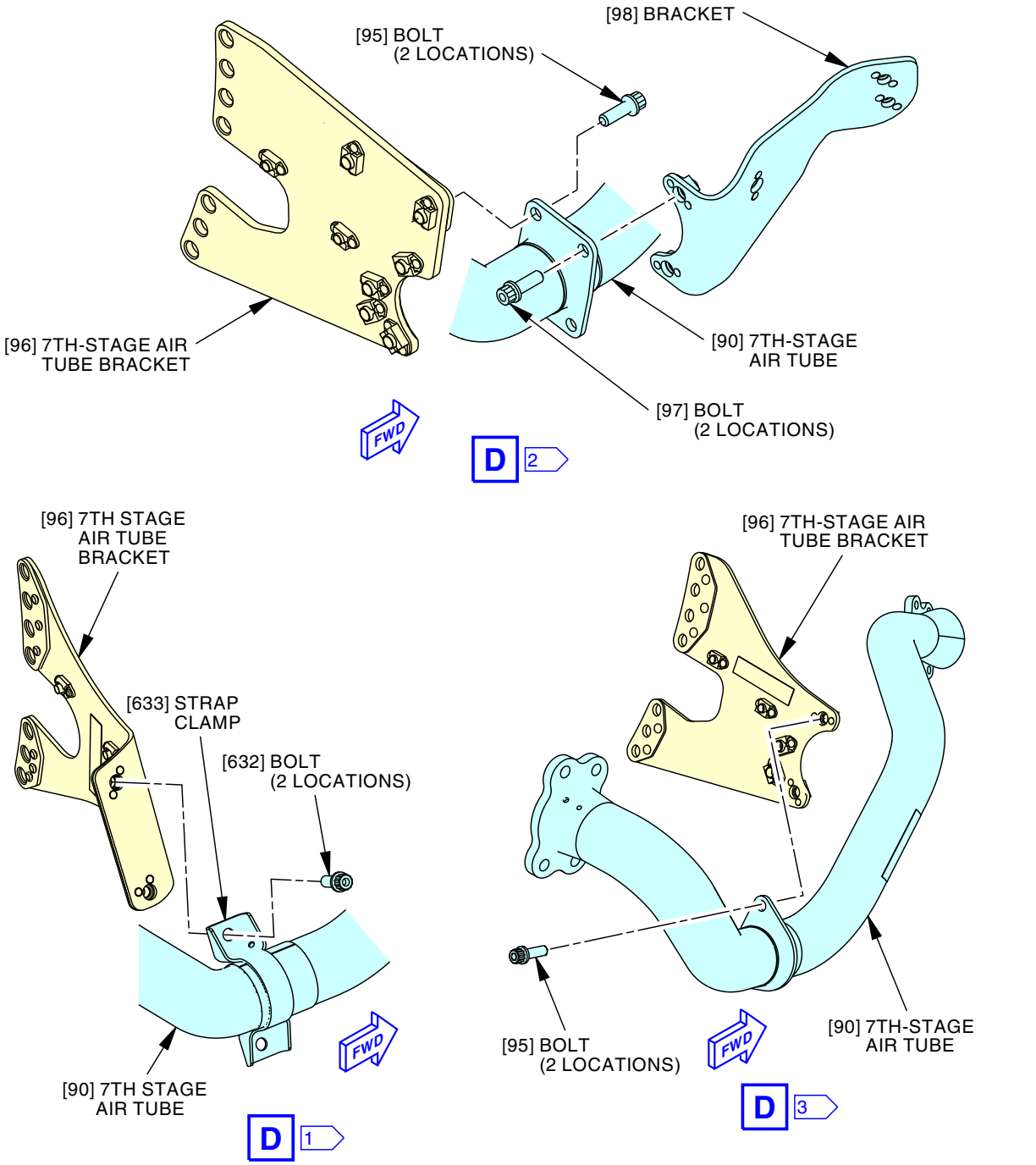


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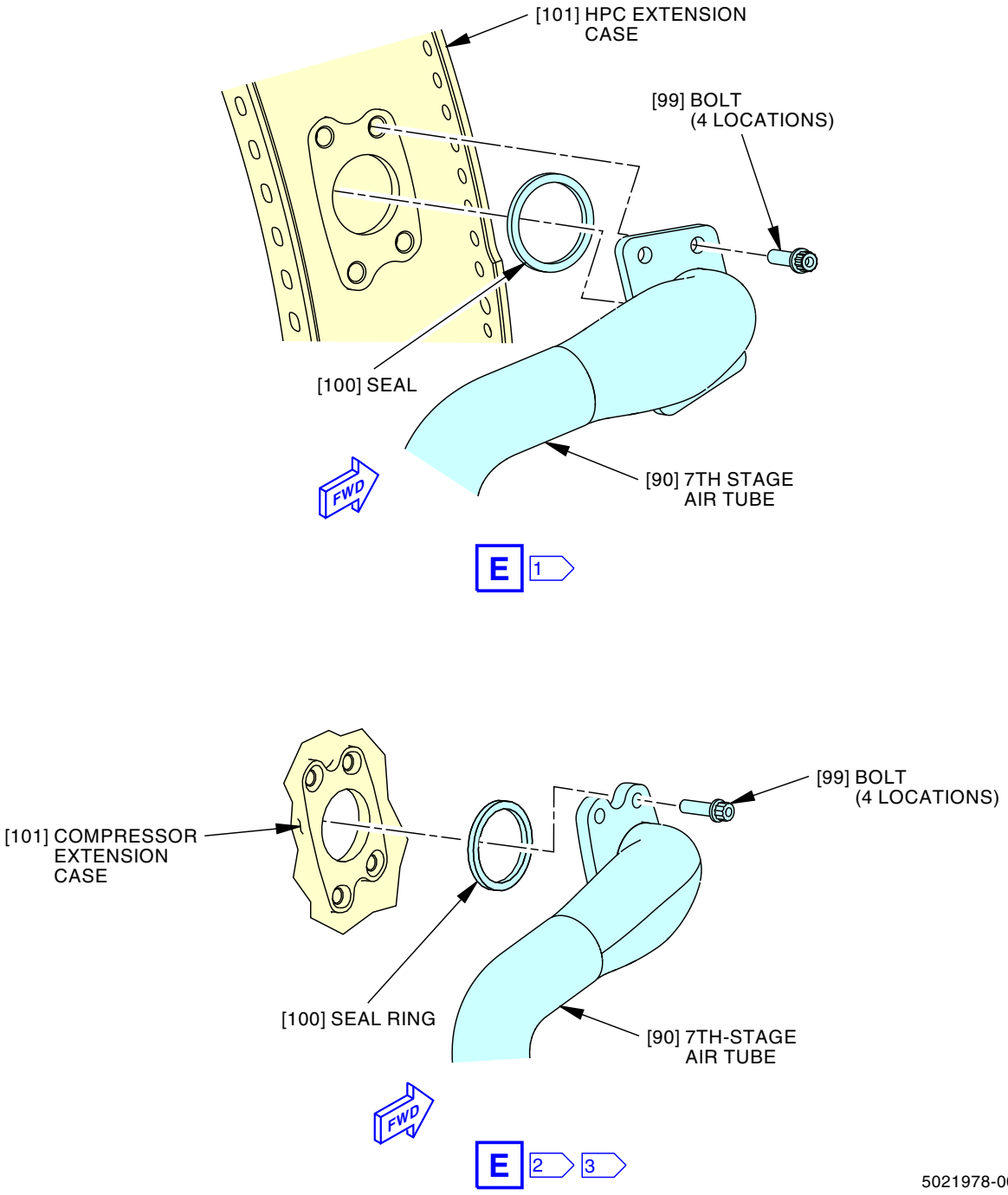
Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



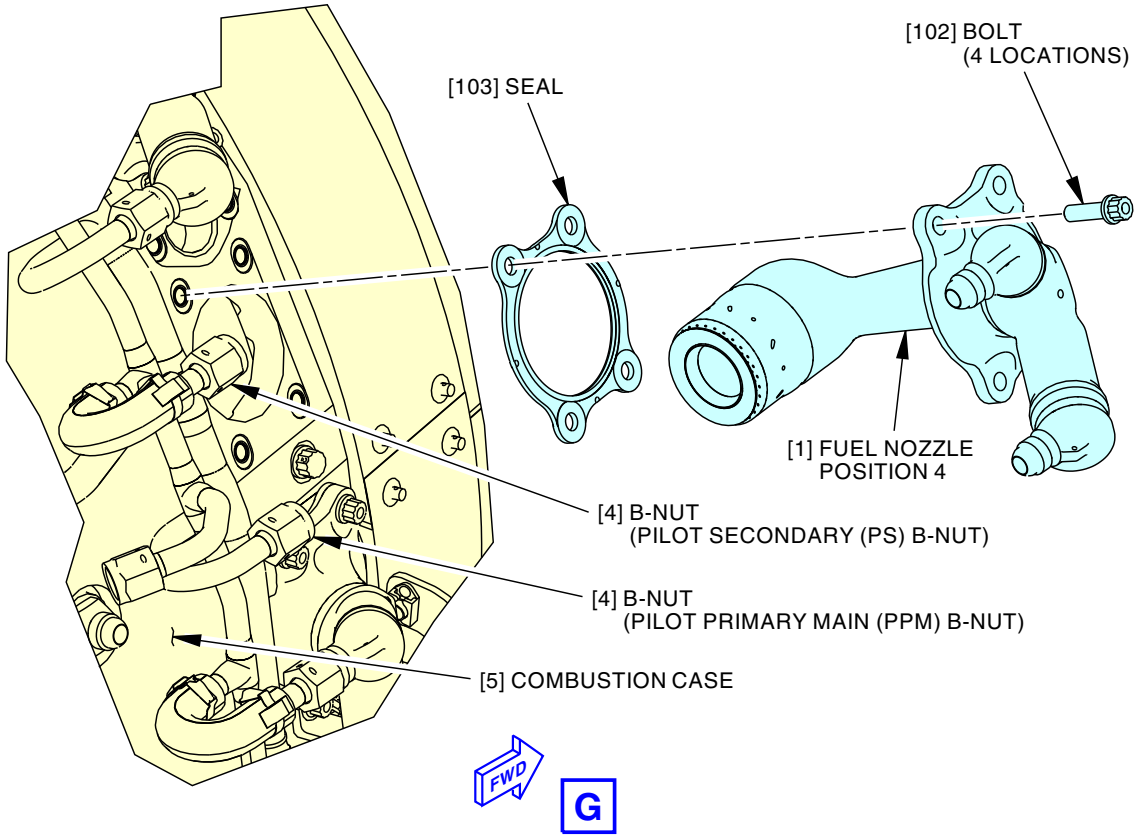
Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 4 of 6)

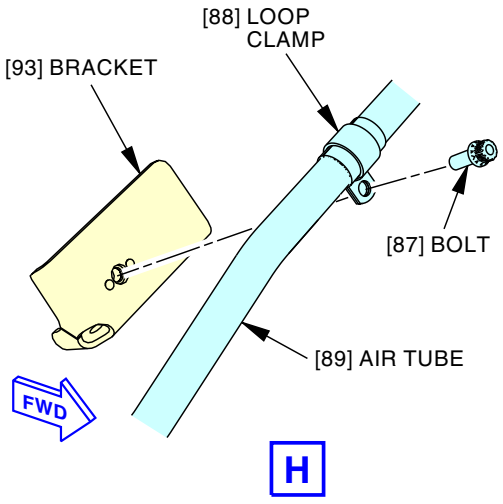
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



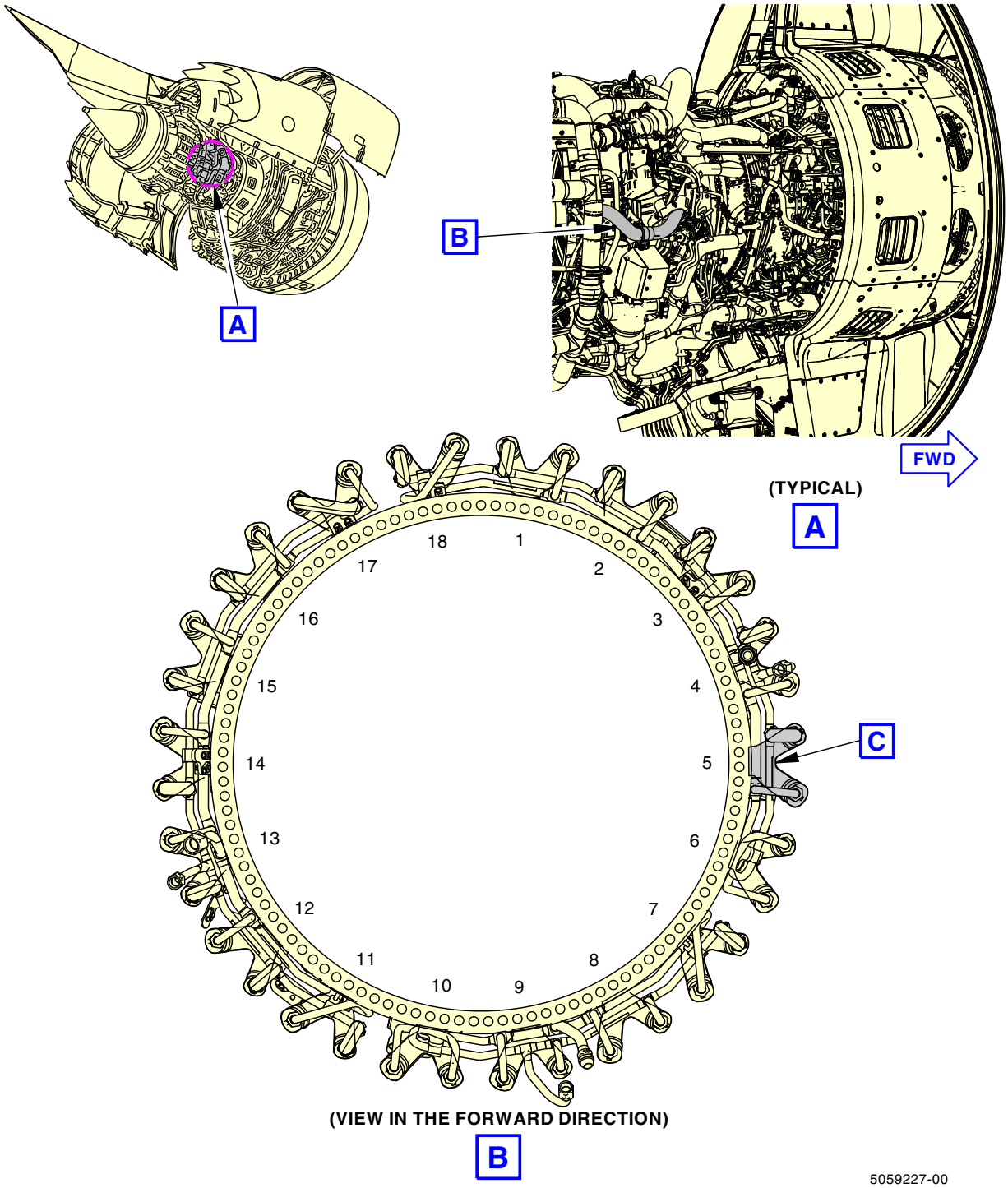


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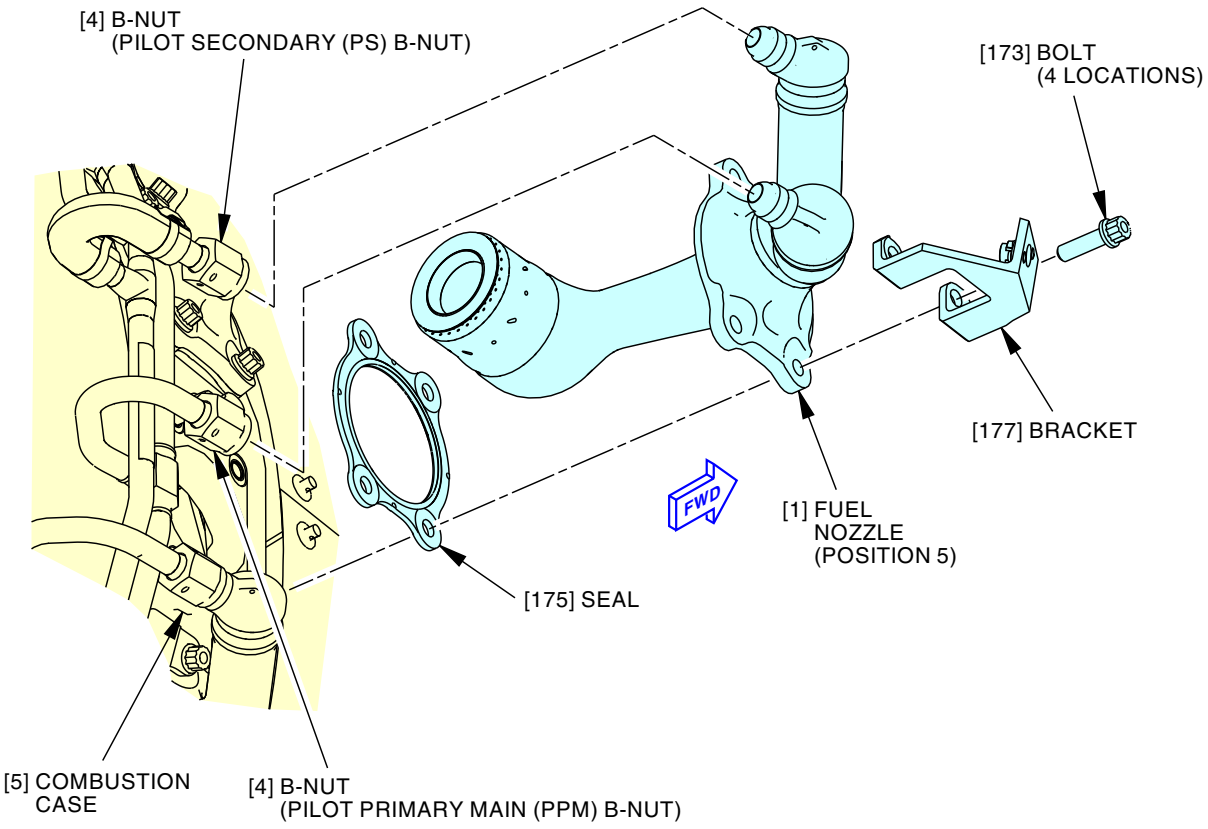
Fuel Nozzle (Position 4) Installation
Figure 405/73-11-05-990-891-G00 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 1 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

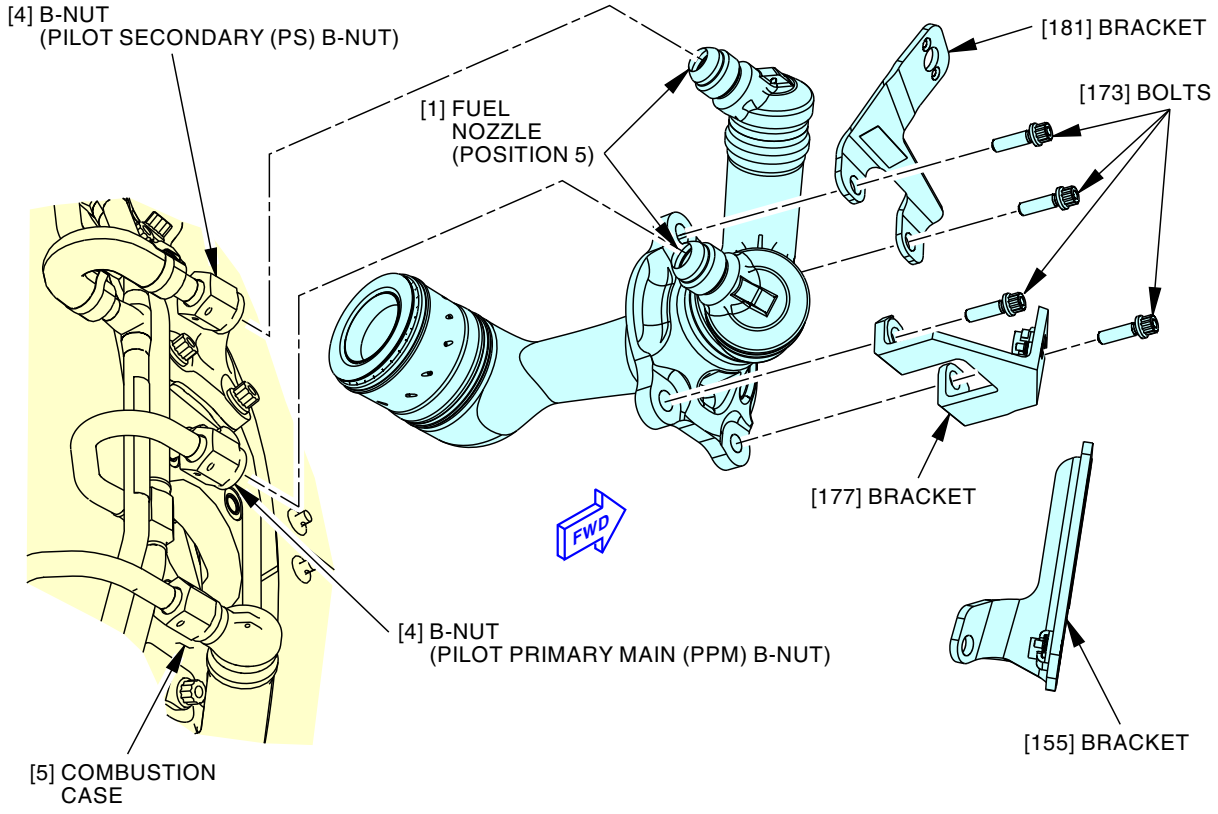


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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 2 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

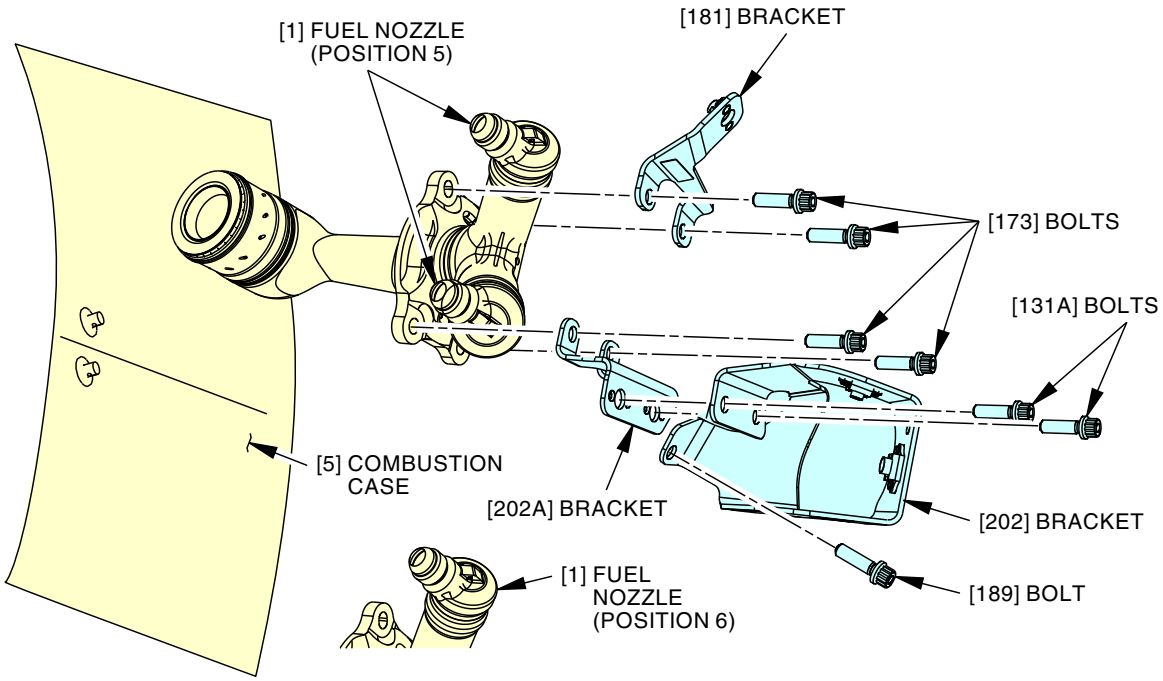


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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 3 of 35)

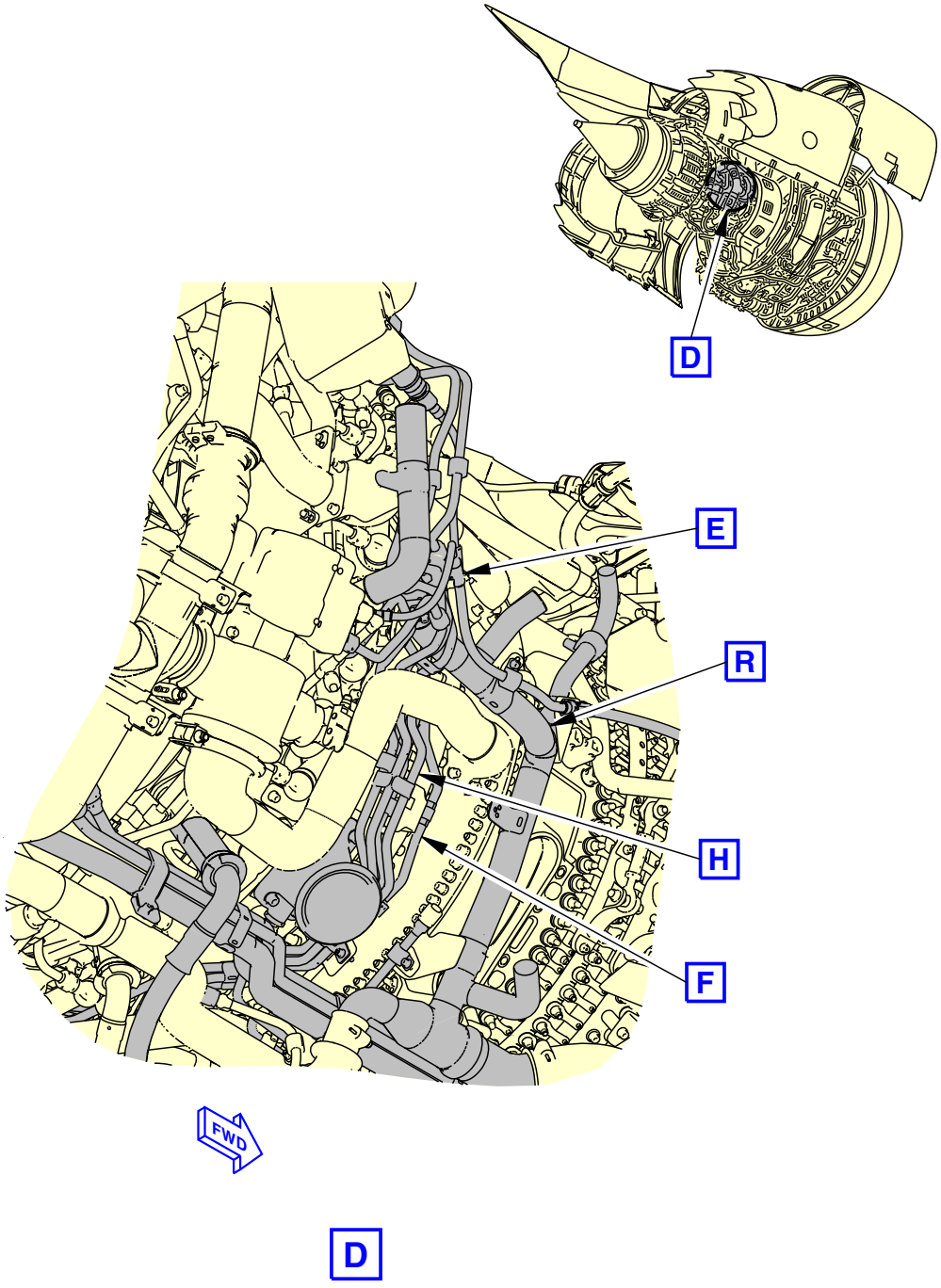
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 4 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

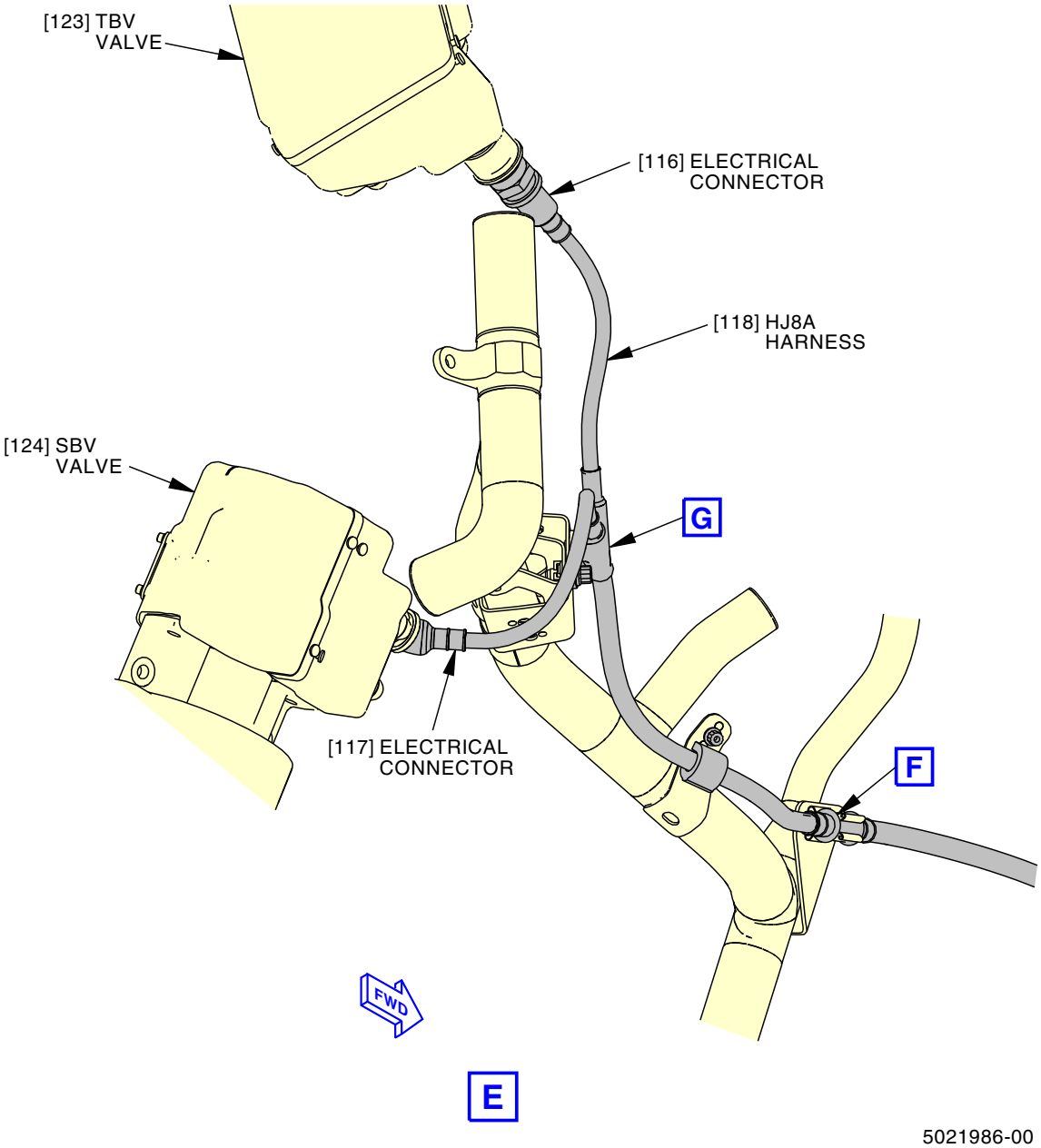


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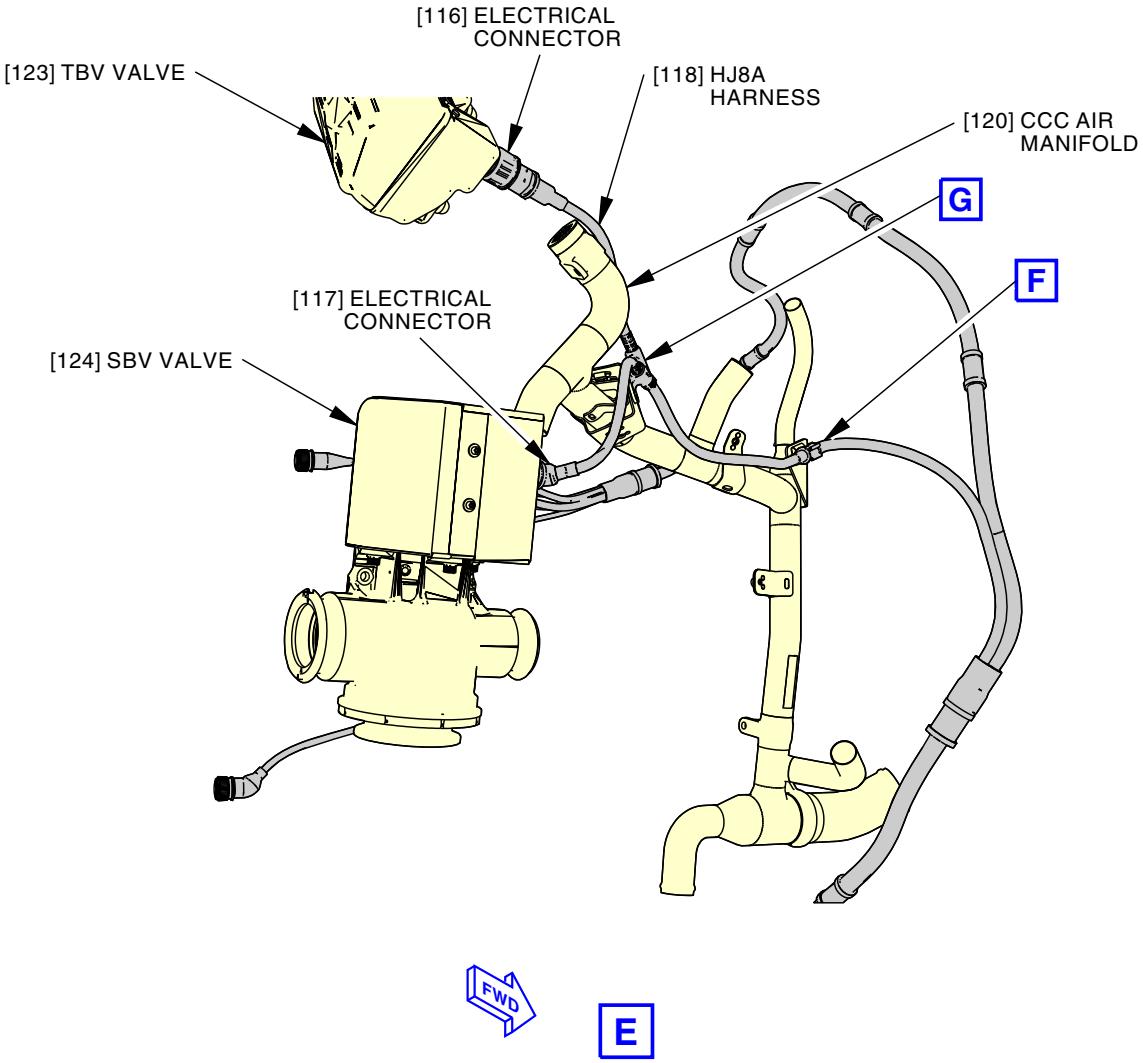
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 5 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 6 of 35)

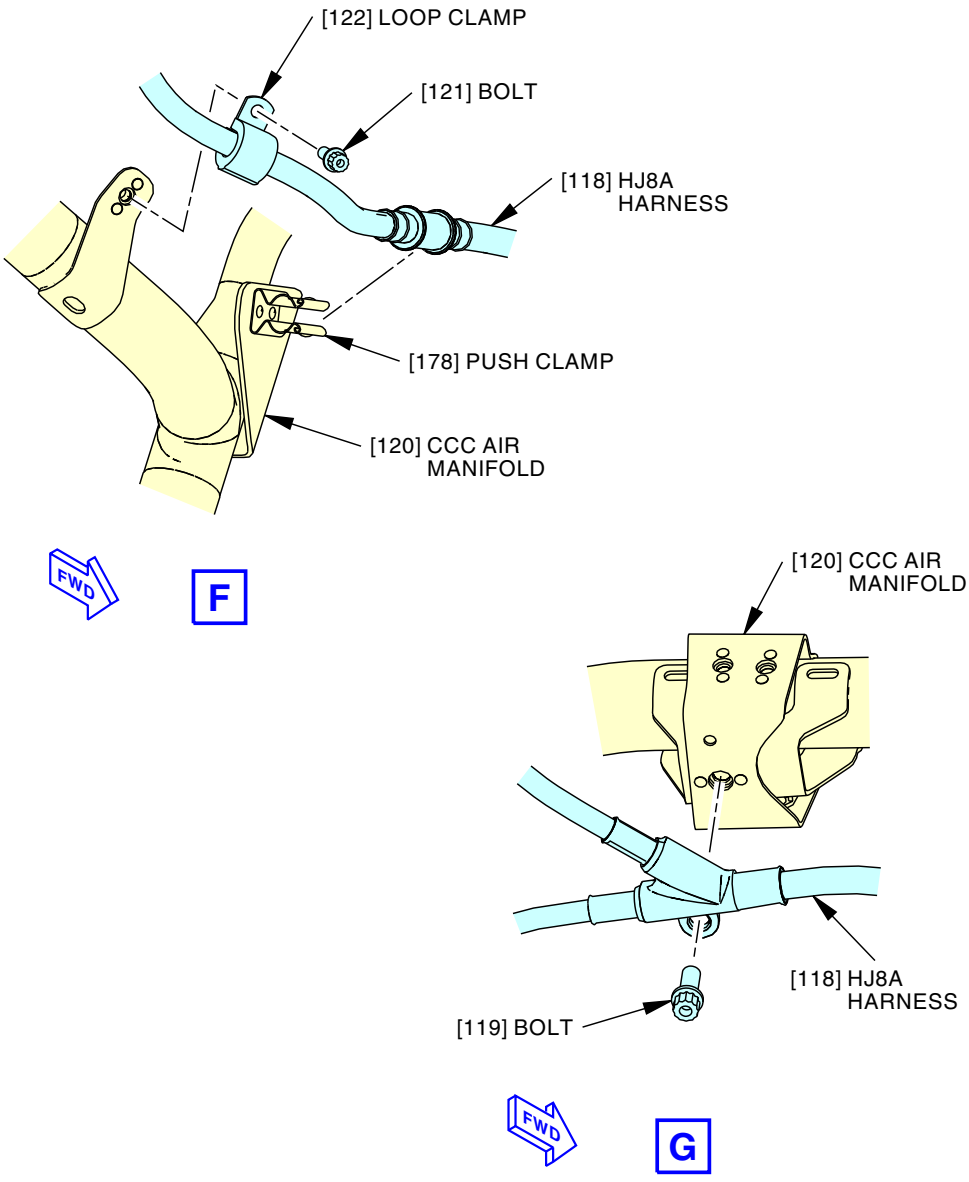
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 7 of 35)

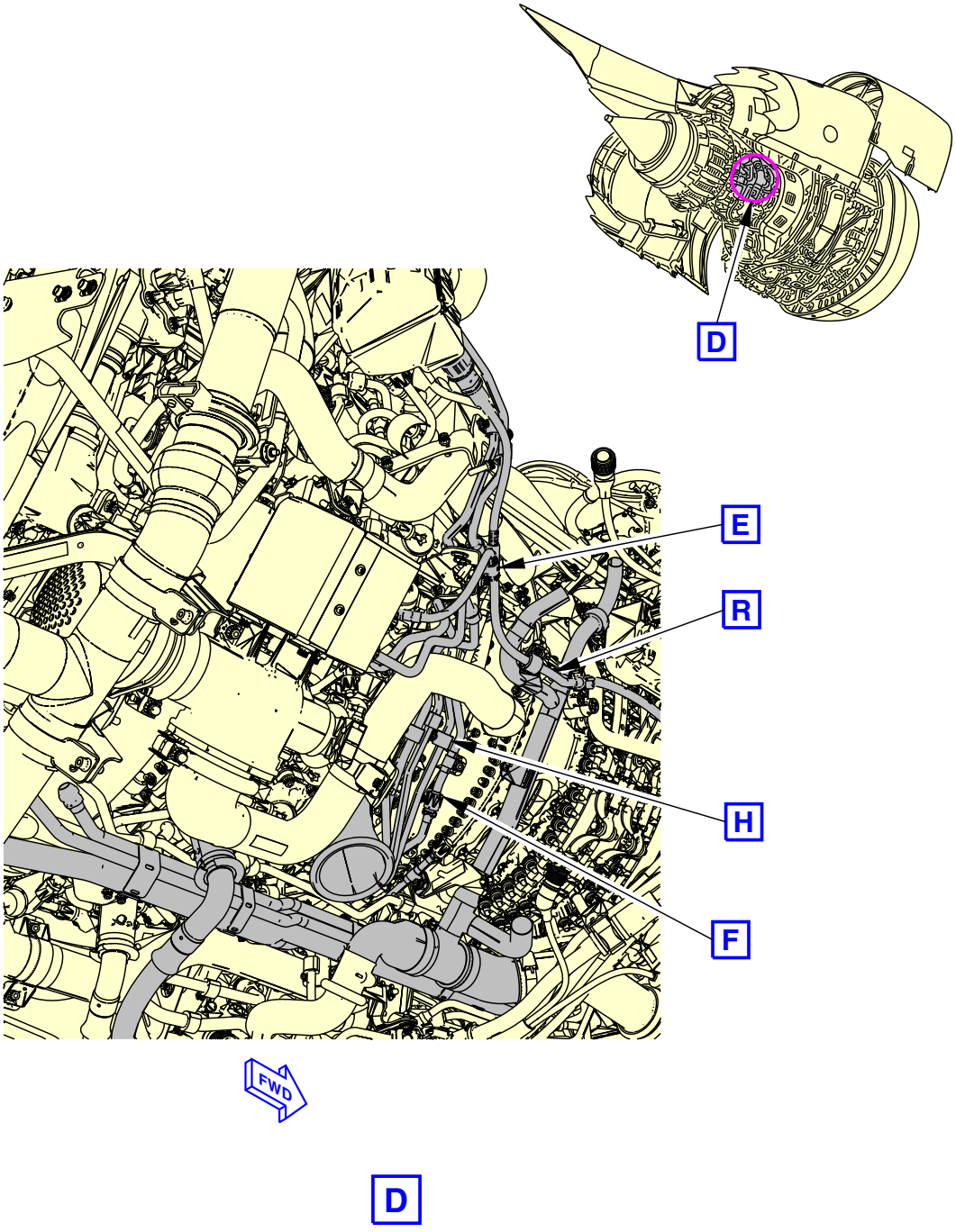
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 8 of 35)

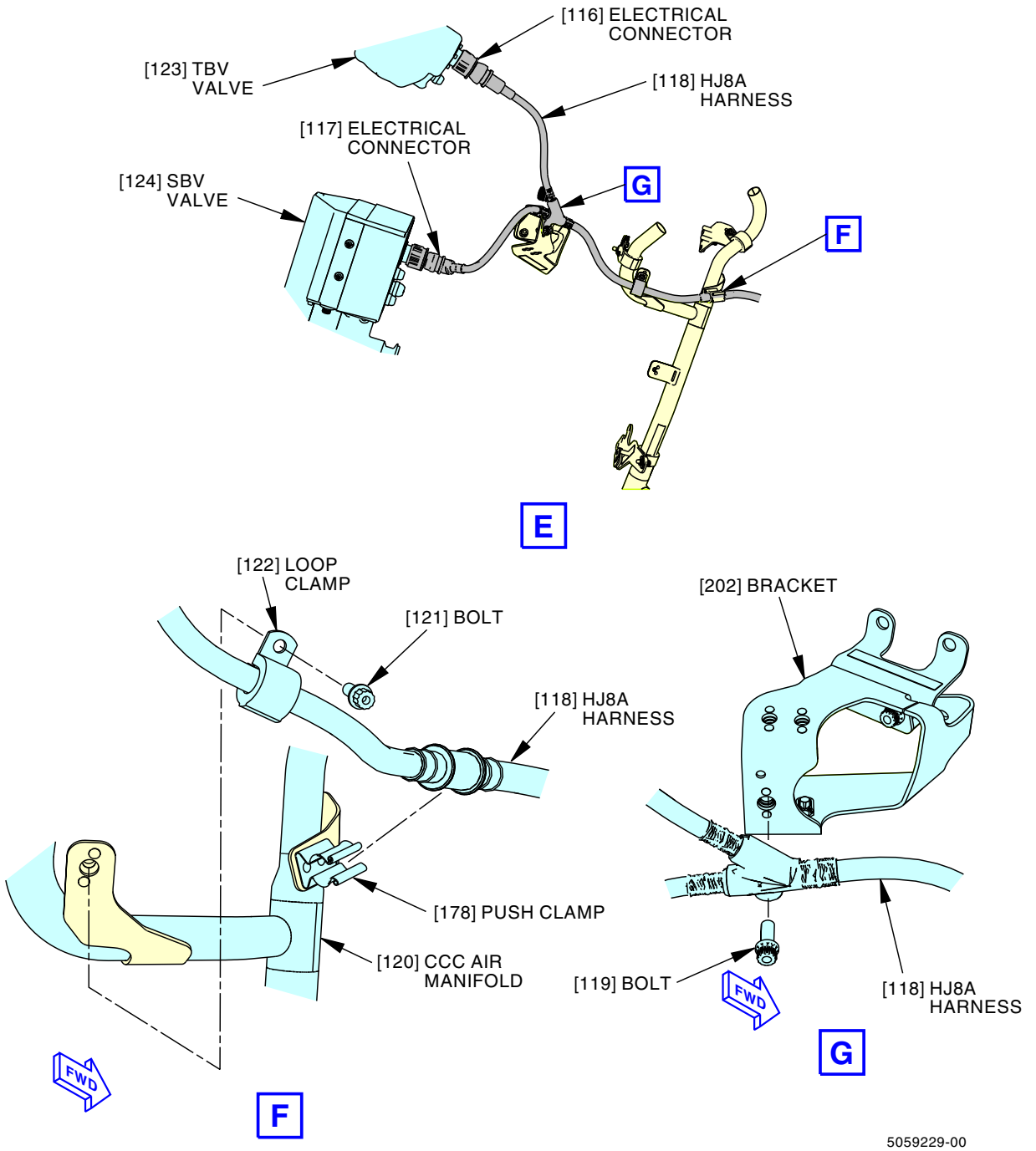
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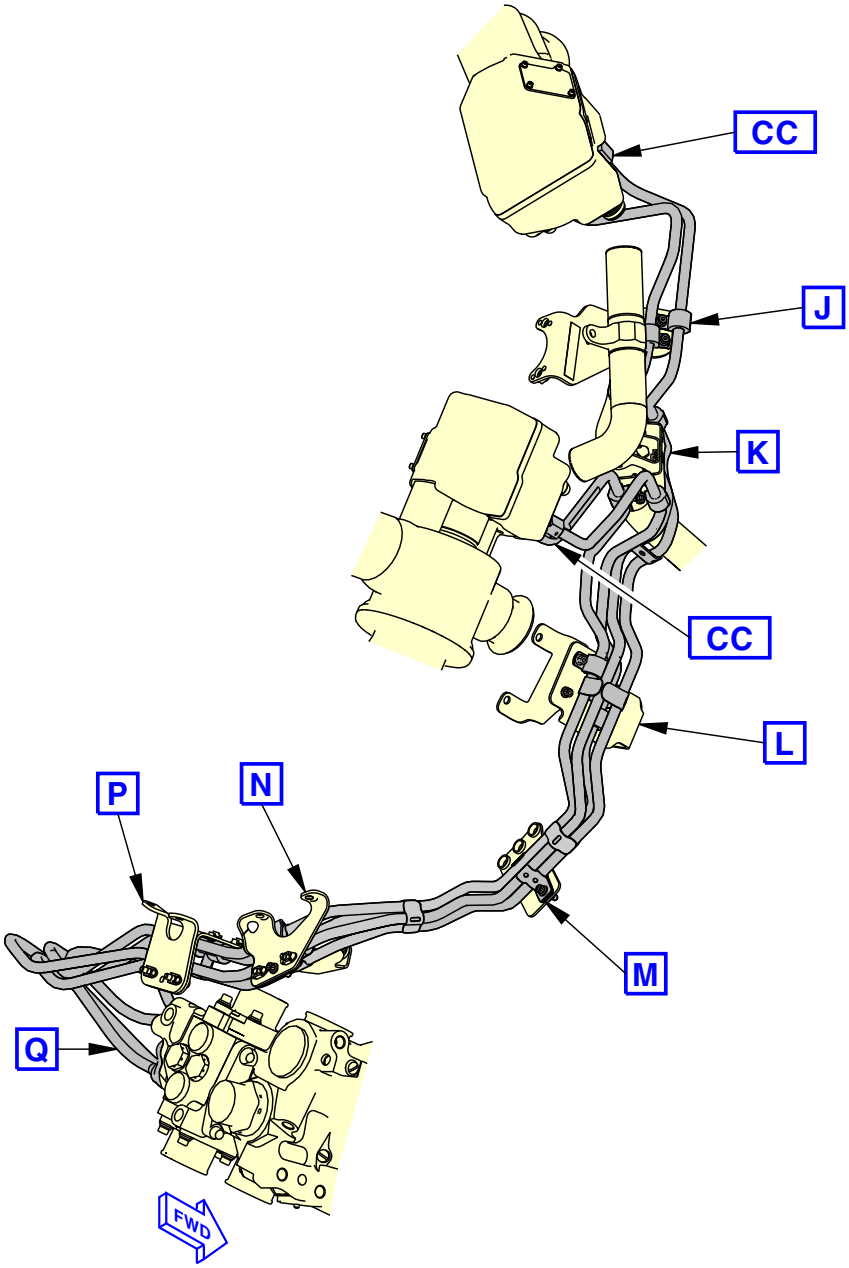
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 9 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 10 of 35)

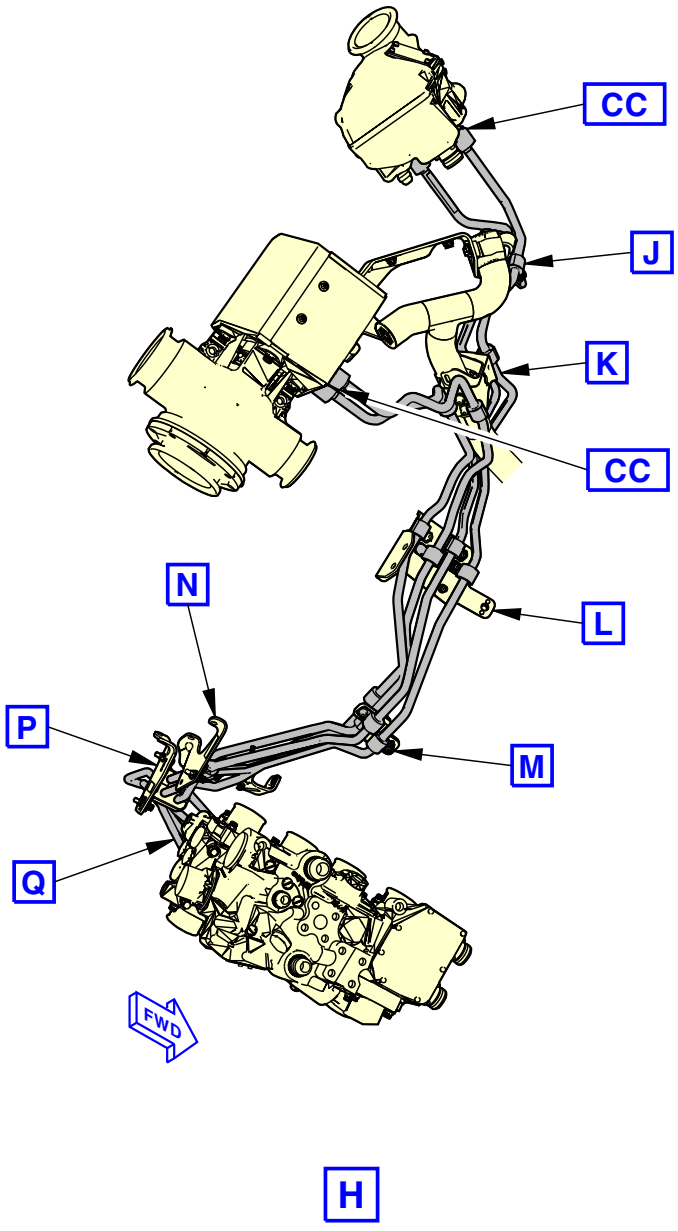
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 11 of 35)

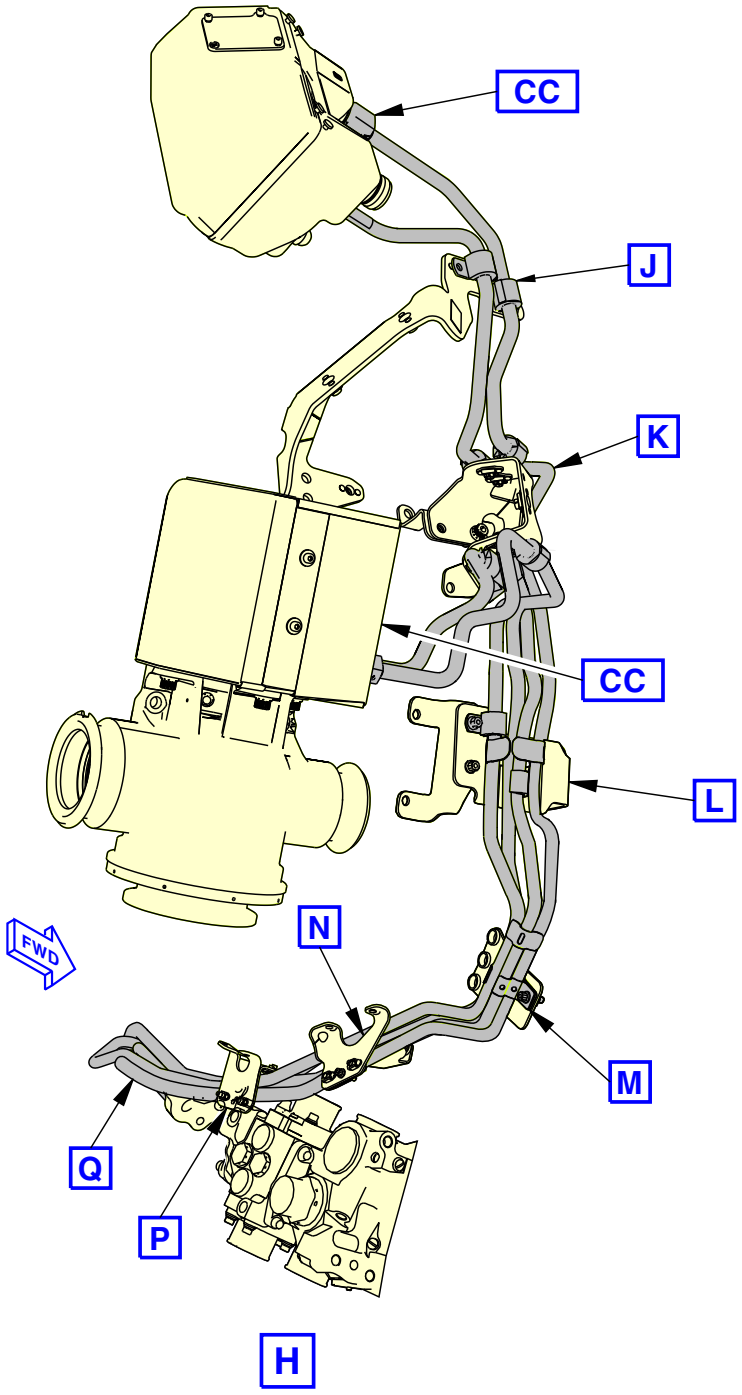
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 12 of 35)

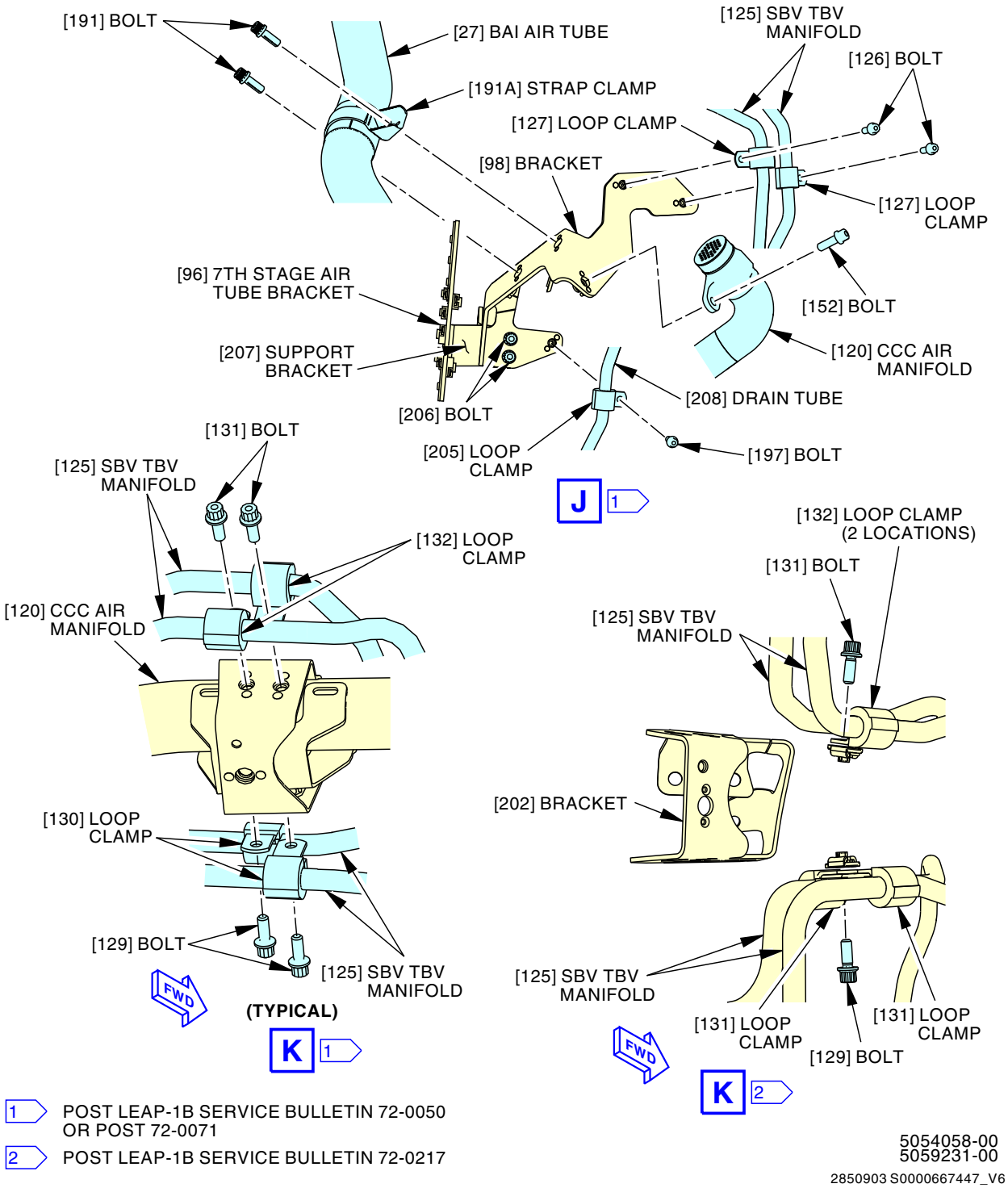
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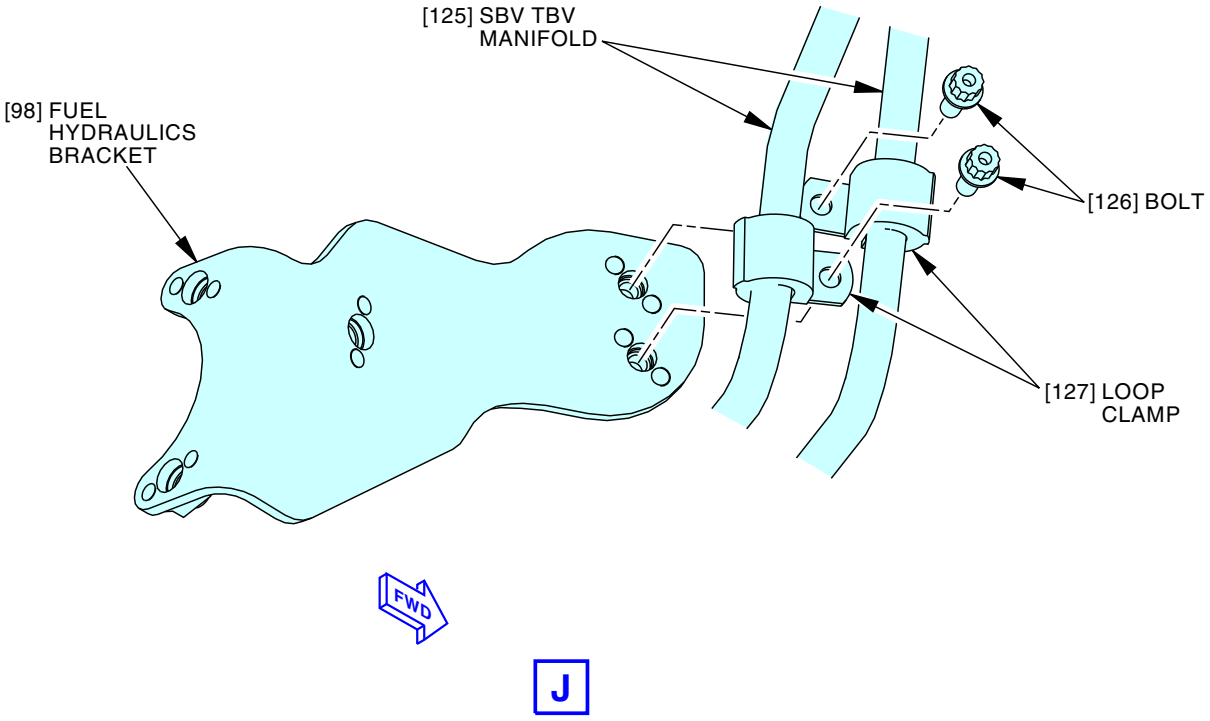
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 13 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 14 of 35)

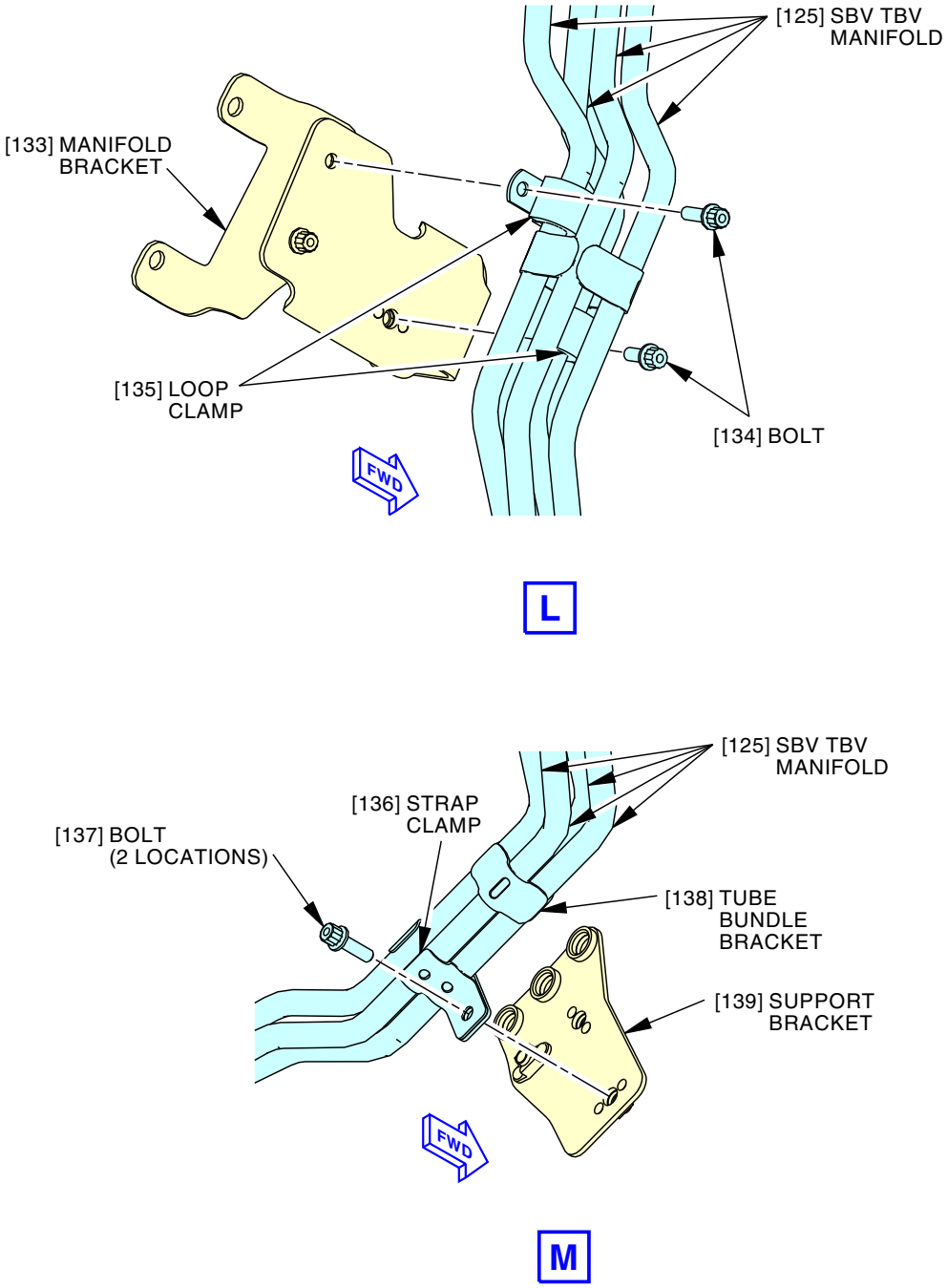
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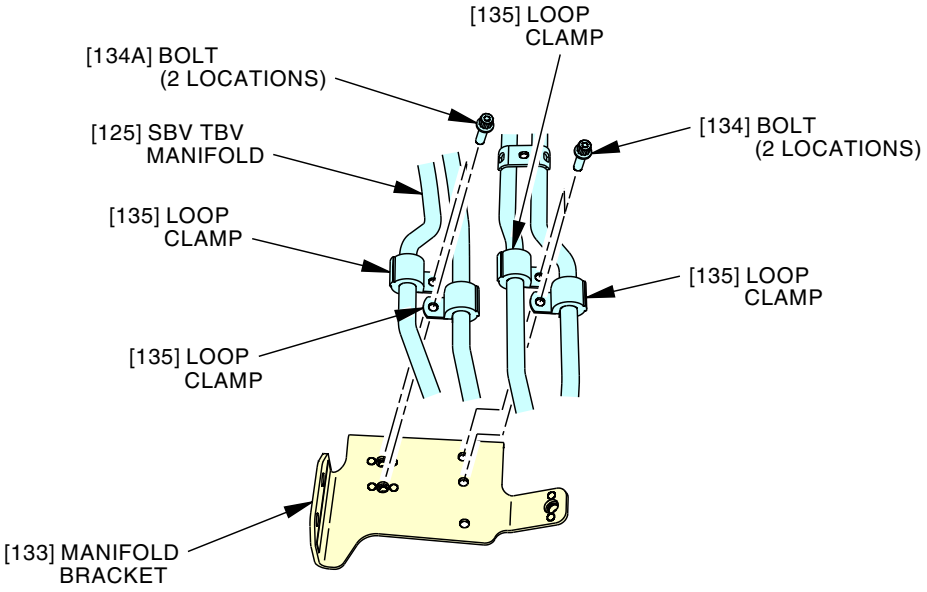
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 15 of 35)

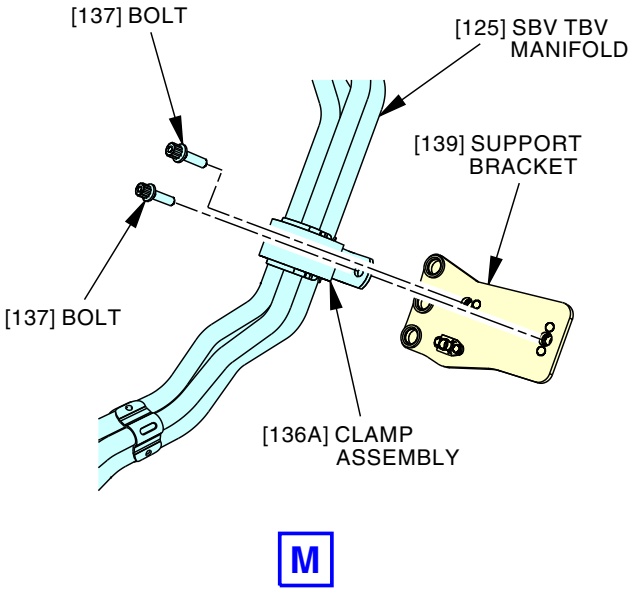
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 16 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

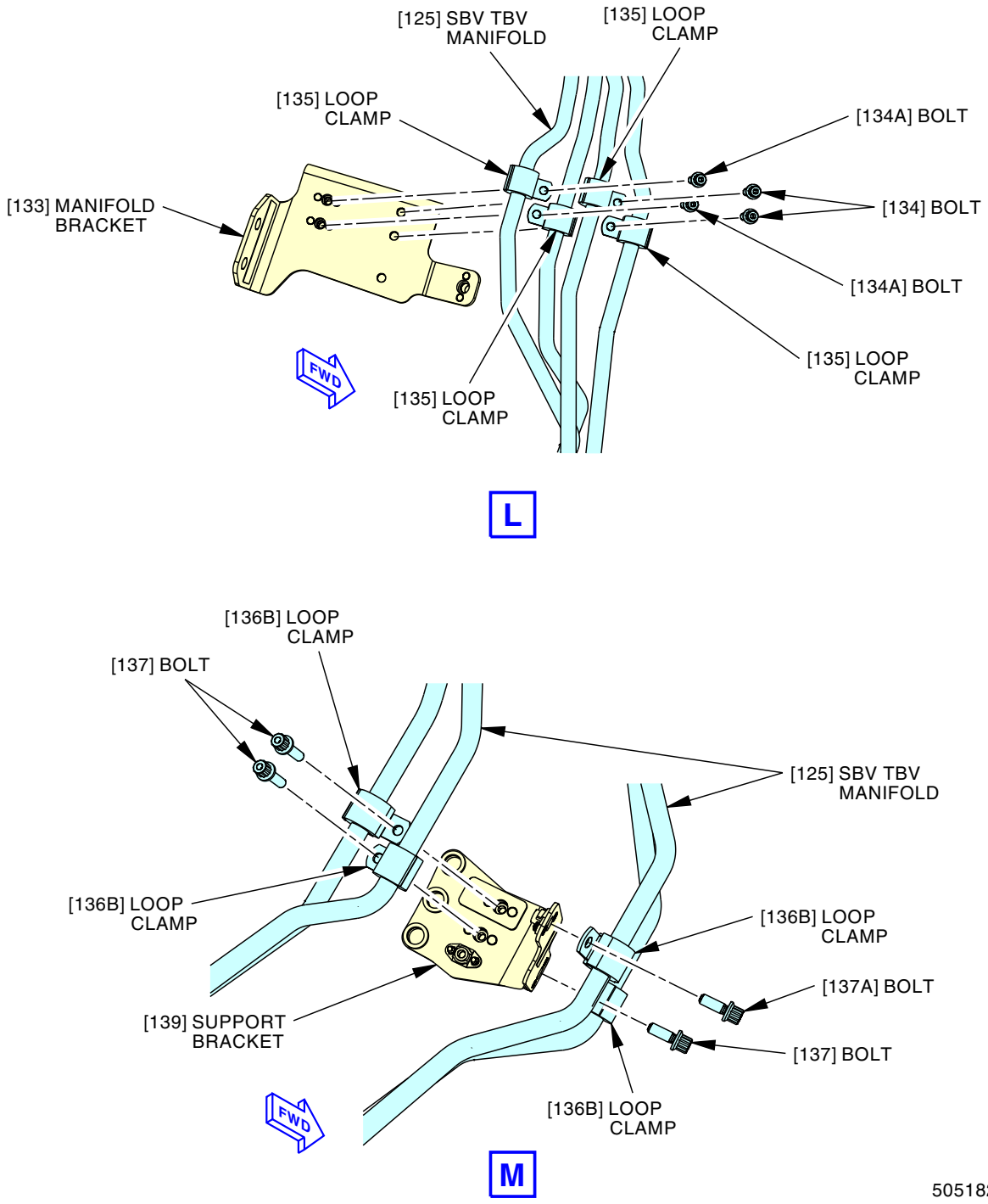




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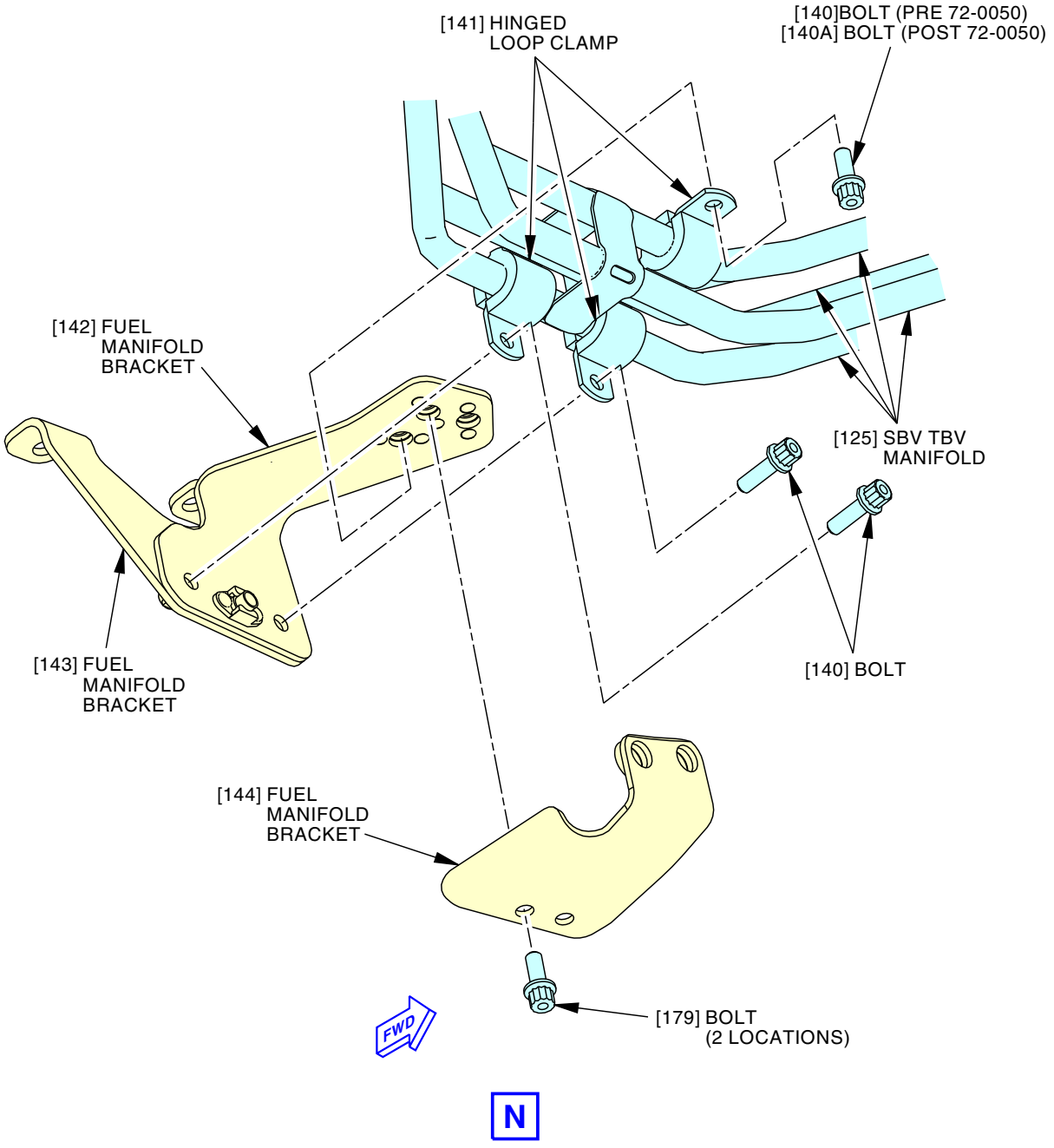
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 17 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



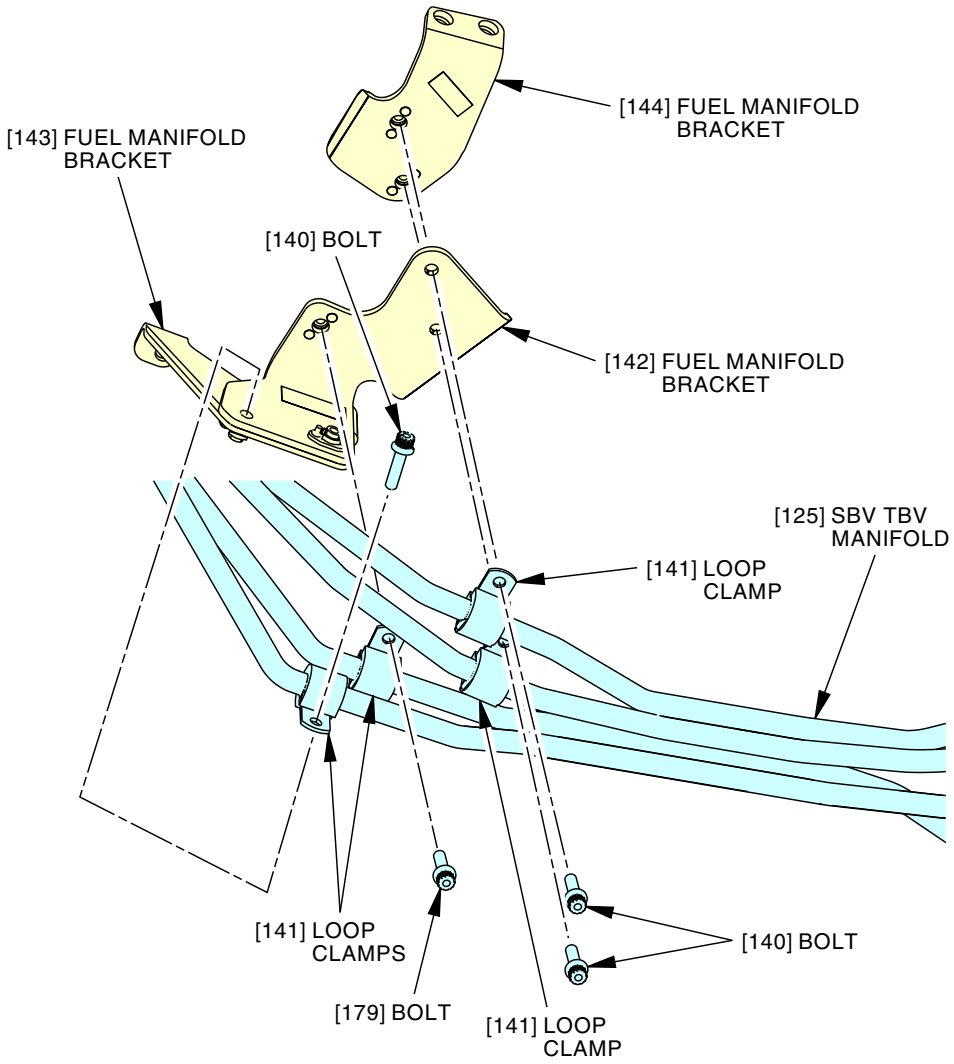
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 18 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 19 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

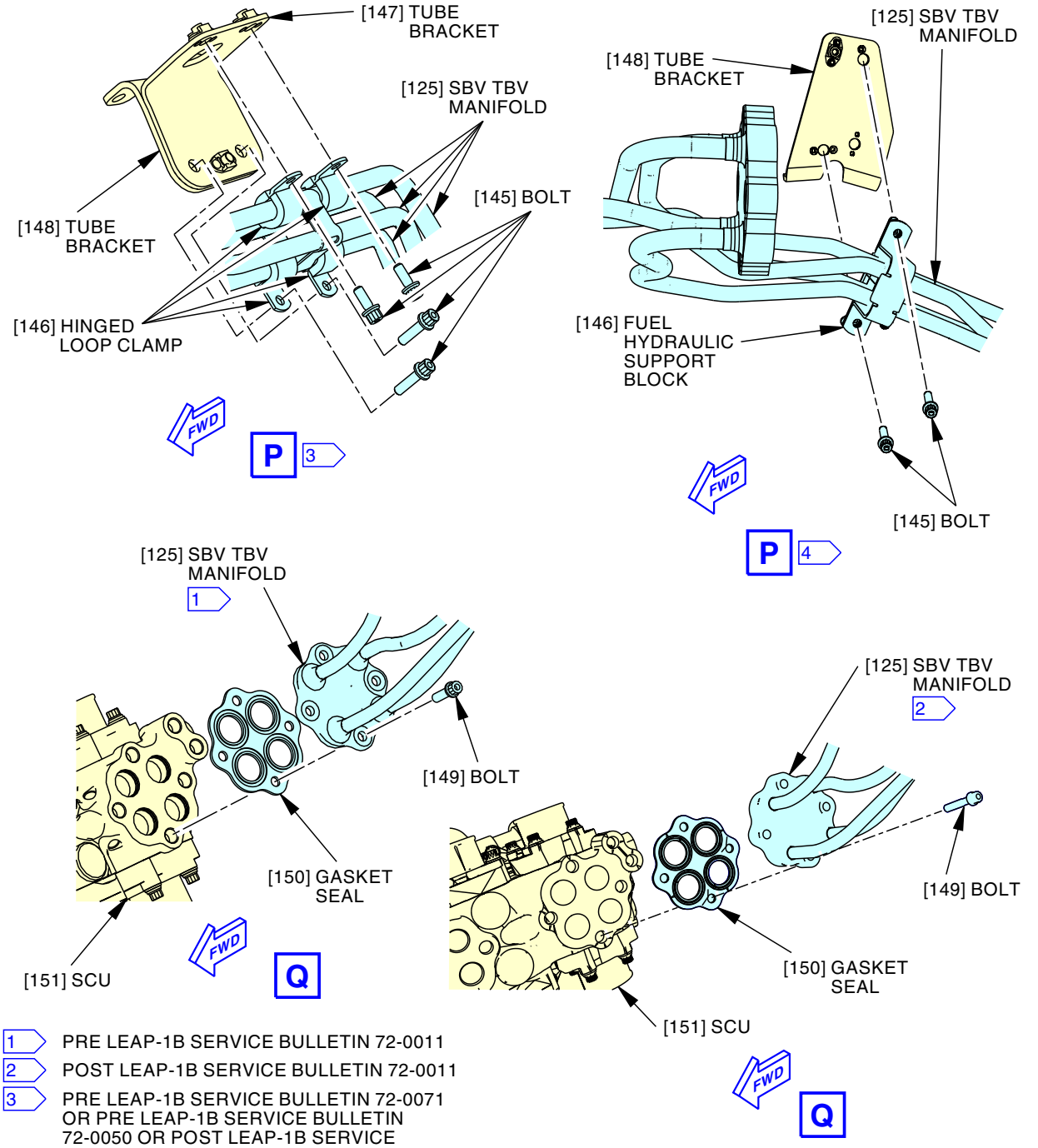


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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 20 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 PRE LEAP-1B SERVICE BULLETIN 72-0011

2 POST LEAP-1B SERVICE BULLETIN 72-0011

3 PRE LEAP-1B SERVICE BULLETIN 72-0071 OR PRE LEAP-1B SERVICE BULLETIN 72-0050 OR POST LEAP-1B SERVICE BULLETIN 72-0050

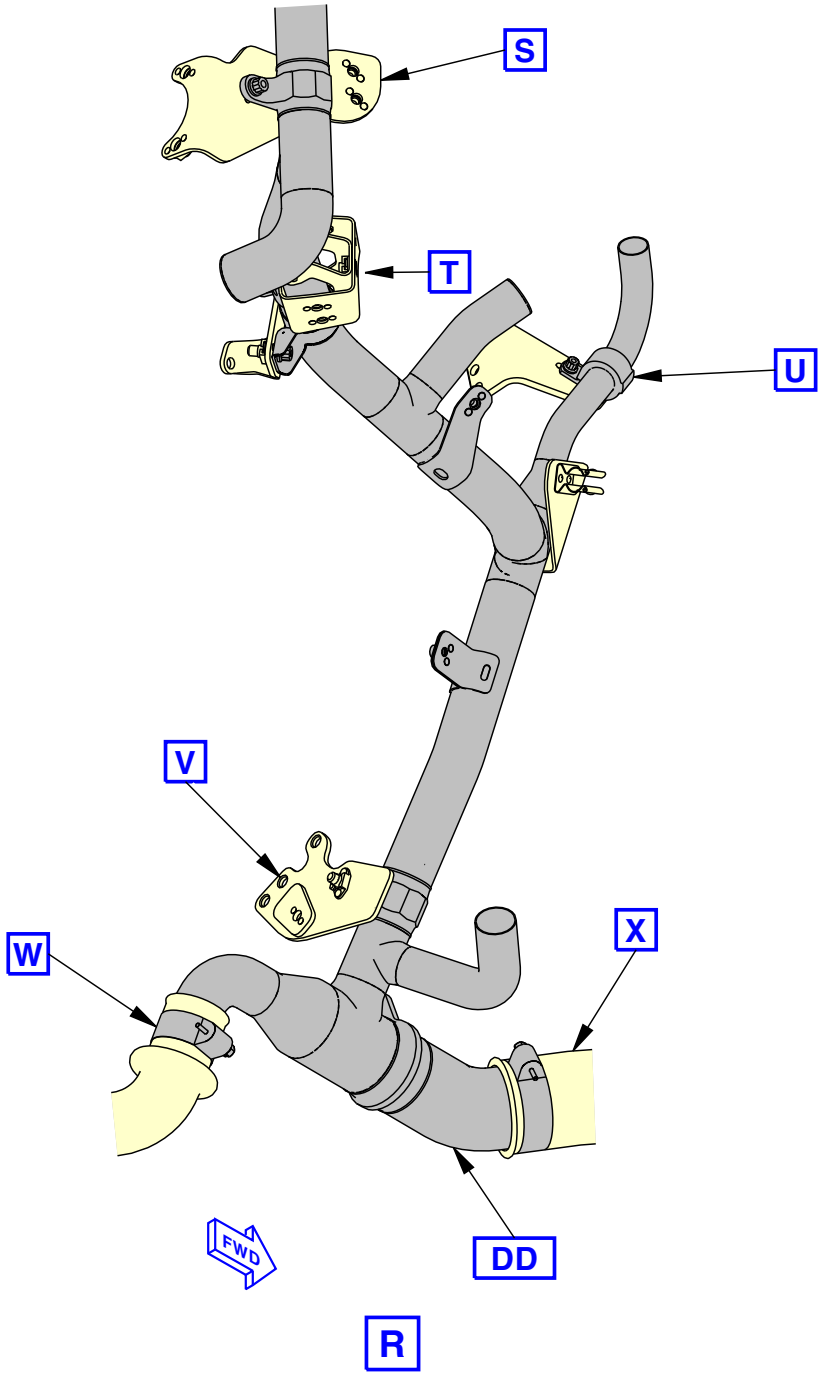
4 POST LEAP-1B SERVICE BULLETIN 72-0071

5053481-00/ 5051826-00

2443845 S0000566369_V5

Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 21 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

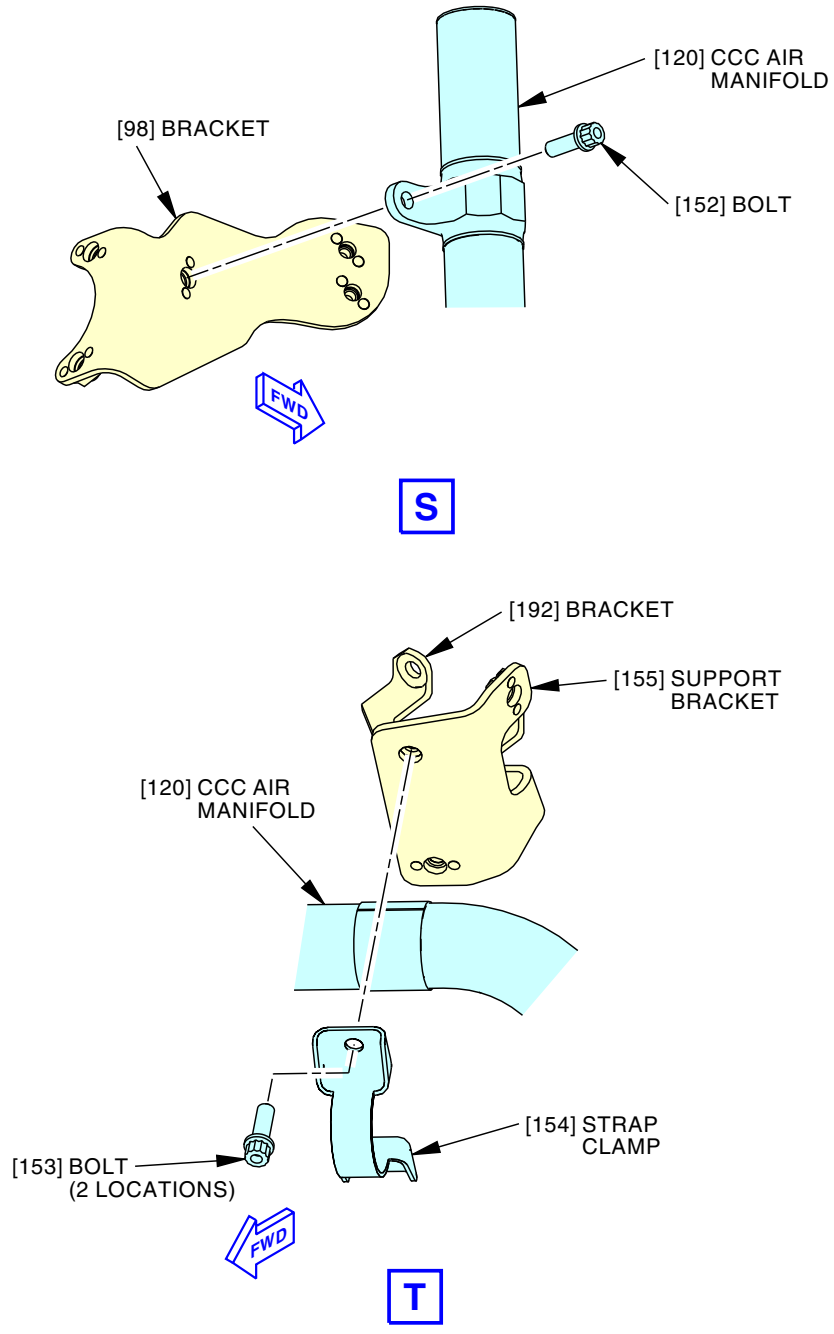


5021994-00

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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 22 of 35)

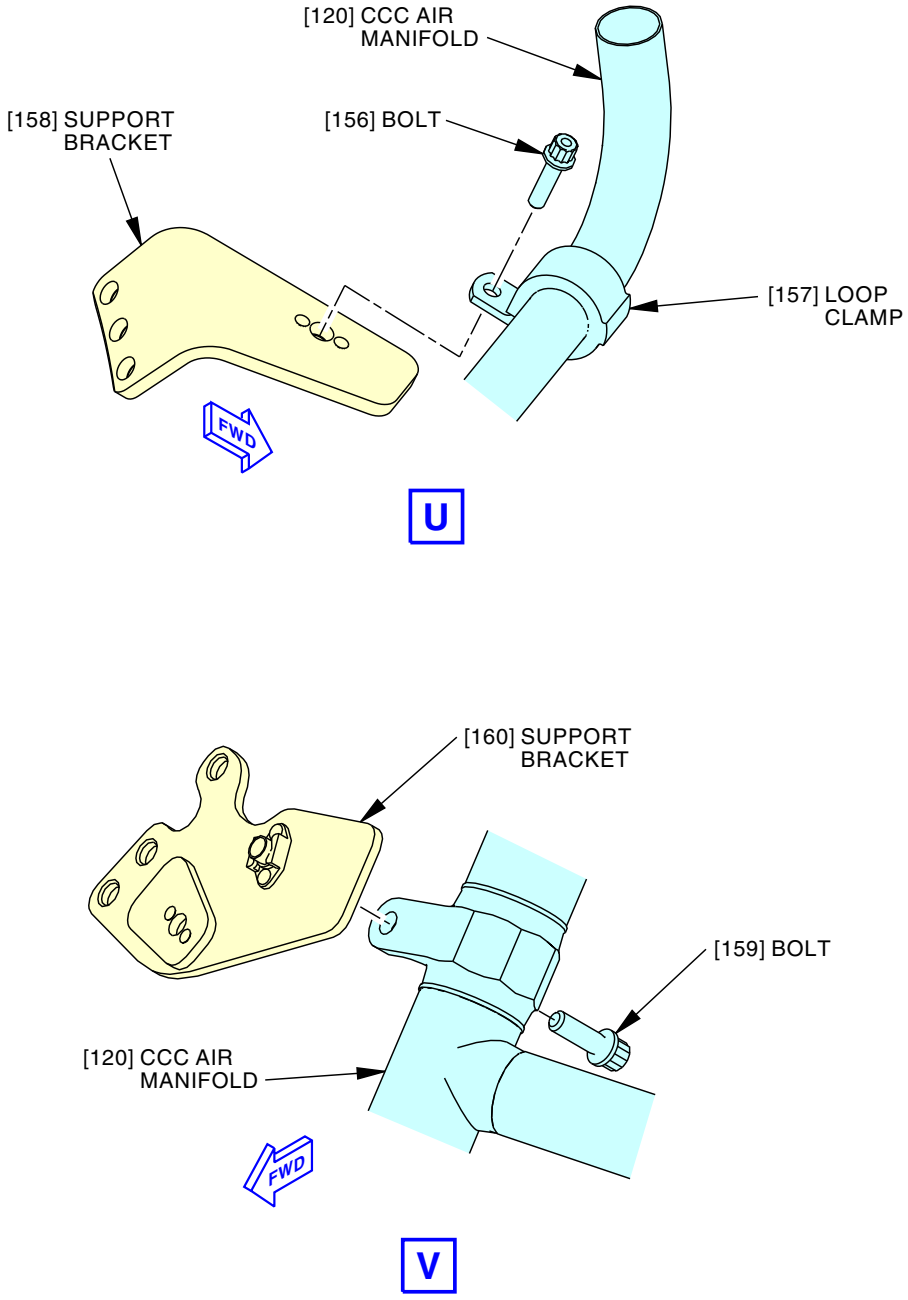
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5021995-00
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 23 of 35)

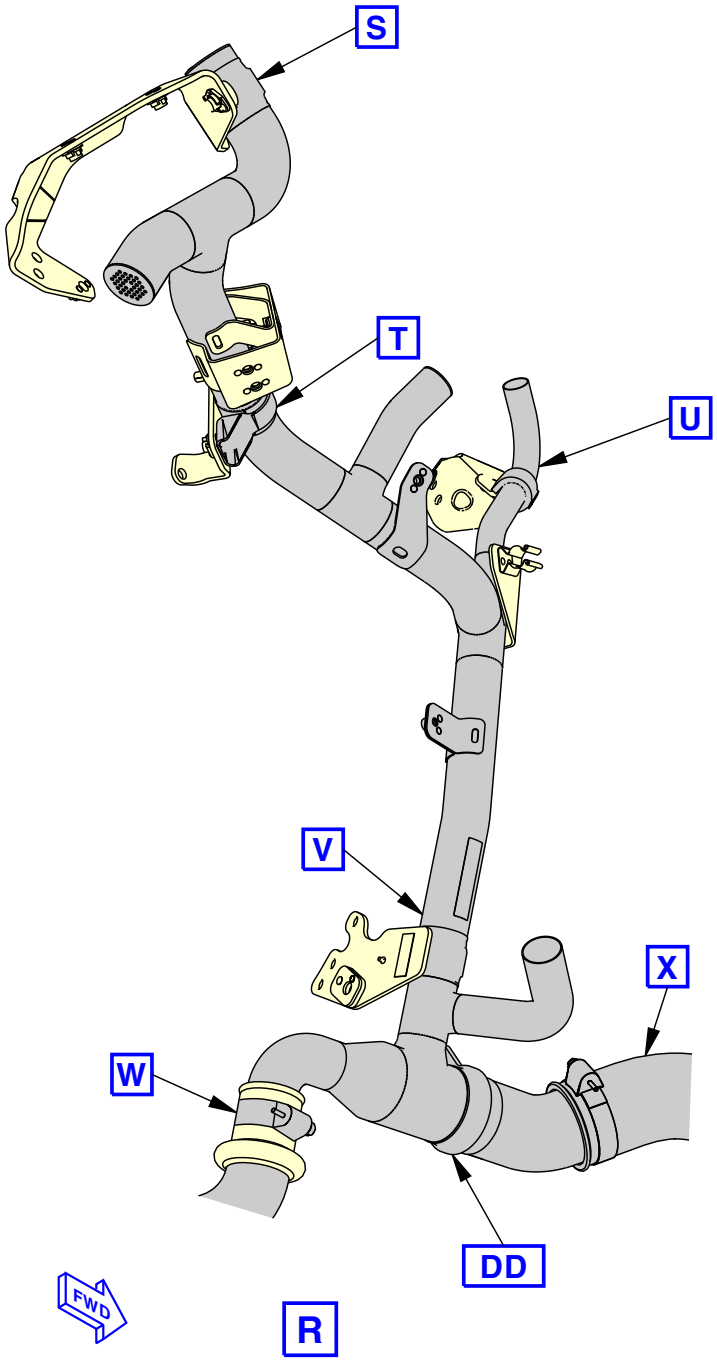
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 24 of 35)

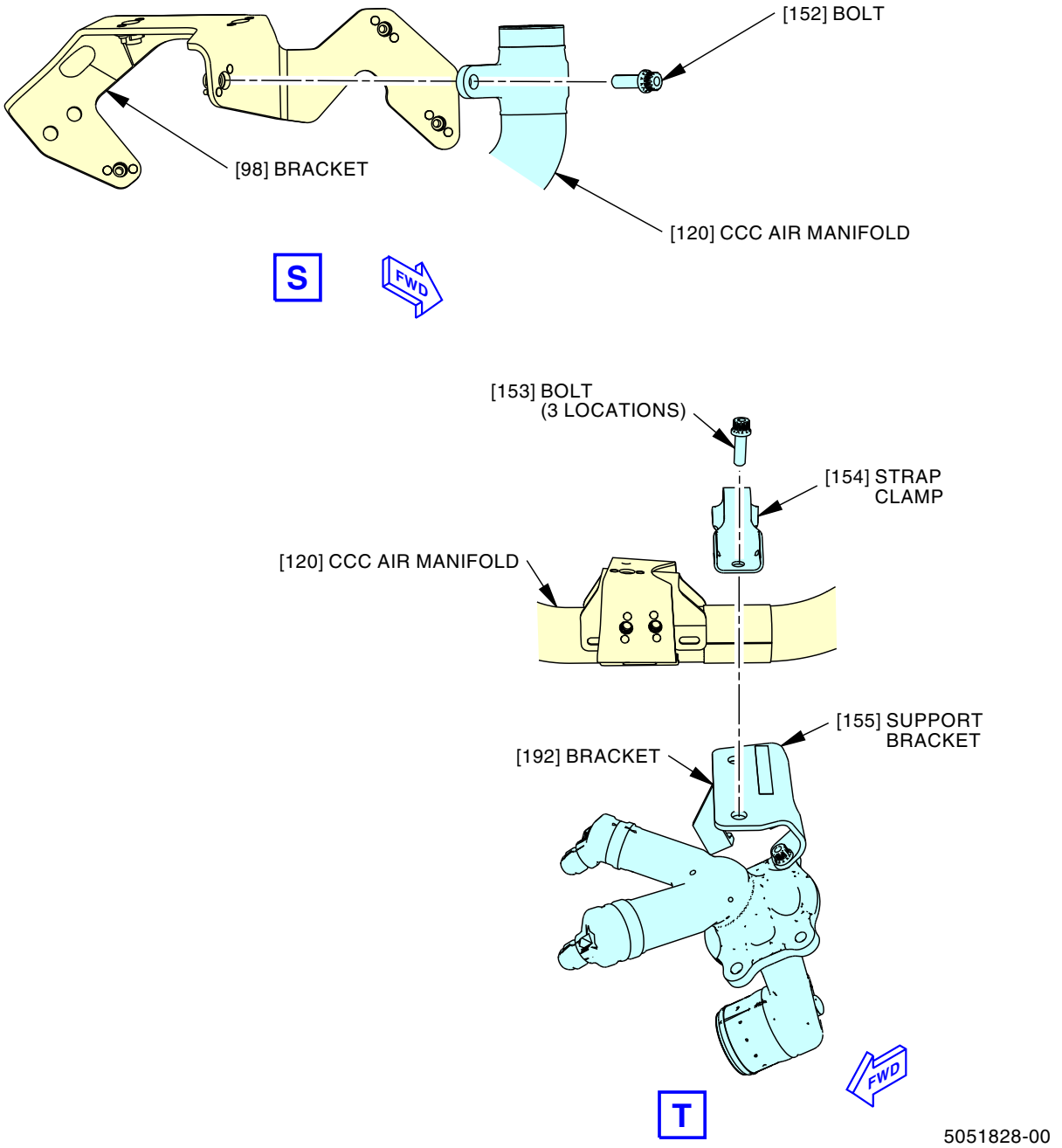
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5051827-00
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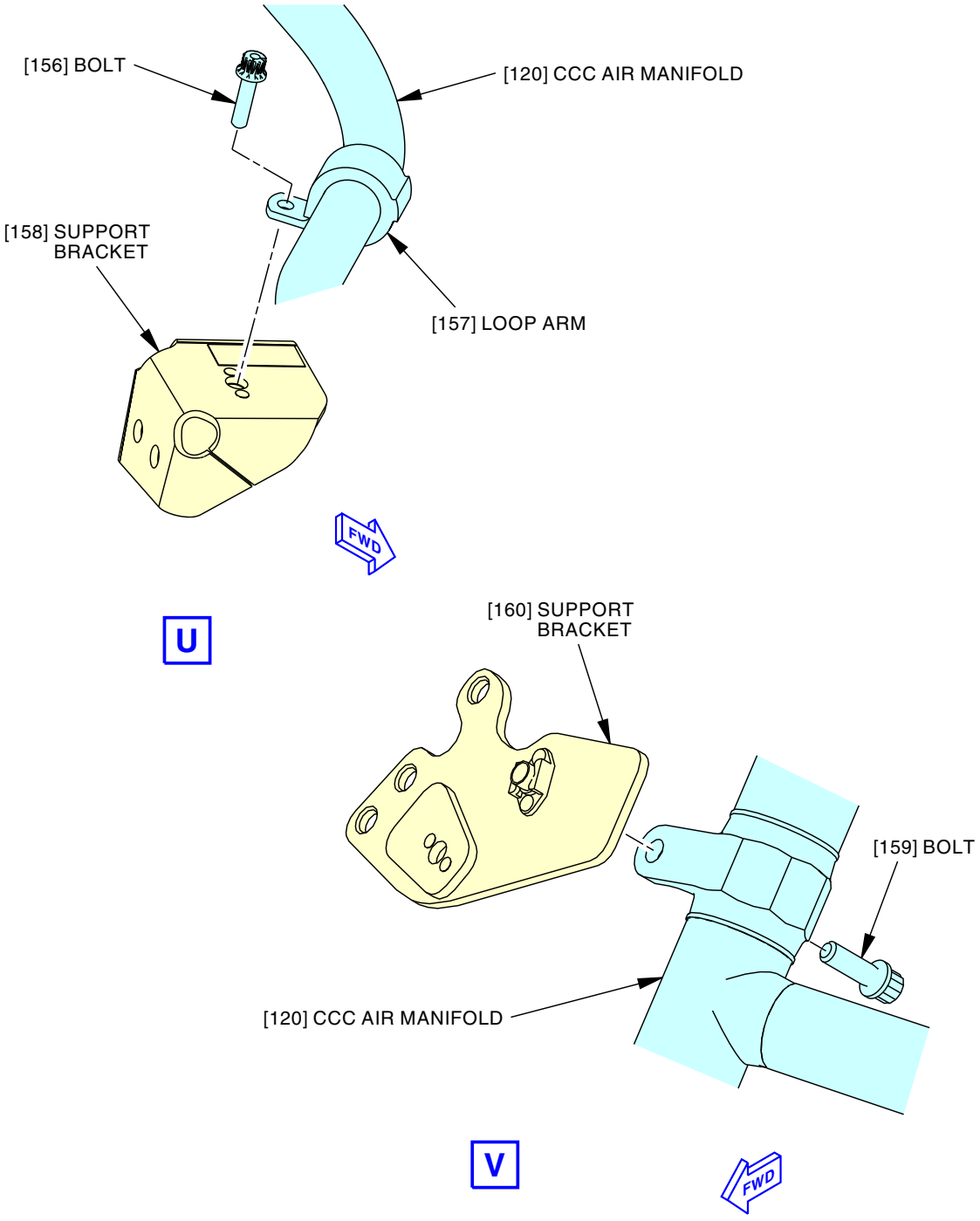
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 25 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



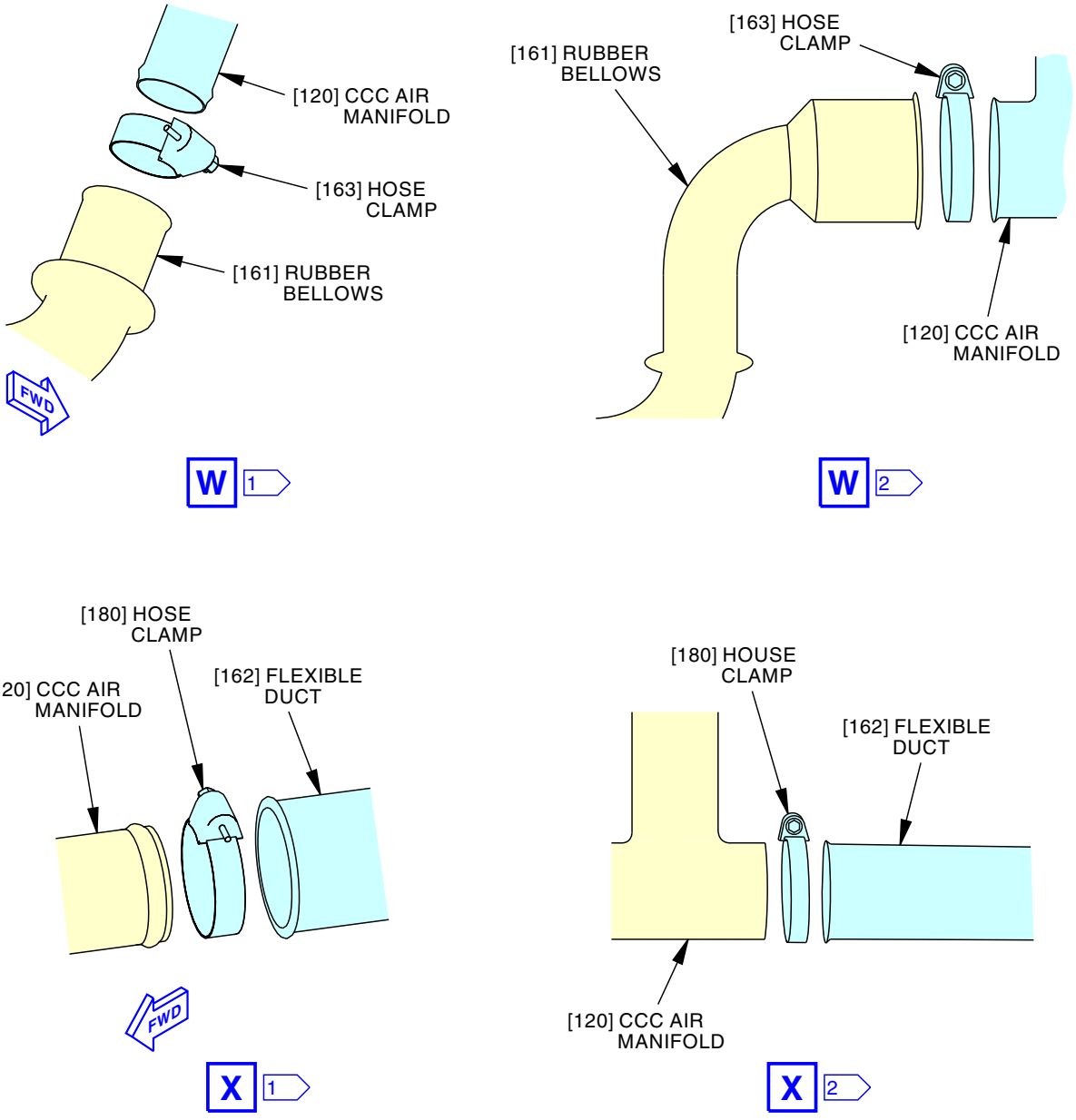
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 26 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 27 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



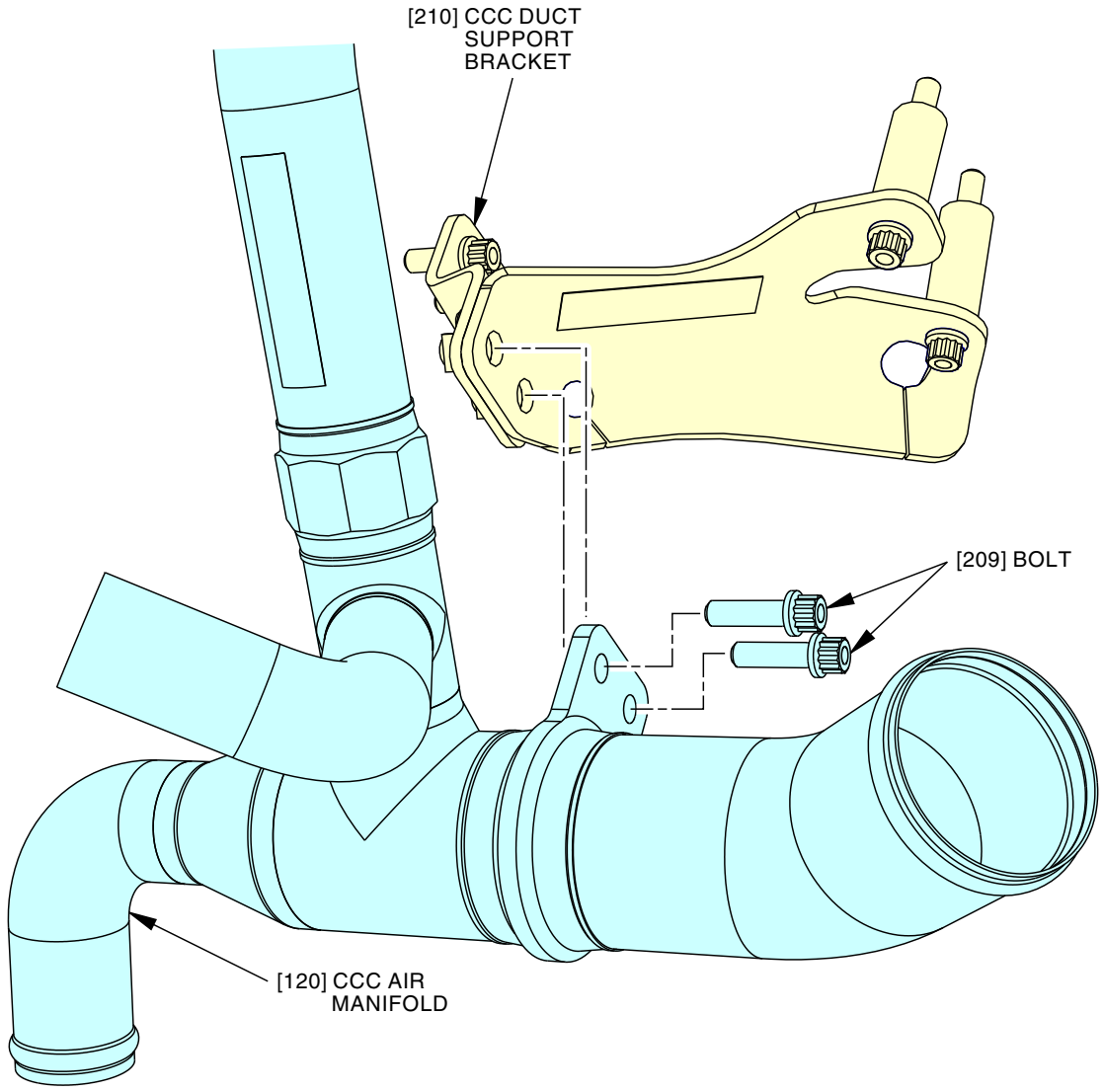
1 PRE LEAP-1B SERVICE BULLETIN 72-0050 OR POST LEAP-1B SERVICE BULLETIN 72-0050

2 POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0217

5021997-00
2443850 S0000566373_V3

Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 28 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



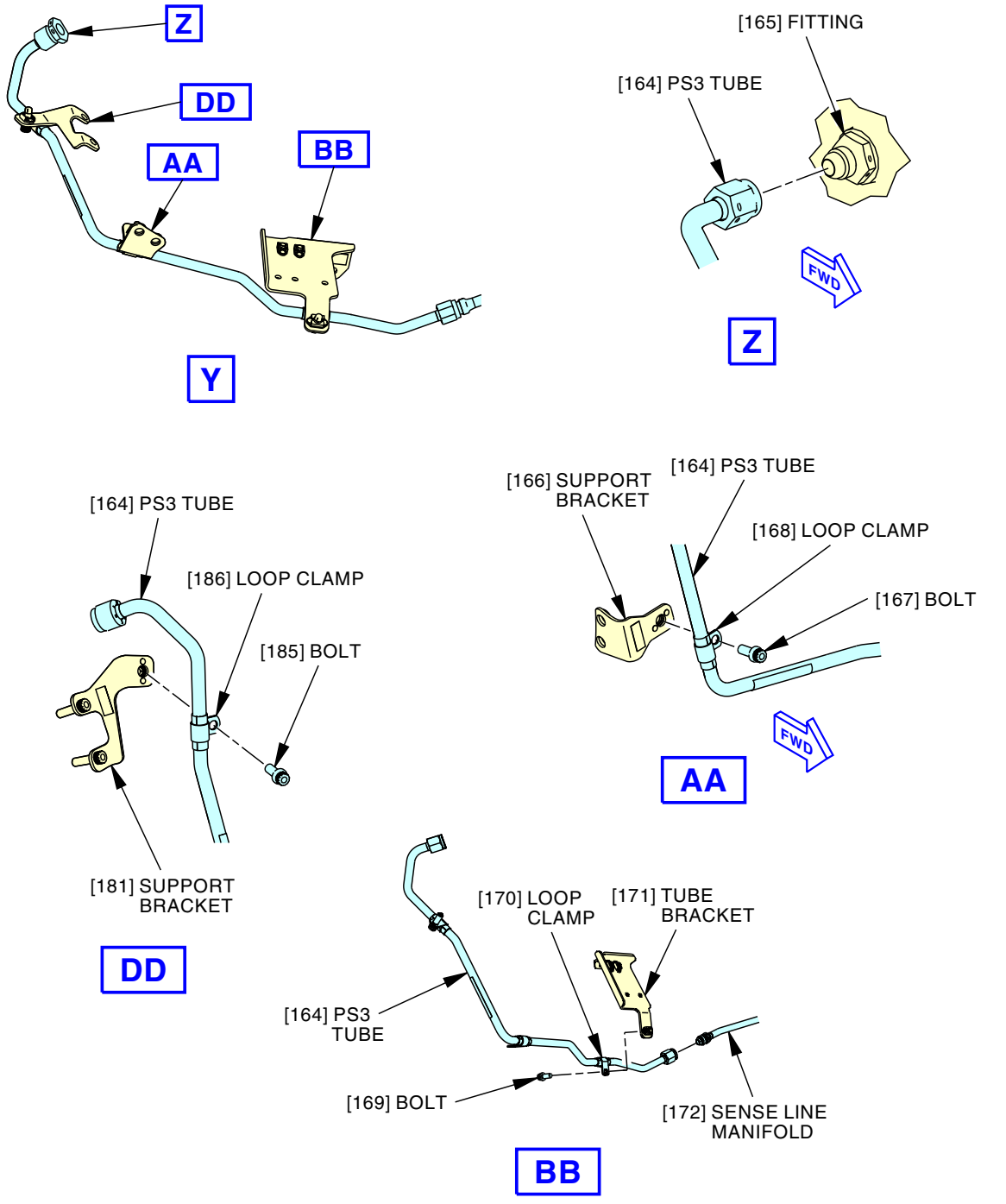
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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 29 of 35)

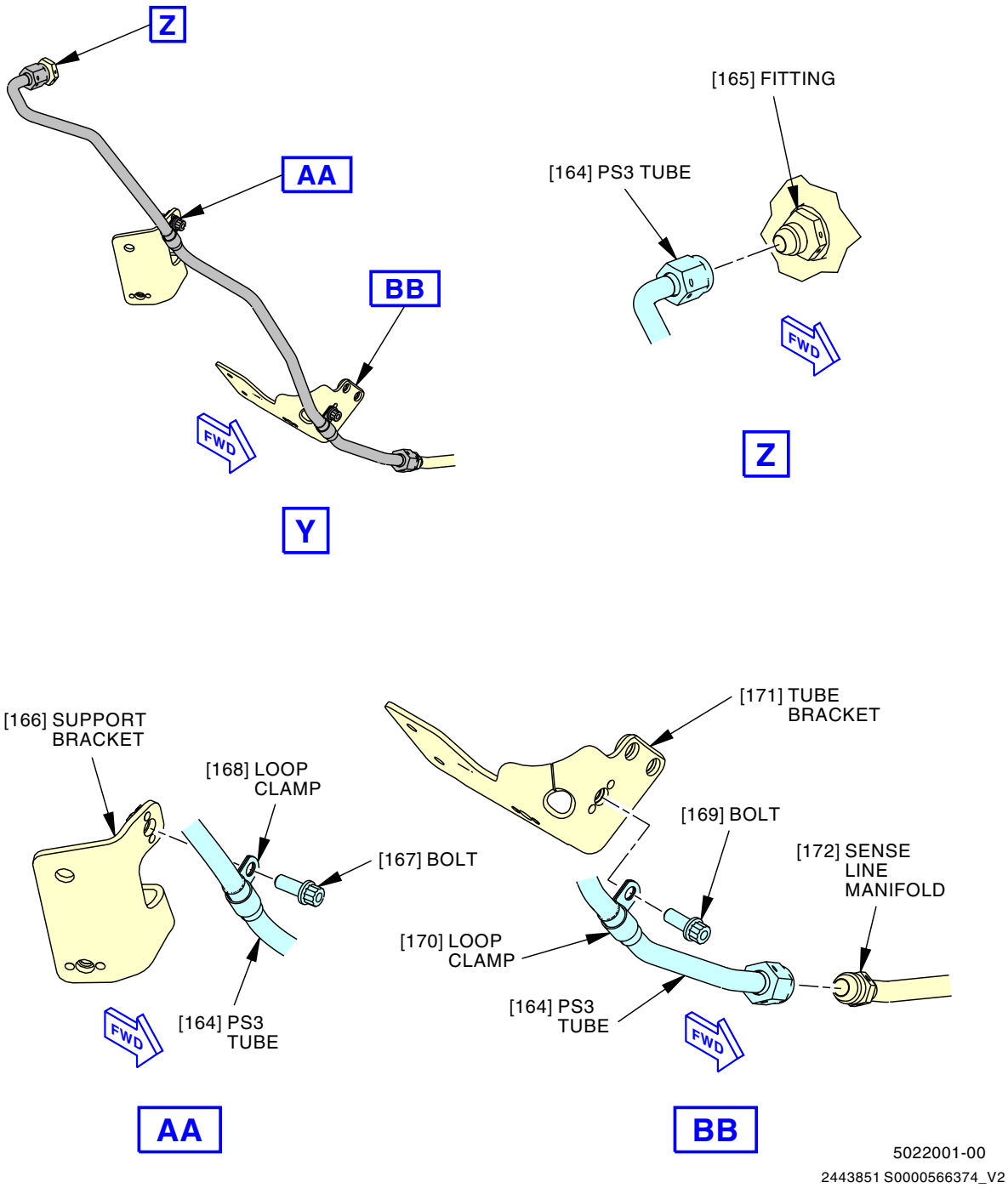
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5051836-00
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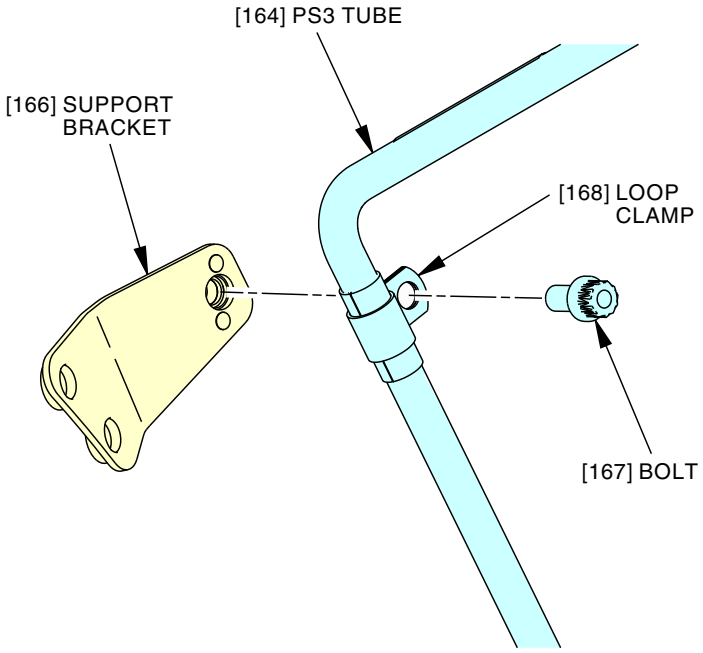
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 30 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 31 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

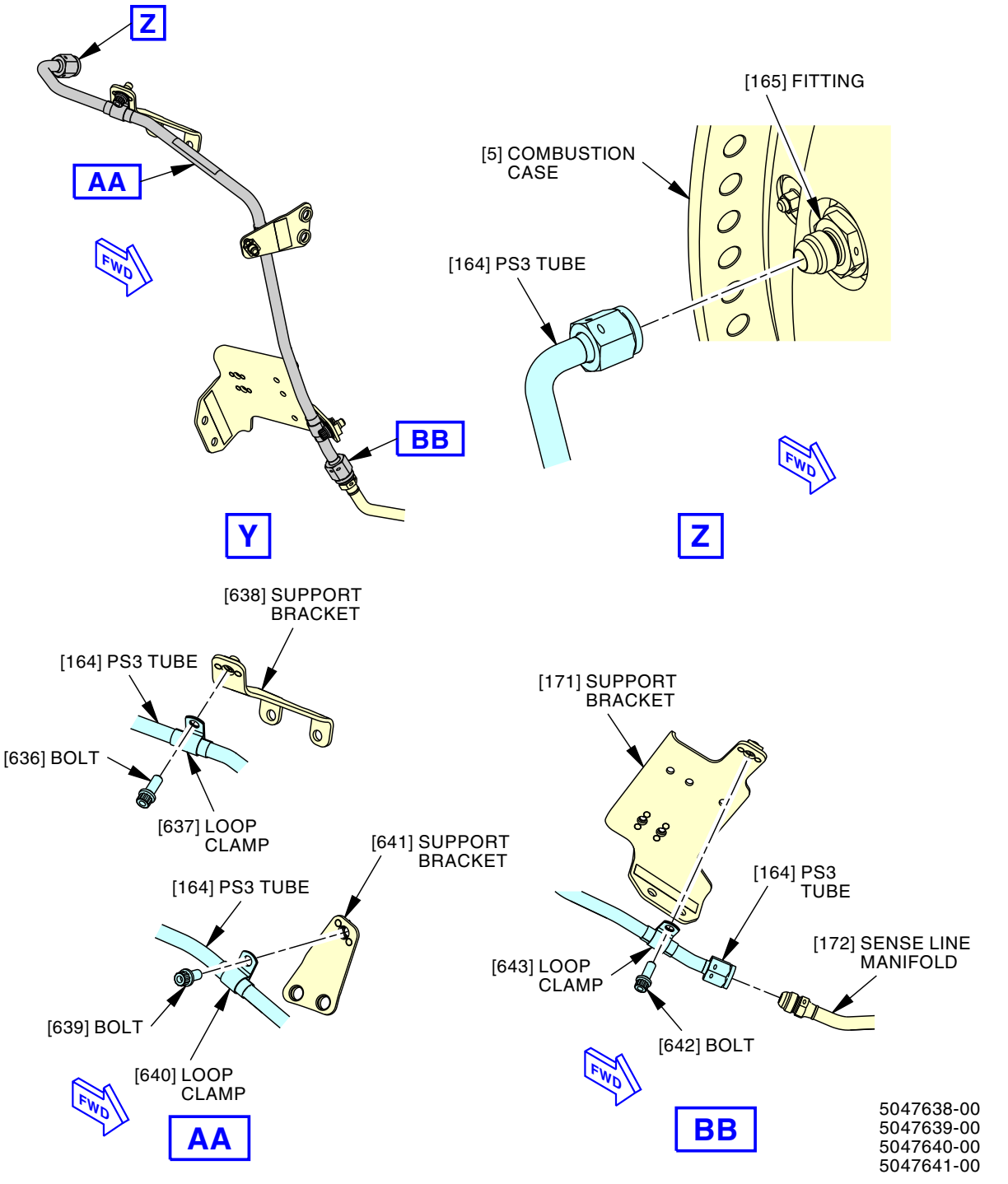


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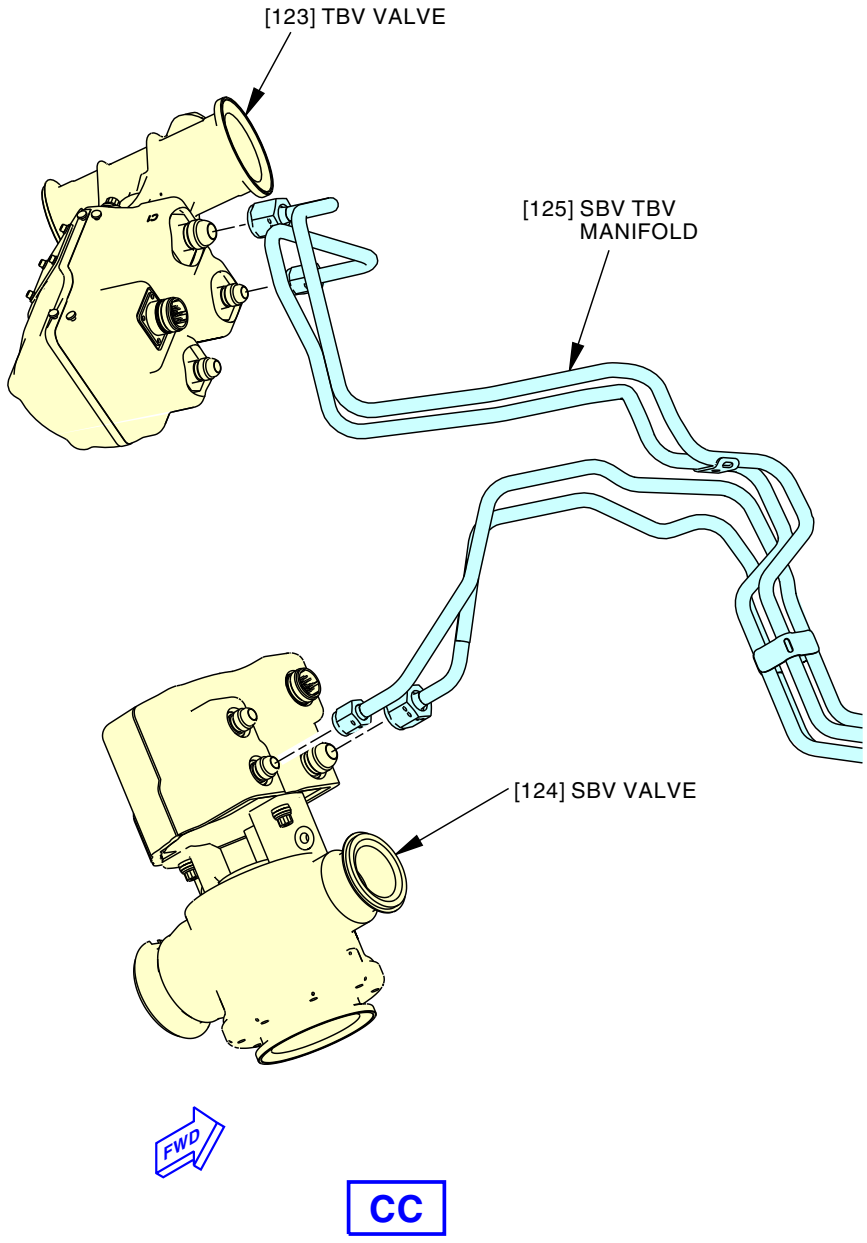
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 32 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 33 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

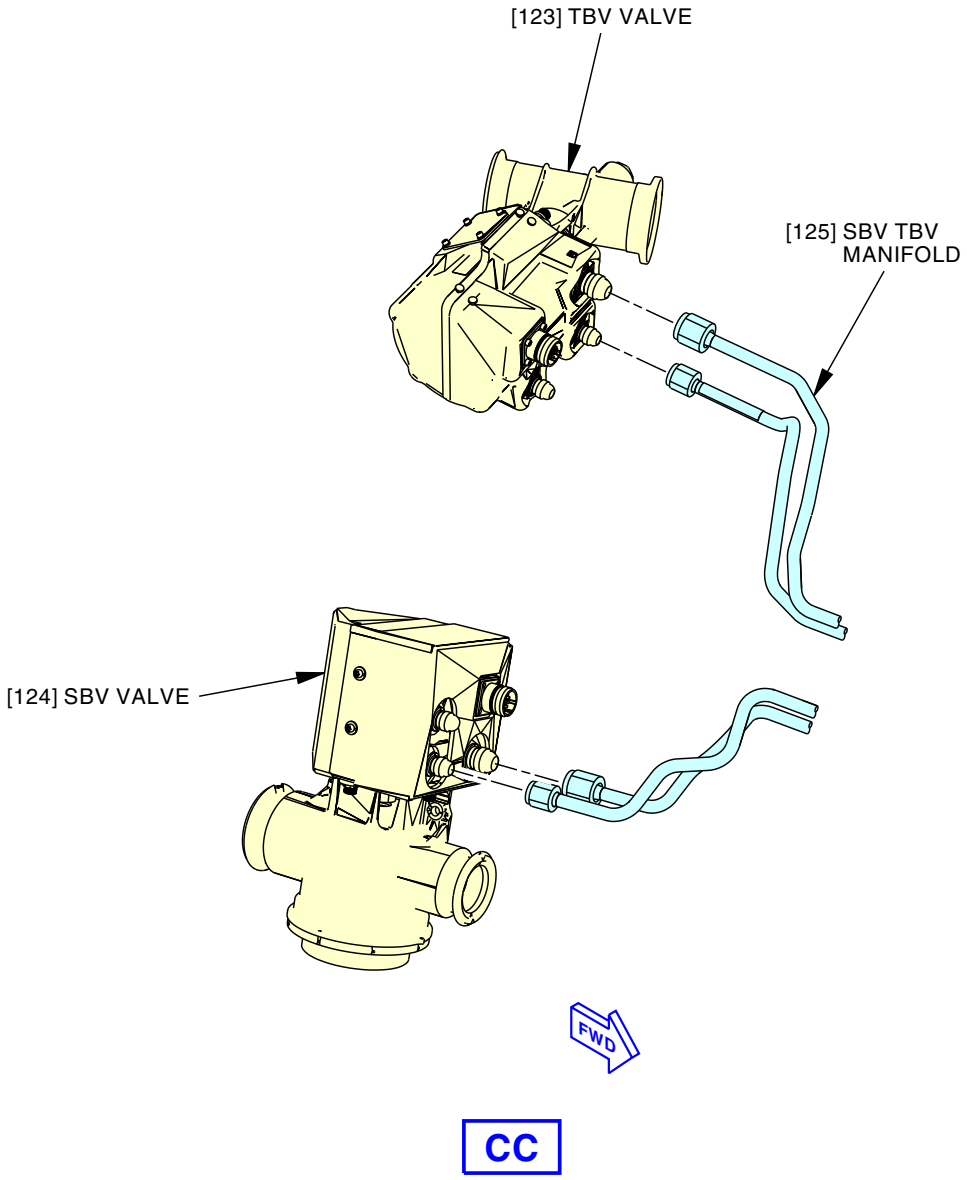


5024885-00

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Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 34 of 35)

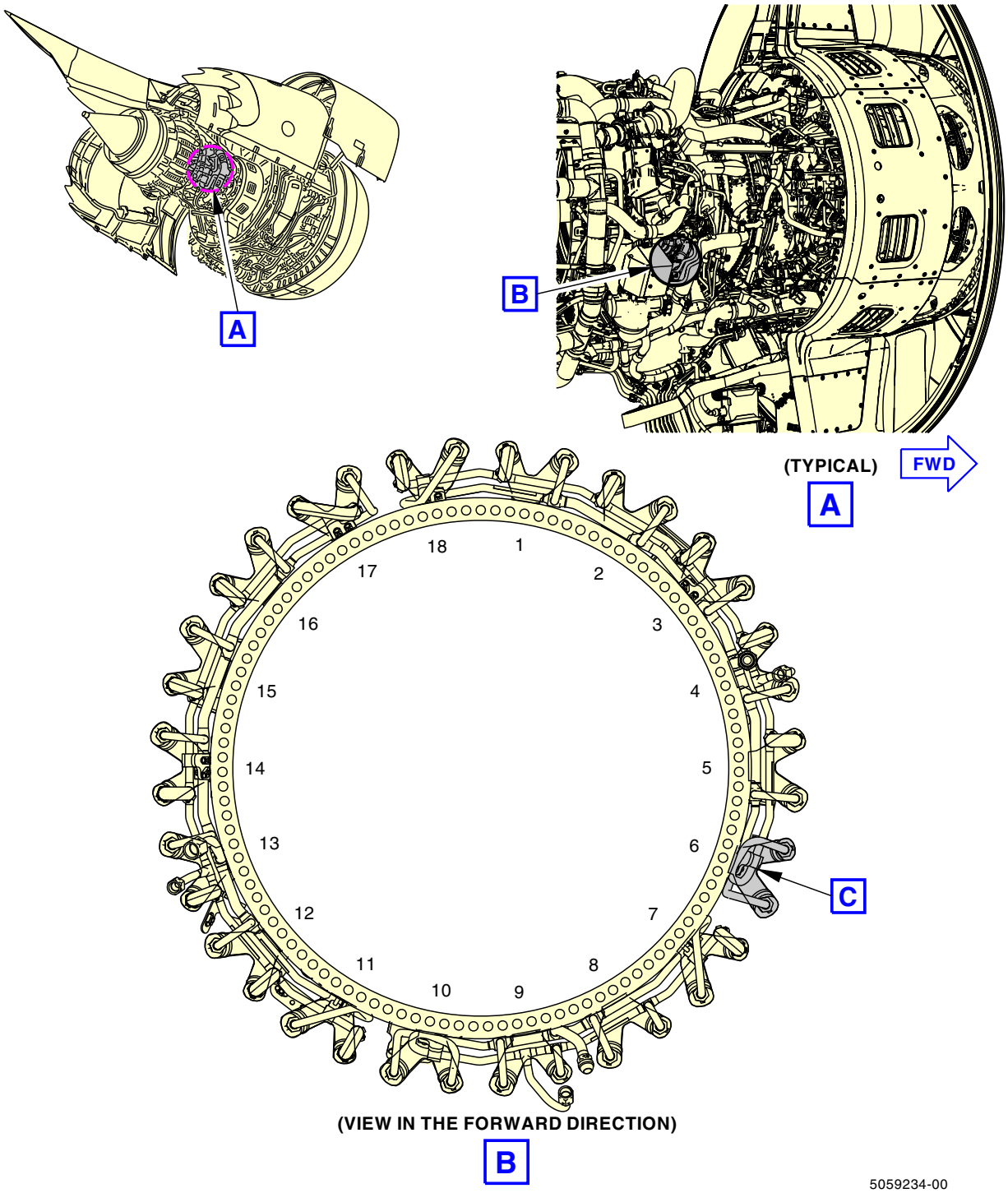
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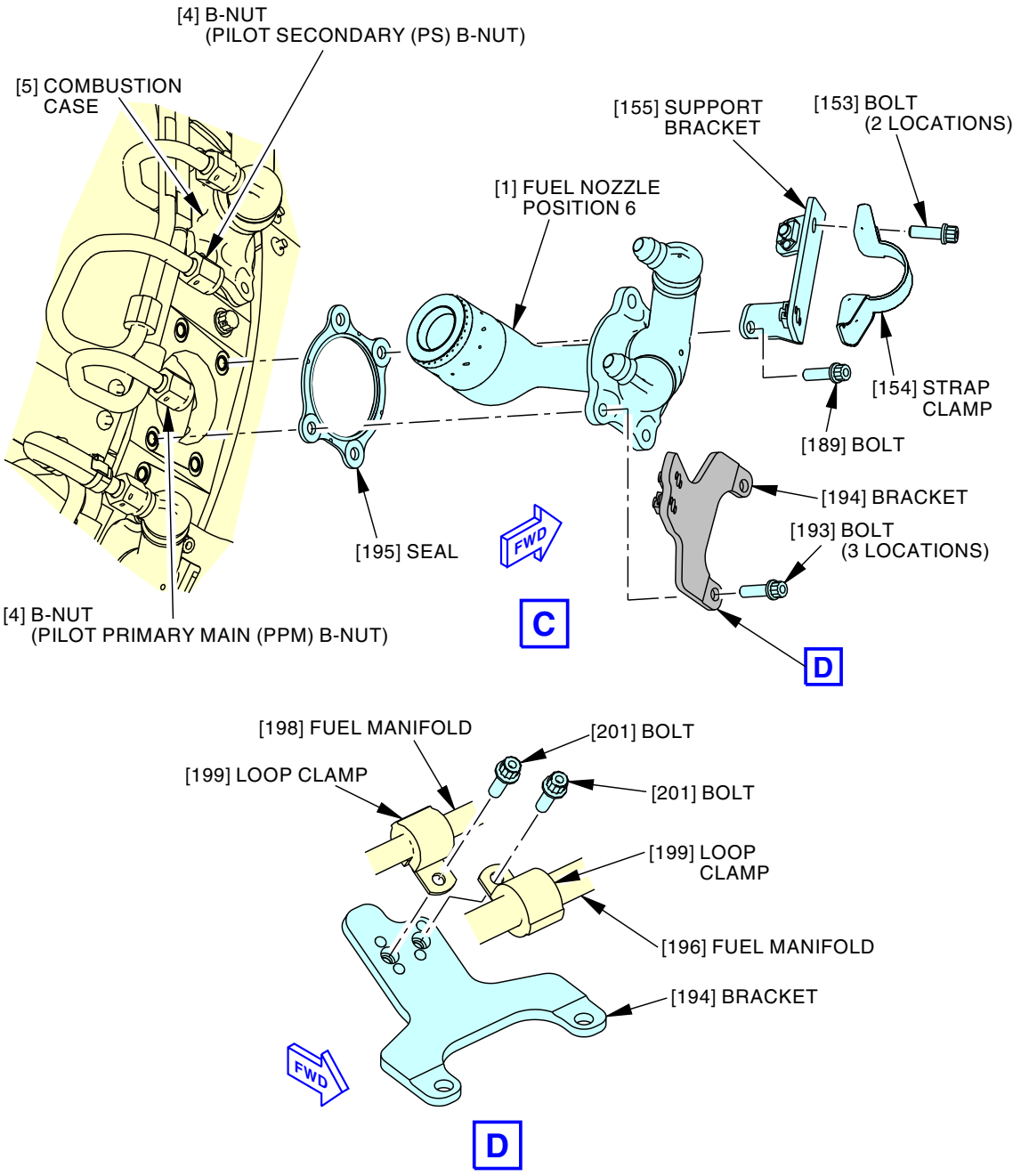
Fuel Nozzle (Position 5) Installation
Figure 406/73-11-05-990-892-G00 (Sheet 35 of 35)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



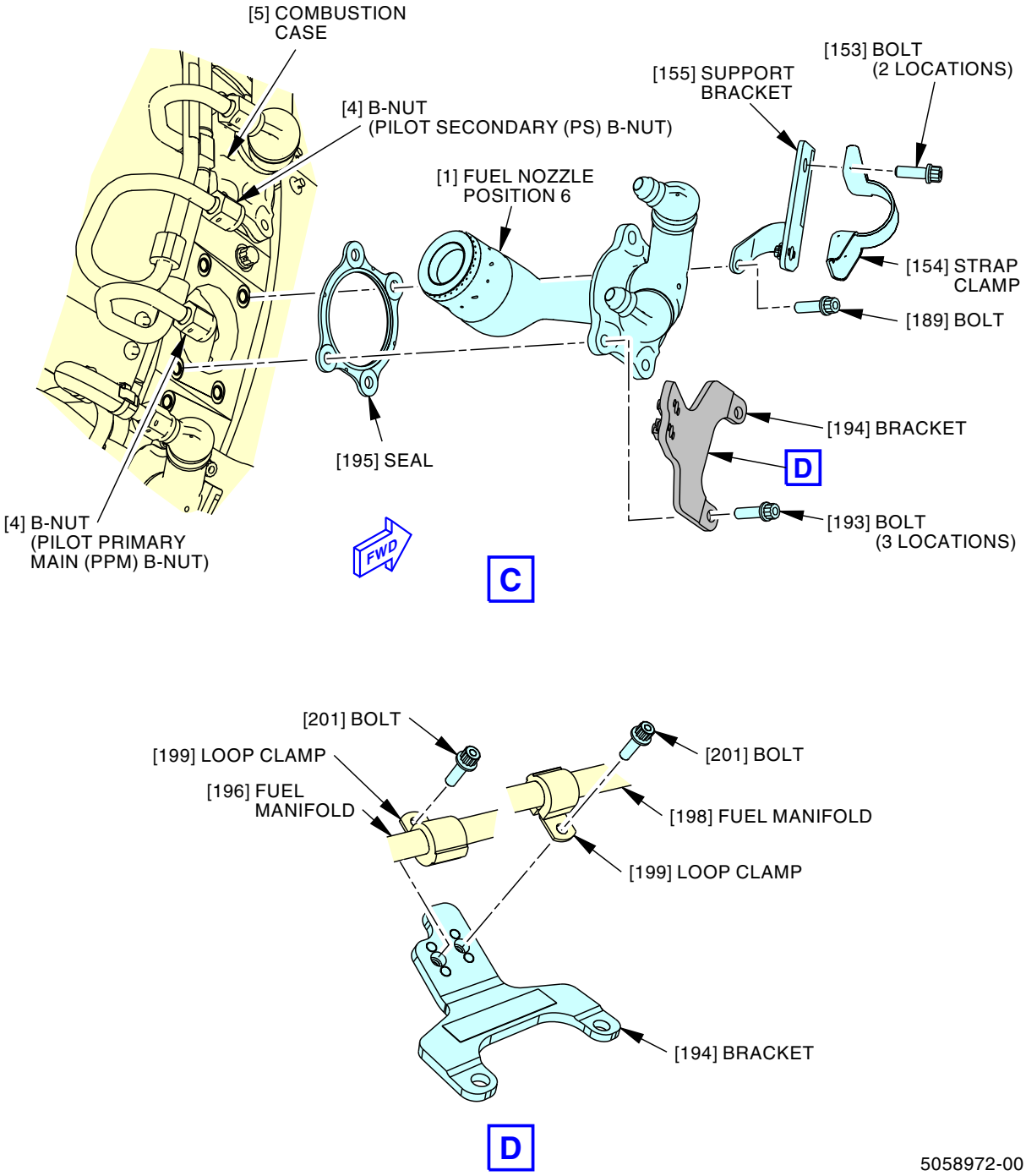
Fuel Nozzle (Position 6) Installation
Figure 407/73-11-05-990-893-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 6) Installation
Figure 407/73-11-05-990-893-G00 (Sheet 2 of 5)

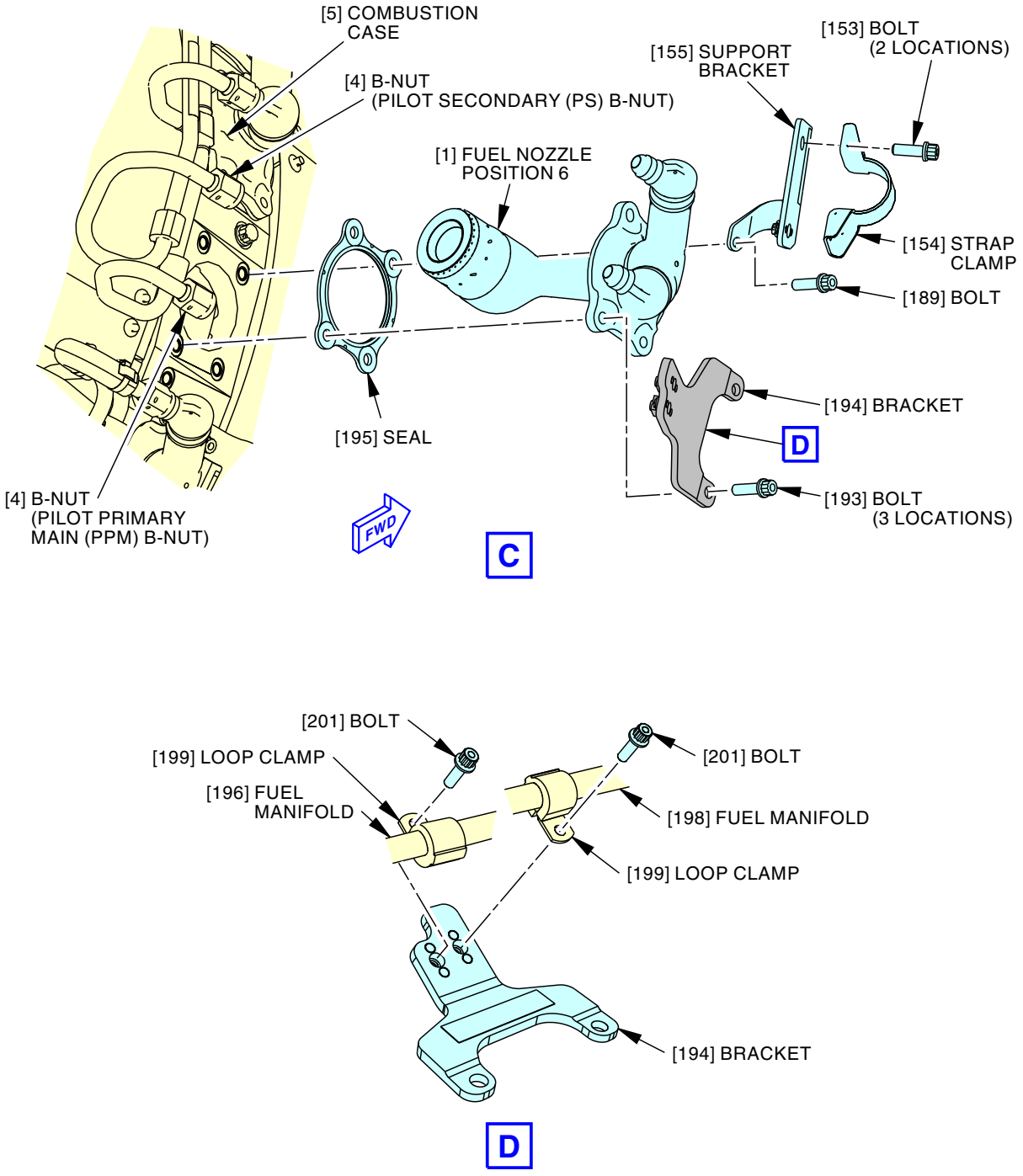
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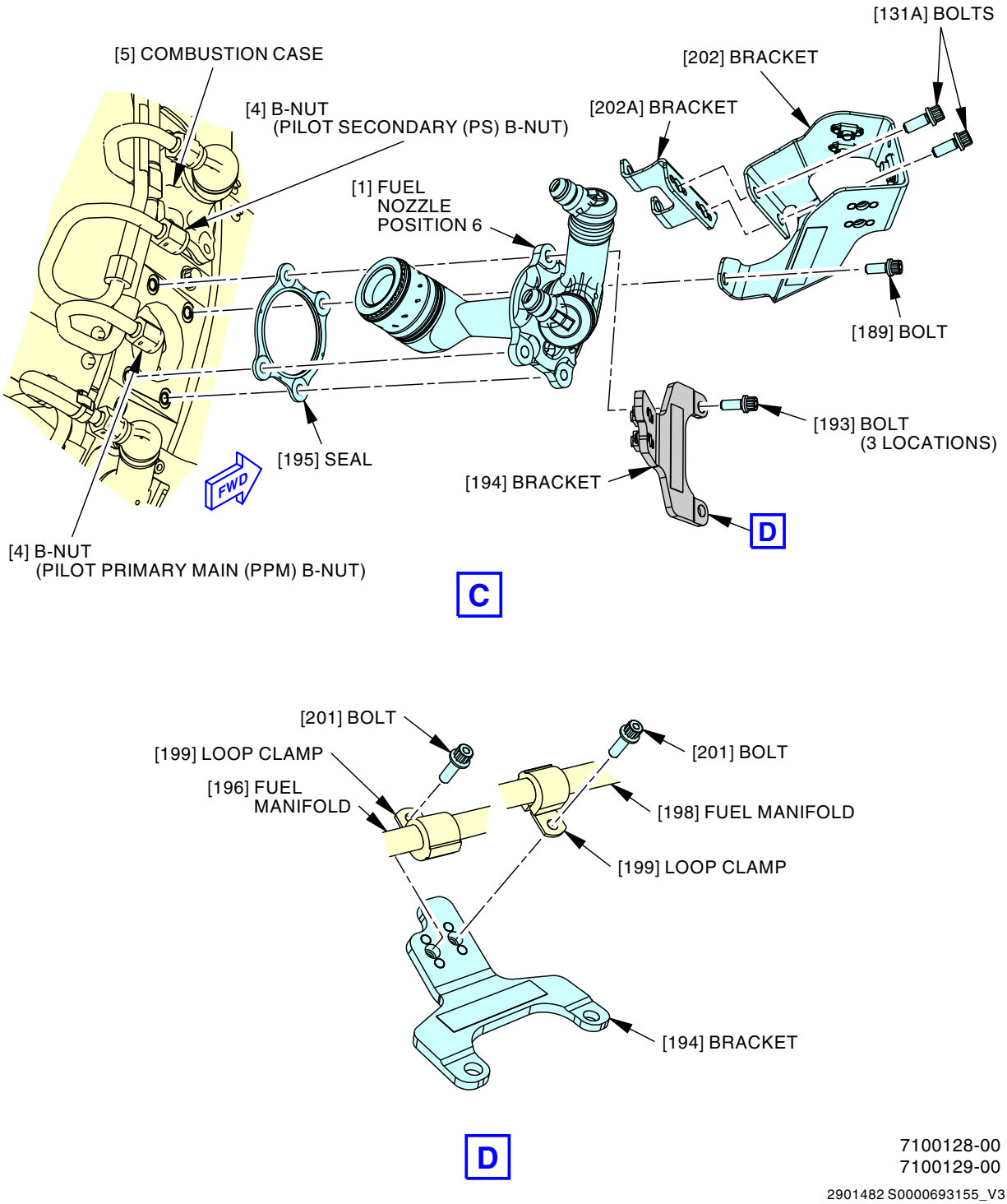
Fuel Nozzle (Position 6) Installation
Figure 407/73-11-05-990-893-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



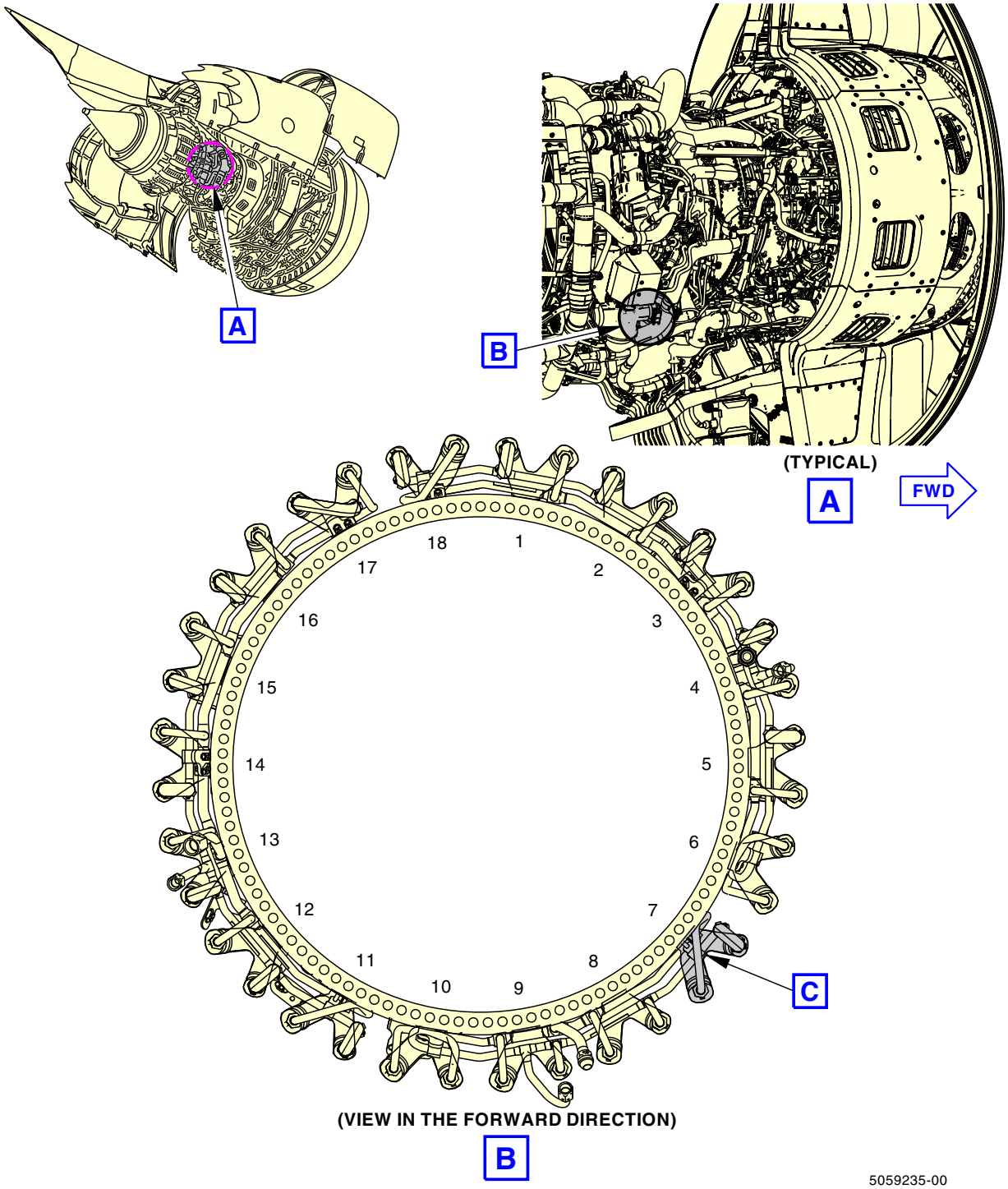
Fuel Nozzle (Position 6) Installation
Figure 407/73-11-05-990-893-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



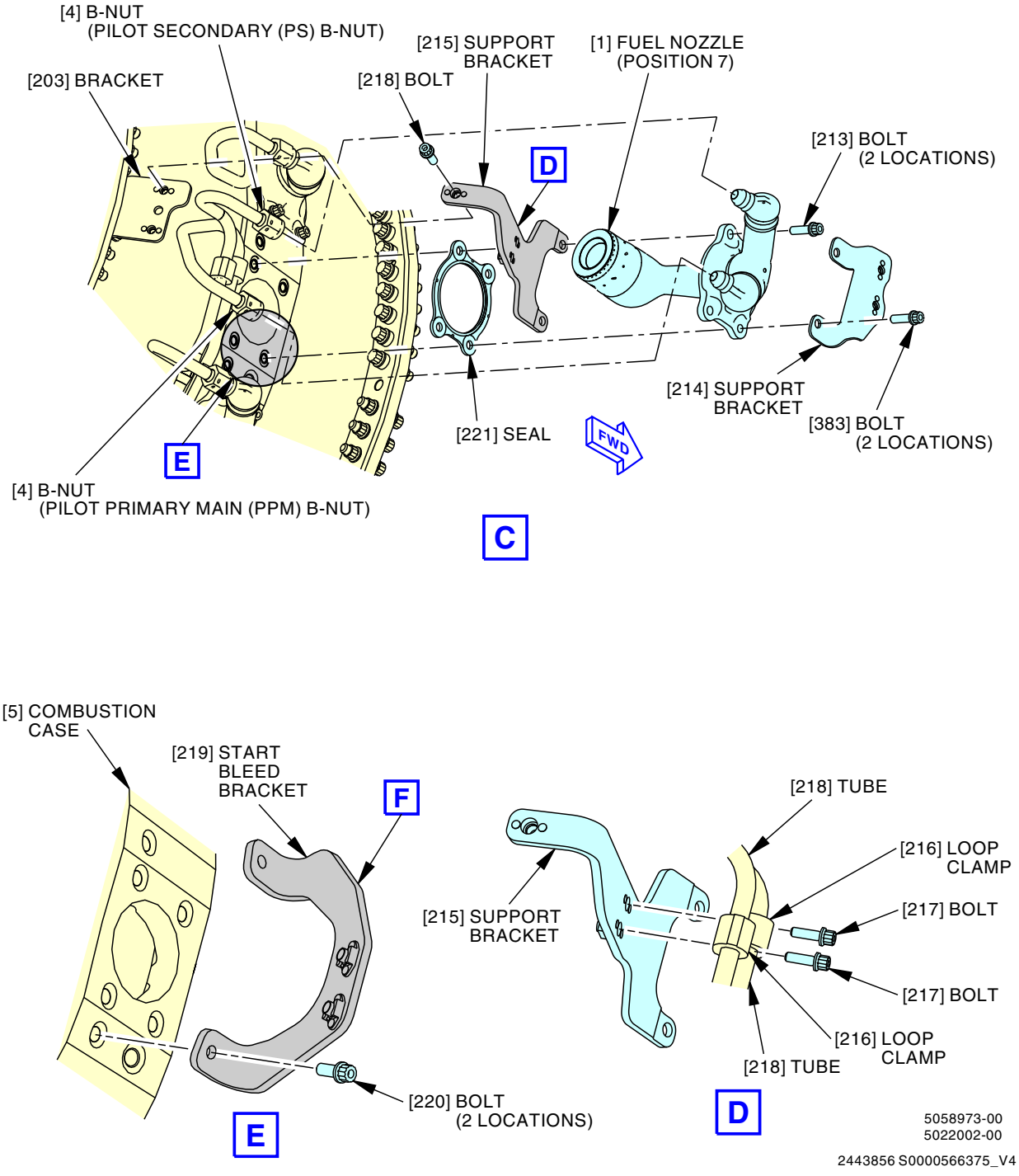
Fuel Nozzle (Position 6) Installation
Figure 407/73-11-05-990-893-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



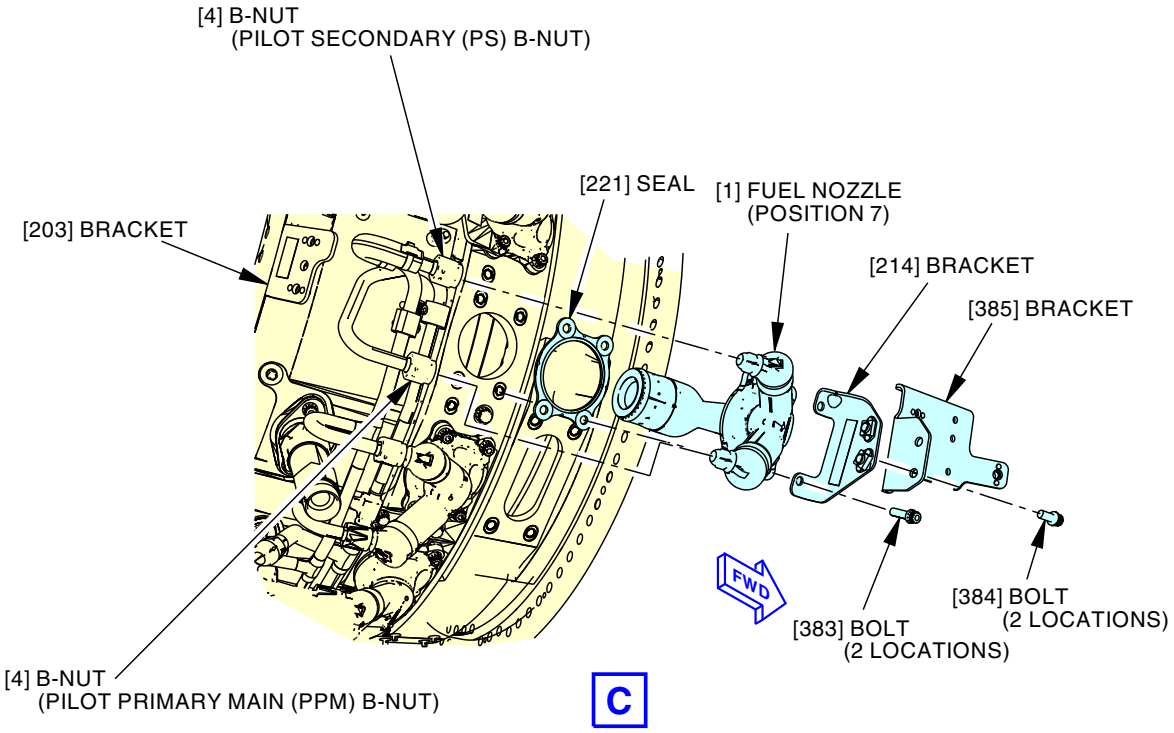
Fuel Nozzle (Position 7) Installation
Figure 408/73-11-05-990-894-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 7) Installation
Figure 408/73-11-05-990-894-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

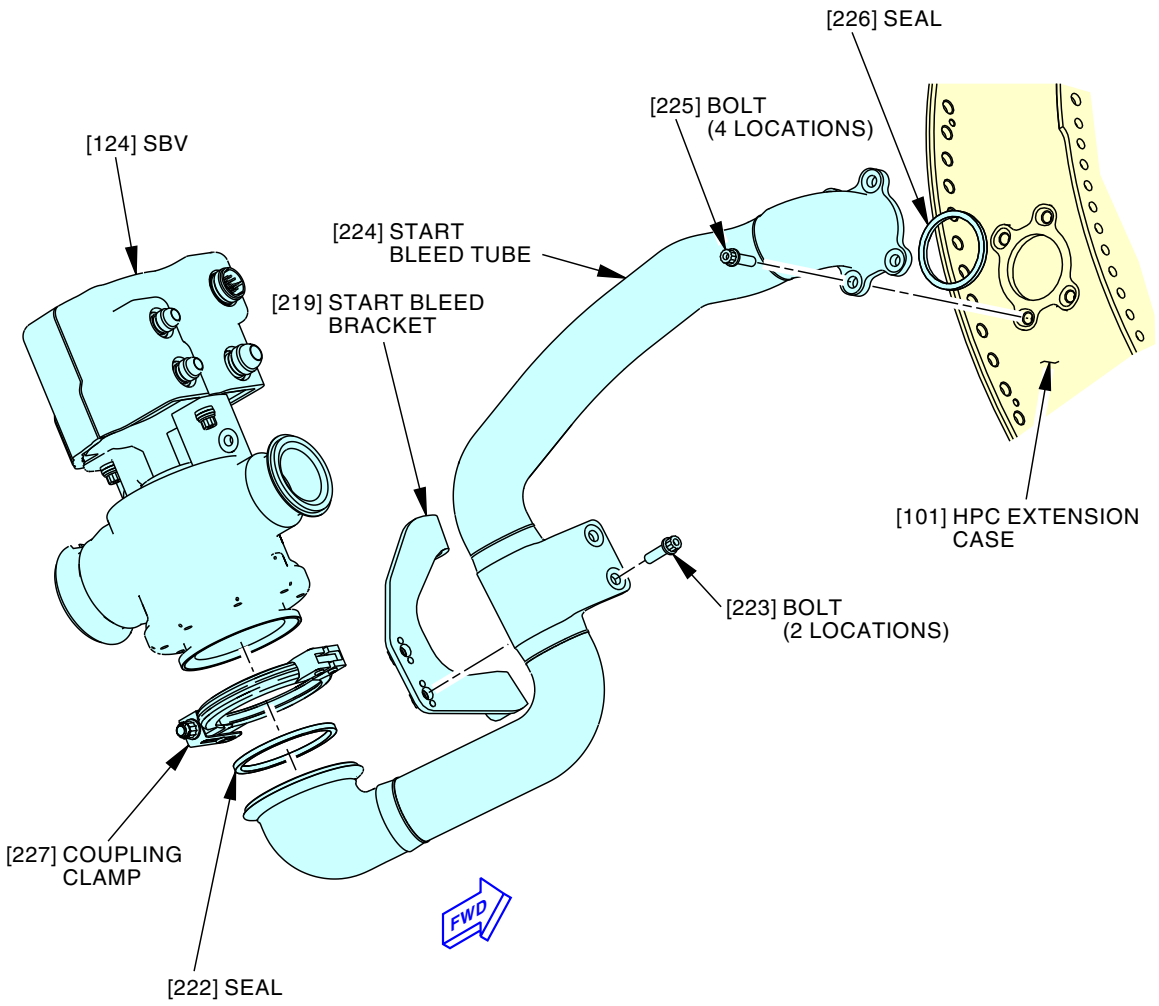


5058973-00

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Fuel Nozzle (Position 7) Installation
Figure 408/73-11-05-990-894-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

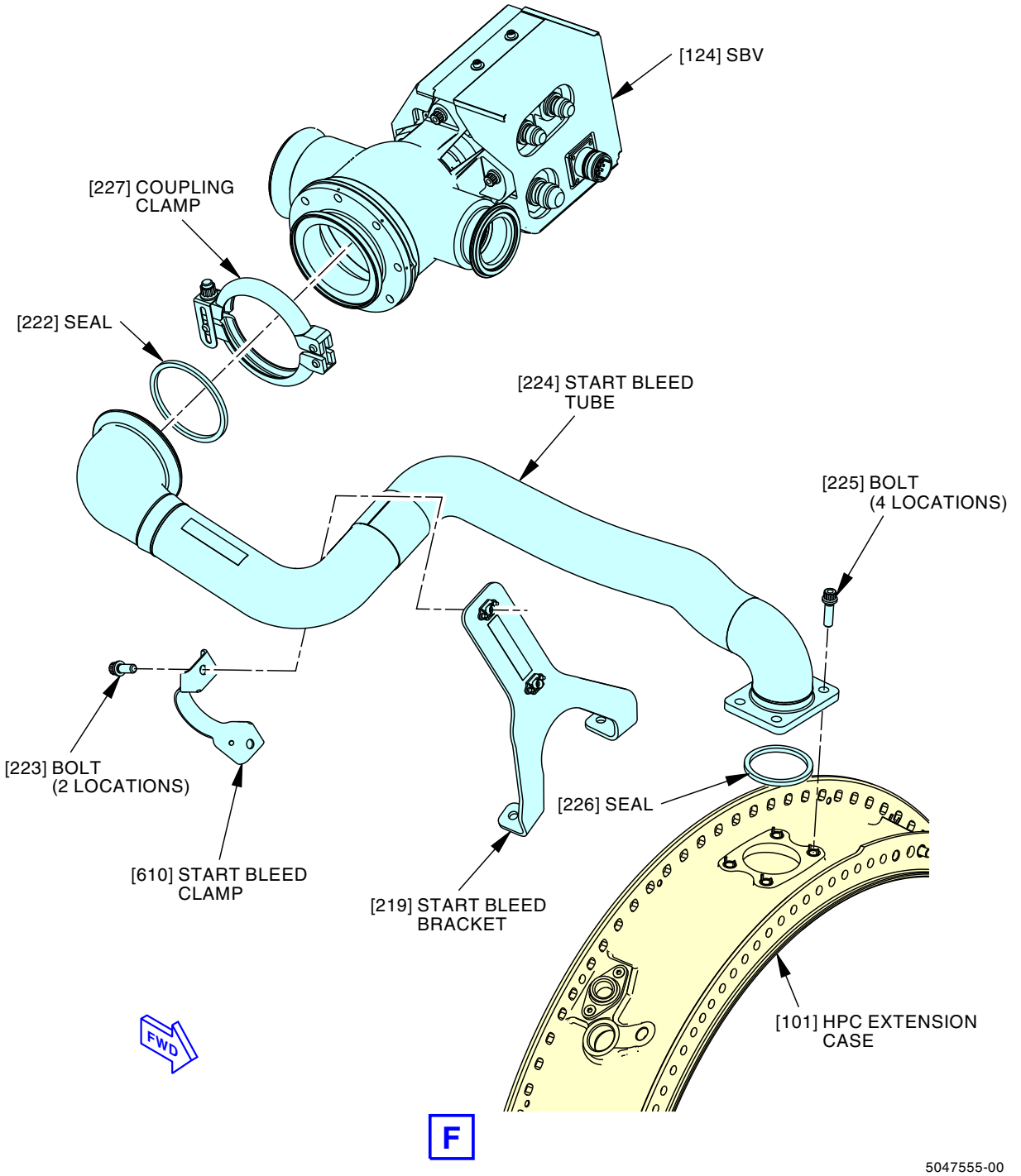


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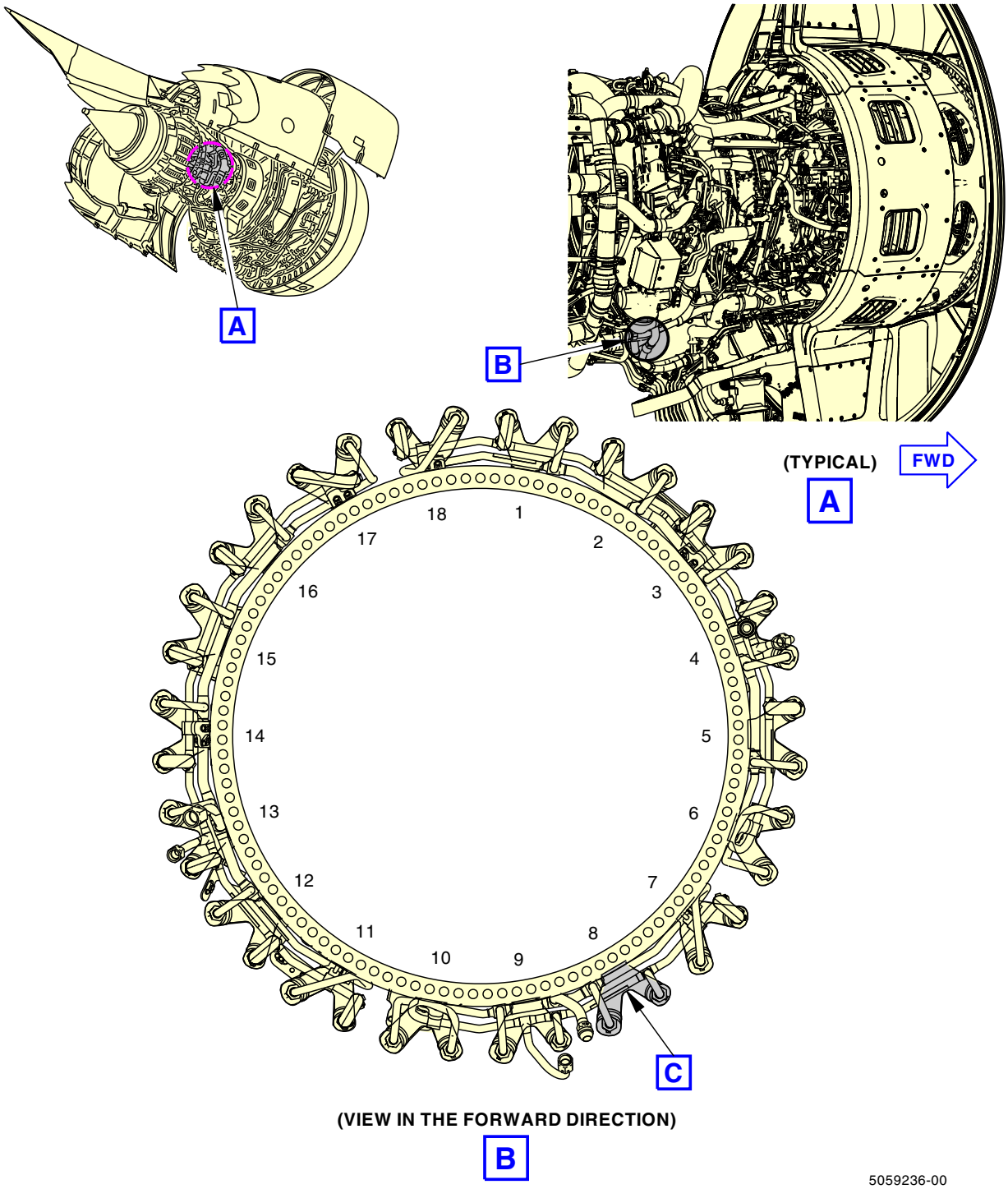
Fuel Nozzle (Position 7) Installation
Figure 408/73-11-05-990-894-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



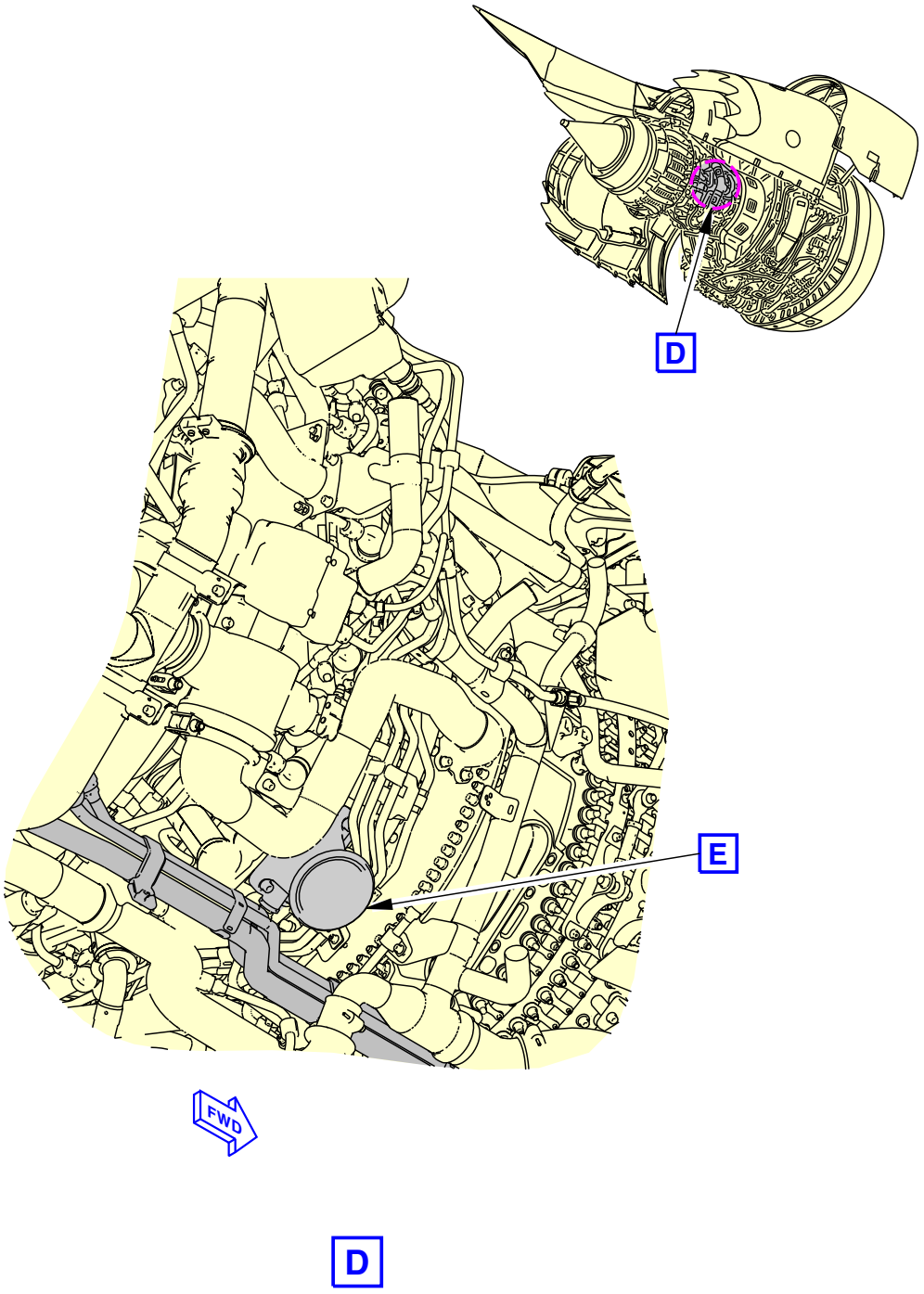
Fuel Nozzle (Position 7) Installation
Figure 408/73-11-05-990-894-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 1 of 7)

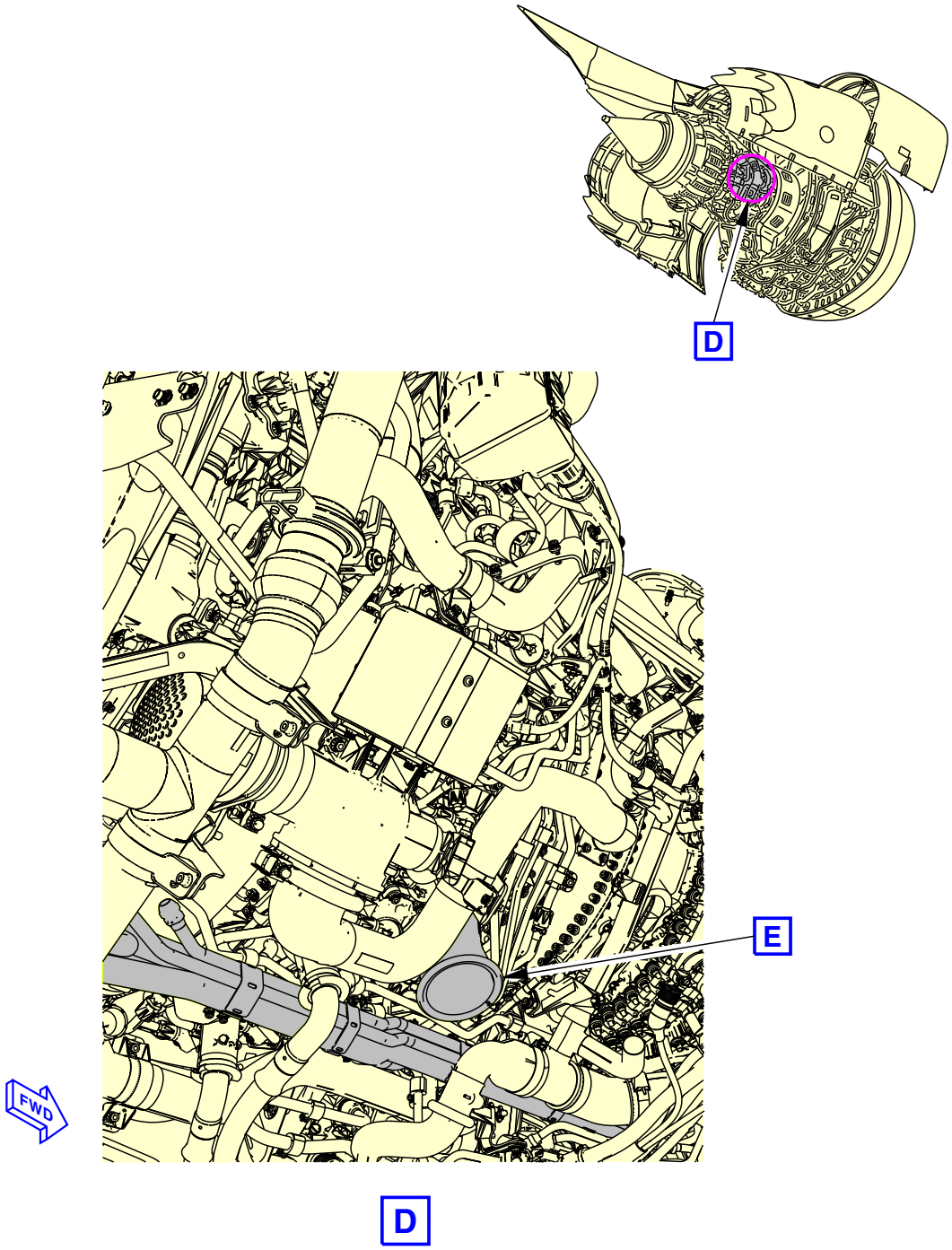
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5021985-00
2444007 S0000566987_V3

Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 2 of 7)

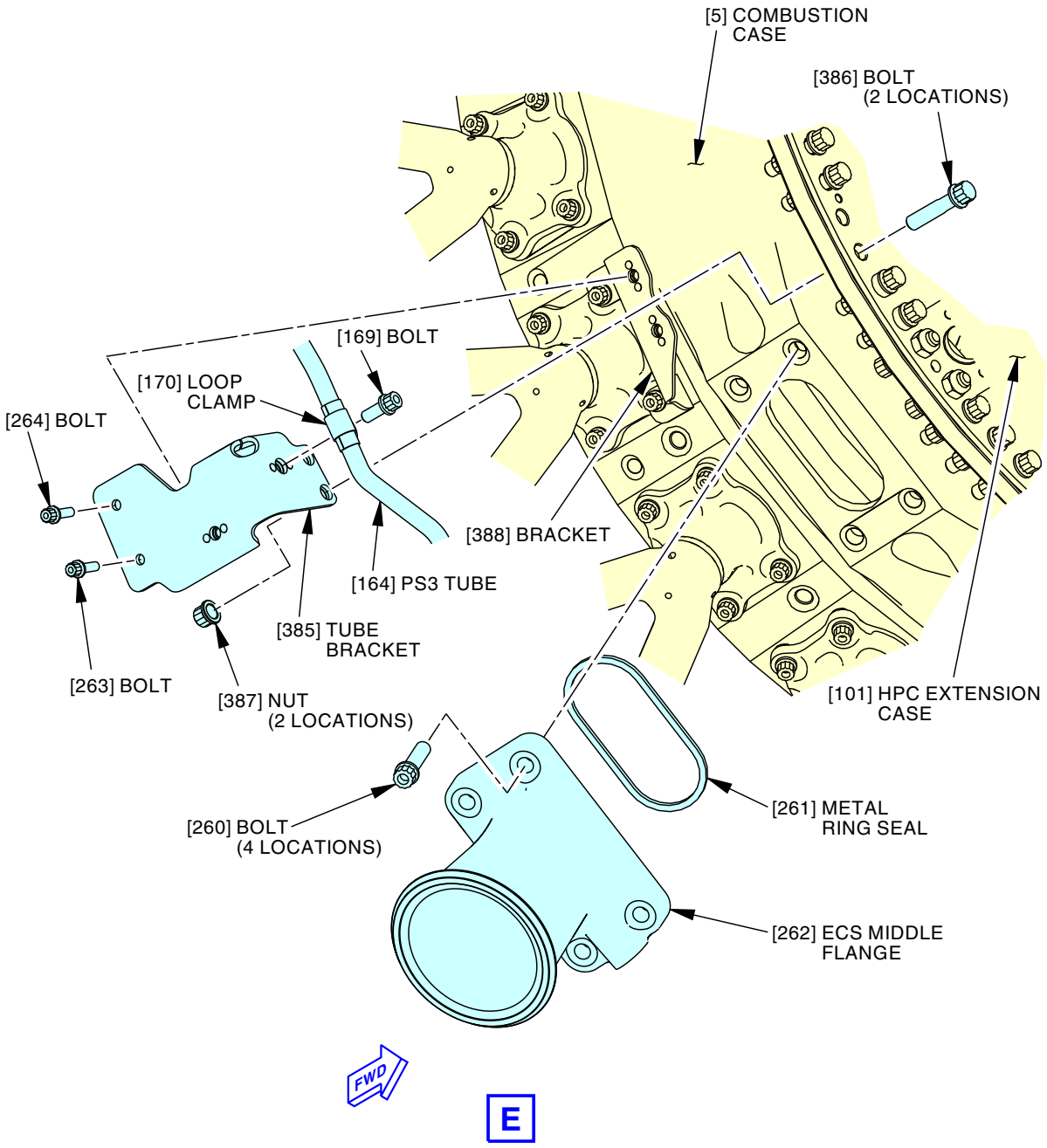
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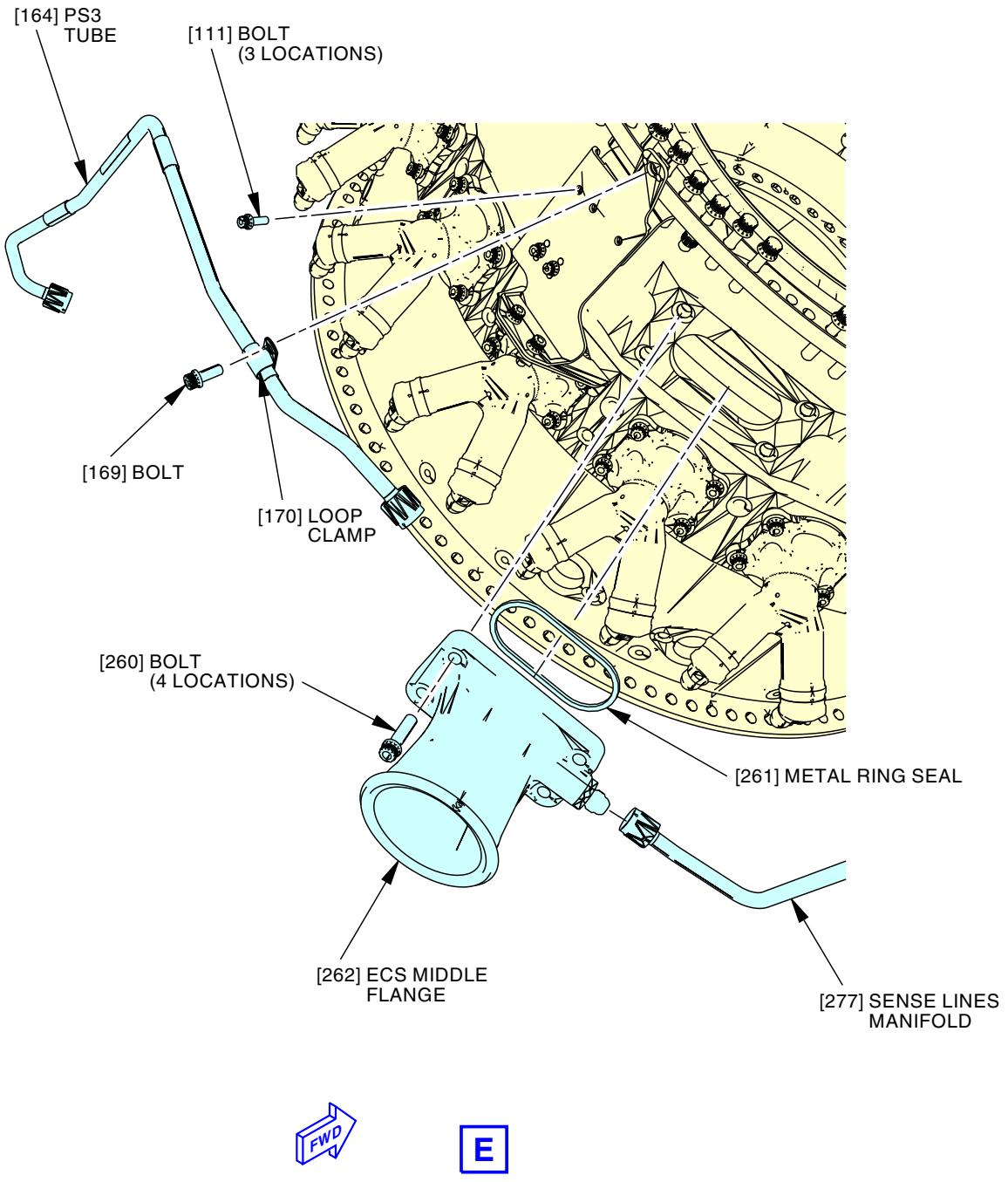
Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



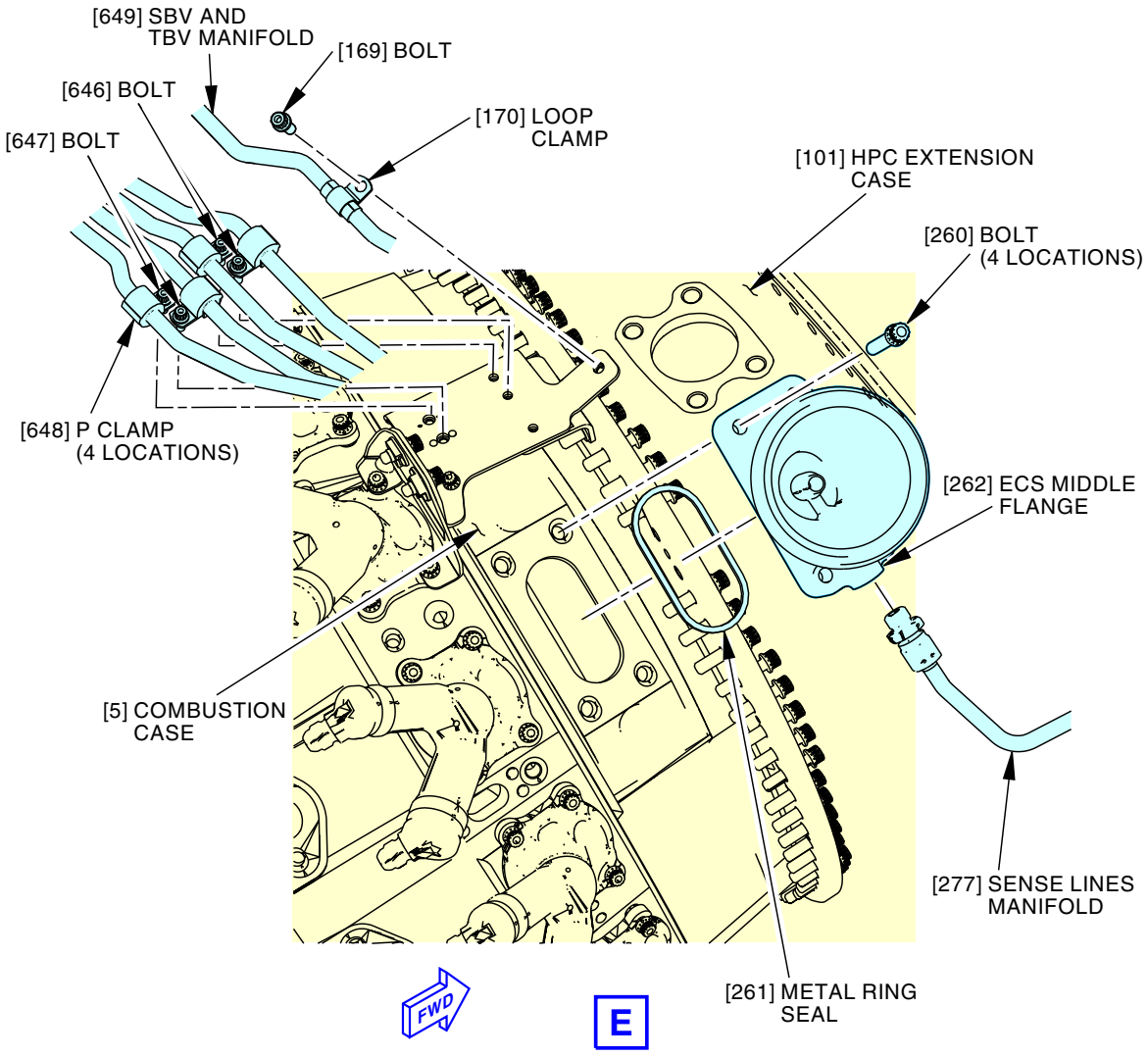
Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 5 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

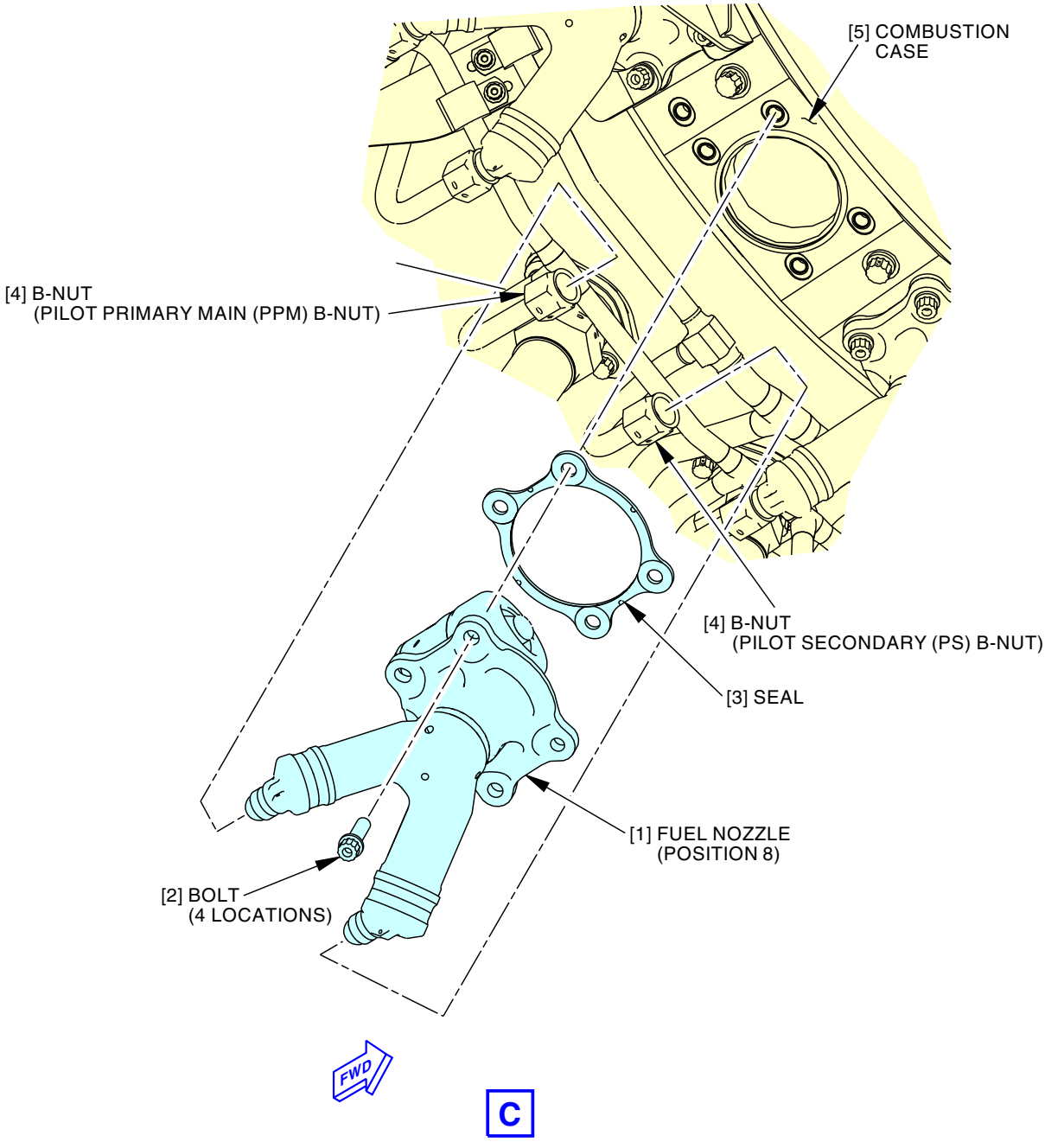


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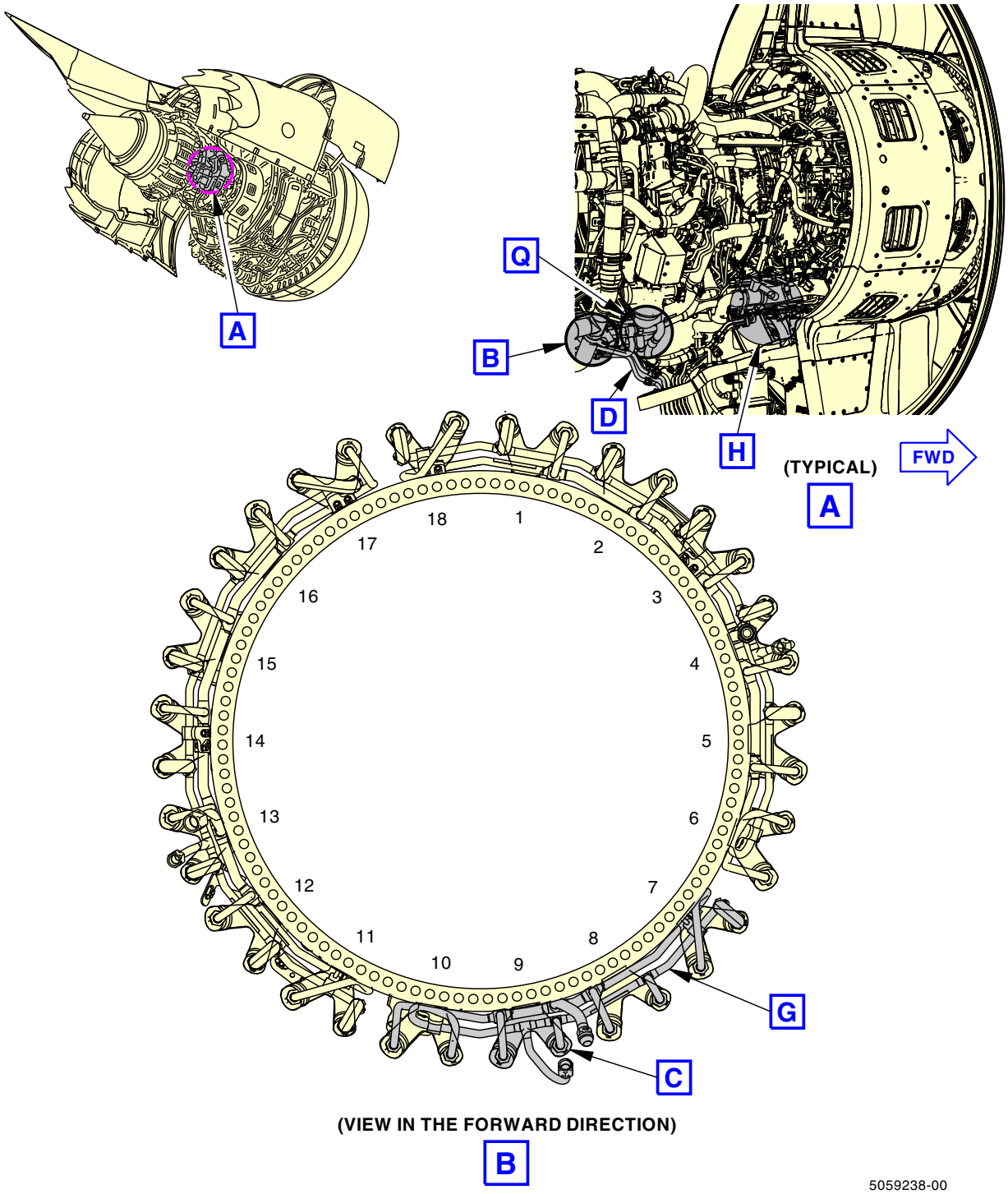
Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



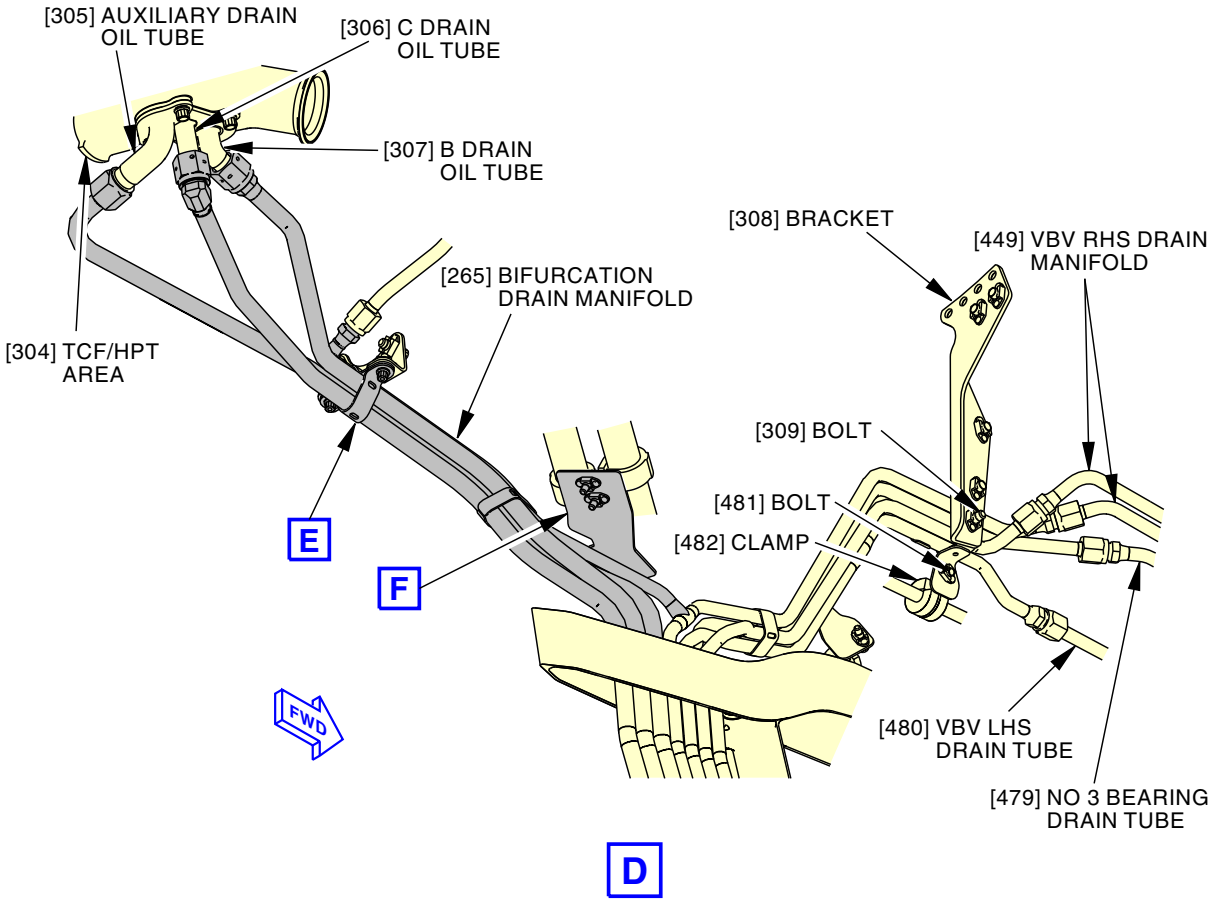
Fuel Nozzle (Position 8) Installation
Figure 409/73-11-05-990-895-G00 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 1 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

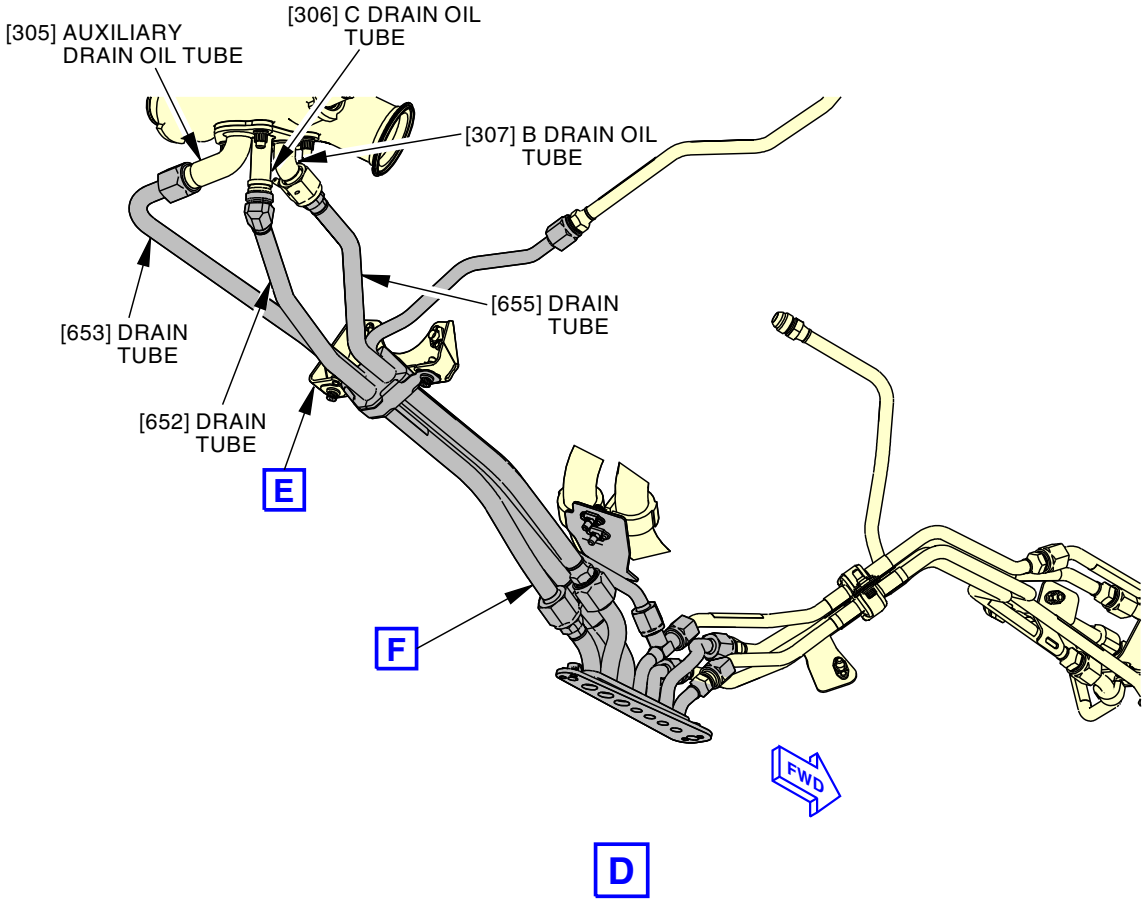


5058975-00

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Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 2 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

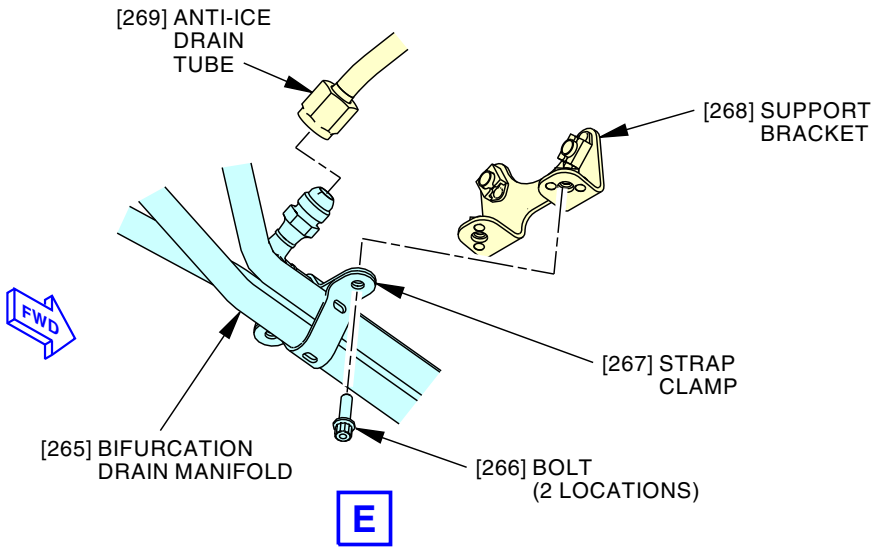


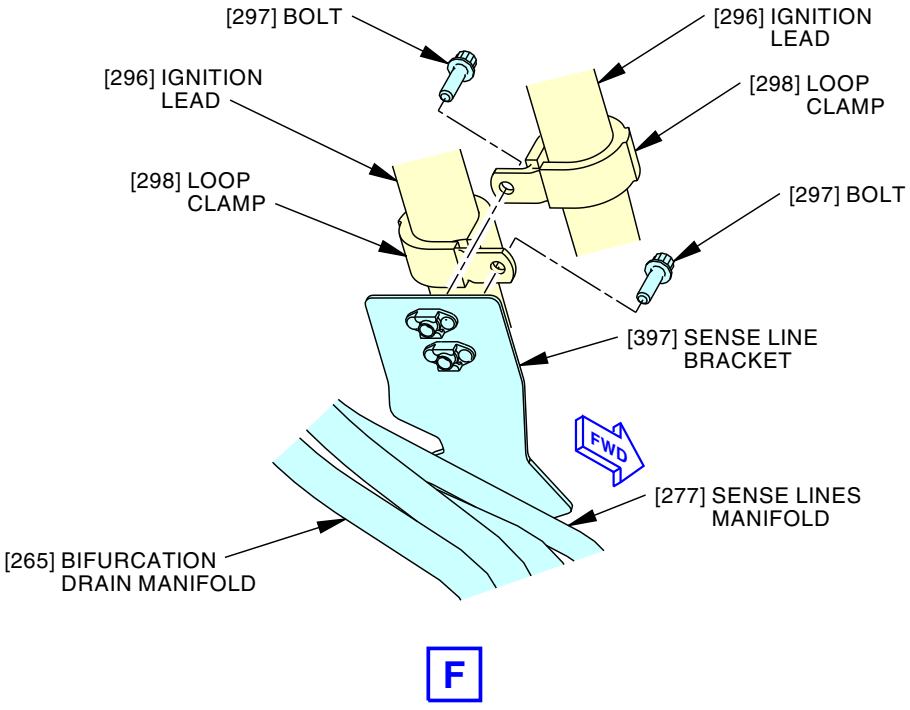
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Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 3 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

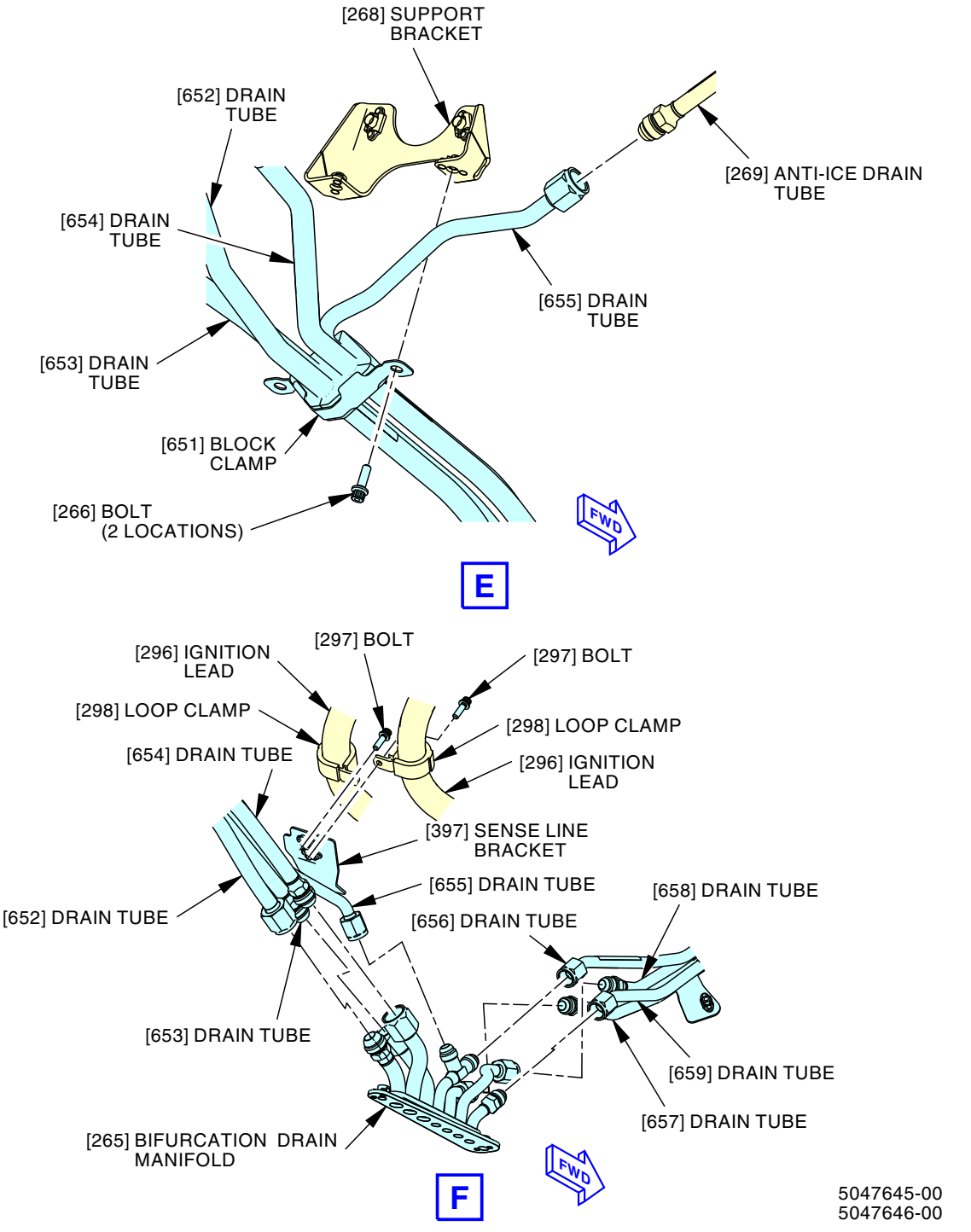




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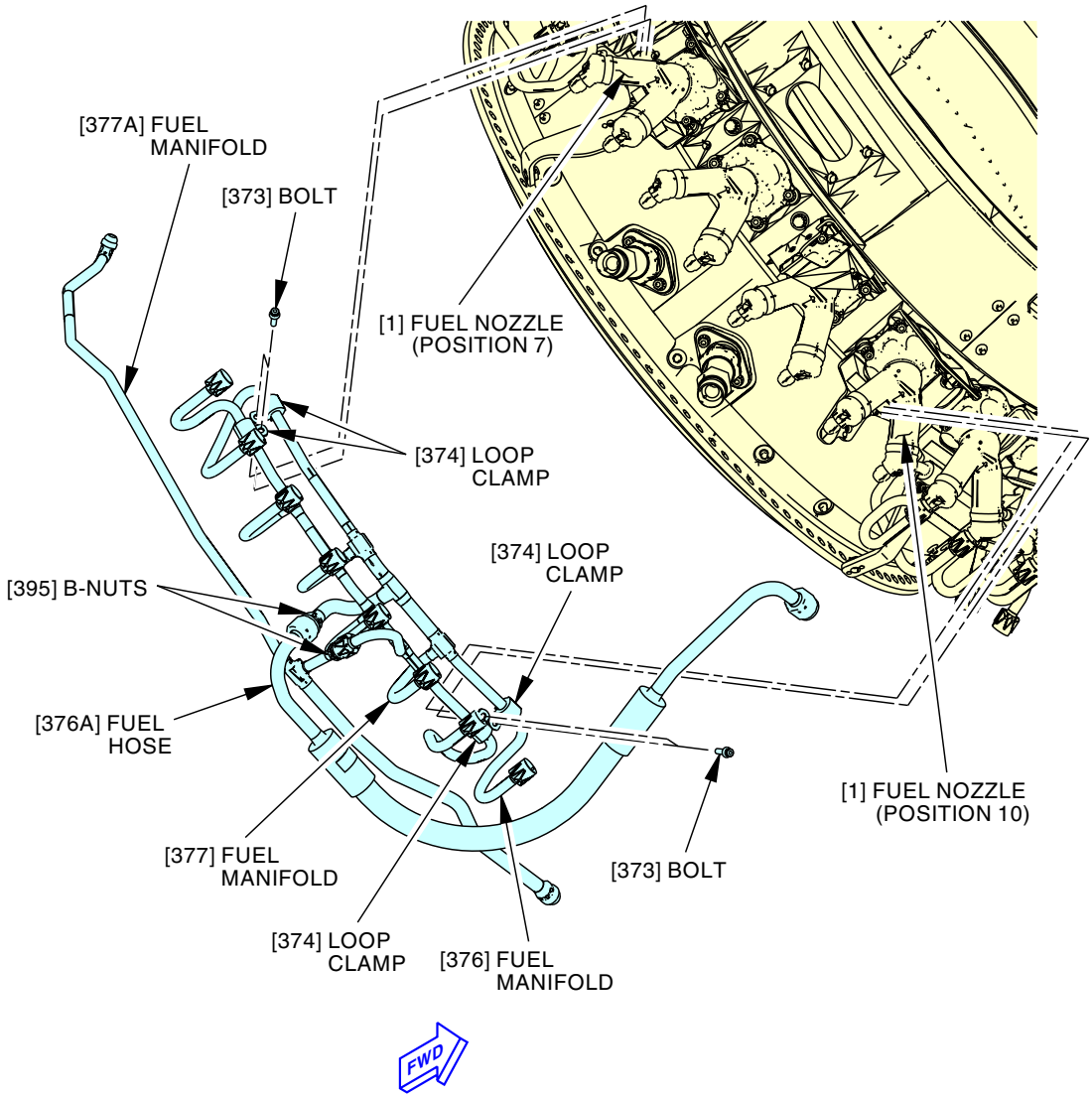
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 4 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 5 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

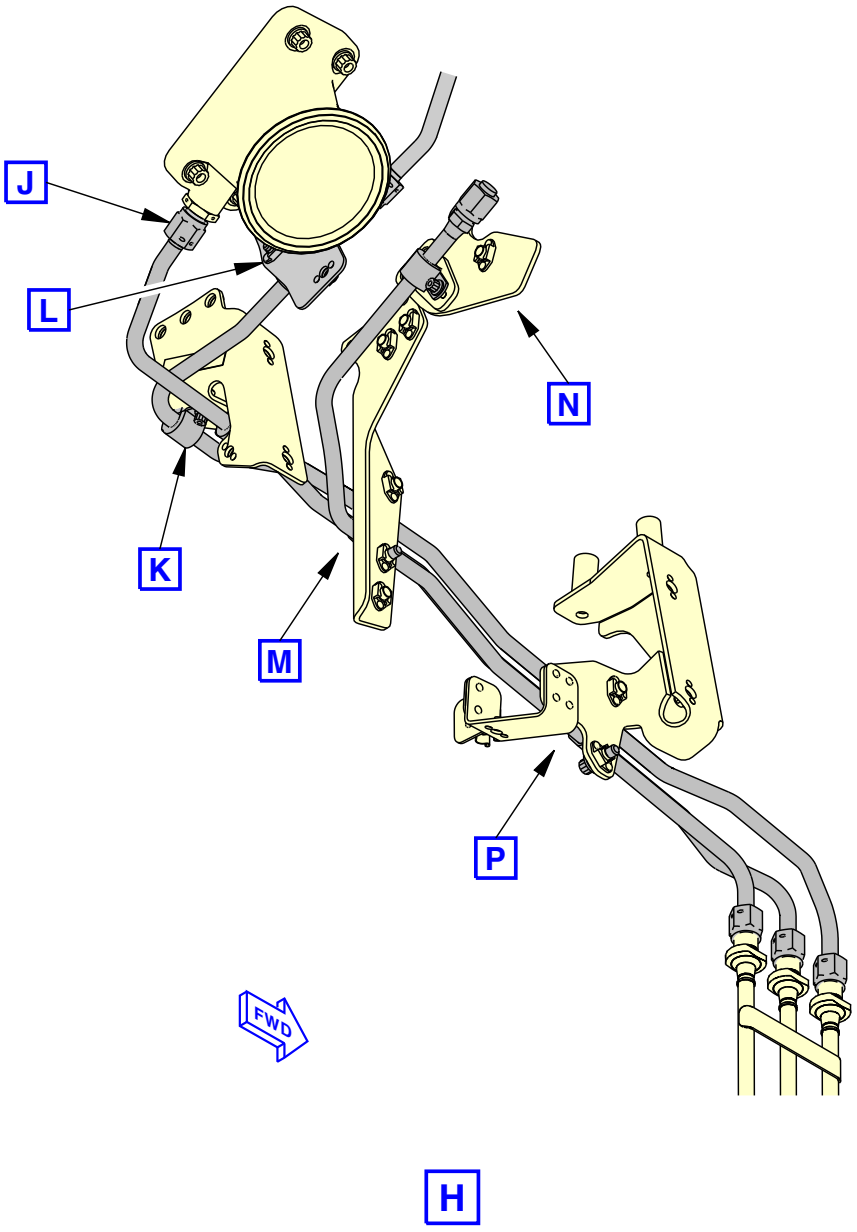


5022016-01

2440028 S0000566451_V6

Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 6 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

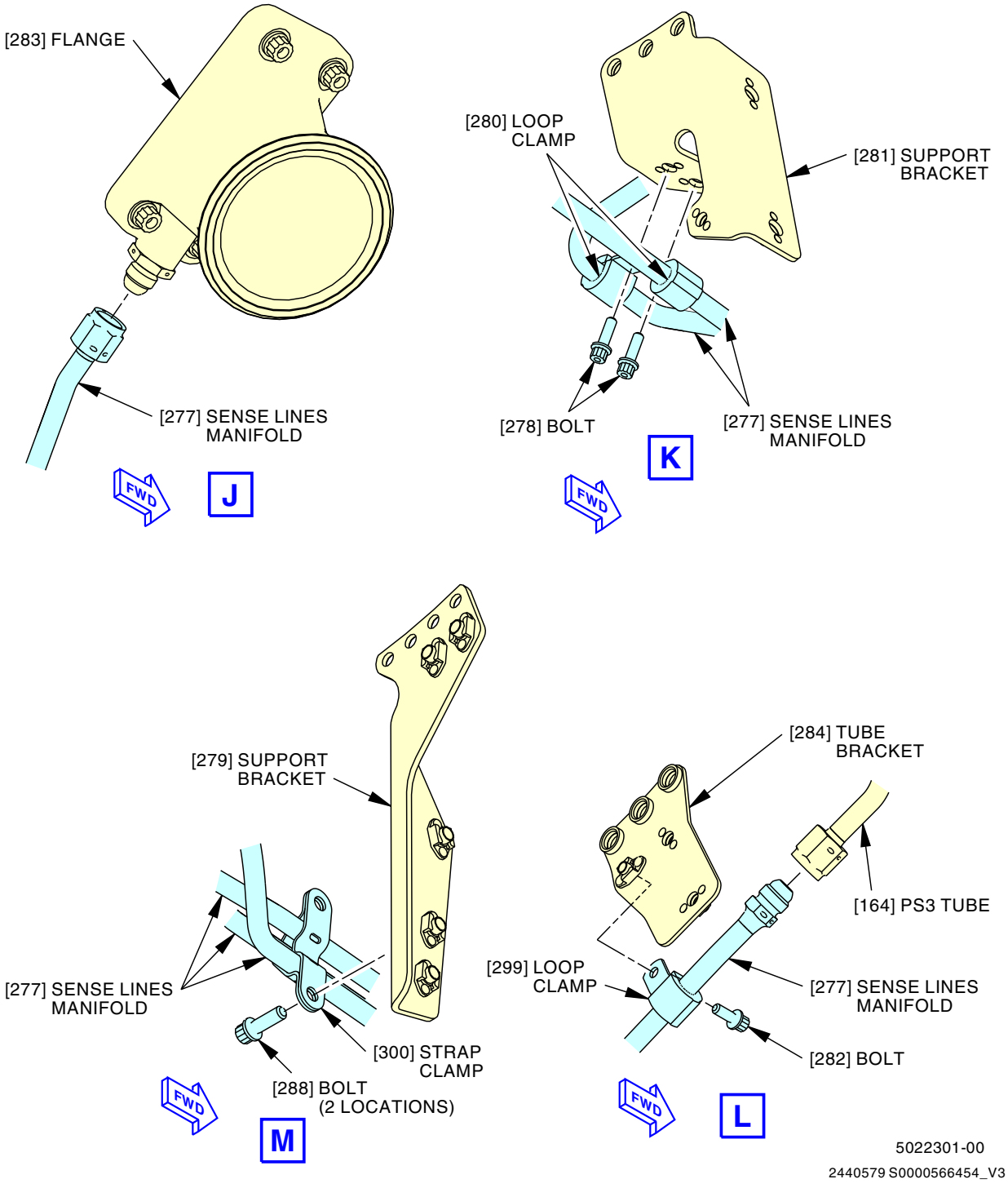


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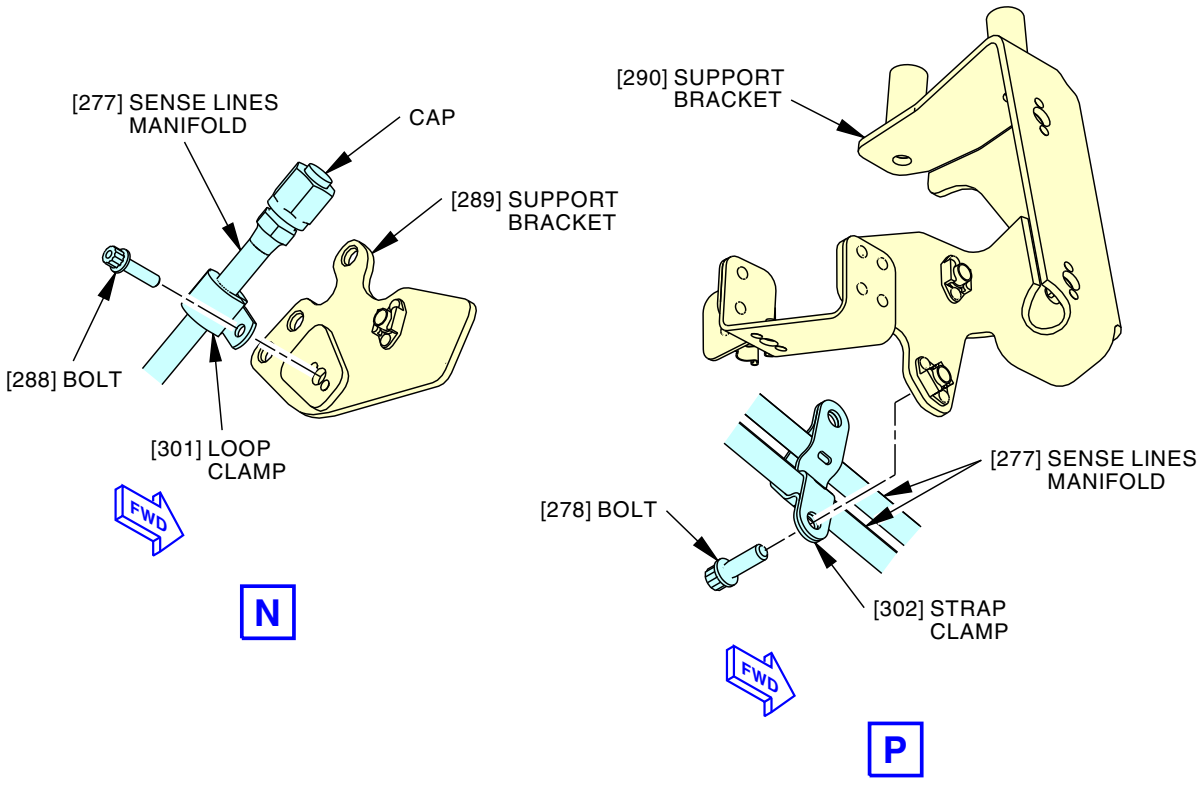
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 7 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 8 of 15)

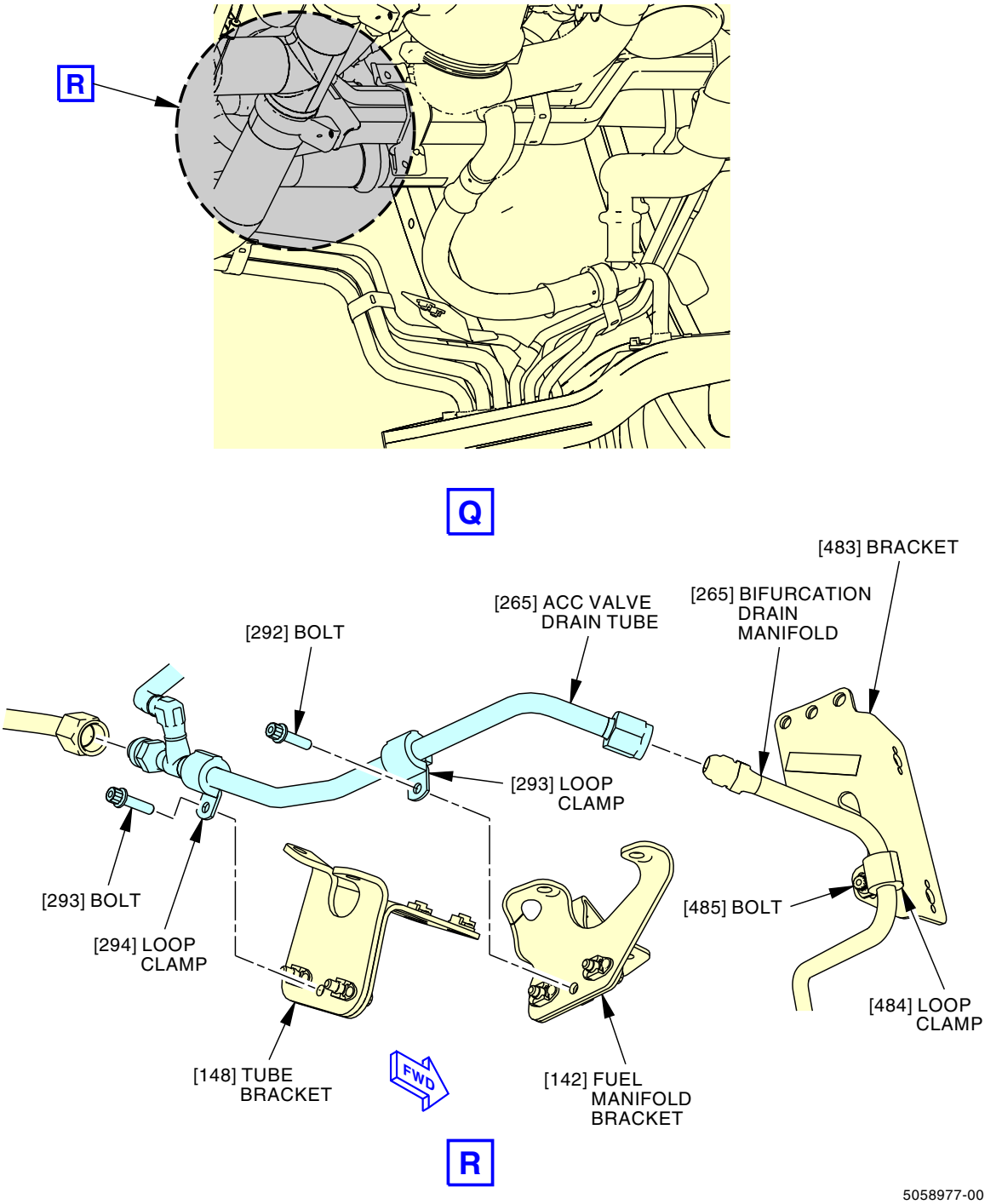
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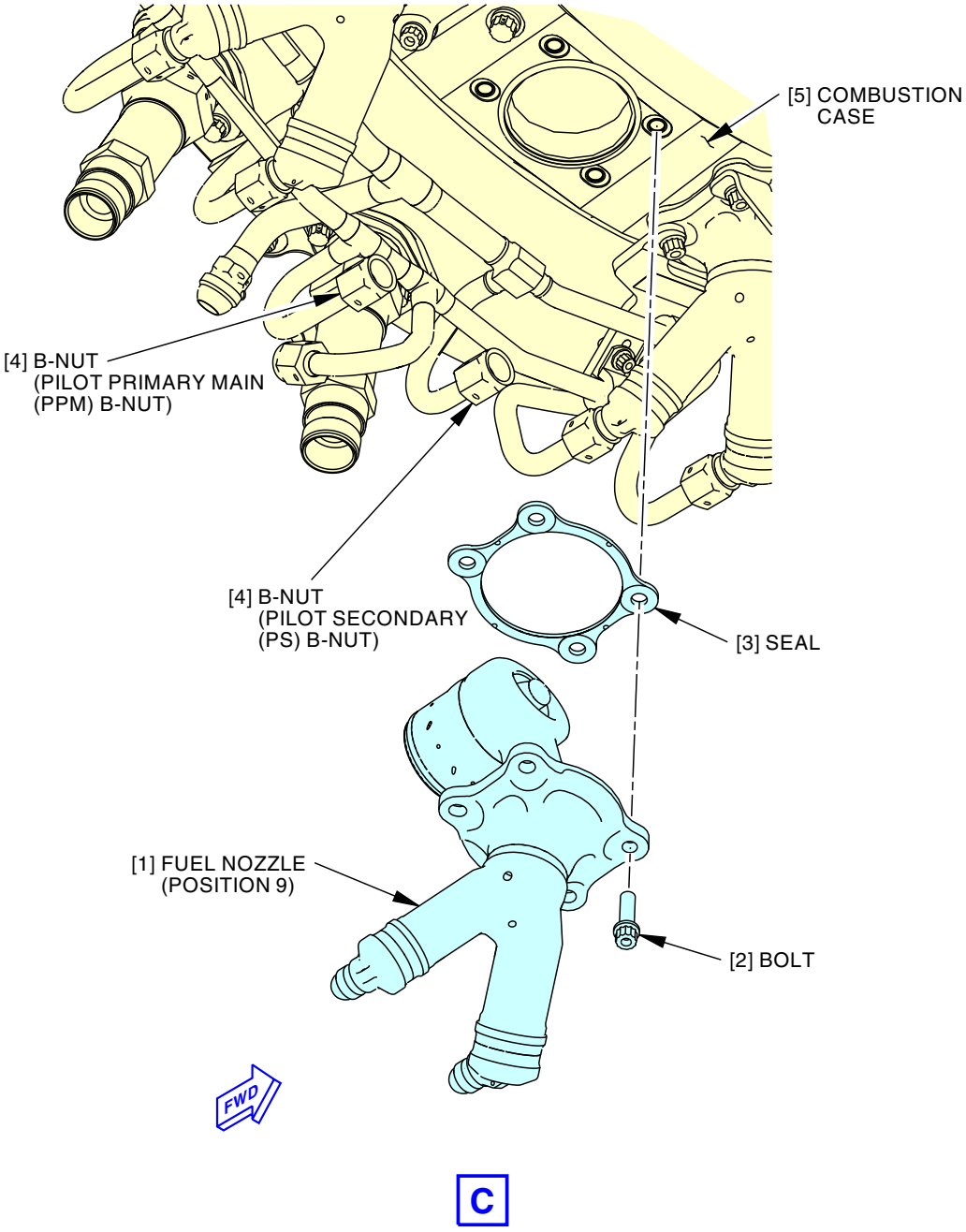
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 9 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



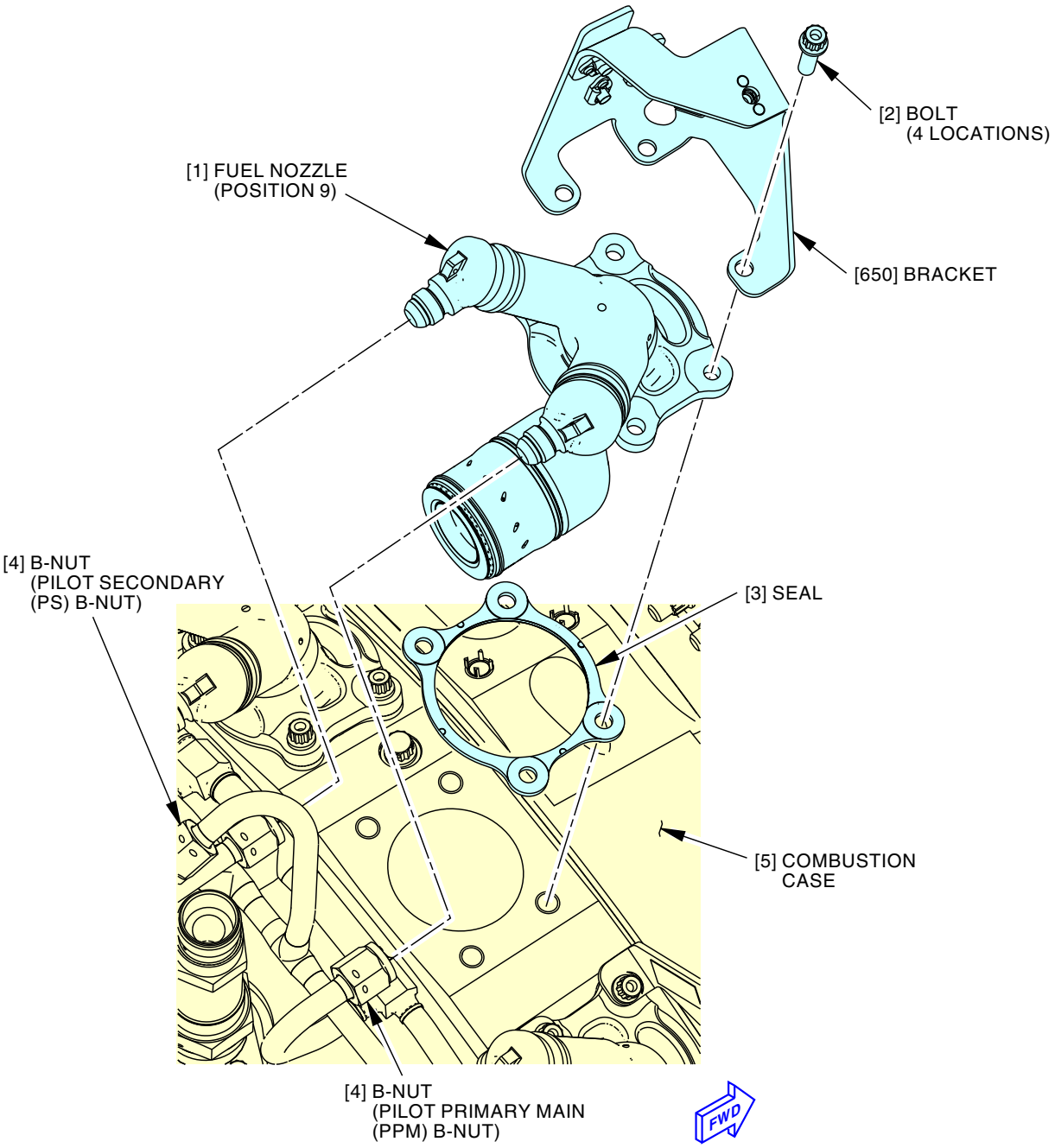
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 10 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



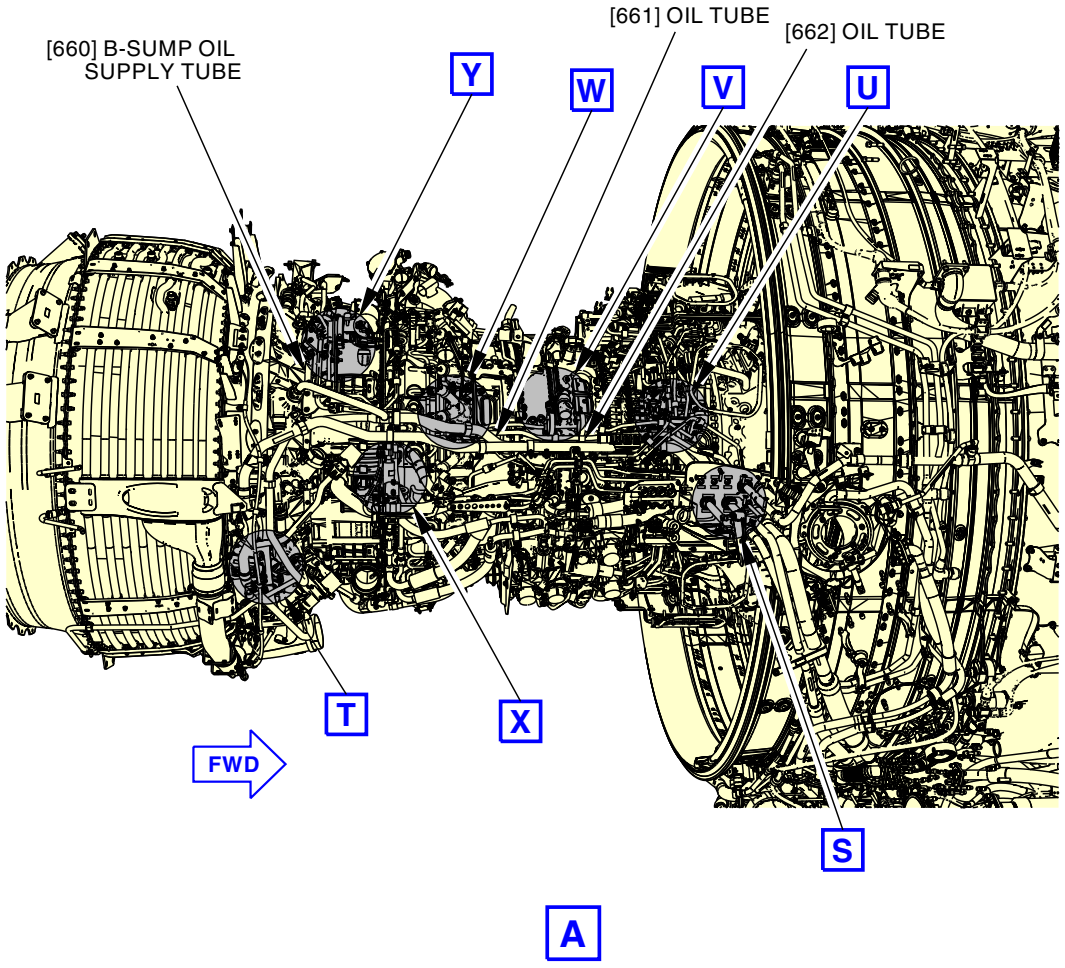
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 11 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 12 of 15)

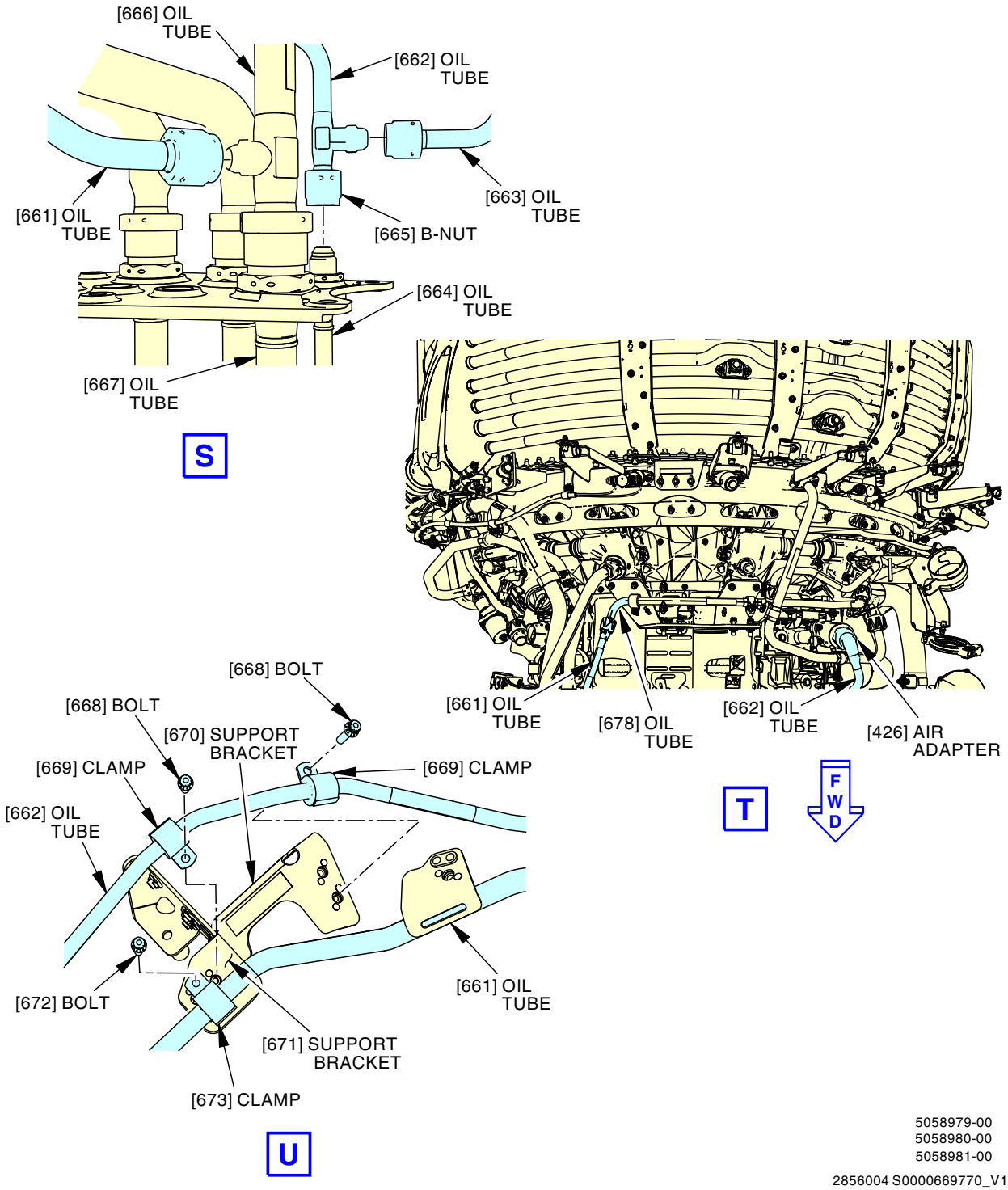
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Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 13 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

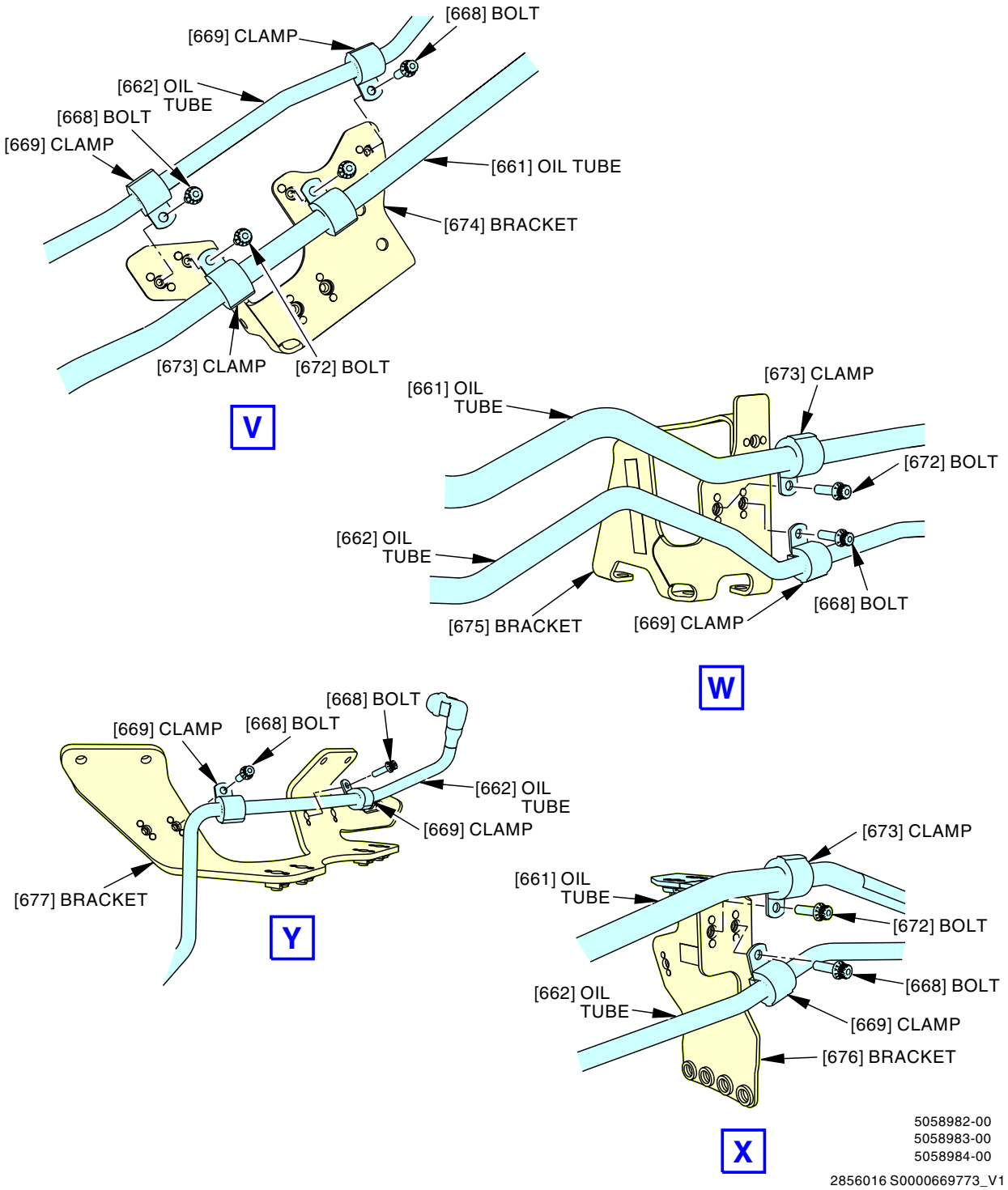


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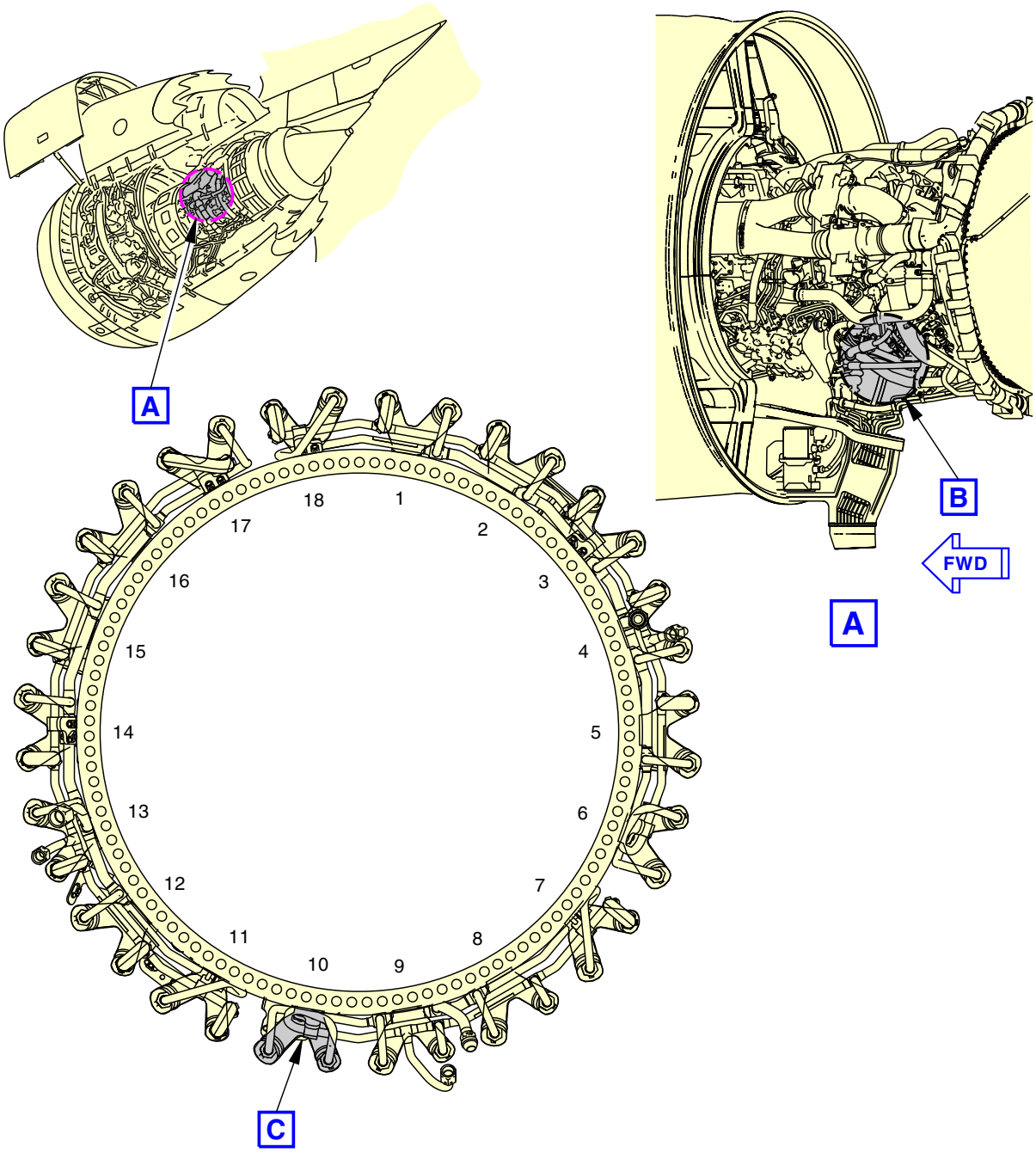
Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 14 of 15)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 9) Installation
Figure 410/73-11-05-990-896-G00 (Sheet 15 of 15)

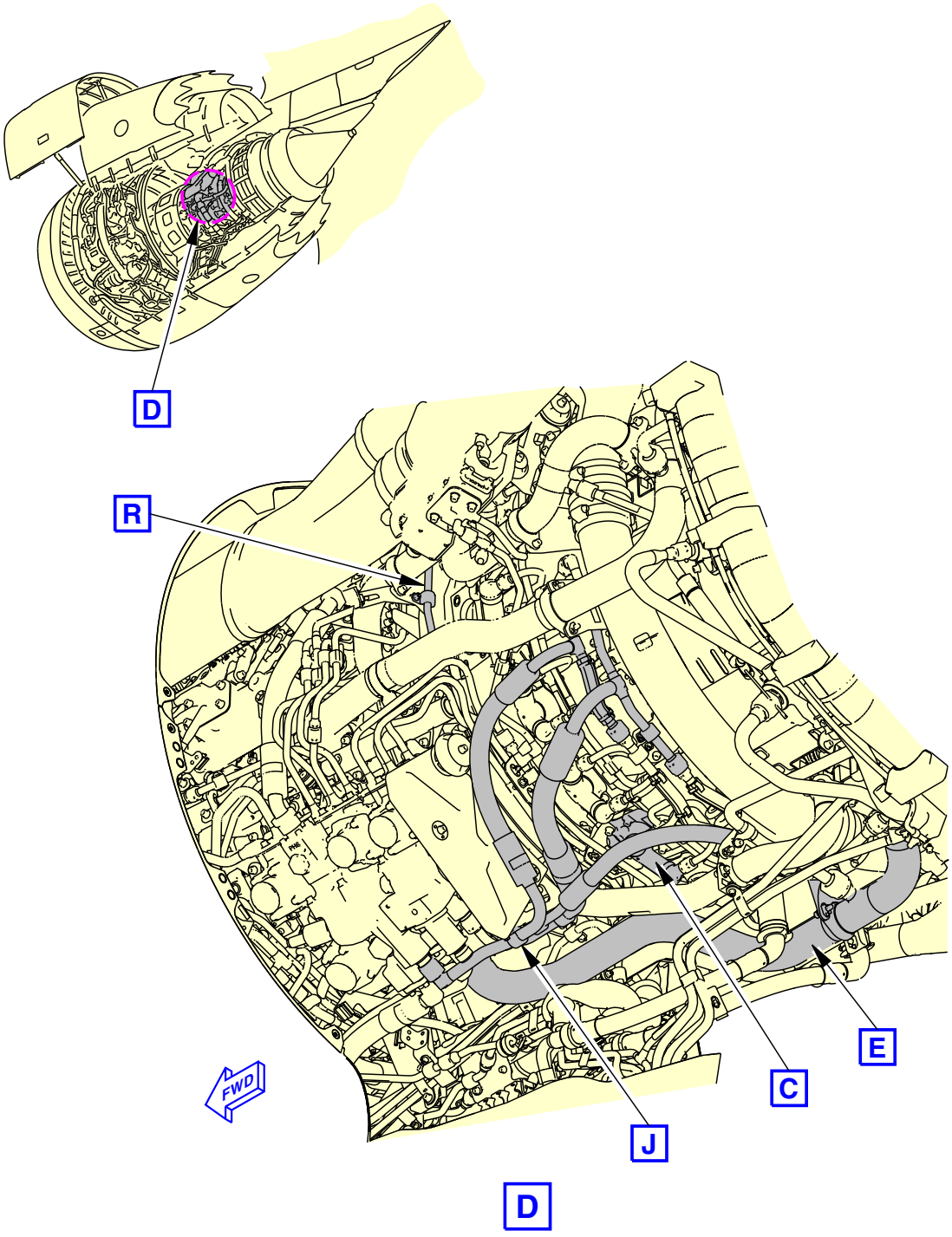
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Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 1 of 16)

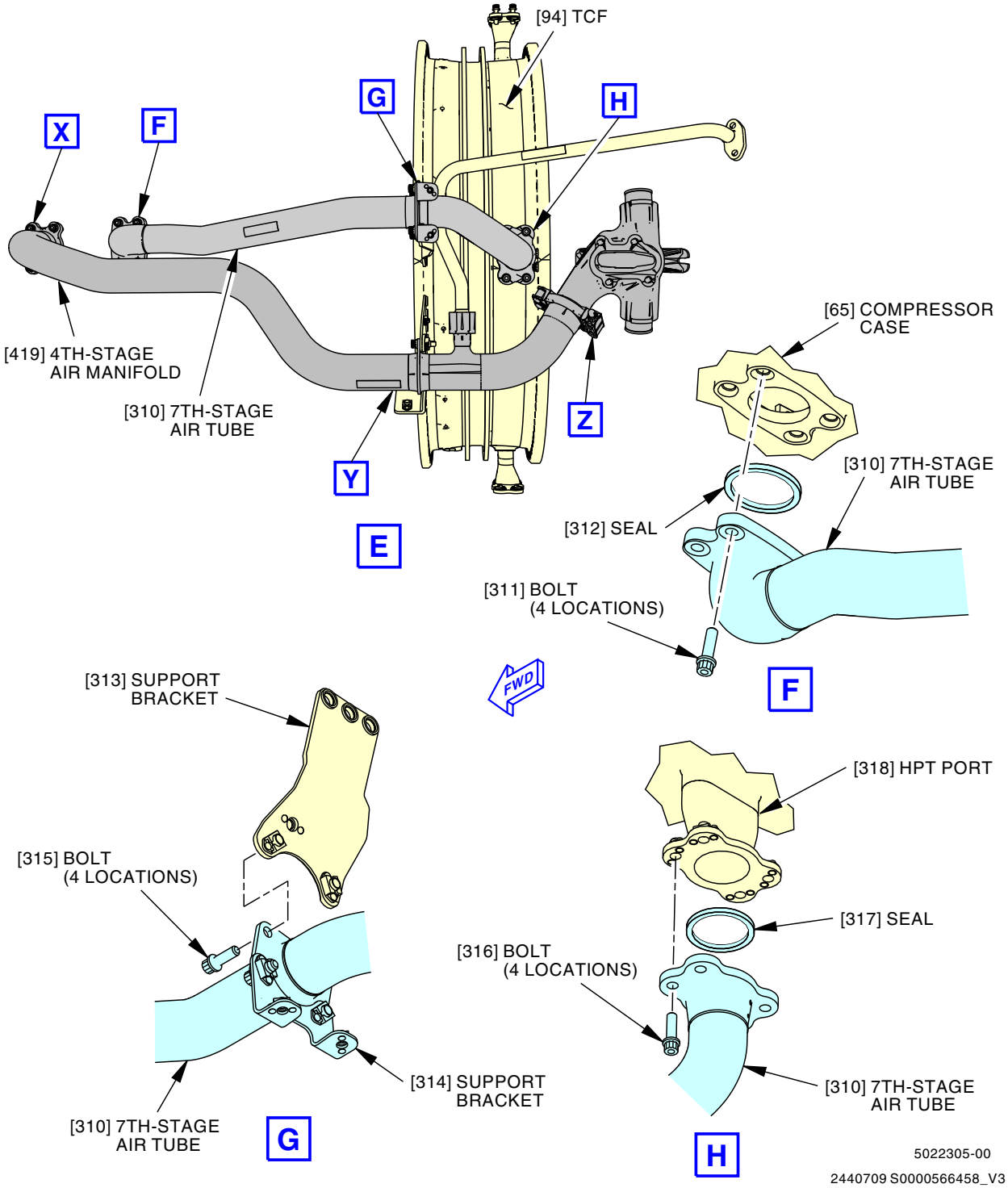
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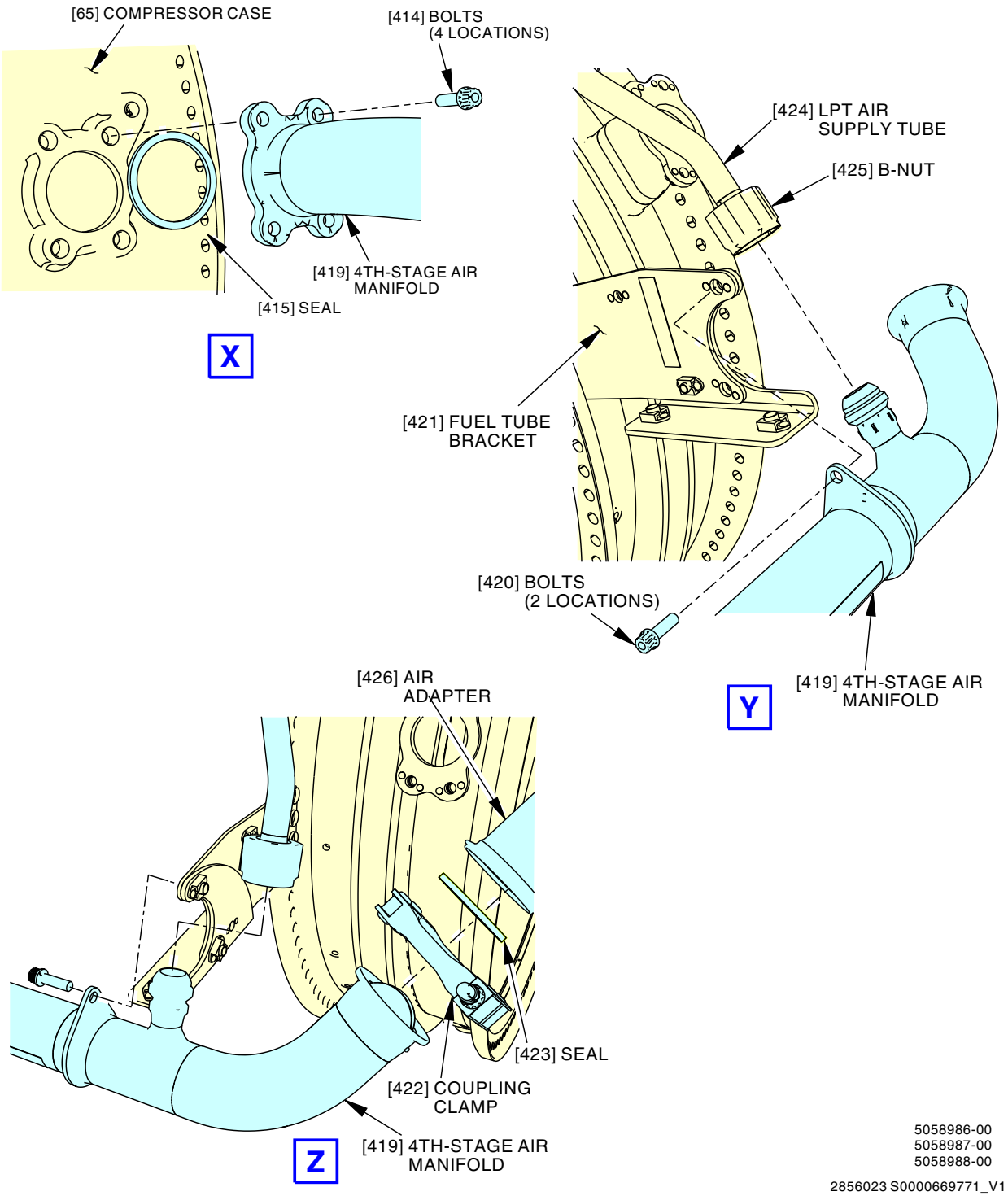
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 2 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



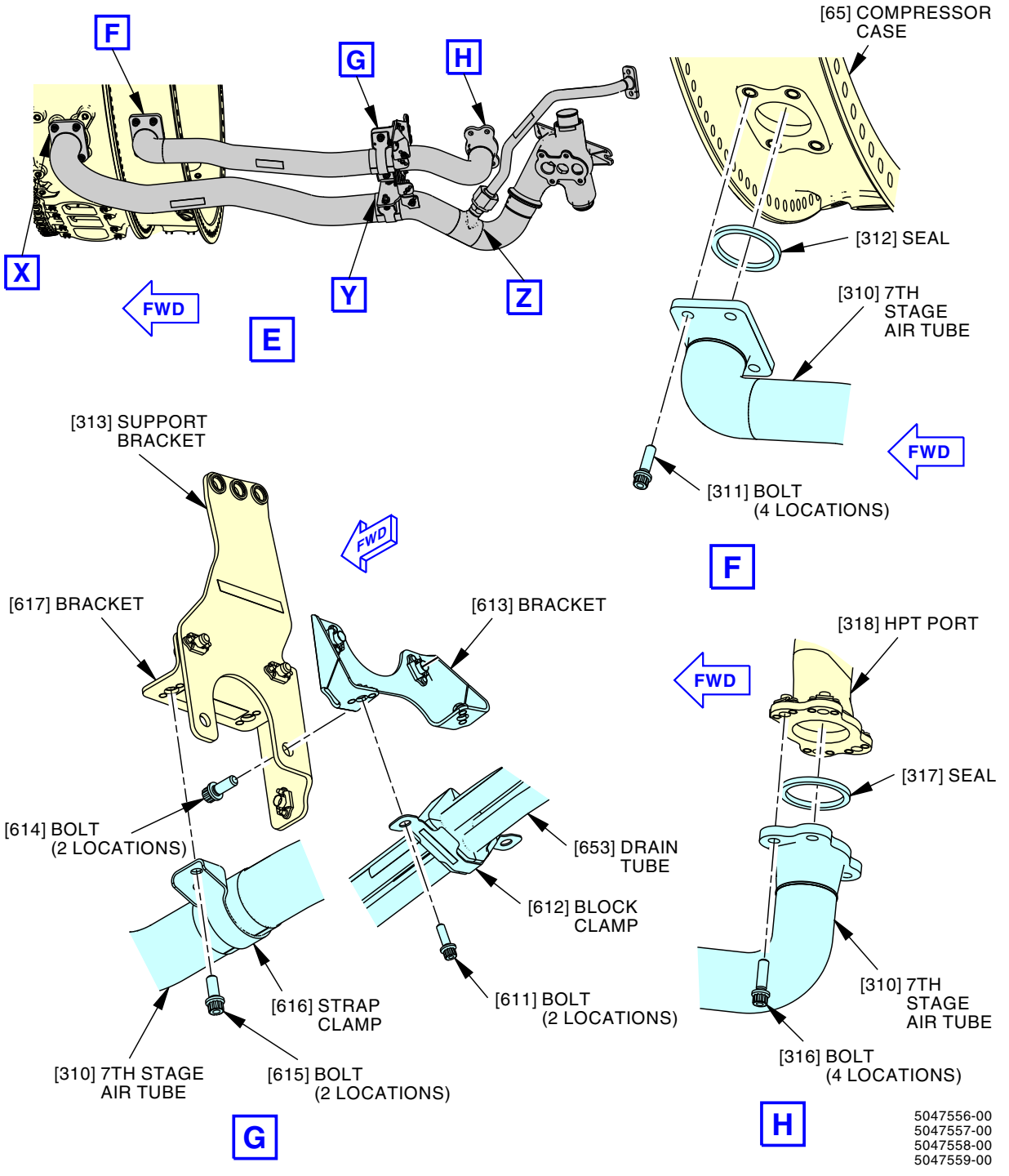
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 3 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



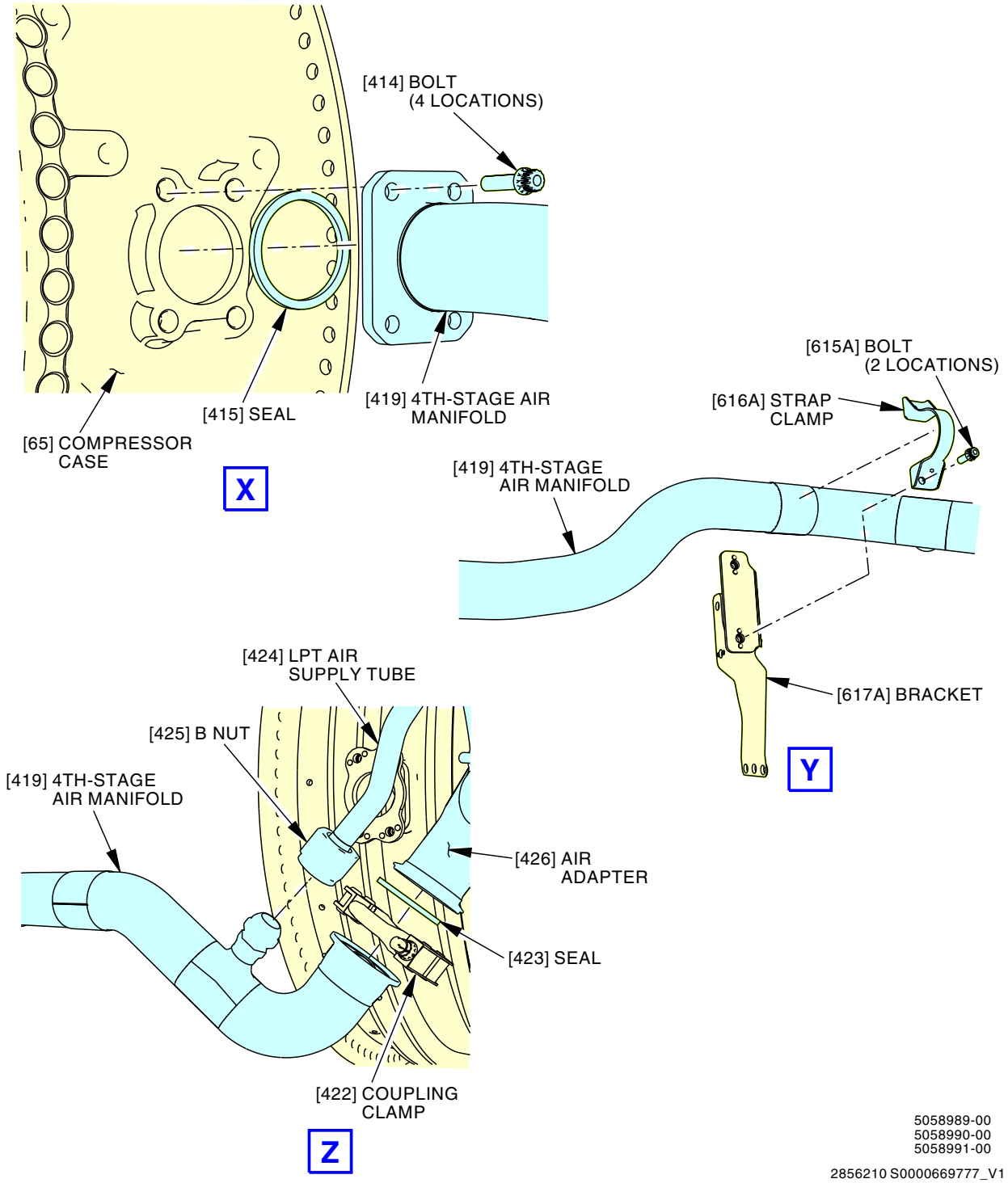
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 4 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



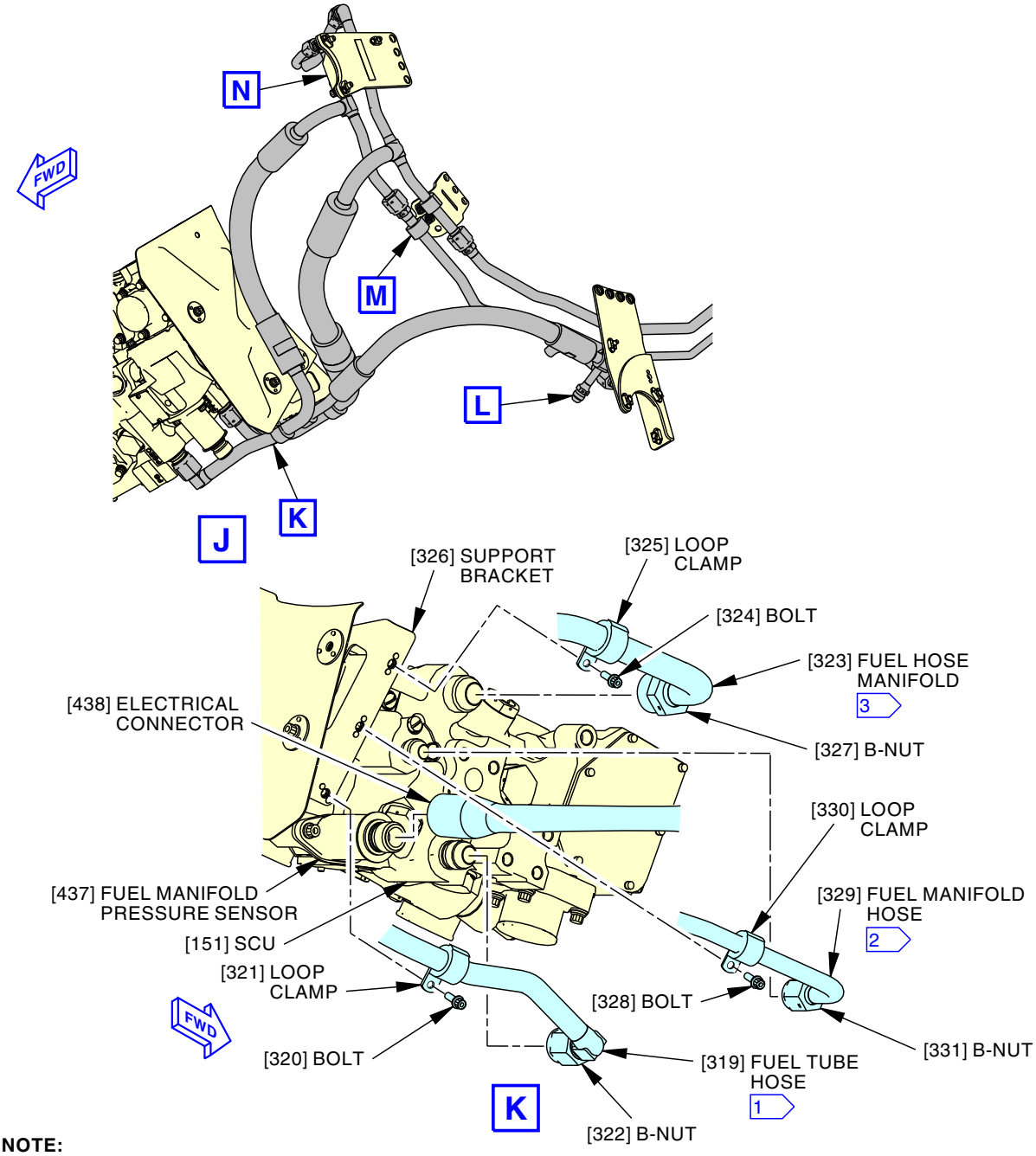
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 5 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 6 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



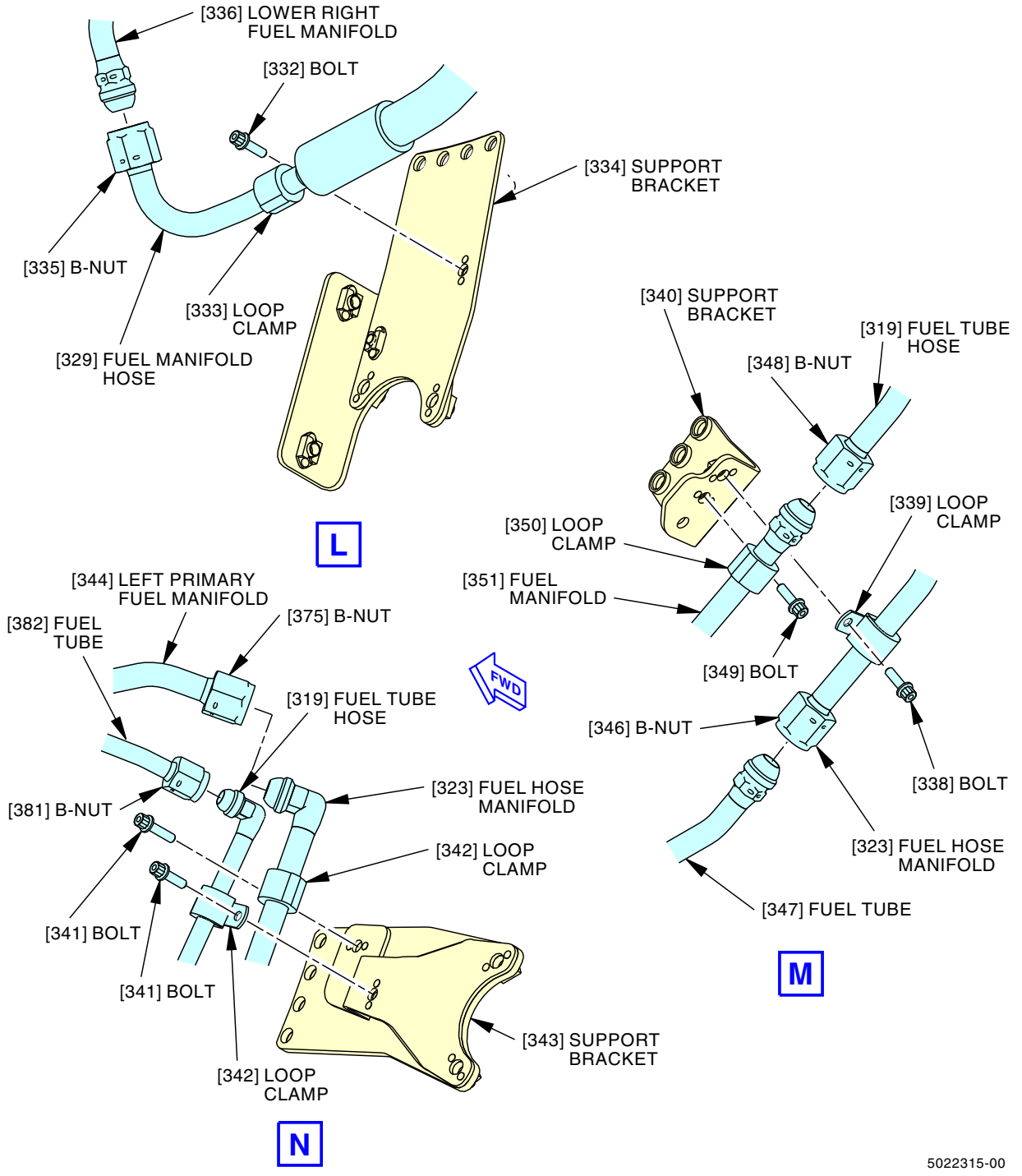
NOTE:

1. PILOT SECONDARY (PSEC) FUEL MANIFOLD
2. PILOT PRIMARY AND MAIN ENRICHED (PPME) FUEL MANIFOLD
3. PILOT PRIMARY AND MAIN NON-ENRICHED (PPMNE) FUEL MANIFOLD

5022312-00
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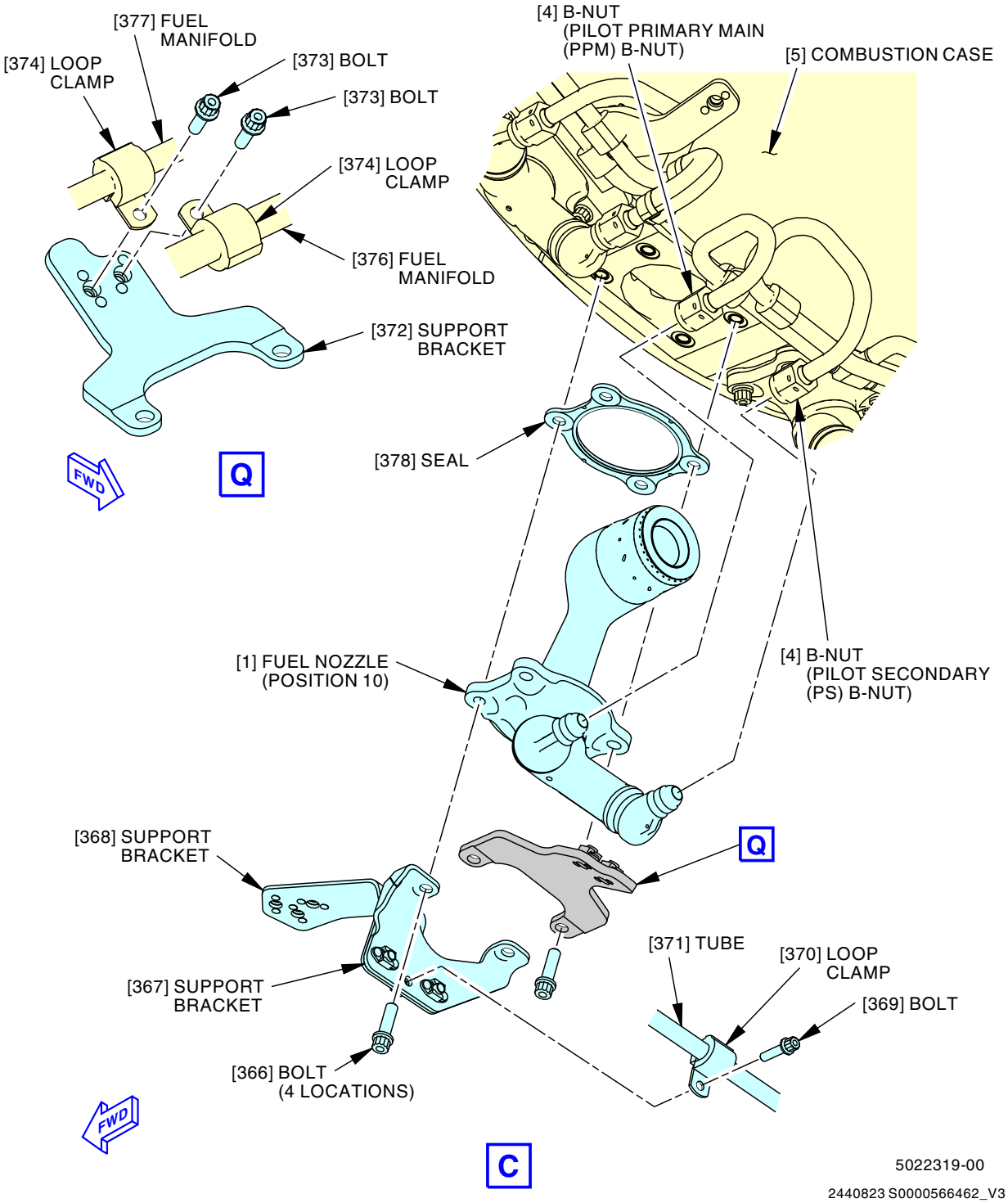
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 7 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



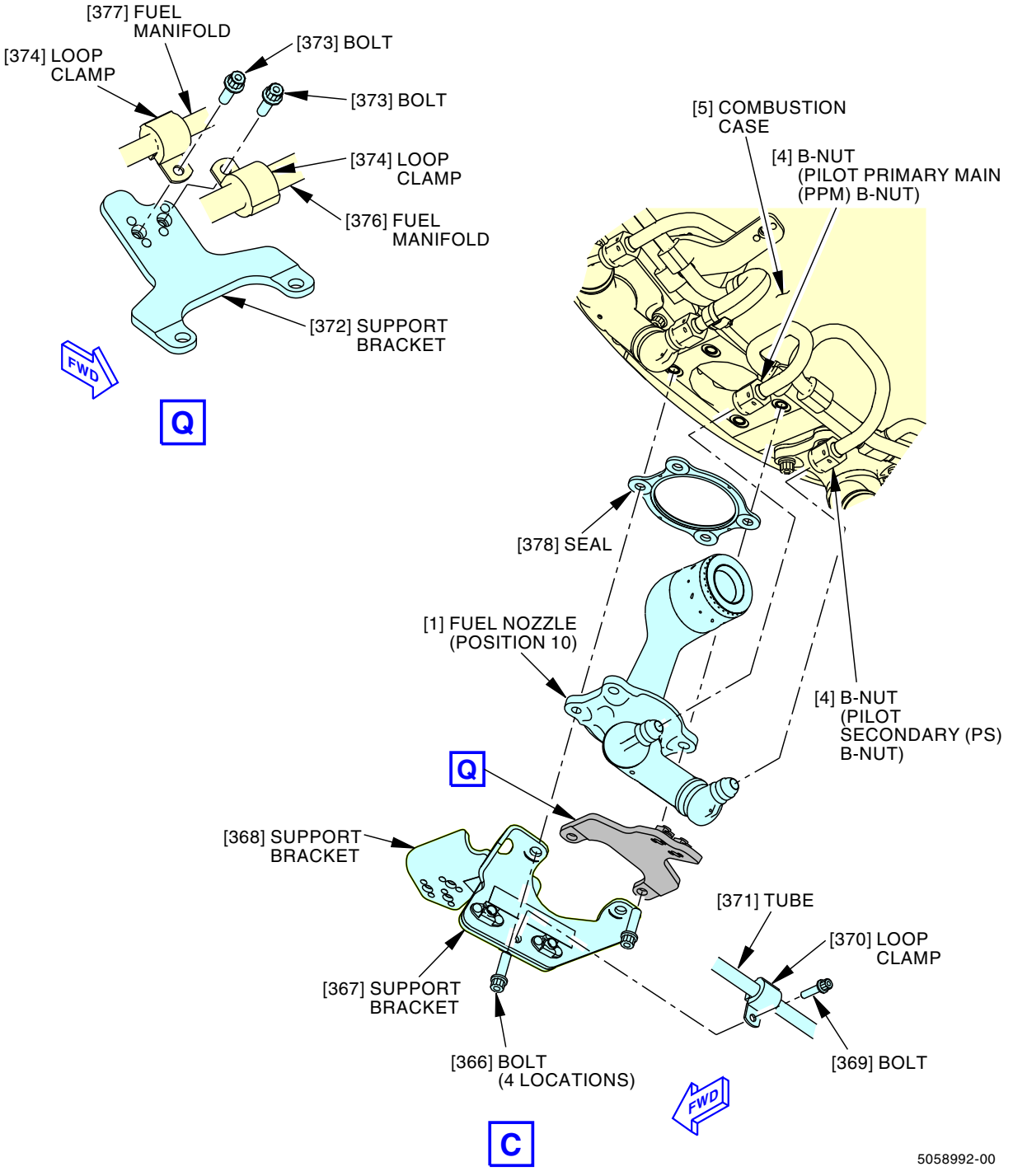
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 8 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



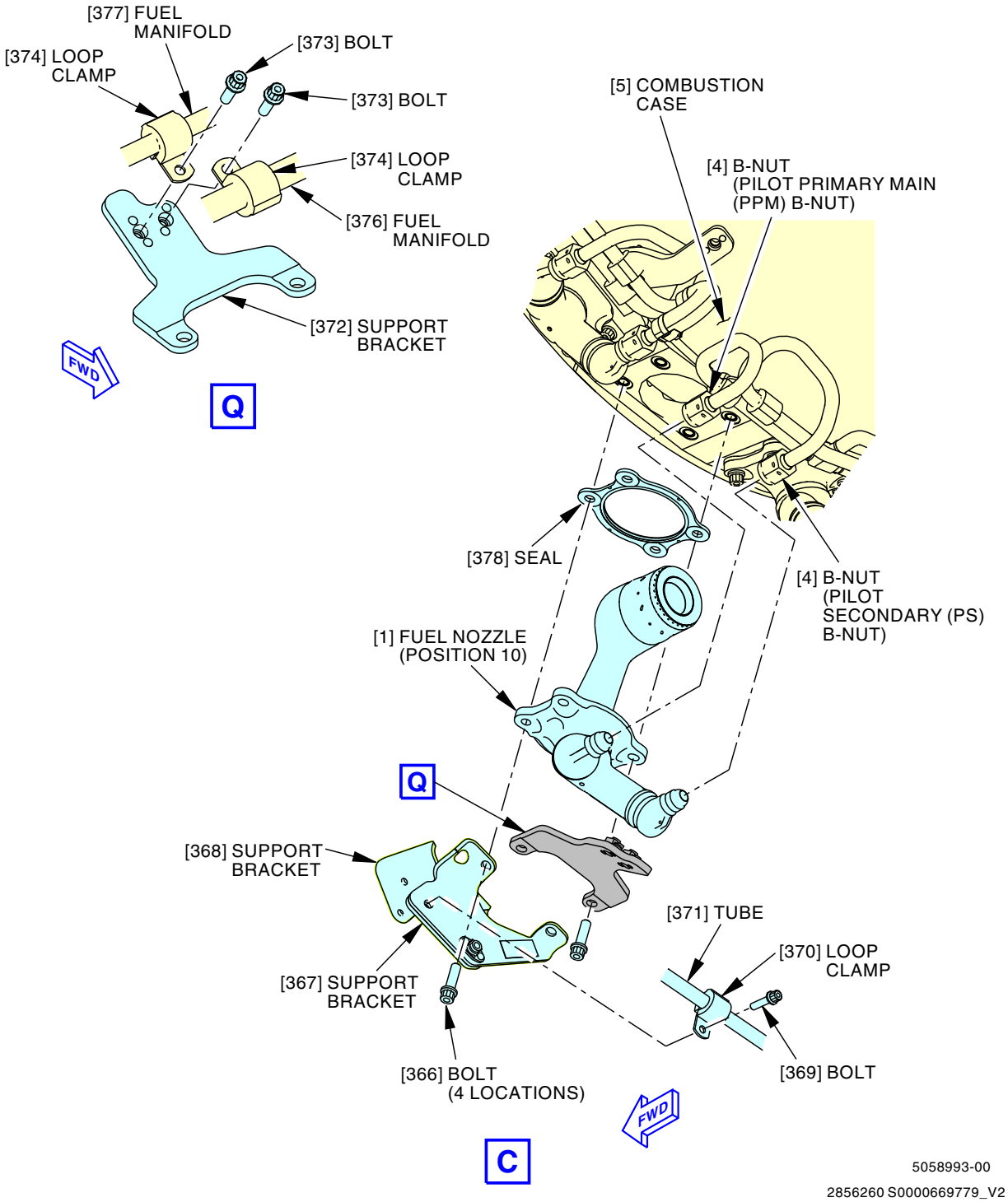
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 9 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



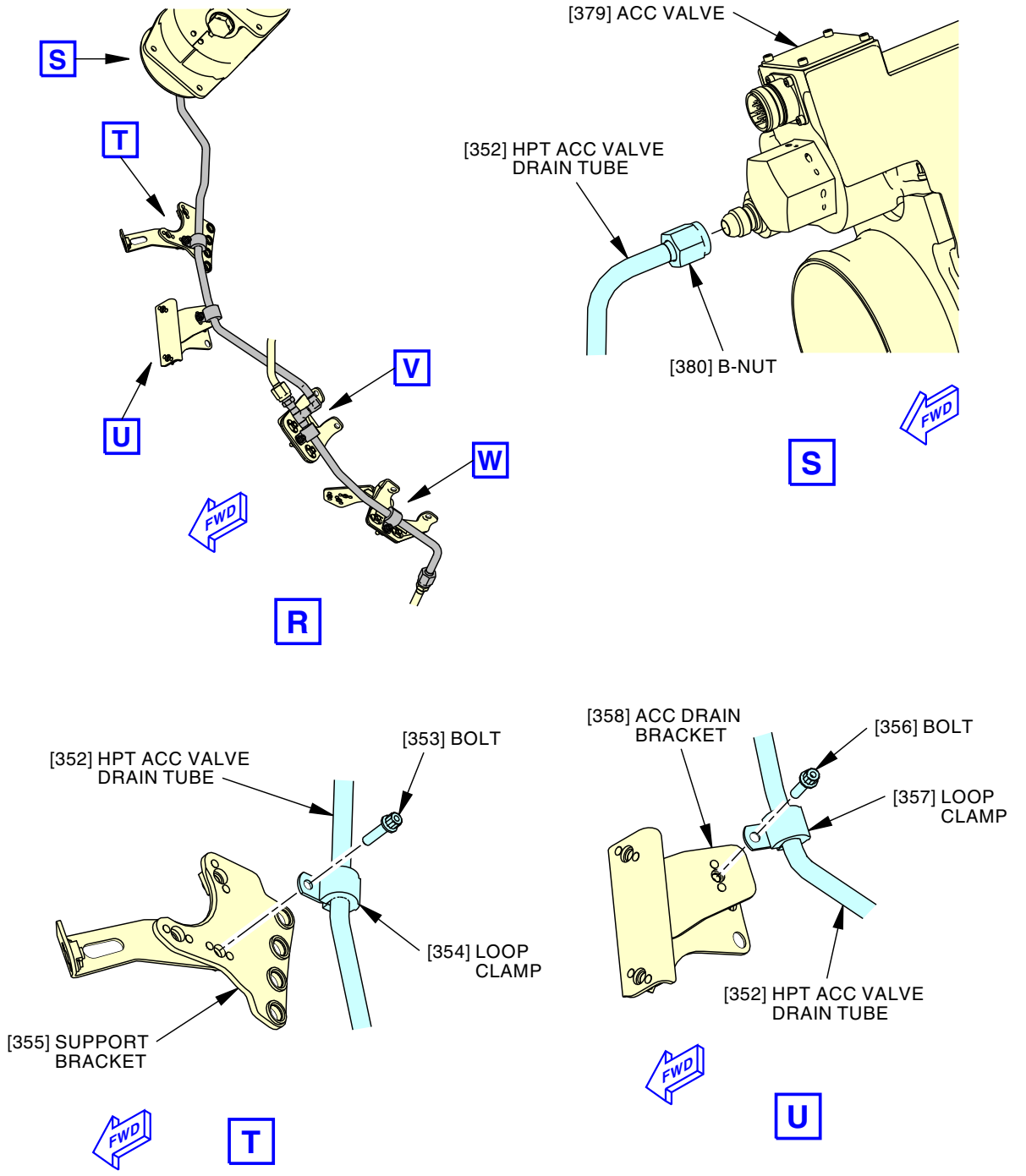
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 10 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



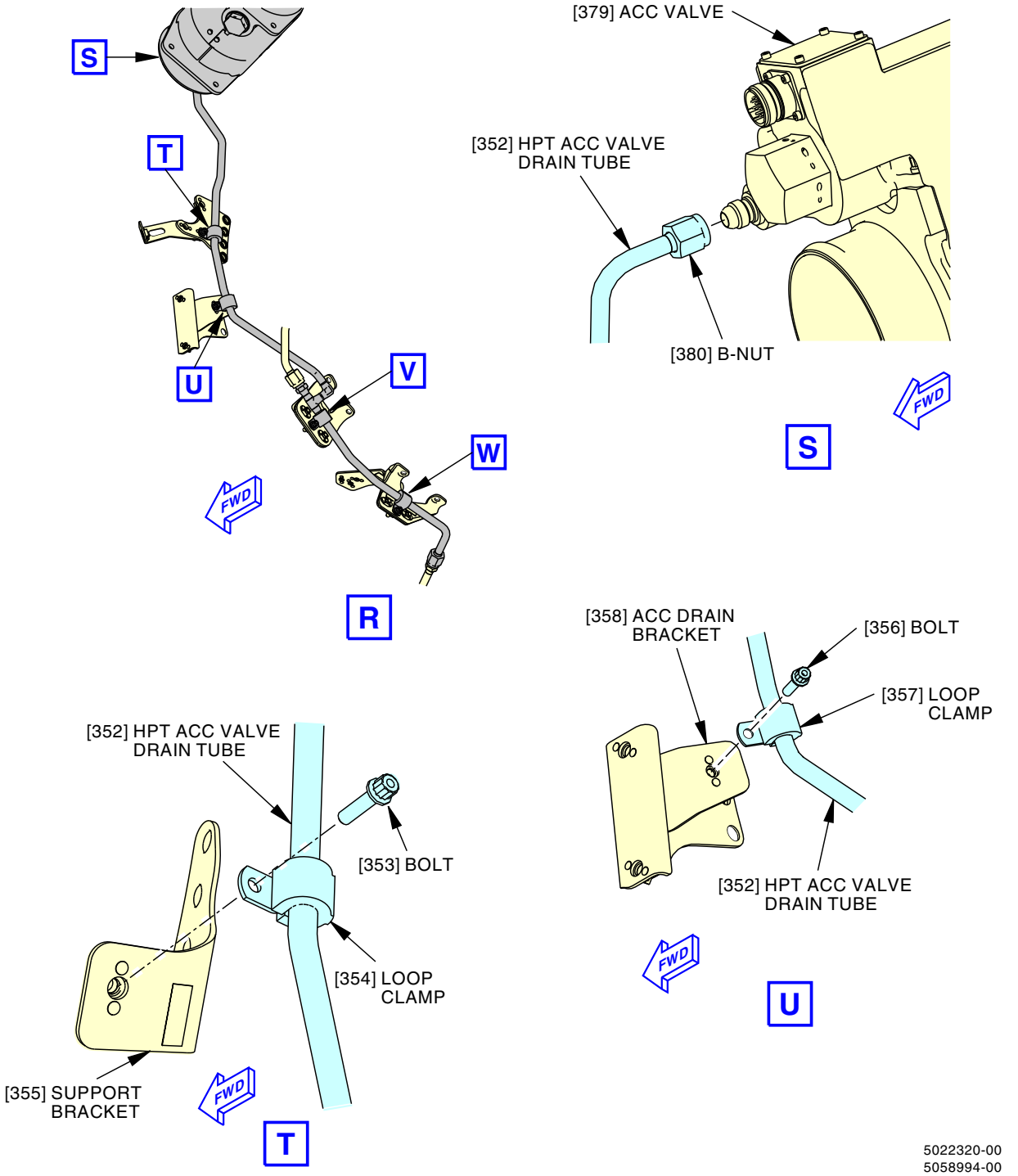
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 11 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 12 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

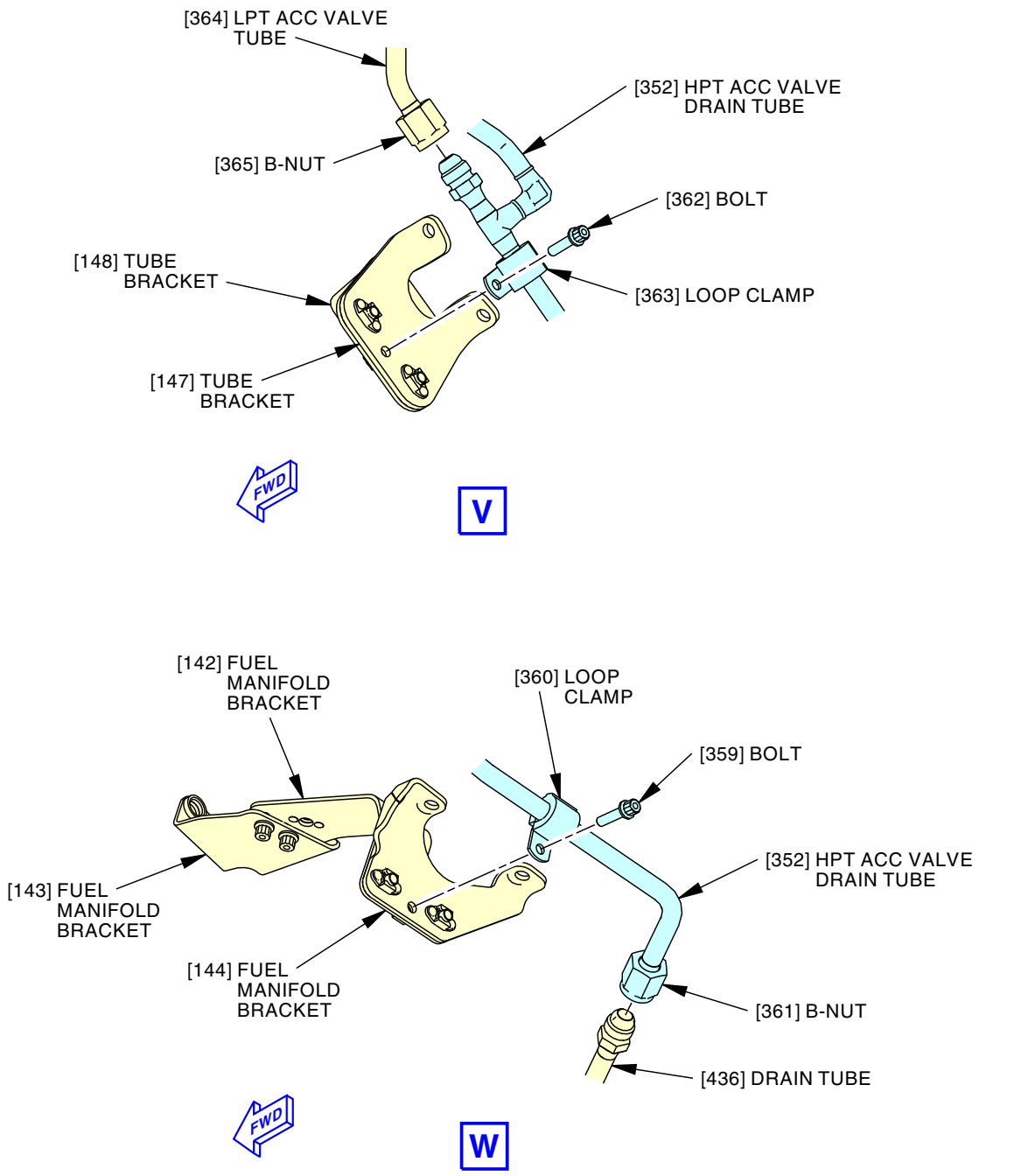


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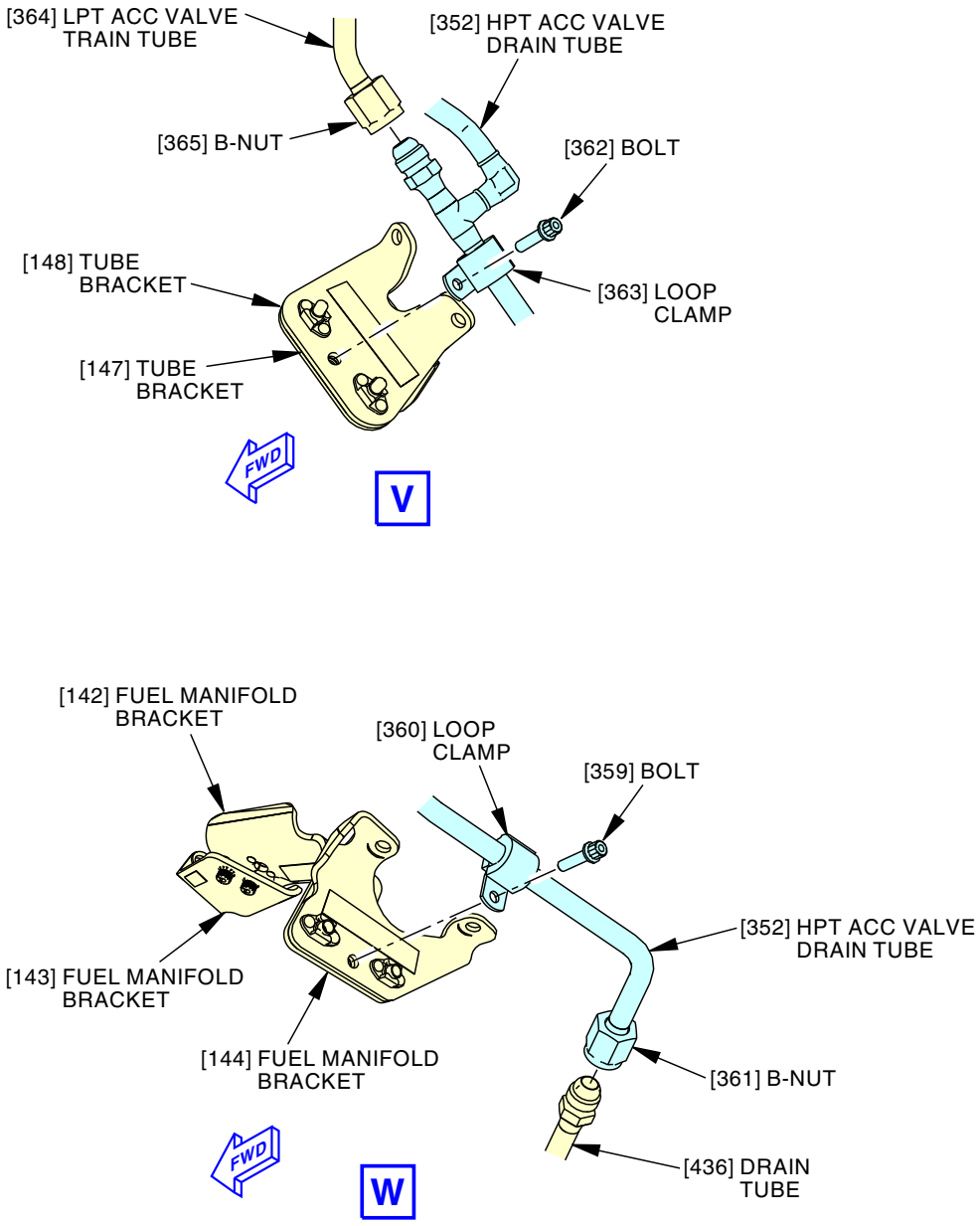
Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 13 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 14 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

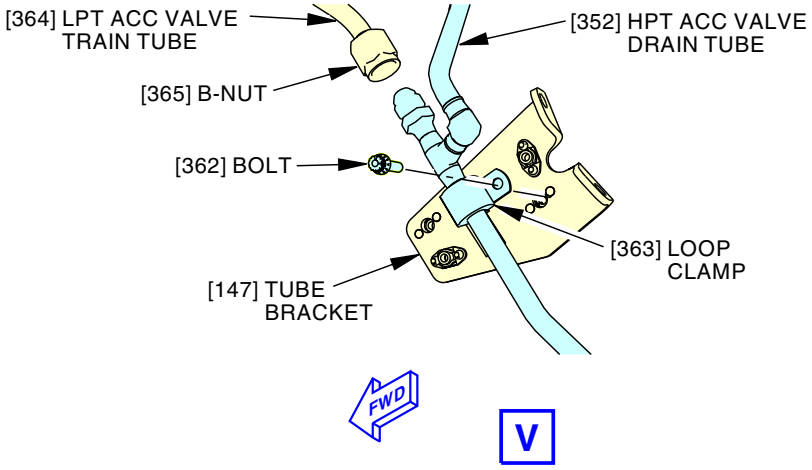


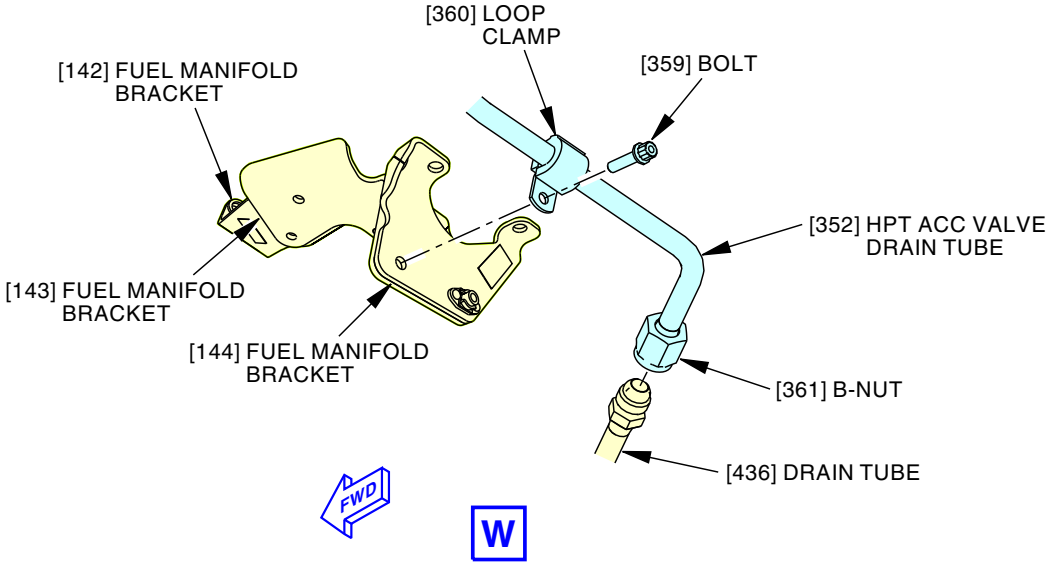
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Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 15 of 16)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



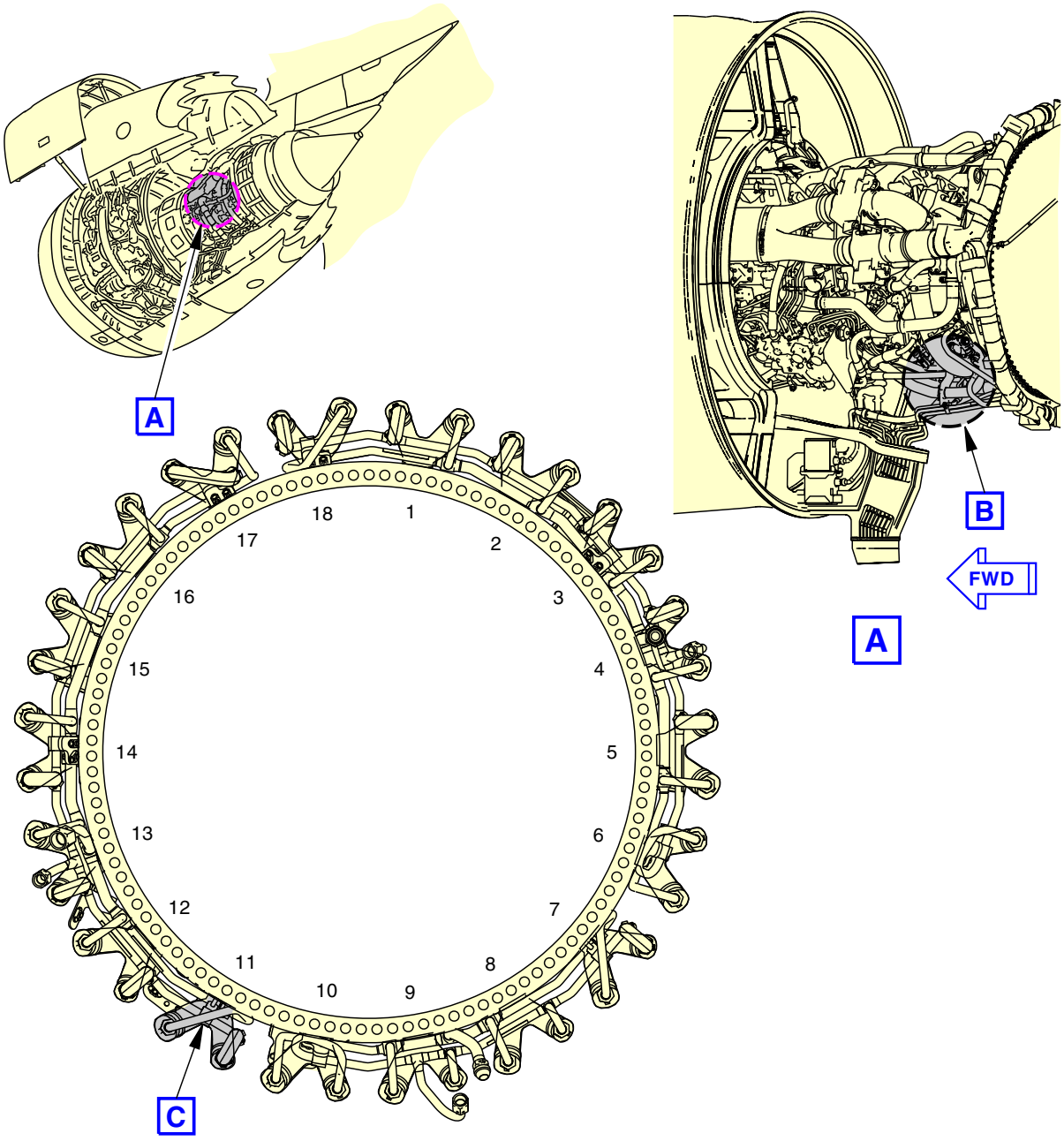


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Fuel Nozzle (Position 10) Installation
Figure 411/73-11-05-990-897-G00 (Sheet 16 of 16)

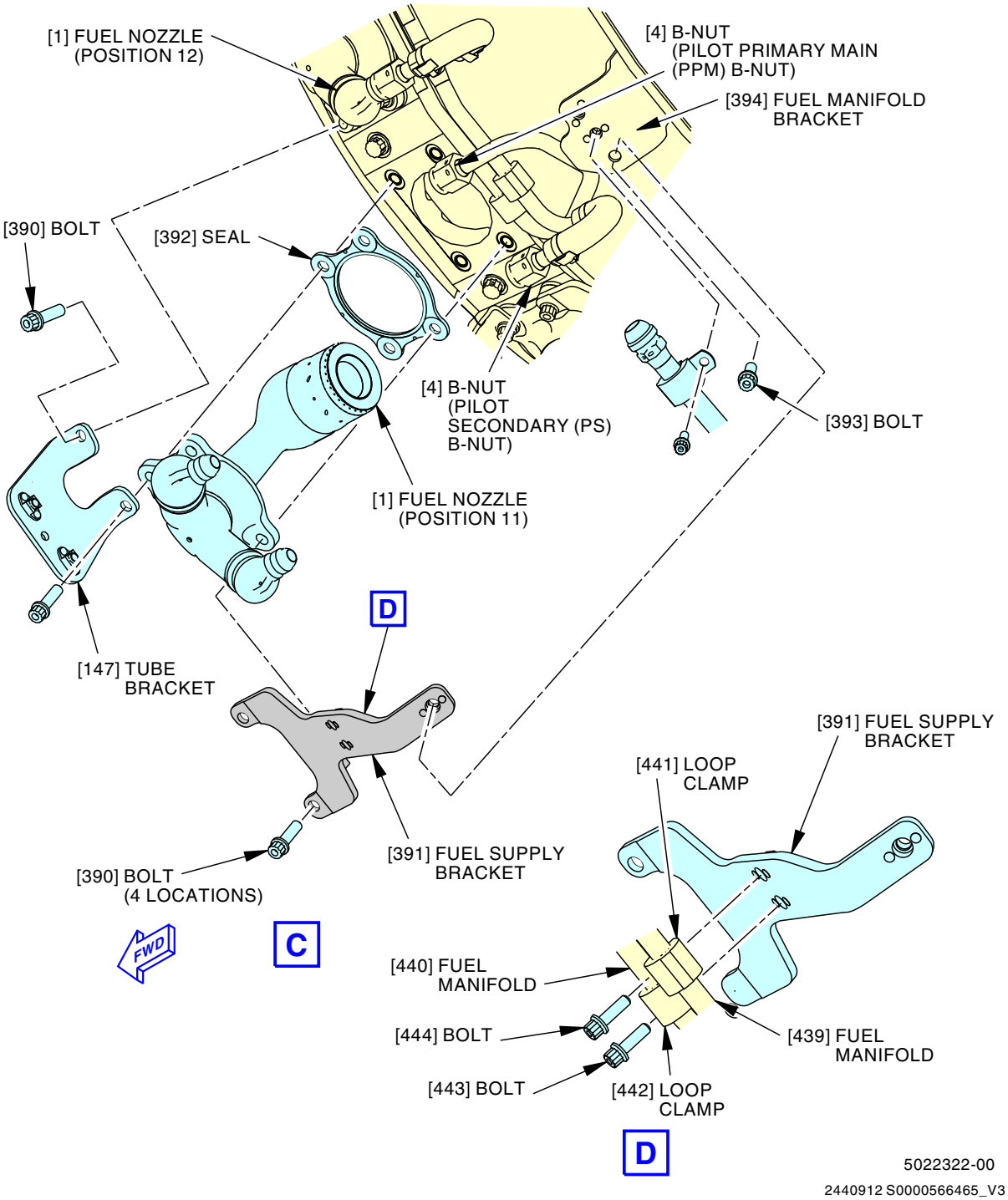
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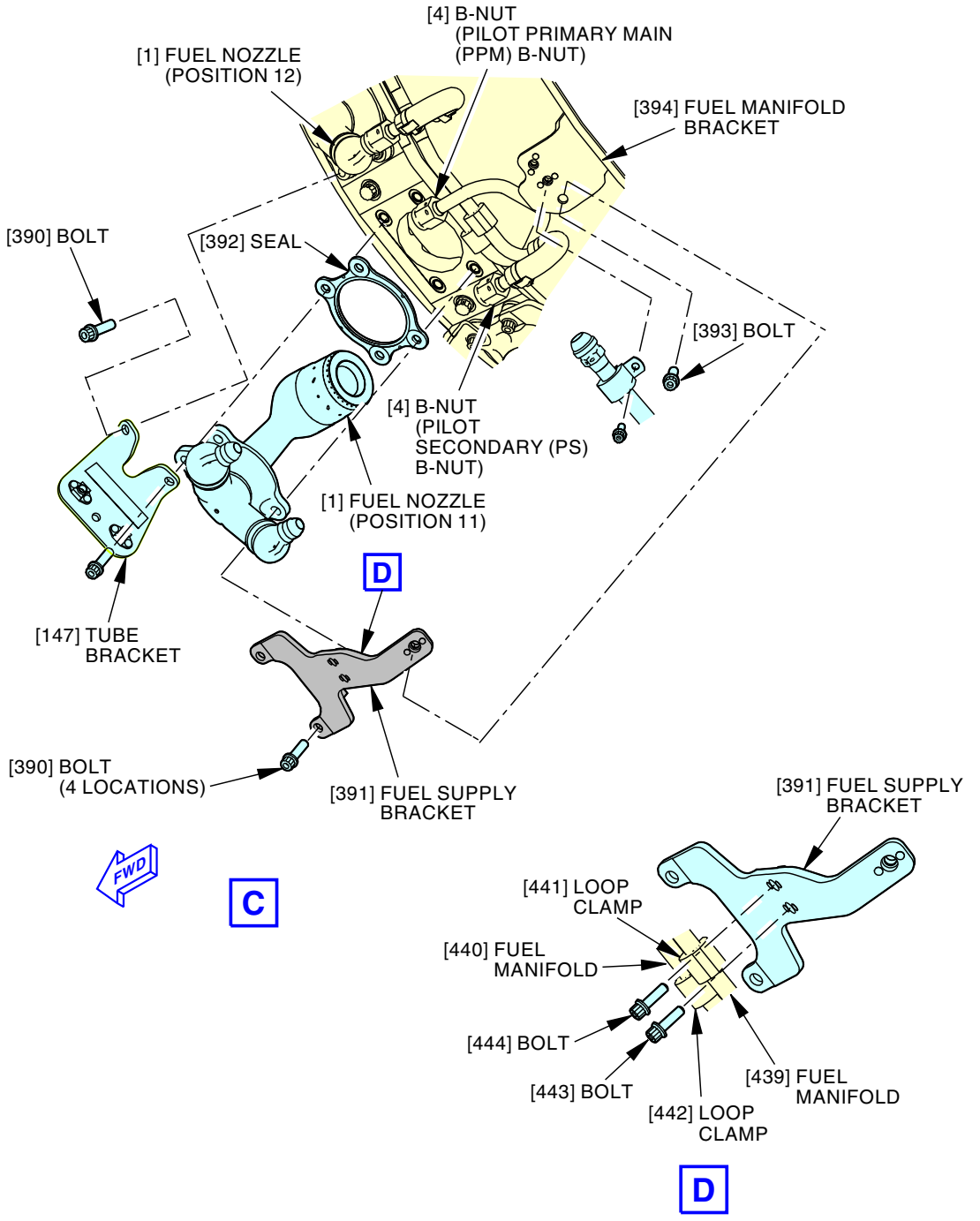
Fuel Nozzle (Position 11) Installation
Figure 412/73-11-05-990-898-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



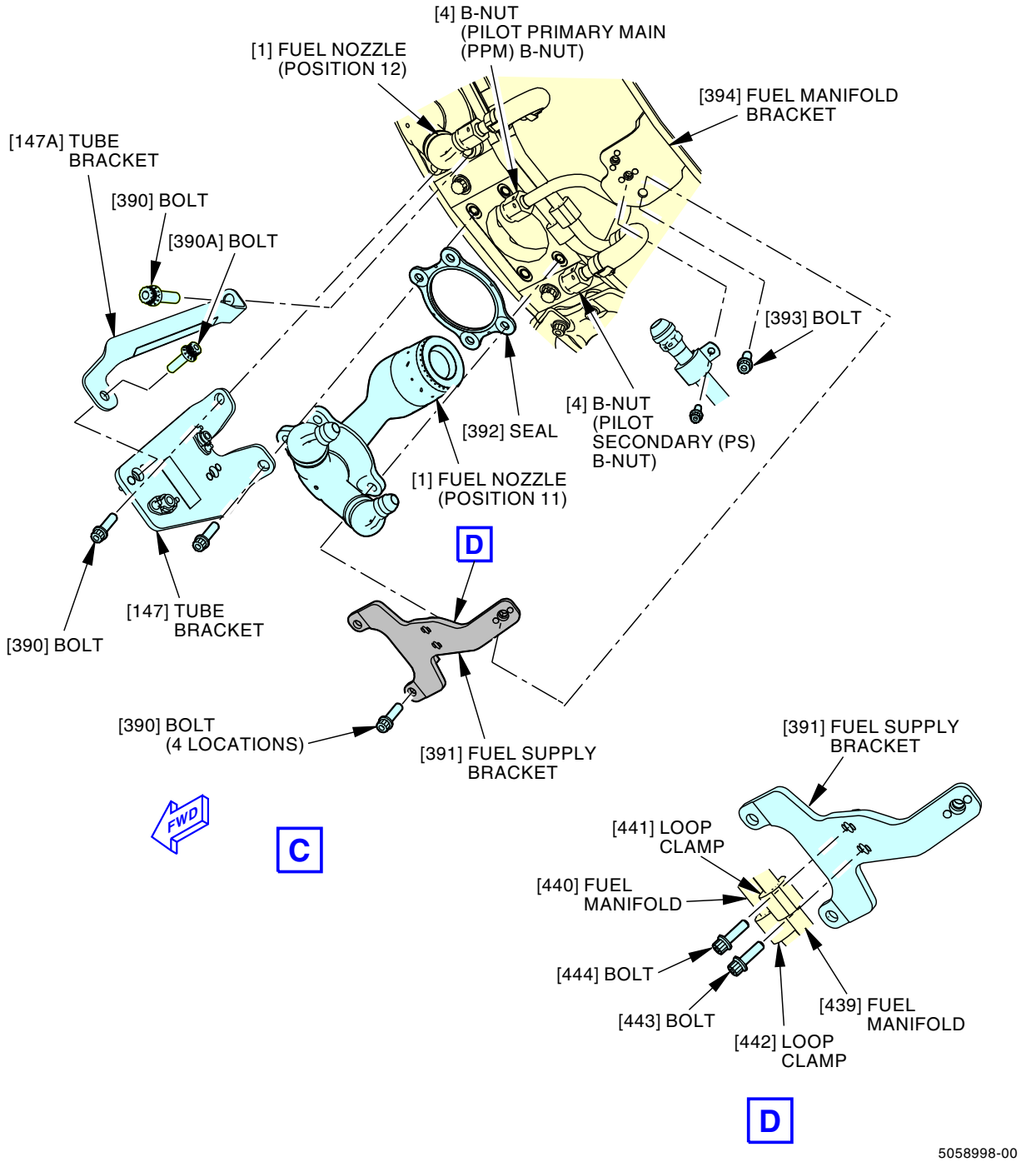
Fuel Nozzle (Position 11) Installation
Figure 412/73-11-05-990-898-G00 (Sheet 2 of 4)

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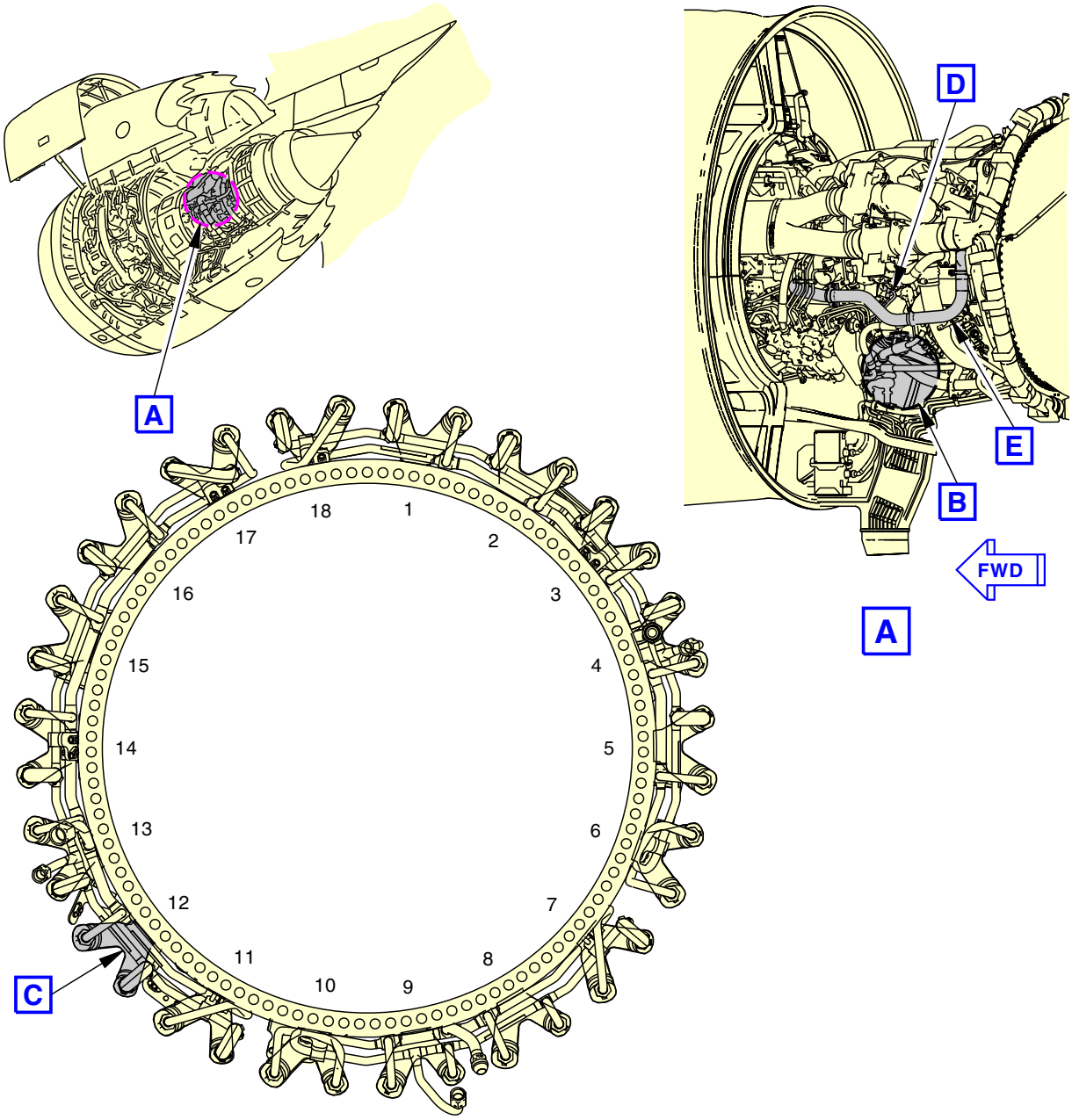
Fuel Nozzle (Position 11) Installation
Figure 412/73-11-05-990-898-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 11) Installation
Figure 412/73-11-05-990-898-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(VIEW IN THE FORWARD DIRECTION)

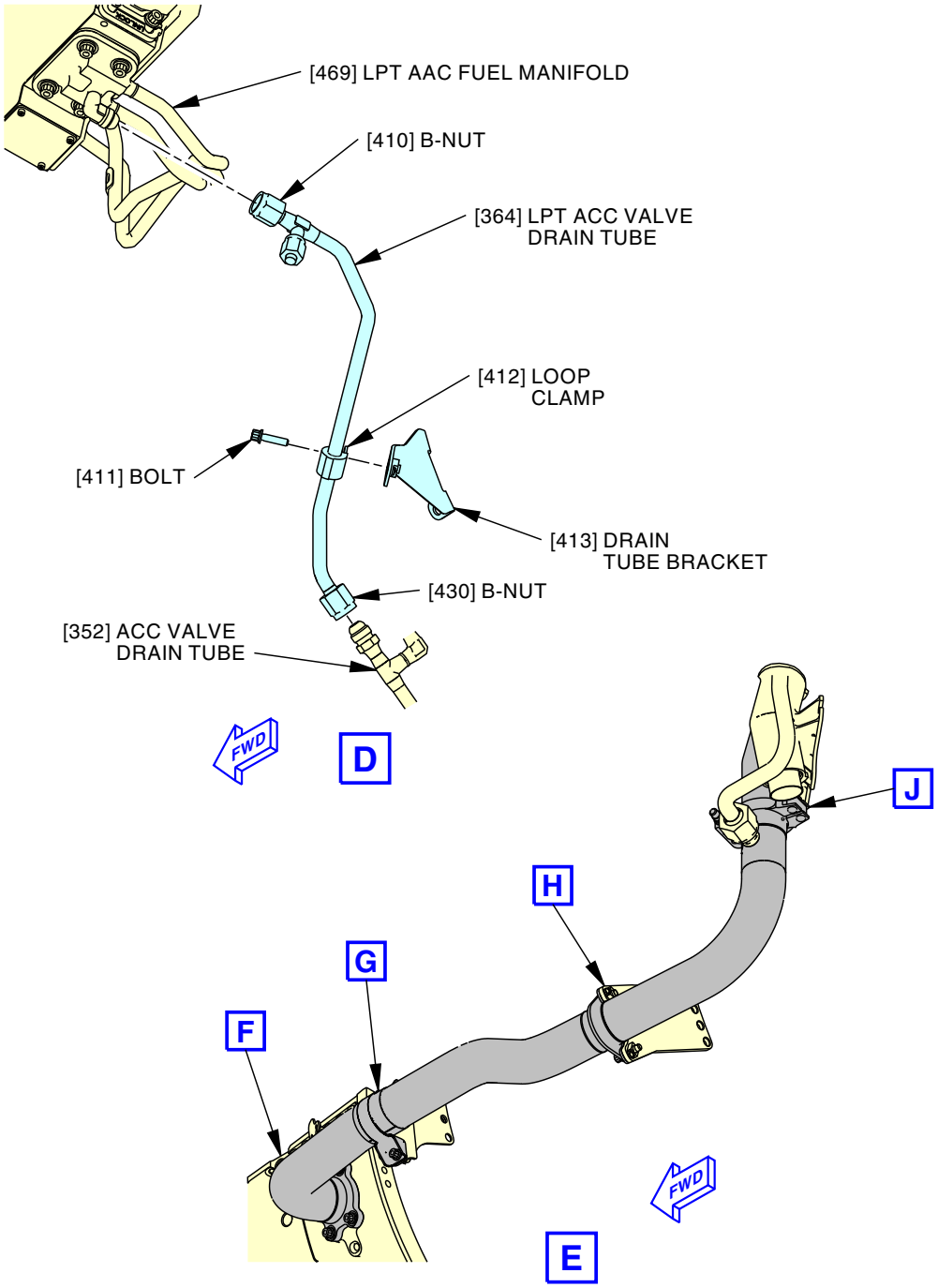
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Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 1 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

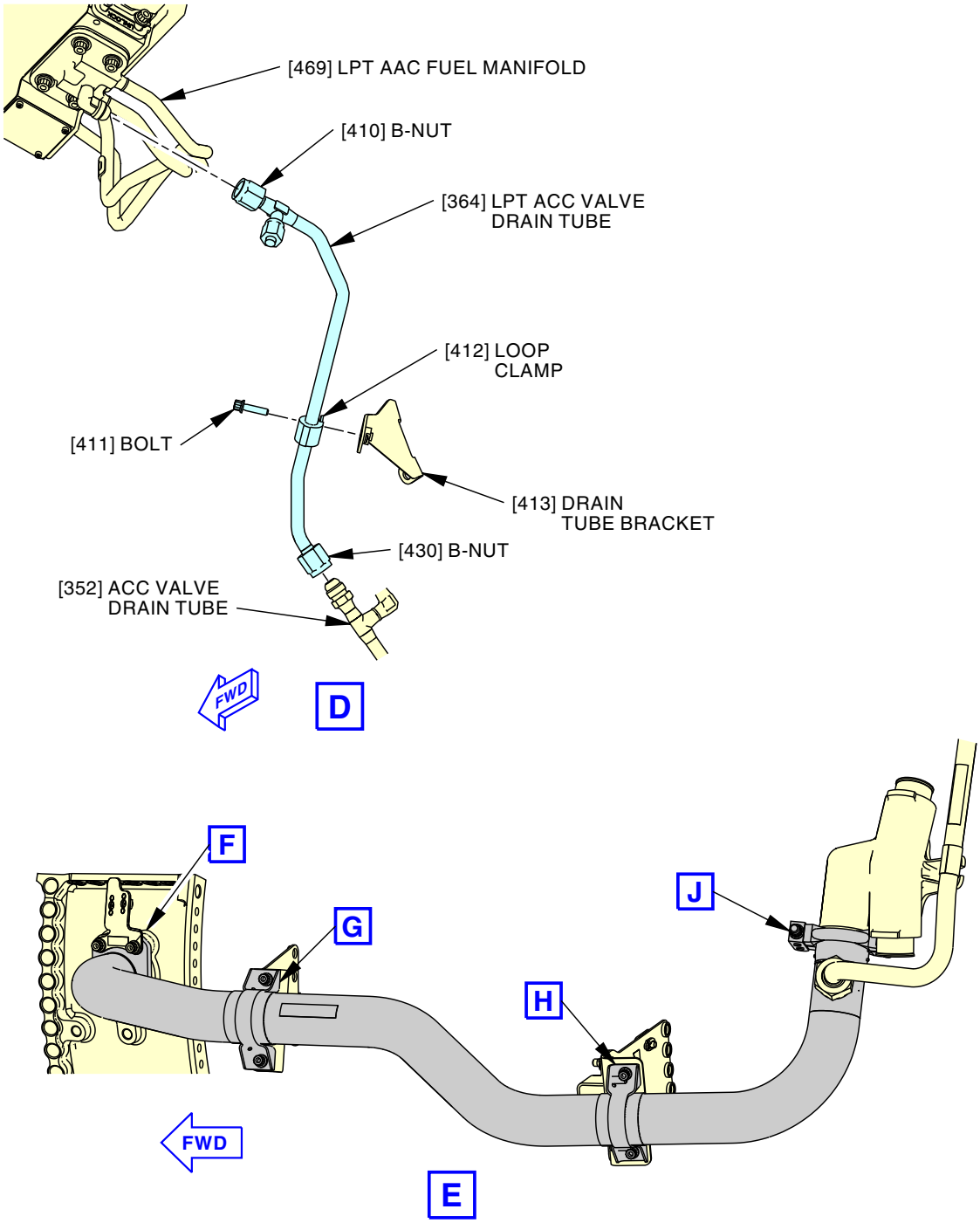


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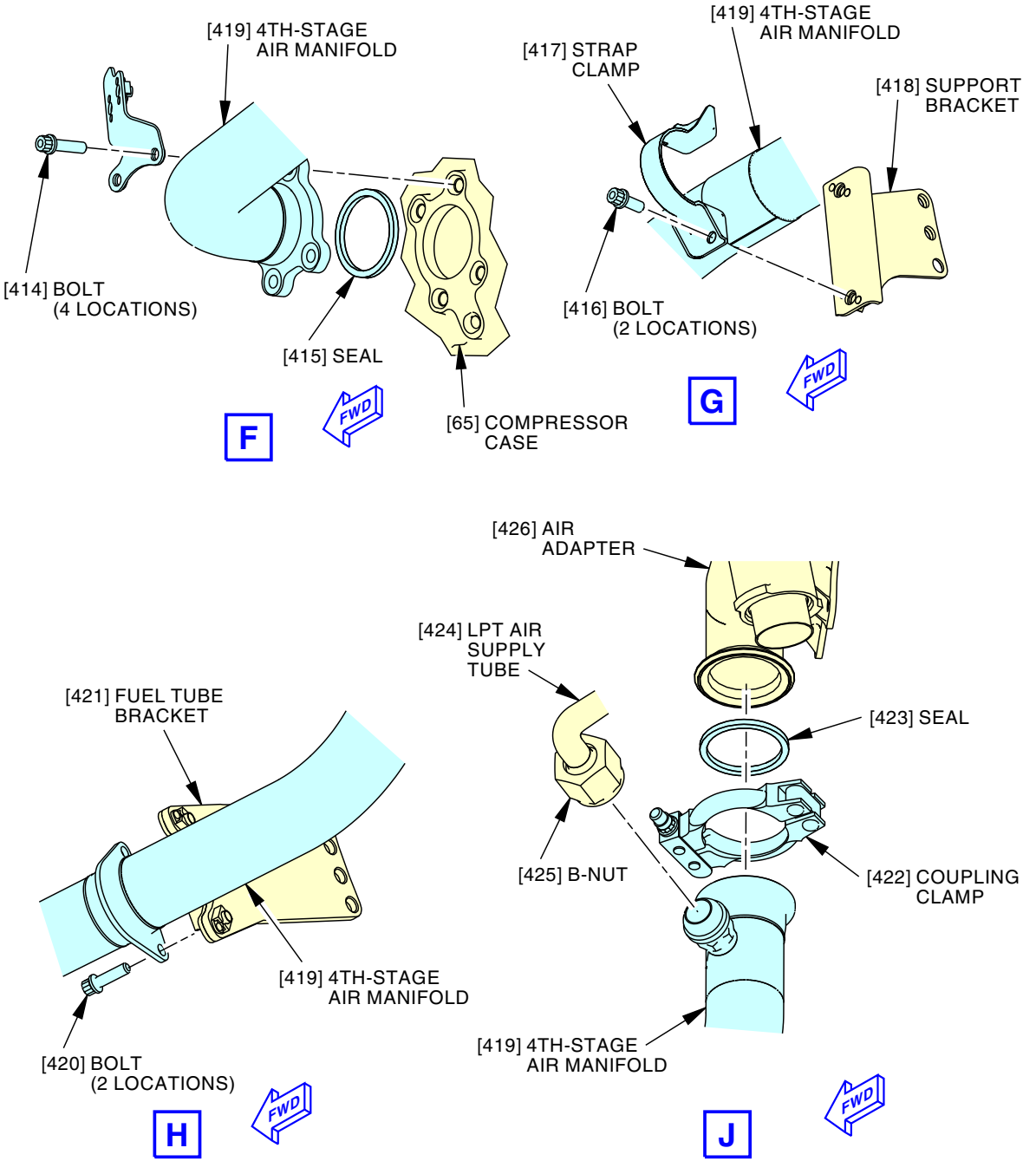
Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 2 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



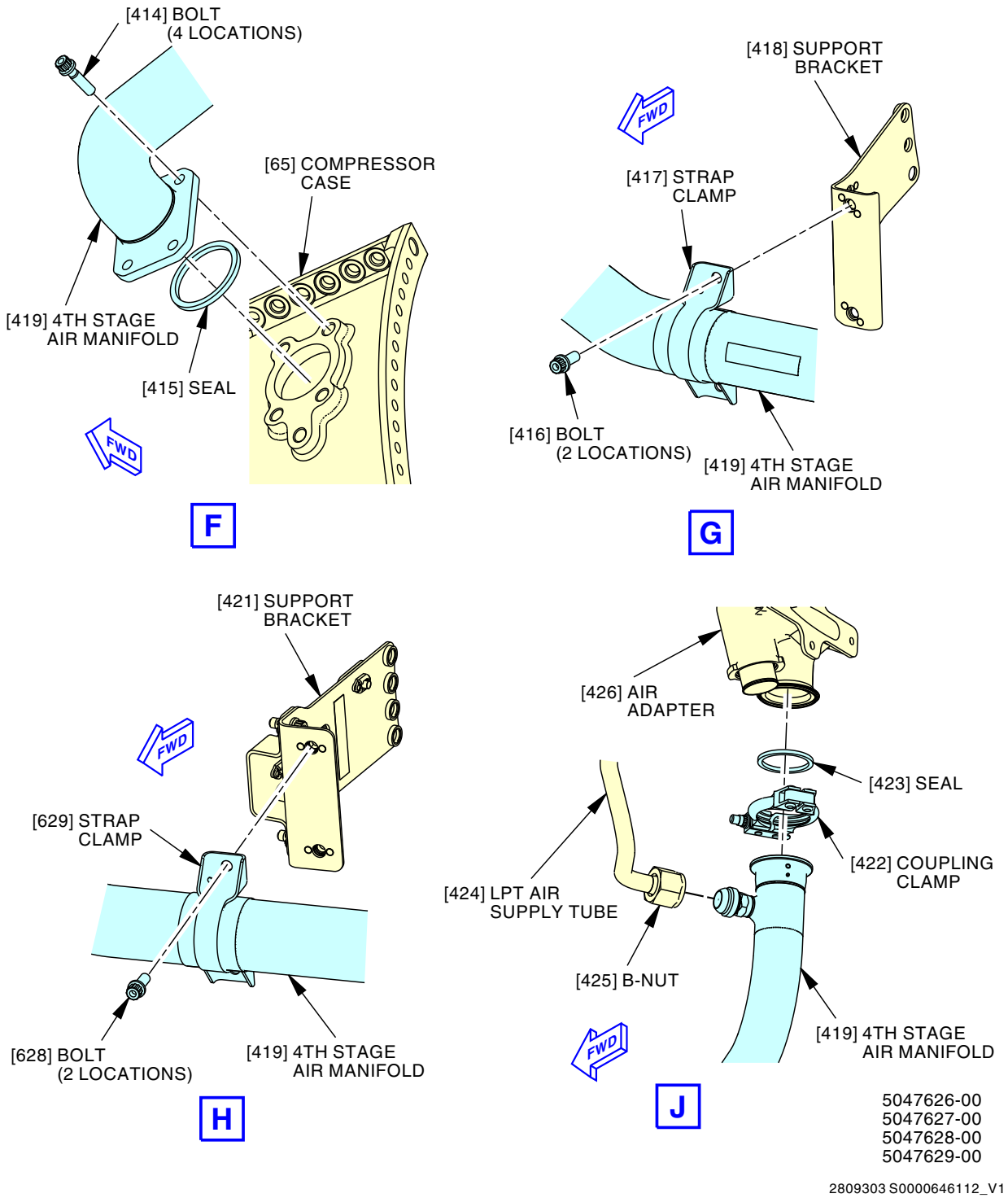
Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 3 of 8)

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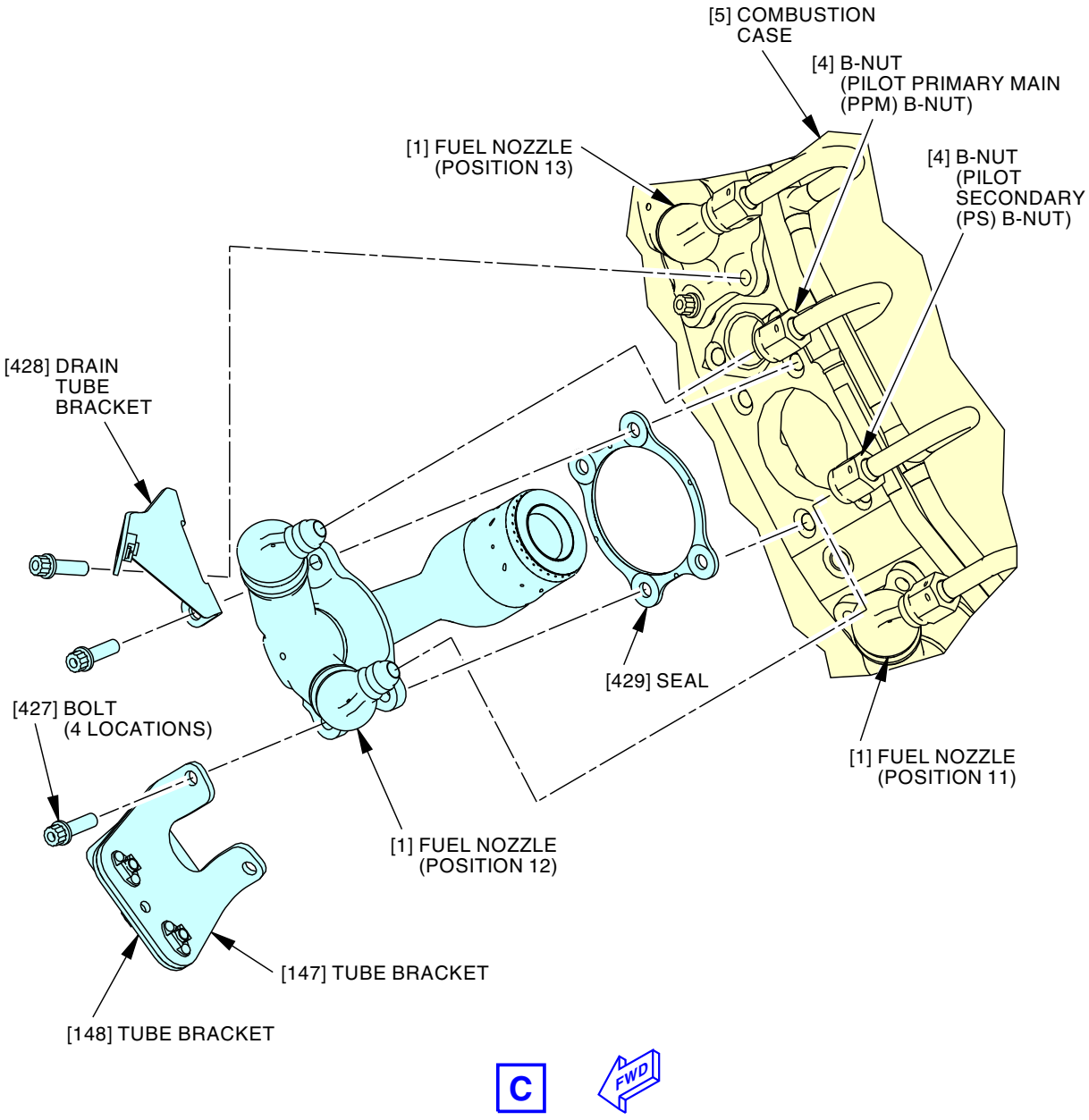
Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 4 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 5 of 8)

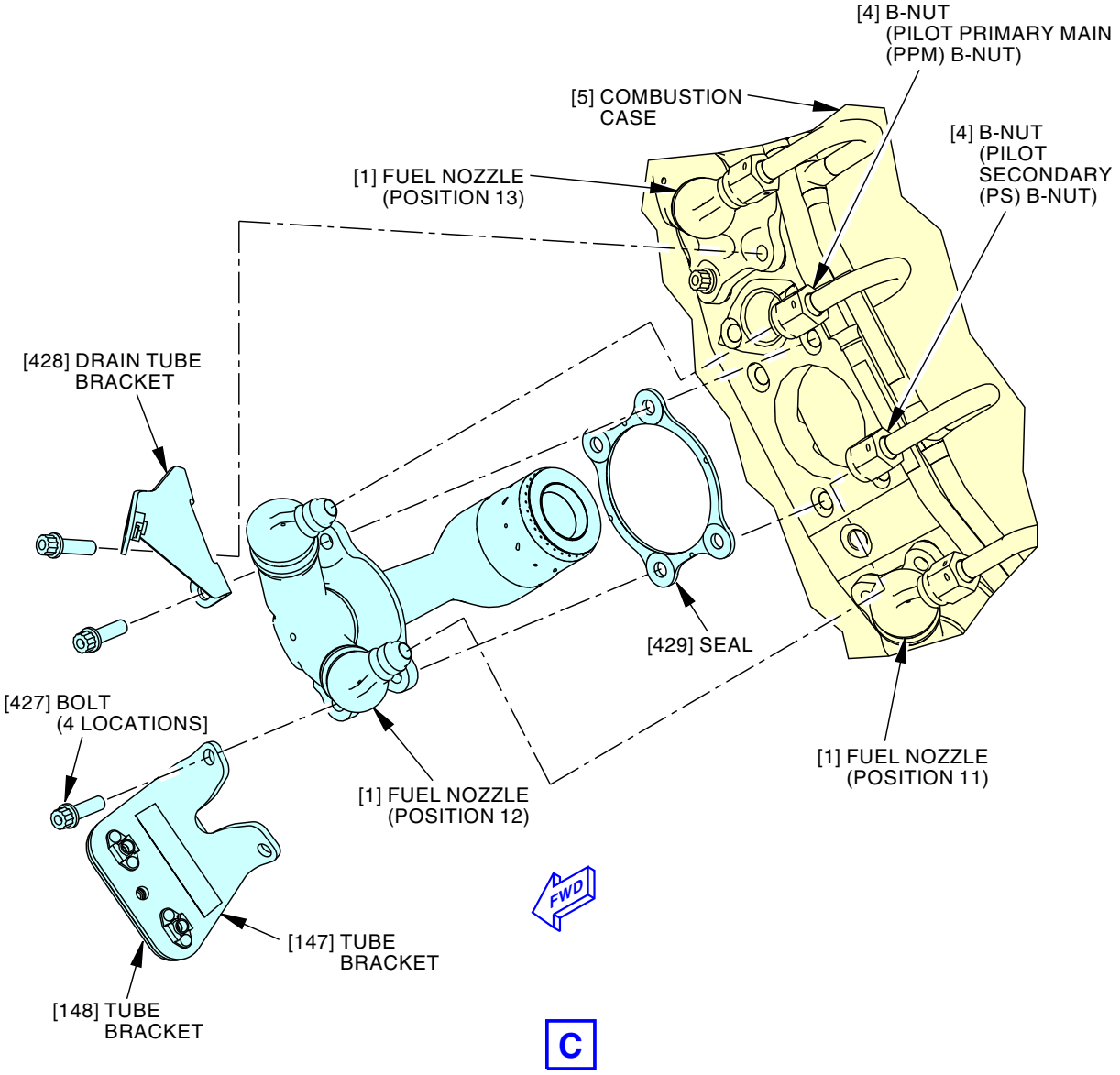
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Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 6 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

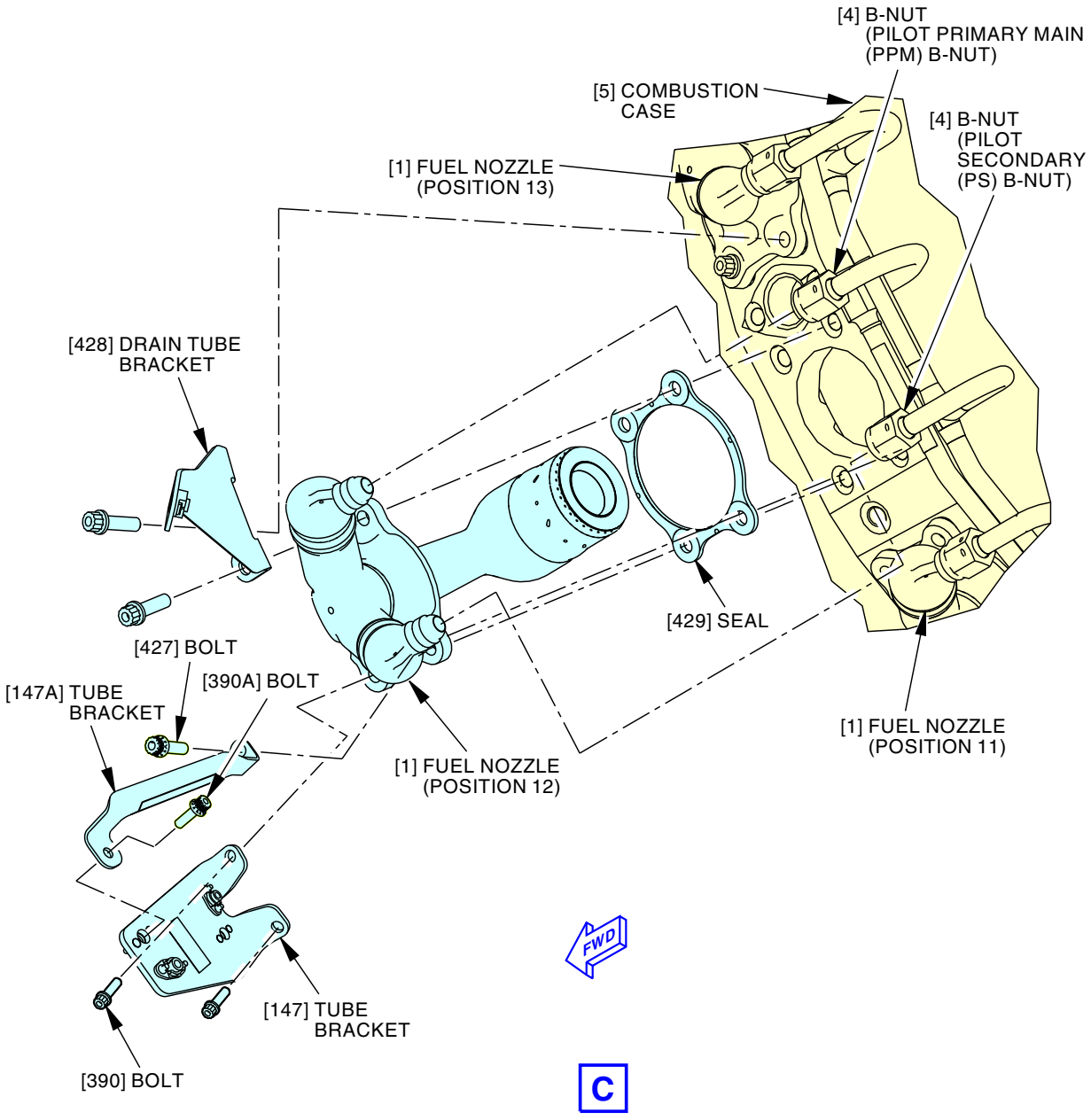


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Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 7 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

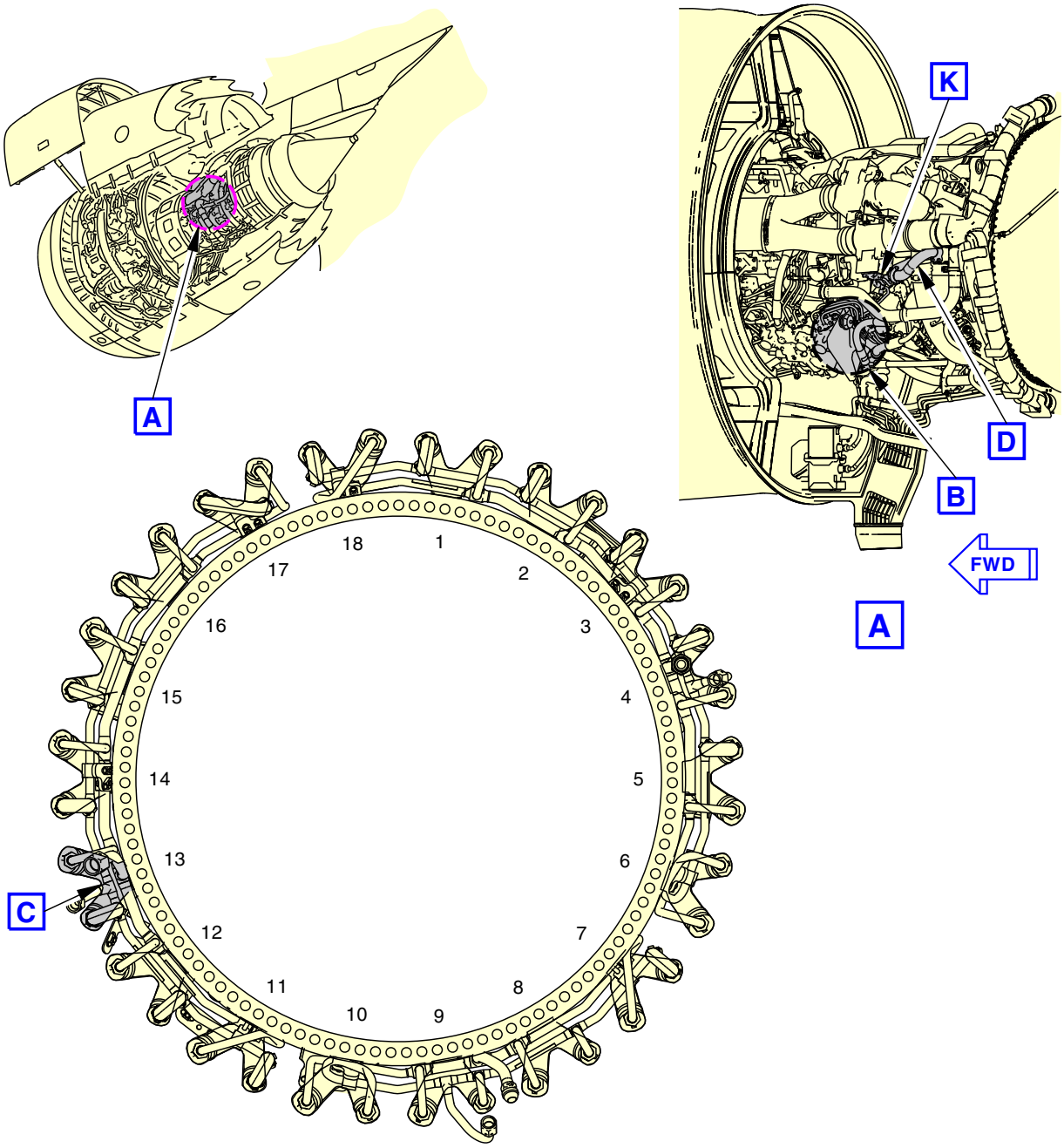


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Fuel Nozzle (Position 12) Installation
Figure 413/73-11-05-990-899-G00 (Sheet 8 of 8)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

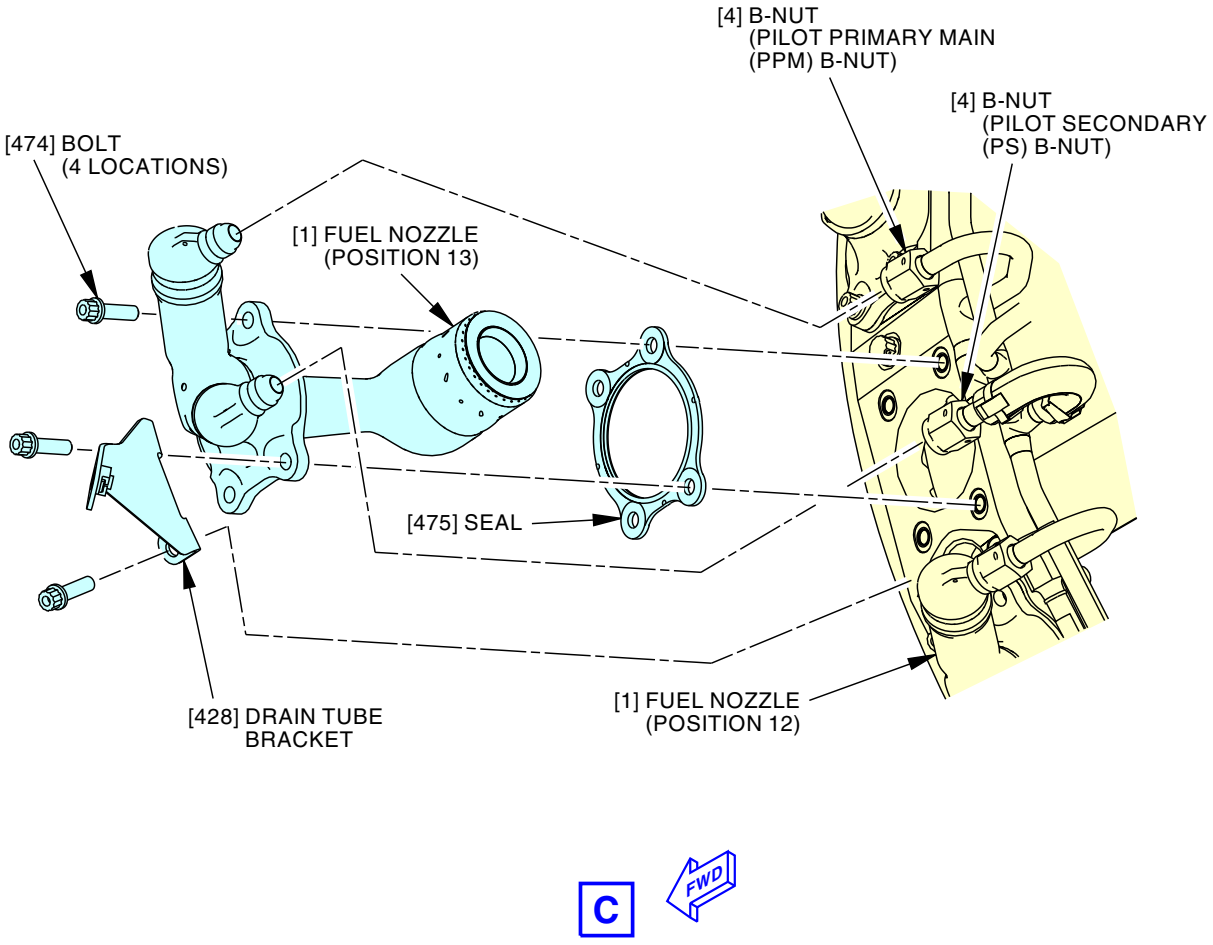


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Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 1 of 9)

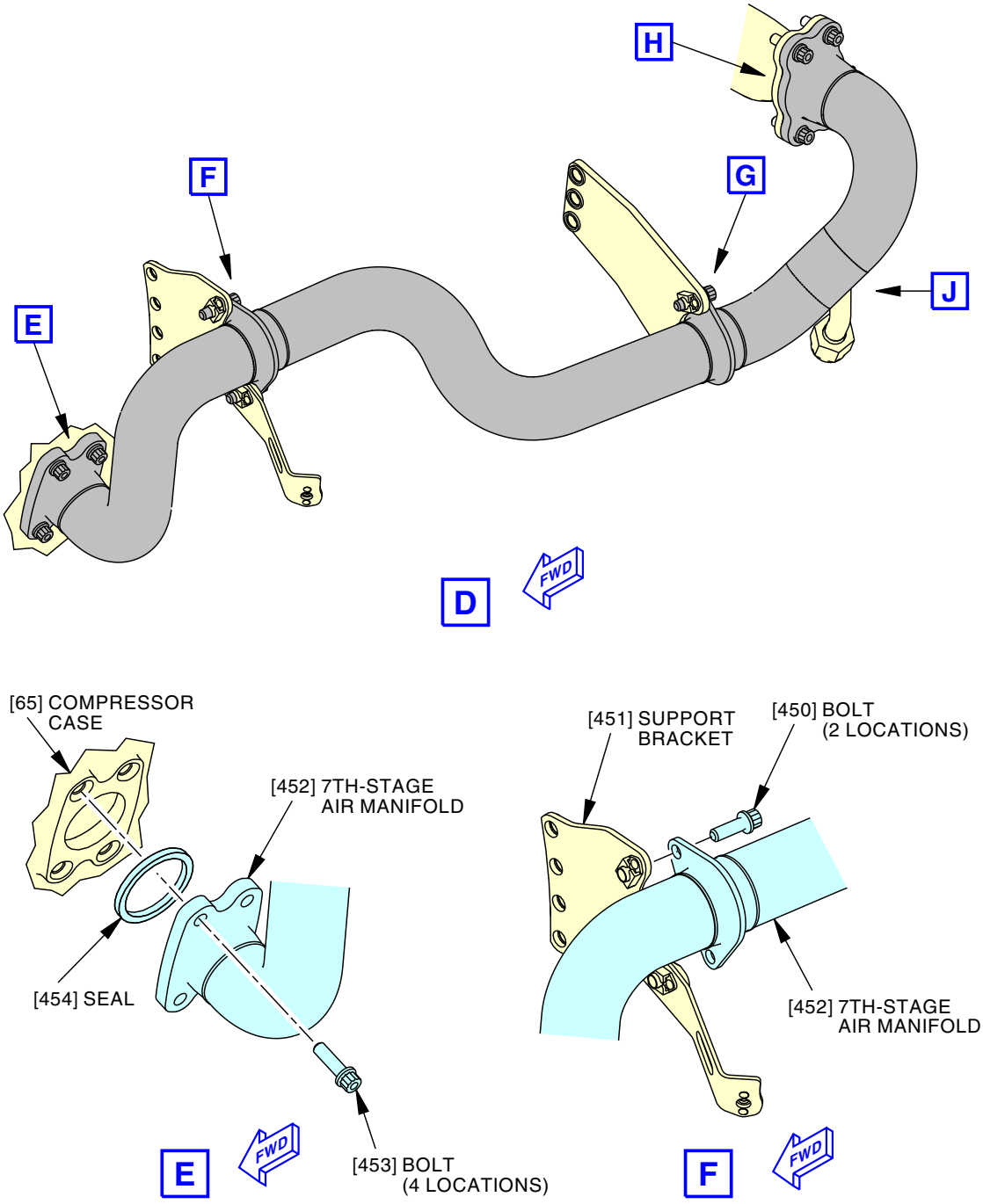
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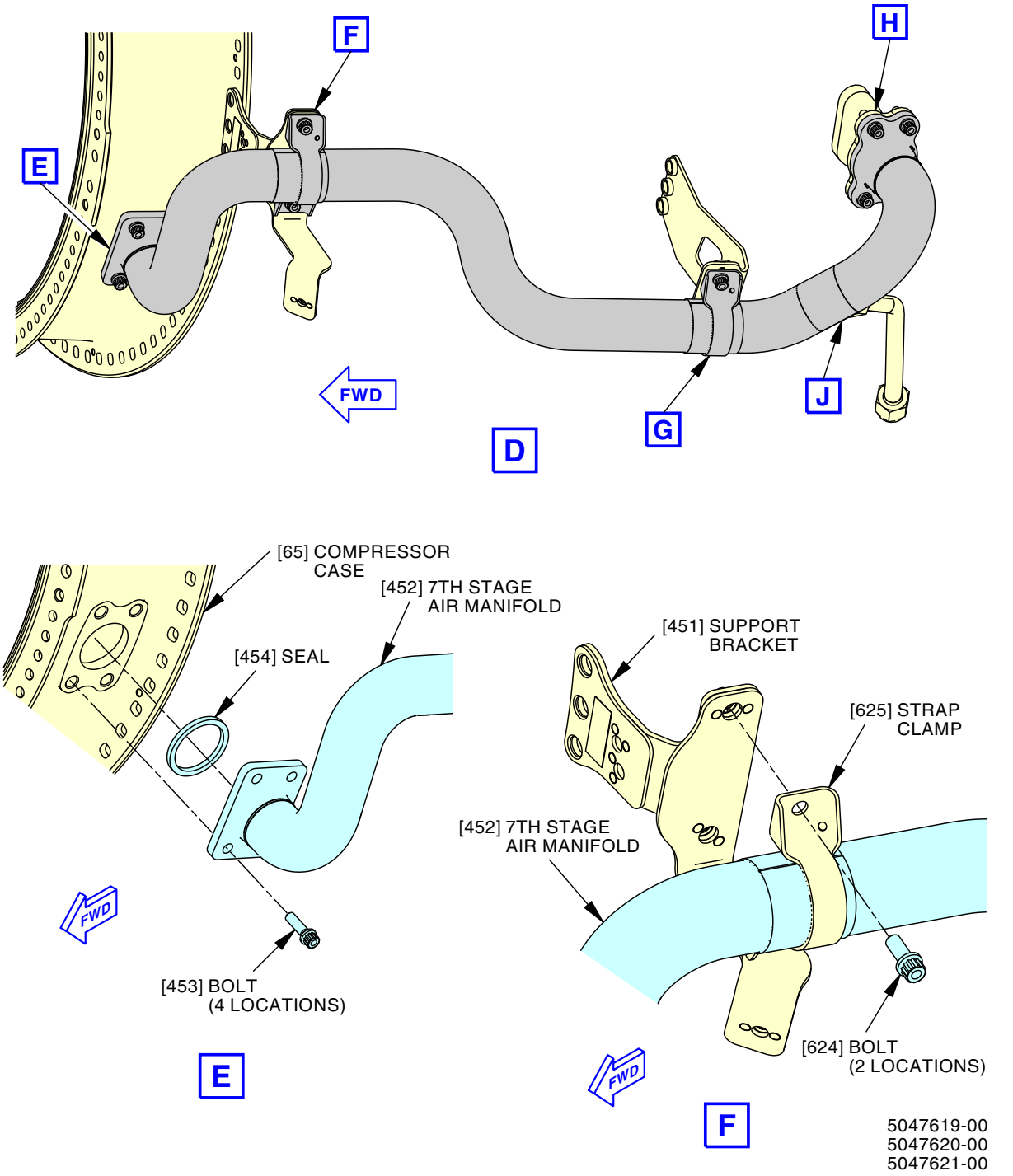
Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



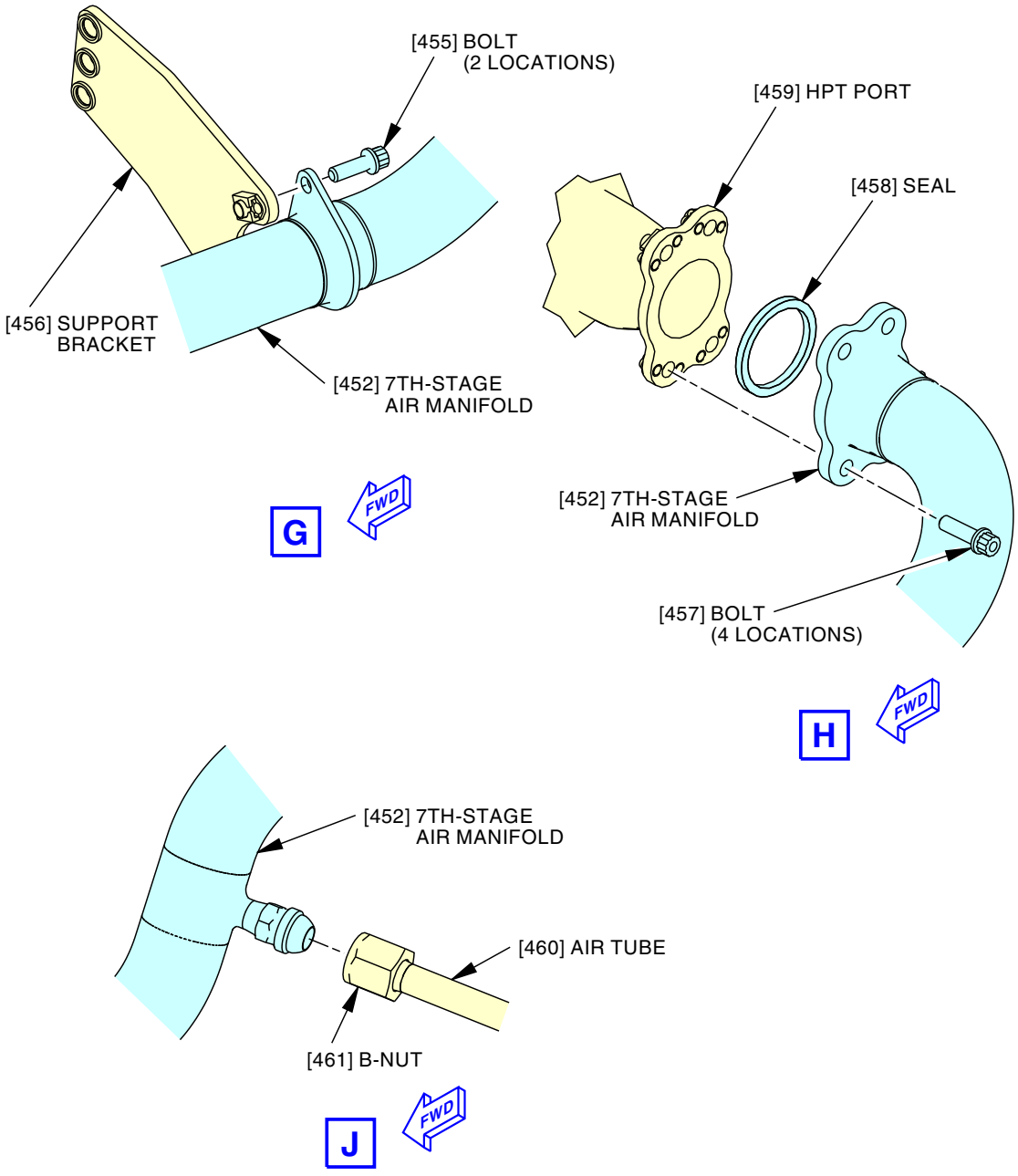
Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

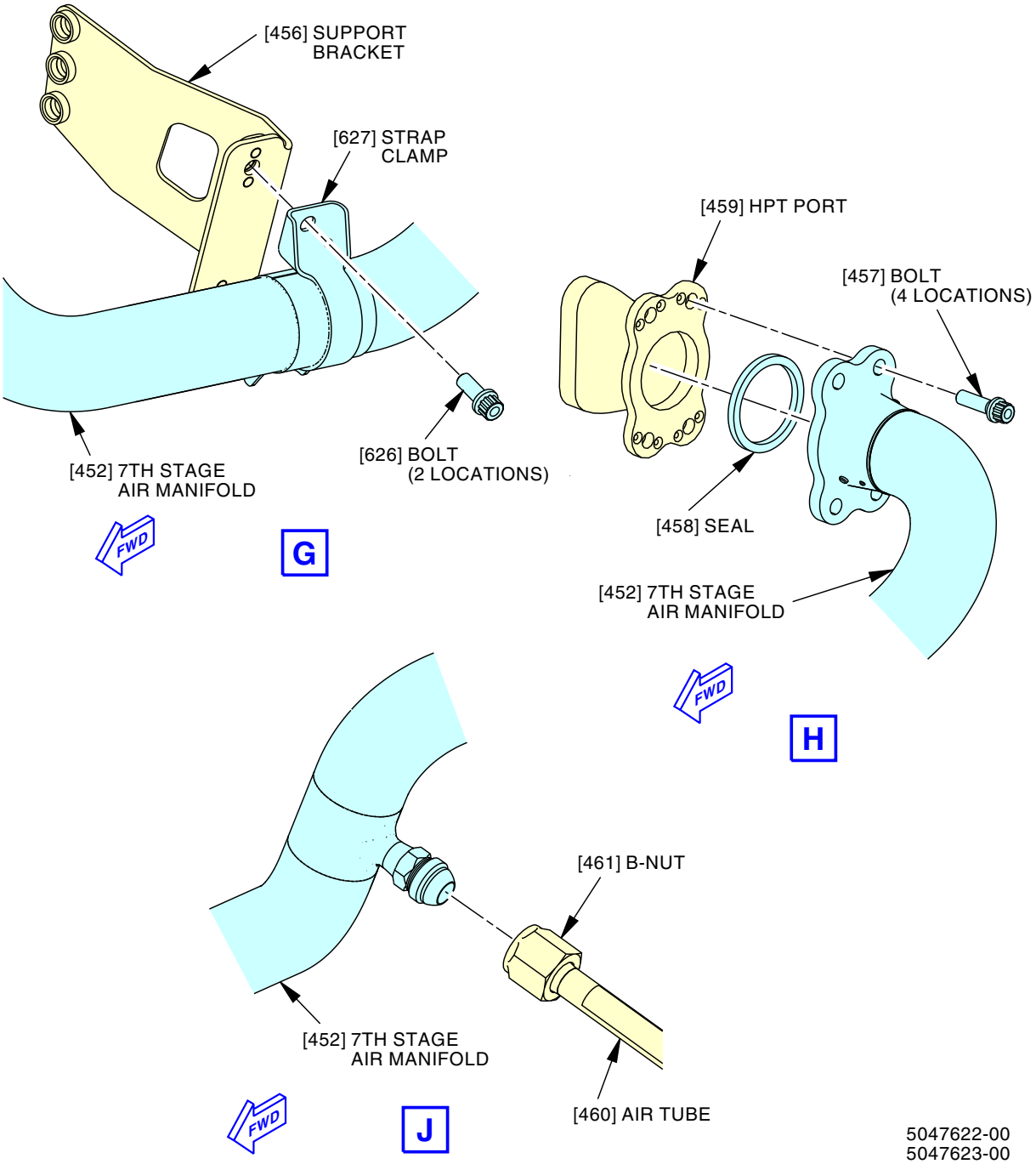


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Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

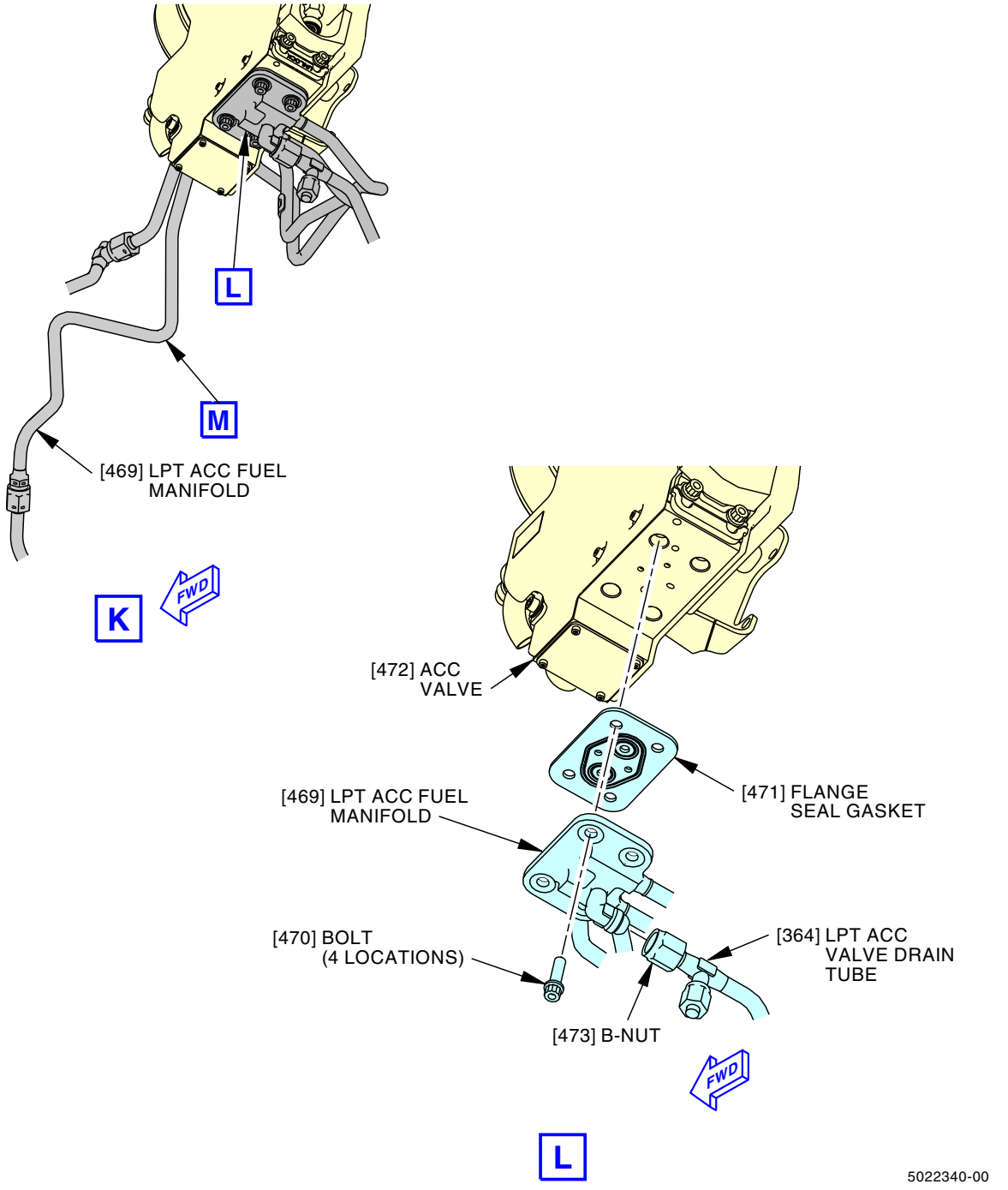


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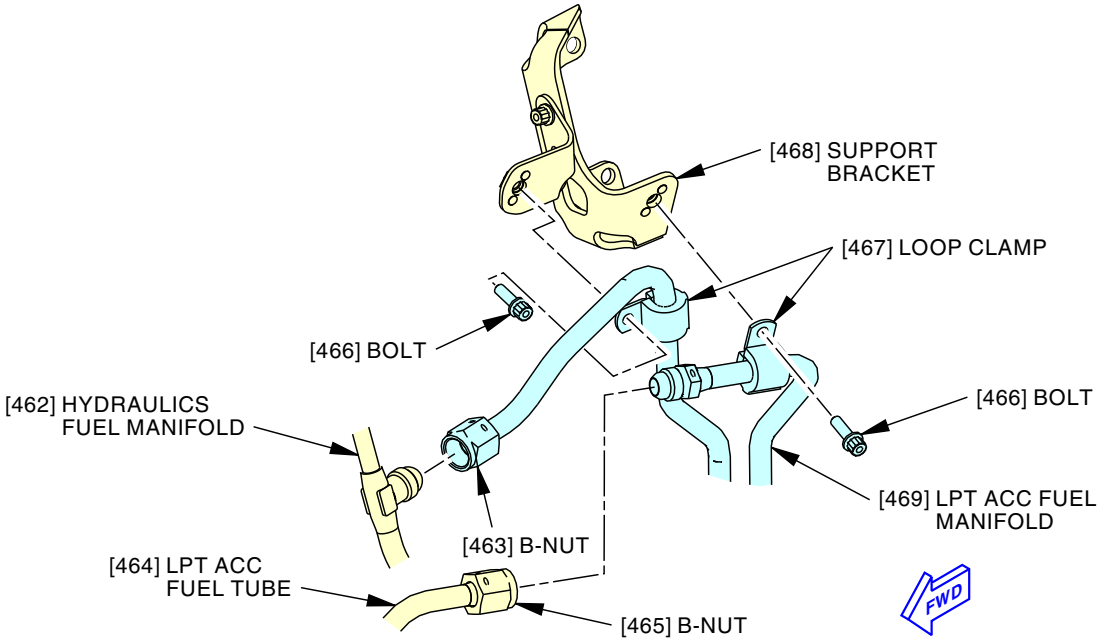
Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

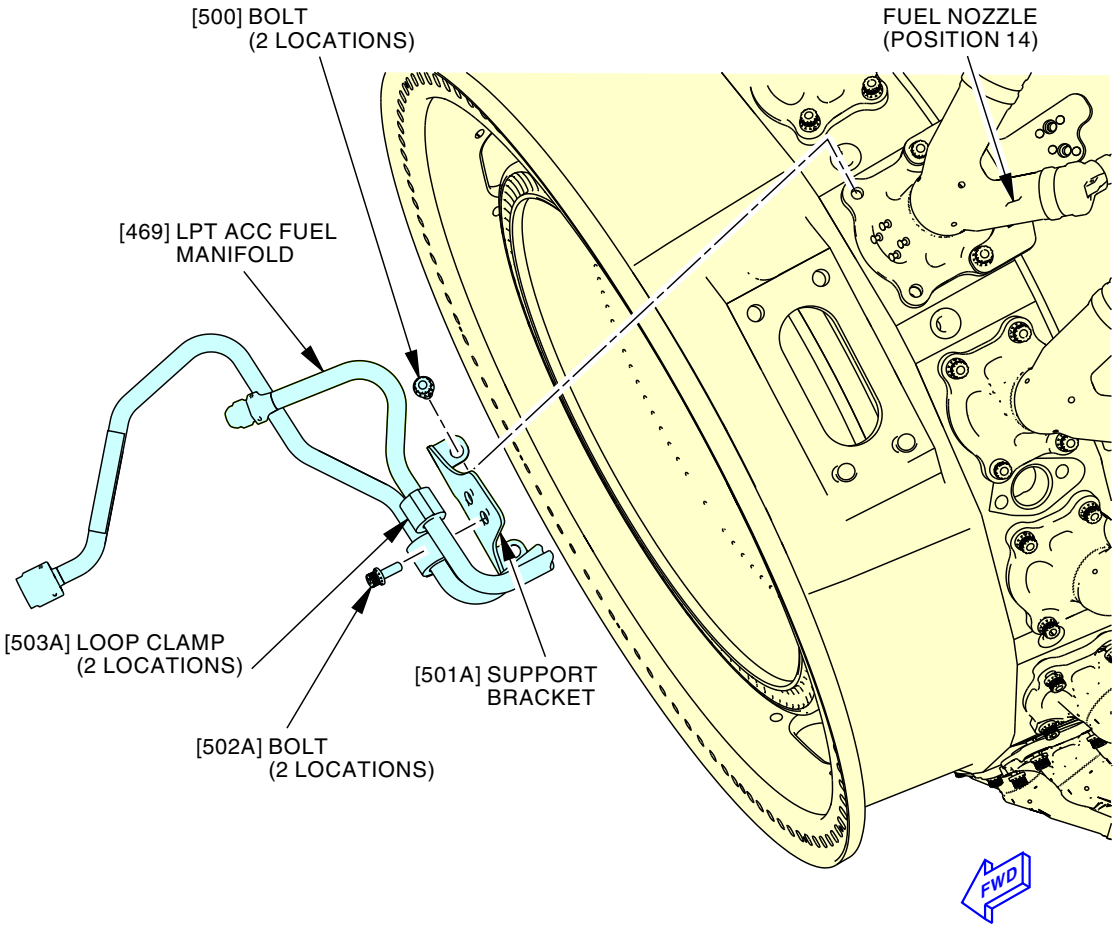


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Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

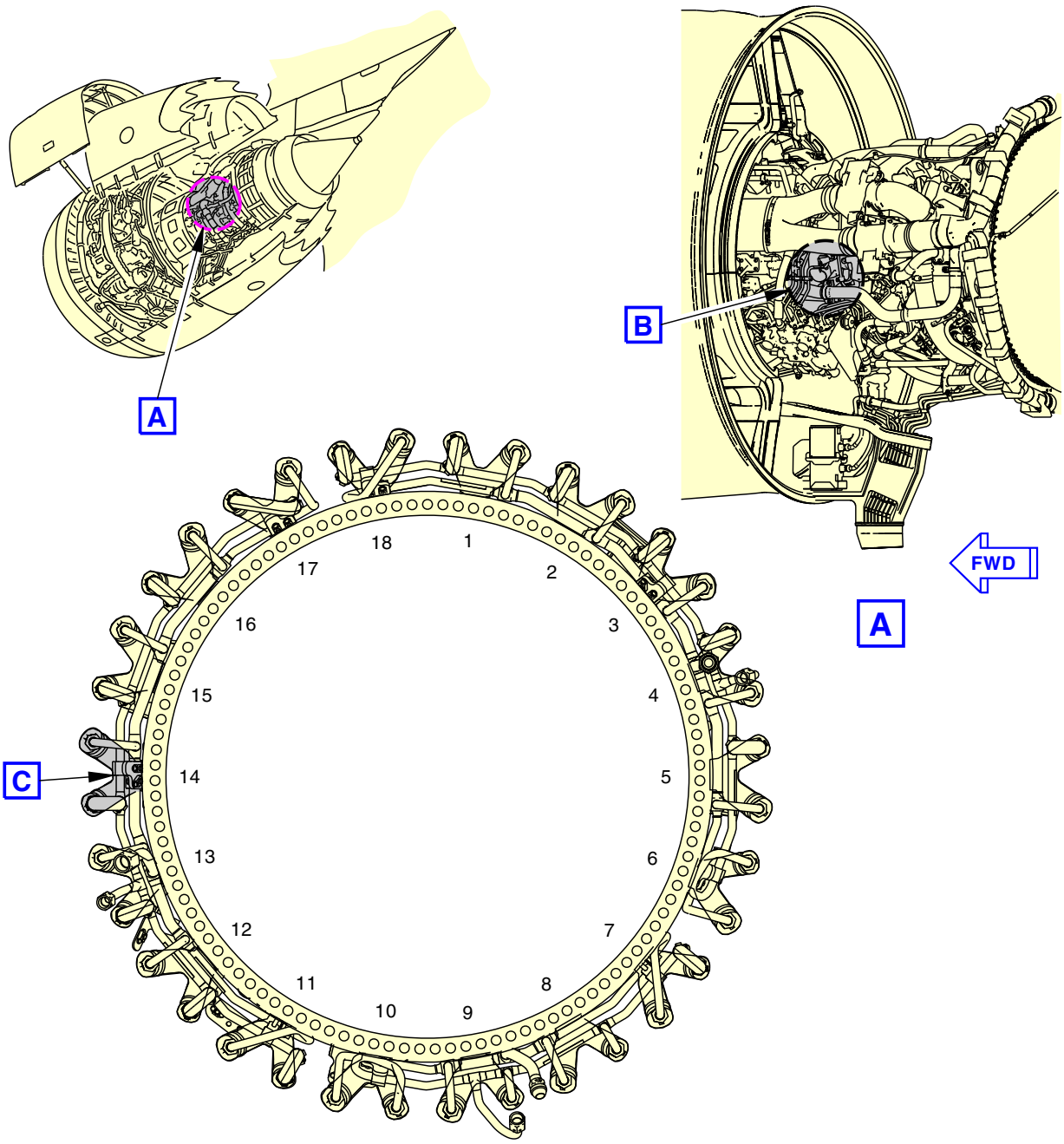


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Fuel Nozzle (Position 13) Installation
Figure 414/73-11-05-990-900-G00 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

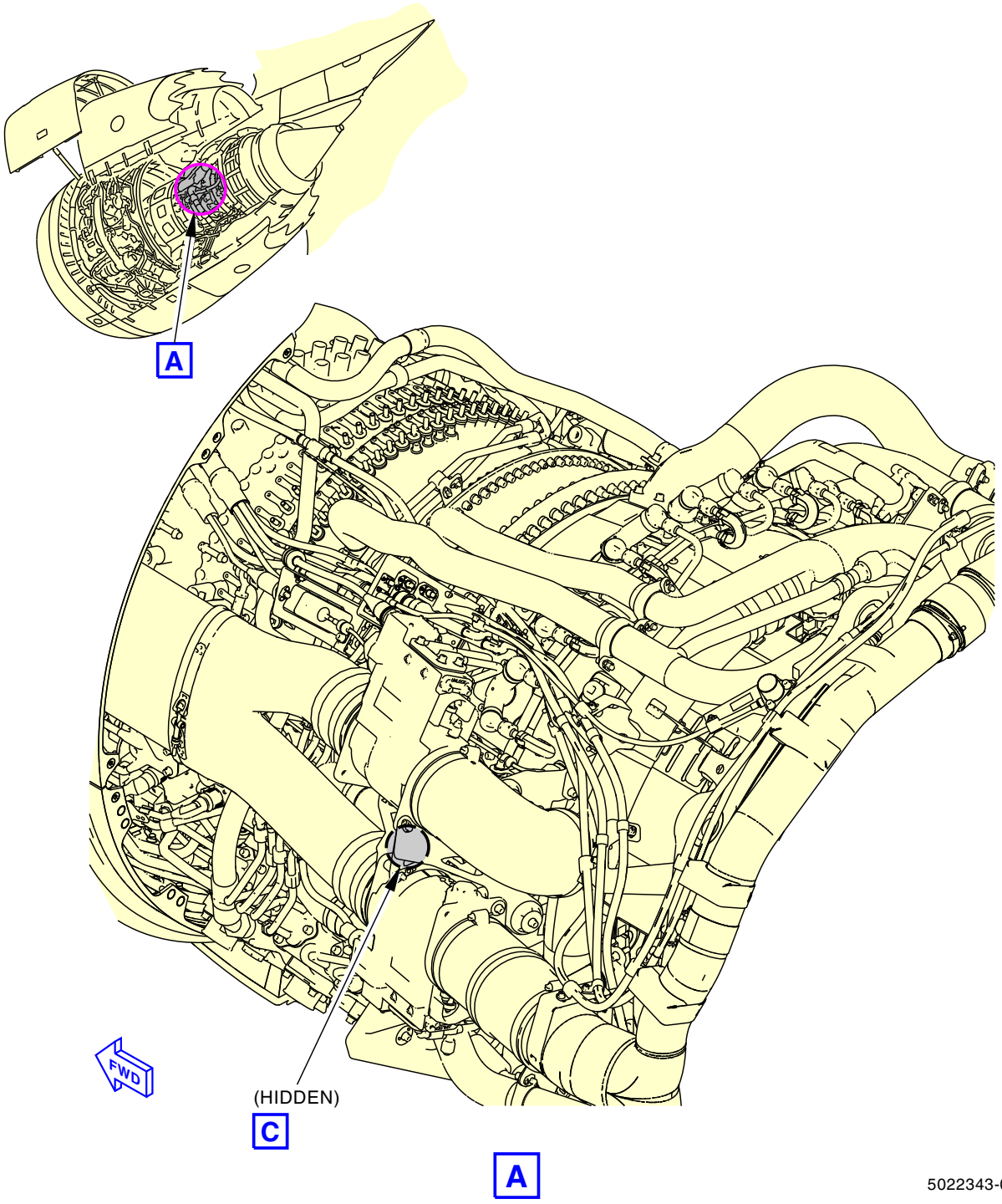


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Fuel Nozzle (Position 14) Installation
Figure 415/73-11-05-990-901-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

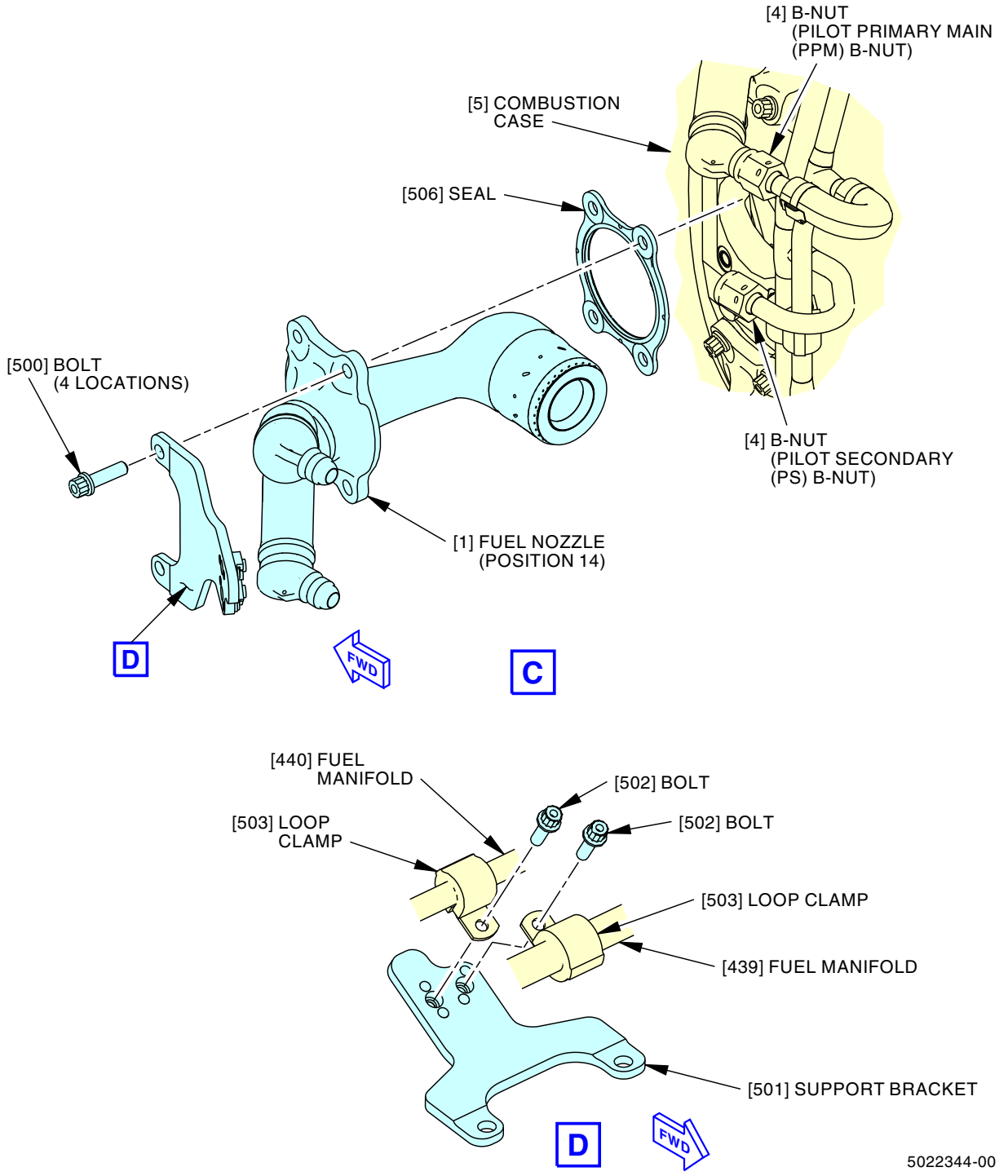


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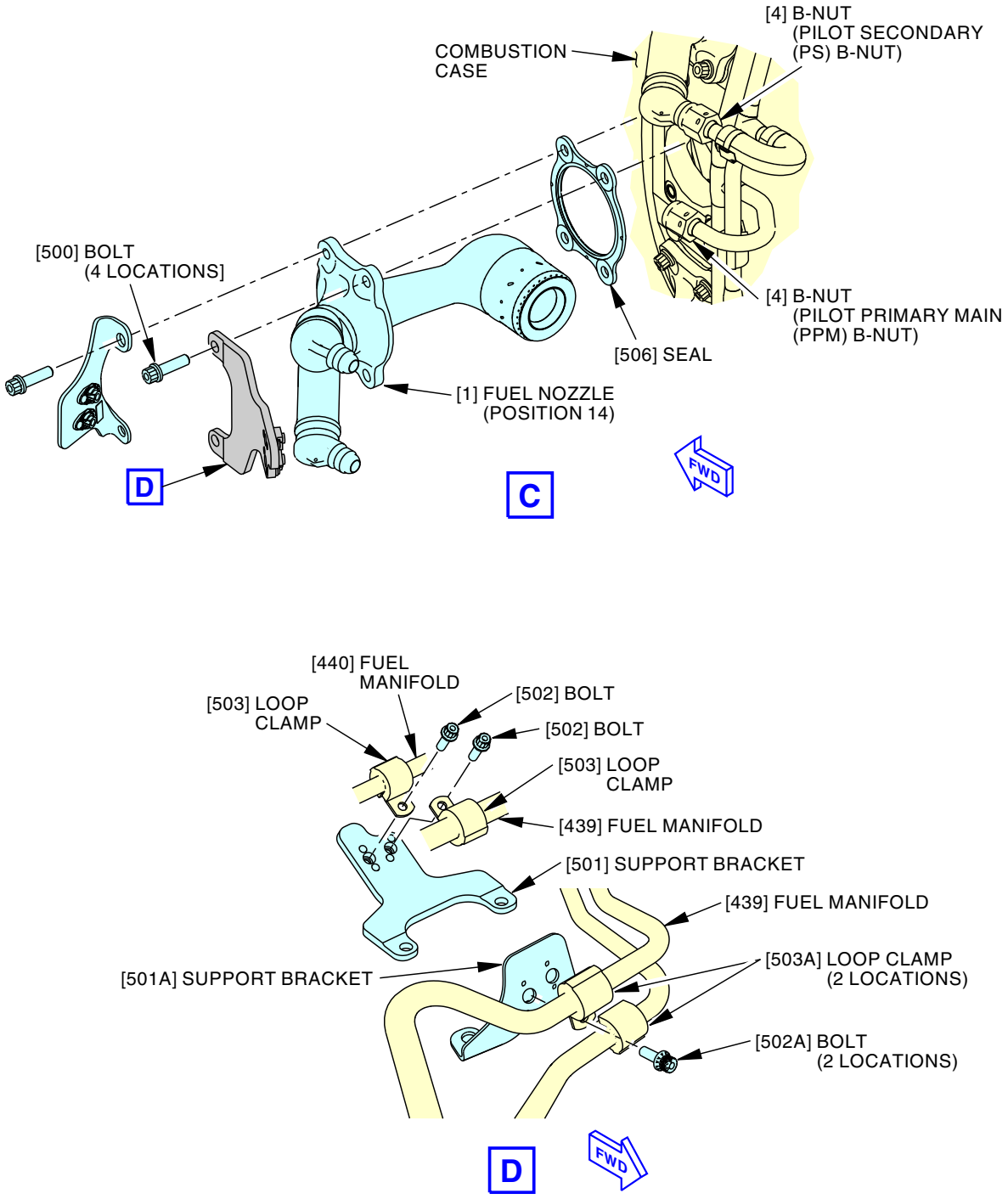
Fuel Nozzle (Position 14) Installation
Figure 415/73-11-05-990-901-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



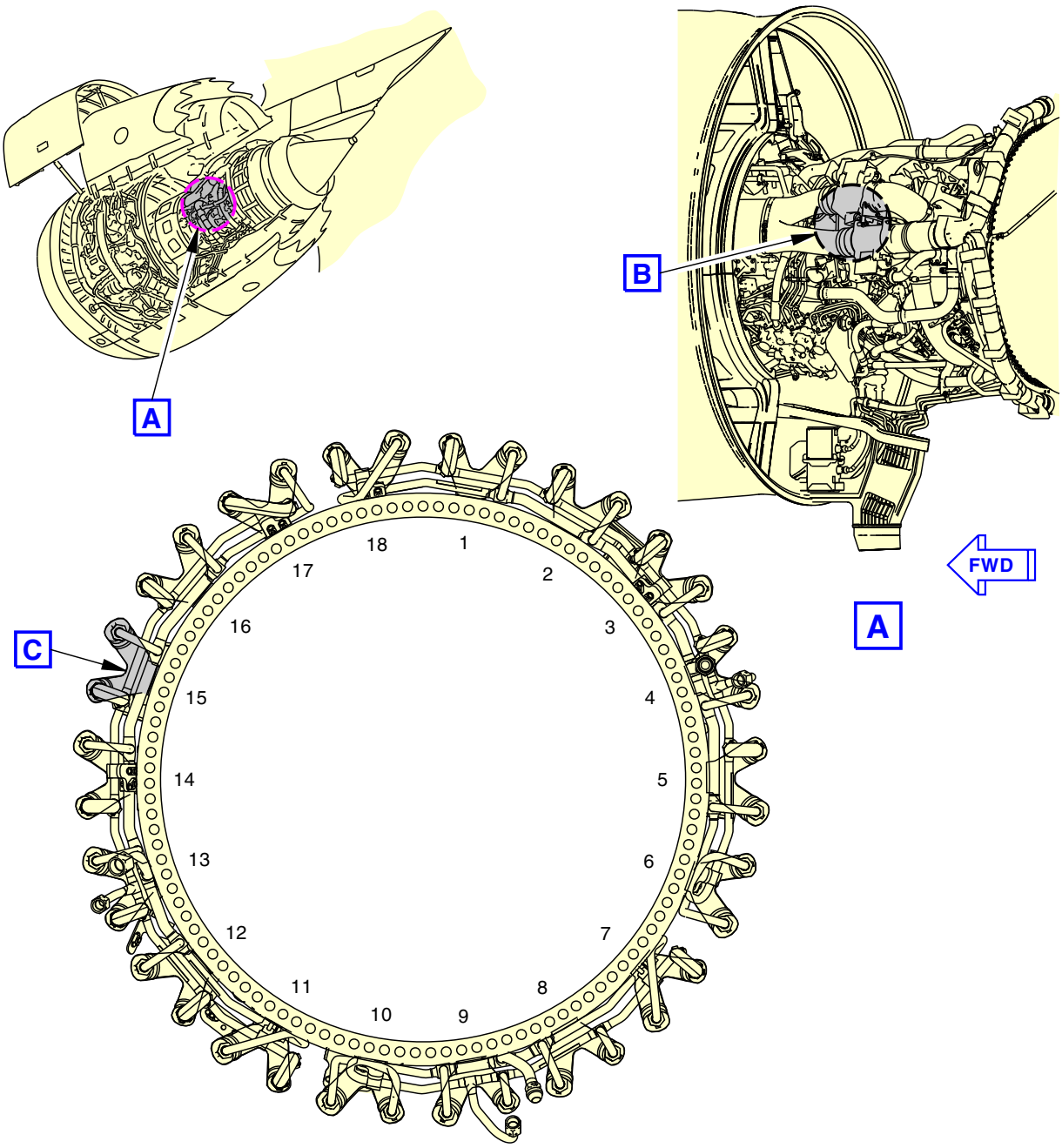
Fuel Nozzle (Position 14) Installation
Figure 415/73-11-05-990-901-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 14) Installation
Figure 415/73-11-05-990-901-G00 (Sheet 4 of 4)

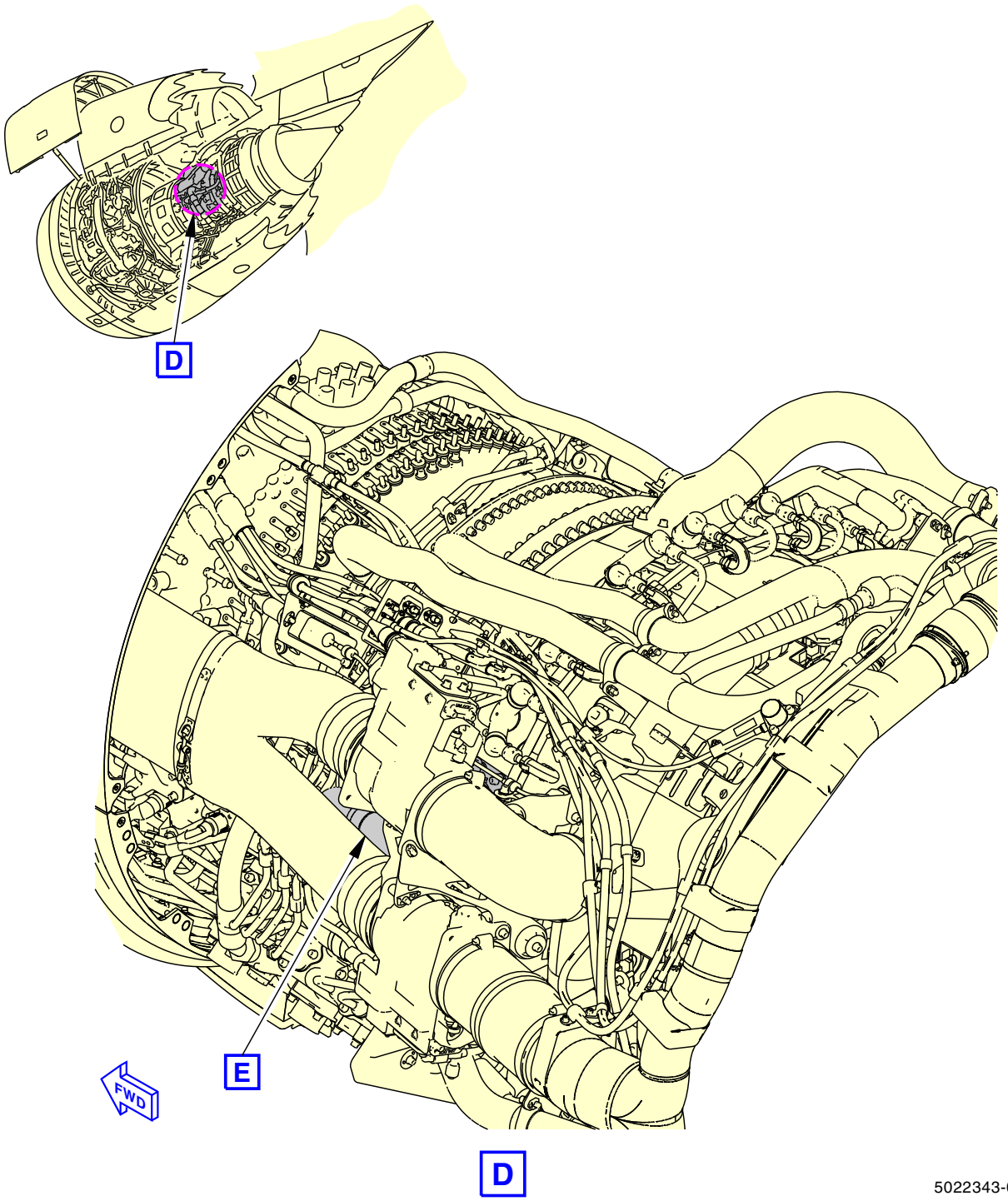
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Fuel Nozzle (Position 15) Installation
Figure 416/73-11-05-990-902-G00 (Sheet 1 of 4)

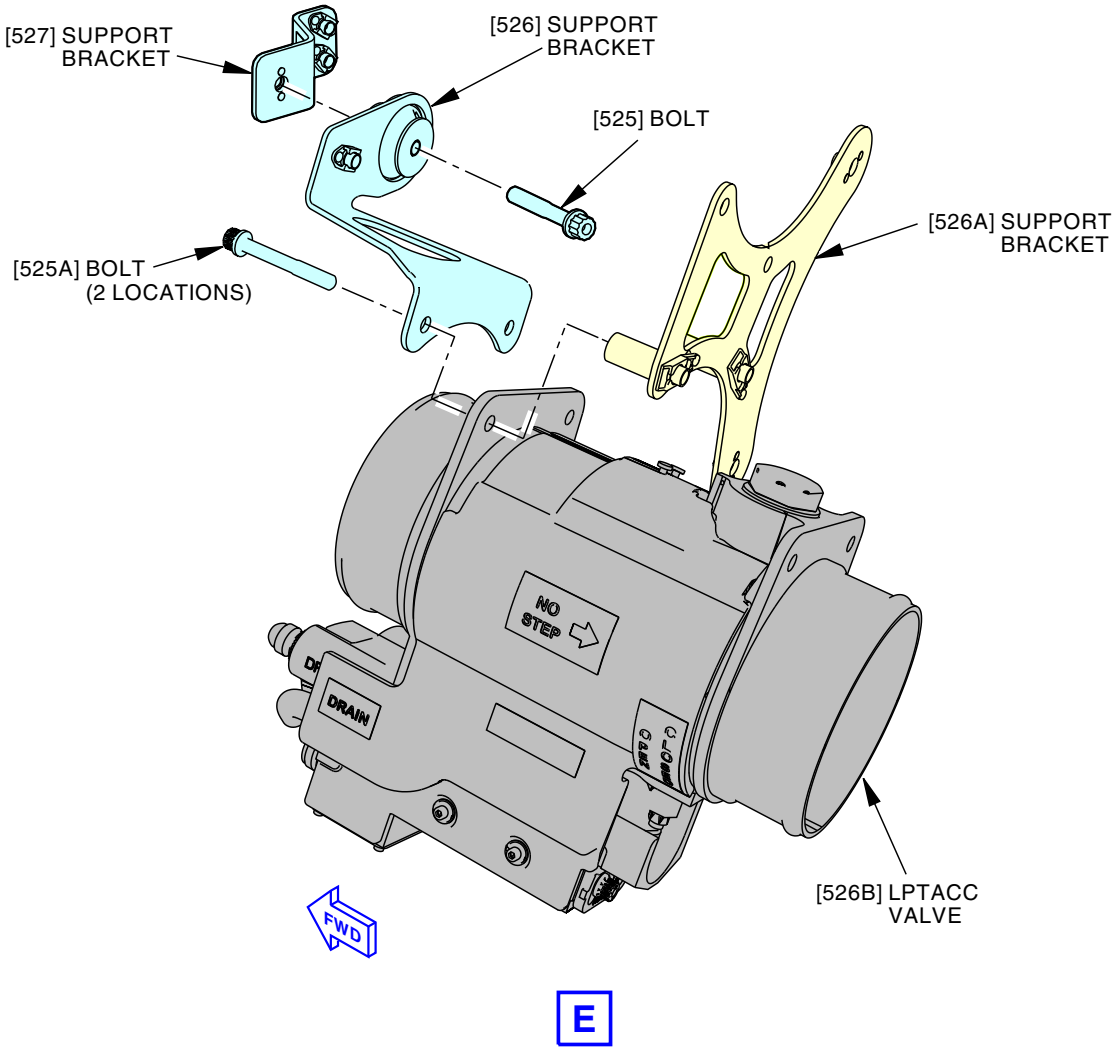
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Fuel Nozzle (Position 15) Installation
Figure 416/73-11-05-990-902-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

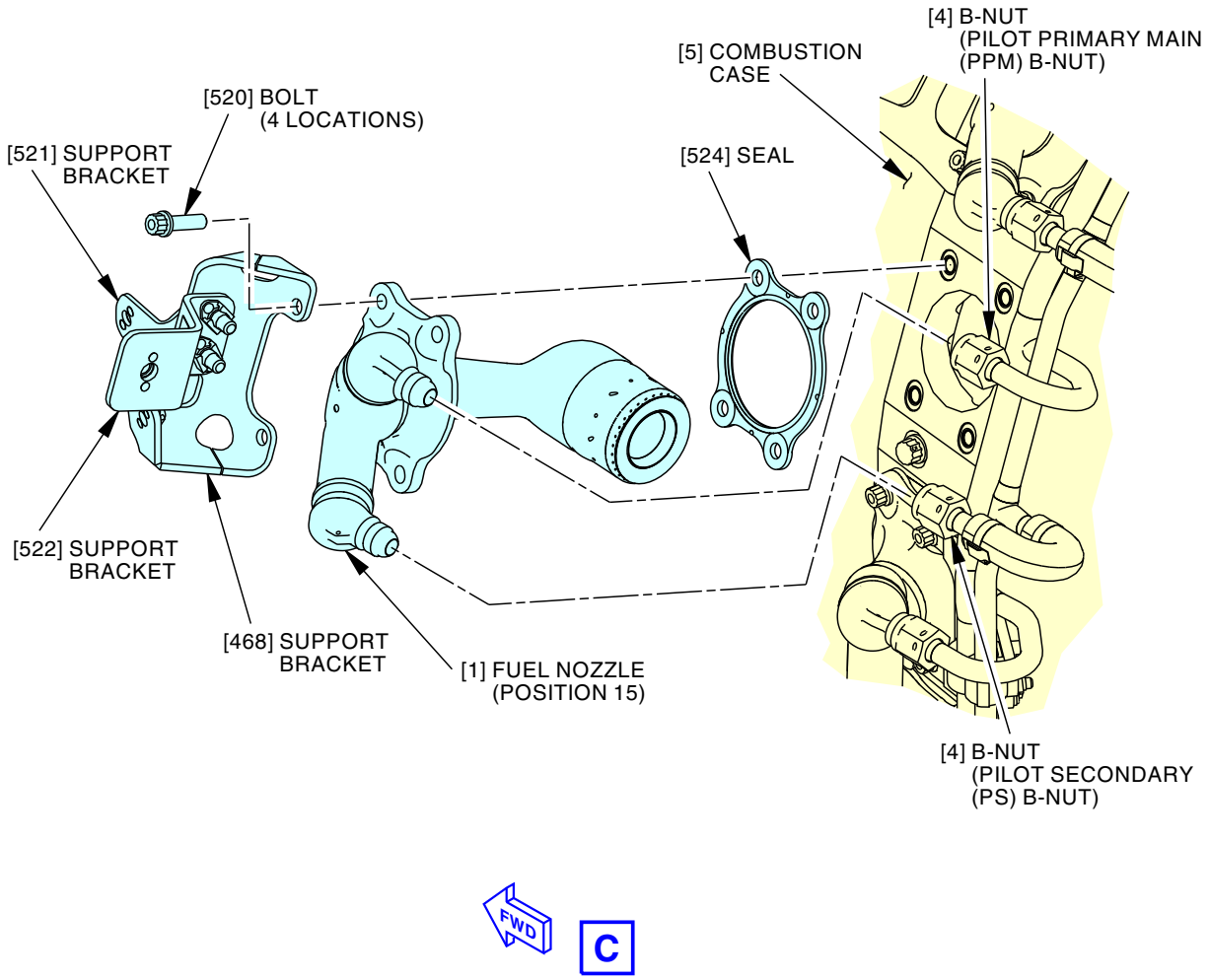


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Fuel Nozzle (Position 15) Installation
Figure 416/73-11-05-990-902-G00 (Sheet 3 of 4)

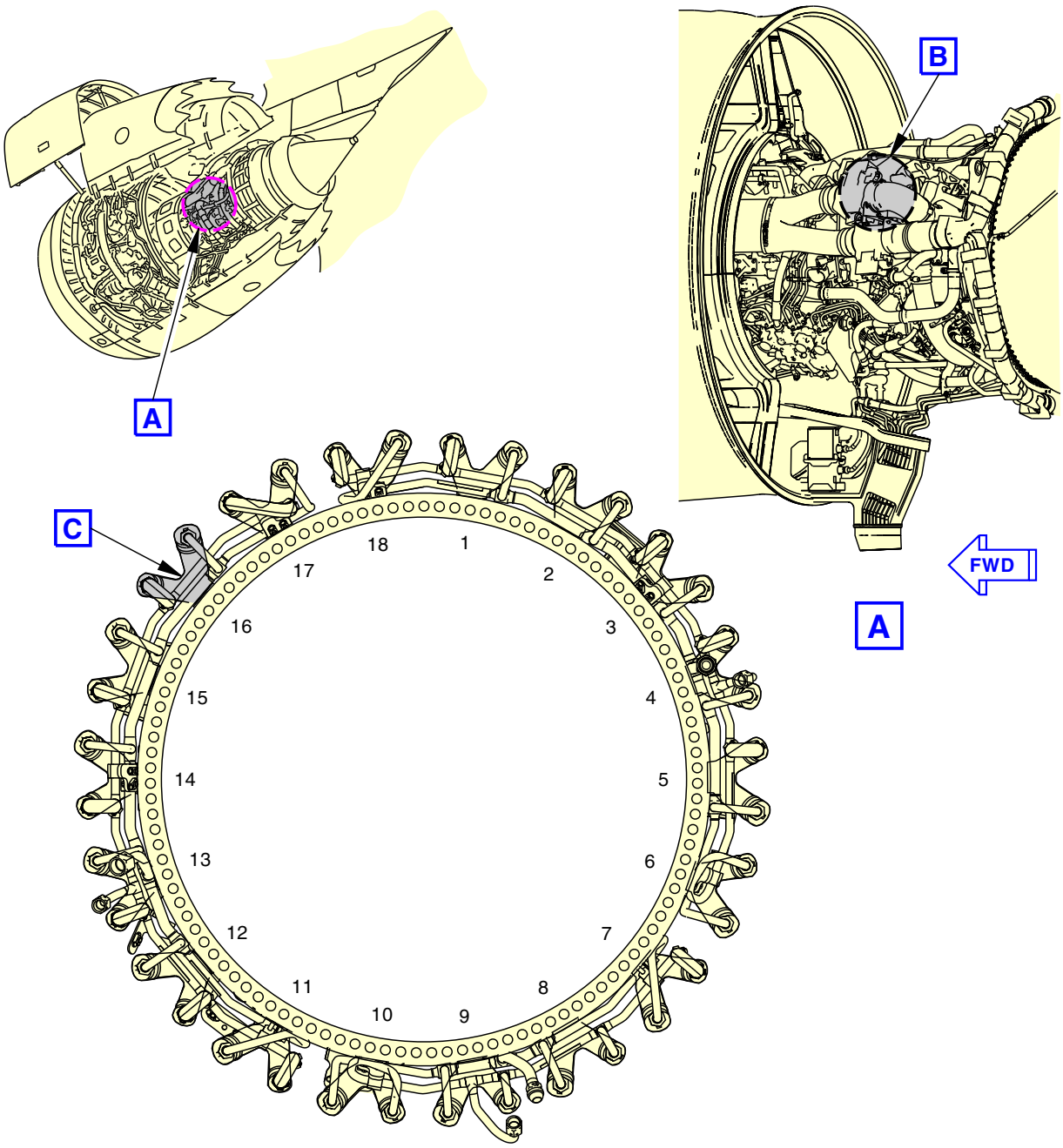
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Fuel Nozzle (Position 15) Installation
Figure 416/73-11-05-990-902-G00 (Sheet 4 of 4)

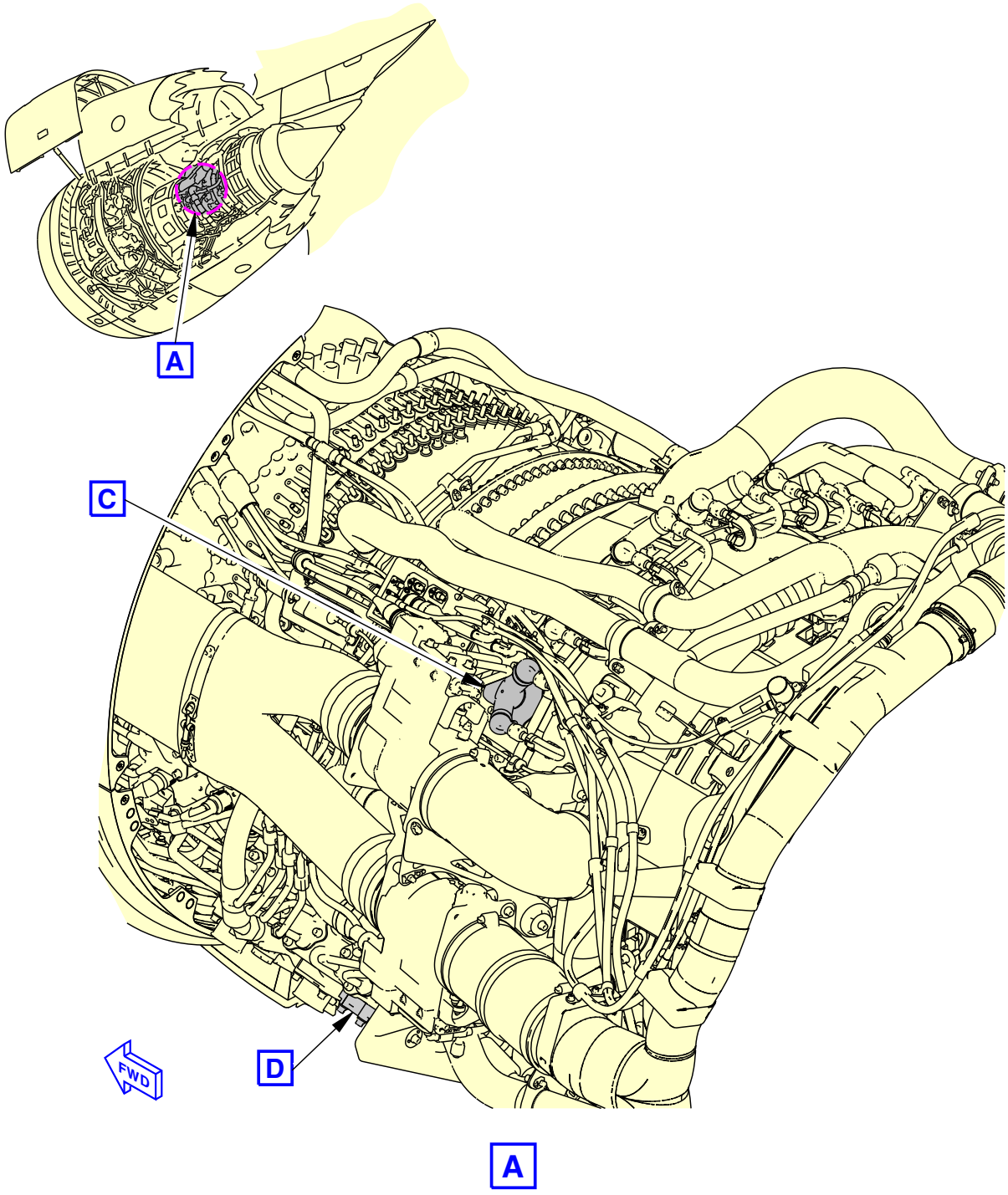
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Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 1 of 14)

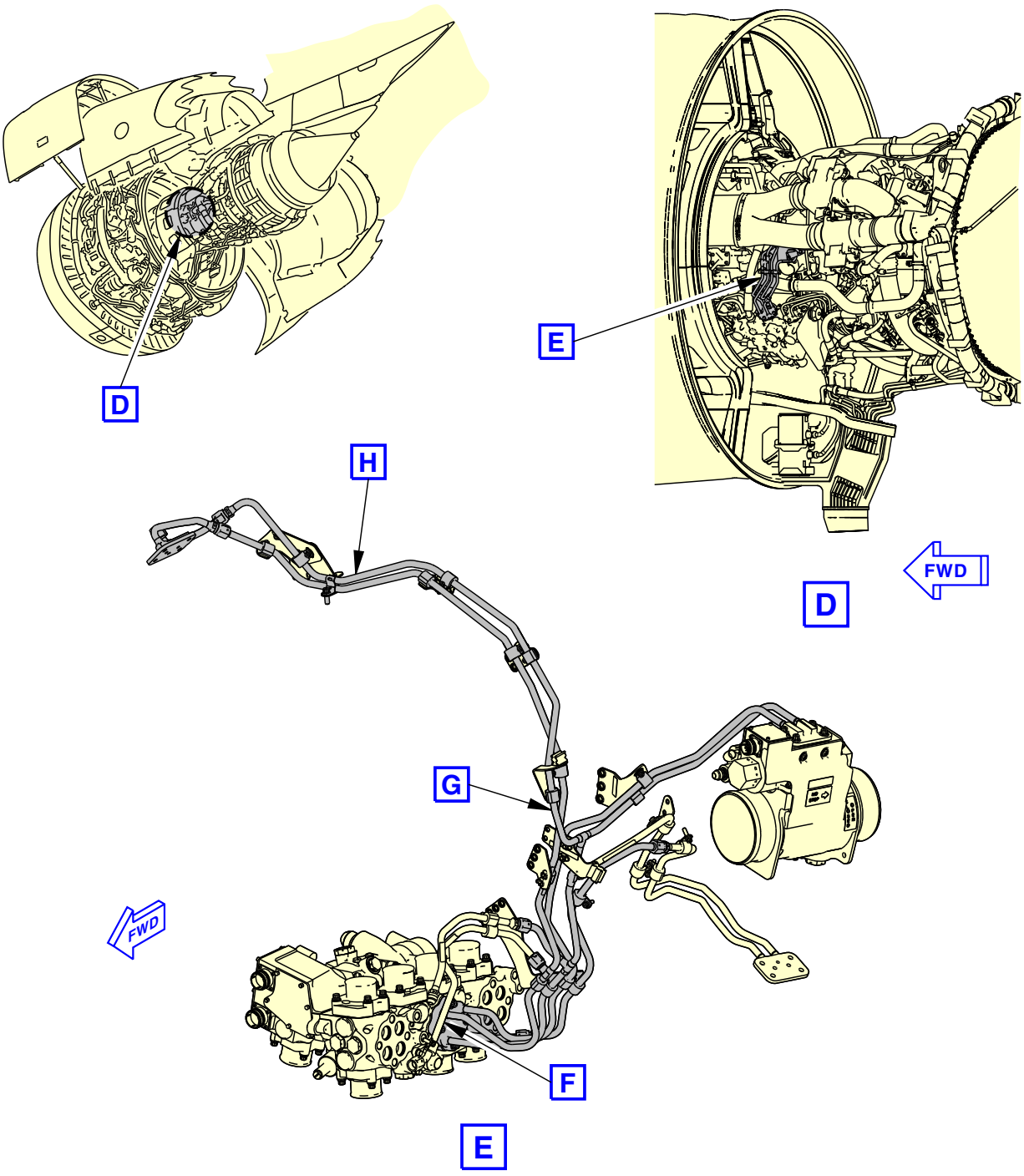
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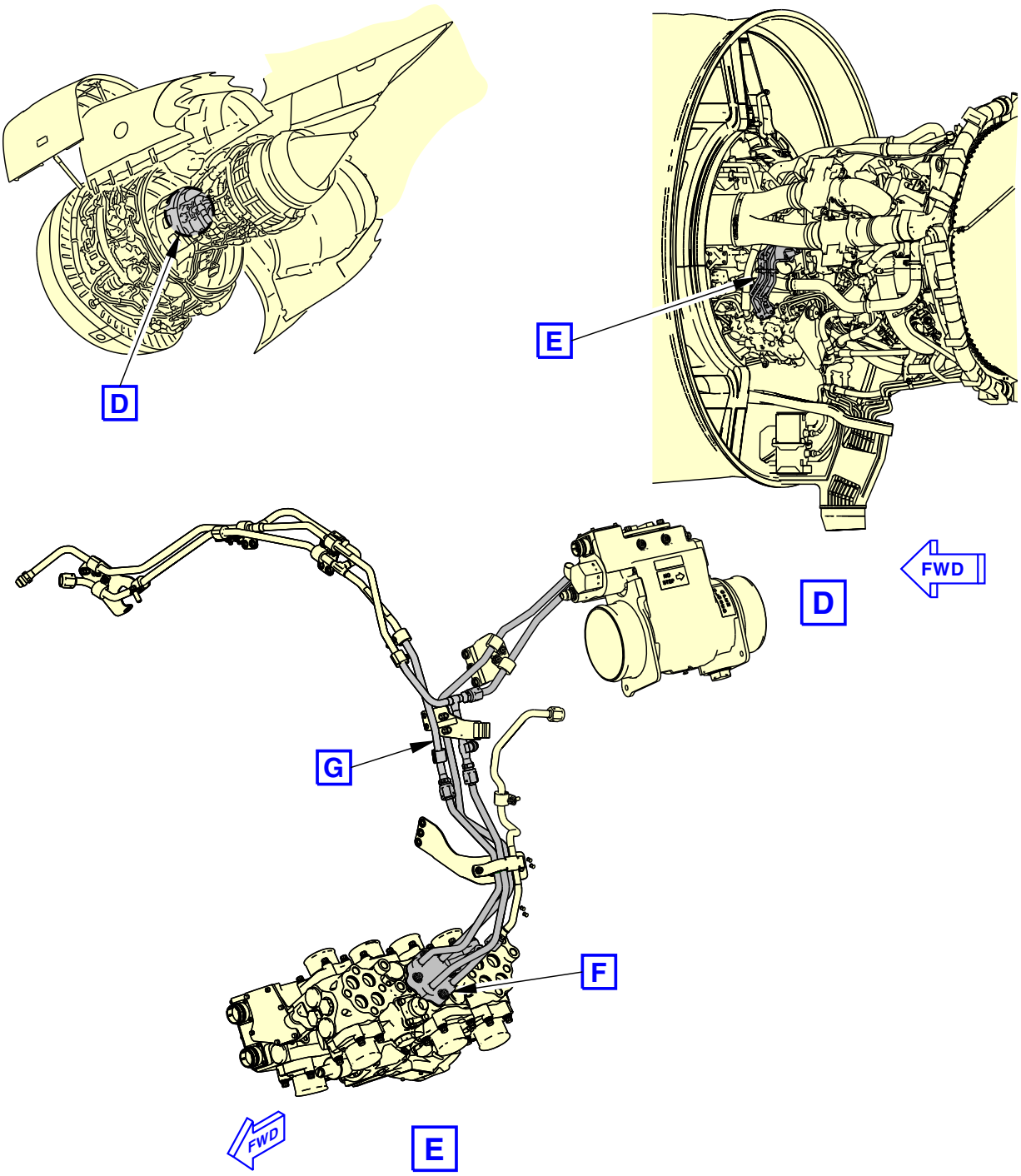
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 2 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



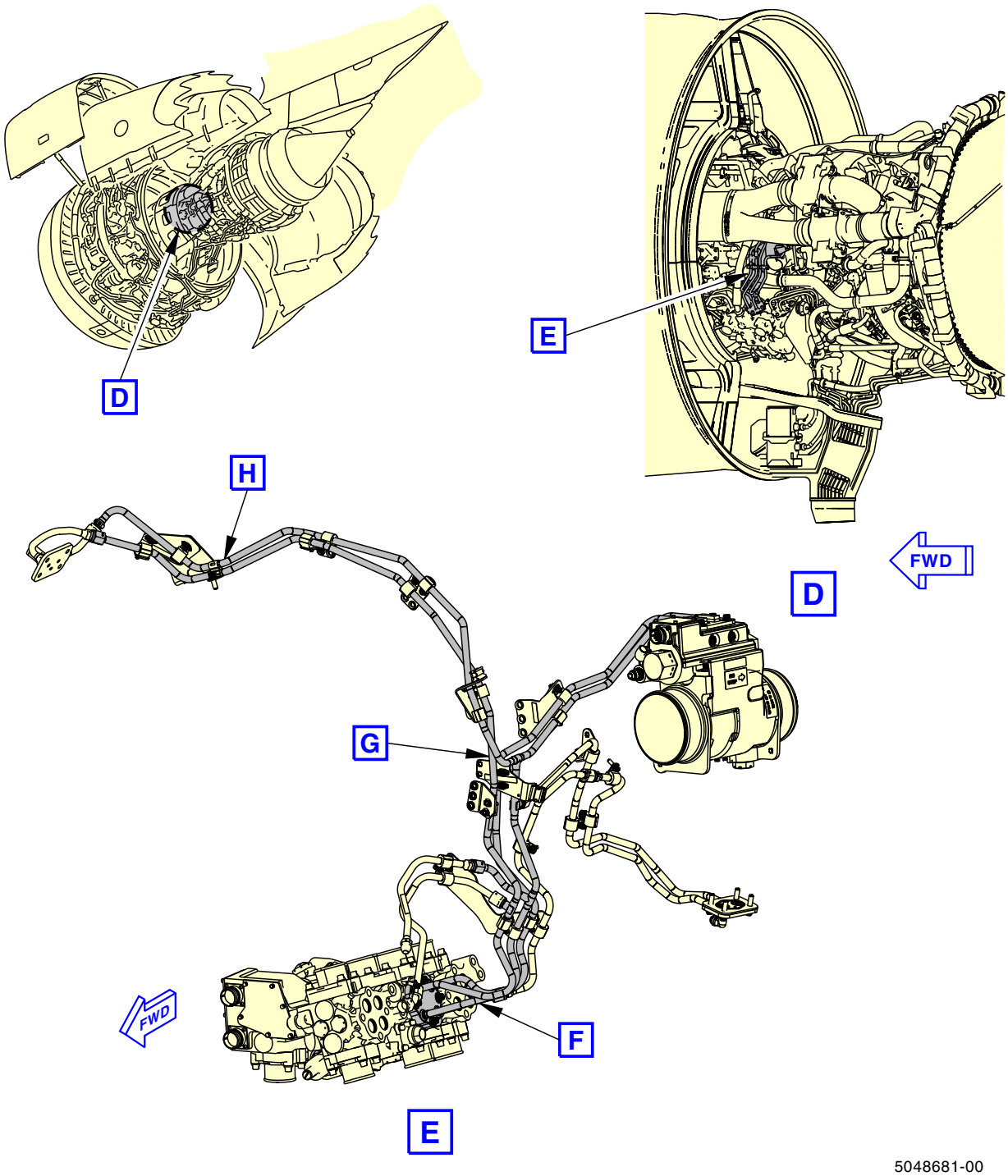
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 3 of 14)

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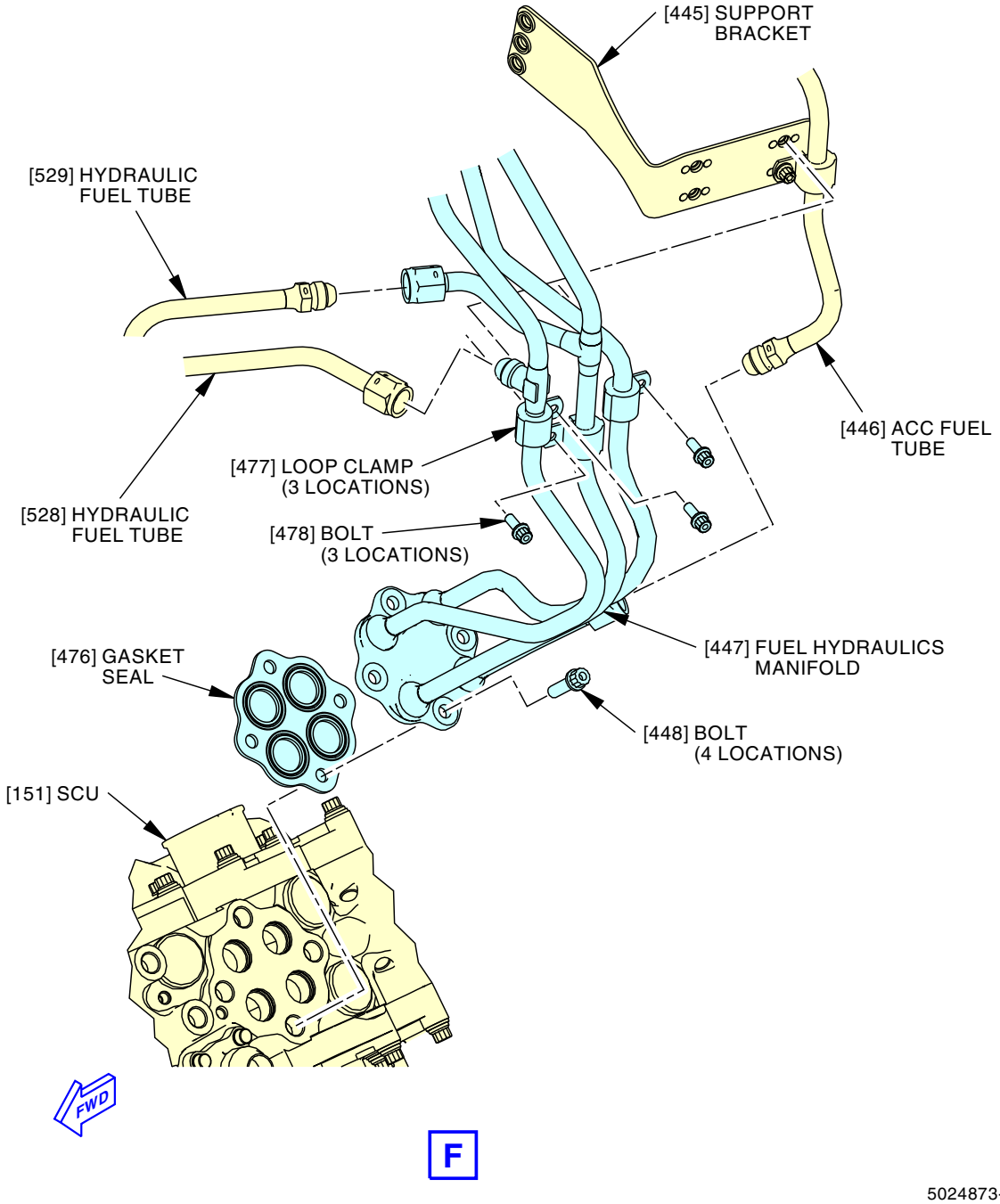
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 4 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



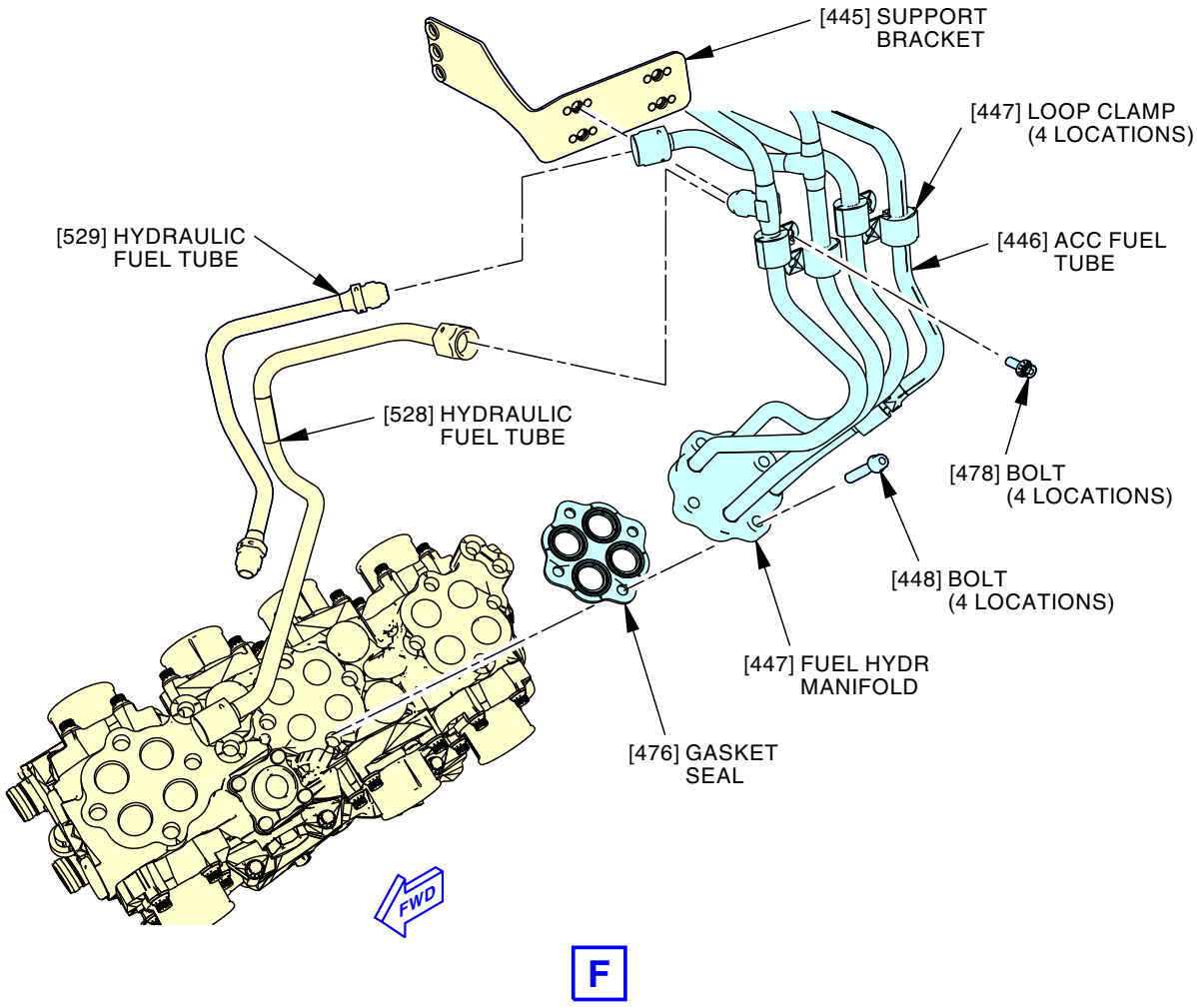
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 5 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 6 of 14)

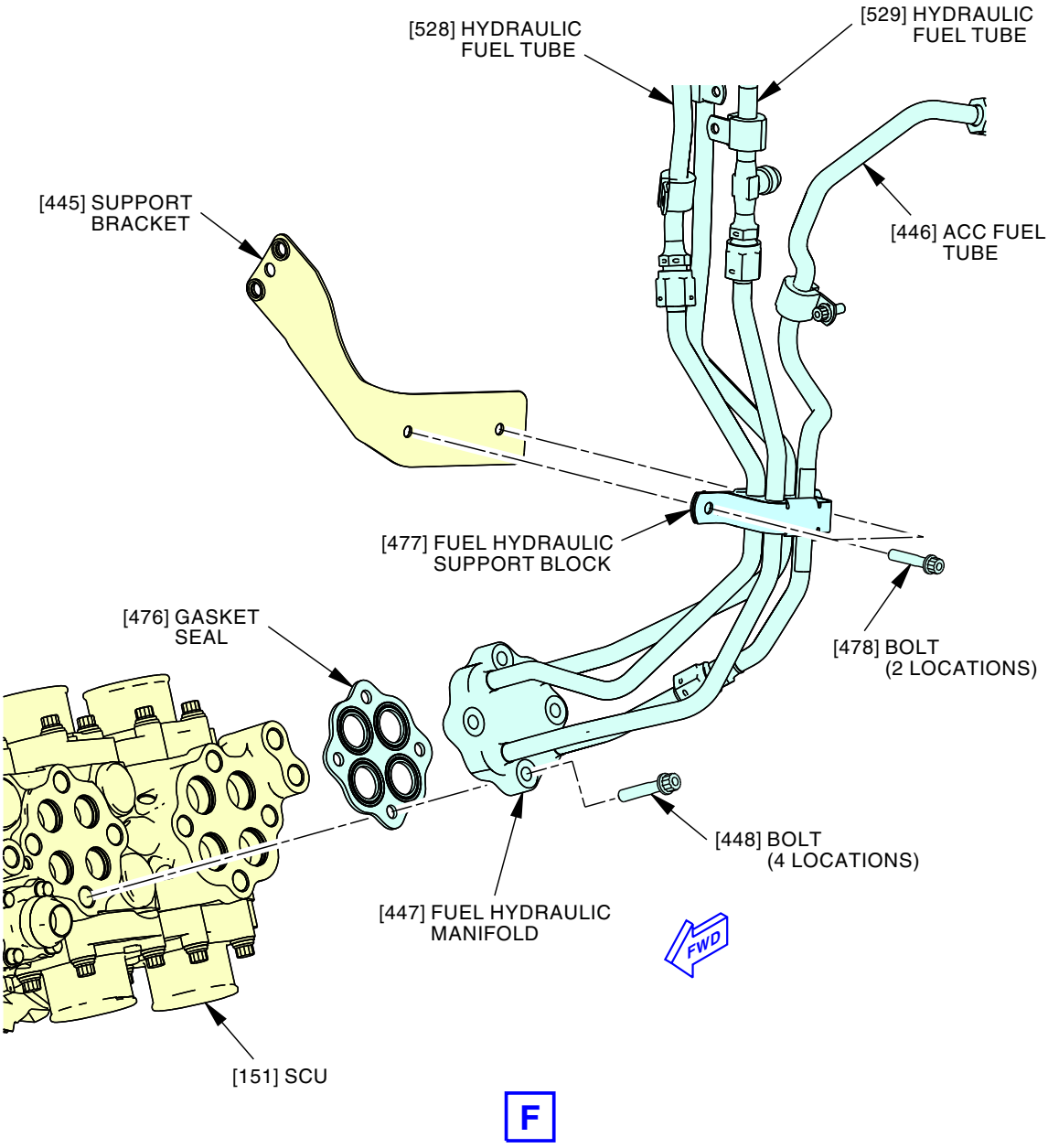
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Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 7 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

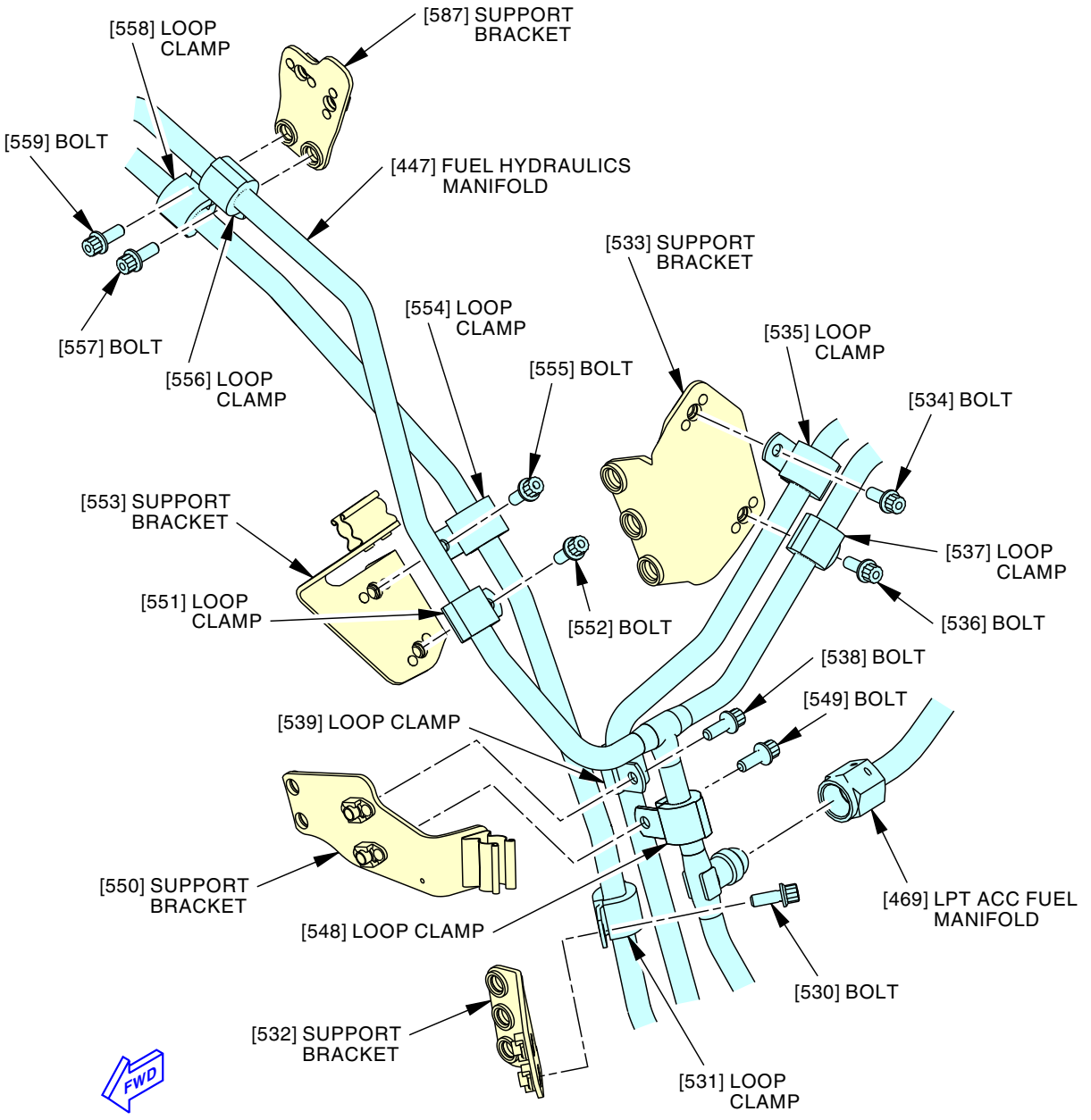


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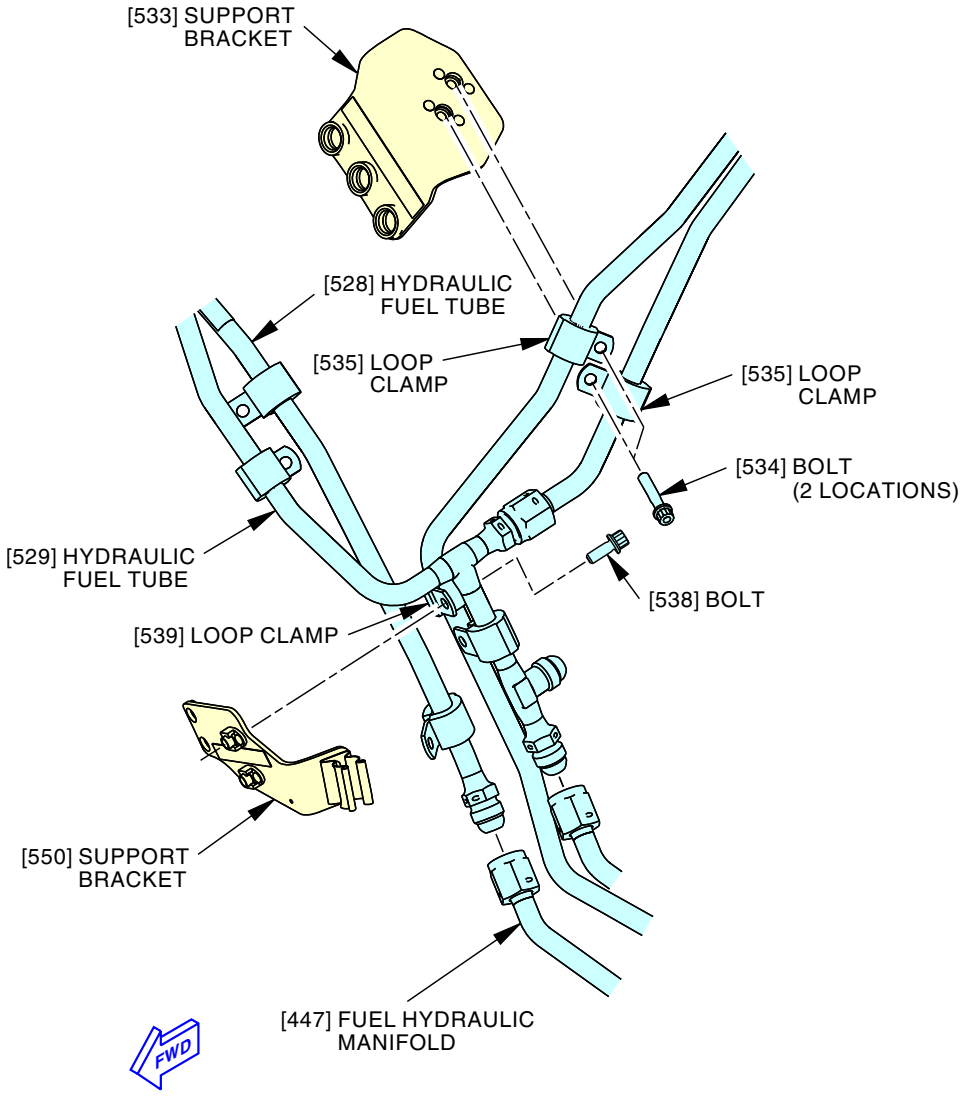
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 8 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 9 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



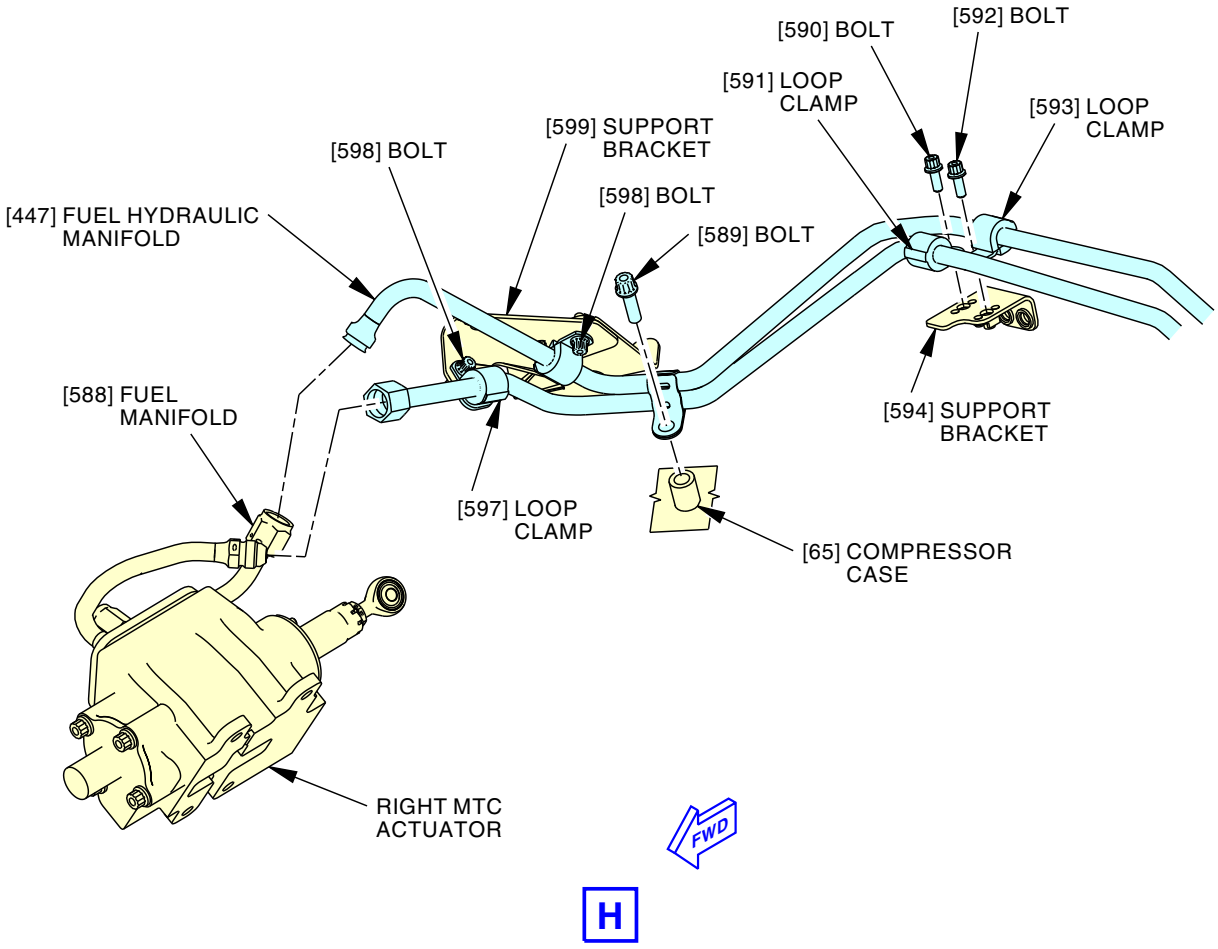
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Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 10 of 14)

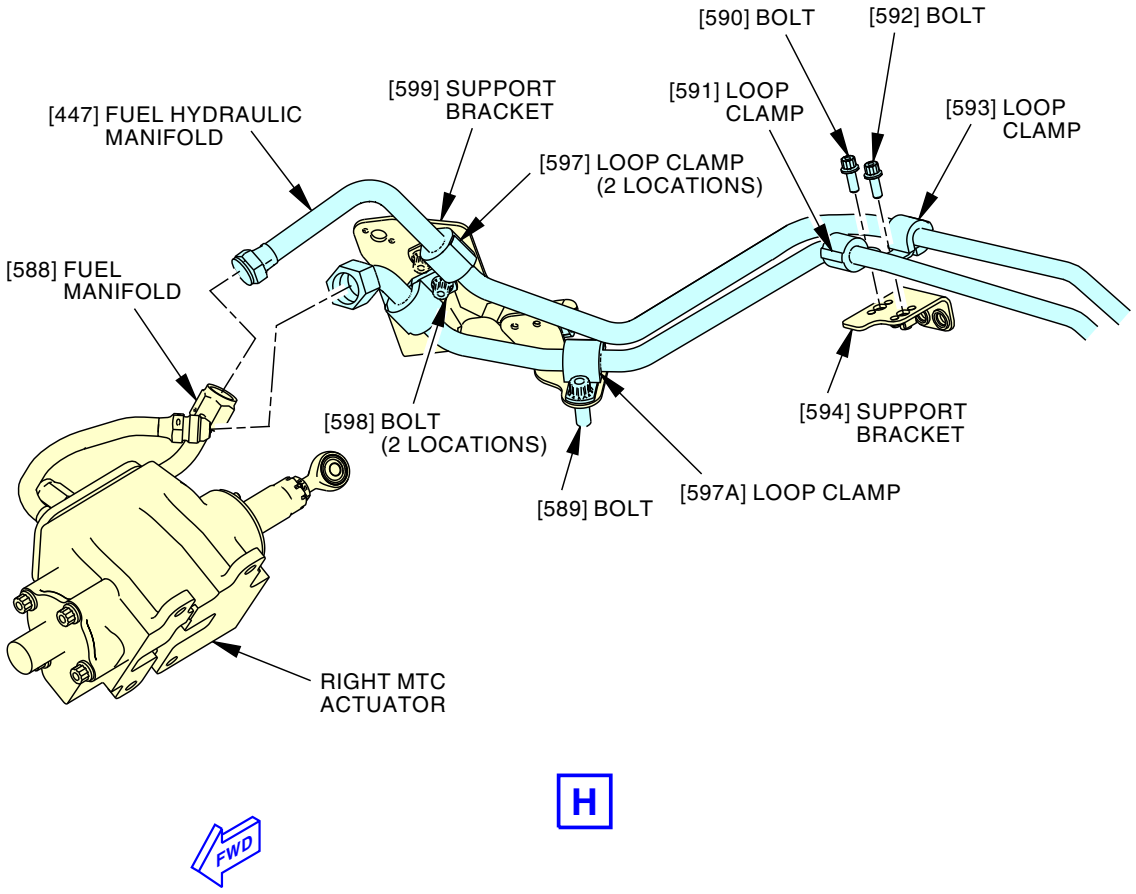
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Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 11 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

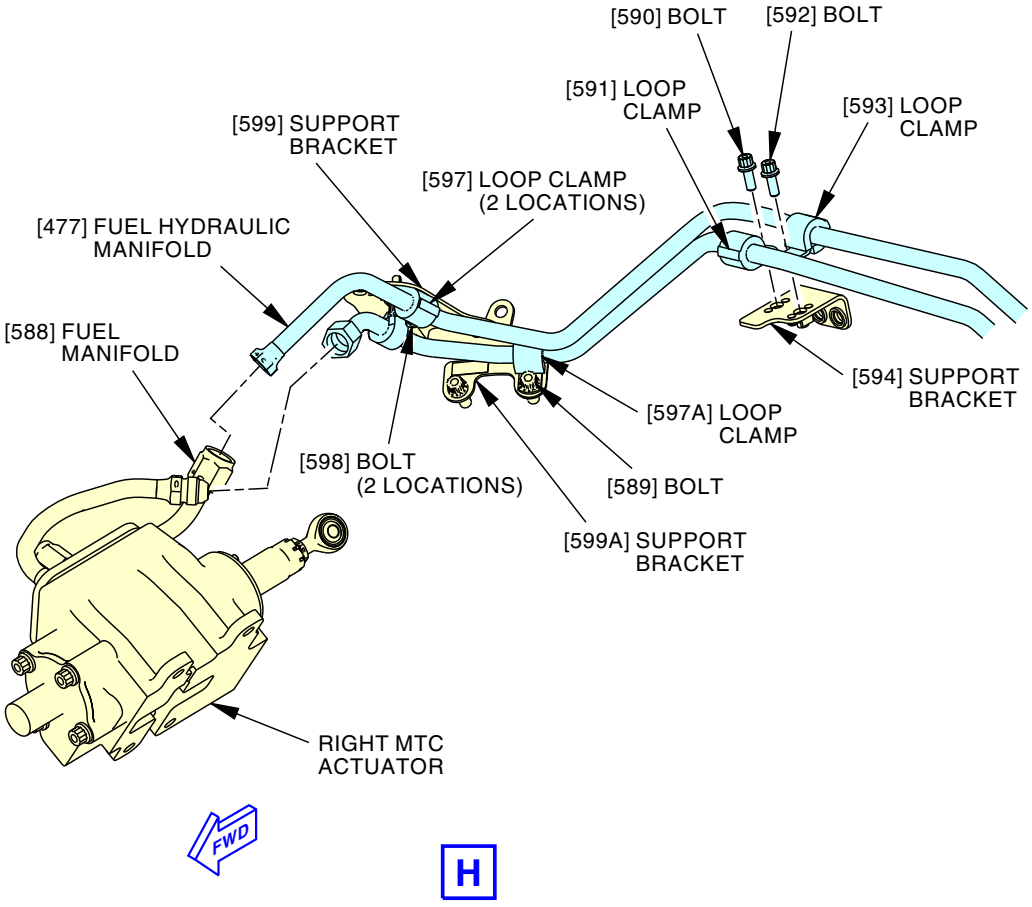


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Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 12 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

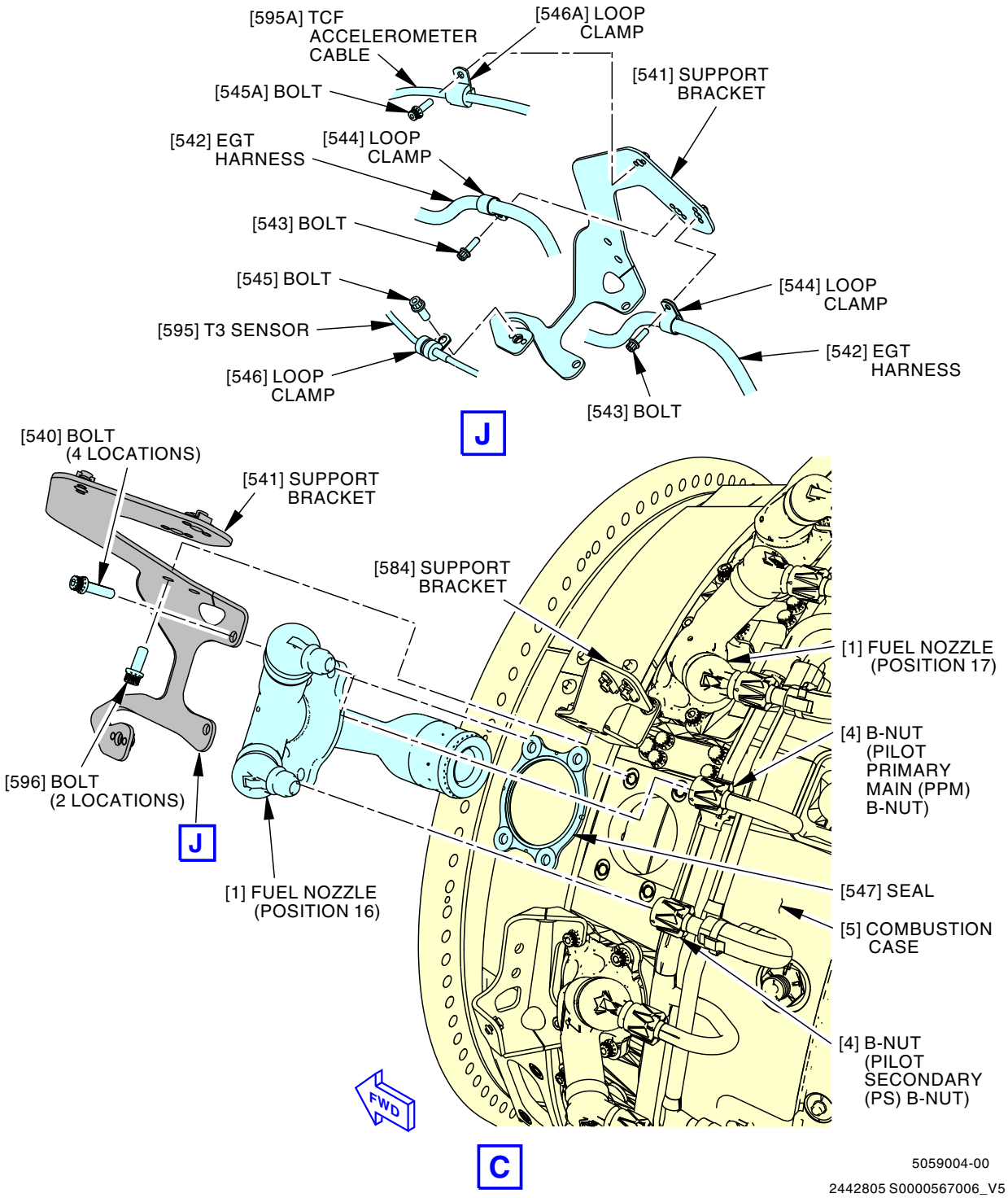


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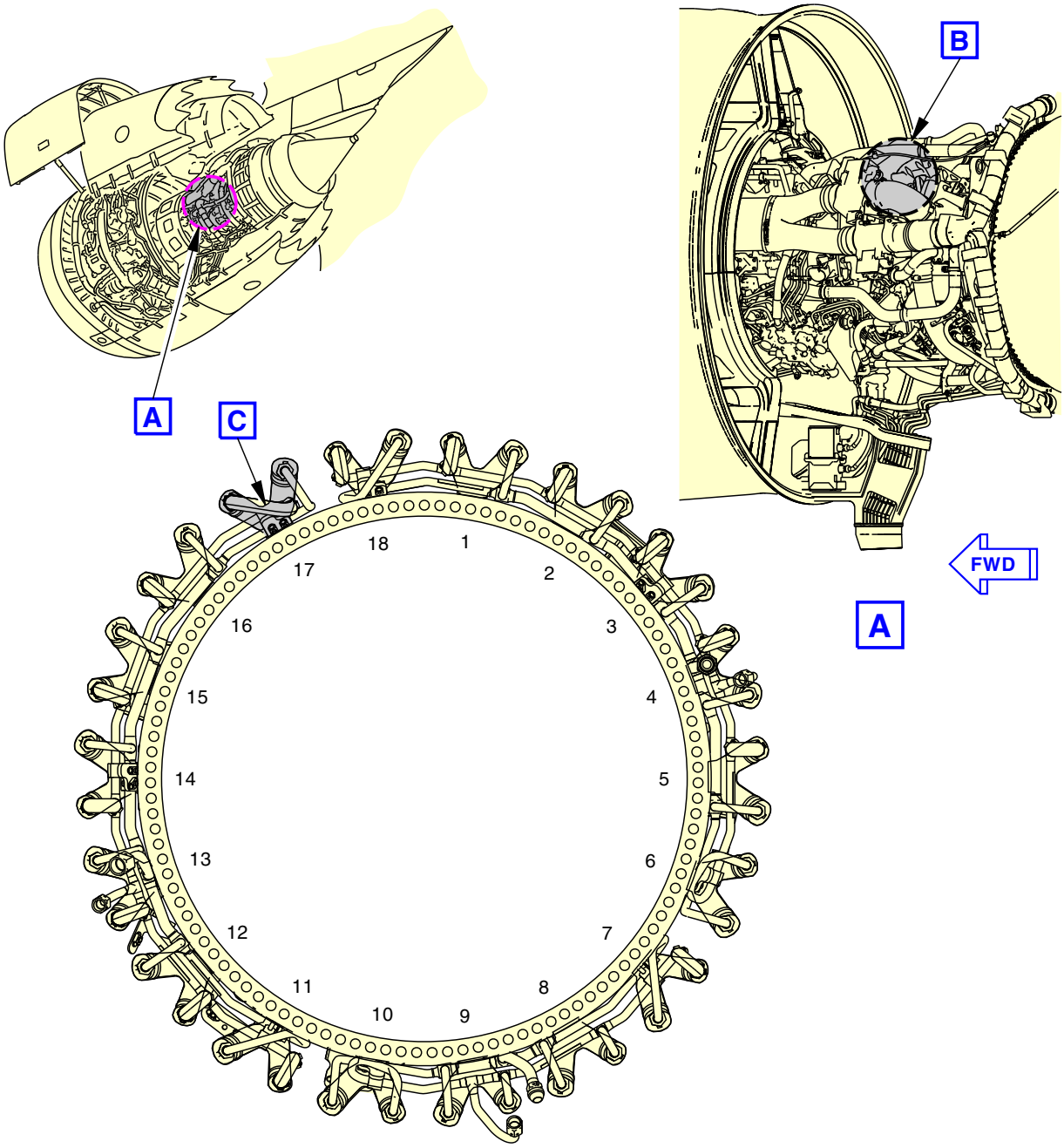
Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 13 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 16) Installation
Figure 417/73-11-05-990-903-G00 (Sheet 14 of 14)

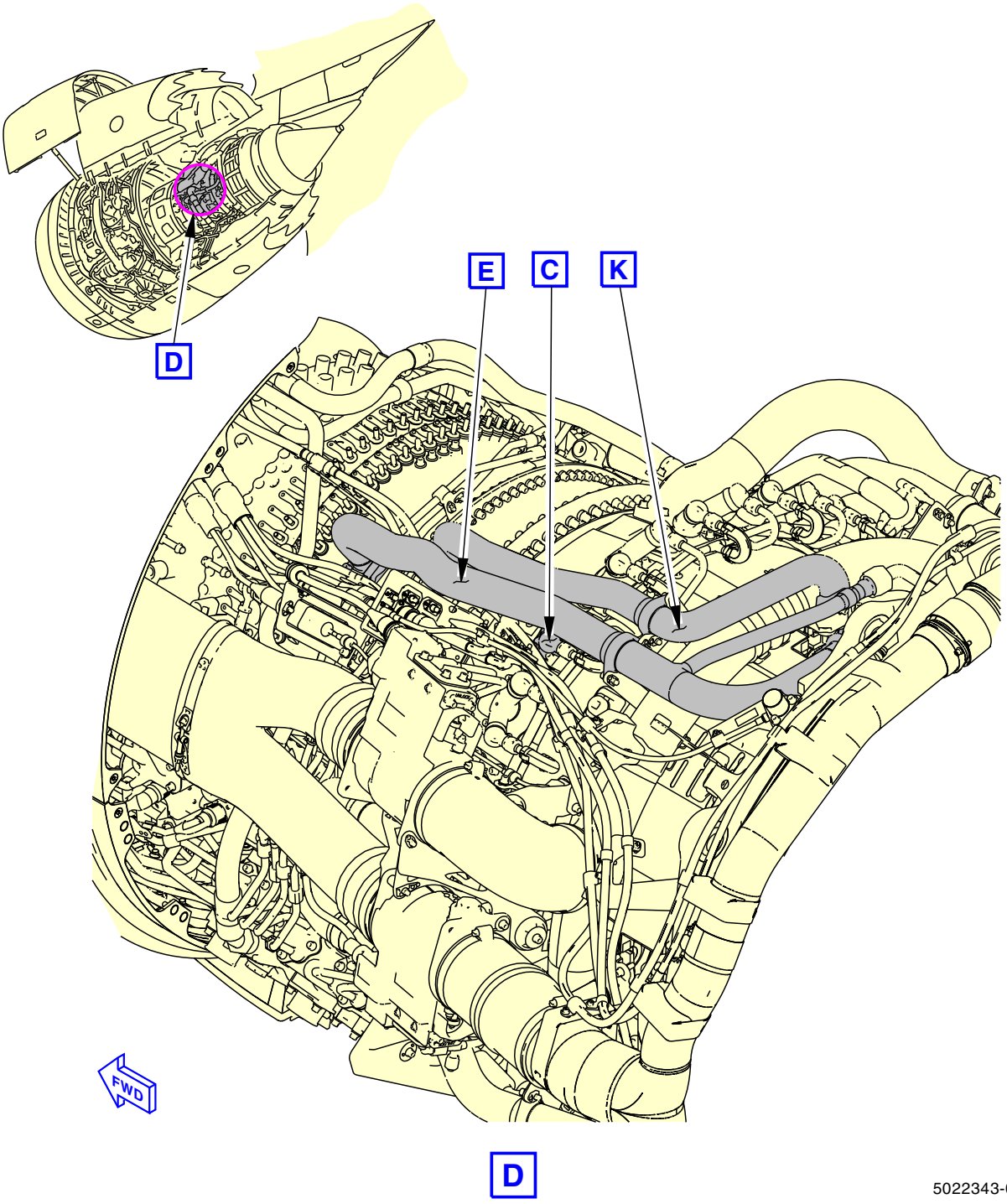
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Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 1 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

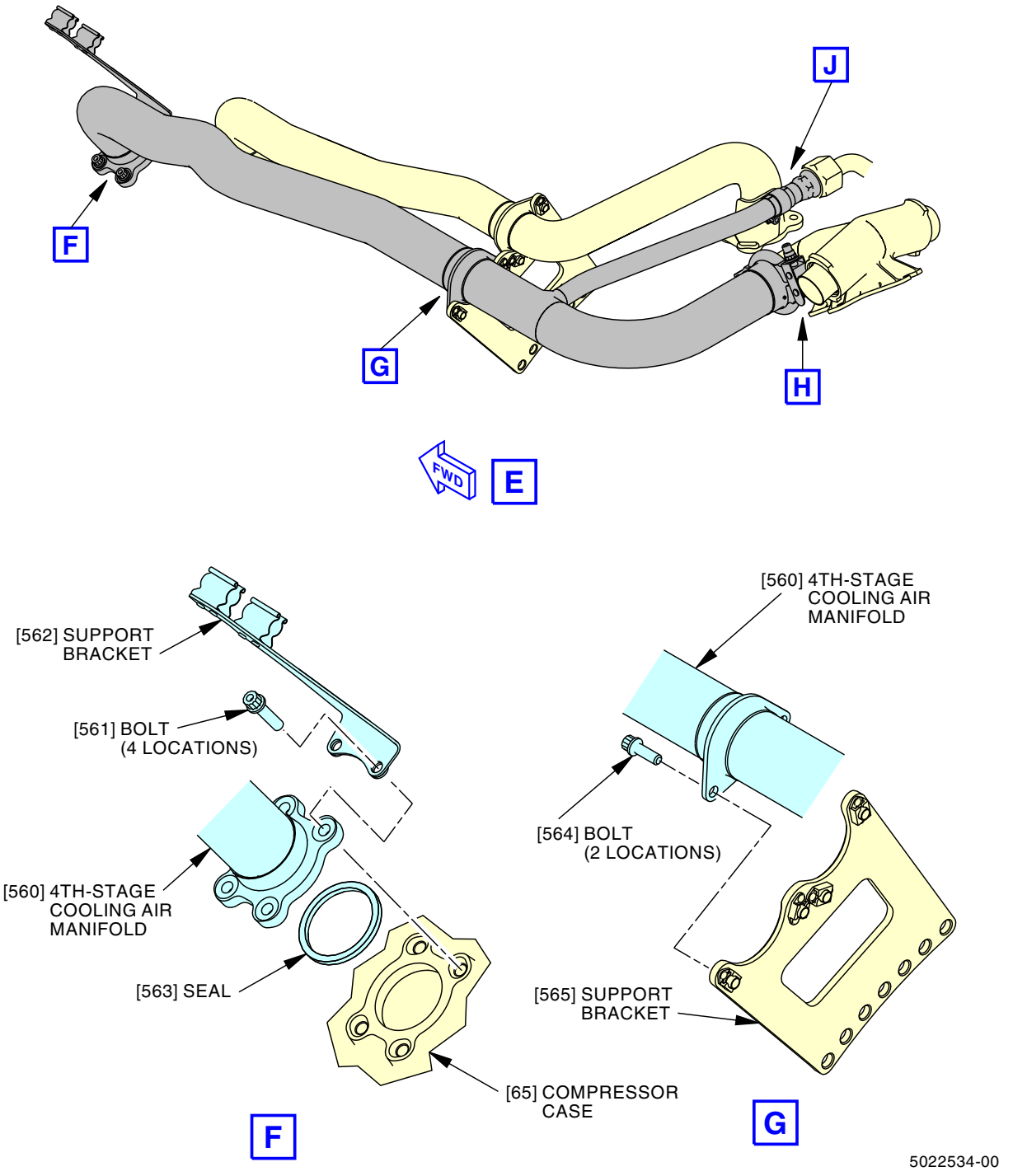


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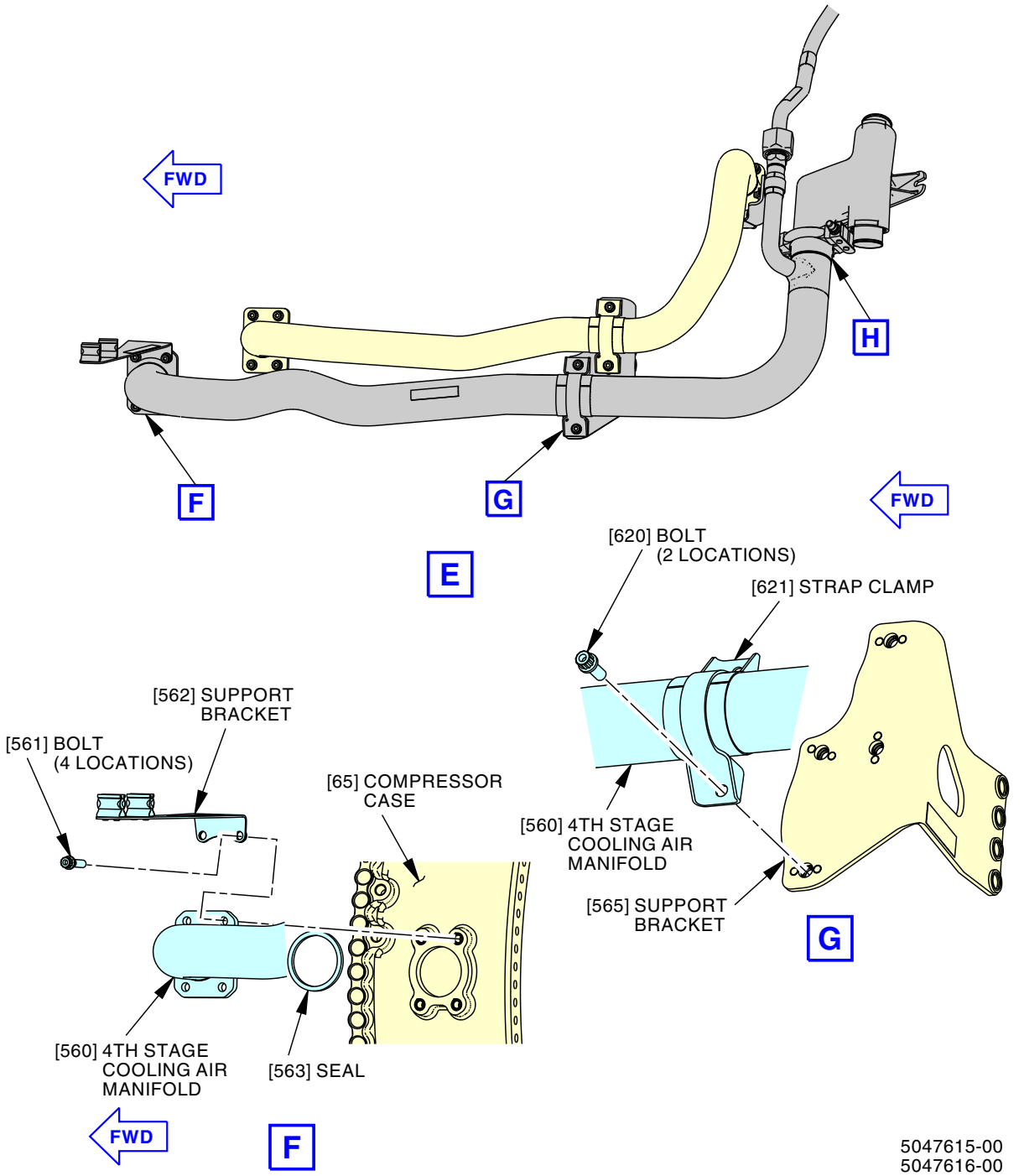
Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 2 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



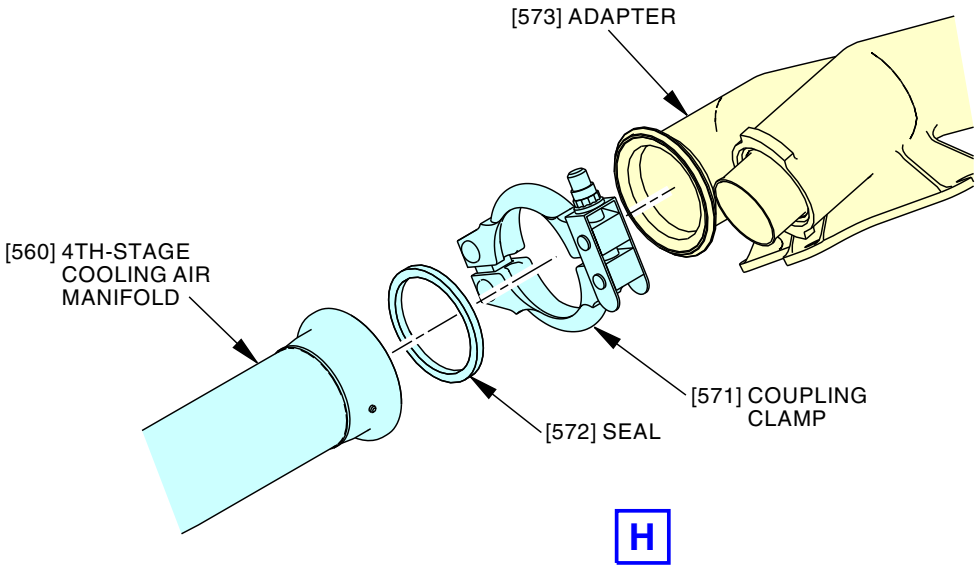
Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 3 of 10)

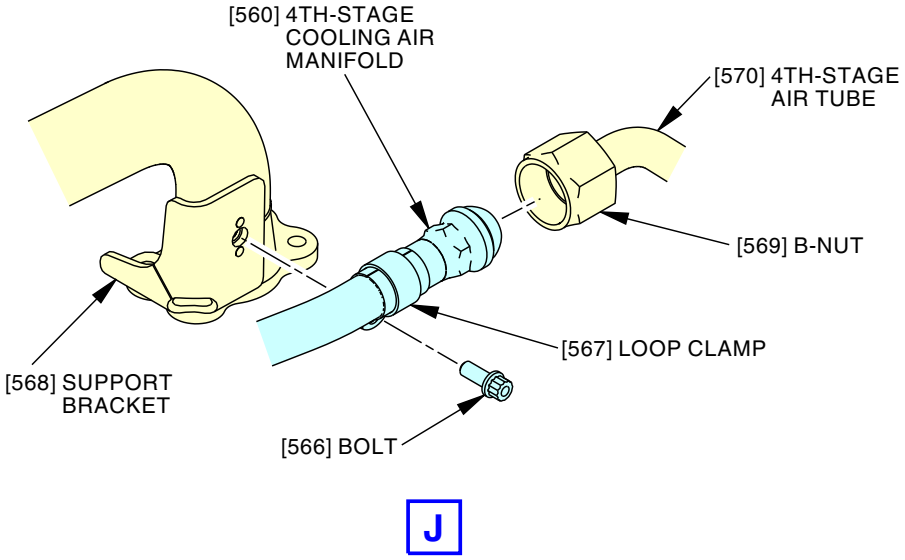
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Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 4 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



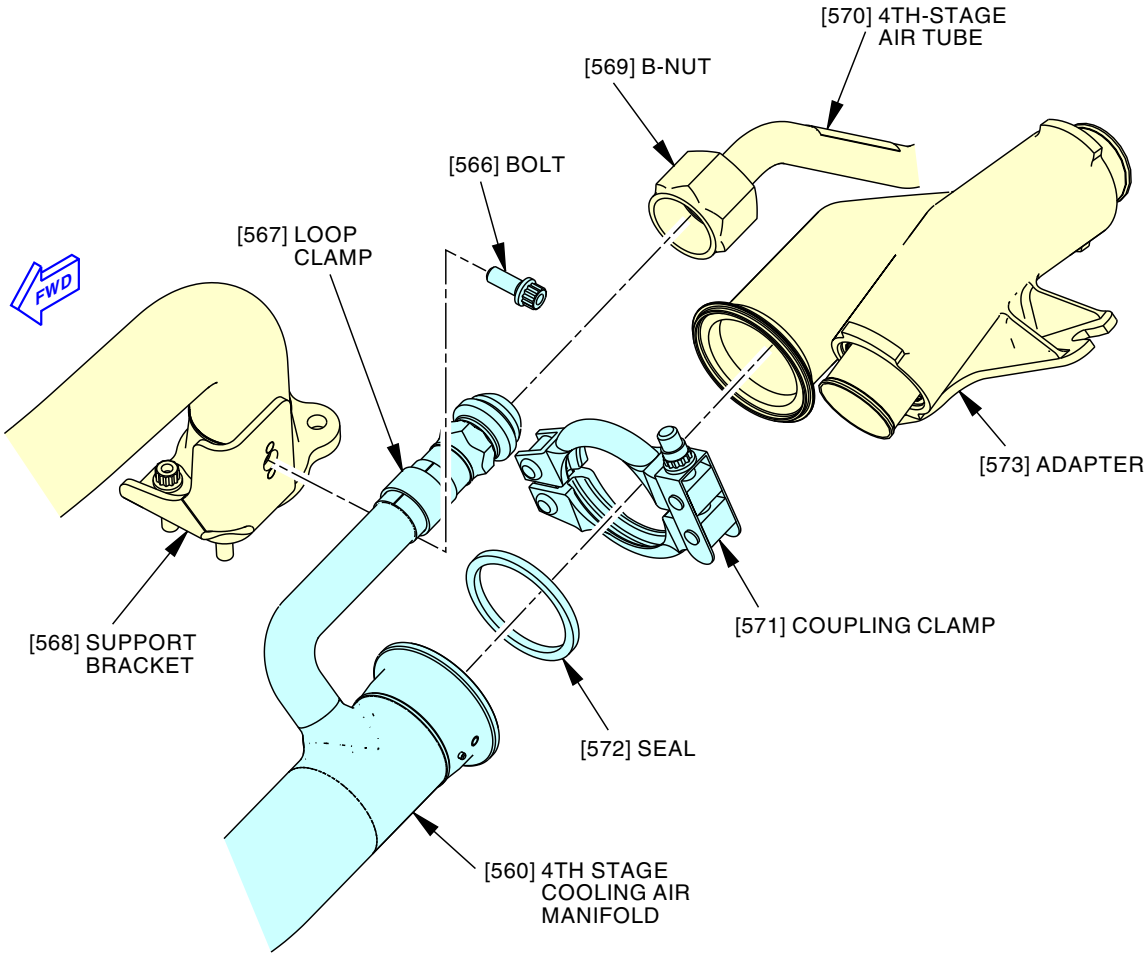


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Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 5 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



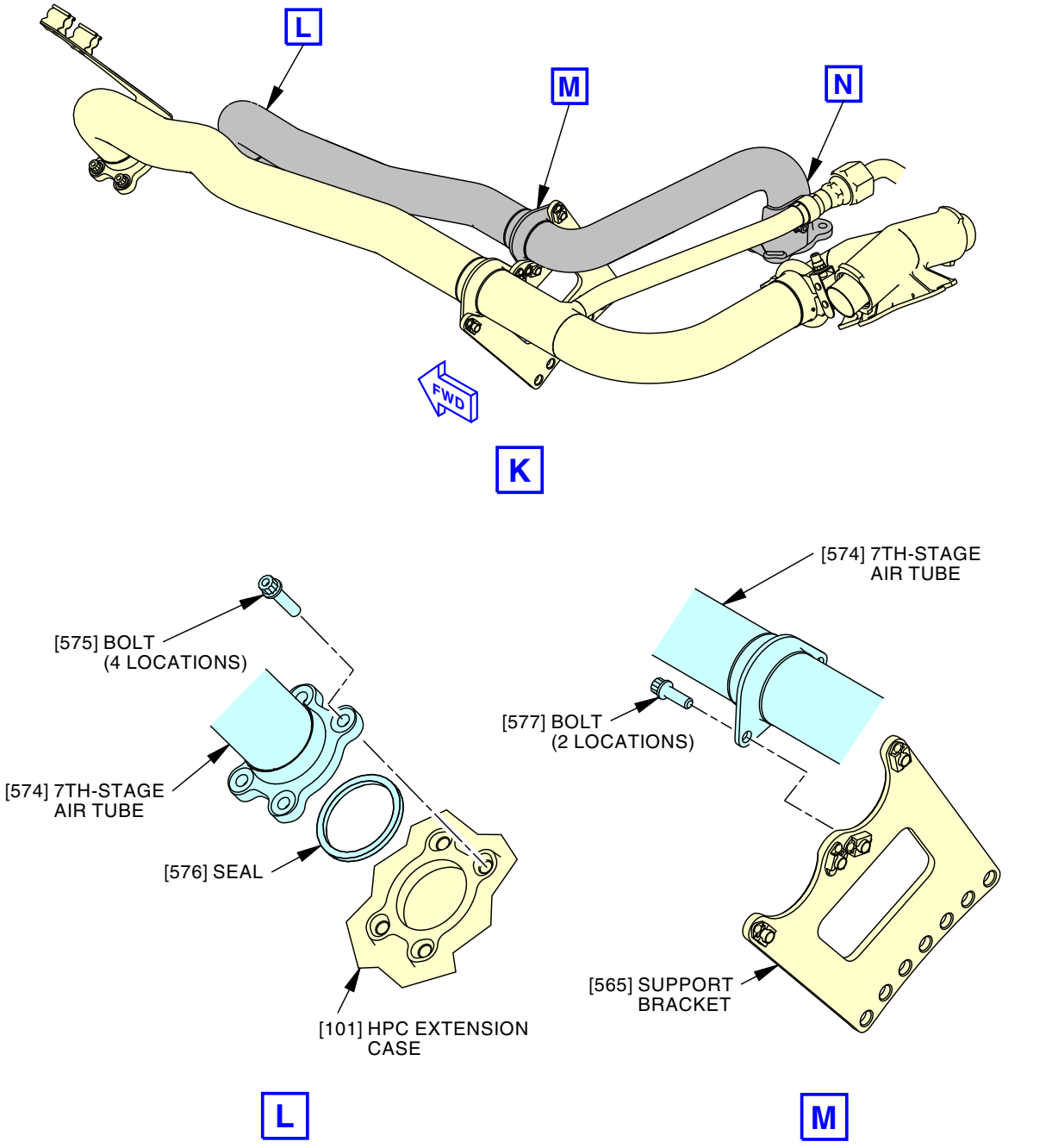
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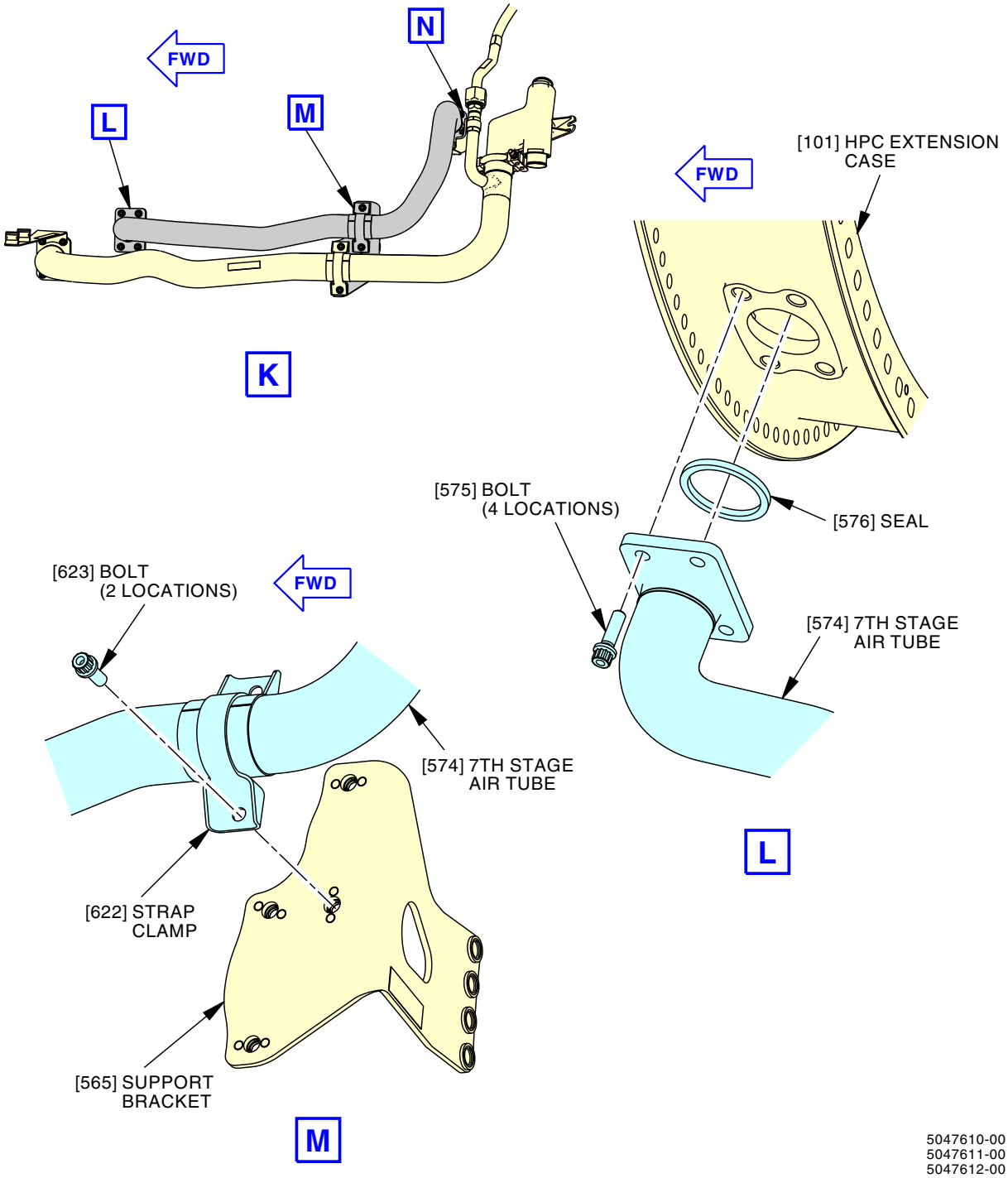
Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 6 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



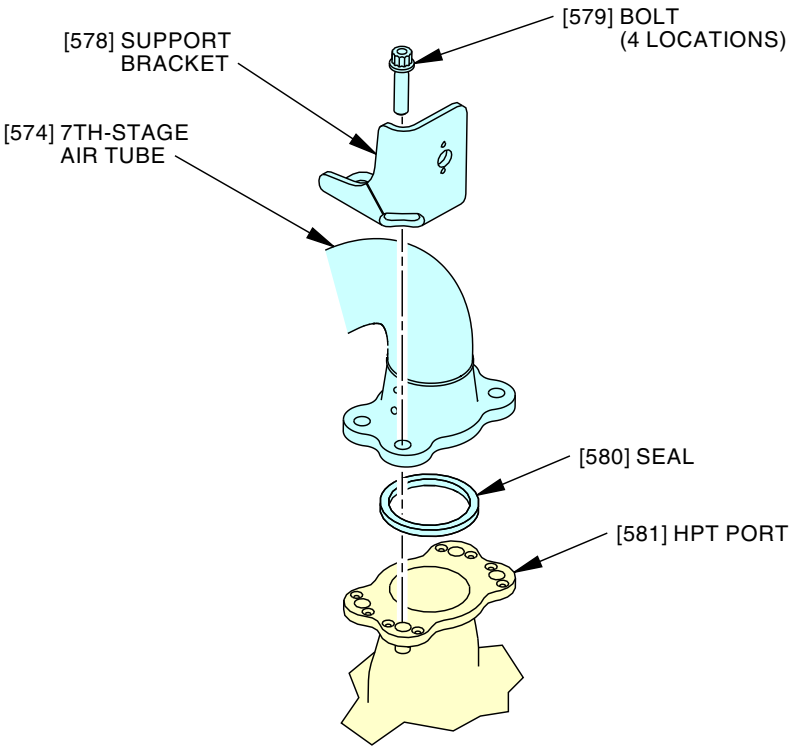
Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 7 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 8 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



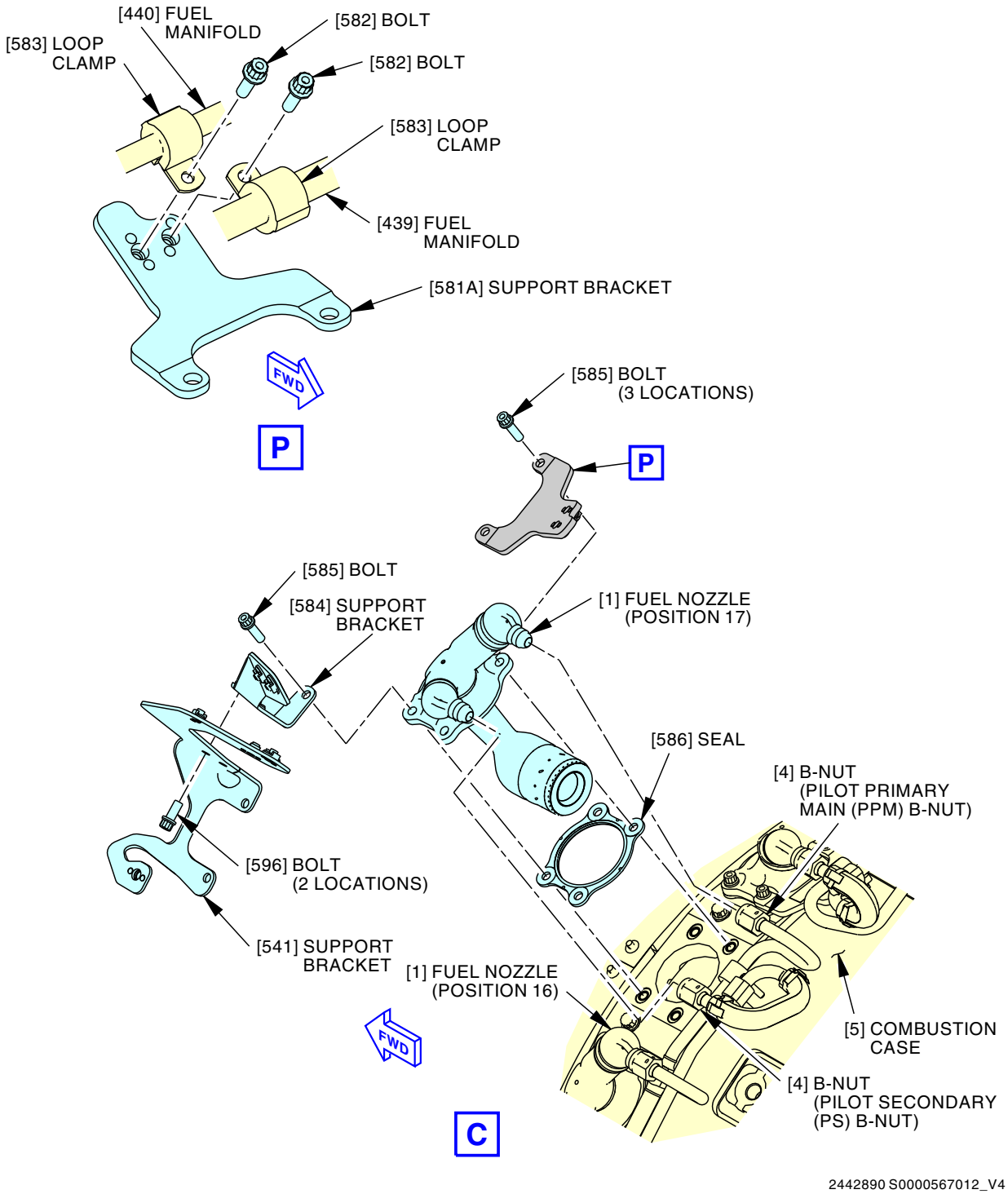
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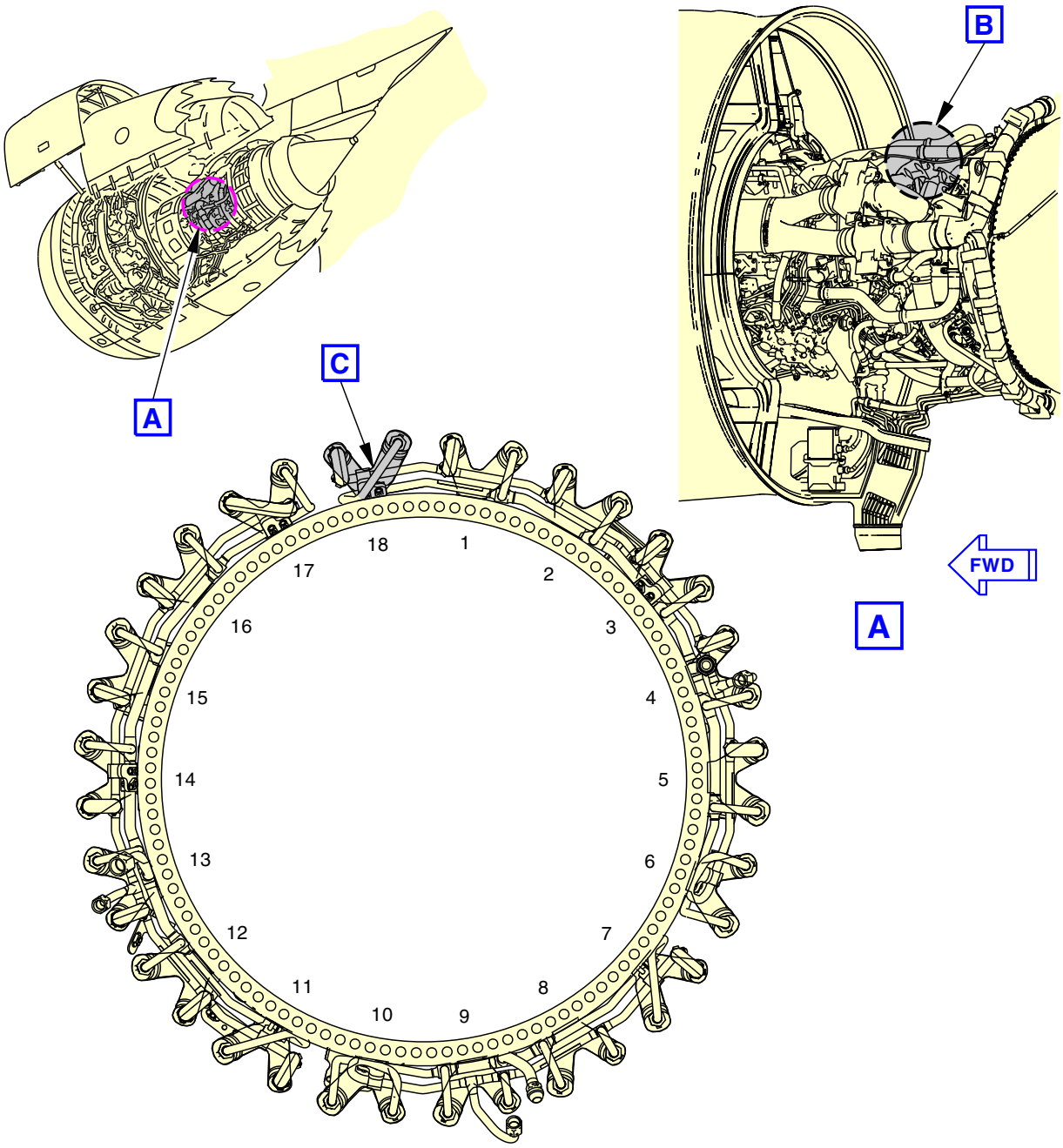
Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 9 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle (Position 17) Installation
Figure 418/73-11-05-990-904-G00 (Sheet 10 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(VIEW IN THE FORWARD DIRECTION)

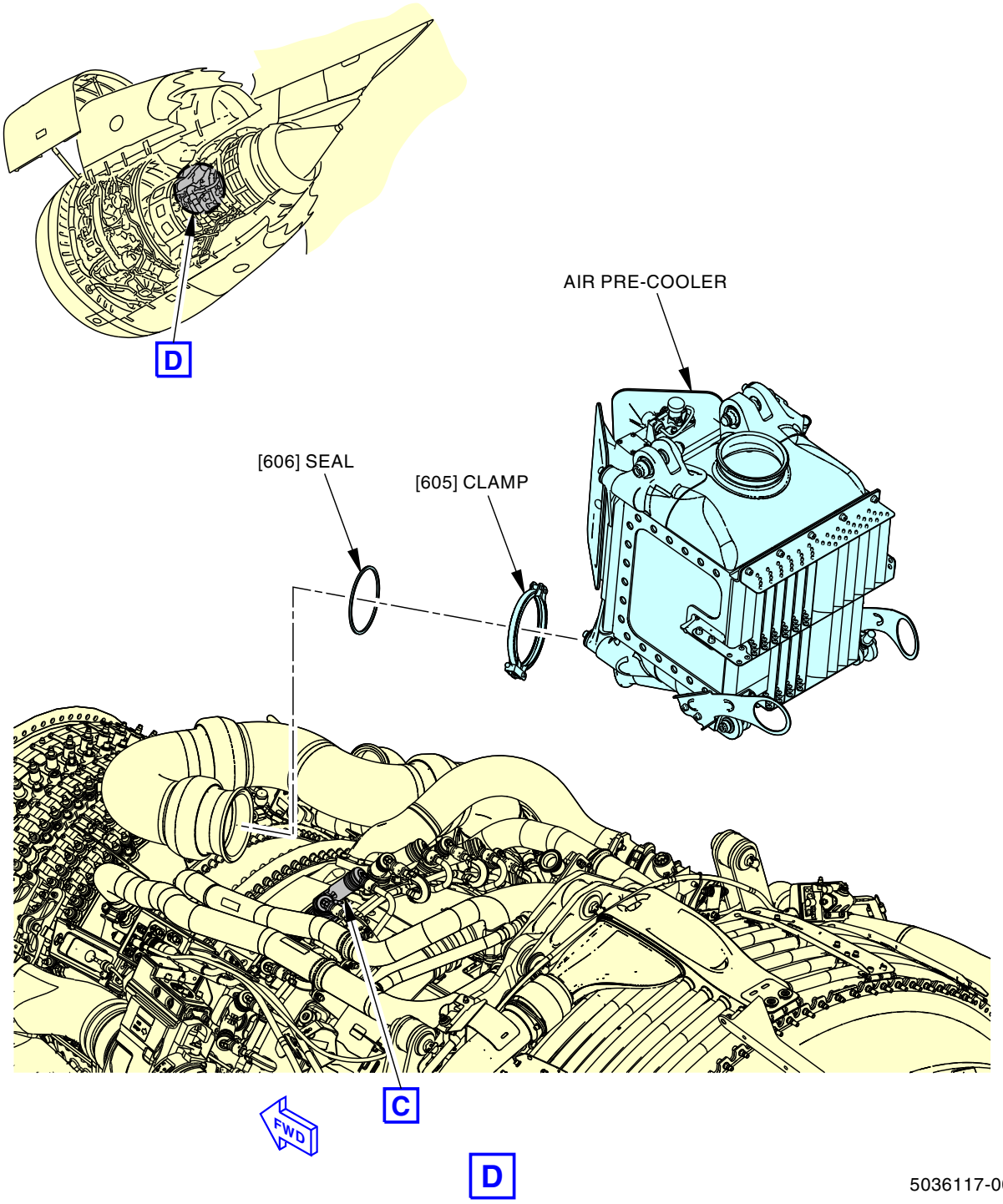
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5021979-00

2476892 S0000580905_V1

Fuel Nozzle (Position 18) Installation
Figure 419/73-11-05-990-905-G00 (Sheet 1 of 3)

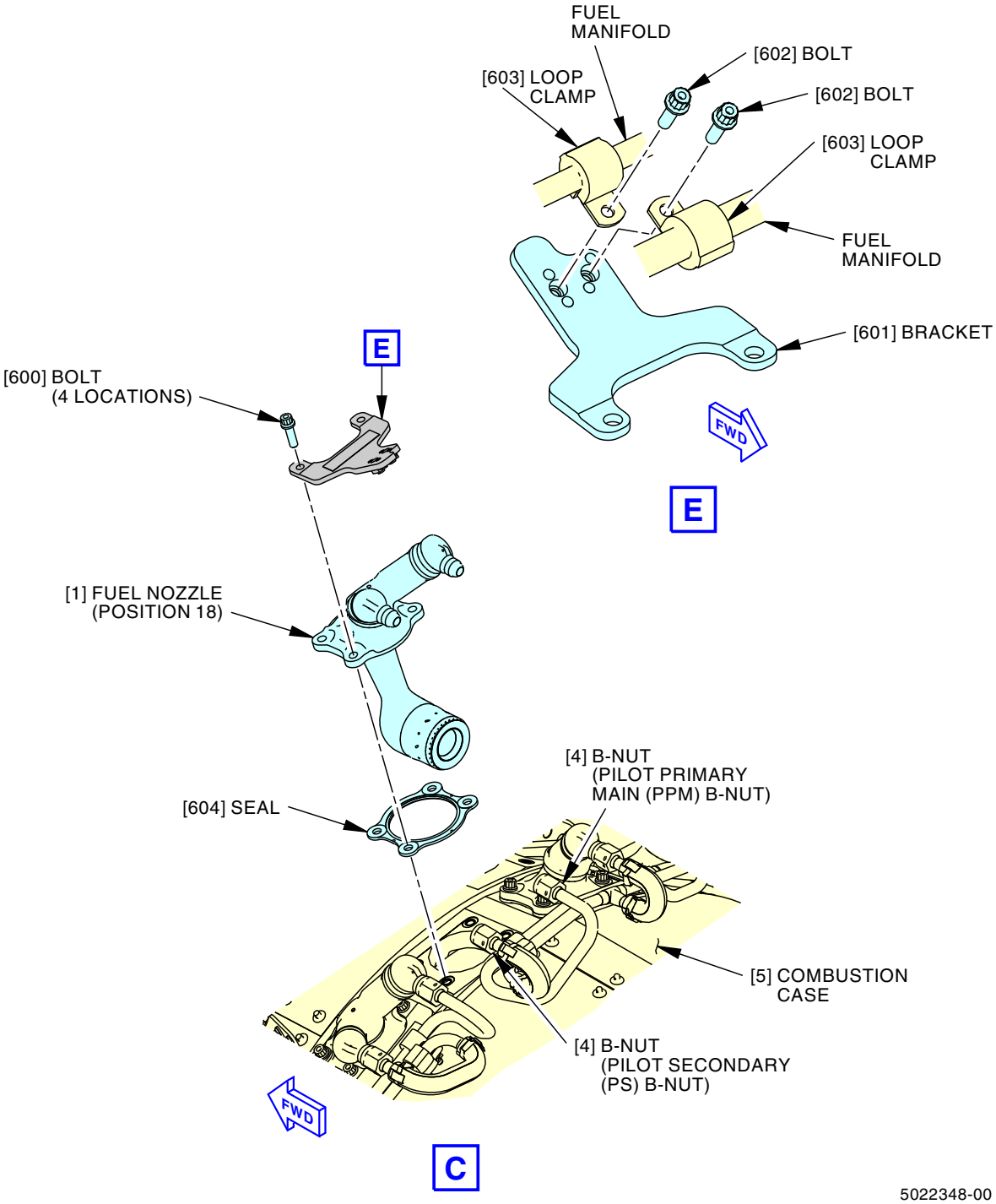
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5036117-00
2442458 S0000567013_V3

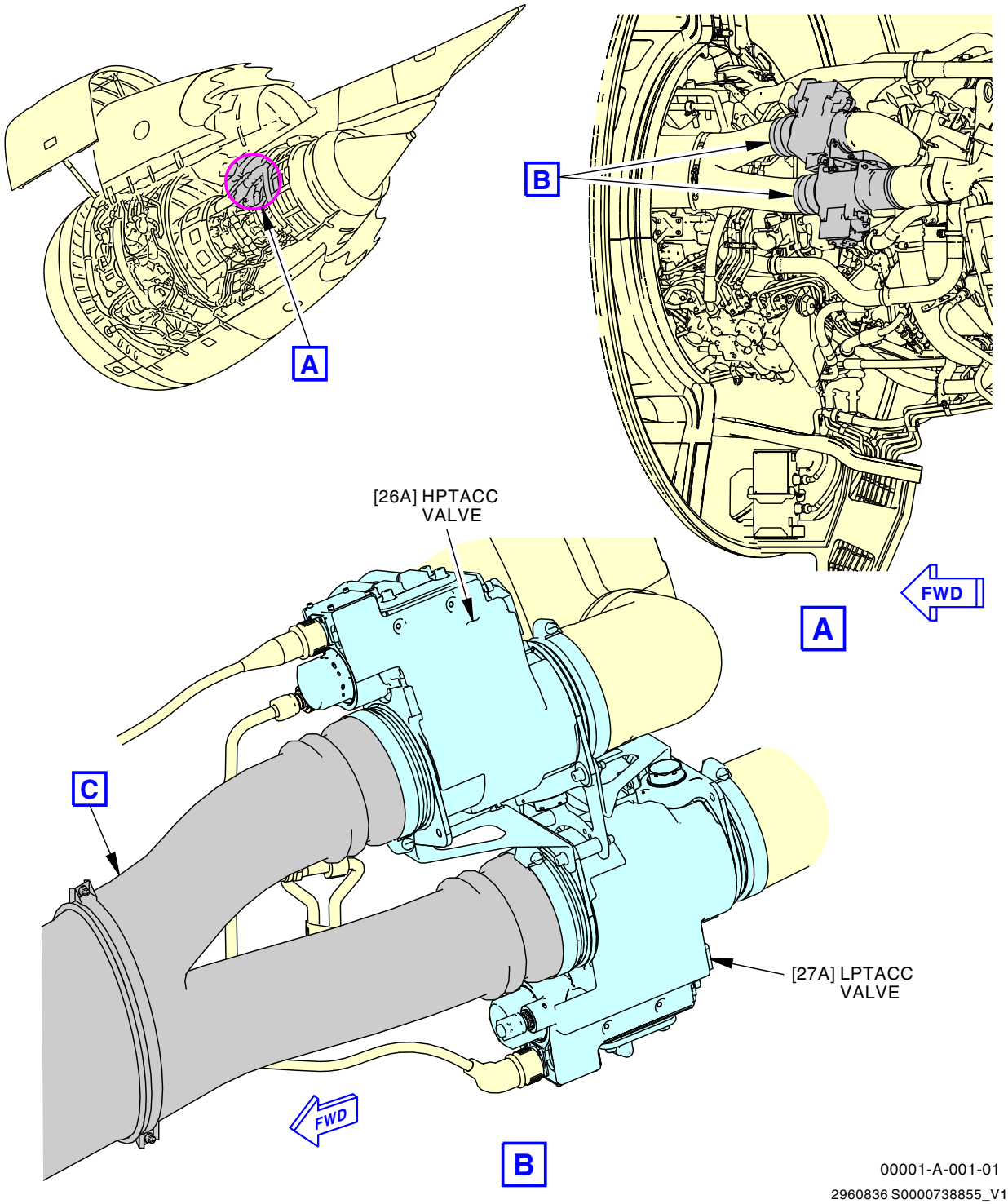
Fuel Nozzle (Position 18) Installation
Figure 419/73-11-05-990-905-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



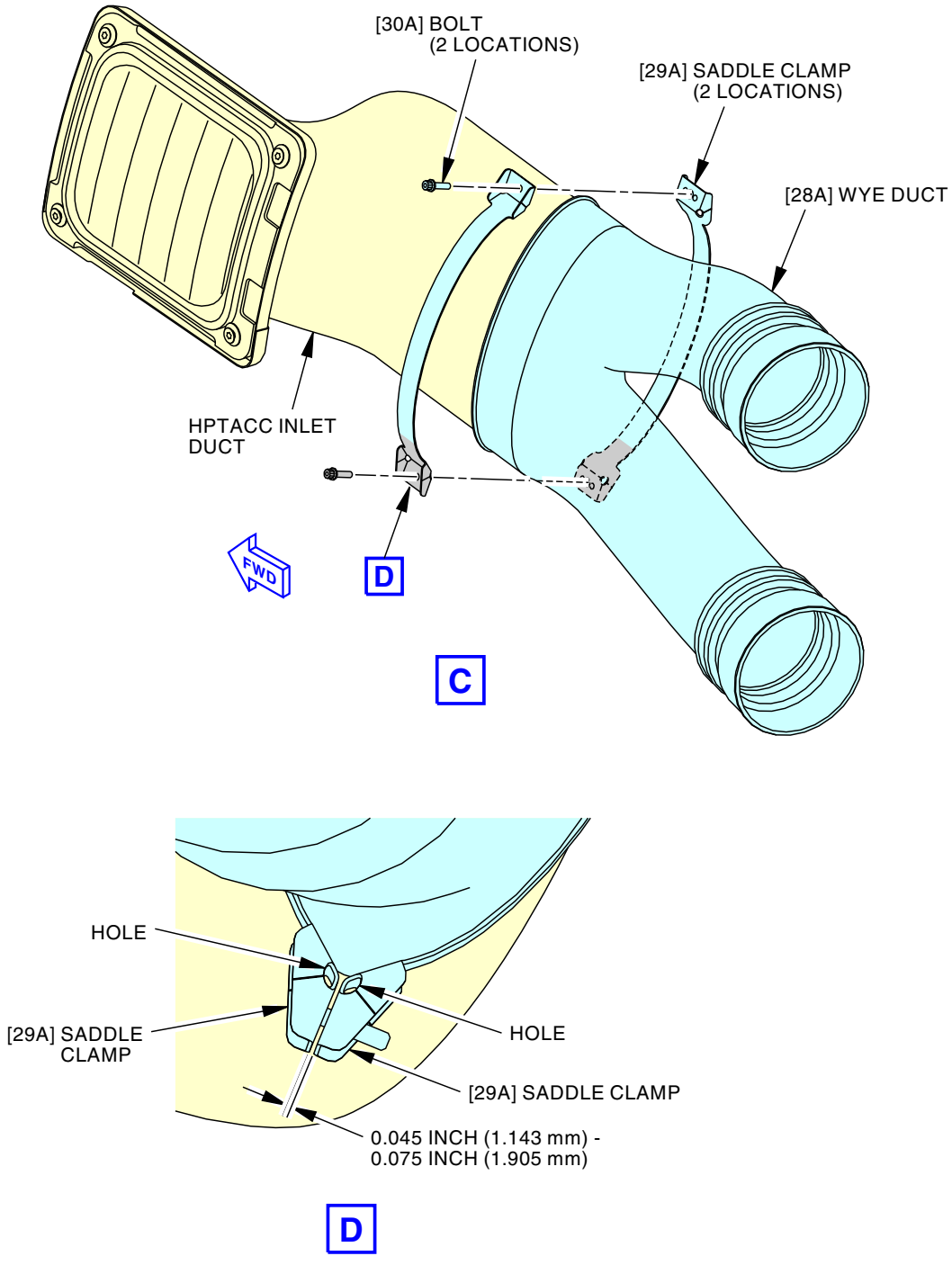
Fuel Nozzle (Position 18) Installation
Figure 419/73-11-05-990-905-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



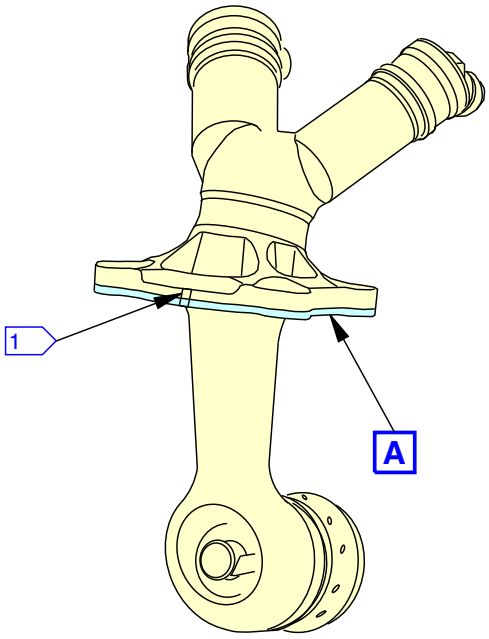
HPT and LPT Valve Installation
Figure 420/73-11-05-990-906-G00 (Sheet 1 of 2)

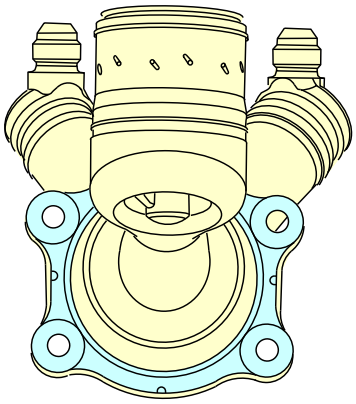
ECCN 9E991 BOEING PROPRIETARY - See title page for details



HPT and LPT Valve Installation
Figure 420/73-11-05-990-906-G00 (Sheet 2 of 2)

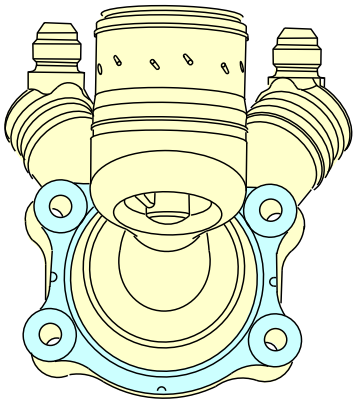
ECCN 9E991 BOEING PROPRIETARY - See title page for details





SEAL ALIGNED
(CORRECT POSITION)

A



SEAL NOT ALIGNED
(INCORRECT POSITION)

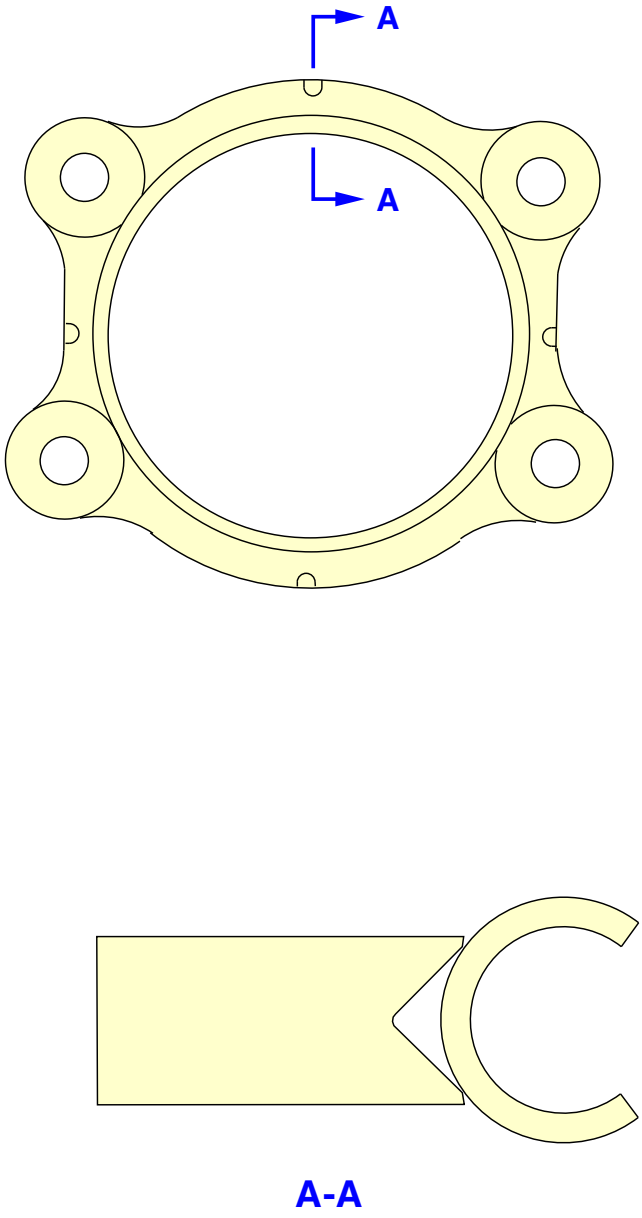
A

1 THE MARK ON THE SEAL MUST BE ALIGNED WITH THE MARK ON THE FUEL NOZZLE.

2953777 S0000731186_V1

Fuel Nozzle Seal Inspection
Figure 421/73-11-05-990-907-G00 (Sheet 1 of 2)

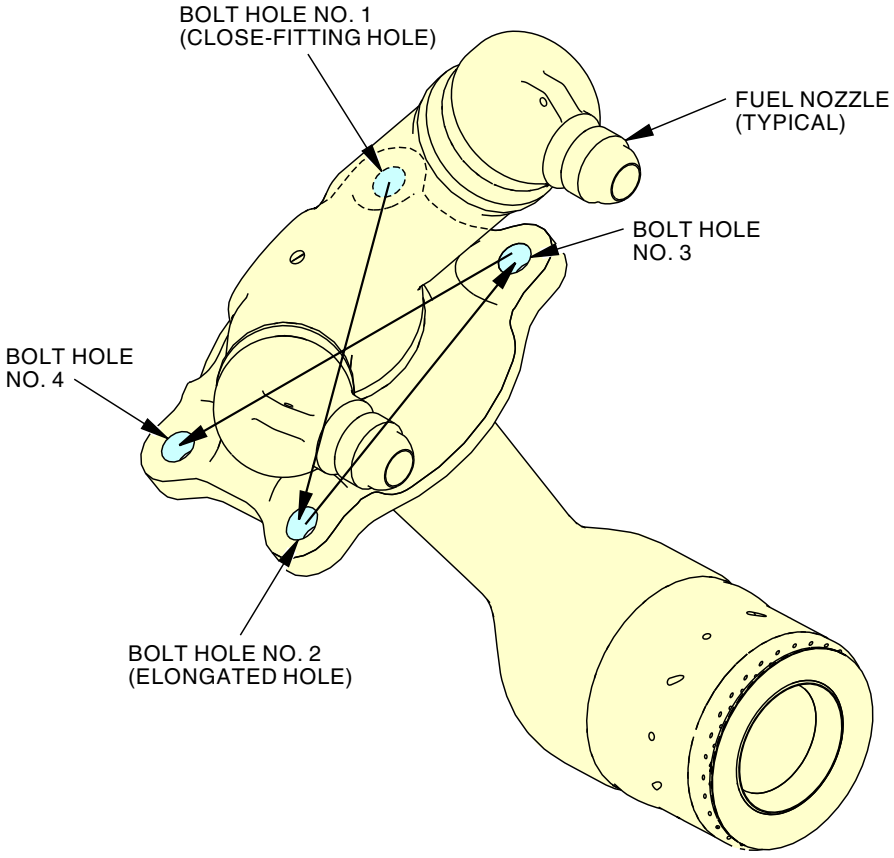
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2953822 S0000731208_V1

Fuel Nozzle Seal Inspection
Figure 421/73-11-05-990-907-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

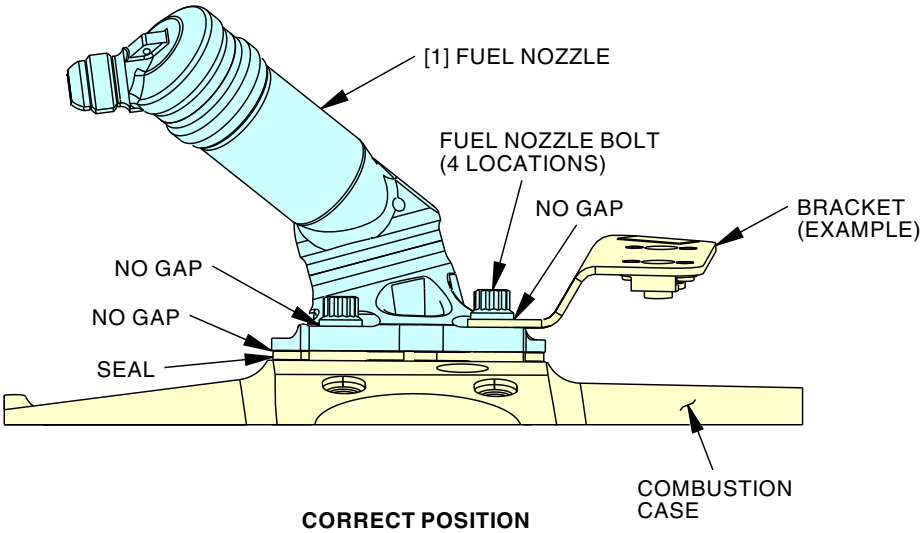


FUEL NOZZLE TORQUE SEQUENCE

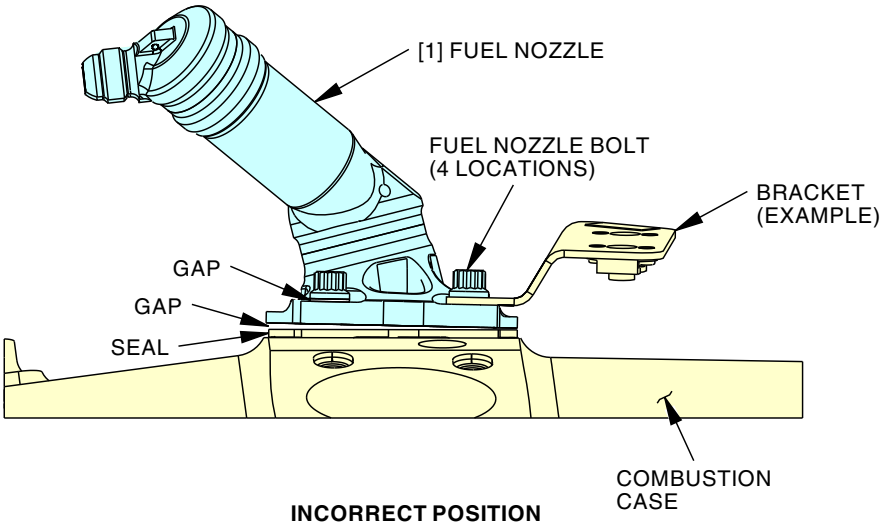
2947512 S0000724407_V2

Fuel Nozzle Torque Sequence
Figure 422/73-11-05-990-908-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CORRECT POSITION



INCORRECT POSITION

2978976 S0000757000_V1

Fuel Nozzle Bolt Seated Position Inspection
Figure 423/73-11-05-990-909-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-05-400-801-G00

3. Fuel Nozzle Installation

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406, Figure 407, Figure 408, Figure 409, Figure 410, Figure 411, Figure 412, Figure 413, Figure 414, Figure 415, Figure 416, Figure 417, Figure 418, Figure 419, Figure 420, Figure 421, Figure 422, and Figure 423)

A. General

(1) This task gives the instructions to install one or more fuel nozzles.

(2) There are eighteen fuel nozzles on the combustion case.

(3) The fuel nozzle position numbers are in a Clockwise (CW) sequence when viewed from the rear of the engine facing forward or Aft Looking Forward (ALF).

NOTE: All bolts that attach fuel nozzle to the case have the same part number.

NOTE: The offset hole on the combustion case aft flange is the Top Vertical Centerline (TVCL). The first fuel nozzle clockwise, aft looking forward, from the TVCL is No. 1.

(4) The task is divided into eighteen installation topics.

(5) You can install the fuel nozzles individually per instructions in the individual topic.

(6) If you will install multiple or a full set of fuel nozzles at the same time, it is preferable that you install the fuel nozzles in sets.

NOTE: It may be necessary to loosen and partially remove an adjacent fuel nozzle in order to get access to rotate the fuel nozzle into the combustion case during fuel nozzle installation. Replace the fuel nozzle seal assembly if three or more fuel nozzle bolts are loosened.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124

NOTE: The left side MTC valve and actuator (aft looking forward) are removed.

SIA ALL

NOTE: Right side MTC valve is installed between Fuel nozzles 3 & 4 and Left side MTC valve is installed between Fuel nozzles 12 & 13. Nozzle installation in sets may avoid MTC valve installation (if removed during Fuel Nozzle removal).

(7) To install the fuel nozzles [1] (positions 1 through 18), turn the fuel nozzles [1] as follows:

NOTE: The installation sequence is only for reference and can be changed for best achievement, such a down-top installation sequence.

(a) Fuel Nozzle (FN) at positions 1, 2, 3, 18, and 17 (installed at the 1:30 o'clock position).

1) The FN 1 turn to the LEFT and into the case.
2) The FN 2 turn to the RIGHT and into the case.
3) The FN 3 turn to the RIGHT and into the case.
4) The FN 18 turn to the LEFT and into the case.
5) The FN 17 turn to the LEFT and into the case.
6) Move the fuel nozzles [1] aft to engage the swirl cup.

(b) FN 4, 5, 6, 7, 8, and 9 (installed at the 3 to 5 o'clock position).

1) The FN 4 turn UP and into the case.
2) The FN 5 turn DOWN and into the case.
3) The FN 6 turn DOWN and into the case.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) The FN 7 turn DOWN and into the case.
5) The FN 8 turn to the LEFT and into the case.
6) The FN 9 turn to the LEFT and into the case.
7) Move the fuel nozzles [1] aft to engage the swirl cup.

(c) FN 11, 10, and 12 (installed at the 7 to 8 o'clock position).
1) The FN 11 turn DOWN and into the case.
2) The FN 10 turn RIGHT and into the case.
3) The FN 12 turn UP and into the case.
4) Move the fuel nozzles [1] aft to engage the swirl cup.

(d) FN 16, 15, 14, and 13 (installed at the 9 o'clock position).
1) The FN 16 turn UP and into the case.
2) The FN 15 turn DOWN and into the case.
3) The FN 13 turn DOWN and into the case.
4) Move the fuel nozzles [1] aft to engage the swirl cup.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
36-11-01-400-801	Engine Pneumatic Duct Installation (P/B 401)
36-11-04-400-801	PRSOV Installation (P/B 401)
36-11-07-400-801	HPSOV Installation (P/B 401)
36-12-01-400-803	Bleed Air Precooler Installation with Engine Installed (P/B 401)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
70-41-00 P/B 201	LOCKING METHODS - MAINTENANCE PRACTICES
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
70-51-00-800-801-G00	Instructions for Torque (Miscellaneous) (P/B 201)
71-00-00-700-808-G00	Test No. 32 - Engine Idle System Test (P/B 501)
71-00-00-700-811-G00	Test No. 35 - Erase All Channel A Faults Special Functions Test (P/B 501)
71-00-00-700-812-G00	Test No. 36 - Erase All Channel B Faults Special Functions Test (P/B 501)
71-00-00-790-801-G00	Test No. 1 - Pneumatic Leak Test (P/B 501)
71-00-00-790-804-G00	Test No. 4 - Idle Leak Test (P/B 501)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-64-400-801-G00	T3 Sensor Installation (P/B 401)
74-21-02-400-801-G00	Left Igniter Plug Installation (P/B 401)
74-21-02-400-802-G00	Right Igniter Plug Installation (P/B 401)
75-23-02-400-801-G00	Left Modulated Turbine Cooling (MTC) Valve Installation (P/B 401)
75-23-02-400-802-G00	Right Modulated Turbine Cooling (MTC) Valve Installation (P/B 401)
75-24-01-400-801-G00	Low Pressure Turbine Active Clearance Control (LPTACC) Valve Installation (P/B 401)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
75-24-04-400-801-G00	High Pressure Turbine Active Clearance Control (HPTACC) Valve Installation (P/B 401)
77-21-04-400-801-G00	Exhaust Gas Temperature Sensor Harness 1 Installation (P/B 401)
77-21-05-400-801-G00	Exhaust Gas Temperature Sensor Harness 2 Installation (P/B 401)
77-31-06-400-801-G00	Turbine Center Frame Accelerometer Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-600	Mirror - Inspection
STD-858	Tag - DO NOT OPERATE
STD-6087	Brush - Acid Resistant

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D50355 [CP2961]	Lubricant - Anti-Seize Compound	D6Y31C2
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G02495 [CP8002]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS5689
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A
G50530 [CP5061]	Marker - Temporary	
G51403 [CP2166]	Tape - Polyester-Backed, Adhesive	
G51435 [CP2635]	Wax - Stick	
G51669 [CP2975]	Tape - Silicone Rubber, Glass Cloth Fabric	MIL-I-22444

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel nozzle	73-11-05-01-020	SIA ALL
3	Seal	73-11-05-01-030	SIA ALL
21A	Seal	75-23-00-02-310	SIA ALL
23	Metal seal ring	75-23-00-02-350	SIA ALL
41	Seal	73-11-05-01-030	SIA ALL
41A	Seal	72-00-00-25-160	SIA ALL
45A	Seal	72-00-00-25-070	SIA ALL
52A	Seal	75-11-00-03-230	SIA ALL
60	Seal	75-23-00-02-380	SIA ALL
67	Seal ring	75-23-00-02-440	SIA ALL
70	Seal	73-11-05-01-030	SIA ALL
92	Seal ring	75-23-00-02-270	SIA ALL
100	Seal ring	75-23-00-02-280	SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
103	Seal	73-11-05-01-030	SIA ALL
150	Seal gasket	73-11-00-20-140	SIA ALL
175	Seal	73-11-05-01-030	SIA ALL
195	Seal	73-11-05-01-030	SIA ALL
221	Seal	73-11-05-01-030	SIA ALL
222	Seal	75-23-00-02-100	SIA ALL
226	Seal	75-23-00-02-110	SIA ALL
312	Seal	75-23-00-01-070	SIA ALL
317	Seal	75-23-00-01-060	SIA ALL
378	Seal	73-11-05-01-030	SIA ALL
392	Seal	73-11-05-01-030	SIA ALL
415	Seal	75-23-00-01-160	SIA ALL
423	Seal	75-23-00-01-120	SIA ALL
429	Seal	73-11-05-01-030	SIA ALL
454	Seal	75-23-00-01-210	SIA ALL
458	Seal	75-23-00-01-200	SIA ALL
471	Flange seal gasket	73-11-00-20-270	SIA ALL
475	Seal	73-11-05-01-030	SIA ALL
506	Seal	73-11-05-01-030	SIA ALL
524	Seal	73-11-05-01-030	SIA ALL
547	Seal	73-11-05-01-030	SIA ALL
563	Seal	75-23-00-01-300	SIA ALL
572	Seal	75-23-00-01-260	SIA ALL
576	Seal	75-23-00-01-370	SIA ALL
580	Seal	75-23-00-01-360	SIA ALL
586	Seal	73-11-05-01-030	SIA ALL
604	Seal	73-11-05-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
426	Right Thrust Reverser, Engine 2

H. Prepare for the Fuel Nozzle Installation

SUBTASK 73-11-05-420-198-G00

(1) Do the following steps:

NOTE: The steps below apply to the fuel nozzle pad bolts and any bolts that can be attached to the combustion case during the installation of the fuel nozzle.

(a) At the required fuel nozzle [1] position, new fuel nozzle bolts must be used.

(b) Prepare all the fuel nozzles bolts and case bolts with Tiodize T8E-H grease, D50355 [CP2961], with the acid resistant brush, STD-6087.

NOTE: You can put a label on the serviceable (new or overhauled) fuel nozzle [1] to make installation easy.

(c) Place all clean fuel nozzles [1] on a bench and mark the fuel nozzles [1] (No. 1 through No.18) as applicable per number of nozzles being installed.

(d) Make a record of the fuel nozzle [1] position with the related fuel nozzle serial number, and part number.

(e) Remove the DO NOT OPERATE tags, from the fuel nozzle [1].

(f) Remove 3M 851 Tape, G51403 [CP2166], from the fuel nozzle [1].

(g) Do a general visual inspection of the fuel nozzle [1].

(h) Do a general visual inspection of the new seal that connects to the fuel nozzle [1] to see if there is an inner C-seal (Figure 421).

1) Do an inspection for deformation or damage across mating joints.

CAUTION

TURN THE FUEL NOZZLE SEAL UNTIL BOLT HOLES ALIGN. THE ORIENTATION OF THE SEAL TURNS IN ONE DIRECTION. THE BOLT HOLES WILL NOT LINE UP IN THE OTHER DIRECTION. DO NOT USE USED FUEL NOZZLE SEALS. IF YOU DO NOT OBEY, DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION

YOU MUST INSTALL A NEW FUEL NOZZLE SEAL EACH TIME. THIS WILL PREVENT A HOT AIR LEAK AND HIGH TEMPERATURE BELOW THE COWLING. IF YOU DO NOT OBEY, DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(i) Install the new seal on the fuel nozzle [1].

NOTE: It is recommended that the new set of fuel nozzles and their related C-seals are marked with a match mark as a visual aid to make the alignment between the fuel nozzles and gasket seals easy during the assembly process (Figure 421).

(j) Remove the protective covers from the fuel nozzle [1], fuel nozzle ports, and fuel manifold connections.

(k) Remove 3M 851 Tape, G51403 [CP2166], from the combustion case [5].

(l) Do an inspection of the new or overhauled fuel nozzle [1] inlet strainers for any foreign objects.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Fuel Nozzle Installation (Position 1)

WARNING	DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION	DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION	DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

SUBTASK 73-11-05-420-199-G00

(1) Install the fuel nozzle [1] (position 1) as follows (View C, Figure 402):

(a) Install the fuel nozzle [1] (position 1) with the new seal [3] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 1) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [3] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 1) aft to engage the fuel nozzle [1] (position 1) tip in the combustor radial mixer (cup).

(d) Align the seal [3] and fuel nozzle [1] (position 1) bolt holes to the combustion case [5].

(e) Do not tighten the fuel nozzle bolts at this time.

(f) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(g) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 1) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(h) Tighten the bolts [2] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle bolts [2].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(i) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(j) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the two B-nuts [4] until you can turn them with your fingers.

c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with the safety cable, cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-010-016-G00

(2) If the precooler was disconnected, do this task: Bleed Air Precooler Installation with Engine Installed, TASK 36-12-01-400-803.

J. Fuel Nozzle Installation (Position 2)

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

SUBTASK 73-11-05-420-200-G00

(1) Install the fuel nozzle [1] (position 2) as follows (View L, Figure 403):

(a) Install the fuel nozzle [1] (position 2) with the new seal [41] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 2) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [41] and combustion case [5] pad.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Move the fuel nozzle [1] (position 2) aft to engage the fuel nozzle [1] (position 2) tip in the combustor radial mixer (cup).

(d) Align the seal [41] and fuel nozzle [1] (position 2) bolt holes to the combustion case [5].

(e) Install the booster anti-ice tube bracket [45] as follows (View L, Figure 403):

NOTE: The booster anti-ice bracket [45] is two brackets assembled together that span across fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

1) Install the two bolts [40] that attach the bracket [45] to the fuel nozzle [1] (position 2).

2) Install the bolt [46] that attaches the bracket [45] to the fuel nozzle [1] (position 3).

(f) Install the remaining two bolts [40] that attach the fuel nozzle [1] (position 2) to the combustion case [5].

(g) Do not tighten the fuel nozzle bolts at this time.

(h) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(i) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 2) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(j) Tighten the bolts [40] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle bolts [40].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m)..

NOTE: One of the four fuel nozzle bolt holes is elongated.

(k) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION

MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(l) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with the safety cable, cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-201-G00

(2) Install the booster anti-ice tube [37A] as follows (View E, Figure 403):

(a) Support and secure the booster anti-ice tube [38A] and booster anti-ice tube [39A] from damage.

(b) Support and secure the booster anti-ice tube [37A] from damage.

(c) Install the new seal [41A] and coupling clamp [40A] that attach the booster anti-ice tube [37A] to the booster anti-ice tube [44A].

1) Do not tighten the coupling clamp [40A] at this moment.

(d) Install the two coupling clamps [46A] and two new seals [45A] that attach the booster anti-ice tube [37A] to the booster anti-ice tube [38A] and booster anti-ice tube [39A].

1) Do not tighten the two coupling clamps [46A] at this moment.

(e) Apply oil, D00599 [CP2442], on the threads of the bolts [42A] and bolts [47A].

(f) Install the four bolts [42A] and two strap clamps [43A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [38A] to the support brackets.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 OR PRE LEAP-1B SERVICE BULLETIN 72-0144

(g) Install the bolts [47A] and loop clamp [48A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [39A] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(h) Install the two bolts [47A] and strap clamp [43A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [39A] to the support bracket.

SIA ALL

(i) Tighten the coupling clamp [40A] and coupling clamps [46A] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(j) Tighten the bolts [42A] and bolts [47] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-202-G00

(3) Install the booster anti-ice tube [44A] as follows (View G, Figure 403):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [50A] and bolt [53A].

(b) Install the new seal [52A] and coupling clamp [51A] that attaches the booster anti-ice tube [44A] to the SBV valve at the 4:00 o'clock position (View J, Figure 403).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Do not tighten the coupling clamp [51A] at this time.

(c) Support and tightly attach the booster anti-ice tube [44A].

(d) Install the bolt [50A], bolt [53A], and clamps [49A] that attach the booster anti-ice tube [44A] to the support bracket.

1) Do not tighten the bolt [50A] and bolt [53A] at this time.

(e) Tighten the coupling clamp [51A], bolt [50A], and bolt [53A] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-203-G00

(4) Install the transient bleed air tube [19] as follows (View C and D, Figure 403):

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [22].

(b) Apply a layer of stick wax, G51435 [CP2635], to the new metal seal ring [23] to hold it during installation.

(c) Attach the transient bleed air tube [19] and new metal seal ring [23] to the combustion case [5] with the four bolts [22].

1) Do not tighten the bolts [22] at this time.

(d) Apply oil, D00599 [CP2442], on the threads of the three bolts [18].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0229

(e) Install the three bolts [18] that attach the transient bleed air tube [19] to the support bracket [20].

1) Do not tighten the bolts [18] at this time.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0229

(f) Install the two bolts [18] that attach the transient bleed air tube [19] to the support bracket [20].

1) Do not tighten the bolts [18] at this time.

SIA ALL

(g) Install the new seal [21A] on the transient bleed air tube [19].

(h) Install the coupling clamp [21] on the transient bleed valve [47].

1) Tighten the coupling clamp [21] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(i) Tighten the bolts [22] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Tighten the bolts [18] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-204-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(5) Install the engine crossover duct assembly (TASK 36-11-01-400-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

K. Fuel Nozzle Installation (Position 3)

SUBTASK 73-11-05-420-205-G00

WARNING	DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION	DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION	DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 3) as follows (View G, Figure 404):

(a) Install the fuel nozzle [1] (position 3) with the new seal [70] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 3) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [70] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 3) aft to engage the fuel nozzle [1] (position 3) tip in the combustor radial mixer (cup).

(d) Align the seal [70] and fuel nozzle [1] (position 3) bolt holes to the combustion case [5].

(e) Install the booster anti-ice tube bracket [74] as follows:

NOTE: The booster anti-ice bracket [74] is two brackets assembled together that span across fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

1) Install the two bolts [68] that attach the bracket [74] to the fuel nozzle [1] (position 2).

2) Install the bolt [69] that attaches the bracket [74] to the fuel nozzle [1] (position 3).

(f) Install the bracket [75] as follows (Figure 404):

1) Install the bolts [69] that attach the bracket [75] to the fuel nozzle [1] (position 3).

(g) Install the remaining bolt [69] that attach the fuel nozzle [1] (position 3) to the combustion case [5].

(h) Do not tighten the fuel nozzle bolts at this time.

(i) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(j) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 3) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(k) Tighten the bolts [69] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle Tiodize T8E-H grease, D50355 [CP2961].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(l) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(m) Install the bolts [76] that attach the loop clamps [77] to the bracket [75].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(n) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-206-G00

(2) If removed, install the right MTC valve (TASK 75-23-02-400-802-G00).

SUBTASK 73-11-05-420-207-G00

(3) Install the 4th-stage cooling air manifold [58] as follows (View C, D, and E, Figure 404):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0004

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [66] and two bolts [64].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0004

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [66] and two bolts [634].

SIA ALL

(c) Install the seal ring [67] on the compressor case [65].

(d) Attach the 4th-stage cooling air manifold [58] to the compressor case [65] and install the four bolts [66].

1) Do not tighten the bolts [66] at this time.

(e) Install the seal [60] and coupling clamp [61] that attaches the 4th-stage cooling air manifold [58] to the air supply adapter tube [62].

1) Do not tighten the coupling clamp [61] at this time.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0004

(f) Install the two bolts [64] that attach the 4th-stage cooling air manifold [58] at the air tube bracket [63].

1) Tighten the bolts [64] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0004

(g) Install the two bolts [634] and strap clamp [635] that attach the 4th-stage cooling air manifold [58] at the air tube bracket [63].

1) Tighten the bolts [634] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

(h) Attach the LPT air supply tube [59] to the 4th-stage cooling air manifold [58].

1) Tighten the LPT air supply tube [59] B-nut to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

(i) Tighten the bolts [66] to106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Tighten the coupling clamp [61] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

SUBTASK 73-11-05-420-208-G00

(4) Install the booster anti-ice tube [37A] as follows (View E, Figure 403):

(a) Support and secure the booster anti-ice tube [38A] and booster anti-ice tube [39A] from damage.

(b) Support and secure the booster anti-ice tube [37A] from damage.

(c) Install the new seal [41A] and coupling clamp [40A] that attach the booster anti-ice tube [37A] to the booster anti-ice tube [44A].

1) Do not tighten the coupling clamp [40A] at this moment.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the two coupling clamps [46A] and two new seals [45A] that attach the booster anti-ice tube [37A] to the booster anti-ice tube [38A] and booster anti-ice tube [39A].

1) Do not tighten the two coupling clamps [46A] at this moment.

(e) Apply oil, D00599 [CP2442], on the threads of the bolts [42A] and bolts [47A].

(f) Install the four bolts [42A] and two strap clamps [43A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [38A] to the support brackets.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 OR PRE LEAP-1B SERVICE BULLETIN 72-0144

(g) Install the bolts [47A] and loop clamp [48A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [39A] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(h) Install the two bolts [47A] and strap clamp [43A] that attach the booster anti-ice tube [37A] and booster anti-ice tube [39A] to the support bracket.

SIA ALL

(i) Tighten the coupling clamp [40A] and coupling clamps [46A] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(j) Tighten the bolts [42A] and bolts [47] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-400-035-G00

(5) Install the booster anti-ice tube [44A] as follows (View G, Figure 403):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [50A] and bolt [53A].

(b) Install the new seal [52A] and coupling clamp [51A] that attaches the booster anti-ice tube [44A] to the SBV valve at the 4:00 o'clock position (View J, Figure 403).

1) Do not tighten the coupling clamp [51A] at this time.

(c) Support and tightly attach the booster anti-ice tube [44A].

(d) Install the bolt [50A], bolt [53A], and clamps [49A] that attach the booster anti-ice tube [44A] to the support bracket.

1) Do not tighten the bolt [50A] and bolt [53A] at this time.

(e) Tighten the coupling clamp [51A], bolt [50A], and bolt [53A] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-210-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Install the engine crossover duct assembly (TASK 36-11-01-400-801).

L. Fuel Nozzle Installation (Position 4)

SUBTASK 73-11-05-420-211-G00

(1) Install the fuel nozzle [1] (position 4) as follows (View G, Figure 405):

(a) Install the fuel nozzle [1] (position 4) with the new seal [103] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 4) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [103] and combustion case [5] pad.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Move the fuel nozzle [1] (position 4) aft to engage the fuel nozzle [1] (position 4) tip in the combustor radial mixer (cup).

(d) Align the seal [103] and fuel nozzle [1] (position 4) bolt holes to the combustion case [5].

(e) Do not tighten the fuel nozzle bolts at this time.

(f) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(g) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 4) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(h) Install the four bolts [102] that attach the fuel nozzle [1] (position 4) to the combustion case [5].

1) Tighten the bolts [102] as follows (Figure 422):

a) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle bolts [102].

b) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

c) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(i) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(j) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the two B-nuts [4] until you can turn them with your fingers.

c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-212-G00

(2) If removed, install the right MTC valve (TASK 75-23-02-400-802-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-213-G00

(3) Install the bracket [98] as follows (Figure 406):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [152] and two bolts [126].

(b) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98] (View S, Figure 406).

(c) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98] (View J, Figure 406).

(d) Tighten the bolt [152] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(e) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-214-G00

(4) Install the bracket [98] as follows (Figure 406):

(a) Apply oil, D00599 [CP2442], on the threads of the bolts [191], bolt [197], and bolts [206].

(b) Install two bolts [206] that attach the bracket [98] to the support bracket [207].

(c) Install the bolt [197] that attaches the loop clamp [205] and drain tube [208] to the bracket [98].

(d) Install the two bolts [191] that attach the strap clamp [191A] and BAI air tube [27] to the bracket [98].

(e) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98] (View S, Figure 406).

(f) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98] (View J, Figure 406).

(g) Tighten the bolt [152] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(h) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) Tighten the bolts [206] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(j) Tighten the bolt [197] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(k) Tighten the bolts [191] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

SUBTASK 73-11-05-420-215-G00

(5) Install the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], two bolts [97], and four bolts [99].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], and four bolts [99].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(c) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [632], and four bolts [99].

SIA ALL

(d) Apply a layer of stick wax, G51435 [CP2635], to the seal ring [92] and seal ring [100] to hold them during installation.

(e) Install the new seal ring [92] at the aft end of the 7th-stage air tube [90] on the HPT case [94].

(f) Install the new seal ring [100] at the forward end of the 7th-stage air tube [90] on the HPC extension case [101].

(g) Put the 7th-stage air tube [90] in position between the 7th-stage air tube bracket [96] and HPT case [94].

1) Install the bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(h) Install the four bolts [99] that attach the forward end of the 7th-stage air tube [90] to the HPC extension case [101].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(i) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

(j) Install the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(k) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(l) Install the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(m) Tighten the bolts [91] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(n) Tighten the bolts [99] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(o) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(p) Tighten the bolts [97] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(q) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(r) Tighten the bolts [632] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

(s) Apply a layer of oil, D00599 [CP2442], on the threads of the bolt [87].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(t) Install the bolt [87] that attaches the air tube [89] to the bracket [93].

(u) Tighten the bolt [87] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

SUBTASK 73-11-05-420-216-G00

WARNING	YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Install the engine crossover duct assembly (Engine Pneumatic Duct Installation, TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-217-G00

(7) Install the Pressure Regulating and Shutoff Valve (PRSOV) (TASK 36-11-04-400-801).

M. Fuel Nozzle Installation (Position 5)

WARNING	DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION	DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION	DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

SUBTASK 73-11-05-420-218-G00

(1) Install the fuel nozzle [1] (position 5) as follows (View C, Figure 406):

(a) Install the fuel nozzle [1] (position 5) with the new seal [175] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 5) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [175] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 5) aft to engage the fuel nozzle [1] (position 5) tip in the combustor radial mixer (cup).

(d) Align the seal [175] and fuel nozzle [1] (position 5) bolt holes to the combustion case [5].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(e) Install the two bolts [173] that attach the bracket [177] and fuel nozzle [1] (position 5) to the combustion case [5].

SIA ALL

(f) Install the remaining two bolts [173] that attach the fuel nozzle [1] (position 5) to the combustion case [5].

(g) Install the remaining two bolts [173] to attach the bracket [177] to the combustion case [5].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0050 & PRE LEAP-1B SB 72-0217

(h) Install the remaining two bolts [173] to attach the bracket [181] to the combustion case [5].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(i) Install the two bolts [173] to attach bracket [202A] to fuel nozzle [1] (position 5).

(j) Install the two bolts [173] that attach the support bracket [181] to combustion case [5].

SIA ALL

(k) Do not tighten the fuel nozzle bolts at this time.

(l) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(m) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1](position 5) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(n) Tighten the bolts [173] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle bolts [173].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m)).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(o) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(p) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:
   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-219-G00

(2) Install the PS3 tube [164] as follows (View Y, Z, AA, and BB, Figure 406):

(a) Apply a layer of Tiodize T8E-H grease, D50355 [CP2961], on the threads of the fitting [165].

(b) Connect the PS3 tube [164] to the PS3 port fitting [165] on the combustion case [5].

(c) Connect the PS3 tube [164] to the PS3 sense line [172].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [167].

1) Install the bolt [167] that attaches the loop clamp [168] and PS3 tube [164] to the support bracket [166].

2) Tighten the bolt [167] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [169].

1) Install the bolt [169] that attaches the loop clamp [170] and PS3 tube [164] to the tube bracket [171].

2) Tighten the bolt [169] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(f) Tighten the PS3 tube [164] B-nuts at the sense line [172] and combustion case [5] as follows:

1) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the two B-nuts until you can turn them with your fingers.

3) Tighten the two B-nuts again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the two B-nuts for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nuts are fully seated.

6) If the B-nuts are not fully seated, do the above steps again to tighten the PS3 tube [164] B-nut(s).

7) Secure the PS3 tube [164] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-221-G00

(3) Install the PS3 tube [164] as follows (View Y, Z, AA, and BB, Figure 406):

(a) Apply a layer of Tiodize T8E-H grease, D50355 [CP2961], on the threads of the fitting [165].

(b) Connect the PS3 tube [164] to the PS3 port fitting [165] on the combustion case [5].

(c) Connect the PS3 tube [164] to the PS3 sense line [172].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [167].

1) Install the bolt [167] that attaches the loop clamp [168] and PS3 tube [164] to the support bracket [166].

2) Tighten the bolt [167] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [185].

1) Install the bolt [185] that attaches the loop clamp [186] and PS3 tube [164] to the support bracket [181].

2) Tighten the bolt [185] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(f) Tighten the PS3 tube [164] B-nuts at the sense line [172] and combustion case [5] as follows:

1) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the two B-nuts until you can turn them with your fingers.

3) Tighten the two B-nuts again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the two B-nuts for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nuts are fully seated.

6) If the B-nuts are not fully seated, do the above steps again to tighten the PS3 tube [164] B-nut(s).

7) Secure the PS3 tube [164] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-420-220-G00

(4) Install the PS3 tube [164] as follows (View Y, Z, AA, and BB, Figure 406):

(a) Apply a layer of Tiodize T8E-H grease, D50355 [CP2961], on the threads of the fitting [165].

(b) Connect the PS3 tube [164] to the PS3 port fitting [165] on the combustion case [5].

(c) Connect the PS3 tube [164] to the PS3 sense line [172].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [639].

1) Install the bolt [639] that attaches the loop clamp [640] and PS3 tube [164] to the support bracket [641].

2) Tighten the bolt [639] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [636].

1) Install the bolt [636] that attaches the loop clamp [637] and PS3 tube [164] to the support bracket [638].

2) Tighten the bolt [636] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(f) Apply oil, D00599 [CP2442], on the threads of the bolt [642].

1) Install the bolt [642] that attaches the loop clamp [643] and PS3 tube [164] to the tube bracket [171].

2) Tighten the bolt [642] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(g) Tighten the PS3 tube [164] B-nuts at the sense line [172] and combustion case [5] as follows:

1) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the two B-nuts until you can turn them with your fingers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 (Continued)

3) Tighten the two B-nuts again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
4) Tighten the two B-nuts for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
5) Make sure that the B-nuts are fully seated.
6) If the B-nuts are not fully seated, do the above steps again to tighten the PS3 tube [164] B-nut(s).
7) Secure the PS3 tube [164] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SIA ALL

SUBTASK 73-11-05-420-222-G00

(5) Install the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], two bolts [97], and four bolts [99].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], and four bolts [99].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(c) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [632], and four bolts [99].

SIA ALL

(d) Apply a layer of stick wax, G51435 [CP2635], to the seal ring [92] and seal ring [100] to hold them during installation.

(e) Install the new seal ring [92] at the aft end of the 7th-stage air tube [90] on the HPT case [94].

(f) Install the new seal ring [100] at the forward end of the 7th-stage air tube [90] on the HPC extension case [101].

(g) Put the 7th-stage air tube [90] in position between the 7th-stage air tube bracket [96] and HPT case [94].

1) Install the bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(h) Install the four bolts [99] that attach the forward end of the 7th-stage air tube [90] to the HPC extension case [101].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(i) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

(j) Install the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(k) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(l) Install the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(m) Tighten the bolts [91] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(n) Tighten the bolts [99] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(o) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(p) Tighten the bolts [97] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(q) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(r) Tighten the bolts [632] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

(s) Apply a layer of oil, D00599 [CP2442], on the threads of the bolt [87].

(t) Install the bolt [87] that attaches the air tube [89] to the bracket [93].

(u) Tighten the bolt [87] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-223-G00

(6) Install the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

(a) Install and align the CCC air manifold [120] in the rubber bellows [161] and flexible duct [162].

(b) Tighten the hose clamps [163] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(c) Tighten the hose clamp [180] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [159].

(e) Install the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(f) Tighten the bolt [159] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [156].

(h) Install the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(i) Tighten the bolt [156] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [153].

(k) Install the two bolts [153] that attach the strap clamp [154] to the bracket [155].

(l) Tighten the bolts [153] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(m) Apply oil, D00599 [CP2442], on the threads of the bolt [152].

(n) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(o) Tighten the bolt [152] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-224-G00

(7) Install the CCC air manifold [120] as follows (View R, S, T, U, V, W, DD, and X, Figure 406):

(a) Install and align the CCC air manifold [120] in the rubber bellows [161] and flexible duct [162].

(b) Install the bolt [189] that attaches the bracket [155] to the fuel nozzle [1] (position 6) (View C, Figure 407).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(c) Apply oil, D00599 [CP2442], on the threads of the bolts [209].

(d) Install the two bolts [209] that attach the CCC air manifold [120] to the CCC duct support bracket [210].

(e) Tighten the bolts [209] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(f) Tighten the hose clamp [163] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

(g) Tighten the hose clamp [180] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the bolt [159].

(i) Install the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(j) Tighten the bolt [159] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the bolt [156].

(l) Install the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(m) Tighten the bolt [156] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the bolts [153].

(o) Install the bolts [153] that attaches the strap clamp [154] to the bracket [155].

(p) Tighten the bolts [153] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the bolt [152].

(r) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(s) Tighten the bolt [152] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

SUBTASK 73-11-05-420-225-G00

(8) Do these steps to install the bracket [202] (View C, Figure 406):

(a) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the one bolt [189].

NOTE: You can use oil, D00599 [CP2442], as an alternative.

(b) Install the bolt bolt [189] to attach the bracket [202] fuel nozzle (position 6).

(c) Tighten the bolt [189] to 87 in-lb (9.83 N·m) - 103 in-lb (11.64 N·m).

(d) If Tiodize T8E-H grease, D50355 [CP2961], is used as a lubricant, final tighten the bolt [189] to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

(e) If oil, D00599 [CP2442], is used as a lubricant, final tighten the bolt [189] to 189 in-lb (21.35 N·m) - 221 in-lb (24.97 N·m).

(f) Apply a layer of oil, D00599 [CP2442], on the threads of the bolts [131A].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217 (Continued)

(g) Attach the bracket [202] to bracket [202A] with the two bolts [131A].

(h) Tighten the bolts [131A] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-226-G00

(9) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(f) Install the four bolts [145] that attach the hinged loop clamp [146] to the tube bracket [147] and tube bracket [148].

(g) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(l) Install the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [137].

(o) Install the two bolts [137] that attach the strap clamp [136] and SBV TBV manifold [125] to the support bracket [139].

(p) Tighten the bolts [137] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [134].

(r) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Tighten the bolts [134] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(t) Connect the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(u) Connect the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(w) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(x) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(z) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(aa) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(ac) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(ad) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-227-G00

(10) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(g) Install the four bolts [145] that attach the hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

(k) Install the two bolts [140] that attach the hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(l) Install the bolt [140A] that attaches the hinged loop clamps [141] to the fuel manifold bracket [142].

(m) Apply oil, D00599 [CP2442] on the threads of the two bolts [137].

(n) Install the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(p) Install the two bolts [134] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(q) Install the two bolts [134A] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(s) Install the two bolts [131] that attach the loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(t) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(u) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(w) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(x) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(y) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(z) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(aa) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ac) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ad) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ae) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ag) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ah) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(aj) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-420-228-G00

(11) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [145].

(g) Install the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(i) Install the bolt [179] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(k) Install the two bolts [140] that attach the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(l) Install the bolt [140] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Apply oil, D00599 [CP2442], on the threads of the three bolts [137] and bolt [137A].

(n) Install the three bolts [137] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(o) Install the bolt [137A] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(q) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Install the two bolts [134A] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(t) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(u) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(w) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(x) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(z) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(aa) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ab) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ac) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(ad) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ae) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ag) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ah) Tighten the bolts [137A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(aj) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ak) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(al) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(am) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

SUBTASK 73-11-05-420-229-G00

(12) Connect the HJ8A harness [118] as follows (View E, F, and G, Figure 406):

(a) Install the HJ8A harness [118] in the push clamp [178] on the CCC air manifold [120].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Apply oil, D00599 [CP2442], on the threads of the bolt [121].

(c) Install the bolt [121] that attaches the loop clamp [122] to the CCC air manifold [120].

(d) Tighten the bolt [121] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [119].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Install the bolt [119] that attaches the HJ8A harness [118] wye to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(g) Install the bolt [119] that attaches the HJ8A harness [118] wye to the bracket [202].

SIA ALL

(h) Tighten the bolt [119] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) Connect the electrical connector [116] and electrical connector [117] of the HJ8A harness [118] to the TBV valve [123] and SBV valve [124] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-05-420-230-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(13) Install the engine mix manifold duct assembly (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-231-G00

(14) Install the Pressure Regulating and Shutoff Valve (PRSOV) (TASK 36-11-04-400-801).

N. Fuel Nozzle Installation (Position 6)

SUBTASK 73-11-05-420-232-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 6) as follows (View C and D, Figure 407):

(a) Install the fuel nozzle [1] (position 6) with the new seal [195] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Turn the fuel nozzle [1] (position 6) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [195] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 6) aft to engage the fuel nozzle [1] (position 6) tip in the combustor radial mixer (cup).

(d) Align the seal [195] and fuel nozzle [1] (position 6) bolt holes to the combustion case [5].

(e) Install the two bolts [193] that attach the bracket [194] and fuel nozzle [1] (position 6) to the combustion case [5].

(f) Install the bolt [189] that attaches the bracket [155] or bracket [202] and fuel nozzle [1] (position 6) to the combustion case [5].

(g) Install the remaining bolt [193] that attaches the fuel nozzle [1] (position 6) to the combustion case [5].

(h) Install the bolt [153] that attaches the strap clamp [154] and bracket [155] to the bracket [192].

(i) Do not tighten the fuel nozzle bolts at this time.

(j) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] fittings.

(k) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 6) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(l) Tighten the bolts [193] and bolt [189] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle bolts [193] and bolt [189].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(m) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(n) Tighten the bolt [153] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(o) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with the safety cable, cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

(p) Apply oil, D00599 [CP2442], on the threads of the bolts [201].

(q) Install the two bolts [201] that attach the two loop clamps [199], fuel manifold [198], and fuel manifold [196] to the bracket [194].

(r) Tighten the bolts [201] to 32 in-lb (3.62 N·m) - 36 in-lb (4.07 N·m).

SUBTASK 73-11-05-420-233-G00

(2) Install the 7th-stage air tube [90] as follows (View C, D, and E, Figure 405):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], two bolts [97], and four bolts [99].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [95], and four bolts [99].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(c) Apply oil, D00599 [CP2442], on the threads of the four bolts [91], two bolts [632], and four bolts [99].

SIA ALL

(d) Apply a layer of stick wax, G51435 [CP2635], to the seal ring [92] and seal ring [100] to hold them during installation.

(e) Install the new seal ring [92] at the aft end of the 7th-stage air tube [90] on the HPT case [94].

(f) Install the new seal ring [100] at the forward end of the 7th-stage air tube [90] on the HPC extension case [101].

(g) Put the 7th-stage air tube [90] in position between the 7th-stage air tube bracket [96] and HPT case [94].

1) Install the bolts [91] that attach the bracket [93] and 7th-stage air tube [90] to the HPT case [94].

(h) Install the four bolts [99] that attach the forward end of the 7th-stage air tube [90] to the HPC extension case [101].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(i) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

(j) Install the two bolts [97] that attach the 7th-stage air tube [90] to the bracket [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(k) Install the two bolts [95] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(l) Install the two bolts [632] and strap clamp [633] that attach the 7th-stage air tube [90] to the 7th-stage air tube bracket [96].

SIA ALL

(m) Tighten the bolts [91] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(n) Tighten the bolts [99] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(o) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(p) Tighten the bolts [97] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(q) Tighten the bolts [95] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(r) Tighten the bolts [632] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

(s) Apply a layer of oil, D00599 [CP2442], on the threads of the bolt [87].

(t) Install the bolt [87] that attaches the air tube [89] to the bracket [93].

(u) Tighten the bolt [87] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-234-G00

(3) Install the CCC air manifold [120] as follows (View R, S, T, U, V, W, and X, Figure 406):

(a) Install and align the CCC air manifold [120] in the rubber bellows [161] and flexible duct [162].

(b) Tighten the hose clamps [163] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(c) Tighten the hose clamp [180] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [159].

(e) Install the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(f) Tighten the bolt [159] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [156].

(h) Install the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(i) Tighten the bolt [156] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [153].

(k) Install the two bolts [153] that attach the strap clamp [154] to the bracket [155].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(l) Tighten the bolts [153] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(m) Apply oil, D00599 [CP2442], on the threads of the bolt [152].

(n) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(o) Tighten the bolt [152] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-235-G00

(4) Install the CCC air manifold [120] as follows (View R, S, T, U, V, W, DD, and X, Figure 406):

(a) Install and align the CCC air manifold [120] in the rubber bellows [161] and flexible duct [162].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [209].

(c) Install the two bolts [209] that attach the CCC air manifold [120] to the CCC duct support bracket [210].

(d) Tighten the bolts [209] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Tighten the hose clamp [163] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Tighten the hose clamp [180] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [159].

(h) Install the bolt [159] that attaches the CCC air manifold [120] to the support bracket [160].

(i) Tighten the bolt [159] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the bolt [156].

(k) Install the bolt [156] that attaches the loop clamp [157] to the support bracket [158].

(l) Tighten the bolt [156] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(m) Apply oil, D00599 [CP2442], on the threads of the bolts [153].

(n) Install the bolts [153] that attaches the strap clamp [154] to the bracket [155].

(o) Tighten the bolts [153] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(p) Apply oil, D00599 [CP2442], on the threads of the bolt [152].

(q) Install the bolt [152] that attaches the CCC air manifold [120] to the bracket [98].

(r) Tighten the bolt [152] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

SUBTASK 73-11-05-420-236-G00

(5) Do these steps to install the bracket [202A] (View C, Figure 407):

(a) Apply oil, D00599 [CP2442], on the threads of the one bolt [134A].

(b) Attach the bracket [202] to the bracket [202A] with two bolts [131A].

(c) Tighten the bracket [202A] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-237-G00

(6) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(f) Install the four bolts [145] that attach the hinged loop clamp [146] to the tube bracket [147] and tube bracket [148].

(g) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(l) Install the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [137].

(o) Install the two bolts [137] that attach the strap clamp [136] and SBV TBV manifold [125] to the support bracket [139].

(p) Tighten the bolts [137] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [134].

(r) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Tighten the bolts [134] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(t) Connect the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(u) Connect the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(w) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(x) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(z) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(aa) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(ac) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(ad) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-238-G00

(7) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(g) Install the four bolts [145] that attach the hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

(k) Install the two bolts [140] that attach the hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(l) Install the bolt [140A] that attaches the hinged loop clamps [141] to the fuel manifold bracket [142].

(m) Apply oil, D00599 [CP2442] on the threads of the two bolts [137].

(n) Install the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(p) Install the two bolts [134] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(q) Install the two bolts [134A] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(s) Install the two bolts [131] that attach the loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(t) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(u) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(w) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(x) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(y) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
b) Loosen the B-nut until you can turn it with your fingers.
c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
b) Loosen the B-nut until you can turn it with your fingers.
c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(z) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).
(aa) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ab) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ac) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ad) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ae) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(af) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ag) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ah) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ai) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(aj) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-420-239-G00

(8) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):
(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].
(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].
(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].
(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.
(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.
(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [145].
(g) Install the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].
(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].
(i) Install the bolt [179] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142].
(j) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(k) Install the two bolts [140] that attach the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(l) Install the bolt [140] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Apply oil, D00599 [CP2442], on the threads of the three bolts [137] and bolt [137A].

(n) Install the three bolts [137] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(o) Install the bolt [137A] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(q) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Install the two bolts [134A] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(t) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(u) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(w) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(x) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(z) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(aa) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ab) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:
1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ac) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(ad) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ae) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ag) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ah) Tighten the bolts [137A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(aj) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ak) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(al) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(am) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

SUBTASK 73-11-05-420-240-G00

(9) Connect the HJ8A harness [118] as follows (View E, F, and G, Figure 406):
   (a) Install the HJ8A harness [118] in the push clamp [178] on the CCC air manifold [120].
   (b) Apply oil, D00599 [CP2442], on the threads of the bolt [121].
   (c) Install the bolt [121] that attaches the loop clamp [122] to the CCC air manifold [120].
   (d) Tighten the bolt [121] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [119].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Install the bolt [119] that attaches the HJ8A harness [118] wye to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(g) Install thebolt [119] that attaches the HJ8A harness [118] wye to the bracket [202].

SIA ALL

(h) Tighten the bolt [119] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) Connect the electrical connector [116] and electrical connector [117] of the HJ8A harness [118] to the TBV valve [123] and SBV valve [124] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-05-420-241-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(10) Install the engine mix manifold duct assembly (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-242-G00

(11) Install the High Pressure Regulating and Shutoff Valve (PRSOV) (TASK 36-11-07-400-801).

O. Fuel Nozzle Installation (Position 7)

SUBTASK 73-11-05-420-243-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 7) as follows (View C, Figure 408):

(a) Install the fuel nozzle [1] (position 7) with the new seal [221] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 7) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [221] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 7) aft to engage the fuel nozzle [1] (position 7) tip in the combustor radial mixer (cup).

(d) Align the seal [221] and fuel nozzle [1] (position 7) bolt holes to the combustion case [5].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Install the support bracket [214] on the fuel nozzle [1] (position 7).

(f) Install the two bolts [383] that attach the support bracket [214] and fuel nozzle [1] (position 7) to the combustion case [5].

(g) Install the two bolts [213] that attach the support bracket [215] and fuel nozzle [1] (position 7) to the combustion case [5].

(h) Do not tighten the fuel nozzle bolts at this time.

(i) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(j) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 7) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(k) Tighten the bolts [213] and bolts [383] as follows (Figure 408):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the threads of the fuel nozzle the bolts [213] and bolt [383].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(l) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(m) Apply oil, D00599 [CP2442], on the threads of the bolt [218].

(n) Install the bolt [218] that attaches the support bracket [215] to the bracket [203].

(o) Tighten the bolt [218] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [220].

(q) Install the two bolts [220] that attach the start bleed bracket [219] to the combustion case [5].

(r) Install the two bolts [384] that attach the bracket [385] to the support bracket [214].

(s) Tighten the bolts [384] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(t) Tighten the bolts [220] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(u) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

(v) Apply oil, D00599 [CP2442], on the threads of the bolts [217].

(w) Install the two bolts [217] that attach the two loop clamp [216] to the support bracket [215].

(x) Tighten the bolts [217] to 32 in-lb (3.62 N·m) - 36 in-lb (4.07 N·m).

SUBTASK 73-11-05-420-244-G00

(2) Install the start bleed tube [224] as follows (View F, Figure 408):

(a) Apply oil, D00599 [CP2442], on the threads of the bolts [223] and bolts [225].

(b) Apply a layer of stick wax, G51435 [CP2635], to the new seal [226] to hold it during installation.

(c) Install the new seal [226] on the start bleed tube [224] or on the HPC extension case [101].

(d) Install the new seal [222] and coupling clamp [227] that attach the start bleed tube [224] to the SBV valve [124].

(e) Tighten the coupling clamp [227] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0134

(f) Install the two bolts [223] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0134

(g) Install the two bolts [223] and start bleed clamp [610] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL

(h) Tighten the bolts [223] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(i) Install the four bolts [225] that attach the start bleed tube [224] to the HPC extension case [101].

(j) Tighten the bolts [225] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-245-G00

(3) Connect the HJ8A harness [118] as follows (View E, F, and G, Figure 406):

(a) Install the HJ8A harness [118] in the push clamp [178] on the CCC air manifold [120].

(b) Apply oil, D00599 [CP2442], on the threads of the bolt [121].

(c) Install the bolt [121] that attaches the loop clamp [122] to the CCC air manifold [120].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Tighten the bolt [121] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the bolt [119].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Install the bolt [119] that attaches the HJ8A harness [118] wye to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(g) Install thebolt [119] that attaches the HJ8A harness [118] wye to the bracket [202].

SIA ALL

(h) Tighten the bolt [119] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) Connect the electrical connector [116] and electrical connector [117] of the HJ8A harness [118] to the TBV valve [123] and SBV valve [124] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-05-420-246-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Install the engine lower CDP duct assembly (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-247-G00

(5) Install the Pressure Regulating and Shutoff Valve (PRSOV) (TASK 36-11-04-400-801).

P. Fuel Nozzle Installation (Position 8)

SUBTASK 73-11-05-420-248-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 8) as follows (View C, Figure 409):

(a) Install the fuel nozzle [1] (position 8) with the new seal [3] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 8) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [3] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 8) aft to engage the fuel nozzle [1] (position 8) tip in the combustor radial mixer (cup).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Align the seal [3] and fuel nozzle [1] (position 8) bolt holes to the combustion case [5].

(e) Do not tighten the fuel nozzle bolts at this time.

(f) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(g) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 8) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(h) Tighten the bolts [2] as follows (Figure 409):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [2].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(i) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(j) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-249-G00

(2) Install the ECS middle flange [262] as follows (View E, Figure 409):

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [260].

(b) Put the metal ring seal [261] in position on the ECS middle flange [262].

(c) Put the ECS middle flange [262] in position on the combustion case [5].

(d) Install the four bolts [260] that attach the ECS middle flange [262] to the combustion case [5].

(e) Tighten the bolts [260] to 225 in-lb (25.42 N·m) - 265 in-lb (29.94 N·m).

(f) Connect the sense lines manifold [277] B-nut to the ECS middle flange [262].

(g) Triple tighten the sense lines manifold [277] B-nut as follows:

1) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut until it turns freely.

3) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Secure the sense lines manifold [277] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-250-G00

(3) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(f) Install the four bolts [145] that attach the hinged loop clamp [146] to the tube bracket [147] and tube bracket [148].

(g) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(l) Install the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [137].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(o) Install the two bolts [137] that attach the strap clamp [136] and SBV TBV manifold [125] to the support bracket [139].

(p) Tighten the bolts [137] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [134].

(r) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Tighten the bolts [134] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(t) Connect the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(u) Connect the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(w) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(x) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(z) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(aa) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(ac) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(ad) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-251-G00

(4) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(g) Install the four bolts [145] that attach the hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach thefuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

(k) Install the two bolts [140] that attach the hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(l) Install the bolt [140A] that attaches the hinged loop clamps [141] to the fuel manifold bracket [142].

(m) Apply oil, D00599 [CP2442] on the threads of the two bolts [137].

(n) Install the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(p) Install the two bolts [134] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(q) Install the two bolts [134A] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(s) Install the two bolts [131] that attach the loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(t) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(u) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(w) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(x) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(y) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(z) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(aa) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ac) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ad) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ae) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ag) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(ah) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(aj) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-420-252-G00

(5) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [145].

(g) Install the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the bolt [179] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(k) Install the two bolts [140] that attach the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(l) Install the bolt [140] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Apply oil, D00599 [CP2442], on the threads of the three bolts [137] and bolt [137A].

(n) Install the three bolts [137] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(o) Install the bolt [137A] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(q) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Install the two bolts [134A] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(t) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(u) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the bracket [202].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(w) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(x) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(z) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(aa) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ab) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ac) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(ad) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ae) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ag) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ah) Tighten the bolts [137A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(aj) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ak) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(al) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(am) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

SUBTASK 73-11-05-420-253-G00

(6) Install the start bleed bracket [219] as follows (View C, Figure 408):

(a) Apply oil, D00599 [CP2442], on the threads of the two bolts [220].

(b) Install the two bolts [220] that attach the start bleed bracket [219] to the combustion case [5].

(c) Tighten the two bolts [220] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-254-G00

(7) Install the start bleed tube [224] as follows (View F, Figure 408):

(a) Apply oil, D00599 [CP2442], on the threads of the bolts [223] and bolts [225].

(b) Apply a layer of stick wax, G51435 [CP2635], to the new seal [226] to hold it during installation.

(c) Install the new seal [226] on the start bleed tube [224] or on the HPC extension case [101].

(d) Install the seal [222] and coupling clamp [227] that attach the start bleed tube [224] to the SBV valve [124].

(e) Tighten the coupling clamp [227] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0134

(f) Install the two bolts [223] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0134

(g) Install the two bolts [223] and start bleed clamp [610] that attach the start bleed tube [224] to the start bleed bracket [219].

SIA ALL

(h) Tighten the bolts [223] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(i) Install the four bolts [225] that attach the start bleed tube [224] to the HPC extension case [101].

(j) Tighten the bolts [225] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-255-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(8) Install the engine lower CDP duct assembly (TASK 36-11-01-400-801).

Q. Fuel Nozzle Installation (Position 9)

SUBTASK 73-11-05-420-256-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 9) as follows (View C, Figure 410):

(a) Install the fuel nozzle [1] (position 9) with the new seal [3] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 9) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [3] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 9) aft to engage the fuel nozzle [1] (position 9) tip in the combustor radial mixer (cup).

(d) Align the seal [3] and fuel nozzle [1] (position 9) bolt holes to the combustion case [5].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(e) Install the four bolts [2] that attach the fuel nozzle [1] (position 9) to the combustion case [5].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(f) Put the bracket [650] in position on the fuel nozzle [1] (position 9) and align with the bolt holes.

(g) Install the four bolts [2] that attach the fuel nozzle [1] (position 9) and bracket [650] to the combustion case [5].

SIA ALL

(h) Do not tighten the fuel nozzle bolts at this time.

(i) Install the fuel manifold [376] and fuel manifold [377] to the fuel nozzle [1] (positions 7, 8, and 10) (View G, Figure 410).

1) Apply oil, D00599 [CP2442], on the threads of the four bolts [373].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Install the two bolts [373] to the two loop clamps [374] that attach the fuel manifold [377] to the bracket [396].

3) Install the two bolts [373] to the two loop clamps [374] that attach the fuel manifold [376] to the bracket [396].

4) Hand tighten the fuel manifold [376] B-nuts to the fuel nozzle [1] (positions 7, 8, and 10).

5) Hand tighten the fuel manifold [377] B-nuts to the fuel nozzle [1] (positions 7, 8, and 10).

6) Hand tighten the B-nuts [395] that connect the fuel hose [376A] to fuel manifold [376] and fuel manifold [377] to fuel manifold [377A].

7) Tighten the bolts [373] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(j) Hand tighten the fuel manifold [376] and fuel manifold [377] B-nuts to the fuel nozzle [1] (position 9) pilot-primary and pilot-secondary fittings.

(k) Tighten the bolts [2] as follows (Figure 410):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [2].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(l) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(m) Tighten the fuel manifold B-nuts [4] at all four fuel nozzle [1] positions 7, 8, 9, and 10 to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:
   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

(n) For the B-nuts [395] (fuel hose [376A] to fuel manifold [376] and fuel manifold [377] to fuel manifold [377A]) triple tighten and safety install cabling.

SUBTASK 73-11-05-420-257-G00

(2) Install the 4th stage air manifold [419] as follows (View E, X, Y, and Z, Figure 413):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(a) Apply oil, D00599 [CP2442], on the threads of the six bolts [414].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [414] and two bolts [615A].

SIA ALL

(c) Install the new seal [423] between the 4th stage air manifold [419] and air adapter [426].

(d) Install the new seal [415] between the 4th stage air manifold [419] and compressor case [65].

(e) Install the four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

(f) Tighten the bolts [414] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(g) Install the two bolts [420] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

1) Tighten the bolts [420] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(h) Install the two bolts [615A] and strap clamp [616A] that attach the 4th stage air manifold [419] to the bracket [617A].

1) Tighten the bolts [615A] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

(i) Install the coupling clamp [422] to the 4th stage air manifold [419] to the air adapter [426].

1) Tighten the coupling clamp [422] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(j) Connect the LPT air supply tube [424] and B-nut [425] to the 4th stage air manifold [419].

1) Tighten the B-nut [425] to 79 ft-lb (107.1 N·m) - 91 ft-lb (123.4 N·m).

SUBTASK 73-11-05-420-258-G00

(3) Install the bifurcation drain manifold [265] as follows (View D, E, F, and R, Figure 410):

WARNING THE OIL SUPPLY MANIFOLD IS HEAVY AND AWKWARD AND MUST BE SUPPORTED AND SECURED PRIOR TO REMOVAL OR INSTALLATION TO HELP PREVENT INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Apply oil, D00599 [CP2442], on the threads of all loop clamp and strap clamp bolts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(b) Connect the bifurcation drain manifold [265] at four locations in the TCF/HPT area [304] and B-nuts at the FWD end of the manifold.

(c) Connect the B-nut [303] on the ACC valve drain tube [291] to the bifurcation drain manifold [265].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(d) Connect the drain tube [652], drain tube [653], drain tube [654], drain tube [655], drain tube [656], drain tube [657], drain tube [658], and drain tube [659] to the bifurcation drain manifold [265].

(e) Connect the drain tube [652], drain tube [653], drain tube [655] to the auxiliary drain oil tube [305], C drain oli tube [306], and B drain oil tube [307].

SIA ALL

(f) Do not tighten at this time.

(g) Support and secure the bifurcation drain manifold [265] in place.

(h) Install the two bolts [297] that attach the two loop clamps [298] to the sense line bracket [397].

(i) Tighten the bolts [297] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(j) Install the two bolts [266] that attach the strap clamp [267] and bifurcation drain manifold [265] to the support bracket [268].

(k) Tighten the bolts [266] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(l) Apply a layer of oil, D00599 [CP2442], on the threads of the bolt [309] and bolt [481].

(m) Install the bolt [309] that attaches the drain manifold to the bracket [308].

(n) Install the bolt [481] that attaches the clamp [482] to the bifurcation drain manifold [265].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(o) Install the two bolts [266] that attach the block clamp [651], drain tube [652], drain tube [653], drain tube [654], and drain tube [655] to the support bracket [268].

(p) Tighten the bolts [266] to 50 in-lb (5.65 N·m) - 60 in-lb (6.78 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(q) Tighten the drain manifold to the B drain oil tube [307] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(r) Tighten the drain manifold to the C drain oli tube [306] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(s) Tighten the drain manifold to the auxiliary drain oil tube [305] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(t) Tighten the bifurcation drain manifold [265] B-nut that connects to the VBV RHS drain manifold [449] to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

(u) Tighten the No.3 bearing drain tube [479] B-nut that connects to the bifurcation drain manifold [265] to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

(v) Tighten the VBV LHS drain tube [480] B-nut that connects to the bifurcation drain manifold [265] to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135 (Continued)

(w) Tighten the ACC valve drain tube [291] and B-nut [303] that connects to the bifurcation drain manifold [265] to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

(x) Tighten the bolt [309] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(y) Tighten the bolt [481] to 32 in-lb (3.6 N·m) - 38 in-lb (4.3 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(z) Tighten the drain tube [653] B-nut that connects to the auxiliary drain oil tube [305] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(aa) Tighten the C drain oli tube [306] B-nut that connects drain tube [652] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(ab) Tighten the B drain oil tube [307] B-nut that connects to drain tube [655] to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

SIA ALL

(ac) Tighten the B-nut at the anti-ice drain tube [269] to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-420-259-G00

(4) Install the oil tube [661] as follows (View A, S, T, U, V, W, and X, Figure 410):

(a) Put the oil tube [661] onto the core module between the TCF and HPC forward case.

(b) Connect the oil tube [661] to the oil tube [666].

1) Tighten the coupling nut with your hands.

(c) Connect the oil tube [661] to the oil tube [678].

1) Tighten the coupling nut with your hands.

(d) Apply oil, D00599 [CP2442], on the threads and pressure faces of the bolts [668].

NOTE: The bolts [668] must not be tighten at this time. You must tighten them with your hands.

(e) Install the bolt [672] and clamp [673] that attaches the oil tube [661] to the support bracket [671].

(f) Install the bolts [672] and clamps [673] that attach the oil tube [661] to the bracket [674].

(g) Install the bolt [672] and clamp [673] that attaches the oil tube [661] to the bracket [675].

(h) Install the bolt [672] and clamp [673] that attaches the oil tube [661] to the bracket [676].

(i) Triple-tighten the oil tube [661] coupling nut to the oil tube [666] as follows:

1) Tighten the coupling nut to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

2) Loosen each coupling nut until it turns freely.

3) Tighten the coupling nuts to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

4) Tighten the coupling nuts again to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(j) Install cable, G50065 [CP8006], or safety wire, G02345 [CP8001], to the oil tube [661] coupling nut.

(k) Triple-tighten the oil tube [678] coupling nuts to the oil tube [661] as follows:

1) Tighten the coupling nut to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 (Continued)

2) Loosen each coupling nut until it turns freely.

3) Tighten the coupling nuts to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

4) Tighten the coupling nuts again to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(l) Install cable, G50065 [CP8006], or safety wire, G02345 [CP8001], to the oil tube [661] coupling nuts.

(m) Tighten the bolts [672] to 35 in-lb (4 N·m).

SUBTASK 73-11-05-420-260-G00

(5) Install the oil tube [662] as follows (View A, S, T, U, V, W, X, and Y, Figure 410):

(a) Put the oil tube [662] onto the core module between the TCF and HPC forward case.

(b) Connect the oil tube [662] at its FWD end to the oil tube [664] and oil tube [663].

1) Tighten the coupling nut with your hands.

(c) Connect the oil tube [662] at the TCF area to the air adapter [426].

1) Tighten the coupling nut with your hands.

(d) Make sure that the oil tube [662] is not under strain.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

(e) Apply oil, D00599 [CP2442], to the threads and pressure faces of the bolts [668].

NOTE: The bolts [668] must not be tightened at this time. You must tighten them with your hands.

(f) Install the bolt [668] and clamp [669] that attaches the oil tube [662] to the support bracket [670].

(g) Install the bolt [668] and clamp [669] that attaches the oil tube [662] to the support bracket [671].

(h) Install the bolts [668] and clamps [669] that attach the oil tube [662] to the bracket [674].

(i) Install the bolt [668] and clamp [669] that attaches the oil tube [662] to the bracket [675].

(j) Install the bolt [668] and clamp [669] that attaches the oil tube [662] to the bracket [676].

(k) Install the bolt [668] and clamp [669] that attaches the oil tube [662] to the bracket [677].

(l) Triple-tighten the oil tube [662] coupling nut to the air adapter [426] as follows:

1) Tighten the coupling nut to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

2) Loosen each coupling nut until it turns freely.

3) Tighten the coupling nut to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

4) Tighten the coupling nut again to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

(m) Triple-tighten the oil tube [662] coupling nut that connects to the oil tube [664] as follows:

1) Tighten the coupling nut to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

2) Loosen each coupling nut until it turns freely.

3) Tighten the coupling nut to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

4) Tighten the coupling nut again to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 (Continued)

(n) Triple-tighten the B-nut on the oil tube [663] that connects to the oil tube [662] as follows:

1) Tighten the coupling nut to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).
2) Loosen each coupling nut until it turns freely.
3) Tighten the coupling nut to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).
4) Tighten the coupling nut again to 262 in-lb (29.6 N·m) - 308 in-lb (34.8 N·m).

(o) Install cable, G50065 [CP8006], or safety wire, G02345 [CP8001], to the oil tube [662] and oil tube [663] coupling nuts.

(p) Tighten the bolts [668] to 35 in-lb (4 N·m).

SIA ALL

SUBTASK 73-11-05-420-261-G00

(6) Connect the ignition leads [296] as follows (View F, Figure 410):

(a) Apply oil, D00599 [CP2442], on the threads of the bolts [297].

(b) Install the two bolts [297] that attaches the two loop clamps [298] to the sense lines manifold [277].

(c) Tighten the bolts [297] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(d) Install the igniter cooling shroud halves and left ignition lead on the igniter (TASK 74-21-02-400-801-G00).

(e) Install the igniter cooling shroud halves and right ignition lead on the igniter (TASK 74-21-02-400-802-G00).

SUBTASK 73-11-05-420-262-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Install the engine lower CDP duct assembly (TASK 36-11-01-400-801).

R. Fuel Nozzle Installation (Position 10)

SUBTASK 73-11-05-420-263-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 10) as follows (View C, Figure 411):

(a) Install the fuel nozzle [1] (position 10) with the new seal [378] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 10) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [378] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 10) aft to engage the fuel nozzle [1] (position 10) tip in the combustor radial mixer (cup).

(d) Align the seal [378] and fuel nozzle [1] (position 10) bolt holes to the combustion case [5].

(e) Install the support bracket [367], support bracket [368], and support bracket [372] in position on the fuel nozzle [1] (position 10).

(f) Install the four bolts [366] that attach the fuel nozzle [1] (position 10), support bracket [367], support bracket [368], and support bracket [372] to the combustion case [5].

(g) Do not tighten the fuel nozzle bolts at this time.

(h) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(i) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 10) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(j) Tighten the bolts [366] as follows (Figure 411):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [366].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(k) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(l) Attach the loop clamp [370] to the support bracket [367] and support bracket [368] with the three bolts [369].

(m) Tighten the bolts [369] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Attach the two loop clamps [374] to the support bracket [372] with the two bolt [373].

(o) Tighten the bolt [373] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(p) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the two B-nuts [4] until you can turn them with your fingers.

c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-264-G00

(2) Install the fuel manifold bracket [142] as follows (View N, Figure 406):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(a) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(b) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(c) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(d) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(e) Install the three bolts [140] that attach the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143] with the hinged loop clamps [141].

(f) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(g) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(h) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(i) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(k) Install the bolts [140] that attach theSBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144] with the two hinged loop clamps [141].

1) Tighten the bolts [140] with your hands.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

(l) Install the bolt [140A] that attaches the SBV TBV manifold [125] to the fuel manifold bracket [142] with a hinged loop clamp [141].

1) Tighten the bolt [140A] with your hands.

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(o) Apply oil, D00599 [CP2442], on the threads of the bolts [179].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(p) Install the bolt [140] that attaches the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143] with a hinged loop clamps [141].

1) Tighten the bolt [140] with your hands.

(q) Install the two bolts [140] that attach the SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144] with the two hinged loop clamps [141].

1) Tighten the bolts [140] with your hands.

(r) Tighten the bolt [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(s) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

SUBTASK 73-11-05-420-265-G00

(3) Install the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Connect the LPT ACC valve tube [364] and B-nut [365] to the HPT ACC valve drain tube [352].

(b) Connect the HPT ACC valve drain tube [352] and B-nut [361] to the drain tube [436].

(c) Connect the HPT ACC valve drain tube [352] and B-nut [380] to the ACC valve [379].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [359].

(e) Install the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142], fuel manifold bracket [143], and fuel manifold bracket [144].

(f) Tighten the bolt [359] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [362].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(h) Install the bolt [362] that attaches the loop clamp [363] to the tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(i) Install the bolt [362] that attaches loop clamp [363] to the tube bracket [147].

SIA ALL

(j) Tighten thebolt [362] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the bolt [356].

(l) Install the bolt [356] that attach the loop clamp [357] and HPT ACC valve drain tube [352] to the ACC drain tube [358].

(m) Tighten the bolt [356] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the bolt [353].

(o) Install the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(p) Tighten the bolt [353] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(q) Tighten the B-nut [361], B-nut [380], and B-nut [365] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-420-266-G00

(4) Install the 7-th stage air tube [310] as follows (View E, F, G, and H, Figure 411):

(a) Apply a layer of stick wax, G51435 [CP2635], to the seal [312] and seal [317] to hold them during installation.

(b) Install the new seal [312] on the 7-th stage air tube [310] or on the compressor case [65].

(c) Install the new seal [317] on the 7-th stage air tube [310] or on the HPT port [318].

(d) Apply oil, D00599 [CP2442], on the threads of the four bolts [311].

(e) Install the four bolts [311] that attach the 7-th stage air tube [310] to the compressor case [65].

(f) Tighten the bolts [311] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the four bolts [316].

(h) Install the four bolts [316] that attach the 7-th stage air tube [310] to the HPT port [318].

(i) Tighten the bolts [316] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the four bolts [315].

(k) Install the four bolts [315] that attach the 7-th stage air tube [310] to the support support bracket [313] and support bracket [314].

(l) Tighten the bolts [315] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

SUBTASK 73-11-05-420-267-G00

(5) Install the 7-th stage air tube [310] as follows (View E, F, G, and H, Figure 411):

(a) Apply a layer of stick wax, G51435 [CP2635], to the new seal [312], and new seal [317] to hold them during installation.

(b) Install the new seal [312] on the 7-th stage air tube [310] or on the compressor case [65].

(c) Install the new seal [317] on the 7-th stage air tube [310] or on the HPT port [318].

(d) Apply oil, D00599 [CP2442], on the threads of the four bolts [311].

(e) Install the four bolts [311] that attach the 7-th stage air tube [310] to the compressor case [65].

(f) Tighten the bolts [311] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the four bolts [316].

(h) Install the four bolts [316] that attach the 7-th stage air tube [310] to the HPT port [318].

(i) Tighten the bolts [316] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [614] and two bolts [615].

(k) Install the two bolts [614] that attach the bracket [613] to the support bracket [313].

(l) Install the two bolts [615] and strap clamp [616] that attach the 7-th stage air tube [310] to the bracket [617].

(m) Install the two bolts [611] that attach the block clamp [612] to the bracket [613].

(n) Tighten the bolts [614] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 (Continued)

(o) Tighten the bolts [615] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(p) Tighten the bolts [611] to 50.6 in-lb (5.72 N·m) - 59.4 in-lb (6.71 N·m).

SIA ALL

SUBTASK 73-11-05-420-268-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Install the engine upper CDP duct assembly (TASK 36-11-01-400-801).

S. Fuel Nozzle Installation (Position 11)

SUBTASK 73-11-05-420-269-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 11) as follows (View C, Figure 412):

(a) Install the fuel nozzle [1] (position 11) with the new seal [392] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 11) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [392] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 11) aft to engage the fuel nozzle [1] (position 11) tip in the combustor radial mixer (cup).

(d) Align the seal [392] and fuel nozzle [1] (position 11) bolt holes to the combustion case [5].

(e) Install the fuel supply bracket [391] in position on the fuel nozzle [1] (position 11).

(f) Install the tube bracket [147] in position on the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 12).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [390A] and bolt [390].

(h) Install the tube tube bracket [147A] as follows:

1) Install the bolt [390] that attaches the tube bracket [147A] to the fuel nozzle [1] (position 12).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

2) Install the bolt [390A] that attaches the tube bracket [147A] to the tube bracket [147].

SIA ALL

(i) Apply oil, D00599 [CP2442], on the threads of the bolt [393].

(j) Align the fuel manifold bracket [394] to the fuel supply bracket [391] and install the bolt [393].

(k) Install the five bolts [390] that attach the fuel nozzle [1] (position 11), fuel nozzle [1] (position 12), fuel supply bracket [391] and tube bracket [147] to the combustion case [5].

(l) Do not tighten the fuel nozzle bolts at this time.

(m) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(n) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 11) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(o) Tighten the bolts [390] as follows (Figure 412):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [390A].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(p) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(q) Tighten the bolt [393] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(r) Tighten the bolt [390A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(s) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzleB-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzleB-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

(t) Apply oil, D00599 [CP2442], on the threads of the bolt [443] and bolt [444].

(u) Install the bolt [443] that attaches the loop clamp [442] and fuel manifold [440] to the fuel supply bracket [391].

(v) Tighten the bolt [443] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(w) Install the bolt [444] that attaches the loop clamp [441] and fuel manifold [439] to the fuel supply bracket [391].

(x) Tighten the bolt [444] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-270-G00

(2) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(f) Install the four bolts [145] that attach the hinged loop clamp [146] to the tube bracket [147] and tube bracket [148].

(g) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(l) Install the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [137].

(o) Install the two bolts [137] that attach the strap clamp [136] and SBV TBV manifold [125] to the support bracket [139].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(p) Tighten the bolts [137] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [134].

(r) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Tighten the bolts [134] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(t) Connect the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(u) Connect the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(w) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(x) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(z) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(aa) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(ab) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(ac) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(ad) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-271-G00

(3) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(g) Install the four bolts [145] that attach the hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach thefuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

(k) Install the two bolts [140] that attach the hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(l) Install the bolt [140A] that attaches the hinged loop clamps [141] to the fuel manifold bracket [142].

(m) Apply oil, D00599 [CP2442] on the threads of the two bolts [137].

(n) Install the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(p) Install the two bolts [134] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(q) Install the two bolts [134A] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(s) Install the two bolts [131] that attach the loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(t) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(u) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(w) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(x) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(y) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(z) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(aa) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ac) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ad) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ae) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ag) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ah) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(aj) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-420-272-G00

(4) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [145].

(g) Install the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the bolt [179] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(k) Install the two bolts [140] that attach the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(l) Install the bolt [140] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Apply oil, D00599 [CP2442], on the threads of the three bolts [137] and bolt [137A].

(n) Install the three bolts [137] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(o) Install the bolt [137A] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(q) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Install the two bolts [134A] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(t) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(u) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(w) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(x) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(z) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(aa) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ab) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ac) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(ad) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ae) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(af) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ag) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ah) Tighten the bolts [137A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(aj) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ak) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(al) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(am) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

SUBTASK 73-11-05-420-273-G00

(5) Install the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Connect the LPT ACC valve tube [364] and B-nut [365] to the HPT ACC valve drain tube [352].

(b) Connect the HPT ACC valve drain tube [352] and B-nut [361] to the drain tube [436].

(c) Connect the HPT ACC valve drain tube [352] and B-nut [380] to the ACC valve [379].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [359].

(e) Install the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142], fuel manifold bracket [143], and fuel manifold bracket [144].

(f) Tighten the bolt [359] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [362].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(h) Install the bolt [362] that attaches the loop clamp [363] to the tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(i) Install the bolt [362] that attaches loop clamp [363] to the tube bracket [147].

SIA ALL

(j) Tighten the bolt [362] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the bolt [356].

(l) Install the bolt [356] that attach the loop clamp [357] and HPT ACC valve drain tube [352] to the ACC drain tube [358].

(m) Tighten the bolt [356] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the bolt [353].

(o) Install the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

(p) Tighten the bolt [353] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(q) Tighten the B-nut [361], B-nut [380], and B-nut [365] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-274-G00

(6) Install the fuel hose manifold [323] as follows (View J, K, M, and N, Figure 411):

NOTE: The fuel hose manifold [323] can also be identified as Pilot Primary and Main non-enriched (PPMne) fuel manifold.

(a) Connect the left primary fuel manifold [344] and B-nut [375] to the fuel hose manifold [323].

(b) Connect the fuel hose manifold [323] and B-nut [346] at the fuel tube [347].

(c) Connect the fuel hose manifold [323] and B-nut [327] at the SCU [151].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [324].

(e) Install the bolt [324] that attaches the loop clamp [325] to the support bracket [326].

(f) Apply oil, D00599 [CP2442], on the threads of the bolt [338].

(g) Install the bolt [338] that attaches the loop clamp [339] to the support bracket [340].

(h) Apply oil, D00599 [CP2442], on the threads of the bolt [341].

(i) Install the bolt [341] that attaches the loop clamp [342] to the support bracket [343].

(j) Tighten the B-nut [327] at the SCU [151] as follows:

1) Tighten the B-nut [327] to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

2) Loosen the B-nut [327] until you can turn them with your fingers.

3) Tighten the B-nut [327] again to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

4) Tighten the B-nut [327] for a third time to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

5) Make sure that the B-nut [327] is fully seated.

6) If the B-nut [327] is not fully seated, do the above steps again to tighten the B-nut [327].

(k) Tighten the B-nut [375] as follows:

1) Tighten the B-nut [375] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Loosen the B-nut [375] until you can turn them with your fingers.

3) Tighten the B-nut [375] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

4) Tighten the B-nut [375] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

5) Make sure that the B-nut [375] is fully seated.

6) If the B-nut [375] is not fully seated, do the above steps again to tighten the B-nut [375].

7) Secure the B-nut [375] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(l) Tighten the B-nut [346] as follows:

1) Tighten the B-nut [346] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Loosen the B-nut [346] until you can turn them with your fingers.

3) Tighten the B-nut [346] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

4) Tighten the B-nut [346] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

5) Make sure that the B-nut [346] is fully seated.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

6) If the B-nut [346] is not fully seated, do the above steps again to tighten the B-nut [346].

7) Secure the B-nut [346] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-05-420-275-G00

(7) Connect the fuel tube hose [319] to the SCU [151] as follows (View K, Figure 411):

NOTE: The fuel tube hose [319] can also be identified as pilot secondary (Psec) fuel manifold.

(a) Apply oil, D00599 [CP2442], on the threads of a bolt [320].

(b) Install the bolt [320] that attaches the loop clamp [321] and fuel tube hose [319] to the support bracket [326].

1) Tighten the bolt [320] by hands.

(c) Connect the fuel tube hose [319] and B-nut [322] to the SCU [151].

(d) Tighten the B-nut [322] as follows:

1) Tighten the B-nut [322] to 55.2 ft-lb (74.8 N·m) - 64.8 ft-lb (87.9 N·m).

2) Loosen the B-nut [322] until you can turn them with your fingers.

3) Tighten the B-nut [322] again to 55.2 ft-lb (74.8 N·m) - 64.8 ft-lb (87.9 N·m).

4) Tighten the B-nut [322] for a third time to 55.2 ft-lb (74.8 N·m) - 64.8 ft-lb (87.9 N·m).

5) Make sure that the B-nut [322] is fully seated.

6) If the B-nut [322] is not fully seated, do the above steps again to tighten the B-nut [322].

7) Install cable, G50065 [CP8006], or safety wire, G02495 [CP8002], on the B-nut [322](TASK 70-41-00-400-802-G00).

(e) Tighten the bolt [320] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SUBTASK 73-11-05-420-276-G00

(8) Connect the fuel manifold hose [329] on the SCU [151] as follows (View K, Figure 411):

NOTE: The fuel manifold hose [329] can also be identified as Pilot Primary and Main enriched (PPMe) fuel manifold.

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [328].

(b) Install the bolt [328] that attaches loop clamp [330] and fuel manifold hose [329] to the support bracket [326].

1) Tighten the bolt [328] by hands.

(c) Connect the fuel manifold hose [329] and B-nut [331] on the SCU [151].

(d) Tighten the B-nut [331] as follows:

1) Tighten the B-nut [331] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Loosen the B-nut [331] until you can turn them with your fingers.

3) Tighten the B-nut [331] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

4) Tighten the B-nut [331] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

5) Make sure that the B-nut [331] is fully seated.

6) If the B-nut [331] is not fully seated, do the above steps again to tighten the B-nut [331].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

7) Install cable, G50065 [CP8006], or safety wire, G02495 [CP8002], on the B-nut [331] (TASK 70-41-00-400-802-G00).

(e) Tighten the bolt [328] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SUBTASK 73-11-05-420-277-G00

(9) Connect the electrical connector [438] to the fuel manifold pressure sensor [437] (TASK 70-00-01-910-803-G00) (View K, Figure 411).

SUBTASK 73-11-05-420-278-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(10) Install the engine upper CDP duct assembly (TASK 36-11-01-400-801).

T. Fuel Nozzle Installation (Position 12)

SUBTASK 73-11-05-420-279-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 12) as follows (View C, Figure 413):

(a) Install the fuel nozzle [1] (position 12) with the new seal [429] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 12) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [429] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 12) aft to engage the fuel nozzle [1] (position 12) tip in the combustor radial mixer (cup).

(d) Align the seal [429] and fuel nozzle [1] (position 12) bolt holes to the combustion case [5].

(e) Install the drain tube bracket [428] in position on the fuel nozzle [1] (position 12) and on the fuel nozzle [1] (position 13).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(f) Install the tube bracket [147] and tube bracket [148] in position on the fuel nozzle [1] (position 11) and in position on the fuel nozzle [1] (position 12).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(g) Install the tube bracket [147] in position on the fuel nozzle [1] (position 11) and in position on the fuel nozzle [1] (position 12).

(h) Apply oil, D00599 [CP2442], on the threads of the bolt [390A].

(i) Install the tube bracket [147A] as follows:

1) Install the tube bracket [147A] in position on the fuel nozzle [1] (position 12).

2) Install the bolt [390A] that attaches the tube bracket [147A] to the tube bracket [147].

SIA ALL

(j) Install the six bolts [427] that attach the fuel nozzle [1] (position 11), fuel nozzle [1] (position 12), fuel nozzle [1] (position 13), tube bracket [147], tube bracket [148], and drain tube bracket [428] to the combustion case [5].

(k) Do not tighten the fuel nozzle bolts at this time.

(l) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(m) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 12) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(n) Tighten the bolts [427] as follows (Figure 413):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [427].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(o) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(p) Tighten the bolt [390A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(q) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-280-G00

(2) If removed, install the left MTC valve (TASK 75-23-02-400-801-G00).

SUBTASK 73-11-05-420-281-G00

(3) Install the HPT ACC valve drain tube [352] as follows (View R, S, T, U, V, and W, Figure 411):

(a) Connect the LPT ACC valve tube [364] and B-nut [365] to the HPT ACC valve drain tube [352].

(b) Connect the HPT ACC valve drain tube [352] and B-nut [361] to the drain tube [436].

(c) Connect the HPT ACC valve drain tube [352] and B-nut [380] to the ACC valve [379].

(d) Apply oil, D00599 [CP2442], on the threads of the bolt [359].

(e) Install the bolt [359] that attaches the loop clamp [360] to the fuel manifold bracket [142], fuel manifold bracket [143], and fuel manifold bracket [144].

(f) Tighten the bolt [359] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(g) Apply oil, D00599 [CP2442], on the threads of the bolt [362].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(h) Install the bolt [362] that attaches the loop clamp [363] to the tube bracket [147] and tube bracket [148].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(i) Install the bolt [362] that attaches loop clamp [363] to the tube bracket [147].

SIA ALL

(j) Tighten thebolt [362] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the bolt [356].

(l) Install the bolt [356] that attach the loop clamp [357] and HPT ACC valve drain tube [352] to the ACC drain tube [358].

(m) Tighten the bolt [356] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the bolt [353].

(o) Install the bolt [353] that attaches the loop clamp [354] to the support bracket [355].

(p) Tighten the bolt [353] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(q) Tighten the B-nut [361], B-nut [380], and B-nut [365] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-282-G00

(4) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(f) Install the four bolts [145] that attach the hinged loop clamp [146] to the tube bracket [147] and tube bracket [148].

(g) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

(i) Install the two bolts [179] that attach the fuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(k) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

(l) Install the three bolts [140] that attach the three hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [137].

(o) Install the two bolts [137] that attach the strap clamp [136] and SBV TBV manifold [125] to the support bracket [139].

(p) Tighten the bolts [137] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [134].

(r) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Tighten the bolts [134] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(t) Connect the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(u) Connect the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings.

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(w) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(x) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(z) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(aa) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ab) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(ac) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(ad) Tighten the bolts [126] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

SUBTASK 73-11-05-420-283-G00

(5) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):

(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].

(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].

(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.

(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.

(f) Apply oil, D00599 [CP2442], on the threads of the four bolts [145].

(g) Install the four bolts [145] that attach the hinged loop clamps [146] to the tube bracket [147] and tube bracket [148].

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

(i) Install the two bolts [179] that attach thefuel manifold bracket [144] to the fuel manifold bracket [142].

(j) Apply oil, D00599 [CP2442], on the threads of the two bolts [140] and bolt [140A].

(k) Install the two bolts [140] that attach the hinged loop clamps [141] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(l) Install the bolt [140A] that attaches the hinged loop clamps [141] to the fuel manifold bracket [142].

(m) Apply oil, D00599 [CP2442] on the threads of the two bolts [137].

(n) Install the two bolts [137] that attach the clamp assembly [136A] to the support bracket [139].

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(p) Install the two bolts [134] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(q) Install the two bolts [134A] that attach the loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

(s) Install the two bolts [131] that attach the loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

(t) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

(u) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(w) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(x) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(y) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
b) Loosen the B-nut until you can turn it with your fingers.
c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
b) Loosen the B-nut until you can turn it with your fingers.
c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(z) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).
(aa) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ab) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ac) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ad) Tighten the bolt [140A] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ae) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(af) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).
(ag) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ah) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(ai) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).
(aj) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

SUBTASK 73-11-05-420-284-G00

(6) Install the SBV TBV manifold [125] as follows (View H, J, K, L, M, N, P, Q, and CC, Figure 406):
(a) Install the new seal gasket [150] on the SBV TBV manifold [125] or on the SCU [151].
(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [149].
(c) Install the four bolts [149] that attach the SBV TBV manifold [125] to the SCU [151].
(d) Hand tighten the two SBV TBV manifold [125] B-nut to the two TBV valve fittings.
(e) Hand tighten the two SBV TBV manifold [125] B-nut to the two SBV valve fittings.
(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [145].
(g) Install the two bolts [145] that attach the fuel hydraulic support block [146] to the tube bracket [148].
(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [179].
(i) Install the bolt [179] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142].
(j) Apply oil, D00599 [CP2442], on the threads of the three bolts [140].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

(k) Install the two bolts [140] that attach the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [144].

(l) Install the bolt [140] that attaches the hinged loop clamp [141] and SBV TBV manifold [125] to the fuel manifold bracket [142] and fuel manifold bracket [143].

(m) Apply oil, D00599 [CP2442], on the threads of the three bolts [137] and bolt [137A].

(n) Install the three bolts [137] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(o) Install the bolt [137A] that attach the loop clamp [136B] and SBV TBV manifold [125] to the support bracket [139].

(p) Apply oil, D00599 [CP2442], on the threads of the two bolts [134] and bolts [134A].

(q) Install the two bolts [134] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(r) Install the two bolts [134A] that attach the two loop clamps [135] and SBV TBV manifold [125] to the manifold bracket [133].

(s) Apply oil, D00599 [CP2442], on the threads of the two bolts [131].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(t) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(u) Install the two bolts [131] that attach the two loop clamps [132] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(v) Apply oil, D00599 [CP2442], on the threads of the two bolts [129].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(w) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the CCC air manifold [120].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(x) Install the two bolts [129] that attach the two loop clamps [130] and SBV TBV manifold [125] to the bracket [202].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(y) Apply oil, D00599 [CP2442], on the threads of the two bolts [126].

(z) Install the two bolts [126] that attach the two loop clamps [127] and SBV TBV manifold [125] to the bracket [98].

(aa) Tighten the two SBV TBV manifold [125] B-nuts to the two TBV valve [123] fittings as follows:

1) Tighten the larger SBV TBV manifold [125] B-nut as follows:

a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 (Continued)

2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ab) Tighten the two SBV TBV manifold [125] B-nuts to the two SBV valve [124] fittings as follows:
1) Tighten the larger SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
   d) Tighten the B-nut again to460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).
2) Tighten the smaller SBV TBV manifold [125] B-nut as follows:
   a) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the B-nut until you can turn it with your fingers.
   c) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
3) Secure the SBV TBV manifold [125] B-nuts with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(ac) Tighten the bolts [149] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(ad) Tighten the bolts [145] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ae) Tighten the bolts [179] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(af) Tighten the bolts [140] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ag) Tighten the bolts [137] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(ah) Tighten the bolts [137A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ai) Tighten the bolts [134] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

(aj) Tighten the bolts [134A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(ak) Tighten the bolts [131] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(al) Tighten the bolts [129] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(am) Tighten the bolts [126] to 51 in-lb (5.76 N·m) - 59 in-lb (6.67 N·m).

SIA ALL

SUBTASK 73-11-05-420-285-G00

(7) Install the LPT ACC valve tube [364] as follows (View D, Figure 413):
   (a) Connect the LPT ACC valve tube [364] and B-nut [410] to the LPT ACC fuel manifold [469].
   (b) Apply oil, D00599 [CP2442], on the threads of the bolt [411].
   (c) Install the bolt [411] that attaches the loop clamp [412] to the drain tube bracket [413].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Tighten the bolt [411] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(e) Tighten the B-nut [410] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

SUBTASK 73-11-05-420-286-G00

(8) Install the fuel hose manifold [323] as follows (View K, N, and M, Figure 411):

NOTE: The fuel hose manifold [323] can also be identified as Pilot Primary and Main non-enriched (PPMne) fuel manifold.

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [324], bolt [341], and bolt [338].

(b) Install the bolt [324] that attaches the loop clamp [325] and fuel hose manifold [323] to the support bracket [326].

1) Tighten the bolt [324] by hands.

(c) Install the bolt [341] that attaches the loop clamp [342] and fuel hose manifold [323] to the support bracket [343].

1) Tighten the bolt [341] by hands.

(d) Install the bolt [338] that attaches the loop clamp [339] and fuel hose manifold [323] to the support bracket [340].

1) Tighten the bolt [338] by hands.

(e) Connect the fuel hose manifold [323] and B-nut [346] to the fuel tube [347] (View M, Figure 411).

1) Tighten the B-nut [346] as follows:

a) Tighten the B-nut [346] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut [346] until you can turn them with your fingers.

c) Tighten the B-nut [346] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut [346] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

e) Make sure that the B-nut [346] is fully seated.

f) If the B-nut [346] is not fully seated, do the above steps again to tighten the B-nut [346].

g) Secure the B-nut [346] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(f) Connect the left primary fuel manifold [344] and B-nut [375] to the fuel hose manifold [323] (View N, Figure 411).

1) Tighten the B-nut [375] as follows:

a) Tighten the B-nut [375] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut [375] until you can turn them with your fingers.

c) Tighten the B-nut [375] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten theB-nut [375] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

e) Make sure that the B-nut [375] is fully seated.

f) If the B-nut [375] is not fully seated, do the above steps again to tighten the B-nut [375].

g) Secure the B-nut [375] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Connect the fuel hose manifold [323] and B-nut [327] to the SCU [151] (View K, Figure 411).

1) Tighten the B-nut [327] at the split control unit as follows:

a) Tighten the B-nut [327] to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

b) Loosen the B-nut [327] until you can turn them with your fingers.

c) Tighten the B-nut [327] again to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

d) Tighten the B-nut [327] for a third time to 78.2 ft-lb (106.0 N·m) - 91 ft-lb (123.4 N·m).

e) Make sure that the B-nut [327] is fully seated.

f) If the B-nut [327] is not fully seated, do the above steps again to tighten the B-nut [327].

g) Tighten the bolt [324], bolt [341], and bolt [338] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SUBTASK 73-11-05-420-287-G00

(9) Connect the fuel manifold hose [329] on the SCU [151] as follows (View K, Figure 411):

NOTE: The fuel manifold hose [329] can also be identified as Pilot Primary and Main enriched (PPMe) fuel manifold.

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [328].

(b) Install the bolt [328] that attaches loop clamp [330] and fuel manifold hose [329] to the support bracket [326].

1) Tighten the bolt [328] by hands.

(c) Connect thefuel manifold hose [329] and B-nut [331] on the SCU [151].

(d) Tighten the B-nut [331] as follows:

1) Tighten the B-nut [331] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

2) Loosen the B-nut [331] until you can turn them with your fingers.

3) Tighten the B-nut [331] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

4) Tighten theB-nut [331] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

5) Make sure that the B-nut [331] is fully seated.

6) If the B-nut [331] is not fully seated, do the above steps again to tighten the B-nut [331].

7) Install cable, G50065 [CP8006], or safety wire, G02495 [CP8002], on the B-nut [331] (TASK 70-41-00-400-802-G00).

(e) Tighten the bolt [328] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SUBTASK 73-11-05-420-288-G00

(10) Install the fuel tube hose [319] as follows (View K, N, and M, Figure 411):

NOTE: The fuel tube hose [319] can also be identified as Pilot secondary (Psec) fuel manifold.

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [320] and bolt [341].

(b) Install the bolt [320] that attaches the loop clamp [321] and fuel tube hose [319] to the support bracket [326].

1) Tighten the bolt [320] by hands.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolt [341] that attaches the loop clamp [342] and fuel tube hose [319] to the support bracket [343].

1) Tighten the bolt [341] by hands.

(d) Connect the fuel tube hose [319] and B-nut [322] at the SCU [151] (View K, Figure 411).

1) Tighten the B-nut [322] as follows:

a) Tighten the B-nut [322] to 55.2 ft-lb (74.84 N·m) - 64.8 ft-lb (87.86 N·m).

b) Loosen the B-nut [322] until you can turn them with your fingers.

c) Tighten the B-nut [322] again to 55.2 ft-lb (74.84 N·m) - 64.8 ft-lb (87.86 N·m).

d) Tighten the B-nut [322] for a third time to55.2 ft-lb (74.84 N·m) - 64.8 ft-lb (87.86 N·m).

e) Make sure that the B-nut [322] is fully seated.

f) If the B-nut [322] is not fully seated, do the above steps again to tighten the B-nut [322].

g) Secure the B-nut [322] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(e) Connect the fuel tube [382] and B-nut [381] at the fuel tube hose [319] (View N, Figure 411).

1) Tighten the B-nut [381] as follows:

a) Tighten the B-nut [381] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut [381] until you can turn them with your fingers.

c) Tighten the B-nut [381] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut [381] for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut [381] is fully seated.

f) If the B-nut [381] is not fully seated, do the above steps again to tighten the B-nut [381].

g) Secure the B-nut [381] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(f) Connect the fuel tube hose [319] and B-nut [348] to the fuel manifold [351] (View M, Figure 411).

1) Tighten the B-nut [348] to the fuel manifold [351] as follows:

a) Tighten the B-nut [348] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

b) Loosen the B-nut [348] until you can turn them with your fingers.

c) Tighten the B-nut [348] again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

d) Tighten the B-nut [348] for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

e) Make sure that the B-nut [348] is fully seated.

f) If the B-nut [348] is not fully seated, do the above steps again to tighten the B-nut [348].

g) Secure the B-nut [348] with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

2) Tighten the bolt [320] and bolt [341] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-289-G00

(11) Connect the electrical connector [438] to the fuel manifold pressure sensor [437] (TASK 70-00-01-910-803-G00) (View K, Figure 411).

SUBTASK 73-11-05-420-290-G00

WARNING

YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(12) Install the engine upper CDP duct assembly (TASK 36-11-01-400-801).

U. Fuel Nozzle Installation (Position 13)

SUBTASK 73-11-05-420-291-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 13) as follows (View C, Figure 414):

(a) Install the fuel nozzle [1] (position 13) with the new seal [475] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 13) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [475] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 13) aft to engage the fuel nozzle [1] (position 13) tip in the combustor radial mixer (cup).

(d) Align the seal [475] and fuel nozzle [1] (position 13) bolt holes to the combustion case [5].

(e) Install the drain tube bracket [428] in position on the fuel nozzle [1] (position 13) and on the fuel nozzle [1] (position 12).

(f) Install the four bolts [474] that attach the fuel nozzle [1] (position 13) to the combustion case [5] and bolt [474] for fuel nozzle [1] (position 12).

(g) Do not tighten the fuel nozzle bolts at this time.

(h) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(i) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 13) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Tighten the bolts [474] as follows (Figure 414):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolt [427].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(k) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(l) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-292-G00

(2) If removed, install the left MTC valve (TASK 75-23-02-400-801-G00).

SUBTASK 73-11-05-420-293-G00

(3) Install the LPT ACC fuel manifold [469] as follows (View K, L, and M, Figure 414):

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [470].

(b) Install the new flange seal gasket [471] to the LPT ACC fuel manifold [469] or to the ACC valve [472].

(c) Install the four bolts [470] that attach the LPT ACC fuel manifold [469] to the ACC valve [472].

(d) Connect the LPT ACC fuel manifold [469] and B-nut [463] to the hydraulic fuel manifold [462].

(e) Connect the LPT ACC fuel tube [464] and B-nut [465] to the LPT ACC fuel manifold [469].

(f) Apply oil, D00599 [CP2442], on the threads of the two bolts [466].

(g) Install the two bolts [466] that attaches the two loop clamps [467] to the support bracket [468].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(h) Apply oil, D00599 [CP2442], on the threads of the two bolts [502A].

(i) Install the two bolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

(j) Tighten the bolts [502A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

(k) Tighten the bolts [466] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(l) Tighten the bolts [470] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(m) Tighten the B-nut [463] to the hydraulic fuel manifold [462] as follows:

1) Tighten the B-nut [463] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut [463] until you can turn them with your fingers.

3) Tighten the B-nut [463] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the B-nut [463] for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nut [463] is fully seated.

6) If the B-nut [463] is not fully seated, do the above steps again to tighten the B-nut [463].

7) Secure the B-nut [463] with cable, G50065 [CP8006] (TASK 70-41-00-400-802-G00).

(n) Tighten the B-nut [465] to the LPT ACC fuel manifold [469] as follows:

1) Tighten the B-nut [465] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut [465] until you can turn them with your fingers.

3) Tighten the B-nut [465] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Tighten the B-nut [465] for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nut [465] is fully seated.

6) If the B-nut [465] is not fully seated, do the above steps again to tighten the B-nut [465].

SUBTASK 73-11-05-420-294-G00

(4) Install the LPT ACC valve tube [364] as follows (View D, Figure 413):

(a) Connect the LPT ACC valve tube [364] and B-nut [410] to the LPT ACC fuel manifold [469].

(b) Connect the LPT ACC valve tube [364] and B-nut [430] to the HPT ACC valve drain tube [352].

(c) Apply oil, D00599 [CP2442], on the threads of the bolt [411].

(d) Install the bolt [411] that attaches the loop clamp [412] to the drain tube bracket [413].

(e) Tighten the bolt [411] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(f) Tighten the B-nut [410] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

SUBTASK 73-11-05-420-295-G00

(5) Install the 7th-stage air manifold [452] as follows (View D, E, F, G, H, and J, Figure 414):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(a) Apply oil, D00599 [CP2442], on the threads of the two bolts [450], four bolts [453], two bolts [455], and four bolts [457].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(b) Apply oil, D00599 [CP2442], on the threads of the two bolts [624], bolts [453], two bolts [626], and four bolts [457].

SIA ALL

(c) Apply a layer of stick wax, G51435 [CP2635], to the new seal [454] and seal [458] to hold them during installation.

(d) Put the 7th-stage air manifold [452] in position on the engine.

(e) Install the new seal [454] on the 7th-stage air manifold [452] or on the compressor case [65].

(f) Install the new seal [458] on the 7th-stage air manifold [452] or the HPT port [459].

(g) Install the four bolts [453] that attach the 7th-stage air manifold [452] and seal [454] to the compressor case [65].

(h) Install the four bolts [457] that attach the 77th-stage air manifold [452] and seal [458] to the HPT port [459].

(i) Tighten the bolts [453] and bolts [457] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Connect the air tube [460] and B-nut [461] to the 7th-stage air manifold [452].

(k) Tighten the B-nut [461] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(l) Install the two bolts [450] that attach the 7th-stage air manifold [452] to the support bracket [451].

(m) Tighten the bolts [450] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007 (Continued)

(n) Install the two bolts [455] that attach the 7th-stage air manifold [452] to the support bracket [456].

(o) Tighten the bolts [455] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(p) Install the two bolts [624] and strap clamp [625] that attach the 7th-stage air manifold [452] to the support bracket [451].

(q) Tighten the bolts [624] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(r) Install the two bolts [626] and strap clamp [627] that attach the 7th-stage air manifold [452] to the support bracket [456].

(s) Tighten the bolts [626] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

SUBTASK 73-11-05-420-296-G00

(6) Install the 4th stage air manifold [419] as follows (View E, F, G, H, and J, Figure 413):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0006

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [414], two bolts [416] and two bolts [420].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0006

(b) Apply oil, D00599 [CP2442], on the threads of the four bolts [414], two bolts [416], and two bolts [628].

SIA ALL

(c) Install the seal [423] between the 4th stage air manifold [419] and air adapter [426].

(d) Install the seal [415] between the 4th stage air manifold [419] and compressor case [65].

(e) Install the four bolts [414] that attach the 4th stage air manifold [419] to the compressor case [65].

(f) Tighten the bolts [414] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(g) Install the two bolts [416] that attach the strap clamp [417] to the support bracket [418].

(h) Tighten the bolts [416] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0006

(i) Install the two bolts [420] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

(j) Tighten the bolts [420] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0006

(k) Install the two bolts [628] and strap clamp [629] that attach the 4th stage air manifold [419] to the fuel tube bracket [421].

(l) Tighten the bolts [628] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

(m) Install the coupling clamp [422] to the 4th stage air manifold [419] to the air adapter [426].

(n) Tighten the coupling clamp [422] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(o) Connect the LPT air supply tube [424] and B-nut [425] to the 4th stage air manifold [419].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(p) Tighten the B-nut [425] to 79 ft-lb (107.1 N·m) - 91 ft-lb (123.4 N·m).

SUBTASK 73-11-05-420-297-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(7) Install the engine upper CDP duct assembly (TASK 36-11-01-400-801).

V. Fuel Nozzle Installation (Position 14)

SUBTASK 73-11-05-420-298-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 14) as follows (View B, Figure 415):

(a) Install the fuel nozzle [1] (position 14) with the new seal [506] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn thefuel nozzle [1] (position 14) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [506] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 14) aft to engage the fuel nozzle [1] (position 14) tip in the combustor radial mixer (cup).

(d) Align the seal [506] and fuel nozzle [1] (position 14) bolt holes to the combustion case [5].

(e) Install the support bracket [501] in position on the fuel nozzle [1] (position 14).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(f) Install the four bolts [500] that attach the fuel nozzle [1] (position 14) and support bracket [501] to the combustion case [5].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(g) Install the two bolts [500] that attach the fuel nozzle [1] (position 14) and support bracket [501] to the combustion case [5].

(h) Install the two bolts [500] that attach the fuel nozzle [1] (position 14) and support bracket [501A] to the combustion case [5].

SIA ALL

(i) Do not tighten the fuel nozzle bolts at this time.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Do not apply lubricant on the fuel nozzle [1] and B-nut [4] threads.

(k) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 14) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(l) Tighten the bolts [500] as follows (Figure 415):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [500].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(m) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [502].

(o) Install the two bolts [502] that attach the two loop clamps [503] to the support bracket [501].

(p) Tighten the bolts [502] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(q) Install the two bolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

(r) Tighten the bolts [502A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(s) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.
2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-299-G00

(2) Install the LPT ACC fuel manifold [469] as follows (View K, L, and M, Figure 414):

(a) Apply oil, D00599 [CP2442], on the threads of the four bolts [470].

(b) Install the new flange seal gasket [471] to the LPT ACC fuel manifold [469] or to the ACC valve [472].

(c) Install the four bolts [470] that attach the LPT ACC fuel manifold [469] to the ACC valve [472].

(d) Connect the LPT ACC fuel manifold [469] and B-nut [463] to the hydraulic fuel manifold [462].

(e) Connect the LPT ACC fuel tube [464] and B-nut [465] to the LPT ACC fuel manifold [469].

(f) Connect the LPT ACC valve tube [364] and B-nut [473] that attaches the LPT ACC valve tube [364] to the LPT ACC fuel manifold [469].

(g) Apply oil, D00599 [CP2442], on the threads of the two bolts [466].

(h) Install the two bolts [466] that attaches the two loop clamps [467] to the support bracket [468].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(i) Apply oil, D00599 [CP2442], on the threads of the two bolts [502A].

(j) Install the twobolts [502A] that attach the two loop clamps [503A] to the support bracket [501A].

(k) Tighten the bolts [502A] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

(l) Tighten the bolts [466] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(m) Tighten the bolts [470] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(n) Tighten the B-nut [473] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

(o) Tighten the B-nut [463] to the hydraulic fuel manifold [462] as follows:

1) Tighten the B-nut [463] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut [463] until you can turn them with your fingers.

3) Tighten the B-nut [463] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the B-nut [463] for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Make sure that the B-nut [463] is fully seated.

6) If the B-nut [463] is not fully seated, do the above steps again to tighten the B-nut [463].

7) Secure the B-nut [463] with cable, G50065 [CP8006] (TASK 70-41-00-400-802-G00).

(p) Tighten the B-nut [465] to the LPT ACC fuel manifold [469] as follows:

1) Tighten the B-nut [465] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut [465] until you can turn them with your fingers.

3) Tighten theB-nut [465] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the B-nut [465] for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nut [465] is fully seated.

6) If the B-nut [465] is not fully seated, do the above steps again to tighten the B-nut [465].

7) Secure the B-nut [465] with cable, G50065 [CP8006] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-05-420-321-G00

(3) Install the 7th-stage air manifold [452] as follows (View D, E, F, G, H, and J, Figure 404):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(a) Apply oil, D00599 [CP2442], on the threads of the two bolts [450], four bolts [453], two bolts [455], and four bolts [457].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(b) Apply oil, D00599 [CP2442], on the threads of the two bolts [624], bolts [453], two bolts [626], and four bolts [457].

SIA ALL

(c) Apply a layer of stick wax, G51435 [CP2635], to the new seal [454] and new seal [458] to hold them during installation.

(d) Put the 7th-stage air manifold [452] in position on the engine.

(e) Install the new seal [454] on the 7th-stage air manifold [452] or on the compressor case [65].

(f) Install the new seal [458] on the 7th-stage air manifold [452] or the HPT port [459].

(g) Install the four bolts [453] that attach the 7th-stage air manifold [452] and seal [454] to the compressor case [65].

(h) Install the four bolts [457] that attach the 77th-stage air manifold [452] and seal [458] to the HPT port [459].

(i) Tighten the bolts [453] and bolts [457] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(j) Connect the air tube [460] and B-nut [461] to the 7th-stage air manifold [452].

(k) Tighten the B-nut [461] to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(l) Install the two bolts [450] that attach the 7th-stage air manifold [452] to the support bracket [451].

(m) Tighten the bolts [450] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007 (Continued)

(n) Install the two bolts [455] that attach the 7th-stage air manifold [452] to the support bracket [456].

(o) Tighten the bolts [455] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(p) Install the two bolts [624] and strap clamp [625] that attach the 7th-stage air manifold [452] to the support bracket [451].

(q) Tighten the bolts [624] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(r) Install the two bolts [626]and strap clamp [627] that attach the 7th-stage air manifold [452] to the support bracket [456].

(s) Tighten the bolts [626] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

SUBTASK 73-11-05-420-301-G00

(4) Install the wye duct [28A] as follows (Figure 420):

(a) Put the wye duct [28A] onto the core module to interface with the High-Pressure Turbine ACC inlet duct at the 9:30 o'clock position.

1) If the wye duct [28A] already has silicone rubber tape, G51669 [CP2975], in the clamping area, proceed to step (b).

2) If the wye duct [28A] does not have silicone rubber tape, G51669 [CP2975], in the clamping area, apply as follows:

a) Apply the two adjacent rows of silicone rubber tape, G51669 [CP2975].

NOTE: Each row will be three plies thick of silicone rubber tape, G51669 [CP2975], 0.02 in. (0.51 mm) x 1.0 in. (25.4 mm) width to the wye duct [28A] directly aft of the forward edge bead of the wye duct [28A].

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [30A].

(c) Attach the wye duct [28A] to the HPTACC inlet duct with the bolts [30A] and saddle clamp [29A].

(d) Tighten the bolts [30A] to 51 in-lb (5.8 N·m) - 59 in-lb (6.7 N·m).

(e) Measure the gap between the saddle clamp [29A] with the feeler gage (View D, Figure 420).

NOTE: The gaps show dimension at the forward and aft sides of both the bolts [30A].

1) Acceptable gap between the saddle clamps [29A] adjacent to the wye duct [28A] is to 0.045 in. (1.143 mm) - 0.075 in. (1.905 mm).

2) If measured gap exceeds 0.075 in. (1.905 mm), remove the bolts [30A] from the saddle clamps [29A].

a) Remove one ply of silicone rubber tape, G51669 [CP2975], from wye duct [28A].

b) Repeat steps (c), (d), and (e).

3) If measured gap is less than 0.045 in. (1.143 mm), remove the bolts [30A] from the saddle clamps [29A].

a) Add one ply of silicone rubber tape, G51669 [CP2975], to wye duct [28A].

b) Repeat steps (c), (d), and (e).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-302-G00

(5) Install the LPTACC valve (TASK 75-24-01-400-801-G00).

SUBTASK 73-11-05-420-322-G00

WARNING YOU MUST SUPPORT AND MAKE THE ECS DUCT SAFE BEFORE YOU INSTALL IT. THE ECS DUCT IS HEAVY AND HARD TO HANDLE. IF YOU DO NOT OBEY THESE INSTRUCTIONS, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(6) Install the engine upper CDP duct assembly (TASK 36-11-01-400-801).

W. Fuel Nozzle Installation (Position 15)

SUBTASK 73-11-05-420-303-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 15) as follows (View C, Figure 416):

(a) Install the fuel nozzle [1] (position 15) with the new seal [524] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 15) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [524] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 15) aft to engage the fuel nozzle [1] (position 15) tip in the combustor radial mixer (cup).

(d) Align the seal [524] and fuel nozzle [1] (position 15) bolt holes to the combustion case [5].

(e) Install the support bracket [468] in position on the fuel nozzle [1] (position 15).

(f) Install the four bolts [520] that attach the fuel nozzle [1] (position 15) and support bracket [468] to the combustion case [5].

(g) Do not tighten the fuel nozzle bolts at this time.

(h) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(i) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 15) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(j) Tighten the bolts [520] as follows (Figure 416):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [520].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(k) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(l) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-304-G00

(2) Attach the support bracket [526] to the support bracket [527] as follows (View E, Figure 416):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [525].

(b) Install the bolt [525] that attaches the support bracket [526] to the support bracket [527].

(c) Tighten the bolt [525] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-305-G00

(3) Install the LPTACC valve [526B] as follows (View E, Figure 416):

(a) Apply oil, D00599 [CP2442], on the threads of two bolts [525A].

(b) Hold the LPTACC valve [526B] and install the two bolts [525A] that attach the LPTACC valve [526B] to the support bracket [526] and support bracket [526A].

(c) Tighten the bolts [525A] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-306-G00

(4) Install the HPTACC valve (TASK 75-24-04-400-801-G00).

(a) If it is necessary, cut off the hose clamp tab more than 1 in. (25.4 mm) from the hose clamp screw housing.

1) Remove all burrs from the hose clamp tabs.

SUBTASK 73-11-05-420-307-G00

(5) Install the wye duct [28A] as follows (Figure 420):

(a) Put the wye duct [28A] onto the core module to interface with the High-Pressure Turbine ACC inlet duct at the 9:30 o'clock position.

1) If the wye duct [28A] already has silicone rubber tape, G51669 [CP2975], in the clamping area, proceed to step (b).

2) If the wye duct [28A] does not have silicone rubber tape, G51669 [CP2975], in the clamping area, apply as follows:

a) Apply the two adjacent rows of silicone rubber tape, G51669 [CP2975].

NOTE: Each row will be three plies thick of silicone rubber tape, G51669 [CP2975], 0.02 in. (0.51 mm) x 1.0 in. (25.4 mm) width to the wye duct [28A] directly aft of the forward edge bead of the wye duct [28A].

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [30A].

(c) Attach the wye duct [28A] to the HPTACC inlet duct with the bolts [30A] and saddle clamp [29A].

(d) Tighten the bolts [30A] to 51 in-lb (5.8 N·m) - 59 in-lb (6.7 N·m).

(e) Measure the gap between the saddle clamp [29A] with the feeler gage (View D, Figure 420).

NOTE: The gaps show dimension at the forward and aft sides of both the bolts [30A].

1) Acceptable gap between the saddle clamps [29A] adjacent to the wye duct [28A] is to 0.045 in. (1.143 mm) - 0.075 in. (1.905 mm).

2) If measured gap exceeds 0.075 in. (1.905 mm), remove the bolts [30A] from the saddle clamps [29A].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Remove one ply of silicone rubber tape, G51669 [CP2975], from wye duct [28A].

b) Repeat steps (c), (d), and (e).

3) If measured gap is less than 0.045 in. (1.143 mm), remove the bolts [30A] from the saddle clamps [29A].

a) Add one ply of silicone rubber tape, G51669 [CP2975], to wye duct [28A].

b) Repeat steps (c), (d), and (e).

X. Fuel Nozzle Installation (Position 16)

SUBTASK 73-11-05-420-308-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 16) as follows (View C and J, Figure 417):

(a) Install the fuel nozzle [1] (position 16) with the new seal [547] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 16) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [547] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 16) aft to engage the fuel nozzle [1] (position 16) tip in the combustor radial mixer (cup).

(d) Align the seal [547] and fuel nozzle [1] (position 16) bolt holes to the combustion case [5].

(e) Install the support bracket [541] in position on the fuel nozzle [1] (position 16).

(f) Install the four bolts [540] that attach the fuel nozzle [1] (position 16) and support bracket [541] to the combustion case [5].

(g) Do not tighten the fuel nozzle bolts at this time.

(h) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(i) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 16) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(j) Tighten the bolts [540] as follows (Figure 417):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [540].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(k) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(l) Apply oil, D00599 [CP2442], on the threads of the two bolts [596].

(m) Install the two bolts [596] that attach the support bracket [541] to the support bracket [584].

(n) Tighten the bolts [596] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [543], bolt [545], and bolt [545A].

(p) Install the two bolts [543] that attach the two loop clamps [544] and EGT harness [542] to the support bracket [541].

(q) Tighten the bolts [543] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(r) Install the bolt [545] that attaches the loop clamp [546] and T3 sensor [595] to the support bracket [541].

(s) Tighten the bolt [545] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

(t) Install the bolt [545A] that attaches the loop clamp [546A] and TCF accelerometer cable [595A] to the support bracket [541].

(u) Tighten the bolt [545A] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(v) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the two B-nuts [4] until you can turn them with your fingers.

c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-309-G00

(2) Connect the turbine center frame accelerometer at the connector and attach the turbine center frame accelerometer to the mounting bracket as follows:

(a) Do the applicable steps in this task: Turbine Center Frame Accelerometer Installation, TASK 77-31-06-400-801-G00.

SUBTASK 73-11-05-420-310-G00

(3) Connect the EGT sensor harness 1 and 2 as follows (TASK 77-21-04-400-801-G00 and TASK 77-21-05-400-801-G00):

(a) Connect the EGT sensor harness 1 and 2 at the connectors.

(b) Attach the EGT sensor harnesses to the mounting bracket.

SUBTASK 73-11-05-420-311-G00

(4) Do this task: T3 Sensor Installation, TASK 73-21-64-400-801-G00.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

SUBTASK 73-11-05-420-312-G00

(5) Connect the fuel hydraulic manifold [447] as follows (View D, E, F, G, and H, Figure 417):

(a) Apply oil, D00599 [CP2442], to the threads of the bolt [530], bolt [538], four bolts [448], three bolts [478], bolts [534], bolt [536], bolt [549], bolt [552], bolt [555], bolt [557], bolt [559], bolt [589], bolt [590], bolt [592], and two bolts [598].

(b) Install the gasket seal [476] between the fuel hydraulic manifold [447] and SCU [151].

(c) Install the four bolts [448] that attach the fuel hydraulic manifold [447] to the SCU [151].

1) Tighten the bolts [448] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(d) Connect thefuel manifold [588] B-nut to the fuel fuel hydraulic manifold [447].

1) Tighten the fuel manifold [588] B-nut as follows:

a) Tighten the fuel manifold [588] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) Tightly attach the fuel manifold [588] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(e) Connect the fuel hydraulic manifold [447] B-nut to the fuel manifold [588].

1) Tighten the fuel hydraulic manifold [447] B-nut as follows:

a) Tighten the fuel hydraulic manifold [447] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124 (Continued)

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

g) Tightly attach the fuel hydraulic manifold [447] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(f) Connect the LPT ACC fuel manifold [469] B-nut to the fuel hydraulic manifold [447].

1) Tighten the LPT ACC fuel manifold [469] B-nut as follows:

a) Tighten the LPT ACC fuel manifold [469] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

g) Tightly attach the LPT ACC fuel manifold [469] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(g) Connect the hydraulic fuel tube [528] B-nut to the fuel hydraulic manifold [447].

1) Tighten thehydraulic fuel tube [528] B-nut as follows:

a) Tighten the hydraulic fuel tube [528] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

g) Tightly attach the hydraulic fuel tube [528] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(h) Connect the fuel hydraulic manifold [447] B-nut to the hydraulic fuel tube [529].

1) Tighten the fuel hydraulic manifold [447] B-nut as follows:

a) Tighten the fuel hydraulic manifold [447] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124 (Continued)

g) Tightly attach the fuel hydraulic manifold [447] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

(i) Connect the fuel hydraulic manifold [447] B-nut to the ACC fuel tube [446].

1) Tighten the fuel hydraulic manifold [447] B-nut as follows:

a) Tighten the fuel hydraulic manifold [447] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

g) Tightly attach the fuel hydraulic manifold [447] B-nut with cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(j) Install the bolt [589] that attaches the fuel hydraulic manifold [447] to the compressor case [65].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071 AND PRE LEAP-1B SERVICE BULLETIN 75-0004

(k) Install the bolt [589] that attaches the loop clamp [597A] and fuel hydraulic manifold [447] to the support bracket [599].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0004

(l) Install the bolt [589] that attaches the loop clamp [597A] and fuel hydraulic manifold [447] to the support bracket [599A].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

(m) Tighten the bolt [589] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(n) Install the two bolts [598] that attach two loop clamp [597] and fuel hydraulic manifold [447] to the support bracket [599].

(o) Install the bolt [590] that attaches the loop clamp [591] and fuel hydraulic manifold [447] to the support bracket [594].

(p) Install the bolt [592] that attaches the loop clamp [593] and fuel hydraulic manifold [447] to the support bracket [594].

(q) Install the bolt [559] that attaches the loop clamp [558] and fuel hydraulic manifold [447] to the support bracket [587].

(r) Install the bolt [557] that attaches the loop clamp [556] and fuel hydraulic manifold [447] to the support bracket [587].

(s) Install the bolt [555] that attaches the loop clamp [554] and fuel hydraulic manifold [447] to the support bracket [553].

(t) Install the bolt [552] that attaches the loop clamp [551] and fuel hydraulic manifold [447] to the support bracket [553].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124 (Continued)

(u) Install the bolt [534] that attaches the loop clamp [535] and fuel hydraulic manifold [447] to the support bracket [533].

(v) Install the bolt [536] that attaches the loop clamp [537] and fuel hydraulic manifold [447] to the support bracket [533].

(w) Install the bolt [538] that attaches the loop clamp [539] and fuel hydraulic manifold [447] to the support bracket [550].

(x) Install the bolt [549] that attaches the loop clamp [548] and fuel hydraulic manifold [447] to the support bracket [550].

(y) Install the bolt [530] that attaches the loop clamp [531] and fuel hydraulic manifold [447] to the support bracket [532].

(z) Install the three bolts [478] that attach the three loop clamps [477] and fuel hydraulic manifold [447] to the support bracket [445].

(aa) Tighten the bolt [590], bolt [592], bolt [559], bolt [557], bolt [555], bolt [552], bolt [534], bolt [536], bolt [538], bolt [549], bolt [530], two bolts [598], and three bolts [478] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124

SUBTASK 73-11-05-420-313-G00

(6) Connect the fuel hydraulic manifold [447] as follows (View D, E, F, and G, Figure 417):

(a) Apply oil, D00599 [CP2442], to the threads of the four bolts [448], two bolts [478], two bolts [534], and bolt [538].

(b) Install the gasket seal [476] between the fuel hydraulic manifold [447] and SCU [151].

(c) Install the four bolts [448] that attach the fuel hydraulic manifold [447] to the SCU [151].

1) Tighten the bolts [448] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(d) Connect the fuel hydraulic manifold [447] B-nut to the hydraulic fuel tube [528].

1) Tighten thefuel hydraulic manifold [447] B-nut as follows:

a) Tighten the fuel hydraulic manifold [447] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

(e) Connect the fuel hydraulic manifold [447] B-nuts to the hydraulic fuel tube [529] at two locations.

1) Tighten the fuel hydraulic manifold [447] B-nuts as follows:

a) Tighten the fuel hydraulic manifold [447] B-nuts to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nuts until you can turn it with your fingers.

c) Tighten the B-nuts again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124 (Continued)

d) Tighten the B-nuts for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nuts are fully seated.

f) If the B-nuts is not fully seated, do the above steps again.

(f) Connect the fuel hydraulic manifold [447] B-nut to the ACC fuel tube [446].

1) Tighten the fuel hydraulic manifold [447] B-nut as follows:

a) Tighten the fuel hydraulic manifold [447] B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

b) Loosen the B-nut until you can turn it with your fingers.

c) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

d) Tighten the B-nut for a third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

e) Make sure that the B-nut is fully seated.

f) If the B-nut is not fully seated, do the above steps again.

(g) Install the two bolts [534] that attach the two loop clamps [535] and fuel hydraulic manifold [447] to the support bracket [533] at two locations.

(h) Install the bolt [538] that attaches the loop clamp [539] and fuel hydraulic manifold [447] to the support bracket [550].

(i) Install the two bolts [478] that attach the fuel hydraulic support block [477], fuel hydraulic manifold [447], and ACC fuel tube [446] to the support bracket [445].

(j) Tighten the bolts [478], bolts [534], and bolt [538] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SIA ALL

SUBTASK 73-11-05-420-314-G00

(7) Do this task: High Pressure Turbine Active Clearance Control (HPTACC) Valve Installation, TASK 75-24-04-400-801-G00.

(a) If it is necessary, cut off the hose clamp tab more than 1 in. (25.4 mm) from the hose clamp screw housing.

1) Remove all burrs from the hose clamp tabs.

Y. Fuel Nozzle Installation (Position 17)

SUBTASK 73-11-05-420-315-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION

DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 17) as follows (View C and P, Figure 418):

(a) Install the fuel nozzle [1] (position 17) with the new seal [586] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 17) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [586] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 17) aft to engage the fuel nozzle [1] (position 17) tip in the combustor radial mixer (cup).

(d) Align the seal [586] and fuel nozzle [1] (position 17) bolt holes to the combustion case [5].

(e) Install the support bracket [584] in position on the fuel nozzle [1] (position 16) and fuel nozzle [1] (position 17).

(f) Install the bolt [585] that attach the support bracket [584] to the fuel nozzle [1] (position 17).

(g) Install the support bracket [581A] in position on the fuel nozzle [1] (position 17).

(h) Install the remaining three bolts [585] that attach the fuel nozzle [1] (position 17) and support bracket [581A] to the combustion case [5].

(i) Do not tighten the fuel nozzle bolts at this time.

(j) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(k) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 17) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(l) Tighten the bolts [585] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [585].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(m) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(n) Apply oil, D00599 [CP2442], on the threads of the two bolts [596].

(o) Install the two bolts [596] that attach the support bracket [541] to the support bracket [584].

(p) Tighten the bolts [596] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(q) Apply oil, D00599 [CP2442], on the threads of the two bolts [582].

(r) Install the two bolts [582] that attach the two loop clamps [583] to the support bracket [581A].

(s) Tighten the bolts [582] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(t) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Triple tighten the fuel nozzle B-nuts [4] as follows:
   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   b) Loosen the two B-nuts [4] until you can turn them with your fingers.
   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).
   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).
   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].
3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:
   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].
   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).
   c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

      NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-316-G00

(2) Install the 7th-stage air tube [574] as follows (View D, K, L, M, and N, Figure 418):
   (a) Apply a layer of stick wax, G51435 [CP2635], to the new seal [576], and new seal [580] to hold them during installation.
   (b) Install the new seal [576] on the7th-stage air tube [574] or on the HPC extension case [101].
   (c) Install the new seal [580] on the 7th-stage air tube [574] or on the HPT port [581].
   (d) Apply oil, D00599 [CP2442], on the threads of the four bolts [575].
   (e) Install the four bolts [575] that attach the 7th-stage air tube [574] to the HPC extension case [101].
   (f) Tighten the bolts [575] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).
   (g) Apply oil, D00599 [CP2442], on the threads of the four bolts [579].
   (h) Install the four bolts [579] that attach the support bracket [578] and 7th-stage air tube [574] to the HPT port [581].
   (i) Tighten the bolts [579] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0008

   (j) Apply oil, D00599 [CP2442], on the threads of the two bolts [577].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0008 (Continued)

(k) Install the two bolts [577] that attach the 7th-stage air tube [574] to the support bracket [565].

(l) Tighten the bolts [577] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0008

(m) Apply oil, D00599 [CP2442], on the threads of the two bolts [623].

(n) Install the two bolts [623] and strap clamp [622] that attach the 7th-stage air tube [574] to the support bracket [565].

(o) Tighten the bolts [623] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

SUBTASK 73-11-05-420-317-G00

(3) Install the 4th-stage cooling air manifold [560] as follows (View D, E, F, G, H, and J, Figure 418):

(a) Install the seal [563] on the 4th-stage cooling air manifold [560] or on the compressor case [65].

(b) Install the seal [572] on the 4th-stage cooling air manifold [560] or on the adapter [573].

(c) Install the coupling clamp [571] to the 4th-stage cooling air manifold [560] and adapter [573].

(d) Install the 4th-stage air tube [570] and B-nut [569] to the 4th-stage cooling air manifold [560].

(e) Apply oil, D00599 [CP2442], on the threads of the four bolts [561].

(f) Install the support bracket [562] in position on the 4th-stage cooling air manifold [560].

(g) Install the four bolts [561] that attach the 4th-stage cooling air manifold [560] and support bracket [562] to the compressor case [65].

(h) Tighten thebolts [561] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

(i) Apply oil, D00599 [CP2442], on the threads of the bolt [566].

(j) Install the bolt [566] that attaches the loop clamp [567] to the support bracket [568].

(k) Tighten the bolt [566] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0008

(l) Apply oil, D00599 [CP2442], on the threads of the two bolts [564].

(m) Install the two bolts [564] that attach the 4th-stage cooling air manifold [560] to the support bracket [565].

(n) Tighten the bolts [564] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0008

(o) Apply oil, D00599 [CP2442], on the threads of the two bolts [620].

(p) Install the two bolts [620] and strap clamp [621] that attach the 4th-stage cooling air manifold [560] to the support bracket [565].

(q) Tighten the bolts [620] to 106 in-lb (11.98 N·m) - 124 in-lb (14.01 N·m).

SIA ALL

(r) Tighten the coupling clamp [571] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(s) Tighten the B-nut [569] to 79 ft-lb (107.1 N·m) - 91 ft-lb (123.4 N·m).

Z. Fuel Nozzle Installation (Position 18)

SUBTASK 73-11-05-420-318-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzle [1] (position 18) as follows (View C, Figure 419):

(a) Install the fuel nozzle [1] (position 18) with the new seal [604] aligned into the combustion case [5] pad with the fuel nozzle [1] tip forward.

(b) Turn the fuel nozzle [1] (position 18) 180 degrees counter-clockwise and put the fuel nozzle [1] in position on the seal [604] and combustion case [5] pad.

(c) Move the fuel nozzle [1] (position 18) aft to engage the fuel nozzle [1] (position 18) tip in the combustor radial mixer (cup).

(d) Align the seal [604] and fuel nozzle [1] (position 18) bolt holes to the combustion case [5].

(e) Install the bracket [601] in position on the fuel nozzle [1] (position 18).

(f) Install the four bolts [600] that attach the fuel nozzle [1] (position 18) and bracket [601] to the combustion case [5].

(g) Apply oil, D00599 [CP2442], on the threads of the two bolts [602].

(h) Install the two bolts [602] that attach the fuel manifolds, and two loop clamps [603] to the bracket [601].

(i) Do not tighten the fuel nozzle bolts at this time.

(j) Do not apply lubricant on the fuel nozzle [1] or B-nut [4] threads.

(k) Hand tight the fuel manifold B-nuts [4] on their fuel nozzle [1] (position 18) fittings, before you tighten the fuel nozzle bolts.

1) Do not tighten the B-nuts [4] at this time.

NOTE: This helps the fuel manifold correctly center onto the fuel nozzle fittings.

(l) Tighten the bolts [600] as follows (Figure 422):

1) Make sure that Tiodize T8E-H grease, D50355 [CP2961], is on the thread of the fuel nozzle bolts [600].

2) Tighten the fuel nozzle bolts and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) Do the sequence to tighten the fuel nozzle bolts again and start at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129 in-lb (14.57 N·m) - 151 in-lb (17.06 N·m).

NOTE: One of the four fuel nozzle bolt holes is elongated.

(m) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

1) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 423.

2) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

3) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

(n) Tighten the bolts [602] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

CAUTION

MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION

MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(o) Tighten the fuel manifold B-nuts [4] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings as follows:

NOTE: False tightening is a possibility, mainly in hard to reach locations. A wrench/attachment/extension can hit other hardware when you tighten them and give a false torque.

NOTE: It is necessary to triple tighten the fuel nozzle B-nuts [4] in this sequence: TIGHTEN – LOOSEN – TIGHTEN– TIGHTEN.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension can be used. When an offset extension wrench such as a crowfoot extension is used with a torque wrench, the effective length of the torque wrench is changed. The torque wrench is so calibrated that when an extension wrench is used, the indicated torque, the value that appears on the scale or dial of the torque wrench, can be different from the actual torque that is applied to the B-nut (Instructions for Torque (Miscellaneous), TASK 70-51-00-800-801-G00).

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with preset alerts you can hear or feel is recommended. Dial tighten wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple tighten the fuel nozzle B-nuts [4] as follows:

   a) Tighten the two B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   b) Loosen the two B-nuts [4] until you can turn them with your fingers.

   c) Tighten the two B-nuts [4] again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   d) Tighten the two B-nuts [4] for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

   e) Make a record of the completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 401).

   f) Paint a stripe line across the fuel nozzle B-nuts [4] and fuel nozzle fitting with temporary marker, G50530 [CP5061].

3) Do the fuel nozzle B-nuts [4] tightening inspection as follows:

   a) Tighten the fuel nozzle B-nuts [4] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

      NOTE: On each fuel nozzle [1] tighten the pilot secondary (PS) B-nut first followed by the pilot primary main (PPM) B-nut.

      NOTE: Do not break the torque of the B-nuts.

      NOTE: An inspector must be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [4].

   b) Record completion of inspection and torque value at each fuel nozzle B-nut [4] fitting (Table 401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Tightly attach each fuel nozzle B-nuts [4] with cable, G50065 [CP8006], or with safety wire, G02495 [CP8002] (PAGEBLOCK 70-41-00/201).

NOTE: If lockwire is used, stop the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-319-G00

(2) If the precooler was disconnected, do this task: Bleed Air Precooler Installation with Engine Installed, TASK 36-12-01-400-803.

AA. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-05-860-025-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-05-860-026-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-05-860-027-G00

(3) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 73-11-05-860-028-G00

(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

AB. Fuel Nozzle Installation Test

SUBTASK 73-11-05-860-030-G00

(1) Do the tests as follows:

(a) Do an idle check (TASK 71-00-00-790-804-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

a) Electronic Engine Control (EEC) can find fuel system faults after fuel system maintenance because of residual air in fuel lines, do these steps:

<1> Do an engine idle run (TASK 71-00-00-790-804-G00).

<a> Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table, note 7.a.

b) Check the Onboard Maintenance Function (OMF) for any new fuel system faults.

<1> If the faults are found, clear the faults (TASK 71-00-00-700-811-G00 and TASK 71-00-00-700-812-G00).

<a> Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table, note 7.b.

(b) Do a pneumatic leak test (TASK 71-00-00-790-801-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

NOTE: This is necessary for High Pressure Shutoff Valve (HPSOV), Environmental Control System (ECS) ducts, Pressure Regulating and Shutoff Valve (PRSOV), and Transient Bleed Valve (TBV) duct installation.

a) After the tests are done, follow the applicable inspections:

<1> Do a visual inspection of the engine after idle leak check and do as follows:

<a> Do a visual inspection of the fuel lines and connections and check for fuel leaks.

<b> Do a visual inspection of the air ducts, tubes, and seals to check for hot air leakage indication and/or damage.

(c) Do an idle test menu mode (TASK 71-00-00-700-808-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

SUBTASK 73-11-05-790-004-G00

(2) If you open the EEC air signal manifolds when you remove and install the fuel nozzle, do this step:

(a) Do the test for the air ducts and air tubes (TASK 71-00-00-800-804-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

AC. Triple Tightening and Torque Inspection of B-nuts

SUBTASK 73-11-05-420-320-G00

(1) Triple tightening and torque inspection of Pilot Secondary (PS) and Pilot Primary Main (PPM) B-nuts.

Table 401/73-11-05-993-803-G00 Triple tightening and torque inspection of Pilot Secondary (PS) and Pilot Primary Main (PPM) B-nuts

FN Position	B-nut Position	Confirm First Torque (Yes/ No)	Confirm Loosen (Yes/No)	Confirm Second Torque (Yes/ No)	Record Third Torque at Each B-nut	Completion Date and Mechanic Signature	Inspection: Record Torque at Each B-nut	Inspection: Completion Date and Signature
1	PS							
	PPM							
2	PS							
	PPM							
3	PS							
	PPM							
4	PS							
	PPM							
5	PS							
	PPM							
6	PS							
	PPM							
7	PS							
	PPM							
8	PS							
	PPM							
9	PS							
	PPM							
10	PS							
	PPM							
11	PS							
	PPM							
12	PS							
	PPM							
13	PS							
	PPM							
14	PS							
	PPM							

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 401/73-11-05-993-803-G00 Triple tightening and torque inspection of Pilot Secondary (PS) and Pilot Primary Main (PPM) B-nuts (Continued)

FN Position	B-nut Position	Confirm First Torque (Yes/ No)	Confirm Loosen (Yes/No)	Confirm Second Torque (Yes/ No)	Record Third Torque at Each B-nut	Completion Date and Mechanic Signature	Inspection: Record Torque at Each B-nut	Inspection: Completion Date and Signature
15	PS							
	PPM							
16	PS							
	PPM							
17	PS							
	PPM							
18	PS							
	PPM							

——— END OF TASK ———

TASK 73-11-05-000-802-G00

4. Fuel Nozzle Set Removal

(Figure 424, Figure 425, Figure 426, Figure 428, Figure 429, Figure 430, Figure 431, Figure 432, Figure 433, Figure 434, Figure 435, Figure 436, Figure 437, Figure 438, Figure 439, Figure 440, Figure 441, Figure 442, Figure 443, Figure 444, Figure 445, Figure 446, Figure 447, Figure 448, Figure 449, Figure 450, Figure 451, Figure 452, Figure 453, Figure 454, Figure 455, and Figure 456)

A. General

(1) This task is to show the removal and installation procedures to do a full set replacement of the combustion chamber fuel nozzle.

(2) There are eighteen fuel nozzles installed on the combustion case.

(3) The fuel nozzle position numbers are in a Clockwise (CW) sequence when viewed from the rear of the engine facing forward or Aft Looking Forward (ALF).

(4) It is recommended to dry motor the engine up to 5 minutes to help cool down the engine (TASK 71-00-00-910-808-G00).

(a) Make sure that the Exhaust Gas Temperature (EGT) is below 150°F (66°C).

NOTE: The dry motoring will help to cool down the engine to start the work of the fuel nozzle [1] replacement.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
36-11-01-000-801	Engine Pneumatic Duct Removal (P/B 401)
36-11-04-000-801	PRSOV Removal (P/B 401)
36-11-07-000-801	HPSOV Removal (P/B 401)
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-21-64-000-801-G00	T3 Sensor Removal (P/B 401)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
73-22-01-000-808-G00	Electronic Engine Control (EEC) Electrical Harness (HJ8A) Removal (P/B 401)
75-24-01-000-801-G00	Low Pressure Turbine Active Clearance Control (LPTACC) Valve Removal (P/B 401)
75-24-04-000-801-G00	High Pressure Turbine Active Clearance Control (HPTACC) Valve Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-200	Container - Fuel Resistant, 10 gallon (38 l)
STD-562	Lens - Magnifying, 10x
STD-858	Tag - DO NOT OPERATE
STD-1242	Hammer - Standard
STD-1285	Container - Fuel Resistant, 10 Gallon (38 Liter)
STD-3842	Punch - Drift
STD-6847	Ratchet

D. Consumable Materials

Reference	Description	Specification
D50186 [CP2691]	Fluid - Penetrating - Aerokroil	
G00834	Cloth - Lint-free Cotton	
G50530 [CP5061]	Marker - Temporary	
G51403 [CP2166]	Tape - Polyester-Backed, Adhesive	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-11-05-040-003-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-05-010-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-05-040-004-G00

(3) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 73-11-05-000-023-G00

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-11-05-040-005-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 73-11-05-000-024-G00

(6) Read and obey the recommendation, while you do this procedure:

(a) Use good lighting and a 10x magnifying lens, STD-562, to help you see the left and right engine core areas.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Catch the fuel that will drain from the combustor area in a 10 gallon (38 liter) fuel resistant container, STD-1285.

(c) Use lint-free cloth, G00834, or rags around the combustion case.

SUBTASK 73-11-05-000-026-G00

CAUTION BE PREPARED TO REPLACE DAMAGED INSERTS WHEN REMOVING FUEL NOZZLES AND CASE MOUNTED COMPONENTS. IF THE DAMAGED INSERTS ARE NOT REPAIRED OR REPLACED, DAMAGE TO THE ENGINE CAN OCCUR.

(7) To prevent broken bolts and damaged inserts during the removal process, do the following steps:

NOTE: The steps below apply to the 72 fuel nozzle pad bolts, and any bolts that can be removed from the engine cases to get access to the fuel nozle pads (i.e., ECS pad, TBV pad, and/or 7th stage air manifolds). This is done to keep the possible risk of broken bolts and damaged inserts to a minimum.

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

(a) Do an initial soak of all the 72 fuel nozzle bolts [135], bolts [136] , bolts [138], bolts [2], bolts [140], bolts [141], bolts [142], bolts [146], bolts [150], bolts [153], bolts [154], bolts [155], bolts [158], bolts [160], bolts [175], bolts [187], bolts [195], bolts [197], bolts [203], bolts [209], bolts [210], bolts [212], and bolts [222] with penetrating fluid, D50186 [CP2691] at the very beginning of the job.

1) Let the lubricant soak into the threads for a one hour.

2) Let the capillary action of penetrating fluid, D50186 [CP2691], penetrate while you work the external hardware removal in parallel before you break the torque of the fuel nozzle bolts.

(b) Do an initial soak of all the case pad bolts listed below at the very beginning of the job.

1) The four bolts that attach the upper CDP duct assembly [25] to the case (VIew B, Figure 427).

2) The four bolts [32] that attach the transient bleed air tube [31] to the case (View C, Figure 429).

3) The four bolts [56] and four bolts [58] that attach the 7th-stage air tube [55] to the case (View C and View D, Figure 430).

4) The four bolts [92] that attach the start bleed tube [91] to the case (View B, Figure 432).

5) The eight bolts [102] that attach the 7th stage air tube [101] to the case (View C and View F, Figure 433).

6) The eight bolts [117] that attach the 7th-stage air tube [115] to the engine cases (View C and View E, Figure 435).

7) The two bolts [173] that attach the start bleed bracket [172] to the case (View C, Figure 444).

(c) Let the application soak for one hour.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-028-G00

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

WARNING MAKE SURE THAT ALL PLUGS OR CAP-COVERS ON OPEN HOLES ON TUBES, DUCTS, MANIFOLDS THAT YOU REMOVE. IF YOU DO NOT FOLLOW THIS WARNING, YOU CAN CAUSE INJURY.

CAUTION BE CAREFUL WHEN YOU BREAK THE TORQUE FROM THE BOLTS IN THE ENGINE CASES. IF YOU DO NOT OBEY, DAMAGE TO INSERTS CAN OCCUR.

CAUTION MAKE SURE THAT YOU COVER ALL PORTS, OPENINGS, MATING SURFACES, AND CASES. IF YOU DO NOT OBEY, FOD CAN GO INTO THE COMPONENTS AND DAMAGE CAN OCCUR.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO LOOSEN THE ELECTRICAL CONNECTOR. DO NOT USE PLIERS THAT HAVE METAL JAWS. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(8) Remove the ECS/CDP ducts (Figure 427).

(a) Remove the Pressure Regulating and Shutoff Valve (PRSOV) [21] (TASK 36-11-04-000-801).

(b) Remove the mix manifold [22] (TASK 36-11-01-000-801).

(c) Remove the High Pressure Shutoff Valve (HPSOV) [24] (TASK 36-11-07-000-801).

(d) Remove the lower CDP duct assembly [23] (TASK 36-11-01-000-801).

(e) Remove the upper CDP duct assembly [25] (TASK 36-11-01-000-801).

SUBTASK 73-11-05-000-029-G00

(9) Remove the HPTACC valve [26] (TASK 75-24-04-000-801-G00).

SUBTASK 73-11-05-020-170-G00

(10) Remove the LPTACC valve [27] (TASK 75-24-01-000-801-G00).

SUBTASK 73-11-05-020-171-G00

(11) Remove the wye duct [28], as follows (Figure 428):

(a) Remove the two bolts [30] and two saddle clamps [29] that attach the wye duct [28] to the High Pressure Turbine (HPT) inlet duct at the 9:30 o'clock position.

(b) Remove the wye duct [28].

SUBTASK 73-11-05-020-172-G00

(12) Remove the transient bleed air tube [31], as follows (View B, Figure 429):

(a) Remove the two bolts [34] that attach the transient bleed air tube [31] to the support bracket.

(b) Remove the coupling clamp [35] and seal [20] from the transient bleed valve [36].

1) Discard the seal [20].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Remove the four bolts [32] that attach the transient bleed air tube [31] to the combustion case.

(d) Remove the transient bleed air tube [31].

(e) Discard the metal seal ring [33] from the transient bleed air tube [31].

SUBTASK 73-11-05-020-173-G00

(13) Remove the booster anti-ice tube [37], as follows (View E, Figure 429):

(a) Remove the four bolts [42] and two strap clamps [43] that attach the booster anti-ice tube [37] to the support brackets.

(b) Remove the coupling clamp [46] and seal [45] from the booster anti-ice tube [38].

(c) Remove the coupling clamp [46] and seal [45] from the booster anti-ice tube [39].

(d) Discard the seals [45].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 OR PRE LEAP-1B SERVICE BULLETIN 72-0144

(e) Remove the bolt [47] that attaches the loop clamp [48] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(f) Remove the two bolts [47] that attach the strap clamp [43] to the support bracket.

SIA ALL

(g) Remove the coupling clamp [40] and seal [41] from the booster anti-ice tube [44].

1) Discard the seal [41].

(h) Remove the booster anti-ice tube [37].

(14) Remove the booster anti-ice tube [44], as follows (View G, Figure 429):

(a) Remove the two bolts [50] and clamp [49] that attach the booster anti-ice tube [44] to the support bracket.

(b) Remove the two bolts [53] and clamp [49] that attach the booster anti-ice tube [44] to the support bracket.

(c) Remove the coupling clamp [51] and seal [52] that attach the booster anti-ice tube [44] to the SBV valve.

1) Discard the seal [52].

(d) Remove the booster anti-ice tube [44] from the engine.

SUBTASK 73-11-05-000-030-G00

(15) Remove the 7th-stage air tube [55], as follows (View B, Figure 430):

(a) Remove the four bolts [56] that attach the 7th-stage air tube [55] to the HPC extension case.

1) Remove and discard the seal ring [57].

(b) Remove the four bolts [58] that attach the bracket [59] and 7th-stage air tube [55] to the HPT case.

1) Remove and discard the seal [60].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0005

(c) Remove the two bolts [62] that attach the 7th-stage air tube [55] to the 7th-stage air tube bracket.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0005 (Continued)

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(d) Remove the two bolts [62] that attach the strap clamp [61] and 7th-stage air tube [55] to the 7th-stage air tube bracket.

SIA ALL

SUBTASK 73-11-05-020-174-G00

(16) Disconnect the HJ8A harness [65] (TASK 73-22-01-000-808-G00) (View B, Figure 431).

SUBTASK 73-11-05-020-175-G00

(17) Remove the bracket [73], as follows (View D, Figure 431):

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(a) Loosen the two bolts [71] and two loop clamps [72] that attach the SBV TBV manifold [70] to the bracket [73].

1) Keep the loop clamps [72] installed on the bracket [73] and do not remove them from the engine.

SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0071 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

(b) Remove the bolt [76] and loop clamp [77] that attach the drain tube [75] to the bracket [73].

(c) Remove the two bolts [78] that attach the bracket [73] to the support bracket.

(d) Remove the bolt [85] that attaches the CCC air manifold [74] to the bracket [73].

SIA ALL

(e) Remove the bracket [73] from the engine.

SUBTASK 73-11-05-020-176-G00

(18) Detach the SBV TBV manifolds [70], as follows (View E, Figure 431):

SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0071 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

(a) Remove the four bolts [80] and four loop clamps [81] that attach the SBV TBV manifolds [70] to the bracket [82].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the two bolts [83] and four loop clamps [84] that attach the SBV TBV manifolds [70] to the bracket [82].

SIA ALL

(c) Detach the SBV TBV manifolds [70].

SUBTASK 73-11-05-020-177-G00

(19) Remove the CCC air manifold [74] (TASK 73-11-05-000-801-G00) (View F, Figure 431).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

NOTE: It is not necessary to remove the CCC air manifold [74].

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-020-178-G00

(20) Disconnect the PS3 tube [87] from only one tube end to make it flexible, as follows (View G, Figure 431):

NOTE: It is not necessary to remove any components from the engine.

(a) Loosen the two bolts [89] that attach the two loop clamps [88] and PS3 tube [87] to the support bracket.

(b) Disconnect the PS3 tube [63] from the fitting.

SUBTASK 73-11-05-020-179-G00

(21) Remove the start bleed tube [91], as follows (View B, Figure 432):

(a) Remove the four bolts [92] that attach the start bleed tube [91] to the HPC extension case.

1) Remove and discard the seal [93].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(b) Remove the two bolts [94] that attach the start bleed tube [91] to the start bleed bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(c) Remove the two bolts [98] that attach the start bleed clamp [99] to the start bleed bracket.

SIA ALL

(d) Remove the coupling clamp [96] that attach the start bleed tube [91] to the SBV valve [90].

1) Remove and discard the seal [97].

SUBTASK 73-11-05-020-181-G00

(22) Remove the 7th stage air tube [101], as follows (View B, Figure 433):

(a) Disconnect the air tube [107] from the 7th stage air tube [101].

(b) Remove the four bolts [102] and seal [103] that attach the 7th stage air tube [101] to the compressor case.

(c) Remove the four bolts [102] and seal [103] that attach the 7th stage air tube [101] to the HPT port.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(d) Remove the four bolts [105] that attach the 7th stage air tube [101] to the support brackets.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(e) Remove the four bolts [106] and two strap clamps [104] that attach the 7th stage air tube [101] to the support brackets.

SIA ALL

(f) Discard the seals [103] from the 7th stage air tube [101].

SUBTASK 73-11-05-020-180-G00

(23) Remove the LPT ACC valve drain tube [108], as follows (View H, Figure 433):

(a) Put a 10 gallon (38 l) fuel resistant container, STD-200, below the ACC valve drain tube that you will remove.

(b) Disconnect the B-nut from the ACC valve drain tube and let it drain into the 10 gallon (38 l) fuel resistant container, STD-200.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Remove the bolt [109] that attaches the loop clamp [110] to the drain tube bracket.

SUBTASK 73-11-05-020-182-G00

(24) Disconnect the T3 sensor [111], as follows (TASK 73-21-64-000-801-G00) (Figure 434):

(a) Loosen all the bolts that attach the loop clamps of the T3 sensor [111].

NOTE: There is no need to remove the bolts and loop clamps.

(b) Loosen the B-nut connected to the combustor case threaded insert adapter.

SUBTASK 73-11-05-020-183-G00

(25) Remove the 7th-stage air tube [115], as follows (View B, Figure 435):

(a) Remove the four bolts [117] that attach the 7th-stage air tube [115] to the compressor case.

1) Remove and discard the seal [116].

(b) Remove the four bolts [117] that attach the 7th-stage air tube [115] to the HPT port.

1) Remove and discard the seal [116].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0005

(c) Remove the four bolts [118] that attach the 7th-stage air tube [115] and support bracket [119] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(d) Remove the two bolts [124] that attach the block clamp [125] to the bracket [120].

(e) Remove the two bolts [121] that attach the bracket [120] to the bracket.

(f) Remove the two bolts [122] and strap clamp [123] that attach the 7th-stage air tube [115] to the bracket.

SIA ALL

(g) Remove the 7th-stage air tube [115].

SUBTASK 73-11-05-020-184-G00

(26) Remove the HPT ACC valve drain tube [126], as follows (View F, Figure 435):

(a) Put a 10 gallon (38 liter) fuel resistant container, STD-1285, below the HPT ACC valve drain tube [126].

(b) Disconnect the HPT ACC valve drain tube [126] from the drain tube (View K, Figure 435).

1) Let the fuel drain into the 10 gallon (38 liter) fuel resistant container, STD-1285.

(c) Remove the bolt [127] that attaches the loop clamp [128] to the fuel manifold bracket.

(d) Remove the bolt [127] that attaches the loop clamp [128] to the tube bracket.

(e) Disconnect the HPT ACC valve drain tube [126] from the LPT ACC valve tube [129].

(f) Remove the bolt [127] that attaches the loop clamp [128] to the support bracket.

(g) Remove the bolt [127] that attaches the loop clamp [128] to the ACC drain bracket.

(h) Disconnect the HPT ACC valve drain tube [126] from to the ACC valve.

(i) Remove the HPT ACC valve drain tube [126].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-032-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(27) Loosen the fuel manifolds B-nuts as follows and do these steps to drain the three fuel manifold sections as follows:

NOTE: There are no fuel manifold drain plugs on the engine. The three fuel manifold sections are drained by decreasing the fuel pressure and draining each fuel manifold tube. Each fuel manifold tube is independent and must be drained at its lowest connection point on each manifold section. Each manifold section has two separate manifold tubes.

NOTE: Both fuel manifold section tubes that supply the fuel nozzle to be removed must be drained before the fuel nozzle removal. The fuel manifolds can have a small amount of pressure remaining after the fuel manifold tube is drained.

(a) Remove the thrust reverser rod No. 2.

(b) Put 10 gallon (38 l) fuel resistant container, STD-200, below the fuel manifold drain point of the fuel nozzle [1] you will remove.

(c) Remove all the safety wire from the B-nuts [3] (at 18 fuel nozzles positions).

(d) Loosen the fuel manifold B-nuts [3] at the lower 6 o'clock position.

1) Fully remove the B-nuts [3] from the fuel nozzle [1].

(e) Loosen the fuel manifold B-nuts [3] at the upper 12 o'clock position.

1) Fully remove the B-nuts [3] from the fuel nozzle [1].

(f) Drain all the fuel into 10 gallon (38 l) fuel resistant container, STD-200.

(g) Loosen the remaining B-nuts [3] from the engine.

G. Fuel Nozzle Removal

SUBTASK 73-11-05-020-185-G00

CAUTION BE CAREFUL WHEN YOU SHOCK THE MACHINE BOLTS. IF YOU ARE NOT CAREFUL, YOU CAN CAUSE DAMAGE TO THE CASE OR SURROUNDING COMPONENTS.

(1) Remove the fuel nozzle bolts as follows:

(a) After one hour passes, carefully shock the fuel nozzle bolts heads with standard hammer, STD-1242, and drift punch, STD-3842.

NOTE: This shock can help to break loose any material buildup on bolts shank, threads, or bolt point.

(b) Loosen the torque of the fuel nozzle bolts with half a turn counterclockwise.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

CAUTION DO NOT REMOVE THE BOLTS TOO QUICKLY. THE BOLTS CAN BECOME HOT AND SEIZE. IF YOU DO NOT OBEY, DAMAGE TO BOLTS AND THREADS CAN OCCUR.

(c) Apply penetrating fluid, D50186 [CP2691], to the fuel nozzle bolts again.

1) Let the lubricant soak into the threads for another hour.

NOTE: Do not use power tools when you remove the bolts.

(d) After the second hour of the second soak, start the removal of the fuel nozzle bolts.

1) Use a ratchet to turn the bolts slowly.

(e) If any bolt becomes too tight, apply penetrating fluid, D50186 [CP2691], onto the bolt shaft and in the bolt hole.

NOTE: Exposed seals and removed fuel nozzle bolts must be discarded during the removal process.

1) If it is necessary, use a ratchet, STD-6847, and turn the fuel nozzle bolts slowly.

NOTE: If you remove the fuel nozzle bolts too fast, they can get hot and seize.

2) Turn the machine bolts counterclockwise for 3 revolutions.

3) Apply penetrating fluid, D50186 [CP2691], to the bolts shaft and in the bolt hole.

4) Loosen the bolts again.

5) If the bolts cannot be removed, repeat the steps above.

(f) Remove all 72 fuel nozzles bolts.

(g) Discard the fuel nozzle bolts.

SUBTASK 73-11-05-720-001-G00

(2) If it is necessary to remove any support bracket that is attach to the fuel nozzle, use temporary marker, G50530 [CP5061], to do a temporarily position mark to the associated bracket to the associated fuel nozzle [1] position, before you start removing brackets and fuel nozzles.

SUBTASK 73-11-05-020-186-G00

(3) Remove the fuel nozzles bolts that attach the fuel nozzle [1] to the combustion case.

(a) Make sure that the fuel nozzles bolts were removed before the fuel nozzles and support brackets.

NOTE: It is recommended to keep the brackets assembled on top of the fuel nozzles until the fuel nozzles are removed from the engine and to mark each fuel nozzle position/bracket, to make the installation easy.

SUBTASK 73-11-05-020-187-G00

(4) Loosen the two bolts [11] and two loop clamps [12] that attach the fuel manifold [13] to the support bracket [14] at the fuel nozzle [1] (positions 17, 18, 3, 6, 7, 10, 11, and 14) (Figure 425).

(a) Do not remove the hardware from the engine.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-000-031-G00

(5) Remove or disconnect the support brackets attached to the fuel nozzle [1] and combustion case on QUADRANT 1, as follows (Figure 424):

(a) If necessary, loosen the two bolts [132] that attach the support bracket [131] to the support bracket [133] at the fuel nozzle [1] (position 17) (View B, Figure 436).

(b) Move the support bracket [133] away (position 17, and 16).

NOTE: The support bracket [133] and support bracket [131] are two brackets assembled together that span across fuel nozzle [1] (position 17) and fuel nozzle [1] (position 16).

1) Move the support bracket [134] away at fuel nozzle [1] (position 17).

(c) Move the support bracket [137] away at the fuel nozzle [1] (position 18) (View B, Figure 437).

(d) Remove the bracket assembly [139] from the engine at the fuel nozzle [1] (position 2 and 3) (View B, Figure 439, View B, Figure 440).

NOTE: The bracket assembly [139] is bracket that span across the fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

(e) Move the support bracket [143] away at the fuel nozzle [1] (position 3) (View B, Figure 440).

SUBTASK 73-11-05-020-188-G00

(6) Remove or disconnect the support brackets attached to fuel nozzle [1] and combustion case on QUADRANT, 2 as follows (Figure 424):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

(a) Remove the bracket [147], bracket [145] and bracket [144] from the engine core at the fuel nozzle [1] (position 5 and 6) (View B, Figure 442).

NOTE: The support the bracket [147] and bracket [145] are two brackets assembled together that span across the fuel nozzle [1] (position 5) and fuel nozzle [1] (position 6).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(b) Remove the bracket [149], and bracket [151] from the engine core at the fuel nozzle [1] (position 5 and 6).

1) Keep the bracket [149] and bracket [151] assembled with the bolts [148] (View B, Figure 442).

NOTE: The bracket [149] and bracket [151] are two brackets assembled together that span across the fuel nozzle [1] (position 5) and fuel nozzle [1] (position 6).

SIA ALL; AIRPLANES WITH PRE LEAP-1B SB 72-0135 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

(c) Remove the bracket [152] from the engine core at the fuel nozzle [1] (View B, Figure 443).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(d) Remove the support bracket [156] from the engine core at the fuel nozzle [1] (View B, Figure 443).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(e) Loosen the bolt [162] that attaches the support bracket [161] to the bracket at the combustion case (View B, Figure 444).

1) Move the support bracket [161] away at the fuel nozzle [1] (position 7).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Loosen the two bolts [168] and two bolts [169] that attach the SBV and TBV manifold [170] to the bracket [164] with the four p-clamps [171] at the fuel nozzle [1] (position 7) (View D, Figure 444).

1) Do not remove the hardware from the engine core.

(g) Loosen the bolt [166] that attaches the PS3 air tube [167] to the bracket [164] with the loop clamps [165].

1) Do not remove the hardware from the engine core.

(h) Loosen the two bolts [163] that attach the bracket [164] to the support bracket [159].

1) Do not remove the hardware from the engine core.

SIA ALL

(i) Remove the support bracket [159] from the engine core at the fuel nozzle [1] (position 7) (View B, Figure 444).

(j) Remove the two bolts [173] and start bleed bracket [172] attached to the combustor case at the fuel nozzle [1] (position 7) (View C, Figure 444).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(k) Loosen the bolt [177], bolt [180], bolt [182], and bolt [183] that attach the oil tubes to the bracket [176] with the p-clamp [178], p-clamp [179], p-clamp [181], and p-clamp [184] at the fuel nozzle [1] (position 9) (View C, Figure 446).

1) Do not remove the hardware from the engine.

2) Move the bracket [176] away at the fuel nozzle [1] (position 9).

SIA ALL

SUBTASK 73-11-05-020-189-G00

(7) Remove or disconnect the support brackets attached to the fuel nozzle [1] and combustion case on QUADRANT 3, as follows (Figure 424):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(a) Loosen the two bolts [193] with the two loop clamps [191] that attach the SBV TBV manifolds [192] to the support bracket [186] at the fuel nozzle [1] (position 10) (View C, Figure 447).

1) Do not remove the hardware from the engine core.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(b) Loosen the bolt [193] that attaches the SBV TBV manifolds [192] to the support bracket [186] with loop clamp [191] at the fuel nozzle [1] (position 10) (View C, Figure 447).

1) Do not remove the hardware from the engine core.

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Loosen the bolt [189] that attaches the to the support bracket [186] with the loop clamp [190] at the fuel nozzle [1] (position 10) (View B, Figure 447).

1) Move the bundle of support bracket [186] away for clearance.

2) Move the support bracket [188] away at the fuel nozzle [1] (position 10).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

(d) Remove the four bolts [206] with the four hinged loop clamps [205] that attach the SBV TBV manifolds [207] to the tube bracket [198] at the fuel nozzle [1] (position 11) (View C, Figure 448).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(e) Remove the two bolts [206] with the fuel hydraulic support block [194] that attach the SBV TBV manifolds [207] to the tube bracket [198] at the fuel nozzle [1] (position 11) (View C, Figure 448).

SIA ALL

(f) Remove the bolt [127] with the loop clamp [128] that attaches the HPT ACC valve drain tube [126] to the tube bracket [198] at the fuel nozzle [1] (position 11) (View D, Figure 448).

(g) Remove the tube bracket [198] from the engine core.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

1) Keep the tube bracket [198] assembled to the tube bracket [202] with the bolt [204].

SIA ALL

(h) Move the support bracket [196] away at the fuel nozzle [1] (position 11) (View B, Figure 448).

(i) Move the drain tube bracket [208] away at the fuel nozzle [1] (position 12) (View B, Figure 449).

NOTE: The drain tube bracket [208] spans across the fuel nozzle [1] (position 12) and fuel nozzle [1] (position 13).

SUBTASK 73-11-05-020-190-G00

(8) Remove or disconnect the support brackets attached to the fuel nozzle [1] and combustion case on QUADRANT 4, as follows (Figure 424):

(a) Move the support bracket [211] away at the fuel nozzle [1] (position 14) (View B, Figure 451).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

(b) Loosen the two bolts [216] with the two loop clamps [215] that attach the fuel manifold to the support bracket [213] at the fuel nozzle [1] (position 14) (View C, Figure 451).

1) Move the support bracket [213] away at the fuel nozzle [1] (position 14).

SIA ALL

(c) Remove the two bolts [224] and two loop clamps [225] that attach the LPT ACC fuel manifold to the support bracket [221] and support bracket [223] at the fuel nozzle [1] (position 15) (Figure 452).

(d) Remove the bundle of the support bracket [221], support bracket [223], and support bracket [220] from the engine core at the fuel nozzle [1] (position 15) (View B, Figure 452).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Remove the three bolts [231], bolts [232], three loop clamps [230], and loop clamp [230] that attach the TCF accelerometer cable, EGT harnesses, and T3 sensor at the fuel nozzle [1] (position 16) (View C, Figure 453).

(f) Remove the four bolts [130] that attach the support bracket [131] and fuel nozzle [1](position 16) to the case (View B, Figure 453).

1) Move the support bracket [131] away at the fuel nozzle [1] (position 16).

SUBTASK 73-11-05-000-033-G00

CAUTION BE PREPARED TO REPLACE DAMAGED INSERTS WHEN REMOVING FUEL NOZZLES AND CASE MOUNTED COMPONENTS. IF THE DAMAGED INSERTS ARE NOT REPAIRED OR REPLACED, DAMAGE TO THE ENGINE CAN OCCUR.

(9) Remove the fuel nozzle [1] (positions 1 through 18) as follows:

(a) To remove the multiple fuel nozzles or the full set of fuel nozzles, do these steps:

NOTE: If you will remove multiple fuel nozzles or the full set of fuel nozzles at the same time, it is preferential to remove the nozzles in sets (Figure 424).

NOTE: The fuel nozzle removal sequence is for reference only and may be changed as necessary.

1) If it is necessary, loosen and partially remove an adjacent fuel nozzle in order to provide access to rotate the fuel nozzle out of the combustion case during fuel nozzle removal.

a) If you loosen three or more fuel nozzle bolts, replace the fuel nozzle seal assembly.

2) Support the fuel nozzles [1] (positions 1 through 18) with your hand and move the mounting flange aft and down.

NOTE: This will let you disengage the tip of the fuel nozzle from the combustor radial mixer (cup).

3) Lift the fuel nozzles [1] (positions 1 through 18) and move the mounting flange aft and down.

4) Turn the fuel nozzles [1] (positions 1 through 18) to remove the fuel nozzles [1] from the combustion case as follows:

a) Fuel Nozzle (FN) at positions 1, 2, 3, 18, and 17 (removed at the 1:30 o'clock position)

NOTE: FN 2 and FN 3 need to be turned right to get FN 1 removed.

<1> The FN 1 turn to the RIGHT and out of the case.

<2> The FN 2 turn to the LEFT and out of the case.

<3> The FN 3 turn to the LEFT and out of the case.

<4> The FN 18 turn to the RIGHT and out of the case.

<5> The FN 17 turn to the RIGHT and out of the case.

b) FN 4, 5, 6, 7, 8, and 9 (removed at the 3 to 5 o'clock position)

NOTE: FN 5 and FN 6 need to be turned right to get FN 4 removed.

<1> The FN 4 turn DOWN and out of the case.

<2> The FN 5 turn UP and out of the case.

<3> The FN 6 turn UP and out of the case.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

<4> The FN 7 turn UP and out of the case.

<5> The FN 8 turn to the RIGHT and out of the case.

<6> The FN 9 turn to the RIGHT and out of the case.

c) The FN 11, 10, and 12 (removed at the 7 to 8 o'clock position)

NOTE: FN 12 needs to be turned up to get FN 11 removed.

<1> The FN 11 turn UP and out of the case.

<2> The FN 10 turn LEFT and out of the case.

<3> The FN 12 turn DOWN and out of the case.

d) FN 16, 15, 14, and 13 (removed at the 9 o'clock position).

NOTE: FN 15 and FN 14 need to be turned down to get FN 16 removed.

<1> The FN 16 turn DOWN and out of the case.

<2> The FN 15 turn UP and out of the case.

<3> The FN 13 turn UP and out of the case.

(b) Drain all residual fuel from the fuel nozzle [1] into the 10 gallon (38 l) fuel resistant container, STD-200.

(c) Remove and discard the seals [4] from the fuel nozzles [1] (positions 1 through 18) or the combustion case.

(d) Install protective covers on the fuel nozzle, the fuel nozzle ports, and fuel manifold connections.

(e) Cover the fuel nozzle pad with 3M 851 Tape, G51403 [CP2166], on the combustion case.

(f) Attach DO NOT OPERATE tags, STD-858, to the fuel nozzles [1].

(g) Place all 18 removed fuel nozzles [1] on a bench and cap nozzle inlet fitting and aft heat shield.

(h) Obtain and discard all 18 removed fuel nozzle seals [4].

(i) Record serial number and respective cup position of the removed fuel nozzles [1].

(j) Record engine TSN and CSN.

(k) Send the removed fuel nozzles [1] and these records to:

Advanced Atomization Technologies L.L.C.

Customer Support

7777 North Glen Harbor Blvd.

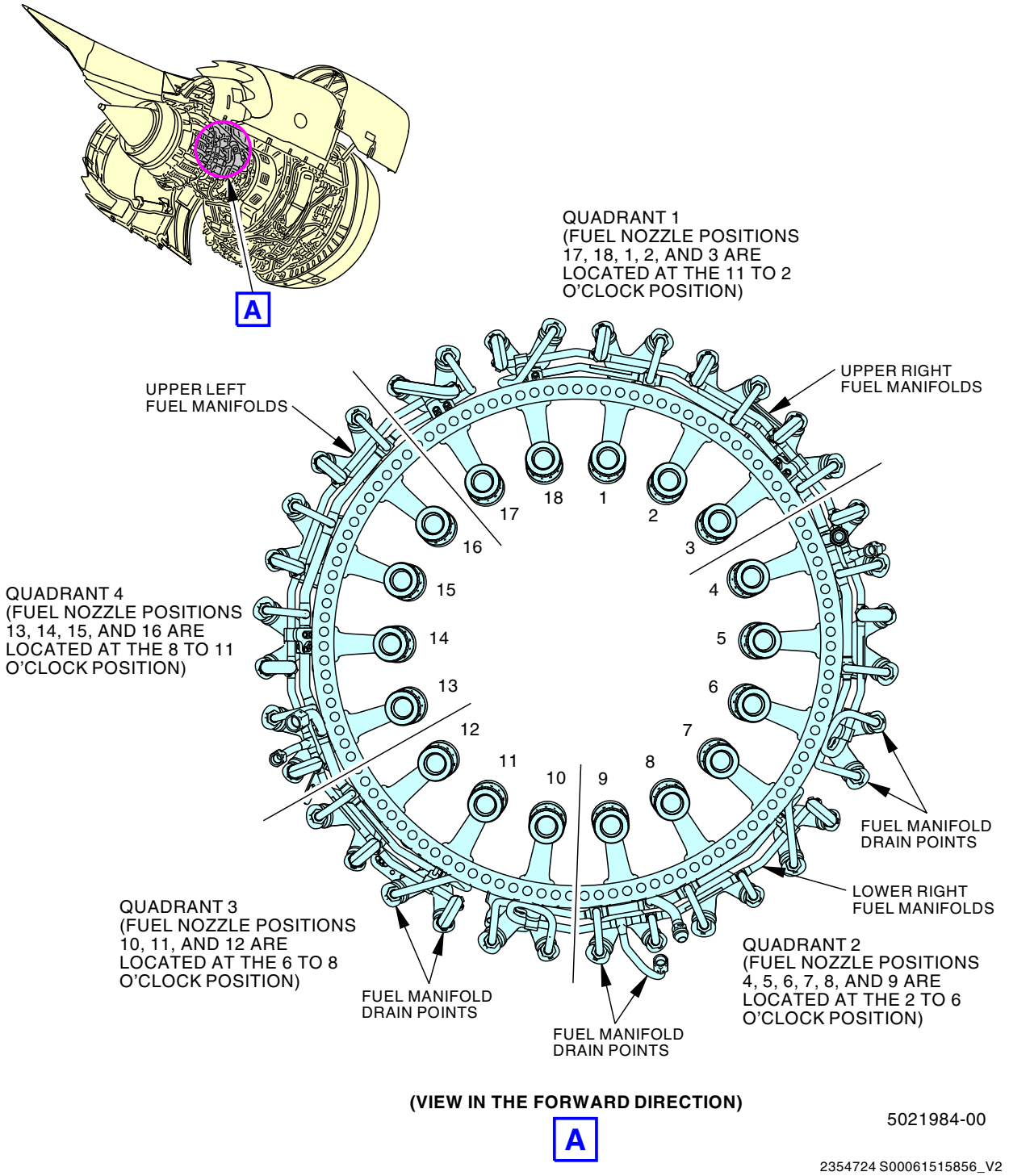
Glendale, AZ 85307

Phone: (623) 872-6160

U.S.A.

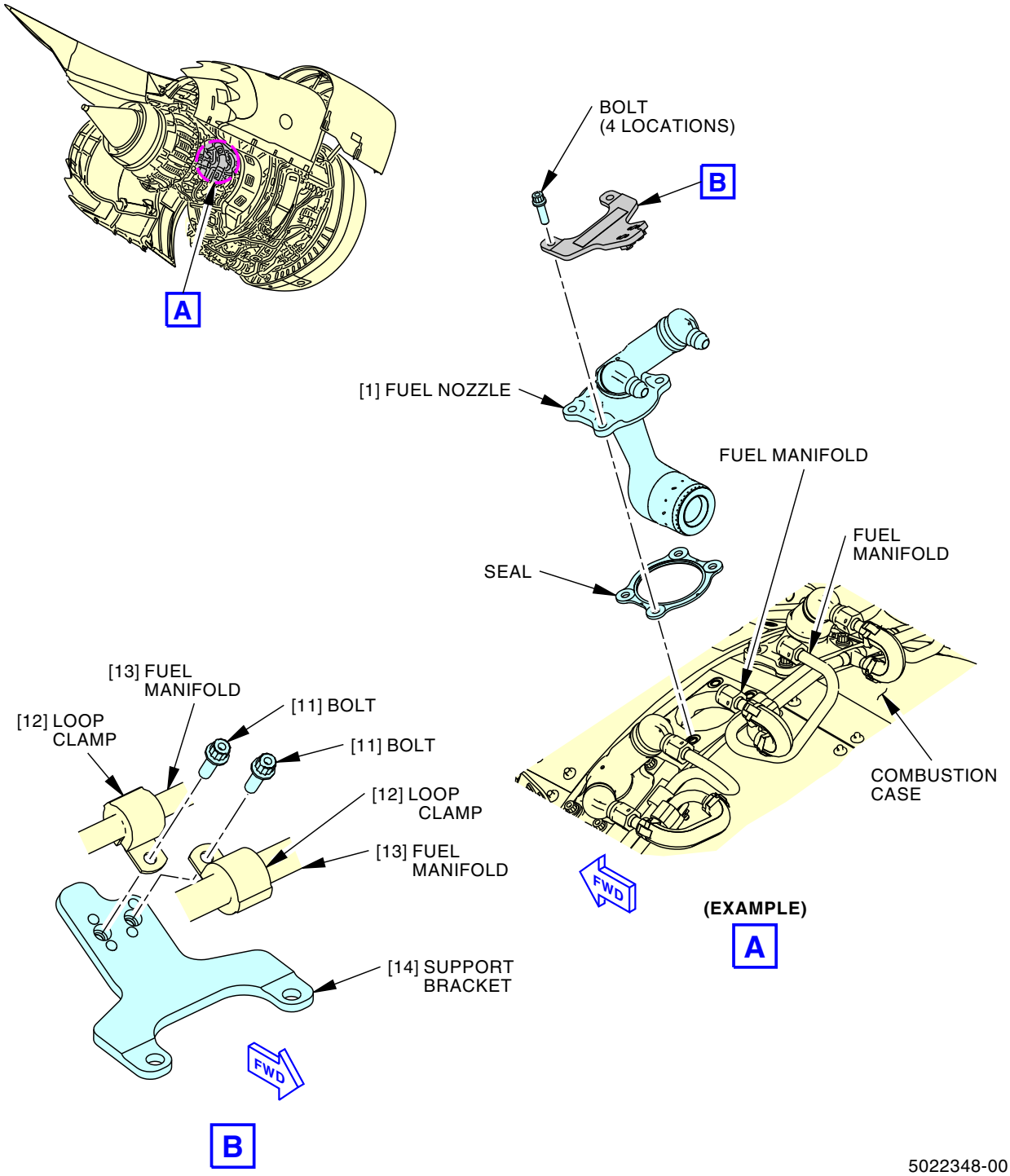
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle Positions and Fuel Manifold Drain Points
Figure 424/73-11-05-990-855-G00

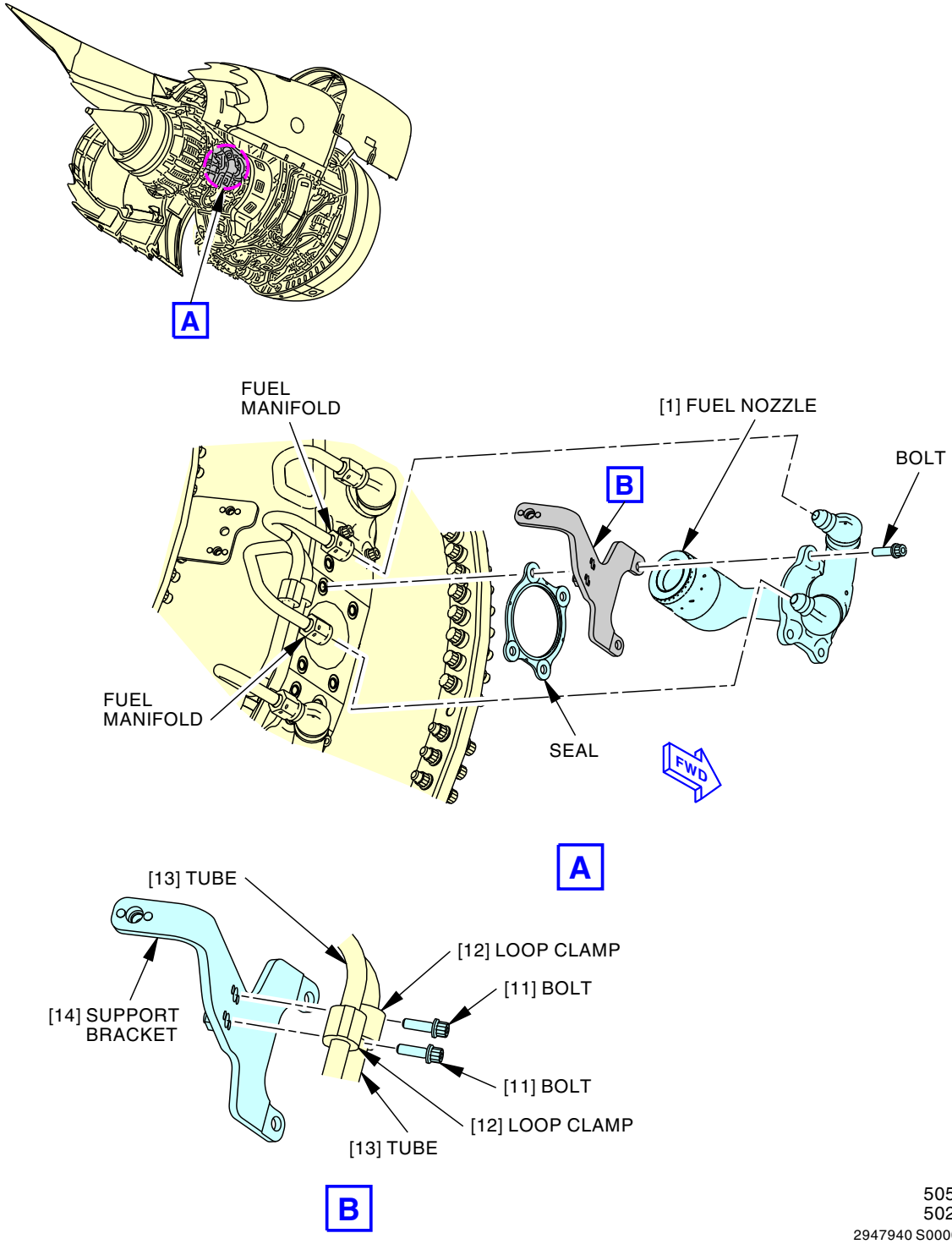
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5022348-00
2947939 S0000724971_V1

Loosen p-clamps on fuel nozzles (positions 17, 18, 3, 6, 10, and 14) Installation
Figure 425/73-11-05-990-856-G00

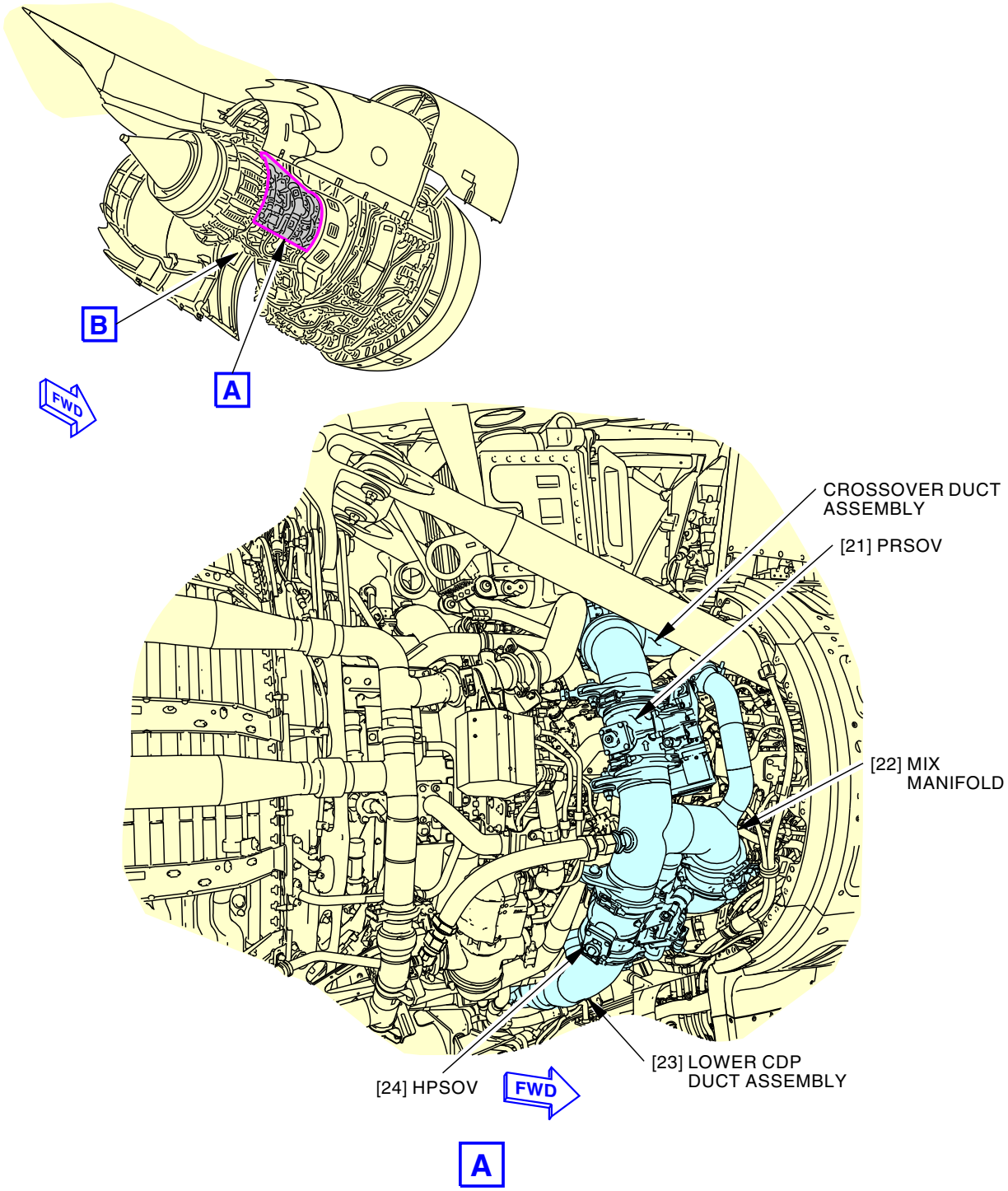
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5058973-00
5022002-00
2947940 S0000724972_V1

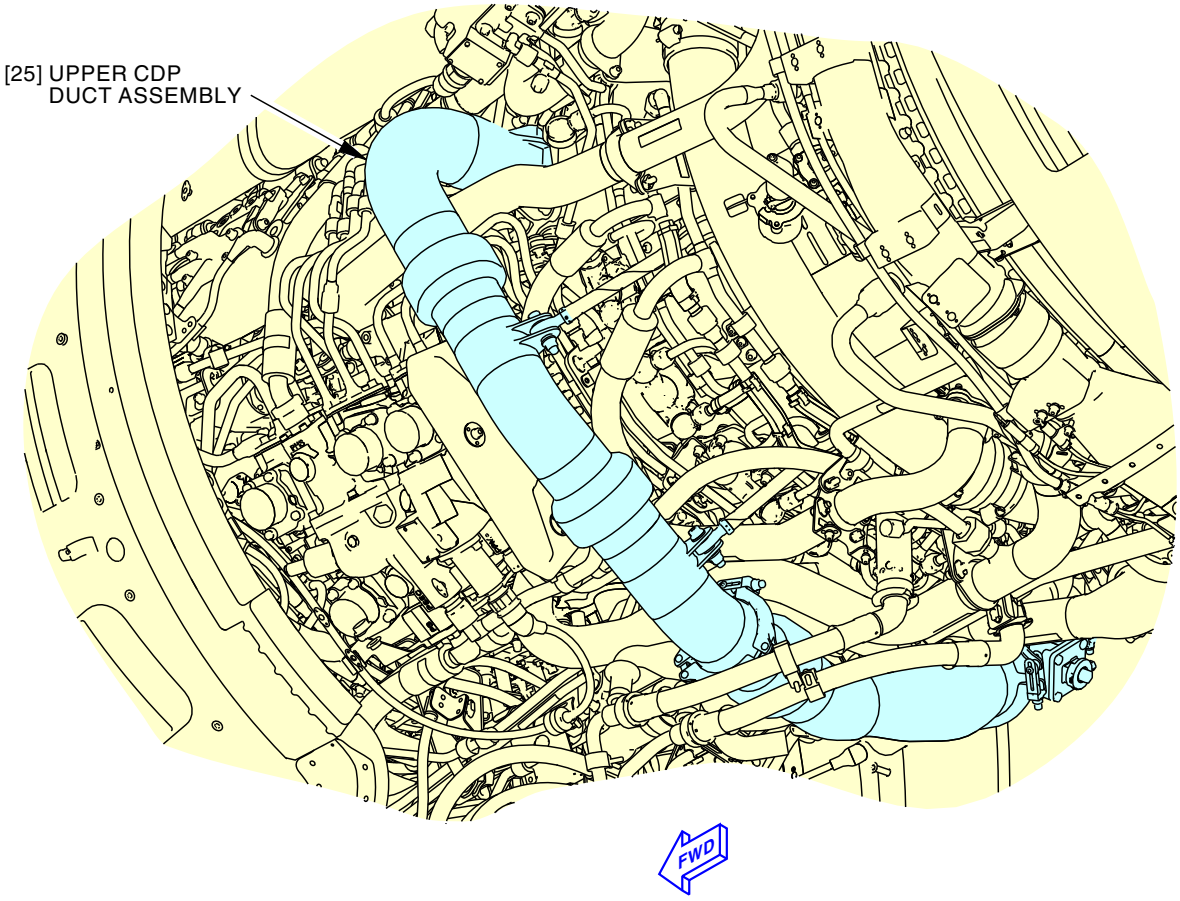
Loosen p-clamps on fuel nozzles (positions 7, and 11) Installation
Figure 426/73-11-05-990-857-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Build Up (EBU) Hardware Installation
Figure 427/73-11-05-990-858-G00 (Sheet 1 of 2)

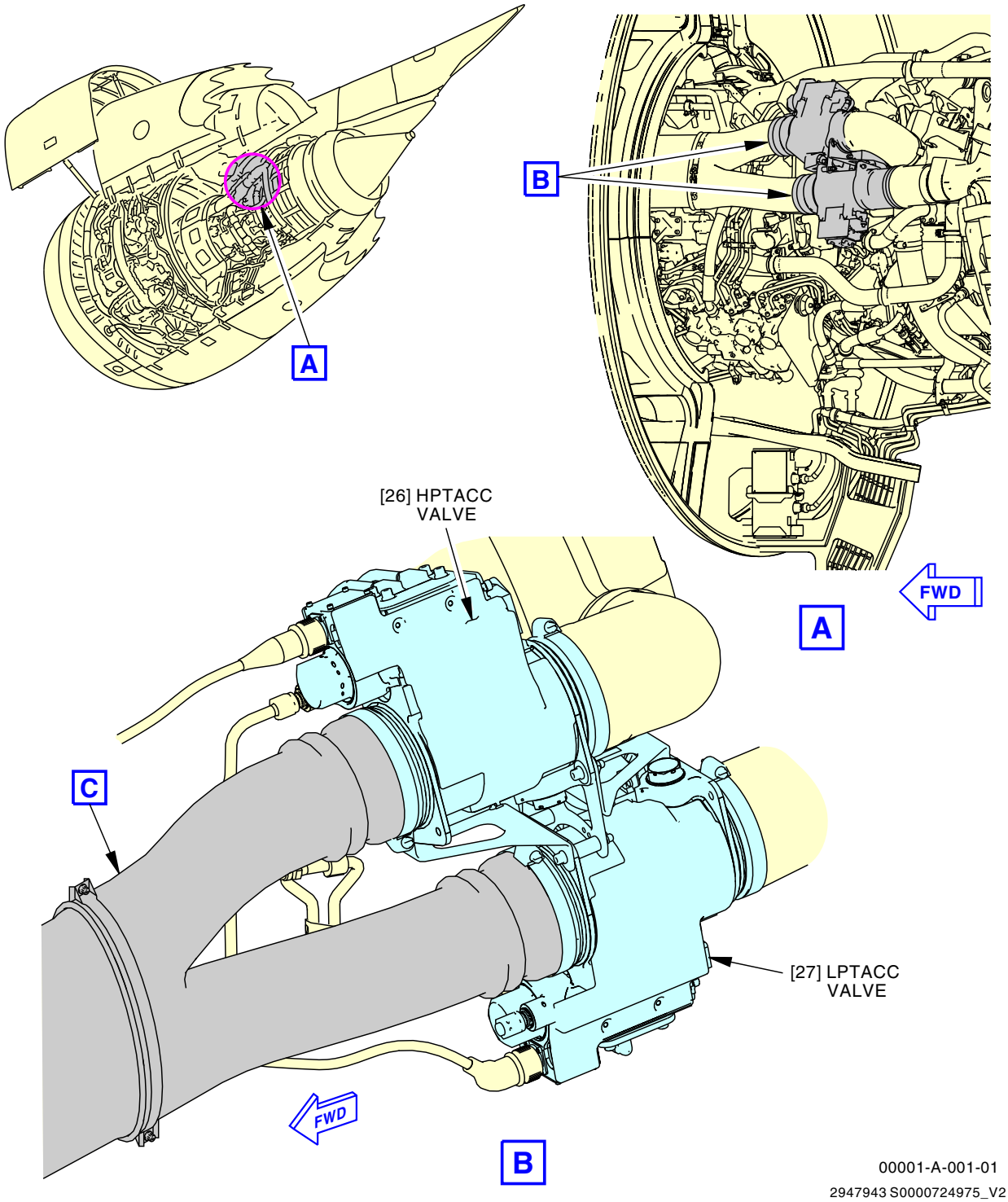
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2947942 S0000724974_V1

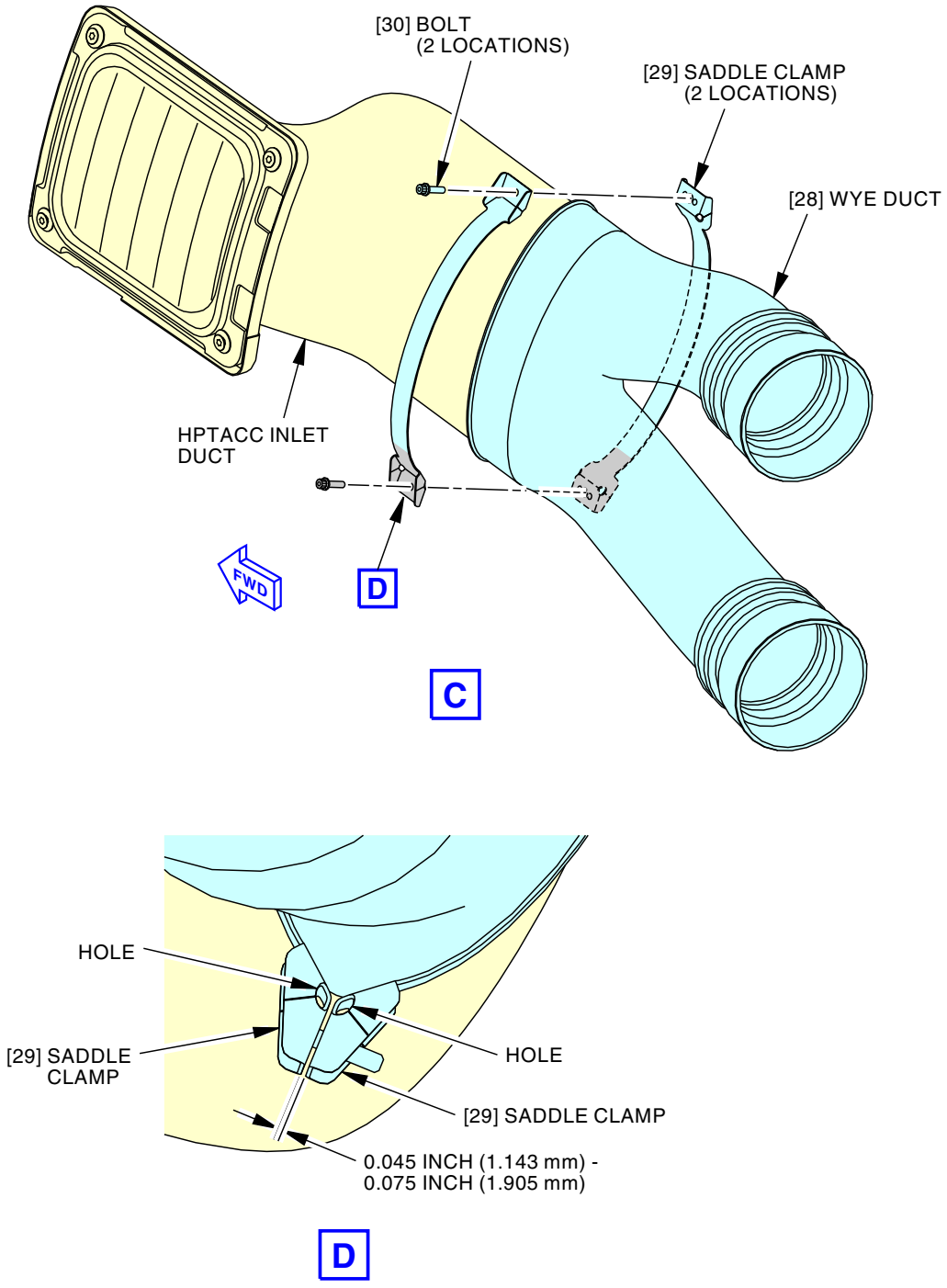
Engine Build Up (EBU) Hardware Installation
Figure 427/73-11-05-990-858-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



HPT and LPT Valve Installation
Figure 428/73-11-05-990-859-G00 (Sheet 1 of 2)

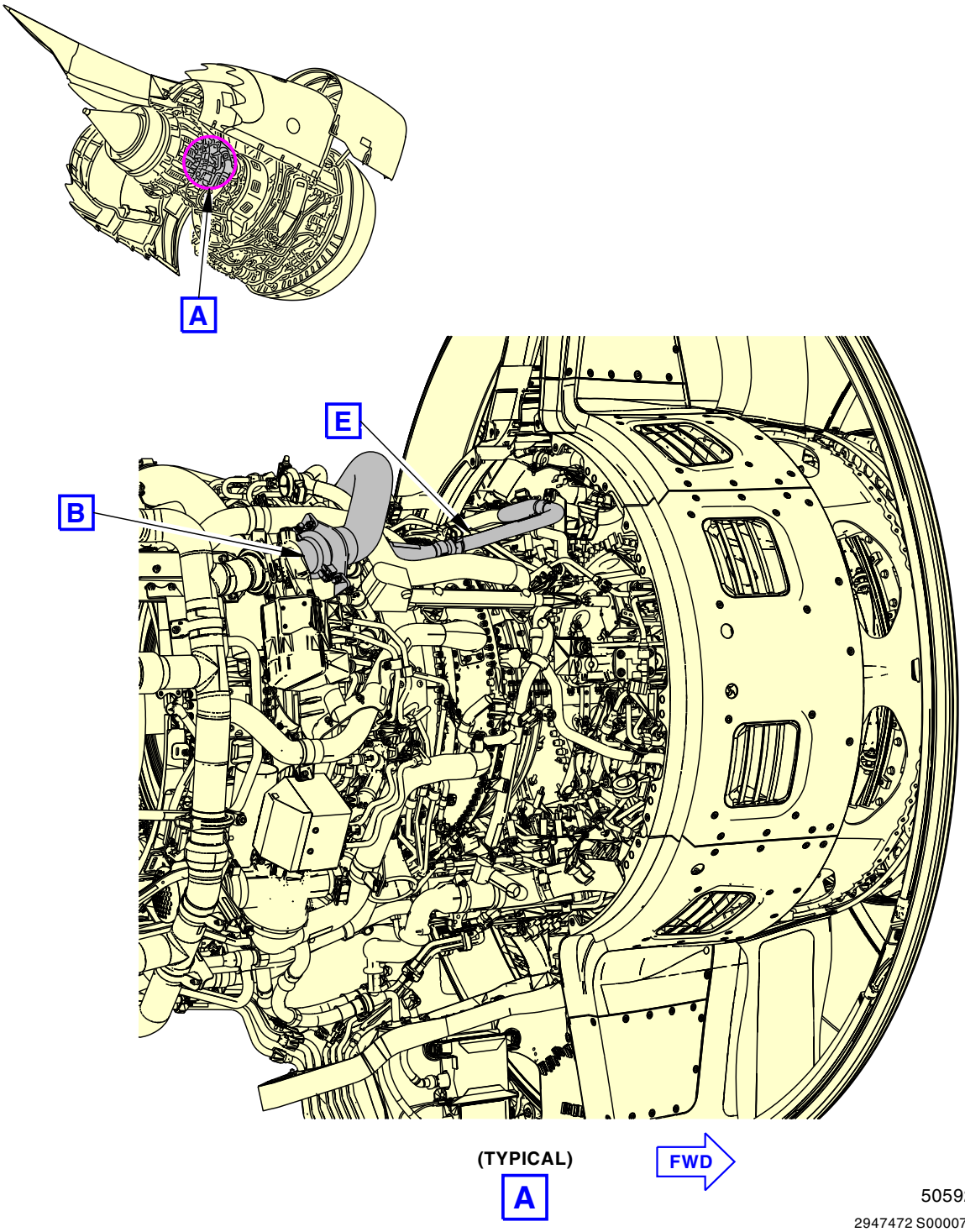
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2955742 S0000733088_V1

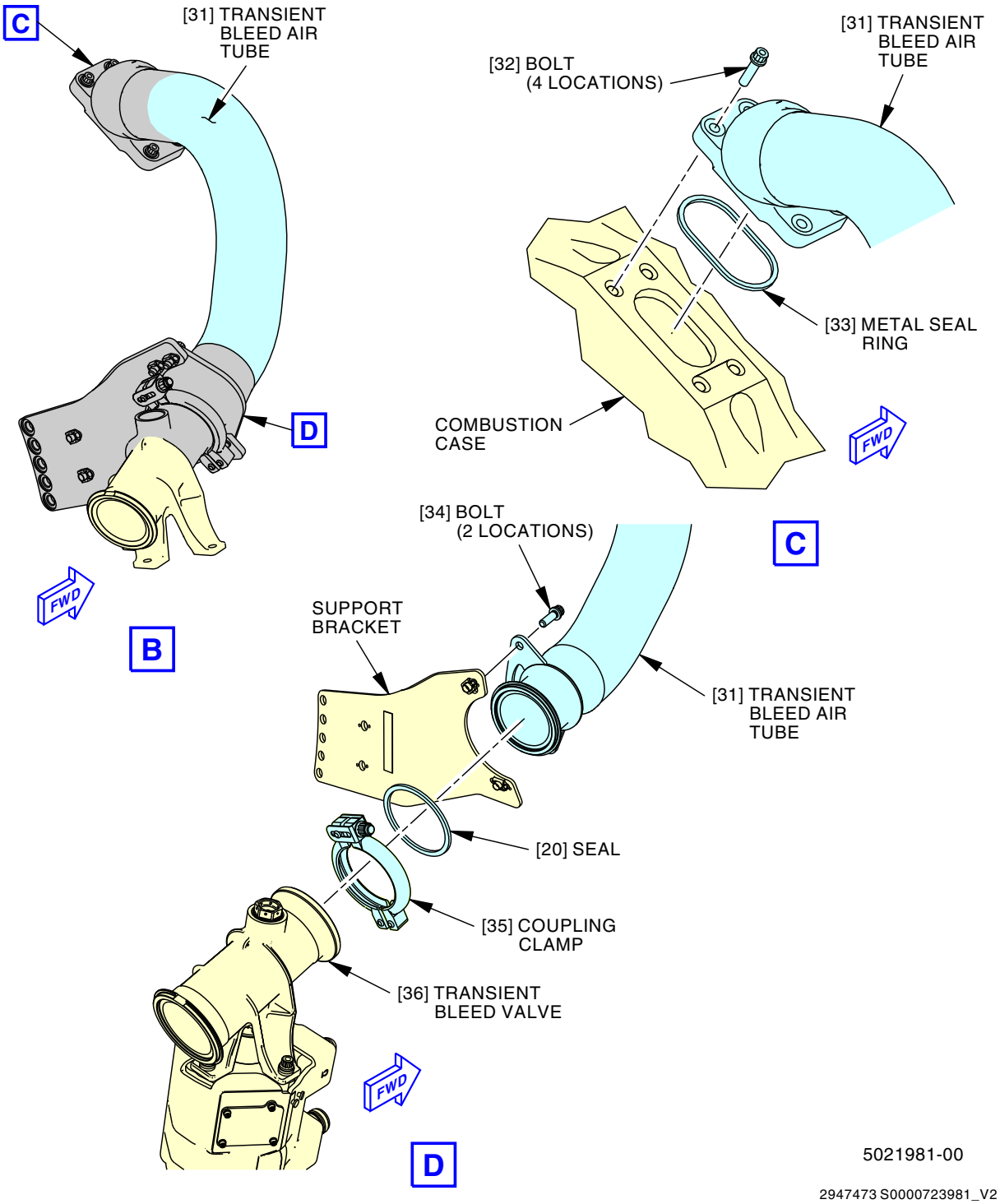
HPT and LPT Valve Installation
Figure 428/73-11-05-990-859-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



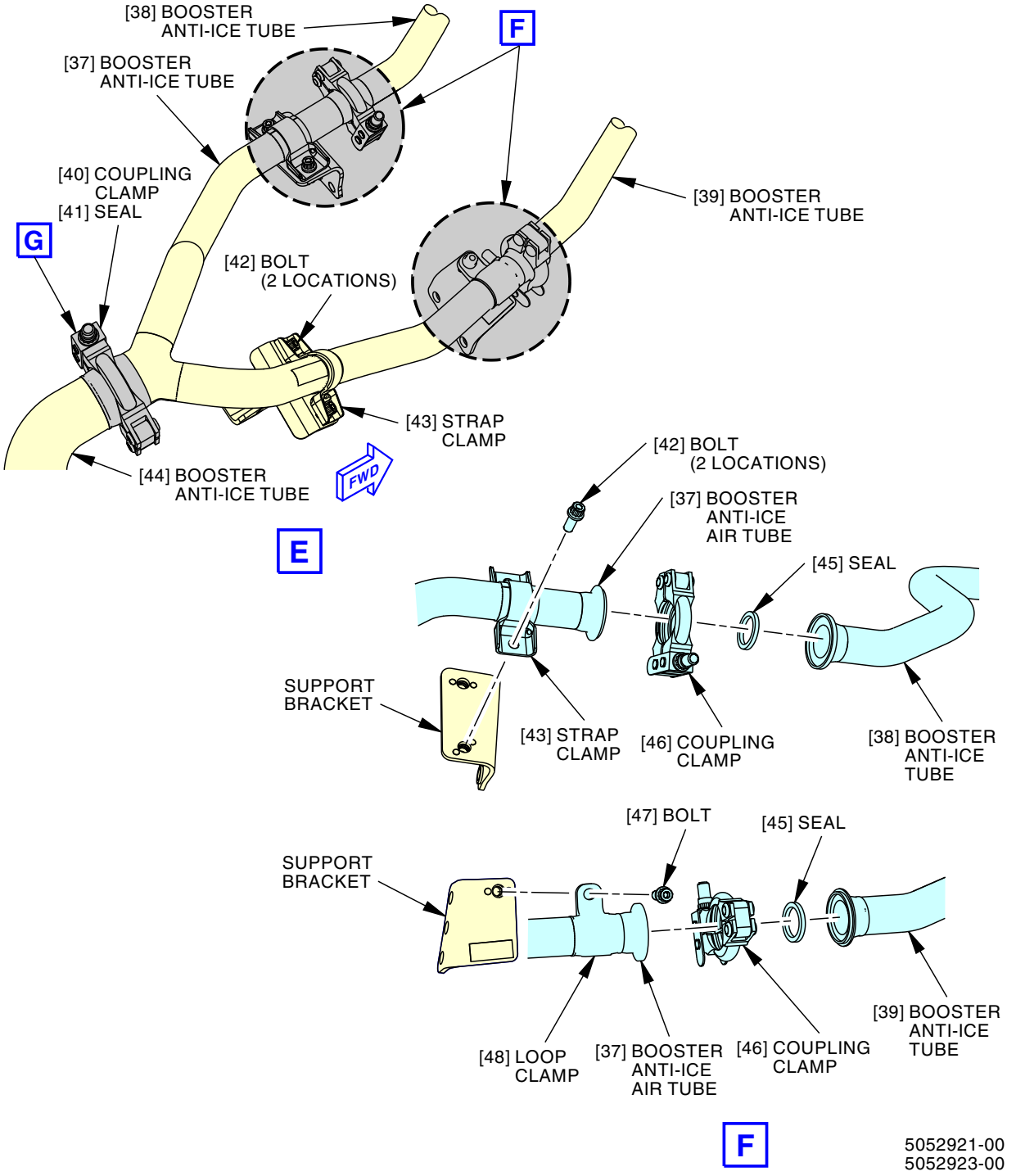
Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



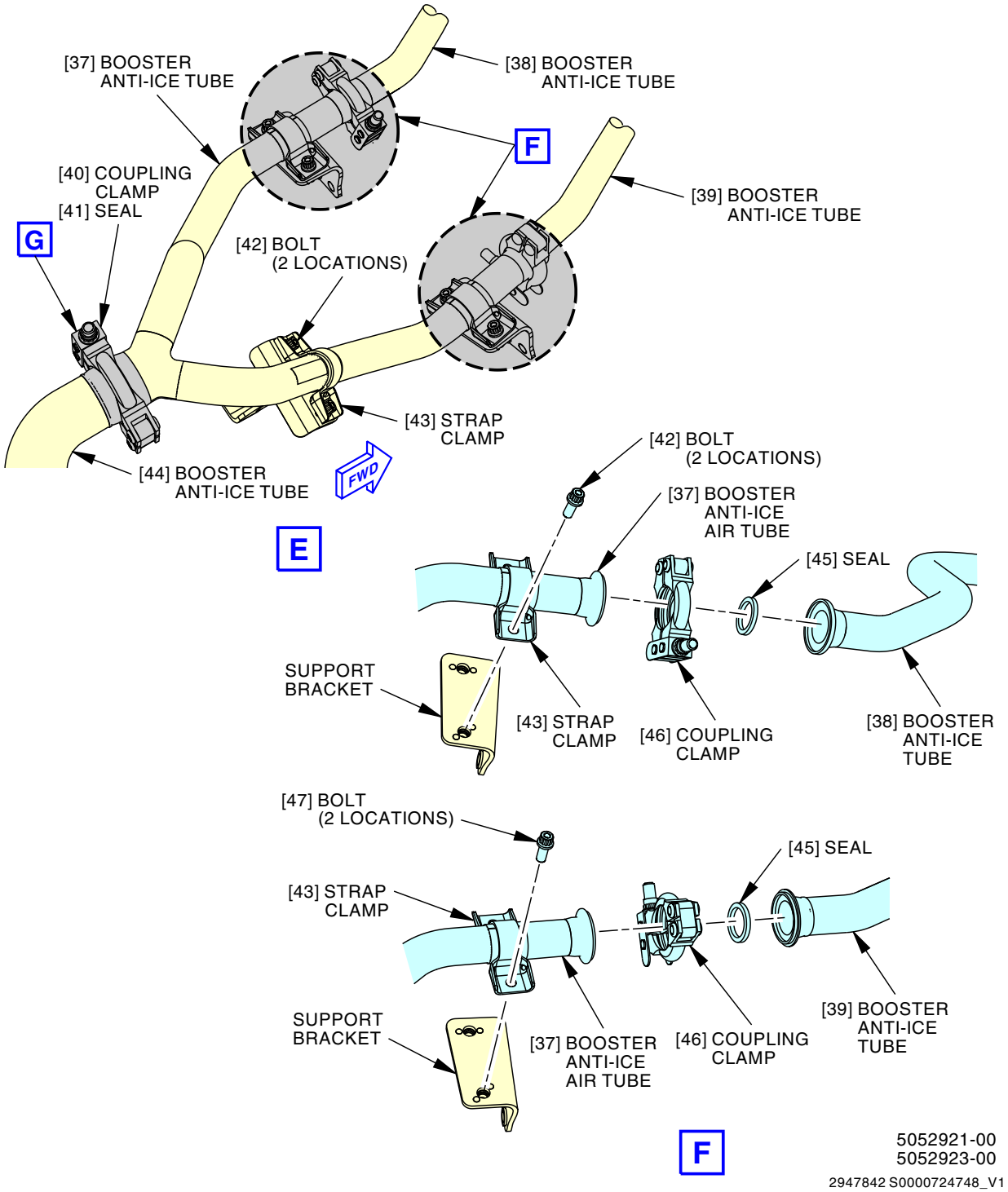
Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



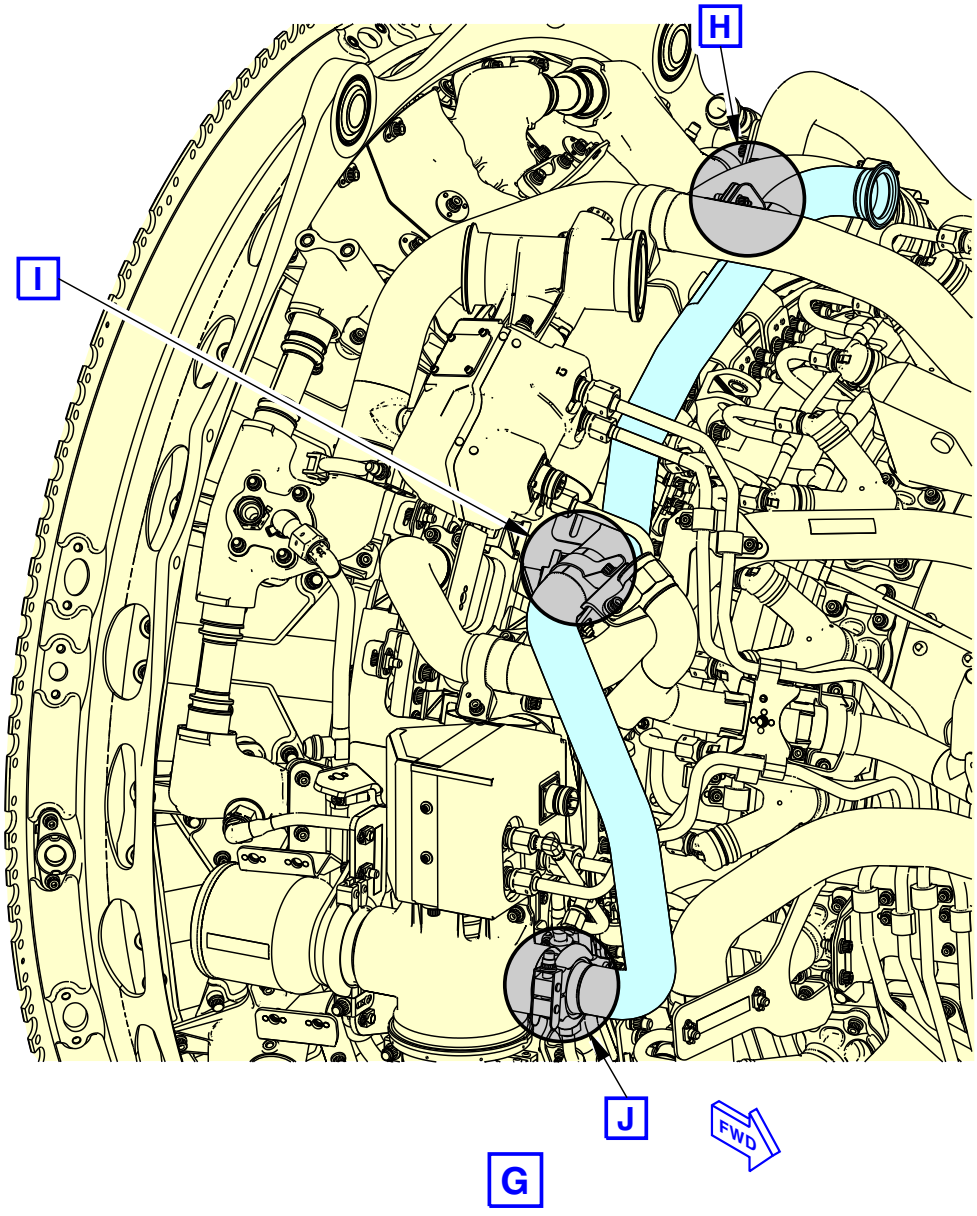
Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 4 of 6)

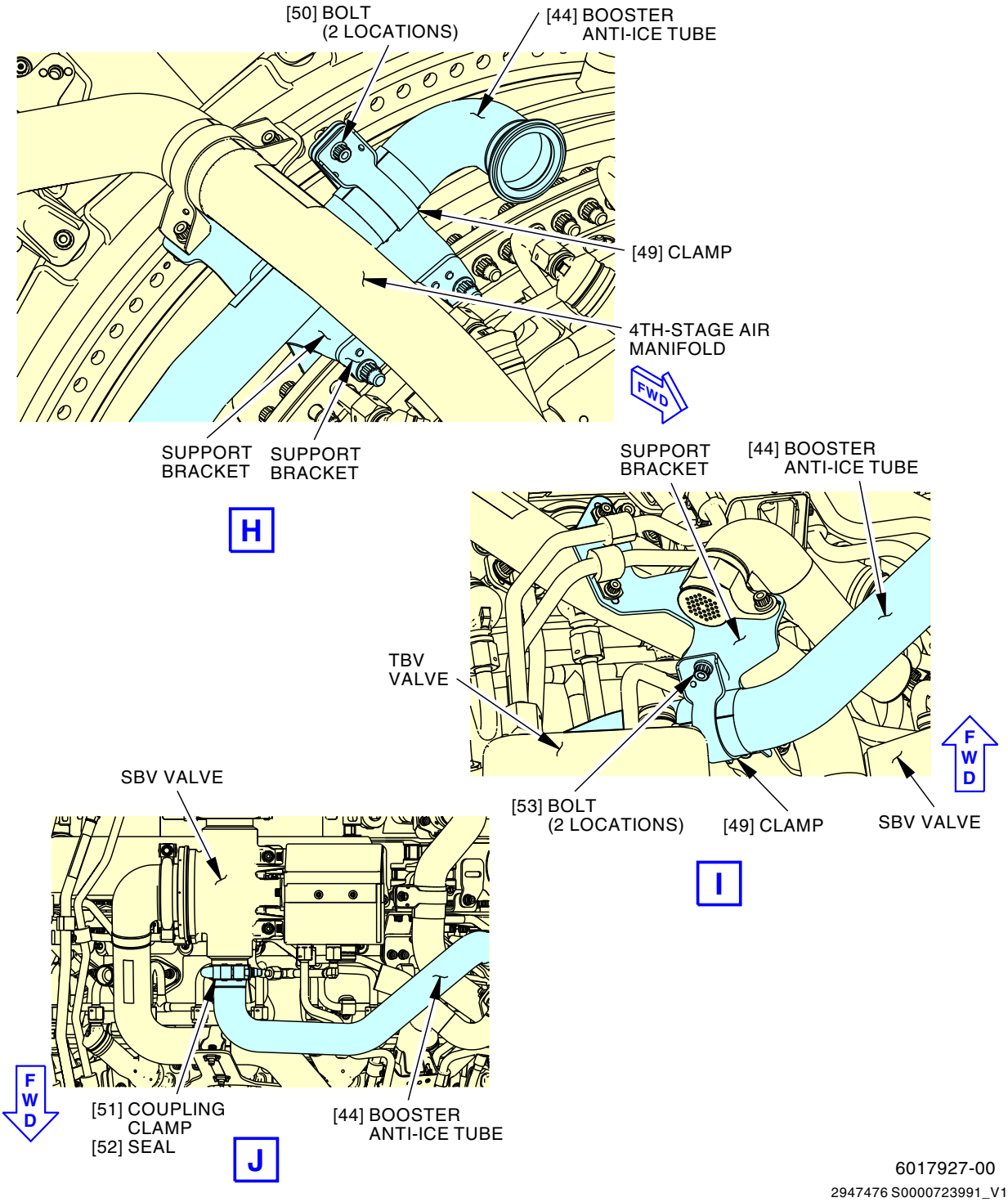
ECCN 9E991 BOEING PROPRIETARY - See title page for details



6017926-00
2947475 S0000723989_V1

Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 5 of 6)

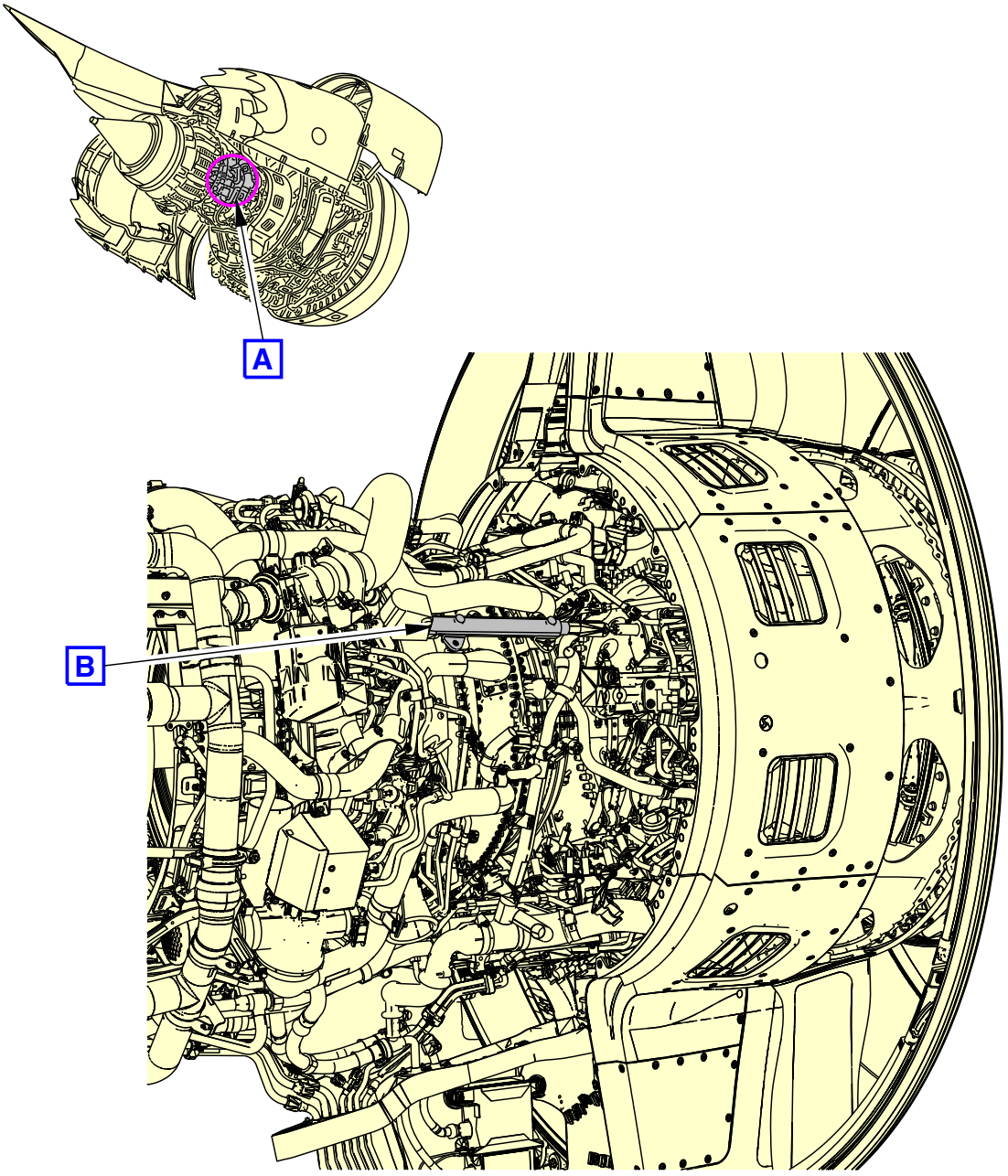
ECCN 9E991 BOEING PROPRIETARY - See title page for details



6017927-00
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Transient Bleed Air Tube and Booster Anti-ice Air Tube Installation
Figure 429/73-11-05-990-860-G00 (Sheet 6 of 6)

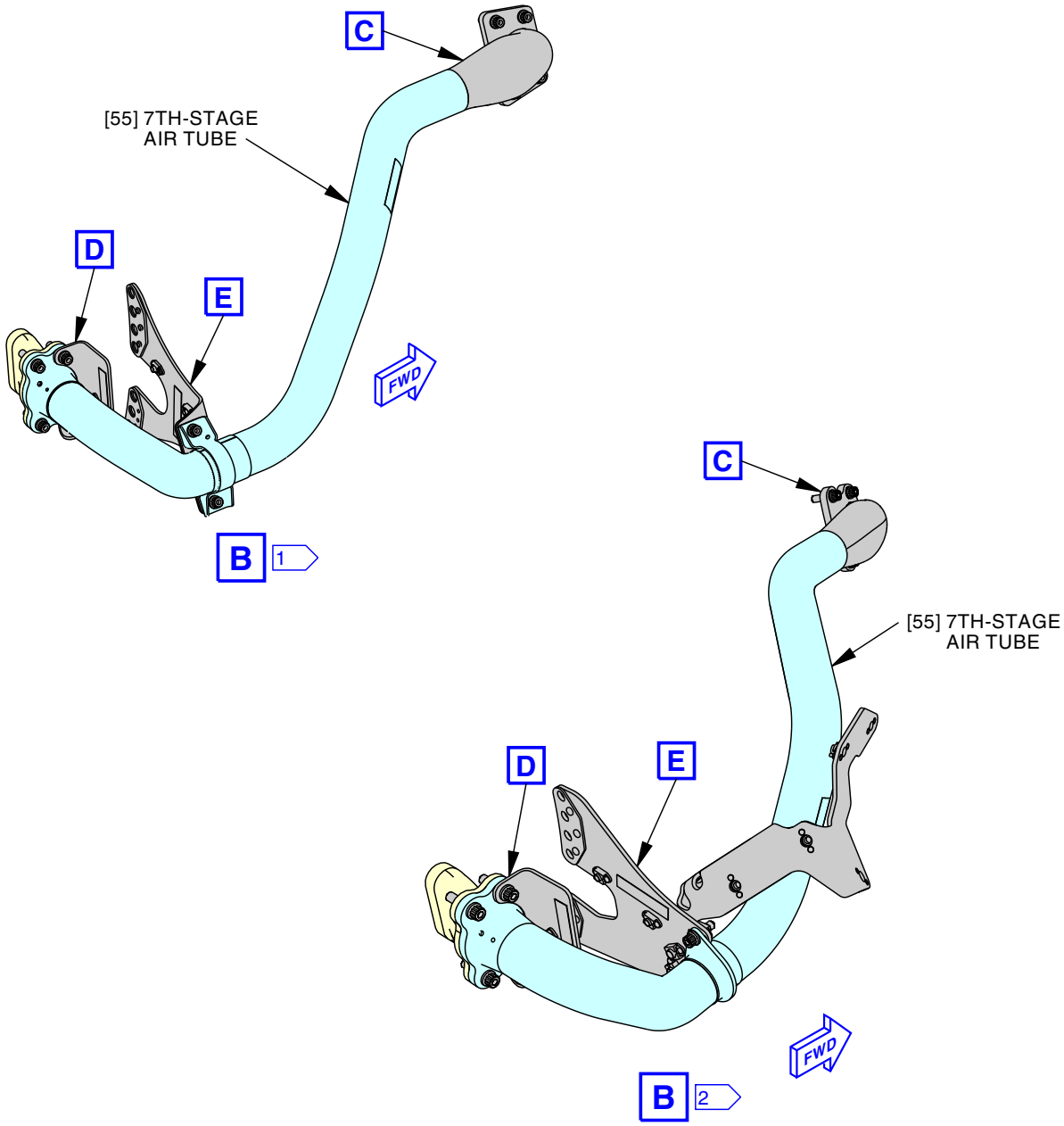
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5059226-00
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7th Stage Air Tube Installation
Figure 430/73-11-05-990-861-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

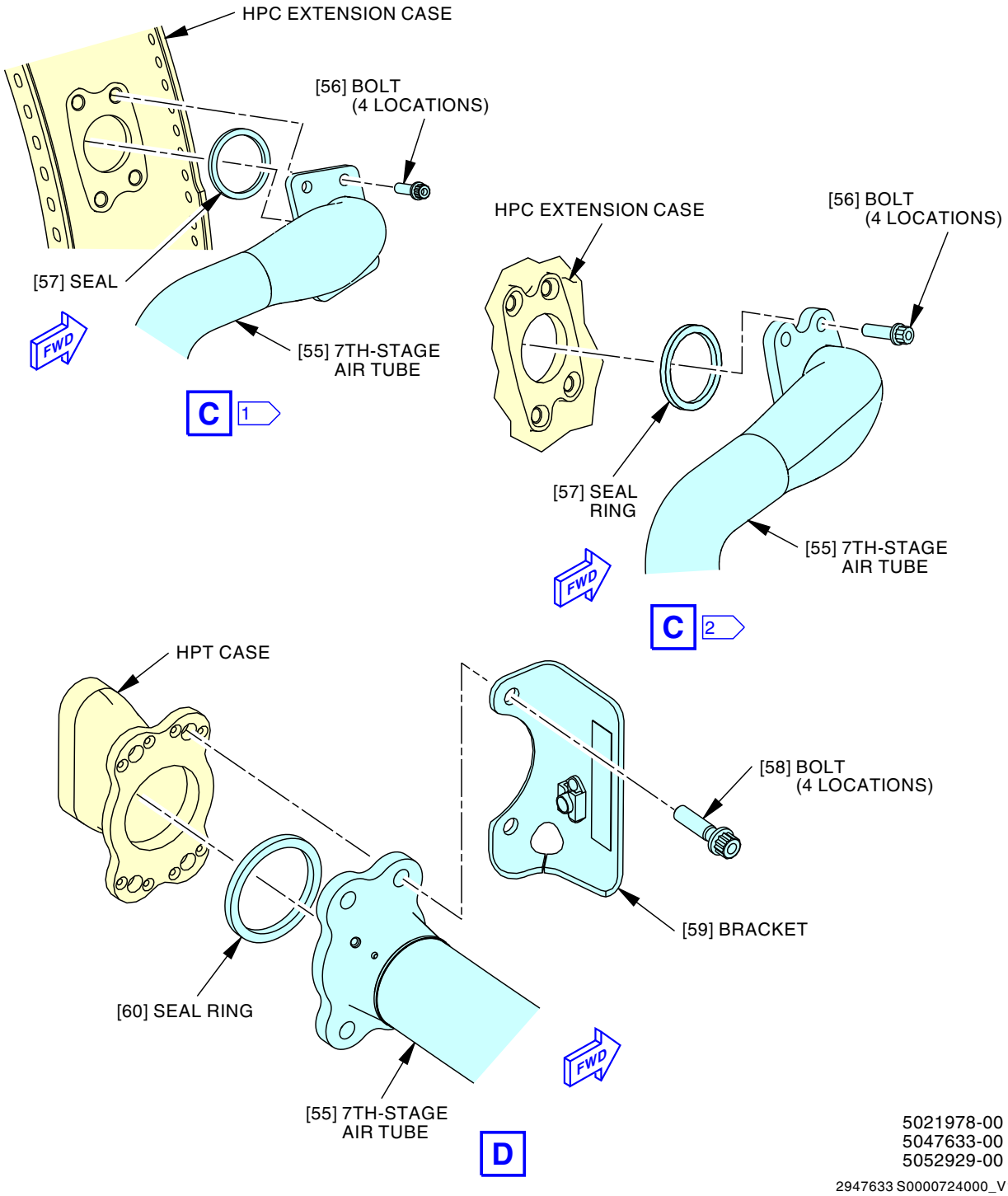


1 POST LEAP 1-B SERVICE BULLETIN 75-0005
2 PRE LEAP 1-B SERVICE BULLETIN 75-0005

5052929-00
5058970-00
2947632 S0000723998_V1

7th Stage Air Tube Installation
Figure 430/73-11-05-990-861-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

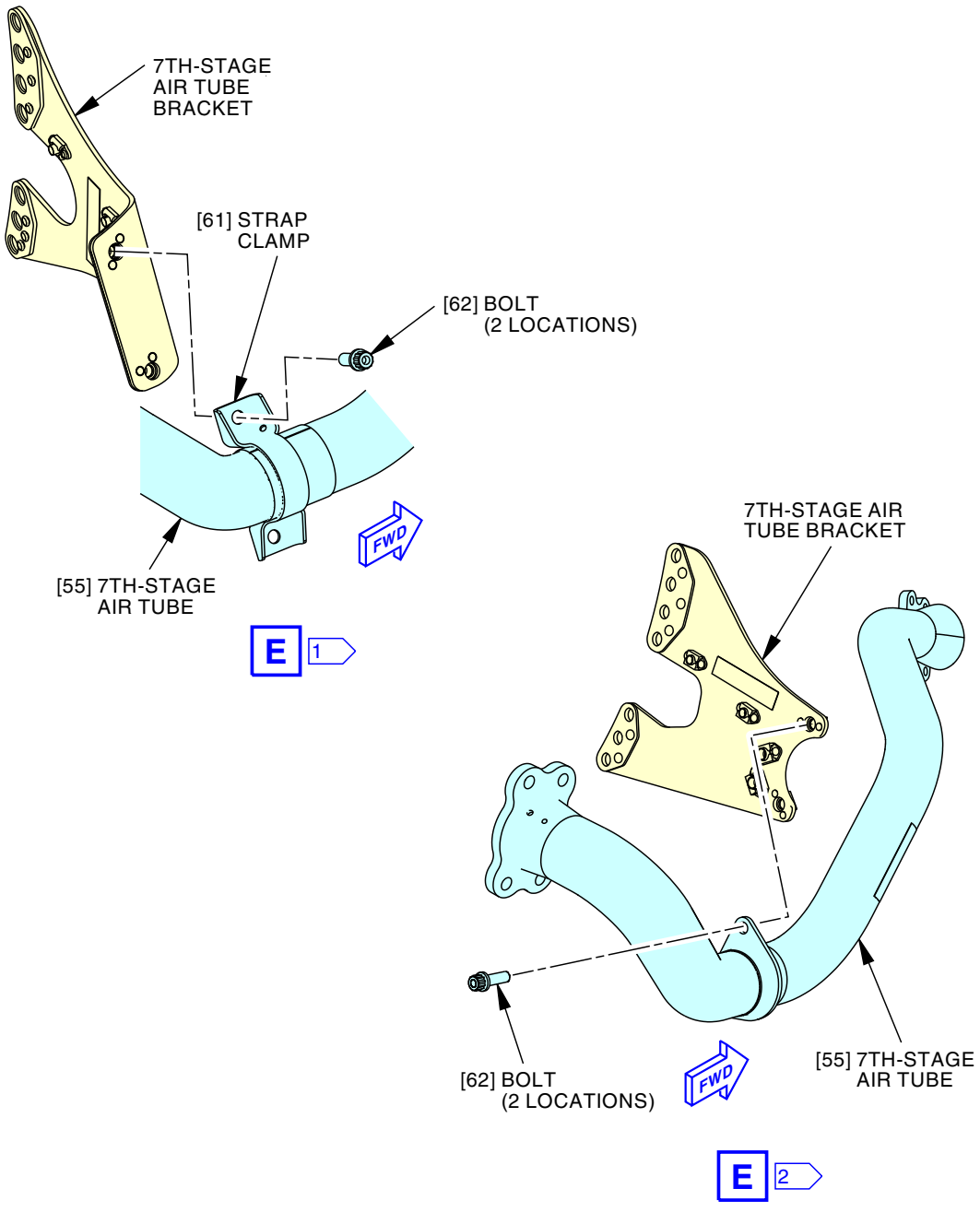


5021978-00
5047633-00
5052929-00

2947633 S0000724000_V1

7th Stage Air Tube Installation
Figure 430/73-11-05-990-861-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

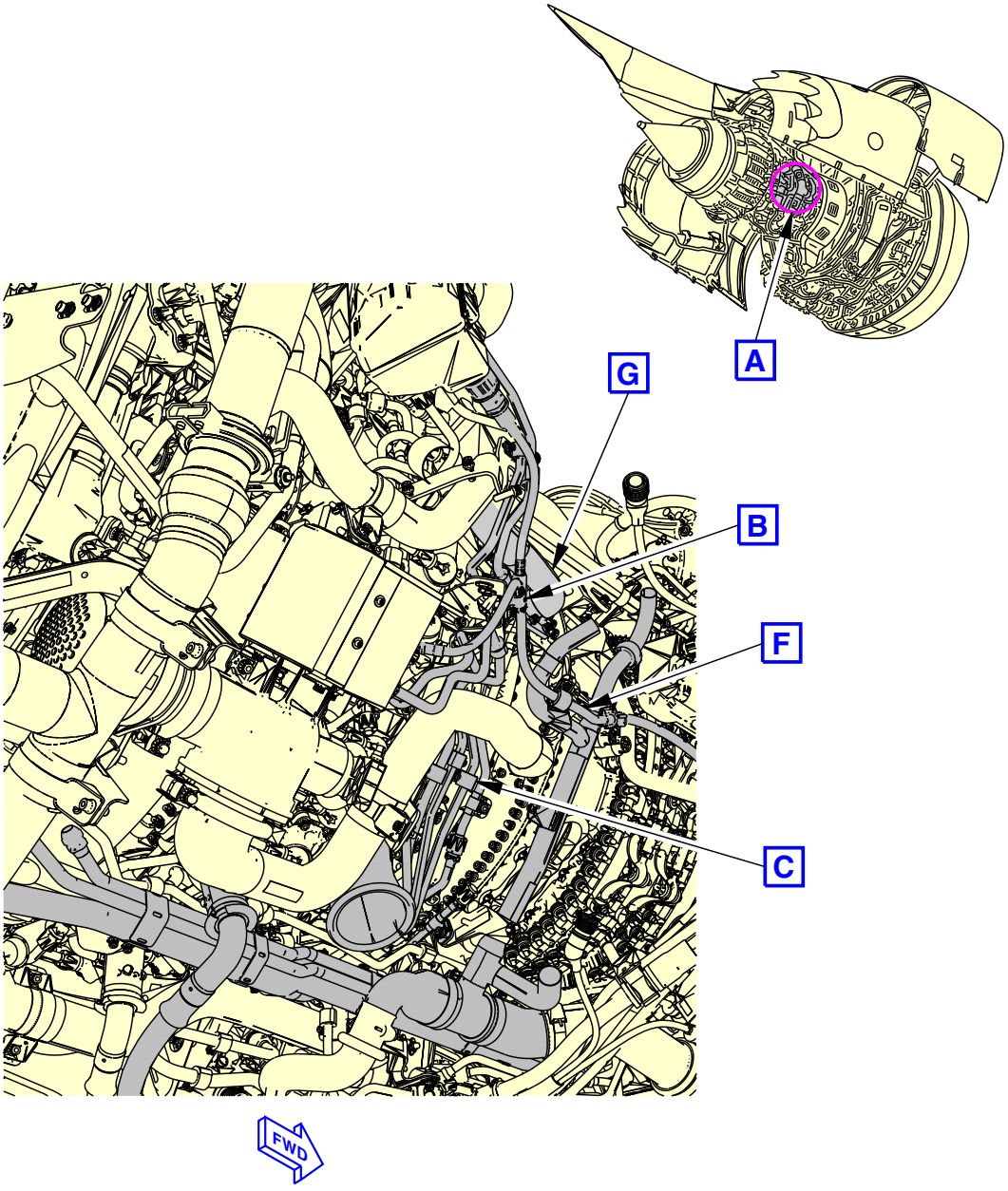


5047632-00
5021978-00

2947634 S0000724004_V1

7th Stage Air Tube Installation
Figure 430/73-11-05-990-861-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



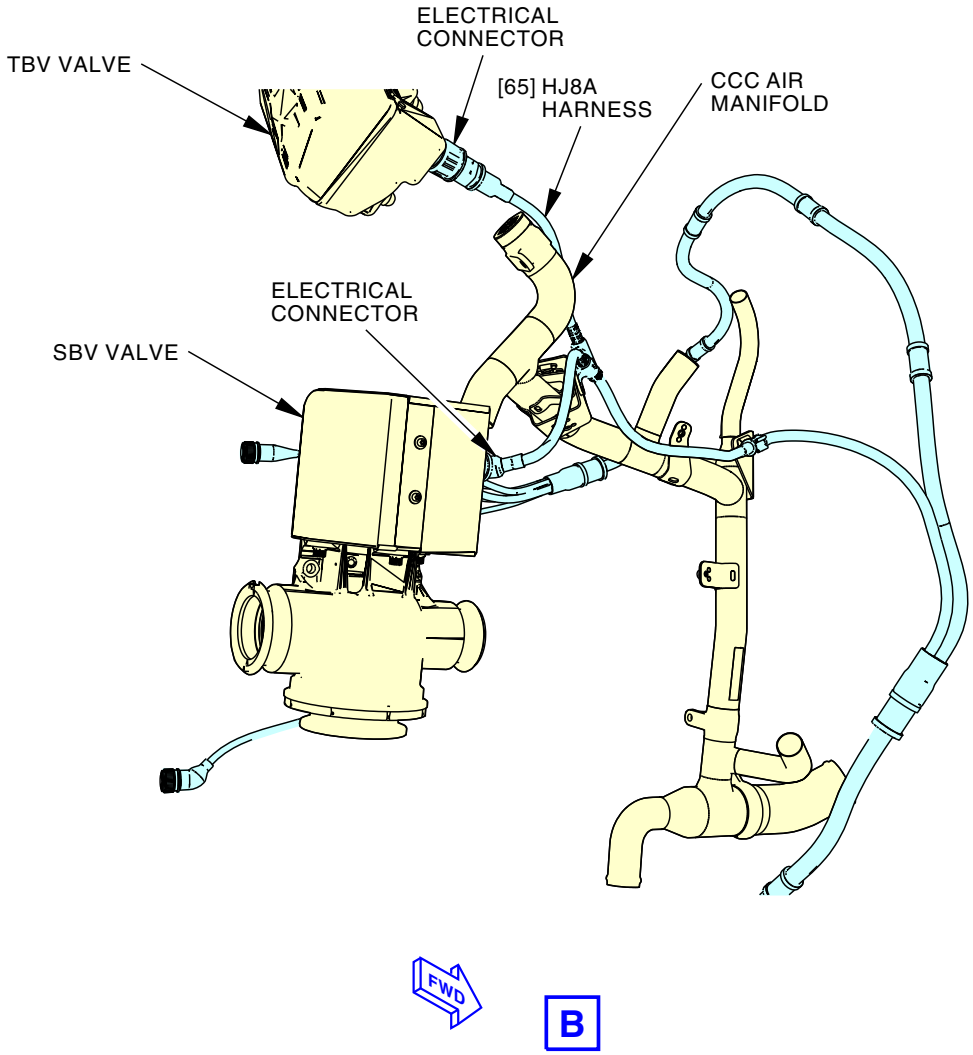
(EXAMPLE)

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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 1 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

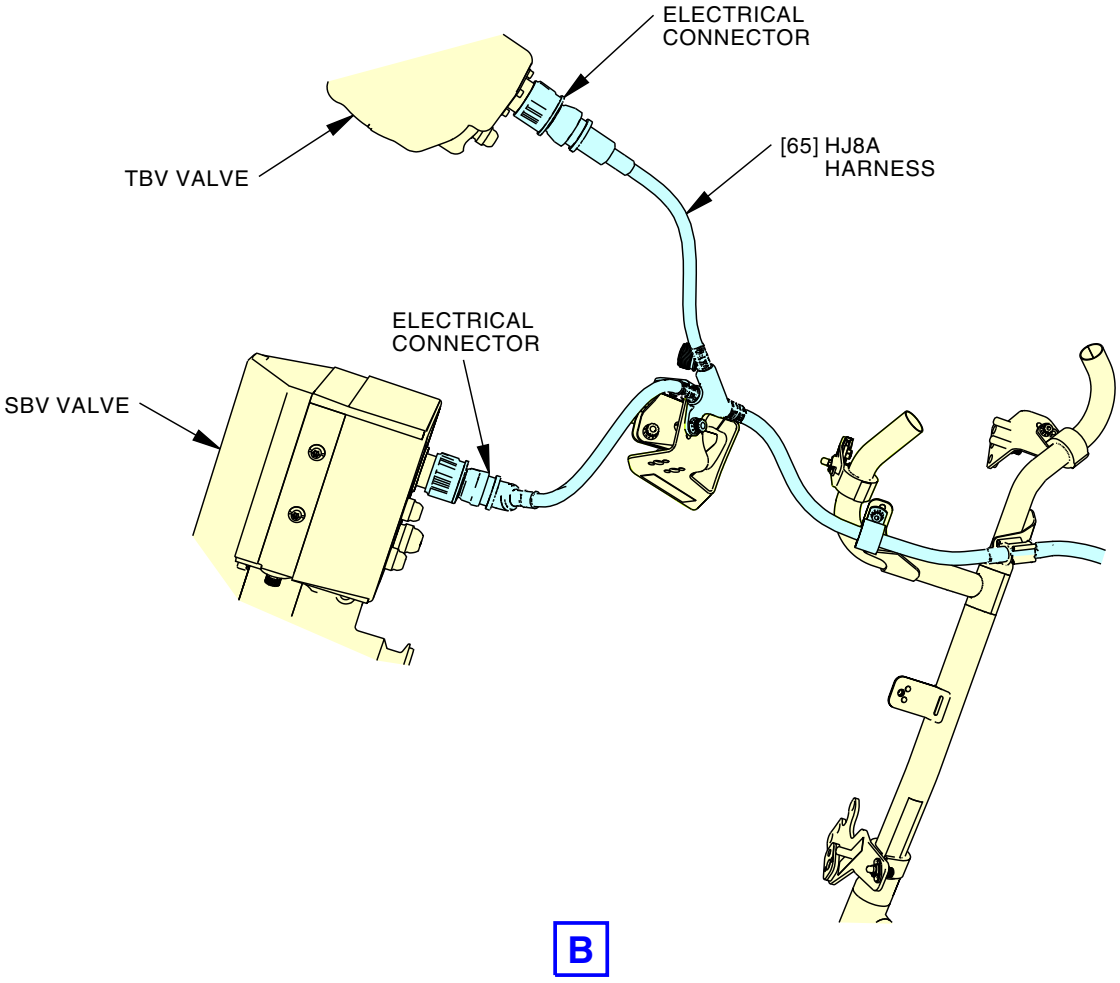


5021986-01
5021986-00

2947641 S0000724089_V1

Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 2 of 11)

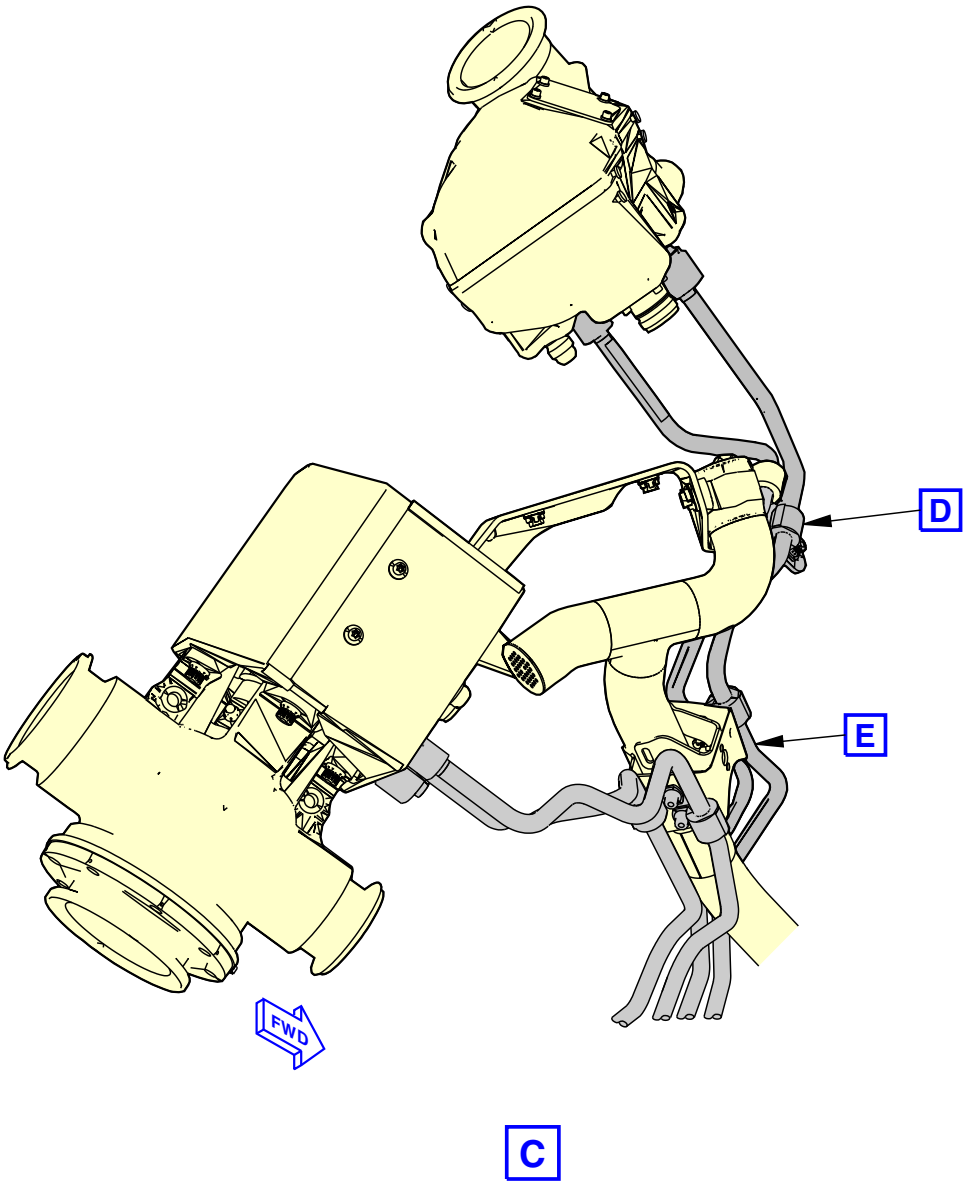
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5059229-00
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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 3 of 11)

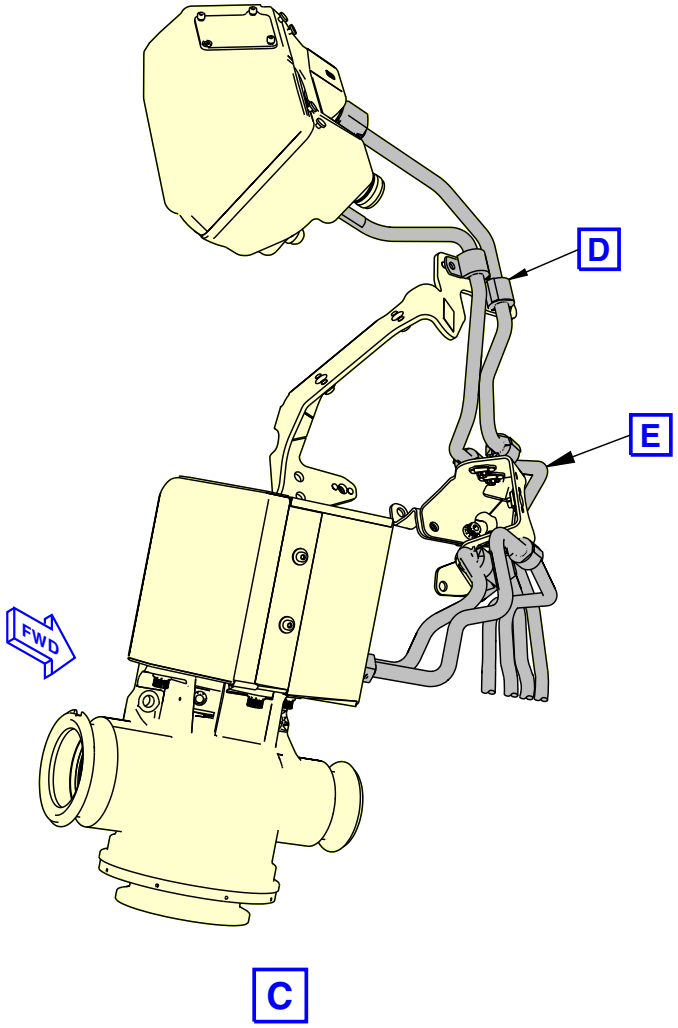
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5051821-00
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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 4 of 11)

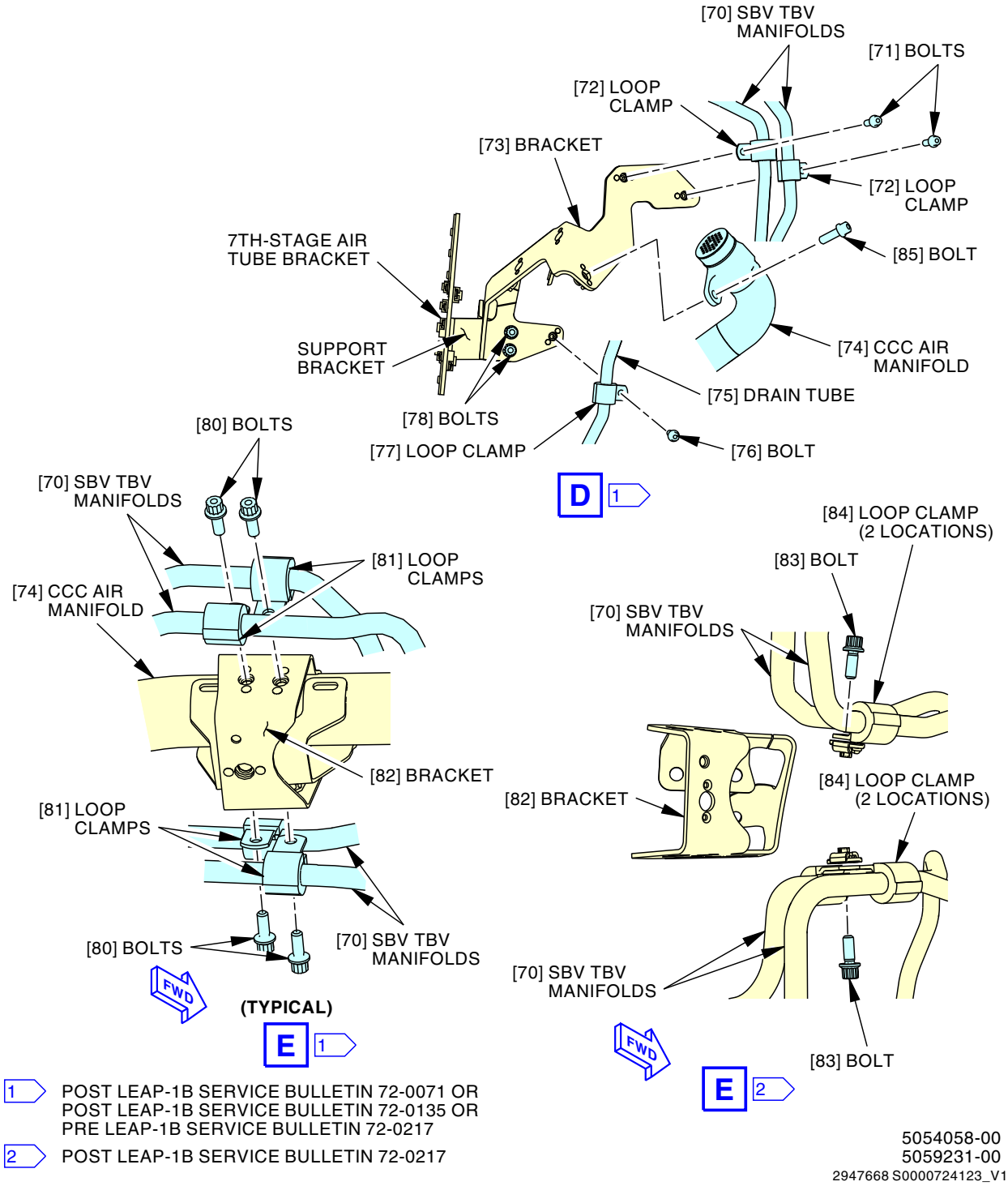
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 POST LEAP-1B SERVICE BULLETIN 72-0071 OR POST LEAP-1B SERVICE BULLETIN 72-0135 OR PRE LEAP-1B SERVICE BULLETIN 72-0217

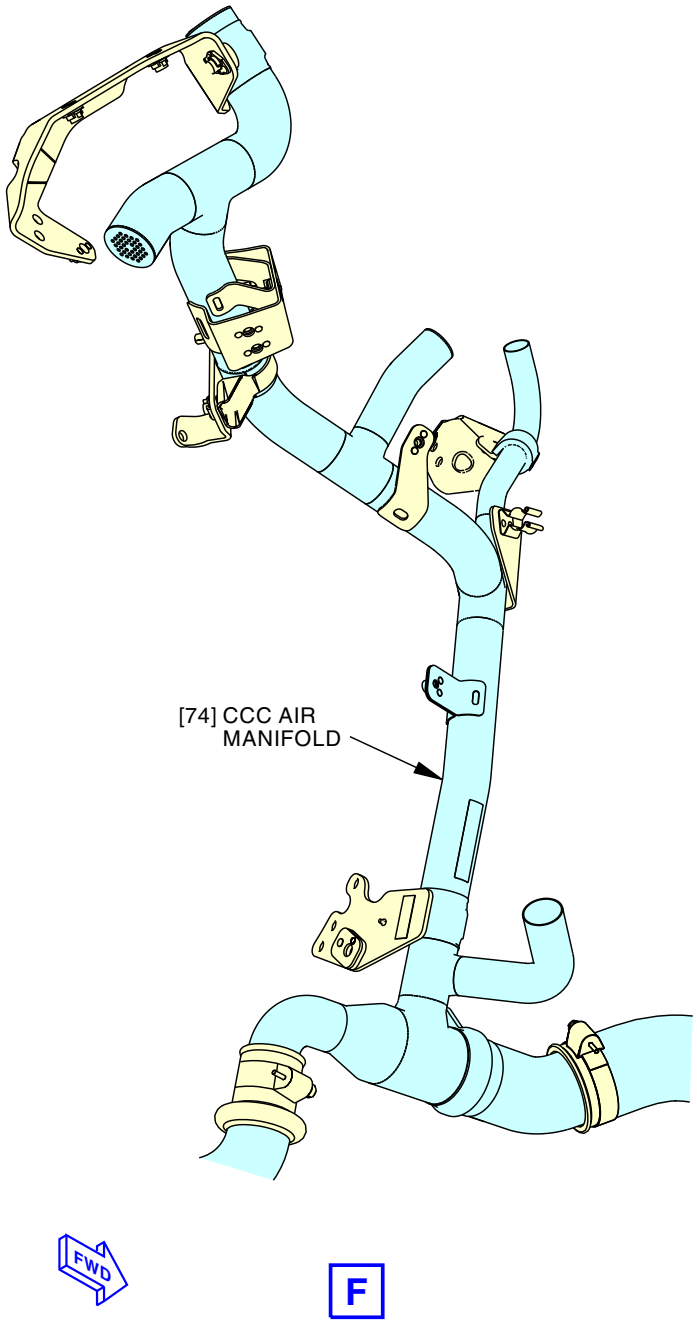
2 POST LEAP-1B SERVICE BULLETIN 72-0217

5054058-00
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2947668 S0000724123_V1

Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 6 of 11)

EFFECTIVITY
SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0071 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217 OR POST LEAP-1B SB 72-0217

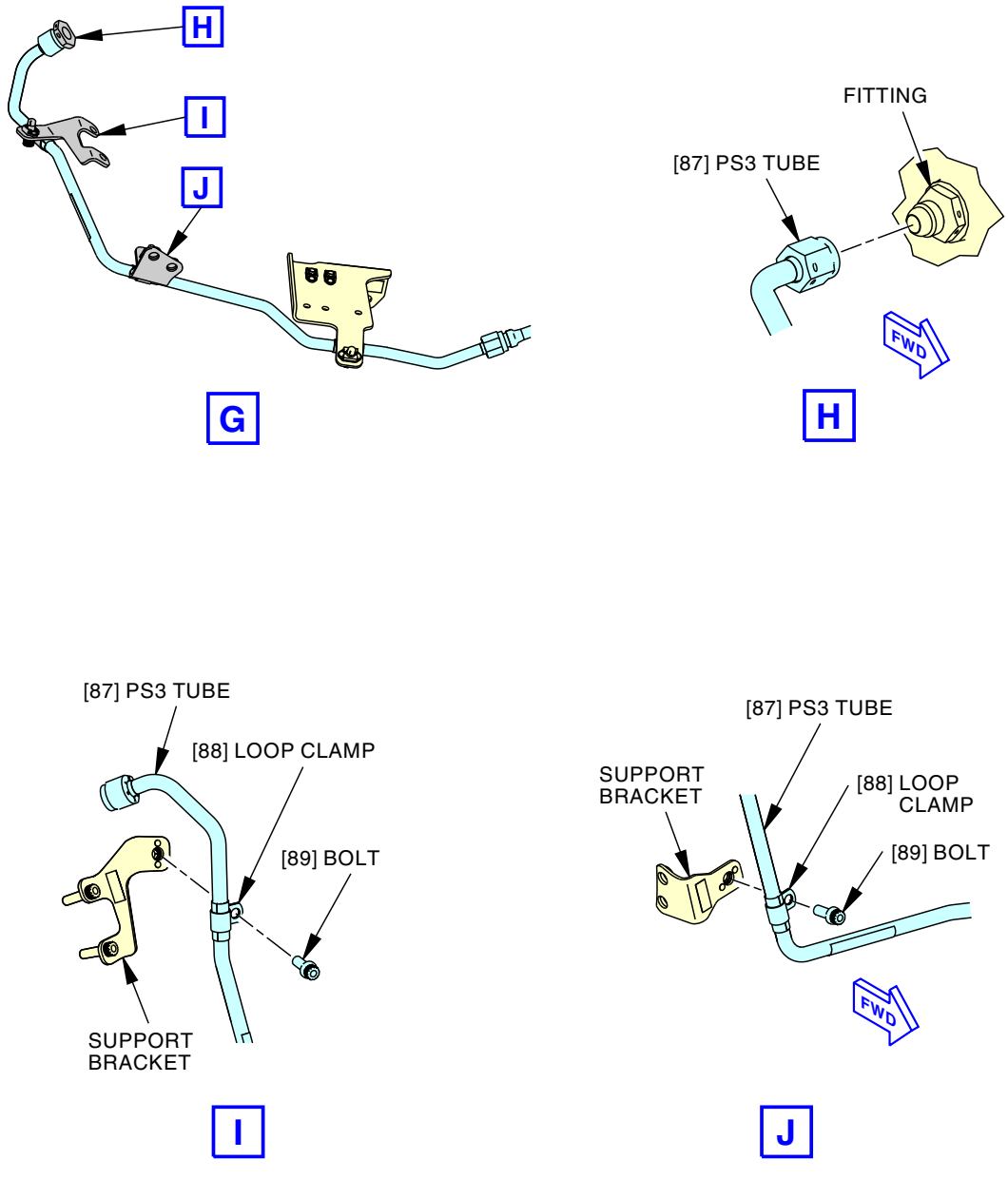
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 7 of 11)

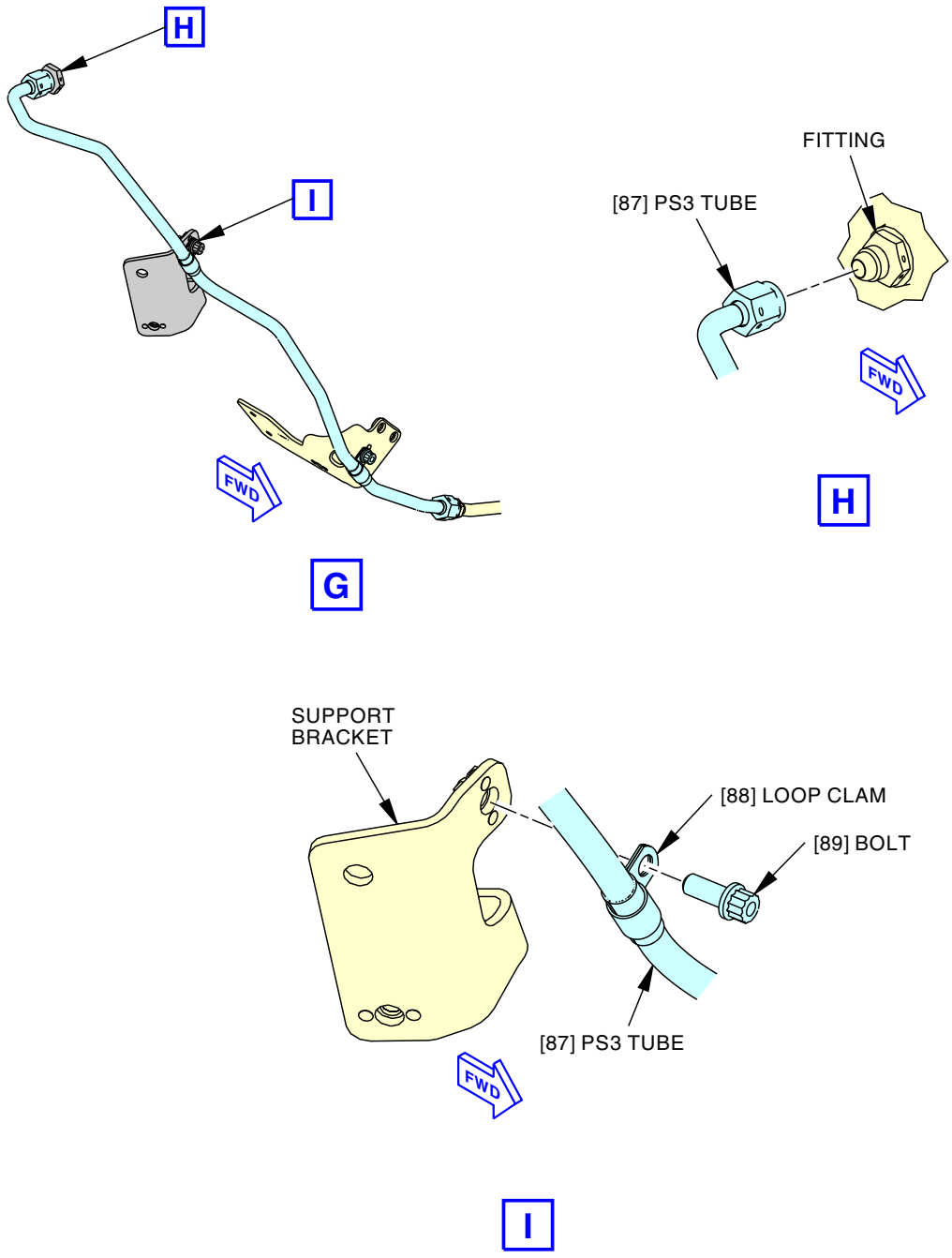
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 8 of 11)

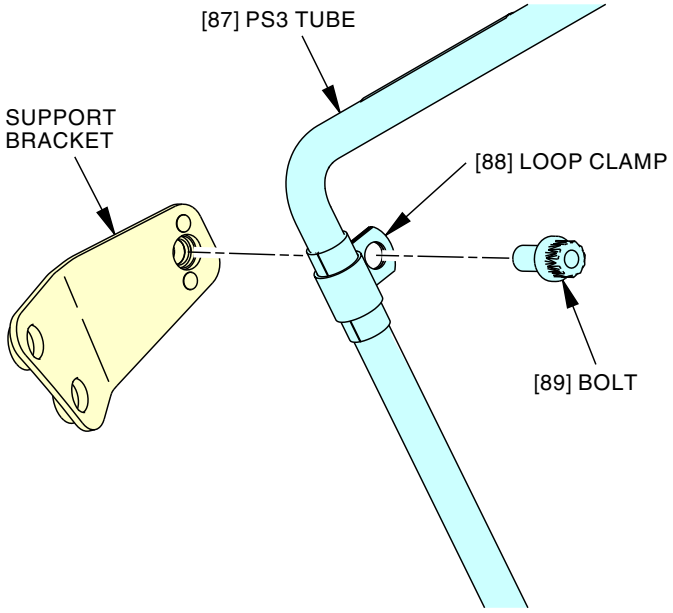
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 9 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

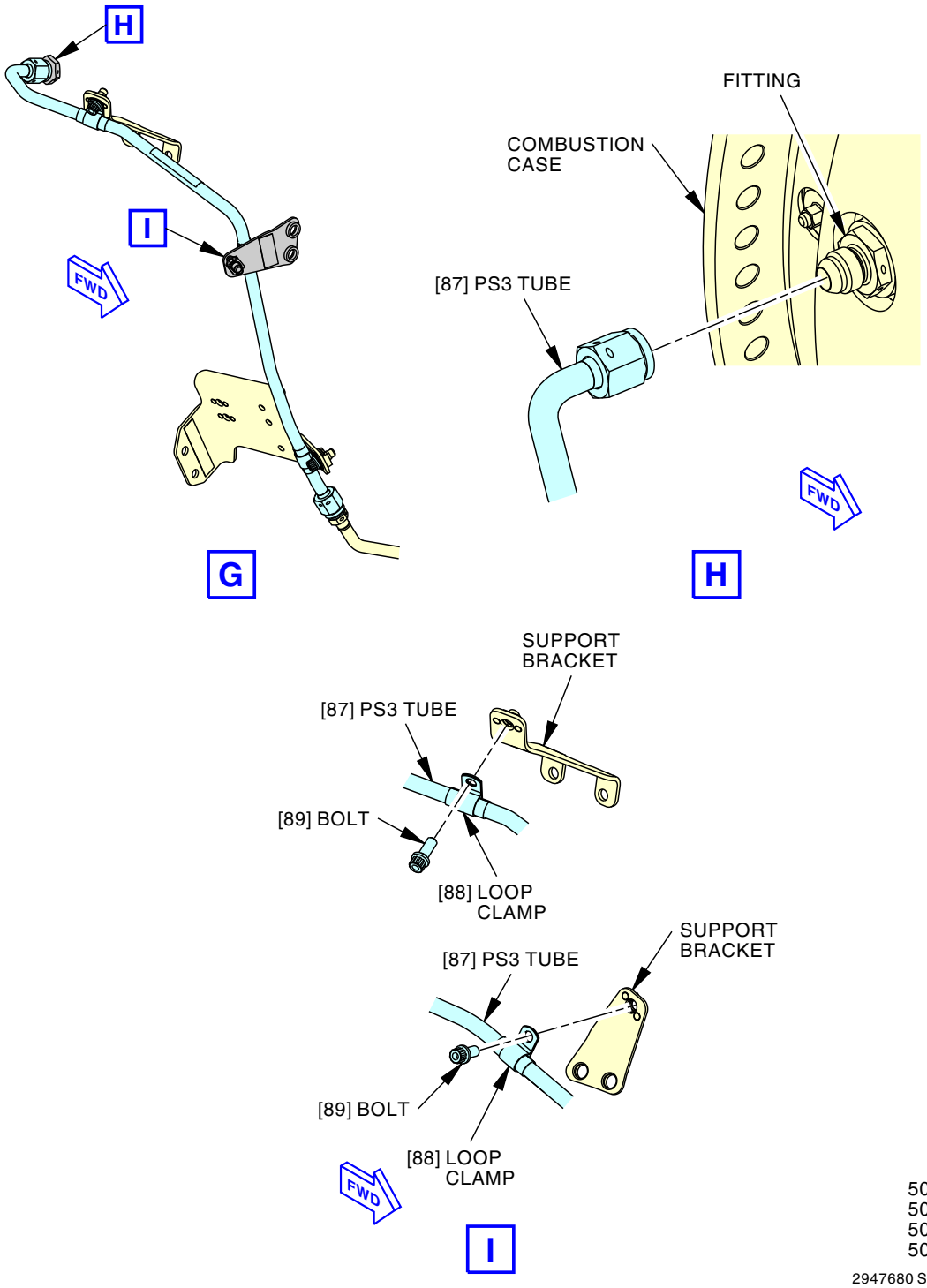


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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

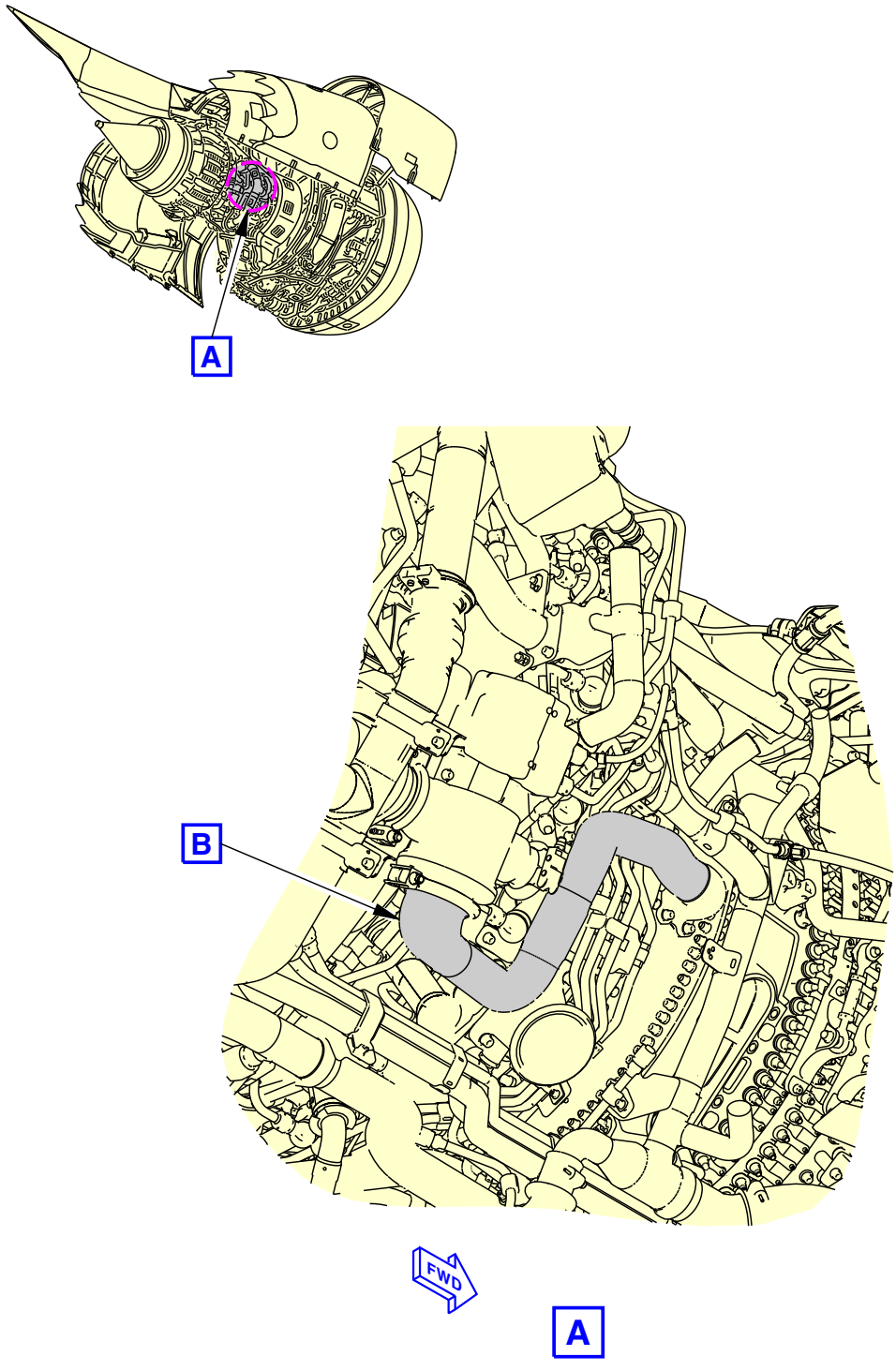


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Harness, SBV TBV Manifold, CCC Air Manifold, and PS3 Tube Installation
Figure 431/73-11-05-990-862-G00 (Sheet 11 of 11)

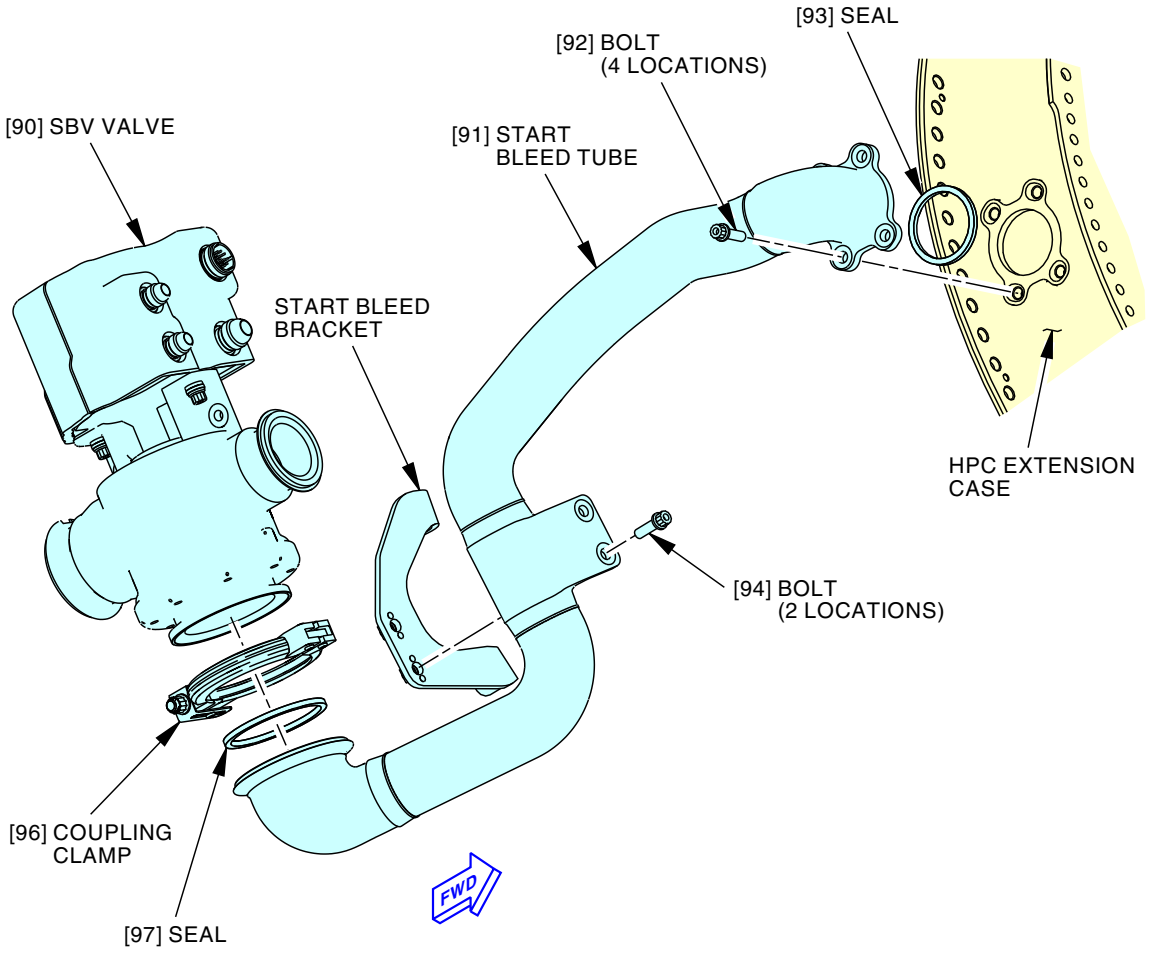
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Start Bleed Tube Installation
Figure 432/73-11-05-990-863-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

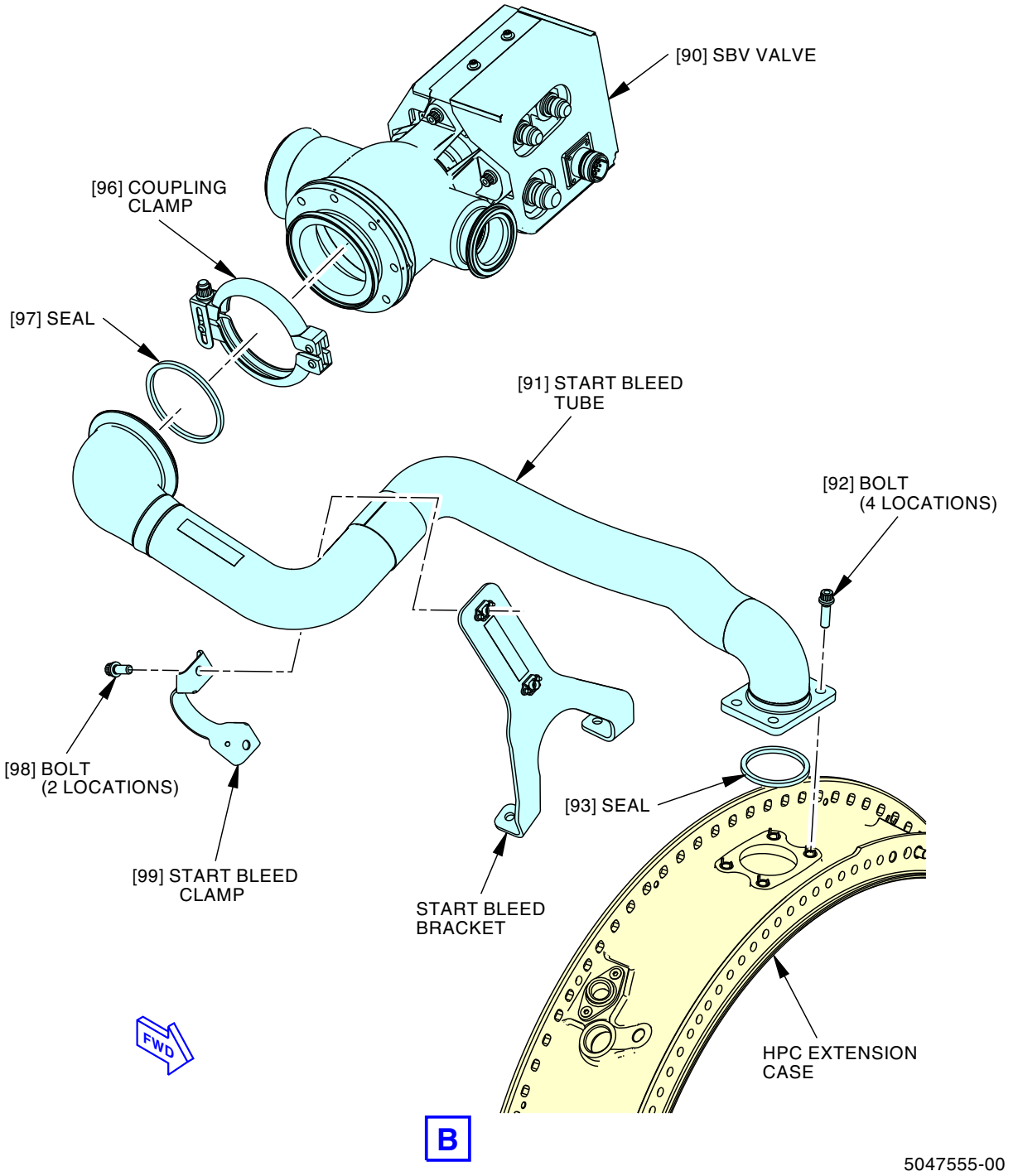


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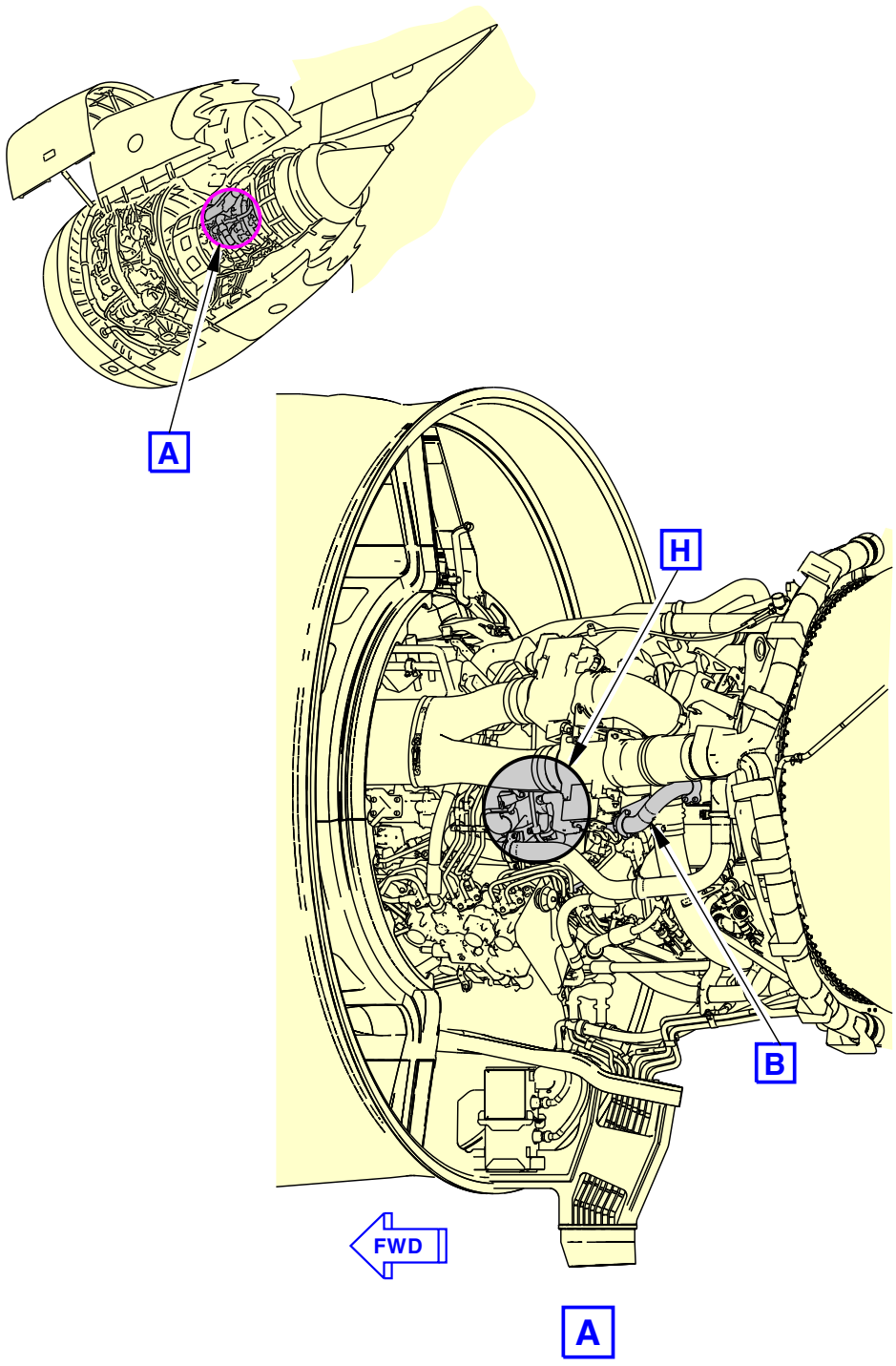
Start Bleed Tube Installation
Figure 432/73-11-05-990-863-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Start Bleed Tube Installation
Figure 432/73-11-05-990-863-G00 (Sheet 3 of 3)

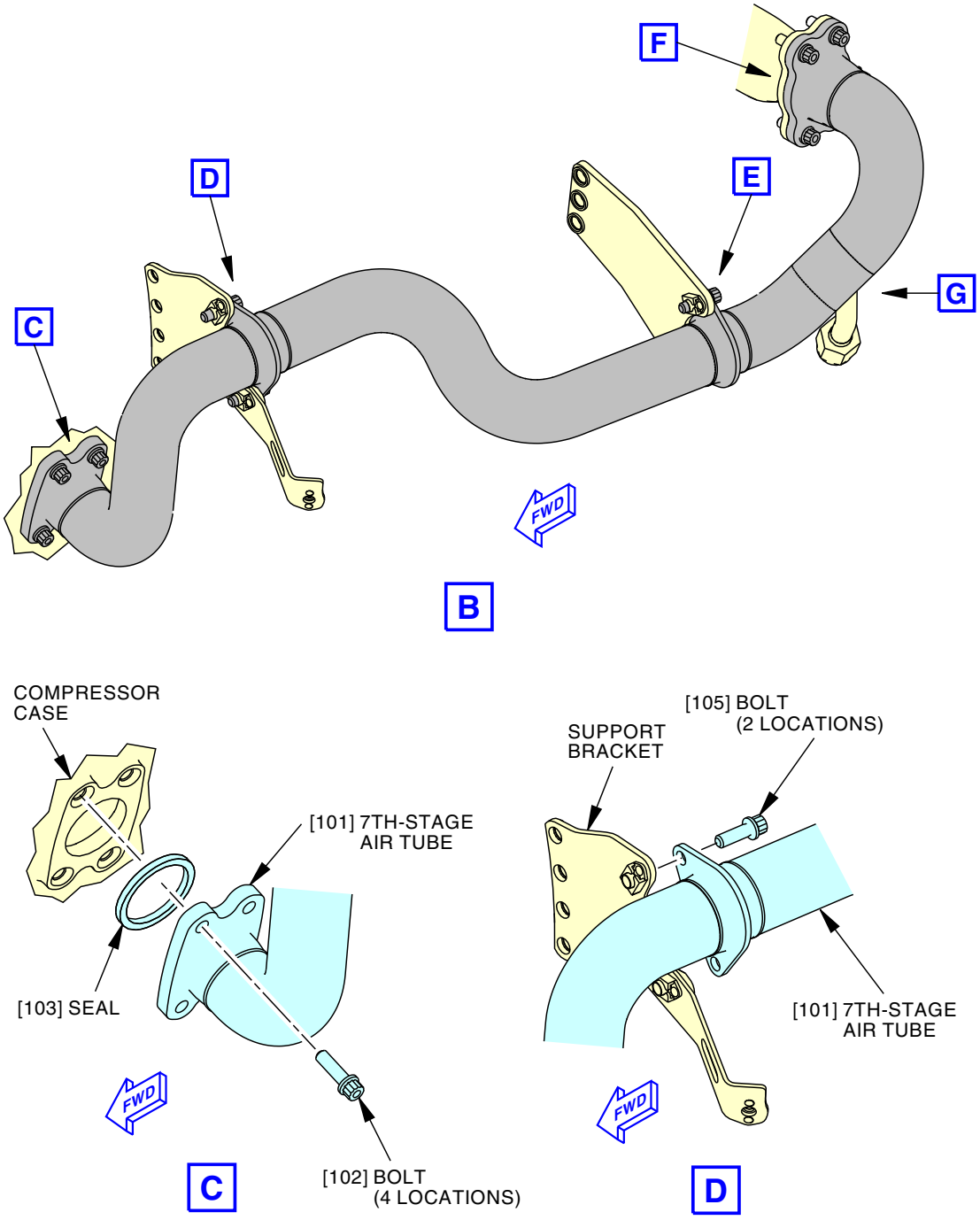
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 1 of 6)

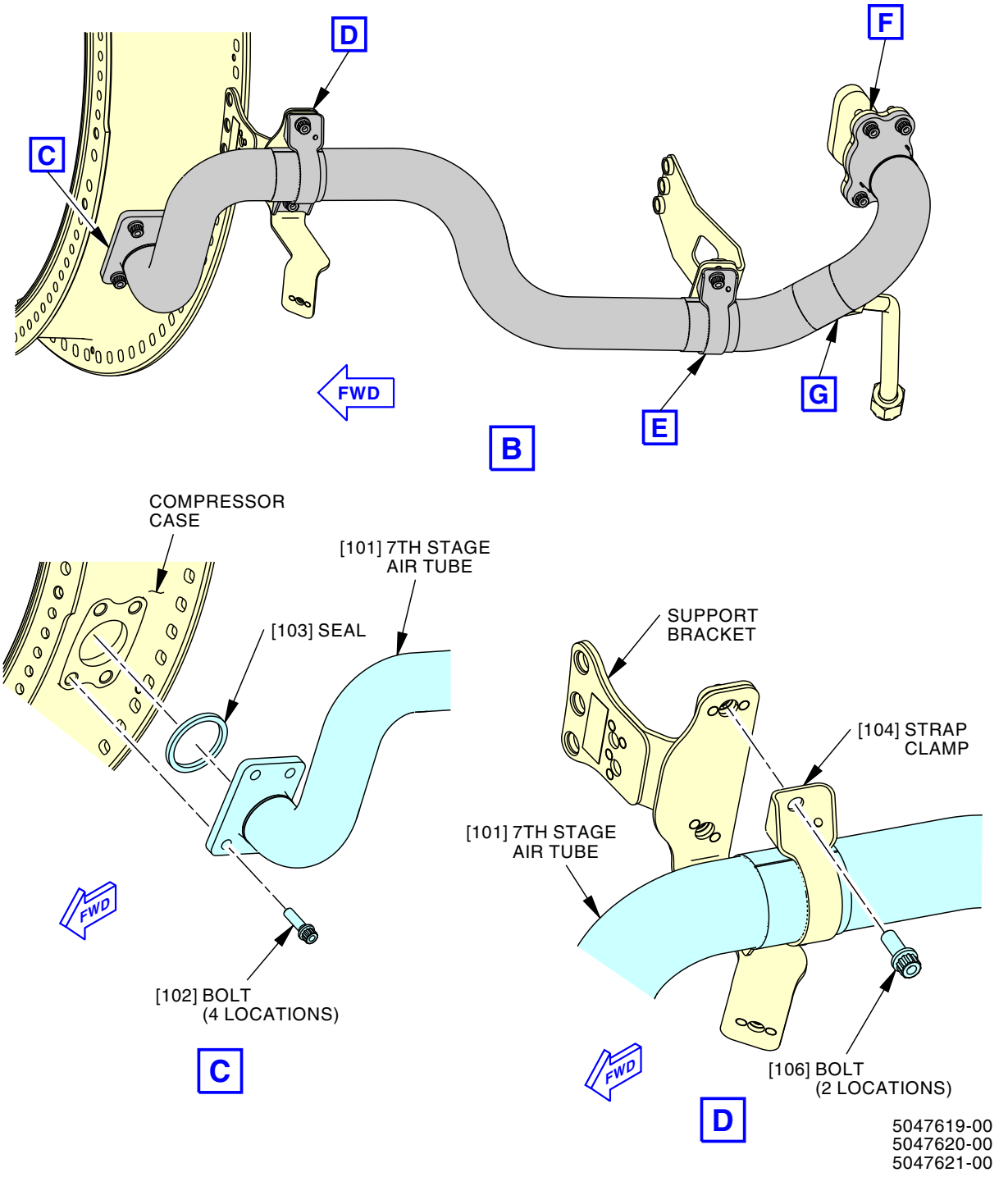
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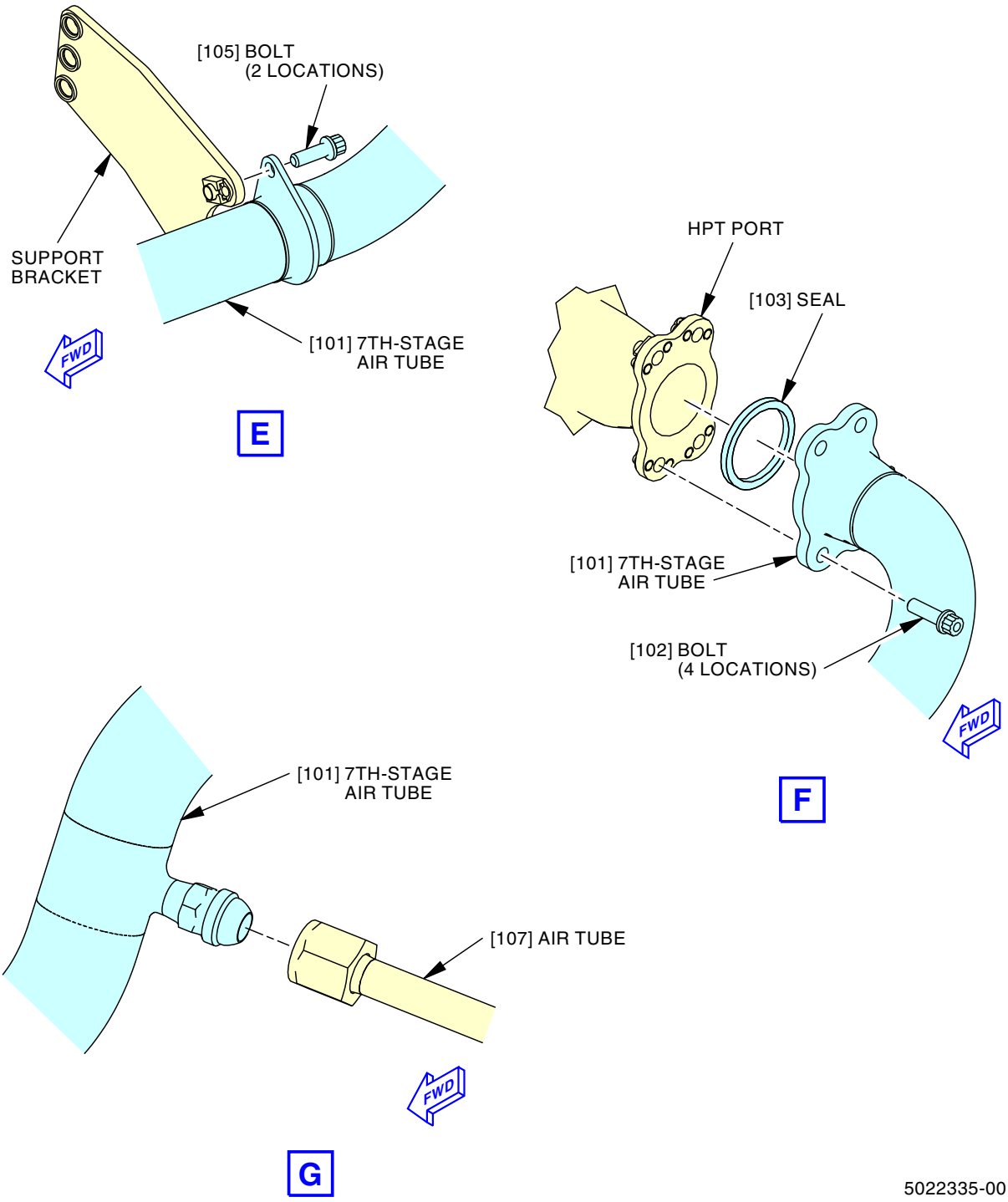
7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 3 of 6)

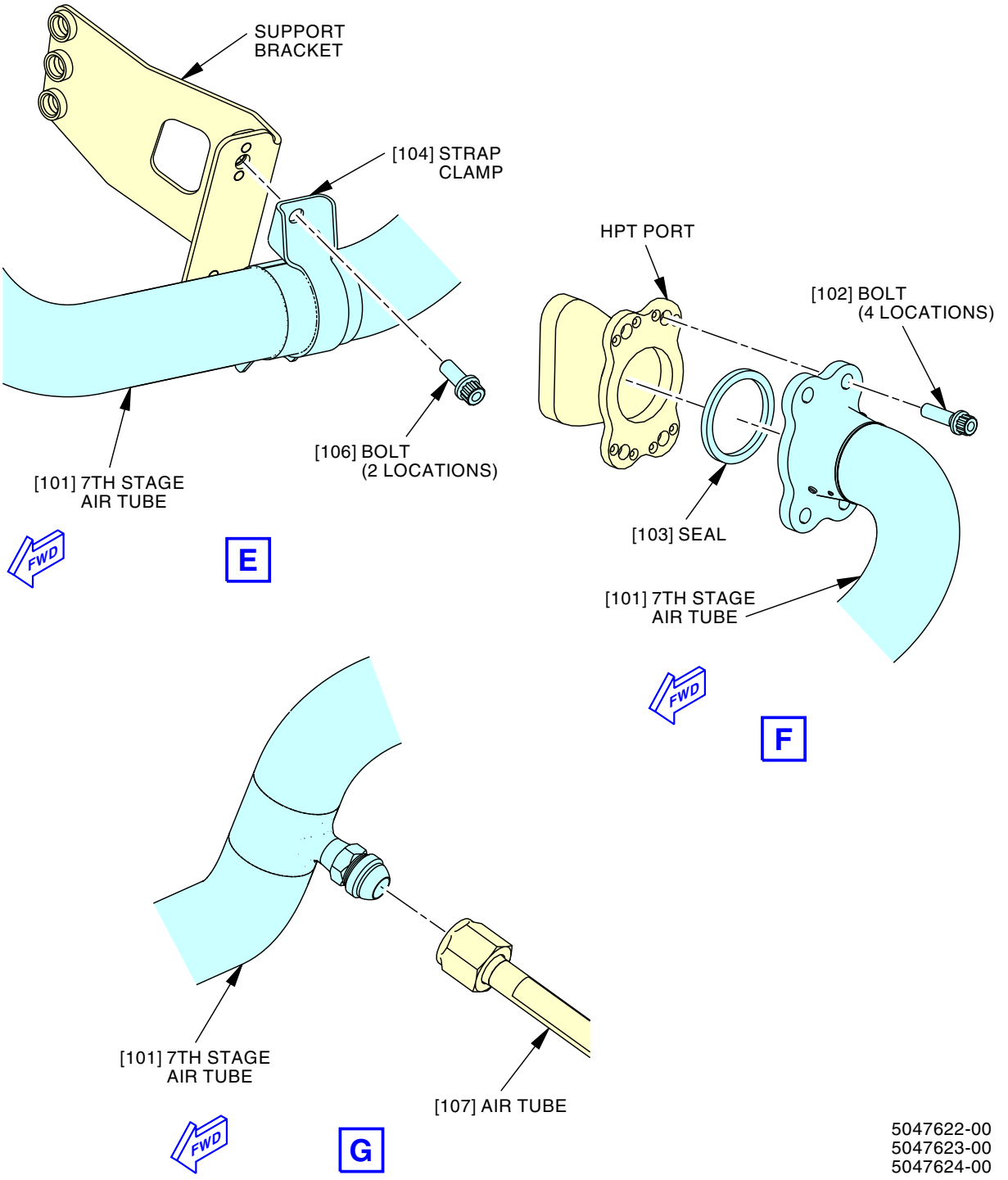
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5022335-00
2947580 S0000724374_V2

7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

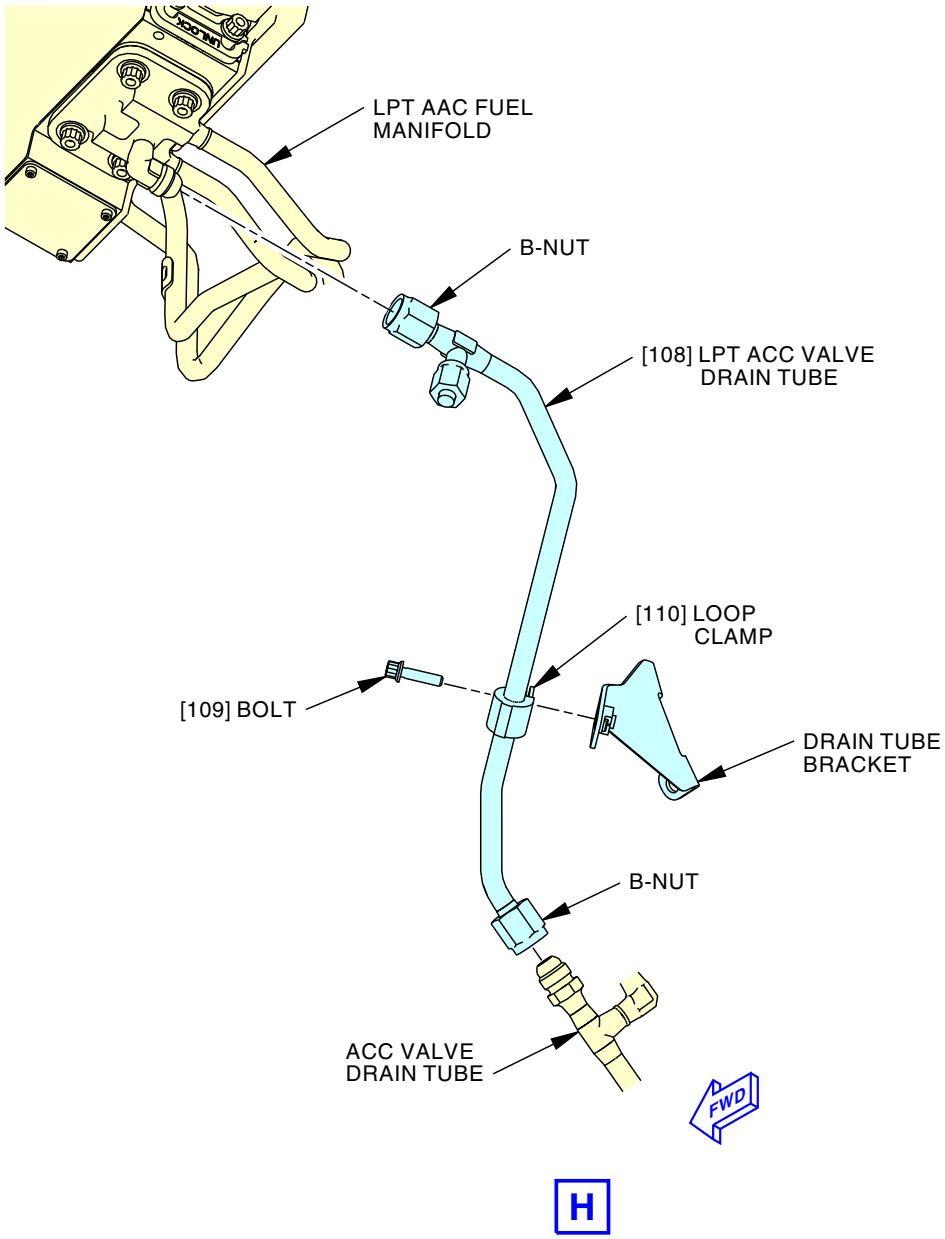


5047622-00
5047623-00
5047624-00

2947572 S0000724375_V2

7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

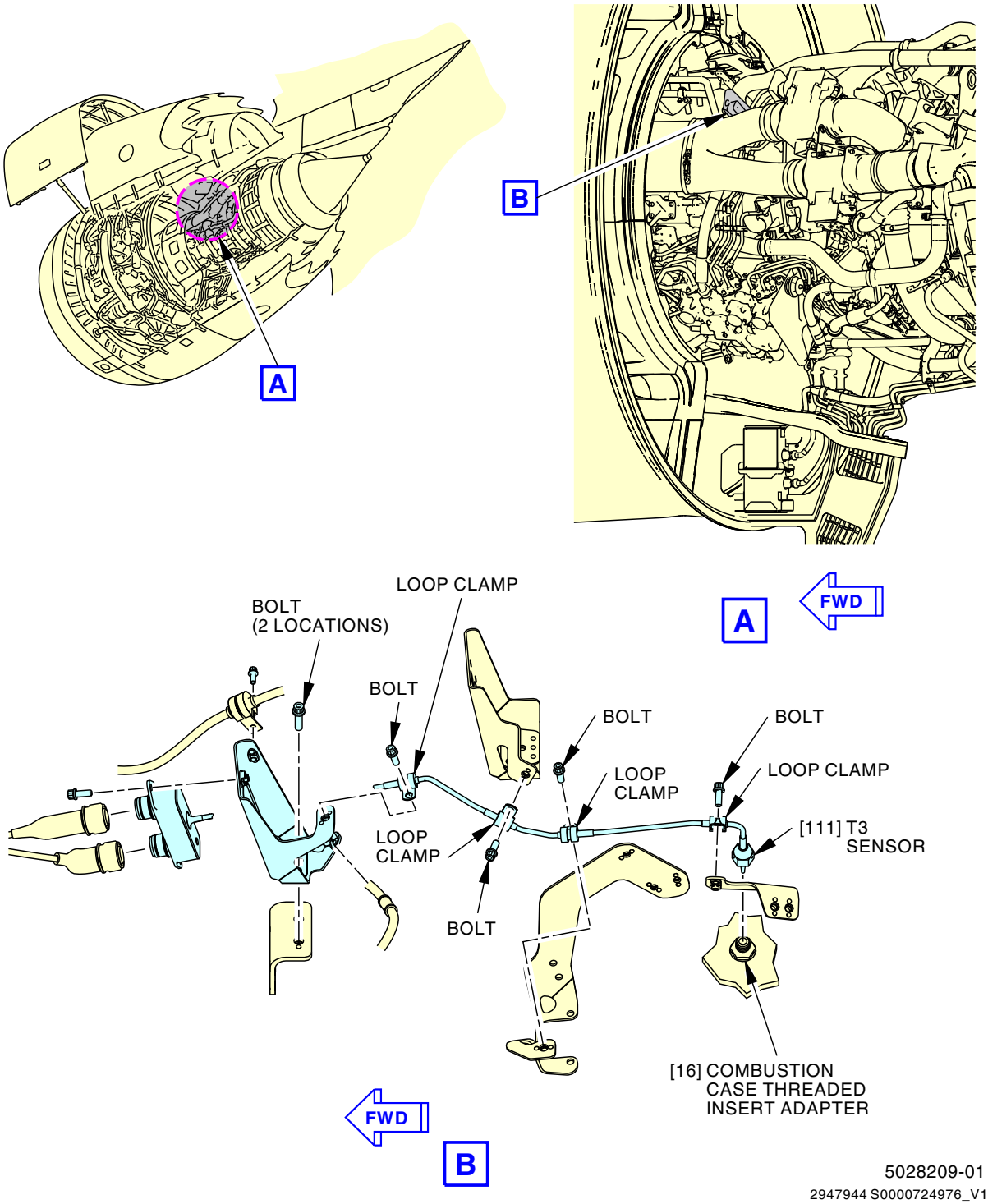


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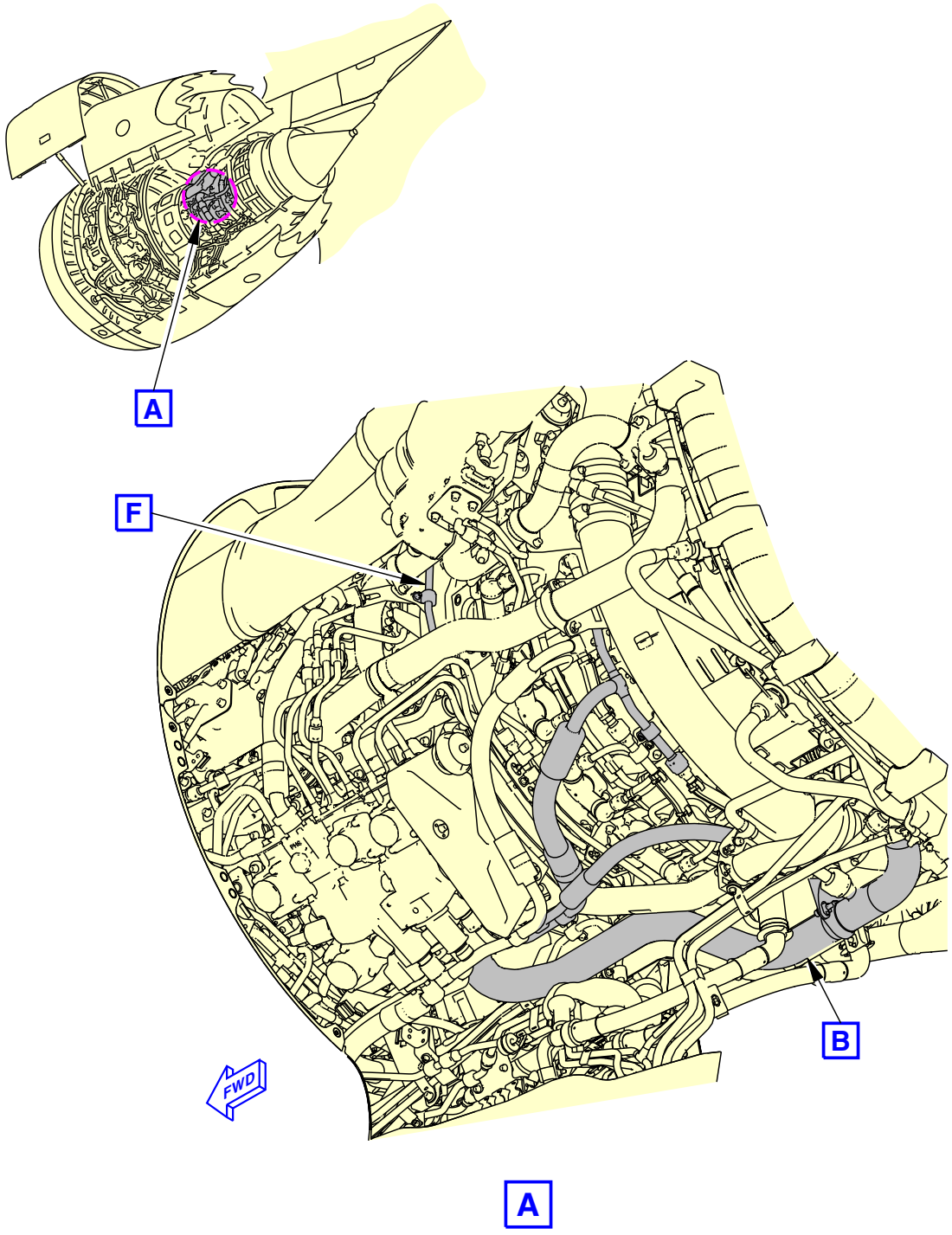
7th-Stage Air Manifold and LPT ACC Drain Tube Installation
Figure 433/73-11-05-990-864-G00 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T3 Sensor Installation
Figure 434/73-11-05-990-865-G00

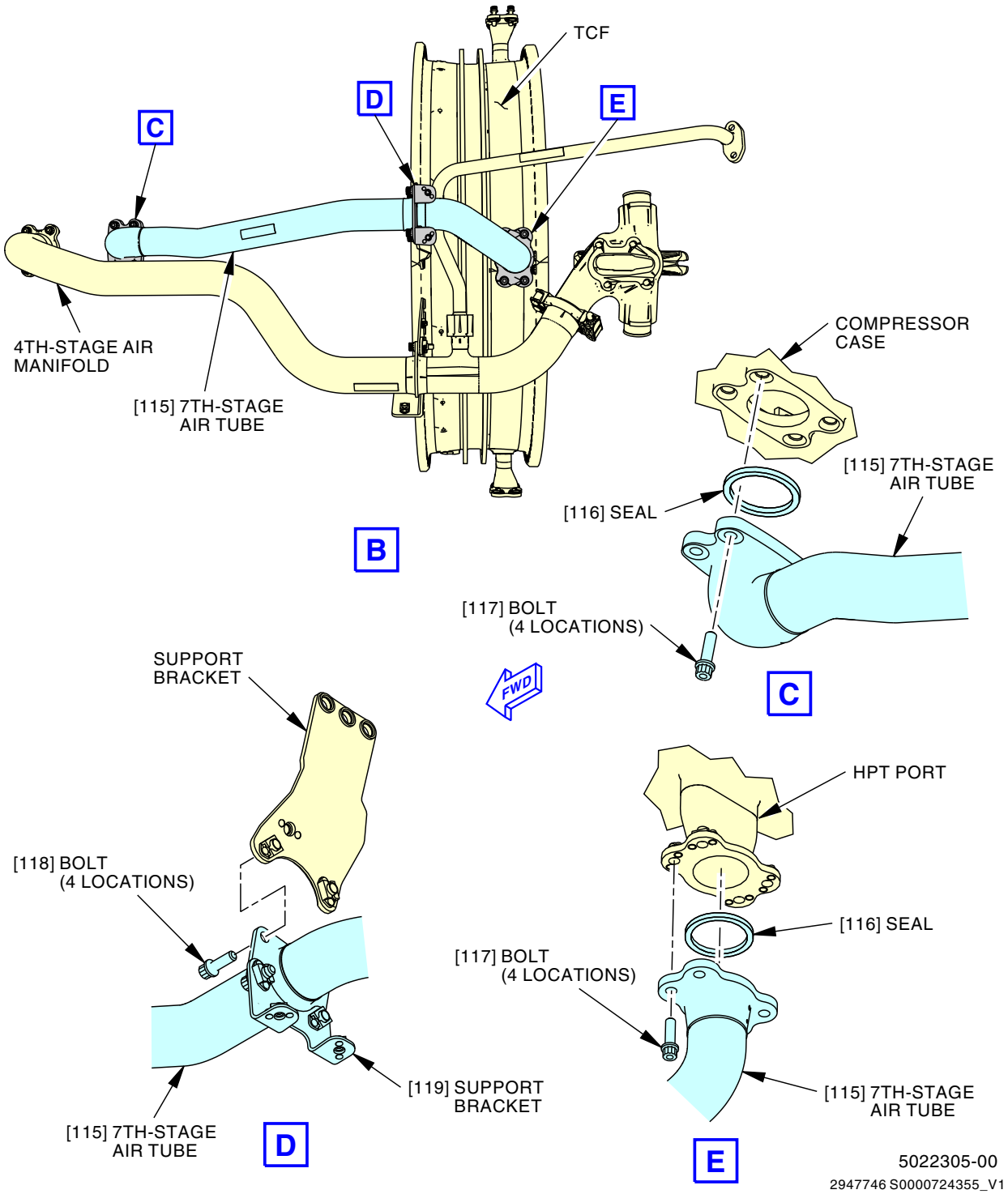
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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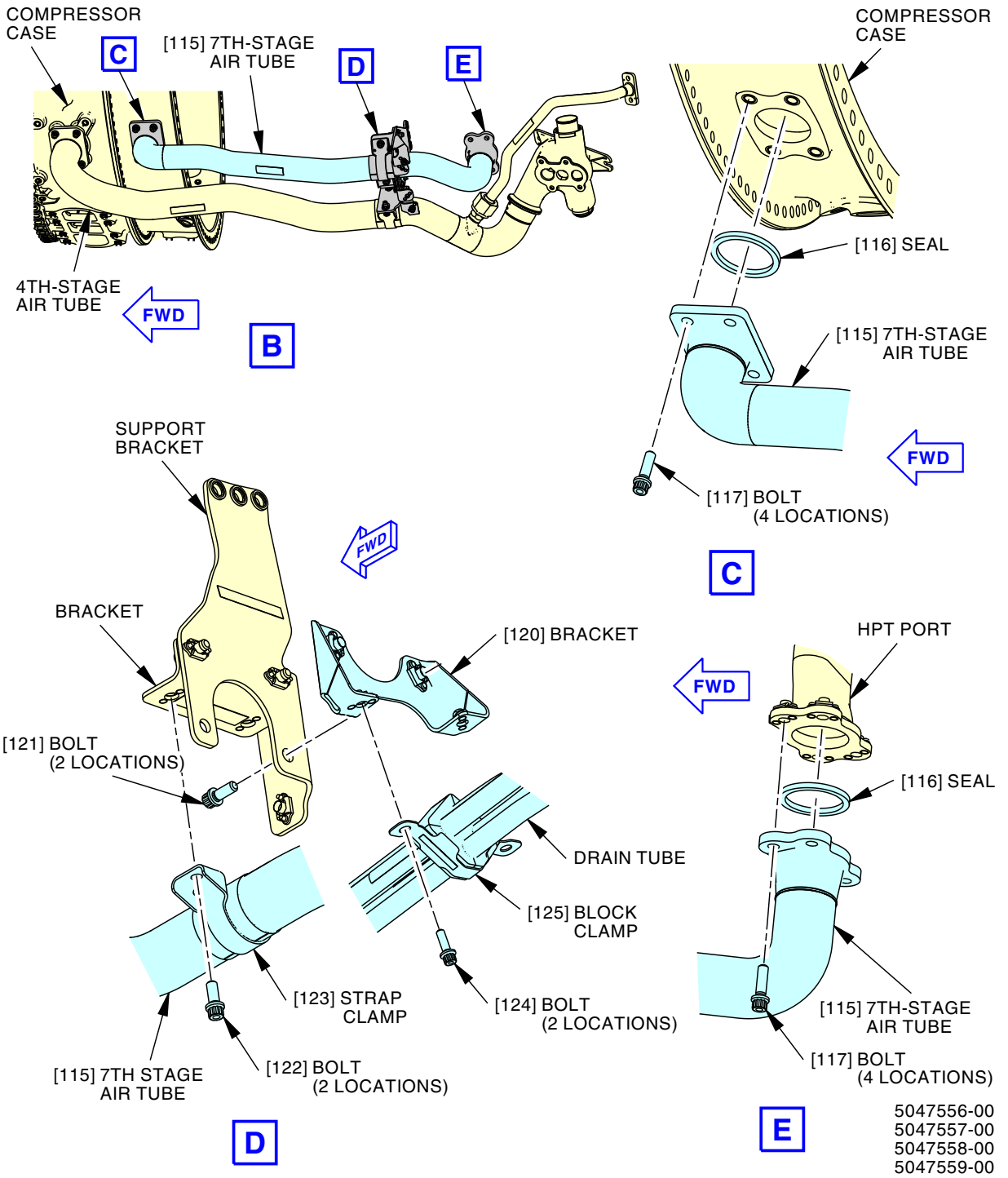
7th-stage Air Tube and HPT ACC Valve Drain Tube Installation
Figure 435/73-11-05-990-866-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



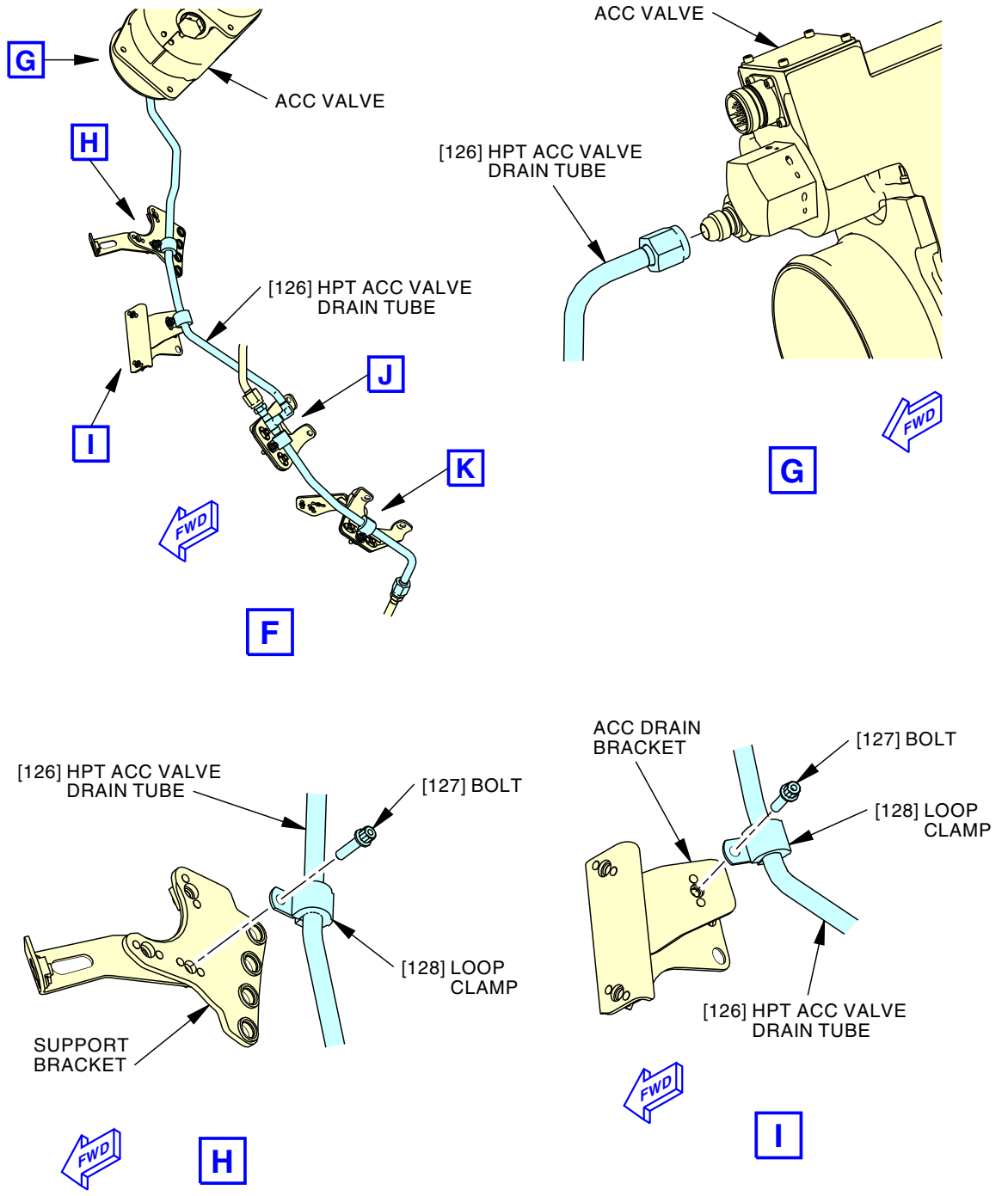
7th-stage Air Tube and HPT ACC Valve Drain Tube Installation
Figure 435/73-11-05-990-866-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



7th-stage Air Tube and HPT ACC Valve Drain Tube Installation
Figure 435/73-11-05-990-866-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

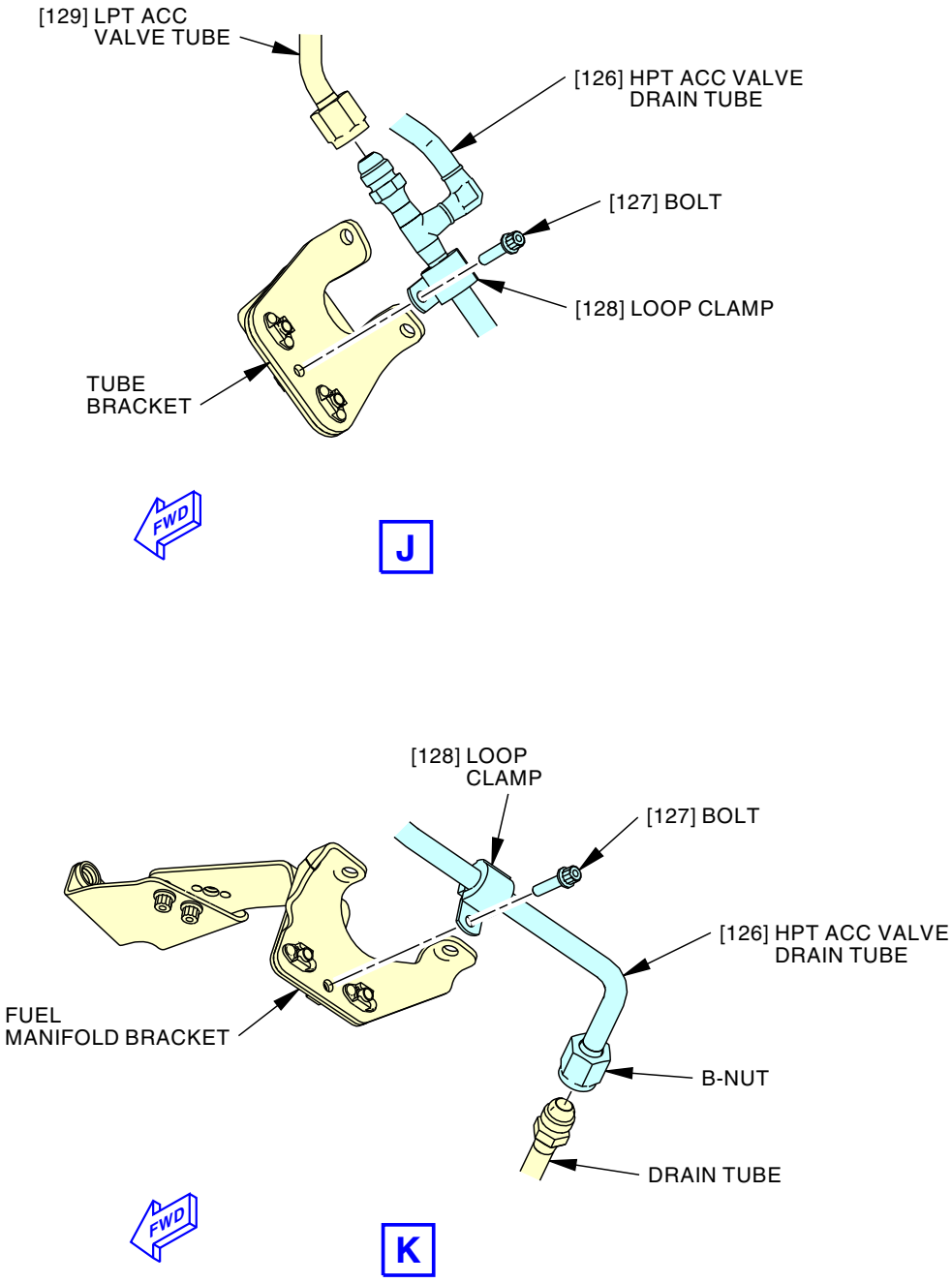


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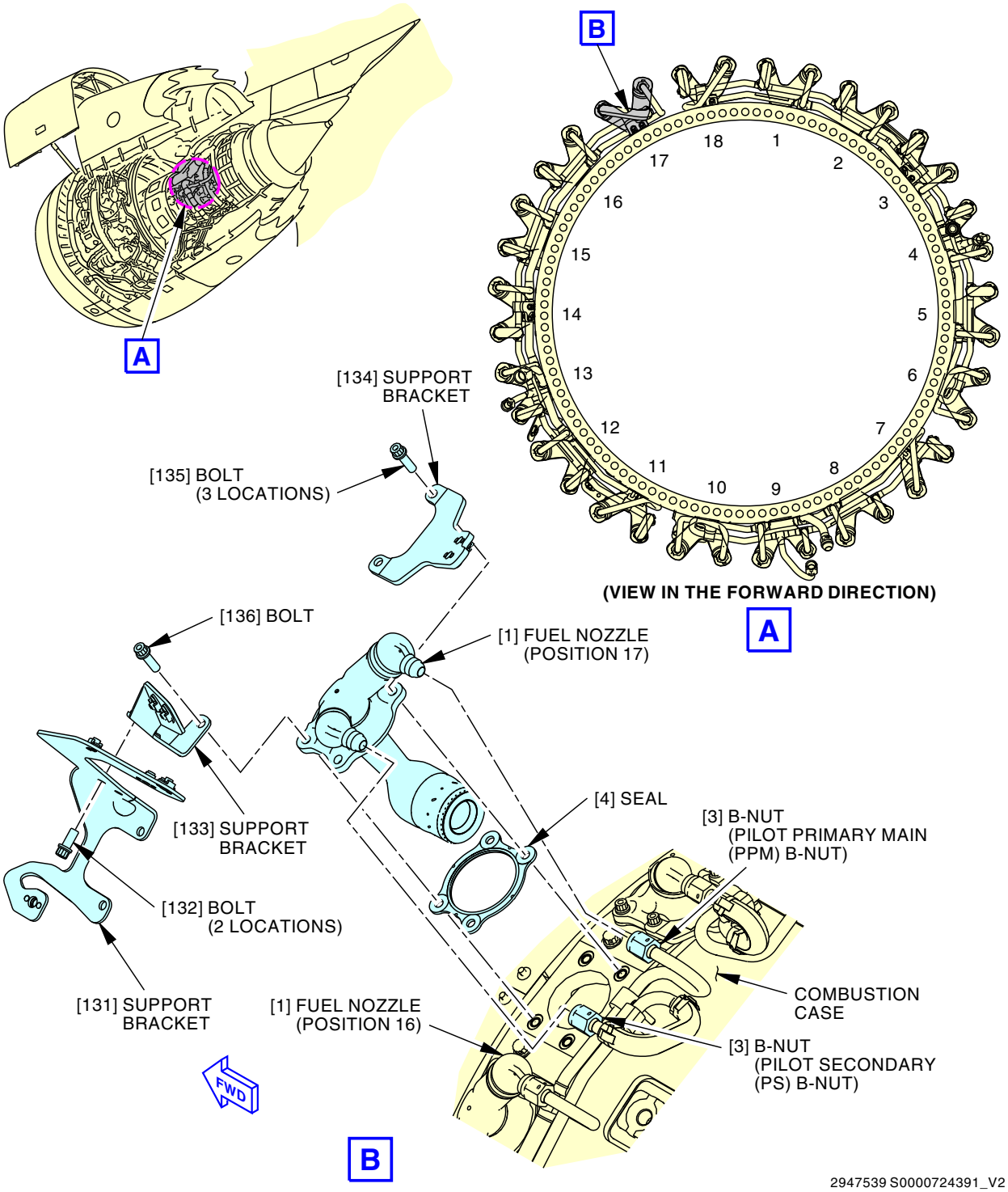
7th-stage Air Tube and HPT ACC Valve Drain Tube Installation
Figure 435/73-11-05-990-866-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



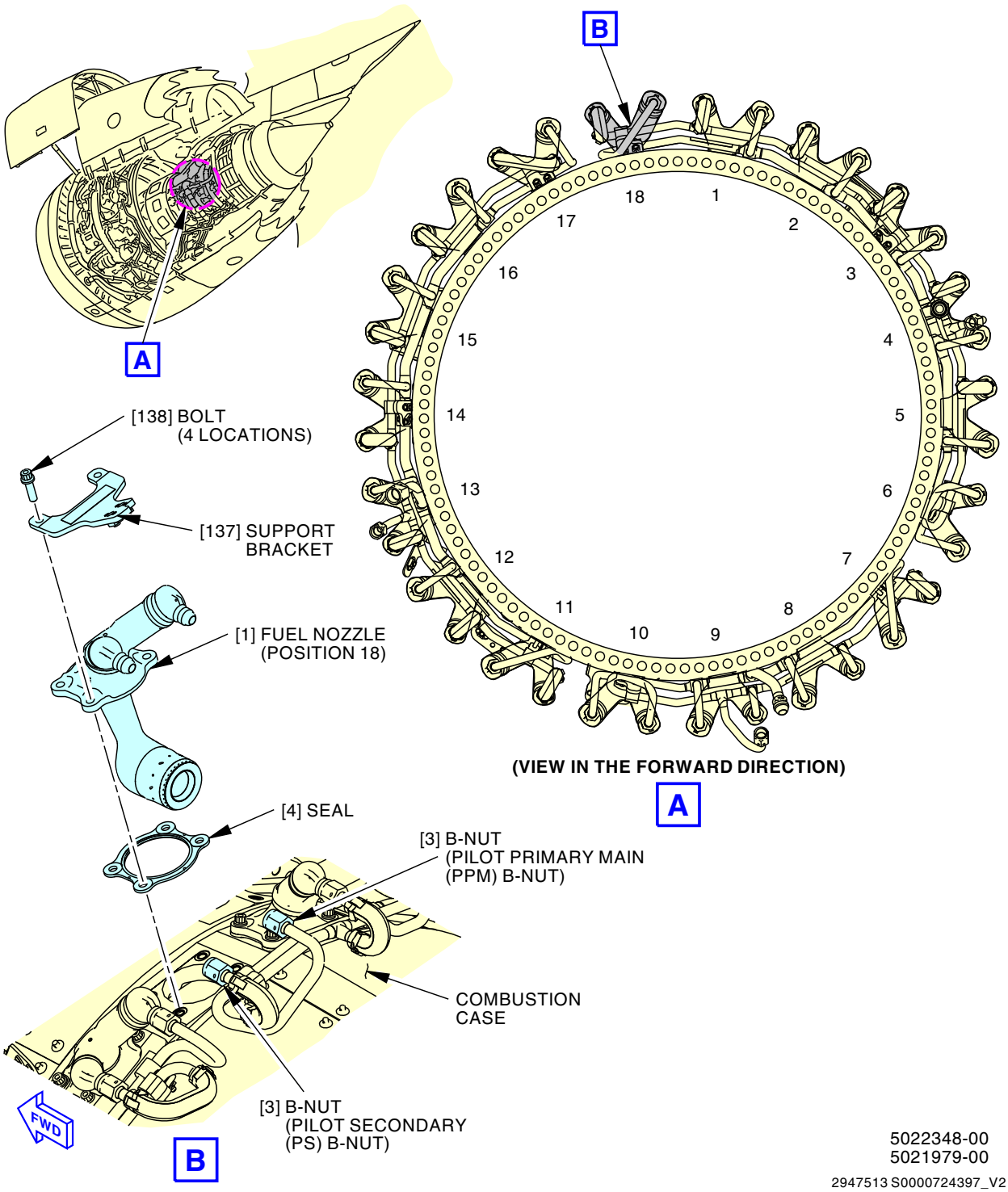
7th-stage Air Tube and HPT ACC Valve Drain Tube Installation
Figure 435/73-11-05-990-866-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.17 Installation
Figure 436/73-11-05-990-867-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

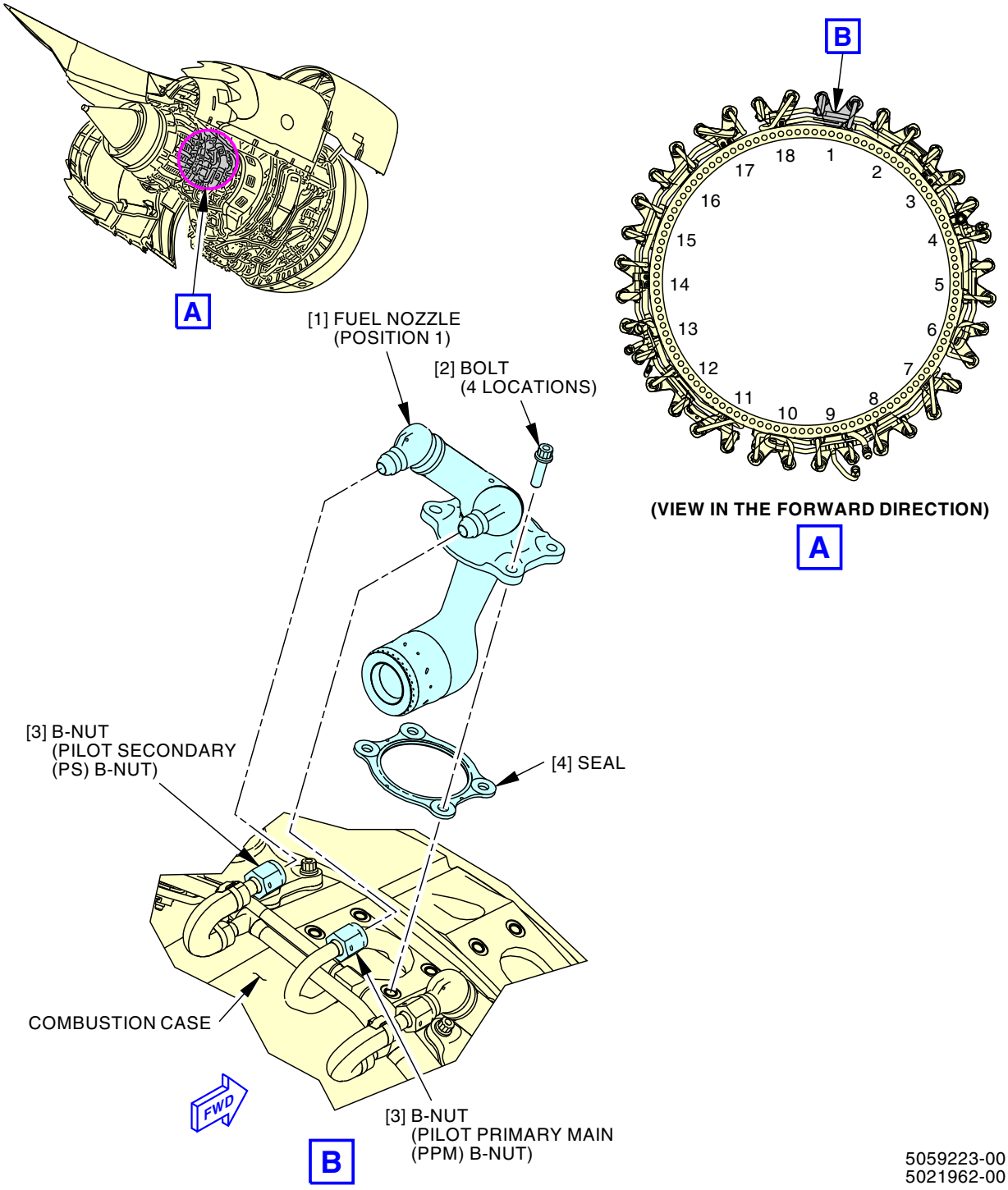


5022348-00
5021979-00

2947513 S0000724397_V2

Fuel Nozzle No.18 Installation
Figure 437/73-11-05-990-868-G00

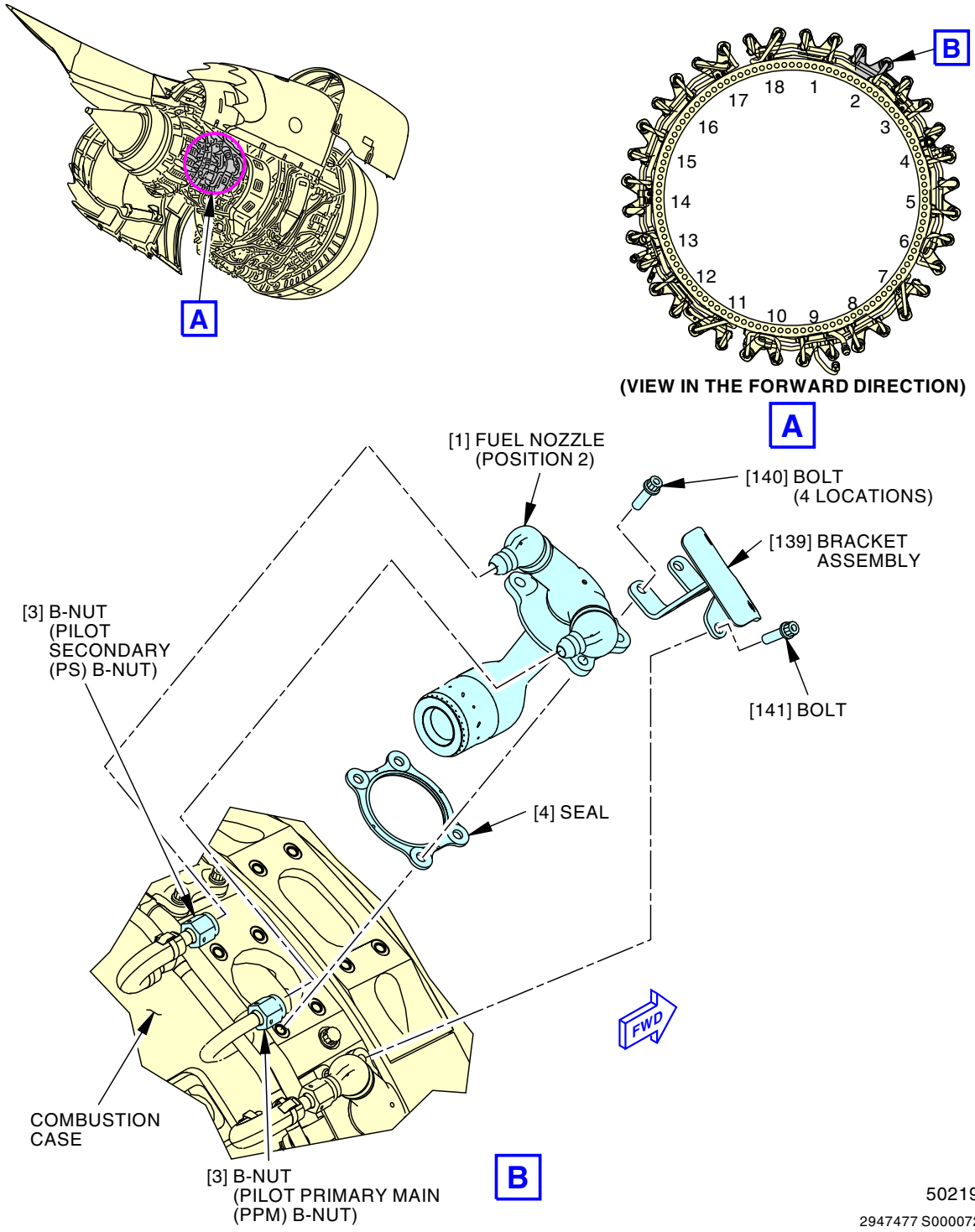
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5059223-00
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2947471 S0000723958_V2

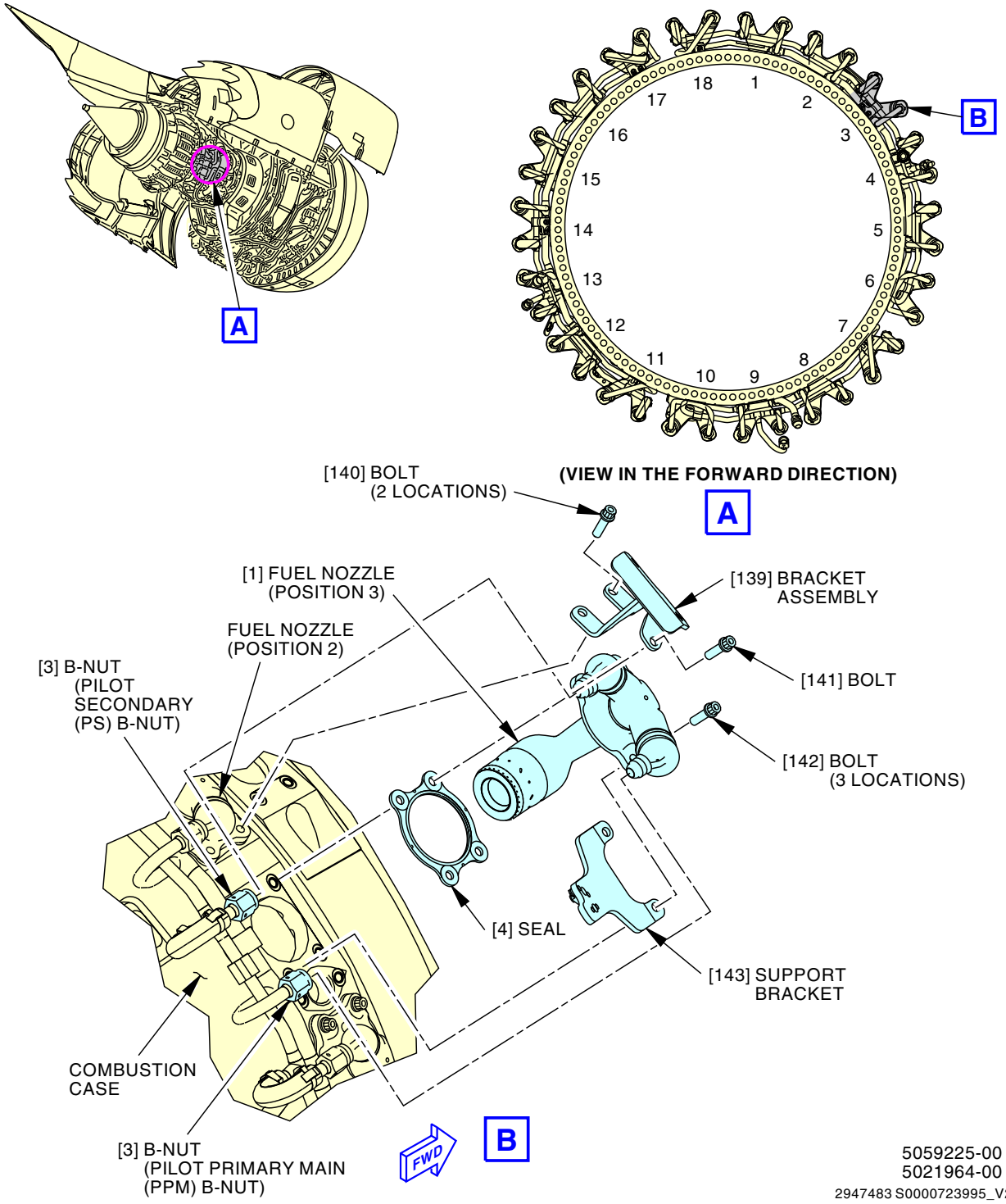
Fuel Nozzle No.1 Installation
Figure 438/73-11-05-990-869-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



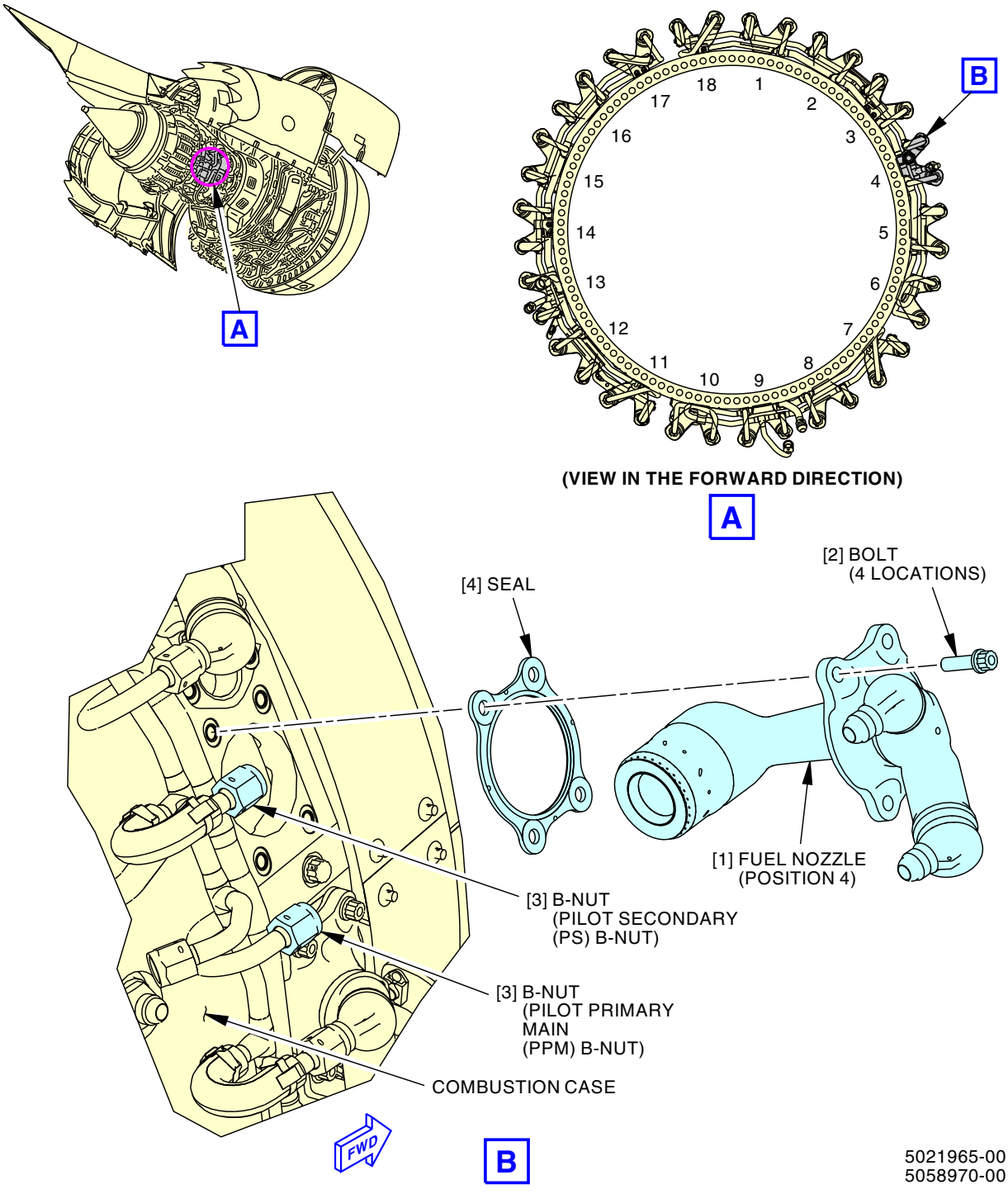
Fuel Nozzle No.2 Installation
Figure 439/73-11-05-990-870-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



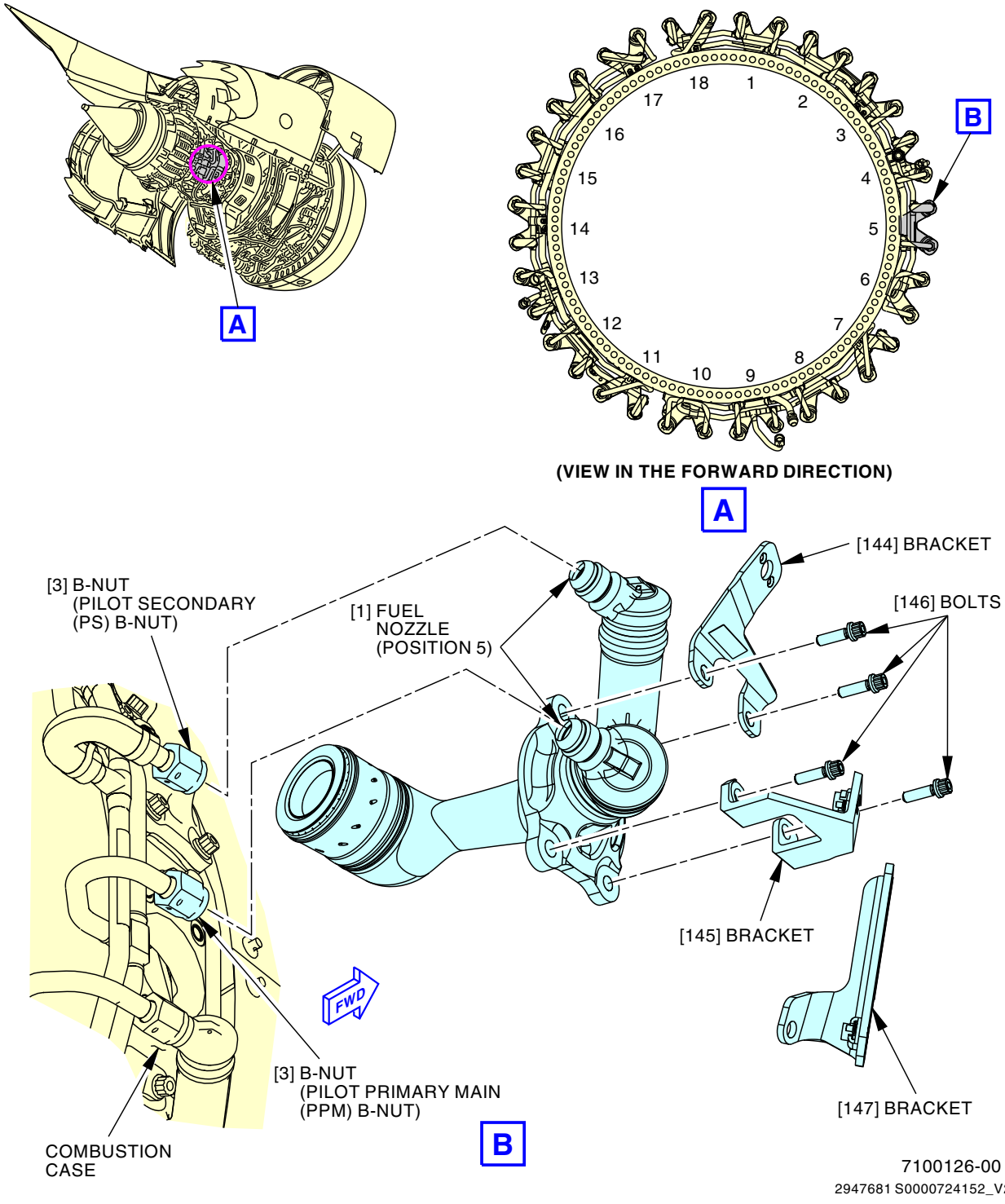
Fuel Nozzle No.3 Installation
Figure 440/73-11-05-990-871-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



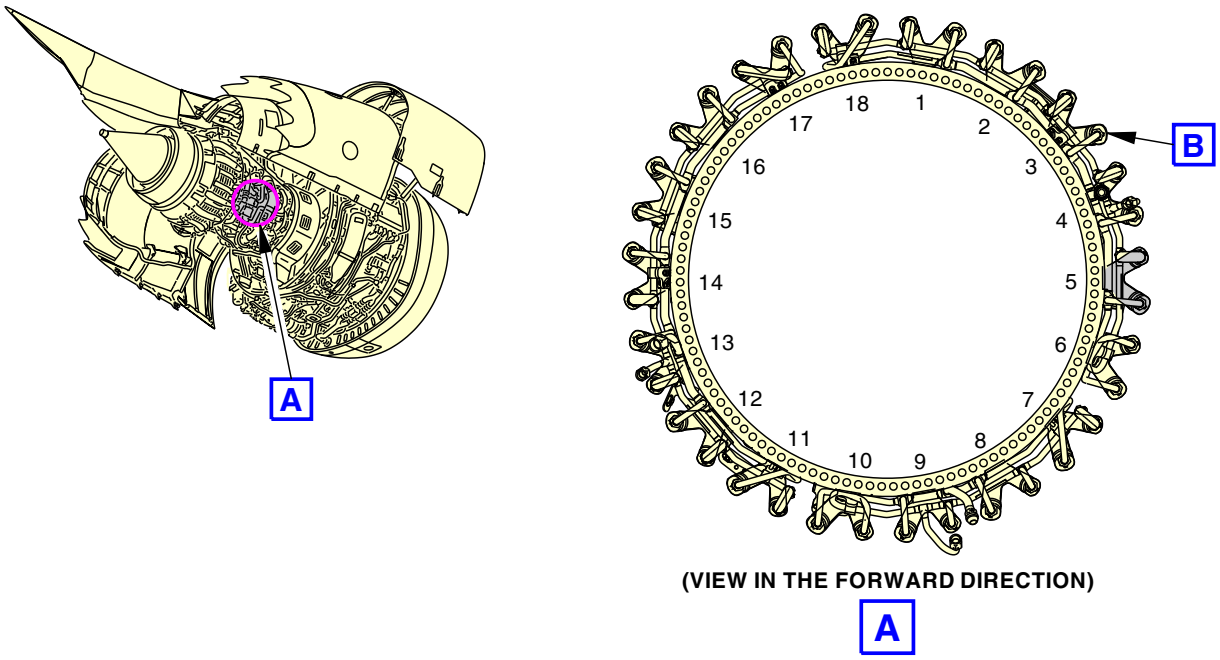
Fuel Nozzle No.4 Installation
Figure 441/73-11-05-990-872-G00

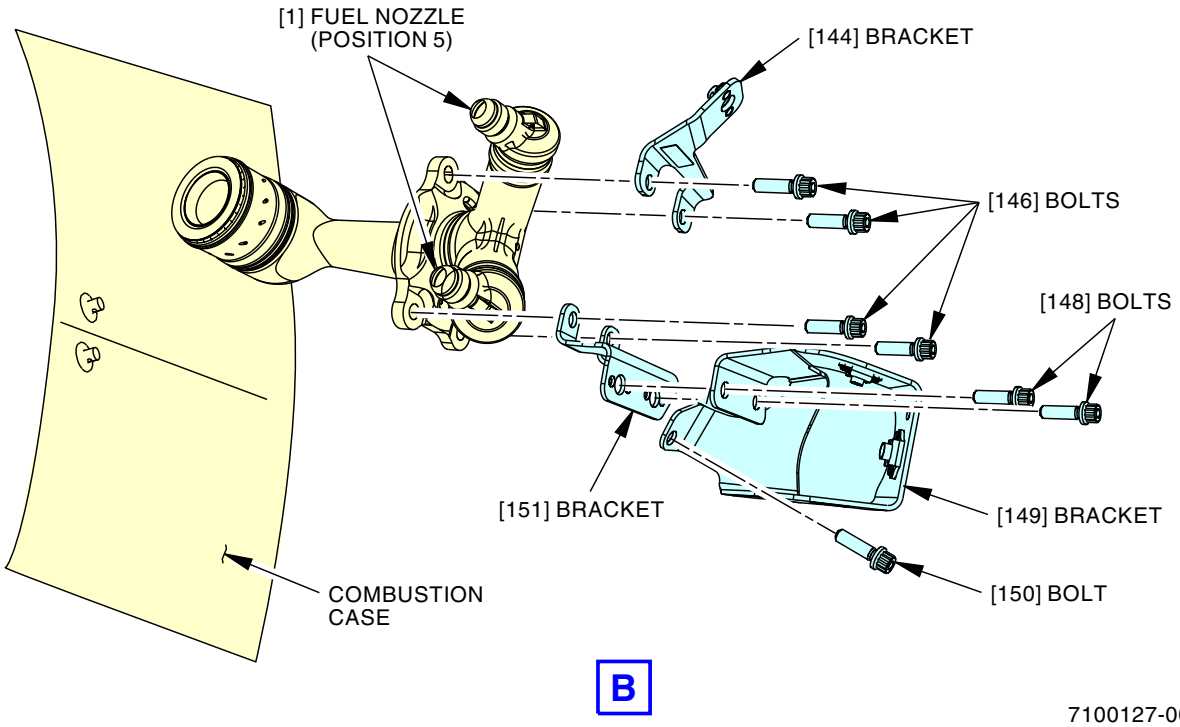
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.5 Installation
Figure 442/73-11-05-990-873-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

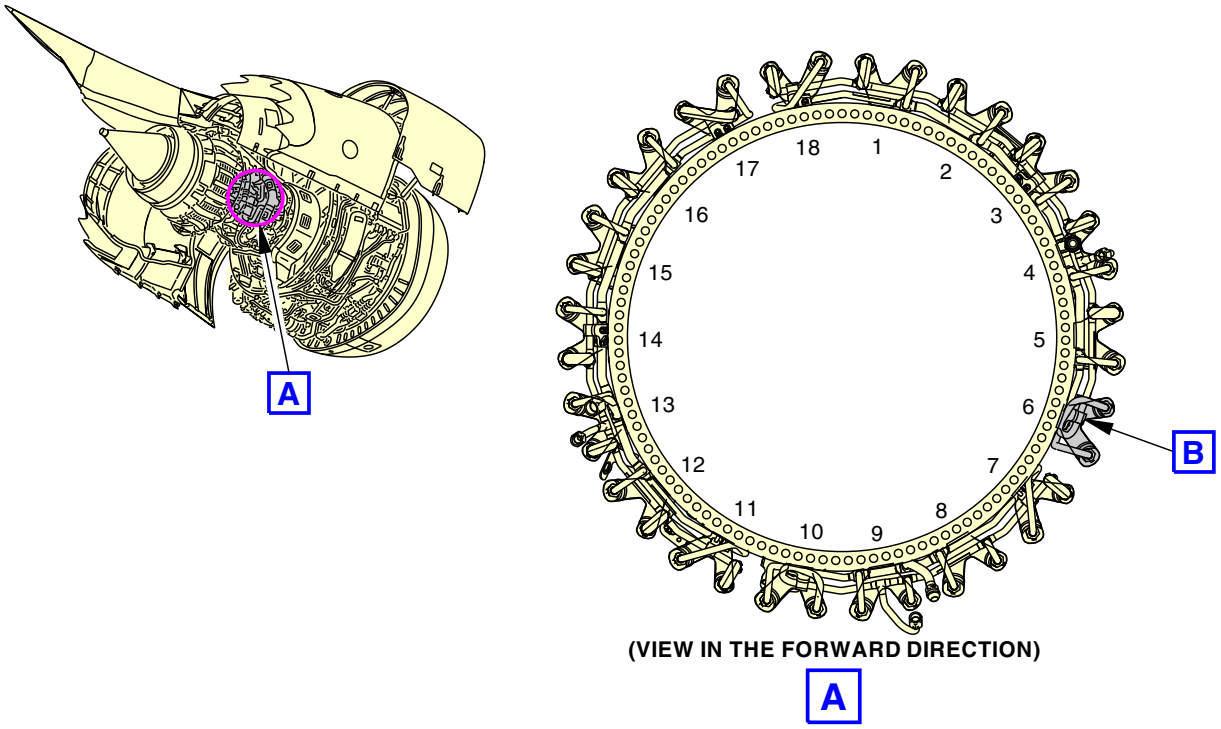




7100127-00
2947682 S0000724158_V1

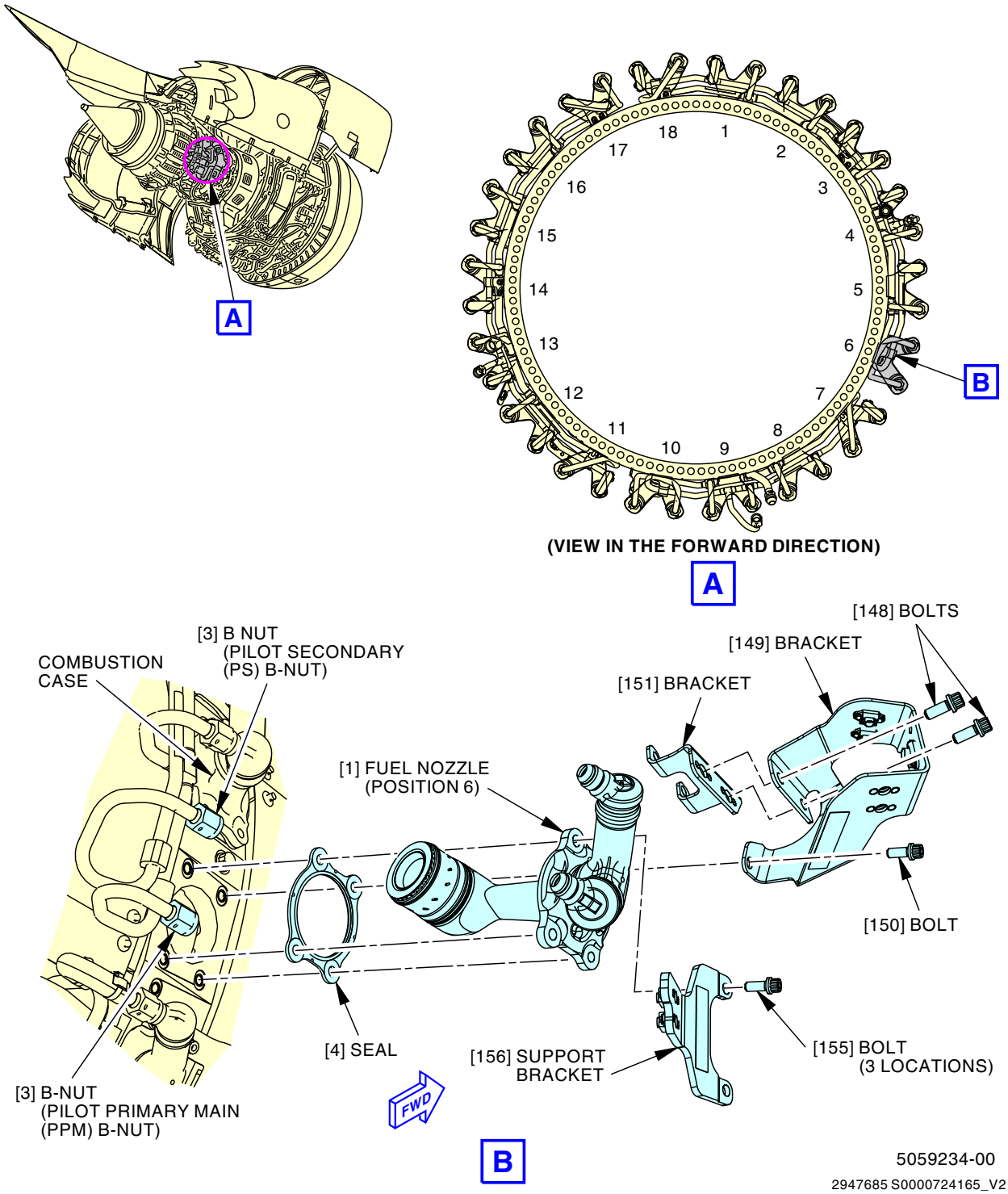
Fuel Nozzle No.5 Installation
Figure 442/73-11-05-990-873-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



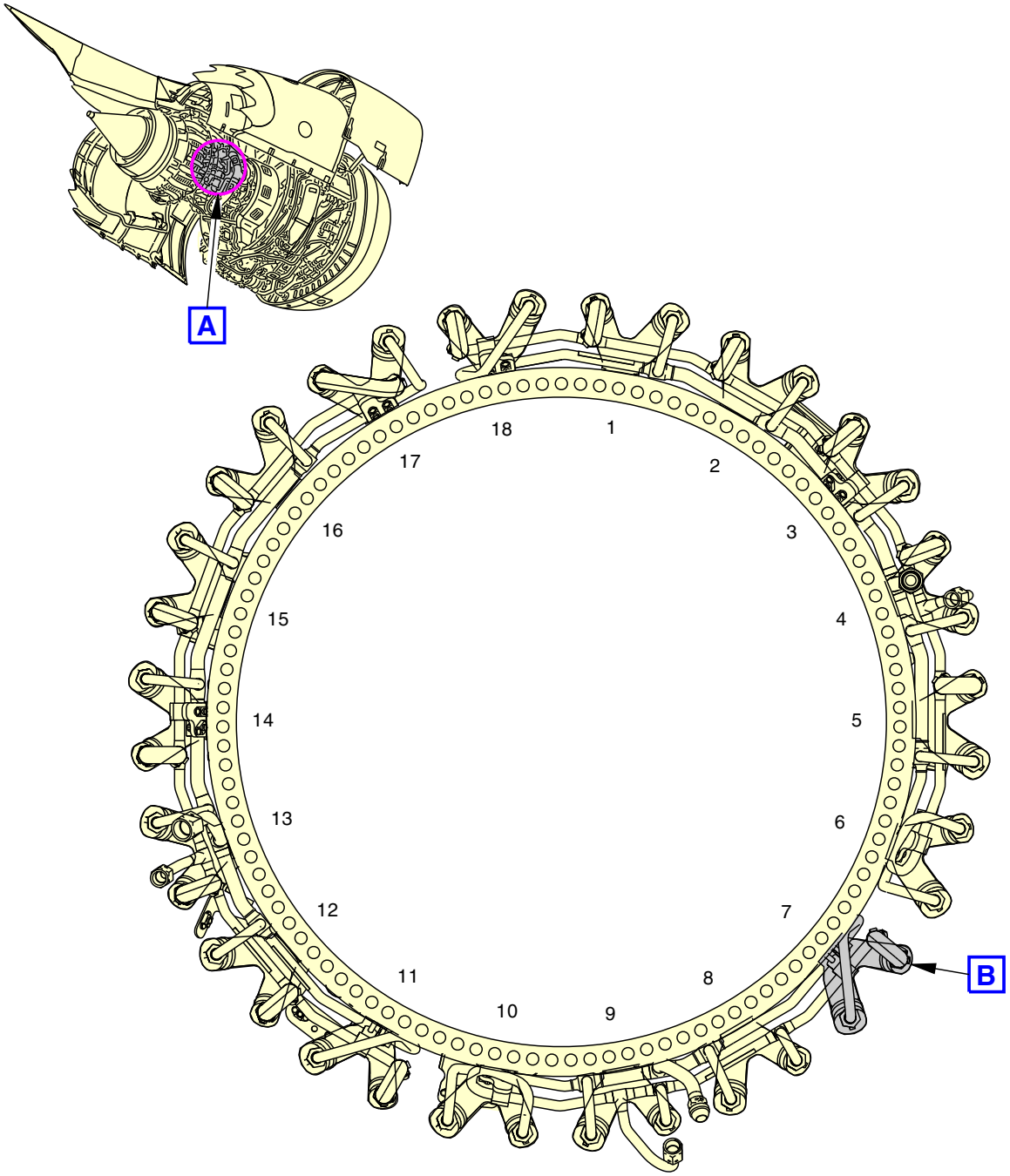
Fuel Nozzle No.6 Installation
Figure 443/73-11-05-990-874-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



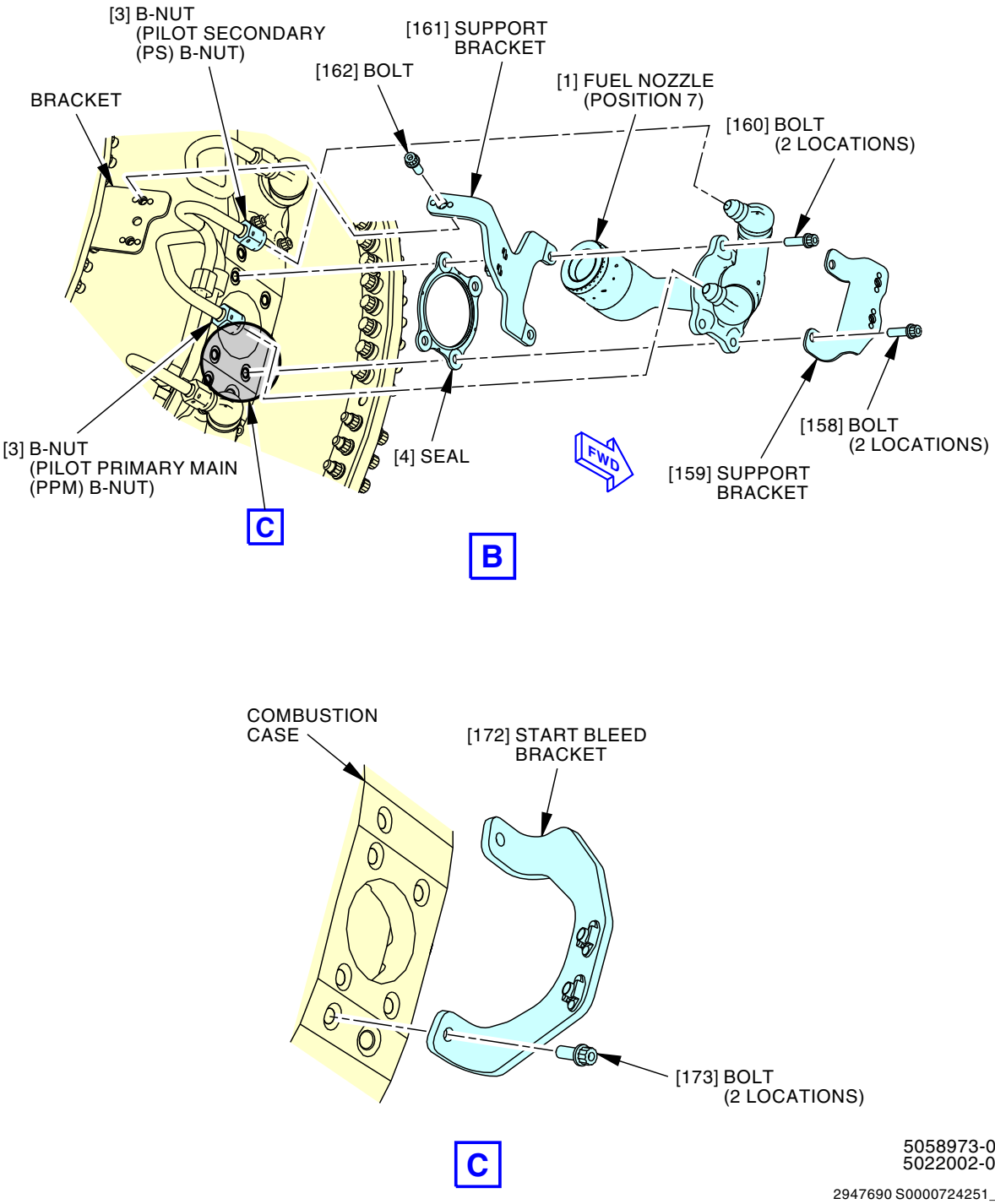
Fuel Nozzle No.6 Installation
Figure 443/73-11-05-990-874-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



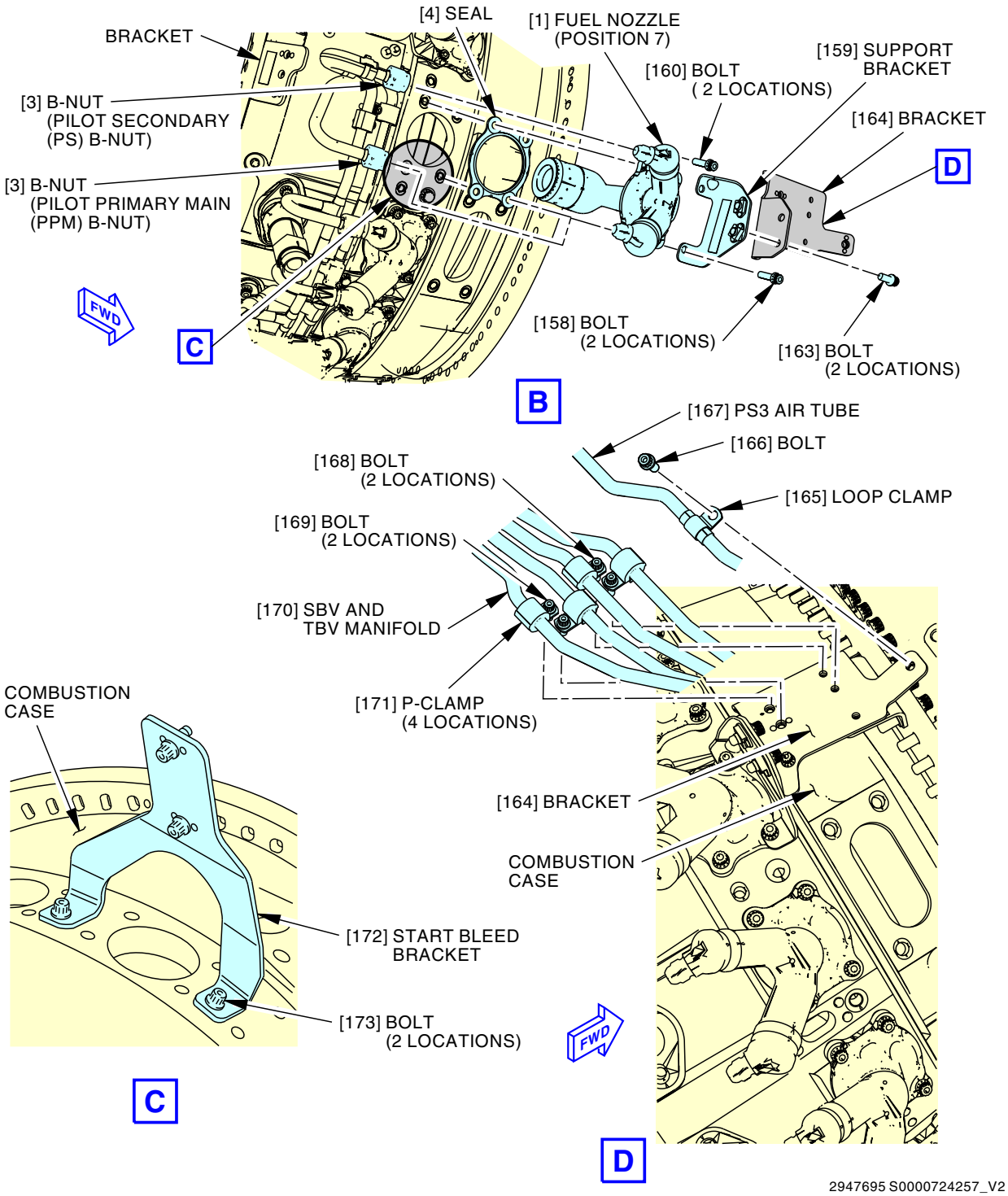
Fuel Nozzle No.7 Installation
Figure 444/73-11-05-990-875-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



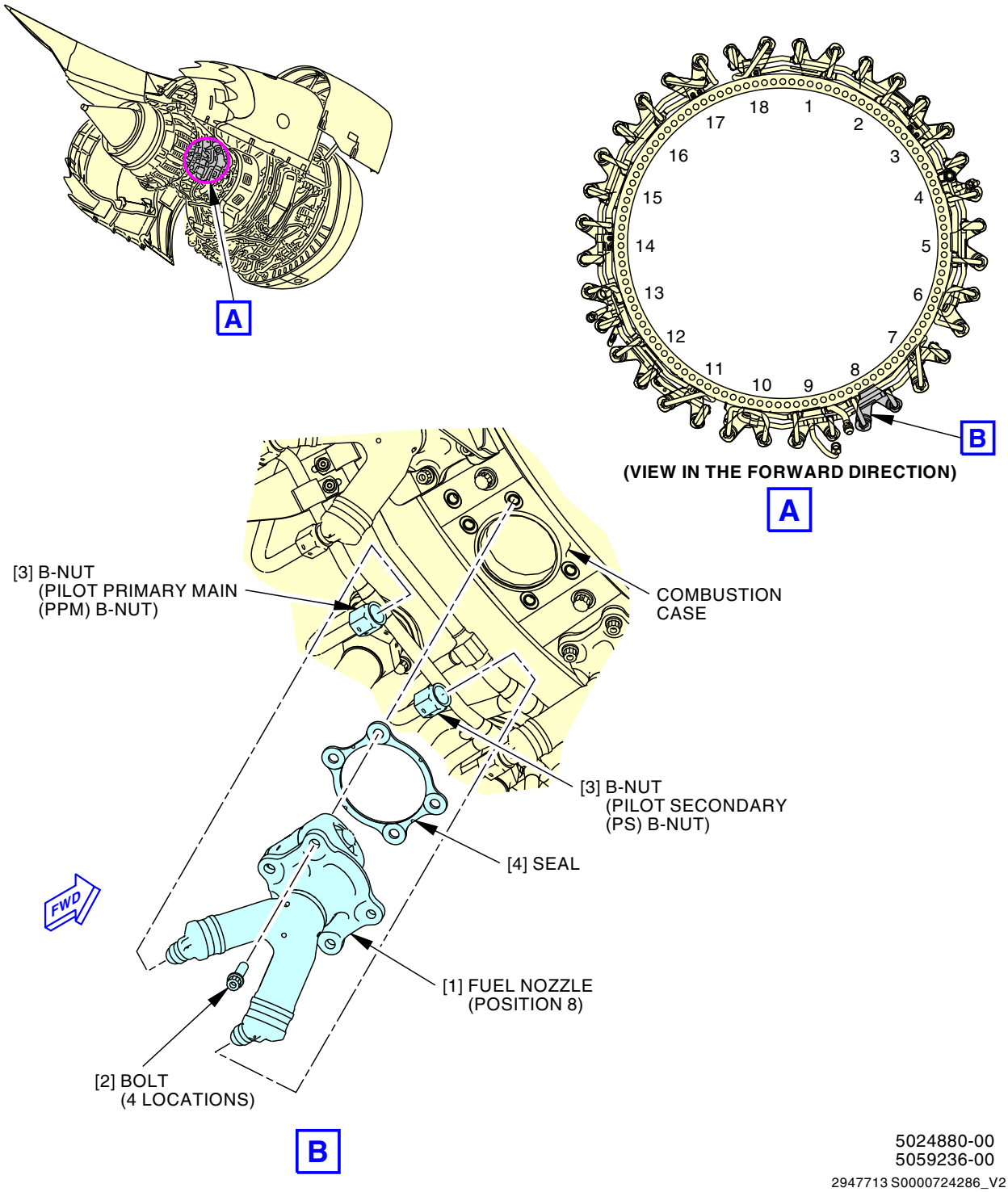
Fuel Nozzle No.7 Installation
Figure 444/73-11-05-990-875-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.7 Installation
Figure 444/73-11-05-990-875-G00 (Sheet 3 of 3)

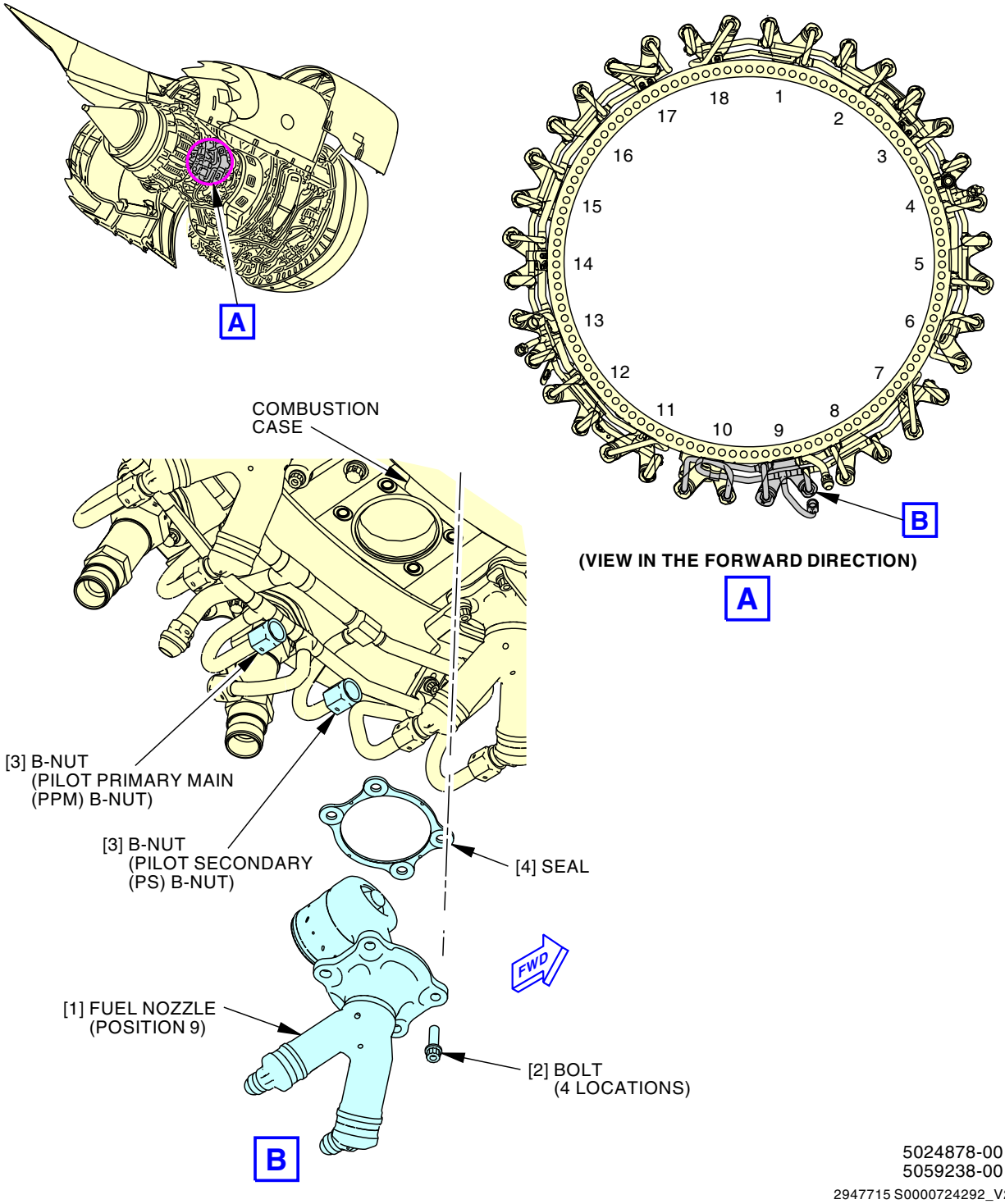
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5024880-00
5059236-00
2947713 S0000724286_V2

Fuel Nozzle No.8 Installation
Figure 445/73-11-05-990-876-G00

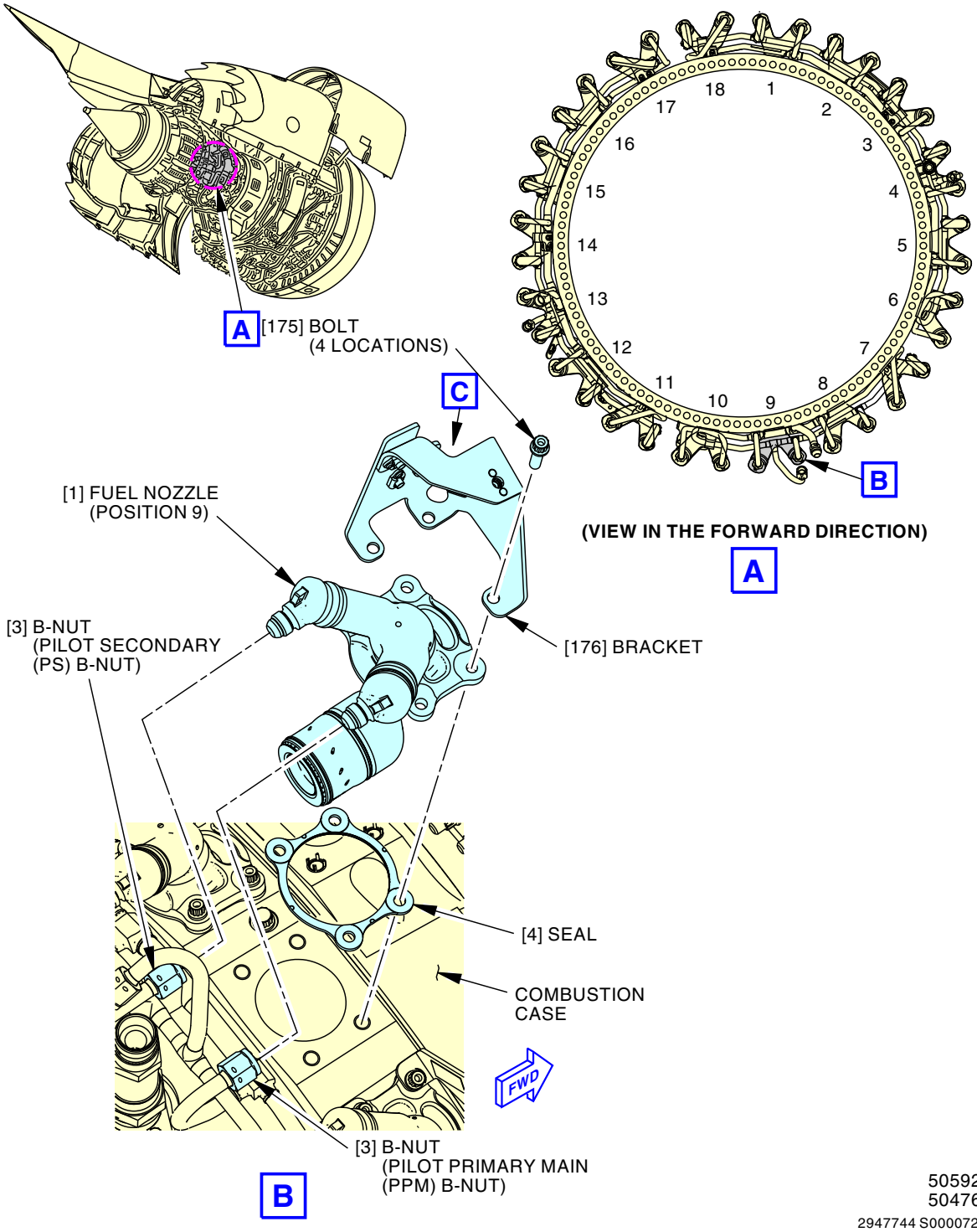
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5024878-00
5059238-00
2947715 S0000724292_V2

Fuel Nozzle No.9 Installation
Figure 446/73-11-05-990-877-G00 (Sheet 1 of 3)

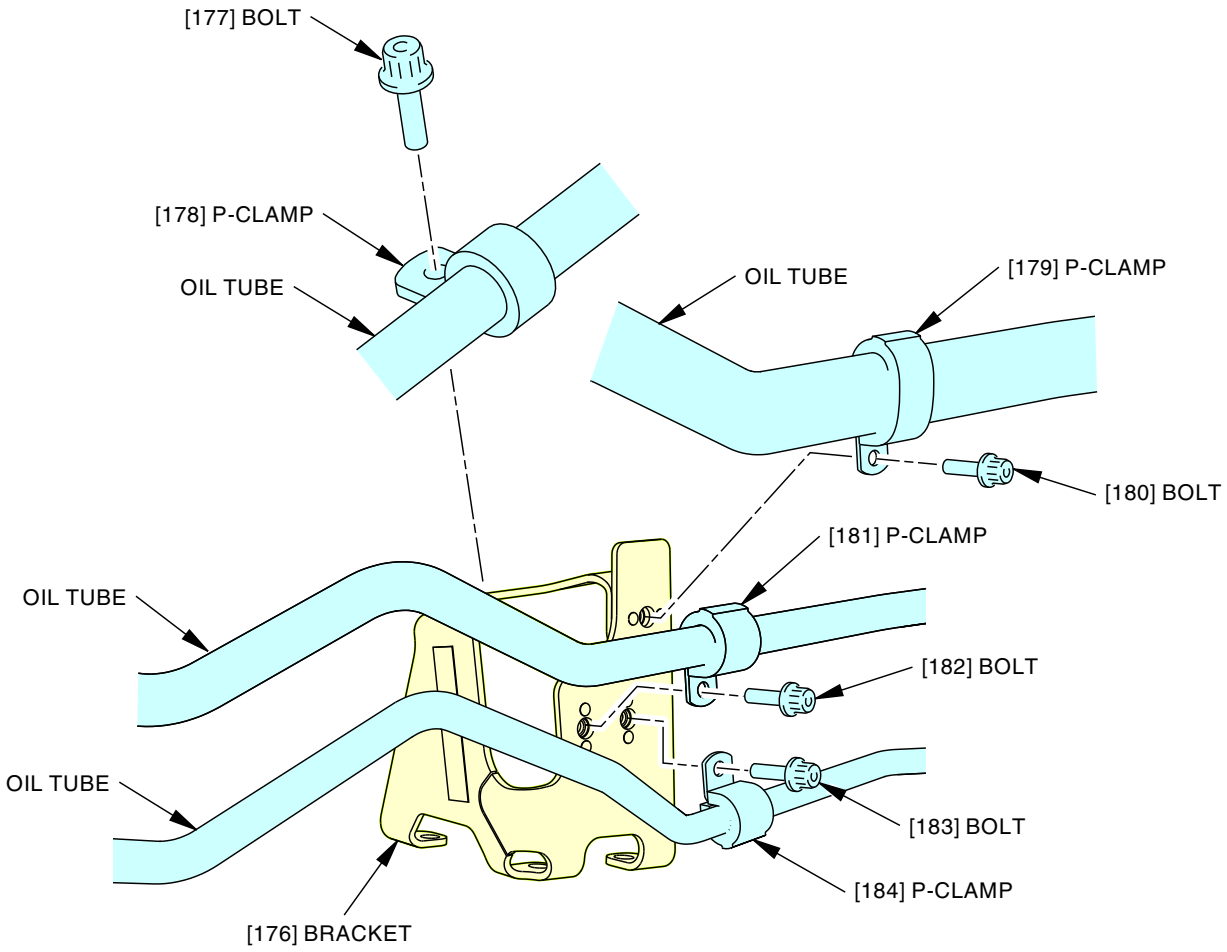
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5059238-00
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Fuel Nozzle No.9 Installation
Figure 446/73-11-05-990-877-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

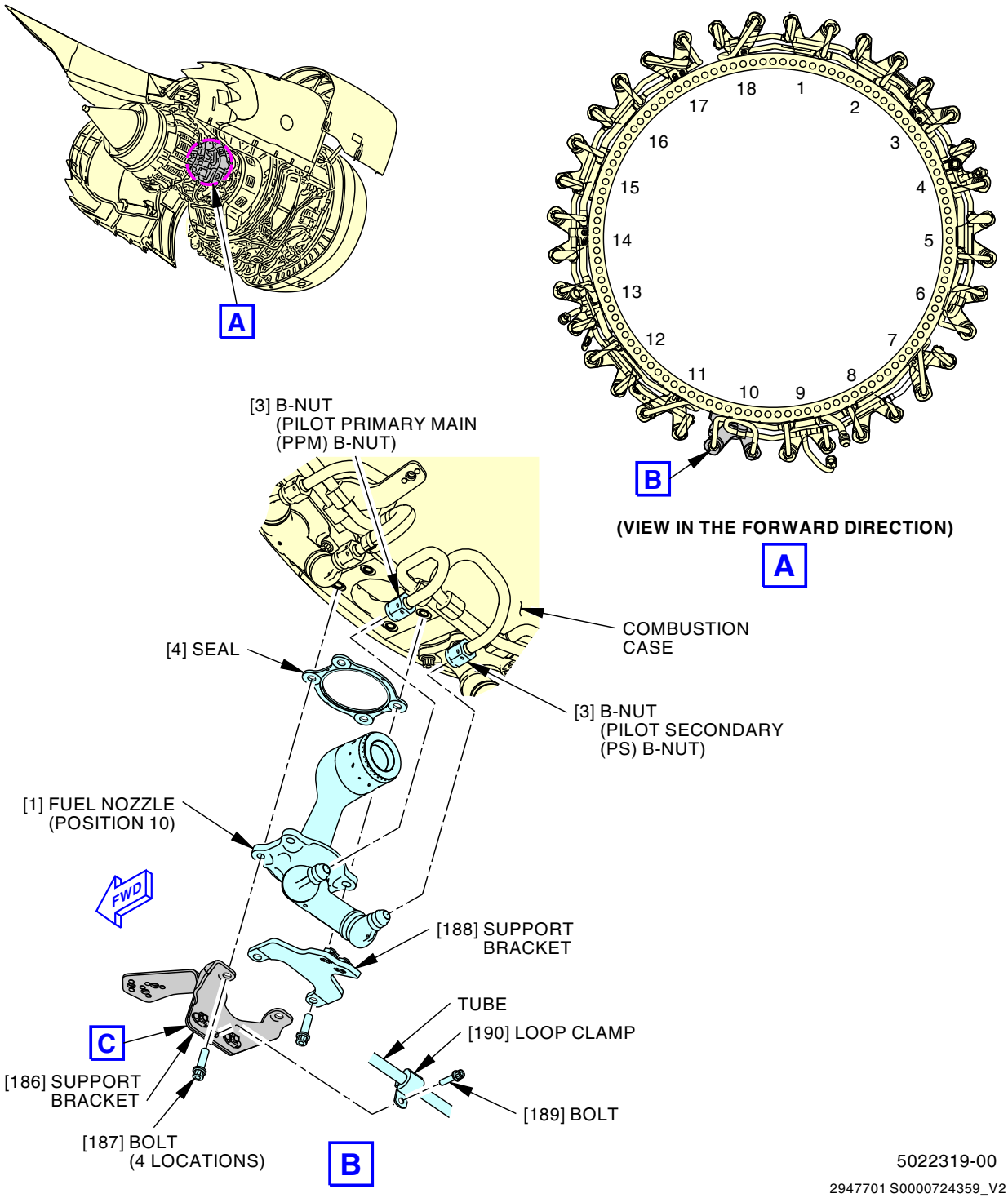


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2947756 S0000724299_V1

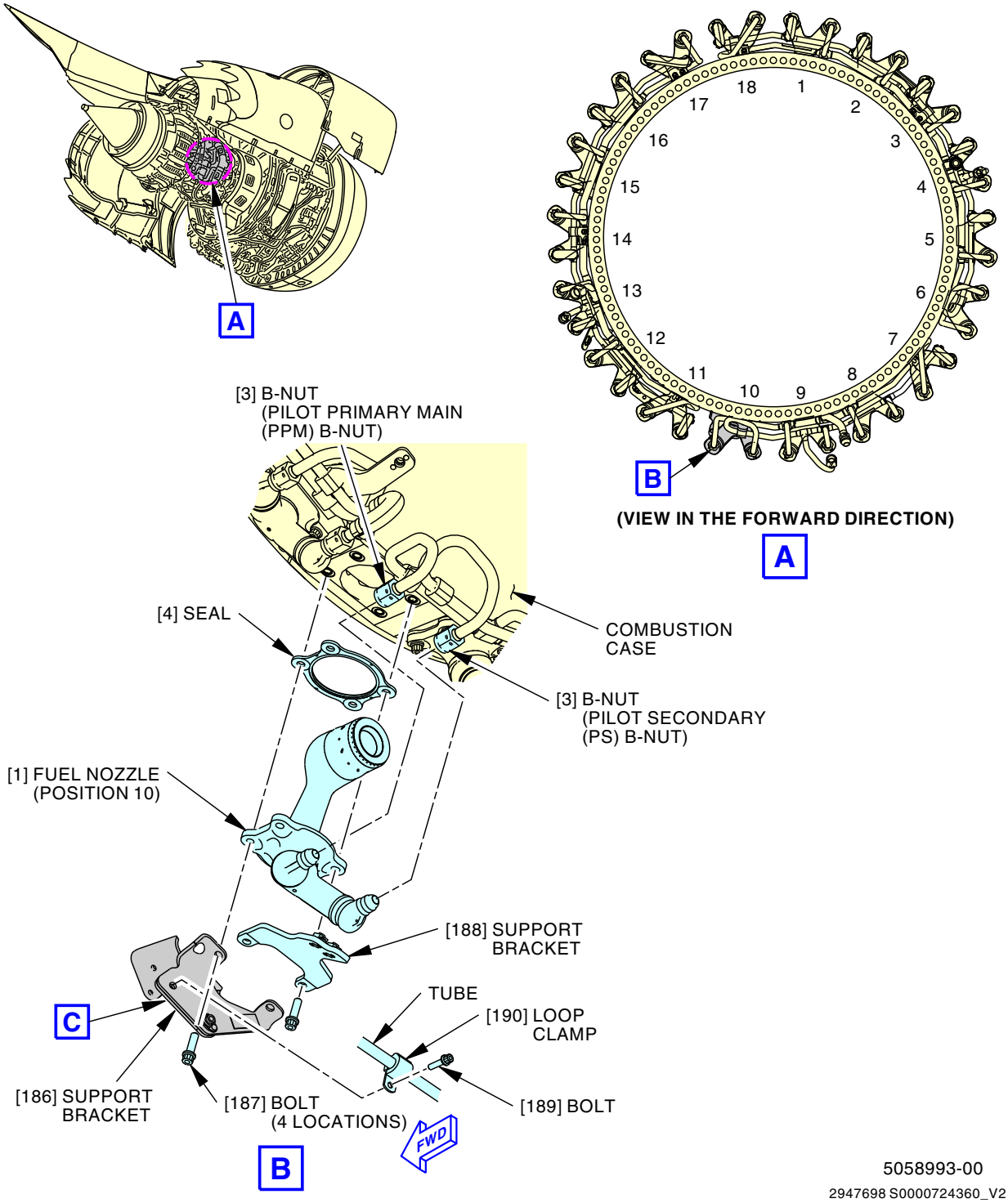
Fuel Nozzle No.9 Installation
Figure 446/73-11-05-990-877-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



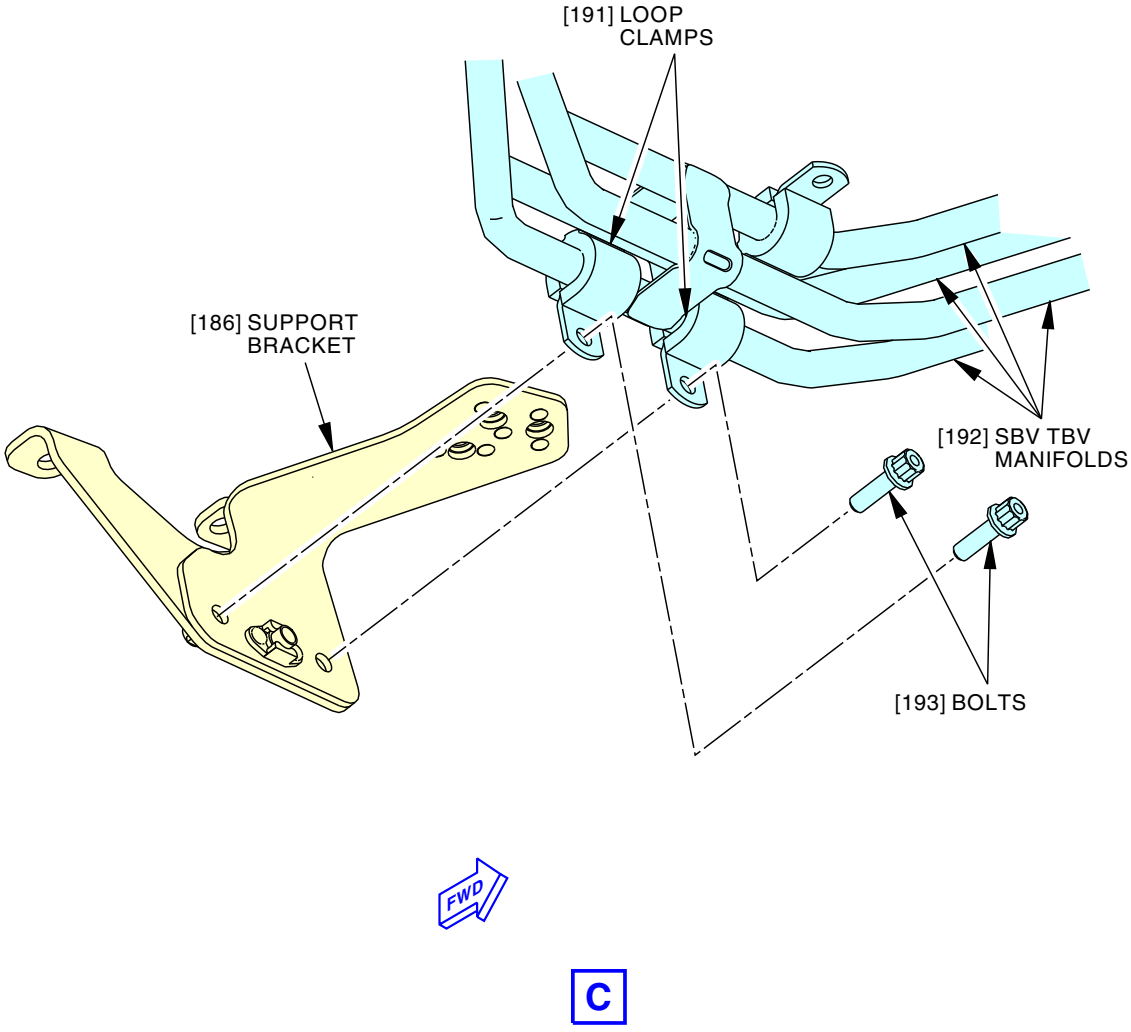
Fuel Nozzle No.10 Installation
Figure 447/73-11-05-990-878-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.10 Installation
Figure 447/73-11-05-990-878-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

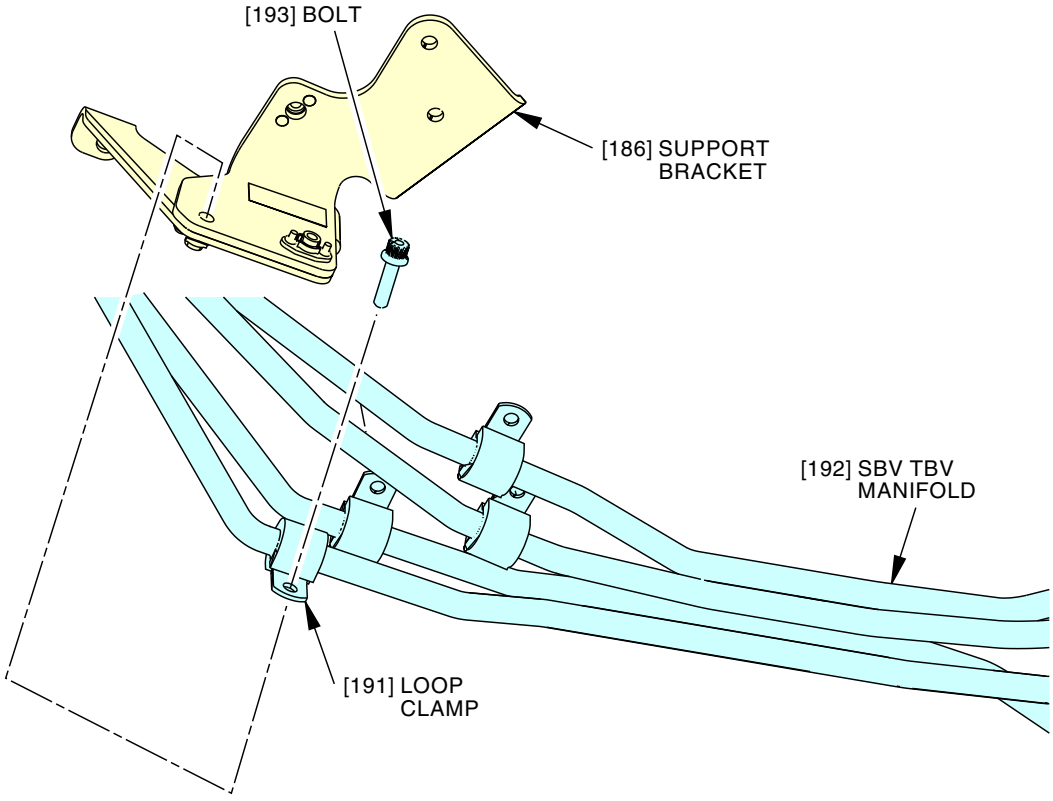


5021992-00

2947697 S0000724361_V1

Fuel Nozzle No.10 Installation
Figure 447/73-11-05-990-878-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

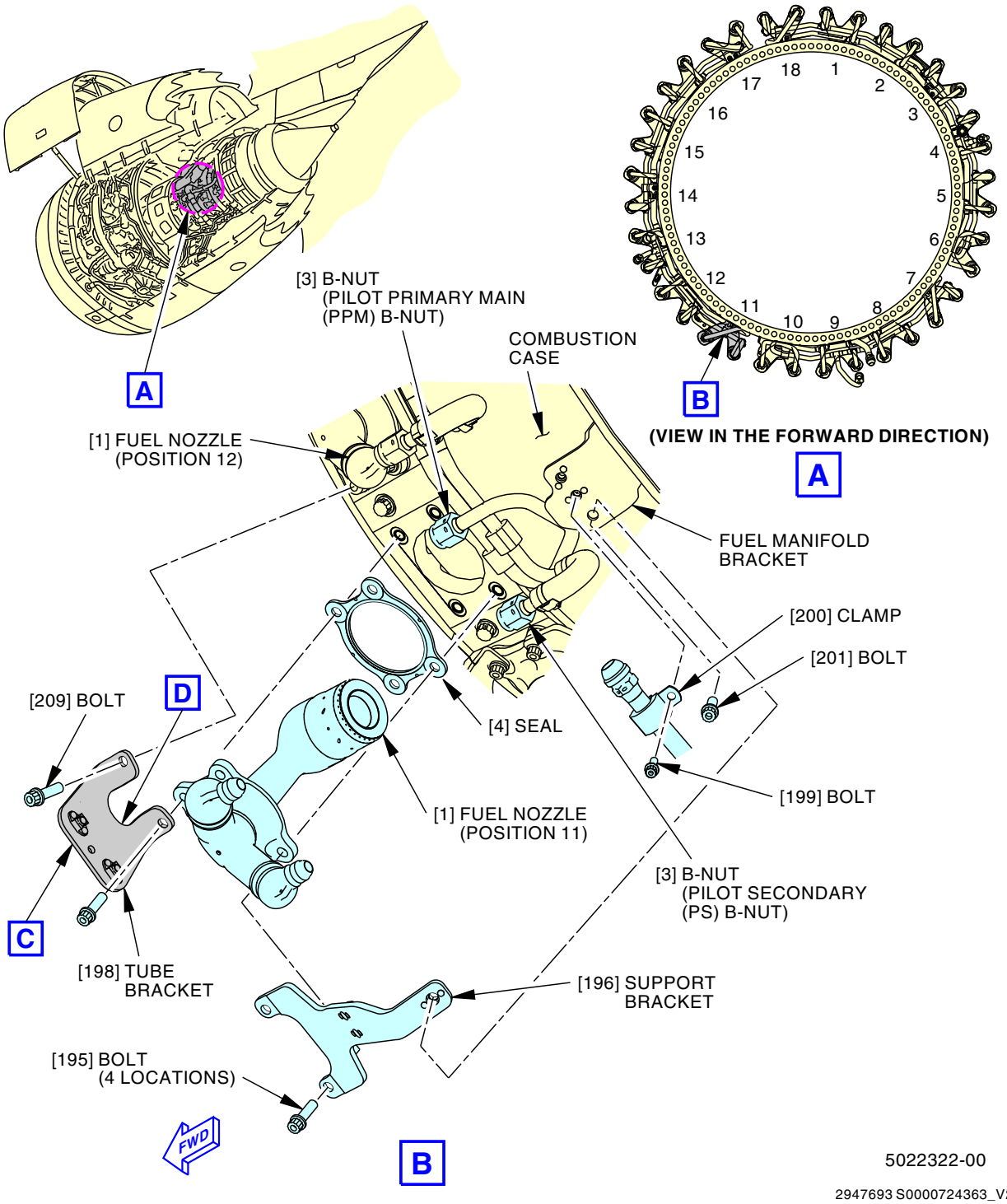


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2947694 S0000724466_V2

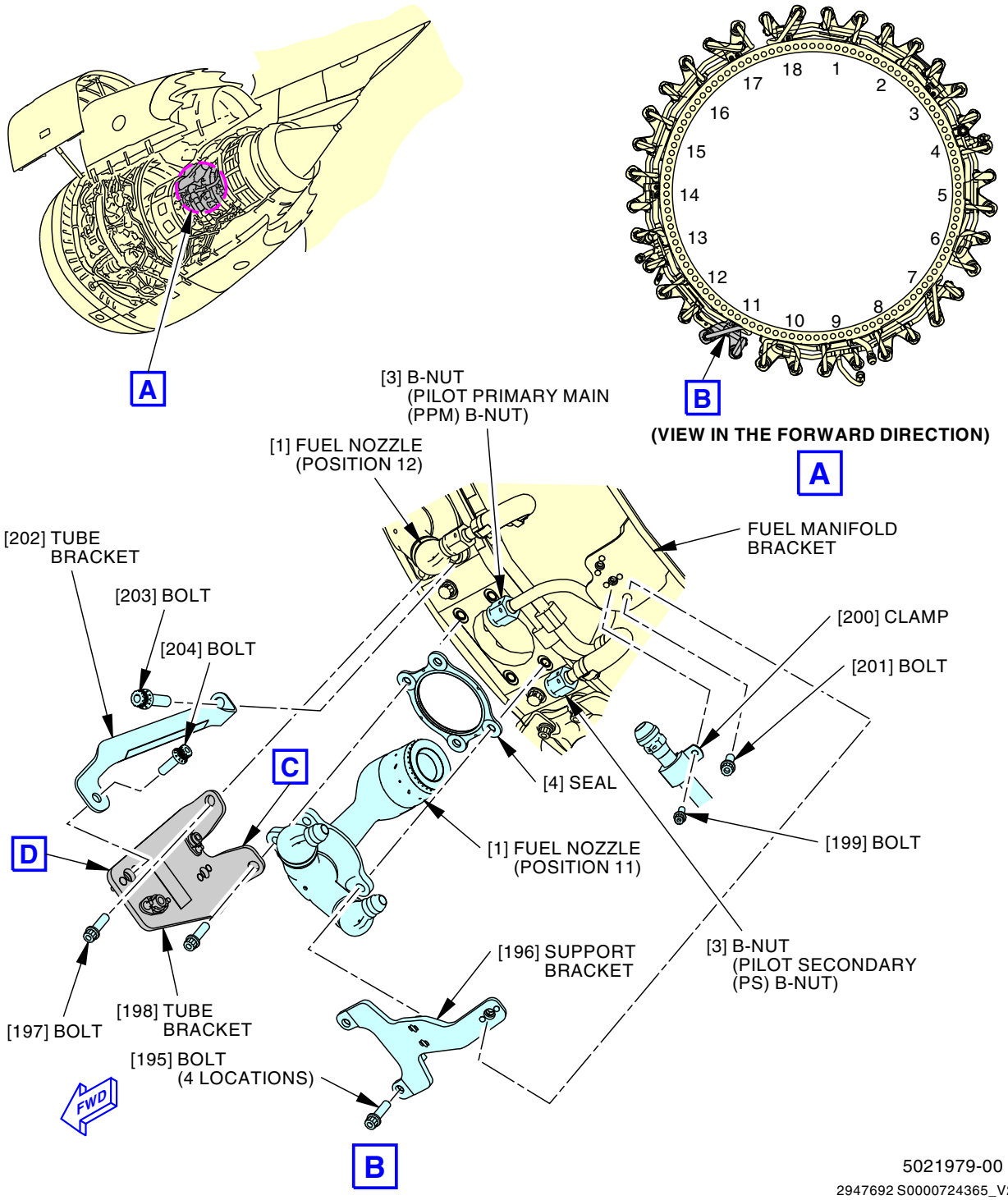
Fuel Nozzle No.10 Installation
Figure 447/73-11-05-990-878-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



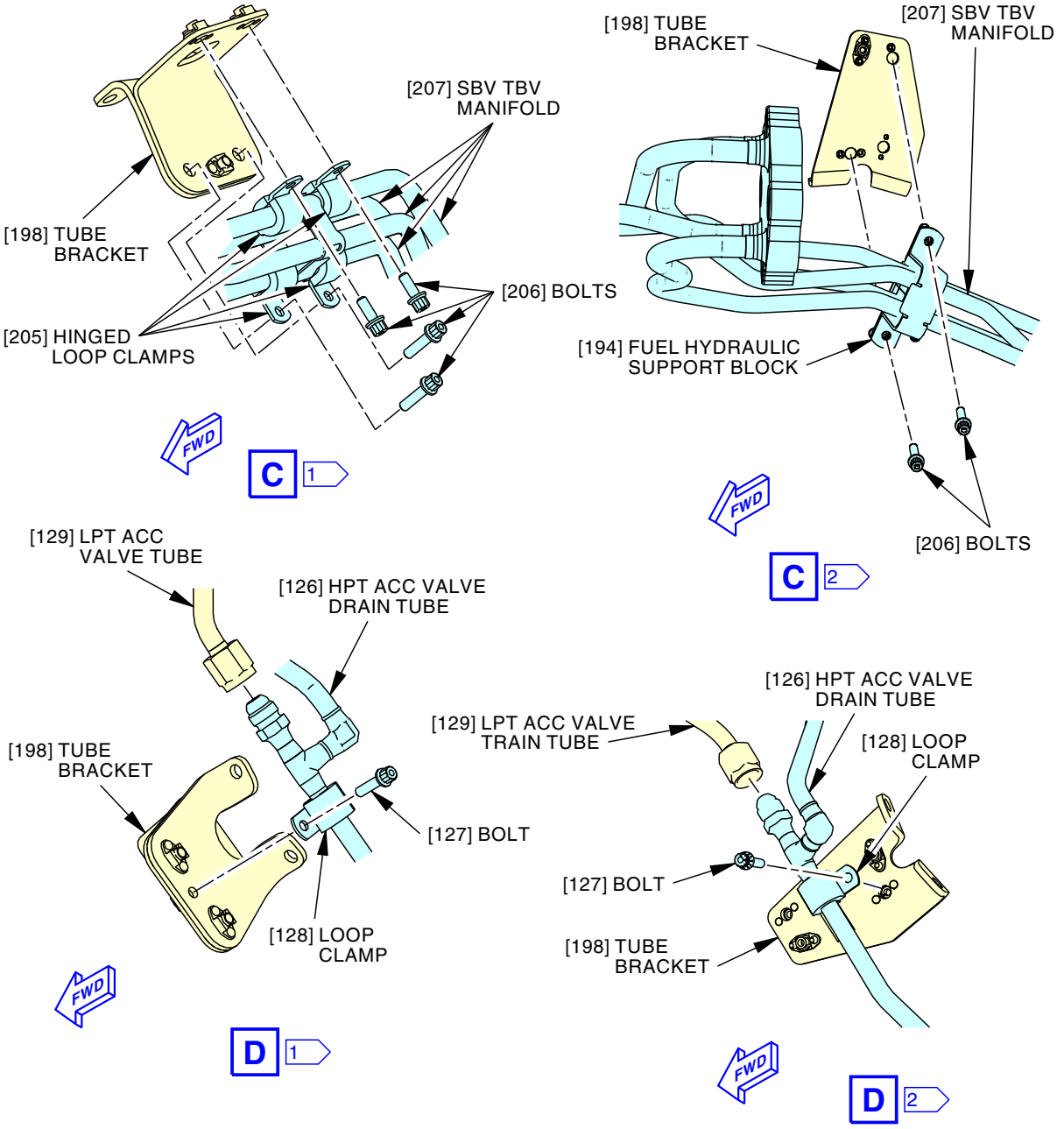
Fuel Nozzle No.11 Installation
Figure 448/73-11-05-990-879-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.11 Installation
Figure 448/73-11-05-990-879-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

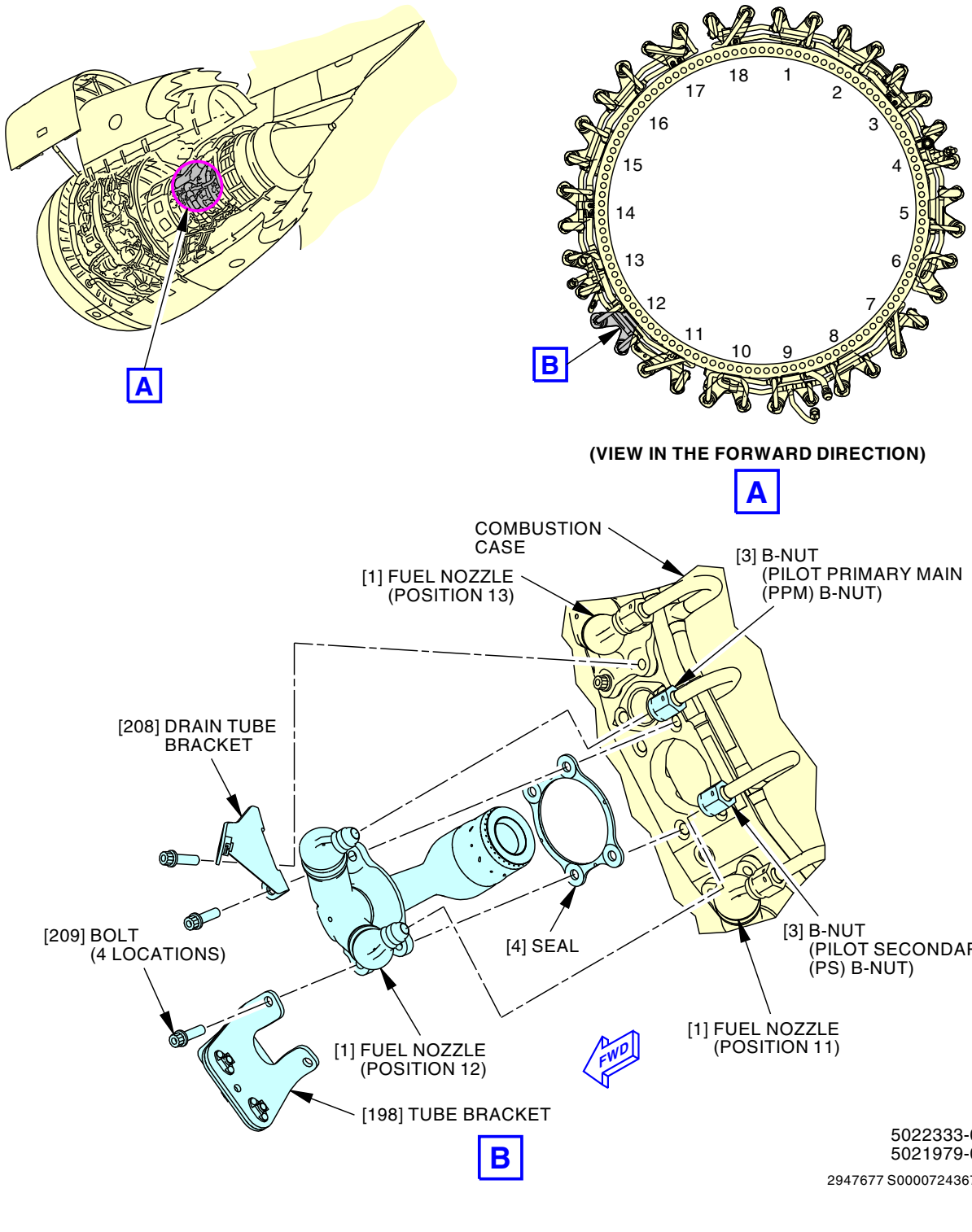


1 PRE LEAP-1B SERVICE BULLETIN 72-0071
2 POST LEAP-1B SERVICE BULLETIN 72-0071

5053481-00/ 5058996-00
2947691 S0000724366_V1

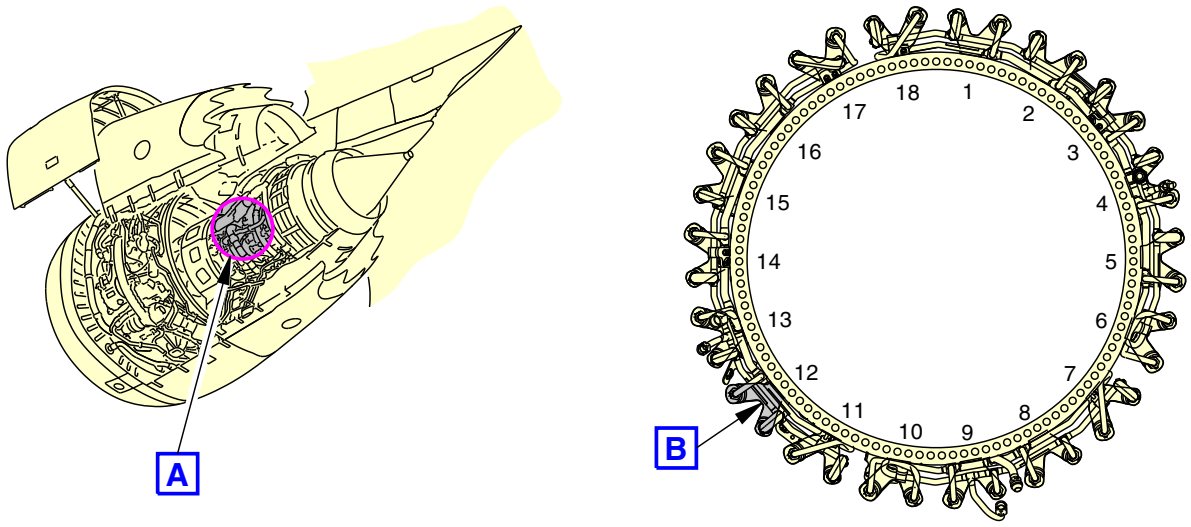
Fuel Nozzle No.11 Installation
Figure 448/73-11-05-990-879-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

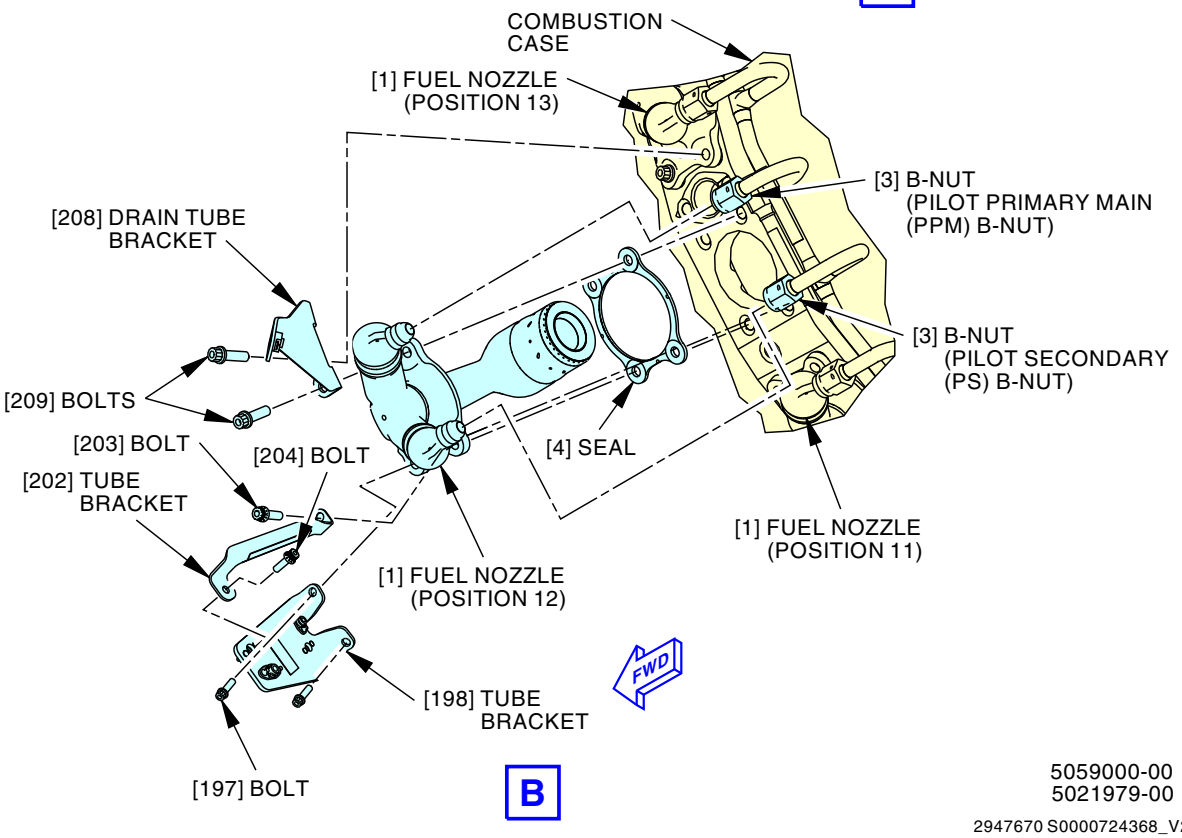


Fuel Nozzle No.12 Installation
Figure 449/73-11-05-990-880-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(VIEW IN THE FORWARD DIRECTION)

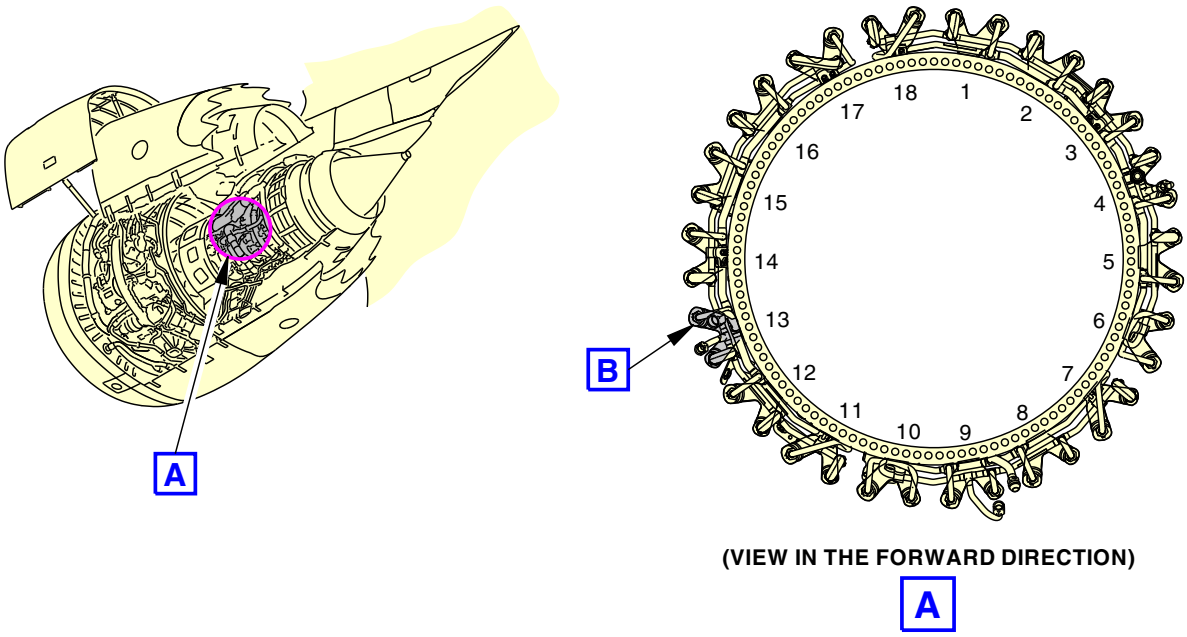


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5021979-00

2947670 S0000724368_V2

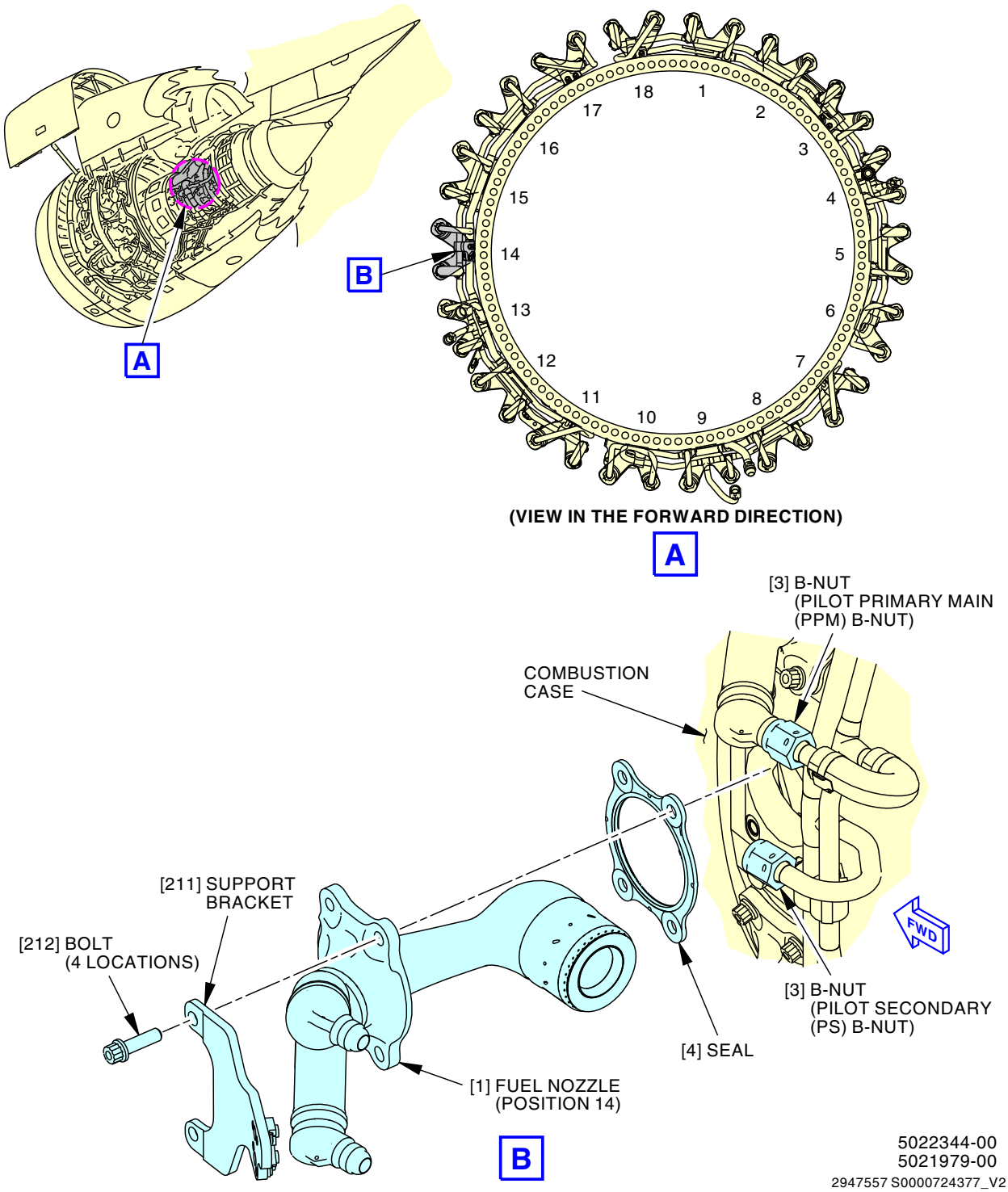
Fuel Nozzle No.12 Installation
Figure 449/73-11-05-990-880-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



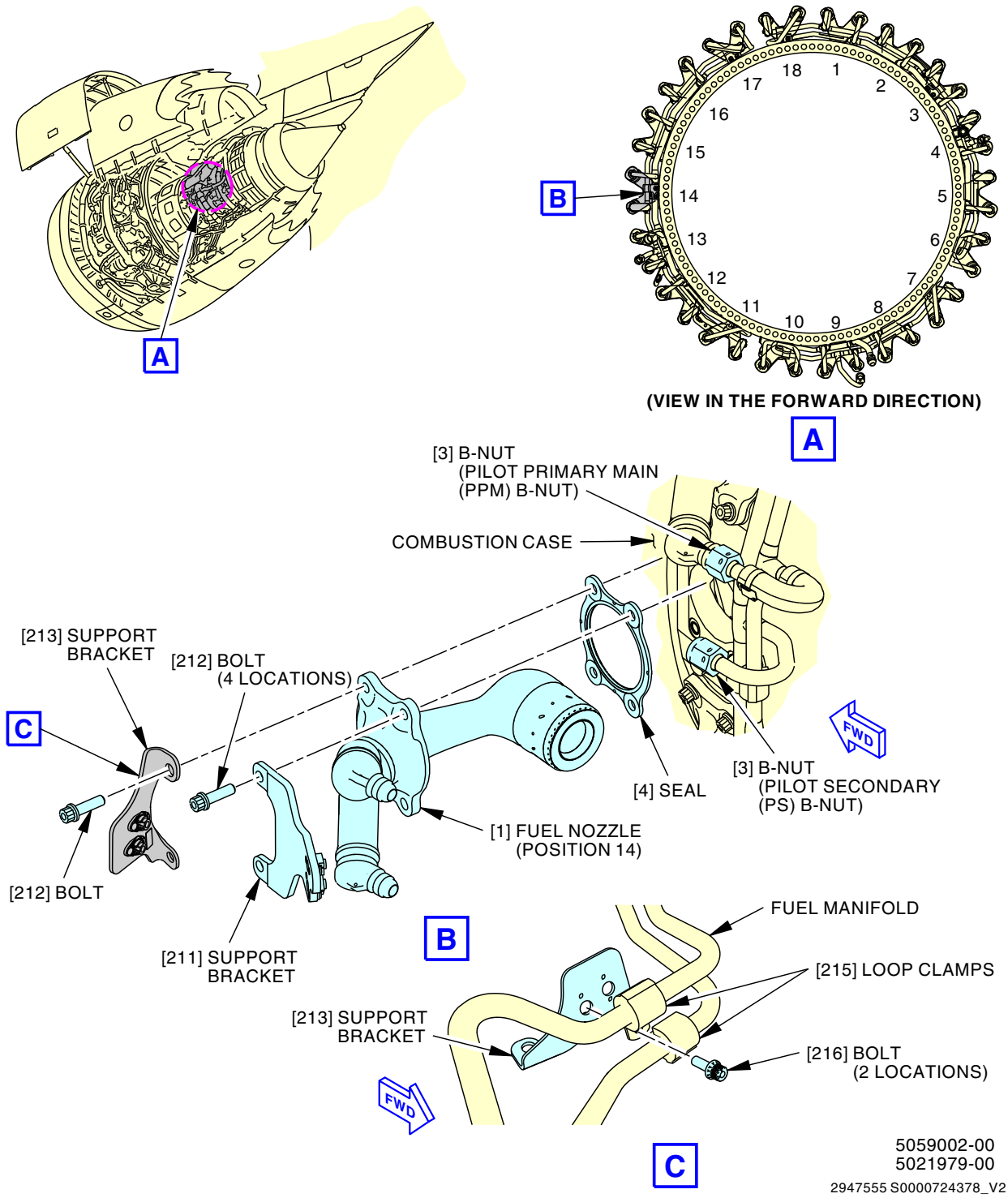
Fuel Nozzle No.13 Installation
Figure 450/73-11-05-990-881-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



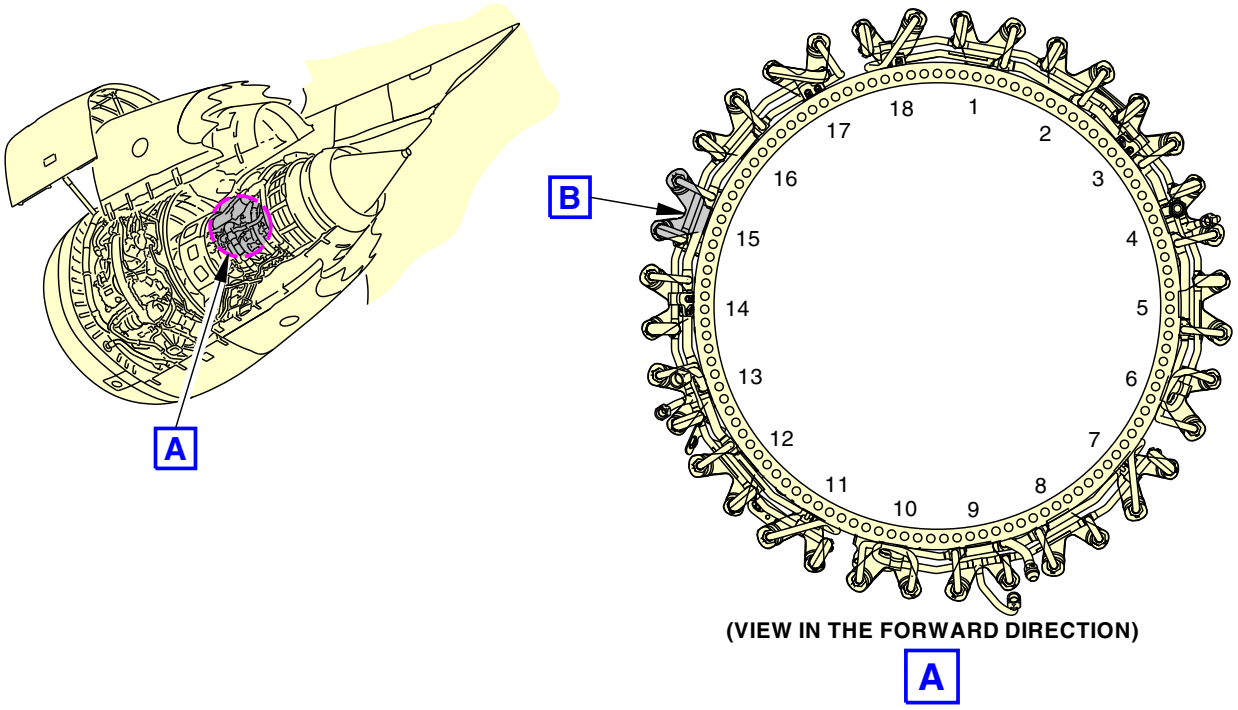
Fuel Nozzle No.14 Installation
Figure 451/73-11-05-990-882-G00 (Sheet 1 of 2)

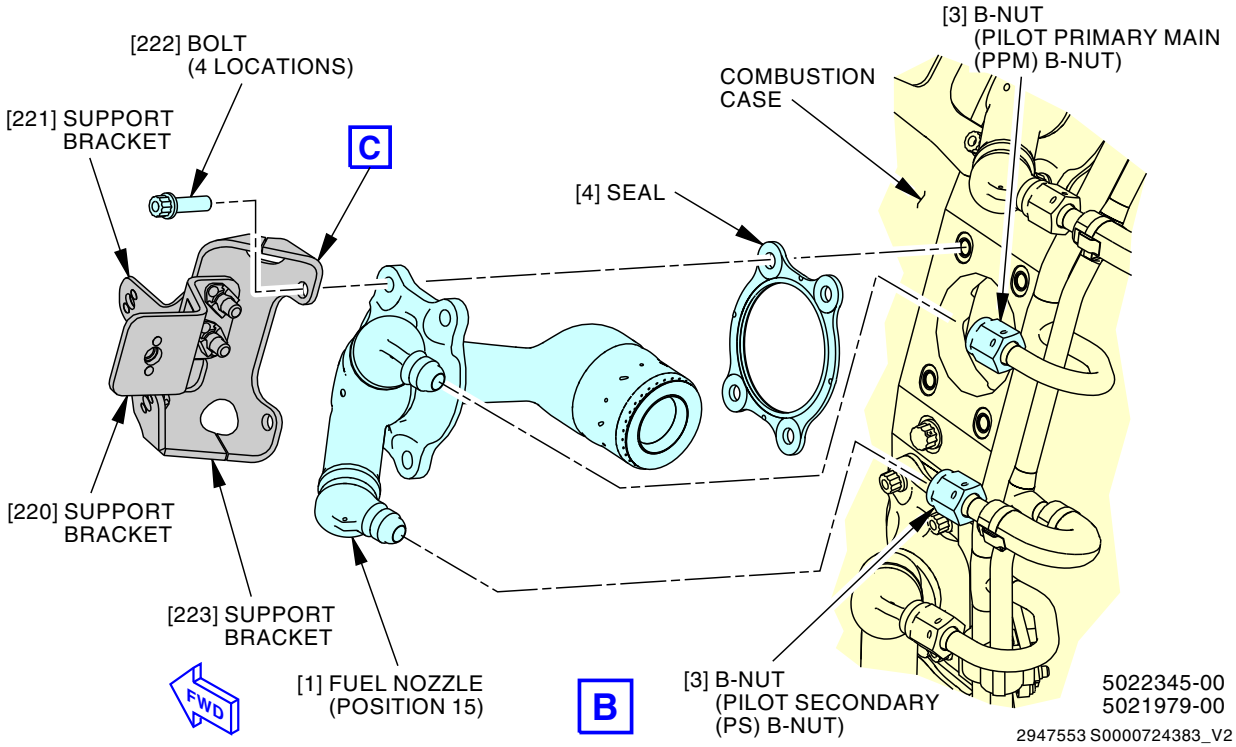
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.14 Installation
Figure 451/73-11-05-990-882-G00 (Sheet 2 of 2)

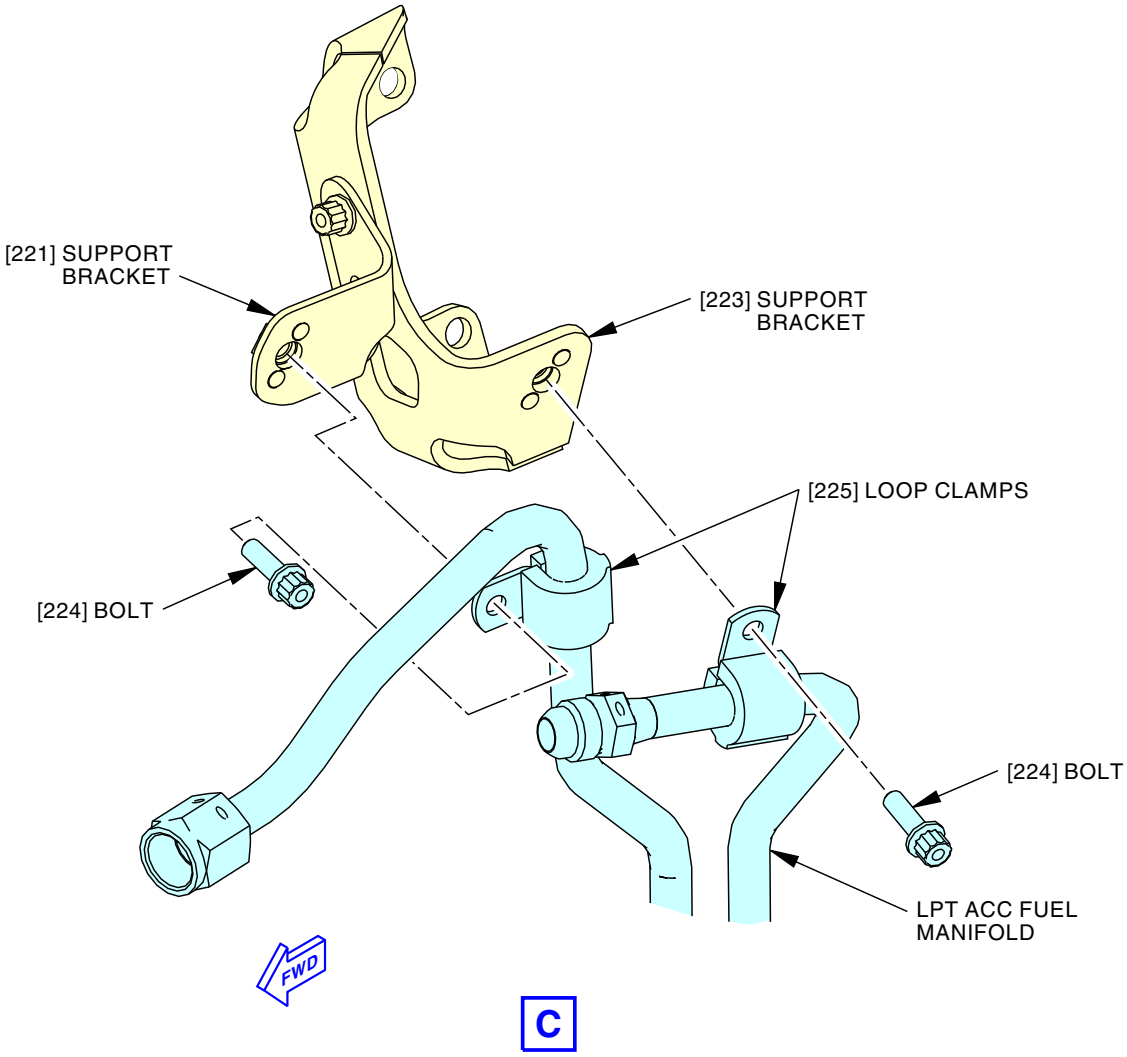
ECCN 9E991 BOEING PROPRIETARY - See title page for details





Fuel Nozzle No.15 Installation
Figure 452/73-11-05-990-883-G00 (Sheet 1 of 2)

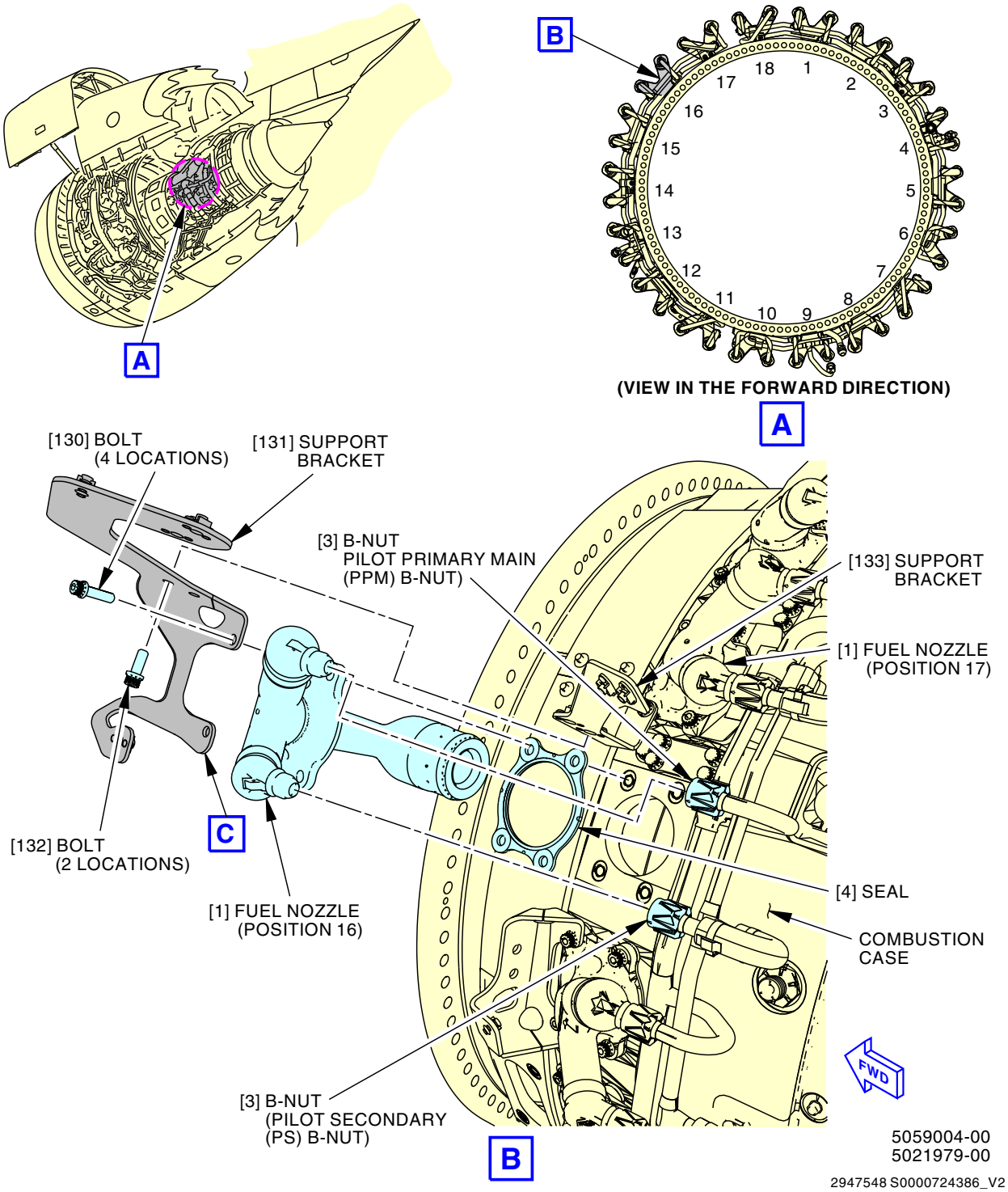
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2947552 S0000724385_V1

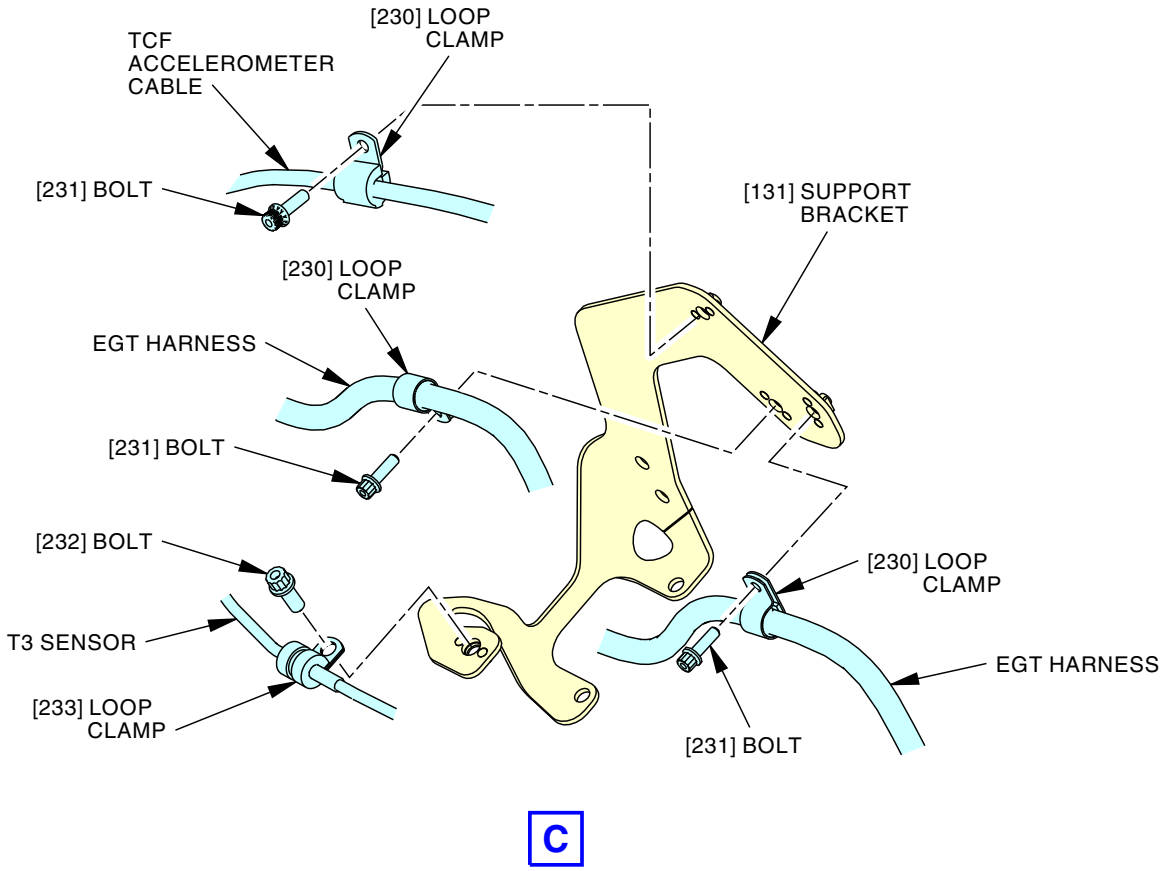
Fuel Nozzle No.15 Installation
Figure 452/73-11-05-990-883-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle No.16 Installation
Figure 453/73-11-05-990-884-G00 (Sheet 1 of 2)

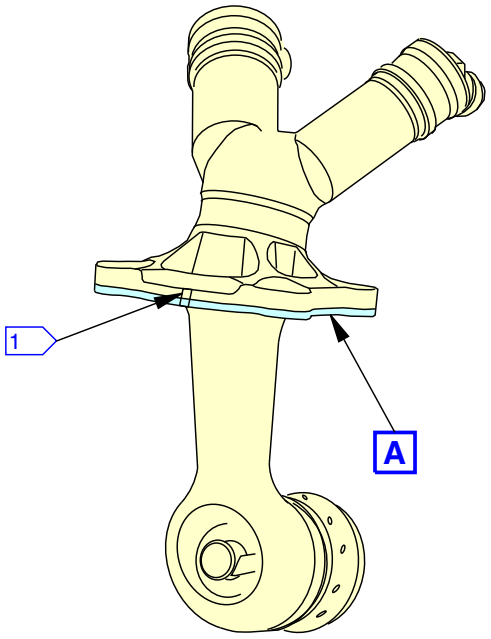
ECCN 9E991 BOEING PROPRIETARY - See title page for details

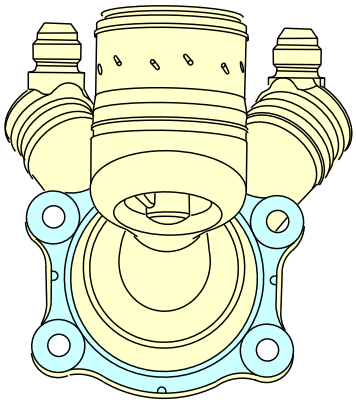


2947546 S0000724390_V1

Fuel Nozzle No.16 Installation
Figure 453/73-11-05-990-884-G00 (Sheet 2 of 2)

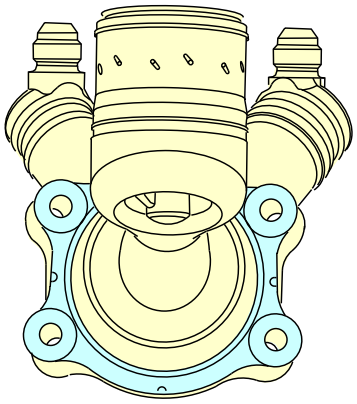
ECCN 9E991 BOEING PROPRIETARY - See title page for details





SEAL ALIGNED
(CORRECT POSITION)

A



SEAL NOT ALIGNED
(INCORRECT POSITION)

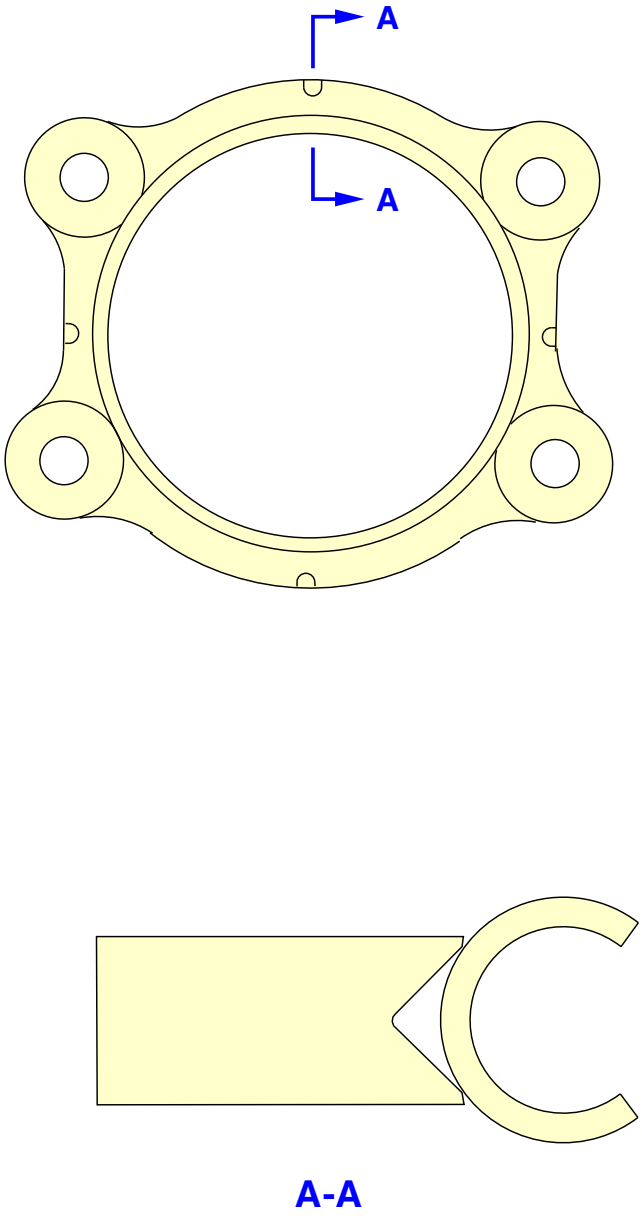
A

1 THE MARK ON THE SEAL MUST BE ALIGNED WITH THE MARK ON THE FUEL NOZZLE.

2953777 S0000731186_V1

Fuel Nozzle Seal Inspection
Figure 454/73-11-05-990-886-G00 (Sheet 1 of 2)

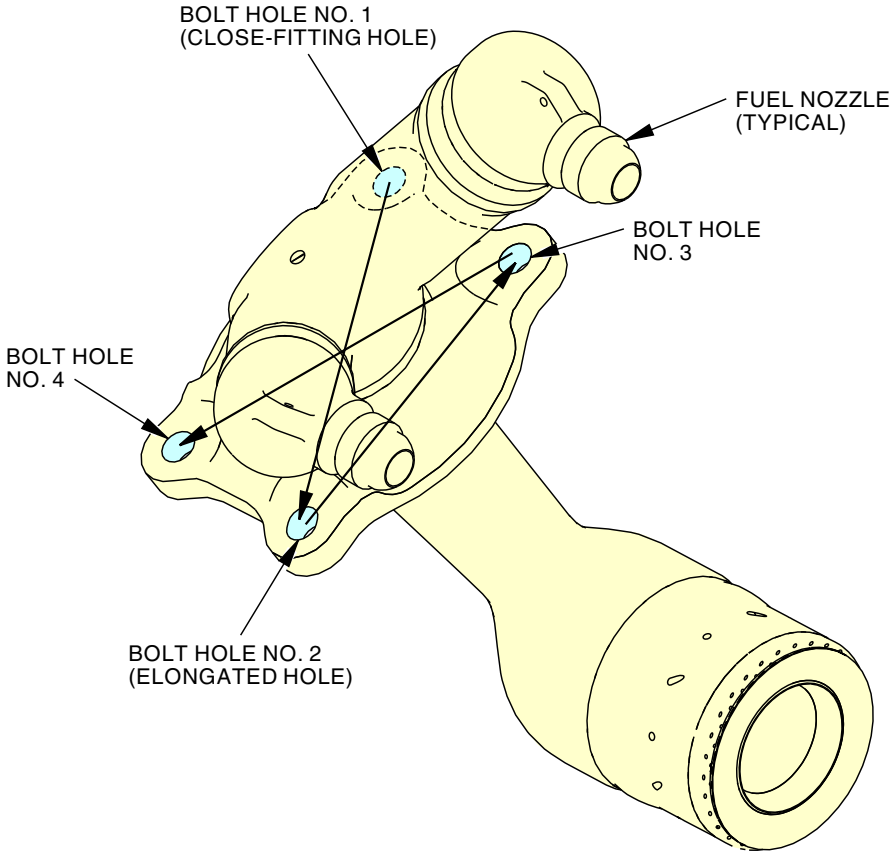
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2953822 S0000731208_V1

Fuel Nozzle Seal Inspection
Figure 454/73-11-05-990-886-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

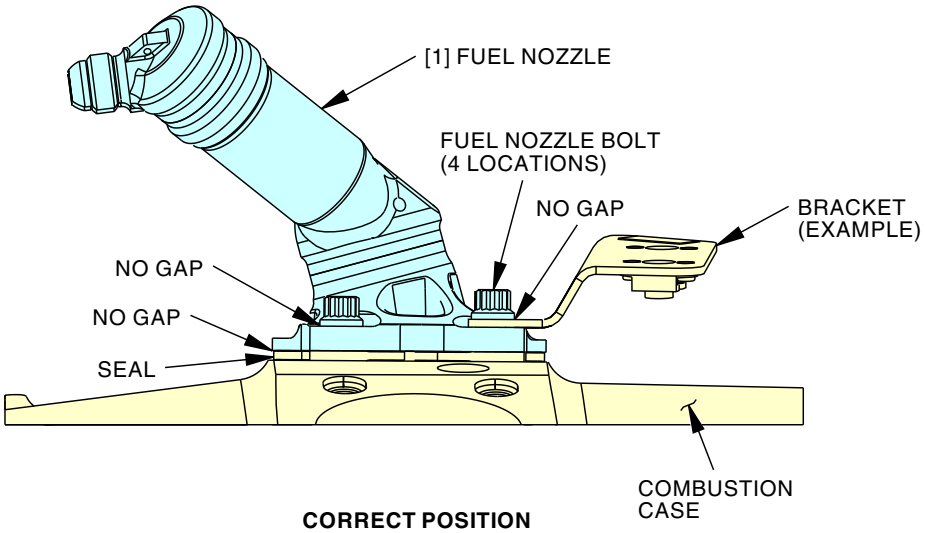


FUEL NOZZLE TORQUE SEQUENCE

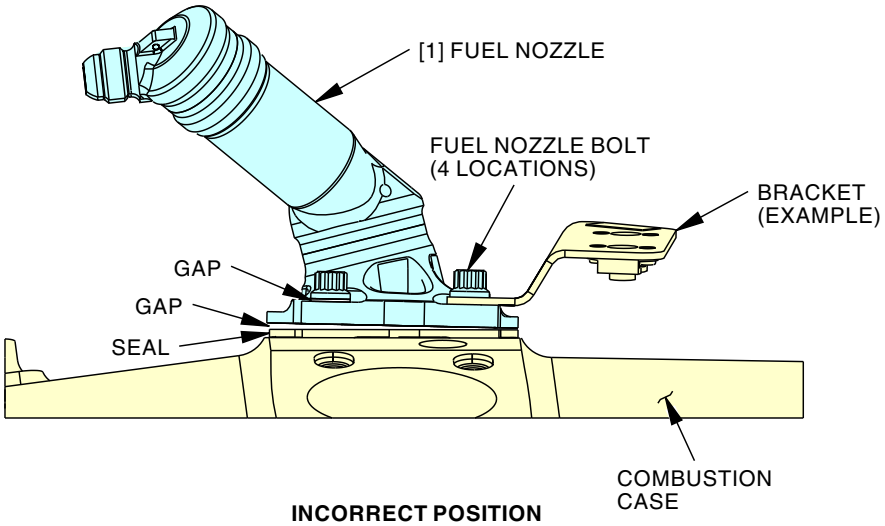
2947512 S0000724407_V2

Fuel Nozzle Torque Sequence
Figure 455/73-11-05-990-885-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CORRECT POSITION



INCORRECT POSITION

2978976 S0000757000_V1

Fuel Nozzle Seated Position Visual Inspection
Figure 456/73-11-05-990-910-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-05-400-802-G00

5. Fuel Nozzle Set Installation

(Figure 424, Figure 425, Figure 426, Figure 428, Figure 429, Figure 430, Figure 431, Figure 432, Figure 433, Figure 434, Figure 435, Figure 436, Figure 437, Figure 438, Figure 439, Figure 440, Figure 441, Figure 442, Figure 443, Figure 444, Figure 445, Figure 446, Figure 447, Figure 448, Figure 449, Figure 450, Figure 451, Figure 452, Figure 453, Figure 454, Figure 455, and Figure 456)

A. General

(1) This task gives the instructions to install one or more fuel nozzles.

(2) There are eighteen fuel nozzles on the combustion case.

NOTE: If you will install multiple or a full set of fuel nozzles at the same time, it is preferable that you install the fuel nozzles in sets.

(3) The fuel nozzle position numbers are in a Clockwise (CW) sequence when viewed from the rear of the engine facing forward or Aft Looking Forward (ALF).

NOTE: All bolts that attach fuel nozzle to the case have the same part number.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
36-11-01-400-801	Engine Pneumatic Duct Installation (P/B 401)
36-11-04-400-801	PRSOV Installation (P/B 401)
36-11-07-400-801	HPSOV Installation (P/B 401)
70-41-00-400-801-G00	Lockwire Installation (P/B 201)
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-00-00-700-808-G00	Test No. 32 - Engine Idle System Test (P/B 501)
71-00-00-700-811-G00	Test No. 35 - Erase All Channel A Faults Special Functions Test (P/B 501)
71-00-00-700-812-G00	Test No. 36 - Erase All Channel B Faults Special Functions Test (P/B 501)
71-00-00-790-801-G00	Test No. 1 - Pneumatic Leak Test (P/B 501)
71-00-00-790-804-G00	Test No. 4 - Idle Leak Test (P/B 501)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-64-400-801-G00	T3 Sensor Installation (P/B 401)
73-22-01-400-808-G00	Electronic Engine Control (EEC) Electrical Harness (HJ8A) Installation (P/B 401)
75-24-01-400-801-G00	Low Pressure Turbine Active Clearance Control (LPTACC) Valve Installation (P/B 401)
75-24-04-400-801-G00	High Pressure Turbine Active Clearance Control (HPTACC) Valve Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-600	Mirror - Inspection
STD-858	Tag - DO NOT OPERATE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Description
STD-6087	Brush - Acid Resistant

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D50355 [CP2961]	Lubricant - Anti-Seize Compound	D6Y31C2
G02495 [CP8002]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS5689
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A
G50530 [CP5061]	Marker - Temporary	
G51403 [CP2166]	Tape - Polyester-Backed, Adhesive	
G51435 [CP2635]	Wax - Stick	
G51669 [CP2975]	Tape - Silicone Rubber, Glass Cloth Fabric	MIL-I-22444

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Bolt	73-11-05-01-010	SIA ALL
4	Seal	73-11-05-01-030	SIA ALL
20	Seal	75-23-00-02-310	SIA ALL
33	Metal seal ring	75-23-00-02-350	SIA ALL
41	Seal	72-00-00-22-610	SIA ALL
45	Seal	72-00-00-25-070	SIA ALL
52	Seal	75-11-00-03-230	SIA ALL
57	Seal ring	75-23-00-02-280	SIA ALL
60	Seal ring	75-23-00-02-270	SIA ALL
93	Seal	75-23-00-02-110	SIA ALL
97	Seal	75-23-00-02-100	SIA ALL
103	Seal	75-23-00-01-210	SIA ALL
116	Seal	75-23-00-01-070	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Prepare for the Installation

SUBTASK 73-11-05-420-161-G00

(1) Do the following steps:

NOTE: The steps below apply to the fuel nozzle pad bolts and any bolts that can be attached to the combustion case during the installation of the fuel nozzle.

(a) Use new fuel nozzle bolts [130], bolts [135], bolts [136], bolts [138], bolts [2], bolts [140], bolts [141], bolts [142], bolts [146], bolts [150], bolts [153], bolts [154], bolts [155], bolts [158], bolts [160], bolts [175], bolts [187], bolts [195], bolts [197], bolts [203], bolts [209], bolts [210], bolts [212], and bolts [222] at the fuel nozzles [1] (positions 1 through 18).

(b) Prepare all the 72 fuel nozzles bolts and combustion case bolts with Tiodize T8E-H grease, D50355 [CP2961], with acid resistant brush, STD-6087.

(c) Place all 18 clean fuel nozzles [1] on a bench and mark the fuel nozzles No. 1 through No.18.

NOTE: Labeling the serviceable (new or overhauled) fuel nozzles (1-18) may easy installation.

(d) Record the fuel nozzles [1] position with the corresponding fuel nozzle serial number, and the part number.

(e) Remove DO NOT OPERATE tags, STD-858, from the fuel nozzles [1].

(f) Remove 3M 851 Tape, G51403 [CP2166], from the fuel nozzles [1].

(g) Do a general visual inspection of the fuel nozzles [1].

(h) Do a general visual inspection of the seal [4] that mates to the fuel nozzles [1] to see if there is an inner C-seal (Figure 454).

1) Do an inspection for deformation or damage across mating joints.

CAUTION

TURN THE FUEL NOZZLE SEAL UNTIL BOLT HOLES ALIGN. THE ORIENTATION OF THE SEAL TURNS IN ONE DIRECTION. THE BOLT HOLES WILL NOT LINE UP IN THE OTHER DIRECTION. DO NOT USE USED FUEL NOZZLE SEALS. IF YOU DO NOT OBEY, DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

(i) Install the new seal [4] on the fuel nozzles [1] (positions 1 through 18).

NOTE: It is recommended that the new set of fuel nozzles and their corresponding C-seals are marked with a match mark as a visual aid to make the alignment between the fuel nozzles and gasket seals easy during the assembly process (Figure 454).

(j) Remove all caps and covers from the engine case and the fuel nozzles [1] being installed.

(k) Do an inspection of the new or overhauled fuel nozzles [1] inlet strainers for any foreign objects.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Fuel Nozzle Installation

SUBTASK 73-11-05-420-162-G00

WARNING	DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION	DO NOT LET TOOLS HIT THE FUEL NOZZLES WHEN YOU LOOSEN OR TIGHTEN THE COUPLING NUTS, AND THE FUEL NOZZLE FLANGE BOLTS. DO NOT APPLY PRESSURE WITH A TOOL TO THE FUEL NOZZLE. DAMAGE TO THE FUEL NOZZLE CAN OCCUR.

CAUTION	DO NOT PUSH THE FUEL NOZZLE INTO THE COMBUSTION CHAMBER WITH TOO MUCH FORCE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE SWIRL CUP OR THE FUEL NOZZLE TIP.

(1) Install the fuel nozzles [1] (position 1 to 18) as follows:

NOTE: The left and right sides of the engine can be worked at the same time.

(a) Do not tighten the fuel nozzle bolts until all fuel nozzles [1] are installed.

(b) Place the fuel nozzles [1] with the new seals [4] aligned into the combustion case pad with the fuel nozzle [1] tip forward.

(c) Turn the fuel nozzles [1] (positions 1 through 18) in the reverse order of the fuel nozzle [1] removal process and put the fuel nozzles [1] (positions 1 through 18) in position on the seals [4] and combustion case pad.

(d) If necessary, move the fuel nozzles [1] (positions 1 through 18) aft to engage the fuel nozzles [1] (positions 1 through 18) tip in the combustor radial mixer (cup).

(e) Align the seals [4] and fuel nozzles [1] (positions 1 through 18) bolt holes to the combustion case.

SUBTASK 73-11-05-420-164-G00

(2) Install the support brackets and fuel nozzles [1] to the combustor case on QUADRANT 1, as follows:

(a) Make sure that Tiodize T8E-H grease, D50355 [CP2961], on the threads of the bolts [135], bolts [136], bolts [138], bolts [2], bolts [140], bolts [141], and bolts [142].

(b) Apply oil, D00599 [CP2442], on the threads of the two bolts [132].

(c) Install the support bracket [133] in position on the fuel nozzle [1] (position 17), as follows (View B, Figure 436):

1) Install the bolt [136] that attaches the support bracket [133] and fuel nozzle [1] (position 17) to the combustion case.

2) Install the support bracket [134] in position on the fuel nozzle [1] (position 17).

3) Install the remaining three bolts [135] that attach the fuel nozzle [1] (position 17) and support bracket [134] to the combustion case.

4) Install the two bolts [132] that attach the support bracket [133] to the support bracket [131].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the support bracket [137] in position on the fuel nozzle [1] (position 18), as follows (View B, Figure 437):

1) Install the four bolts [138] that attach the fuel nozzle [1] (position 18) and support bracket [137] to the combustion case.

(e) Install the fuel nozzle [1] (position 1), as follows (View B, Figure 438):

1) Install the four bolts [2] that attach the fuel nozzle [1] (position 1) to the combustion case.

(f) Install the fuel nozzle [1] (position 2), as follows (View B, Figure 439):

1) Install the bracket assembly [139] on the fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3), as follows:

NOTE: The bracket assembly [139] is the bracket that span across the fuel nozzle [1] (position 2) and fuel nozzle [1] (position 3).

a) Install the two bolts [140] that attach the bracket assembly [139] to the fuel nozzle [1] (position 2).

2) Install the remaining two bolts [140] that attach the fuel nozzle [1] (position 2) to the combustion case.

(g) Install the fuel nozzle [1] (position 3), as follows (View B, Figure 440):

1) Install the bolt [141] that attaches the bracket assembly [139] to the fuel nozzle [1] (position 3).

2) Install the two bolts [142] that attach the support bracket [143] to the fuel nozzle [1] (position 3).

3) Install the remaining bolt [142] that attaches the fuel nozzle [1] (position 3) to the combustion case.

(h) Do not tighten any bolts at this time.

SUBTASK 73-11-05-420-165-G00

(3) Install the support brackets and fuel nozzles [1] to the combustion case on QUADRANT 2, as follows:

(a) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the bolts [2], bolts [146], bolt [150], bolt [154], bolts [153], bolts [160], bolts [155], and bolts [158].

(b) Apply oil, D00599 [CP2442], on the threads of the bolt [166], bolt [162], bolts [163], bolts [168], bolts [169], bolts [173], bolt [177], bolt [180], bolt [182], and bolt [183].

(c) Install the fuel nozzle [1] (position 4), as follows (View B, Figure 441):

1) Install the four bolts [2] that attach the fuel nozzle [1] (position 4) to the combustion case.

(d) Install the fuel nozzle [1] (position 5), as follows (View B, Figure 442):

1) Install the two bolts [146] that attach the bracket [144] and fuel nozzle [1] (position 5) to the combustion case.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0217

2) Install the two bolts [146] that attach the bracket [145] assembled with the bracket [147] and fuel nozzle [1] (position 5) to the combustion case.

NOTE: The bracket [145] and bracket [147] are two brackets assembled together that span across the fuel nozzle [1] (position 5) and fuel nozzle [1] (position 6).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

3) Install the two bolts [146] that attach the bracket [151] assembled with the bracket [149] and fuel nozzle [1] (position 5) to the combustion case.

NOTE: The bracket [151] assembled with the bracket [149] are two brackets assembled together that span across the fuel nozzle [1] (position 5) and fuel nozzle [1] (position 6).

SIA ALL

(e) Install the fuel nozzle [1] (position 6), as follows (View B, Figure 443):

SIA ALL; AIRPLANES WITH PRE LEAP-1B SB 72-0135 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

1) Install the two bolts [153] that attach the bracket [152] and fuel nozzle [1] (position 6) to the combustion case.

2) Install the bolt [154] that attaches the bracket [147] and fuel nozzle [1] (position 6) to the combustion case.

3) Install the remaining bolt [153] that attaches the fuel nozzle [1] (position 6) to the combustion case.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

4) Install the two bolts [155] that attach the support bracket [156] and fuel nozzle [1] (position 6) to the combustion case.

5) Install the bolt [150] that attaches the bracket [149] and fuel nozzle [1] (position 6) to the combustion case.

6) Install the remaining bolt [155] that attaches the fuel nozzle [1] (position 6) to the combustion case.

SIA ALL

(f) Install the fuel nozzle [1] (position 7), as follows (View B, Figure 444):

1) Install the support bracket [159] on the fuel nozzle [1].

a) Install the two bolts [158] that attach the support bracket [159] and fuel nozzle [1] (position 7) to the combustion case.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

2) Install the two bolts [160] that attach the support bracket [161] and fuel nozzle [1] (position 7) to the combustion case.

3) Install the bolt [162] that attaches the support bracket [161] to the bracket on the combustion case.

4) Install the two bolts [173] that attach the start bleed bracket [172] to the combustion case (View C, Figure 444).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050

5) Install the two bolts [160] that attach the fuel nozzle [1] (position 7) to the combustion case.

6) Install the two bolts [173] that attach the start bleed bracket [172] to the combustion case (View C, Figure 444).

7) Install the two bolts [163] that attach the bracket [164] to the support bracket [159].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 AND POST LEAP-1B SERVICE BULLETIN 72-0050 (Continued)

8) Install the two bolts [168] that attach the two p-clamps [171] and SBV and TBV manifolds [170] to the bracket [164] (View D, Figure 444).

9) Install the two bolts [169] that attach the two p-clamps [171] and SBV and TBV manifold [170] to the bracket [164].

10) Install the bolt [166] that attaches the loop clamp [165] and PS3 air tube [167] to the bracket [164].

SIA ALL

(g) Install the four bolts [2] that attach the fuel nozzle [1] (position 8) to the combustion case (View B, Figure 445).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0135

(h) Install the four bolts [2] that attach the fuel nozzle [1] (position 9) to the combustion case (View B, Figure 446).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(i) Install the fuel nozzle [1] (position 9), as follows (View B, Figure 446):

1) Install the bracket [176] in position on the fuel nozzle [1] (position 9) and align with the bolt holes.

2) Install the four bolts [175] that attach the fuel nozzle [1] (position 9) and bracket [176] to the combustion case.

3) Install the bolt [177], bolt [180], bolt [182], bolt [183] with p-clamp [178], p-clamp [179], p-clamp [181], and p-clamp [184] that attach the oil tubes to the bracket [176] at the fuel nozzle [1] (position 9) (View C, Figure 446).

SIA ALL

(j) Do not tighten any bolts at this time.

SUBTASK 73-11-05-420-166-G00

(4) Install the support brackets and fuel nozzle [1] to the combustion case on QUADRANT 3, as follows:

(a) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the bolts [187], bolts [195], bolts [197], bolts [203], bolts [210], and bolts [209].

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [193], bolts [206], bolt [127], bolt [189], and bolt [201].

(c) Install the fuel nozzle [1] (position 10), as follows (View B, Figure 447):

1) Install the support bracket [186] and support brackets [188] in position on fuel nozzle [1] (position 10).

2) Install the four bolts [187] that attach the fuel nozzle [1] (position 10), support bracket [186], and support brackets [188] to the combustion case.

3) Install the bolt [189] and loop clamp [190] that attaches the tube to the support bracket [186].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

4) Install the two bolts [193] with the two loop clamps [191] that attach the SBV TBV manifolds [192] to the support bracket [186] (View C, Figure 447).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

5) Install the bolt [193] with the loop clamp [191] that attaches the SBV TBV manifolds [192] to the support bracket [186] (View C, Figure 447).

SIA ALL

(d) Install the fuel nozzle [1] (position 11), as follows (View B, Figure 448):

1) Install the support bracket [196] in position on the fuel nozzle [1] (position 11).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

2) Install the tube bracket [198] in position on the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 12).

NOTE: The tube bracket [198] spans across the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 12).

3) Install the four bolts [195] that attach the fuel nozzle [1] (position 11), support bracket [196], and tube bracket [198] to the combustion case.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

4) Install the tube bracket [198] assembled with the tube bracket [202] in position on the fuel nozzle [1] (position 11) fuel nozzle [1] (position 12), as follows:

NOTE: The tube bracket [198] and tube bracket [202] span across the fuel nozzle [1] (position 11) and fuel nozzle [1] (position 12).

a) Install the four bolts [195] that attach the support bracket [196], tube bracket [198] assembled with the tube bracket [202], and fuel nozzle [1] to the combustion case.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

5) Install the four bolts [206] with the hinged loop clamps [205] that attach the SBV TBV manifolds [207] to the tube bracket [198] (View C, Figure 448).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

6) Install the two bolts [206] with the fuel hydraulic support block [194] that attach the SBV TBV manifolds [207] to the tube bracket [198] (View C, Figure 448).

SIA ALL

7) Align the support bracket [196] to the fuel manifold bracket to and install the bolt [201].

8) Install the bolt [199] to attach the clamp [200] to the fuel manifold bracket.

9) Install the bolt [127] with the loop clamp [128] that attaches the HPT ACC valve drain tube [126] to the tube bracket [198] at the fuel nozzle [1] (position 11) (View D, Figure 448).

a) Connect the LPT ACC valve tube [129] to the HPT ACC valve drain tube [126].

(e) Install the fuel nozzle [1] (position 12), as follows (View B, Figure 449):

1) Install the drain tube bracket [208] in position on the fuel nozzle [1] (position 12) and fuel nozzle [1] (position 13).

NOTE: The drain tube bracket [208] spans across the fuel nozzle [1] (position 12) and fuel nozzle [1] (position 13).

2) Install the bolt [209] that attaches the drain tube bracket [208] and fuel nozzle [1] (position 12) to the combustion case.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

3) Install the bolt [209] that attaches the tube bracket [198] and fuel nozzle [1] (position 12) to the combustion case.

4) Install the remaining two bolts [209] that attach the fuel nozzle [1] (position 12) to the combustion case.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

5) Install the bolt [197] and bolt [203] that attach the tube bracket [202] and tube bracket [198] to the fuel nozzle [1] (position 12).

6) Install the remaining bolt [209] that attaches the fuel nozzle [1] (position 12) to the combustion case.

SIA ALL

(f) Do not tighten any bolts at this time.

SUBTASK 73-11-05-420-167-G00

(5) Install the support brackets and fuel nozzle [1] to the combustor case on QUADRANT 4, as follows:

(a) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the bolts [210], bolts [212], bolts [222], and bolts [130].

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [132], bolt [224], and bolts [216].

(c) Install fuel nozzle [1] (position 13), as follows (View B, Figure 450):

1) Make sure that the drain tube bracket [208] in position on the fuel nozzle [1] (position 13) and fuel nozzle [1] (position 12).

a) Install the four bolts [210] that attach the fuel nozzle [1] (position 13) to the combustion case.

(d) Install the fuel nozzle [1] (position 14), as follows (View B, Figure 451):

1) Install the support bracket [211] in position on the fuel nozzle [1] (position 14).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

2) Install the four bolts [212] that attach the fuel nozzle [1] (position 14) and support bracket [211] to the combustion case.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

3) Install the two bolts [212] that attach the fuel nozzle [1] (position 14) and support bracket [211] to the combustion case.

4) Install the two bolts [212] that attach the fuel nozzle [1] (position 14) and support bracket [213] to the combustion case.

5) Install the two bolts [216] with the two loop clamps [215] that attach the fuel manifolds to the support bracket [213].

SIA ALL

(e) Install the fuel nozzle [1] (position 15), as follows (View B, Figure 452):

1) Install the support bracket [223] assembled with the support bracket [221] and support bracket [220] in position on the fuel nozzle [1] (position 15).

2) Install the four bolts [222] that attach the fuel nozzle [1] (position 15) and support bracket [223] to the combustion case.

3) Install the two bolts [224] with two loop clamps [225] that attach the LPTACC fuel manifold to the support bracket [221] and support bracket [220].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Install the fuel nozzle [1] (position 16), as follows (View B, Figure 453):

1) Install the support bracket [131] in position on the fuel nozzle [1] (position 16).

a) Install the two bolts [132] that attach the support bracket [131] and support bracket [133].

b) Install the four bolts [130] that attach the fuel nozzle [1] (position 16) and support bracket [131] assembled to the combustion case.

c) Install the three bolts [231], bolt [232], three loop clamps [230], and loop clamp [233] to attach TCF accelerometer cable, EGT harnesses, and T3 sensor to the support bracket [131] at the fuel nozzle [1] (position 16) (View C, Figure 453).

(g) Do not tighten any bolt at this time.

SUBTASK 73-11-05-400-034-G00

(6) Hand tight all the 36 fuel manifold B-buts onto their applicable fuel nozzle [1] fittings, before you torque the fuel nozzle bolts.

(a) Do not torque B-nuts [3] at this time.

SUBTASK 73-11-05-420-168-G00

(7) Tighten the 72 fuel nozzle bolts that attach the support brackets or fuel nozzles [1] to the combustion case, as follows:

(a) Tighten the fuel nozzle bolts starting at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 87.0 in-lb (9.8 N·m) - 103.0 in-lb (11.6 N·m) (Figure 455).

(b) Repeat tighten to the fuel nozzle bolts starting at the close-fitting bolt hole (no. 1) followed by the elongated bolt hole (no. 2) and then the remaining two bolt holes (no. 3 and 4) to 129.0 in-lb (14.57 N·m) - 151.0 in-lb (17.06 N·m) (Figure 455).

NOTE: One of the four fuel nozzle bolt holes is elongated.

SUBTASK 73-11-05-200-001-G00

(8) Do a visual inspection of the fuel nozzle bolts to make sure that the fuel nozzle bolts are fully seated on the fuel nozzle base.

(a) Use an inspection mirror, STD-600, or equivalent, and light for inspection as many locations are difficult to access and view.

NOTE: Correct and incorrect seated positions of the fuel nozzle bolts are shown in the Figure 456.

(b) If the fuel nozzle bolts are not seated correctly, or you think that they are not seated, remove the fuel nozzle bolts and install new fuel nozzle bolts with a large amount of Tiodize T8E-H grease, D50355 [CP2961].

(c) Put the verification mark line across the fuel nozzle bolts and fuel nozzle base with temporary marker, G50530 [CP5061].

SUBTASK 73-11-05-420-169-G00

(9) Install the two loosened bolts [11] with loop clamps [12] that attach the fuel manifolds [13] to the support bracket [14] at the fuel nozzles [1] (positions 17, 18, 3, 6, 7, 10, 11, and 14).

(a) Tighten all the bolts [11] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SUBTASK 73-11-05-420-170-G00

(10) Install the remaining loosened bolts at the fuel nozzles [1] (positions 17, 7, 9, 10, 11, 12, 14, 15 and 16), as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) At the fuel nozzles [1] (positions 16 and 17):

1) Tighten the bolts [132] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(b) At the fuel nozzle [1] (position 7):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

1) Tighten the two bolts [162] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050

2) Tighten the two bolts [163] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

3) Tighten the bolt [166] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

4) Tighten the two bolts [168] to 51.0 in-lb (5.76 N·m) - 59.0 in-lb (6.67 N·m).

5) Tighten the two bolts [169] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

6) Tighten the two bolts [173] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135

(c) At the fuel nozzle [1] (position 9):

1) Tighten the bolt [180], bolt [183], bolt [182], and bolt [177] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

(d) At the fuel nozzle [1] (position 10):

1) Tighten the two bolts [193] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

2) Tighten the bolt [189] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(e) At the fuel nozzle [1] (position 11):

1) Tighten the bolt [201] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

2) Tighten the bolt [127] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

3) Tighten the bolt [199] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0071

4) Tighten the four bolts [206] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0071

5) Tighten the two bolts [206] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(f) At the fuel nozzles [1] (position 12):

1) Tighten the bolt [204] to 55.0 in-lb (6.21 N·m).

(g) At the fuel nozzles [1] (position 14):

1) Tighten the two bolts [216] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

(h) At the fuel nozzles [1] (position 15):

1) Tighten the two bolts [224] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) At the fuel nozzle [1] (position 16):

1) Tighten the three bolts [231] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

2) Tighten the bolt [232] to 65.0 in-lb (7.34 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-171-G00

CAUTION MAKE SURE THAT YOU CORRECTLY ENGAGE THE FUEL NOZZLE FITTINGS AND YOU FULLY SEAT THEM BEFORE YOU TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, DAMAGE TO THE HARDWARE AND FUEL LEAKS CAN OCCUR.

CAUTION MAKE SURE YOU CORRECTLY TIGHTEN THE B-NUTS. IF YOU DO NOT OBEY, FUEL LEAKAGE, ENGINE FIRE, ABORTED TAKE-OFF, AIR TURN BACK AND/OR IN-FLIGHT SHUT DOWN, OR OTHER DAMAGE CAN OCCUR.

CAUTION MAKE SURE THAT THE FUEL NOZZLE AND B-NUT THREADS DO NOT CONTAIN UNWANTED MATERIAL OR LUBRICANT. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(11) Tighten the 36 fuel manifold B-nut [3] to the fuel nozzle [1] pilot-primary and pilot-secondary fittings.

NOTE: False torque is a possibility, mainly in hard to reach locations. A wrench/ attachment/ extension may clash with other hardware during tightening providing a false torque.

(a) Tighten the fuel manifold B-nuts [3] as follows:

NOTE: Fuel nozzle B-nuts [3] require sequential triple tightening in this sequence: TORQUE – LOOSEN – TORQUE – TORQUE.

NOTE: For hard to reach locations, a 3 in. (76 mm) - 6 in. (152 mm) socket extension (not offset) and/or crowfoot extension must be used. When a crowfoot or other offset extension is used, torque calculation per SPM: LEAP-00-70-70-11-01A-711A-D (TIGHTENING METHODS - TIGHTEN PROCEDURE) is required.

NOTE: An adjustable click-type fixed ratchet torque wrench or a digital torque wrench with audible or tactile preset alerts is recommended. Dial torque wrenches must not be used.

1) Remove any unwanted material or lubricant from the fuel nozzle and B-nut threads.

2) Triple torque the fuel nozzle B-nuts [3] as follows:

a) Tighten the two B-nuts [3] to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m).

b) Loosen the two B-nuts [3] until you can turn them with your fingers.

c) Tighten the two B-nuts [3] again to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m).

d) Tighten the two B-nuts [3] for the third time to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m).

e) Record completion of triple tightening and torque at each fuel nozzle B-nut fitting (Table 402).

f) Paint a stripe line across the fuel nozzle B-nuts [3] and the fuel nozzle fitting with the temporary marker, G50530 [CP5061].

3) Inspection:

NOTE: It is necessary to start inspection with the fuel nozzle [1] position 1.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Tighten the fuel nozzle B-nuts [3] to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m), sequentially, in clockwise direction ALF.

NOTE: On each fuel nozzle [1] torque pilot secondary (PS) B-nut first followed by pilot primary main (PPM) B-nut.

NOTE: Do not break the torque of the B-nuts.

NOTE: An inspector should be a different person from the crew that does the steps to tighten fuel nozzle B-nuts [3].

Table 402/73-11-05-993-802-G00 Triple tightening and torque inspection of Pilot Secondary (PS) and Pilot Primary Main (PPM) B-nuts

FN Position	B-nut Position	Confirm First Torque (Yes/ No)	Confirm Loosen (Yes/No)	Confirm Second Torque (Yes/ No)	Record Third Torque at Each B-nut	Completion Date and Mechanic Signature	Inspection: Record Torque at Each B-nut	Inspection: Completion Date and Signature
1	PS							
	PPM							
2	PS							
	PPM							
3	PS							
	PPM							
4	PS							
	PPM							
5	PS							
	PPM							
6	PS							
	PPM							
7	PS							
	PPM							
8	PS							
	PPM							
9	PS							
	PPM							
10	PS							
	PPM							
11	PS							
	PPM							
12	PS							
	PPM							
13	PS							
	PPM							

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 402/73-11-05-993-802-G00 Triple tightening and torque inspection of Pilot Secondary (PS) and Pilot Primary Main (PPM) B-nuts (Continued)

FN Position	B-nut Position	Confirm First Torque (Yes/ No)	Confirm Loosen (Yes/No)	Confirm Second Torque (Yes/ No)	Record Third Torque at Each B-nut	Completion Date and Mechanic Signature	Inspection: Record Torque at Each B-nut	Inspection: Completion Date and Signature
14	PS							
	PPM							
15	PS							
	PPM							
16	PS							
	PPM							
17	PS							
	PPM							
18	PS							
	PPM							

WARNING WHEN YOU DO WORK WITH SAFETY CABLES, MAKE SURE YOU USE SAFETY GOGGLES. IF PART OF THE SAFETY CABLE BREAKS, INJURY TO PERSONS CAN OCCUR.

(b) Secure each fuel nozzle B-nuts [3] with the safety cable, G50065 [CP8006] (TASK 70-41-00-400-802-G00), or with the safety wire, G02495 [CP8002] (TASK 70-41-00-400-801-G00).

NOTE: If lockwire is used, terminate the lockwire at the fuel nozzle end.

SUBTASK 73-11-05-420-172-G00

(12) Install the HPT ACC valve drain tube [126], as follows (View F, Figure 435):

(a) Connect the HPT ACC valve drain tube [126] to the ACC valve.

(b) Apply a layer of oil, D00599 [CP2442], to the threads of the four bolts [127].

1) Install the four bolts [127] and four loop clamps [128] that attach the HPT ACC valve drain tube [126] to the ACC drain bracket, fuel manifold bracket, tube bracket, and support bracket.

a) Tighten the bolts [127] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(c) Connect the HPT ACC valve drain tube [126] to the LPT ACC valve tube [129].

(d) Connect the HPT ACC valve drain tube [126] to the drain tube (View K, Figure 435).

(e) Tighten the B-nuts on HPT ACC valve drain tube [126] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

SUBTASK 73-11-05-420-173-G00

(13) Install the 7th-stage air tube [115], as follows (View B, Figure 435):

(a) Put the 7th-stage air tube [115] in position on the engine.

(b) Apply a layer of stick wax, G51435 [CP2635], to the seal [116] to hold it during installation.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Apply a layer of Tiodize T8E-H grease, D50355 [CP2961], to the threads of the eight bolts [117].

(d) Install the new seals [116] on the 7th-stage air tube [115].

(e) Install the four bolts [117] that attach the 7th-stage air tube [115] and seal [116] to the compressor case.

(f) Install the four bolts [117] that attach the 7th-stage air tube [115] and seal [116] to HPT port.

(g) Tighten the bolts [117] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0005

(h) Apply oil, D00599 [CP2442], on the threads of the four bolts [118].

(i) Install the four bolts [118] that attach the 7th-stage air tube [115] and support bracket [119] to the support bracket.

1) Tighten the bolts [118] 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(j) Apply oil, D00599 [CP2442], on the threads of the bolts [121], bolts [122], and bolts [124].

(k) Install the two bolts [121] that attach the bracket [120] to the support bracket.

(l) Install the two bolts [122] and strap clamp [123] that attach the 7th-stage air tube [115] to the bracket.

(m) Install the two bolts [124] and block clamp [125] that attach the drain tube to the bracket [120].

(n) Tighten the bolts [121] and bolts [122] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(o) Tighten the bolts [124] to 50.6 in-lb (5.72 N·m) - 59.4 in-lb (6.71 N·m).

SIA ALL

SUBTASK 73-11-05-420-174-G00

(14) Install all the bolts and loop clamps that attach the T3 sensor [111] (TASK 73-21-64-400-801-G00) (Figure 434).

(a) Connect the T3 sensor [111] to the combustor case threaded insert adapter.

(b) Tighten the T3 sensor [111] nut to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m).

SUBTASK 73-11-05-420-176-G00

(15) Install the LPT ACC valve drain tube [108], as follows (View H, Figure 433):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [109].

(b) Install the bolt [109] and loop clamp [110] that attaches the loop clamp [110] to the drain tube bracket.

1) Tighten the bolt [109] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(c) Connect the LPT ACC valve drain tube [108] to the ACC valve drain tube.

(d) Connect the LPT ACC valve drain tube [108] to the LPT ACC fuel manifold.

(e) Tighten the B-nuts on the LPT ACC valve drain tube [108] to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

SUBTASK 73-11-05-420-175-G00

(16) Install the 7th stage air tube [101], as follows (View B, Figure 433):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(a) Apply oil, D00599 [CP2442], on the threads of the two bolts [105].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(b) Apply oil, D00599 [CP2442], on the threads of the bolts [106].

SIA ALL

(c) Apply a layer of stick wax, G51435 [CP2635], to the seals [103] to hold them in position during installation.

(d) Apply a layer of Tiodize T8E-H grease, D50355 [CP2961], to the threads of the eight bolts [102].

(e) Put the 7th stage air tube [101] in position on the engine.

(f) Install the new seals [103] on the 7th stage air tube [101].

(g) Install the four bolts [102] that attach the 7th stage air tube [101] and seal [103] to the compressor case.

(h) Install the four bolts [102] that attach the 7th stage air tube [101] and seal [103] to the HPT port.

(i) Tighten the bolts [102] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(j) Connect the air tube [107] to the 7th stage air tube [101].

(k) Tighten the air tube [107] to 460.0 in-lb (51.97 N·m) - 540.0 in-lb (61.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0007

(l) Install the two bolts [105] that attach the 7th stage air tube [101] to the support brackets.

1) Tighten the bolts [105] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0007

(m) Install the four bolts [106] and two strap clamps [104] that attach the 7th stage air tube [101] to the support brackets.

1) Tighten the bolts [106] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

SUBTASK 73-11-05-420-177-G00

(17) Install the start bleed tube [91], as follows (View B, Figure 432):

(a) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the bolts [92].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(b) Apply oil, D00599 [CP2442], on the threads of the two bolts [98].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(c) Apply oil, D00599 [CP2442], on the threads of the two bolts [94].

SIA ALL

(d) Install the new seal [97] on the start bleed tube [91].

(e) Install the coupling clamp [96] that attach the start bleed tube [91] and seal [97] to the SBV valve [90].

1) Tighten the coupling clamp [96] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0135 OR POST LEAP-1B SERVICE BULLETIN 72-0050

(f) Install the two bolts [98] and start bleed clamp [99] that attach the start bleed tube [91] to the start bleed bracket.

1) Tighten the two bolts [98] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0050

(g) Install the two bolts [94] that attach the start bleed tube [91] to the start bleed bracket.

1) Tighten the two bolts [94] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

(h) Apply a layer of stick wax, G51435 [CP2635], to the seal [93] to hold it in position during installation.

(i) Install the new seal [93] on the start bleed tube [91].

(j) Install the four bolts [92] that attach the start bleed tube [91] and seal [93] to the HPC extension case.

1) Tighten the four bolts [92] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-178-G00

(18) Connect the PS3 tube [87], as follows (View G, Figure 431):

(a) Apply the layer of Tiodize T8E-H grease, D50355 [CP2961], on the threads of fitting.

(b) Connect the PS3 tube [87] to the fitting on the combustion case.

(c) Apply oil, D00599 [CP2442], on the threads of the bolts [89].

1) Install the bolts [89] and loop clamps [88] that attach the PS3 tube [87] to the support brackets.

2) Tighten the bolts [89] to 60 in-lb (6.78 N·m) - 70 in-lb (7.91 N·m).

(d) Tighten the PS3 tube [87] B-nuts at the combustion case fitting, as follows:

1) Tighten the B-nut to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

2) Loosen the B-nut until you can turn it with your fingers.

3) Tighten the B-nut again to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

4) Tighten the two B-nuts for the third time to 262 in-lb (29.60 N·m) - 308 in-lb (34.80 N·m).

5) Make sure that the B-nut is fully seated.

6) If the B-nut is not fully seated, do the above steps again to tighten the PS3 tube [87] B-nuts.

7) Secure the PS3 tube [87] B-nuts with a safety cable, G50065 [CP8006], or safety wire, G02495 [CP8002] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-05-420-179-G00

(19) Install the CCC air manifold [74] (TASK 73-11-05-400-801-G00) (View F, Figure 431).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

NOTE: It is not necessary to install the CCC air manifold [74].

SIA ALL

SUBTASK 73-11-05-420-180-G00

(20) Install the bracket [73], as follows (View D, Figure 431):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; AIRPLANES WITH POST LEAP-1B SB 72-0071 OR POST LEAP-1B SB 72-0135 OR PRE LEAP-1B SB 72-0217

(a) Put the bracket [73] back on the engine and put it in position for installation.

(b) Apply oil, D00599 [CP2442], on the threads of the bolt [85], bolts [78], bolt [76], and bolts [71].

(c) Install the bolt [85] that attaches CCC air manifold [74] to the bracket [73].

1) Do not tighten at this time.

(d) Install the two bolts [78] that attach bracket [73] to the support bracket.

1) Do not tighten at this time.

(e) Install the bolt [76] and loop clamp [77] that attaches the drain tube [75] to the bracket [73].

1) Do not tighten at this time.

(f) Install the two bolts [71] and two loop clamps [72] that attach the SBV TBV manifolds [70] to the bracket [73].

1) Do not tighten at this time.

(g) Tighten the bolt [85] and bolts [78] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m)

(h) Tighten the bolt [76] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

(i) Tighten the bolts [71] to 51.0 in-lb (5.8 N·m) - 59.0 in-lb (6.7 N·m).

(j) Apply oil, D00599 [CP2442], on the threads of the four bolts [80].

(k) Install the four bolts [80] and four loop clamps [81] that attach the SBV TBV manifolds [70] to the bracket [82].

1) Tighten the four bolts [80] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0217

(l) Apply oil, D00599 [CP2442], on the threads of the two bolts [83].

(m) Install the two bolts [83] and four loop clamps [84] that attach the SBV TBV manifolds [70] to the bracket [82].

1) Tighten the bolts [83] to 32.5 in-lb (3.67 N·m) - 37.5 in-lb (4.24 N·m).

SIA ALL

SUBTASK 73-11-05-420-181-G00

(21) Connect the HJ8A harness [65] (TASK 73-22-01-400-808-G00) (View B, Figure 431).

SUBTASK 73-11-05-420-182-G00

(22) Install the 7th-stage air tube [55], as follows (View B, Figure 430):

(a) Apply a layer of stick wax, G51435 [CP2635], to the new seal ring [57] and new seal ring [60] to hold them in position during installation.

(b) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the four bolts [58].

(c) Apply oil, D00599 [CP2442], on the threads of the four bolts [56] and two bolts [62].

(d) Install the new seal ring [60] at the aft end of the 7th-stage air tube [55] on the HPT case.

(e) Install the new seal ring [57] at the forward end of the 7th-stage air tube [55] on the HPC extension case.

(f) Put the 7th-stage air tube [55] in position between the 7th-stage air tube bracket and HPT case.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 75-0005

(g) Install the two bolts [62] that attach the strap clamp [61] and 7th-stage air tube [55] to the 7th-stage air tube bracket.

1) Tighten the two bolts [62] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0005

(h) Install the two bolts [62] that attach the 7th-stage air tube [55] to the 7th-stage air tube bracket.

1) Tighten the two bolts [62] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SIA ALL

(i) Install the four bolts [58] that attach the bracket [59] to the 7th-stage air tube [55] and HPT case.

(j) Install the four bolt [56] that attach the 7th-stage air tube [55] to the HPC extension case.

(k) Tighten the bolts [58] and bolt [56] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-183-G00

(23) Install the booster anti-ice tube [37], as follows (View E, Figure 429):

(a) Support and secure the booster anti-ice tube [38] and booster anti-ice tube [39] from damage.

(b) Support and secure the booster anti-ice tube [37] from damage.

(c) Install the new seal [41] and coupling clamp [40] that attach the booster anti-ice tube [37] to the booster anti-ice tube [44].

1) Do not tighten the coupling clamp [40] at this moment.

(d) Install the two coupling clamps [46] and two new seals [45] that attach the booster anti-ice tube [37] to the booster anti-ice tube [38] and booster anti-ice tube [39].

1) Do not tighten the two coupling clamps [46] at this moment.

(e) Apply oil, D00599 [CP2442], on the threads of the bolts [42] and bolts [47].

(f) Install the four bolts [42] and two strap clamps [43] that attach the booster anti-ice tube [37] and booster anti-ice tube [38] to the support brackets.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0050 OR PRE LEAP-1B SERVICE BULLETIN 72-0144

(g) Install the bolt [47] and loop clamp [48] that attach the booster anti-ice tube [37] and booster anti-ice tube [39] to the support bracket.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0144

(h) Install the two bolts [47] and strap clamp [43] that attach the booster anti-ice tube [37] and booster anti-ice tube [39] to the support bracket.

SIA ALL

(i) Tighten the coupling clamp [40] and coupling clamps [46] to 60.0 in-lb (6.78 N·m) - 70.0 in-lb (7.91 N·m).

(j) Tighten the bolts [42] and bolts [47] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-197-G00

(24) Install the booster anti-ice tube [44], as follows (View G, Figure 429):

(a) Apply oil, D00599 [CP2442], on the threads of the bolt [50] and bolt [53].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Install the new seal [52] and coupling clamp [51] that attaches the booster anti-ice tube [44] to the SBV valve at the 4:00 o'clock position (View J, Figure 429).

1) Do not tighten the coupling clamp [51] at this time.

(c) Support and tightly attach the booster anti-ice tube [44].

(d) Install the bolt [50], bolt [53], and clamps [49] that attach the booster anti-ice tube [44] to the support bracket.

1) Do not tighten the bolt [50] and bolt [53] at this time.

(e) Tighten the coupling clamp [51], bolt [50], and bolt [53] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-184-G00

(25) Install the transient bleed air tube [31], as follows (View B, Figure 429):

(a) Apply a layer of stick wax, G51435 [CP2635], to the metal seal ring [33] to hold it in position during installation.

(b) Apply Tiodize T8E-H grease, D50355 [CP2961], on the threads of the four bolts [32].

(c) Install the four bolts [32] that attach the transient bleed air tube [31] and new metal seal ring [33] to the combustion case.

1) Do not tighten the bolts [32] at this time.

(d) Apply oil, D00599 [CP2442], on the threads of the two bolts [34].

(e) Install the two bolts [34] that attach the transient bleed air tube [31] to the support bracket.

1) Do not tighten the bolts [34] at this time.

(f) Install the coupling clamp [35] and new seal [20] on the transient bleed valve [36].

(g) Tighten the coupling clamp [35] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(h) Tighten the bolts [32] and bolts [34] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-05-420-185-G00

(26) Install the wye duct [28], as follows (Figure 428):

(a) Put the wye duct [28] onto the core module to interface with the High-Pressure Turbine ACC inlet duct at the 9:30 o'clock position.

1) If the wye duct [28] already has silicone rubber tape, G51669 [CP2975], in the clamping area, proceed to step (b).

2) If the wye duct [28] does not have silicone rubber tape, G51669 [CP2975], in the clamping area, apply as follows:

a) Apply the two adjacent rows of silicone rubber tape, G51669 [CP2975].

NOTE: Each row will be three plies thick of silicone rubber tape, G51669 [CP2975], 0.02 in. (0.51 mm) x 1.0 in. (25.4 mm) width to the wye duct [28] directly aft of the forward edge bead of the wye duct [28].

(b) Apply oil, D00599 [CP2442], on the threads of the two bolts [30].

(c) Attach the wye duct [28] to the HPTACC inlet duct with the bolts [30] and saddle clamps [29].

(d) Torque the bolts [30] to 51 in-lb (5.8 N·m) - 59 in-lb (6.7 N·m).

(e) Measure the gap between the saddle clamps [29] with the feeler gage (View D, Figure 428).

NOTE: The gaps show dimension at the forward and aft sides of both the two bolts [30].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Acceptable gap between the saddle clamps [29] adjacent to the wye duct [28] is to 0.045 in. (1.143 mm) - 0.075 in. (1.905 mm).

2) If measured gap exceeds 0.075 in. (1.905 mm), remove the bolts [30] from the saddle clamps [29].

   a) Remove one ply of silicone rubber tape, G51669 [CP2975], from wye duct [28].

   b) Repeat steps (c), (d), and (e).

3) If measured gap is less than 0.045 in. (1.143 mm), remove the bolts [30] from the saddle clamps [29].

   a) Add one ply of silicone rubber tape, G51669 [CP2975], to wye duct [28].

   b) Repeat steps (c), (d), and (e).

SUBTASK 73-11-05-420-186-G00

(27) Install the LPTACC valve [27] (TASK 75-24-01-400-801-G00).

(a) If necessary, remove the length from the hose clamp tab over 1 in. (25.4 mm) from the hose clamp screw housing.

1) Remove all burrs from the hose clamp tabs.

SUBTASK 73-11-05-020-195-G00

(28) Install the HPTACC valve [26] (TASK 75-24-04-400-801-G00).

(a) If necessary, remove the length from the hose clamp tab over 1 in. (25.4 mm) from the hose clamp screw housing.

1) Remove all burrs from the hose clamp tabs.

SUBTASK 73-11-05-420-187-G00

(29) Install the upper CDP duct assembly [25] (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-188-G00

(30) Install the lower CDP duct assembly [23] (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-189-G00

(31) Install the High Pressure Shutoff Valve (HPSOV) [24] (TASK 36-11-07-400-801).

SUBTASK 73-11-05-420-190-G00

(32) Install the mix manifold [22] (TASK 36-11-01-400-801).

SUBTASK 73-11-05-420-191-G00

(33) Install the Pressure Regulating and Shutoff Valve (PRSOV) [21] (TASK 36-11-04-400-801).

J. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-05-860-018-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-420-192-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-05-420-193-G00

(3) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 73-11-05-420-194-G00

(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

K. Fuel Nozzle Installation Test

SUBTASK 73-11-05-420-323-G00

(1) Do the tests as follows:

(a) Do an idle check (TASK 71-00-00-790-804-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

a) Electronic Engine Control (EEC) can find fuel system faults after fuel system maintenance because of residual air in fuel lines, do these steps:

<1> Do an engine idle run (TASK 71-00-00-790-804-G00).

<a> Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table, note 7.a.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Check the Onboard Maintenance Function (OMF) for any new fuel system faults.

<1> If the faults are found, clear the faults (TASK 71-00-00-700-811-G00 and TASK 71-00-00-700-812-G00).

<a> Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table, note 7.b.

(b) Do a pneumatic leak test (TASK 71-00-00-790-801-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

NOTE: This is necessary for High Pressure Shutoff Valve (HPSOV), Environmental Control System (ECS) ducts, Pressure Regulating and Shutoff Valve (PRSOV), and Transient Bleed Valve (TBV) duct installation.

a) After the tests are done, follow the applicable inspections:

<1> Do a visual inspection of the engine after idle leak check and do as follows:

<a> Do a visual inspection of the fuel lines and connections and check for fuel leaks.

<b> Do a visual inspection of the air ducts, tubes, and seals to check for hot air leakage indication and/or damage.

(c) Do an idle test menu mode (TASK 71-00-00-700-808-G00).

1) Refer to the Power Plant Test Reference Table, TASK 71-00-00-800-804-G00.

NOTE: Use Power Plant Test table.

SUBTASK 73-11-05-420-196-G00

(2) If you open the EEC air signal manifolds when you remove and install the fuel nozzle, do this step:

(a) Do the test for the air ducts and air tubes (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL NOZZLE AND FUEL MANIFOLD - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel nozzle and fuel manifold check.

TASK 73-11-05-200-801-G00

2. Fuel Nozzle and Fuel Manifold Leak Check

(Figure 601 and Figure 602)

A. General

(1) This task provides the instructions on how to examine the fuel nozzle and fuel manifold for leakage.

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)
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
71-00-00-790-804-G00	Test No. 4 - Idle Leak Test (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-05 P/B 401	FUEL NOZZLE - REMOVAL/INSTALLATION
73-11-05-000-801-G00	Fuel Nozzle Removal (P/B 401)
73-11-05-000-802-G00	Fuel Nozzle Set Removal (P/B 401)
73-11-05-400-801-G00	Fuel Nozzle Installation (P/B 401)
73-11-05-400-802-G00	Fuel Nozzle Set Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

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-14801	Adapter Set - Manifold Pressure Check Part #: 956A3209G02 Supplier: 58828 Opt Part #: 956A3209G01 Supplier: 58828
SPL-14802	Cart- Fuel Manifold Pressure Check Part #: 956A1256G01 Supplier: 58828
STD-858	Tag - DO NOT OPERATE
STD-1054	Container - Fuel Resistant, 5-Gallon (19-Liter)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Consumable Materials

Reference	Description	Specification
G50380	LEAK TEC - 16-OX, THIN FILM BUBBLE TESTING SOLUTIONS	MIL-PRF-25567

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Prepare for the Check

SUBTASK 73-11-05-860-011-G00

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-801.

SUBTASK 73-11-05-860-012-G00

(2) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-05-860-013-G00

(3) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-05-010-001-G00

(4) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 73-11-05-040-001-G00

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(5) Do the thrust reverser deactivation for ground maintenance (TASK 78-31-00-040-801-G00).

SUBTASK 73-11-05-860-014-G00

(6) Do this task: Leading Edge Flaps and Slats Retraction, TASK 27-81-00-860-804.

SUBTASK 73-11-05-040-002-G00

(7) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-11-05-860-015-G00

(8) Do this task: Remove Electrical Power, TASK 24-22-00-860-802.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Fuel Nozzle and Fuel Manifold Leak Check

SUBTASK 73-11-05-680-002-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Drain the three fuel manifold sections as follows (TASK 73-11-05-000-801-G00 or TASK 73-11-05-000-802-G00):

NOTE: There are no fuel manifold drain plugs on the engine. Each fuel manifold tube is independent. You must drain each one at its lowest connection point on the manifold section. Each manifold section has two separate manifold tubes.

NOTE: The fuel manifolds can have a small amount of pressure remaining after you drain the fuel manifold tube.

(a) Put a 5-gallon (19-liter) fuel resistant container, STD-1054 below the fuel manifold drain point.

(b) Loosen the B-nut at the fuel manifold drain points and drain the fuel into the 5-gallon (19-liter) fuel resistant container, STD-1054.

SUBTASK 73-11-05-790-002-G00

(2) Do the steps that follow to examine for leaks on the right side fuel manifolds.

NOTE: As you view the manifolds aft looking forward.

(a) Remove the caps from the Adapter Set, SPL-14801 as follows:

1) Remove the cap [15] from the tube assembly [13].
2) Remove the cap [14] from the tube assembly [21].
3) Remove the cap [20] from the male connector [19] on the gage adapter [18].

(b) Make sure that you install the plug [16] tightly into tube assembly [17].

(c) Connect the tube assembly [21] to the PSEC RS fuel manifold [2] as follows:

1) Disconnect the PSEC fuel tube [7] from the PSEC RS fuel manifold [2].
2) Tightly connect the tube assembly [21] to the PSEC RS fuel manifold [2].

(d) Connect the tube assembly [13] to the PPM RS fuel manifold [1] as follows:

1) Disconnect the PPM fuel tube [8] from the PPM RS fuel manifold [1].
2) Tightly connect the tube assembly [13] to the PPM RS fuel manifold [1].

(e) Tightly connect the hose from the nitrogen cart, SPL-14802 to the male connector [19].

(f) Use the nitrogen cart, SPL-14802 to apply pressure to the fuel manifolds as follows:

NOTE: Make sure that you filter the inert gas to 10 micron maximum with a non-bypass metallic or ceramic mesh filter.

1) Apply a pressure of 10 psig (69 kPa) to the fuel manifolds.
2) Make sure that the check valves in the fuel nozzles do not open at this pressure.
3) Slowly increase the pressure to 15 psig (103 kPa).
4) Make sure that the check valves in the fuel nozzles do not open as the pressure increases.
5) If a check valve opens, replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

6) Use the nitrogen cart, SPL-14802 to apply a pressure of 40 psig (276 kPa) to 50 psig (345 kPa) to the manifolds.

(g) Let the system pressure stabilize.

(h) Use Leak Tec 16-OX (leak detection compound), G50380 at the manifold to the fuel nozzle B-nuts of the PSEC RS fuel manifold [2] and the PPM RS fuel manifold [1].

(i) Make sure that there is no leakage.

(j) If you find leakage on a connection, do these steps:

1) Turn off the pressure from the nitrogen cart, SPL-14802.

2) Loosen the B-nut that have the leakage.

3) Tighten the connection to the specified torque (TASK 73-11-05-400-801-G00 or TASK 73-11-05-400-802-G00).

4) Loosen the two B-nut until you can turn them with your fingers.

5) Tighten the connection again to the specified torque.

6) Tighten the connection a third time to the specified torque.

(k) Use Leak Tec 16-OX (leak detection compound), G50380 at the fuel nozzle assemblies where they attach to the combustion case.

(l) Make sure that there are no leaks.

(m) If there are leaks at the fuel nozzle assemblies, do these steps:

1) Turn off the pressure from the nitrogen cart, SPL-14802.

2) Replace the fuel nozzle assembly that has the leak (PAGEBLOCK 73-11-05/401).

(n) Turn off the pressure from the nitrogen cart, SPL-14802.

(o) Disconnect the Adapter Set, SPL-14801 from the nitrogen cart, SPL-14802.

(p) Disconnect the tube assembly [13] from the PPM RS fuel manifold [1].

(q) Connect the PPM RS fuel manifold [1] to the PPM fuel tube [8] as follows:

1) Tighten the B-nut to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).

2) Loosen the B-nut until you can turn it with your fingers.

3) Tighten the B-nut again to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).

4) Tighten the B-nut a final time to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).

(r) Disconnect the tube assembly [21] from the PSEC RS fuel manifold [2].

(s) Connect the PSEC RS fuel manifold [2] to the PSEC fuel tube [7] as follows:

1) Tighten the B-nut to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).

2) Loosen the B-nut until you can turn it with your fingers.

3) Tighten the B-nut again to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).

4) Tighten the B-nut a final time to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).

SUBTASK 73-11-05-211-001-G00

(3) Do the steps that follow to examine for leaks on the left side fuel manifolds.

NOTE: As you view the manifolds aft looking forward.

(a) Remove the caps from the Adapter Set, SPL-14801 as follows:

1) Remove the cap [15] from the tube assembly [13].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Remove the cap [14] from the tube assembly [21].

3) Remove the cap [20] from the male connector [19] on the gage adapter [18].

(b) Make sure that you install the plug [16] tightly into the tube assembly [17].

(c) Connect the tube assembly [21] to the PSEC LS fuel manifold [5] as follows:

1) Disconnect the PSEC fuel supply hose [12] from the PSEC LS fuel manifold [5].

2) Tightly connect the tube assembly [21] to the PSEC LS fuel manifold [5].

(d) Connect the tube assembly [13] to the PPM LS fuel manifold [6] as follows:

1) Disconnect the PPM fuel supply hose [11] from the PPM LS fuel manifold [6].

2) Tightly connect the tube assembly [13] to the PPM LS fuel manifold [6].

(e) Tightly connect the hose from the nitrogen cart, SPL-14802 to the male connector [19].

(f) Use the nitrogen cart, SPL-14802 to apply pressure to the fuel manifolds as follows:

NOTE: Make sure that you filter the inert gas to 10 micron maximum with a non-bypass metallic or ceramic mesh filter.

1) Apply a pressure of 10 psig (69 kPa) to the fuel manifolds.

2) Make sure that the check valves in the fuel nozzles do not open at this pressure.

3) Slowly increase the pressure to 15 psig (103 kPa).

4) Make sure that the check valves in the fuel nozzles do not open as the pressure increases.

5) If a check valve opens, replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

6) Use the nitrogen cart, SPL-14802 to apply a pressure of 40 psig (276 kPa) to 50 psig (345 kPa) to the manifolds.

(g) Let the system pressure stabilize.

(h) Use Leak Tec 16-OX (leak detection compound), G50380 at the manifold to the fuel nozzle B-nuts of the manifolds PSEC LS fuel manifold [5] and PPM LS fuel manifold [6].

(i) Make sure that there is no leakage.

(j) If you find leakage on a connection, do these steps:

1) Turn off the pressure from the nitrogen cart, SPL-14802.

2) Loosen the B-nut that have the leakage.

3) Tighten the connection to the specified torque (TASK 73-11-05-400-801-G00 or TASK 73-11-05-400-802-G00).

4) Loosen the B-nut until you can turn them with your fingers.

5) Tighten the connection again to the specified torque.

6) Tighten the connection a third time to the specified torque.

(k) Use Leak Tec 16-OX (leak detection compound), G50380 at the fuel nozzle assemblies where they attach to the combustion case.

(l) Make sure that there are no leaks.

(m) If there are leaks at the fuel nozzle assemblies, do these steps:

1) Turn off the pressure from the nitrogen cart, SPL-14802.

2) Replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

(n) Turn off the pressure from the nitrogen cart, SPL-14802.

(o) Disconnect the Adapter Set, SPL-14801 from the nitrogen cart.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(p) Disconnect the tube assembly [21] from the PSEC LS fuel manifold [5].

(q) Connect the PSEC LS fuel manifold [5] to the PSEC fuel supply hose [12] as follows:

1) Tighten the B-nut to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).
2) Loosen the B-nut until you can turn it with your fingers.
3) Tighten the B-nut again to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).
4) Tighten the B-nut a final time to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).

(r) Disconnect the tube assembly [13] from the PPM LS fuel manifold [6].

(s) Connect the PPM LS fuel manifold [6] to the PPM fuel supply hose [11] as follows:

1) Tighten the B-nut to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).
2) Loosen the B-nut until you can turn it with your fingers.
3) Tighten the B-nut again to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).
4) Tighten the B-nut a final time to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).

SUBTASK 73-11-05-211-002-G00

(4) Do the steps that follow to examine for leaks on the bottom fuel manifolds.

NOTE: As you view the manifolds aft looking forward.

(a) Remove the plug and caps from the Adapter Set, SPL-14801 as follows:

1) Remove the plug [16] from the tube assembly [17].
2) Remove the cap [14] from the tube assembly [21].
3) Remove the cap [20] from the male connector [19] on the gage adapter [18].

(b) Make sure that you install the cap [15] tightly on the tube assembly [13].

(c) Connect the tube assembly [21] to the PSEC bottom fuel manifold [4] as follows:

1) Disconnect the PSEC fuel tube [9] from the PSEC bottom fuel manifold [4].
2) Tightly connect the tube assembly [21] to the PSEC bottom fuel manifold [4].

(d) Connect the tube assembly [17] to the PPM bottom fuel manifold [3] as follows:

1) Disconnect the PPME inlet fuel hose [10] from the PPM bottom fuel manifold [3].
2) Tightly connect the tube assembly [17] to the PPM bottom fuel manifold [3].

(e) Tightly connect the hose from the nitrogen cart, SPL-14802 to the male connector [19].

(f) Use the nitrogen cart, SPL-14802 to apply pressure to the fuel manifolds as follows:

NOTE: Make sure that you filter the inert gas to 10 micron maximum with a non-bypass metallic or ceramic mesh filter.

1) Apply a pressure of 10 psig (69 kPa) to the fuel manifolds.
2) Make sure that the check valves in the fuel nozzles do not open at this pressure.
3) Slowly increase the pressure to 15 psig (103 kPa).
4) Make sure that the check valves in the fuel nozzles do not open as the pressure increases.
5) If a check valve opens, replace the fuel nozzle (PAGEBLOCK 73-11-05/401).
6) Use the nitrogen cart, SPL-14802 to apply a pressure of 40 psig (276 kPa) to 50 psig (345 kPa) to the manifolds.

(g) Let the system pressure stabilize.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Use Leak Tec 16-OX (leak detection compound), G50380 at the manifold to the fuel nozzle B-nuts of the PPM bottom fuel manifold [3] and the PSEC bottom fuel manifold [4].

(i) Make sure that there is no leakage.

(j) If you find leakage on a connection, loosen the B-nut and do these steps:

1) Turn off the pressure from the nitrogen cart.
2) Loosen the B-nut that have the leakage.
3) Tighten the connection to the specified torque (TASK 73-11-05-400-801-G00 or TASK 73-11-05-400-802-G00).
4) Loosen the B-nut until you can turn them with your fingers.
5) Tighten the connection again to the specified torque.
6) Tighten the connection a third time to the specified torque.

(k) Use Leak Tec 16-OX (leak detection compound), G50380 at the fuel nozzle assemblies where they attach to the combustion case.

(l) Make sure that there are no leaks.

(m) If there are leaks at the fuel nozzle assemblies, do these steps:

1) Turn off the pressure from the nitrogen cart, SPL-14802.
2) Replace the fuel nozzle (PAGEBLOCK 73-11-05/401).

(n) Turn off the pressure from the nitrogen cart, SPL-14802.

(o) Disconnect the Adapter Set, SPL-14801 from the nitrogen cart, SPL-14802.

(p) Disconnect the tube assembly [21] from the PSEC bottom fuel manifold [4].

(q) Connect the PSEC bottom fuel manifold [4] to the PSEC fuel tube [9] as follows:

1) Tighten the B-nut to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).
2) Loosen the B-nut until you can turn it with your fingers.
3) Tighten the B-nut again to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).
4) Tighten the B-nut a final time to 262.0 in-lb (29.60 N·m) to 308.0 in-lb (34.80 N·m).

(r) Disconnect the tube assembly [17] from the PPM bottom fuel manifold [3].

(s) Connect the PPM bottom fuel manifold [3] to the PPME inlet fuel hose [10] and triple tighten as follows:

1) Tighten the B-nut to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).
2) Loosen the B-nut until you can turn it with your fingers.
3) Tighten the B-nut again to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).
4) Tighten the B-nut a final time to 460.0 in-lb (51.97 N·m) to 540.0 in-lb (61.01 N·m).

(t) Remove the nitrogen cart, SPL-14802 from the manifold fitting.

(u) Remove the Norgen general purpose filter.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-05-480-001-G00

(1) Put all caps and plug on the Adapter Set, SPL-14801.

SUBTASK 73-11-05-440-001-G00

(2) Do the activation procedure for the thrust reverser (TASK 78-31-00-440-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-05-410-001-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-05-860-016-G00

(4) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-05-860-017-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

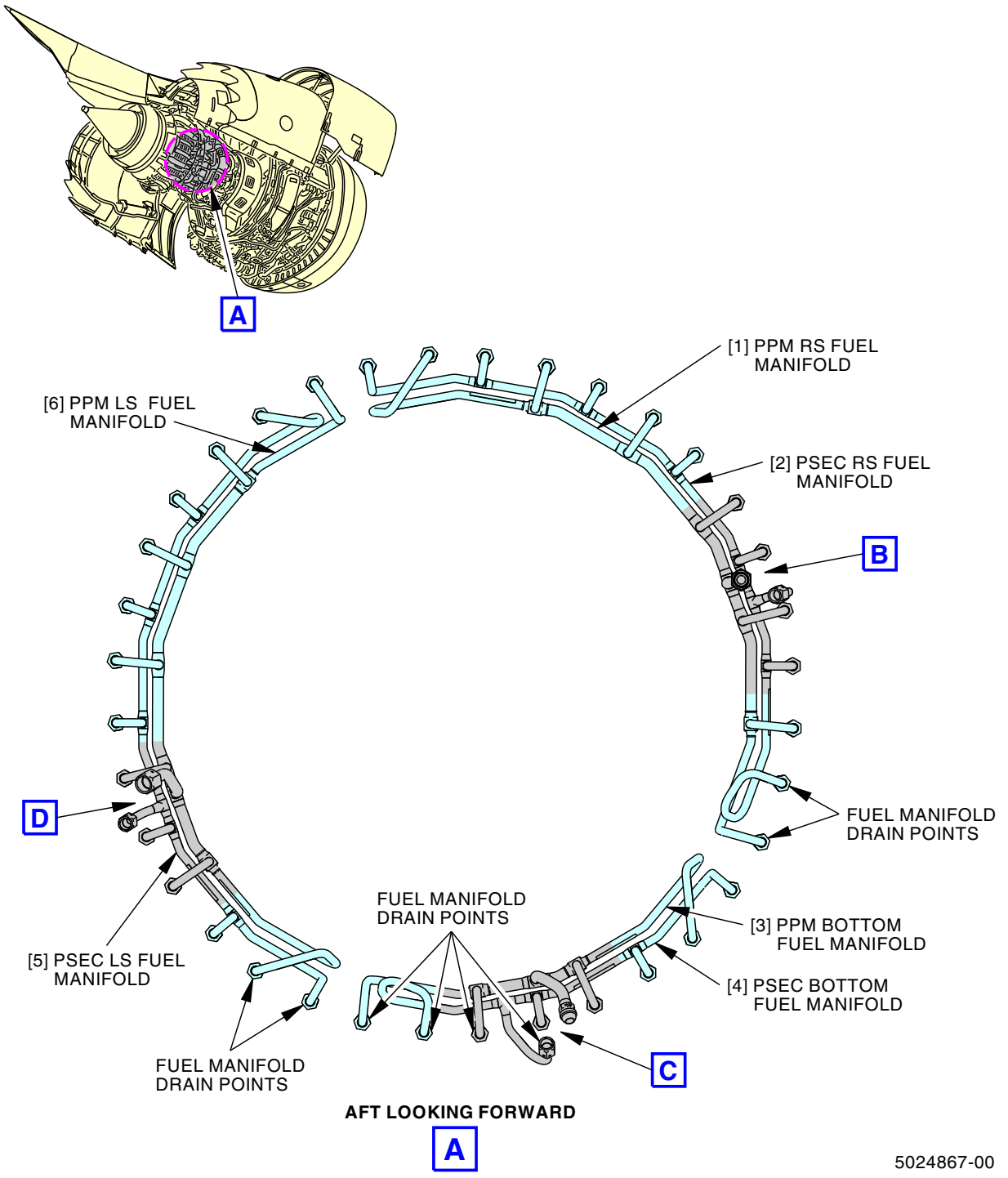
(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-05-790-003-G00

(6) Do this task: Test No. 4 - Idle Leak Test, TASK 71-00-00-790-804-G00.

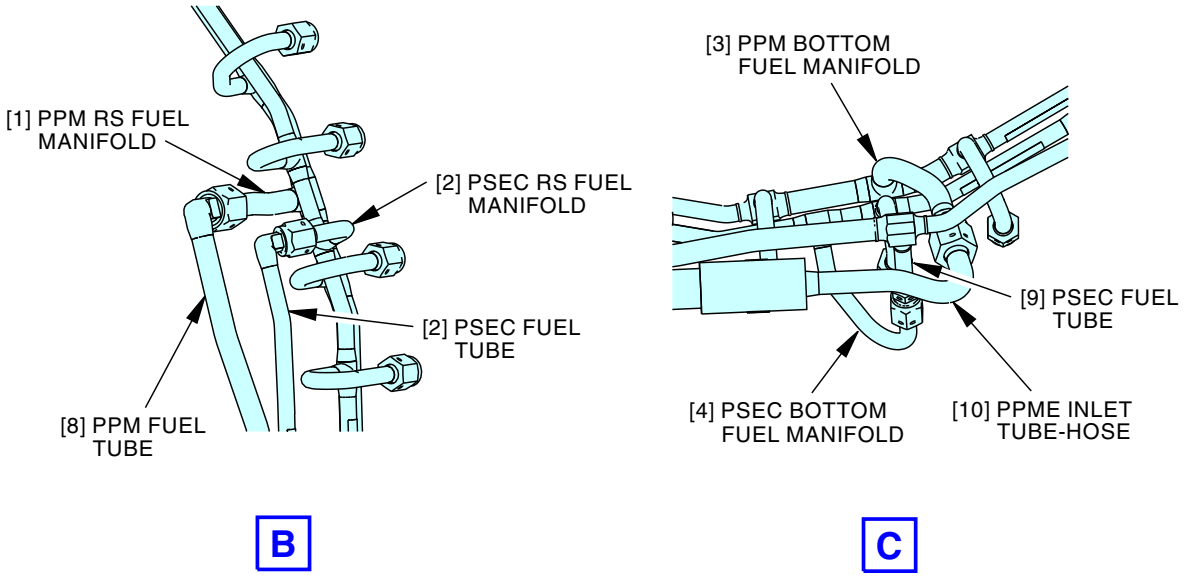
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Nozzle and Fuel Manifold Leak Check
Figure 601/73-11-05-990-829-G00 (Sheet 1 of 2)

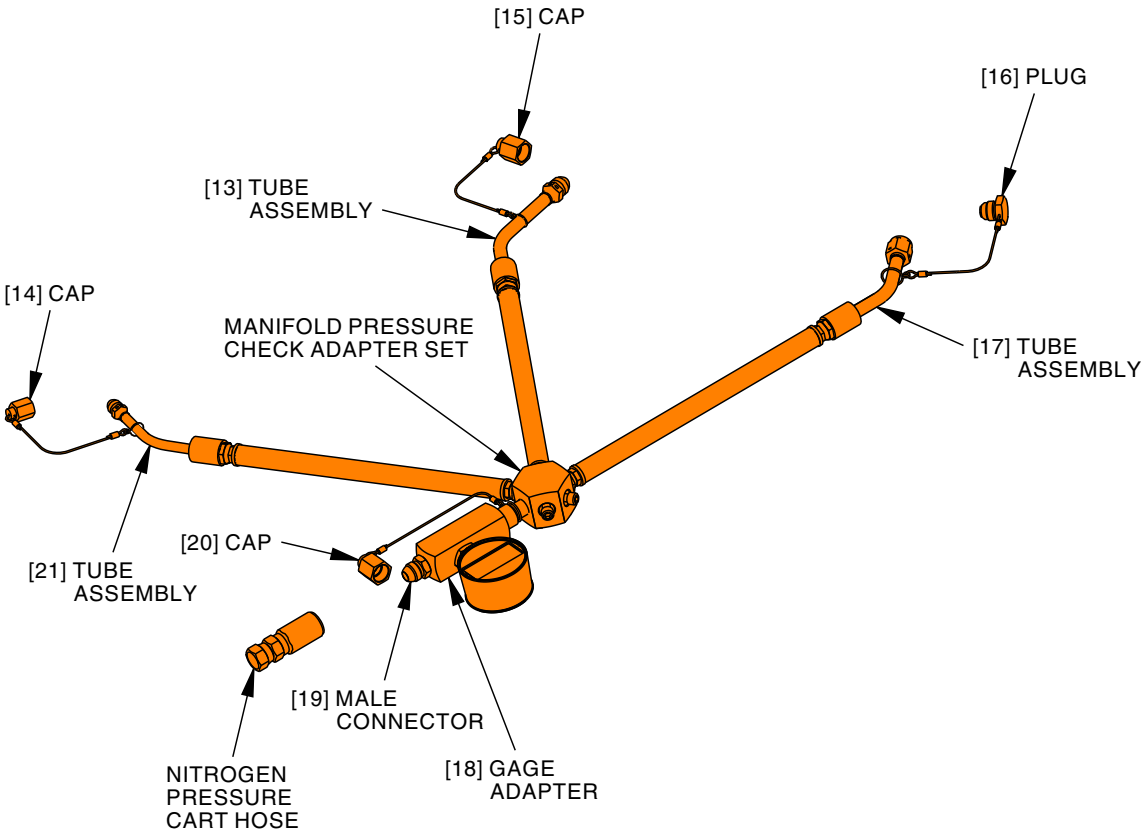
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5024868-00
2473015 S0000578791_V1

Fuel Nozzle and Fuel Manifold Leak Check
Figure 601/73-11-05-990-829-G00 (Sheet 2 of 2)

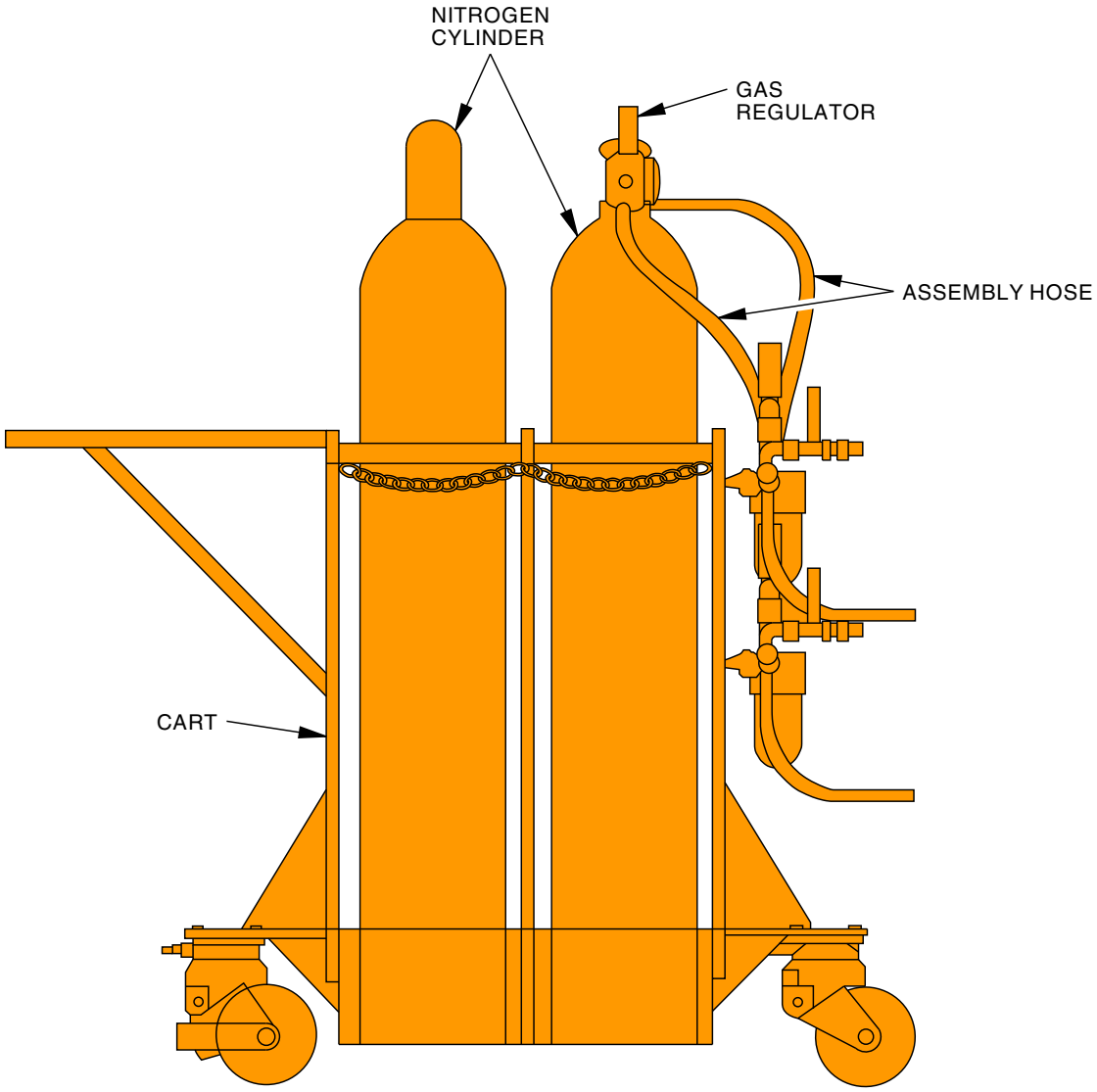
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2473018 S0000578793_V1

Manifold Pressure Check Adapter Set
Figure 602/73-11-05-990-830-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



5027835-00
2484245 S0000584378_V1

Nitrogen Cart
Figure 603/73-11-05-990-831-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPLIT CONTROL UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the split control unit

(2) An installation of the split control unit.

TASK 73-11-06-000-801-G00

2. Split Control Unit Removal

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to remove the Split Control Unit (SCU).

(2) A minimum of two persons are required to handle the SCU if the jack stand and the SCU adapter support equipment are not used.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
72-23-04-000-801-G00	Fan Frame Module Segment Shrouds Removal (P/B 401)
73-21-67-000-801-G00	Fuel Manifold Pressure Transducer Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14501	Adapter- Support Part #: 956A1614G01 Supplier: 58828
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER YOU STOP THE ENGINE. THE ENGINE PARTS CAN STAY HOT FOR ALMOST 1 HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 73-11-06-860-014-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-06-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-06-010-001-G00

(3) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Split Control Unit Removal

SUBTASK 73-11-06-010-002-G00

(1) Remove the shroud segment 4 (TASK 72-23-04-000-801-G00).

SUBTASK 73-11-06-010-004-G00

CAUTION MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(2) Use a teflon-jawed pliers, STD-664, to disconnect the SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3] from the SCU [1] (TASK 70-00-01-910-803-G00).

(a) Disconnect the SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3] from the SCU [1].

(b) Install the protective covers on the electrical receptacles on the SCU [1], SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3].

SUBTASK 73-11-06-010-005-G00

(3) Do this task: Fuel Manifold Pressure Transducer Removal, TASK 73-21-67-000-801-G00.

SUBTASK 73-11-06-010-007-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Disconnect the P23 fuel tube-hose [15] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the P23 fuel tube-hose [15].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the four bolts [14] that attach the P23 fuel tube-hose [15] to the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(d) Remove and discard the gasket seal [16].

SUBTASK 73-11-06-010-011-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Disconnect the P8 fuel tube-hose [18] as follows:

(a) Remove the HJ5A electrical harness [46] from the clip on the support bracket [45].

(b) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the P8 fuel tube-hose [18].

(c) Remove the four bolts [17] that attach the P8 fuel tube-hose [18] and support bracket [45] to the SCU [1].

(d) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(e) Remove and discard the gasket seal [19].

SUBTASK 73-11-06-030-001-G00

(6) Remove the bolt [27] that attaches the loop clamp [28] and secondary fuel manifold hose [20] to the support bracket [29].

SUBTASK 73-11-06-020-002-G00

(7) Remove the bolt [25] that attaches the loop clamp [26] and primary enriched fuel tube-hose [21] to the support bracket [29].

SUBTASK 73-11-06-020-003-G00

(8) Remove the bolt [24] that attaches the loop clamp [23] and primary non-enriched fuel manifold hose [22] to the support bracket [29].

SUBTASK 73-11-06-010-008-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(9) Disconnect the secondary fuel manifold hose [20] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the secondary fuel manifold hose [20].

(b) Cut the safety wire/cable and disconnect the secondary fuel manifold hose [20] from the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-06-010-009-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(10) Disconnect the primary enriched fuel tube-hose [21] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the primary enriched fuel tube-hose [21].

(b) Cut the safety wire/cable and disconnect the primary enriched fuel tube-hose [21] from the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

SUBTASK 73-11-06-010-010-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(11) Disconnect the primary non-enriched fuel manifold hose [22] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the primary non-enriched fuel manifold hose [22].

(b) Cut the safety wire/cable and disconnect the primary non-enriched fuel manifold hose [22] from the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

SUBTASK 73-11-06-680-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(12) Drain the PHS fuel tube-hose [13] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the PHS fuel tube-hose [13].

(b) Disconnect the PHS fuel tube-hose [13] from the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

SUBTASK 73-11-06-680-002-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(13) Disconnect the fuel hydraulics manifold [11] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the fuel hydraulics manifold [11].

(b) Remove the four bolts [12] that attach the fuel hydraulics manifold [11] to the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

CAUTION

DO NOT USE A SHARP OR POINTED TOOL TO REMOVE A SEAL. DAMAGE TO THE SEALING SURFACE OF A COMPONENT CAN CAUSE AN ENGINE FAILURE AND DAMAGE TO THE EQUIPMENT.

(d) Remove and discard the gasket seal [9].

SUBTASK 73-11-06-020-001-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(14) Disconnect the fuel hydraulics manifold [4] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the fuel hydraulics manifold [4].

(b) Remove the four bolts [5] that attach the fuel hydraulics manifold [4] to the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(d) Remove and discard the gasket seal [10].

SUBTASK 73-11-06-010-006-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(15) Disconnect the fuel hydraulics manifold [6] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the fuel hydraulics manifold [6].

(b) Remove the four bolts [7] that attach the fuel hydraulics manifold [6] to the SCU [1].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(d) Remove and discard the gasket seal [8].

SUBTASK 73-11-06-010-013-G00

(16) Remove the bolt [33] that attaches the aft skirt heat shield [32] to the SCU [1].

(a) Do not remove any additional bolts.

SUBTASK 73-11-06-010-016-G00

(17) Remove the bolt [31] that attaches the support bracket [29] to the SCU [1].

(a) Do not remove any additional bolts.

SUBTASK 73-11-06-010-014-G00

(18) Remove the aft skirt heat shield [32] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the bolt [35] and two washers [36] that attach the aft skirt heat shield [32] and support bracket [30] to the SCU [1].

(b) Remove the aft skirt heat shield [32] with the attached support bracket [29] from the SCU [1].

SUBTASK 73-11-06-020-004-G00

WARNING FOLLOW THE INSTRUCTIONS INCLUDED WITH THE JACK STAND, SPL-14500, BEFORE YOU USE THE TOOL. IF YOU DO NOT FOLLOW THE INSTRUCTIONS, DAMAGE TO THE EQUIPMENT OR INJURY TO PERSONNEL CAN OCCUR.

(19) If necessary, install the SCU/SVA adapter, SPL-14501, on the jack stand, SPL-14500.

NOTE: The SCU/SVA weight is 38.1 lb (17.3 kg).

NOTE: If the two-person alternative method is used, you do not have to install the adapter, SPL-14501, and jack stand, SPL-14500.

NOTE: To extend the SCU/SVA adapter, SPL-14501, turn the adjusting wheel clockwise.

SUBTASK 73-11-06-020-005-G00

(20) If necessary, move the jack stand, SPL-14500, below the SCU [1].

SUBTASK 73-11-06-010-012-G00

(21) If necessary, attach the SCU/SVA adapter, SPL-14501, to the SCU [1].

SUBTASK 73-11-06-010-017-G00

(22) Remove the bolt [40] and two washers [41] that attach the SCU [1] to the support bracket [39].

SUBTASK 73-11-06-010-018-G00

(23) Remove the bolt [38] and two washers [42] that attach the SCU [1] to the support bracket [37].

SUBTASK 73-11-06-010-019-G00

(24) Remove the two bolts [43] that attach the SCU [1] to the support bracket [44].

SUBTASK 73-11-06-010-020-G00

(25) If necessary, move the SCU [1] away from the engine with the jack stand, SPL-14500.

SUBTASK 73-11-06-010-021-G00

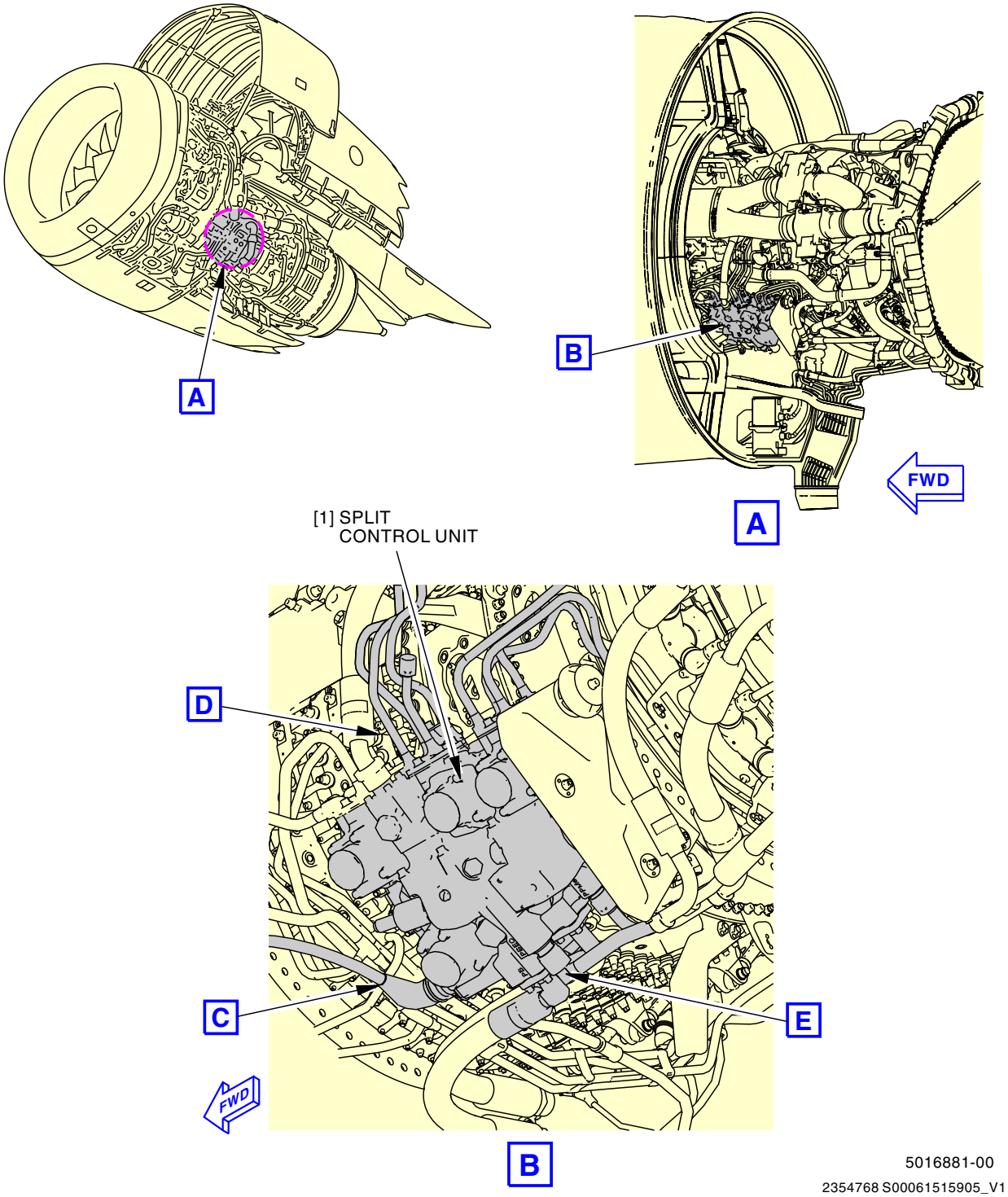
(26) If necessary, remove the SCU [1] from the SCU/SVA adapter, SPL-14501.

SUBTASK 73-11-06-010-022-G00

(27) Install protective covers on all the open tubes, hoses and open ports and fittings on the SCU [1].

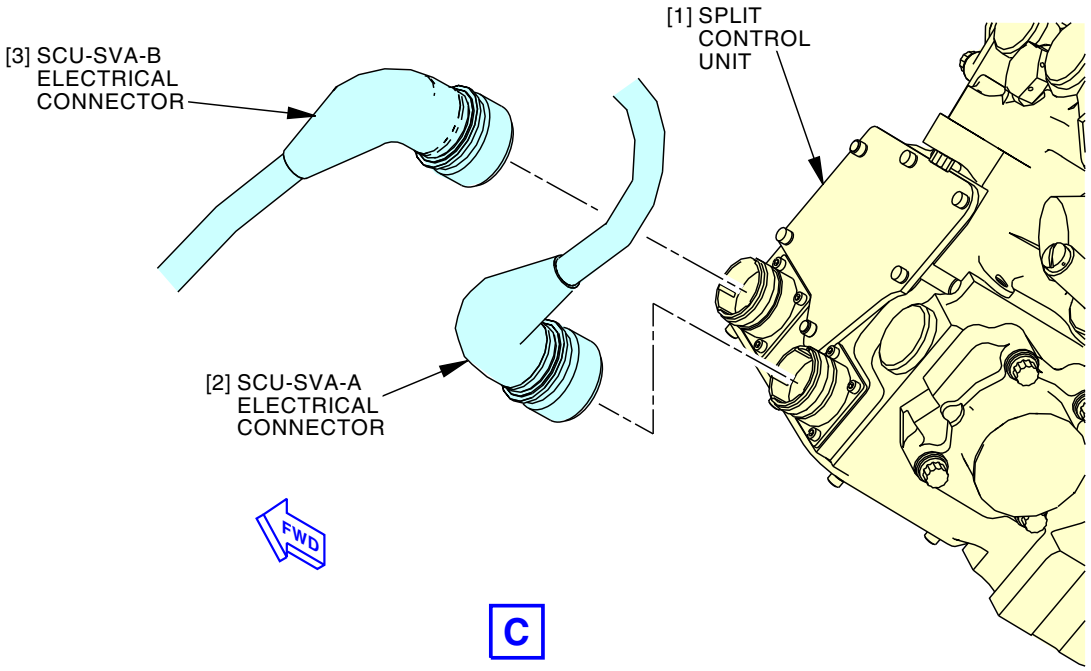
END OF TASK

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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 1 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

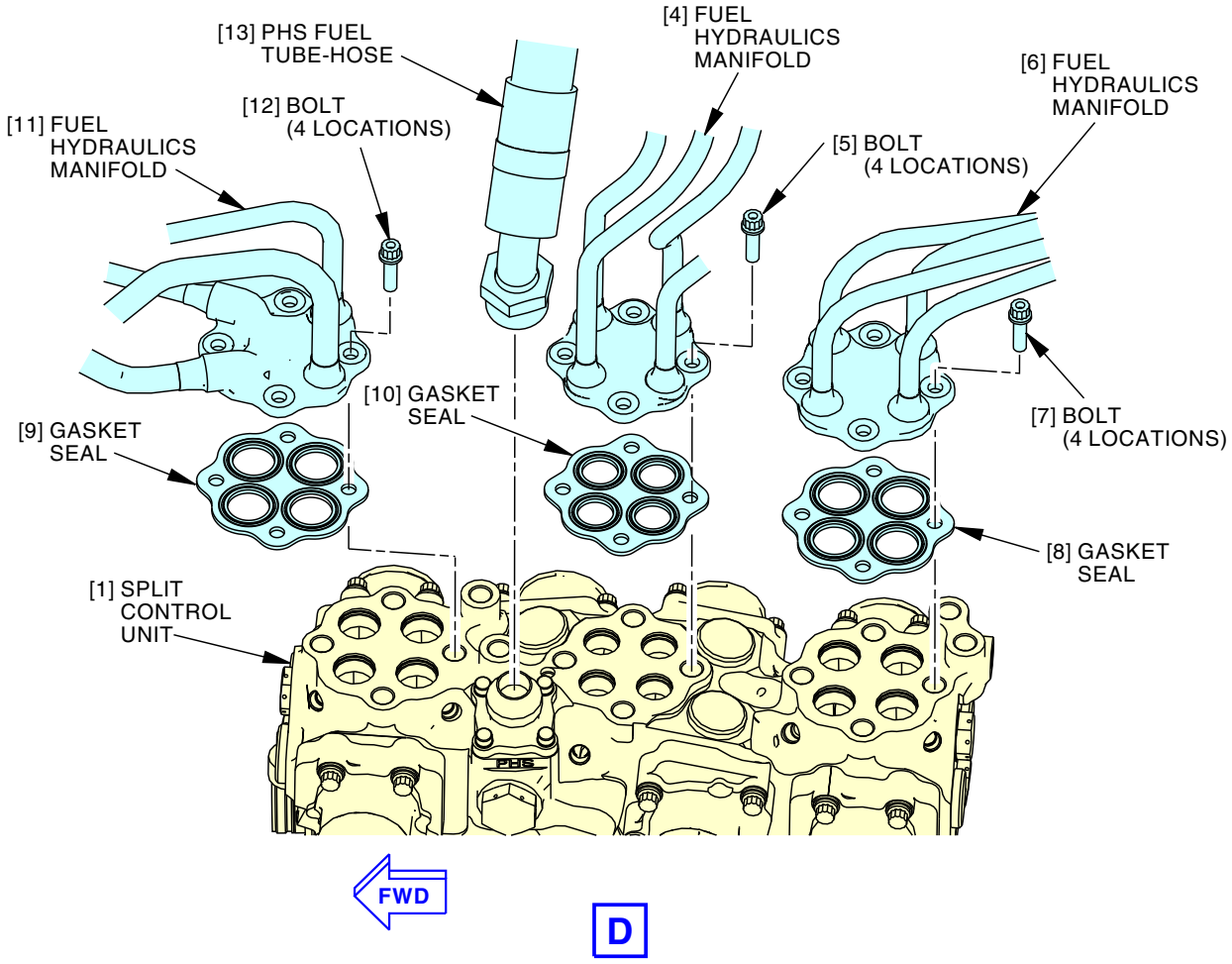


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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 2 of 14)

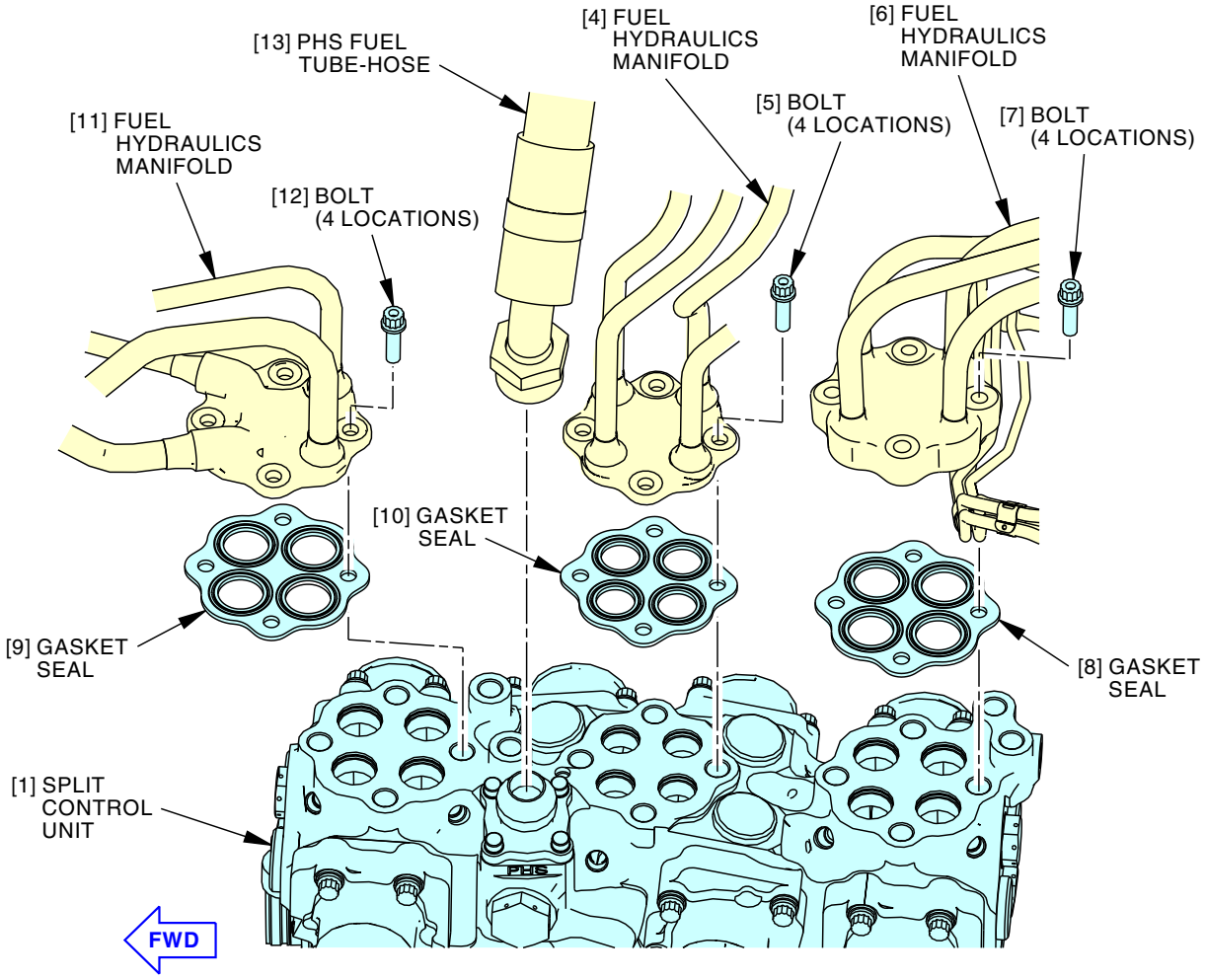
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5016882-00
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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 3 of 14)

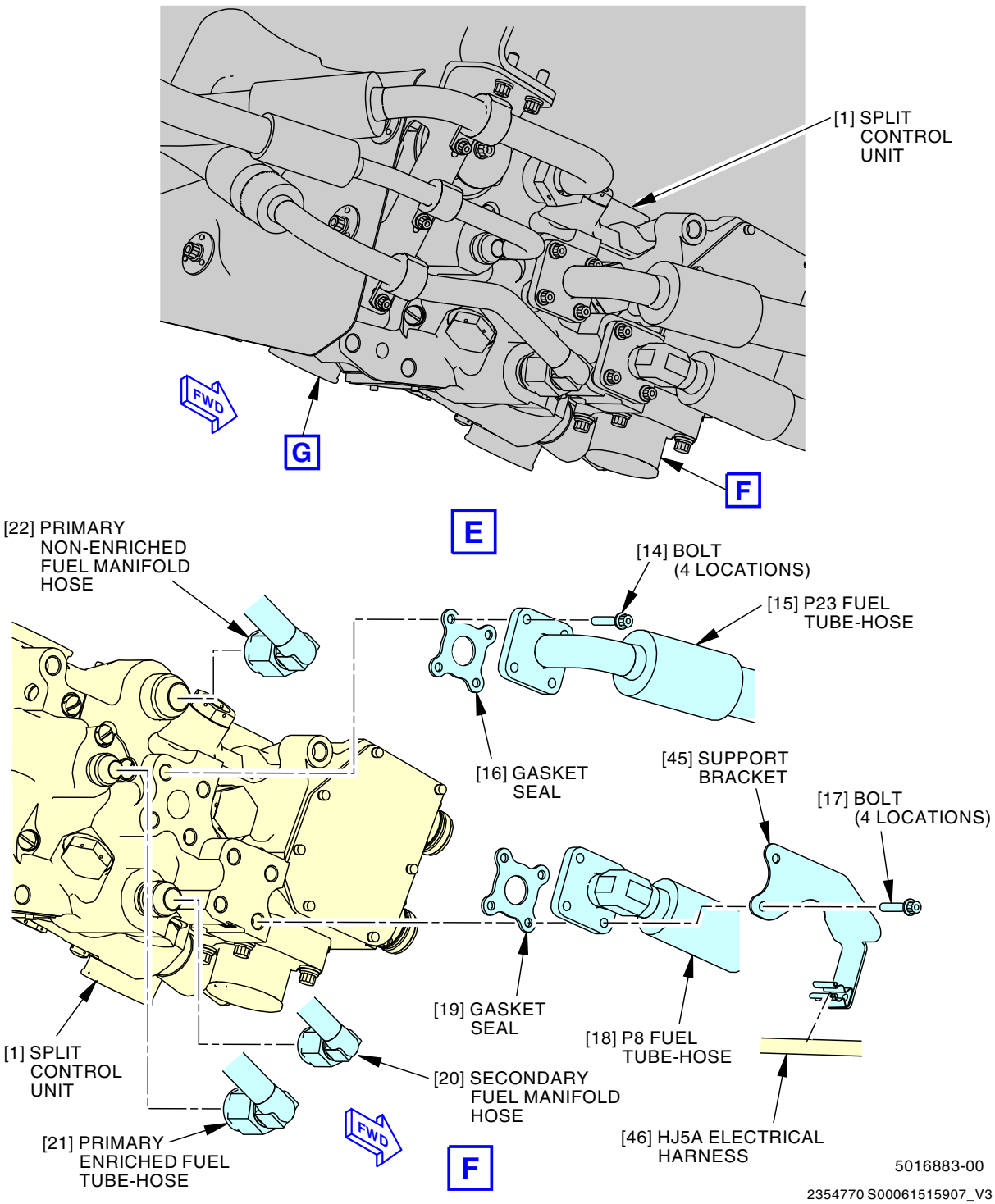
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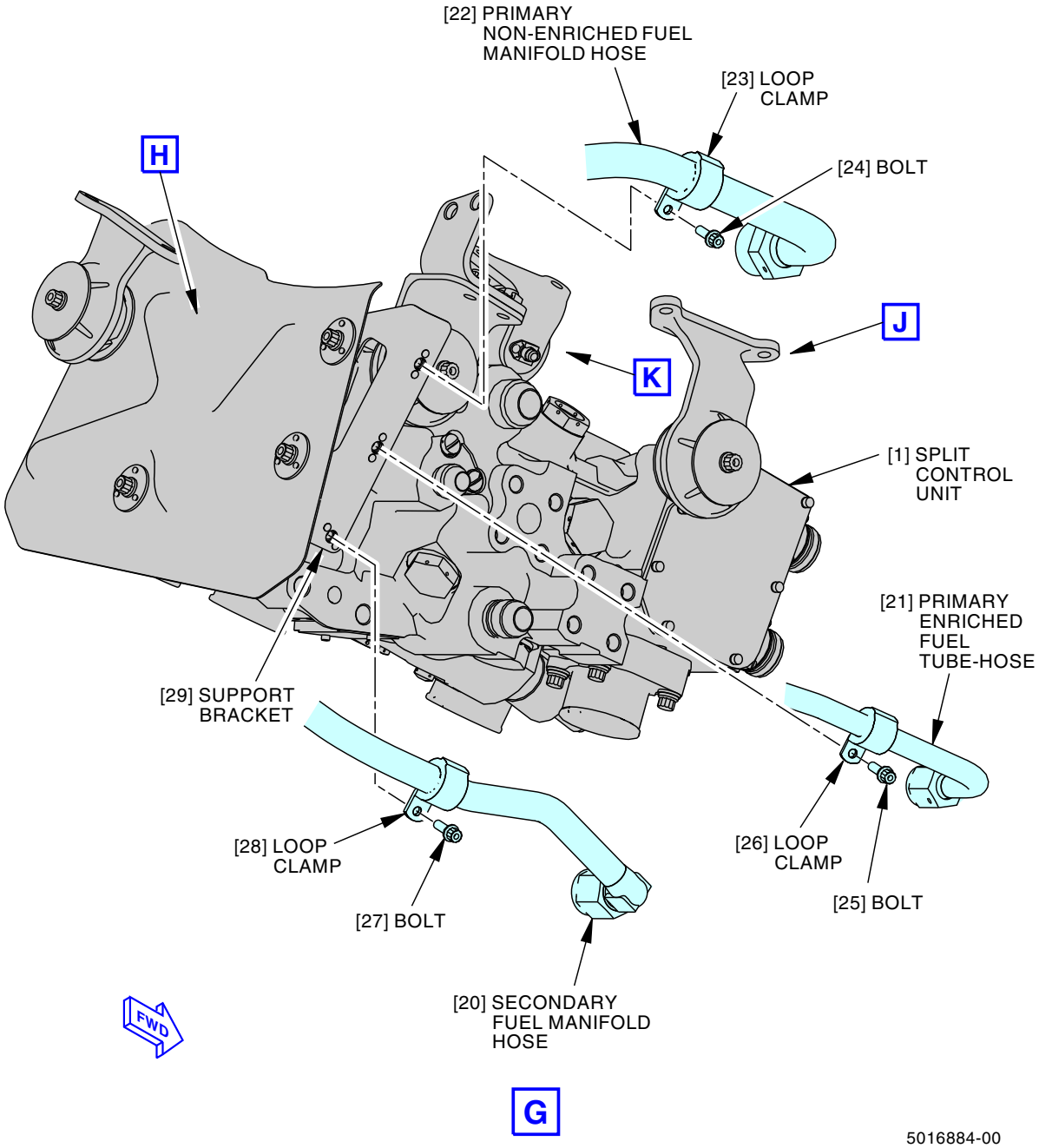
Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 4 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



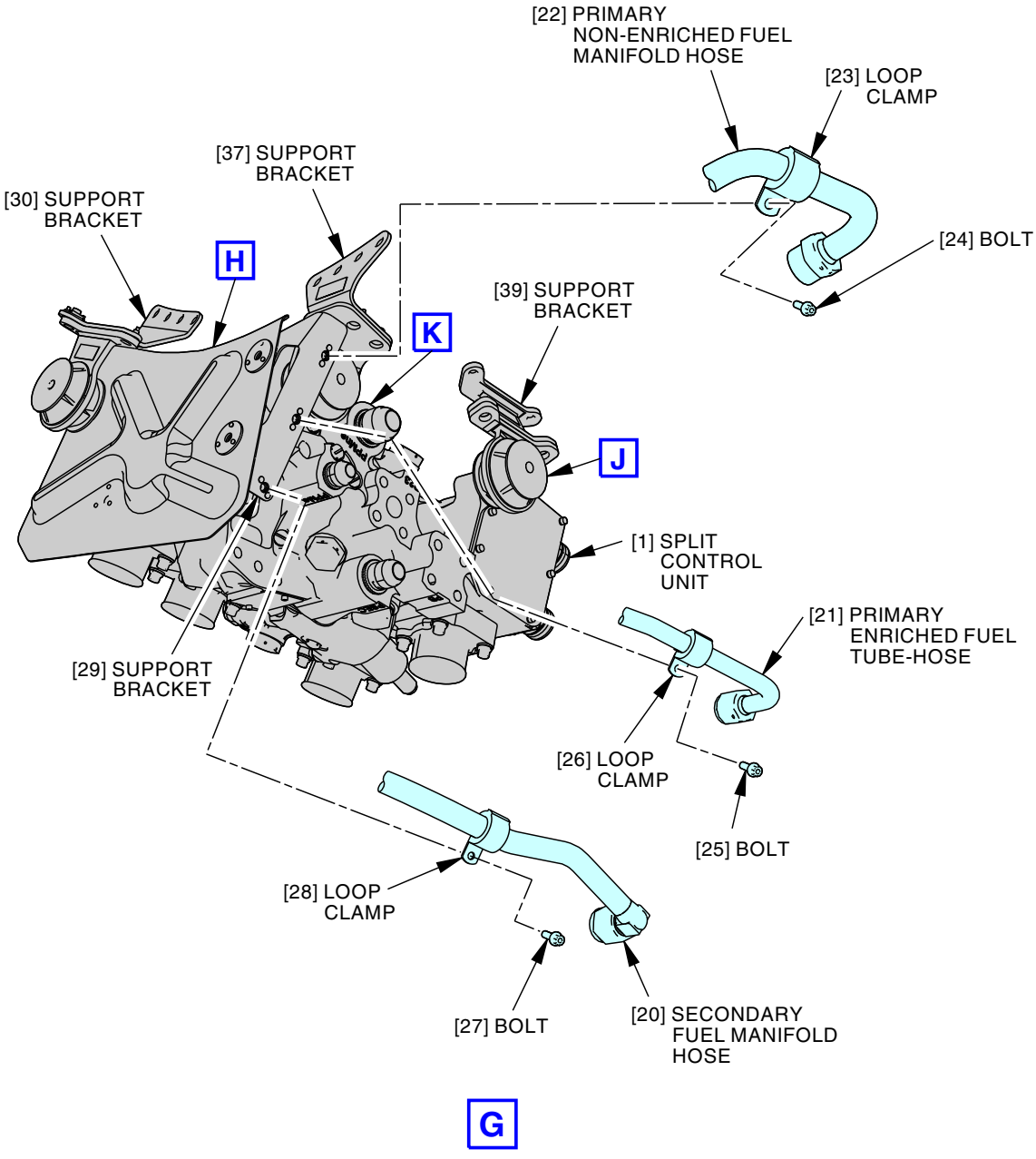
Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 5 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 6 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

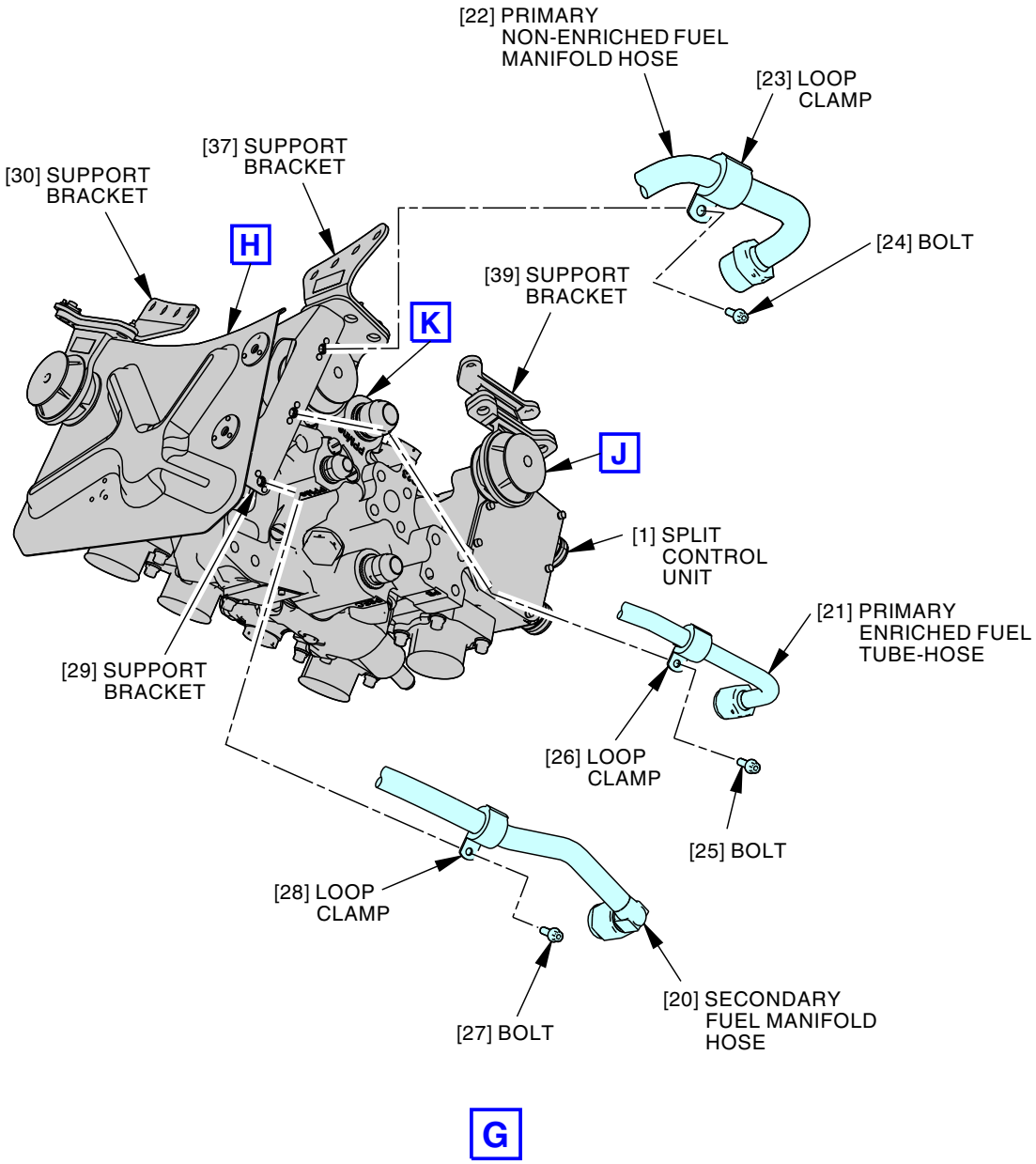


5050830-00

2819741 S0000651557_V1

Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 7 of 14)

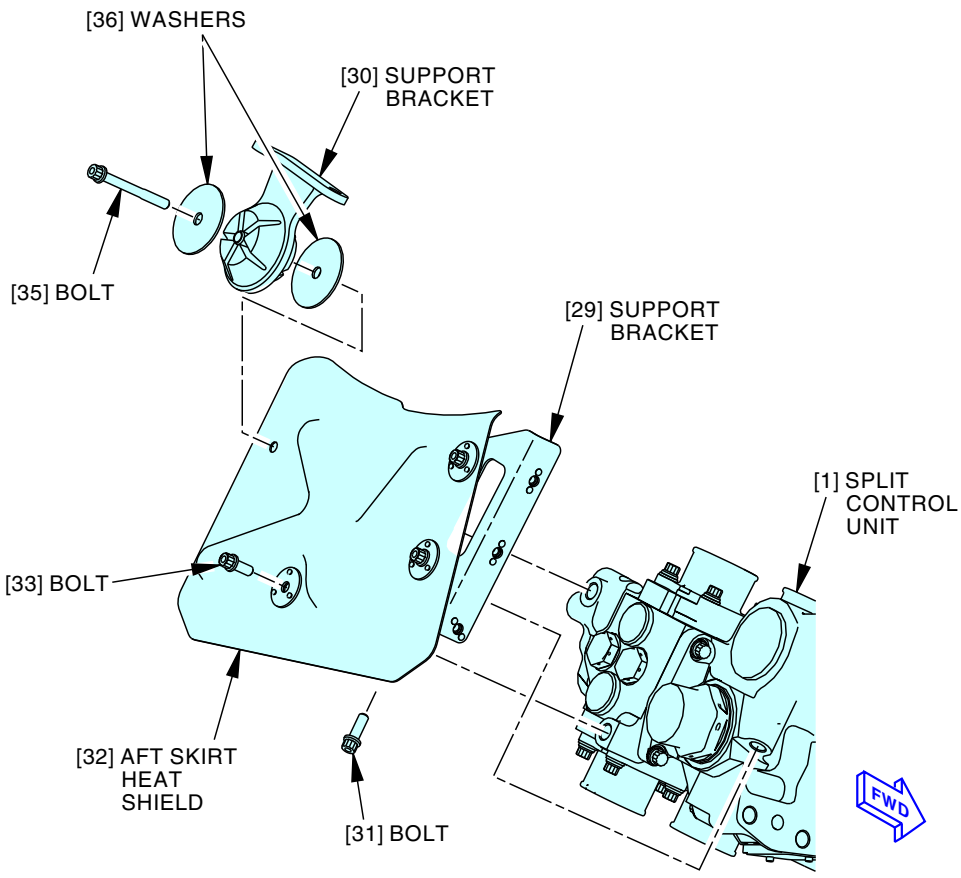
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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 8 of 14)

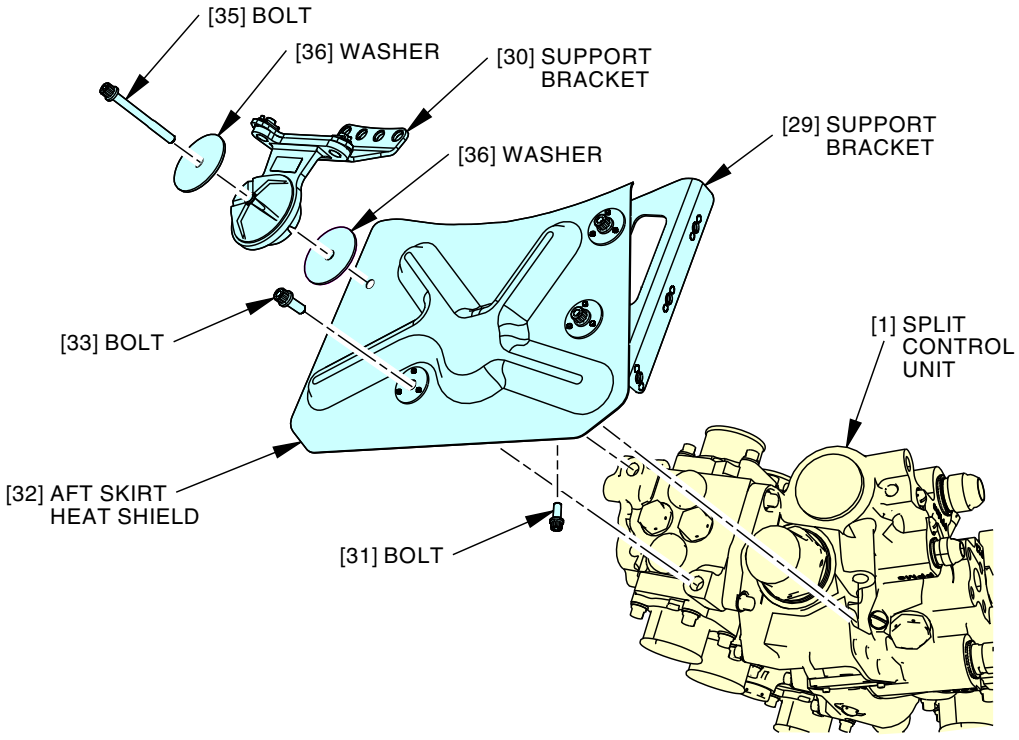
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5016889-00
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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 9 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

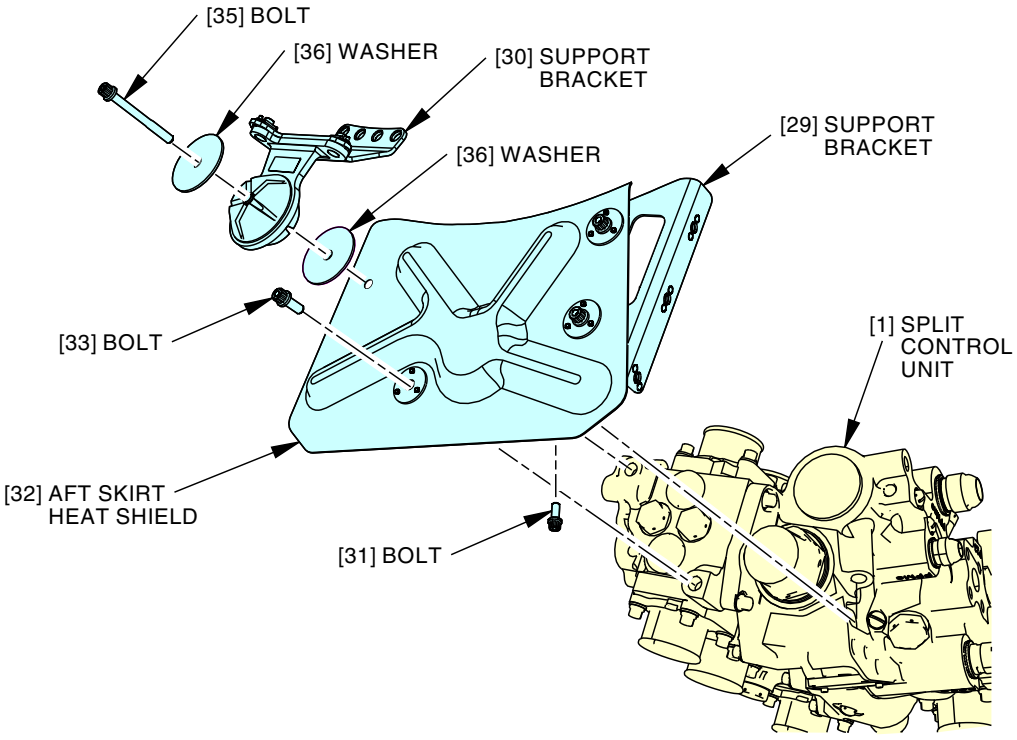


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Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 10 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

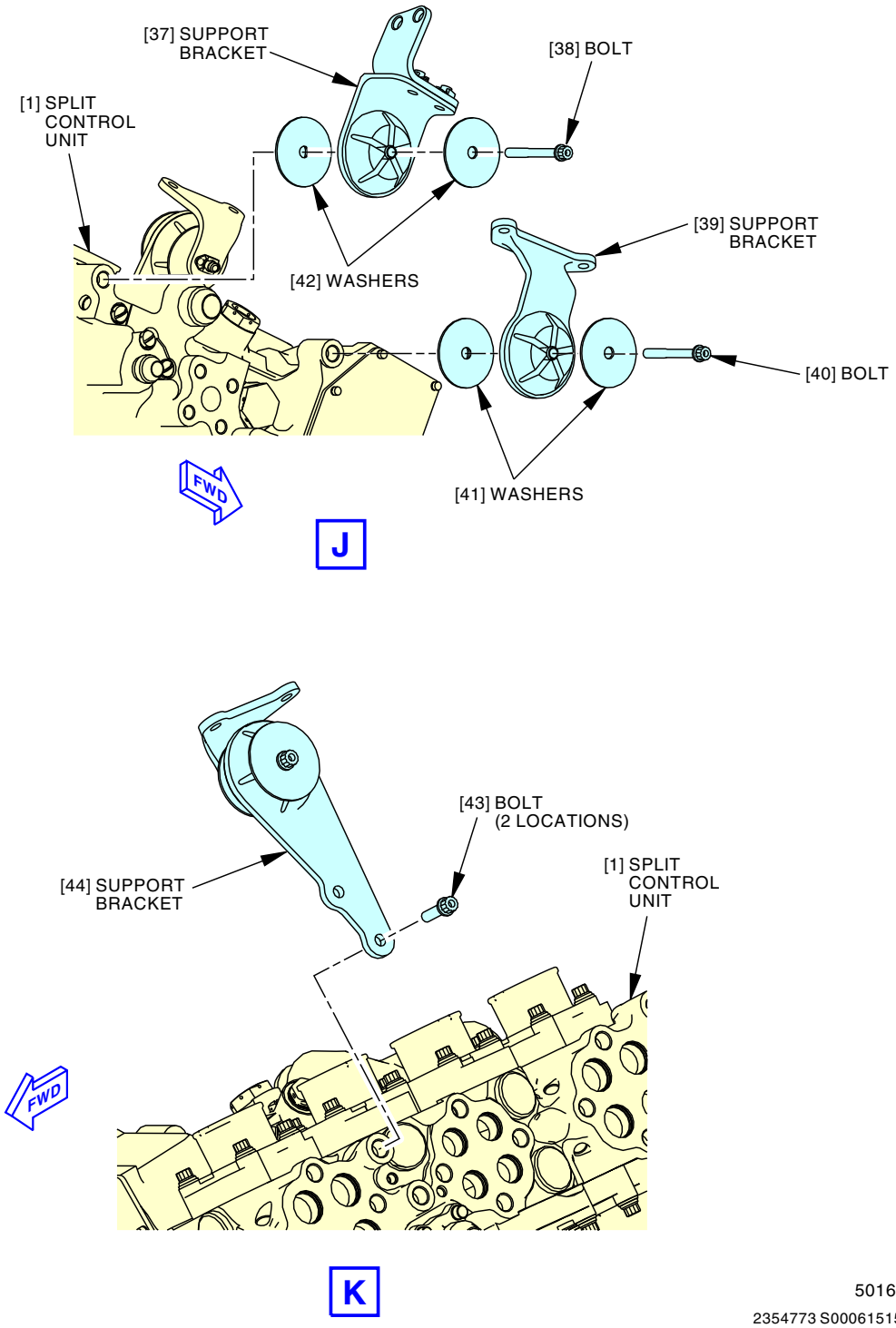


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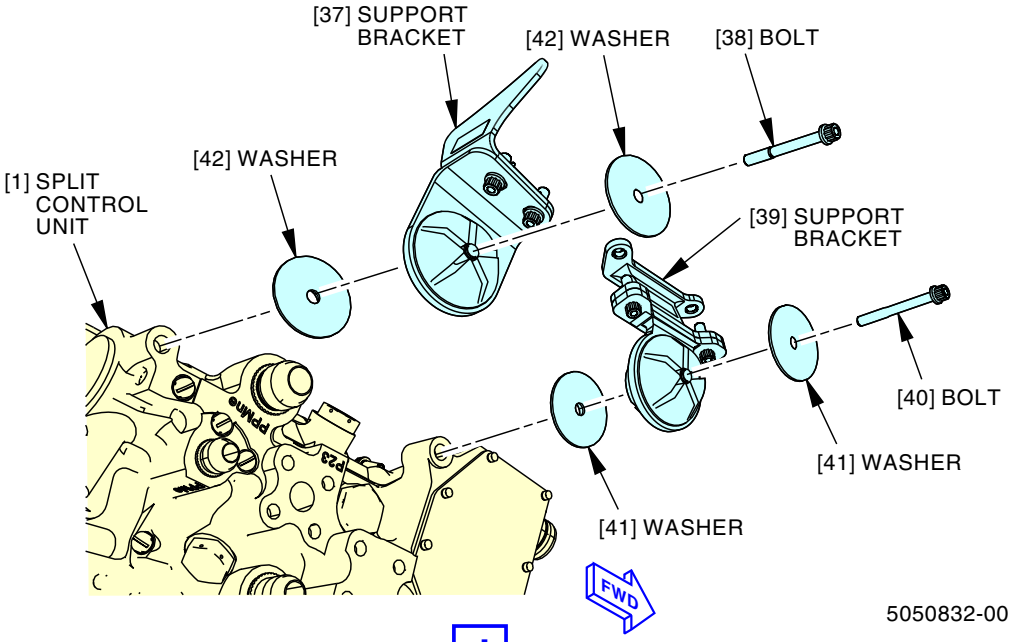
Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 11 of 14)

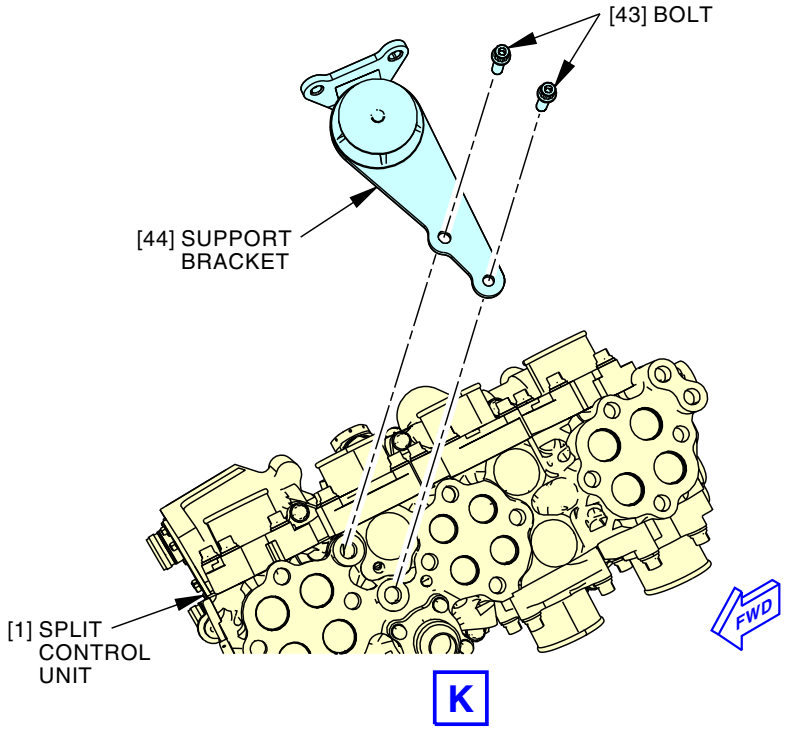
ECCN 9E991 BOEING PROPRIETARY - See title page for details



Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 12 of 14)

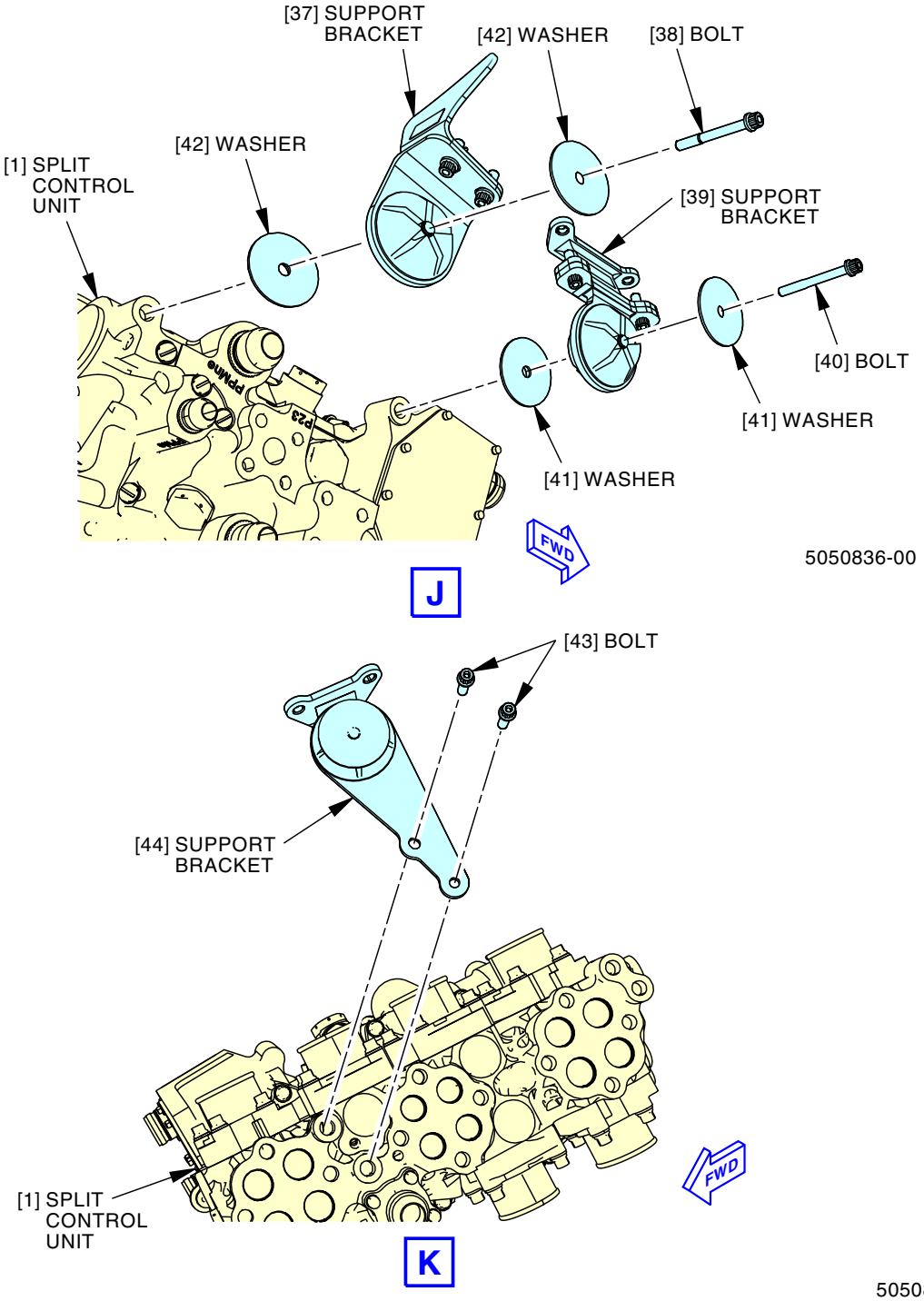
ECCN 9E991 BOEING PROPRIETARY - See title page for details





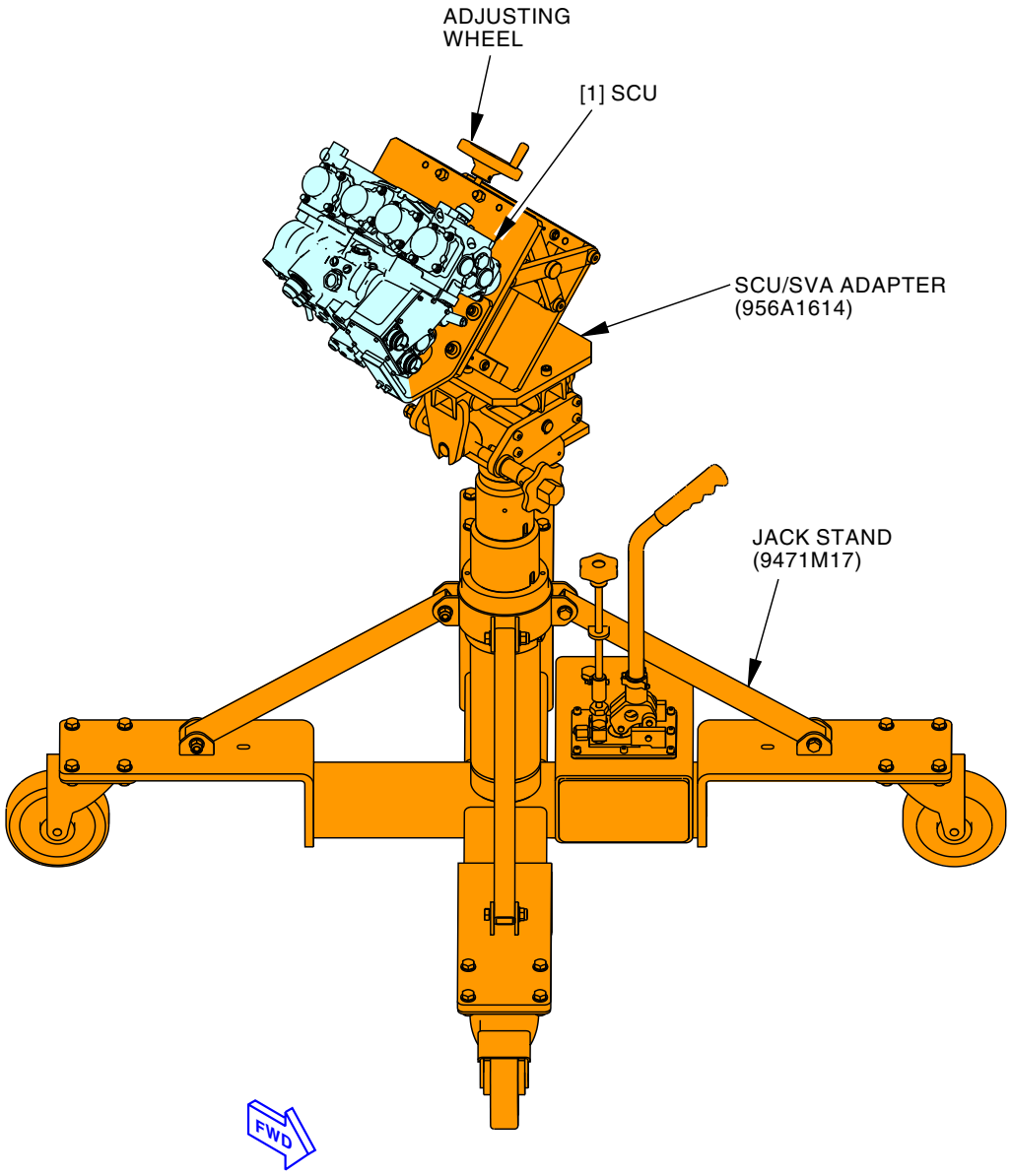
Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 13 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Split Control Unit Installation
Figure 401/73-11-06-990-802-G00 (Sheet 14 of 14)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



5017361-00
2354775 S00061515912_V3

Split Control Unit LRU Fixture Installation
Figure 402/73-11-06-990-803-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-06-400-801-G00

3. Split Control Unit Installation

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to install the Split Control Unit (SCU).

(2) A minimum of two persons are required to handle the SCU if the jack stand and the SCU adapter support equipment are not used.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-23-04-400-801-G00	Fan Frame Module Segment Shrouds Installation (P/B 401)
73-21-09-400-801-G00	Data Entry Plug Installation (P/B 401)
73-21-09-700-801-G00	Data Entry Plug Configuration Check (P/B 601)
73-21-67-400-801-G00	Fuel Manifold Pressure Transducer Installation (P/B 401)
75-24-01-000-801-G00	Low Pressure Turbine Active Clearance Control (LPTACC) Valve Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14501	Adapter- Support Part #: 956A1614G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G02495 [CP8002]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS5689
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	SCU	73-11-06-01-010	SIA ALL
8	Gasket seal	73-11-00-20-140	SIA ALL
9	Gasket seal	73-11-00-20-330	SIA ALL
10	Gasket seal	73-11-00-20-260	SIA ALL
16	Gasket seal	72-00-00-22-460	SIA ALL
19	Gasket seal	73-11-00-05-290	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Prepare for the Installation

SUBTASK 73-11-06-860-011-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-06-860-012-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-06-860-013-G00

(3) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

I. Split Control Unit Installation

SUBTASK 73-11-06-210-002-G00

(1) Check the SCU [1], Low Pressure Turbine Active Clearance Control (LPTACC) valve part numbers, and Data Entry Plug (DEP) configuration to be installed as follows:

SIA ALL; POST LEAP-1B SERVICE BULLETIN 73-0013

NOTE: It is not necessary to do the part number check.

SIA ALL

(a) Examine and record the part number of the installed LPTACC valve.

1) To get access to the LPTACC valve, do this task: Low Pressure Turbine Active Clearance Control (LPTACC) Valve Removal, TASK 75-24-01-000-801-G00.

(b) Examine and record the part number of the SCU [1] to be installed.

(c) Examine and record the hardware configuration data entry plug pin configuration from the DEP, do this task: Data Entry Plug Configuration Check, TASK 73-21-09-700-801-G00.

(d) Install the DEP again (TASK 73-21-09-400-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION THE USE OF ANY SCU AND LPTACC VALVE PART NUMBER AND DEP CONFIGURATION COMBINATION NOT LISTED BELOW IS NOT PERMITTED. THIS CAN LEAD TO INCORRECT COMPONENT AND ENGINE PERFORMANCE AND TOO MUCH ENGINE WEAR.

(e) Make sure that the SCU [1], LPTACC part numbers, and DEP configuration agree with the combinations given in Table 401.

Table 401/73-11-06-993-801-G00 SCU and LPTACC Valve Part Number and DEP Configuration Combination

Allowed Configurations	SCU	LPTACC Valve	Engine Configuration Plug
Pre LEAP-1B Service Bulletin 73-0013	8062-1151	8910-274	Make sure that the DEP hardware configuration is correct (TASK 73-21-09-700-801-G00).
Post LEAP-1B Service Bulletin 73-0013	8062-1180	8910-309	

(f) If the part numbers do not agree, replace the SCU [1] with a unit that agrees with the installed LPTACC valve part number and DEP configuration.

SUBTASK 73-11-06-480-001-G00

WARNING FOLLOW THE INSTRUCTIONS INCLUDED WITH THE JACK STAND, SPL-14500, BEFORE YOU USE THE TOOL. IF YOU DO NOT FOLLOW THE INSTRUCTIONS, DAMAGE TO THE EQUIPMENT OR INJURY TO PERSONNEL CAN OCCUR.

(2) If necessary, install the SCU/SVA adapter, SPL-14501, on the jack stand, SPL-14500.

NOTE: The SCU/SVA weight is 38.1 lb (17.3 kg).

NOTE: If the two-person alternative method is used, you do not have to install the adapter, SPL-14501, and jack stand, SPL-14500.

NOTE: To retract the SCU/SVA adapter, SPL-14501, turn the adjusting wheel counter-clockwise.

SUBTASK 73-11-06-480-002-G00

(3) If necessary, install the SCU [1] on the SCU/SVA adapter, SPL-14501.

SUBTASK 73-11-06-080-001-G00

(4) Remove the protective covers from the open tubes, hoses, ports, and fittings on the SCU [1].

SUBTASK 73-11-06-640-001-G00

(5) Lubricate the threads of these bolts with engine oil, D00599 [CP2442]:

(a) four bolts [5]

(b) four bolts [7]

(c) four bolts [12]

(d) bolt [14]

(e) bolt [17]

(f) bolt [25]

(g) bolt [24]

(h) bolt [27]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(i) bolt [31]

(j) bolt [33]

(k) bolt [35]

(l) bolt [38]

(m) bolt [40]

(n) two bolts [43].

SUBTASK 73-11-06-560-001-G00

(6) If necessary, move the SCU [1] under engine with the jack stand, SPL-14500.

(a) Align the SCU [1] with the support bracket [44].

SUBTASK 73-11-06-410-001-G00

(7) Install and loosely tighten the two bolts [43] that attach the SCU [1] to the support bracket [44].

SUBTASK 73-11-06-410-002-G00

(8) Install and loosely tighten the bolt [38] and two washers [42] that attach the SCU [1] to the support bracket [37].

SUBTASK 73-11-06-410-003-G00

(9) Install and loosely tighten the bolt [40] and two washers [41] that attach the SCU [1] to the support bracket [39].

SUBTASK 73-11-06-080-002-G00

(10) If necessary, disconnect the SCU/SVA adapter, SPL-14501, from the SCU [1].

SUBTASK 73-11-06-010-025-G00

(11) If necessary, move the jack stand, SPL-14500, away from the engine.

SUBTASK 73-11-06-410-006-G00

(12) Put the aft skirt heat shield [32] in position on the SCU [1].

SUBTASK 73-11-06-410-008-G00

(13) Install and loosely tighten the bolt [35] and two washers [36] that attach the aft skirt heat shield [32] and support bracket [30] to the SCU [1].

SUBTASK 73-11-06-410-005-G00

(14) Install and loosely tighten the bolt [31] that attaches the support bracket [29] to the SCU [1].

SUBTASK 73-11-06-410-009-G00

(15) Install and loosely tighten the bolt [33] that attaches the aft skirt heat shield [32] to the SCU [1].

SUBTASK 73-11-06-420-004-G00

(16) Tighten the two bolts [43] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-420-005-G00

(17) Tighten the bolt [38] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-420-006-G00

(18) Tighten the bolt [40] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-420-007-G00

(19) Tighten the bolt [35] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-420-008-G00

(20) Tighten the bolt [31] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-420-009-G00

(21) Tighten the bolt [33] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-06-640-003-G00

(22) Lubricate the new gasket seal [8], new gasket seal [9], and new gasket seal [10] with vaseline, D00672 [CP5070].

SUBTASK 73-11-06-410-020-G00

(23) Install the new gasket seal [8] between the fuel hydraulics manifold [6] and SCU [1].

SUBTASK 73-11-06-410-021-G00

(24) Install the four bolts [7] that attach the fuel hydraulics manifold [6] to the SCU [1].

(a) Tighten the four bolts [7] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-410-022-G00

(25) Install a new gasket seal [10] between the fuel hydraulics manifold [4] and SCU [1].

SUBTASK 73-11-06-400-001-G00

(26) Install the four bolts [5] that attach the fuel hydraulics manifold [4] to the SCU [1].

(a) Tighten the four bolts [5] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-410-023-G00

(27) Install a new gasket seal [9] between the fuel hydraulics manifold [11] and SCU [1].

SUBTASK 73-11-06-410-024-G00

(28) Install the four bolts [12] that attach the fuel hydraulics manifold [11] to the SCU [1].

(a) Tighten the four bolts [12] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

SUBTASK 73-11-06-410-025-G00

(29) Connect the PHS fuel tube-hose [13] to the SCU [1] and triple tighten as follows:

(a) Tighten the PHS fuel tube-hose [13] B-nut to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(b) Loosen the B-nut until it turns freely.

(c) Tighten the B-nut again to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(d) Tighten the B-nut for a third time to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(e) Make sure that the B-nut is fully seated.

(f) If the B-nut is not fully seated, do the above steps again.

SUBTASK 73-11-06-410-010-G00

(30) Install the bolt [24] that attaches the loop clamp [23] and primary non-enriched fuel manifold hose [22] to the support bracket [29].

(a) Tighten the bolt [24] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SUBTASK 73-11-06-410-015-G00

(31) Connect and loosely tighten the primary non-enriched fuel manifold hose [22] to the SCU [1].

SUBTASK 73-11-06-410-011-G00

(32) Install the bolt [25] that attaches the loop clamp [26] and primary enriched fuel tube-hose [21] to the support bracket [29].

(a) Tighten the bolt [25] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SUBTASK 73-11-06-410-016-G00

(33) Connect and loosely tighten the primary enriched fuel tube-hose [21] to the SCU [1].

SUBTASK 73-11-06-420-011-G00

(34) Triple tighten the primary enriched fuel tube-hose [21] B-nut as follows:

(a) Tighten the B-nut to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Loosen the B-nut until it turns freely.

(c) Tighten the B-nut again to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

(d) Tighten the B-nut for a third time to 460 in-lb (51.97 N·m) - 540 in-lb (61.01 N·m).

(e) Make sure that the B-nut is fully seated.

(f) If the B-nut is not fully seated, do the above steps again.

(g) Secure the B-nut with safety cable, G50065 [CP8006], or safety wire, G02495 [CP8002], to the SCU [1] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-06-410-012-G00

(35) Install the bolt [27] that attaches the loop clamp [28] and secondary fuel manifold hose [20] to the support bracket [29].

(a) Tighten the bolt [27] to 32 in-lb (3.62 N·m) - 38 in-lb (4.29 N·m).

SUBTASK 73-11-06-410-017-G00

(36) Connect and loosely tighten the secondary fuel manifold hose [20] to the SCU [1].

SUBTASK 73-11-06-420-012-G00

(37) Triple tighten the secondary fuel manifold hose [20] B-nut as follows:

(a) Tighten the B-nut to 662.4 in-lb (74.84 N·m) - 777.6 in-lb (87.86 N·m).

(b) Loosen the B-nut until it turns freely.

(c) Tighten the B-nut again to 662.4 in-lb (74.84 N·m) - 777.6 in-lb (87.86 N·m).

(d) Tighten the B-nut for a third time to 662.4 in-lb (74.84 N·m) - 777.6 in-lb (87.86 N·m).

(e) Make sure that the B-nut is fully seated.

(f) If the B-nut is not fully seated, do the above steps again.

(g) Secure the B-nut with safety cable, G50065 [CP8006], or safety wire, G02495 [CP8002], to the SCU [1] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-06-420-010-G00

(38) Triple tighten the primary non-enriched fuel manifold hose [22] B-nut as follows:

(a) Tighten the B-nut to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(b) Loosen the B-nut until it turns freely.

(c) Tighten the B-nut again to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(d) Tighten the B-nut for a third time to 938.4 in-lb (106.02 N·m) - 1101.6 in-lb (124.46 N·m).

(e) Make sure that the B-nut is fully seated.

(f) If the B-nut is not fully seated, do the above steps again.

(g) Secure the B-nut with safety cable, G50065 [CP8006], or safety wire, G02495 [CP8002], to the SCU [1] (TASK 70-41-00-400-802-G00).

SUBTASK 73-11-06-410-018-G00

(39) Install a new gasket seal [19] between the P8 fuel tube-hose [18] and SCU [1].

SUBTASK 73-11-06-410-019-G00

(40) Install the four bolts [17] that attach the P8 fuel tube-hose [18] and support bracket [45] to the SCU [1].

(a) Tighten the four bolts [17] to 51.0 in-lb (5.8 N·m) - 59.0 in-lb (6.7 N·m).

SUBTASK 73-11-06-410-013-G00

(41) Install a new gasket seal [16] between the P23 fuel tube-hose [15] and SCU [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-06-410-014-G00

(42) Install the four bolts [14] that attach the P23 fuel tube-hose [15] to the SCU [1].

(a) Tighten the four bolts [14] to 51.0 in-lb (5.76 N·m) - 59.0 in-lb (6.67 N·m).

SUBTASK 73-11-06-420-013-G00

(43) Install the HJ5A electrical harness [46] in the clip of the support bracket [45].

SUBTASK 73-11-06-420-002-G00

(44) Do this task: Fuel Manifold Pressure Transducer Installation, TASK 73-21-67-400-801-G00.

SUBTASK 73-11-06-420-003-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(45) Use the teflon-jawed pliers, STD-664, to connect the SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3] to the SCU [1] (TASK 70-00-01-910-803-G00).

(a) Remove the protective covers from the electrical receptacles on the SCU [1], SCU-SVA-A electrical connector [2], and SCU-SVA-B electrical connector [3].

(b) Connect the SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3] to the SCU [1].

1) Tighten the SCU-SVA-A electrical connector [2] and SCU-SVA-B electrical connector [3].

SUBTASK 73-11-06-410-027-G00

(46) Install the shroud segment 4 (TASK 72-23-04-400-801-G00).

SUBTASK 73-11-06-160-002-G00

(47) Clean the work area and clear the tools and other items.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-06-860-004-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-06-860-005-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-06-410-029-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

K. Split Control Unit Installation Test

SUBTASK 73-11-06-730-002-G00

(1) Do the applicable tests given in the Power Plant Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SPLIT CONTROL UNIT - INSPECTION/CHECK

1. General

A. This procedure has one task.

(1) Split Control Unit Inspection

TASK 73-11-06-210-801-G00

2. Split Control Unit Inspection

Figure 601

A. General

(1) This task gives the instructions to inspect the Split Control Unit (SCU).

(a) The SCU is located on the left side of the engine core.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-06-000-801-G00	Split Control Unit Removal (P/B 401)
73-11-06-400-801-G00	Split Control Unit Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Prepare for the Inspection

SUBTASK 73-11-06-860-007-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-06-860-008-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-06-010-026-G00

(3) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. SCU Inspection

SUBTASK 73-11-06-210-001-G00

(1) Inspect the Split Control Unit (SCU):

(a) Look for signs of fuel leaks between the SCU and the fuel connections.

1) If you see signs of fuel leaks, do the steps in these tasks to replace the gaskets (Split Control Unit Removal, TASK 73-11-06-000-801-G00 and Split Control Unit Installation, TASK 73-11-06-400-801-G00).

(b) Make sure that the SCU is not loose.

1) If the SCU is loose, tighten the bolts that attach the SCU to the engine (Split Control Unit Installation, TASK 73-11-06-400-801-G00).

(c) Look for cracks in the SCU.

1) If you see cracks, replace the SCU (Split Control Unit Removal, TASK 73-11-06-000-801-G00 and Split Control Unit Installation, TASK 73-11-06-400-801-G00).

(d) Make sure that the electrical connectors are not loose.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-06-410-030-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-11-06-860-009-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-06-860-010-G00

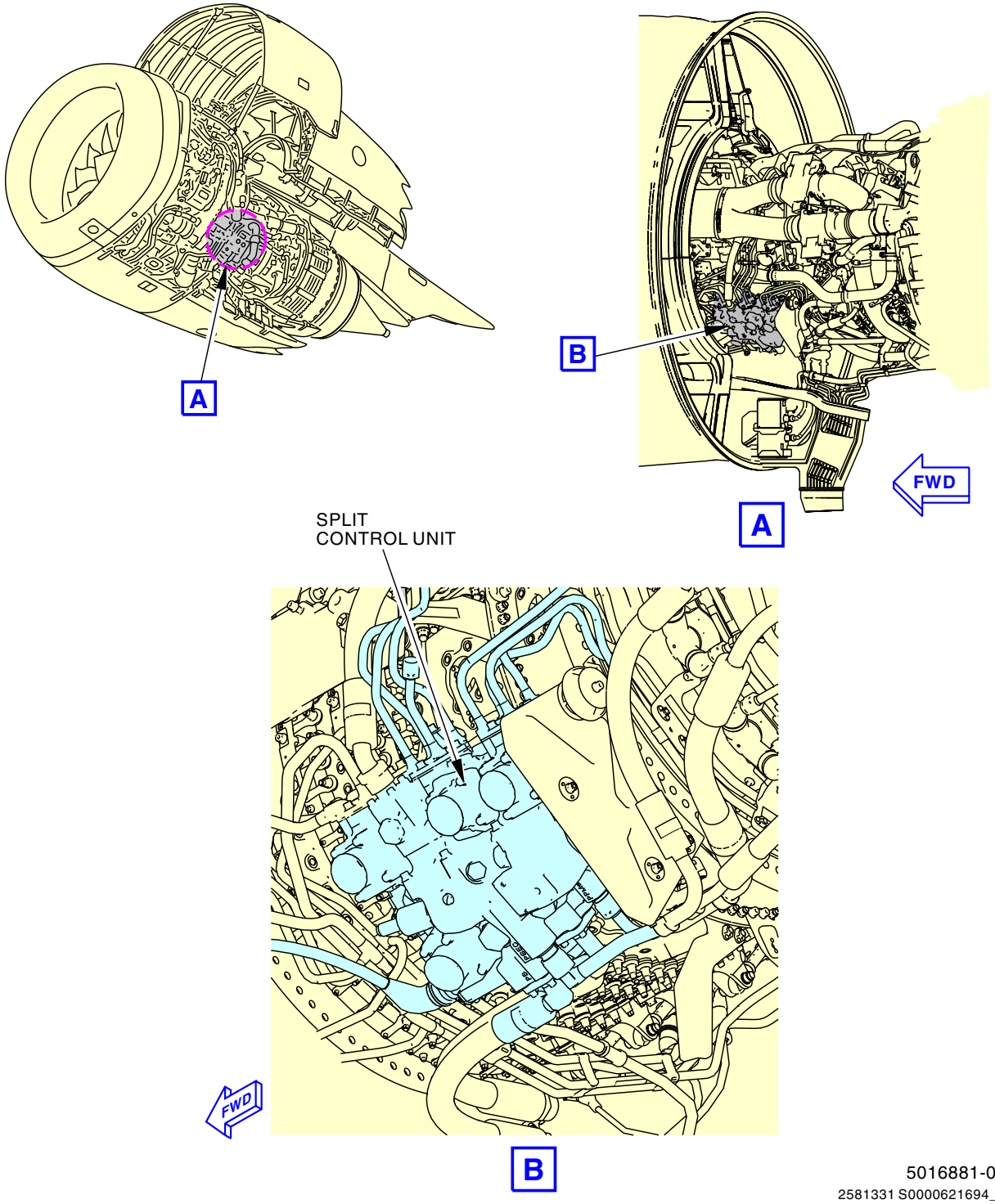
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Split Control Unit Inspection
Figure 601/73-11-06-990-804-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN FUEL SUPPLY HOSE - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) A removal of the main fuel supply hose

(2) An installation of the main fuel supply hose.

TASK 73-11-07-000-801-G00

2. Main Fuel Supply Hose Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the main fuel supply hose.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Preformed packing	73-11-01-01-050	SIA ALL
12	Preformed packing	73-11-01-01-070	SIA ALL
15	Preformed packing	73-11-01-01-070	SIA ALL
16	Preformed packing	73-11-03-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 73-11-07-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-07-860-002-G00

(2) For the applicable engine, 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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	1	C04016	ENGINE 1 IGNITION PWR CONT
E	2	C04017	ENGINE 2 IGNITION PWR CONT

SUBTASK 73-11-07-860-003-G00

(3) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-07-860-016-G00

(4) Do these steps to make sure that the fuel control valve and spar valve stay in the closed position:

(a) Make sure that the L (R) START LEVER switch is in the CUTOFF position.

1) Install a DO NOT OPERATE tag, STD-858, on the L (R) START LEVER switch.

(b) Make sure that the applicable SPAR VALVE CLOSED light, on the P5 forward overhead panel, is on dim.

(c) Make sure that the applicable ENG VALVE CLOSED light, on the P5 forward overhead panel, is on dim.

SUBTASK 73-11-07-010-002-G00

(5) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Main Fuel Supply Hose Removal

SUBTASK 73-11-07-680-001-G00

WARNING	DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION	A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

(1) Drain the main fuel pump as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the main fuel pump.

(b) Remove the drain plug [9] from the main fuel pump as follows:

1) Cut and discard the safety wire [8] from the drain plug [9].

2) Remove the drain plug [9] from the main fuel pump.

3) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

4) Remove and discard the preformed packing [7] from drain plug [9].

(c) Install the drain plug [9] on the main fuel pump as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the drain plug [9] and the new preformed packing [7] with clean oil, D00599 [CP2442].

3) Install the preformed packing [7] on the drain plug [9].

4) Install the drain plug [9] in a correct position on the main fuel pump.

5) Tighten the drain plug [9] to 13 in-lb (1.5 N·m) - 16 in-lb (1.8 N·m).

6) Install the safety wire [8] on the drain plug [9].

(d) Remove the drain plug [11] from the main fuel pump as follows:

1) Cut and discard the safety wire [10] from the drain plug [11].

2) Remove the drain plug [11] from the main fuel pump.

3) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

4) Remove and discard the preformed packing [12] from the drain plug [11].

(e) Install the drain plug [11] on the main fuel pump as follows:

1) Make sure that the mating faces are clean and clear of unwanted materials.

2) Lubricate the threads of the drain plug [11] and the new preformed packing [12] with clean oil, D00599 [CP2442].

3) Install the preformed packing [12] on the drain plug [11].

4) Install the drain plug [11] in a correct position on the main fuel pump.

5) Tighten the drain plug [11] to 190 in-lb (21.5 N·m) - 210 in-lb (23.7 N·m).

6) Install the safety wire [10] on the drain plug [11].

(f) Remove the drain plug [14] from the main fuel pump as follows:

1) Cut and discard the safety wire [13] from the drain plug [14].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Remove the drain plug [14] from the main fuel pump.
3) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
4) Remove and discard the preformed packing [15] from the drain plug [14].

(g) Install the drain plug [14] on the main fuel pump as follows:
1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Lubricate the threads of the drain plug [14] and the new preformed packing [15] with clean oil, D00599 [CP2442].
3) Install the preformed packing [15] on the drain plug [14].
4) Install the drain plug [14] in a correct position on the main fuel pump.
5) Tighten the drain plug [14] to 190 in-lb (21.5 N·m) - 210 in-lb (23.7 N·m).
6) Install the safety wire [13] on the drain plug [14].

SUBTASK 73-11-07-680-002-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

(2) Drain the fuel supply system at the fuel filter bowl as follows:
(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the fuel filter bowl.
(b) Remove the drain plug [17] from the fuel filter bowl as follows:
1) Cut and remove the safety wire [18] from the drain plug [17].
2) Remove the drain plug [17] from the fuel filter bowl.
3) Remove and discard the preformed packing [16] from the groove of the drain plug [17].
4) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(c) Install the drain plug [17] on the fuel filter bowl as follows:
1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Lubricate a new preformed packing [16] with oil, D00599 [CP2442].
3) Install the preformed packing [16] onto the groove of the drain plug [17].

CAUTION MAKE SURE THAT YOU INSTALL THE PREFORMED PACKING. IF YOU DO NOT INSTALL THE PACKING, THE ENGINE OIL LEVEL CAN DECREASE DURING OPERATION. IF THE OIL LEVEL IS TOO LOW, IT CAN CAUSE A SHUTDOWN OF THE ENGINE.

4) Install the drain plug [17] in a correct position on the fuel filter bowl.
5) Tighten the drain plug [17] to 140 in-lb (15.8 N·m) - 150 in-lb (16.9 N·m).
6) Install the safety wire [18] on the drain plug [17].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-07-010-001-G00

(3) Remove the two bolts [2] and saddle clamp [3] that attach the main fuel supply hose [1] to the upper fan case bracket.

(a) Keep the two bolts [2] and saddle clamp [3] for the subsequent installation.

SUBTASK 73-11-07-020-001-G00

(4) Remove the two bolts [2A] and saddle clamp [3] that attach the main fuel supply hose [1] to the lower fan case bracket.

(a) Keep the two bolts [2A] and saddle clamp [3] for the subsequent installation.

SUBTASK 73-11-07-030-001-G00

(5) Disconnect the main fuel supply hose [1] from the main fuel pump as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201, below the main fuel pump.

(b) Loosen the four bolts [4] that attach the main fuel supply hose [1] to the main fuel pump inlet port.

1) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(c) Remove the four bolts [4] and four washers [5].

(d) Remove the main fuel supply hose [1] from the main fuel pump.

(e) Remove and discard the gasket seal [6].

SUBTASK 73-11-07-030-002-G00

(6) Disconnect the main fuel supply hose [1] from the strut fitting as follows:

(a) Use two wrenches to disconnect the main fuel supply hose [1] B-nut from the strut fitting.

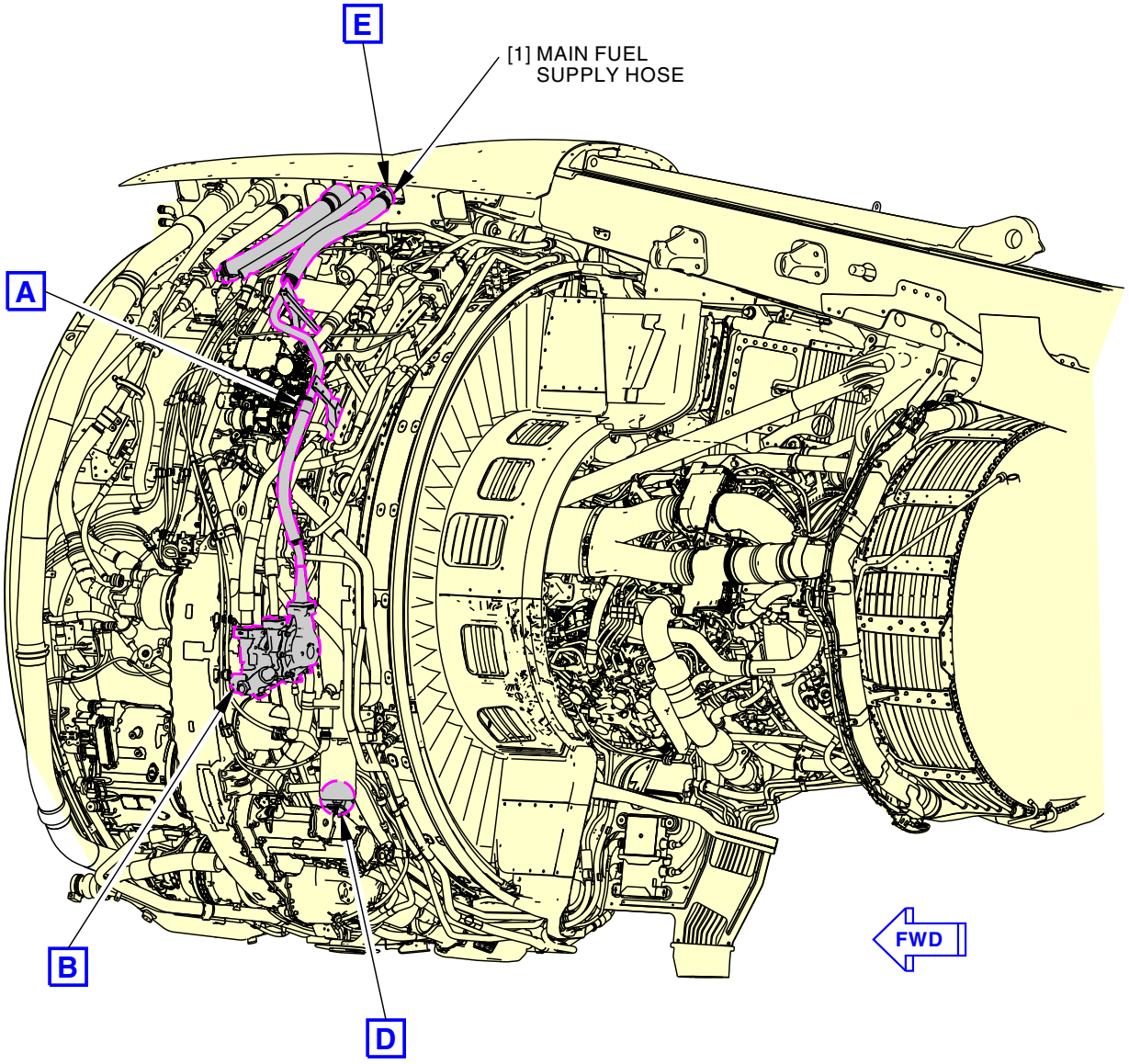
NOTE: Use one wrench to hold the main fuel supply hose and use another wrench to turn the B-nut.

SUBTASK 73-11-07-420-001-G00

(7) Put the protection covers on the main fuel supply hose [1], main fuel pump inlet port, and strut fitting.

——— END OF TASK ———

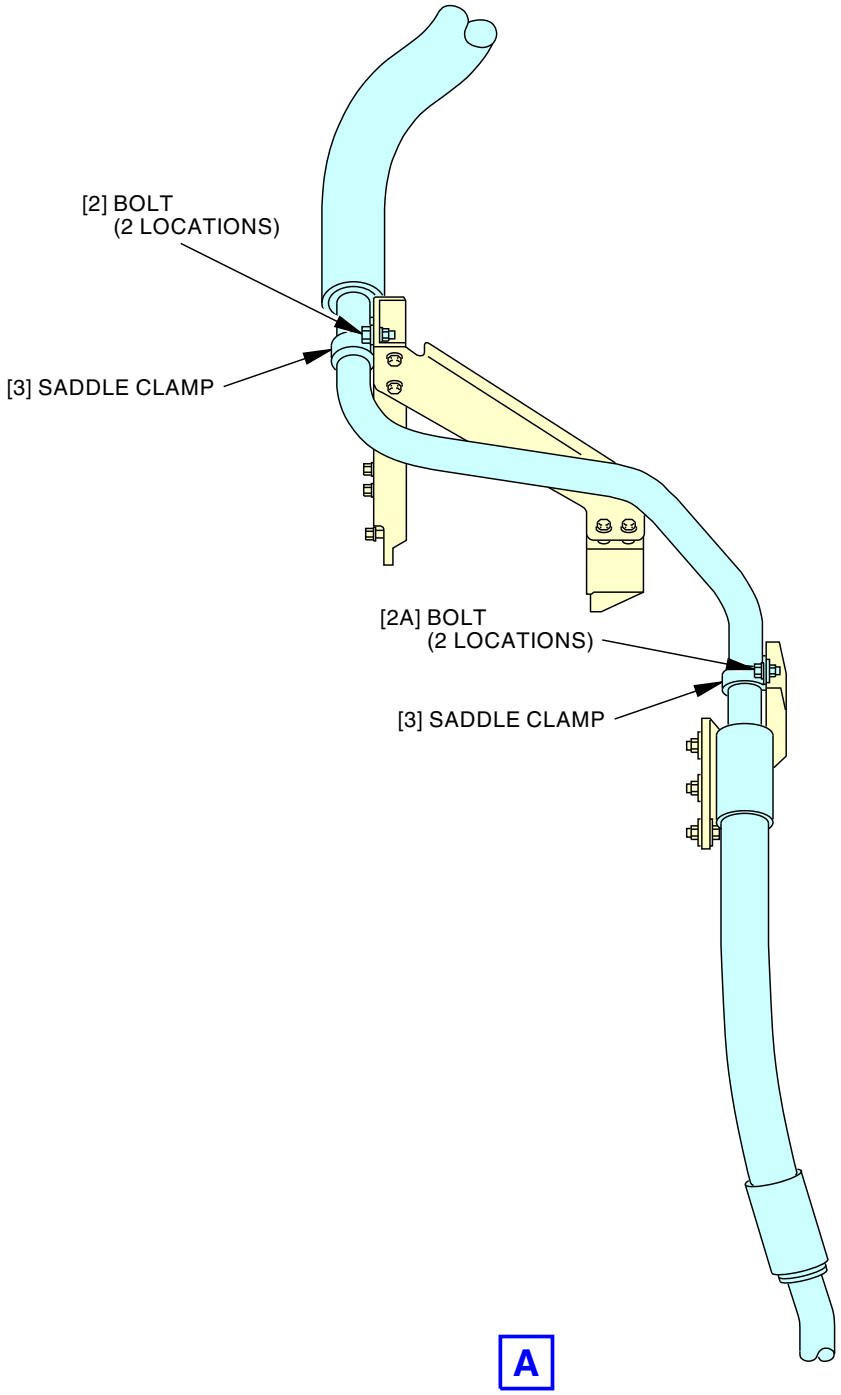
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Main Fuel Supply Hose Installation
Figure 401/73-11-07-990-802-G00 (Sheet 1 of 5)

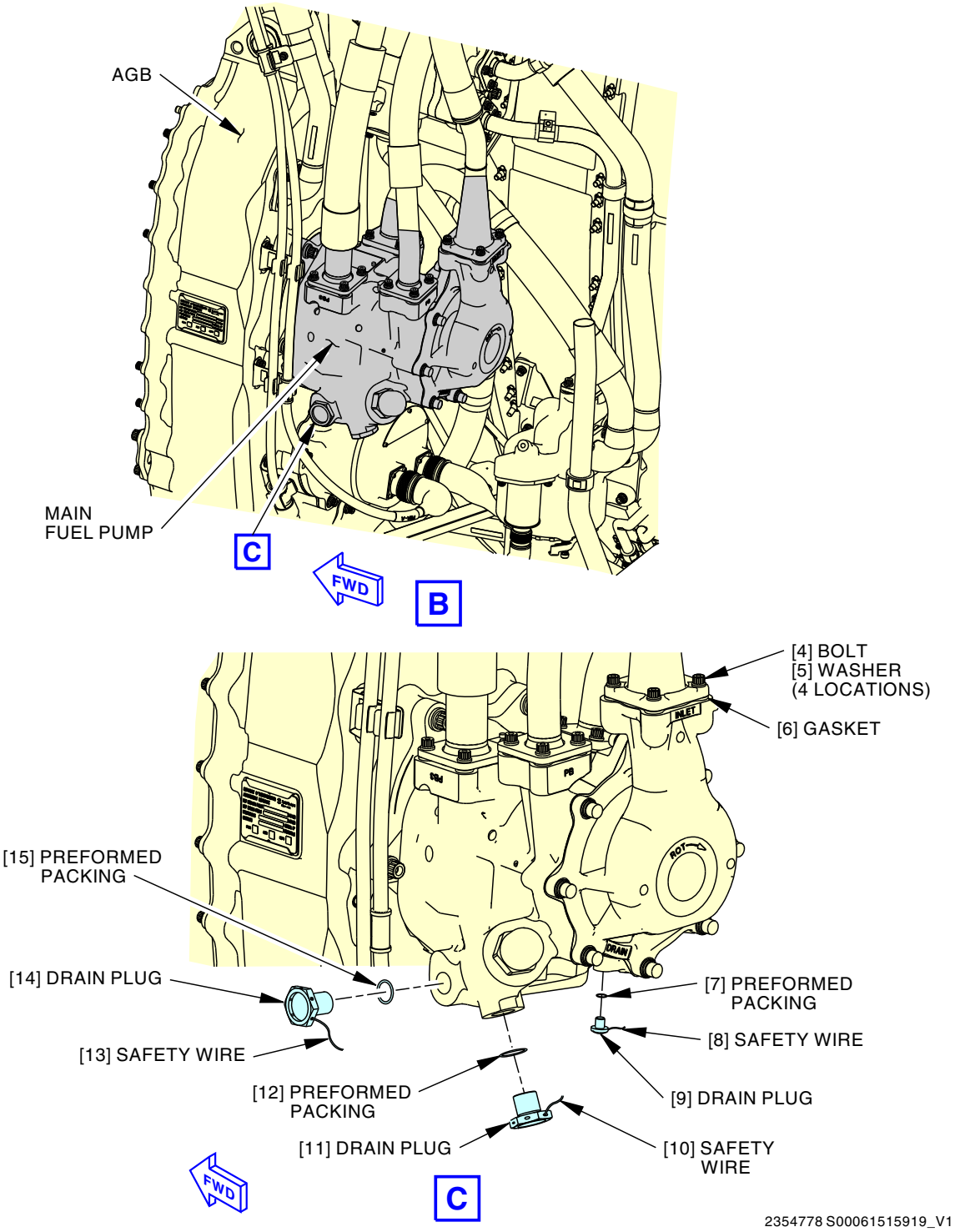
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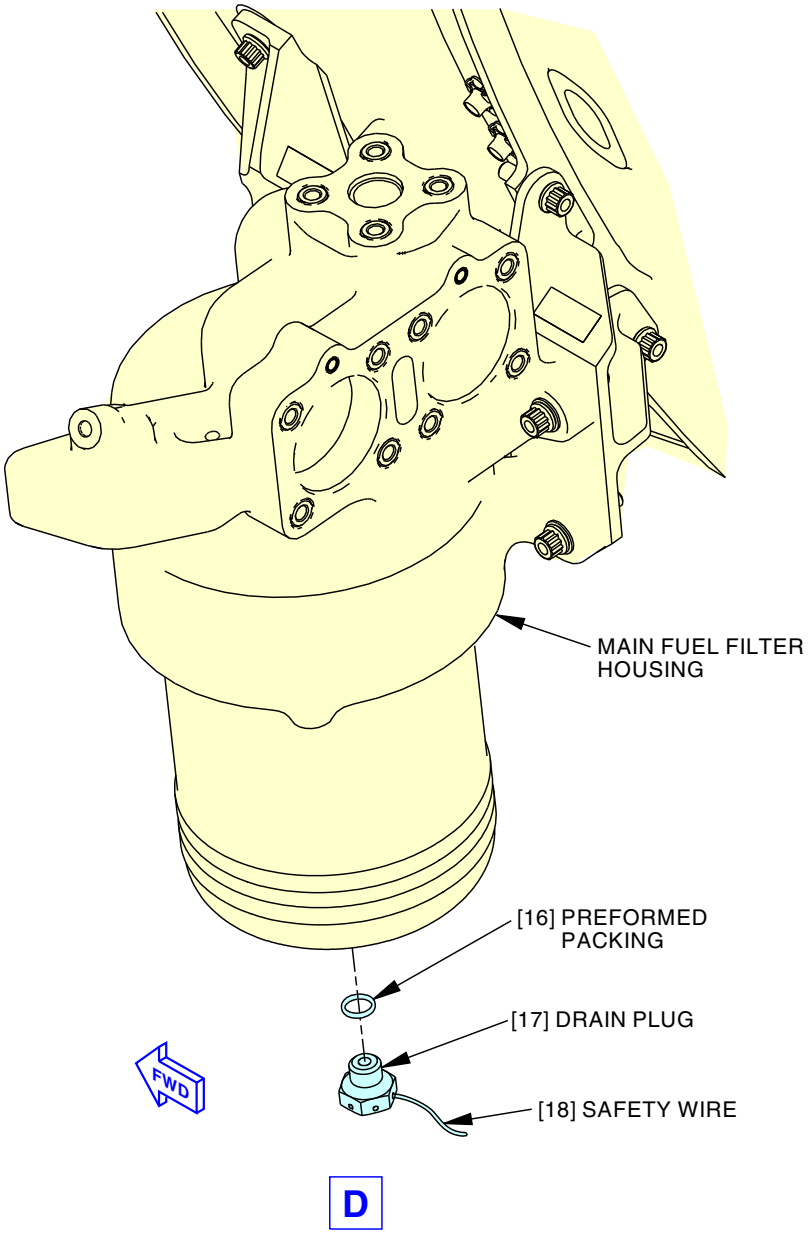
Main Fuel Supply Hose Installation
Figure 401/73-11-07-990-802-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel Supply Hose Installation
Figure 401/73-11-07-990-802-G00 (Sheet 3 of 5)

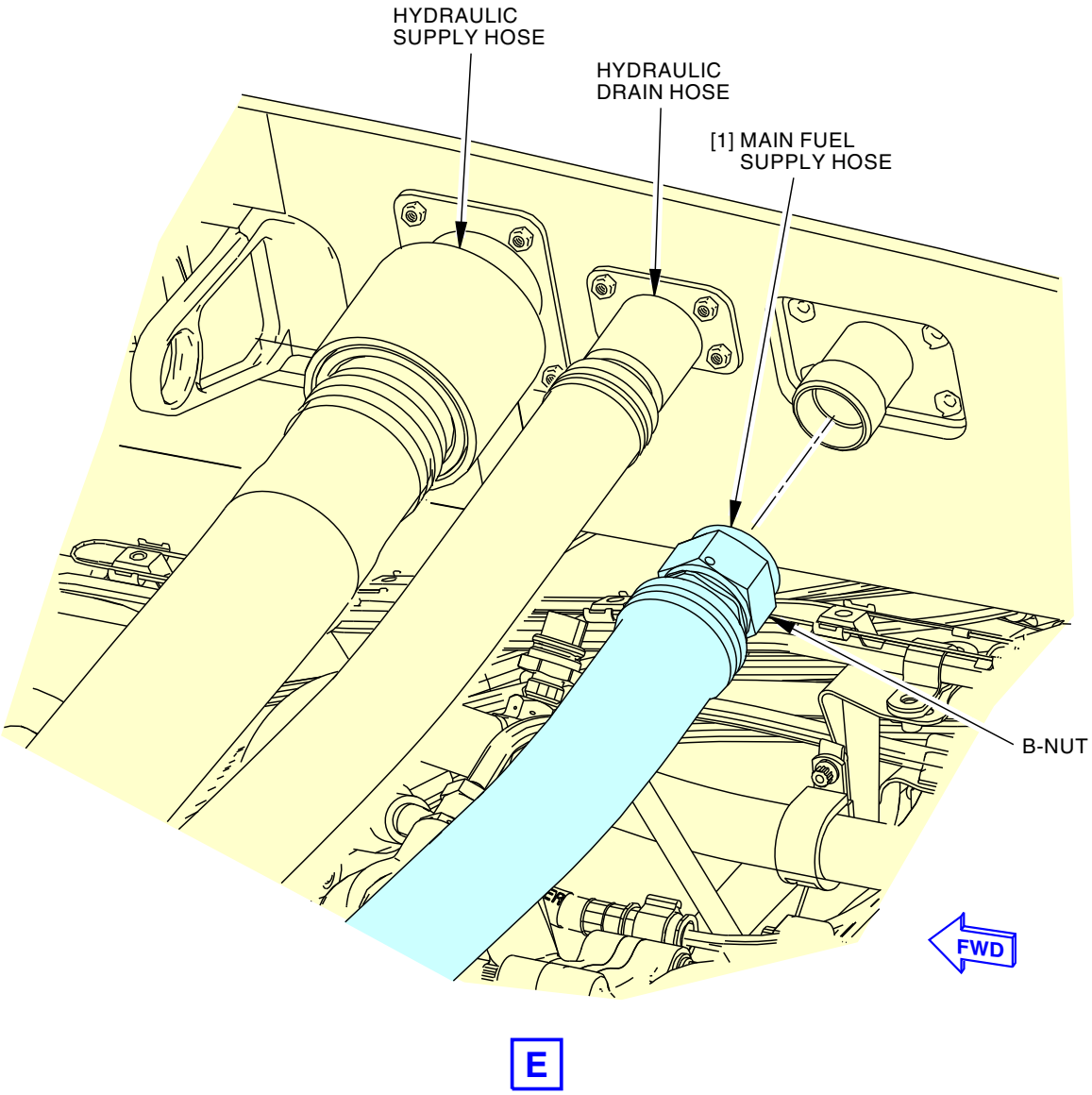
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Main Fuel Supply Hose Installation
Figure 401/73-11-07-990-802-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Main Fuel Supply Hose Installation
Figure 401/73-11-07-990-802-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-07-400-801-G00

3. Main Fuel Supply Hose Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the main fuel supply hose.

(2) Do the tests that are listed in the power plant test reference table after the main fuel supply hose installation.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00006	Compound - Antiseize Pure Nickel Special - Never-Seez NSBT	
D50011	Grease - Perfluoropolyether - Christo-lube MCG111	
D50271 [C02-033]	Lubricant - Petrolatum, Soft	VV-P-236
G00834	Cloth - Lint-free Cotton	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Main fuel supply hose	73-11-51-01-030	SIA ALL
6	Gasket seal	73-11-51-01-025	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Installation

SUBTASK 73-11-07-860-009-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-07-860-018-G00

(2) For the applicable engine, make sure that these circuit breakers are open and have 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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	1	C04016	ENGINE 1 IGNITION PWR CONT
E	2	C04017	ENGINE 2 IGNITION PWR CONT

SUBTASK 73-11-07-860-017-G00

(3) Do these steps to make sure that the fuel control valve and spar valve stay in the closed position:

(a) Make sure that the L (R) START LEVER switch is in the CUTOFF position.

1) Install a DO NOT OPERATE tag, STD-858, on the L (R) START LEVER switch.

(b) Make sure that the applicable SPAR VALVE CLOSED light, on the P5 forward overhead panel, is on dim.

(c) Make sure that the applicable ENG VALVE CLOSED light, on the P5 forward overhead panel, is on dim.

SUBTASK 73-11-07-860-019-G00

(4) On the applicable engine, make sure that these access panels are open:

(TASK 71-11-04-010-801-G00)

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

I. Main Fuel Supply Hose Installation

SUBTASK 73-11-07-430-001-G00

(1) Connect the main fuel supply hose [1] to the strut fitting as follows:

(a) Remove the protection covers from the main fuel supply hose [1] and strut fitting.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Lubricate the main fuel supply hose [1] B-nut with Christo-lube MCG111 grease, D50011.

(c) Connect the main fuel supply hose [1] B-nut to the strut fitting.

(d) Use two wrenches to tighten the main fuel supply hose [1] B-nut to 1140 in-lb (129 N·m) - 1260 in-lb (142.4 N·m).

NOTE: Use one wrench to hold the main fuel supply hose and use another wrench to turn the B-nut.

(e) Tighten the B-nut again to 1140 in-lb (129 N·m) - 1260 in-lb (142.4 N·m).

SUBTASK 73-11-07-430-002-G00

(2) Connect the main fuel supply hose [1] to the main fuel pump inlet port as follows:

(a) Remove the protection cover on the main fuel supply hose [1] and main fuel pump inlet port.

(b) Lubricate the gasket seal [6] with soft petrolatum, D50271 [C02-033].

(c) Lubricate the threads of the four bolts [4] with Never-Seez NSBT compound, D00006.

(d) Put the gasket seal [6] in its position on the main fuel pump inlet port.

(e) Install the main fuel supply hose [1] in its position on the main fuel pump inlet port.

1) Loosely install the four bolts [4] and four washers [5] that attach the main fuel supply hose [1] to the main fuel pump inlet port.

(f) Attach the main fuel supply hose [1] to the fan case brackets.

1) Install the two bolts [2] and saddle clamp [3] that attach the main fuel supply hose [1] to the upper fan case bracket.

2) Install the two bolts [2A] and saddle clamp [3] that attach the main fuel supply hose [1] to the lower fan case bracket.

3) Adjust the main fuel supply hose [1] to distribute the hose equally.

4) Tighten the two bolts [2] and two bolts [2A] to 78 in-lb (8.8 N·m) - 82 in-lb (9.3 N·m).

(g) Tighten the bolts [4] to 50 in-lb (5.6 N·m) - 56 in-lb (6.3 N·m).

SUBTASK 73-11-07-100-001-G00

(3) Use a clean lint-free cloth, G00834, to remove the fuel from the surface of the main fuel supply hose [1].

J. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-07-860-005-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-07-860-006-G00

(2) For the applicable engine, remove the safety tags and close these applicable circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	1	C04016	ENGINE 1 IGNITION PWR CONT
E	2	C04017	ENGINE 2 IGNITION PWR CONT

SUBTASK 73-11-07-860-007-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-07-860-014-G00

(4) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

K. Main Fuel Supply Hose Installation Test

SUBTASK 73-11-07-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FMU FUEL STRAINER DIFFERENTIAL PRESSURE TRANSDUCER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) FMU fuel strainer differential pressure transducer removal

(2) FMU fuel strainer differential pressure transducer installation.

TASK 73-11-09-000-801-G00

2. FMU Fuel Strainer Differential Pressure Transducer Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the FMU fuel strainer differential pressure transducer.

(2) The FMU fuel strainer differential pressure transducer is referred to as the fuel strainer DP transducer.

(3) The fuel strainer DP transducer is installed at the 10:00 o'clock position on the left engine case.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-11-09-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-09-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-09-010-001-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Strainer DP Transducer Removal

SUBTASK 73-11-09-020-001-G00

(1) Remove the fuel strainer DP transducer [1] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel strainer DP transducer [1].

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(b) Disconnect the electrical connector [3] as follows:

1) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the fuel strainer DP transducer [1] (TASK 70-00-01-910-803-G00).

2) Install the protection covers on the electrical receptacle of the fuel strainer DP transducer [1] and the electrical connector [3].

(c) Remove the fuel strainer DP transducer [1] from the FMU [2] as follows:

1) Remove the two bolts [4] that attach the fuel strainer DP transducer [1] to the FMU [2].

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

2) Remove the fuel strainer DP transducer [1] from the FMU [2].

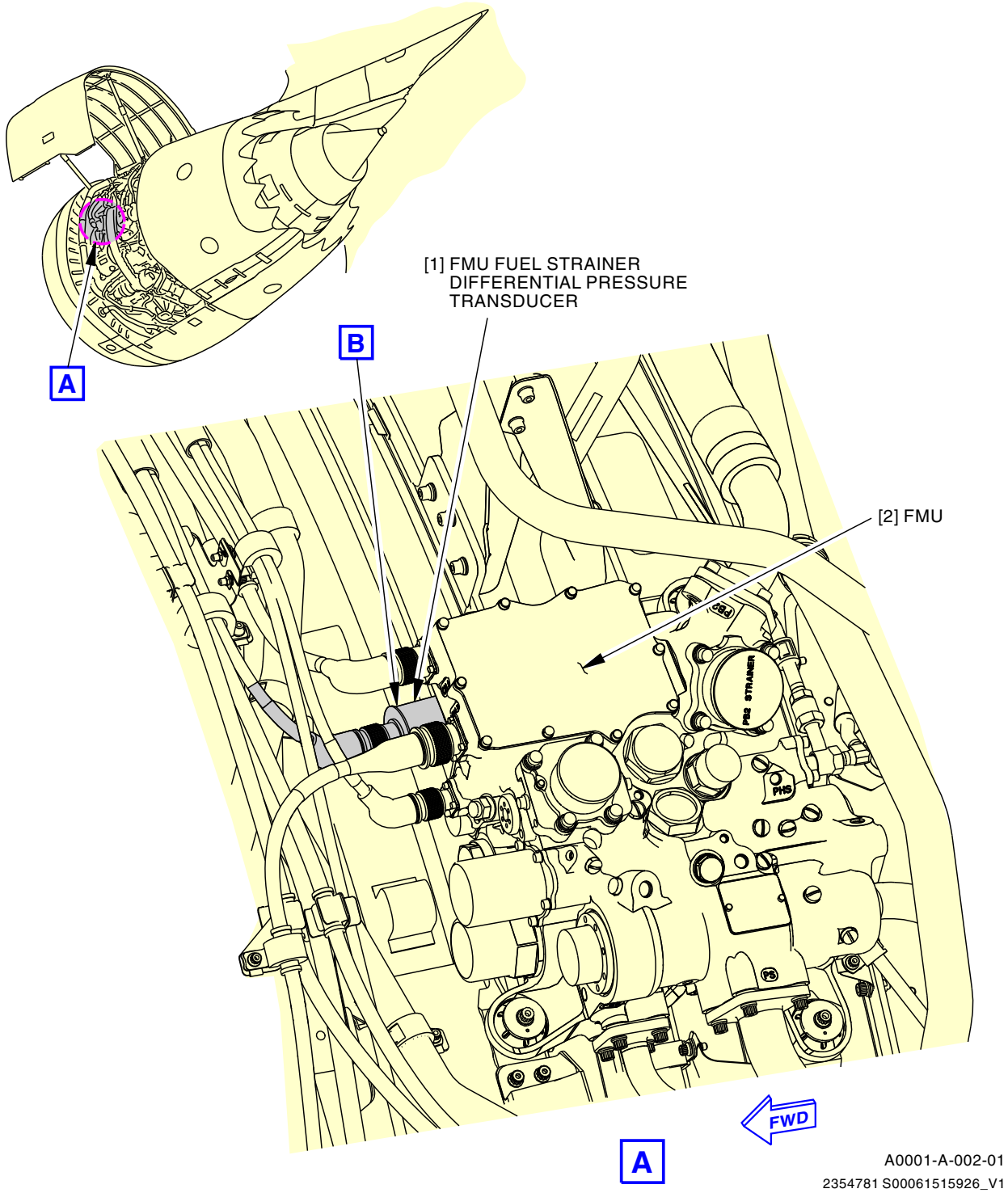
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3) Remove and discard the preformed packing [5], the two back-up rings [7] and the preformed packing [6] from the fuel strainer DP transducer [1].

4) Install the protection covers on the fuel strainer DP transducer [1] and the opening port.

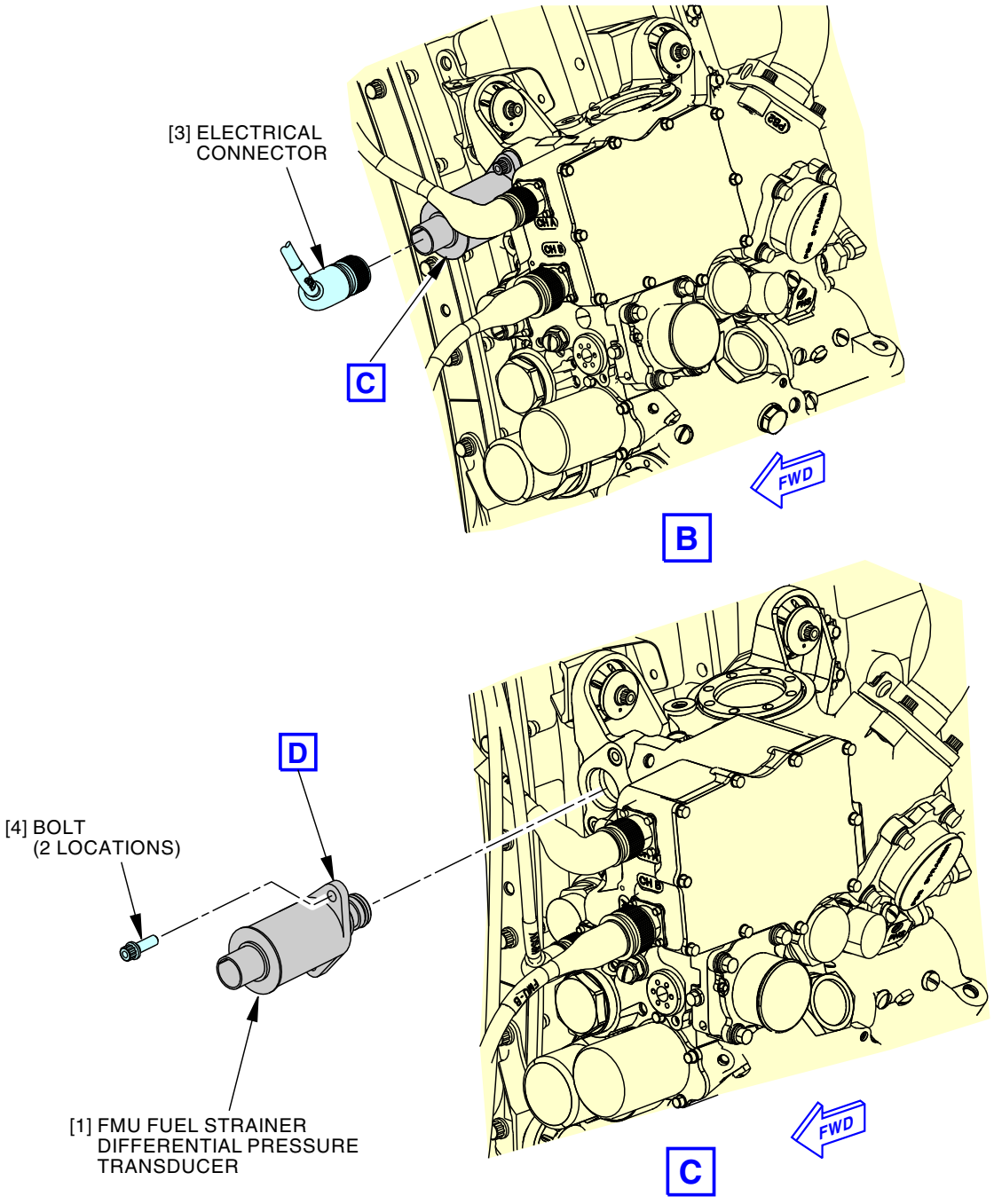
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Strainer DP Transducer Installation
Figure 401/73-11-09-990-801-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



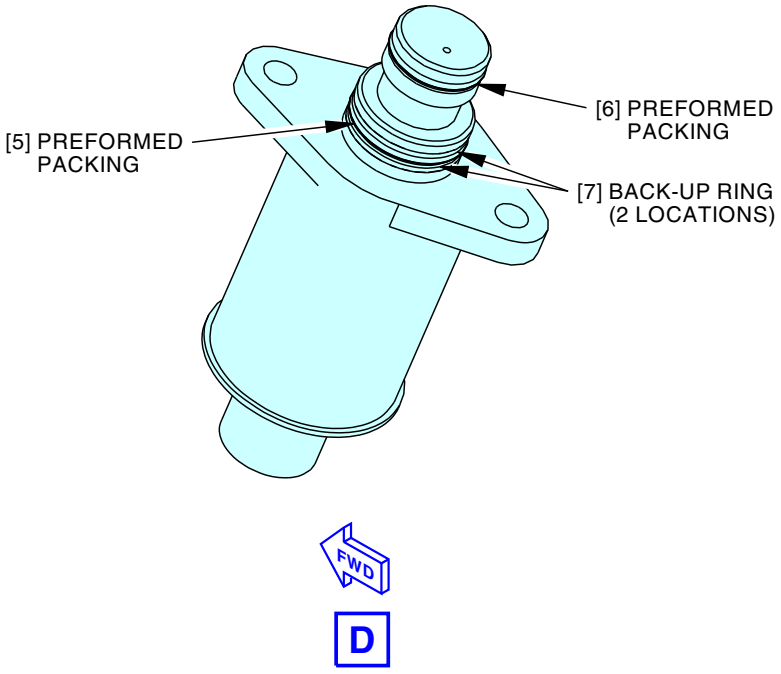
NOTE:

SOME COMPONENTS ARE NOT SHOWN

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Fuel Strainer DP Transducer Installation
Figure 401/73-11-09-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Fuel Strainer DP Transducer Installation
Figure 401/73-11-09-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-09-400-801-G00

3. FMU Fuel Strainer Differential Pressure Transducer Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the FMU fuel strainer differential pressure transducer.

(2) The FMU fuel strainer differential pressure transducer is referred to as the fuel strainer DP transducer.

(3) You must do the tests that are listed in the power plant test reference table after you install the fuel strainer DP transducer.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel strainer DP transducer	73-11-09-01-010	SIA ALL
5	Preformed packing	73-11-09-01-050	SIA ALL
6	Preformed packing	73-11-09-01-030	SIA ALL
7	Back-up ring	73-11-09-01-040	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Fuel Strainer DP Transducer Installation

SUBTASK 73-11-09-420-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Install the fuel strainer DP transducer [1] as follows:

(a) Remove the protection covers from the fuel strainer DP transducer [1] and the opening port.

(b) Make sure that the mating faces are clean and clear of the unwanted materials.

(c) Lubricate the threads of the two bolts [4], the new new preformed packing [5], the two new back-up rings [7] and the preformed packing [6] with engine oil, D00599 [CP2442].

(d) Install the new preformed packing [5], the two new back-up rings [7] and the preformed packing [6] onto the grooves of the fuel strainer DP transducer [1].

(e) Install the fuel strainer DP transducer [1] on the FMU [2].

(f) Install the two bolts [4] that attach the fuel strainer DP transducer [1] to the FMU [2].

(g) Tighten the bolts [4] to 109.25 in-lb (12.3 N·m) - 120.75 in-lb (13.6 N·m).

SUBTASK 73-11-09-410-002-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(2) Connect the electrical connector [3] as follows:

(a) Remove the protective covers from the electrical receptacle of the fuel strainer DP transducer [1] and the electrical connector [3].

(b) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [3] to the fuel strainer DP transducer [1] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-09-100-001-G00

(3) Clean the work area and clear the tools used in the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-09-410-003-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-09-860-003-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-09-860-004-G00

(3) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

J. Fuel Strainer DP Transducer Installation Test

SUBTASK 73-11-09-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FMU FUEL STRAINER DIFFERENTIAL PRESSURE TRANSDUCER - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) FMU Fuel Strainer Differential Pressure Transducer inspection.

TASK 73-11-09-210-801-G00

2. FMU Fuel Strainer Differential Pressure Transducer Inspection

Figure 601

A. General

(1) This task provides the instructions to inspect the FMU fuel strainer differential pressure transducer.

(2) The FMU fuel strainer DP transducer is installed on the fuel metering unit on the left side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-09-000-801-G00	FMU Fuel Strainer Differential Pressure Transducer Removal (P/B 401)
73-11-09-400-801-G00	FMU Fuel Strainer Differential Pressure Transducer Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-11-09-860-005-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-09-860-006-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-09-010-003-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. FMU Fuel Strainer Differential Pressure Transducer Inspection

SUBTASK 73-11-09-210-001-G00

(1) Inspect the FMU fuel strainer Differential Pressure (DP) transducer:

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, do the steps in these tasks to replace the transducer preformed packings (TASK 73-11-09-000-801-G00 and TASK 73-11-09-400-801-G00).

(b) Make sure that the FMU fuel strainer DP transducer is not loose.

1) If the transducer is loose, tighten the bolts that attach the transducer to the FMU (TASK 73-11-09-400-801-G00).

(c) Make sure that the electrical connector is not loose.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-09-410-004-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-09-860-007-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-09-860-008-G00

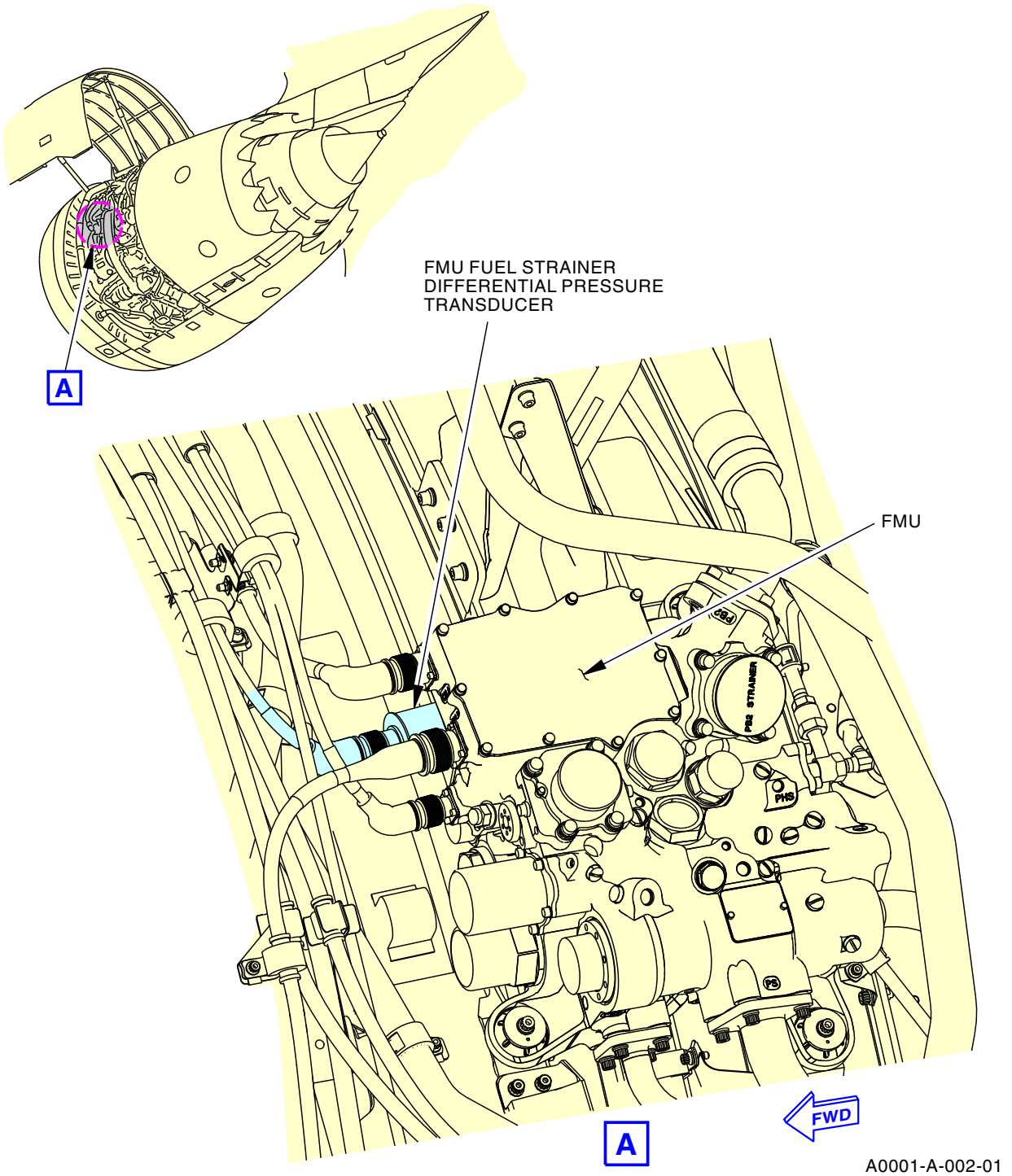
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FMU Fuel Strainer Differential Pressure Transducer Inspection
Figure 601/73-11-09-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FILTER DIFFERENTIAL PRESSURE TRANSDUCER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel filter differential pressure transducer removal

(2) Fuel filter differential pressure transducer installation.

TASK 73-11-10-000-801-G00

2. Fuel Filter Differential Pressure Transducer Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the fuel filter differential pressure transducer.

(2) The fuel filter differential pressure transducer is referred to as the fuel filter DP transducer.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-11-10-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-10-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-10-860-003-G00

(3) For the left engine, open these applicable circuit breakers and install safety tags:

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 73-11-10-860-004-G00

(4) For the right engine, open these applicable circuit breakers and install safety tags:

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 73-11-10-010-001-G00

(5) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Filter Differential Pressure Transducer Removal

SUBTASK 73-11-10-030-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the fuel filter DP transducer [1] (TASK 70-00-01-910-803-G00).

(a) Disconnect the electrical connector [3] from the receptacle of the fuel filter DP transducer [1].

(b) Install the protective covers on the electrical connector [3] and the fuel filter DP transducer [1].

SUBTASK 73-11-10-020-001-G00

(2) Remove the fuel filter DP transducer [1] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel filter DP transducer [1].

(b) Remove the two bolts [4] that attach the fuel filter DP transducer [1] to the main fuel filter housing [2].

(c) Remove the fuel filter DP transducer [1].

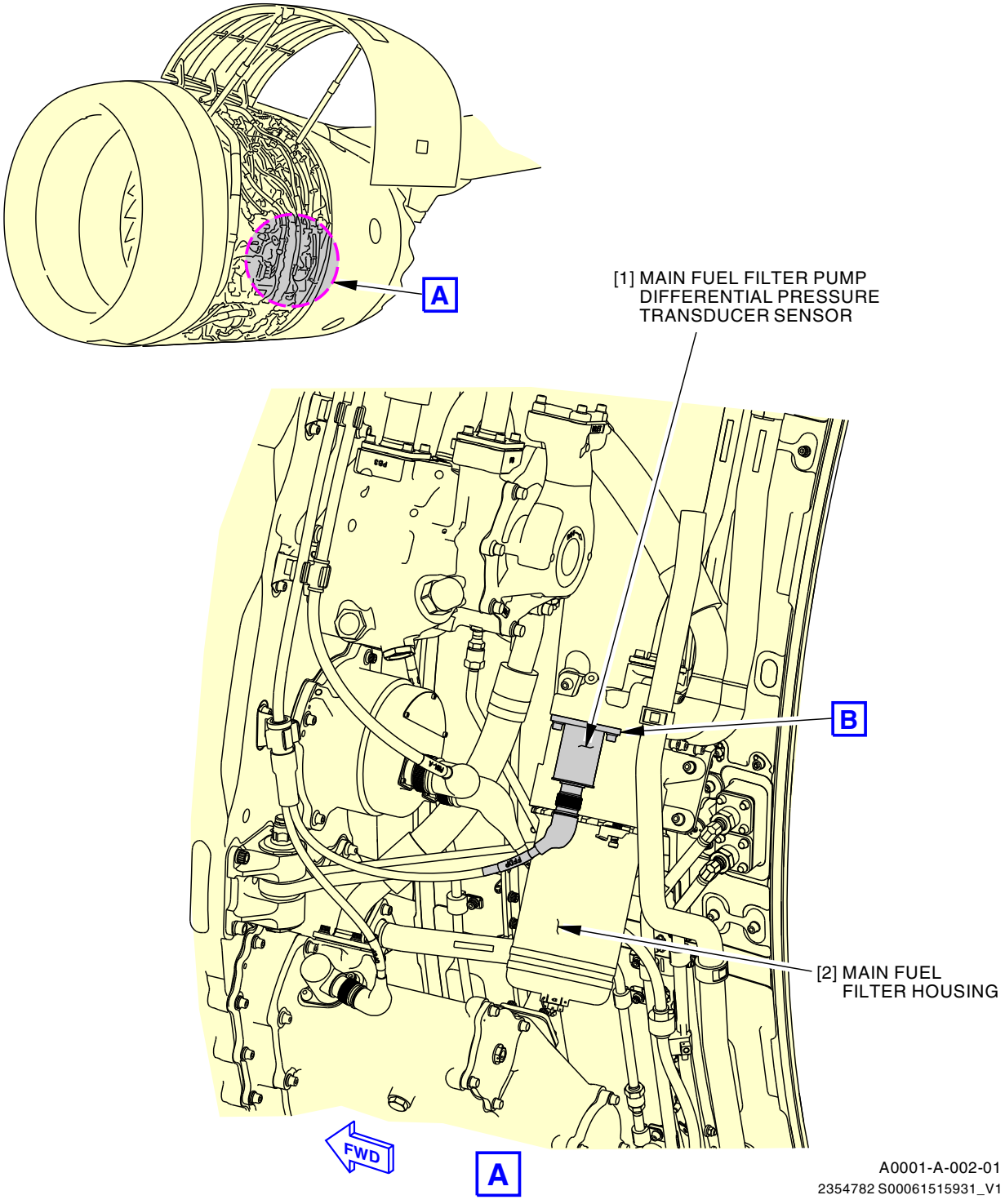
1) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(d) Remove and discard the preformed packing [5], the two back-up rings [7], and the preformed packing [6] from the fuel filter DP transducer [1].

(e) Install the protective covers on the fuel filter DP transducer [1] and the main fuel filter housing [2].

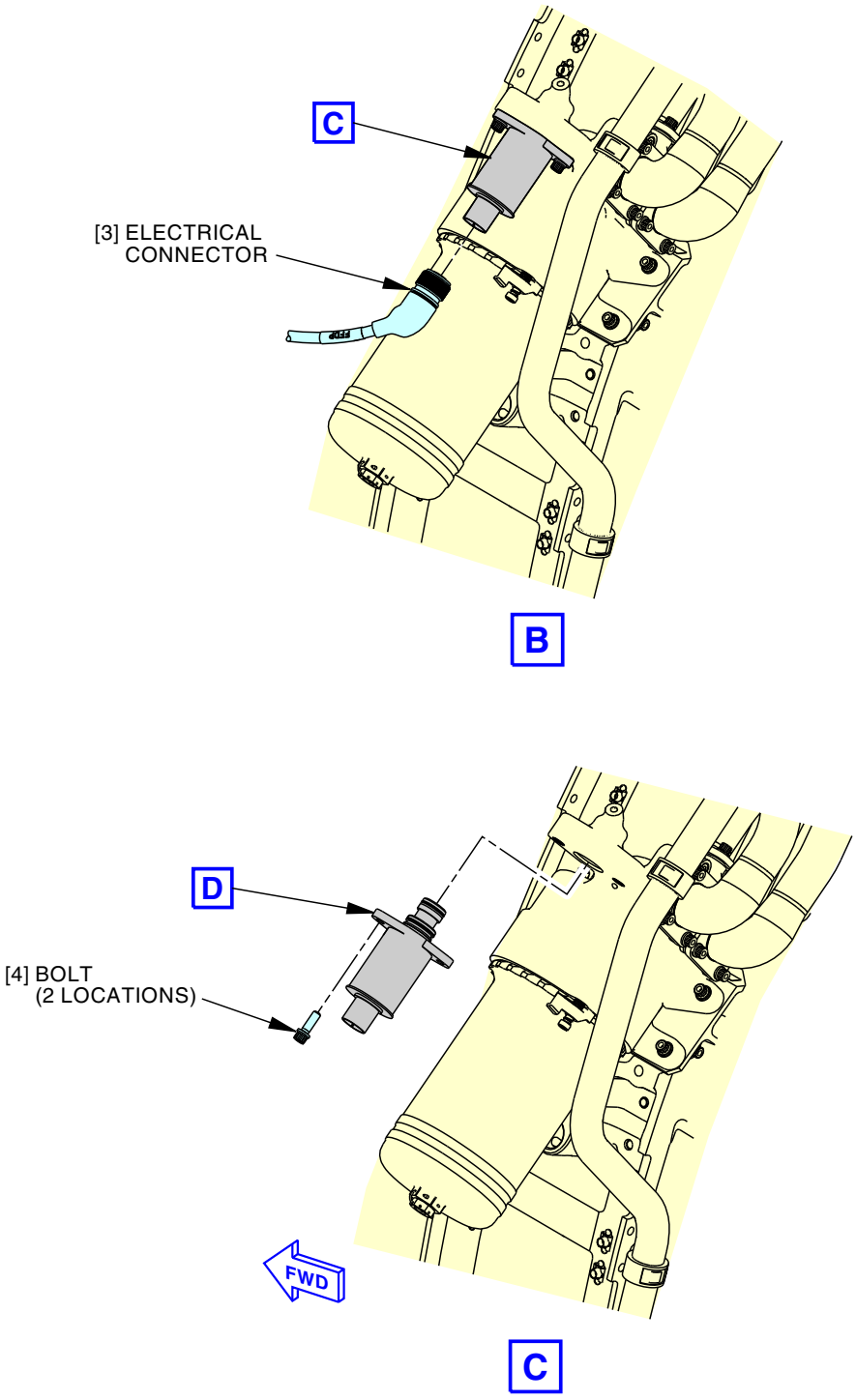
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



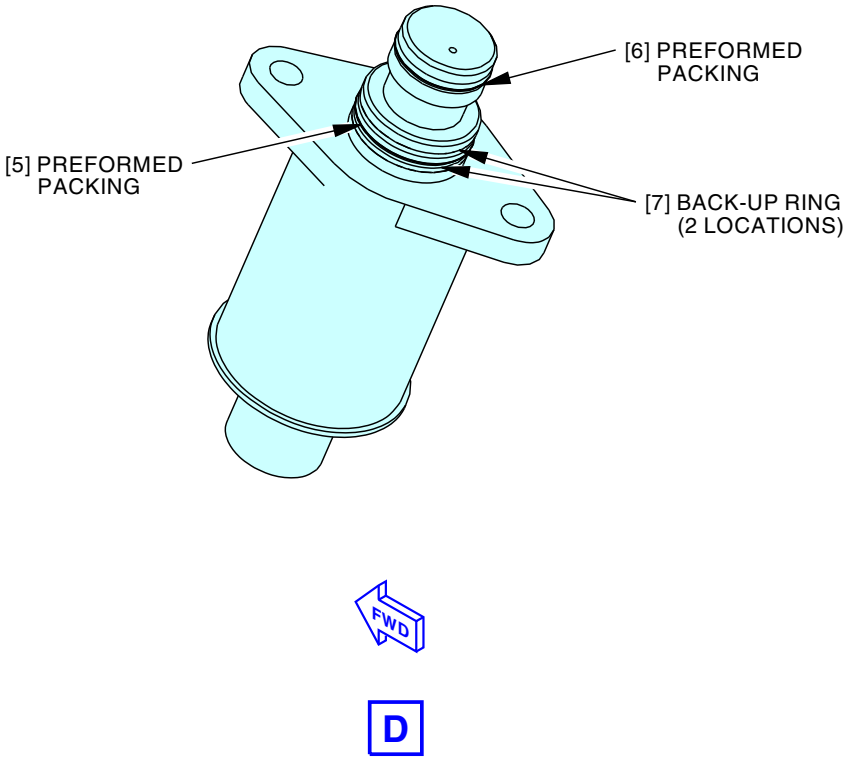
Fuel Filter Differential Pressure Transducer Installation
Figure 401/73-11-10-990-801-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Filter Differential Pressure Transducer Installation
Figure 401/73-11-10-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Fuel Filter Differential Pressure Transducer Installation
Figure 401/73-11-10-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-10-400-801-G00

3. Fuel Filter Differential Pressure Transducer Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the fuel filter differential pressure transducer.

(2) The fuel filter differential pressure transducer is referred to as the fuel filter DP transducer.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel filter DP transducer	73-11-10-01-010	SIA ALL
5	Preformed packing	73-11-10-01-050	SIA ALL
6	Preformed packing	73-11-10-01-030	SIA ALL
7	Back-up ring	73-11-10-01-040	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Fuel Filter Differential Pressure Transducer Installation

SUBTASK 73-11-10-540-001-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Install the fuel filter DP transducer [1] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the protective covers from the fuel filter DP transducer [1] and the main fuel filter housing [2].

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the two bolts [4], the new preformed packing [5], the two new back-up rings [7], and the new preformed packing [6] with the oil, D00599 [CP2442].

(d) Install the new preformed packing [5], the two new back-up rings [7], and the new preformed packing [6] onto the grooves of the fuel filter DP transducer [1].

(e) Install the fuel filter DP transducer [1] on the main fuel filter housing [2].

(f) Install the two bolts [4] that attach the fuel filter DP transducer [1] to the main fuel filter housing [2].

(g) Tighten the bolts [4] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

SUBTASK 73-11-10-430-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(2) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [3] as follows (TASK 70-00-01-910-803-G00):

(a) Remove the protective covers from the electrical connector [3] and the fuel filter DP transducer [1].

(b) Connect the electrical connector [3] to the fuel filter DP transducer [1].

(c) Tighten the electrical connector [3].

SUBTASK 73-11-10-860-005-G00

(3) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-10-860-006-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-10-860-007-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-10-860-008-G00

(3) For the left engine, remove the safety tags and close these applicable circuit breakers:

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 73-11-10-860-009-G00

(4) For the right engine, remove the safety tags and close these applicable circuit breakers:

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 73-11-10-410-001-G00

(5) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Fuel Filter Differential Pressure Transducer Installation Test

SUBTASK 73-11-10-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FILTER DIFFERENTIAL PRESSURE TRANSDUCER - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel Filter Differential Pressure Transducer inspection.

TASK 73-11-10-210-801-G00

2. Fuel Filter Differential Pressure Transducer Inspection

(Figure 601)

A. General

(1) This task provides the instructions to inspect the fuel filter differential pressure transducer.

(2) The fuel filter differential pressure transducer is located on the main fuel filter housing on the left side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-10-000-801-G00	Fuel Filter Differential Pressure Transducer Removal (P/B 401)
73-11-10-400-801-G00	Fuel Filter Differential Pressure Transducer Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-11-10-860-010-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-10-860-011-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-10-010-002-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Filter Differential Pressure Transducer Inspection

SUBTASK 73-11-10-210-001-G00

(1) Inspect the fuel filter Differential Pressure (DP) transducer:

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, do the steps in these tasks to replace the transducer preformed packings (TASK 73-11-10-000-801-G00 and TASK 73-11-10-400-801-G00).

(b) Make sure that the fuel filter DP transducer is not loose.

1) If the transducer is loose, tighten the bolts that attach the transducer to the main fuel filter housing (TASK 73-11-10-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-10-410-002-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-11-10-860-012-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-10-860-013-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

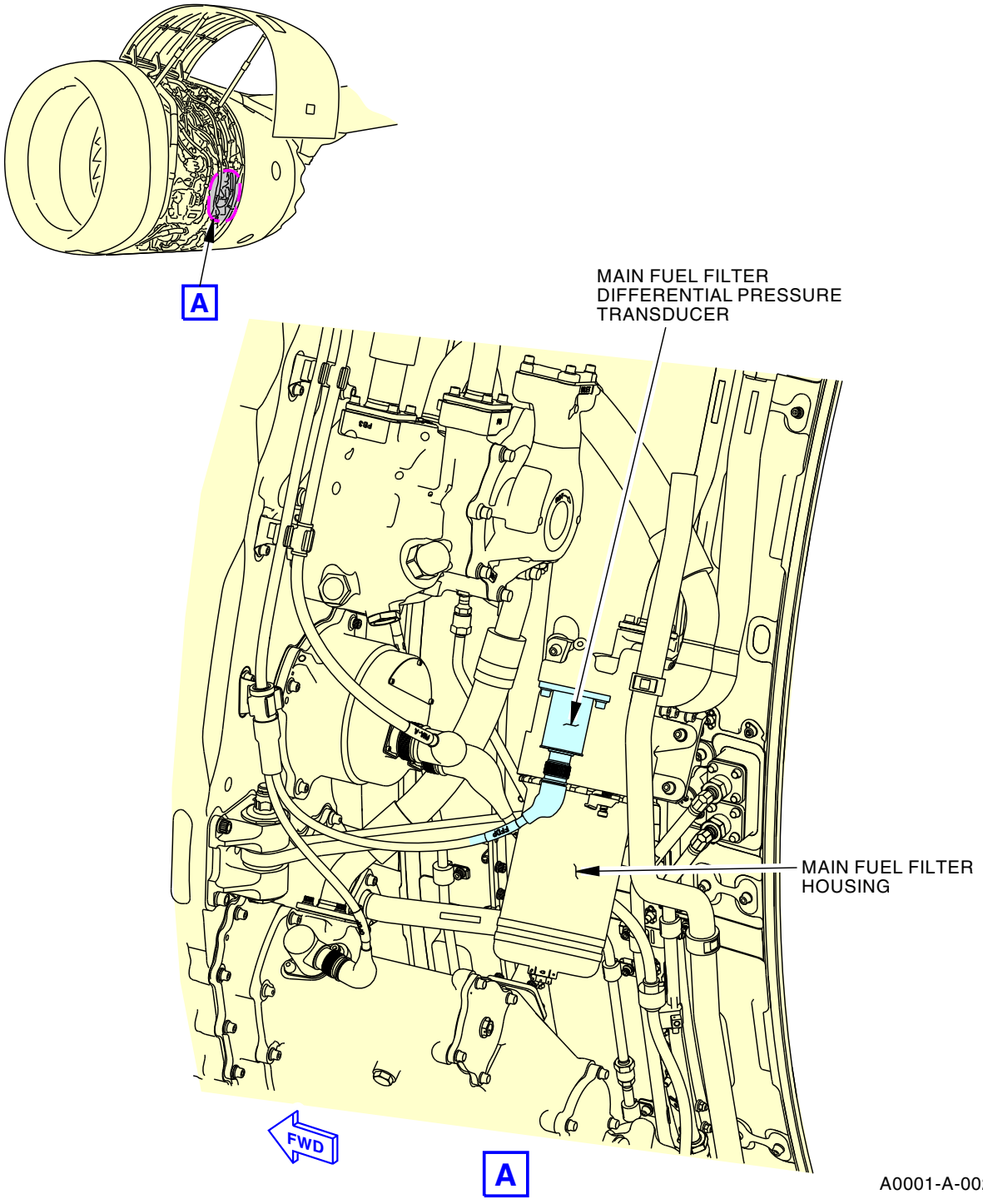
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Filter Differential Pressure Transducer Inspection
Figure 601/73-11-10-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SERVO FUEL HEATER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Servo fuel heater removal

(2) Servo fuel heater installation.

TASK 73-11-11-000-801-G00

2. Servo Fuel Heater Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the servo fuel heater.

B. References

Reference	Title
12-13-11-100-801	Engine Oil System Flushing (P/B 301)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-11-11-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-11-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-11-860-003-G00

(3) For the left engine, open these applicable circuit breakers and install safety tags:

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 73-11-11-860-004-G00

(4) For the right engine, open these applicable circuit breakers and install safety tags:

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 73-11-11-010-001-G00

(5) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-11-11-680-001-G00

WARNING BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

WARNING DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

WARNING DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. USE THE OIL IN AN AREA WITH GOOD VENTILATION. THE OIL IS POISONOUS AND CAN BE ABSORBED THROUGH YOUR SKIN. THE OIL FUMES CAN IRRITATE YOUR RESPIRATORY TRACT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(6) Drain the oil from the oil supply line (TASK 12-13-11-100-801).

NOTE: The oil line supply drain [39] is above the lubrication unit on the oil supply.

SUBTASK 73-11-11-680-002-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

CAUTION A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

(7) Drain the fuel from the main fuel filter (TASK 73-11-02-000-801-G00).

NOTE: The main fuel filter cartridge drain [38] is on the main fuel filter bowl.

G. Servo Fuel Heater Removal

SUBTASK 73-11-11-860-005-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the servo fuel heater.

SUBTASK 73-11-11-020-006-G00

(2) Disconnect the fuel tube [18] from the servo fuel heater [1] as follows:

(a) Remove the four bolts [19] from the fuel tube [18].

(b) Disconnect the fuel tube [18] from the servo fuel heater [1].

(c) Remove and discard the gasket seal [20].

(d) Install the protective covers on the openings.

SUBTASK 73-11-11-020-010-G00

(3) Disconnect the fuel tube [18] from the main fuel filter housing as follows:

(a) Remove the four bolts [34] from the fuel tube [18].

(b) Disconnect the fuel tube [18] from the main fuel filter housing.

(c) Remove and discard the gasket seal [35].

(d) Remove the bolt [37] and clamp [36].

(e) Install the protective covers on the openings.

SUBTASK 73-11-11-020-007-G00

(4) Disconnect the fuel tube [21] from the servo fuel heater [1] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the four bolts [22] from the fuel tube [21].

(b) Disconnect the fuel tube [21] from the servo fuel heater [1].

(c) Remove and discard the gasket seal [23].

(d) Install the protective covers on the openings.

SUBTASK 73-11-11-020-008-G00

WARNING DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

WARNING DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(5) Disconnect the oil tube [24] from the servo fuel heater [1] as follows:

(a) Remove the four bolts [25] from the oil tube [24].

(b) Disconnect the oil tube [24] from the servo fuel heater [1].

(c) Remove and discard the gasket seal [26].

(d) Install the protective covers on the openings.

SUBTASK 73-11-11-020-009-G00

(6) Disconnect the oil tube [27] from the servo fuel heater [1] as follows:

(a) Remove the four bolts [28] from the oil tube [27].

(b) Disconnect the oil tube [27] from the servo fuel heater [1].

(c) Remove and discard the gasket seal [29].

(d) Install the protective covers on the openings.

SUBTASK 73-11-11-010-002-G00

(7) Remove the servo fuel heater [1] from the mounting brackets as follows:

(a) Remove the three bolts [30] with integrated washers from the servo fuel heater [1].

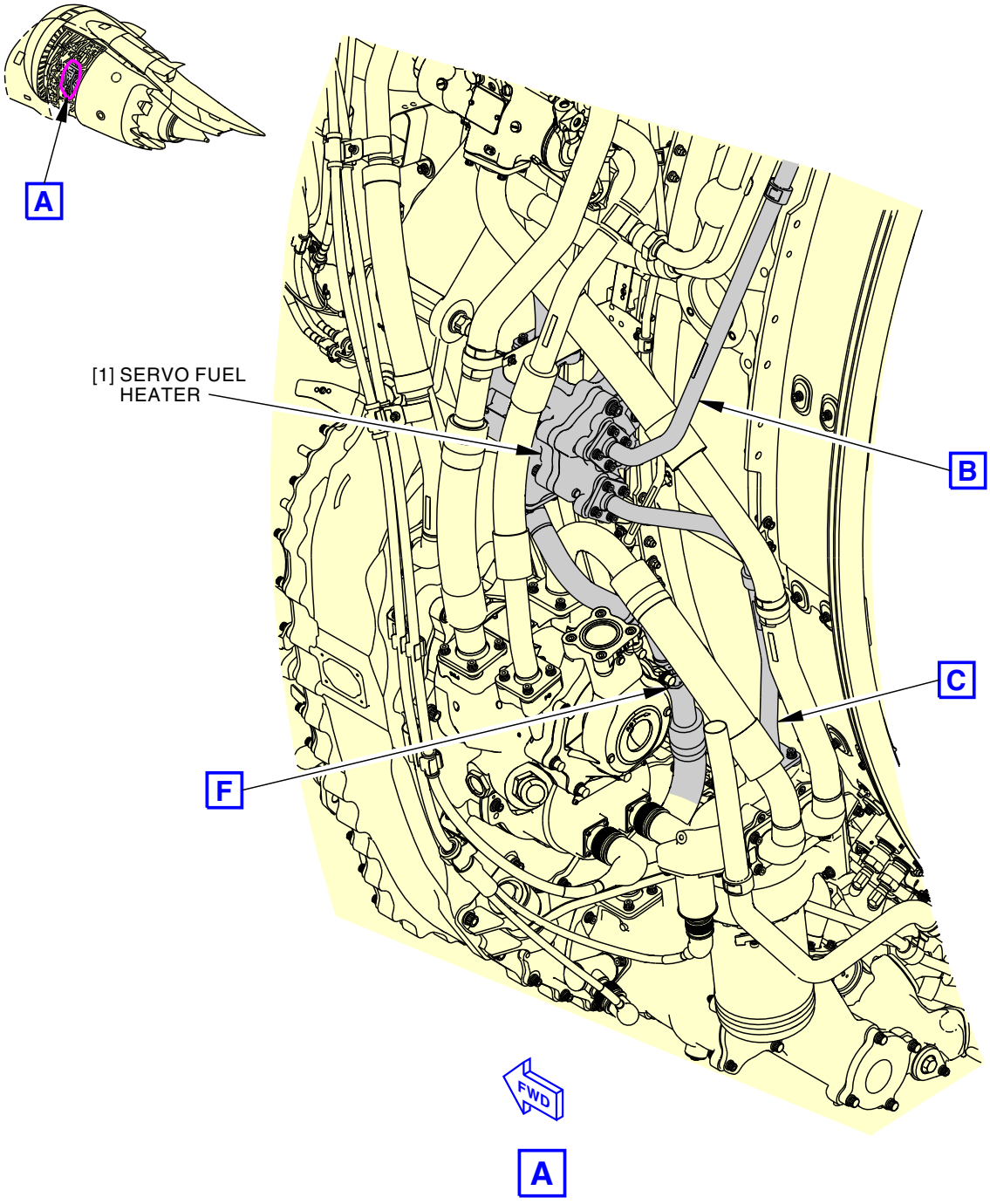
(b) Remove the servo fuel heater [1] from the mounting bracket [31], the mounting bracket [32] and the mounting bracket [33].

SUBTASK 73-11-11-480-001-G00

(8) Install the protective covers on the openings for the fuel tubes, the main fuel pump [2], the main fuel/oil heat exchanger [3], the FMU, and the servo fuel heater [1].

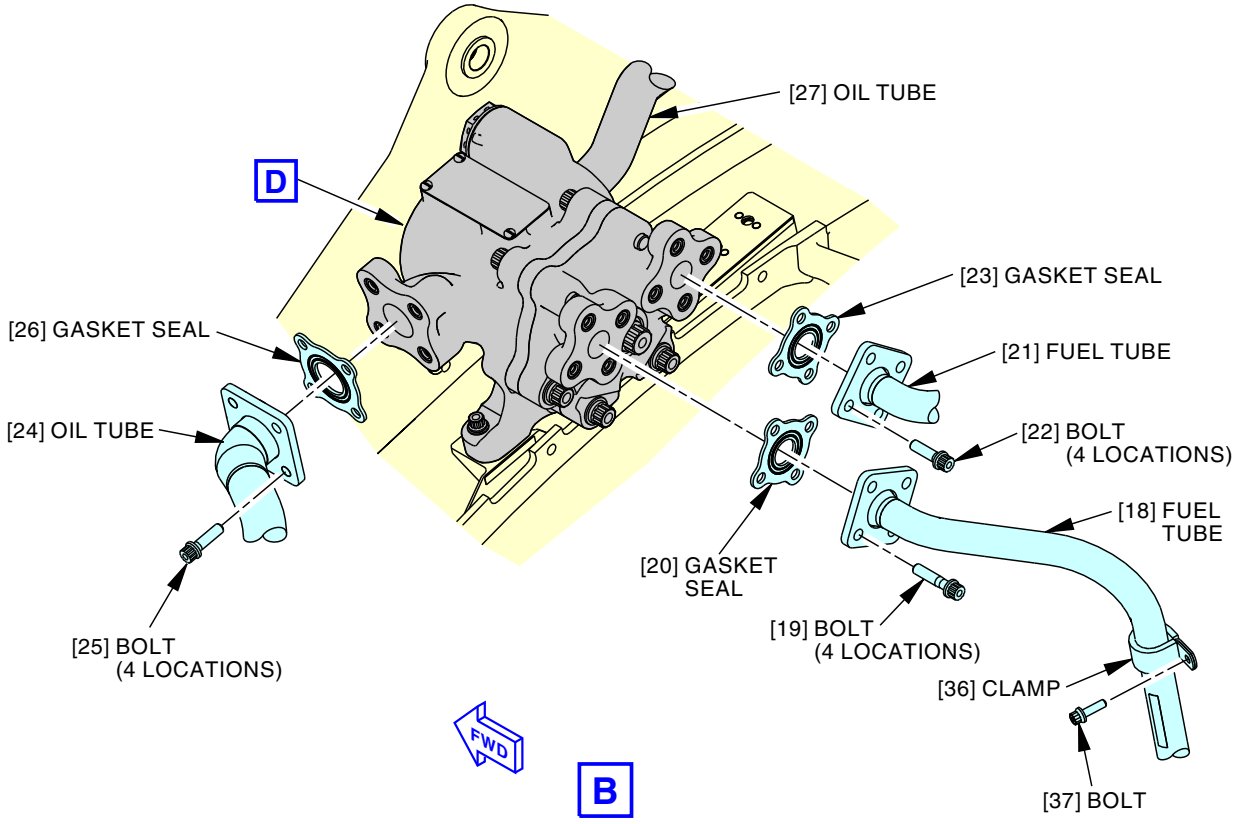
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Servo Fuel Heater Installation
Figure 401/73-11-11-990-801-G00 (Sheet 1 of 5)

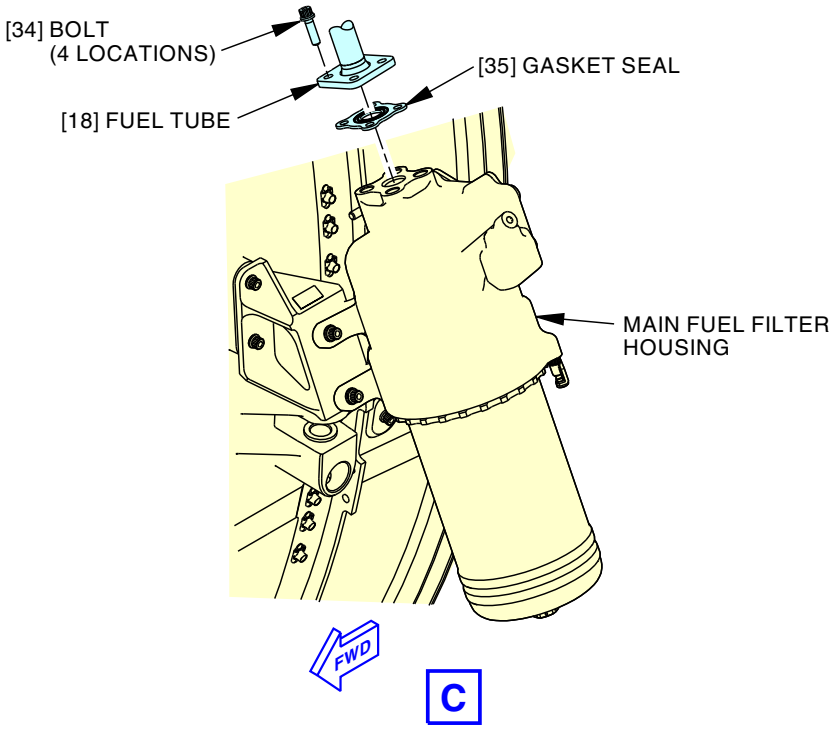
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Servo Fuel Heater Installation
Figure 401/73-11-11-990-801-G00 (Sheet 2 of 5)

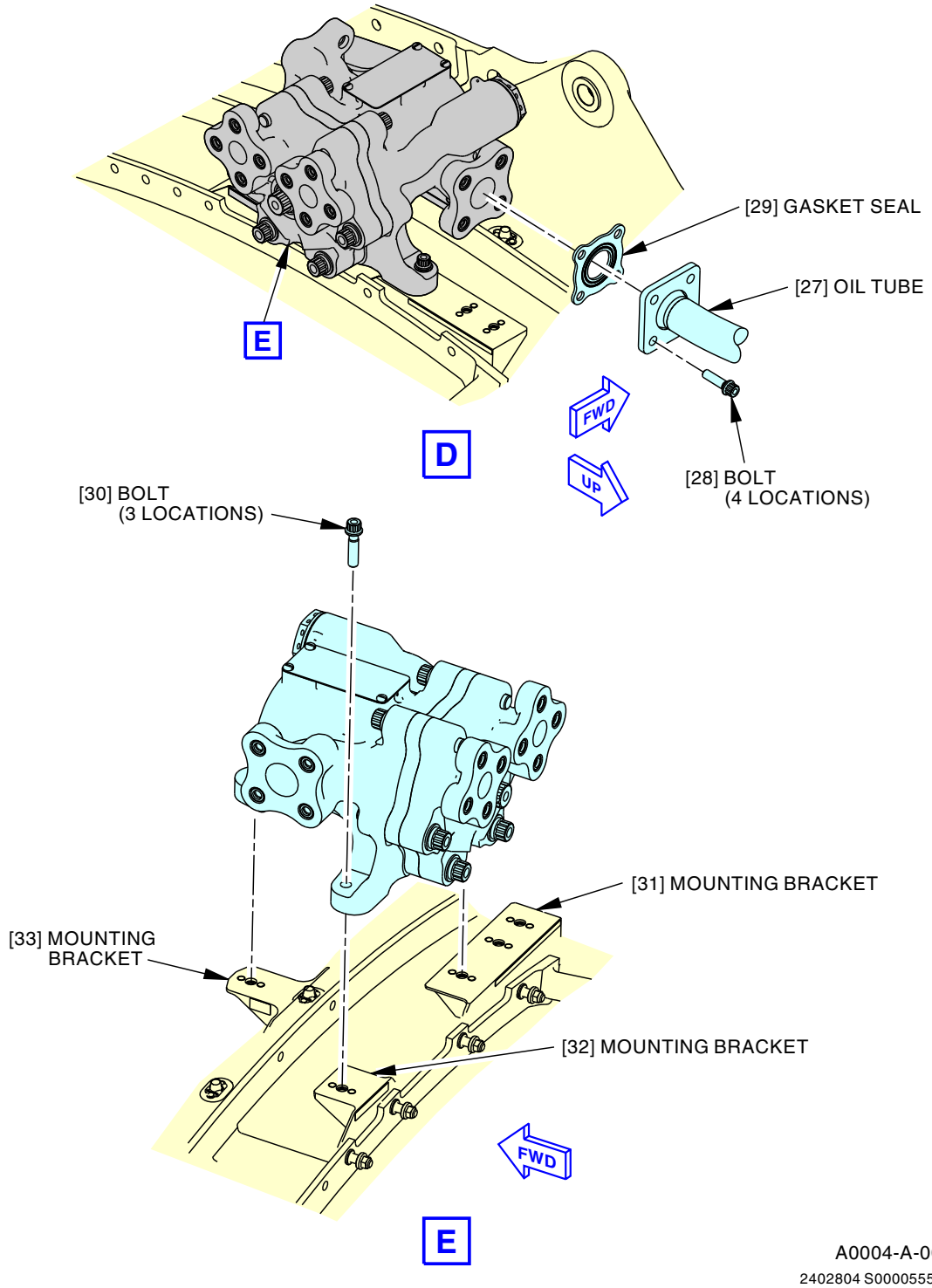
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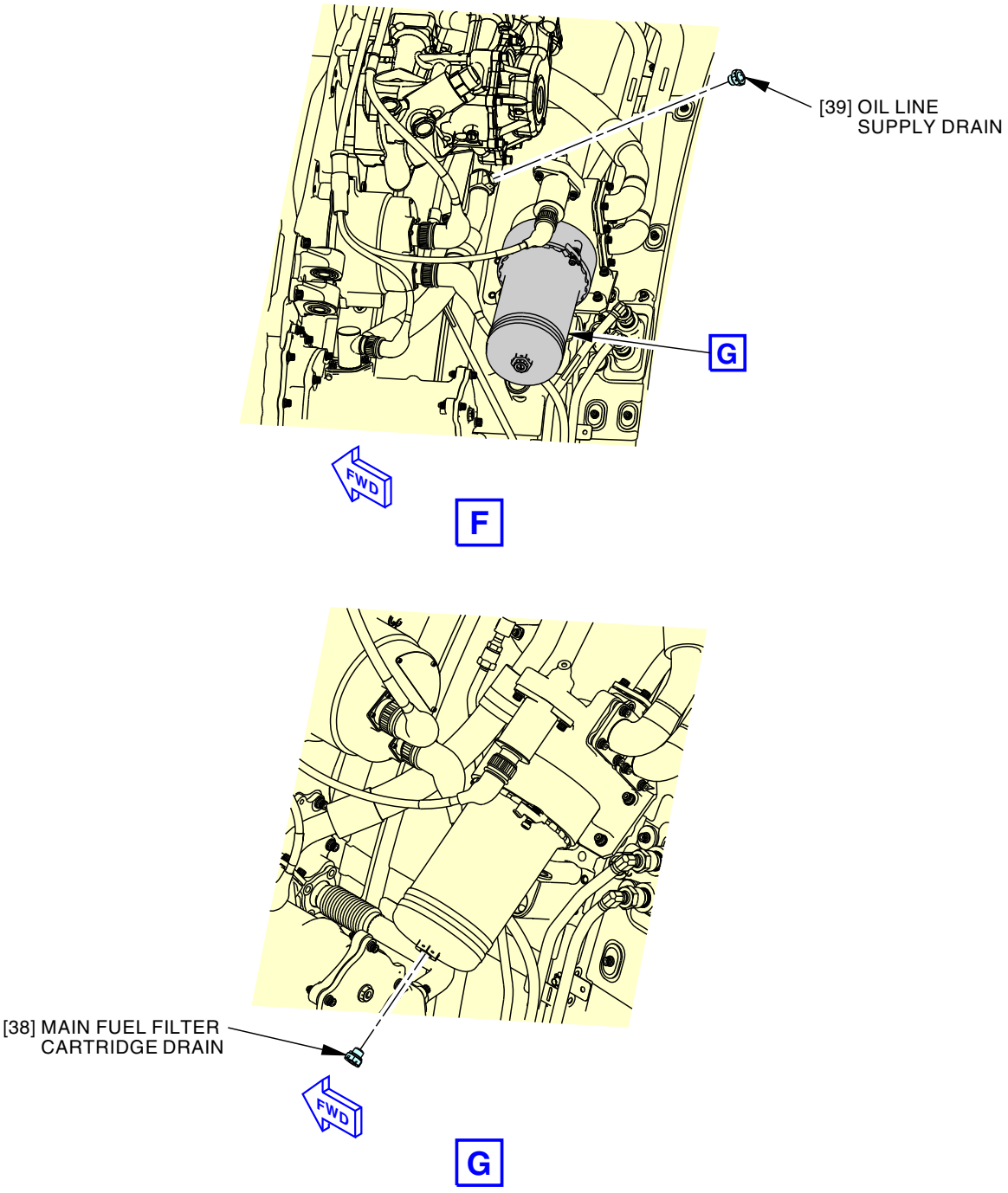
Servo Fuel Heater Installation
Figure 401/73-11-11-990-801-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Servo Fuel Heater Installation
Figure 401/73-11-11-990-801-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Servo Fuel Heater Installation
Figure 401/73-11-11-990-801-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-11-400-801-G00

3. Servo Fuel Heater Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the servo fuel heater.

(2) You must do the tests that are listed in the power plant test reference table after you install the servo fuel heater.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Servo fuel heater	73-11-11-01-100	SIA ALL
20	Gasket seal	73-11-11-01-020	SIA ALL
23	Gasket seal	73-11-11-01-040	SIA ALL
26	Gasket seal	73-11-11-01-060	SIA ALL
29	Gasket seal	73-11-11-01-080	SIA ALL
35	Gasket seal	73-11-03-01-130	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Servo Fuel Heater Installation

SUBTASK 73-11-11-420-001-G00

(1) Install the servo fuel heater [1]:

(a) Remove the protective covers from the openings.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the three bolts [30] with integrated washers with engine oil, D00599 [CP2442].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Install the three bolts [30] to attach the servo fuel heater [1] to the mounting bracket [31], the mounting bracket [32], and the mounting bracket [33].

(e) Tighten the bolts [30] to 67.5 in-lb (7.6 N·m) - 74.3 in-lb (8.4 N·m).

SUBTASK 73-11-11-420-002-G00

(2) Connect the oil tube [27] to the servo fuel heater [1]:

(a) Lubricate the threads of the four bolts [28] with graphite mineral vaseline, D00601 [CP2101].

(b) Install a new gasket seal [29] and the oil tube [27] in on the servo fuel heater [1].

(c) Install the four bolts [28] on the oil tube [27].

(d) Tighten the bolts [28] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 73-11-11-420-003-G00

(3) Connect the oil tube [24] to the servo fuel heater [1]:

(a) Lubricate the threads of the four bolts [25] with graphite mineral vaseline, D00601 [CP2101].

(b) Install a new gasket seal [26] and the oil tube [24] on the servo fuel heater [1].

(c) Install the four bolts [25] on the oil tube [24].

(d) Tighten the bolts [25] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 73-11-11-420-004-G00

(4) Connect the fuel tube [21] to the servo fuel heater [1]:

(a) Lubricate the threads of the four bolts [22] with graphite mineral vaseline, D00601 [CP2101].

(b) Install a new gasket seal [23] and the fuel tube [21] on the servo fuel heater [1].

(c) Install the four bolts [22] on the fuel tube [21].

(d) Tighten the bolts [22] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 73-11-11-420-005-G00

(5) Connect the fuel tube [18] to the servo fuel heater [1]:

(a) Lubricate the threads of the four bolts [19] with graphite mineral vaseline, D00601 [CP2101].

(b) Install the new gasket seal [20] and the fuel tube [18] in a correct position on the servo fuel heater [1].

(c) Install the four bolts [19] on the fuel tube [18]

(d) Tighten the bolts [19] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 73-11-11-420-006-G00

(6) Connect the fuel tube [18] to the main fuel filter housing:

(a) Lubricate the threads of the four bolts [34] with graphite mineral vaseline, D00601 [CP2101].

(b) Install the new gasket seal [35] and the fuel tube [18] on the main fuel filter housing.

(c) Install the four bolts [34] on the fuel tube [18].

(d) Tighten the bolts [34] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

(e) Install the bolt [37] on the clamp [36] that hold the fuel tube [18].

1) Tighten the bolt [37] to 42.5 in-lb (4.8 N·m) - 46.2 in-lb (5.2 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-11-160-001-G00

(7) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-11-610-001-G00

(1) Do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 73-11-11-860-006-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-11-860-007-G00

(3) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-11-860-008-G00

(4) For the left engine, remove the safety tags and close these applicable circuit breakers:

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 73-11-11-860-009-G00

(5) For the right engine, remove the safety tags and close these applicable circuit breakers:

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 73-11-11-410-002-G00

(6) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Servo Fuel Heater Installation Test

SUBTASK 73-11-11-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN FUEL/OIL HEAT EXCHANGER DIFFERENTIAL PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Main fuel/oil heat exchanger differential pressure sensor removal

(2) Main fuel/oil heat exchanger differential pressure sensor installation.

TASK 73-11-12-000-801-G00

2. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the differential pressure sensor for the main fuel/oil heat exchanger.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Preformed packing	73-11-01-01-070	SIA ALL
12	Preformed packing	73-11-01-01-070	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 73-11-12-210-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-11-12-860-001-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-12-010-001-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-11-12-480-001-G00

(4) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the main fuel pump [7].

I. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Removal

SUBTASK 73-11-12-020-001-G00

(1) Remove the drain plug [8] from the main fuel pump [7]:

(a) Cut and discard the cable, G50065 [CP8006] from the drain plug [8], drain plug [11] and drain plug [14].

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. USE THE OIL IN AN AREA WITH GOOD VENTILATION. THE OIL IS POISONOUS AND CAN BE ABSORBED THROUGH YOUR SKIN. THE OIL FUMES CAN IRRITATE YOUR RESPIRATORY TRACT.

CAUTION DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(b) Remove the drain plug [8] from the main fuel pump [7].

(c) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(d) Remove and discard the preformed packing [9] from the drain plug [8].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-12-420-001-G00

(2) Install the drain plug [8] on the main fuel pump [7] as follows:

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Lubricate the threads of the drain plug [8] and the new preformed packing [9] with vaseline, D00672 [CP5070].

(c) Install the preformed packing [9] on the drain plug [8].

(d) Install the drain plug [8] on the main fuel pump [7].

(e) Tighten the drain plug [8] to 190.0 in-lb (21.5 N·m) to 210.0 in-lb (23.7 N·m).

SUBTASK 73-11-12-020-002-G00

(3) Remove the drain plug [11] from the main fuel pump [7] as follows:

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) Remove the drain plug [11] from the main fuel pump [7].

(b) Let the fuel drain into the 5 U.S.-gal (19 l) fuel resistant container, STD-201.

(c) Remove and discard the preformed packing [12] from the drain plug [11].

SUBTASK 73-11-12-420-002-G00

(4) Install the drain plug [11] on the main fuel pump [7] as follows:

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Lubricate the threads of the drain plug [11] and the new new preformed packing [12] with vaseline, D00672 [CP5070].

(c) Install the preformed packing [12] on the drain plug [11].

(d) Install the drain plug [11] on the main fuel pump [7].

(e) Tighten the drain plug [11] to 190.0 in-lb (21.5 N·m) to 210.0 in-lb (23.7 N·m).

(f) Install the cable, G50065 [CP8006] through the drain plug [8], drain plug [11] and drain plug [14].

SUBTASK 73-11-12-020-004-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(5) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the differential pressure sensor [1] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-12-020-005-G00

(6) Remove the differential pressure sensor [1] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the two bolts [4] that attach the main fuel/oil heat exchanger differential pressure sensor [1] to the main fuel/oil heat exchanger [2].

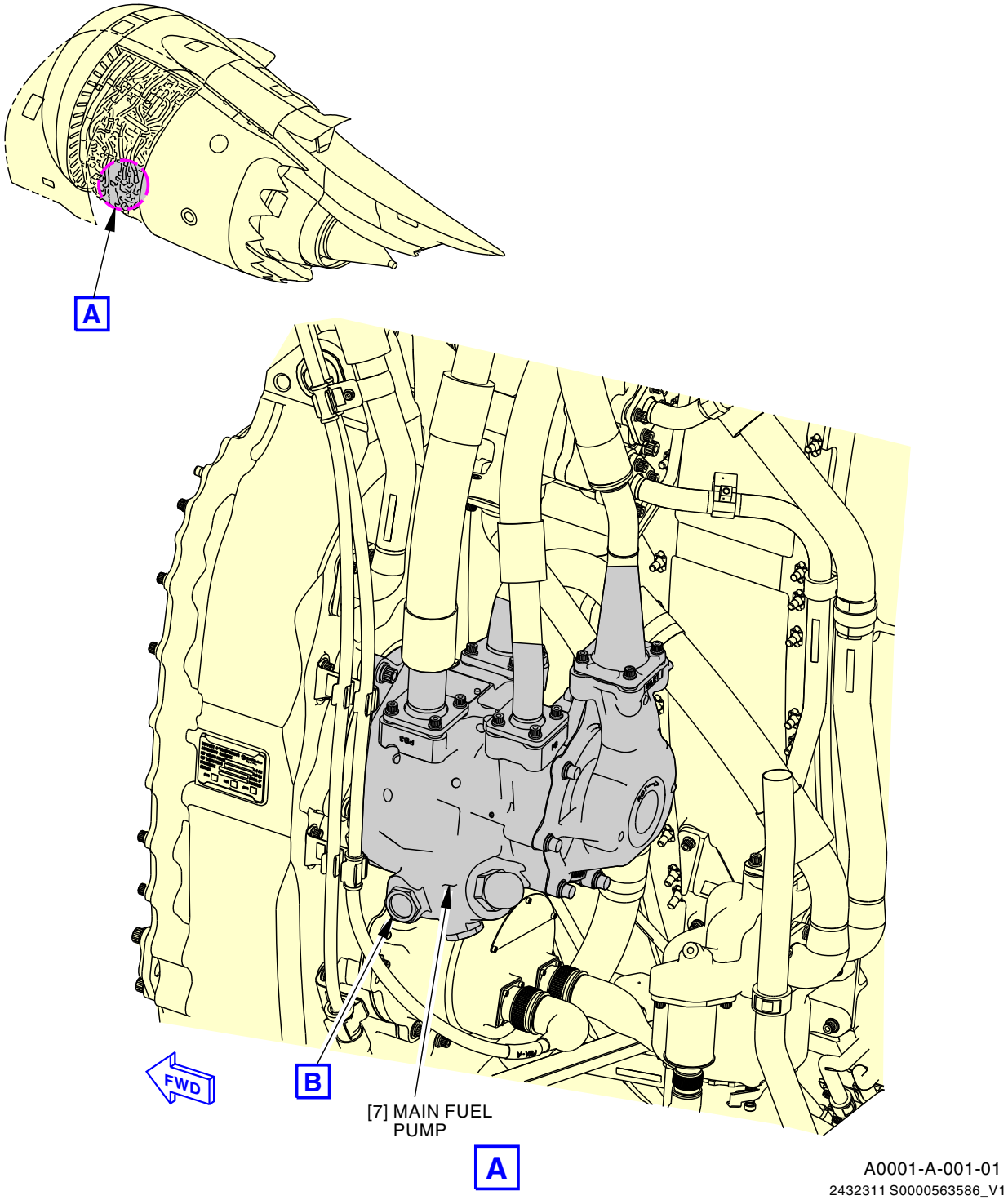
(b) Remove the differential pressure sensor [1] from the engine.

(c) Remove and discard the preformed packing [5], the preformed packing [6] and the backup rings [17] from the grooves of the differential pressure sensor [1].

(d) Install protective cover on the opening for the differential pressure sensor [1].

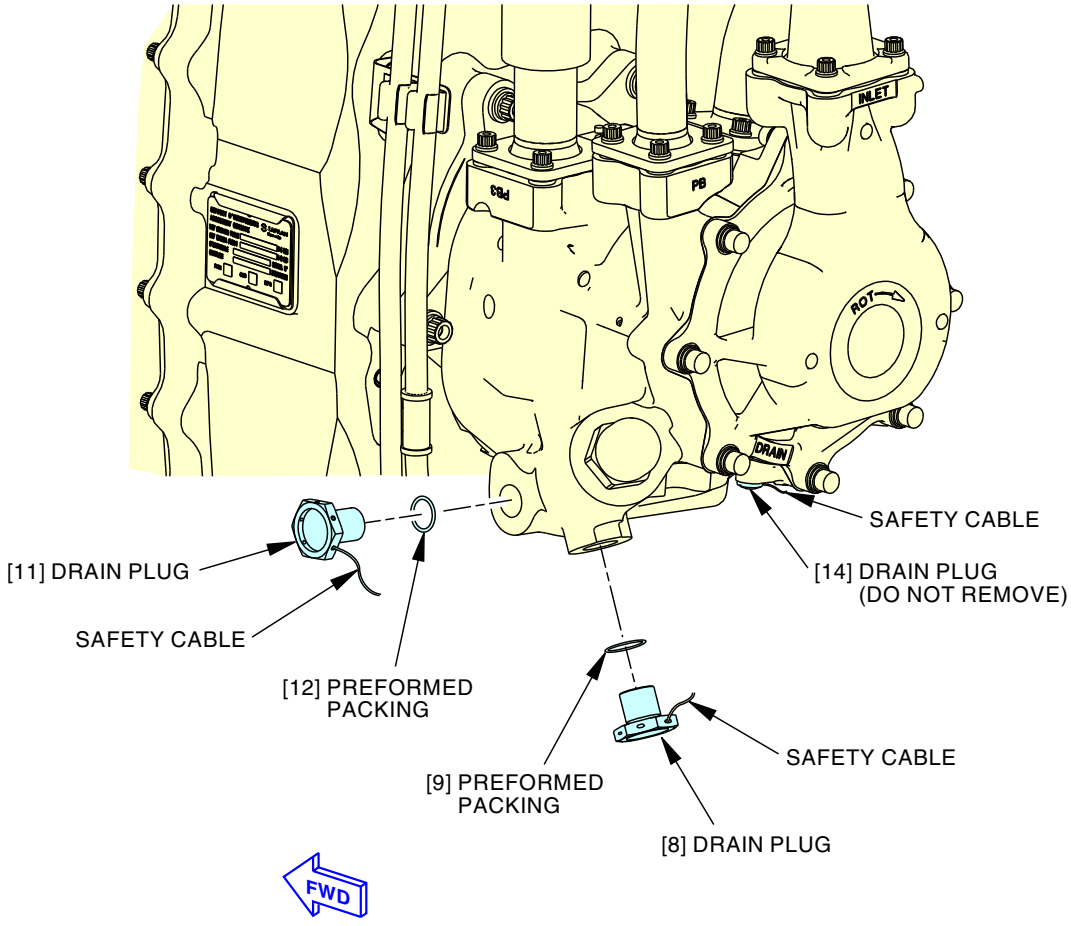
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation
Figure 401/73-11-12-990-801-G00 (Sheet 1 of 5)

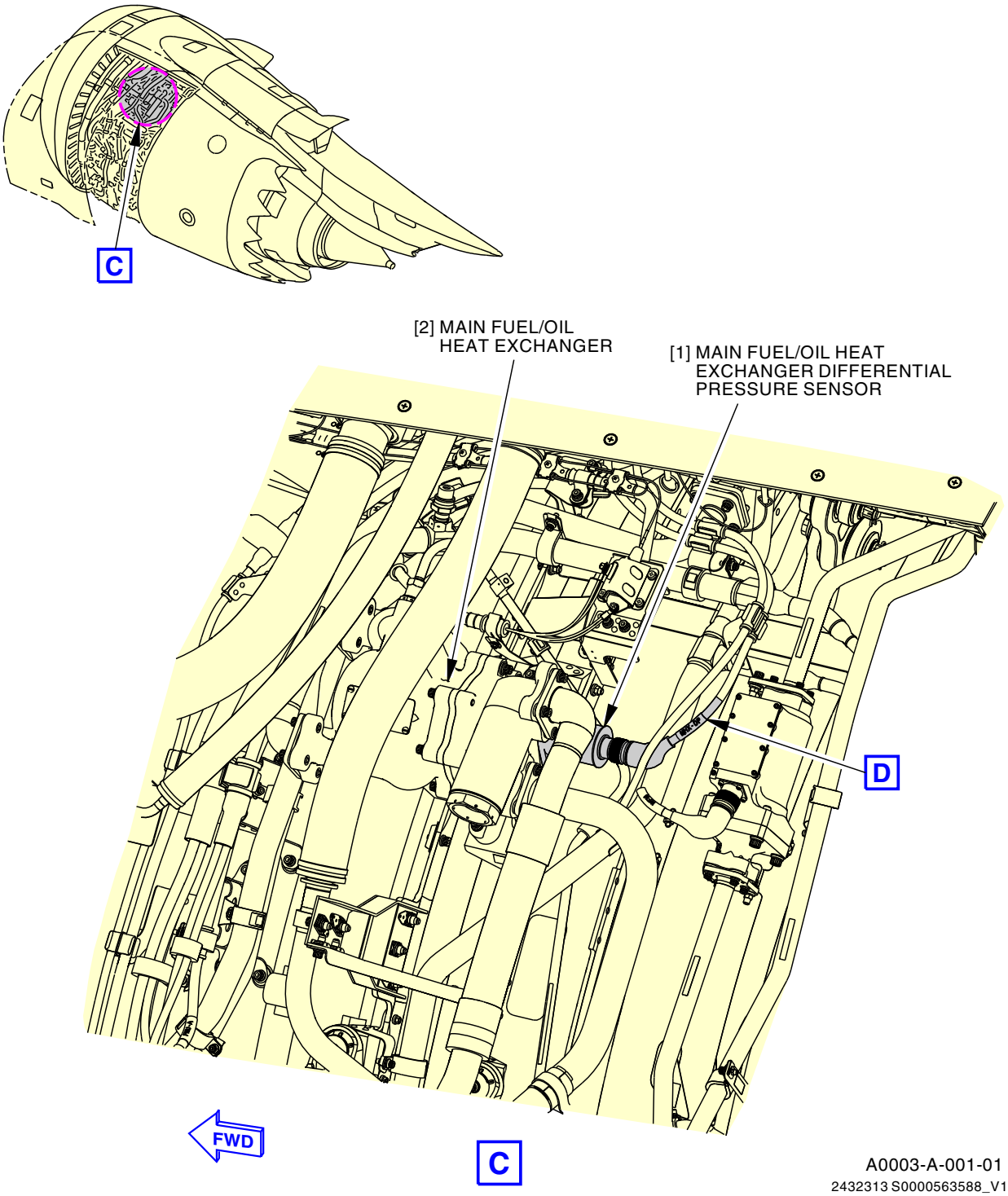
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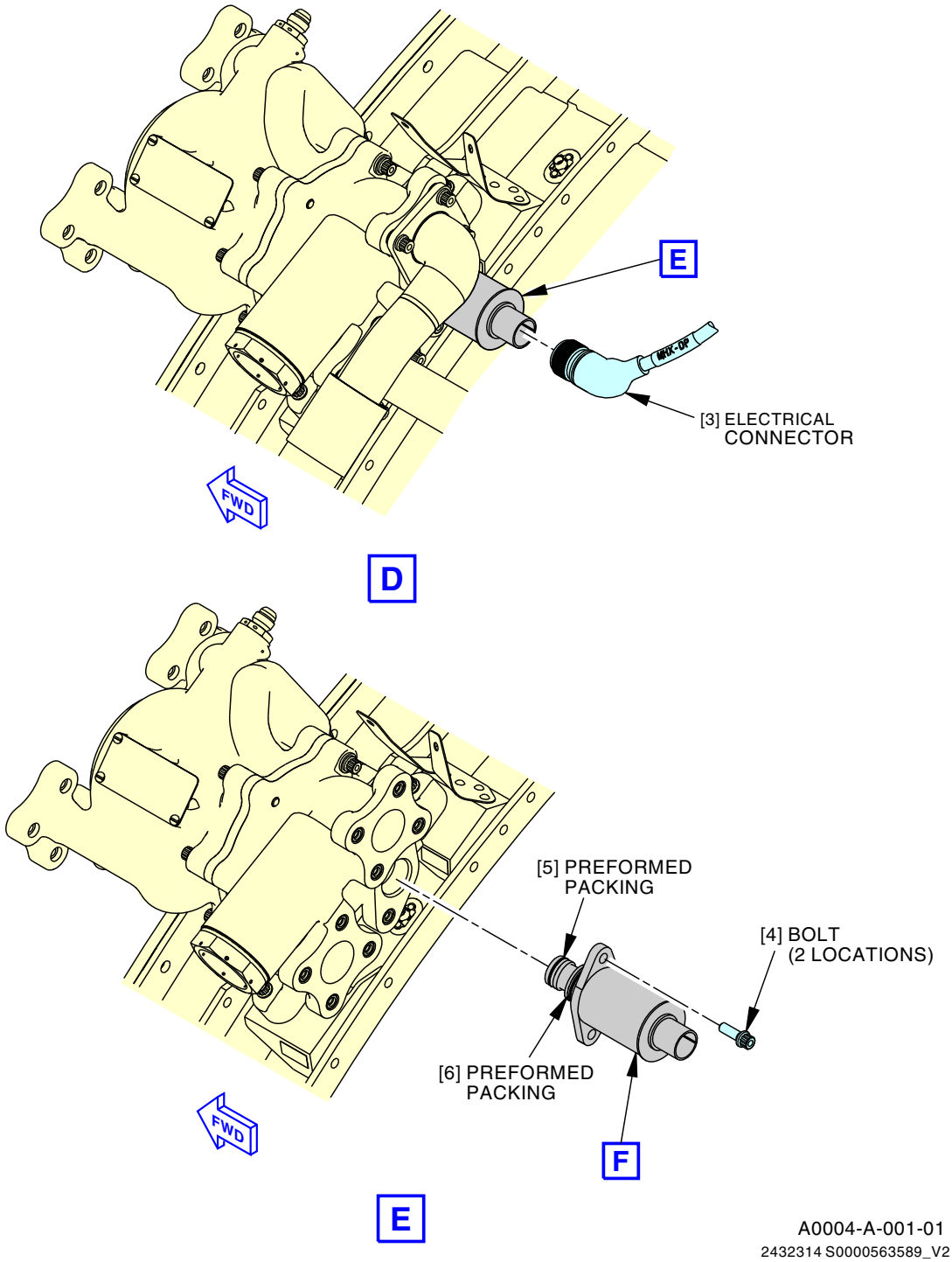
Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation
Figure 401/73-11-12-990-801-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



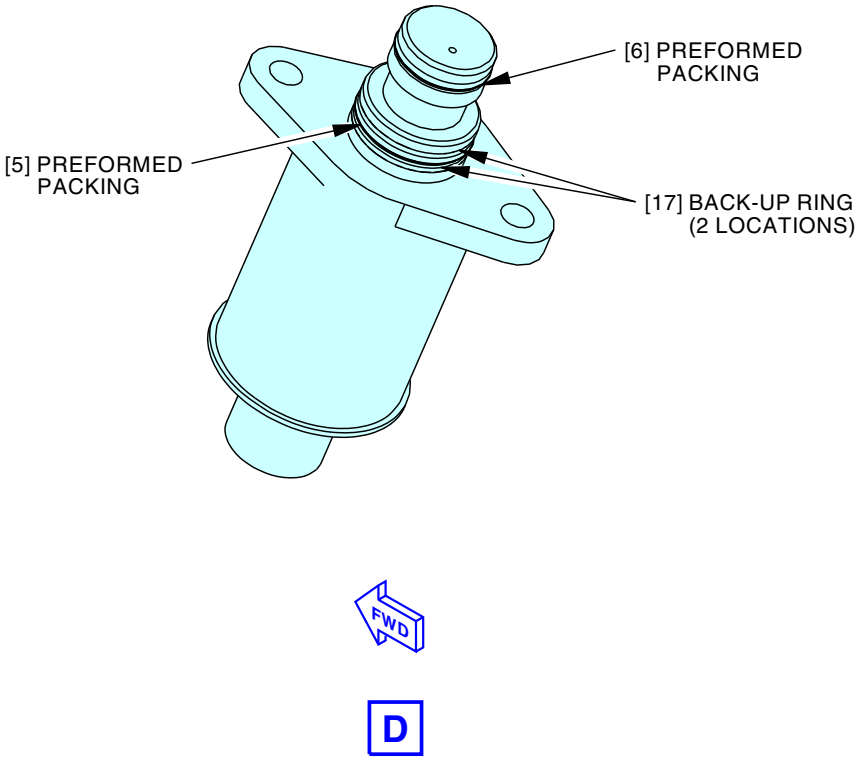
Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation
Figure 401/73-11-12-990-801-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation
Figure 401/73-11-12-990-801-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation
Figure 401/73-11-12-990-801-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-11-12-400-801-G00

3. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the differential pressure sensor for the main fuel/oil heat exchanger.

(2) You must do the tests that are listed in the power plant test reference table after you install the differential pressure sensor for the main fuel/oil heat exchanger.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Differential pressure sensor	73-11-12-01-020	SIA ALL
5	Preformed packing	73-11-12-01-050	SIA ALL
6	Preformed packing	73-11-12-01-030	SIA ALL
17	Backup ring	73-11-12-01-040	SIA ALL
		73-11-12-01-060	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation

SUBTASK 73-11-12-420-004-G00

(1) Install the differential pressure sensor [1] as follows:

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Remove the protective cover from the engine opening for the main fuel/oil heat exchanger differential pressure sensor [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Lubricate the threads of the bolts [4], the new preformed packing [5], preformed packing [6] and the backup rings [17] with engine oil, D00599 [CP2442].

(d) Install the preformed packing [6], the preformed packing [5] and the backup rings [17] in the grooves of the main fuel/oil heat exchanger differential pressure sensor [1].

(e) Install the differential pressure sensor [1] on the main fuel/oil heat exchanger [2].

(f) Install the bolts [4] that attach the differential pressure sensor [1] to the main fuel/oil heat exchanger [2].

(g) Tighten the bolts [4] to 109.31 in-lb (12.35 N·m) to 120.81 in-lb (13.65 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(h) Use a teflon-jawed pliers, STD-664 to connect the electrical connector [3] to the differential pressure sensor [1] (TASK 70-00-01-910-803-G00).

SUBTASK 73-11-12-160-001-G00

(2) Clean the area and remove all tools from where you did the work.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-12-410-001-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-11-12-860-002-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-11-12-860-003-G00

(3) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

J. Fuel Strainer DP Transducer Installation Test

SUBTASK 73-11-12-700-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

MAIN FUEL/OIL HEAT EXCHANGER DIFFERENTIAL PRESSURE SENSOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Main Fuel/Oil Heat Exchanger Differential Pressure Sensor inspection.

TASK 73-11-12-210-801-G00

2. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection

(Figure 601)

A. General

(1) This task provides the instructions to inspect the differential pressure sensor for the main fuel/oil heat exchanger.

(a) The differential pressure sensor is located on the main fuel/oil heat exchanger on the left side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-12-000-801-G00	Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Removal (P/B 401)
73-11-12-400-801-G00	Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-11-12-860-004-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-12-860-005-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-12-010-002-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection

SUBTASK 73-11-12-210-002-G00

(1) Inspect the main fuel/oil heat exchanger Differential Pressure (DP) sensor:

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, do the steps in these tasks to replace the sensor preformed packings (TASK 73-11-12-000-801-G00 and TASK 73-11-12-400-801-G00).

(b) Make sure that the main fuel/oil heat exchanger DP sensor is not loose.

1) If the sensor is loose, tighten the bolts that attach the sensor to the heat exchanger (TASK 73-11-12-400-801-G00).

(c) Make sure that the electrical connector is not loose.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If the electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-11-12-410-002-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-11-12-860-006-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-11-12-860-007-G00

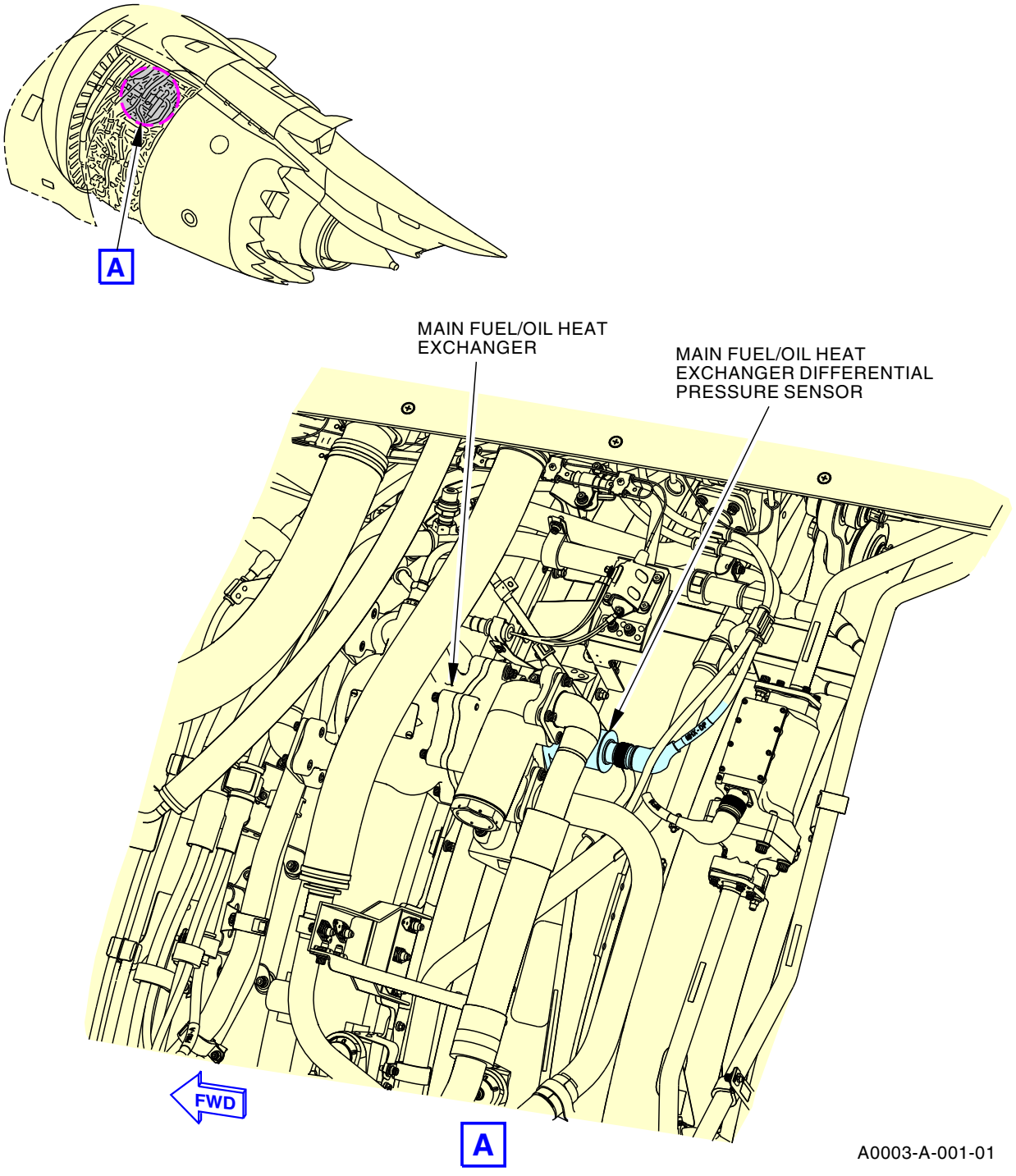
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection
Figure 601/73-11-12-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL CONTROL SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

(1) EEC System Configuration Data Functions Check

(2) EEC Shop Faults Function Check

(3) EEC Onboard Software Installation

(4) EEC Onboard Software Installation Using a PMAT

(5) EEC Onboard Software Verification Installation

(6) EEC Maintenance Power Selection.

TASK 73-21-00-470-801-G00

2. EEC System Configuration Data Functions Check

A. General

(1) This task gives the instructions to do the Electronic Engine Control (EEC) system configuration data functions check.

(2) This task verifies the system configuration in the Onboard Network System (ONS)'s Line Replaceable Unit (LRU).

B. References

Reference	Title
46-13-00-710-802	System Configuration Check (P/B 201)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Prepare for the Data Functions Check (with MDS/ML)

SUBTASK 73-21-00-860-122-G00

(1) Access the applicable EEC system configuration page (TASK 46-13-00-710-802).

E. EEC System Configuration

SUBTASK 73-21-00-860-119-G00

(1) Verify the software, thrust management, and various engine configuration setting used by the EEC.

NOTE: EEC System Configuration Page gives information on the software, thrust management, and various engine configuration settings.

NOTE: This EEC information can be compared with the engine data plate, the cross-channel EEC, the opposite engine, the aircraft type, and engine Service Bulletin records to verify the engine system configuration.

(a) Table 201 gives the format for the EEC System Configuration Page.

Table 201/73-21-00-993-807-G00 EEC System Configuration

Hardware Part Number	AAAAAAAAAA *[1]
Serial Number	BBBBBBBB *[2]
Software Location Description:	EEC–XZ *[3], *[4]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 201/73-21-00-993-807-G00 EEC System Configuration (Continued)

73 EEC OPS Part Number	CCCCCCCCCCCCCCC *[5]
77 EEC AVM Part Number	DDDDDDDDDDDDDDD *[6]
77 EEC EHM Part Number	EEEEEEEEEEEEEEE *[7]
77 EEC AML Part Number	PPPPPPPPPPPPPPP *[8]
Options	
Engine Serial Number	FFF-FFF *[9]
PSS Part Number	GGGGGGGGGG *[10]
Engine Configuration	HHHH *[11]
Engine Rating	1BJJJJJJJJ *[12]
Bump	K *[13]
N1 Trim	L *[14]
Menu Mode Hardware Code	RR *[15]
Auto-detected Hardware Configuration Code	TTTTT *[16]
HPT Deterioration	S *[17]
73 EEC OPS Version	MMMM *[18]
77 EEC AVM Version	NNNN *[19]
77 EEC EHM Version	OOOO *[20]
77 EEC AML Version	QQQQ*[21]

*[1] EEC Hardware Part Number
*[2] EEC Serial Number
*[3] "X" - Left or Right Engine (1 = Left Engine; 2 = Right Engine)
*[4] "Z" - EEC Channel (A or B)
*[5] OPS Software Part Number
*[6] AVM Software Part Number
*[7] EHM Software Part Number
*[8] AML Software Part Number
*[9] Engine Serial Number (ESN)
*[10] Pressure Sub-System (PSS) Part Number
*[11] Engine Configuration
*[12] Engine Rating
*[13] Bump available (Y = Yes; N = No)
*[14] N1 Trim designation
*[15] Menu Mode Hardware Code
*[16] Auto-detected Hardware Configuration Code
*[17] HPT Deterioration indication (Y = Yes; N = No)
*[18] OPS Software Version
*[19] AVM Software Version
*[20] EHM Software Version
*[21] AML Software Version

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Table 202 defines the EEC software version per the Service Bulletin.

NOTE: If "77 EEC AVM Part Number" shows "NOT LOADED", keep EEC power on, exit the EEC System Configuration Page, and wait five minutes before accessing again. If "NOT LOADED" is still present, check for maintenance messages 77-4498X or 77-0900X. If either maintenance message is present, follow the fault isolation instructions in the IFIM. If the maintenance message is not present, replace the affected EEC at a convenient maintenance opportunity (refer to CFM LEAP-1B Service Bulletin 73–0034 for additional information).

Table 202/73-21-00-993-809-G00 EEC Software Version Reference Table

EEC Software Version	CFM Service Bulletin (Boeing Service Bulletin)	73 EEC OPS Part Number (73 EEC OPS Version) [CFM Part Number]	77 EEC AVM Part Number (77 EEC AVM Version) [CFM Part Number]	77 EEC EHM Part Number (77 EEC EHM Version) [CFM Part Number]	77 EEC AML Part Number (77 EEC AML Version) [CFM Part Number]
4.5	73-0002 (N/A)	GEC46-2628-8607 (0450) [2628M86P07]	GEC4D-2628-8802 (0305) [2628M88P02]	GEC47-2628-8707 (0450) [2628M87P07]	GEC42-2697-8302 (0200) [2697M83P02]
5.2	73-0011 (737-73-1017)	GEC48-2628-8609 (0520) [2628M86P09]		GEC49-2628-8709 (0520) [2628M87P09]	
6.1	73-0015 (737-73-1018)	GEC40-2628-8610 (0610) [2628M86P10]		GEC41-2628-8710 (0610) [2628M87P10]	
6.5	73-0016 (737-73-1019)	GEC41-2628-8611 (0650) [2628M86P11]		GEC40-2628-8711 (0650) [2628M87P11]	
6.52	73–0022 (737–73–1020)			GEC43-2628-8712 (0652) [2628M87P12]	
6.7	73-0025 Issue 1 (737-73-1021)	GEC42-2628-8612 (0670) [2628M86P12]		GEC42-2628-8713 (0670) [2628M87P13]	
6.72	73-0025 Issue 2 (737-73-1023)			GEC45-2628-8714 (0672) [2628M87P14]	
6.73	73-0029 (737-73-1024)			GEC44-2628-8715 (0673) [2628M87P15]	
7.1	73–0040 (737-73-1026)	GEC43-2628-8613 (0710) [2628M86P13]		GEC47-2628-8716 (0710) [2628M87P16]	

NOTE: EEC software version 6.52 and previous are not allowed.

(c) Table 203 gives the definition of the menu hardware mode.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 203/73-21-00-993-810-G00 Menu Mode Hardware Codes

Menu Mode Hardware Code	EEC Channel B Accelerometer Input
00	Number One Bearing (NOB) Accelerometer Active (Default Selection)
01	Disabled (No Input Selected)
-	Invalid (Reserved for Future Use)

(d) Table 204 gives the definition of the auto-detected hardware configuration code.

Table 204/73-21-00-993-808-G00 Auto-detected Hardware Configuration Code

Auto- detected Hardware Configuration Code	MTC System Configuration	EEC Blower System	Fan Overheat Sensor System
00000	Dual	Disabled	Enabled
00001	Single		
00002	Dual	Enabled	
00003	Single		
00004	Dual	Disabled	Disabled
00005	Single		
00006	Dual	Enabled	
00007	Single		

SUBTASK 73-21-00-970-016-G00

(2) Make a record of the EEC System Configuration Page for your airline's records.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-00-860-075-G00

(1) If the maintenance laptop was used and is no longer necessary, stop the ONS maintenance browser and disconnect the laptop.

——— END OF TASK ———

TASK 73-21-00-470-802-G00

3. EEC Shop Faults Function Check

(Figure 201 and Figure 202)

A. General

(1) This task gives the instructions for the Electronic Engine Control (EEC) shop fault function check and correlate the Fault IDs in the report to maintenance messages on the Onboard Maintenance Function (OMF).

(2) The shop fault function displays the faults saved in the EEC.

NOTE: The flight leg (LEG) in the EEC shop faults report is calculated separately from the aircraft flight leg, and may not match with the corresponding aircraft flight leg on the OMF. Use the date (MM/DD) and time (HH:MM) of when the fault code was set to compare to the maintenance messages recorded by the OMF.

(3) There are two ways that you can verify the system configuration:

(a) Use a Portable Maintenance Device (PMD) such as a laptop.

(b) Use the Portable Software Data Loader (PSDL).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(4) The EEC shop faults check can be used to determine the EEC fault(s) that set a flight deck indication, status message, or Scheduled Maintenance Task (SMT) message where there is no corresponding maintenance message present in the OMF memory.

(5) Faults that are economic in its impact can be corrected at operator's discretion.

B. References

Reference	Title
32-09-00-860-802	Return the Airplane to the Ground Mode (P/B 201)
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Prepare for the Check

SUBTASK 73-21-00-860-015-G00

(1) Make sure that the airplane is in the ground mode (TASK 32-09-00-860-802).

SUBTASK 73-21-00-860-014-G00

(2) Clear the test inhibit conditions.

SUBTASK 73-21-00-860-018-G00

(3) Select the left or right Multi Function Display (MFD).

(a) Push the SYS button, on the P9 MFD control panel.

(b) Push the SEL button on SELECTOR knob, on the P9 MFD control panel.

SUBTASK 73-21-00-860-017-G00

(4) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

NOTE: Master Caution will come on.

SUBTASK 73-21-00-860-019-G00

(5) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-00-860-020-G00

(6) Set the GND TESTS switch, on the P61 maintenance panel, to the ENABLE position.

SUBTASK 73-21-00-860-021-G00

(7) Set the applicable thrust lever to idle.

E. EEC Shop Faults Function Check (with Maintenance Laptop)

SUBTASK 73-21-00-860-076-G00

(1) Connect the maintenance laptop to the Onboard Network System (ONS) port, on the P61 maintenance panel, in the flight deck (TASK 46-13-00-480-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-860-022-G00

(2) Make sure that the EEC Data Load and Trim Balance Functions are inactive.

SUBTASK 73-21-00-860-077-G00

(3) Use the OMF screen to do the EEC shop faults as follows:

(a) Make these selections on the OMF main function menu:

1) ONBOARD NETWORK SYSTEM
2) OTHER FUNCTIONS
3) SHOP FAULTS
4) 71-80 Left Engine or 71- 80 Right Engine
5) EEC - 1A or EEC - 1B
6) CONTINUE
7) REPORT.

a) On the REPORT popup screen, select the steps that follow:

<1> Portable Maintenance Device
<2> SEND
<3> STOP
<4> Wait until Complete is shown.

F. EEC Shop Faults Function Check (with Portable Maintenance Devices)

SUBTASK 73-21-00-480-001-G00

(1) Connect the PMD to the PSDL RJ45 port and to the ONS port, on the P61 aft overhead maintenance panel, in the flight deck.

SUBTASK 73-21-00-860-023-G00

(2) Use the screen to do the EEC shop faults as follows:

(a) Make these selections on the OMF main function menu:

1) ONBOARD MAINTENANCE
2) OTHER FUNCTIONS
3) SHOP FAULTS
4) 71-80 Left Engine or 71- 80 Right Engine
5) EEC - 1A or EEC - 1B
6) CONTINUE
7) REPORT.

a) On the REPORT popup screen, select the steps that follow:

<1> Portable Maintenance Device
<2> SEND
<3> STOP
<4> Wait until Complete is shown.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. EEC Shop Faults Maintenance Message Correlation

SUBTASK 73-21-00-970-008-G00

(1) Use the Fault ID in the EEC Shop Fault report to find the associated OMF maintenance message.

NOTE: Maintenance messages generated by the EECs are in a specific format based on the associated fault ATA chapter, Fault ID (EEC fault code), and which EEC channel(s) detected the fault.

NOTE: All economic faults have no time limits and can be corrected at operator's discretion.

(a) An example of maintenance message with format description is shown in Figure 201.

SUBTASK 73-21-00-970-009-G00

(2) Use Table 205 to find the message number, description, and dispatch group for each Fault ID.

NOTE: The EEC fault codes indicated with a "*" are fault codes related to EEC internal faults. When one or more of these faults are detected the ONS collects these faults into a single maintenance message 77-0900X - ENGINE-Y EEC CHANNEL-Z HAS AN INTERNAL FAULT where X is the EEC channel location (1 through 4), Y is the engine position (1 or 2), and Z is channel position (A or B).

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
100	77-4100X	ACCELEROMETER SENSOR IS OUT OF RANGE	EEC Channel A (TCF): D EEC Channel B (NOB): H
101	77-4101X	ACCELEROMETER SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	EEC Channel A (TCF): D EEC Channel B (NOB): H
102	77-4102X	ACCELEROMETER SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	EEC Channel A (TCF): D EEC Channel B (NOB): H
103	73-4103X	ADIRU-L DATA FROM DPC-1 IS INVALID	D
104	73-4104X	ADIRU-R DATA FROM DPC-2 IS INVALID	D
105	73-4105X	ALTERNATE MODE AND DPC-1 SIGNALS DO NOT AGREE	C
106	73-4106X	ALTERNATE MODE AND DPC-2 SIGNALS DO NOT AGREE	C
107*	77-4107X (77-0900X)	ALTERNATE MODE RELAY IS FAILED CLOSED INTERNAL TO THE EEC	D
108*	77-4108X (77-0900X)	ALTERNATE MODE LIGHT RELAY IS FAILED OPEN INTERNAL TO THE EEC	B
109*	73-4109X (77-0900X)	DATA LOADER CHECKSUM ERROR	H
110	73-4110X	ENGINE-X EEC CHANNEL-X HAS NO ARINC-429 INPUT FROM DPC-1	C
111	73-4111X	ENGINE-X EEC CHANNEL-X HAS NO ARINC-429 INPUT FROM DPC-2	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
112	73-4112X	ENGINE-X EEC CHANNEL-X HAS NO ARINC-429 INPUT FROM DPC-1 OR DPC-2	G
113*	73-4113X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS AN INTERNAL FAULT	F
114*	73-4114X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS AN INTERNAL FAULT	F
115*	73-4115X (77-0900X)	DUAL NON-VOLATILE MEMORY CHECKSUM FAULT	C
116*	73-4116X (77-0900X)	SINGLE NON-VOLATILE MEMORY CHECKSUM FAULT	H
117	73-4117X	CROSS CHANNEL DATA LINK DISCRETE INPUTS AND BACKUP SERIAL CROSS CHANNEL DATA LINK DO NOT AGREE	B
118	73-4118X	CROSS CHANNEL DATA LINK SERIAL DATA IS INVALID	A, D
119	79-4119X	OIL DEBRIS MONITORING SYSTEM HAS DETECTED DEBRIS	D
120	73-4120X	DATA ENTRY PLUG PROGRAM PINS ARE INCORRECT	A
121	73-4121X	DATA ENTRY PLUG FUSE IS INCORRECT	A
122	73-4122X	DATA ENTRY PLUG N1 MODIFIER PARITY FAULT	C
123	75-4123X	DATA ENTRY PLUG CHANNEL-X AND CHANNEL-Y DISCRETES DO NOT AGREE	A
124	75-4124X	BLEED DATA FROM DPC-1 AND DPC-2 DO NOT AGREE	B
126	71-4126X	FLAP CONFIGURATION FROM DPC-1 AND DPC-2 DO NOT AGREE	C
127	74-4127X	LEFT AND RIGHT IGNITER SELECTION SIGNALS FROM DPC-1 ARE INVALID	C
128	71-4128X	LEFT AND RIGHT MAIN LANDING GEAR SIGNALS FROM DPC-1 DO NOT AGREE	C
129	77-4129X	NO LOW-RANGE RADIO ALTIMETER (LRRA-1) INPUT RECEIVED FROM DPC-1	H
130	77-4130X	NO LOW-RANGE RADIO ALTIMETER (LRRA-2) INPUT RECEIVED FROM DPC-1	H
132	71-4132X	FLAP DATA FROM DPC-1 OR DPC-2 IS INVALID	C
133	74-4133X	LEFT AND RIGHT IGNITER SELECTION SIGNALS FROM DPC-2 ARE INVALID	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
134	71-4134X	LEFT AND RIGHT MAIN LANDING GEAR SIGNALS FROM DPC-2 DO NOT AGREE	C
135	77-4135X	NO LOW-RANGE RADIO ALTIMETER (LRRA-1) INPUT RECEIVED FROM DPC-2	H
136	77-4136X	NO LOW-RANGE RADIO ALTIMETER (LRRA-2) INPUT RECEIVED FROM DPC-2	H
137	73-4137X	DPC-1 HAS NO EEC CHANNEL A INPUT ON ARINC-429	C
138	73-4138X	DPC-2 HAS NO EEC CHANNEL A INPUT ON ARINC-429	C
139	73-4139X	ENGINE-X EEC CHANNEL-X HAS NO ARINC-429 INPUT ON RECEIVER 1	C
140	73-4140X	ENGINE-X EEC CHANNEL-X HAS NO ARINC-429 INPUT ON RECEIVER 2	C
141*	73-4141X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS AN ARINC-429 OUTPUT FAULT	E
142	73-4142X	DPC-1 HAS NO EEC CHANNEL B INPUT ON ARINC-429	C
143	73-4143X	DPC-2 HAS NO EEC CHANNEL B INPUT ON ARINC-429	C
144	76-4144X	BLOWER INDICATES OFF WHEN COMMANDED ON	C
145	76-4145X	BLOWER INDICATES ON WHEN COMMANDED OFF	D
146*	73-4146X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS AN INTERNAL FAILURE	F
149	73-4149X	EEC DISCRETES FROM CHANNEL-X OR CHANNEL-Y ARE INVALID	C
150	73-4150X	EEC OVERVOLTAGE TEST FAILED	E
151*	73-4151X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS AN INTERNAL FAILURE	F
152	77-4152X	EEC IS OVERHEATED	F
153	73-4153X	ONBOARD MAINTENANCE DATA CHANNEL-X AND CHANNEL-Y DISCRETES DO NOT AGREE	B
154	73-4154X	PRESSURE SUBSYSTEM (PSS) IS NOT POWERED	E
155*	73-4155X (77-0900X)	PRESSURE SUBSYSTEM POWER SUPPLY FAULT INTERNAL TO THE EEC	H
156	73-4156X	AIRCRAFT POWER VOLTAGE IS LOW	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
157	73-4157X	EEC CHANNEL SYNCHRONIZATION IS INVALID	A, D
158*	77-4158X (77-0900X)	VIBRATION MONITORING FAULT	H
159	77-4159X	EXHAUST GAS TEMPERATURE (EGT) PROBE 1 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
160	77-4160X	EXHAUST GAS TEMPERATURE (EGT) PROBE 1 SIGNAL IS OUT OF RANGE	H
161	77-4161X	EXHAUST GAS TEMPERATURE (EGT) PROBE 2 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
162	77-4162X	EXHAUST GAS TEMPERATURE (EGT) PROBE 2 SIGNAL IS OUT OF RANGE	H
163	77-4163X	EXHAUST GAS TEMPERATURE (EGT) PROBE 3 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
164	77-4164X	EXHAUST GAS TEMPERATURE (EGT) PROBE 3 SIGNAL IS OUT OF RANGE	H
165	77-4165X	EXHAUST GAS TEMPERATURE (EGT) PROBE 4 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
166	77-4166X	EXHAUST GAS TEMPERATURE (EGT) PROBE 4 SIGNAL IS OUT OF RANGE	H
167	77-4167X	EXHAUST GAS TEMPERATURE (EGT) PROBE 5 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
168	77-4168X	EXHAUST GAS TEMPERATURE (EGT) PROBE 5 SIGNAL IS OUT OF RANGE	H
169	77-4169X	EXHAUST GAS TEMPERATURE (EGT) PROBE 6 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
170	77-4170X	EXHAUST GAS TEMPERATURE (EGT) PROBE 6 SIGNAL IS OUT OF RANGE	H
171	77-4171X	EXHAUST GAS TEMPERATURE (EGT) PROBE 7 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H
172	77-4172X	EXHAUST GAS TEMPERATURE (EGT) PROBE 7 SIGNAL IS OUT OF RANGE	H
173	77-4173X	EXHAUST GAS TEMPERATURE (EGT) PROBE 8 VALUE DOES NOT AGREE WITH THE AVERAGE OF ALL OTHER VALID EGT PROBE VALUES	H

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
174	77-4174X	EXHAUST GAS TEMPERATURE (EGT) PROBE 8 SIGNAL IS OUT OF RANGE	H
175	77-4175X	ALL EXHAUST GAS TEMPERATURE (EGT) PROBES HAVE FAILED	A, D
176	71-4176X	EXHAUST GAS TEMPERATURE (EGT) AMBER LIMIT EXCEEDED	D
177	77-4177X	6 OR 7 TOTAL EXHAUST GAS TEMPERATURE (EGT) PROBES HAVE FAILED	B
178	71-4178X	EXHAUST GAS TEMPERATURE (EGT) REDLINE LIMIT EXCEEDED	D
179	71-4179X	EXHAUST GAS TEMPERATURE (EGT) START REDLINE LIMIT EXCEEDED	D
180	79-4180X	ENGINE OIL PRESSURE (PEO) IS BELOW THE AMBER LIMIT	D
181	79-4181X	ENGINE OIL PRESSURE (PEO) IS BELOW THE REDLINE LIMIT	D
182	79-4182X	ENGINE OIL PRESSURE (PEO) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
183	79-4183X	ENGINE OIL PRESSURE (PEO)SENSOR IS OUT OF RANGE	G
184	79-4184X	ENGINE OIL PRESSURE (PEO) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
185*	79-4185X (77-0900X)	ENGINE OIL PRESSURE (PEO) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
186	73-4186X	ENGINE POSITION DISCRETE IS INVALID	C
187	71-4187X	N2 SPEED IS APPROACHING REDLINE LIMIT	A, D
188	79-4188X	ENGINE OIL QUANTITY IS HIGH	B
194	73-4194X	ELECTRONIC OVERSPEED TEST FAILED	F
195	73-4195X	ENGINE CORE (N2) OVERSPEED EVENT	D
196	73-4196X	FUEL COOLED OIL COOLER (FCOC) BYPASS	D
198	73-4198X	FUEL COOLED OIL COOLER (FCOC) DELTA PRESSURE SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
199	73-4199X	FUEL COOLED OIL COOLER (FCOC) DELTA PRESSURE SENSOR IS OUT OF RANGE	C
200	73-4200X	FUEL COOLED OIL COOLER (FCOC) DELTA PRESSURE SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
201*	73-4201X (77-0900X)	FUEL COOLED OIL COOLER (FCOC) DELTA PRESSURE SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
202	77-4202X	AIR/GROUND SYSTEM 1 AND SYSTEM 2 DO NOT AGREE	C
203	77-4203X	AIR/GROUND SYSTEM DATA FROM DPC-1 IS INVALID	C
204	77-4204X	AIR/GROUND SYSTEM DATA FROM DPC-2 IS INVALID	C
205	77-4205X	AIR/GROUND SYSTEM 1 DATA IS INVALID	C
208	77-4208X	AIR/GROUND SYSTEM 2 DATA IS INVALID	C
209	73-4209X	FUEL METERING VALVE (FMV) TORQUE MOTOR CURRENT IS OUT OF RANGE	F
210	73-4210X	FUEL METERING VALVE (FMV) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	F
211	73-4211X	FUEL METERING VALVE (FMV) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	F
212	73-4212X	FUEL METERING VALVE (FMV) IS NOT IN COMMANDED POSITION	A
213	73-4213X	FUEL METERING VALVE (FMV) POSITION SENSOR CHANNEL-X AND CHANNEL-Y DO NOT AGREE	C
214	73-4214X	FUEL METERING VALVE (FMV) POSITION SENSOR IS OUT OF RANGE	G
215	73-4215X	FUEL METERING VALVE (FMV) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
216*	73-4216X (77-0900X)	FUEL METERING VALVE (FMV) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
217	73-4217X	FUEL FILTER BYPASS	D
218	73-4218X	FUEL FILTER APPROACHING BYPASS	H
219	73-4219X	FUEL FILTER IMPENDING BYPASS	D
220	73-4220X	FUEL FILTER DELTA PRESSURE (FFDP) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
221	73-4221X	FUEL FILTER DELTA PRESSURE (FFDP) SENSOR IS OUT OF RANGE	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
222	73-4222X	FUEL FILTER DELTA PRESSURE (FFDP) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
223*	73-4223X (77-0900X)	FUEL FILTER DELTA PRESSURE (FFDP) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
224	73-4224X	FUEL MANIFOLD PRESSURE SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
225	73-4225X	FUEL MANIFOLD PRESSURE SENSOR IS OUT OF RANGE	G
226	73-4226X	FUEL MANIFOLD PRESSURE SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
227*	73-4227X (77-0900X)	FUEL MANIFOLD PRESSURE SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
228	73-4228X	FUEL STRAINER BYPASS	D
229	73-4229X	FUEL STRAINER IMPENDING BYPASS	D
230	73-4230X	FUEL STRAINER DELTA PRESSURE (FSDP) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
231	73-4231X	FUEL STRAINER DELTA PRESSURE (FSDP) SENSOR IS OUT OF RANGE	C
232	73-4232X	FUEL STRAINER DELTA PRESSURE (FSDP) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
233*	73-4233X (77-0900X)	FUEL STRAINER DELTA PRESSURE (FSDP) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
234	73-4234X	ADIRU-L AND ADIRU-R GROUND SPEED SIGNALS DO NOT AGREE	H
235	73-4235X	FUEL METERING UNIT SHUTOFF VALVE IS FAILED CLOSED	A, D
236	73-4236X	FUEL METERING UNIT SHUTOFF VALVE IS FAILED OPEN	A, D
237	75-4237X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE	C
238	75-4238X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
239	75-4239X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	C
240	75-4240X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) VALVE IS FAILED CLOSED	D
241	75-4241X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) VALVE IS FAILED OPEN	A, D
242	75-4242X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (HPTACC) VALVE CHANNEL-X AND CHANNEL-Y POSITION DO NOT AGREE	C
243	75-4243X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL VALVE (HPTACC) POSITION SENSOR IS OUT OF RANGE	C
244	75-4244X	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL VALVE (HPTACC) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
245*	75-4245X (77-0900X)	HIGH PRESSURE TURBINE ACTIVE CLEARANCE CONTROL VALVE (HPTACC) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
246	77-4246X	ALTERNATE MODE CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	B
247	74-4247X	LEFT IGNITER RELAY IS FAILED CLOSED INTERNAL TO THE EEC	B
248	74-4248X	LEFT IGNITER RELAY IS FAILED OPEN INTERNAL TO THE EEC	C
249	74-4249X	LEFT IGNITION SYSTEM IS FAILED	D
250	74-4250X	LEFT IGNITION SYSTEM IS POWERED WITH THE ENGINE START LEVER IN CUTOFF	C
251	74-4251X	LEFT IGNITION SYSTEM IS NOT POWERED WITH ENGINE START LEVER AT IDLE	D
252	74-4252X	RIGHT IGNITER RELAY IS FAILED CLOSED INTERNAL TO THE EEC	B
253	74-4253X	RIGHT IGNITER RELAY IS FAILED OPEN INTERNAL TO THE EEC	C
254	74-4254X	RIGHT IGNITION SYSTEM IS FAILED	D
255	74-4255X	RIGHT IGNITION SYSTEM IS POWERED WITH THE ENGINE START LEVER IN CUTOFF	C
256	74-4256X	RIGHT IGNITION SYSTEM IS NOT POWERED WITH ENGINE START LEVER AT IDLE	D

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
257	74-4257X	IGNITER POWER MONITOR IS FAILED	G
258	80-4258X	ENGINE START FAILED DUE TO LOW FAN SPEED	D
259	77-4259X	STARTER AIR PRESSURE IS LOW	H
260	75-4260X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE	C
261	75-4261X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	C
262	75-4262X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	C
263	75-4263X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE IS FAILED CLOSED	D
264	75-4264X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE IS FAILED OPEN	A, D
265	75-4265X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE CHANNEL-X AND CHANNEL-Y POSITION DO NOT AGREE	C
266	75-4266X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE POSITION SENSOR IS OUT OF RANGE	C
267	75-4267X	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
268*	75-4268X (77-0900X)	LOW PRESSURE TURBINE ACTIVE CLEARANCE CONTROL (LPTACC) VALVE POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
269	77-4269X	LOW RANGE RADIO ALTIMETER (LRRA) SIGNALS DO NOT AGREE	H
270	73-4270X	ENGINE-X EEC CHANNEL-Y AIRCRAFT POWER IS NOT AVAILABLE	A, D
271	73-4271X	ENGINE-X EEC CHANNEL-Y IS NOT AVAILABLE BY: ENGINE-X EEC CHANNEL-X	A, D
272	73-4272X	MODULATED TURBINE COOLING (MTC) VALVE 1 IS FAILED CLOSED	B
273	73-4273X	MODULATED TURBINE COOLING (MTC) VALVE 1 IS FAILED OPEN	C
274	73-4274X	MODULATED TURBINE COOLING (MTC) VALVE 1 POSITION SENSOR IS OUT OF RANGE	B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
275	73-4275X	MODULATED TURBINE COOLING (MTC) VALVE 1 POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	B
276	73-4276X	MODULATED TURBINE COOLING (MTC) VALVE 1 POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	B
277	73-4277X	MODULATED TURBINE COOLING (MTC) VALVE 2 IS FAILED CLOSED	B
278	73-4278X	MODULATED TURBINE COOLING (MTC) VALVE 2 IS FAILED OPEN	C
279	73-4279X	MODULATED TURBINE COOLING (MTC) VALVE 2 POSITION SENSOR IS OUT OF RANGE	B
280	73-4280X	MODULATED TURBINE COOLING (MTC) VALVE 2 POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	B
281	73-4281X	MODULATED TURBINE COOLING (MTC) VALVE 2 POSITION SENSOR POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	B
282	73-4282X	MODULATED TURBINE COOLING (MTC) TORQUE MOTOR CURRENT IS OUT OF RANGE	B
283	73-4283X	MODULATED TURBINE COOLING (MTC) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	B
284	73-4284X	MODULATED TURBINE COOLING (MTC) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	B
285	79-4285X	OIL DEBRIS MONITORING SYSTEM IS FAILED	D
286	79-4286X	OIL DEBRIS MONITORING SYSTEM HAS DETECTED DEBRIS IN A SINGLE FLIGHT	D
287	79-4287X	OIL FILTER BYPASS	D
288	79-4288X	OIL FILTER APPROACHING BYPASS	H
289	79-4289X	OIL FILTER IMPENDING BYPASS	D
290	79-4290X	OIL FILTER DELTA PRESSURE (OFDP) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
291	79-4291X	OIL FILTER DELTA PRESSURE (OFDP) SENSOR IS OUT OF RANGE	C
292	79-4292X	OIL FILTER DELTA PRESSURE (OFDP) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
293*	79-4293X (77-0900X)	OIL FILTER DELTA PRESSURE (OFDP) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
294	73-4294X	ENGINE (P0) AND ADIRU AMBIENT PRESSURE SIGNALS DO NOT AGREE	B
296	73-4296X	AMBIENT PRESSURE (P0) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
297	73-4297X	AMBIENT PRESSURE (P0) SENSOR IS OUT OF RANGE	E
298	73-4298X	BLEED PRESSURE (P3B) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
299	73-4299X	BLEED PRESSURE (P3B) SENSOR IS OUT OF RANGE	E
300	73-4300X	BLEED PRESSURE (P3B) SENSOR AND COMPRESSOR DISCHARGE PRESSURE (PS3) SENSOR SIGNALS DO NOT AGREE	B
301	77-4301X	FAN SPEED (N1) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	B
302	77-4302X	FAN SPEED (N1) SENSOR IS OUT OF RANGE	A
303	77-4303X	FAN SPEED (N1) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	A
304	77-4304X	FAN SPEED (N1) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	A
305	77-4305X	FAN SPEED (N1) REDLINE LIMIT EXCEEDED	D
306	77-4306X	CORE SPEED (N2) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
307	77-4307X	CORE SPEED (N2) SENSOR IS OUT OF RANGE	G
308	77-4308X	CORE SPEED (N2) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
309	77-4309X	CORE SPEED (N2) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
310	77-4310X	N2 SPEED REDLINE LIMIT EXCEEDED	D
311	80-4311X	BOWED ROTOR OVERSPEED	H
312	73-4312X	ADIRU-L PROBE HEAT STATUS SIGNAL FROM DPC-1 IS INVALID	C
313	73-4313X	ADIRU-R PROBE HEAT STATUS SIGNAL FROM DPC-2 IS INVALID	C
314	73-4314X	PERMANENT MAGNET ALTERNATOR (PMA) CIRCUIT IS OPEN OR SHORTED	F

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
315	73-4315X	PERMANENT MAGNET ALTERNATOR (PMA) N2 SPEED SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
316	73-4316X	PERMANENT MAGNET ALTERNATOR (PMA) N2 SPEED SIGNAL IS OUT OF RANGE	G
317	73-4317X	PERMANENT MAGNET ALTERNATOR (PMA) N2 SPEED SIGNAL IS OUT OF RANGE EXTERNAL TO THE EEC	G
318	73-4318X	PERMANENT MAGNET ALTERNATOR (PMA) N2 SPEED SIGNAL IS OUT OF RANGE INTERNAL TO THE EEC	G
319	73-4319X	PILOT METERING VALVE (PMV) TORQUE MOTOR CURRENT IS OUT OF RANGE	F
320	73-4320X	PILOT METERING VALVE (PMV) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	F
321	73-4321X	PILOT METERING VALVE (PMV) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	F
322	73-4322X	PILOT METERING VALVE (PMV) IS FAILED CLOSED	A, D
323	73-4323X	PILOT METERING VALVE (PMV) IS FAILED OPEN	A, D
324	73-4324X	PILOT METERING VALVE (PMV) POSITION SENSOR CHANNEL-X AND CHANNEL-Y DO NOT AGREE	C
325	73-4325X	PILOT METERING VALVE (PMV) POSITION SENSOR IS OUT OF RANGE	G
326	73-4326X	PILOT METERING VALVE (PMV) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
327*	73-4327X (77-0900X)	PILOT METERING VALVE (PMV) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
328	73-4328X	PITOT PROBE HEAT INDICATES OFF	D
329	73-4329X	COMPRESSOR DISCHARGE PRESSURE (PS3) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	B
330	73-4330X	COMPRESSOR DISCHARGE PRESSURE (PS3) SENSOR IS OUT OF RANGE	F
331	73-4331X	POWER SUPPLY REGULATOR HAS A FAULT INTERNAL TO THE EEC	B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
332	75-4332X	PRESSURE SUBSYSTEM (PSS) POWER IS NOT AVAILABLE	E
333	75-4333X	PRESSURE SUBSYSTEM CROSS CHANNEL DATA LINK IS INVALID	H
334	75-4334X	ENGINE-X EEC CHANNEL-X HAS NO INPUT FROM PRESSURE SUBSYSTEM (PSS)	E
335	75-4335X	PRESSURE SUBSYSTEM (PSS) CHANNEL INDICATION IS INVALID	H
336	75-4336X	PRESSURE SUBSYSTEM (PSS) IS OVERHEATED	E
337	75-4337X	PRESSURE SUBSYSTEM (PSS) POWER MONITOR SIGNAL IS INVALID	H
339	75-4339X	PRESSURE SUB-SYSTEM (PSS) INTERNAL TEMPERATURE SENSOR DATA IS INVALID	C
340	73-4340X	ADIRU-L TOTAL PRESSURE SIGNAL FROM DPC-1 IS INVALID	D
341	73-4341X	ADIRU-R TOTAL PRESSURE SIGNAL FROM DPC-2 IS INVALID	D
342	73-4342X	ADIRU-L AND ADIRU-R TOTAL PRESSURE SIGNALS DO NOT AGREE	D
343	73-4343X	EEC RESET FAULT	G
344	80-4344X	STARTER AIR PRESSURE (SAP)SENSOR CHANNEL-X AND CHANNEL-Y DO NOT AGREE	H
345	80-4345X	STARTER AIR PRESSURE (SAP)SENSOR IS OUT OF RANGE	C
346	80-4346X	STARTER AIR PRESSURE (SAP)SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
347*	80-4347X (77-0900X)	STARTER AIR PRESSURE (SAP)SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
348	80-4348X	STARTER AIR VALVE (SAV) SOLENOID HAS AN ELECTRICAL FAULT	C
349	80-4349X	STARTER AIR VALVE (SAV) SOLENOID HAS AN ELECTRICAL FAULT EXTERNAL TO THE EEC	C
350	80-4350X	STARTER AIR VALVE (SAV) SOLENOID HAS AN ELECTRICAL FAULT INTERNAL TO THE EEC	C
351	80-4351X	STARTER AIR VALVE (SAV) IS FAILED OPEN	D
352	75-4352X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) TORQUE MOTOR CURRENT IS OUT OF RANGE	E

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
353	75-4353X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI)TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	E
354	75-4354X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI)TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	E
355	75-4355X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) VALVE IS FAILED CLOSED	A, D
356	75-4356X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) VALVE IS FAILED OPEN	A, D
357	75-4357X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) POSITION SENSOR CHANNEL-X AND CHANNEL-Y DO NOT AGREE	C
358	75-4358X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) POSITION SENSOR IS OUT OF RANGE	G
359	75-4359X	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
360*	75-4360X (77-0900X)	START BLEED VALVE BOOSTER ANTI-ICE (SBV/BAI) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
361	73-4361X	ENGINE START LEVER AND DPC-1 SIGNALS DO NOT AGREE	C
362	73-4362X	ENGINE START LEVER AND DPC-2 SIGNALS DO NOT AGREE	C
364	73-4364X	CHANNEL-X AND CHANNEL-Y ANALOG ENGINE START LEVER SIGNALS DO NOT AGREE	C
365	80-4365X	STARTER AIR PRESSURE (SAP) IS NOT AVAILABLE	H
366	71-4366X	HIGH EXHAUST GAS TEMPERATURE (EGT) DURING START	D
367	71-4367X	STARTER DUTY CYCLE IS EXCEEDED	H
368	80-4368X	START FAILED DUE TO STARTER FAILURE	H
369	71-4369X	ENGINE STALLED DURING START	D
370	73-4370X	N2 SPEED IS BELOW IDLE WITH FUEL SWITCH ON	D
371	73-4371X	EEC HAS INCORRECT SOFTWARE CONFIGURATION	A
372	73-4372X	EEC CHANNEL-X AND CHANNEL-Y SOFTWARE IS INCOMPATIBLE	A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
373	73-4373X	FAN INLET TEMPERATURE (T12) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
374	73-4374X	FAN INLET TEMPERATURE (T12) SENSOR IS OUT OF RANGE	G
375	73-4375X	FAN INLET TEMPERATURE (T12) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
376*	73-4376X (77-0900X)	FAN INLET TEMPERATURE (T12) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
377	73-4377X	COMPRESSOR INLET TEMPERATURE (T25) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	B
378	73-4378X	COMPRESSOR INLET TEMPERATURE (T25) SENSOR IS OUT OF RANGE	E
379	73-4379X	COMPRESSOR INLET TEMPERATURE (T25) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	E
380*	73-4380X (77-0900X)	COMPRESSOR INLET TEMPERATURE (T25) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	E
381	73-4381X	COMPRESSOR DISCHARGE TEMPERATURE (T3) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	B
382	73-4382X	COMPRESSOR DISCHARGE TEMPERATURE (T3) SENSOR IS OUT OF RANGE	E
383	73-4383X	ADIRU-L AND ADIRU-R TOTAL AIR TEMPERATURE (TAT) SIGNALS DO NOT AGREE	C
384	73-4384X	ADIRU-L AND ADIRU-R TOTAL AIR TEMPERATURE (TAT) SIGNALS ARE INVALID	C
385	73-4385X	ENGINE FAN INLET (T12) TEMPERATURE SENSOR AND CALCULATED ADIRU AIR TEMPERATURE SIGNALS DO NOT AGREE	H
386	73-4386X	CALCULATED ENGINE FAN INLET (T12) TEMPERATURE SENSOR AND CALCULATED ADIRU AIR TEMPERATURE SIGNALS DO NOT AGREE	B
387	73-4387X	ENGINE FAN INLET (T12) TEMPERATURE SENSOR AND ADIRU AIR TEMPERATURE SIGNALS DO NOT AGREE	B
388	75-4388X	TRANSIENT BLEED VALVE (TBV) TORQUE MOTOR CURRENT IS OUT OF RANGE	E

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
389	75-4389X	TRANSIENT BLEED VALVE (TBV) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	E
390	75-4390X	TRANSIENT BLEED VALVE (TBV) TORQUE MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	E
391	75-4391X	TRANSIENT BLEED VALVE (TBV) IS FAILED CLOSED	A, D
392	75-4392X	TRANSIENT BLEED VALVE (TBV) IS FAILED OPEN	A, D
393	75-4393X	TRANSIENT BLEED VALVE (TBV) POSITION SENSOR CHANNEL-X AND CHANNEL-Y DO NOT AGREE	C
394	75-4394X	TRANSIENT BLEED VALVE (TBV) POSITION SENSOR IS OUT OF RANGE	G
395	75-4395X	TRANSIENT BLEED VALVE(TBV) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
396*	75-4396X (77-0900X)	TRANSIENT BLEED VALVE POSITION (TBV) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
397*	73-4397X (77-0900X)	TEMPERATURE COLD JUNCTION HAS A FAULT INTERNAL TO THE EEC	G
398	73-4398X	ELECTRONIC OVERSPEED THRUST CONTROL MALFUNCTION ACCOMMODATION TEST FAILED (SINGLE CHANNEL)	B
399	73-4399X	ELECTRONIC OVERSPEED THRUST CONTROL MALFUNCTION ACCOMMODATION TEST FAILED (DUAL CHANNEL)	A, D
400	80-4400X	ELECTRONIC OVERSPEED THRUST CONTROL MALFUNCTION ACCOMMODATION TEST DID NOT START	E
401	73-4401X	THRUST CONTROL MALFUNCTION EVENT	A, D
402*	73-4402X (77-0900X)	MULTIPLE EEC INTERNAL TEMPERATURE SENSOR SIGNALS ARE OUT OF RANGE	B
403*	73-4403X (77-0900X)	EEC INTERNAL TEMPERATURE SENSOR SIGNAL IS OUT OF RANGE	H
404	79-4404X	ENGINE OIL TEMPERATURE (TEO) EXCEEDS AMBER LIMIT	D
405	79-4405X	ENGINE OIL TEMPERATURE (TEO) EXCEEDS REDLINE	D

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
406	79-4406X	ENGINE OIL TEMPERATURE (TEO) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
407	79-4407X	ENGINE OIL SUPPLY TEMPERATURE (TEO) SENSOR IS OUT OF RANGE	G
408	79-4408X	ENGINE OIL SUPPLY TEMPERATURE (TEO) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
409*	79-4409X (77-0900X)	ENGINE OIL SUPPLY TEMPERATURE (TEO) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
412	73-4412X	DUAL CHANNEL THRUST RESOLVER ANGLE (TRA) SENSOR IS OUT OF RANGE	A
413	78-4413X	THRUST REVERSER AIR/GROUND SIGNALS DO NOT AGREE	D
414	73-4414X	THRUST RESOLVER ANGLE (TRA) SENSOR IS OUT OF RANGE	B
415	78-4415X	EEC THRUST REVERSER INTERLOCK RELAY IS FAILED CLOSED	D
416	78-4416X	EEC THRUST REVERSER INTERLOCK RELAY IS FAILED OPEN	D
417	78-4417X	EEC THRUST REVERSER INTERLOCK RELAY POWER IS NOT AVAILABLE	D
418	73-4418X	THRUST RESOLVER ANGLE (TRA) CHANNEL-X AND CHANNEL-Y SENSORS DO NOT AGREE	A, D
419	78-4419X	THRUST REVERSER DIRECTIONAL CONTROL VALVE (DCV) IS FAILED IN THE DEPLOY POSITION	D
421	78-4421X	EEC DIRECTIONAL CONTROL VALVE (DCV) RELAY IS FAILED CLOSED	D
422	78-4422X	EEC DIRECTIONAL CONTROL VALVE (DCV) RELAY IS FAILED OPEN	D
424	78-4424X	THRUST REVERSER DIRECTIONAL CONTROL VALVE (DCV) IS FAILED IN THE STOW POSITION	D
425	78-4425X	THRUST REVERSER HYDRAULIC ISOLATION VALVE (HIV) IS FAILED CLOSED	D
426	78-4426X	THRUST REVERSER HYDRAULIC SYSTEM INDICATES PRESSURIZED WHEN COMMANDED STOWED	D

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
427	78-4427X	THRUST REVERSER DIRECTIONAL CONTROL VALVE (DCV) STOW SOLENOID POWER IS NOT AVAILABLE	D
428	78-4428X	THRUST REVERSER HYDRAULIC ISOLATION VALVE POWER IS NOT AVAILABLE	D
429	78-4429X	EEC HYDRAULIC ISOLATION VALVE (HIV) RELAY IS FAILED CLOSED	D
430	78-4430X	EEC HYDRAULIC ISOLATION VALVE (HIV) RELAY IS FAILED OPEN	D
432	78-4432X	THRUST REVERSER LEFT SLEEVE IS NOT IN THE COMMANDED POSITION	D
433	78-4433X	THRUST REVERSER LEFT SLEEVE POSITION SENSOR SIGNAL CHANNEL-X AND CHANNEL-Y DO NOT AGREE	B
434	78-4434X	THRUST REVERSER LEFT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE	B
435	78-4435X	THRUST REVERSER LEFT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE EXTERNAL TO THE EEC	B
436	78-4436X	THRUST REVERSER CENTER ACTUATOR (CH A = LEFT/ CH B = RIGHT) IS FAILED IN THE LOCKED POSITION	D
437	78-4437X	THRUST REVERSER CENTER ACTUATOR (CH A = LEFT/ CH B = RIGHT)PROXIMITY SWITCH INDICATES LOCKED WITH THRUST REVERSER DEPLOYED	D
438	78-4438X	THRUST REVERSER CENTER ACTUATOR (CH A = LEFT/ CH B = RIGHT) PROXIMITY SWITCH INDICATES UNLOCKED WITH THRUST REVERSER STOWED	D
439	78-4439X	THRUST REVERSER CENTER ACTUATOR (CH A = LEFT/ CH B = RIGHT) PROXIMITY SWITCH SIGNAL IS OUT OF RANGE	D
440	78-4440X	THRUST REVERSER UPPER (CH A = LEFT/ CH B = RIGHT) ACTUATOR IS FAILED IN THE LOCKED POSITION	D
441	78-4441X	THRUST REVERSER UPPER (CH A = LEFT/ CH B = RIGHT) ACTUATOR PROXIMITY SWITCH INDICATES LOCKED WITH THRUST REVERSER DEPLOYED	D

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
442	78-4442X	THRUST REVERSER UPPER (CH A = LEFT/ CH B = RIGHT) ACTUATOR PROXIMITY SWITCH INDICATES UNLOCKED WITH THRUST REVERSER STOWED	D
443	78-4443X	THRUST REVERSER UPPER ACTUATOR (CH A = LEFT/ CH B = RIGHT) PROXIMITY SWITCH SIGNAL IS OUT OF RANGE	D
444	78-4444X	THRUST REVERSER RIGHT SLEEVE IS NOT IN THE COMMANDED POSITION	D
445	78-4445X	THRUST REVERSER RIGHT SLEEVE POSITION SENSOR SIGNAL CHANNEL-X AND CHANNEL-Y DO NOT AGREE	B
446	78-4446X	THRUST REVERSER RIGHT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE	B
447	78-4447X	THRUST REVERSER RIGHT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE EXTERNAL TO THE EEC	B
448	78-4448X	THRUST REVERSER SYNC LOCK (CH A = LEFT/ CH B = RIGHT) IS FAILED IN THE LOCKED POSITION	D
449	78-4449X	THRUST REVERSER SYNC LOCK (CH A = LEFT/ CH B = RIGHT) POWER CIRCUIT IS FAILED OPEN	D
450	78-4450X	THRUST REVERSER SYNC LOCK (CH A = LEFT/ CH B = RIGHT) POWER CIRCUIT IS FAILED CLOSED	D
451	75-4451X	VARIABLE BLEED VALVE (VBV) TORQUE MOTOR CURRENT IS OUT OF RANGE	F
452	75-4452X	VARIABLE BLEED VALVE (VBV) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	F
453	75-4453X	VARIABLE BLEED VALVE (VBV) TORQUE MOTOR HAS AN ELECTRICAL FAULT INTERNAL TO THE EEC	F
454	75-4454X	VARIABLE BLEED VALVE (VBV) IS FAILED CLOSED	A
455	75-4455X	VARIABLE BLEED VALVE (VBV) IS FAILED OPEN	A
456	75-4456X	POSITION SIGNALS FROM VARIABLE BLEED VALVE (VBV) ACTUATORS LEFT AND RIGHT DO NOT AGREE	C
457	75-4457X	VARIABLE BLEED VALVE (VBV) POSITION SENSOR IS OUT OF RANGE	G

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
458	75-4458X	VARIABLE BLEED VALVE (VBV) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
459*	75-4459X (77-0900X)	VARIABLE BLEED VALVE (VBV) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
460	77-4460X	ADIRU-L AND ADIRU-R CALIBRATED AIRSPEED SIGNALS DO NOT AGREE	H
461	77-4461X	ENGINE N1 VIBRATION IS APPROACHING EXCEEDANCE LIMIT	H
462	77-4462X	ENGINE N1 VIBRATION LIMIT EXCEEDED	D
463	73-4463X	FAN SPEED (N1) SENSOR LOW TOOTH SIGNAL IS INVALID	H
464	77-4464X	ENGINE N2 VIBRATION IS APPROACHING EXCEEDANCE LIMIT	H
465	77-4465X	ENGINE N2 VIBRATION LIMIT EXCEEDED	D
466	75-4466X	VARIABLE STATOR VANE (VSV) TORQUE MOTOR CURRENT IS OUT OF RANGE	F
467	75-4467X	VARIABLE STATOR VANE (VSV) TORQUE MOTOR CURRENT IS OUT OF RANGE EXTERNAL TO THE EEC	F
468	75-4468X	VARIABLE STATOR VANE (VSV) TORQUE MOTOR MOTOR CURRENT IS OUT OF RANGE INTERNAL TO THE EEC	F
469	75-4469X	VARIABLE STATOR VANE (VSV) IS FAILED CLOSED	A
470	75-4470X	VARIABLE STATOR VANE (VSV) IS FAILED OPEN	A
471	75-4471X	POSITION SIGNALS FROM VARIABLE STATOR VANE (VSV) ACTUATORS LEFT AND RIGHT DO NOT AGREE	C
472	75-4472X	VARIABLE STATOR VANE (VSV) POSITION SENSOR IS OUT OF RANGE	G
473	75-4473X	VARIABLE STATOR VANE (VSV) POSITION SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	G
474*	75-4474X (77-0900X)	VARIABLE STATOR VANE (VSV) POSITION SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	G
475	73-4475X	FUEL FLOW METER (WFM) SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
476	73-4476X	FUEL FLOW METER(WFM) SENSOR SIGNAL IS OUT OF RANGE	C
477	73-4477X	MODULATED TURBINE COOLING (MTC) VALVES 1 AND 2 ARE NOT IN COMMANDED POSITION	B
478*	74-4478X (77-0900X)	ENGINE-X EEC CHANNEL-X HAS A POWER SUPPLY CAPACITOR CHARGE FAULT INTERNAL TO THE EEC	C
479	73-4479X	EEC IS POWERED WHEN NOT COMMANDED	H
480	73-4480X	FUEL FLOW METER(WFM) SENSOR SIGNAL IS OUT OF RANGE EXTERNAL TO THE EEC	C
481	73-4481X	THRUST INSTABILITY EVENT (TIE)	H
482	75-4482X	AIRCRAFT MODEL AND ENGINE RATING DO NOT AGREE	A
483	73-4483X	FUEL FLOW METER(WFM) SENSOR SIGNAL IS OUT OF RANGE INTERNAL TO THE EEC	C
484	73-4484X	EEC CHANNEL-X IS IN TEST CELL MODE	A
485	73-4485X	OFF-NOMINAL ADJUSTMENT CONFIGURATION	A
486	78-4486X	THRUST REVERSER PRESSURE SWITCH SIGNAL AND THRUST REVERSER COMMANDED POSITION DO NOT AGREE	D
488	77-4488X	ONS AUTHENTICATION IS INVALID	H
489	77-4489X	ONS AUTHORIZATION IS INVALID	H
490	73-4490X	THRUST INSTABILITY EVENT (TIE) AT TAKEOFF	A
491	78-4491X	THRUST REVERSER LEFT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE INTERNAL TO THE EEC	B
492	78-4492X	THRUST REVERSER RIGHT SLEEVE POSITION SENSOR SIGNAL IS OUT OF RANGE INTERNAL TO THE EEC	B
493	73-4493X	THRUST RESOLVER ANGLE (TRA) SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	B
494	73-4494X	THRUST RESOLVER ANGLE (TRA) SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	B
495	77-4495X	ONS ETHERNET RECEIVER IS INVALID	H
496	77-4496X	ONS ETHERNET HARDWARE IS FAILED	H
497	77-4497X	ONS ETHERNET ARP IS INVALID	H
498	77-4498X	EEC OPS AND EEC EHM HAVE INCOMPATIBLE SOFTWARE VERSIONS	H

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 205/73-21-00-993-805-G00 EEC Shop Faults Correlation Table (Continued)

EEC Shop Fault Report Fault ID (EEC Fault Code)	OMF Maintenance Message Number	OMF Maintenance Message Text	Dispatch Group
499	73-4499X	AIRCRAFT MODEL DISCRETES ARE NOT VALID	G
500	75-4500X	UPPER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE	C
501	75-4501X	UPPER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
502	75-4502X	UPPER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
503	75-4503X	LOWER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE	C
504	75-4504X	LOWER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE EXTERNAL TO THE EEC	C
505	75-4505X	LOWER FAN COMPARTMENT TEMPERATURE SENSOR IS OUT OF RANGE INTERNAL TO THE EEC	C
506	75-4506X	UPPER FAN COMPARTMENT TEMPERATURE SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
507	75-4507X	LOWER FAN COMPARTMENT TEMPERATURE SENSOR CHANNEL-X AND CHANNEL-Y SIGNALS DO NOT AGREE	C
508	75-4508X	UPPER FAN COMPARTMENT TEMPERATURE REDLINE LIMIT EXCEEDED	D
509	75-4509X	LOWER FAN COMPARTMENT TEMPERATURE REDLINE LIMIT EXCEEDED	D
510	74-4510X	DUAL IGNITER RELAY IS FAILED	D
511	73-4511X	DPC1 DATA IS NOT AVAILABLE	C
512	78-4512X	THRUST REVERSER INTERLOCK FAILED IN BLOCKING POSITION	D
513	78-4513X	THRUST REVERSER INTERLOCK FAILED IN NON-BLOCKING POSITION	D
514	73-4514X	DPC2 DATA IS NOT AVAILABLE	C
515	77-4515X	ENGINE N2 VIBRATION LIMIT EXCEEDED SUB-IDLE	A, D
516	77-4516X	ENGINE N1 HIGH VIBRATION DURING ICE CRYSTAL ICING CONDITIONS	H
533	73-4533X	ENGINE-X EEC CHANNEL-Y IS IN CONTINUOUS RESET CONDITION	A, D

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-970-010-G00

(3) The dispatch group in Table 205 is associated to the dispatch level and associated flight deck indications. The EEC fault dispatch group summary is shown in Table 206.

Table 206/73-21-00-993-806-G00 Dispatch Group

Dispatch Group	Dispatch Level Determination	Associated Flight Deck Indication
A	No Dispatch	ENGINE CONTROL Alert (direct) ENG X CONTROL Status (direct)
B	Short-Time Dispatch	ENG X EEC C1 SMT (direct)
C	Long-Time Dispatch	ENG X EEC C2 SMT (direct)
E	Long-Time Dispatch OR No Dispatch (if any other Group E or F fault is set on other channel or if Active Channel is in SCO)	ENG X EEC C2 SMT (direct) OR ENGINE CONTROL Alert (indirect) ENG X CONTROL Status (indirect)
F	Short-Time Dispatch OR No Dispatch (if any other Group E or F fault is set on other channel or if Active Channel is in SCO)	ENG X EEC C1 SMT (direct) OR ENGINE CONTROL Alert (indirect) ENG X CONTROL Status (indirect)
G	Long-Time Dispatch OR No Dispatch (if same fault is set on other channel or if Active Channel is in SCO)	ENG X EEC C2 SMT (direct) OR ENGINE CONTROL Alert (indirect) ENG X CONTROL Status (indirect)
D	Dedicated Flight Deck Effect (FDE) Dispatch per the MMEL or SMT procedures	Dedicated Alert/Status/SMT (direct)
A, D	Same as Group A (with dedicated Alert/Status/SMT Message)	ENGINE CONTROL Alert (direct) ENG X CONTROL Status (direct) AND Dedicated Alert/Status/SMT (direct)
H	Economic Dispatch	NONE (Maintenance Message only)

NOTE: A “direct” flight deck indication results solely via setting of an individual fault on a single EEC channel. An “indirect” flight deck indication requires multiple faults to be set (either the same fault on both channels or a combination of different faults).

Some faults in Dispatch Groups B, C, E, F, and G are indirect contributors to dedicated flight deck indications.

(a) The EEC assigns the final dispatch limitation level based on the EEC detected faults as shown in Figure 202.

SUBTASK 73-21-00-970-011-G00

(4) Use the EEC fault dispatch group summary to find the dispatch level and associated flight deck indications for the Fault IDs (Table 206 and Figure 202).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-00-080-001-G00

(1) If the maintenance device is used, disconnect the PMD (or laptop) from the ONS port, on the P61 aft overhead maintenance panel, in the flight deck.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-860-025-G00

(2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

SUBTASK 73-21-00-860-026-G00

(3) Set the GND TESTS switch, on the P61 aft overhead maintenance panel, to the NORM position.

SUBTASK 73-21-00-860-027-G00

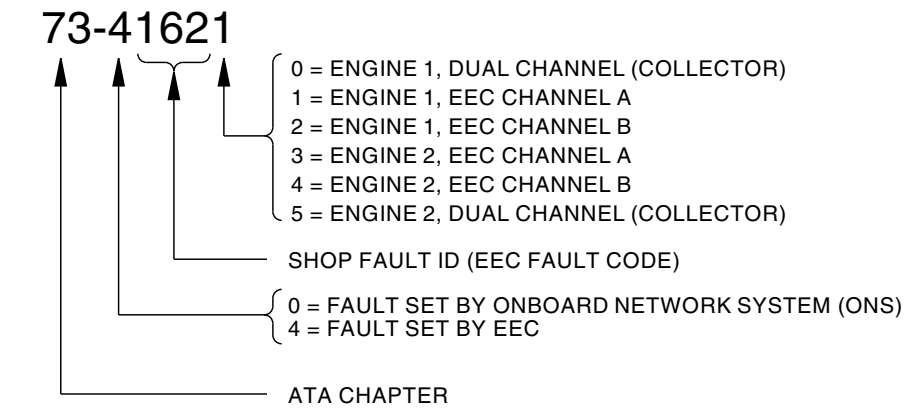
(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

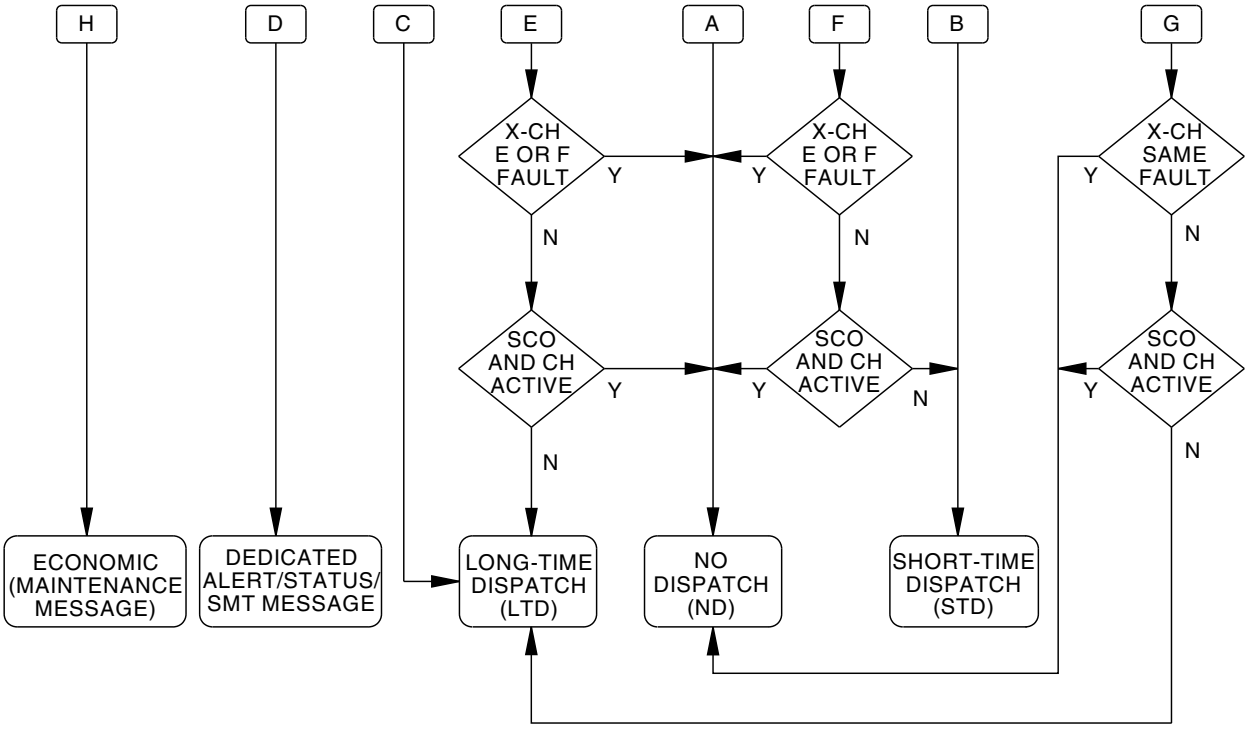
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5041442-00
2786092 S0000631956_V2

Maintenance Message Format
Figure 201/73-21-00-990-809-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

ACRONYMS ARE DEFINED AS FOLLOWS:

1) DCO (DUAL-CHANNEL OPERATION) - FAULT AND DISPATCH DATA FROM BOTH CHANNELS IS AVAILABLE.
2) SCO (SINGLE-CHANNEL OPERATION) - THE CHANNEL IS NOT RECEIVING SERIAL DATA FROM THE OPPOSITE CHANNEL. EITHER THE LOCAL CHANNEL IS HEALTHIER AND MADE ACTIVE ("CHANNEL IS ACTIVE") OR THE LOCAL CHANNEL IS KEPT INACTIVE BECAUSE THE OPPOSITE CHANNEL IS HEALTHIER ("CHANNEL IS NOT ACTIVE").
3) ND (NO-DISPATCH) - A "NO DISPATCH" LIMITATION LEVEL EXISTS.
4) STD (SHORT-TIME DISPATCH) - A "SHORT-TIME DISPATCH" LIMITATION LEVEL EXISTS.
5) LTD (LONG-TIME DISPATCH) - A "LONG-TIME DISPATCH" LIMITATION LEVEL EXISTS.

5041443-00
2786112 S0000631957_V1

Dispatch Limitation Level
Figure 202/73-21-00-990-810-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-00-470-803-G00

4. EEC Onboard Software Installation

A. General

(1) This task gives the instructions to upload the Electronic Engine Control (EEC) software.

(2) These are the ways that you can install the software in the system:

(a) Use the MAX Display System (MDS) screen.

(b) Use the universal maintenance device, SPL-11321.

(3) There are 4 EEC software part numbers (Operational Program Software (OPS), Engine Health Management (EHM), AVM, and AML).

(a) Only OPS and EHM can be loaded from Onboard Network System (ONS).

(b) To update the AVM or AML software part numbers, do this task: EEC Software Installation Using a PMAT, TASK 73-21-00-470-805-G00.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)
46-13-00-470-801	LRU Software Parts Installation (P/B 201)
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)
46-13-00-860-804	Mass Storage Device Software Parts Check (P/B 201)
71-00-00-700-802-G00	Test No. 26 - Debris Monitoring System Channel B Special Functions Test (P/B 501)
71-00-00-700-810-G00	Test No. 34 - Menu Mode Hardware Code Entry Special Functions Test (P/B 501)
71-00-00-700-813-G00	Test No. 37 - Engine Serial Number Entry Special Functions Test (P/B 501)
71-00-00-710-806-G00	Test No. 17 - Electronic Engine Control (EEC) System Test (P/B 501)
71-00-00-720-805-G00	Test No. 11 - Low Pressure System (Fan) Trim Balance (With ONS) (P/B 501)
71-00-00-970-801-G00	Maintenance Data Pages from the Engine Propulsion Control System (EPCS) (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-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
411	Engine 1 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Zone	Area
421	Engine 2 - Engine

E. Prepare for the EEC Onboard Software Installation (with MDS/MD)

SUBTASK 73-21-00-200-002-G00

(1) Make sure that the new software part, or parts, are available on the Mass Storage Device (MSD) (TASK 46-13-00-860-804).

SUBTASK 73-21-00-860-029-G00

(2) Select the left or right Multi Function Display (MFD).

(a) Push the SYS button on the MFD control panel, P9.

(b) Push the SEL button on SELECTOR knob on the MFD control panel, P9.

SUBTASK 73-21-00-860-028-G00

(3) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS (MCS) page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER switch to the TEST position.

(a) Wait for a minimum of 30 seconds to let the EEC complete the test.

SUBTASK 73-21-00-860-030-G00

(4) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-00-860-031-G00

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

SUBTASK 73-21-00-860-032-G00

(6) Set the applicable thrust lever to idle.

SUBTASK 73-21-00-970-001-G00

(7) Make a record of the current fan trim balance weight configuration (TASK 71-00-00-720-805-G00).

SUBTASK 73-21-00-970-012-G00

(8) Make a record of the menu mode hardware code and current EEC software version installed (TASK 73-21-00-470-801-G00).

NOTE: If you reprogram the EEC software, it erases the menu mode hardware code stored in the EEC Non Volatile Memory (NVM).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-910-003-G00

(9) Make a record of the current engine cumulative oil debris chip count (Debris Monitoring System (DMS)) on Engine Propulsion Control System (EPCS) page 2 (TASK 71-00-00-970-801-G00).

NOTE: If you reprogram the EEC software, it erases the cumulative oil debris chip count stored in the EEC NVM.

SUBTASK 73-21-00-910-004-G00

(10) Before you reprogram the EEC with new software, refer to the applicable Boeing Service Bulletin.

NOTE: It is important that the new EEC software version agrees with the Boeing interchangeability requirements.

F. EEC Onboard Software Installation (with MDS or Maintenance Device)

SUBTASK 73-21-00-860-107-G00

(1) Use the ONS to install the EEC software (TASK 46-13-00-470-801).

NOTE: There are 4 EEC software part numbers (OPS, EHM, AVM, and AML), but only OPS and EHM can be loaded from the ONS. The software parts loadable from the ONS are formatted as follows where XX is unique to the applicable software version:

- 73 EEC OPS part number: GEC4X-2628-86XX
- 77 EEC EHM part number: GEC4X-2628-87XX.

NOTE: Only one software part can be loaded at a time. If you load the OPS and EHM software parts, it is recommended to load OPS before EHM.

NOTE: If the AVM or AML software part numbers needs to be updated, use the EEC Software Installation Using a PMAT, TASK 73-21-00-470-805-G00.

NOTE: It is recommended to install the EEC software on one EEC channel at a time.

EEC-1A is the left engine CH A and EEC-1B is the left engine CH B.

EEC-2A is the right engine CH A and EEC-2B is the right engine CH B.

(a) If the software part reports “FAIL” in the Status field, do the steps that follow:

1) Make sure that the applicable EEC(s) are powered on (TASK 73-21-00-800-801-G00).

2) Operate the GND TEST switch on the maintenance bite panel, P61-4, from ENABLE to NORM, then back to ENABLE.

3) Try to install the EEC software again.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-00-840-001-G00

(1) If it is necessary, do these steps after the EEC software installation:

(a) Erase these status messages set by the EEC software installation procedure (TASK 31-65-00-750-801):

NOTE: ENG X CONTROL, ENG X REVERSER, and ENG X FAN COMP OVHT SENSOR status messages may be set due to EEC reprogramming, where "X" is specific to the engine reporting the fault. No fault isolation is required for these maintenance messages when set due to EEC software installation procedure.

1) Erase the ENG X CONTROL, ENG X REVERSER.

2) Erase the ENG X FAN COMP OVHT SENSOR.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Cycle power to the EECs with the EEC MAINT POWER on the MISC SYSTEM CTRLS page on the MFD (TASK 73-21-00-800-801-G00).

(c) Confirm the status messages are no longer present (TASK 31-65-00-750-801).

(d) If the status message(s) is or are still active, do the IFIM task(s) for the associated maintenance message(s).

SUBTASK 73-21-00-970-002-G00

(2) If the OPS software was installed, do this task to input the Engine Serial Number (ESN): Test No. 37 - Engine Serial Number Entry Special Functions Test, TASK 71-00-00-700-813-G00.

NOTE: The next engine start after one of the tasks that follow can have a longer pre-start motoring time than typical of cold engines. This is because the engine off time has been erased from EEC NVM.

(a) Install new EEC software.

(b) Enter new Engine Serial Number (ESN).

(c) Install the engine on a new aircraft tail number.

(d) Install the engine on the opposite engine position on the same aircraft tail number.

(e) Install a data entry plug with new thrust rating, N1 trim, or engine configuration.

SUBTASK 73-21-00-970-013-G00

(3) If the OPS software was installed, input the menu mode hardware configuration code (TASK 71-00-00-700-810-G00).

SUBTASK 73-21-00-710-001-G00

(4) Cycle power to the EECs with the EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD (TASK 73-21-00-800-801-G00).

NOTE: This will make sure that the data entry plug information is read and stored correctly to the EEC NVM.

SUBTASK 73-21-00-860-105-G00

(5) Do this task: EEC Onboard Software Installation Verification, TASK 73-21-00-470-804-G00.

SUBTASK 73-21-00-970-003-G00

(6) If the OPS software was installed, input the fan trim balance weight configuration, as necessary.

(a) After saving a Weights Configuration change, wait 75 seconds before making additional Weights Configuration changes.

NOTE: If you do not wait 75 seconds, the EEC will not save the Weight Configuration to memory.

(b) If only one EEC channel was reprogrammed, you do not need to manually enter the engine trim balance weight configuration.

NOTE: The EEC channel that was not replaced will automatically transfer the engine trim balance weight configuration to the newly installed EEC channel, after the engine is started and at stable ground idle.

(c) If both EEC channels were reprogrammed, input the fan trim balance weight configuration.

NOTE: This can be done on the next maintenance schedule, but the balance weight configuration will not be correct when you try to do an engine fan trim balance, or when you view the EHM vibration reports.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Connect the Portable Maintenance Device (PMD) to the ONS (TASK 46-13-00-480-801).

2) Make these selections on the PMD:

a) OTHER FUNCTIONS

b) EHM

SIA 001-014 PRE SB 737-46-1029

c) ENGINE 1 or ENGINE 2.

SIA 015-999; SIA 001-014 POST SB 737-46-1029

d) Engine Position: 1 or Engine Position: 2

e) Select OK on the CONFIRM BALANCE WEIGHTS pop up window

SIA ALL

f) Select ADD.

<1> Select the part number (P0x) column and configuration hole/blade (yy) column.

<2> Input the previously recorded weights.

<3> Select SAVE.

(d) If EEC software version prior to installing the new software part number was 6.7 or later (post LEAP-1B Service Bulletin 73-0025), the fan trim balance weight configuration was preserved through the EEC software installation.

NOTE: It is not necessary to input the fan trim balance weight configuration.

SUBTASK 73-21-00-860-102-G00

(7) If the OPS software was installed, input the engine cumulative oil debris chip count, as necessary.

(a) If only one EEC channel was reprogrammed, you do not need to perform Test No. 26 (DMS Reset) special function.

1) The EEC channel that was not replaced will automatically transfer the engine oil debris cumulative chip count to the newly installed EEC channel, after the engine is started and at stable ground idle.

(b) If both EEC channels were reprogrammed, check the cumulative oil debris chip count.

NOTE: If EEC software version that was installed before the new software part number (Step E.(8)) was 6.7 or later (post LEAP-1B Service Bulletin 73-0025), the cumulative oil debris chip count was preserved through the EEC software installation. It is not necessary to input the cumulative oil debris chip count.

1) Confirm the engine cumulative oil debris chip count (DMS) on EPCS page 2 is the same as what was recorded in Step E.(9) (TASK 71-00-00-970-801-G00).

2) If the chip count is not correct, input the correct count (TASK 71-00-00-700-802-G00).

SUBTASK 73-21-00-730-001-G00

(8) Do this task: Test No. 17 - Electronic Engine Control (EEC) System Test, TASK 71-00-00-710-806-G00.

SUBTASK 73-21-00-860-103-G00

(9) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS (MSC) page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-860-104-G00

(10) Set the GND TEST switch on the maintenance bite panel, P61-4, to the NORM position.

SUBTASK 73-21-00-860-055-G00

(11) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

TASK 73-21-00-470-805-G00

5. EEC Software Installation Using a PMAT

(Figure 203)

A. General

(1) This task gives the instructions to install software on the Electronic Engine Control (EEC) using a Portable Maintenance Access Terminal (PMAT).

(a) Portable data loaders (PDLs) compatible with the LEAP-1B EECs are an acceptable alternative to the PMAT. If you use a PDL, follow the steps in this task but refer to the PDL user manual for task steps specific to the PMAT interface. Contact CFM if you have any questions on PDL compatibility or task procedures.

(2) These tools are necessary to retrieve Non Volatile Memory (NVM) data from the EEC:

(a) PMAT 2000, ARINC 615/615A data loader, COM-4963.

(b) CFM recommends the reprogramming kit Cable Assembly, SPL-14903, (reprogramming box, reprogramming box cable, and Ethernet cable).

(c) Ethernet adapter (Teledyne controls cable), CIS-MS/FSM boot-loader breakout kit, COM-13929.

(d) ARINC 615A-3 software image update, part number 80719-3-UPG or newer, to upgrade the PMAT 2000.

(3) This procedure can generate the Onboard Maintenance Function (OMF) maintenance messages that follow as both EECs are powered and only one EEC is connected to the PMAT:

(a) 73-4117X 'CROSS CHANNEL DATA LINK DISCRETE INPUTS AND BACKUP SERIAL CROSS CHANNEL DATA LINK DO NOT AGREE'

(b) 73-4270X 'ENGINE-Y EEC CHANNEL-Z AIRCRAFT POWER IS NOT AVAILABLE'

(c) 73-4271X 'ENGINE-Y EEC CHANNEL-Z IS NOT AVAILABLE'.

NOTE: Where X refers to EEC channel detecting the fault (0 - Engine 1 Channel A and B, 1 - Engine 1 Channel A, 2 - Engine 1 Channel B, 3 - Engine 2 Channel A, 4 - Engine 2 Channel B, 5 - Engine 2 Channel A and B), Y refers to engine position (1-Left or 2-Right) and Z refers to EEC channel (A or B).

NOTE: No fault isolation is necessary for these maintenance messages when they are set because of the performance of this procedure.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)
71-00-00-700-810-G00	Test No. 34 - Menu Mode Hardware Code Entry Special Functions Test (P/B 501)
71-00-00-700-813-G00	Test No. 37 - Engine Serial Number Entry Special Functions Test (P/B 501)
71-00-00-710-806-G00	Test No. 17 - Electronic Engine Control (EEC) System Test (P/B 501)
71-00-00-720-805-G00	Test No. 11 - Low Pressure System (Fan) Trim Balance (With ONS) (P/B 501)
71-00-00-970-801-G00	Maintenance Data Pages from the Engine Propulsion Control System (EPCS) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (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-4963	Loader - Data, ARINC 615/615A (Model is PMAT 2000) Part #: P2K-615A-06 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0
COM-13929	Kit - Breakout, CIS-MS/FSM Boot-loader Part #: 80080-1 Supplier: 0BAW0
SPL-14903	Cable Assembly - PMAT (LEAP-1B Engine) Part #: 9471M34G02 Supplier: 58828
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
414	Engine 1 - Fan Cowl, Right
424	Engine 2 - Fan Cowl, Right

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

F. Prepare for the Software Installation

SUBTASK 73-21-00-470-002-G00

(1) Install the EEC software on the PMAT:

(a) Make sure that the power is applied to the PMAT.

(b) If the new EEC software version is not installed on the PMAT, transfer it to the PMAT C:\datafiles\NEWLOADS directory.

(c) If not already active, select the "PMAT Main Menu" icon on the PMAT desktop.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Select the LOADSTAR box.

NOTE: The LOADSTAR box can be in a different location on a different PMAT.

(e) When LOADSTAR opens, select the LIBRARY tab on the lower right edge of the screen.

(f) Select the INSTALL SOFTWARE bar at the top of the screen.

(g) Select the NEW LOAD DIRECTORY radio button.

(h) Select the specified software to load.

NOTE: Multiple items can be selected.

(i) Select NEXT.

(j) When the new INSTALL SOFTWARE Window shows, select NEXT.

NOTE: If you select more than one part, an INSTALL SOFTWARE window will show for each subsequent part after the previous part is installed.

(k) When the INSTALLATION COMPLETE window shows, after you install all the parts, select OK.

(l) Select LOGOFF LOADSTAR.

NOTE: The selection is on the lower left corner of the display.

(m) Close LOADSTAR.

SUBTASK 73-21-00-860-114-G00

(2) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-00-970-007-G00

(3) Make a record of the fan trim balance weight configuration (TASK 71-00-00-720-805-G00).

NOTE: Reprogramming the EEC software erases the fan trim balance weight configuration stored in the EEC NVM.

SUBTASK 73-21-00-970-014-G00

(4) Make a record of the menu mode hardware code and current EEC software version installed (TASK 73-21-00-470-801-G00).

NOTE: If you reprogram the EEC software, it erases the menu mode hardware code stored in the EEC NVM.

SUBTASK 73-21-00-910-001-G00

(5) Make a record of the current engine cumulative oil debris chip count ("Debris Monitoring System (DMS)") on Engine Propulsion Control System (EPCS) page 2 (TASK 71-00-00-970-801-G00).

NOTE: If you reprogram the EEC software, it erases the cumulative oil debris chip count stored in the EEC NVM.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-970-017-G00

(6) Before you reprogram the EEC with new software, refer to the applicable Boeing Service Bulletin.

NOTE: It is important that the new EEC software version agrees with the Boeing interchangeability requirements.

SUBTASK 73-21-00-210-021-G00

(7) Make sure that the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page is set to NORM (TASK 73-21-00-800-801-G00).

SUBTASK 73-21-00-700-001-G00

(8) Test the battery charge and cable continuity on the Cable Assembly, SPL-14903:

(a) Remove the dust cap from the Ground Support Equipment (GSE) VIBRATION DSP ETHERNET port on the reprogramming box.

(b) Connect one end of the Ethernet cable to the GSE VIBRATION DSP ETHERNET port.

(c) Remove the dust cap from the GSE ETHERNET port on the reprogramming box.

(d) Connect the other end of the Ethernet cable to the GSE ETHERNET PORT.

(e) Make sure that the BATTERY FULLY CHARGED light is on.

1) If the BATTERY FULLY CHARGED light is not on, replace the standard 9V battery on the reprogramming box.

(f) Disconnect both ends of the Ethernet cables.

(g) Put the dust caps on GSE VIBRATION DSP ETHERNET and GSE ETHERNET ports on the reprogramming box.

(h) Disconnect the dust cap on the TESTER RECEPTACLE on the reprogramming box.

(i) Connect the end of the reprogramming box cable to the TESTER RECEPTACLE on the reprogramming box.

1) Connect the end of the reprogramming box cable used for connection to the EEC J9.

(j) Make sure that the CABLE OK light is illuminates.

1) If the CABLE OK light does not illuminate, replace the battery and do the test again.

2) If the CABLE OK light still does not illuminate, replace the Cable Assembly, SPL-14903, and do the test again.

(k) Replace the dust cap on the TESTER RECEPTACLE.

SUBTASK 73-21-00-860-115-G00

(9) Make sure that the engines are shut down at least 5 minutes before you start the software installation.

SUBTASK 73-21-00-010-005-G00

(10) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-470-003-G00

(11) Connect the PMAT to the EEC:

(a) Remove the dust cap on the J9 connector.

(b) Connect the end of the EEC programming Cable Assembly, SPL-14903, to the EEC J9 connector.

(c) Connect the Ethernet adapter (Teledyne controls cable), CIS-MS/FSM boot-loader breakout kit, COM-13929, to the reprogramming port of the PMAT.

(d) Connect the EEC programming Cable Assembly, SPL-14903, to the PMAT reprogramming Ethernet adapter cable port with a “straight” Ethernet cable at either:

NOTE: If you use a ”cross-over” Ethernet cable, the PMAT will not be able to find an EEC target to connect with for the software upload.

1) The GSE ETHERNET port to reprogram Control & System Configuration (Operational Program Software (OPS)) software, Engine Health Management (EHM) Reporting & Onboard Network System (ONS) Functions (EHM) software, or Application Memory Loader (AML) software.

2) The GSE VIBRATION DSP ETHERNET port to reprogram the Advanced Vibration Analysis (AVM) OMAP software.

SUBTASK 73-21-00-860-120-G00

(12) Set the GND TESTS switch on the auxiliary panel, P61, to the ENABLE position.

G. Electronic Engine Control (EEC) Software Installation Using a PMAT

SUBTASK 73-21-00-470-004-G00

(1) Install the EEC software using a PMAT:

(a) Set the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page to TEST (TASK 73-21-00-800-801-G00).

(b) Power on the PMAT.

(c) Select “PMAT MAIN MENU” icon on the PMAT desktop to open the loading software.

(d) Select “ARINC 615A DATALOADER” (Figure 203 (Sheet 5)).

(e) Enter USER NAME into box 1 (Figure 203 (Sheet 6)).

(f) In box 2, SELECT A TAIL NUMBER and then select OK.

1) If a tail number is not present in box 2, select OTHER and enter a tail number.

2) Then select OK.

(g) In box 3, SELECT CONNECTION TYPE.

(h) In box 4, select CONTINUE.

(i) Select “Upload” (Figure 203 (Sheet 7)).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Wait for the screen to show that a target was found, then select that target (Figure 203 (Sheet 8)).

NOTE: If reprogramming the field loadable OMAP software, there will be a delay of approximately 40 seconds between EEC power-on and when the target appears.

NOTE: If you will use the GSE ETHERNET port when reprogramming, the screen will display the target name as: “GEC-EECCPU_A” or “GEC-EECCPU_B” depending on the channel the PMAT will connect to (A or B).

NOTE: If you will use the GSE VIBRATION DSP ETHERNET port when reprogramming, the screen will display the target name as: “GEC-EECDSP_A” or “GEC-EECDSP_B” depending on the channel the PMAT will connect to (A or B).

(k) Select CONTINUE (Figure 203 (Sheet 8)).

(l) Select a tail number (Figure 203 (Sheet 9)).

(m) Scroll through the list of parts and select the part to be loaded as defined by the release documentation.

(n) Select CONTINUE (Figure 203 (Sheet 8)).

(o) Select CONTINUE “UPLOAD” (Figure 203 (Sheet 9)).

(p) Monitor the software loading progress bar on the PMAT display.

NOTE: A complete successful load is indicated by a green bar on the PMAT display.

(q) If the software load is successful, then do the steps that follow:

1) Select “Close” and “GO BACK”.

2) If installing another software using the same Ethernet port on the EEC programming Cable Assembly, SPL-14903, do this step:

a) Select “PMAT Main Menu” icon on the PMAT desktop to open the loading software.

b) Do the steps again for installation of the software.

3) If no additional software load, select “SHUTDOWN” on the PMAT MAIN MENU.

4) Set the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page is set to NORM (TASK 73-21-00-800-801-G00).

SUBTASK 73-21-00-860-116-G00

(2) If the software installation was not successful, do these steps:

(a) Make sure that the EEC power is on (TASK 73-21-00-800-801-G00).

(b) Make sure that the installation of the cables between the PMAT and the EEC is correct.

(c) Make sure that you tighten cable connections to the proper torque.

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

(e) Make sure that the PMAT is properly configured.

(f) Do the procedure again at least three times to load the software.

1) If the software installation fails after three or more attempts, do a repair action.

SUBTASK 73-21-00-000-001-G00

(3) Disconnect the PMAT from the EEC:

(a) Disconnect the EEC programming Cable Assembly, SPL-14903, from the EEC J9 connector.

(b) Disconnect the Ethernet cable from the applicable GSE Ethernet port on the EEC programming Cable Assembly, SPL-14903, and the PMAT Ethernet port.

(c) Install the dust cap on the J9 connector.

SUBTASK 73-21-00-470-005-G00

(4) Connect the PMAT to the other EEC channel or to load the other EEC software:

(a) Remove the dust cap on the J9 connector.

(b) Connect the end of the EEC programming Cable Assembly, SPL-14903, to the EEC J9 connector.

(c) Connect the Ethernet adapter (Teledyne controls cable), CIS-MS/FSM boot-loader breakout kit, COM-13929, to the reprogramming port of the PMAT.

(d) Connect the EEC programming Cable Assembly, SPL-14903, to the PMAT reprogramming Ethernet adapter cable port with a "straight" Ethernet cable at either:

NOTE: If you use a "cross-over" Ethernet cable, the PMAT will not be able to find an EEC target to connect with for the software upload.

1) The GSE ETHERNET port to reprogram Control & System Configuration (OPS) software, EHM Reporting & ONS Functions (EHM) software, or Application Memory Loader (AML) software.

2) The GSE VIBRATION DSP ETHERNET port to reprogram the Advanced Vibration Analysis (AVM) OMAP software.

SUBTASK 73-21-00-470-006-G00

(5) Do these steps again to continue the loading of the software on the other EEC channel:

(a) Set the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page to TEST (TASK 73-21-00-800-801-G00).

(b) Power on the PMAT.

(c) Select “PMAT MAIN MENU” icon on the PMAT desktop to open the loading software.

(d) Select “ARINC 615A DATALOADER” (Figure 203 (Sheet 5)).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Enter USER NAME into box 1 (Figure 203 (Sheet 6)).

(f) In box 2, SELECT A TAIL NUMBER and then select OK.

1) If a tail number is not present in box 2, select OTHER and enter a tail number.

2) Select OK.

(g) In box 3, SELECT CONNECTION TYPE.

(h) In box 4, select CONTINUE.

(i) Select “Upload” (Figure 203 (Sheet 7)).

(j) Wait for the screen to show that a target was found, then select that target (Figure 203 (Sheet 8)).

NOTE: If reprogramming the field loadable OMAP software, there will be a delay of approximately 40 seconds between EEC power-on and when the target appears.

NOTE: If you will use the GSE ETHERNET port when reprogramming, the screen will display the target name as: “GEC-EECCPU_A” or “GEC-EECCPU_B” depending on the channel the PMAT will connect to (A or B).

NOTE: If you will use the GSE VIBRATION DSP ETHERNET port when reprogramming, the screen will display the target name as: “GEC-EECDSP_A” or “GEC-EECDSP_B” depending on the channel the PMAT will connect to (A or B).

(k) Select CONTINUE (Figure 203 (Sheet 8)).

(l) Select a tail number (Figure 203 (Sheet 9)).

(m) Scroll through the list of parts and select the part to be loaded as defined by the release documentation.

(n) Select CONTINUE (Figure 203 (Sheet 8)).

(o) Select CONTINUE “UPLOAD” (Figure 203 (Sheet 9)).

(p) Monitor the software loading progress bar on the PMAT display.

NOTE: A complete successful load is indicated by a green bar on the PMAT display.

(q) If the software load is successful, then do these steps:

1) Select “Close” and “GO BACK”.

2) If installing another software using the same Ethernet port on the EEC programming Cable Assembly, SPL-14903, do this step:

a) Select “PMAT Main Menu” icon on the PMAT desktop to open the loading software.

b) Do the steps again for installation of the software.

3) If no additional software load, select “SHUTDOWN” on the PMAT MAIN MENU.

4) Set the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page is set to NORM (TASK 73-21-00-800-801-G00).

H. Put the Airplane Back to its Usual Condition

SUBTASK 73-21-00-410-006-G00

(1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

(a) On the applicable engine, close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-00-860-117-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-00-210-022-G00

(3) Do a check on the OMF for the EEC maintenance messages that follows:

(a) 73-41170, 73-41175, 73-42701, 73-42702, 73-42703, 73-42704, 73-42711, 73-42712, 73-42713, and 73-42714.

NOTE: No fault isolation is required for these maintenance messages when set due to EEC connection to the PMAT.

1) If the maintenance messages are displayed, cycle the power to the EECs with the EEC MAINT POWER on the MISC SYSTEM CTRLS page on the Multi Function Display (MFD) (TASK 73-21-00-800-801-G00).

2) If the maintenance messages clear, confirm that no STATUS or SMT messages are on display (TASK 31-65-00-750-801).

SUBTASK 73-21-00-470-007-G00

(4) If the OPS software was installed, input the Engine Serial Number (ESN) (TASK 71-00-00-700-813-G00).

NOTE: The next engine start after one of the tasks that follow can have a longer pre-start motoring time than typical of cold engines. This is because the engine off time has been erased from EEC NVM.

(a) Install new EEC software.

(b) Enter new Engine Serial Number (ESN).

(c) Install the engine on a new aircraft tail number.

(d) Install the engine on the opposite engine position on the same aircraft tail number.

(e) Install a data entry plug with new thrust rating, N1 trim, or engine configuration.

SUBTASK 73-21-00-970-015-G00

(5) If the OPS software was installed, input the menu mode hardware configuration code (TASK 71-00-00-700-810-G00).

SUBTASK 73-21-00-910-002-G00

(6) Cycle power to the EECs with the EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD (TASK 73-21-00-800-801-G00).

NOTE: If you cycle power to the EECs, it will make sure that the data entry plug information is read and stored correctly to EEC NVM.

SUBTASK 73-21-00-700-002-G00

(7) Do this task: EEC Onboard Software Installation Verification, TASK 73-21-00-470-804-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-470-008-G00

(8) If the OPS software was installed, input the fan trim balance weight configuration, as necessary.

(a) After saving a Weights Configuration change, wait 75 seconds before making additional Weights Configuration changes.

NOTE: If you do not wait 75 seconds, the EEC will not save the Weight Configuration to memory.

(b) If only one EEC channel was reprogrammed, you do not need to manually enter the engine trim balance weight configuration.

NOTE: The EEC channel that was not replaced will automatically transfer the engine trim balance weight configuration to the newly installed EEC channel, after the engine is started and at stable ground idle.

(c) If both EEC channels were reprogrammed, input the fan trim balance weight configuration.

NOTE: This can be done on the next maintenance schedule, but the balance weight configuration will not be correct when you do an engine fan trim balance, or when you view the EHM vibration reports.

1) Connect the Portable Maintenance Device (PMD) to the ONS (TASK 46-13-00-480-801).

2) Make these selections on the PMD:

a) OTHER FUNCTIONS

b) EHM

SIA 001-014 PRE SB 737-46-1029

c) ENGINE 1 or ENGINE 2.

SIA 015-999; SIA 001-014 POST SB 737-46-1029

d) Engine Position: 1 or Engine Position: 2

e) Select OK on the CONFIRM BALANCE WEIGHTS pop up window.

SIA ALL

f) Select ADD.

<1> Select the part number (P0x) column and configuration hole/blade (yy) column.

<2> Input the previously recorded weights.

<3> Select SAVE.

(d) If EEC software version prior to installing the new software part number was 6.7 or later (post LEAP-1B Service Bulletin 73-0025), the fan trim balance weight configuration was preserved through the EEC software installation.

NOTE: It is not necessary to input the fan trim balance weight configuration.

SUBTASK 73-21-00-860-118-G00

(9) If the OPS software was installed, input the engine cumulative oil debris chip count, as necessary.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) If only one EEC channel was reprogrammed, you do not need to perform Test No. 26 (DMS Reset) special function.

NOTE: The EEC channel that was not replaced will automatically transfer the engine oil debris cumulative chip count to the newly installed EEC channel, after the engine is started and at stable ground idle.

(b) If both EEC channels were reprogrammed, check the cumulative oil debris chip count.

(c) If EEC software version that was installed before the new software part number (Step E.(8)) was 6.7 or later (post LEAP-1B Service Bulletin 73–0025), the cumulative oil debris chip count was preserved through the EEC software installation.

NOTE: It is not necessary to input the cumulative oil debris chip count.

1) Confirm the engine cumulative oil debris chip count (DMS) on EPCS page 2 is the same as what was recorded in Step E.(9) (TASK 71-00-00-970-801-G00).

2) If the chip count is not correct, input the correct count (TASK 71-00-00-970-801-G00).

SUBTASK 73-21-00-860-121-G00

(10) Set the GND TESTS switch on the auxiliary panel, P61, to the NORM position.

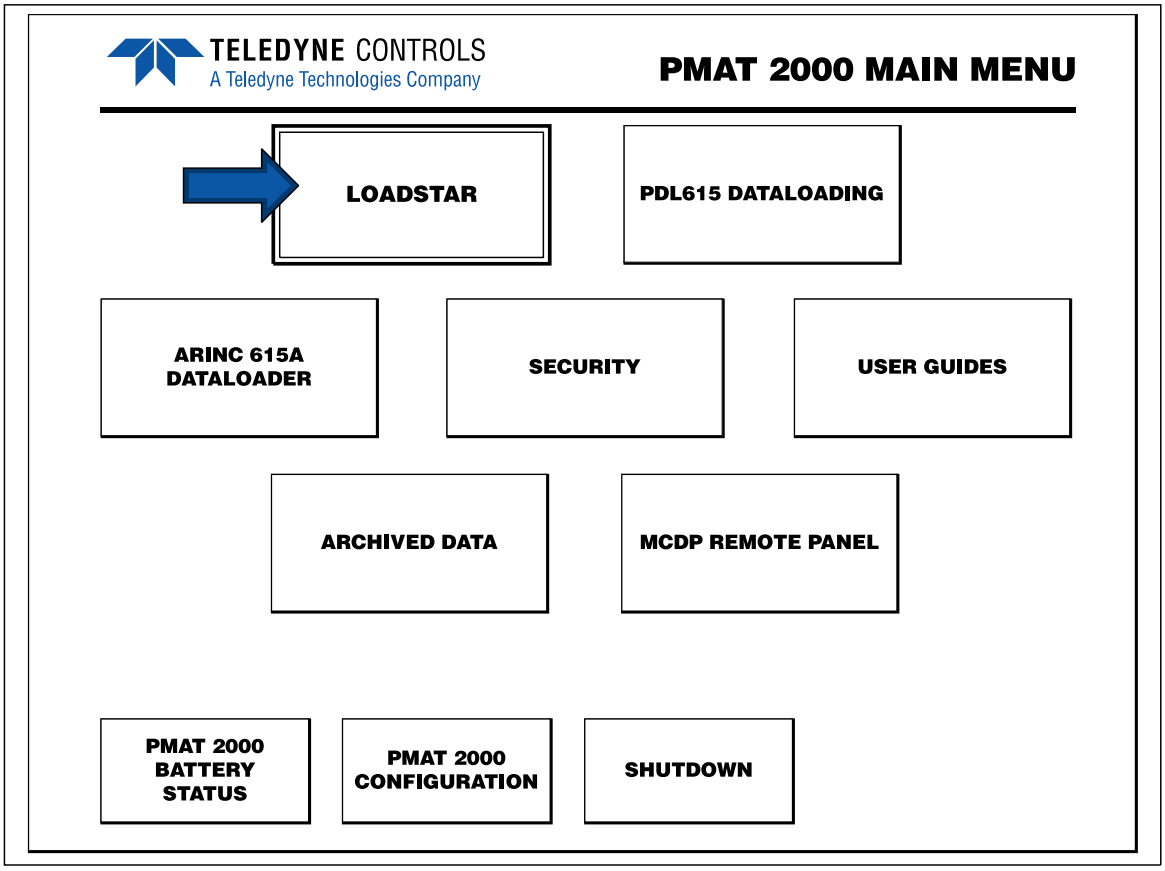
I. Electronic Engine Control (EEC) Software Installation Test

SUBTASK 73-21-00-730-002-G00

(1) Do this task: Test No. 17 - Electronic Engine Control (EEC) System Test, TASK 71-00-00-710-806-G00.

——— END OF TASK ———

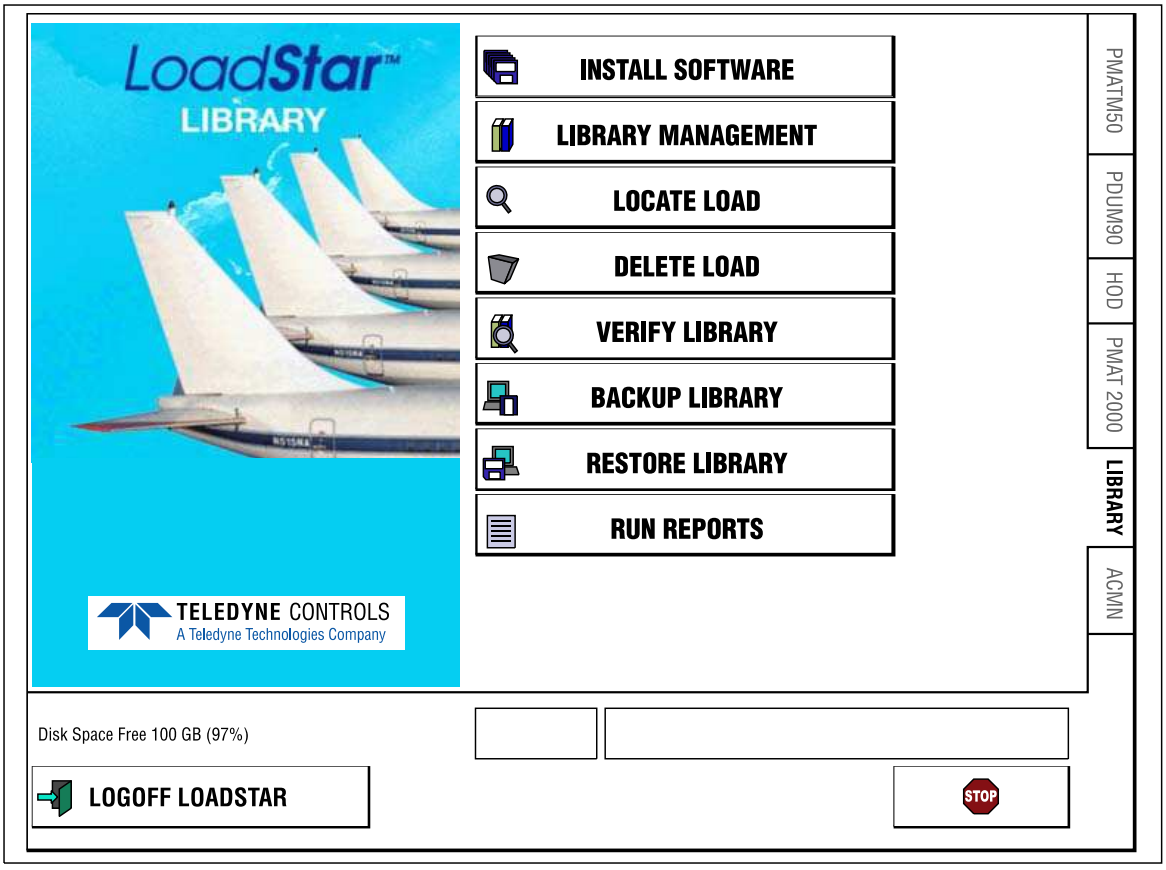
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035499-00
2568012 S0000614809_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 1 of 9)

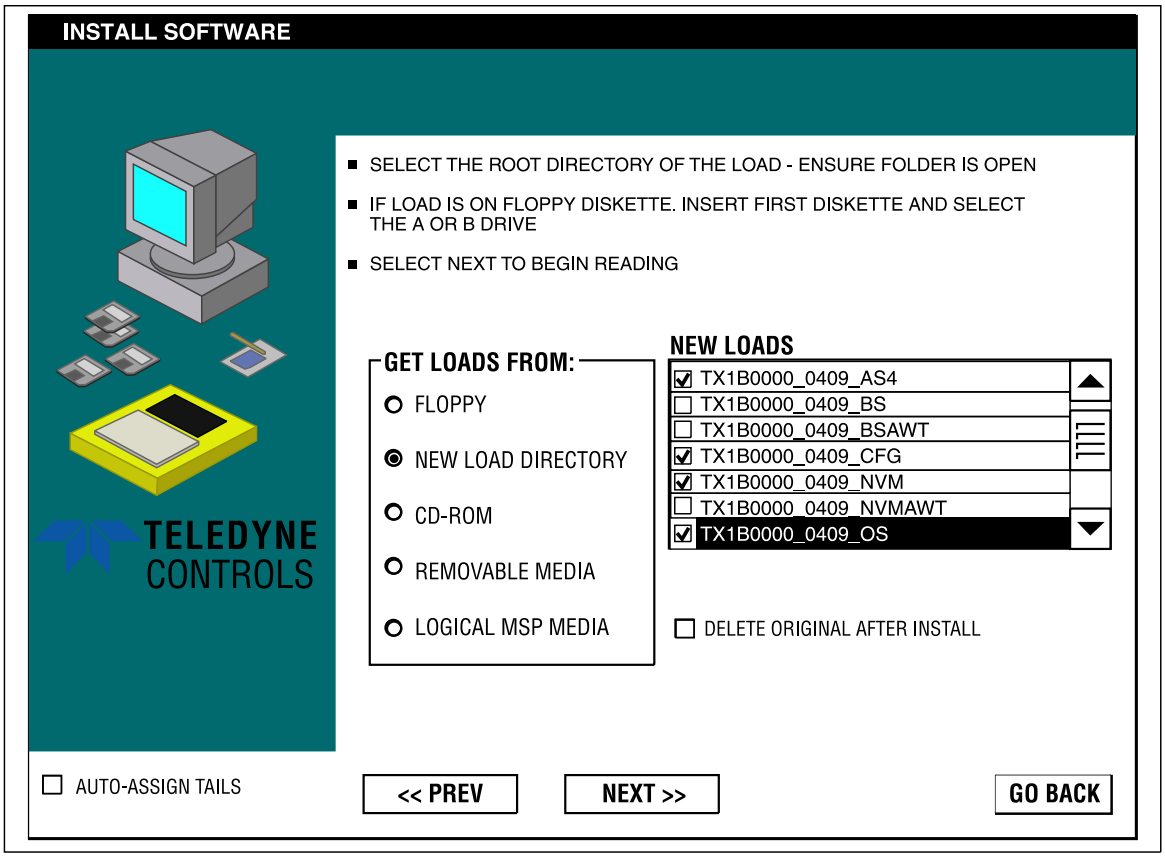
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035500-00
2568013 S0000614810_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 2 of 9)

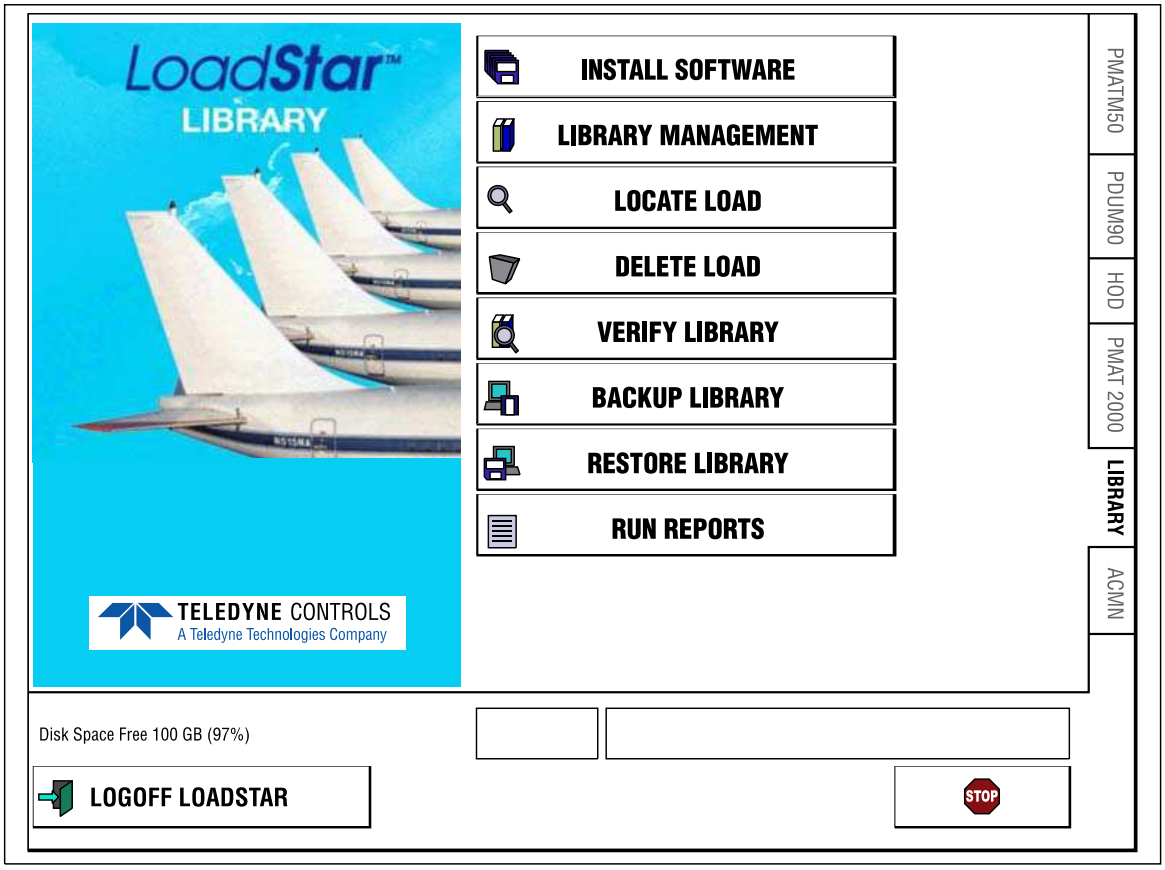
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035501-00
2568014 S0000614811_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

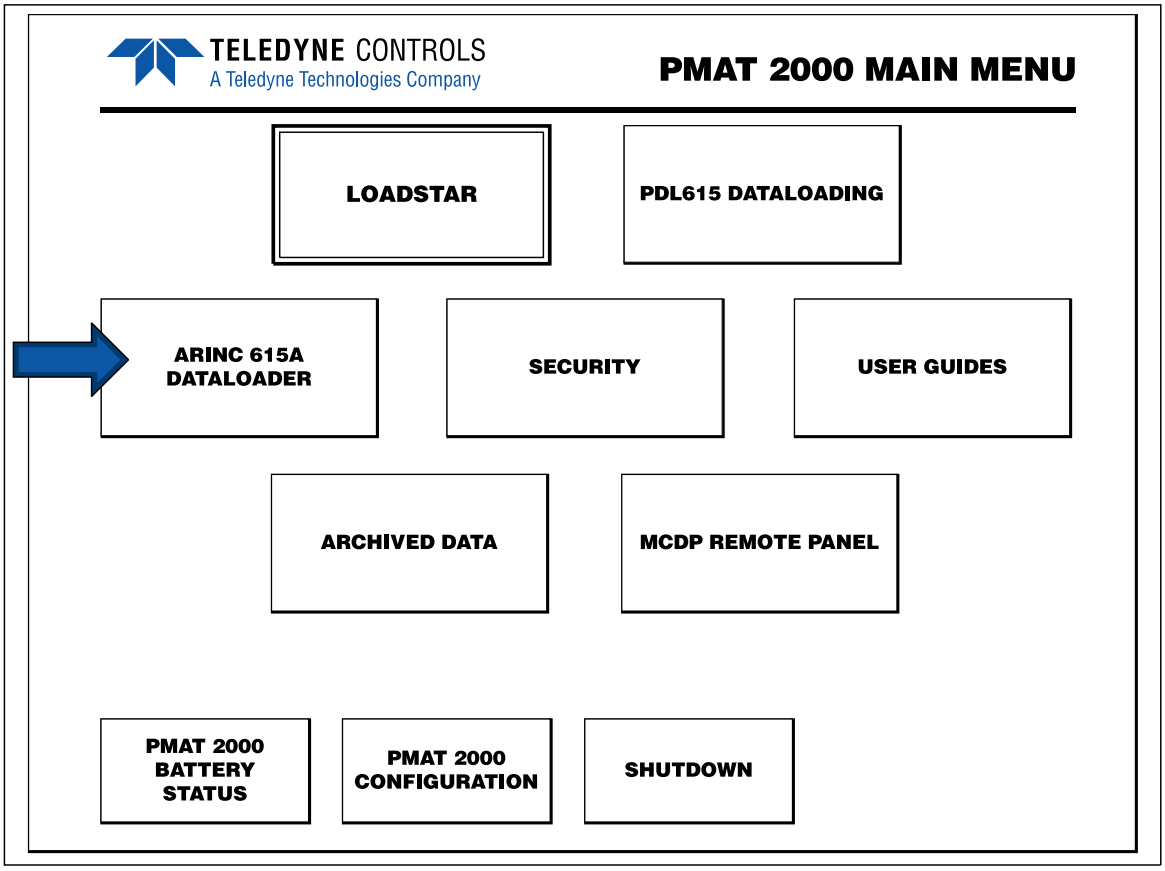


5035502-00

2568019 S0000614812_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 4 of 9)

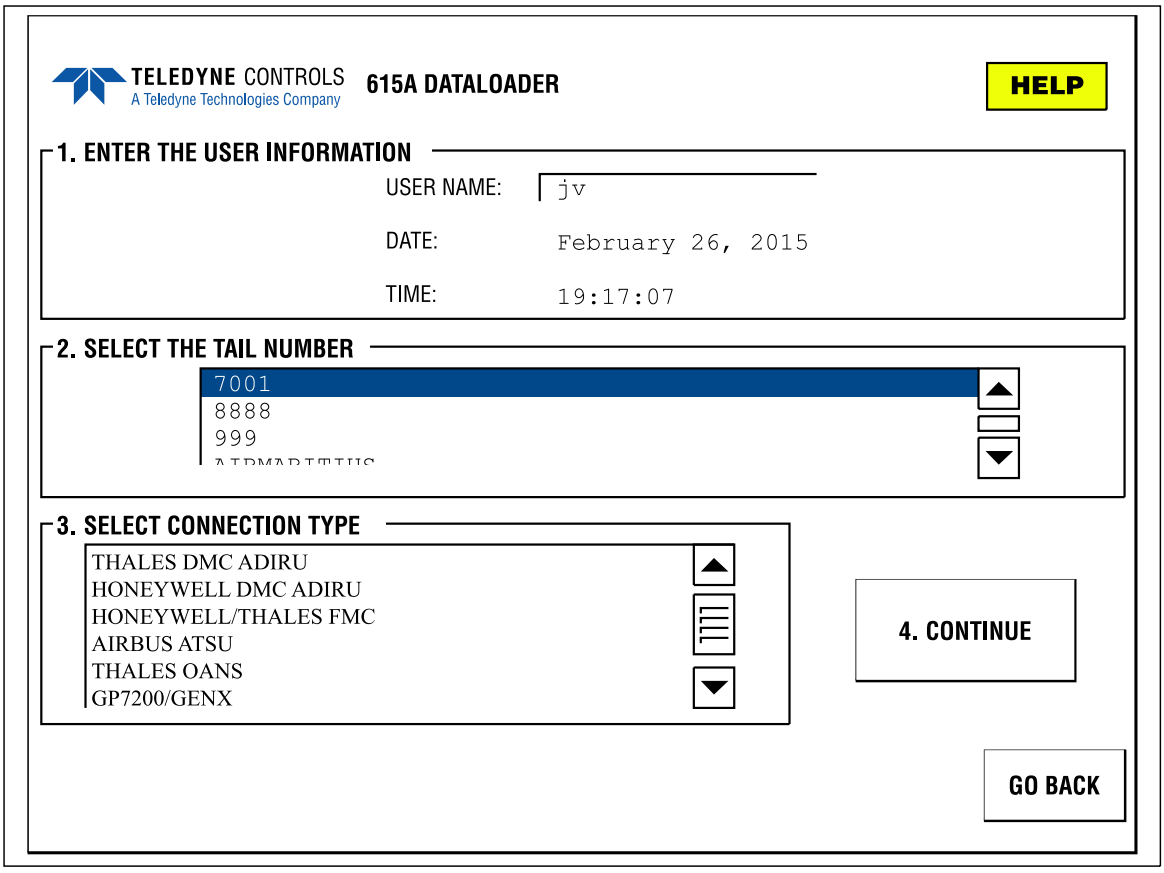
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035503-00
2568017 S0000614813_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 5 of 9)

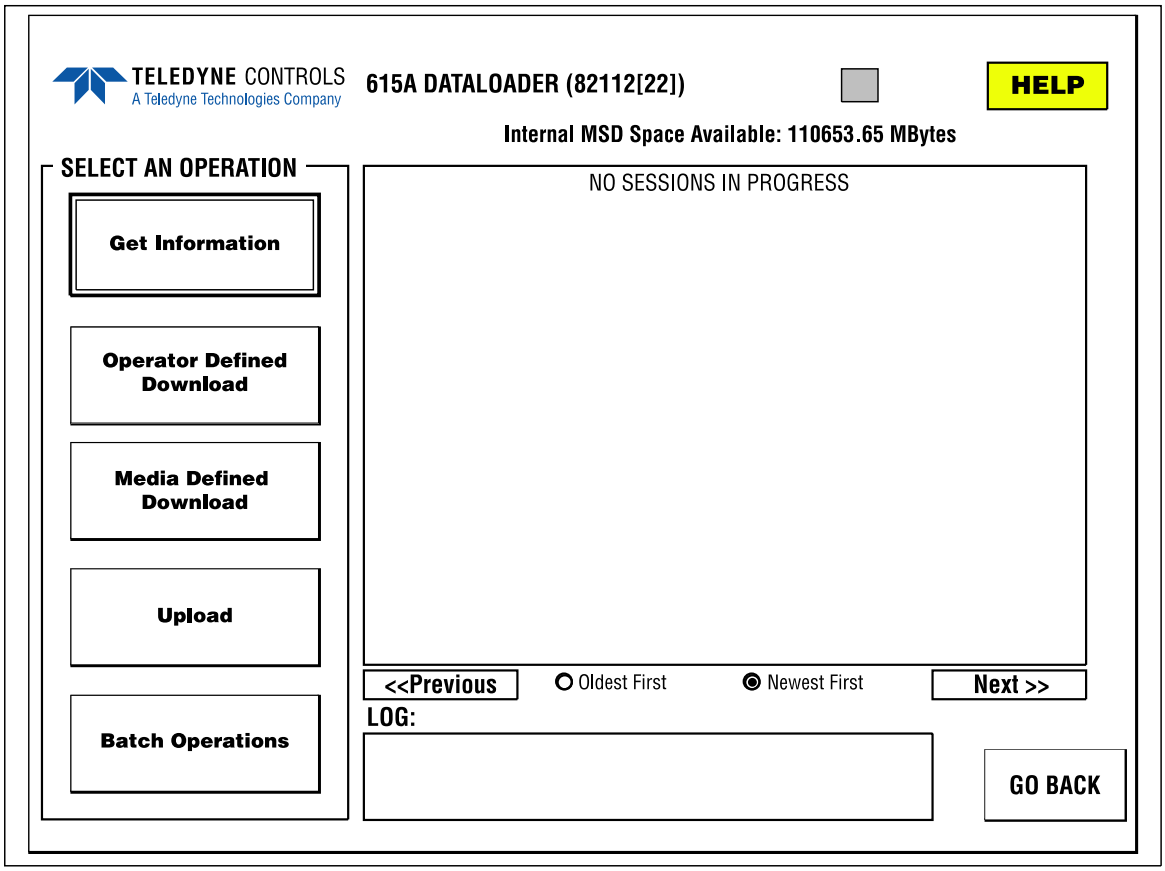
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035504-00
2568020 S0000614814_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

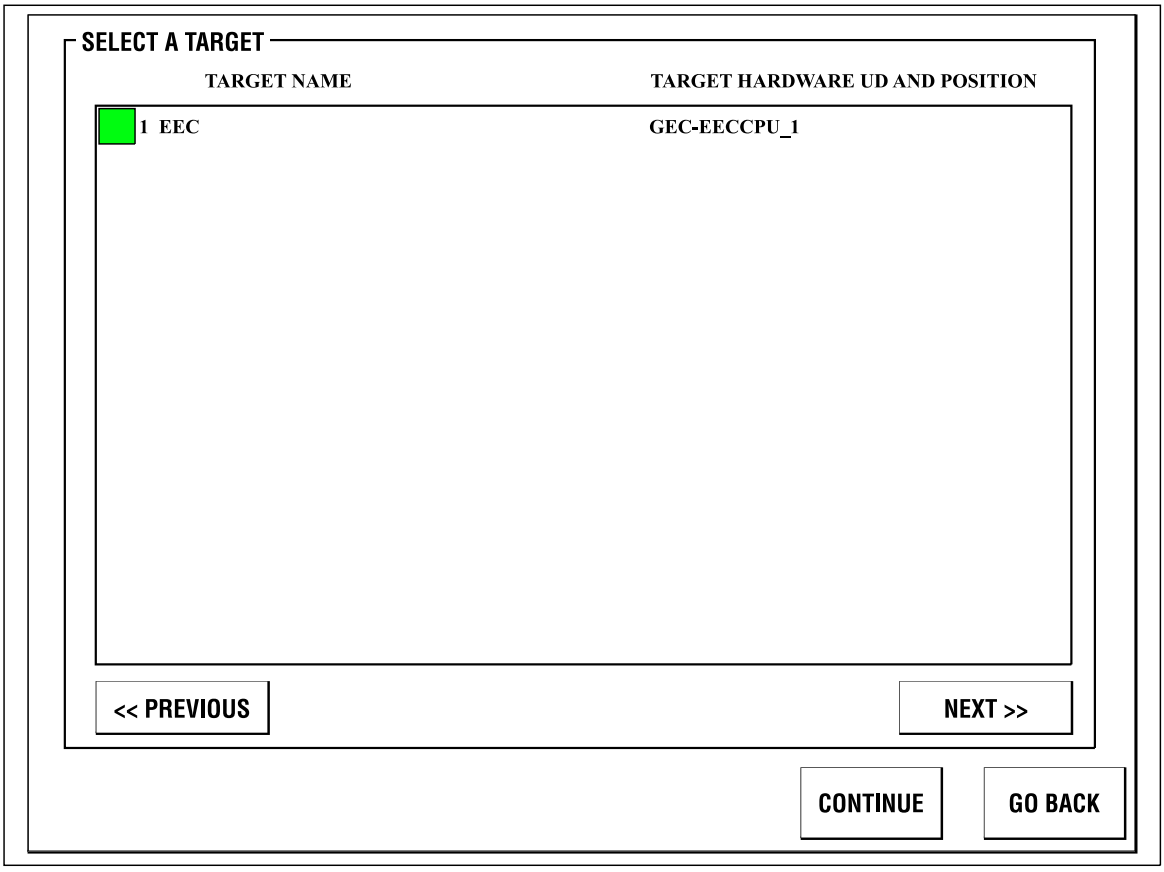


5035505-00

2568021 S0000614815_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

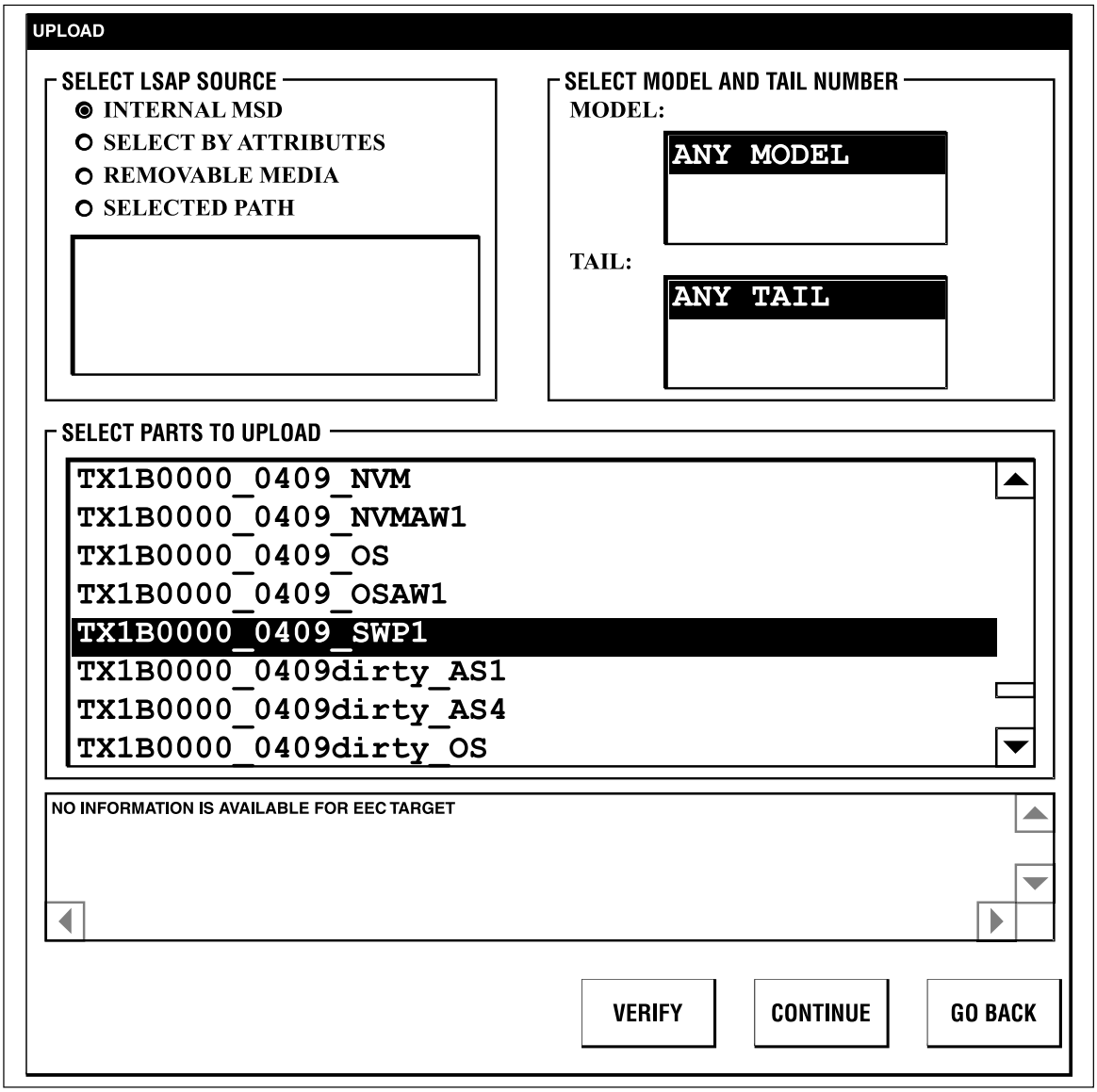


5035506-00

2568022 S0000614816_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



5035507-00

2568023 S0000614817_V1

Electronic Engine Control (EEC) Software Installation Using a PMAT
Figure 203/73-21-00-990-808-G00 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-00-470-804-G00

6. EEC Onboard Software Installation Verification

A. General

(1) This task gives the instructions to do the EEC onboard software verification.

(2) This task verifies the software residing in the Onboard Network System's LRU.

(3) There are two ways that you can verify the software in the system:

(a) Use the Max Display System (MDS) screen.

(b) Use the universal maintenance device, SPL-11321.

B. References

Reference	Title
46-13-00-710-802	System Configuration Check (P/B 201)
71-00-00-700-810-G00	Test No. 34 - Menu Mode Hardware Code Entry Special Functions Test (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
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

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the EEC Software Installation Verification (with MDS/MD)

SUBTASK 73-21-00-860-057-G00

(1) Select the left or right Multi-Function Display (MFD).

(a) Push the SYS button on the MFD control panel, P9.

(b) Push the SEL button on SELECTOR knob on the MFD control panel, P9.

SUBTASK 73-21-00-860-056-G00

(2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS (MSC) page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER switch to the TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

F. EEC Onboard Software Installation Verification (with MDS or Maintenance Device)

SUBTASK 73-21-00-860-108-G00

(1) Use the Onboard Network System (ONS) to check the EEC software part numbers.

(a) Do this task: System Configuration Check, TASK 46-13-00-710-802.

NOTE: EEC-1A is the left engine CH A and EEC-1B is the left engine CH B.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

EEC-2A is the right engine CH A and EEC-2B is the right engine CH B.

(b) Make sure that the system EEC software part numbers are displayed.

NOTE: If the 77 EEC AVM Part Number shows "NOT LOADED", exit the System Configuration report, wait five minutes, and try to access the report again.

1) If the software part numbers are not correct, do this task: EEC Onboard Software Installation, TASK 73-21-00-470-803-G00.

NOTE: Do the steps again for the software installation to make sure it is correct.

(c) Make sure that you check the menu mode hardware code and auto-detected hardware configuration code (TASK 73-21-00-470-801-G00).

(d) If the menu mode hardware code is not correct, do this task: Test No. 34 - Menu Mode Hardware Code Entry Special Functions Test, TASK 71-00-00-700-810-G00.

(e) If the auto-detected hardware configuration code is not correct, do the fault isolation for the component or system that is reporting the incorrect configuration as follows:

1) Examine the applicable system electrical connections.

2) Make sure that the installed hardware configuration is correct.

3) Do another check to make sure that the auto-detected hardware configuration code is correct (TASK 73-21-00-470-801-G00).

(f) Do these steps to exit:

1) Select LINE MAINTENANCE

2) Select EXIT.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-00-860-106-G00

(1) If the MFD is used, follow the instructions on the MFD screen to go back to the ONBOARD MAINTENANCE screen.

SUBTASK 73-21-00-860-084-G00

(2) If the Maintenance Device (MD) is used, stop the ONS maintenance browser and disconnect the MD.

SUBTASK 73-21-00-860-065-G00

(3) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS (MSC) page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

END OF TASK

TASK 73-21-00-800-801-G00

7. EEC Maintenance Power Selection

(Figure 204)

A. General

(1) This task provides the instructions on how to apply maintenance power to the electronic engine control system when the engines are off. Maintenance power is necessary to do engine maintenance functions such as engine ground tests, engine special functions, engine data loading, engine trim balance, functional tests, display engine configuration and data and download the engine shop fault data.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(2) To access the EEC maintenance functions, you must use two control switches on the flight deck. The EEC MAINT power switch is a virtual switch accessed through the multi-functional panel control (MFP) to supply maintenance ground power to the EECs. The GND TEST switch is a physical switch that must be operated for EEC maintenance functions.

(3) The electronic engine control maintenance power is referred to as the EEC MAINT power. The EEC MAINT power selection has two positions: NORM and TEST. The NORM selection enables normal EEC operation. The TEST selection energizes the EEC when the engine is not in operation.

(4) All EEC controlled ground tests, special functions, data load, or trim balance operations can not be done if the GND TEST switch is not set to ENABLE.

(5) You use the controls on the P9-82 multi-function display (MFD) panel which is located on the forward instrument panel and the P61-4 MAINT/BITE side panel in the flight compartment.

(a) The forward instrument panel has two rotary cursor control knobs, each with a center selector button SEL to select the applicable function. One knob is the CAPT SELECTOR for the L or C display unit position. The other knob is the FO SELECTOR for the C or R display unit position. There are four display units. The captain has the outboard-left display unit and an inboard-center display unit. The first officer has an inboard-center display unit and the outboard-right display unit.

(b) The P61-4 MAINT/BITE panel has one rotary cursor control knob with two positions for MAINT SELECTOR, L or R and a center selector button SEL to select the applicable function. This panel also has the GND TEST switch with the ENABLE and NORM positions.

(c) The rotary cursor control knob is also known as the “Tabber” which moves and highlights the function tabs that you see on the display.

NOTE: If the airplane power is removed while the EEC Maintenance Power is selected, ENG CONTROL and ENG REVERSER status messages will be set without a correlated maintenance message. Refer to this task: Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)

C. Location Zones

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

D. Prepare for the Procedure

SUBTASK 73-21-00-860-086-G00

(1) Make sure that the engine 1 and 2 start levers are in the CUTOFF position.

SUBTASK 73-21-00-860-087-G00

(2) Make sure that the engine 1 and 2 start switches are in the AUTO position.

SUBTASK 73-21-00-860-088-G00

(3) Make sure that the engine 1 and 2 forward thrust levers are in the IDLE position.

SUBTASK 73-21-00-860-089-G00

(4) Make sure that the engine 1 and 2 reverse thrust levers are in the forward and down (stowed) position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Electronic Engine Control (EEC) Maintenance Power Selection

SUBTASK 73-21-00-860-001-G00

(1) Turn the rotary cursor control knob on the multi-functional panel control (MFP) to select the CAPT SELECTOR L or C display unit or the FO SELECTOR C or R display unit.

(a) Push the SYS button on the P9-82 multi-function panel control (MFP).

NOTE: The captains outboard left or inboard left display unit or the first officers inboard right or outboard right display unit will show the system's main menu page when you select the SYS button.

SUBTASK 73-21-00-860-090-G00

(2) Turn the rotary cursor control knob clockwise or counter-clockwise until the MAINT function is highlighted.

(a) Push the center selector button SEL to select the MAINT function.

SUBTASK 73-21-00-860-091-G00

(3) Turn the rotary cursor control knob clockwise or counter-clockwise until the MAINT CTRL PGS function is highlighted at top right corner.

(a) Push the center selector button SEL to select the MAINT CTRL PGS function.

SUBTASK 73-21-00-860-092-G00

(4) Turn the rotary cursor control knob clockwise until the MISC SYSTEM CTRLS (MSC) function is highlighted.

(a) Push the center selector button SEL to select the MISC SYSTEM CTRLS (MSC) function.

SUBTASK 73-21-00-860-093-G00

(5) Turn the rotary cursor control knob clockwise until the TEST function diamond is highlighted for ENG 1 or ENG 2 in the EEC MAINT POWER box.

(a) Push the center selector button SEL to select the TEST function to power the EEC for ENG 1 or the ENG 2.

SUBTASK 73-21-00-860-094-G00

(6) Make sure that the STATUS: PWR is shown below ENG 1 or ENG 2.

SUBTASK 73-21-00-860-095-G00

(7) Set the GND TEST switch on the P61-4 MAINT/BITE panel to ENABLE.

NOTE: All EEC controlled ground tests, special functions, data load, or trim balance operations can not be done if the GND TEST switch is not set to ENABLE.

NOTE: You can do the engine ground tests and engine special functions in any order after this step.

F. Put the Airplane Back To the Usual Condition

SUBTASK 73-21-00-860-085-G00

(1) When you have completed the engine ground tests and special functions, set the GND TEST switch on the P61-4 MAINT/BITE panel to the NORM position to turn off the power on the applicable EEC MAINT POWER selection.

SUBTASK 73-21-00-860-096-G00

(2) Turn the rotary cursor control knob clockwise or counter-clockwise until the MAINT CTRL PGS function is highlighted.

(a) Push the center selector button SEL to select the MAINT CTRL PGS function.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-860-097-G00

(3) Turn the rotary cursor control knob clockwise until the MISC SYSTEM CTRLS (MSC) function is highlighted.

(a) Push the center selector button SEL to select the MISC SYSTEM CTRLS (MSC) function.

SUBTASK 73-21-00-860-098-G00

(4) Turn the rotary cursor control knob clockwise until the NORM function diamond is highlighted for ENG 1 or ENG 2 in the EEC MAINT POWER box.

(a) Push the center selector button SEL to select the NORM function to turn off the EEC maintenance power for ENG 1 or ENG 2.

SUBTASK 73-21-00-860-099-G00

(5) Make sure that the STATUS: OFF is shown below ENG 1 or ENG 2.

SUBTASK 73-21-00-860-100-G00

(6) Turn the rotary cursor control knob clockwise or counter-clockwise until the SYS MENU function is highlighted.

(a) Push the center selector button SEL to select SYS MENU screen.

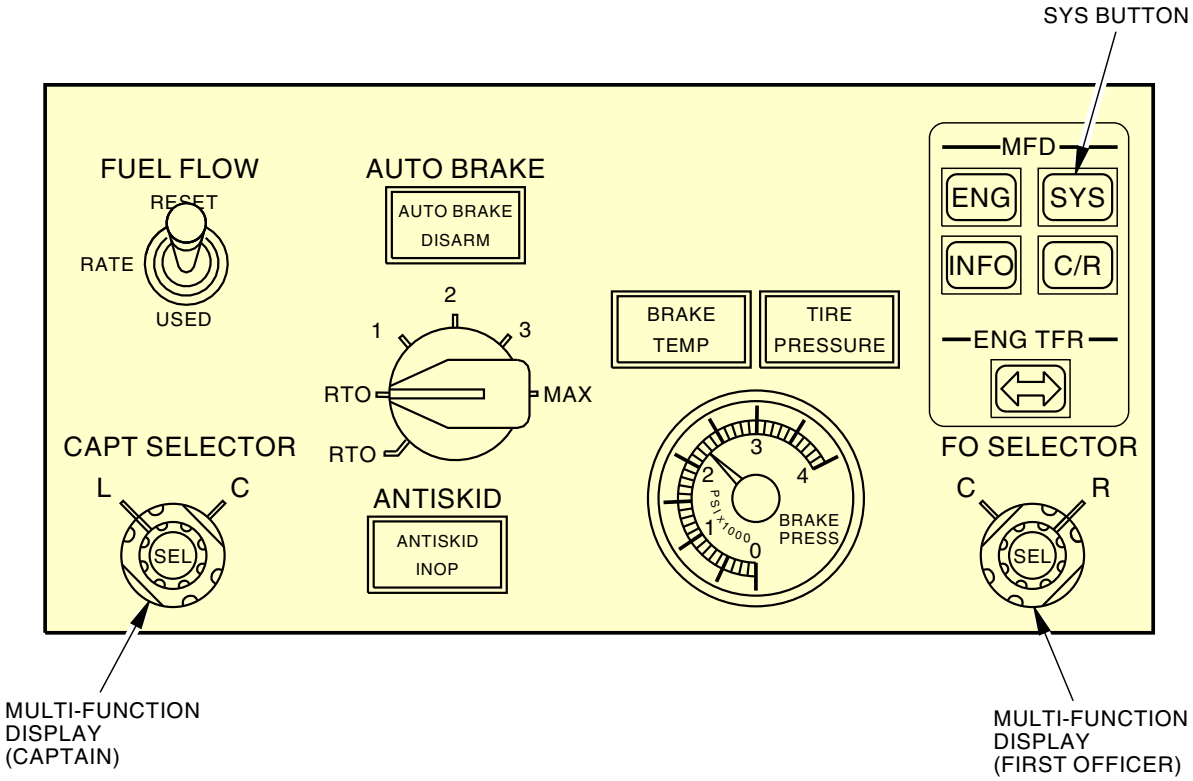
SUBTASK 73-21-00-860-101-G00

(7) Make sure that the MAINT function is highlighted.

(a) Push the SYS button on the multi-functional panel control (MFP) to EXIT.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



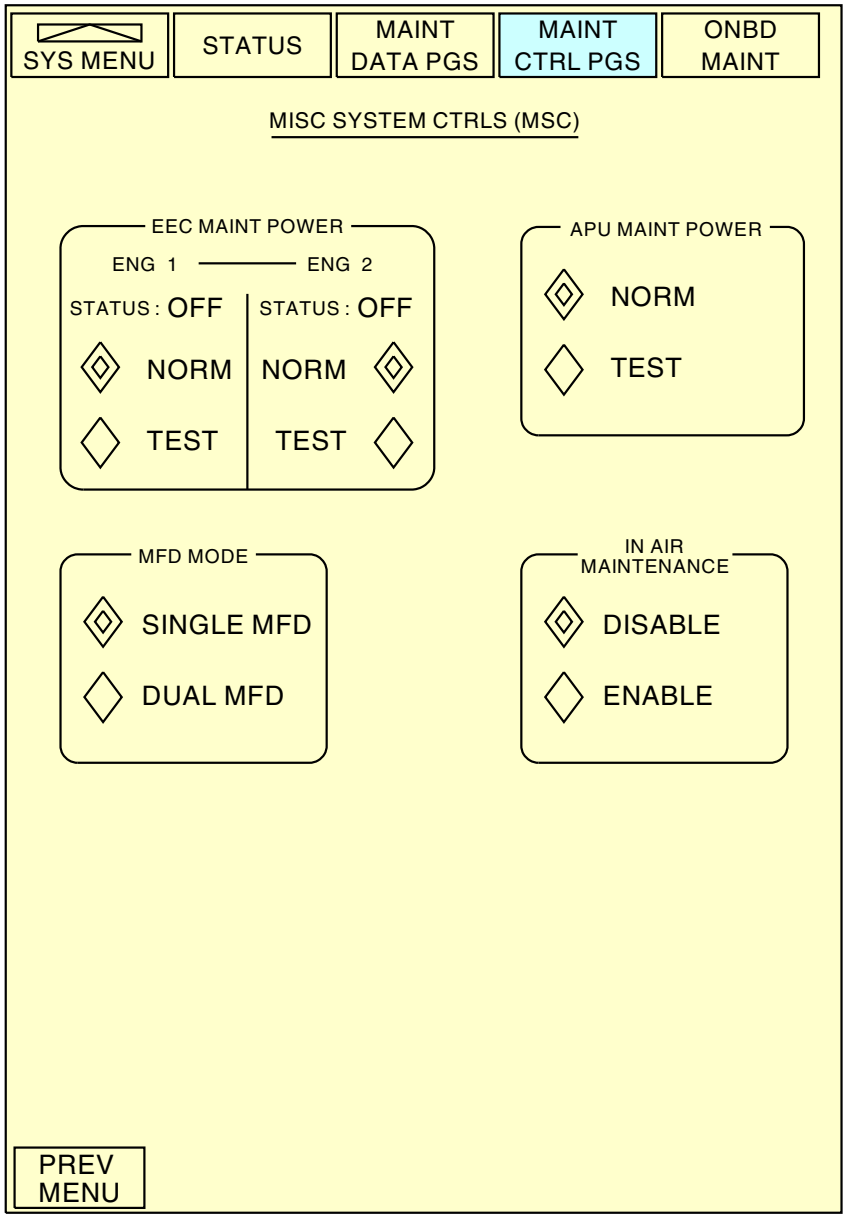
ENGINE DISPLAY CONTROL PANEL

A

2354821 S00061515986_V2

Electronic Engine Control (EEC) Maintenance Power Selection
Figure 204/73-21-00-990-801-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



MISCELLANEOUS SYSTEM CONTROL PAGE

B

2354822 S00061515987_V2

Electronic Engine Control (EEC) Maintenance Power Selection
Figure 204/73-21-00-990-801-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL CONTROL SYSTEM - INSPECTION/CHECK

TASK 73-21-00-200-801-G00

1. Fuel Control System Inspection

A. General

(1) This task provides the references to inspect the fuel control system components.

B. References

Reference	Title
73-11-06-210-801-G00	Split Control Unit Inspection (P/B 601)
73-11-09-210-801-G00	FMU Fuel Strainer Differential Pressure Transducer Inspection (P/B 601)
73-11-10-210-801-G00	Fuel Filter Differential Pressure Transducer Inspection (P/B 601)
73-11-12-210-801-G00	Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection (P/B 601)
73-21-04-200-801-G00	Fuel Metering Unit (FMU) Inspection (P/B 601)
73-21-05-210-801-G00	Electronic Engine Control Inspection (P/B 601)
73-21-06-210-801-G00	T12 Sensor Inspection (P/B 601)
73-21-08-210-801-G00	Permanent Magnet Alternator (PMA) Inspection (P/B 601)
73-21-09-211-801-G00	Data Entry Plug Inspection (P/B 601)
73-21-11-210-801-G00	Pressure Sub-System Inspection (P/B 601)
73-21-63-210-801-G00	T25 Sensor Inspection (P/B 601)
73-21-64-210-801-G00	T3 Sensor Inspection (P/B 601)
73-21-67-210-801-G00	Fuel Manifold Pressure Transducer Inspection (P/B 601)
73-31-01-210-801-G00	Fuel Flow Transmitter Inspection (P/B 601)

C. Fuel Control System Inspection

SUBTASK 73-21-00-210-023-G00

(1) To inspect the Split Control Unit, do this task: Split Control Unit Inspection, TASK 73-11-06-210-801-G00.

SUBTASK 73-21-00-210-024-G00

(2) To inspect the FMU Strainer Differential Pressure Transducer, do this task: FMU Fuel Strainer Differential Pressure Transducer Inspection, TASK 73-11-09-210-801-G00.

SUBTASK 73-21-00-210-025-G00

(3) To inspect the Fuel Filter Differential Pressure Transducer, do this task: Fuel Filter Differential Pressure Transducer Inspection, TASK 73-11-10-210-801-G00.

SUBTASK 73-21-00-210-026-G00

(4) To inspect the Main Fuel/Oil Heat Exchanger Differential Pressure Sensor, do this task: Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Inspection, TASK 73-11-12-210-801-G00.

SUBTASK 73-21-00-210-027-G00

(5) To inspect the Fuel Metering Unit (FMU), do this task: Fuel Metering Unit (FMU) Inspection, TASK 73-21-04-200-801-G00.

SUBTASK 73-21-00-210-028-G00

(6) To inspect the Electronic Engine Control (EEC), do this task: Electronic Engine Control Inspection, TASK 73-21-05-210-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-00-210-029-G00

(7) To inspect the T12 Sensor, do this task: T12 Sensor Inspection, TASK 73-21-06-210-801-G00.

SUBTASK 73-21-00-210-030-G00

(8) To inspect the Permanent Magnet Alternator (PMA), do this task: Permanent Magnet Alternator (PMA) Inspection, TASK 73-21-08-210-801-G00.

SUBTASK 73-21-00-210-031-G00

(9) To inspect the Data Entry Plug, do this task: Data Entry Plug Inspection, TASK 73-21-09-211-801-G00.

SUBTASK 73-21-00-210-032-G00

(10) To inspect the Pressure Sub-System, do this task: Pressure Sub-System Inspection, TASK 73-21-11-210-801-G00.

SUBTASK 73-21-00-210-033-G00

(11) To inspect the T25 Sensor, do this task: T25 Sensor Inspection, TASK 73-21-63-210-801-G00.

SUBTASK 73-21-00-210-034-G00

(12) To inspect the T3 Sensor, do this task: T3 Sensor Inspection, TASK 73-21-64-210-801-G00.

SUBTASK 73-21-00-210-035-G00

(13) To inspect the Fuel Manifold Pressure Transducer, do this task: Fuel Manifold Pressure Transducer Inspection, TASK 73-21-67-210-801-G00.

SUBTASK 73-21-00-210-036-G00

(14) To inspect the Fuel Flow Transmitter, do this task: Fuel Flow Transmitter Inspection, TASK 73-31-01-210-801-G00.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL METERING UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel metering unit removal

(2) Fuel metering unit installation.

TASK 73-21-04-000-801-G00

2. Fuel Metering Unit Removal

(Figure 401 and Figure 402)

A. General

(1) This task provides the instructions on how to remove the Fuel Metering Unit (FMU).

(2) A minimum of two persons are required to handle the FMU if the jack stand and the FMU adapter support equipment are not used.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-01-000-801-G00	Main Fuel Pump Removal (P/B 401)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)
73-11-04-000-801-G00	Fuel Metering Unit Strainer Removal (P/B 401)
73-11-09-000-801-G00	FMU Fuel Strainer Differential Pressure Transducer 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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14528	Adapter - FMU Part #: 956A1613G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Prepare for the Removal

SUBTASK 73-21-04-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-04-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-21-04-010-001-G00

(3) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Metering Unit Removal

SUBTASK 73-21-04-680-003-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

CAUTION A LARGE VOLUME OF FUEL WILL DRAIN FROM THE FUEL SUPPLY SYSTEM. TO PREVENT A FUEL SPILL, YOU MUST USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE FUEL SYSTEM.

(1) Drain the main fuel pump (TASK 73-11-01-000-801-G00).

SUBTASK 73-21-04-680-004-G00

(2) Drain the FMU strainer (TASK 73-11-04-000-801-G00).

SUBTASK 73-21-04-680-005-G00

(3) Drain the main fuel filter housing (TASK 73-11-02-000-801-G00).

SUBTASK 73-21-04-010-002-G00

(4) Remove the FMU fuel strainer DP transducer [2] (TASK 73-11-09-000-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-04-030-001-G00

CAUTION PUT A TAG ON THE CONNECTOR IF YOU REMOVE MORE THAN ONE CONNECTOR IN THE SAME AREA. IF YOU INCORRECTLY CONNECT THE CONNECTORS, IT CAN CAUSE DAMAGE TO THE EQUIPMENT.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(5) Use a teflon-jawed pliers, STD-664, to disconnect the electrical connectors from the FMU [1] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the electrical connector (HJ5B) [4].

(b) Disconnect the electrical connector (HJ5A) [3].

(c) Disconnect the electrical connector (W300) [5].

(d) Install the protection covers on the electrical connectors and the electrical receptacles on the FMU [1].

SUBTASK 73-21-04-010-003-G00

(6) Disconnect the fuel tube [6] from the interface PB2 line on the FMU [1] as follows:

(a) Remove the four bolts [7] from the fuel tube [6].

(b) Disconnect the fuel tube [6].

(c) Remove and discard the gasket [8].

(d) Install the protection covers on the fuel tube [6] and the FMU [1] open port.

SUBTASK 73-21-04-030-002-G00

(7) Disconnect the fuel tube [9] from the interface PHS line on the FMU [1] as follows:

(a) Loosen the coupling nut [10] from the pipe coupling spherical [11].

(b) Disconnect the fuel tube [9].

(c) Install the protection covers on the fuel tube [9] and the FMU [1] open port.

SUBTASK 73-21-04-030-003-G00

(8) Disconnect the fuel tube [12] from the interface PB line on the FMU [1] as follows:

(a) Remove the four bolts [13] from the fuel tube [12].

(b) Disconnect the fuel tube [12].

(c) Remove and discard the gasket [14].

(d) Install the protection covers on the fuel tube [12] and the FMU [1] open port.

SUBTASK 73-21-04-010-004-G00

(9) Disconnect the fuel tube [15] from the interface PS line on the FMU [1] as follows:

(a) Remove the four bolts [16] from the fuel tube [15].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Disconnect the fuel tube [15].

(c) Remove and discard the gasket [17].

(d) Install the protection covers on the fuel tube [15] and the FMU [1] open port.

SUBTASK 73-21-04-010-005-G00

(10) Disconnect the fuel tube [18] from the interface P22 line on the FMU [1] as follows:

(a) Remove the four bolts [19] from the fuel tube [18].

(b) Disconnect the fuel tube [18].

(c) Remove and discard the gasket [20].

(d) Install the protection covers on the fuel tube [18] and the FMU [1] open port.

SUBTASK 73-21-04-490-001-G00

WARNING BE CAREFUL WHEN YOU MOVE THE FUEL METERING UNIT WITHOUT AID. THE FUEL METERING UNIT IS HEAVY. IF YOU DO NOT OBEY, INJURIES TO PERSONNEL OR DAMAGE TO THE FUEL METERING UNIT CAN OCCUR.

(11) Remove the FMU [1] as follows:

NOTE: The fuel metering unit weighs approximately 34.0 lb (15.4 kg).

NOTE: If the two-person alternative method is used, you do not have to install the adapter, SPL-14528, and jack stand, SPL-14500.

(a) If necessary, move the jack stand, SPL-14500, to the correct position.

(b) If necessary, install the adapter, SPL-14528, on the jack stand, SPL-14500.

(c) If necessary, install the four captive bolts [21] of the adapter, SPL-14528, to the bolt holes of the FMU [1].

(d) Remove the three bolts [22] and the bolt [23] with integrated washers from the FMU [1].

(e) Remove nut [24] from the FMU [1].

(f) Remove the FMU [1] from the engine.

(g) If necessary, remove the four captive bolts [21] of the adapter, SPL-14528, from the bolt holes of the FMU [1].

(h) If necessary, remove the FMU [1] from the adapter, SPL-14528.

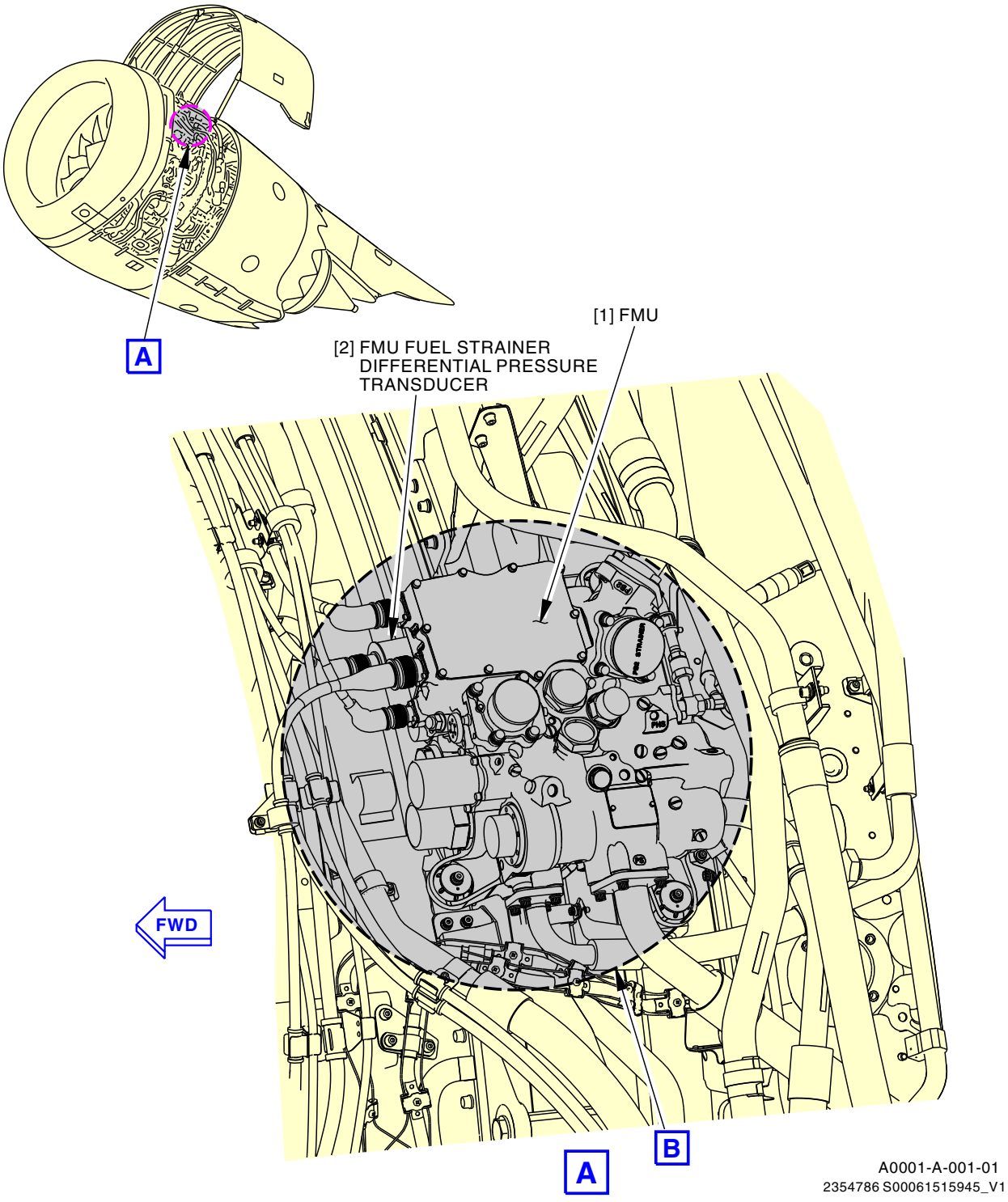
(i) Install the protection covers on the FMU [1] open ports.

SUBTASK 73-21-04-560-001-G00

(12) If necessary, move the jack stand, SPL-14500, and the FMU [1] away from the engine.

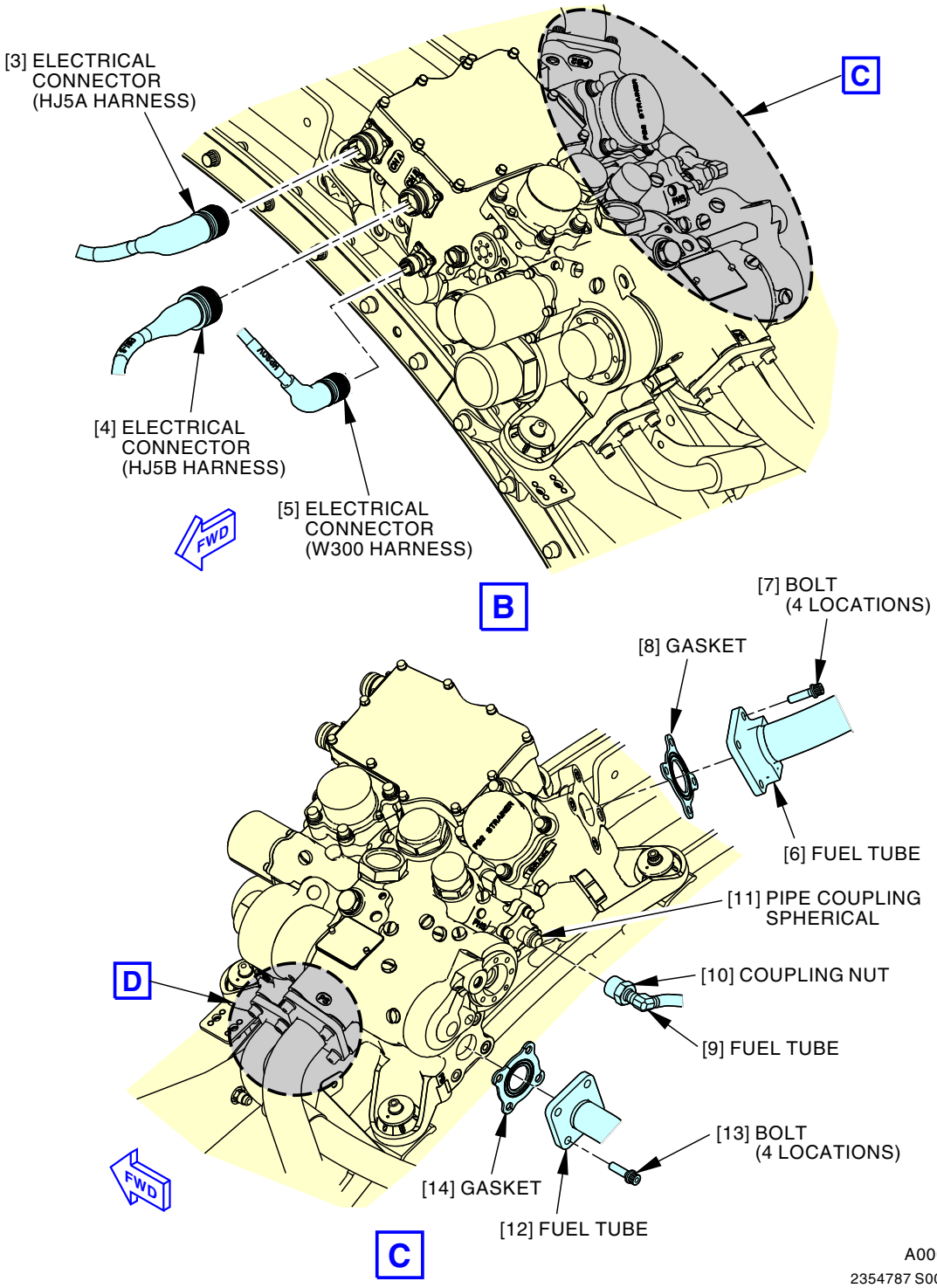
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



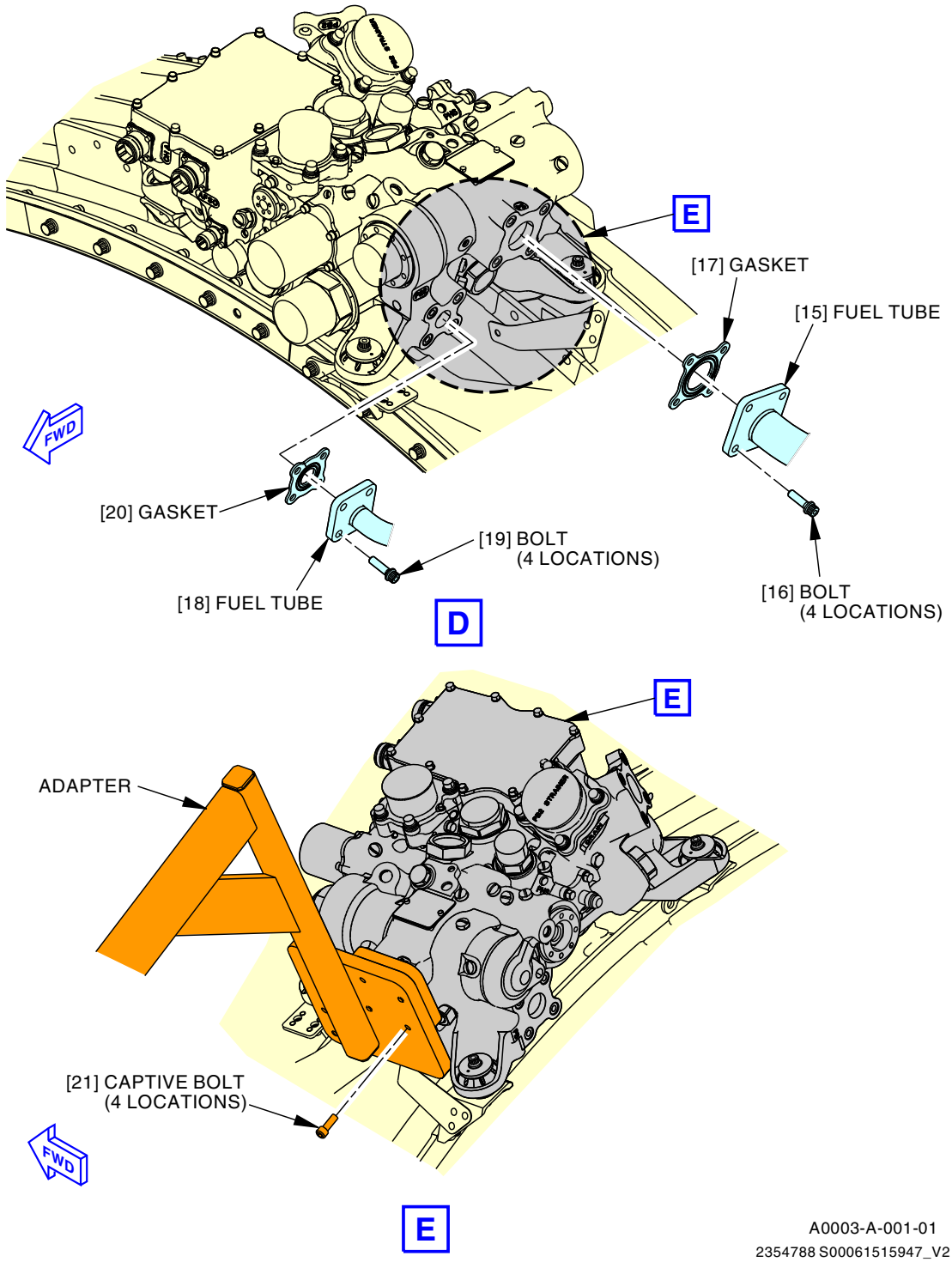
Fuel Metering Unit Installation
Figure 401/73-21-04-990-802-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



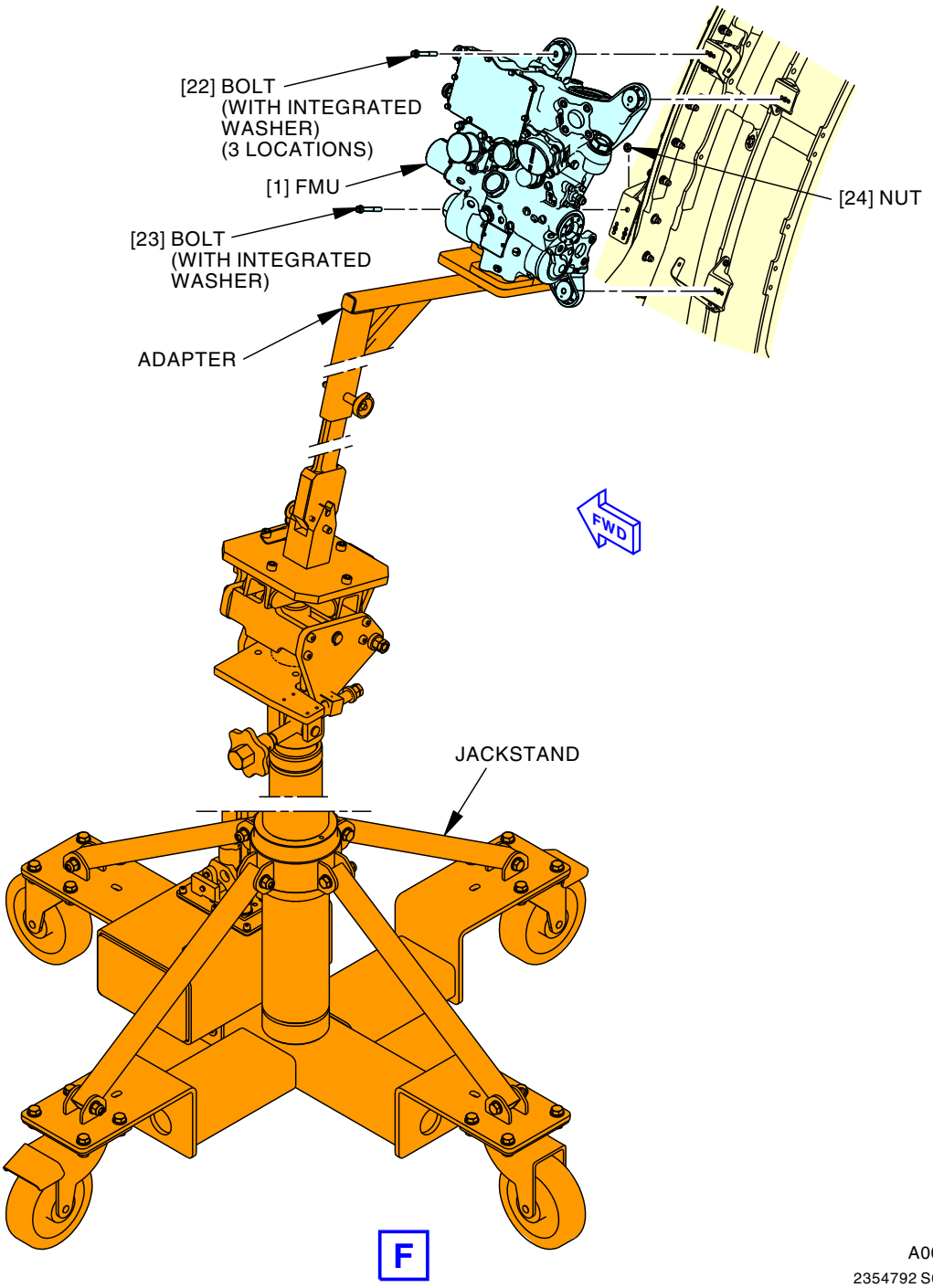
Fuel Metering Unit Installation
Figure 401/73-21-04-990-802-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Metering Unit Installation
Figure 401/73-21-04-990-802-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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2354792 S00061515951_V2

FMU Line Replaceable Unit Fixture Installation
Figure 402/73-21-04-990-803-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-04-400-801-G00

3. Fuel Metering Unit Installation

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions on how to install the Fuel Metering Unit (FMU).

(2) You must do the tests in the Power Plant Test Reference Table after you install the FMU.

(3) A minimum of two persons are required to handle the FMU if the jack stand and the FMU adapter support equipment are not used.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-09-400-801-G00	FMU Fuel Strainer Differential Pressure Transducer 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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14528	Adapter - FMU Part #: 956A1613G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	FMU	73-21-04-01-010	SIA ALL
8	Gasket	73-21-04-01-070	SIA ALL
14	Gasket	73-21-04-01-100	SIA ALL
17	Gasket	73-21-04-01-120	SIA ALL
20	Gasket	73-21-04-01-140	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Fuel Metering Unit Installation

SUBTASK 73-21-04-490-002-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. PUT ON GOGGLES, AND GLOVES WHEN YOU USE FUEL. KEEP FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE. FUEL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

WARNING BE CAREFUL WHEN YOU MOVE THE FUEL METERING UNIT WITHOUT AID. THE FUEL METERING UNIT IS HEAVY. IF YOU DO NOT OBEY, INJURIES TO PERSONNEL OR DAMAGE TO THE FUEL METERING UNIT CAN OCCUR.

(1) If necessary, install the FMU [1] on the jack stand, SPL-14500, as follows:

NOTE: The FMU weighs approximately 34.0 lb (15.4 kg).

NOTE: If the two-person alternative method is used, you do not have to install the adapter, SPL-14528, and jack stand, SPL-14500.

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Install the adapter, SPL-14528, on the jack stand, SPL-14500.

(c) Put the FMU [1] into its position on the jack stand, SPL-14500.

(d) Install the four captive bolts [21] of the adapter, SPL-14528, to the bolt holes of the FMU [1].

(e) Move the jack stand, SPL-14500, and the FMU [1] into the correct position.

SUBTASK 73-21-04-410-001-G00

(2) Install the FMU [1] on the engine as follows:

(a) Remove the protection covers from the FMU [1] ports.

(b) Lubricate the threads of the three bolts [22] and the bolt [23] with engine oil, D00599 [CP2442].

(c) Align the FMU [1] with the bolt hole on the engine.

(d) Install the three bolts [22], the bolt [23] and the nut [24] to attach the FMU [1] to the engine.

NOTE: The bolts have integrated washers.

(e) Tighten the three bolts [22] and the bolt [23] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

(f) Tighten the nut [24] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

(g) If necessary, remove the four captive bolts [21] of the adapter, SPL-14528, from the bolt holes of the FMU [1].

SUBTASK 73-21-04-160-001-G00

(3) Connect the fuel tube [18] to the interface P22 line on the FMU [1] as follows:

(a) Remove the protection covers from the fuel tube [18] and the FMU [1] port.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the four bolts [19] with graphite mineral vaseline, D00601 [CP2101].

(d) Install the new gasket [20] and the fuel tube [18] on the FMU [1].

(e) Install the four bolts [19] on the fuel tube [18].

(f) Tighten the four bolts [19] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

SUBTASK 73-21-04-410-002-G00

(4) Connect the fuel tube [15] to the interface PS line on the FMU [1] as follows:

(a) Remove the protection covers from the fuel tube [15] and the FMU [1] port.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the four bolts [16] with graphite mineral vaseline, D00601 [CP2101].

(d) Install the new gasket [17] and the fuel tube [15] on the FMU [1].

(e) Install the four bolts [16] on the fuel tube [15].

(f) Tighten the four bolts [16] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

SUBTASK 73-21-04-410-003-G00

(5) Connect the fuel tube [12] to the interface PB line on the FMU [1] as follows:

(a) Remove the protection covers from the fuel tube [12] and the FMU [1] port.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the four bolts [13] with graphite mineral vaseline, D00601 [CP2101].

(d) Install the new gasket [14] and the fuel tube [12] on the FMU [1].

(e) Install the four bolts [13] on the fuel tube [12].

(f) Tighten the four bolts [13] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

SUBTASK 73-21-04-410-004-G00

(6) Connect the fuel tube [9] to the interface PHS line on the FMU [1] as follows:

(a) Remove the protection covers from the fuel tube [9] and the FMU [1] port.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the pipe coupling spherical [11] with engine oil, D00599 [CP2442].

(d) Engage the coupling nut [10] on the pipe coupling spherical [11].

(e) Tighten the coupling nut [10] to 270.0 in-lb (30.5 N·m) - 300.0 in-lb (33.9 N·m).

SUBTASK 73-21-04-410-005-G00

(7) Connect the fuel tube [6] to the interface PB2 line on the FMU [1] as follows:

(a) Remove the protection covers from the fuel tube [6] and the FMU [1] port.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the four bolts [7] with graphite mineral vaseline, D00601 [CP2101].

(d) Install the new gasket [8] and the fuel tube [6] on the FMU [1].

(e) Install the four bolts [7] on the fuel tube [6].

(f) Tighten the four bolts [7] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-04-430-001-G00

CAUTION PUT A TAG ON THE CONNECTOR IF YOU REMOVE MORE THAN ONE CONNECTOR IN THE SAME AREA. IF YOU INCORRECTLY CONNECT THE CONNECTORS, IT CAN CAUSE DAMAGE TO THE EQUIPMENT.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(8) Use a teflon-jawed pliers, STD-664, to connect the electrical connectors to the FMU [1] as follows (TASK 70-00-01-910-803-G00):

NOTE: It is physically possible to connect the electrical connector (HJ5A) or electrical connector (HJ5B) to the FMU Fuel Strainer Differential Pressure Transducer location. If these connectors are not installed at the correct locations, the following maintenance messages will be set when you do the test Fuel Metering Unit Installation Test:

- 73-4209X - FUEL METERING VALVE (FMV) TORQUE MOTOR CURRENT IS OUT OF RANGE

- 73-4214X - FUEL METERING VALVE (FMV) POSITION SENSOR IS OUT OF RANGE

- 73-4231X - FUEL STRAINER DELTA PRESSURE (FSDP) SENSOR IS OUT OF RANGE

- 73-4194X - ELECTRONIC OVERSPEED TEST FAILED

where X indicates the Electronic Engine Control (EEC) channel detecting the fault. If these faults are set during the FMU installation test, do a check the harness plug installed locations before fault isolation.

(a) Remove the protection covers from the electrical connectors..

(b) Remove the protection covers from the electrical receptacles on the FMU [1].

(c) Connect the electrical connector (W300) [5] to the FMU [1].

(d) Connect the electrical connector (HJ5A) [3] to the FMU [1].

(e) Connect the electrical connector (HJ5B) [4] to the FMU [1].

SUBTASK 73-21-04-410-006-G00

(9) Do this task: FMU Fuel Strainer Differential Pressure Transducer Installation, TASK 73-11-09-400-801-G00.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-04-410-007-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-21-04-860-003-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-04-860-004-G00

(3) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

J. Fuel Metering Unit Installation Test

SUBTASK 73-21-04-730-002-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

NOTE: If the FMU installed has not previously operated on the engine, the first engine start after FMU installation may require special start procedures due to residual air trapped within the FMU EOS fuel circuit.

SUBTASK 73-21-04-800-001-G00

(2) If the engine fails to start and the maintenance message 73-4235X - FUEL METERING UNIT SHUTOFF VALVE IS FAILED CLOSED is set, do these steps:

(a) Do the engine start procedure up to when the START LEVER is moved to IDLE (TASK 71-00-00-910-802-G00).

(b) When the engine is at 25% N2 or the maximum motoring speed and 'MOTORING' is no longer displayed on the N2 dial, toggle the START LEVER switch between IDLE and CUTOFF for five seconds (approximately 8 cycles) then put the START LEVER to IDLE.

(c) If the engine did not start, repeat the procedure.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL METERING UNIT - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel Metering Unit (FMU) inspection.

TASK 73-21-04-200-801-G00

2. Fuel Metering Unit (FMU) Inspection

(Figure 601)

A. General

(1) This task provides the instructions on how to examine the Fuel Metering Unit (FMU).

(2) The FMU is located on the fan case at the 11:00 o'clock position.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-04-000-801-G00	Fuel Metering Unit Removal (P/B 401)
73-21-04-400-801-G00	Fuel Metering Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-04-860-005-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-04-860-006-G00

(2) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-21-04-860-007-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-21-04-010-006-G00

(4) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Metering Unit (FMU) Inspection

SUBTASK 73-21-04-210-001-G00

(1) Look for signs of fuel leakage between the FMU and the fuel tubes.

(a) If you see signs of fuel leakage, replace the gaskets between the FMU and the fuel tubes as necessary (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

SUBTASK 73-21-04-280-001-G00

(2) Make sure that the FMU is not loose.

(a) If it is necessary, tighten the bolts that attach the FMU to the engine (TASK 73-21-04-400-801-G00).

SUBTASK 73-21-04-210-002-G00

(3) Look for cracks on the FMU.

(a) If you see cracks, replace the FMU (TASK 73-21-04-000-801-G00 and TASK 73-21-04-400-801-G00).

SUBTASK 73-21-04-280-002-G00

(4) Make sure that the electrical connectors are not loose.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(a) If it is necessary, use a teflon-jawed pliers, STD-664 to tighten a loose connector.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-04-410-008-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-21-04-860-008-G00

(2) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-21-04-860-009-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-21-04-860-010-G00

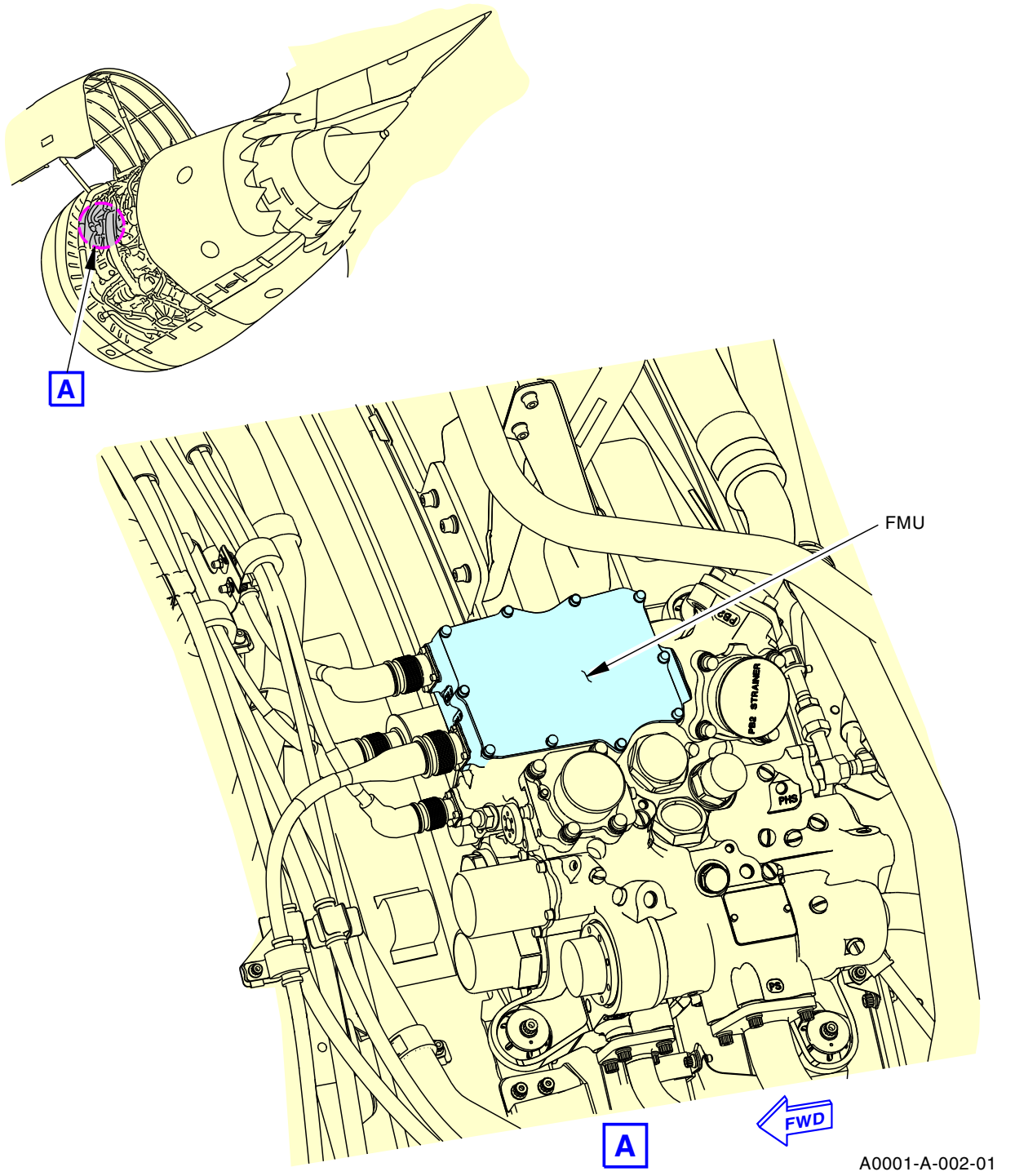
(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Metering Unit Inspection
Figure 601/73-21-04-990-804-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL (EEC) - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

NOTE: Do either task to download engine data from the Electronic Engine Controls (EECs).

(1) EEC data download (on-wing) using the Onboard Network System (ONS)

NOTE: This task is recommended. It does not require opening the engine fan cowl panels.

(2) EEC data download (on-wing) using a Portable Maintenance Access Terminal (PMAT)

NOTE: Use this task if the ONS is not able to connect to the EECs.

(3) EEC data download (on wing) using the Engine Health Management (EHM) function.

NOTE: This task is recommended for the download of detailed fault data.

TASK 73-21-05-970-803-G00

2. Electronic Engine Control (EEC) Data Download (On-Wing)(Selection)

A. General

(1) This procedure gives the mechanics the task selection for electronic engine control (EEC) data download on-wing using different methods.

B. Electronic Engine Control (EEC) Data Download, On-Wing (Selection)

SUBTASK 73-21-05-970-005-G00

(1) Do one of these tasks to download the electronic engine control (EEC) data from an on-wing engine:

(a) Do this task: Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT, TASK 73-21-05-970-801-G00.

(b) Do this task: Electronic Engine Control (EEC) Data Download (On Wing) Using the ONS, TASK 73-21-05-970-802-G00.

(c) Do this task: Electronic Engine Control (EEC) Data Download (On Wing) Using the Engine Health Management (EHM) Function, TASK 73-21-05-970-804-G00.

——— END OF TASK ———

TASK 73-21-05-970-802-G00

3. Electronic Engine Control (EEC) Data Download (On Wing) Using the ONS

(Figure 201)

A. General

(1) This task gives the instructions on how to download the EEC data with the Onboard Network System (ONS).

(2) You will use the Onboard Maintenance Function (OMF) download manager to transfer engine data files to the Portable Maintenance Device (PMD).

(3) The download manager lets the mechanic select engine data files to transfer from ONS to the PMD. You can also delete the files from the ONS. Files can be filtered by application and file type. Engine data files available on the ONS are as follows:

(a) EEC Generated Snapshot and Event History Data

(b) Continuous Engine Operation Data (CEOD)

(c) Bearing Detailed Report

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Debugging Log Files

(e) Fault History, Flight History Vibe, and Engine Balancing Data.

(4) The Download Manager function is only able to download the EEC data stored on the ONS, which typically comes from the active EEC channel.

(a) If data is needed from a specific EEC channel for a particular flight, you may have to download the data directly from the EEC using a PMAT or PDL.

1) If this is the case, refer to Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT, TASK 73-21-05-970-801-G00.

(b) Some data types may be transferred from the EECs to the ONS as an alternative, and are then accessible via the Download Manager function.

1) If this is the case, refer to Electronic Engine Control (EEC) Data Download (On Wing) Using the Engine Health Management (EHM) Function, TASK 73-21-05-970-804-G00.

(5) Do this task when you get access to the Onboard Maintenance Function (OMF) with the maintenance laptop or other type of approved Portable Maintenance Device (PMD).

(6) This task is not available when you access the OMF with the two inboard Multi-function Displays (MFD's).

(7) If attempting to get data immediately following a flight or engine ground run, wait at least 10 minutes after engine shutdown before accessing OMF Download Manager.

NOTE: It can take up to 10 minutes for a data file to become available in the Download Manager list after the file is completed by the EEC. A similar delay in file availability is possible when transferring files from the EECs using the EHM function.

B. References

Reference	Title
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
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

D. Location Zones

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

E. Prepare for the Data Download

SUBTASK 73-21-05-480-001-G00

(1) Do this task: Maintenance Laptop Connection, TASK 46-13-00-480-801.

SUBTASK 73-21-05-970-004-G00

(2) Use the universal maintenance device, SPL-11321, to access the OMF menu.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Electronic Engine Control (EEC) Data Download (On Wing) Using the ONS

SUBTASK 73-21-05-860-023-G00

(1) From the OMF main menu, select LINE MAINTENANCE > DOWNLOAD MANAGER and do these steps:

(a) From the FILTERS tab, select one or more of the engine-related data files.

NOTE: Make sure that a green check mark shows adjacent to your selection.

Engine Related Data Files

APPLICATION FILE TYPE *[1]	DATA TYPE
EECx:ENxACARS	Engine ACARS reports
EECx:ENxFFD	Continuous Engine Operation Data (CEOD)
EECx:ENxEVENT	Engine event reports
EECx:ENxVIBE	Engine vibration data
EECx:ENxSHOPFLT	EEC NVM, engine shop faults, and debugging files
EECx:ENxBOVIBE	Vibration data for Boeing engine trim balance
EECx:ENxUDREPCONF	Uplink/downlink report files
EECx:ENxUPLINKREP	Uplink notifications, uplinked report file
EHM:REPORT	Engine trim balance reports, including balance weight configuration and trim solution data

*[1] The x corresponds engine position (1 for left, 2 for right).

(b) Select CONTINUE.

(c) Select the files.

NOTE: Make sure that a green check mark shows adjacent to your selection.

NOTE: To see the files arranged by the most recent, toggle the DATE/TIME header in the third column.

NOTE: If you see a check mark in the TRANSFERRED column, this indicates files that have been downloaded.

NOTE: If you select DETAILS, you can see the number and size of the files.

(d) If directed by the engineering department to delete the files, select the DELETE icon.

(e) Select the REPORT icon to download the files.

(f) Make sure that the destination “Maintenance Device” is selected.

(g) Select the SEND button.

(h) When the Windows popup shows, make your location selection on the maintenance laptop the location where the data will be downloaded.

NOTE: This procedure recommends that you use the auto-created file name. The file name is created automatically. The naming convention is airplane identification/tail ID, filter type (FFD or DIS, for example), date and time.

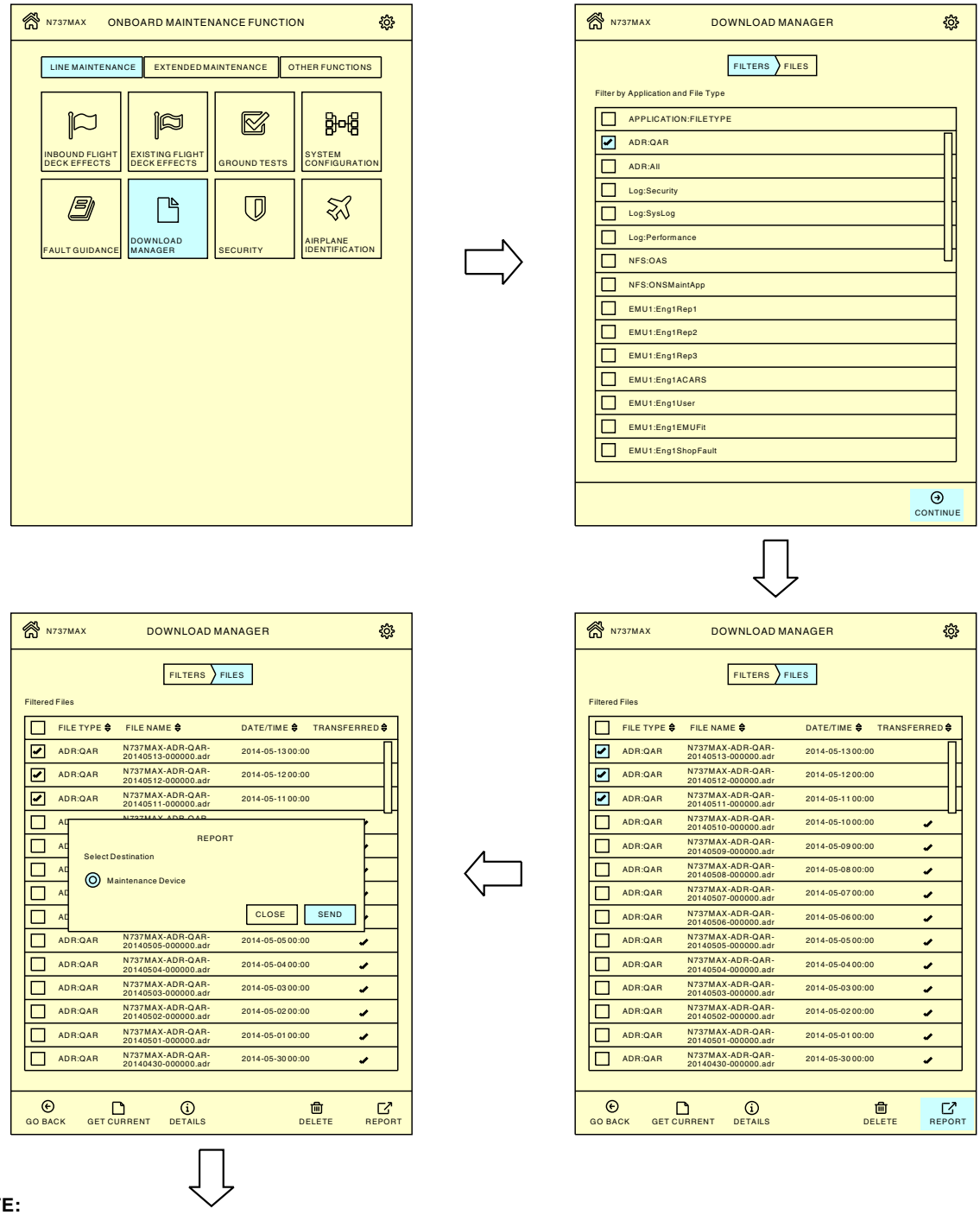
G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-080-001-G00

(1) If it is no longer necessary, stop the OMF access and disconnect the universal maintenance device, SPL-11321.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



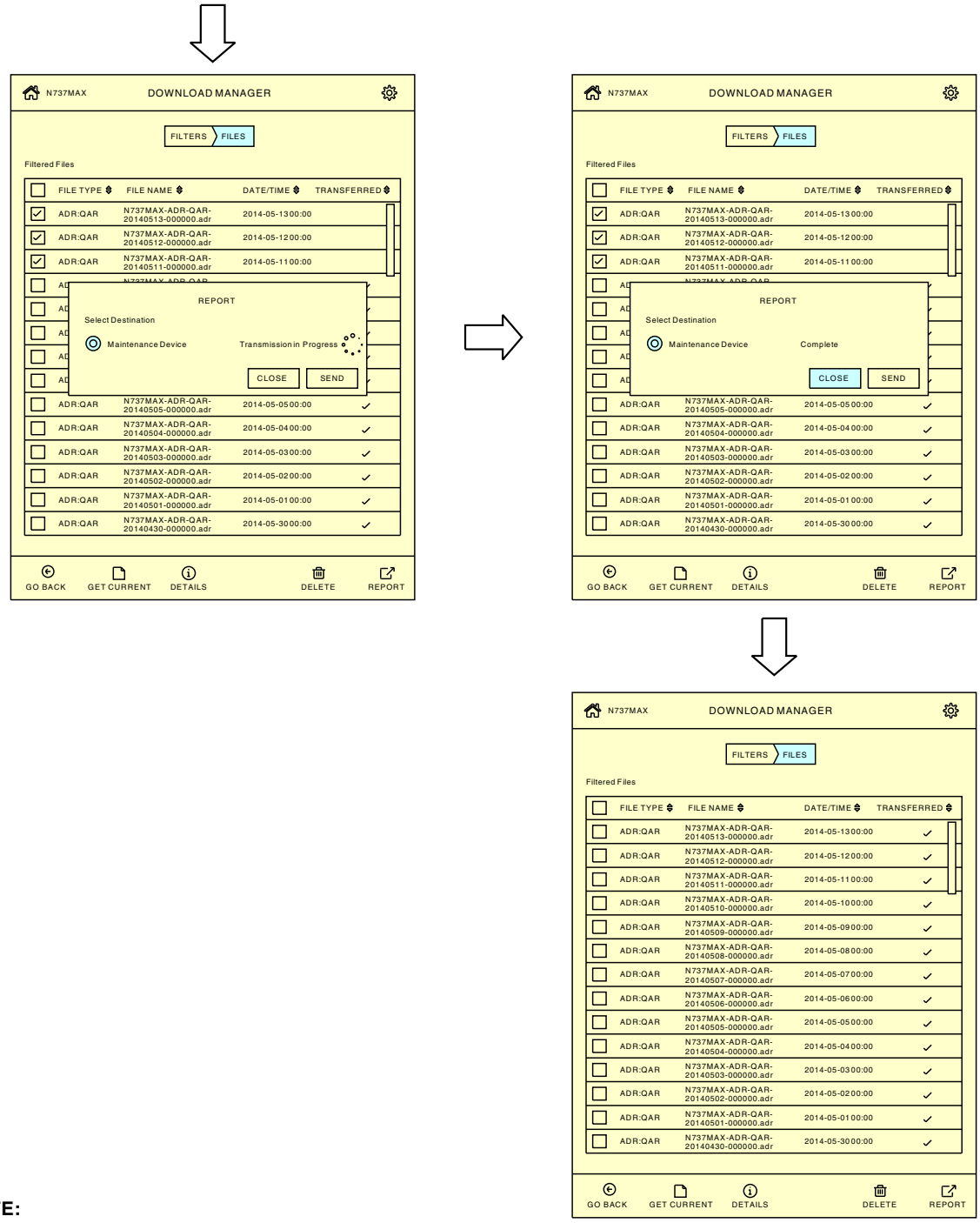
NOTE:

THE DATA ON THE DISPLAY IS ONLY AN EXAMPLE.

2479773 S0000582248_V1

Download Manager
Figure 201/73-21-05-990-814-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

THE DATA ON THE DISPLAY IS ONLY AN EXAMPLE.

2479851 S0000582250_V1

Download Manager
Figure 201/73-21-05-990-814-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-05-970-801-G00

4. Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT

(Figure 202)

A. General

(1) This task gives the instructions to retrieve Non-Volatile Memory (NVM) data from the Electronic Engine Control (EEC).

(2) Retrieving the Non-Volatile Memory (NVM) data from EEC is also referred to as downloading NVM.

(3) Portable data loaders (PDLs) compatible with the LEAP-1B EECs are an acceptable alternative to the PMAT. If you use a PDL, follow the steps in this task but refer to the PDL user manual for task steps specific to the PMAT interface. Contact CFM if you have any questions on PDL compatibility or task procedures.

(4) These tools are necessary when you retrieve NVM data from the EEC:

(a) PMAT 2000, ARINC 615/615A data loader, COM-4963.

(b) CFM recommends the reprogramming kit, Cable Assembly, SPL-14903 (reprogramming box, reprogramming box cable, and Ethernet cable).

(c) Ethernet adapter (Teledyne controls cable), CIS-MS/FSM boot-loader breakout kit, COM-13929.

(d) ARINC 615A-3 software image update, part number 80719-3-UPG or newer, to upgrade the PMAT 2000.

(5) This procedure can generate the OMF maintenance messages that follow as both EECs are powered and only one EEC is connected to the PMAT:

(a) 73-4117X 'CROSS CHANNEL DATA LINK DISCRETE INPUTS AND BACKUP SERIAL CROSS CHANNEL DATA LINK DO NOT AGREE'

(b) 73-4270X 'ENGINE-Y EEC CHANNEL-Z AIRCRAFT POWER IS NOT AVAILABLE'

(c) 73-4271X 'ENGINE-Y EEC CHANNEL-Z IS NOT AVAILABLE'.

NOTE: Where X refers to EEC channel detecting the fault (0 - Engine 1 Channel A and B, 1 - Engine 1 Channel A, 2 - Engine 1 Channel B, 3 - Engine 2 Channel A, 4 - Engine 2 Channel B, 5 - Engine 2 Channel A and B), Y refers to engine position (1-Left or 2-Right) and Z refers to EEC channel (A or B).

No fault isolation is necessary for these maintenance messages when they are set because of the performance of this procedure.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-00-00-700-803-G00	Maintenance Messages Check for EEC Faults (P/B 501)
73-21-00-800-801-G00	EEC Maintenance Power Selection (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-4963	Loader - Data, ARINC 615/615A (Model is PMAT 2000) Part #: P2K-615A-06 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0
COM-13929	Kit - Breakout, CIS-MS/FSM Boot-loader Part #: 80080-1 Supplier: 0BAW0
SPL-14903	Cable Assembly - PMAT (LEAP-1B Engine) Part #: 9471M34G02 Supplier: 58828
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
414	Engine 1 - Fan Cowl, Right
424	Engine 2 - Fan Cowl, Right

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

F. Prepare for the Data Download

SUBTASK 73-21-05-860-016-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-05-860-043-G00

(2) Set the GND TESTS switch on the auxiliary panel, P61, to the ENABLE position.

SUBTASK 73-21-05-010-008-G00

(3) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-940-001-G00

(4) Do these steps to make sure that you have all the necessary tools to download the data from the EEC:

NOTE: You can retrieve the data directly from the EEC using the PMAT 2000 kit, ARINC 615/615A data loader, COM-4963, reprogramming kit, Cable Assembly, SPL-14903, and Ethernet adapter, CIS-MS/FSM boot-loader breakout kit, COM-13929.

NOTE: To download the data using an older PMAT, the CIS-MS/FSM boot-loader breakout kit, COM-13929, will have to be procured separately.

(a) Make sure that the ARINC 615/615A data loader, COM-4963, has the ARINC 615A-3 Data Loading Software (P/N: 80719-3-UPG or newer).

NOTE: To update the ARINC 615/615A data loader, COM-4963, with ARINC 615A-3 Data Loading Software, refer the Software upgrade procedure from the PMAT Users Guide.

(b) Use only the ARINC 615/615A data loader, COM-4963, and the CIS-MS/FSM boot-loader breakout kit, COM-13929, for this procedure.

NOTE: The ARINC 615/615A data loader, COM-4963, contains PMAT 2000, PMAT cable, Ethernet cables (labelled "Straight" & "Crossover"), floppy disk drive, power cable and Ethernet adapter (Teledyne controls cable). The plug is a United States-110 Volt type; therefore, a local type plug/adapter may be required based on the region.

NOTE: Do not use the PMAT cable, Ethernet cable labelled "Crossover" and floppy disk drive.

NOTE: Use Ethernet cable labelled "Straight". If you use Ethernet cable labelled "Crossover", the PMAT will not be able to find an EEC target to connect with for data download.

(c) Use the port GSE Vibration DSP Ethernet on the left hand side of the reprogramming box to download these data:

NOTE: The Cable Assembly, SPL-14903, contains reprogramming box cable connected to a reprogramming box and an Ethernet cable. The reprogramming box contains 2 Ethernet ports, the tester receptacle, and two indicator lights.

1) Continuous Engine Operational Data (CEOD)
2) EEC generated snapshot data
3) Event history and bearing detailed report.

(d) Use the port GSE Ethernet on the right hand side of the reprogramming box to download these data:

NOTE: The CIS-MS/FSM boot-loader breakout kit, COM-13929, is connected on the ARINC 615/615A data loader, COM-4963, and interfaces with the reprogramming box using the Ethernet cable.

NOTE: The EEC when powered ON must be in the programming enabled state, in order to enable the retrieval of the data. Once the EEC is powered ON, and connected to the ARINC 615/615A data loader, COM-4963, the downloading application of the ARINC 615/615A data loader, COM-4963, can be used to retrieve the data from the EEC.

1) Fault history and EEC control learning data.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-860-018-G00

(5) Make sure that the engines are shutdown and the most recent shutdown occurred at least 5 minutes before you start this procedure.

SUBTASK 73-21-05-710-001-G00

(6) Do these steps to test the battery charge and cable continuity on the Cable Assembly, SPL-14903:

(a) Remove the dust cap from the GSE VIBRATION DSP ETHERNET port on the left side of the reprogramming box.

(b) Connect the one end of the Ethernet cable to the GSE VIBRATION DSP ETHERNET port.

(c) Remove the dust cap from the GSE ETHERNET port on the right side of the reprogramming box.

(d) Connect the other end of the Ethernet cable to the GSE ETHERNET port.

(e) Make sure that the BATTERY FULLY CHARGED light is on.

NOTE: If the BATTERY FULLY CHARGED light is not on, replace the standard 9V battery on the reprogramming box.

(f) Disconnect the dust cap on the TESTER RECEPTACLE on the reprogramming box.

(g) Connect the end of the reprogramming box cable (used for connecting to the EEC J9 connector) to the TESTER RECEPTACLE on the reprogramming box.

(h) Make sure that the CABLE OK light is illuminates.

NOTE: If the CABLE OK light does not illuminate, replace the battery, and do the test again. If it is necessary, replace the Cable Assembly, SPL-14903, and do the test again.

(i) Replace the dust cap on the TESTER RECEPTACLE.

G. Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT

SUBTASK 73-21-05-970-001-G00

(1) Do these steps to download data from the EEC channel A:

(a) Make sure that the engine is shutdown.

(b) Make sure that the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page is set to NORM (TASK 73-21-00-800-801-G00).

(c) Disconnect the dust cap from the J9 connector on EEC.

CAUTION

MAKE SURE THAT YOU REMOVE ALL ELECTRICAL CHARGES FROM THE EEC. DAMAGE CAN OCCUR.

(d) Touch the connector-coupling nut of the cable to the J9 connector body on the EEC and hold it for at least 1 second.

NOTE: This will remove all electrical charges on the EEC.

(e) Connect the reprogramming box cable to the J9 connector on the EEC.

(f) Disconnect the dust cap on the ARINC 615/615A data loader, COM-4963, reprogramming port.

(g) Disconnect the dust cap on the CIS-MS/FSM boot-loader breakout kit, COM-13929.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE THAT YOU REMOVE ALL ELECTRICAL CHARGES FROM THE EEC. DAMAGE CAN OCCUR.

(h) Touch the connector-coupling nut of the CIS-MS/FSM boot-loader breakout kit, COM-13929, cable to the connector-coupling nut of the ARINC 615/615A data loader, COM-4963, and hold it for at least 1 second.

NOTE: This will remove all electrical charges on the EEC.

(i) Connect the CIS-MS/FSM boot-loader breakout kit, COM-13929, to the ARINC 615/615A data loader, COM-4963, reprogramming port.

(j) Connect one end of the Ethernet cable to the GSE VIBRATION DSP ETHERNET port on the reprogramming box and the other end to the CIS-MS/FSM boot-loader breakout kit, COM-13929, already connected to ARINC 615/615A data loader, COM-4963.

NOTE: Use the GSE VIBRATION DSP ETHERNET port to download the Continuous Engine Operational Data (CEOD), EEC generated snapshot data, Event History, and bearing detailed report.

NOTE: Do not connect the Ethernet cable to the Ethernet port on the ARINC 615/615A data loader, COM-4963.

NOTE: Use Ethernet cable labelled "Straight". Do not use Ethernet cable labelled "Crossover". If you use Ethernet cable labelled "Crossover", the PMAT will not be able to find an EEC target to connect with for data download.

(k) Turn on the ARINC 615/615A data loader, COM-4963.

(l) Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER to TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

(m) Select ARINC 615A DATALOADER from the PMAT Main Menu.

(n) Enter a USERNAME, in box 1.

(o) Select the Tail Configuration, by entering the Tail Number, in box 2. Then click "OK".

(p) Select the Connection Type, in box 3.

1) Select “EEC CH.B DSP” or “615A LOADER STANDARD (IP ADDRESS = 192.168.1.2)".

2) Select "4. Continue".

(q) Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER to TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

(r) Select Operator Defined Download in the select an operation box.

(s) Wait for the screen to show that a target has been found, then select that target.

NOTE: You should see the target "GEC-EECDSP_A". It may take 1 to 2 minutes to appear on the screen.

(t) Select Continue.

(u) Select the applicable files contain data as given in Table 201.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 201/73-21-05-993-801-G00 Channel A Directories

File Name(s)	Data type
When connected to Channel A	
EECDSP_DIR1_A.RTV	EEC generated Snapshot data, Event History
EECDSP_DIR2_A.RTV	Continuous Engine Operational Data (CEOD)
EECDSP_DIR3_A.RTV	Bearing detailed report
EECDSP_DIR4_A.RTV	EEC-generated Ethernet (ONS-related) log files
EECDSP_DIR5_A.RTV	Unused Currently
EECDSP_DIRg_A.RTV	EEC OMAP activity log files
EECDSP_DIRy_A.RTV	Unused Currently

1) Select one file name from Table 201/73-21-05-993-801-G00 in the Download List window for the appropriate data type you will download.

   NOTE: Download each file one at a time. If you download multiple files at the same time, it can cause a failed download.

   NOTE: It is recommended to download DIR1 first as it downloads quickly and will make sure that the PMAT system is correctly connected and configured.

2) Select Start.

3) After a few seconds, make sure that a progress bar appears and throughput indication starts to update (in KBytes/Sec).

   NOTE: When you download DIR2, it can take up to 25 minutes for the progress bar and throughput to update. Wait at least 25 minutes before you abort the download procedure. DIR2 file size is up to 1.5 GB and can take 45 minutes to fully download.

4) The progress status bar will turn green after the download completes correctly.

   NOTE: If the download for DIR2 has taken approximately 45 minutes and the progress bar turns red and shows failed, check the size of the file downloaded. If the size of the DIR2 .RTV file is approximately 1.5 GB, the download has completed correctly.

5) If you will download another directory, do this step again:

   a) Select Operator Defined Download in the select an operation box.

(v) Click Close on each of the individual status window to properly terminate the download session.

(w) Click Go Back to exit the current window and display the PMAT Main Menu.

(x) Disconnect the Ethernet cable from the GSE Vibration DSP Ethernet port.

(y) Connect the Ethernet cable to the GSE Ethernet port (right hand side port) on the reprogramming box.

NOTE: Use the GSE Ethernet port to download the Flight History Vibe data, Fault History, and balancing data.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(z) Cycle power to the applicable engine EECs. Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to NORM then to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER to TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

(aa) Select ARINC 615A DATALOADER from the PMAT Main Menu.

(ab) Enter a USERNAME, in box 1.

(ac) Select the Tail configuration, by entering the Tail number, in box 2 and then click "OK".

1) Select “EEC CH.B DSP” or “615A LOADER STANDARD (IP ADDRESS = 192.168.1.2)".

(ad) Select Continue.

(ae) Select Operator Defined Download in the select operation box.

(af) Wait for the screen to show that a target has been found, then select that target.

NOTE: You should see the target "GEC-EECCPU_A”. It may take 1 to 2 minutes to appear on the screen.

(ag) Select Continue.

(ah) Select the file by using select all in the Download List window.

(ai) Do these steps to download CPU NVM:

1) Select directory EECCPU_NVM_A.RTV as shown in Table 202.

Table 202/73-21-05-993-802-G00 Channel A CPU File

File Name(s)	Data type
When connected to Channel A	
EECCPU_NVM_A.RTV	Fault history and EEC control learning data

2) Select Start, after a few seconds a progress bar should appear and throughput indication should begin updating (in KBytes/Sec).

NOTE: While selecting the directory, if this step is not completed within 10 seconds, the PMAT will have a timeout error. You will need select the operator defined download in the select operation box again. Wait for the screen to show that a target has been found and then select that target (you should see the target "GEC-EECCPU_A" in 1 to 2 minutes). Then select continue.

3) The progress status bar will turn green after the download is completed successfully.

(aj) Click Close on each of the individual status window to properly terminate the download session.

(ak) Click Go Back to exit the current window and display the PMAT Main Menu.

(al) Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to NORM (TASK 73-21-00-800-801-G00).

(am) Disconnect the reprogramming box cable from the J9 connector on EEC and connect the dust cap.

SUBTASK 73-21-05-970-002-G00

(2) Do these steps to download data from the EEC channel B:

(a) Make sure that the engine is shutdown.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the EEC MAINT POWER on the MISC SYSTEM CTRLS page are in NORM (TASK 73-21-00-800-801-G00).

(c) Disconnect the dust cap from the J9 connector on EEC.

CAUTION

MAKE SURE THAT YOU REMOVE ALL ELECTRICAL CHARGES FROM THE EEC. DAMAGE CAN OCCUR.

(d) Touch the connector-coupling nut of the cable to the J9 connector body on the EEC and hold it for at least 1 second.

NOTE: This will remove all electrical charges on the EEC.

(e) Connect the reprogramming box cable to the J9 connector on the EEC.

(f) Disconnect the dust cap on the ARINC 615/615A data loader, COM-4963, reprogramming port.

(g) Disconnect the dust cap on the CIS-MS/FSM boot-loader breakout kit, COM-13929.

CAUTION

MAKE SURE THAT YOU REMOVE ALL ELECTRICAL CHARGES FROM THE EEC. DAMAGE CAN OCCUR.

(h) Touch the connector-coupling nut of the CIS-MS/FSM boot-loader breakout kit, COM-13929, cable to the connector-coupling nut of the ARINC 615/615A data loader, COM-4963, and hold it for at least 1 second.

NOTE: This will remove all electrical charges on the EEC.

(i) Connect the CIS-MS/FSM boot-loader breakout kit, COM-13929, to the ARINC 615/615A data loader, COM-4963, reprogramming port.

(j) Connect one end of the Ethernet cable to the GSE Vibration DSP Ethernet port (left hand side port) on the reprogramming box and the other end to the CIS-MS/FSM boot-loader breakout kit, COM-13929, already connected to ARINC 615/615A data loader, COM-4963.

NOTE: Use the GSE VIBRATION DSP ETHERNET port to download the Continuous Engine Operational Data (CEOD), EEC generated snapshot data, event History, and bearing detailed report.

NOTE: Do not connect the Ethernet cable to the Ethernet port on the ARINC 615/615A data loader, COM-4963.

NOTE: Use Ethernet cable labelled "Straight". Do not use Ethernet cable labelled "Crossover". If you use Ethernet cable labelled "Crossover", the PMAT will not be able to find an EEC target to connect with for data download.

(k) Turn on the ARINC 615/615A data loader, COM-4963.

(l) Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER to TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

(m) Select ARINC 615A DATALOADER from the PMAT Main Menu.

(n) Enter a USERNAME, in box 1.

(o) Select the Tail Configuration, by entering the Tail Number, in box 2. Then click "OK".

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(p) Select the Connection Type, in box 3.

1) Select "615A LOADER STANDARD (IP ADDRESS = 192.168.1.2)".

2) Select "4. Continue".

(q) Select Operator Defined Download in the select an operation box.

(r) Wait for the screen to show that a target has been found, then select that target.

NOTE: You should see the target "GEC-EECDSP_B". It may take 1 to 2 minutes to appear on the screen.

(s) Select Continue.

(t) Select the applicable files contain data as given in Table 203.

Table 203/73-21-05-993-803-G00 Channel B Directories

File Name(s)	Data type
When connected to Channel B	
EECDSP_DIR1_B.RTV	EEC generated Snapshot data, Event History
EECDSP_DIR2_B.RTV	Continuous Engine Operational Data (CEOD)
EECDSP_DIR3_B.RTV	Bearing detailed report
EECDSP_DIR4_B.RTV	EEC-generated Ethernet (ONS-related) log files
EECDSP_DIR5_B.RTV	Unused Currently
EECDSP_DIRg_B.RTV	EEC OMAP activity log files
EECDSP_DIRy_B.RTV	Unused Currently

1) Select one file name from Table 201/73-21-05-993-801-G00 in the Download List window for the appropriate data type you will download.

NOTE: Download each file one at a time. If you download multiple files at the same time, it can cause a failed download.

NOTE: It is recommended to download DIR1 first as it downloads quickly and will make sure that the PMAT system is correctly connected and configured.

2) Select Start.

3) After a few seconds, make sure that a progress bar appears and throughput indication starts to update (in KBytes/Sec).

NOTE: When you download DIR2, it can take up to 25 minutes for the progress bar and throughput to update. Wait at least 25 minutes before you abort the download procedure. DIR2 file size is up to 1.5 GB and can take 45 minutes to fully download.

4) The progress status bar will turn green after the download completes correctly.

NOTE: If the download for DIR2 has taken approximately 45 minutes and the progress bar turns red and shows failed, check the size of the file downloaded. If the size of the DIR2 .RTV file is approximately 1.5 GB, the download has completed correctly.

5) If you will download another directory, do this step again:

a) Select Operator Defined Download in the select an operation box.

(u) Click Close on each of the individual status window to properly terminate the download session.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(v) Click Go Back to exit the current window and display the PMAT Main Menu.

(w) Disconnect the Ethernet cable from the GSE VIBRATION DSP ETHERNET port.

(x) Connect the Ethernet cable to the GSE ETHERNET port (right port) on the reprogramming box.

NOTE: Use the GSE ETHERNET port to download the flight history vibe data, fault history, and balancing data.

(y) Cycle power to the applicable engine EECs. Set the EEC MAINT POWER for the applicable engine on the MISC SYSTEM CTRLS to NORM then to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER to TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

(z) Select ARINC 615A DATALOADER from the PMAT Main Menu.

(aa) Enter a USERNAME, in box 1.

(ab) Select the Tail configuration, by entering the Tail number, in box 2. Then click "OK".

1) Select "615A LOADER STANDARD (IP ADDRESS = 192.168.1.2)".

(ac) Select Continue.

(ad) Select Operator Defined Download in the select operation box.

(ae) Wait for the screen to show that a target has been found, then select that Target.

NOTE: You should see the target "GEC-EECCPU_B". It may take 1 to 2 minutes to appear on the screen.

(af) Select Continue.

(ag) Select the file by using Select All in the Download List window.

(ah) Do these steps to download CPU NVM:

1) Select directory EECCPU_NVM_B.RTV as shown in Table 204.

Table 204/73-21-05-993-804-G00 Channel B CPU File

File Name(s)	Data type
When connected to Channel B	
EECCPU_NVM_B.RTV	Fault history and EEC control learning data

2) Select Start, after a few seconds a progress bar should appear and throughput indication should begin updating (in KBytes/Sec).

NOTE: While selecting the directory, if this step is not completed within 10 seconds, the PMAT will have a timeout error. You will need select the operator defined download in the select operation box again. Wait for the screen to show that a target has been found and then select that target (you should see the target "GEC-EECCPU_B" in 1 to 2 minutes). Then select continue.

3) The progress status bar will turn green after the download is completed successfully.

(ai) Click Close on each of the individual status window to properly terminate the download session.

(aj) Click Go Back to exit the current window and display the PMAT Main Menu.

(ak) Set the EEC MAINT POWER on the MISC SYSTEM CTRLS to NORM (TASK 73-21-00-800-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(al) Disconnect the reprogramming box cable from the J9 connector on EEC and connect the dust cap.

SUBTASK 73-21-05-970-003-G00

(3) Do these steps to access the downloaded files from the EEC:

(a) Go to the ARINC 615/615A data loader, COM-4963, Main Menu.

(b) Select Archived Data.

NOTE: This will open a new screen with header, Archived Data.

(c) On the Archived Data screen, select 615A Downloads.

(d) On the 615A Downloads screen, select relevant files to be transferred.

(e) Select the icon Transfer to Removable Media.

NOTE: This will open a new screen with the header; Transfer from 615A Downloads To Removal Media.

(f) The transfer from 615A Downloads to Removal Media screen will show the Removable Media Drive when connected to the PMAT.

(g) Select the location on the Media Drive to save the files using Browse.

(h) Select the appropriate Transfer type.

(i) Select appropriate options in Downloads to Transfer.

(j) Click on the Transfer Download(s) to initiate the transfer of files.

NOTE: The file transfer progress can be seen from the transfer status.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-410-007-G00

(1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

(a) On the applicable engine, close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-05-860-020-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-05-860-044-G00

(3) Set the GND TESTS switch on the auxiliary panel, P61, to the NORM position.

SUBTASK 73-21-05-750-001-G00

(4) Do a check on the Onboard Maintenance Function (OMF) for the following EEC maintenance messages (TASK 73-00-00-700-803-G00): 73-41170, 73-41175, 73-42701, 73-42702, 73-42703, 73-42704, 73-42711, 73-42712, 73-42713, and 73-42714.

NOTE: No fault isolation is required for these maintenance messages when set due to EEC connection to PMAT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

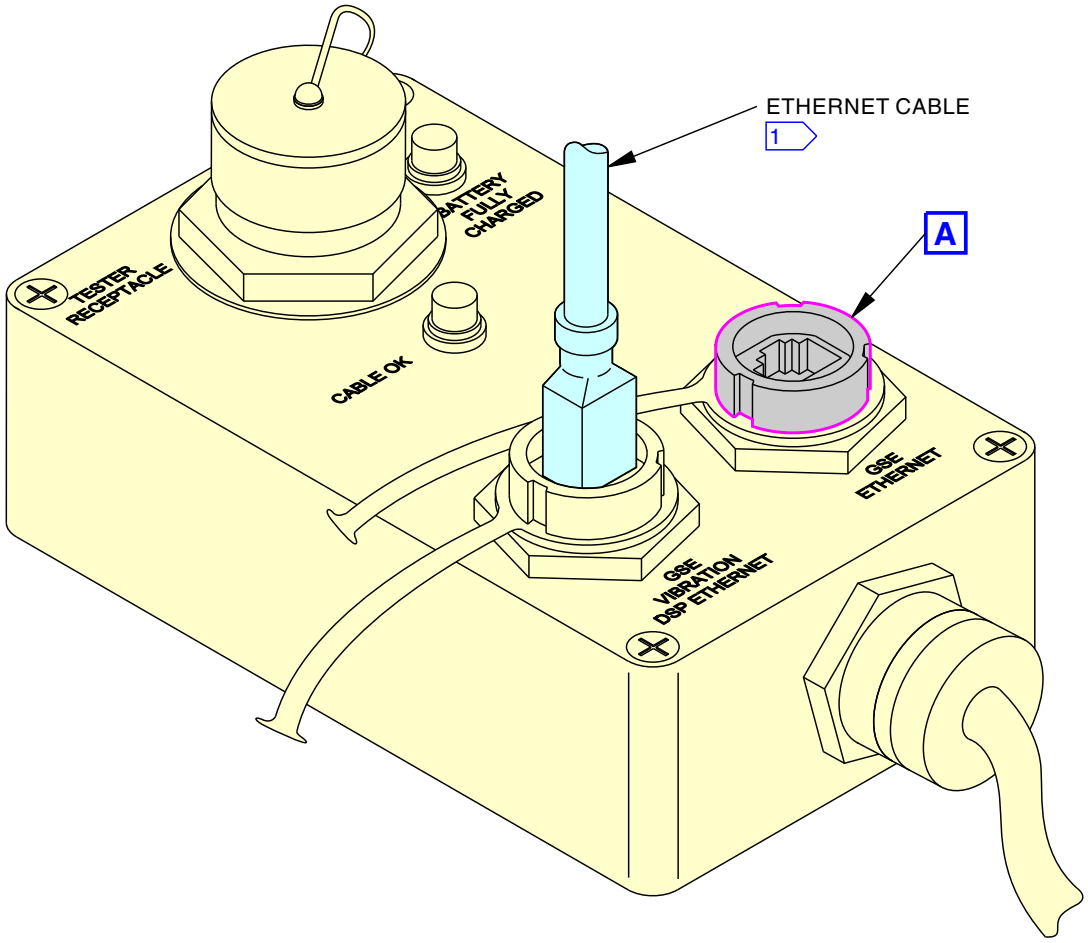
(a) If the maintenance messages are present, cycle power to the EECs using the EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the Multi Function Display (MFD) (TASK 73-21-00-800-801-G00).

1) If the maintenance messages clear, confirm no STATUS or SMT messages are present.

a) Do this task: Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

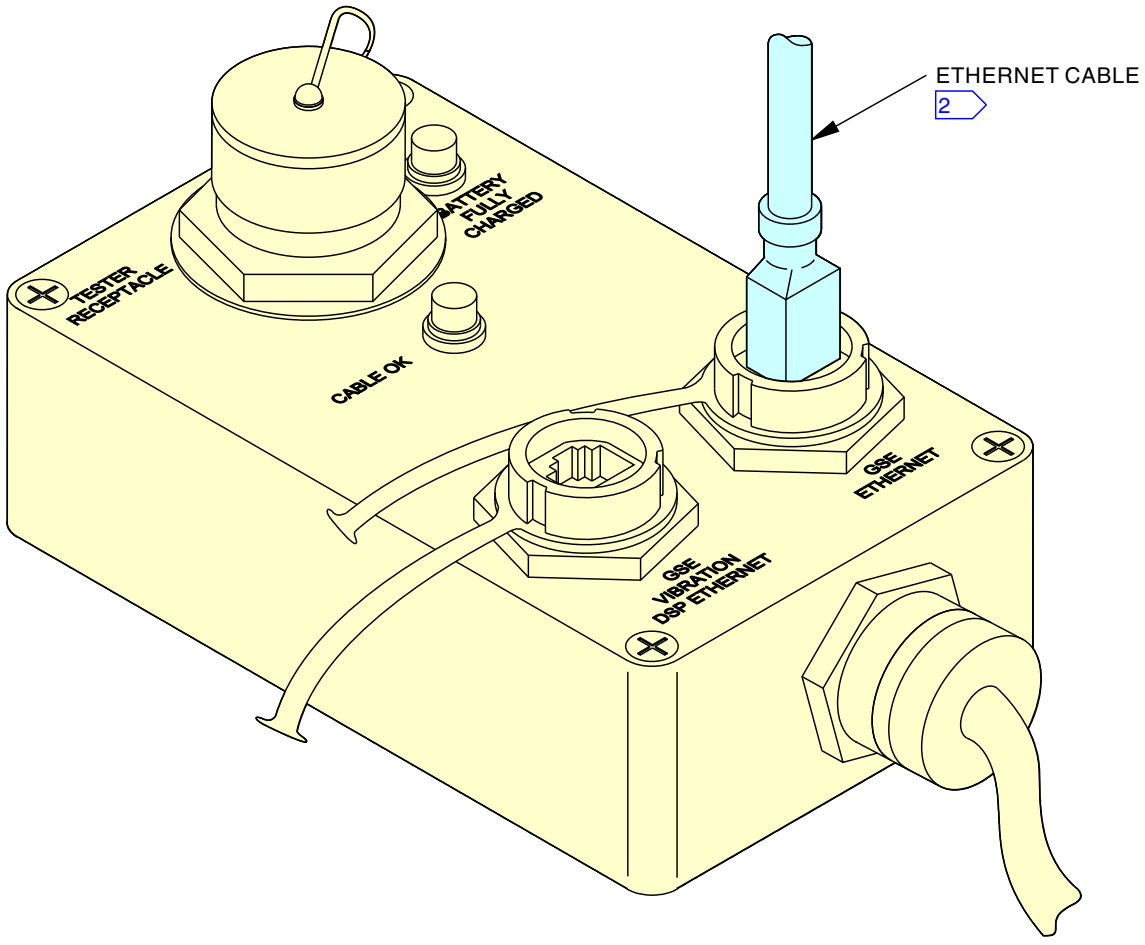


1 ETHERNET CABLE CONNECTED TO GSE VIBRATION DSP ETHERNET PORT FOR DOWNLOADING CONTINUOUS ENGINE OPERATIONAL DATA (CEOD), EEC GENERATED SNAPSHOT DATA, EVENT HISTORY AND BEARING DETAILED REPORTS.

5031436-00
2532204 S0000599744_V1

Reprogramming Box
Figure 202/73-21-05-990-813-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



2 ETHERNET CABLE CONNECTED TO GSE ETHERNET PORT FOR DOWNLOADING FLIGHT HISTORY VIBRATION, FAULT HISTORY, AND ENGINE TRIM BALANCING DATA.

5031437-00
2532208 S0000599746_V1

Reprogramming Box
Figure 202/73-21-05-990-813-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-05-970-804-G00

5. Electronic Engine Control (EEC) Data Download (On Wing) Using the Engine Health Management (EHM) Function

A. General

(1) This task gives the instructions on how to transfer and then download data from the EEC memory to the Onboard Network System (ONS).

(2) You will use the Engine Health Management (EHM) data download function and Onboard Maintenance Function (OMF) download manager to transfer engine data files to the portable universal maintenance device, SPL-11321.

(3) The EHM data download function lets personnel select engine data files to transfer to the ONS from the EEC.

(4) Engine data files available to transfer to the ONS are as follows:

(a) System log of EEC communication with aircraft ONS

(b) Detailed snapshot of EEC fault information, including specific engine parameters when the fault was detected (EEC CPU NVM, detailed fault history)

(c) Detailed vibration data used for event investigation and maturing vibration analytics

(d) EEC-generated snapshot report data.

(5) Do this task when you get access to the Onboard Maintenance Function (OMF) with the maintenance laptop or other type of approved Portable Maintenance Device (PMD).

(6) This task is not available when you access the OMF with the two inboard Multi-Function Displays (MFD's).

B. References

Reference	Title
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (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-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

E. Prepare for the Download

SUBTASK 73-21-05-480-002-G00

(1) Connect the PMD to the ONS (TASK 46-13-00-480-801).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-860-036-G00

(2) Rotate the SELECTOR knob to C or R on the multi-function panel.

SUBTASK 73-21-05-860-037-G00

(3) Push SEL button to activate the MFD screen.

SUBTASK 73-21-05-860-038-G00

(4) Set the applicable EEC MAINT POWER on the MISC SYSTEM CTRLS page to TEST (TASK 73-21-00-800-801-G00).

NOTE: The EEC will do a self-test when you set the EEC MAINT POWER switch to the TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

SUBTASK 73-21-05-860-039-G00

(5) Set the GND TESTS switch on the auxiliary panel, P61, to the ENABLE position.

SUBTASK 73-21-05-210-004-G00

(6) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) On the P5 overhead panel, make sure that the applicable ENGINE START switch is in the OFF position.

(b) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(c) On the P10 control stand, make sure that the applicable START LEVER switch is in the CUTOFF position.

(d) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-05-860-040-G00

(7) Set the applicable thrust lever to idle.

F. Electronic Engine Control (EEC) Data Download (On Wing) Using the Engine Health Management (EHM) Function

SUBTASK 73-21-05-480-003-G00

(1) Make these selections on the PMD main function menu:

(a) OTHER FUNCTIONS.

(b) ENGINE HEALTH MANAGEMENT (EHM).

(c) ENGINE 1 or ENGINE 2.

(d) FUNCTIONS > EEC DATA DOWNLOAD.

SUBTASK 73-21-05-970-011-G00

(2) Select the file type to be transferred from EEC non-volatile memory (NVM) to ONS File Download Manager from the table below:

NOTE: It is recommended to select only one file type at a time.

File Type	File Content	Expected Transfer Time
EEC Syslog Channel A & B	Log of EEC communication with aircraft ONS	7 minutes
EEC Shop Fault Channel A & B	Detailed snapshot of EEC fault information, including specific engine parameters when fault was detected	7 minutes
Advanced Vibration Data Channel A & B	Detailed vibration data used for event investigation and maturing vibration analytics	135 minutes

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

File Type	File Content	Expected Transfer Time
ACARS Channel A & B	EEC-generated snapshot report data	7 minutes
Full Flight Data Channel A & B *[1]	Continuous Engine Operation Data (CEOD)	inhibited

*[1] Full Flight Data Channel A & B file is prevented from being downloaded, as the large file size would result in a very long transfer time.

SUBTASK 73-21-05-970-012-G00

(3) Select REPORT.

SUBTASK 73-21-05-970-013-G00

(4) Select SEND.

NOTE: The ONS will automatically display an error message 60 seconds after selecting SEND. If the transfer error appears, wait for the remaining expected transfer time before you check Download Manager for the transferred file. If you turn off power to the EECs or change the GND TESTS switch position, it will interrupt the file transfer.

SUBTASK 73-21-05-970-014-G00

(5) Download the transferred files from the applicable engine EECx:ENxSHOPFLT directory in Download Manager (TASK 73-21-05-970-802-G00).

NOTE: The x in EECx:ENxSHOPFLT corresponds to engine position (1 for left, 2 for right).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-860-041-G00

(1) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

SUBTASK 73-21-05-860-042-G00

(2) Set the GND TESTS switch on the auxiliary panel, P61, to the NORM position.

SUBTASK 73-21-05-080-004-G00

(3) Remove the DO NOT OPERATE tag, STD-858, from the ENGINE START and the START LEVER switches.

SUBTASK 73-21-05-080-005-G00

(4) Disconnect the PMD from the ONS.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL (EEC) - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Electronic Engine Control (EEC) Channel A Removal

(2) Electronic Engine Control (EEC) Channel A Installation

(3) Electronic Engine Control (EEC) Channel B Removal

(4) Electronic Engine Control (EEC) Channel B Installation.

B. If you remove and replace the two EECs at the same time, make a record of the current engine trim balance weight configuration before you remove the EECs.

TASK 73-21-05-000-801-G00

2. Electronic Engine Control (EEC) Channel A Removal

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to remove the Electronic Engine Control (EEC) Channel A.

(2) A minimum of two persons are required to handle the EEC if the jack stand and EEC adapter support equipment are not used.

B. References

Reference	Title
46-13-02-970-802	Download Manager (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-720-805-G00	Test No. 11 - Low Pressure System (Fan) Trim Balance (With ONS) (P/B 501)
71-00-00-970-801-G00	Maintenance Data Pages from the Engine Propulsion Control System (EPCS) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14529	Adapter - LRU Part #: 956A3616G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-05-860-006-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-05-970-006-G00

(2) If you will replace the two EECs at the same time, do these steps before you remove the EECs:

(a) Make a record of the current engine trim balance weight configuration (TASK 71-00-00-720-805-G00).

(b) Make a record of the current engine cumulative oil debris chip count ("DMS") on EPCS page 2 (TASK 71-00-00-970-801-G00).

SUBTASK 73-21-05-970-009-G00

(3) If you will remove the EEC because of a fault isolation procedure, do this step:

(a) Download the EEC Non Volatile Memory (NVM) from the two EEC channels before you remove the EEC (TASK 46-13-02-970-802).

NOTE: Downloading the CEOD and EEC NVM data is optional. The EEC NVM and CEOD download is recommended only for cases where repetitive maintenance actions or component replacements have failed to identify the root cause of the fault condition. The EEC NVM and CEOD can be helpful to identify the root cause of the fault condition. However, when the EEC is removed for a known cause, it is not necessary to do the EEC NVM and CEOD download.

NOTE: The EEC NVM is listed in Download Manager as EEC1:EN1SHOPFLT for Engine 1 and EEC2:EN2SHOPFLT for Engine 2.

NOTE: You can also use the EEC DATA DOWNLOAD function on the OTHER FUNCTIONS > EHM menu on the Portable Maintenance Device (PMD) to download the EEC NVM. The EEC NVM is listed as 'EEC Shop Fault Channel A & B' in the EEC DATA DOWNLOAD menu.

SUBTASK 73-21-05-040-001-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-05-860-012-G00

(5) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Electronic Engine Control (EEC) Channel A Removal

SUBTASK 73-21-05-030-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

CAUTION MAKE SURE TO FOLLOW THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EEC.

(1) Use the teflon-jawed pliers, STD-664, to disconnect these electrical connectors from the EEC CH A [1] receptacles (TASK 70-00-01-910-803-G00):

(a) The electrical connector (HJ8A) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6A) [5]

(d) The electrical connector (HJ5A) [6]

(e) The electrical connector (W4A) [7]

(f) The electrical connector (HJ3A) [8]

(g) The electrical connector (W2) [9]

(h) The electrical connector (W4A) [7].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-480-005-G00

(2) Install the protection covers on the electrical connectors and the electrical receptacles on the EEC CH A [1].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0010 OR PRE LEAP-1B SERVICE BULLETIN 75-0011

SUBTASK 73-21-05-030-002-G00

(3) Remove the EEC cooling duct [2] from the EEC CH A [1] as follows:

(a) Remove the four bolts [10] that attach the EEC cooling duct [2] to the EEC CH A [1].

(b) Disconnect the EEC cooling duct [2] from the EEC CH A [1].

(c) Remove and discard the gasket seal [13].

SUBTASK 73-21-05-480-004-G00

(4) Install the protective covers on the EEC cooling duct [2].

SIA ALL

SUBTASK 73-21-05-020-001-G00

WARNING THE EEC IS HEAVY AND TWO PERSONS ARE NECESSARY TO LIFT IT. IF YOU LIFT THE EEC INCORRECTLY, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(5) Do these steps to remove the EEC CH A [1] from the fan case mounting brackets [12] as follows:

NOTE: The EEC weighs approximately 37 lb (17 kg).

NOTE: If the two-person alternative method is used, you do not have to install the EEC to the adapter, SPL-14529, and jack stand, SPL-14500.

(a) Attach the adapter, SPL-14529, to the EEC CH A [1].

(b) Move the jack stand, SPL-14500, to the correct position.

(c) Install the adapter, SPL-14529, on the jack stand, SPL-14500.

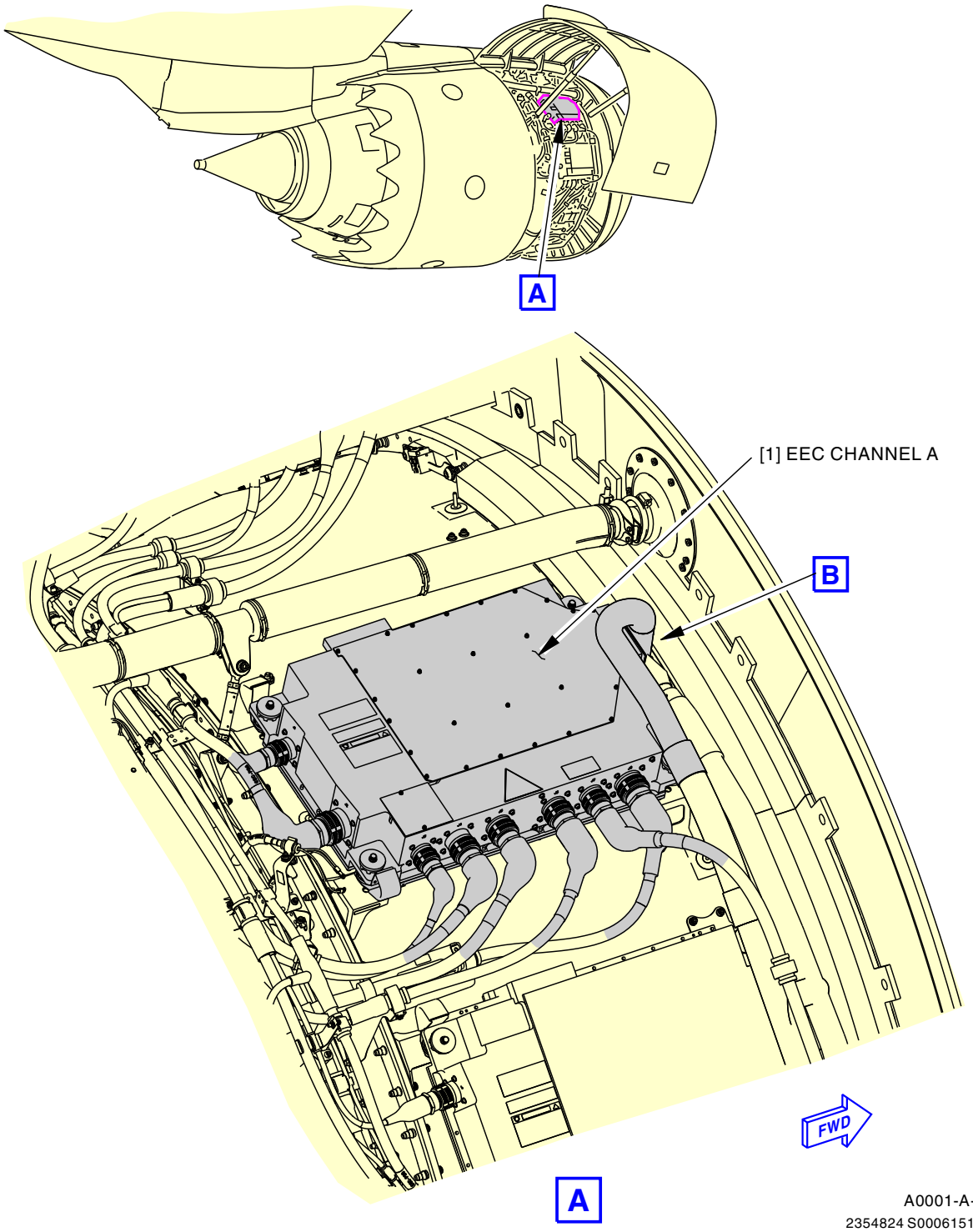
(d) Remove the four screws [11] that attach the EEC CH A [1] to the four mounting brackets [12].

NOTE: Do not remove the captive screws.

(e) Remove the EEC CH A [1] from the four mounting brackets [12].

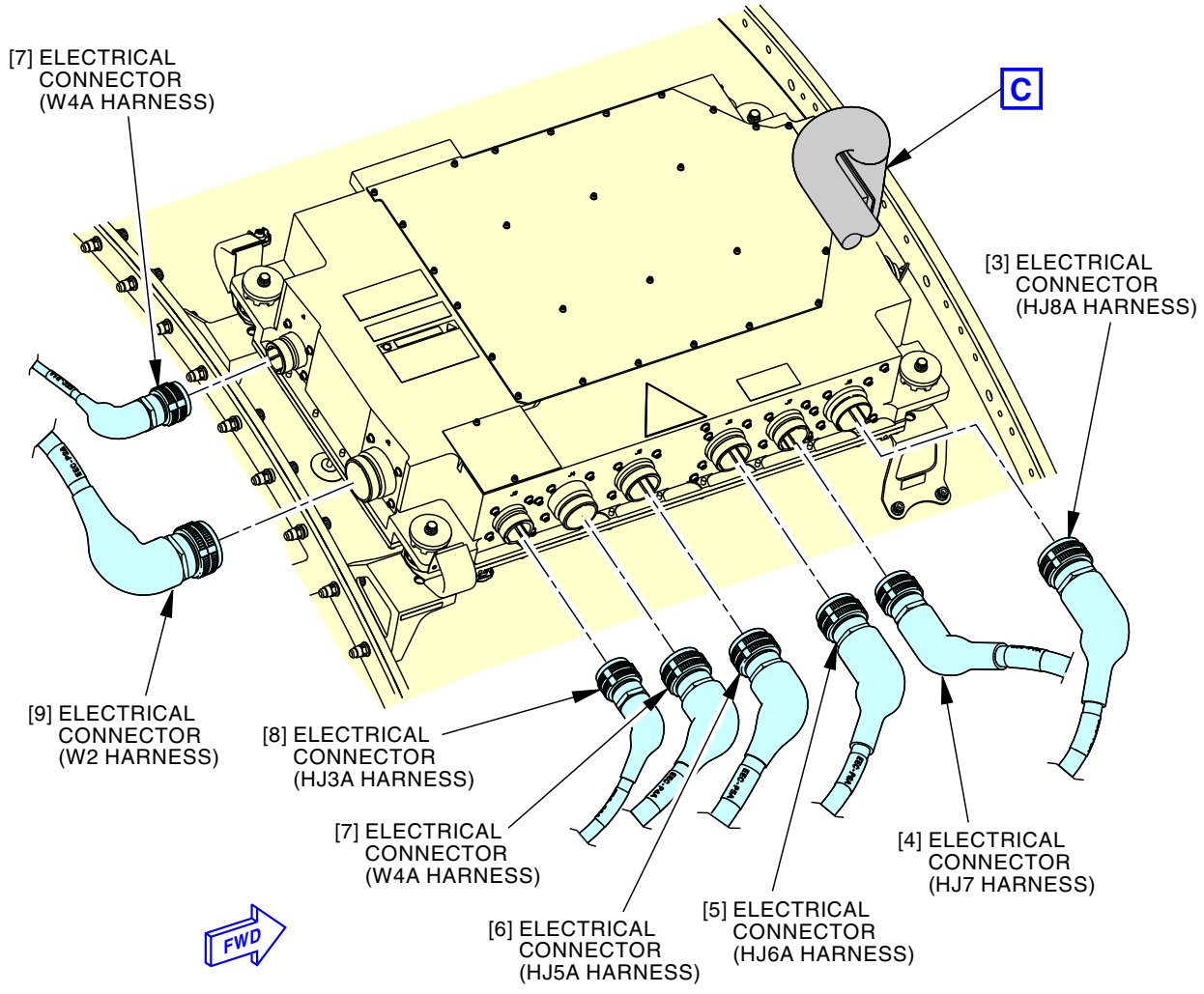
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Electronic Engine Control (EEC) Channel A Installation
Figure 401/73-21-05-990-808-G00 (Sheet 1 of 5)

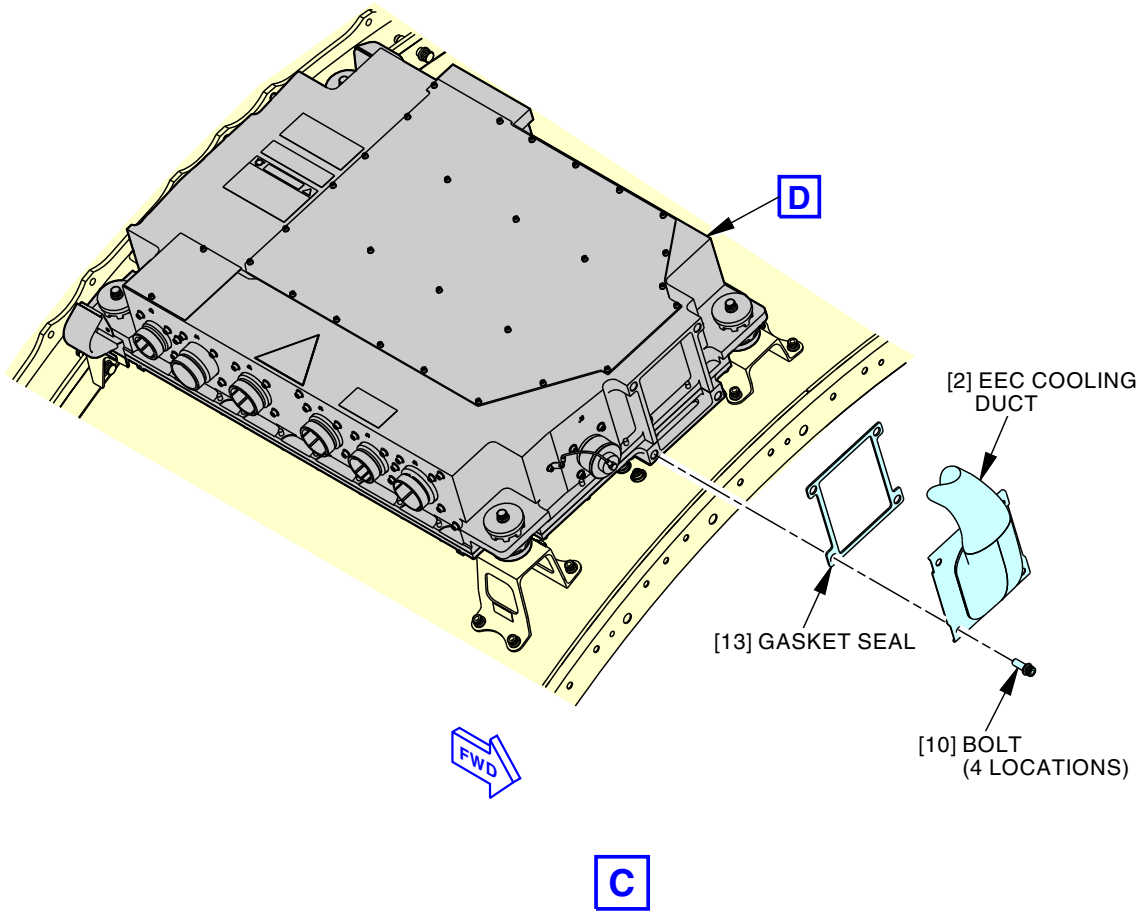
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0007-A-001-01
2354825 S00061515993_V2

Electronic Engine Control (EEC) Channel A Installation
Figure 401/73-21-05-990-808-G00 (Sheet 2 of 5)

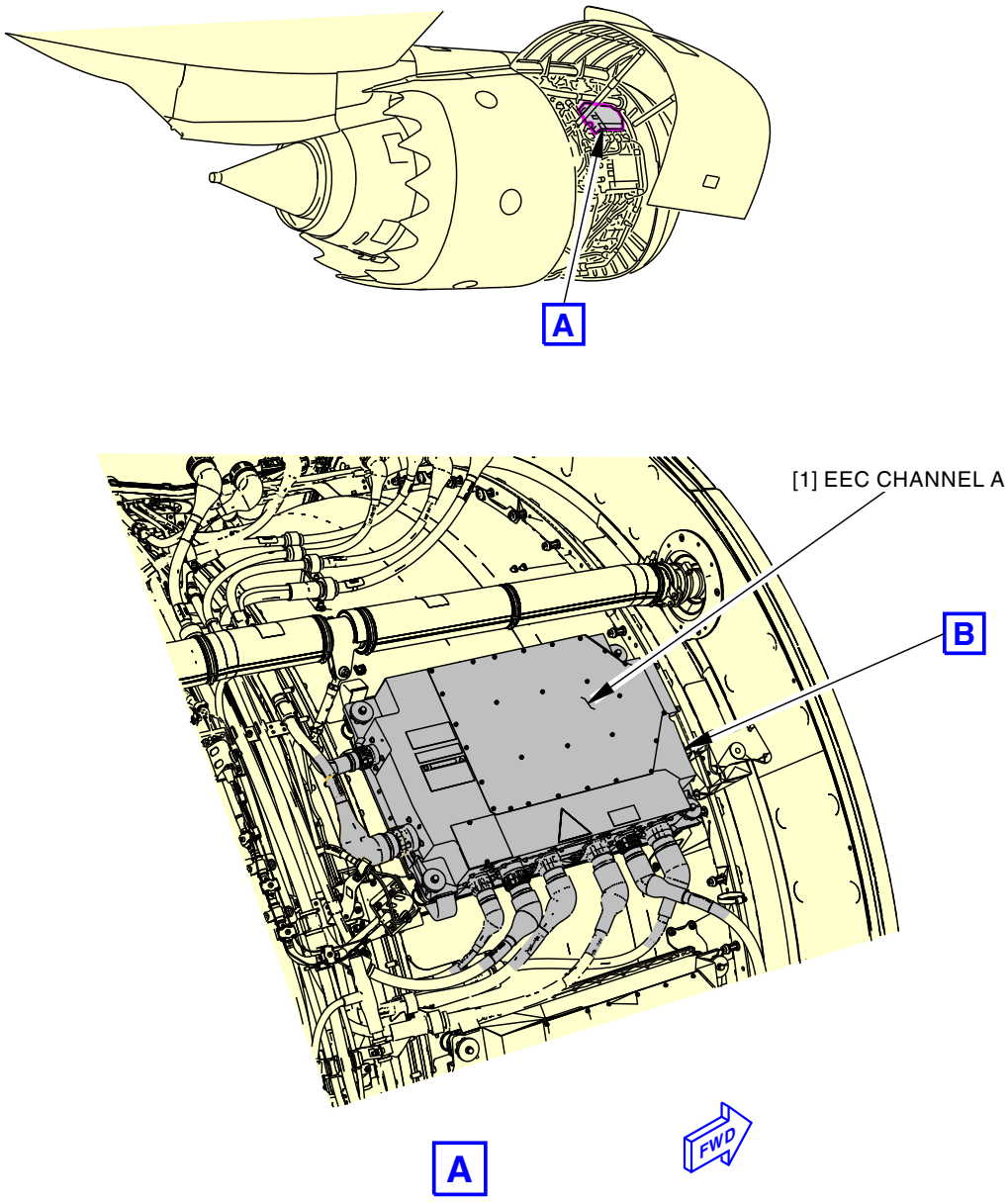
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732105-B-F0301-A0006-A-001-01
2398488 S0000553117_V2

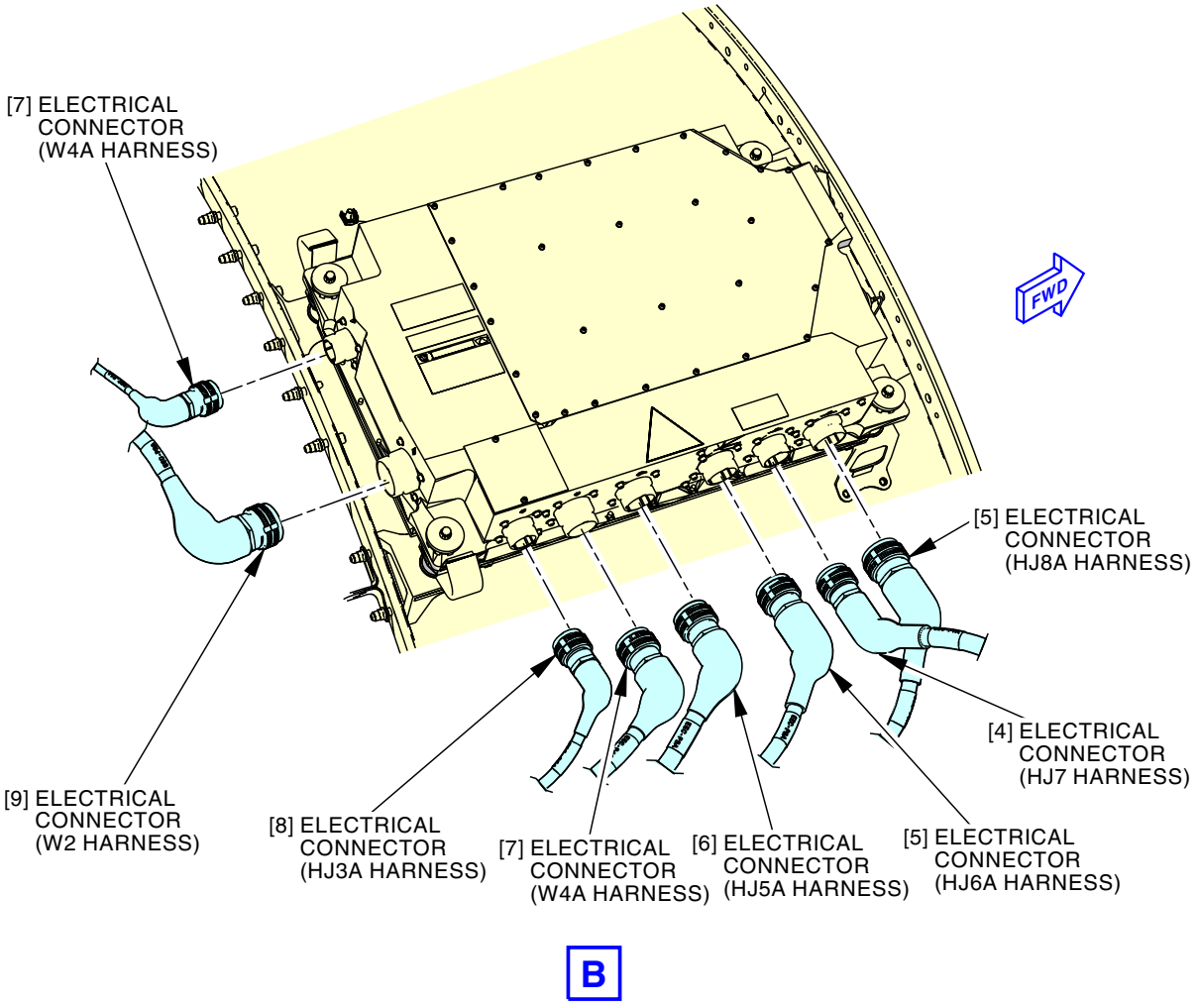
Electronic Engine Control (EEC) Channel A Installation
Figure 401/73-21-05-990-808-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Electronic Engine Control (EEC) Channel A Installation
Figure 401/73-21-05-990-808-G00 (Sheet 4 of 5)

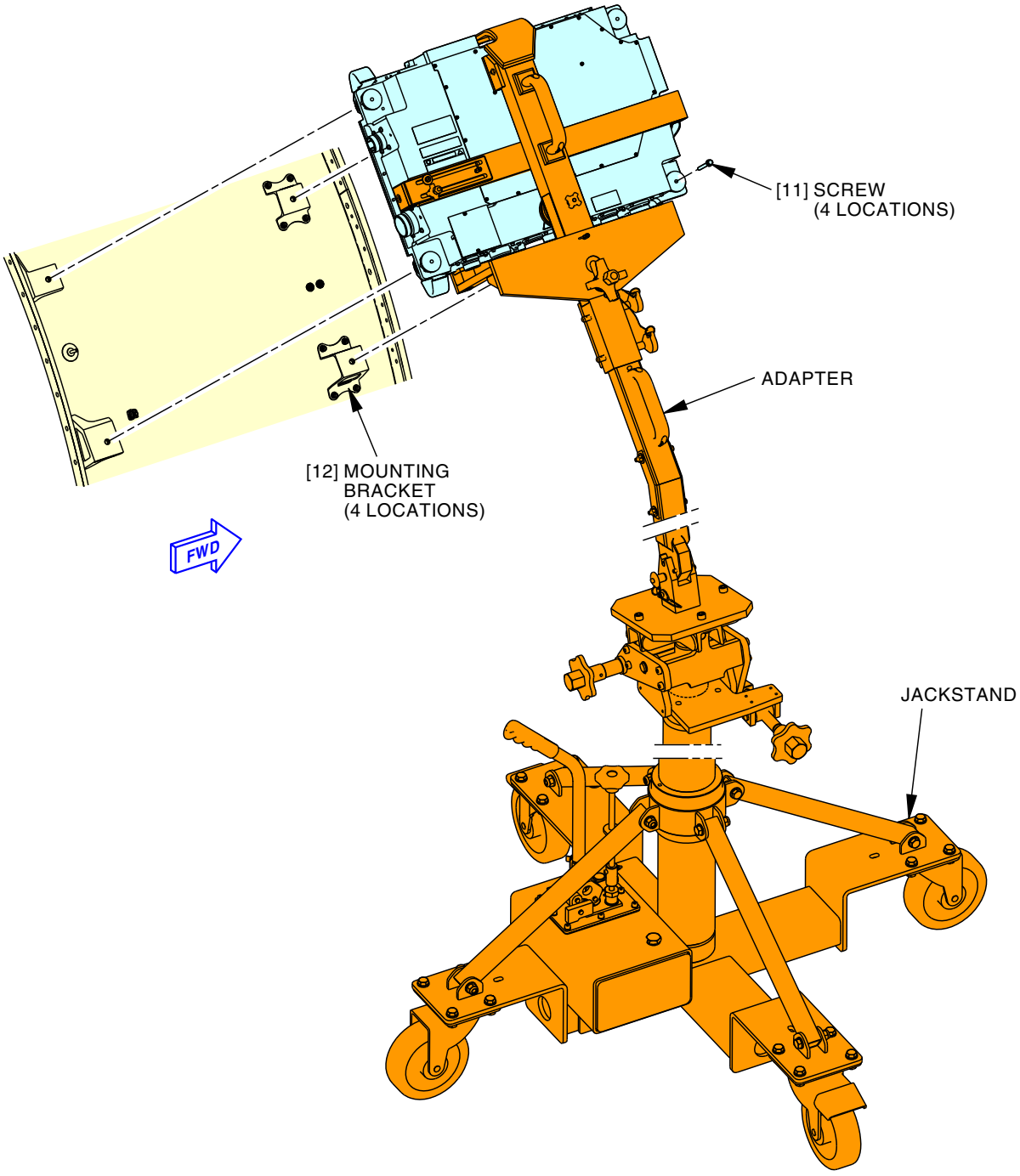
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2831276 S0000657419_V1

Electronic Engine Control (EEC) Channel A Installation
Figure 401/73-21-05-990-808-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC LRU Fixture Installation
Figure 402/73-21-05-990-810-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-05-400-801-G00

3. Electronic Engine Control (EEC) Channel A Installation

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to install the Electronic Engine Control (EEC) channel A.

(2) A minimum of two persons are required to handle the EEC if the jack stand and EEC adapter support equipment are not used.

B. References

Reference	Title
46-13-00-860-803	Client Credentials Check (P/B 201)
70-00-01-400-801-G00	Electrical Bonding Straps Installation (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-00-470-803-G00	EEC Onboard Software Installation (P/B 201)
73-21-00-470-804-G00	EEC Onboard Software Installation Verification (P/B 201)
73-21-05-970-801-G00	Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14529	Adapter - LRU Part #: 956A3616G01 Supplier: 58828
STD-592	Meter - Milliohms, Range from 0.001 to 100 milliohms
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	EEC CH A	73-21-05-01-010	SIA ALL
13	Gasket seal	75-24-08-01-140	SIA ALL
		75-24-08-01-180	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. EEC CH A Installation

SUBTASK 73-21-05-420-001-G00

WARNING

THE EEC IS HEAVY AND TWO PERSONS ARE NECESSARY TO LIFT IT. IF YOU LIFT THE EEC INCORRECTLY, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION

MAKE SURE TO FOLLOW THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EEC.

(1) Do these steps to install the EEC CH A [1] on the fan case mounting brackets [12] as follows:

NOTE: The EEC weighs approximately 37 lb (17 kg).

NOTE: If the two-person alternative method is used, you do not have to install the EEC to the adapter, SPL-14529 and jack stand, SPL-14500.

(a) Install the EEC CH A [1] in the jack stand, SPL-14500.

1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Install the adapter, SPL-14529 on the jack stand, SPL-14500.
3) Attach the adapter, SPL-14529 on the EEC CH A [1].

(b) Install the EEC CH A [1] in the correct position on the mounting brackets [12].

(c) Install the four screws [11] that attach the EEC CH A [1] to the four mounting brackets [12].

NOTE: There are captive screws.

(d) Move the jack stand, SPL-14500 and adapter, SPL-14529 away from the engine.

(e) Tighten the screws [11] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0010 OR PRE LEAP-1B SERVICE BULLETIN 75-0011

(f) Install the EEC cooling duct [2] on the EEC CH A [1] as follows:

1) Remove the protective covers from the EEC cooling duct [2].
2) Make sure that the mating faces are clean and clear of unwanted materials.
3) Lubricate the four bolts [10] with graphite mineral vaseline, D00601 [CP2101].
4) Install the EEC cooling duct [2] with the new gasket seal [13] on the EEC CH A [1].
5) Install the four bolts [10] that attach the EEC cooling duct [2] to the EEC CH A [1].
6) Tighten the bolts [10] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SIA ALL

SUBTASK 73-21-05-760-001-G00

(2) Check the electrical bonding between the EEC CH A [1] and the fan case:

NOTE: You must do this bonding check before you connect the electrical harness connectors to the EEC.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Use the milliohm meter .001 to 100 milliohms, STD-592 to measure the electrical resistance between the EEC mounting foot next to the EEC bond strap on the EEC CH A [1] and the alodine treated area on the aft fan case flange near the EEC CH A [1].

NOTE: Look for the locations to put the ohmmeter probes when you measure the electrical resistance.

NOTE: The fan case flange has bolt holes with circular alodine patches at several locations. The alodine patch is gold in color.

1) Push the tip of the ohmmeter probe through the alodine patch until you reach the bare metal surface.

(b) Make sure that the resistance is less than 5 milliohms (0.005 ohms).

(c) If the resistance is more than 5 milliohms (0.005 ohms), do this step:

1) Make sure that the installation of the EEC CH A [1] electrical bonding strap is correct (TASK 70-00-01-400-801-G00).

SUBTASK 73-21-05-080-002-G00

(3) Remove the protective covers from these connectors and receptacles:

(a) The electrical connector (HJ8A) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6A) [5]

(d) The electrical connector (HJ5A) [6]

(e) The two electrical connector (W4A)s [7]

(f) The electrical connector (HJ3A) [8]

(g) The electrical connector (W2) [9]

(h) The electrical receptacles on the EEC CH A [1].

SUBTASK 73-21-05-430-001-G00

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

(4) Use the teflon-jawed pliers, STD-664 to connect and tighten these electrical connectors to the EEC CH A [1] (TASK 70-00-01-910-803-G00):

(a) The electrical connector (HJ8A) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6A) [5]

(d) The electrical connector (HJ5A) [6]

(e) The electrical connector (W4A) [7]

(f) The electrical connector (HJ3A) [8]

(g) The electrical connector (W2) [9]

(h) The electrical connector (W4A) [7].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-860-013-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-05-860-007-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-05-922-001-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SIA 015-999; SIA 001-014 POST SB 737-46-1029

SUBTASK 73-21-05-470-001-G00

(4) To determine whether the Electronic Engine Control (EEC)s have preloaded credentials, conduct Method 3 in this task: Client Credentials Check, TASK 46-13-00-860-803.

NOTE: This is only applicable when the ONS OS9.1 EEC is new and needs to generate client credential for the first time.

(a) If EEC client credentials generate with a current date and time, the EECs have preloaded credentials and no further action is needed to generate client credentials.

(b) If EEC client credentials do not generate with a current date and time, the EECs do not have preloaded credentials.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 015-999; SIA 001-014 POST SB 737-46-1029 (Continued)

1) If the installed EEC does not have preloaded credentials, generate the EEC client credential by performing Method 1 or Method 2 in this task: Client Credentials Check, TASK 46-13-00-860-803.

NOTE: If neither Method 1 or 2 can be performed, this task may be deferred. EEC data will not store to the NFS until the EEC client credential is generated, but the data can be pulled via a PMAT from the EEC. This is the task: Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT, TASK 73-21-05-970-801-G00

NOTE: Ensure all EEC credentials have a date and time stamp that occur after the date and time of the EEC installation.

SIA ALL

SUBTASK 73-21-05-470-009-G00

(5) Make sure that the correct software configuration is in the EEC as follows:

(a) Do this task: EEC Onboard Software Installation Verification, TASK 73-21-00-470-804-G00.

(b) If the software version is not correct, reprogram the EEC software (TASK 73-21-00-470-803-G00).

J. EEC CH A Installation Test

SUBTASK 73-21-05-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-21-05-000-802-G00

4. Electronic Engine Control (EEC) Channel B Removal

(Figure 403 and Figure 404)

A. General

(1) This task gives the instructions to remove the Electronic Engine Control (EEC) channel B.

(2) A minimum of two persons are required to handle the EEC if the jack stand and EEC adapter support equipment are not used.

B. References

Reference	Title
46-13-02-970-802	Download Manager (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-720-805-G00	Test No. 11 - Low Pressure System (Fan) Trim Balance (With ONS) (P/B 501)
71-00-00-970-801-G00	Maintenance Data Pages from the Engine Propulsion Control System (EPCS) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14529	Adapter - LRU Part #: 956A3616G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-05-860-008-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-05-970-007-G00

(2) If you will replace the two EECs at the same time, do these steps before you remove the EECs:

(a) Make a record of the current engine trim balance weight configuration (TASK 71-00-00-720-805-G00).

(b) Make a record of the current engine cumulative oil debris chip count ("DMS") on EPCS page 2 (TASK 71-00-00-970-801-G00).

SUBTASK 73-21-05-970-010-G00

(3) If you will remove the EEC because of a fault isolation procedure, do this step:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Download the EEC Non Volatile Memory (NVM) from the two EEC channels before you remove the EEC (TASK 46-13-02-970-802).

NOTE: Downloading the CEOD and EEC NVM data is optional. The EEC NVM and CEOD download is recommended only for cases where repetitive maintenance actions or component replacements have failed to identify the root cause of the fault condition. The EEC NVM and CEOD can be helpful to identify the root cause of the fault condition. However, when the EEC is removed for a known cause, it is not necessary to do the EEC NVM and CEOD download.

NOTE: The EEC NVM is listed in Download Manager as EEC1:EN1SHOPFLT for Engine 1 and EEC2:EN2SHOPFLT for Engine 2.

NOTE: You can also use the EEC DATA DOWNLOAD function on the OTHER FUNCTIONS > EHM menu on the Portable Maintenance Device (PMD) to download the EEC NVM. The EEC NVM is listed as 'EEC Shop Fault Channel A & B' in the EEC DATA DOWNLOAD menu.

SUBTASK 73-21-05-860-009-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-05-860-014-G00

(5) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. EEC CH B Removal

SUBTASK 73-21-05-010-003-G00



CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

CAUTION

MAKE SURE TO FOLLOW THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EEC.

(1) Use the teflon-jawed pliers, STD-664, to disconnect these electrical connectors from the EEC CH B [1] (TASK 70-00-01-910-803-G00):

(a) The electrical connector (HJ8B) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6B) [5]

(d) The electrical connector (HJ5B) [6]

(e) The electrical connector (W4B) [7]

(f) The electrical connector (HJ3B) [8]

(g) The electrical connector (W2) [9]

(h) The electrical connector (W4B) [7].

SUBTASK 73-21-05-480-007-G00

(2) Install the protection covers on the electrical connectors and the electrical receptacles on the EEC CH B [1].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0010 OR PRE LEAP-1B SERVICE BULLETIN 75-0011

SUBTASK 73-21-05-010-004-G00

(3) Remove the EEC cooling duct [2] from the EEC CH B [1] as follows:

(a) Remove the four bolts [10] that attach the EEC cooling duct [2] to the EEC CH B [1].

(b) Disconnect the EEC cooling duct [2] from the EEC CH B [1].

(c) Remove and discard the gasket seal [13].

(d) Loosen the screw of the upper flexible duct.

(e) Disconnect the upper flexible duct of the cooling duct.

SUBTASK 73-21-05-480-006-G00

(4) Install the protective covers on the EEC cooling duct [2].

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-010-005-G00

WARNING THE EEC IS HEAVY AND TWO PERSONS ARE NECESSARY TO LIFT IT. IF YOU LIFT THE EEC INCORRECTLY, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

(5) Do these steps to remove the EEC CH B [1] from the fan case mounting brackets [12] as follows:

NOTE: The EEC weighs approximately 37 lb (17 kg).

NOTE: If the two-person alternative method is used, you do not have to install the EEC to the adapter, SPL-14529, and jack stand, SPL-14500.

(a) Attach the adapter, SPL-14529, to the EEC CH B [1].

(b) Move the jack stand, SPL-14500, to the correct position.

(c) Install the adapter, SPL-14529, on the jack stand, SPL-14500.

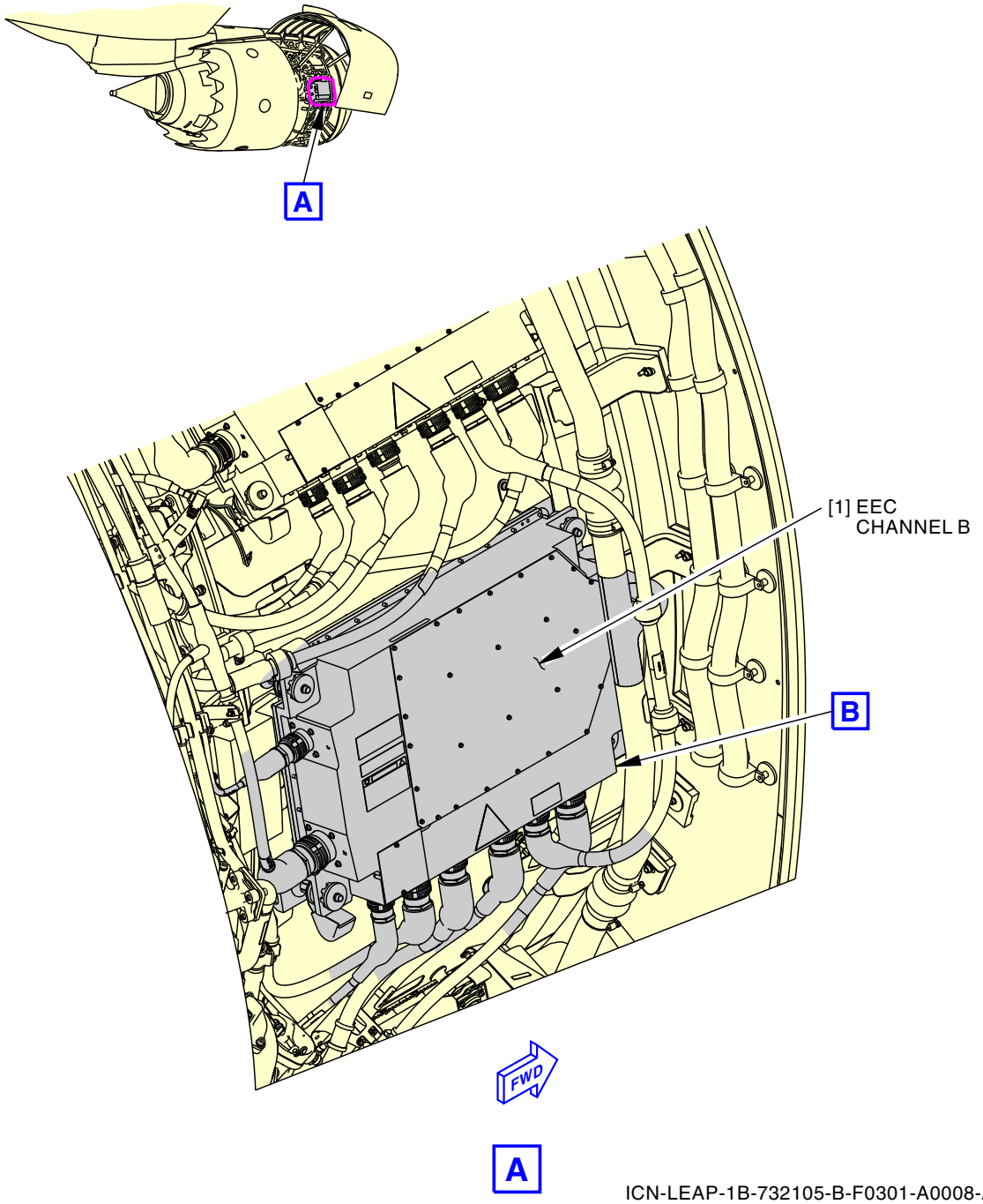
(d) Remove the four screws [11] that attach the EEC CH B [1] on the four mounting brackets [12].

NOTE: Do not remove the captive screws.

(e) Remove the EEC CH B [1] from the four mounting brackets [12].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

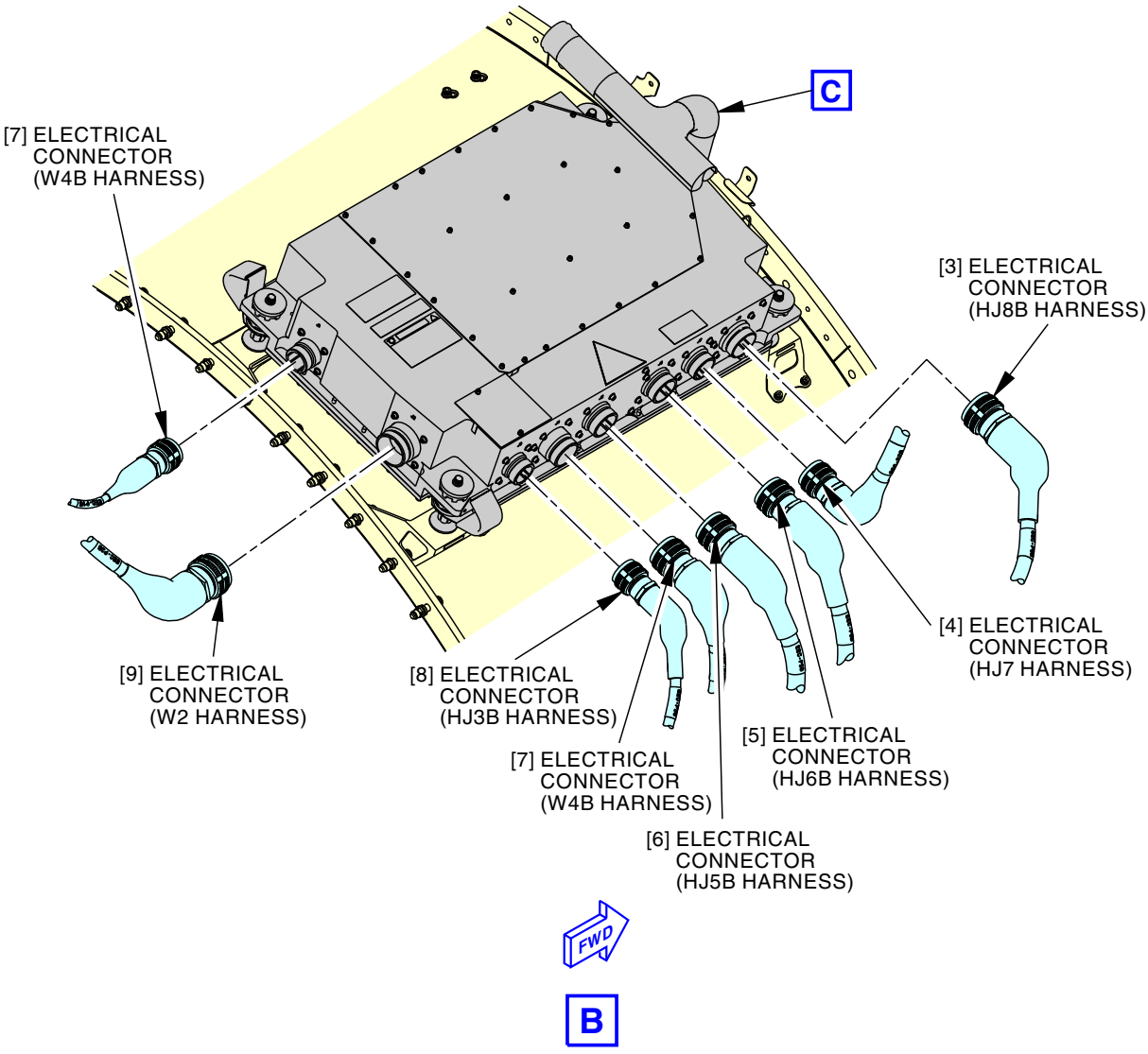


ICN-LEAP-1B-732105-B-F0301-A0008-A-001-01

2398544 S0000553118_V2

Electronic Engine Control (EEC) Channel B Installation
Figure 403/73-21-05-990-811-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

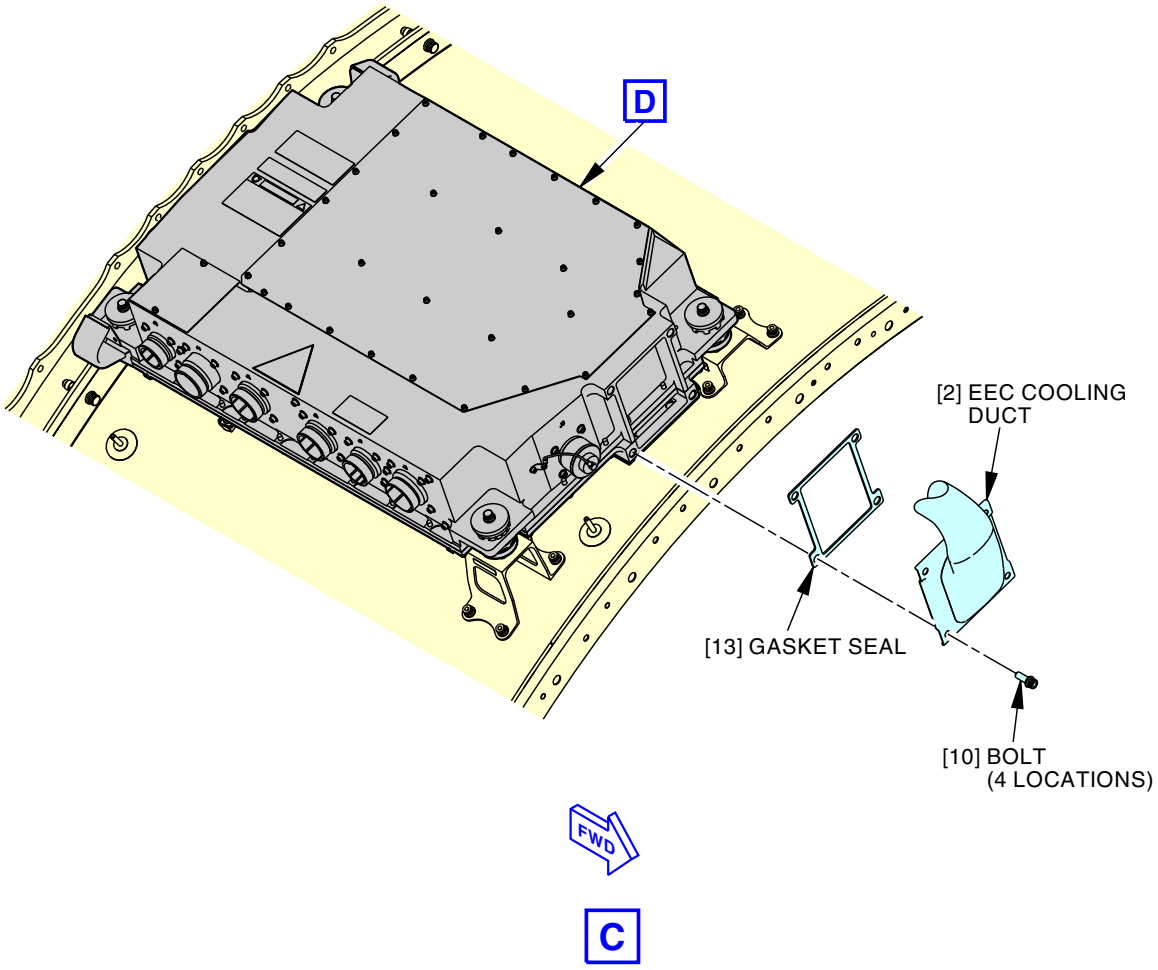


ICN-LEAP-1B-732105-B-F0301-A0009-A-001-01

2398546 S0000553120_V2

Electronic Engine Control (EEC) Channel B Installation
Figure 403/73-21-05-990-811-G00 (Sheet 2 of 5)

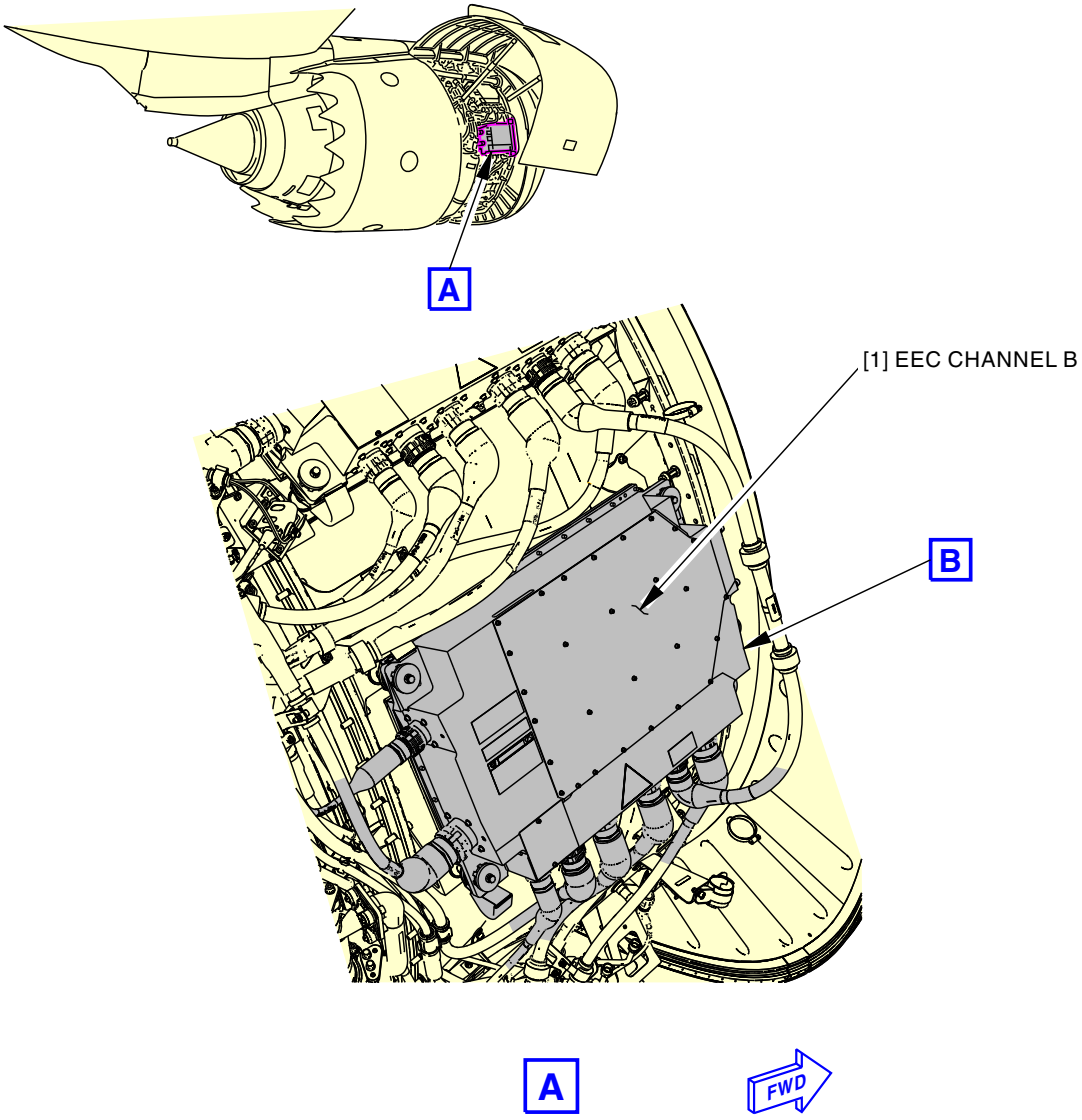
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732105-B-F0301-A0010-A-001-01
2398547 S0000553121_V3

Electronic Engine Control (EEC) Channel B Installation
Figure 403/73-21-05-990-811-G00 (Sheet 3 of 5)

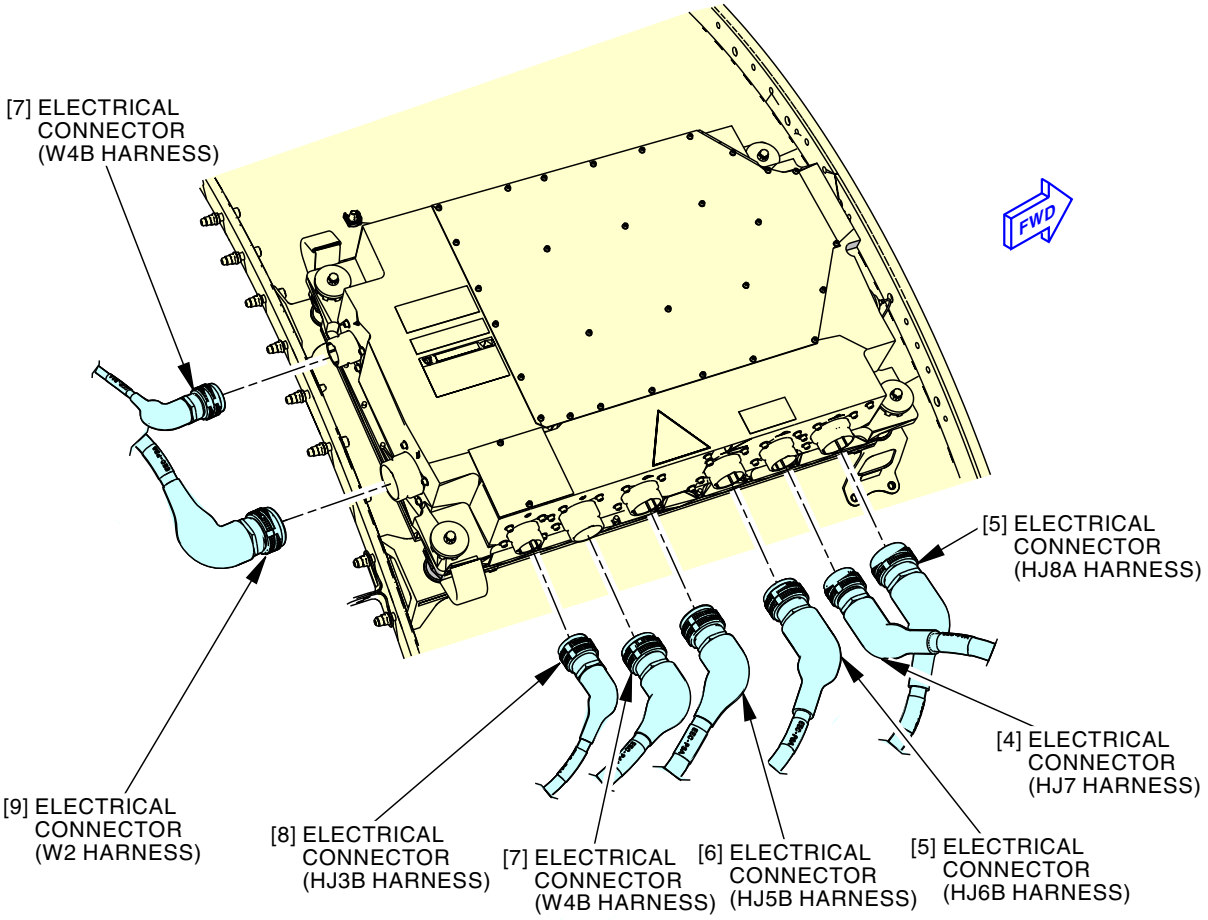
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2831340 S0000657420_V1

Electronic Engine Control (EEC) Channel B Installation
Figure 403/73-21-05-990-811-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

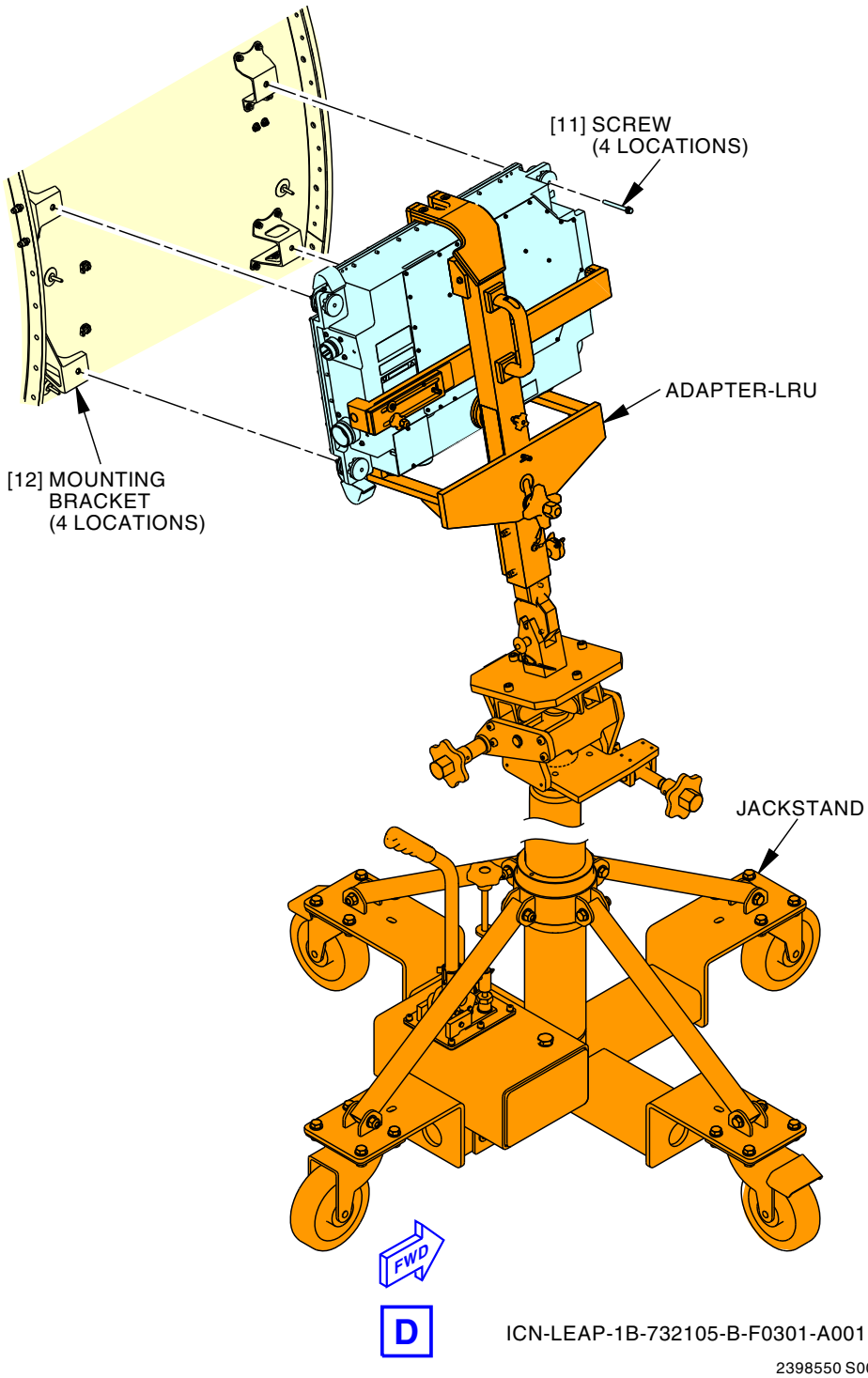


5055173-00

2831353 S0000657421_V1

Electronic Engine Control (EEC) Channel B Installation
Figure 403/73-21-05-990-811-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC LRU Fixture Installation
Figure 404/73-21-05-990-812-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-05-400-802-G00

5. Electronic Engine Control (EEC) Channel B Installation

(Figure 403 and Figure 404)

A. General

(1) This task gives the instructions to install the Electronic Engine Control (EEC) channel B.

(2) A minimum of two persons are required to handle the EEC if the jack stand and EEC adapter support equipment are not used.

B. References

Reference	Title
46-13-00-860-803	Client Credentials Check (P/B 201)
70-00-01-400-801-G00	Electrical Bonding Straps Installation (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-00-470-803-G00	EEC Onboard Software Installation (P/B 201)
73-21-00-470-804-G00	EEC Onboard Software Installation Verification (P/B 201)
73-21-05-970-801-G00	Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT (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-14500	Stand - Jack Part #: 9471M17P01 Supplier: 58828
SPL-14529	Adapter - LRU Part #: 956A3616G01 Supplier: 58828
STD-592	Meter - Milliohms, Range from 0.001 to 100 milliohms
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	EEC CH B	73-21-05-01-020	SIA ALL
13	Gasket seal	75-24-08-01-140	SIA ALL
		75-24-08-01-180	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. EEC CH B Installation

SUBTASK 73-21-05-410-002-G00

WARNING THE EEC IS HEAVY AND TWO PERSONS ARE NECESSARY TO LIFT IT. IF YOU LIFT THE EEC INCORRECTLY, INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT CAN OCCUR.

CAUTION MAKE SURE TO FOLLOW THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE EEC.

(1) Do these steps to install the EEC CH B [1] on the fan case mounting brackets [12] as follows:

NOTE: The EEC weighs approximately 37 lb (17 kg).

NOTE: If the two-person alternative method is used, you do not have to install the EEC to the adapter, SPL-14529, and jack stand, SPL-14500.

(a) Install the EEC CH B [1] in the jack stand, SPL-14500.

1) Make sure that the mating faces are clean and clear of unwanted materials.
2) Install the adapter, SPL-14529, on the jack stand, SPL-14500.
3) Attach the adapter, SPL-14529, on the EEC CH B [1].

(b) Install the EEC CH B [1] in the correct position on the mounting brackets [12].

(c) Install the four screws [11] to attach the EEC CH B [1] on the four mounting brackets [12].

(d) Move the jack stand, SPL-14500, and adapter, SPL-14529, away from the engine.

(e) Tighten the four screws [11] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

NOTE: There are captive screws.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 75-0010 OR PRE LEAP-1B SERVICE BULLETIN 75-0011

(f) Install the EEC cooling duct [2] on the EEC CH B [1] as follows:

1) Remove the protection covers from the EEC cooling duct [2].
2) Make sure that the mating faces are clean and clear of unwanted materials.
3) Lubricate the four bolts [10] with graphite mineral vaseline, D00601 [CP2101].
4) Connect the upper flexible duct of the cooling duct.
5) Tighten the screw of the upper flexible duct.
6) Install the EEC cooling duct [2] with the new gasket seal [13] on the EEC CH B [1].
7) Install the four bolts [10] to attach the EEC cooling duct [2] to the EEC CH B [1].
8) Tighten the bolts [10] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-760-002-G00

(2) Examine the electrical bonding between the EEC CH B [1] and the fan case as follows:

NOTE: You must do this bonding check before you connect the electrical harness connectors to the EEC.

(a) Use the milliohm meter .001 to 100 milliohms, STD-592, to measure the electrical resistance between the EEC mounting foot next to the EEC bond strap on the EEC CH B [1] and the alodine treated area on the aft fan case flange near the EEC CH B [1].

NOTE: Look for the locations to put the ohmmeter probes when you measure the electrical resistance.

NOTE: The fan case flange has bolt holes with circular alodine patches at several locations. The alodine patch is gold in color.

1) Push the tip of the ohmmeter probe through the alodine patch until you reach the bare metal surface.

(b) Make sure that the resistance is less than 5 milliohms (0.005 ohms).

(c) If the resistance is more than 5 milliohms (0.005 ohms), do this step:

1) Make sure that the installation of the EEC CH B [1] electrical bonding strap is correct (TASK 70-00-01-400-801-G00).

SUBTASK 73-21-05-080-003-G00

(3) Remove the protective covers from these connectors and receptacles:

(a) The electrical connector (HJ8B) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6B) [5]

(d) The electrical connector (HJ5B) [6]

(e) The two electrical connector (W4B)s [7]

(f) The electrical connector (HJ3B) [8]

(g) The electrical connector (W2) [9]

(h) The electrical receptacles on the EEC CH B [1].

SUBTASK 73-21-05-410-003-G00

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

(4) Use the teflon-jawed pliers, STD-664, to connect and tighten these electrical connectors to the EEC CH B [1] (TASK 70-00-01-910-803-G00):

(a) The electrical connector (HJ8B) [3]

(b) The electrical connector (HJ7) [4]

(c) The electrical connector (HJ6B) [5]

(d) The electrical connector (HJ5B) [6]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) The electrical connector (W4B) [7]

(f) The electrical connector (HJ3B) [8]

(g) The electrical connector (W2) [9]

(h) The electrical connector (W4B) [7].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-860-015-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-05-860-010-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-05-860-011-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SIA 015-999; SIA 001-014 POST SB 737-46-1029

SUBTASK 73-21-05-211-001-G00

(4) To determine whether the EECs have preloaded credentials, conduct Method 3 in this task: Client Credentials Check, TASK 46-13-00-860-803.

NOTE: This is only applicable when the ONS OS9.1 EEC is new and needs to generate client credential for the first time.

(a) If EEC client credentials generate with a current date and time, the EECs have preloaded credentials and no further action is needed to generate client credentials.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) If EEC client credentials do not generate with a current date and time, the EECs do not have preloaded credentials.

1) If the installed EEC does not have preloaded credentials, generate the EEC client credential by performing Method 1 or Method 2 in this task: Client Credentials Check, TASK 46-13-00-860-803.

NOTE: If neither Method 1 or 2 can be performed, this task may be deferred. EEC data will not store to the NFS until the EEC client credential is generated, but the data can be pulled via a PMAT from the EEC. This is the task: Electronic Engine Control (EEC) Data Download (On-Wing) Using a PMAT, TASK 73-21-05-970-801-G00

NOTE: Ensure all EEC credentials have a date and time stamp that occur after the date and time of the EEC installation.

SIA ALL

SUBTASK 73-21-05-211-002-G00

(5) Do the EEC software configuration check as follows:

(a) Make sure that the correct software is installed in the EEC as follows:

1) Do this task: EEC Onboard Software Installation Verification, TASK 73-21-00-470-804-G00.

2) If incorrect software version is installed, reprogram the EEC software (TASK 73-21-00-470-803-G00).

J. EEC CH B Installation Test

SUBTASK 73-21-05-730-002-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Electronic Engine Control (EEC) Inspection.

TASK 73-21-05-210-801-G00

2. Electronic Engine Control Inspection

(Figure 601)

A. General

(1) This task gives the instructions to inspect the Electronic Engine Controls (EEC).

(a) The two EECs are located on the right side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-05-000-801-G00	Electronic Engine Control (EEC) Channel A Removal (P/B 401)
73-21-05-000-802-G00	Electronic Engine Control (EEC) Channel B Removal (P/B 401)
73-21-05-400-801-G00	Electronic Engine Control (EEC) Channel A Installation (P/B 401)
73-21-05-400-802-G00	Electronic Engine Control (EEC) Channel B Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-05-860-032-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-05-860-033-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-05-010-010-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. EEC Inspection

SUBTASK 73-21-05-210-003-G00

(1) Inspect the Electronic Engine Controls (EECs):

(a) Make sure that the EECs are not loose.

1) If an EEC is loose, tighten the bolts that attaches the EEC to the mount brackets (Electronic Engine Control (EEC) Channel A Installation, TASK 73-21-05-400-801-G00 or Electronic Engine Control (EEC) Channel B Installation, TASK 73-21-05-400-802-G00).

(b) Look for cracks in the EEC housings.

1) If you see cracks, do these steps:

a) If the crack is on EEC channel A, replace the EEC (Electronic Engine Control (EEC) Channel A Removal, TASK 73-21-05-000-801-G00 and Electronic Engine Control (EEC) Channel A Installation, TASK 73-21-05-400-801-G00).

b) If the crack is on EEC channel B, replace the EEC (Electronic Engine Control (EEC) Channel B Removal, TASK 73-21-05-000-802-G00 and Electronic Engine Control (EEC) Channel B Installation, TASK 73-21-05-400-802-G00).

(c) Make sure that the electrical connectors are not loose.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-05-410-009-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-05-860-034-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-05-860-035-G00

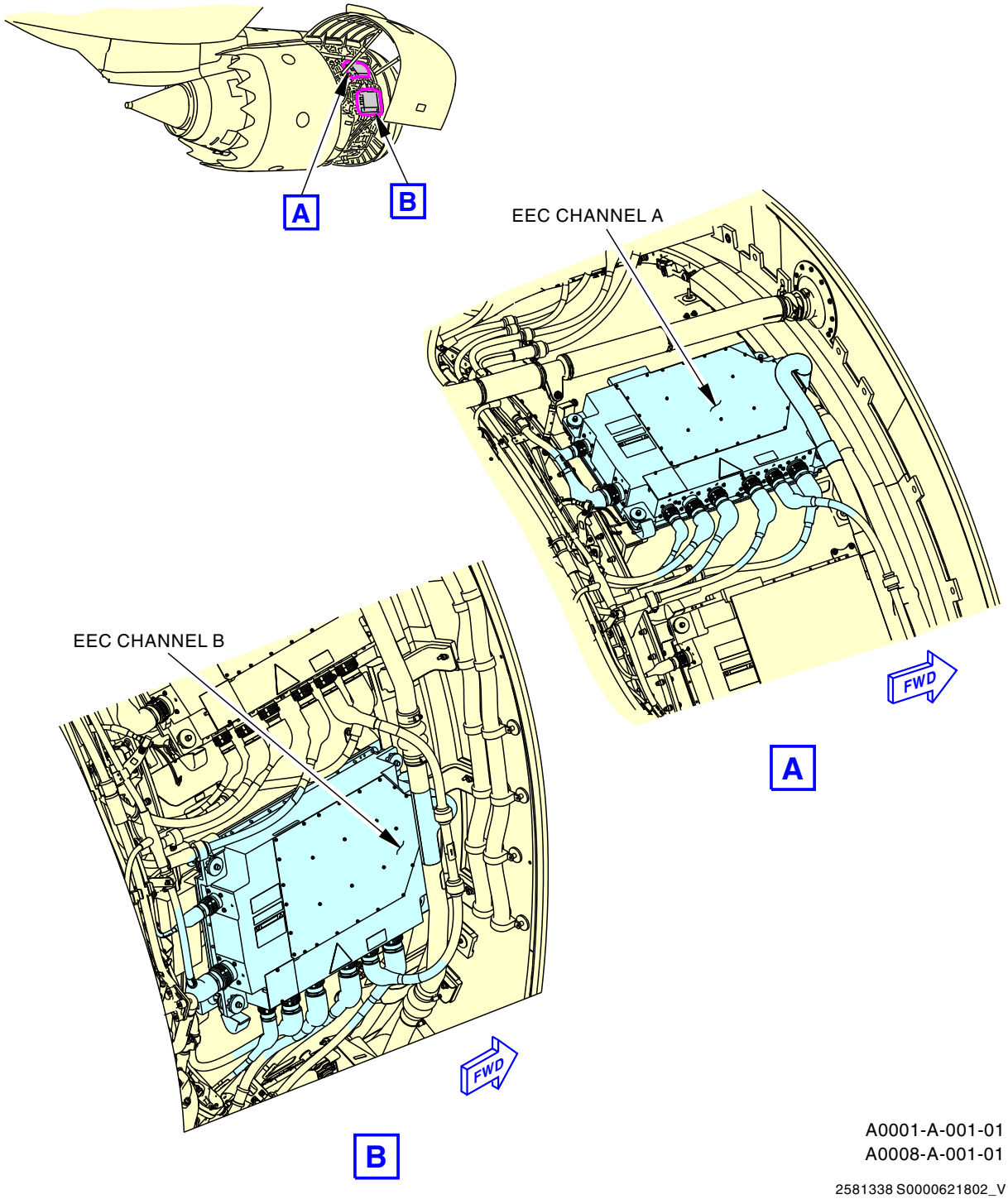
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0001-A-001-01
A0008-A-001-01

2581338 S0000621802_V1

Electronic Engine Control Inspection
Figure 601/73-21-05-990-816-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T12 SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the T12 sensor

(2) An installation of the T12 sensor.

TASK 73-21-06-000-801-G00

2. T12 Sensor Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the T12 sensor.

(2) The T12 sensor is located at the 11:00 o'clock position on the inlet cowl from the aft looking forward.

(3) You must remove the T12 access panel on the outer surface of the inlet cowl to get access to the T12 sensor.

B. References

Reference	Title
27-81-00-040-801	Leading Edge Flaps and Slats - Deactivation (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (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-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
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
412AT	T12 Access Door, Engine 1
413	Left Fan Cowl, Engine 1
422AT	T12 Access Door, Engine 2
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-06-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-06-860-002-G00

(2) For the left engine, open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

SUBTASK 73-21-06-860-003-G00

(3) For the right engine, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

SUBTASK 73-21-06-040-001-G00

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-21-06-020-001-G00

(5) Remove the T12 access panel [2] as follows:

(a) Open these applicable access panels:

Number	Name/Location
412AT	T12 Access Door, Engine 1
422AT	T12 Access Door, Engine 2

(b) Remove the 17 screws [7] that attach the T12 access panel [2] to the inlet cowl [3].

(c) Remove the T12 access panel [2] from the engine.

SUBTASK 73-21-06-010-002-G00

(6) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. T12 Sensor Removal

SUBTASK 73-21-06-020-002-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS OR RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN THE ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use a teflon-jawed pliers, STD-664, to disconnect the T12-A electrical connector [5] and T12-B electrical connector [6] from the T12 sensor [1] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the T12-A electrical connector [5].

(b) Disconnect the T12-B electrical connector [6].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the protective covers on the T12-A electrical connector [5], T12-B electrical connector [6], T12-A and T12-B electrical receptacles on the T12 sensor [1].

SUBTASK 73-21-06-420-001-G00

(2) Remove the T12 sensor [1] as follows:

(a) Remove the nut [12] and washer [15] that attach the bonding strap [11] to the T12 sensor [1].

(b) Remove the four bolts [8] and four washers [13] that attach the T12-A and T12-B electrical receptacles to the aft bulk head [4].

CAUTION MAKE SURE THAT YOU USE THE CORRECT TOOLS FOR THE AFT BULK-HEAD AND T12 SENSOR. IF YOU DO NOT OBEY, DAMAGE TO THE AFT BULK-HEAD AND T12 SENSOR CAN OCCUR.

CAUTION BE CAREFUL WHEN YOU REMOVE THE SEALANTS FROM THE AFT BULK-HEAD AND T12 CONNECTOR HOUSING. IF YOU ARE NOT CAREFUL, DAMAGE TO THE AFT BULK-HEAD AND T12 CONNECTOR HOUSING CAN OCCUR.

(c) Use a sealant removal tool, COM-2481, to remove cured sealant from surfaces.

(d) Remove the four bolts [16] and four washers [17] from the sides of the mounting brackets that attach the probe pan [10].

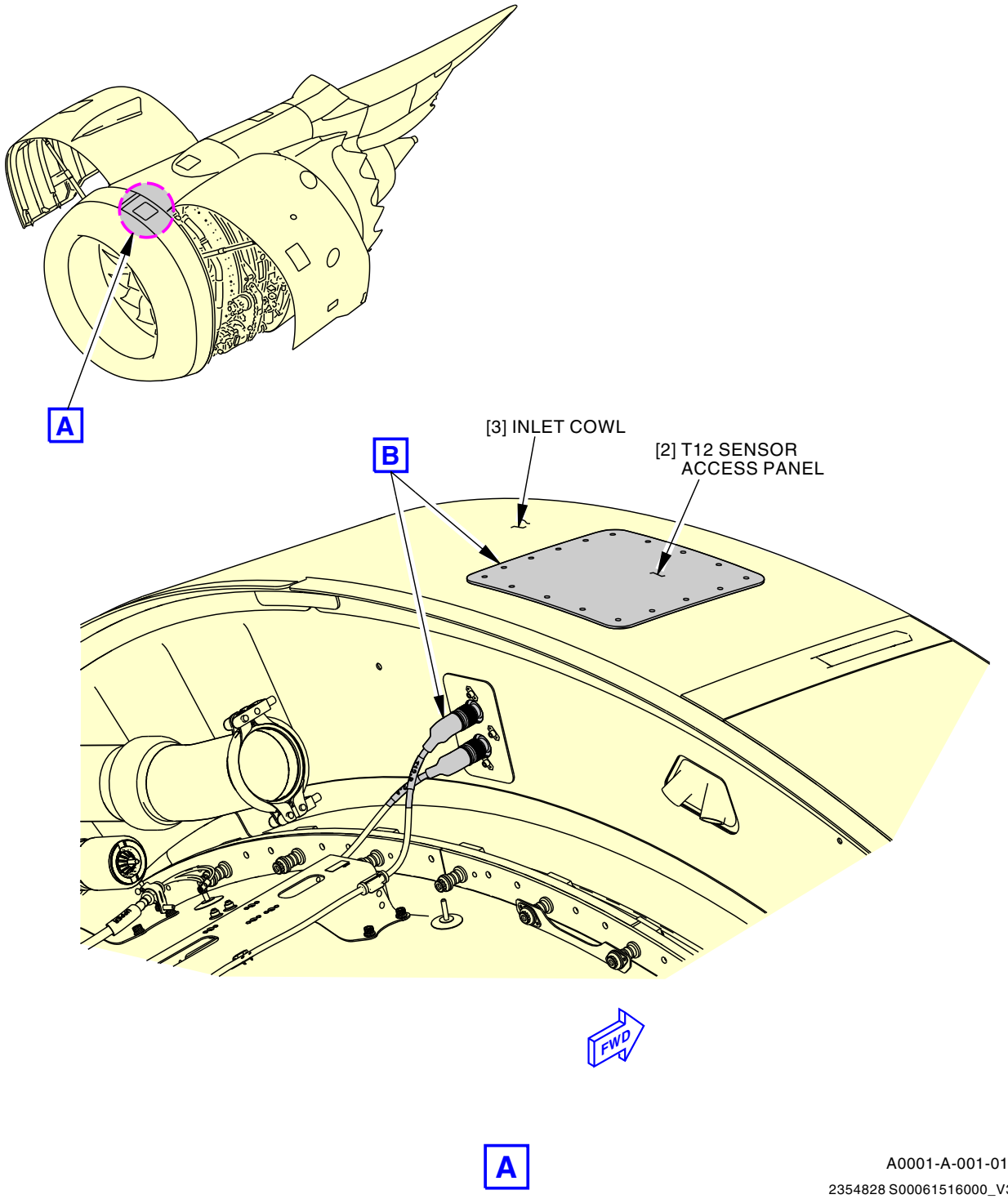
(e) Remove the four bolts [9], four washers [18], and four nuts [19] that attach the T12 sensor [1] to the probe pan [10].

(f) Remove the T12 sensor [1] from the probe pan [10].

(g) Install the protective covers on the openings.

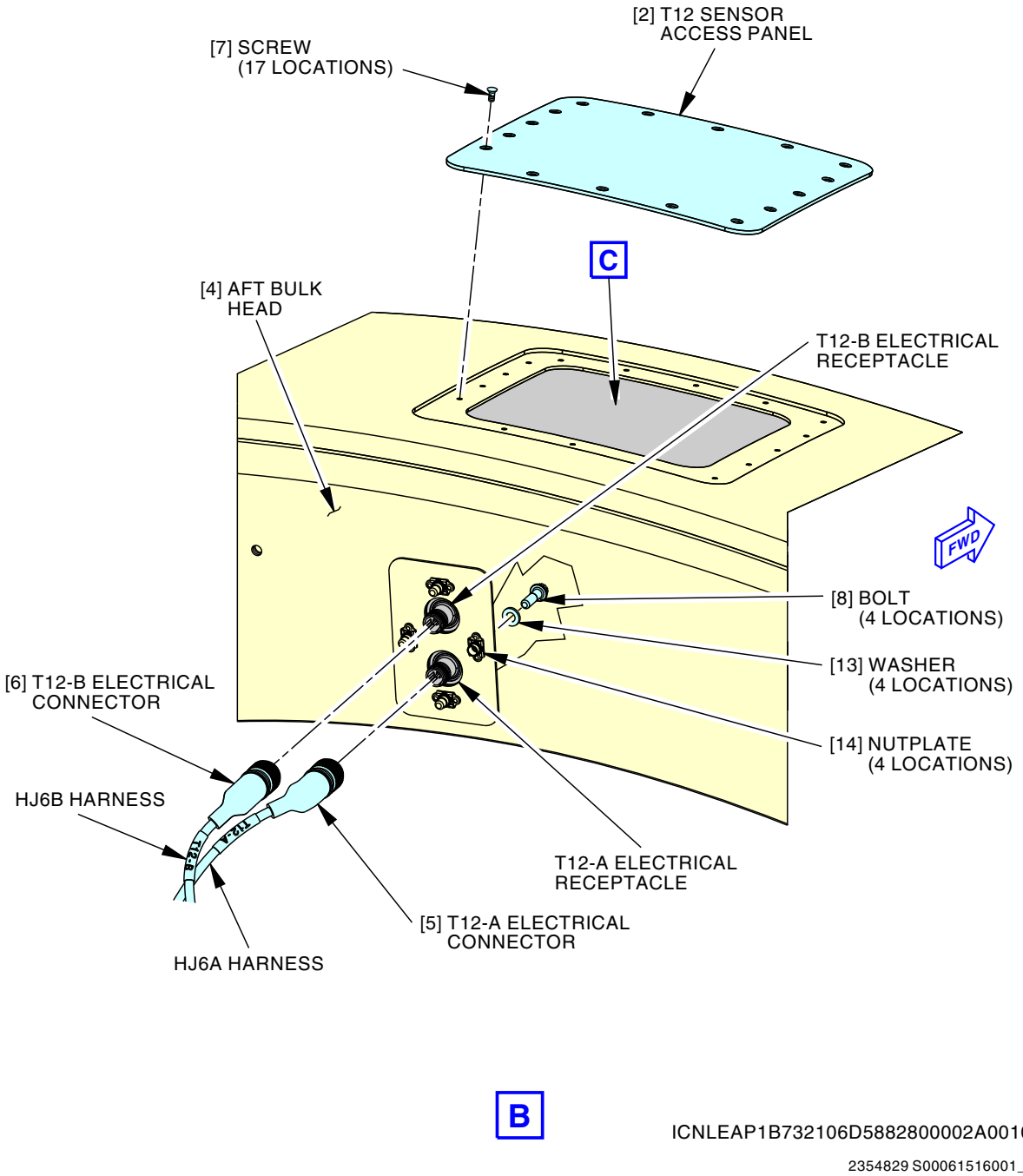
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



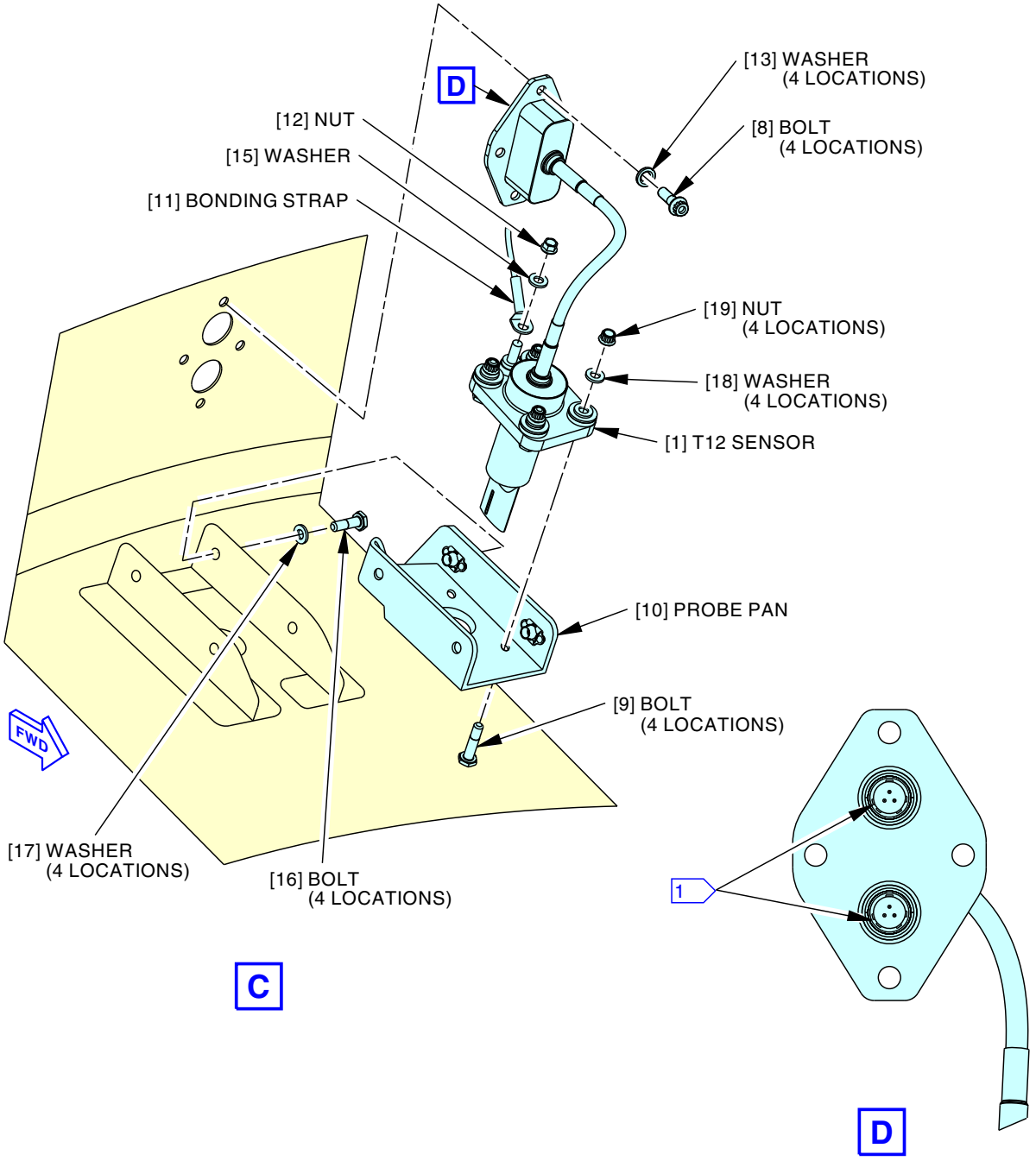
T12 Sensor Installation
Figure 401/73-21-06-990-801-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T12 Sensor Installation
Figure 401/73-21-06-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



1 T12-A ELECRICAL RECEPTACLE MASTERKEY AND T12-B ELECTRICAL RECEPTACLE MASTERKEY ARE ORIENTED UPWARD.

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2402415 S0000555196_V7

T12 Sensor Installation
Figure 401/73-21-06-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-06-400-801-G00

3. T12 Sensor Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the T12 sensor.

(2) You must do the tests listed in the power plant test reference table after you replace the T12 sensor.

B. References

Reference	Title
27-81-00-440-801	Leading Edge Flaps and Slats - Activation (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	T12 sensor	73-21-06-01-010	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
412AT	T12 Access Door, Engine 1
413	Left Fan Cowl, Engine 1
422AT	T12 Access Door, Engine 2
423	Left Fan Cowl, Engine 2

H. T12 Sensor Installation

SUBTASK 73-21-06-420-002-G00

(1) Install the T12 sensor [1] as follows:

(a) Remove the protective covers from the openings.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Lubricate the threads of the four nutplates [14] of the four bolts [8] with Dapco 2100 sealant, A50483 [CP2927].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Lubricate the threads of the four bolts [8], four bolts [16], and nut [12] with Dapco 2100 sealant, A50483 [CP2927].

(e) Lubricate the threads of the four bolts [9] with Dapco 2100 sealant, A50483 [CP2927].

(f) Put the T12 sensor [1] on the probe pan [10].

(g) Install the four bolts [9], four washers [18], and four nuts [19] that attach the T12 sensor [1] to the probe pan [10].

(h) Tighten the four bolts [9] to 65.0 in-lb (7.3 N·m) to 75.0 in-lb (8.5 N·m).

(i) Install the nut [12] and washer [15] that attach the bonding strap [11] to the T12 sensor [1].

(j) Tighten the nut [12] to 90.0 in-lb (10.2 N·m) to 104.0 in-lb (11.8 N·m).

(k) Install the probe pan [10] between the brackets on the cowl with four bolts [16] and four washers [17].

(l) Tighten the four bolts [16] to 73.0 in-lb (8.2 N·m) to 77.0 in-lb (8.7 N·m).

(m) Apply faying surface seal between T12 connector assembly and bulkhead with Dapco 2100 sealant, A50483 [CP2927].

(n) Install the four bolts [8] and four washers [13] that attach the T12-A and T12-B electrical receptacles to the aft bulk head [4] (View C and View D, Figure 401).

NOTE: T12-A electrical receptacle masterkey and T12-B electrical receptacle masterkey are oriented upward.

(o) Tighten the four bolts [8] to 78.0 in-lb (8.8 N·m) to 82.0 in-lb (9.3 N·m).

(p) Lubricate the threads of the four nutplates [14] of the four bolts [8] with Dapco 2100 sealant, A50483 [CP2927].

SUBTASK 73-21-06-420-004-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS OR RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(2) Use a teflon-jawed pliers, STD-664, to connect the T12-A electrical connector [5] and T12-B electrical connector [6] to the T12 sensor [1] as follows (TASK 70-00-01-910-803-G00):

(a) Remove the protective covers from the T12-A electrical connector [5], T12-B electrical connector [6], and T12-A and T12-B electrical receptacles on the T12 sensor [1].

(b) Connect the T12-A electrical connector [5] and T12-B electrical connector [6] to the T12 sensor [1] (View B, Figure 401).

(c) Turn the coupling rings on the electrical connectors 1/8 turn or until the teflon-jawed pliers, STD-664, slippage occurs.

NOTE: Do not over tighten the coupling ring.

SUBTASK 73-21-06-160-001-G00

(3) Clean the work area and clear the tools and items used to do the task.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-06-420-003-G00

(1) Install the T12 access panel [2] as follows:

(a) Close these applicable access panels:

Number	Name/Location
412AT	T12 Access Door, Engine 1
422AT	T12 Access Door, Engine 2

(b) Lubricate the threads of the 17 screws [7] with oil, D00599 [CP2442].

(c) Install the 17 screws [7] that attach the T12 access panel [2] to the inlet cowl [3].

(d) Tighten the 17 screws [7] to 29.0 in-lb (3.3 N·m) to 31.0 in-lb (3.5 N·m).

SUBTASK 73-21-06-440-001-G00

(2) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 73-21-06-860-004-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-06-860-005-G00

(4) For the left engine, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

SUBTASK 73-21-06-860-006-G00

(5) For the right engine, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

SUBTASK 73-21-06-860-007-G00

(6) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. T12 Sensor Installation Test

SUBTASK 73-21-06-730-002-G00

(1) Do the applicable test(s) given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T12 SENSOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) T12 Sensor Inspection.

TASK 73-21-06-210-801-G00

2. T12 Sensor Inspection

(Figure 601)

A. General

(1) This task provides the instructions to inspect the T12 Sensor.

(2) The T12 sensor is located at the 11:00 o'clock position on the inlet cowl from the aft looking forward.

(3) You must remove the T12 access panel on the outer surface of the inlet cowl to get access to the T12 sensor.

B. 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)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-06-000-801-G00	T12 Sensor Removal (P/B 401)
73-21-06-400-801-G00	T12 Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
412AT	T12 Access Door, Engine 1
413	Left Fan Cowl, Engine 1
422AT	T12 Access Door, Engine 2
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-06-860-008-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-06-860-009-G00

(2) For the left engine, open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

SUBTASK 73-21-06-860-010-G00

(3) For the right engine, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

SUBTASK 73-21-06-010-003-G00

(4) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-21-06-010-004-G00

(5) Remove the T12 access panel:

(a) Open these applicable access panels:

Number	Name/Location
412AT	T12 Access Door, Engine 1
422AT	T12 Access Door, Engine 2

(b) Remove the seventeen screws that attach the T12 access panel to the inlet cowl.

(c) Remove the T12 access panel from the engine.

SUBTASK 73-21-06-010-005-G00

(6) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. T12 Sensor Inspection

SUBTASK 73-21-06-210-001-G00

(1) Inspect the T12 sensor:

(a) Make sure that the T12 sensor is not loose.

1) If the T12 sensor is loose, tighten the bolts that attach the sensor to the mounting bracket (T12 Sensor Installation, TASK 73-21-06-400-801-G00).

(b) Look for cracks in the mounting flange of the T12 sensor.

1) If you see cracks, replace the T12 sensor (T12 Sensor Removal, TASK 73-21-06-000-801-G00 and T12 Sensor Installation, TASK 73-21-06-400-801-G00).

(c) Make sure that the electrical connectors are not loose.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-06-410-002-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-21-06-410-003-G00

(2) Install the T12 access panel:

(a) Close these access panels:

Number	Name/Location
412AT	T12 Access Door, Engine 1
422AT	T12 Access Door, Engine 2

(b) Install the seventeen screws that attach the T12 access panel to the inlet cowl.

SUBTASK 73-21-06-860-011-G00

(3) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801.

SUBTASK 73-21-06-860-012-G00

(4) For the left engine, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

SUBTASK 73-21-06-860-013-G00

(5) For the right engine, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

SUBTASK 73-21-06-860-014-G00

(6) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

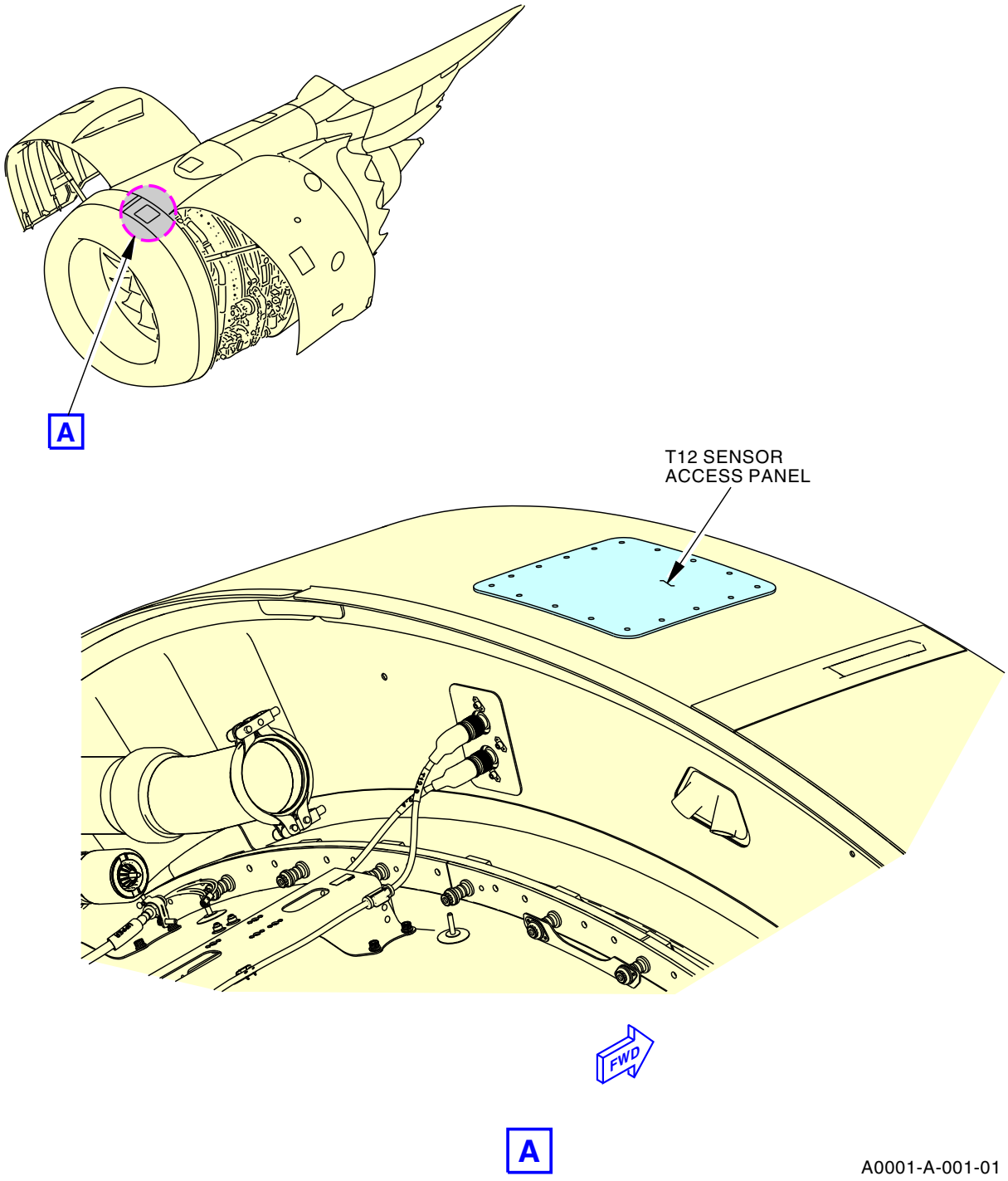
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T12 Sensor Inspection
Figure 601/73-21-06-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PERMANENT MAGNET ALTERNATOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) A removal of the Permanent Magnet Alternator (PMA)

(2) An installation of the PMA.

TASK 73-21-08-000-801-G00

2. Permanent Magnet Alternator Removal

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to remove the Permanent Magnet Alternator (PMA).

(2) The PMA consists of the PMA stator and the PMA rotor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
70-00-04-000-803-G00	Gasket Seal (with Imbedded Flexible Seal Material) Removal (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
72-63-04-000-801-G00	Accessory Gearbox Manual Control Cover 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-14905	Guide Pin Set - Jackscrews (PMA R/I) Part #: 956A3506G01 Supplier: 58828
SPL-14920	Adapter - Core Engine Lock Part #: 956A8679G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Gasket seal	73-21-08-01-040	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 73-21-08-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-08-010-001-G00

(2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

I. Permanent Magnet Alternator Removal

SUBTASK 73-21-08-030-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664, to disconnect the electrical connector (HJ3A harness) [4] and the electrical connector (HJ3B harness) [5] from the PMA stator [2] as follows:

(a) Disconnect the electrical connector (HJ3A harness) [4] and the electrical connector (HJ3B harness) [5] from the PMA stator [2] (TASK 70-00-01-910-803-G00).

(b) Install the protections covers on the electrical connector (HJ3A harness) [4], electrical connector (HJ3B harness) [5], and PMA stator [2] receptacles.

SUBTASK 73-21-08-020-001-G00

WARNING DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

WARNING	DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

WARNING	DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

CAUTION	DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

CAUTION	DO NOT HIT THE PERMANENT MAGNET ALTERNATOR HOUSING WITH A HAMMER OR OTHER OBJECT TO REMOVE IT FROM THE GEARBOX. DAMAGE TO THE WINDINGS CAN OCCUR IF THE PERMANENT MAGNET ALTERNATOR HITS THE GUIDE PINS OR STUDS DURING THE REMOVAL.

CAUTION	MAKE SURE THAT YOU USE THE GUIDE PINS. IF YOU DO NOT USE THE GUIDE PINS TO REMOVE OR INSTALL THE ALTERNATOR, DAMAGE TO THE ROTOR AND THE STATOR OF THE ALTERNATOR CAN OCCUR.

(2) Remove the PMA stator [2] as follows:

NOTE: The PMA consists of the PMA stator and the PMA rotor.

(a) Lubricate the threads of the guide pins from the Guide Pin Set, SPL-14905, with oil, D00599 [CP2442].

(b) Remove the four bolts [6] from the PMA stator [2].

(c) Turn the PMA stator [2] clockwise 90 degrees and install the two guide pins through the bolt holes of the PMA stator [2] to the AGB pad [8].

1) Make sure that the PMA stator [2] does not pull outward when you turn it.

(d) Carefully remove the PMA stator [2] along the guide pins.

(e) Examine the gasket seal [9] for damage (TASK 70-00-04-000-803-G00).

1) Remove the two screws [12] that attach the gasket seal [9] to the PMA stator [2].

2) If the gasket seal [9] is not damaged, re-use the gasket seal [9].

3) If the gasket seal [9] is damaged, replace the gasket seal [9].

a) Remove and discard the gasket seal [9].

b) Use the new gasket seal [9].

<1> Examine the surfaces of the gasket seal [9] for nicks, cuts or abrasions.

<2> Make sure that there is no damage on the gasket seal [9].

4) Remove the two guide pins from the AGB pad [8].

SUBTASK 73-21-08-020-002-G00

(3) Remove the PMA rotor [3] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Remove the manual control cover [26] on the accessory gearbox (TASK 72-63-04-000-801-G00).

(b) Install the locking adapter [23] on the core motoring mount on the accessory gearbox as follows:

NOTE: The Engine core lock adapter, SPL-14920, installed through the core motoring mount is to lock the rotation of the N2 rotor.

1) Install the three bolts [21] on the locking adapter [23].

2) Tighten the bolts [21] to 93 in-lb (11 N·m) - 102 in-lb (12 N·m).

(c) Remove the rotor nut [10] that attaches the PMA rotor [3] to the AGB gearshaft [11].

NOTE: The rotor nut is loosened clockwise.

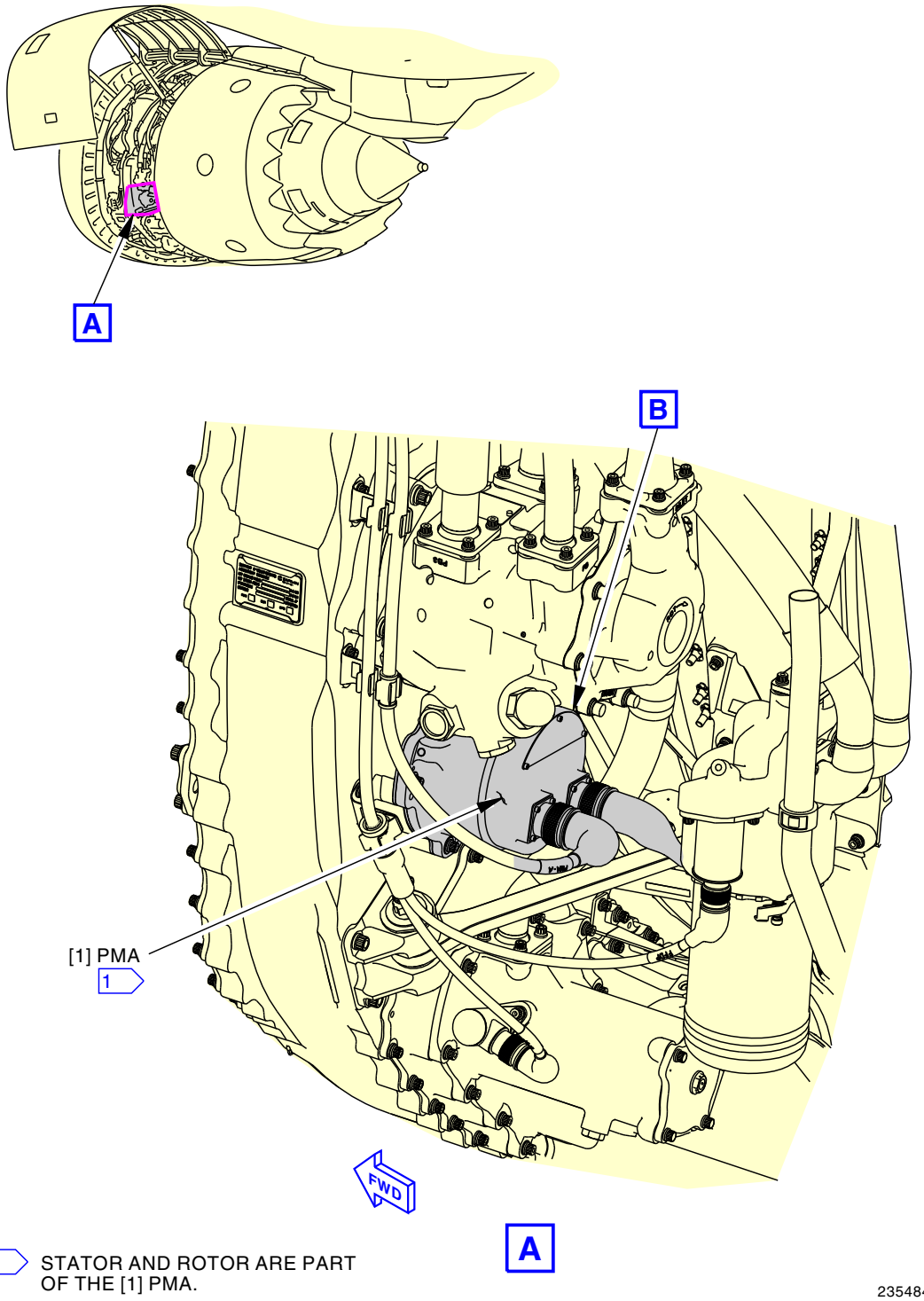
(d) Carefully remove the PMA rotor [3] from the AGB gearshaft [11].

(e) Remove the locking adapter [23] from the core motoring mount.

(f) Install the protection covers on the AGB gearshaft [11] and the PMA rotor [3].

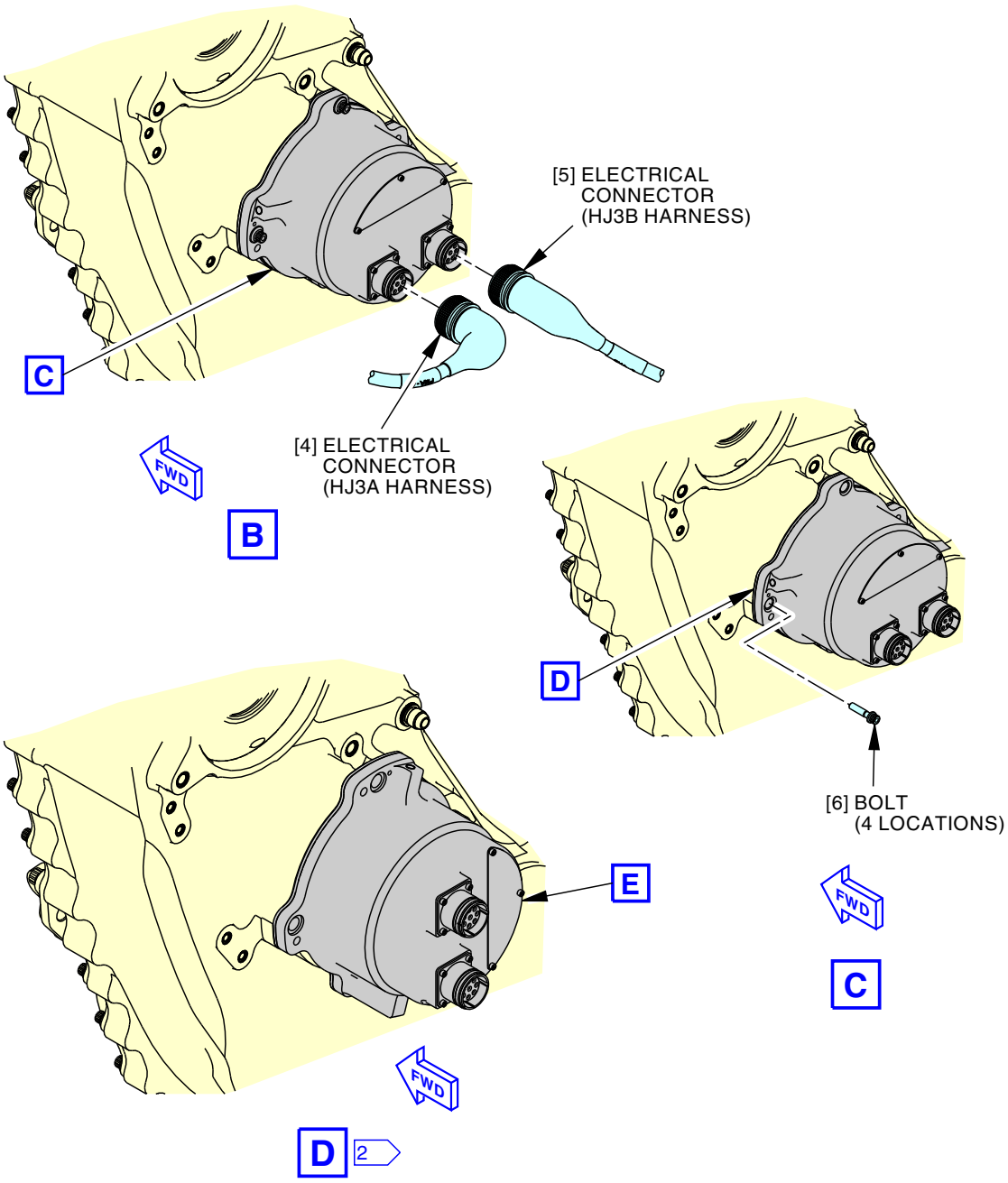
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Permanent Magnet Alternator Installation
Figure 401/73-21-08-990-801-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



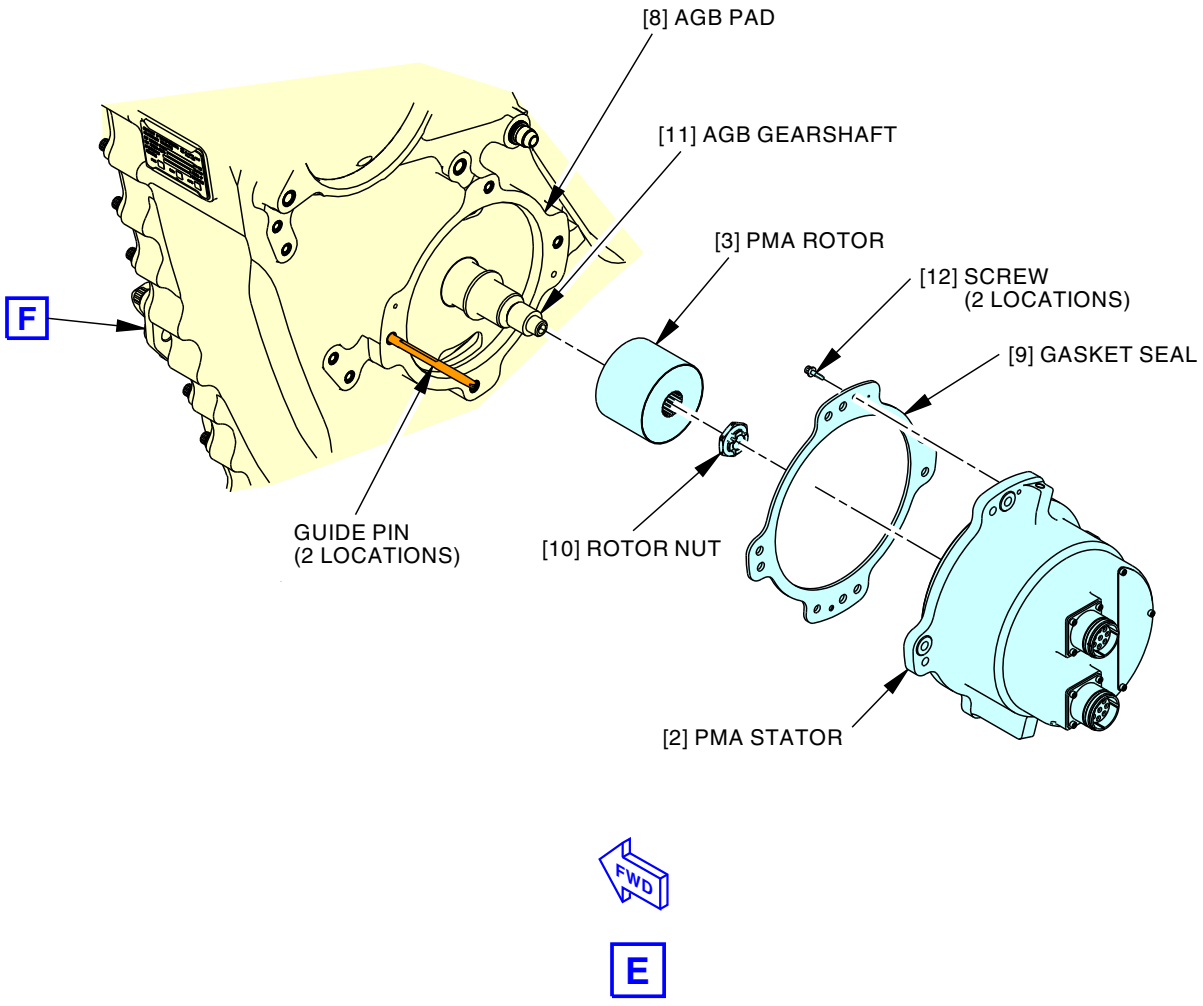
2 PMA STATOR IS TURNED CLOCKWISE 90 DEGREES.

ICN-LEAP-1B-732108-B-F0301-A0002-A-001-01

2406770 S0000556036_V4

Permanent Magnet Alternator Installation
Figure 401/73-21-08-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

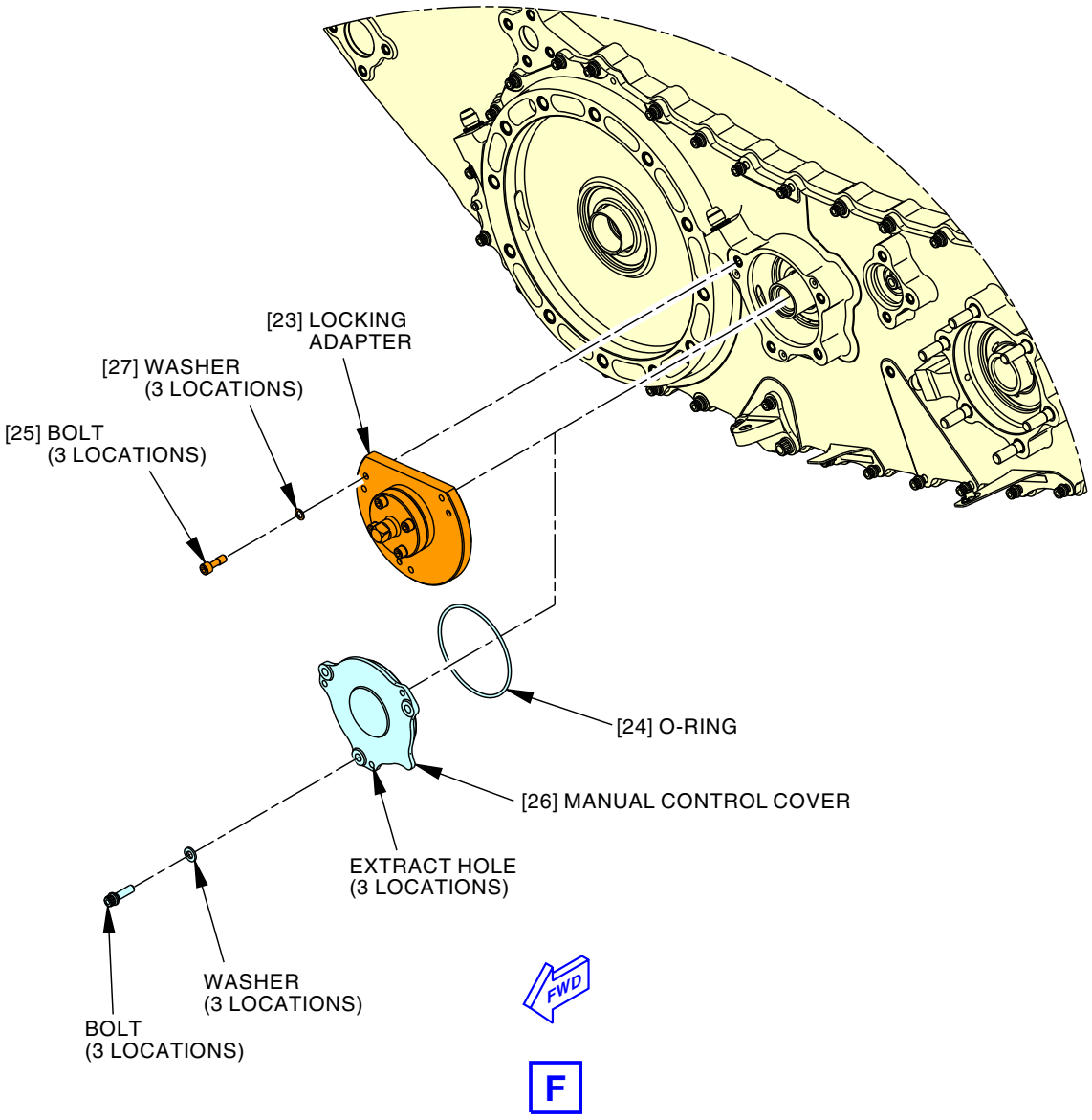


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2568027 S0000615182_V3

Permanent Magnet Alternator Installation
Figure 401/73-21-08-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732108-B-F0301-A0004-A-001-01

2354841 S00061516023_V8

Accessory Gearbox Manual Control Cover Installation
Figure 402/73-21-08-990-803-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-08-400-801-G00

3. Permanent Magnet Alternator Installation

(Figure 401 and Figure 402)

A. General

(1) This task gives the instructions to install the Permanent Magnet Alternator (PMA).

(2) The PMA consists of the PMA stator and the PMA rotor.

(3) You must do the tests that are listed in the power plant test reference table after you install the PMA.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-63-04-000-801-G00	Accessory Gearbox Manual Control Cover Removal (P/B 401)
72-63-04-400-801-G00	Accessory Gearbox Manual Control Cover 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-14905	Guide Pin Set - Jackscrews (PMA R/I) Part #: 956A3506G01 Supplier: 58828
SPL-14920	Adapter - Core Engine Lock Part #: 956A8679G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	PMA stator	73-21-08-01-020	SIA ALL
9	Gasket seal	73-21-08-01-040	SIA ALL
24	O-ring	72-63-01-04-180	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Permanent Magnet Alternator Installation

SUBTASK 73-21-08-420-001-G00

(1) Install the PMA rotor [3] as follows:

NOTE: The PMA [1] consists of the PMA stator [2] and the PMA rotor [3].

(a) Remove the protection covers from the AGB gearshaft [11] and the PMA rotor [3].

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) If it has not done so, remove the manual control cover [26] (TASK 72-63-04-000-801-G00).

1) Install the locking adapter [23] on the core motoring mount on the accessory gearbox as follows:

NOTE: The Engine core lock adapter, SPL-14920 installed through the core motoring mount is to lock the rotation of the N2 rotor.

a) Install the three bolts [21] on the locking adapter [23].

b) Tighten the bolts [21] to 93 in-lb (11 N·m) to 102 in-lb (12 N·m).

(d) Lubricate the threads of the AGB gearshaft [11] with the oil, D00599 [CP2442].

(e) Align the PMA rotor [3] with the AGB gearshaft [11].

(f) Put the PMA rotor [3] on the drive shaft.

(g) Install the rotor nut [10] on the AGB gearshaft [11].

(h) Tighten the rotor nut [10] to 454.1 in-lb (51.3 N·m) - 501.7 in-lb (56.7 N·m).

NOTE: The rotor nut [10] is tightened counterclockwise.

1) Use the reference oil to lubricate the rotor nut [10].

2) Tighten the rotor nut [10] until it contacts the PMA rotor [3].

3) Loosen the rotor nut [10] about one turn, then tighten the rotor nut [10] again and record the self-locking torque value.

NOTE: Do not take the breakaway torque into account when recording the self-locking torque value.

4) Add the recorded self-locking torque value to the tightening torque value specified above.

5) Tighten the rotor nut [10] to the calculated value.

(i) Remove the locking adapter [23] from the core motoring mount.

SUBTASK 73-21-08-420-002-G00

(2) Install the manual control cover [26] on the accessory gearbox (TASK 72-63-04-400-801-G00).

(a) Make sure that you install a new o-ring [24].

SUBTASK 73-21-08-420-003-G00

WARNING DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(WARNING PRECEDES)

WARNING DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

WARNING DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

CAUTION DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

(3) Install the PMA stator [2] as follows:

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Lubricate the threads of the two guide pins from the Guide Pin Set, SPL-14905, and the four bolts [6] with the oil, D00599 [CP2442].

(c) Install the new gasket seal [9] on the PMA stator [2], if it is necessary.

1) Install the two screws [12] that attach the gasket seal [9] to the PMA stator [2].

2) Tighten the two screws [12] to 11 in-lb (1.24 N·m) - 13 in-lb (1.47 N·m).

(d) Install the two guide pins through the bolt holes of the PMA stator [2] to the AGB pad [8], in the same position as the removal task.

(e) Install the PMA stator [2] on the AGB pad [8] with its flange seated correctly on the AGB pad [8].

(f) Remove the two guide pins from the AGB pad [8].

(g) Turn the PMA stator [2] 90 degree counter-clockwise and align it in the correct position on the AGB pad [8].

(h) Install the four bolts [6] on the PMA stator [2].

1) Tighten the bolts [6] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 73-21-08-430-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(4) Use the teflon-jawed pliers, STD-664 to connect the electrical connector (HJ3A harness) [4] and the electrical connector (HJ3B harness) [5] to the PMA stator [2] as follows :

(a) Remove the protection covers from the electrical connector (HJ3A harness) [4], the electrical connector (HJ3B harness) [5], and the PMA stator [2] receptacles.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Connect the electrical connector (HJ3A harness) [4] and the electrical connector (HJ3B harness) [5] to the PMA stator [2] (TASK 70-00-01-910-803-G00).

(c) Tighten the electrical connector (HJ3A harness) [4] and the electrical connector (HJ3B harness) [5].

SUBTASK 73-21-08-860-002-G00

(5) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-08-860-003-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-08-410-001-G00

(2) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Permanent Magnet Alternator Installation Test

SUBTASK 73-21-08-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PERMANENT MAGNET ALTERNATOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Permanent Magnet Alternator (PMA) inspection.

TASK 73-21-08-210-801-G00

2. Permanent Magnet Alternator (PMA) Inspection

(Figure 601)

A. General

(1) This task provides instructions to inspect the Permanent Magnet Alternator (PMA).

(a) The PMA is located on the aft face of the accessory gearbox on the left side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-08-000-801-G00	Permanent Magnet Alternator Removal (P/B 401)
73-21-08-400-801-G00	Permanent Magnet Alternator Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-08-860-004-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-08-010-002-G00

(2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Permanent Magnet Alternator Inspection

SUBTASK 73-21-08-212-001-G00

(1) Inspect the PMA:

(a) Look for signs of oil leaks.

1) If you see signs of oil leak between the permanent magnet alternator and the AGB pad replace the gasket seal (Permanent Magnet Alternator Removal, TASK 73-21-08-000-801-G00 and Permanent Magnet Alternator Installation, TASK 73-21-08-400-801-G00).

(b) Look for cracks in the mounting flange:

1) If you see cracks, replace the permanent magnet alternator (Permanent Magnet Alternator Removal, TASK 73-21-08-000-801-G00 and Permanent Magnet Alternator Installation, TASK 73-21-08-400-801-G00).

(c) Look for dents in the permanent magnet alternator.

1) If you see dents, replace the permanent magnet alternator (Permanent Magnet Alternator Removal, TASK 73-21-08-000-801-G00 and Permanent Magnet Alternator Installation, TASK 73-21-08-400-801-G00).

(d) Make sure that the electrical connectors are not loose.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

(e) Look for ablative coating that is loose on the housing, does not have a good bond, or is missing.

NOTE: Loose ablative coating or ablative coating that does not have a good bond is not permitted.

1) If you find ablative coating that is loose on the housing or does not have a good bond, replace the PMA (Permanent Magnet Alternator Removal, TASK 73-21-08-000-801-G00 and Permanent Magnet Alternator Installation, TASK 73-21-08-400-801-G00).

(f) Look for ablative coating that is cut, peeling, flaking, missing coating or conditions that decrease the coating thickness.

1) If you find ablative coating that is cut, peeling, flaking, missing coating, or have conditions that decrease the coating thickness, do these steps:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) If the area with the damage is less than 10% of the total ablative coating, repair the ablative coating.

NOTE: You can repair a maximum of 10% of the total ablative coating.

NOTE: Contact CFM for the “Permanent Magnet Alternator - Specific Repair” procedure.

b) If the area with the damage is more than 10% of the total ablative coating, or there is any sign of the ablative coating separated from the housing (signs of a weak or defective bond), replace the PMA (Permanent Magnet Alternator Removal, TASK 73-21-08-000-801-G00 and Permanent Magnet Alternator Installation, TASK 73-21-08-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-08-410-002-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-21-08-860-005-G00

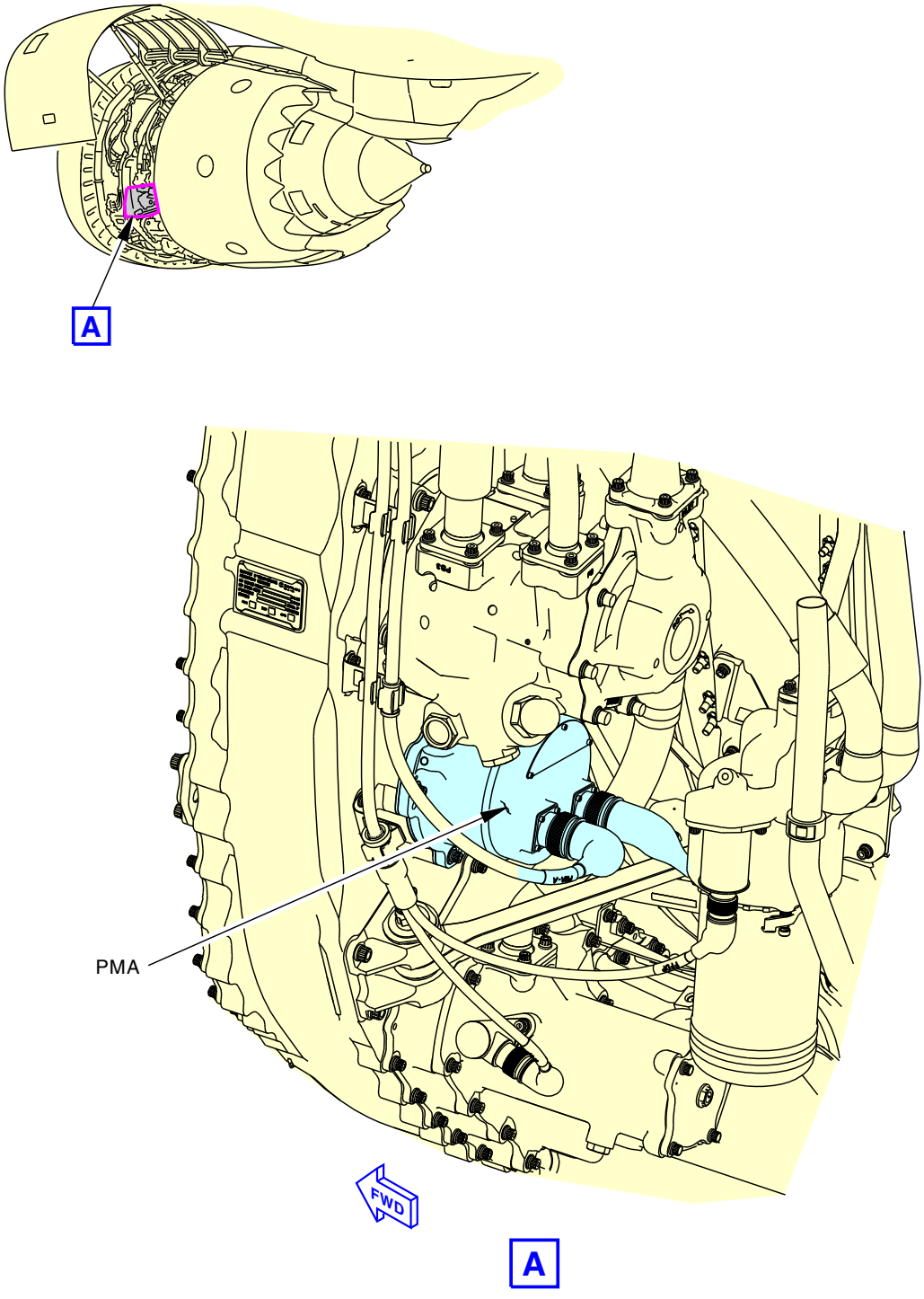
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Permanent Magnet Alternator Inspection
Figure 601/73-21-08-990-804-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

DATA ENTRY PLUG - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Data entry plug removal

(2) Data entry plug installation.

TASK 73-21-09-000-801-G00

2. Data Entry Plug Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the data entry plug.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-09-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-09-860-002-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-09-010-001-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Data Entry Plug Removal

SUBTASK 73-21-09-030-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the data entry plug [1] from the pressure sub-system (PSS) [2].

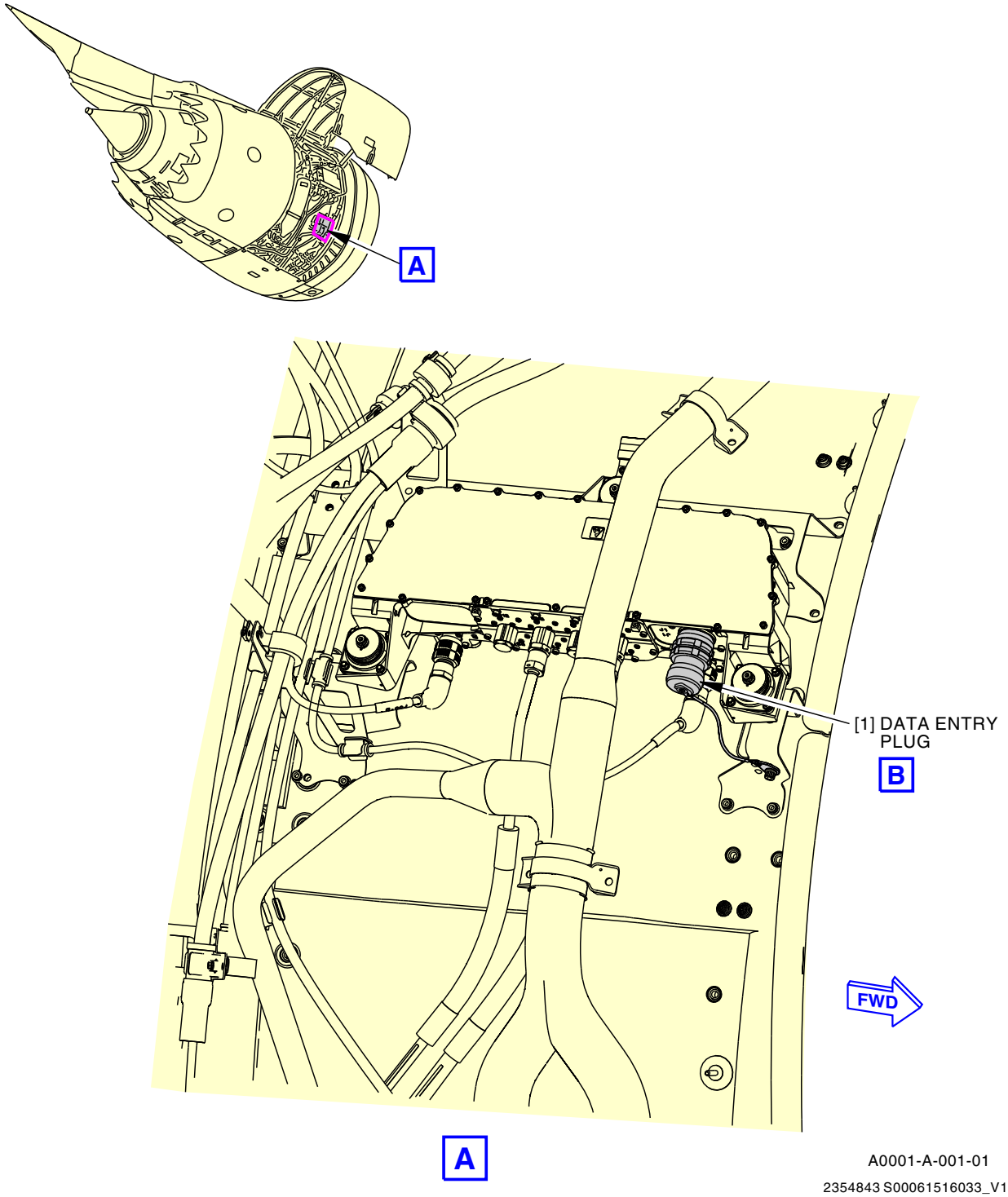
(a) Disconnect the data entry plug [1] from the receptacle of the pressure sub-system (PSS) [2].

(b) Remove the bolt [3] that attaches the metal braid [5] to the bracket [4].

(c) Install the protective covers on the data entry plug [1] and the pressure sub-system (PSS) [2] receptacle.

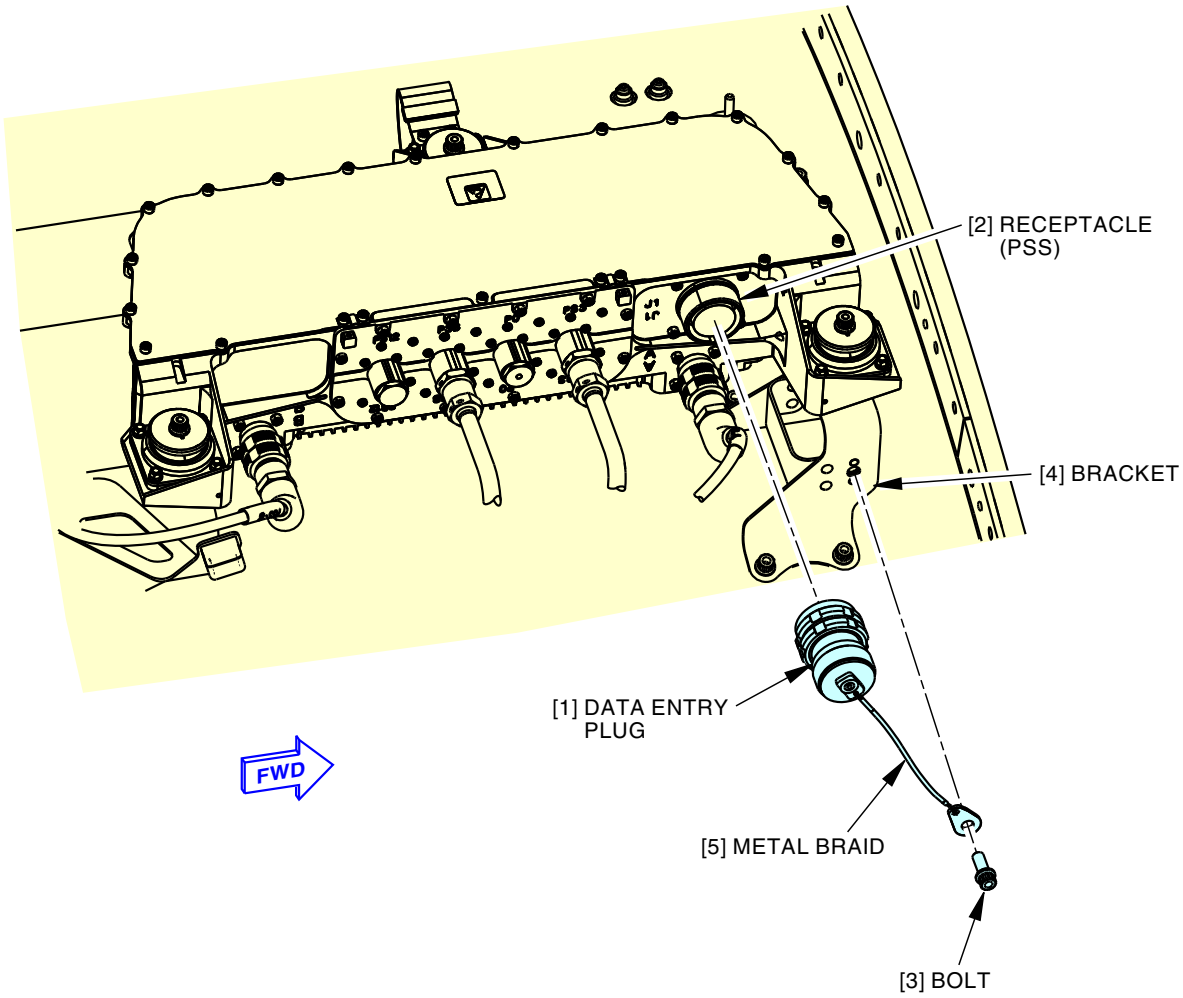
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Data Entry Plug Installation
Figure 401/73-21-09-990-802-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DATA ENTRY PLUG

B

A0002-A-001-01

2402375 S0000555193_V1

Data Entry Plug Installation
Figure 401/73-21-09-990-802-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-09-400-801-G00

3. Data Entry Plug Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the data entry plug.

(2) You must do the tests that are listed in the power plant test reference table after you install the data entry plug.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Data Entry Plug Installation

SUBTASK 73-21-09-540-001-G00

(1) Remove the protective covers from the data entry plug [1] and the pressure sub-system (PSS) [2] receptacle.

SUBTASK 73-21-09-860-003-G00

(2) Make sure that the mating faces are clean and clear of unwanted materials.

SUBTASK 73-21-09-430-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(3) Use the teflon-jawed pliers, STD-664 to connect the data entry plug [1] to the pressure sub-system (PSS) [2].

(a) Connect the data entry plug [1] to the pressure sub-system (PSS) [2] receptacle.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the data entry plug [1] does not move after you fully engage them.

(c) Install the bolt [3] which attaches the metal braid [5] to the bracket [4].

1) Tighten the bolt [3] to 67.45 in-lb (7.6 N·m) to 74.55 in-lb (8.4 N·m).

(d) Clean the work area and clear the tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-09-860-005-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-09-860-006-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-09-410-002-G00

(3) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Data Entry Plug Installation Test

SUBTASK 73-21-09-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

DATA ENTRY PLUG - INSPECTION/CHECK

1. General

A. This procedure has these tasks.

(1) Data Entry Plug Configuration Check

(2) Data Entry Plug Inspection.

TASK 73-21-09-700-801-G00

2. Data Entry Plug Configuration Check

(Figure 601 and Figure 602)

A. General

(1) This task gives the instructions to examine the program on the data entry plug.

(2) The data entry plug is referred to as DEP.

(3) The DEP is a one piece of hardware with two functions. The DEP defines the engine thrust rating via fused links and cannot be re-programmed. The DEP also defines the engine hardware configuration and N1 trim via programmable “push-pull” pins.

(4) The DEP is installed on the Pressure Sub System (PSS) below the EECs. The DEP “push-pull” pins are protected by a cover via a lanyard installed on the fan case.

(5) The “push-pull” pin configuration must be programmed to align with the N1 trim defined from engine test results or documented in as-delivered Engine Data Submittal package as well as the engine hardware configuration defined by Service Bulletin incorporation.

(6) When the “push-pull” pins are set to a combination that defines a specific trim value and/or engine configuration, the engine data plate (nameplate) is then re-marked with the new N1 trim level and configuration.

NOTE: Replacement pre-programmed data entry plug thrust rating must match the engine data plate’s rated thrust, the opposite engine's rated thrust, and be compatible with the airplane model.

B. References

Reference	Title
46-13-00-710-802	System Configuration Check (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-00-470-801-G00	EEC System Configuration Data Functions Check (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)
73-21-09-000-801-G00	Data Entry Plug Removal (P/B 401)
73-21-09-400-801-G00	Data Entry Plug Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE
STD-14055	Tweezers, Flat Nose Industrial

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Check

SUBTASK 73-21-09-860-007-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-09-970-002-G00

(2) Make a record of the applicable engine EEC system configuration page (TASK 46-13-00-710-802).

NOTE: The EEC system configuration page displays the engine thrust rating, N1 modifier, and engine configuration information that are referenced later in this task. For explanation of the EEC system configuration page refer to this task: EEC System Configuration Data Functions Check, TASK 73-21-00-470-801-G00.

SUBTASK 73-21-09-010-004-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Data Entry Plug Configuration Check

SUBTASK 73-21-09-970-001-G00

(1) Make a record of the current engine thrust rating, N1 trim, and hardware configuration displayed on the EEC system configuration page (TASK 73-21-00-470-801-G00).

SUBTASK 73-21-09-010-002-G00

CAUTION

DO NOT REMOVE THE COVER FROM THE ENGINE. FIRST, REMOVE COVER FROM THE DATA ENTRY PLUG, THEN REMOVE DATA ENTRY PLUG FROM PRESSURE SUB SYSTEM. DAMAGE TO THE DATA ENTRY PLUG CAN OCCUR.

(2) Remove the cover from the data entry plug and the data entry plug from the Pressure Sub System (PSS) as follows (View B, Figure 601):

(a) Use the teflon-jawed pliers, STD-664, to remove the cover from the data plug.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the data entry plug from the PSS (TASK 73-21-09-000-801-G00).

NOTE: You can now get access to the pins of the data entry plug to make sure that there are "push"- "pull" pin configurations.

SUBTASK 73-21-09-860-015-G00

(3) Make sure that the DEP engine thrust rating part number matches the engine thrust rating on the engine data plate.

(a) Locate the engine thrust rating on the engine data plate.

(b) Locate the engine thrust rating part number on the DEP (View C, Figure 601).

(c) Make sure that the engine thrust rating matches the appropriate part number (Table 601).

1) If the DEP engine thrust rating part number does not match the engine data plate, replace the DEP with a P/N that matches the engine data plate engine thrust rating.

Table 601/73-21-09-993-806-G00 Engine Thrust Rating

Engine Data Plate Engine Thrust Rating	Data Entry Plug (DEP) Engine Thrust Rating P/N
LEAP-1B21	2531M61P02
LEAP-1B23	2531M61P06
LEAP 1B25	2531M61P10
LEAP-1B27	2531M61P18
LEAP-1B28C2	2531M61P24
LEAP-1B28	2531M61P26
LEAP-1B28B1	2531M61P27
LEAP-1B28B2	2531M61P28
LEAP-1B28B3	2531M61P29
LEAP-1B28BBJ1	2531M61P14
LEAP-1B28BBJ2	2531M61P30

SUBTASK 73-21-09-820-001-G00

CAUTION YOU MUST INSTALL A PROTECTIVE COVER ON THE TOP OF THE DATA ENTRY PLUG DURING HANDLING. THE COVER PROTECTS SENSITIVE PROGRAMMING SWITCHES. IF YOU DO NOT OBEY THIS CAUTION, DAMAGE TO THE DATA ENTRY PLUG CAN OCCUR.

(4) If it is necessary, program the DEP to the specified configuration as follows:

(a) Do the steps below to program the N1 trim configuration:

1) Locate the N1 trim level.

a) If you will not change the thrust rating, the location of the N1 trim level is on the engine data plate.

b) If you will change the engine thrust rating, use the N1 trim level for the new thrust rating from the engine test summary data sheet.

NOTE: Refer to CFM LEAP-1B Service Bulletin 72-0018 for more information.

2) Locate the affected "push-pull" pins.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

3) With a flat nose tweezer, STD-14055, put the affected push-pull pins in the correct position (Table 602).

Table 602/73-21-09-993-802-G00 1-N1 Trim Pin Configuration

N1 Modifier	N1 Trim Pin*[1]			
Level	28	21	20	30 (Parity)
No Modifier	Pull	Pull	Pull	Push
Modifier 1	Pull	Pull	Push	Pull
Modifier 2	Pull	Push	Pull	Pull
Modifier 3	Pull	Push	Push	Push
Modifier 4	Push	Pull	Pull	Pull
Modifier 5	Push	Pull	Push	Push
Modifier 6	Push	Push	Pull	Push
Modifier 7	Push	Push	Push	Pull
Invalid	All other combinations			

*[1] Pins 19 and 22 are unused spares and are to remain in the closed (pushed-in) position.

(b) If it is necessary, do the steps below to program the engine hardware configuration:

1) Locate the engine hardware configuration number.

a) Look for the engine hardware configuration located on the EEC System configuration page recorded prior to removing the DEP from the PSS.

b) If the engine hardware configuration number is not known, refer to your airline's records of engine Service Bulletin incorporation to determine the correct engine hardware configuration number.

2) Locate the affected push-pull pins.

3) With a flat nose tweezer, STD-14055, put the affected push-pull pins in the correct position (Table 603).

Table 603/73-21-09-993-803-G00 Hardware Configuration Data Entry Plug Pin Configuration

Engine Model	Engine Configuration*[1]	Engine Configuration Pin*[2]						
		36	54	31	27	47	46	37
LEAP-1B Baseline	0001	Push	Push	Pull	Pull	Pull	Pull	Pull
LEAP-1B with Reverse-Sense LPTACC Actuator (Post LEAP-1B Service Bulletin 73-0013R0)	0002	Push	Pull	Pull	Pull	Push	Pull	Pull
LEAP-1B with Expanded EGT Capability (Post LEAP-1B Service Bulletin 72-0169R0)	0003	Push	Pull	Pull	Pull	Pull	Push	Pull
LEAP-1B with Reverse-Sense LPTACC Actuator (Post-LEAP-1B Service Bulletin 73-0013R0) and Expanded EGT Capability (Post LEAP-1B Service Bulletin 72-0169R0)	0004	Push	Push	Pull	Pull	Push	Push	Pull

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 603/73-21-09-993-803-G00 Hardware Configuration Data Entry Plug Pin Configuration (Continued)

Engine Model	Engine Configuration*[1]	Engine Configuration Pin*[2]						
LEAP-1B with 21 Count HPC Stage 1 Blisk and Associated Booster IGV (Post LEAP-1B Service Bulletin 72-0182R0), Reverse-Sense LPTACC Actuator (Post LEAP-1B Service Bulletin 73-0013R0), and Expanded EGT Capability (Post LEAP-1B Service Bulletin 72-0169R0)	0010	Pull	Pull	Push	Pull	Push	Pull	Pull
-	Invalid	All other combinations						

*[1] Make sure that you program the correct engine configuration. If the incorrect selection is made for pre or post-Service Bulletin 73-0013, LPTACC position disagree faults will be set at the next engine start (maintenance messages 75-4263X or 75-4264X where X is specific to the EEC channel reporting the fault).

*[2] Pins 19 and 22 are unused spares and are to remain in the closed (pushed-in) position.

(c) Install the data entry plug on the PSS (TASK 73-21-09-400-801-G00).

(d) Use the teflon-jawed pliers, STD-664, to install the cover on the data entry plug.

1) Make sure that the green line is covered (View D, Figure 601).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-09-410-004-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-09-860-010-G00

(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Data Entry Plug Configuration Post Installation Test

SUBTASK 73-21-09-860-020-G00

(1) Energize the EECs with the EEC MAINT POWER switch that is on the MISC SYSTEM CTRLS page on the Multi-Function Display (MFD) (TASK 73-21-00-800-801-G00).

NOTE: You must energize the EECs to make sure that the data entry plug information is read and kept correctly in the EEC NVM.

NOTE: The next engine start after one of the tasks that follow can have a longer pre-start motoring time than typical of cold engines. This is because the engine off time will be erased from the EEC NVM when you do these:

- Install new EEC software
- Enter new Engine Serial Number (ESN)
- Install the engine on a new aircraft tail number
- Install the engine on the opposite engine position on the same aircraft tail number

ECCN 9E991 BOEING PROPRIETARY - See title page for details

- Install a data entry plug with new thrust rating, N1 trim, or engine configuration.

SUBTASK 73-21-09-200-001-G00

(2) Make sure that the engine thrust rating, N1 trim, and hardware configuration displayed on the EEC system configuration page matches the intended data entry plug configuration (TASK 73-21-00-470-801-G00).

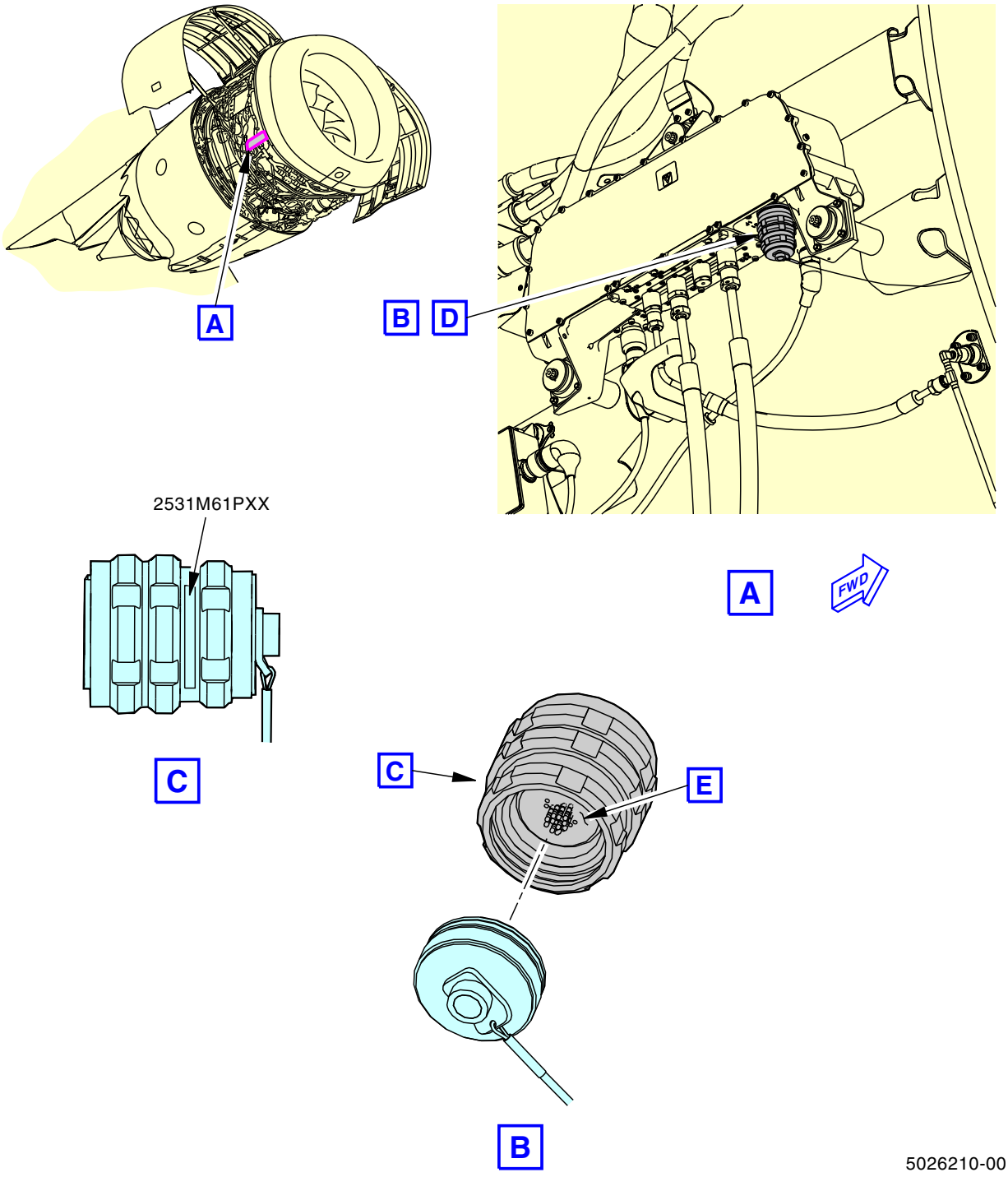
NOTE: The engine thrust rating as shown on the EEC System Configuration Page must match the engine data plate's rated thrust, the opposite engine's rated thrust, and be compatible with the airplane model.

SUBTASK 73-21-09-710-001-G00

(3) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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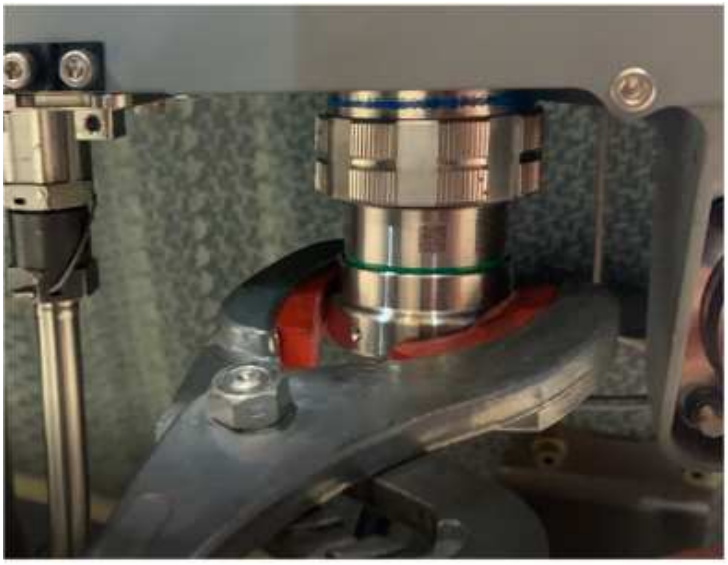
Data Entry Plug Configuration Check
Figure 601/73-21-09-990-803-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(CORRECT POSITION OF COVER)

D



(INCORRECT POSITION OF COVER)

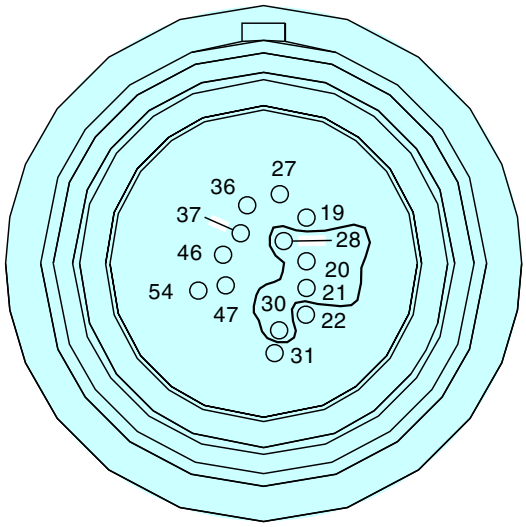
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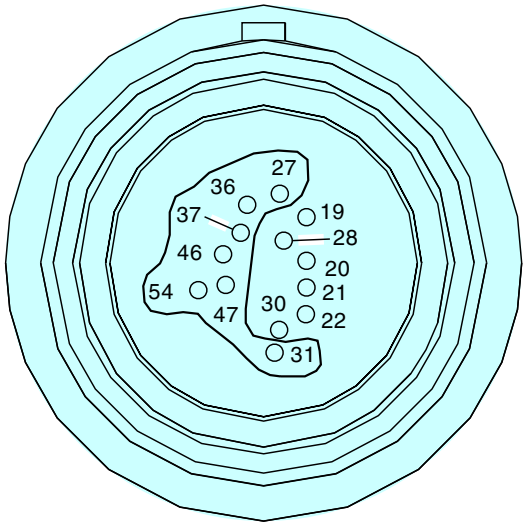
Data Entry Plug Configuration Check
Figure 601/73-21-09-990-803-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



N1 TRIM PIN CONFIGURATION

E 1



HARDWARE CONFIGURATION

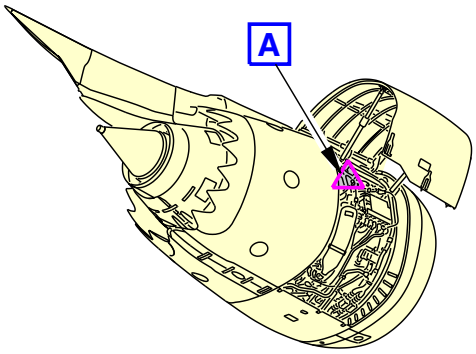
E 1

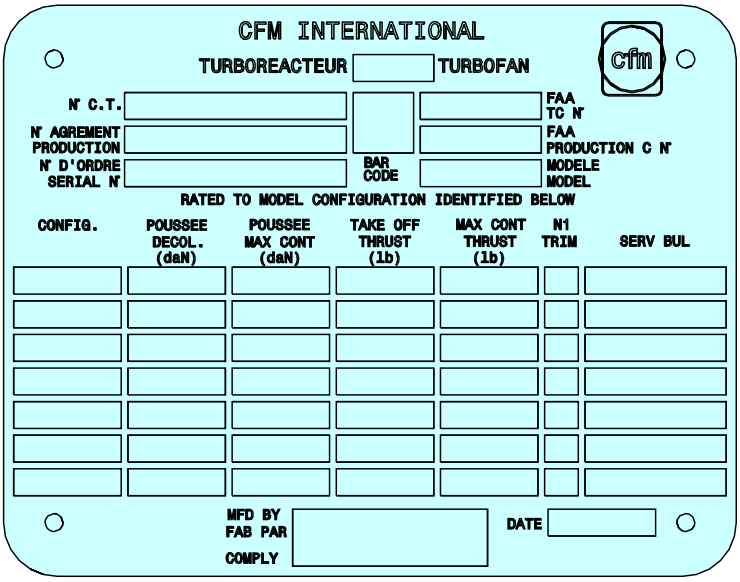
1 PINS 19 AND 22 ARE UNUSED SPARES AND ARE TO REMAIN IN THE CLOSED (PUSHED-IN) POSITION.

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2474533 S0000579631_V3

Data Entry Plug Configuration Check
Figure 601/73-21-09-990-803-G00 (Sheet 3 of 3)

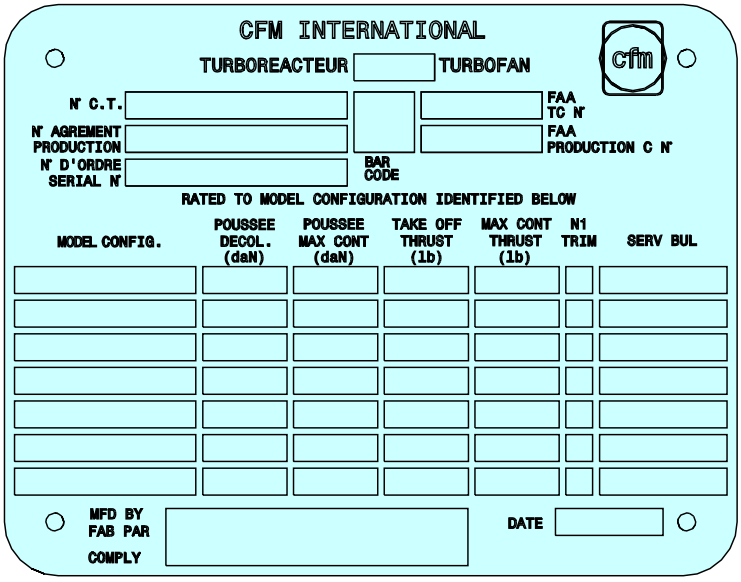
ECCN 9E991 BOEING PROPRIETARY - See title page for details





DATA (NAME) PLATE OLD CONFIGURATION
(PRE LEAP-1B S/B 72-0160)
P/N 649-804-037-0

A



DATA (NAME) PLATE NEW CONFIGURATION
(POST LEAP-1B S/B 72-0160)
P/N 649-804-037-0

A

6008678-00
2474538 S0000579632_V2

Data Plate Reference
Figure 602/73-21-09-990-804-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-09-211-801-G00

3. Data Entry Plug Inspection

(Figure 603)

A. General

(1) This task provides the instructions to inspect the condition of the Data Entry Plug (DEP).

(2) The Data Entry Plug is attached to the Pressure Sub-System (PSS) located on the right side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-09-000-801-G00	Data Entry Plug Removal (P/B 401)
73-21-09-400-801-G00	Data Entry Plug Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-09-860-016-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-09-860-017-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-09-010-003-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Data Entry Plug Inspection

SUBTASK 73-21-09-210-001-G00

(1) Inspect the data entry plug as follows:

(a) Look for signs of arcing.

1) If you see signs of arcing, replace the data entry plug (TASK 73-21-09-000-801-G00 and TASK 73-21-09-400-801-G00).

(b) Make sure that the electrical connector is not loose.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten it.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-09-410-003-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-09-860-018-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-09-860-019-G00

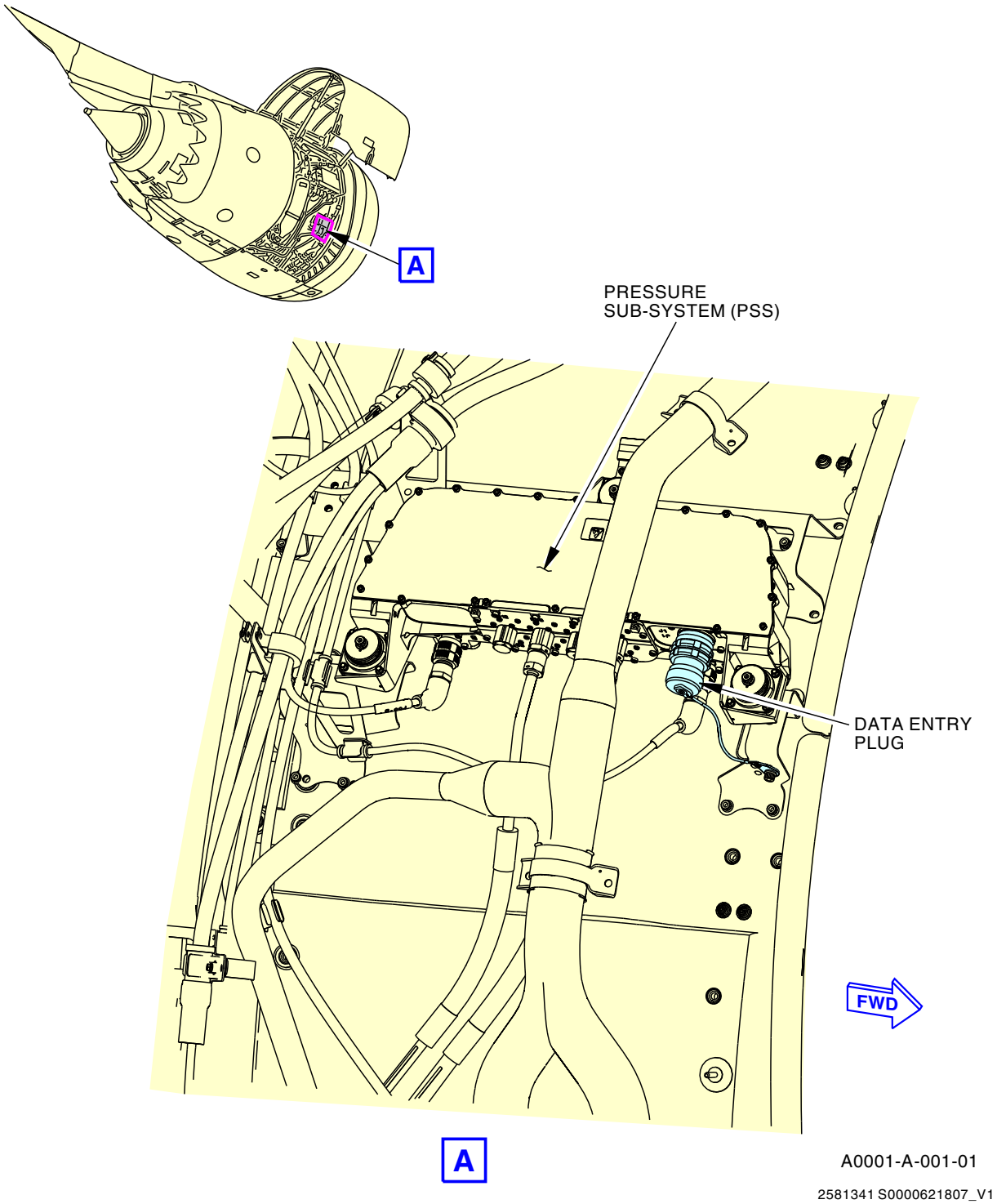
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Data Entry Plug Inspection
Figure 603/73-21-09-990-807-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL (EEC) COOLING BLOWERS - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Electronic Engine Control (EEC) cooling blowers removal

(2) Electronic Engine Control (EEC) cooling blowers installation.

TASK 73-21-10-000-801-G00

2. Electronic Engine Control (EEC) Cooling Blowers Removal

(Figure 401)

A. General

(1) This task gives the instructions on how to remove the Electronic Engine Control (EEC) cooling blowers.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-653	Platform - Engine and Strut Access
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the Removal

SUBTASK 73-21-10-910-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-10-010-002-G00

(2) Open the left and right fan cowl panels (TASK 71-11-04-010-801-G00).

SUBTASK 73-21-10-480-001-G00

(3) Put the engine and strut access platform, STD-653 where you can access the EEC cooling blowers.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Electronic Engine Control (EEC) Cooling Blowers Removal

SUBTASK 73-21-10-020-001-G00

(1) Remove the AFT/Channel B EEC cooling blower [1]:

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(a) Use a teflon-jawed pliers, STD-664 to disconnect the W2A harness electrical connector [3] from the AFT/Channel B EEC cooling blower [1] (TASK 70-00-01-910-803-G00).

(b) Install protective covers on the W2A harness electrical connector [3] and the electrical receptacle on the AFT/Channel B EEC cooling blower [1]

(c) Loosen the screw [6] on the clamp [7].

(d) Remove the clamp [7] from the EEC cooling duct [4].

(e) Disconnect the EEC cooling duct [4] from the AFT/Channel B EEC cooling blower [1].

(f) Loosen the screw [8] on the clamp [9].

(g) Remove the clamp [9] from the EEC cooling duct [5].

(h) Disconnect the EEC cooling duct [5] from the AFT/Channel B EEC cooling blower [1].

(i) Remove the four bolts [10] that attach the AFT/Channel B EEC cooling blower [1] to the mounting bracket [11].

(j) Remove the AFT/Channel B EEC cooling blower [1] from the mounting bracket [11].

(k) Install protective covers on all openings.

SUBTASK 73-21-10-020-002-G00

(2) Remove the FWD/Channel A EEC cooling blower [2]:

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(a) Use a teflon-jawed pliers, STD-664 to disconnect the W2B harness electrical connector [12] from the FWD/Channel A EEC cooling blower [2] (TASK 70-00-01-910-803-G00).

(b) Install protective covers on the W2B harness electrical connector [12] and the electrical receptacle on the FWD/Channel A EEC cooling blower [2].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Loosen the screw [15] on the clamp [16].

(d) Remove the clamp [16] from the EEC cooling duct [13].

(e) Disconnect the EEC cooling duct [13] from the FWD/Channel A EEC cooling blower [2].

(f) Loosen the screw [17] on the clamp [18].

(g) Remove the clamp [18] from the EEC cooling duct [14].

(h) Disconnect the EEC cooling duct [14] from the FWD/Channel A EEC cooling blower [2].

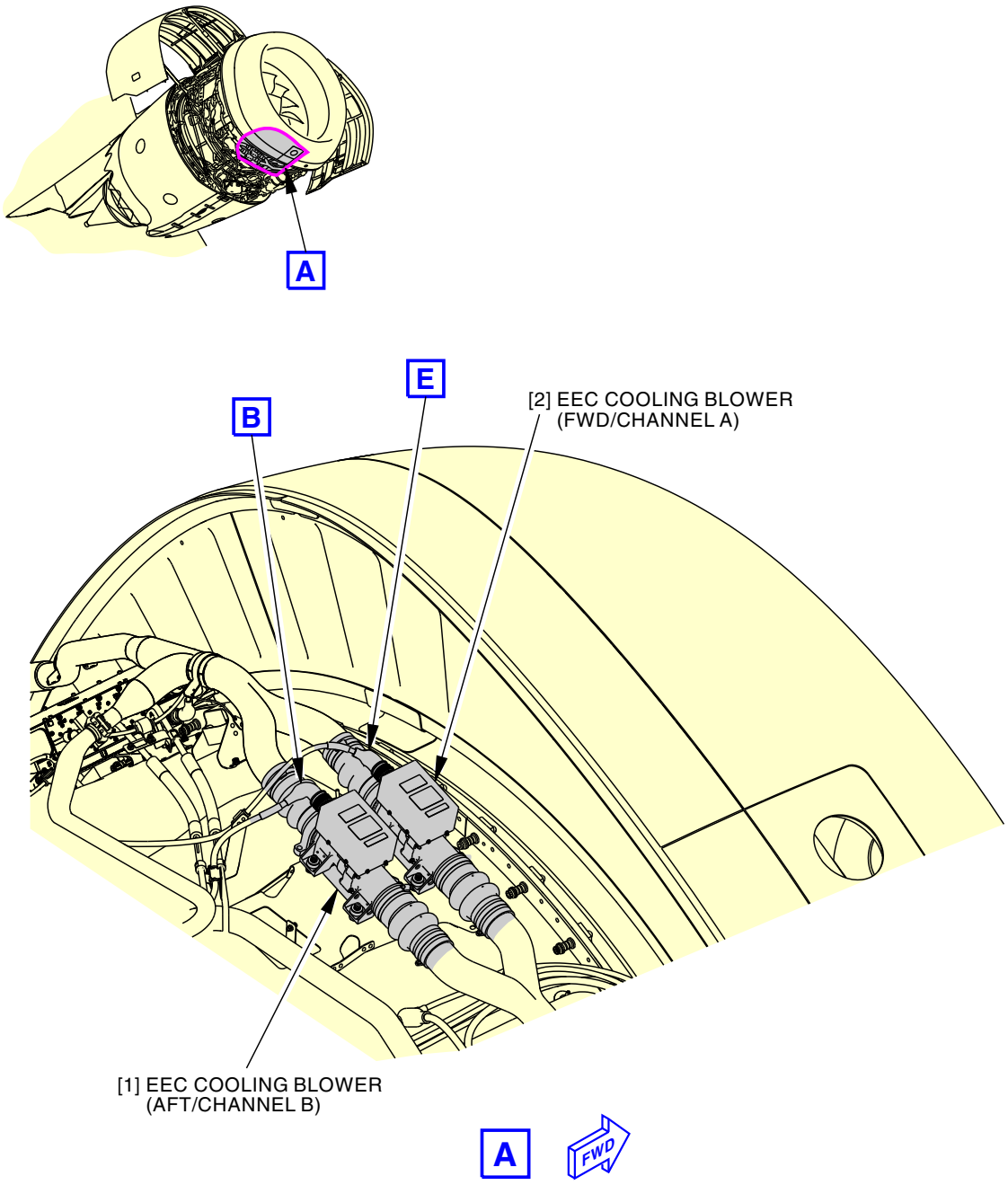
(i) Remove the four bolts [19] that attach the FWD/Channel A EEC cooling blower [2] to the mounting bracket [11].

(j) Remove the FWD/Channel A EEC cooling blower [2] from the mounting bracket [11].

(k) Install protective covers on all openings.

——— END OF TASK ———

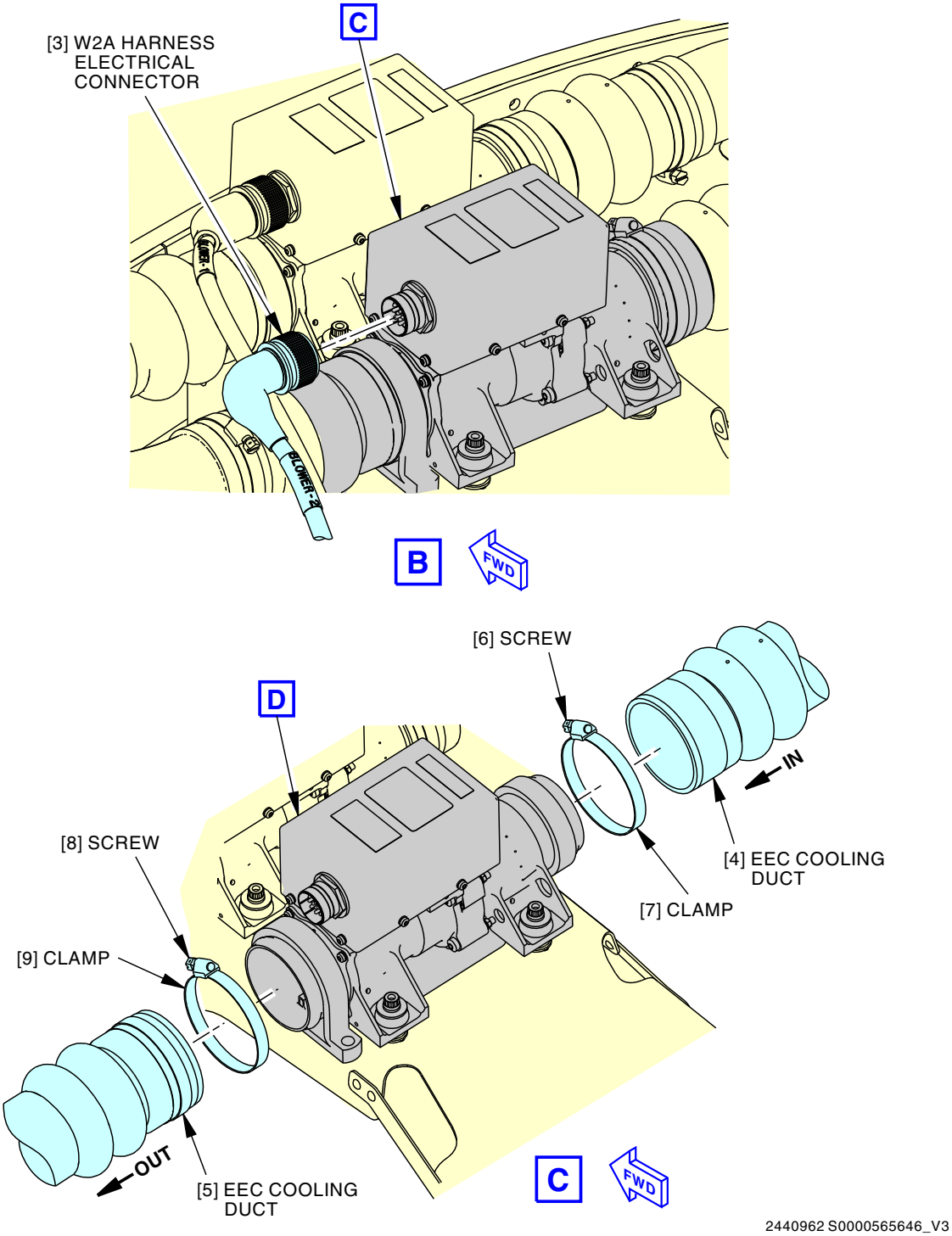
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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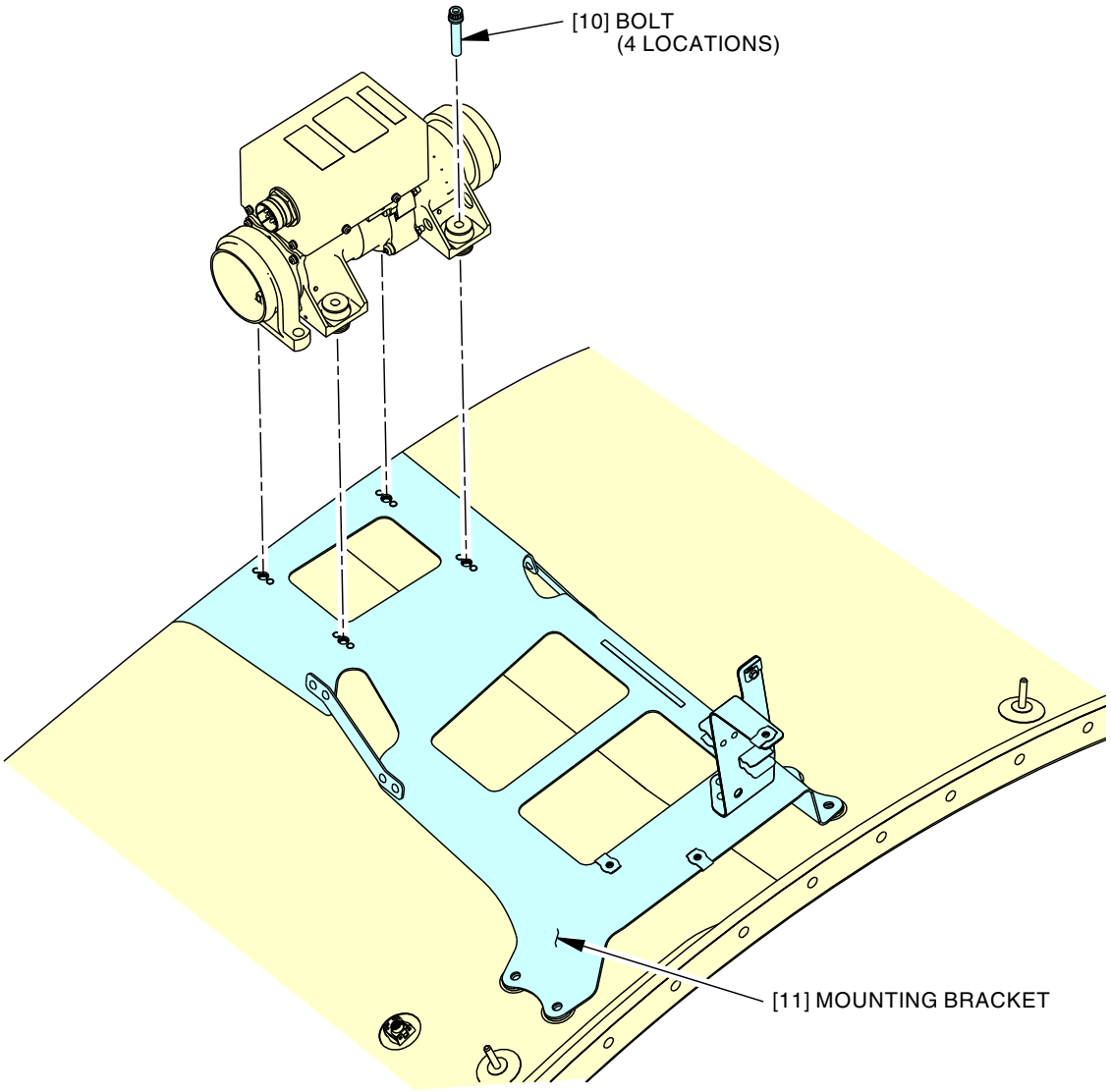
EEC Cooling Blowers Installation
Figure 401/73-21-10-990-801-G00 (Sheet 1 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Cooling Blowers Installation
Figure 401/73-21-10-990-801-G00 (Sheet 2 of 5)

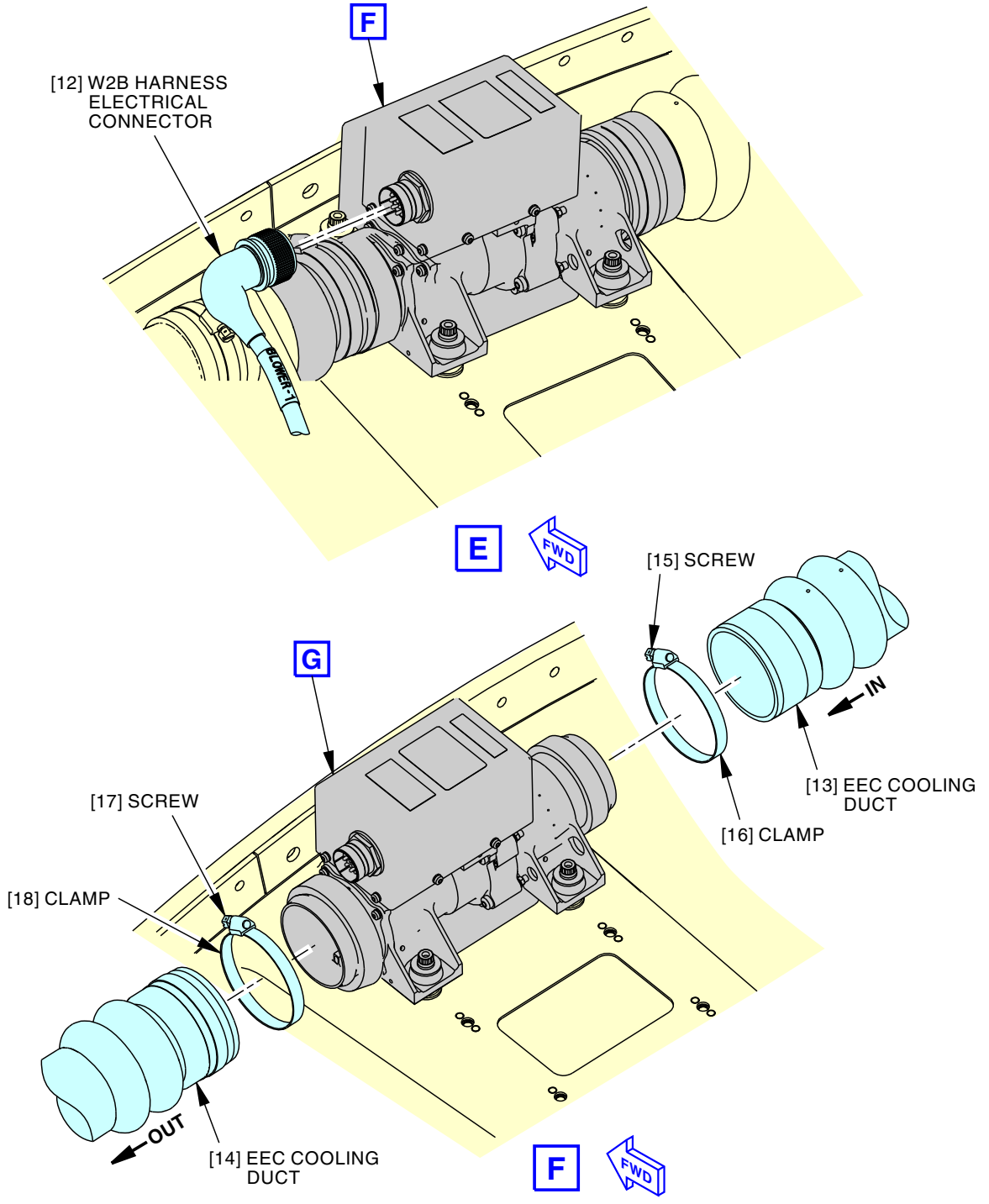
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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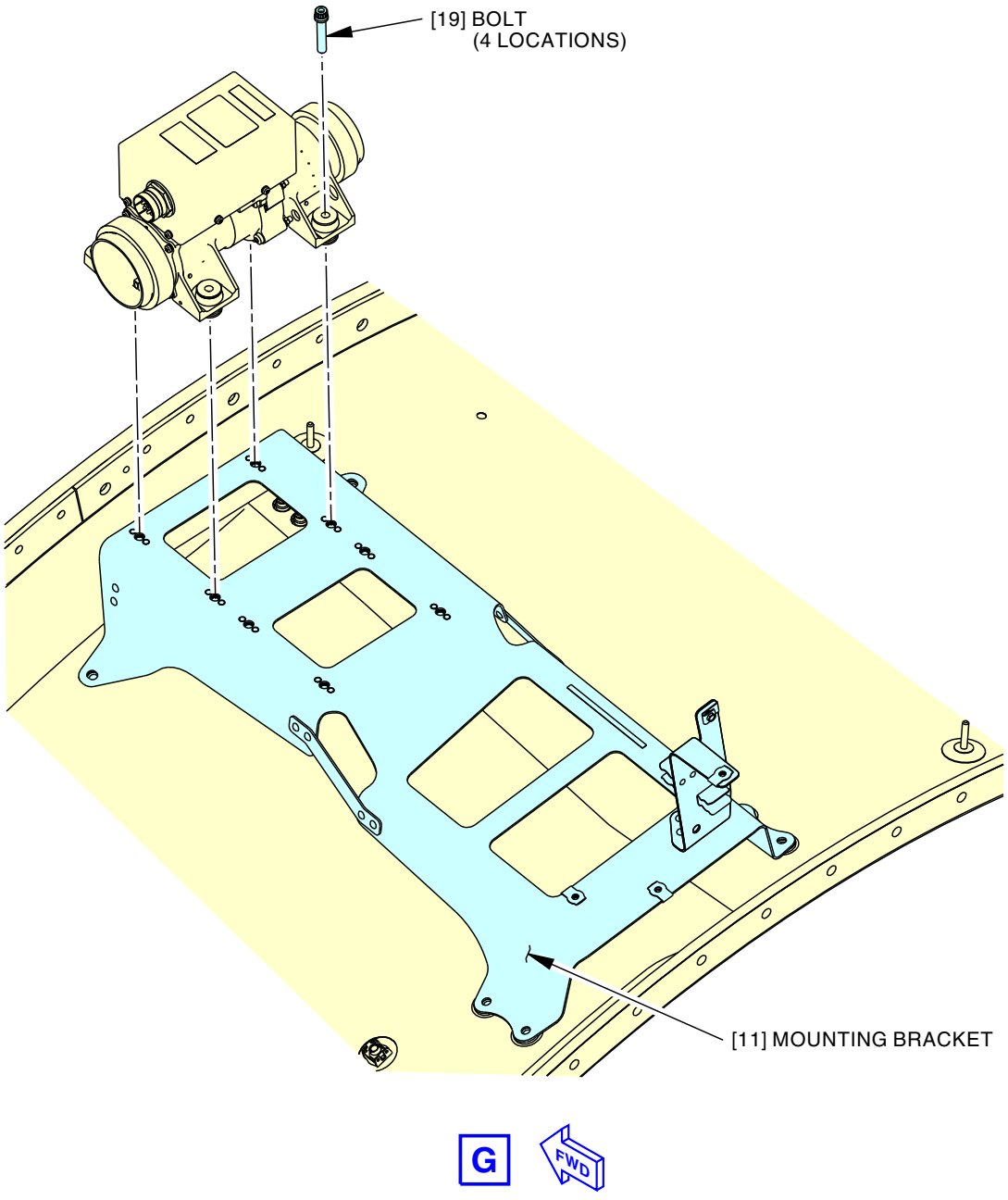
EEC Cooling Blowers Installation
Figure 401/73-21-10-990-801-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Cooling Blowers Installation
Figure 401/73-21-10-990-801-G00 (Sheet 4 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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EEC Cooling Blowers Installation
Figure 401/73-21-10-990-801-G00 (Sheet 5 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-10-400-801-G00

3. Electronic Engine Control (EEC) Cooling Blowers Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the Electronic Engine Control (EEC) cooling blowers.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-653	Platform - Engine and Strut Access
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	AFT/Channel B EEC cooling blower	75-24-08-01-030	SIA 001-005
2	FWD/Channel A EEC cooling blower	75-24-08-01-030	SIA 001-005

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Electronic Engine Control (EEC) Cooling Blowers Installation

SUBTASK 73-21-10-420-001-G00

(1) Install the FWD/Channel A EEC cooling blower [2].

(a) Install the FWD/Channel A EEC cooling blower [2] on the mounting bracket [11].

(b) Install the four bolts [19] to attach the FWD/Channel A EEC cooling blower [2] on the mounting bracket [11].

(c) Tighten the four bolts [19] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

(d) Connect the EEC cooling duct [14] to the FWD/Channel A EEC cooling blower [2]:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Install the clamp [18] in the correct position over the EEC cooling duct [14].

4) Connect the EEC cooling duct [14] to the FWD/Channel A EEC cooling blower [2].

5) Tighten the screw [17] on the clamp [18] to 20.9 in-lb (2.4 N·m) - 23.1 in-lb (2.6 N·m) to attach the EEC cooling duct [14] to the FWD/Channel A EEC cooling blower [2].

(e) Connect the EEC cooling duct [13] to the FWD/Channel A EEC cooling blower [2]:

1) Remove the protective covers from the openings.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Install the clamp [16] in the correct position over the EEC cooling duct [13].

4) Connect the EEC cooling duct [13] to the FWD/Channel A EEC cooling blower [2].

5) Tighten the screw [15] on the clamp [16] to 20.9 in-lb (2.4 N·m) - 23.1 in-lb (2.6 N·m) to attach the EEC cooling duct [13] to the FWD/Channel A EEC cooling blower [2].

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(f) Use the teflon-jawed pliers, STD-664 to connect the W2B harness electrical connector [12] to the FWD/Channel A EEC cooling blower [2] (TASK 70-00-01-910-803-G00):

1) Remove the protection cover from the W2B harness electrical connector [12] and the receptacle on the FWD/Channel A EEC cooling blower [2].

2) Connect the W2B harness electrical connector [12] to the FWD/Channel A EEC cooling blower [2].

3) Tighten the W2B harness electrical connector [12].

SUBTASK 73-21-10-420-002-G00

(2) Install the left AFT/Channel B EEC cooling blower [1].

(a) Install the AFT/Channel B EEC cooling blower [1] in the correct position on the mounting bracket [11].

(b) Install the four bolts [10] to attach the AFT/Channel B EEC cooling blower [1] on the mounting bracket [11].

(c) Tighten the four bolts [10] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

(d) Connect the EEC cooling duct [5] to the AFT/Channel B EEC cooling blower [1]:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Install the clamp [9] in the correct position on the AFT/Channel B EEC cooling blower [1].

4) Connect the EEC cooling duct [5] to the AFT/Channel B EEC cooling blower [1].

5) Tighten the screw [8] on the clamp [9] to 20.9 in-lb (2.4 N·m) - 23.1 in-lb (2.6 N·m) to attach the EEC cooling duct [5] to the AFT/Channel B EEC cooling blower [1].

(e) Connect the EEC cooling duct [4] to the AFT/Channel B EEC cooling blower [1]:

1) Remove the protective covers from the openings.

2) Make sure that the mating faces are clean and clear of unwanted materials.

3) Install the clamp [7] in the correct position over the EEC cooling duct [4].

4) Connect the EEC cooling duct [4] to the AFT/Channel B EEC cooling blower [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Tighten the screw [6] on the clamp [7] to 20.9 in-lb (2.4 N·m) - 23.1 in-lb (2.6 N·m) to attach the EEC cooling duct [4] to the AFT/Channel B EEC cooling blower [1].

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(f) Use the teflon-jawed pliers, STD-664 to connect the W2A harness electrical connector [3] to the AFT/Channel B EEC cooling blower [1] (TASK 70-00-01-910-803-G00):

1) Remove the protection cover from the W2A harness electrical connector [3] and the receptacle on the AFT/Channel B EEC cooling blower [1].

2) Connect the W2A harness electrical connector [3] to the AFT/Channel B EEC cooling blower [1].

3) Tighten the W2A harness electrical connector [3].

SUBTASK 73-21-10-100-001-G00

(3) Clean the work area and clear all tools used to do the task.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-10-080-001-G00

(1) Remove the engine and strut access platform, STD-653 from the work area.

SUBTASK 73-21-10-410-002-G00

(2) Close the left and right fan cowl panels (TASK 71-11-04-410-801-G00).

SUBTASK 73-21-10-910-002-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control (EEC) Cooling Blowers Installation Test

SUBTASK 73-21-10-710-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PRESSURE SUB-SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

(1) Pressure Sub-System and Sense Line Dry Out.

TASK 73-21-11-160-801-G00

2. Pressure Sub-System and Sense Line Dry Out

(Figure 201, Figure 202, and Figure 203)

A. General

(1) This task gives the instructions to remove accumulated moisture from the pressure sub-system sensing system.

(2) Over time and under certain operating conditions, moisture can accumulate inside the pressure sub system (PSS) sensor air manifolds and air tubes [compressor discharge pressure (PS3) and compressor bleed pressure (P3B) sense lines]. This accumulated moisture can lead to a PS3 and/or P3B sense line disagree fault and possible loss of thrust control, if that moisture were to freeze and disrupt the pressure measurement.

B. References

Reference	Title
71-00-00-700-808-G00	Test No. 32 - Engine Idle System Test (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (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-15157	Heat Gun - Thermogun
SPL-14895	Dryout Kit - EEC Part #: RC331931G01 Supplier: 62340 Part #: RC331931G02 Supplier: 62340 Part #: RC331931G03 Supplier: 62340 Part #: RC331931G04 Supplier: 62340
STD-858	Tag - DO NOT OPERATE
STD-1067	Dropper - Medicine
STD-3940	Air Source - Regulated, Dry Filtered, 0-150 psig

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Prepare for the Dry Out

SUBTASK 73-21-11-860-009-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-11-860-010-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-11-860-011-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Pressure Sub-System and Sense Line Dry Out

SUBTASK 73-21-11-160-003-G00

(1) If the ambient temperature is less than 65°F (18.3°C), do this step:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

IF A NON-VARIABLE HEAT GUN IS USED WHEN AMBIENT TEMPERATURE IS LESS THAN 65 F (18.3 C) DEGREES, IT CAN CAUSE DRY-OUT TO NOT BE COMPLETED. THIS CAN CAUSE DAMAGE.

(a) Use a heat gun, COM-15157 to heat the PS3 and P3B pressure ports for 4 minutes before you continue with the water removal.

NOTE: Refer to the table below to set the heat gun temperature (Table 201).

Table 201/73-21-11-993-802-G00 Heat Gun Temperature

Ambient Temperature	Maximum Heat Gun Setting
65 to 50°F (18.3 to 10.0°C)	250°F (121.1°C)
49 to 32°F (9.4 to 0.0°C)	300°F (148.9°C)
31 to 14°F (-0.5 to -10.0°C)	400°F (204.4°C)
13 to -4°F (-10.5 to -20.0°C)	500°F (260.0°C)
Less than -4°F (-20.0 °C)	Not recommended

SUBTASK 73-21-11-020-001-G00

WARNING

USE EYE PROTECTION WHEN YOU CUT MATERIAL OR PARTS. THE PARTICLES CAN CAUSE DAMAGE TO YOUR EYES.

CAUTION

KEEP THE PS3 SENSE LINE AND P3B SENSE LINE AND OPEN PSS UNIT PORTS AWAY FROM CONTAMINATION. IF NOT, OUTSIDE PARTICLES AND SMALL OBJECTS CAN CAUSE DAMAGE TO THE EQUIPMENT.

(2) Disconnect the air tubes from the PSS [1] as follows:

(a) Cut and remove the safety wire [5] from the coupling nut (P3B) [6] and coupling nut (PS3) [7].

CAUTION

USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE COUPLING NUTS. USE ONE TO HOLD THE FITTINGS, AND THE SECOND WRENCH TO LOOSEN OR TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES CORRECTLY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

(b) Disconnect the coupling nut (P3B) [6] and coupling nut (PS3) [7] from the PSS [1].

(c) Install the protective caps on the air tube openings.

SUBTASK 73-21-11-160-004-G00

CAUTION

REMOVE AS MUCH STANDING WATER AS POSSIBLE BEFORE YOU START THE VACUUM PUMP. IF YOU DO NOT REMOVE THE STANDING WATER IT WILL REDUCE THE CAPABILITY OF THE VACUUM PUMP AND CAN CAUSE DAMAGE TO THE VACUUM PUMP.

(3) Do a PS3 and P3B transducer visual water removal:

(a) Insert a clean disposable medicine dropper, STD-1067, (or equivalent) into the opening of the PS3 transducer port on the PSS.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Remove the visible standing water.

1) Make sure that you remove as much of the standing water as possible.

(c) Examine the medicine dropper, STD-1067, for dirt or contamination.

1) If it has dirt or contamination, discard the medicine dropper, STD-1067.

NOTE: You can use a clean medicine dropper, STD-1067, again.

(d) Insert a clean disposable medicine dropper, STD-1067, (or equivalent) into the opening of the P3B transducer port on the PSS.

(e) Remove the visible standing water.

1) Make sure that you remove as much of the standing water as possible.

(f) Examine the medicine dropper, STD-1067, for dirt or contamination.

1) If it has dirt or contamination, discard the medicine dropper, STD-1067.

NOTE: You can use a clean medicine dropper, STD-1067, again.

SUBTASK 73-21-11-160-005-G00

CAUTION

ALWAYS FOLLOW THE MANUFACTURER'S INSTRUCTIONS WHEN YOU OPERATE THE EQUIPMENT. IF YOU DO NOT FOLLOW THE MANUFACTURER'S INSTRUCTIONS, DAMAGE TO THE EQUIPMENT CAN OCCUR.

CAUTION

MAKE SURE THAT YOU CHANGE THE OIL IN THE VACUUM PUMP AFTER 50 OPERATIONS. IF YOU DO NOT, IT CAN DECREASE THE VACUUM PUMP PERFORMANCE.

(4) Use the EEC dryout kit, SPL-14895, to do a vacuum dry-out procedure as follows (Figure 202):

(a) Connect one end of teflon-6 SST braided teflon hose assembly to the P3B pressure port on the PSS unit.

(b) Connect one end of other teflon-6 SST braided teflon hose assembly to the PS3 pressure port on the PSS unit.

(c) Connect the two loose ends of the teflon-6 SST braided teflon hose assemblies to the two horizontal ports on the J6T union tee SS fitting.

(d) Connect the vacuum hose to the T-end of the J6T union tee SS fitting.

(e) Tighten all fittings to 270 in-lb (30.5 N·m) - 300 in-lb (33.9 N·m).

(f) If the ambient temperature is less than 65°F (18.3°C), do these steps:

CAUTION

IF A NON-VARIABLE HEAT GUN IS USED WHEN AMBIENT TEMPERATURE IS LESS THAN 65 F (18.3 C) DEGREES, IT CAN CAUSE DRY-OUT TO NOT BE COMPLETED. THIS CAN CAUSE DAMAGE.

1) Use a heat gun, COM-15157 to heat the PS3 and P3B pressure ports for 4 minutes before you start the vacuum dry-out procedure.

NOTE: Refer to this table to set the heat gun temperature (Table 201).

2) Apply heat from the heat gun, switching from both the PS3 and P3B pressure ports until the procedure is completed

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION DO NOT LET CONTAMINATION GO INTO THE VACUUM PUMP RELIEF PORT. IF THE PRESSURE INDICATION IS NOT BELOW THE SPECIFIED THRESHOLD, THE PROCEDURE COULD BE UNSATISFACTORY.

(g) Do the vacuum procedure as follows:

1) Turn the vacuum relief valve and blank-off valve handles to the open position (vertical position).

2) Start the vacuum pump and let the pump motor get to operating speed.

CAUTION DO NOT CLOSE THE BLANK-OFF VALVE WHILE YOU REMOVE MOISTURE FROM THE PSS UNIT. IF THE BLANK-OFF VALVE IS CLOSED, MOISTURE WILL NOT BE REMOVED. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

3) Turn the valve handle of the vacuum relief valve to the horizontal position to close it.

4) Make sure that the vacuum pump is pulling adequate vacuum on the PS3 and P3B manifolds

a) If the airport elevation is less than 5000 ft (1524 m), make sure that the vacuum measurement is in the green-colored region on the vacuum pressure indicator.

b) If the airport elevation is more than 5000 ft (1524 m), find the correct vacuum pressure measurement (Figure 203).

NOTE: The vacuum achieved needs to be corrected based on the pressure altitude at which the pump is used.

c) If the vacuum measurement is not correct, do these steps:

<1> Do a check for leaks in the vacuum hose and connections.

<2> Make sure that the pump valves are in the correct position.

5) Operate the vacuum pump for a minimum of 20 minutes.

6) After 20 minutes of operation, open the vacuum relief valve to release the pressure.

7) Turn off the vacuum pump.

8) Remove the vacuum hose end adapter from the PS3 and P3B pressure ports.

(h) Blow out the PS3 sense line and P3B sense line as follows:

1) Remove the protective caps from the air tubes (PS3 and P3B).

2) Use approximately 100 psig (689 kPa) (not to exceed 200 psig (1379 kPa)) to dry the air tubes.

a) Use the regulated air source, STD-3940 to blow air into the air tubes for a minimum of 3 minutes.

NOTE: For the best results, compressed nitrogen is recommended

b) Continue until you see no moisture coming out of the sense line weep hole, located at the 6:00 o'clock position, in the aft location of the fan compartment.

3) Do a visual inspection of the weep holes on the air tubes to make sure that they are clear of all blockage.

(i) Connect the air tubes to the PSS [1] as follows:

1) Make sure that the mating surfaces are clean and clear of unwanted materials.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Lubricate the threads of the coupling nut (P3B) [6] and coupling nut (PS3) [7] with the oil, D00599 [CP2442].

3) Connect the coupling nut (P3B) [6] and coupling nut (PS3) [7] to the PSS [1].

CAUTION

USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE COUPLING NUTS. USE ONE TO HOLD THE FITTINGS, AND THE SECOND WRENCH TO LOOSEN OR TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES CORRECTLY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

4) Tighten the coupling nut (P3B) [6] and coupling nut (PS3) [7] as follows:

a) Tighten the two coupling nuts to 270 in-lb (30.5 N·m) - 300 in-lb (33.9 N·m).

b) Loosen the two coupling nuts until you can turn them with your fingers.

c) Tighten the two coupling nuts again to 270 in-lb (30.5 N·m) - 300 in-lb (33.9 N·m).

d) Tighten the two coupling nuts for the third time to 270 in-lb (30.5 N·m) - 300 in-lb (33.9 N·m).

e) Make sure that the two coupling nuts are fully seated.

f) If the coupling nut(s) are not fully seated, do the steps above again to tighten the coupling nut(s).

5) Install the safety wire [5] (safety wire, G02345 [CP8001]) on the coupling nut (P3B) [6] and coupling nut (PS3) [7].

(j) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-11-860-012-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-11-860-013-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-11-860-014-G00

(3) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

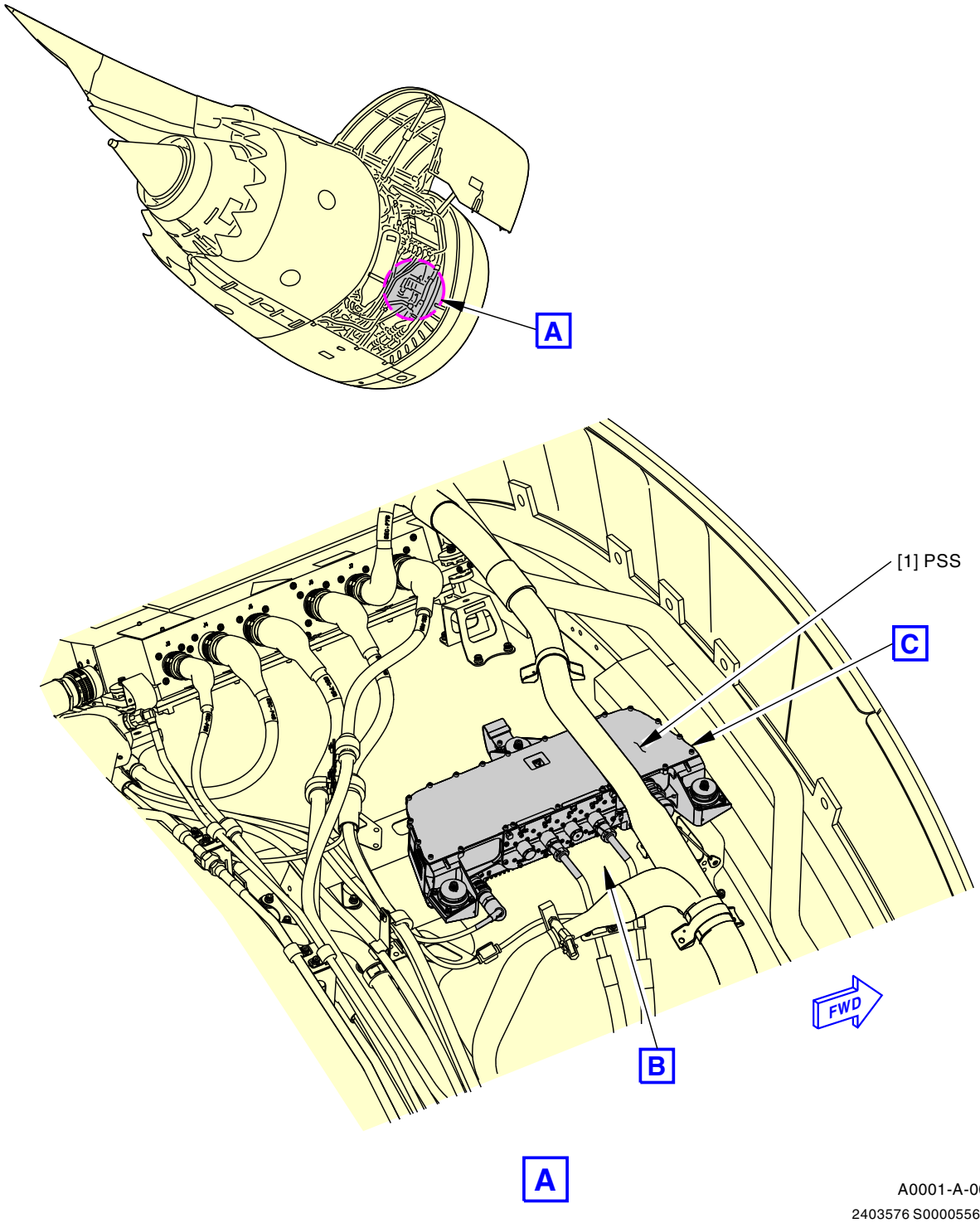
J. Pressure Sub-System Test

SUBTASK 73-21-11-720-001-G00

(1) Do this task: Test No. 32 - Engine Idle System Test, TASK 71-00-00-700-808-G00.

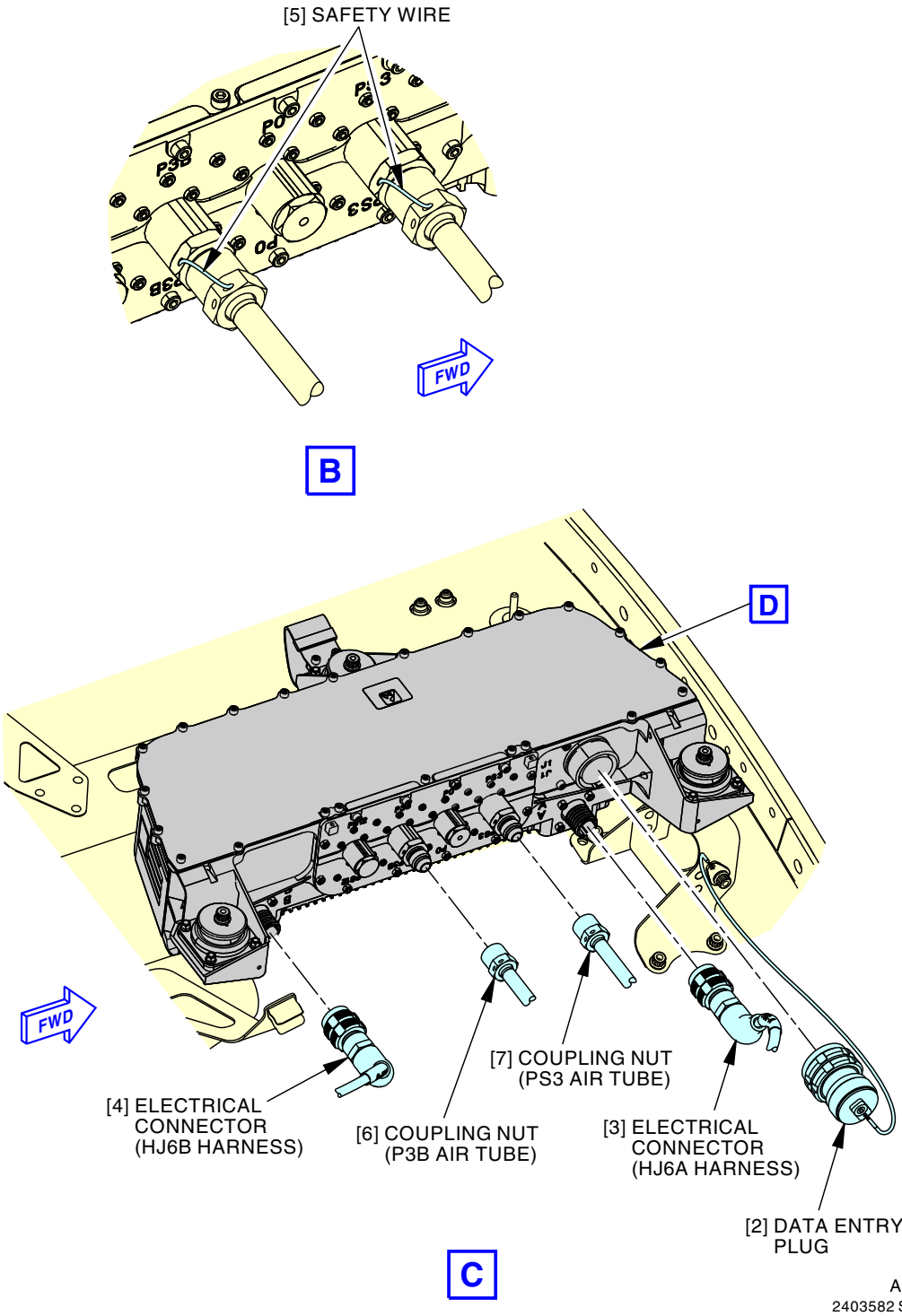
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



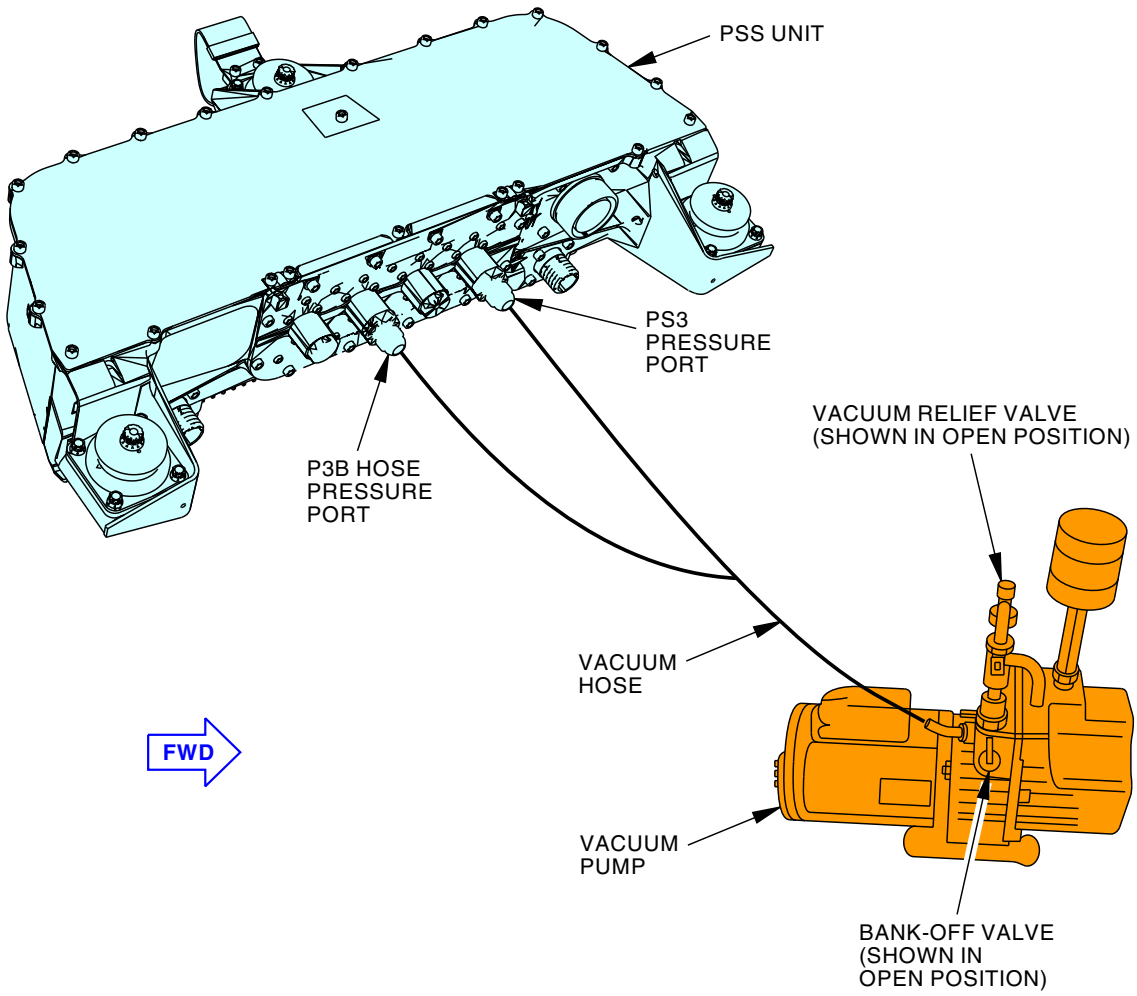
Pressure Sub-System Installation
Figure 201/73-21-11-990-803-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Pressure Sub-System Installation
Figure 201/73-21-11-990-803-G00 (Sheet 2 of 2)

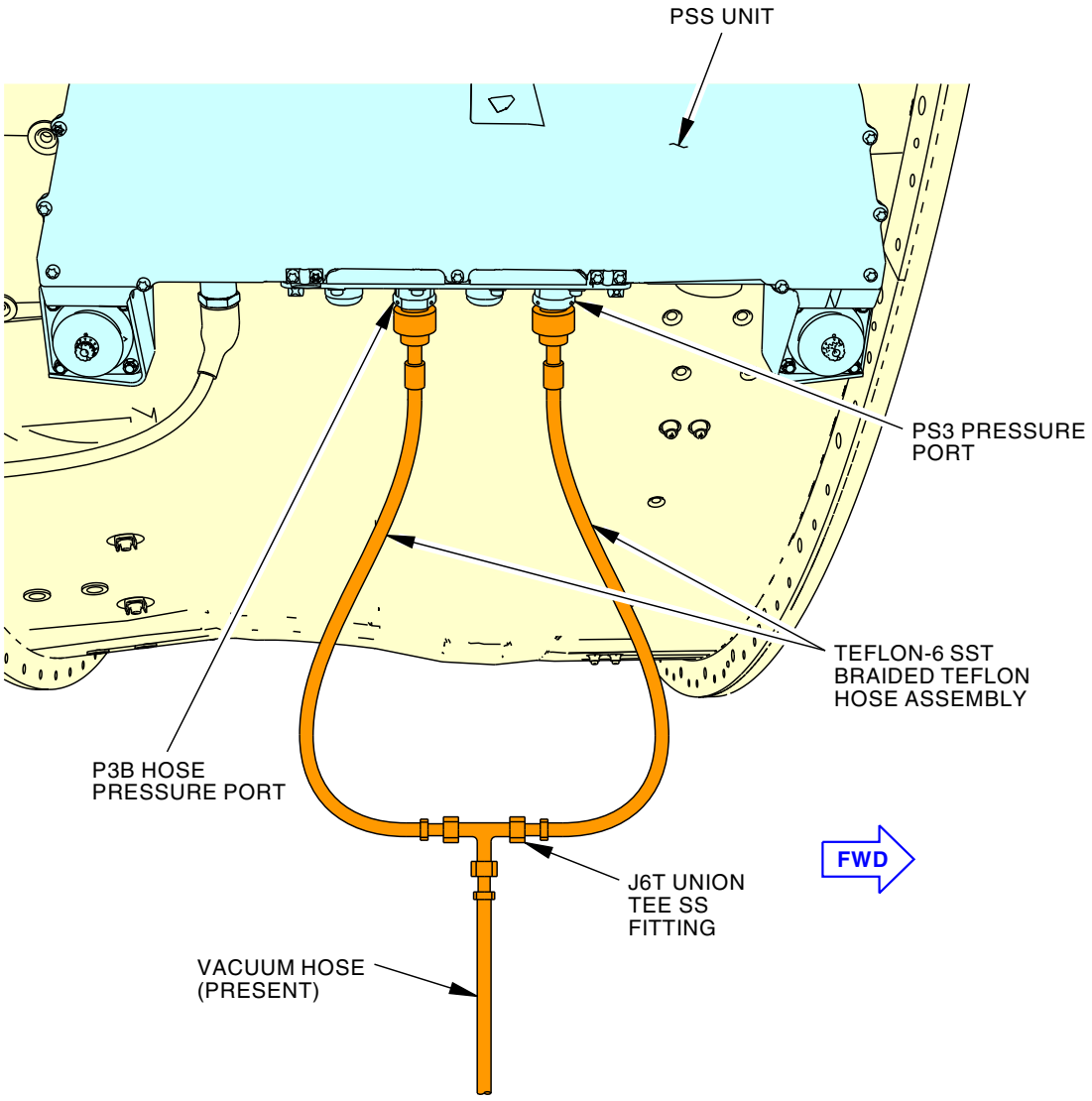
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5054808-00
2830778 S0000656733_V1

Vacuum Pump Tool Connection
Figure 202/73-21-11-990-804-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



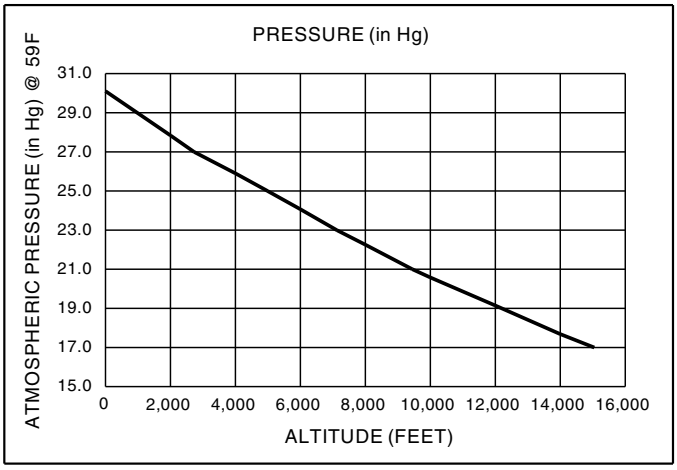
5054809-00

2830782 S0000656734_V1

Vacuum Pump Tool Connection
Figure 202/73-21-11-990-804-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FEET	PRESSURE (in Hg)	PSIA
-5,000	37.5	17.6
-4,000	34.5	17.0
-3,000	33.3	16.4
-2,000	32.1	15.8
-1,000	31.0	15.2
-500	30.5	15.0
0	29.9	14.7
500	29.4	14.4
1,000	28.9	14.2
1,500	28.3	13.9
2,000	27.8	13.7
2,500	27.3	13.4
3,000	26.8	13.2
3,500	26.3	12.9
4,000	25.8	12.7
4,500	25.4	12.5
5,000	24.9	12.2
6,000	24.0	11.8
7,000	23.1	11.3
8,000	22.2	10.9
9,000	21.4	10.5
10,000	20.6	10.1
15,000	16.9	8.3



5054810-00

2830776 S0000656735_V1

Airport Elevation Vacuum Gauge Corrections
Figure 203/73-21-11-990-805-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PRESSURE SUB-SYSTEM - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Pressure Sub-System Removal

(2) Pressure Sub-System Installation.

TASK 73-21-11-000-801-G00

2. Pressure Sub-System Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the Pressure Sub-System (PSS).

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-21-05-970-803-G00	Electronic Engine Control (EEC) Data Download (On-Wing)(Selection) (P/B 201)
73-21-09-000-801-G00	Data Entry Plug Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-11-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-11-860-002-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-11-010-001-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Pressure Sub-System Removal

SUBTASK 73-21-11-010-002-G00

(1) Remove the PSS [1] as follows:

NOTE: Do an EEC NVM and CEOD download if the removed PSS will be sent to the vendor for investigation. Refer to this task: Electronic Engine Control (EEC) Data Download (On-Wing)(Selection), TASK 73-21-05-970-803-G00.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(a) Disconnect the data entry plug [2] from the PSS [1] (TASK 73-21-09-000-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(b) Use the teflon-jawed pliers, STD-664, to disconnect the electrical connector (HJ6A harness) [3] and electrical connector (HJ6B harness) [4] from the PSS [1] as follows (TASK 70-00-01-910-803-G00):

1) Disconnect the electrical connector (HJ6A harness) [3] and electrical connector (HJ6B harness) [4] from the receptacles of the PSS [1].

2) Install the protective covers on the electrical connector (HJ6A harness) [3], electrical connector (HJ6B harness) [4], and receptacles of the PSS [1].

(c) Disconnect the air tubes from the PSS [1] as follows:

1) Cut and remove the safety wire [5] from the coupling nut (P3B) [6] and coupling nut (PS3) [7].

CAUTION USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE COUPLING NUTS. USE ONE TO HOLD THE FITTINGS, AND THE SECOND WRENCH TO LOOSEN OR TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES CORRECTLY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

2) Disconnect the coupling nut (P3B) [6] and coupling nut (PS3) [7] from the PSS [1].

3) Install the protective caps on the air tube openings.

(d) Remove the PSS [1] as follows:

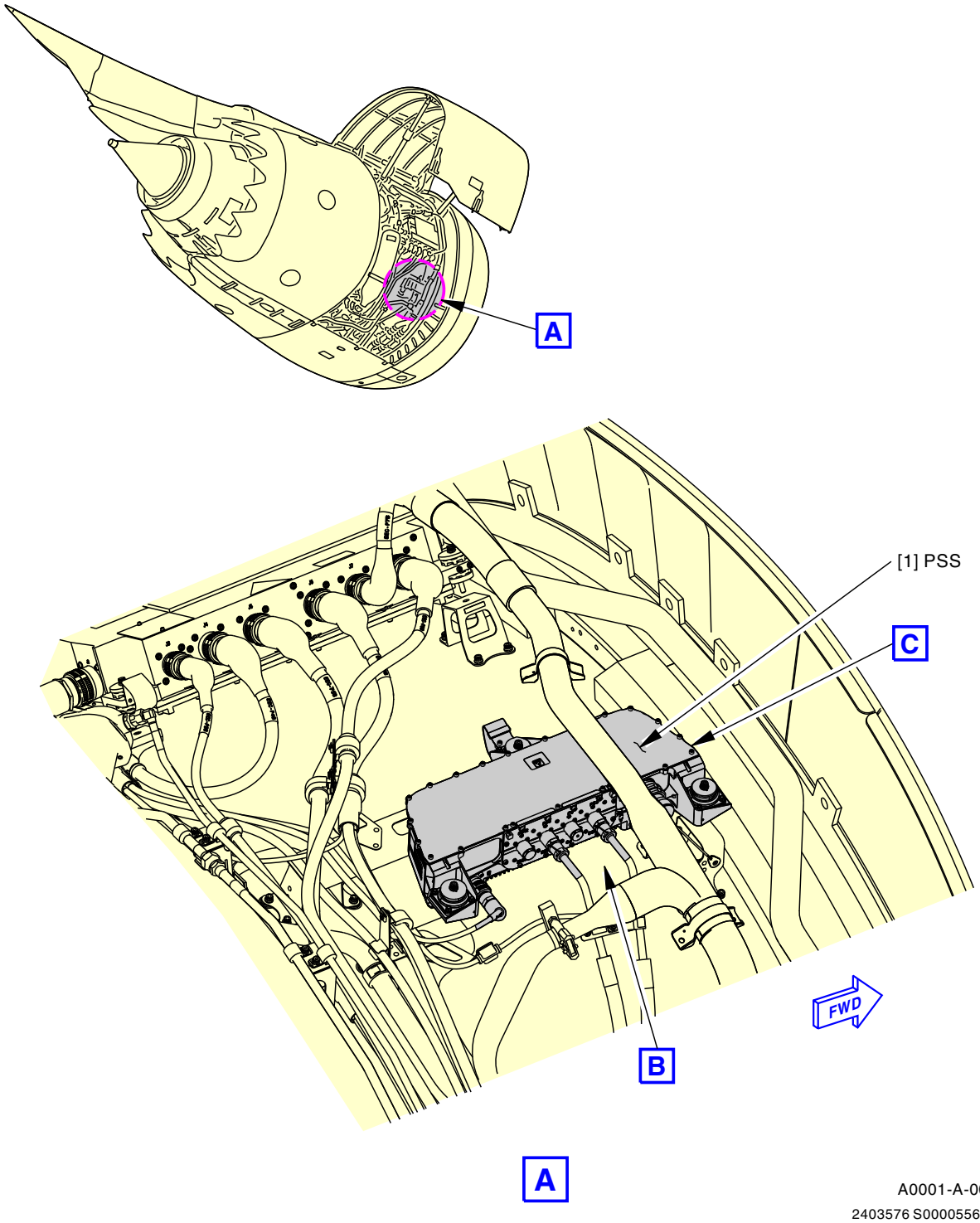
1) Remove the three bolts [8] from the mounting bracket [9].

2) Remove the PSS [1] from the mounting bracket [9].

3) Install the protective covers on the openings.

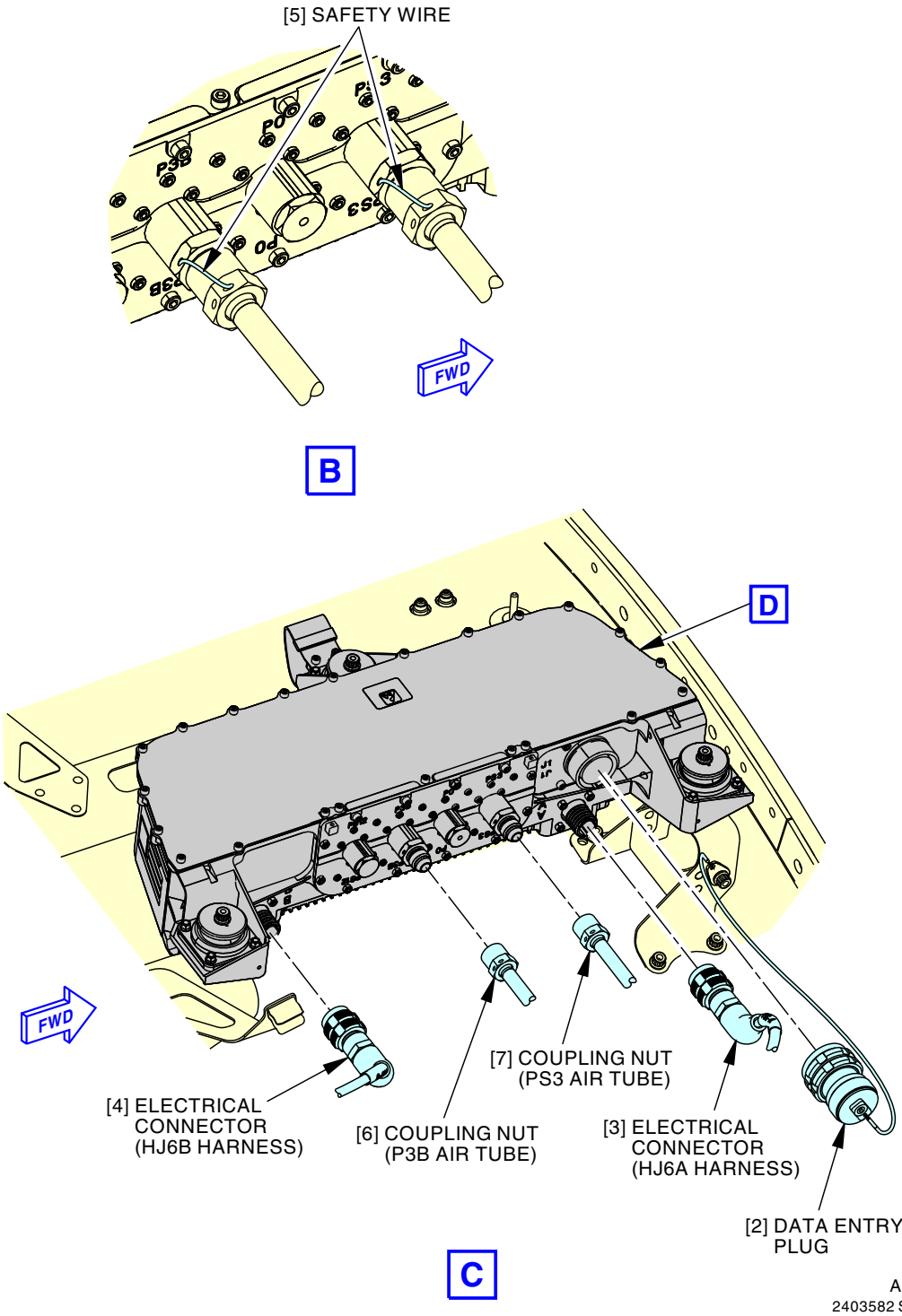
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Pressure Sub-System Installation
Figure 401/73-21-11-990-801-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Pressure Sub-System Installation
Figure 401/73-21-11-990-801-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-11-400-801-G00

3. Pressure Sub-System Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the pressure sub-system.

(2) The pressure sub-system is referred to as the PSS.

(3) You must do the tests that are listed in the power plant test reference table after you install the PSS.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-09-400-801-G00	Data Entry Plug Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE
STD-3940	Air Source - Regulated, Dry Filtered, 0-150 psig

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Pressure Sub-System Installation

SUBTASK 73-21-11-420-001-G00

(1) Install the PSS [1] as follows:

(a) Remove the protective covers from the openings.

(b) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Put the PSS [1] on the mounting bracket [9].

(d) Lubricate the threads of the three bolts [8] with graphite mineral vaseline, D00601 [CP2101].

(e) Install the three bolts [8] that attach the PSS [1] to the mounting bracket [9].

(f) Tighten the bolts [8] to 109.25 in-lb (12.34 N·m) - 120.75 in-lb (13.64 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-11-160-001-G00

(2) Clean the coupling nut (PS3) [7] line and coupling nut (P3B) [6] line as follows:

(a) Remove the protective caps from the air tubes (PS3 and P3B).

(b) Use approximately 100 psig (689 kPa) (not to exceed 200 psig (1379 kPa)) to dry the air tubes (PS3 and P3B).

1) Use the regulated air source, STD-3940 to blow air into the air tubes for a minimum of 3 minutes.

2) Continue until you see no moisture exiting the sense line weep hole located at the 6:00 o'clock position in the aft location of the fan compartment.

(c) Do a visual inspection of the weep holes on the air tubes to make sure that they are clear of all blockage.

SUBTASK 73-21-11-420-002-G00

(3) Connect the air tubes to the PSS [1] as follows:

(a) Make sure that the mating faces are clean and clear of unwanted materials.

(b) Lubricate the threads of the coupling nut (P3B) [6] and coupling nut (PS3) [7] with the oil, D00599 [CP2442].

(c) Connect the coupling nut (P3B) [6] and coupling nut (PS3) [7] to the PSS [1].

(d) Tighten the coupling nut (P3B) [6] and coupling nut (PS3) [7] as follows:

1) Tighten the two coupling nuts to 270 in-lb (31 N·m) - 300 in-lb (34 N·m).

CAUTION

USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE COUPLING NUTS. USE ONE TO HOLD THE FITTINGS, AND THE SECOND WRENCH TO LOOSEN OR TIGHTEN THE COUPLING NUT. IF YOU DO NOT USE TWO WRENCHES CORRECTLY, DAMAGE TO THE EQUIPMENT CAN OCCUR.

2) Loosen the two coupling nuts until you can turn them with your fingers.

3) Tighten the two coupling nuts again to 270 in-lb (31 N·m) - 300 in-lb (34 N·m).

4) Tighten the two coupling nuts for the third time to 270 in-lb (31 N·m) - 300 in-lb (34 N·m).

5) Make sure that the two coupling nuts are fully seated.

6) If the coupling nut(s) are not fully seated, do the steps above again to tighten the coupling nut(s).

(e) Install the safety wire [5] (safety wire, G02345 [CP8001]) on the coupling nut (P3B) [6] and coupling nut (PS3) [7].

SUBTASK 73-21-11-420-003-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(4) Use the teflon-jawed pliers, STD-664 to connect the electrical connector (HJ6A harness) [3] and electrical connector (HJ6B harness) [4] to the PSS [1] as follows (TASK 70-00-01-910-803-G00):

(a) Remove the protective covers from the electrical connector (HJ6A harness) [3], electrical connector (HJ6B harness) [4], and receptacles of the PSS [1].

(b) Connect the electrical connector (HJ6A harness) [3] and electrical connector (HJ6B harness) [4] to the PSS [1].

(c) Tighten the electrical connector (HJ6A harness) [3] and electrical connector (HJ6B harness) [4].

SUBTASK 73-21-11-420-004-G00

(5) Connect the data entry plug [2] to the PSS [1] (TASK 73-21-09-400-801-G00).

SUBTASK 73-21-11-160-002-G00

(6) Clean the work area and clear the tools and other items.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-11-860-003-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-11-860-004-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-11-410-002-G00

(3) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

I. Pressure Sub-System Installation Test

SUBTASK 73-21-11-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

PRESSURE SUB-SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Pressure Sub-System Inspection

TASK 73-21-11-210-801-G00

2. Pressure Sub-System Inspection

(Figure 601)

A. General

(1) This task provides the instructions to inspect the Pressure Sub-System (PSS).

(2) The PSS is located on the right side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-11-000-801-G00	Pressure Sub-System Removal (P/B 401)
73-21-11-400-801-G00	Pressure Sub-System Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-11-860-005-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-11-860-006-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-11-010-003-G00

(3) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Pressure Sub-System Inspection

SUBTASK 73-21-11-210-001-G00

(1) Inspect the Pressure Sub-System (PSS):

(a) Make sure that the PSS is not loose.

1) If the PSS is loose, tighten the bolts that attach the PSS to the mount brackets (Pressure Sub-System Installation, TASK 73-21-11-400-801-G00).

(b) Make sure that the pressure sense hose fittings are not loose.

1) If a fitting is loose, tighten the fitting (Pressure Sub-System Installation, TASK 73-21-11-400-801-G00).

2) Inspect the P3B and PS3 tube-hose manifolds for general condition and security.

(c) Look for cracks in the PSS housing.

1) If you see cracks, replace the PSS (Pressure Sub-System Removal, TASK 73-21-11-000-801-G00 and Pressure Sub-System Installation, TASK 73-21-11-400-801-G00).

(d) Make sure that the electrical connectors are not loose.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-11-410-003-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-21-11-860-007-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-11-860-008-G00

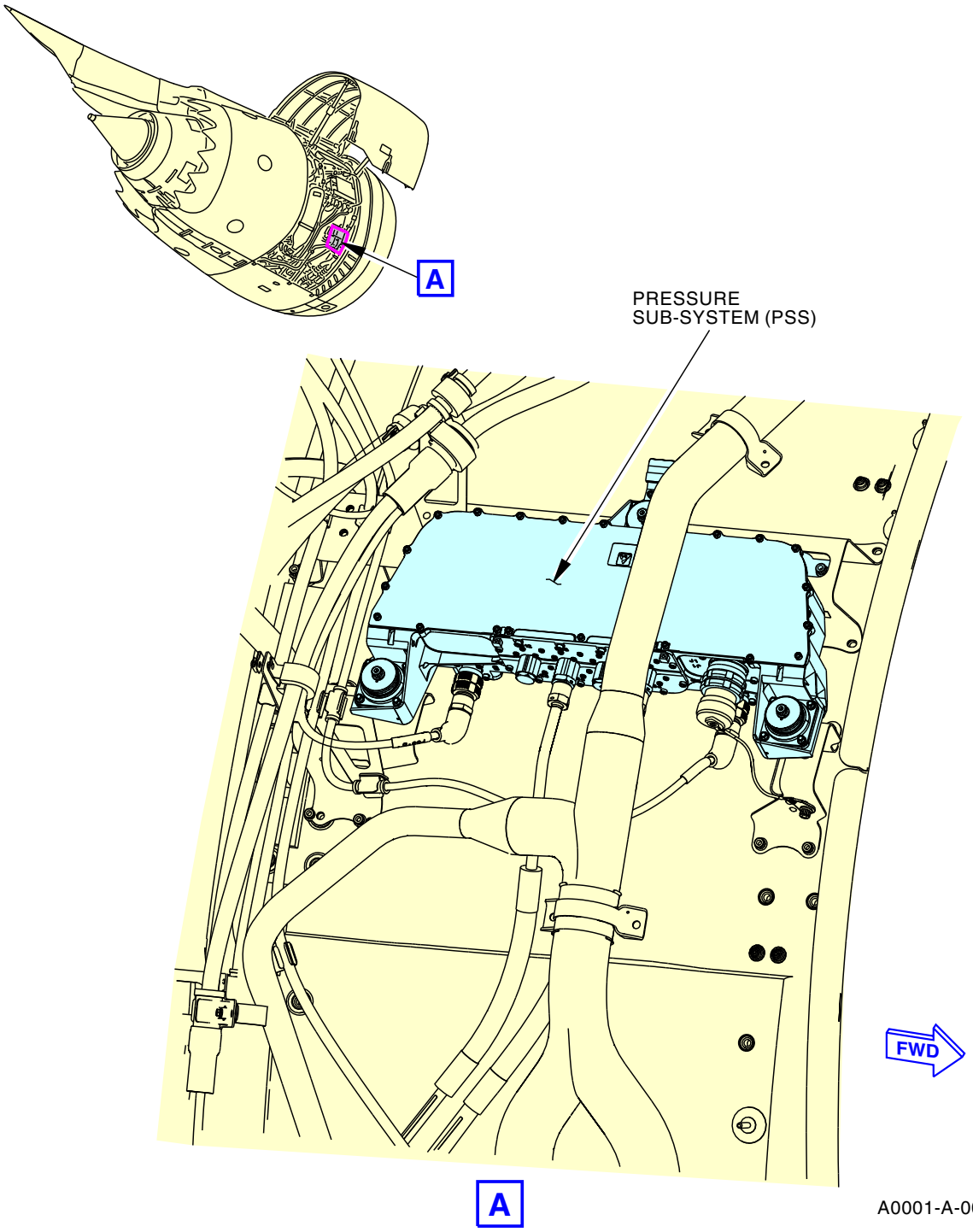
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Pressure Sub-System Inspection
Figure 601/73-21-11-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE CONTROL MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Engine Control Module Removal

(2) Engine Control Module Installation.

TASK 73-21-12-000-801-G00

2. Engine Control Module Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the engine control module (P5-68).

(2) The engine control module (P5-68) is on the P5 Aft Overhead Panel in the flight compartment.

B. References

Reference	Title
20-40-12-000-802	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

Zone	Area
211	Flight Compartment - Left

D. Engine Control Module Removal

SUBTASK 73-21-12-860-001-G00

(1) Do these steps:

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
F	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-12-910-001-G00

CAUTION

DO NOT TOUCH THE UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE UNIT.

(2) Do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-40-12-000-802.

SUBTASK 73-21-12-020-001-G00

(3) Do these steps to remove the engine control module [1]:

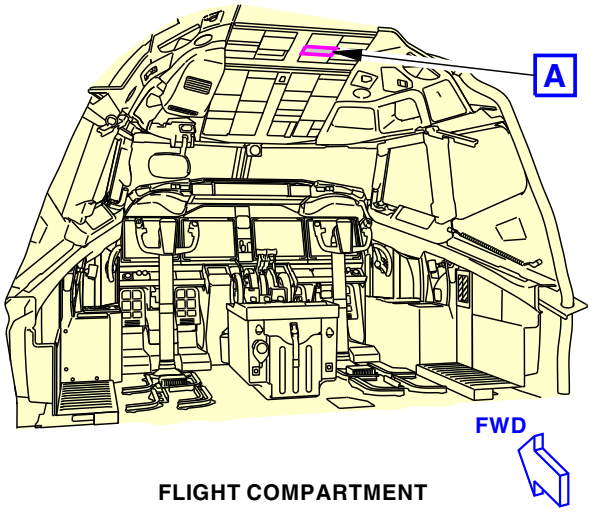
(a) Loosen the four quarter-turn fasteners on the front of the module.

(b) Remove the module from the P5 Aft Overhead Panel.

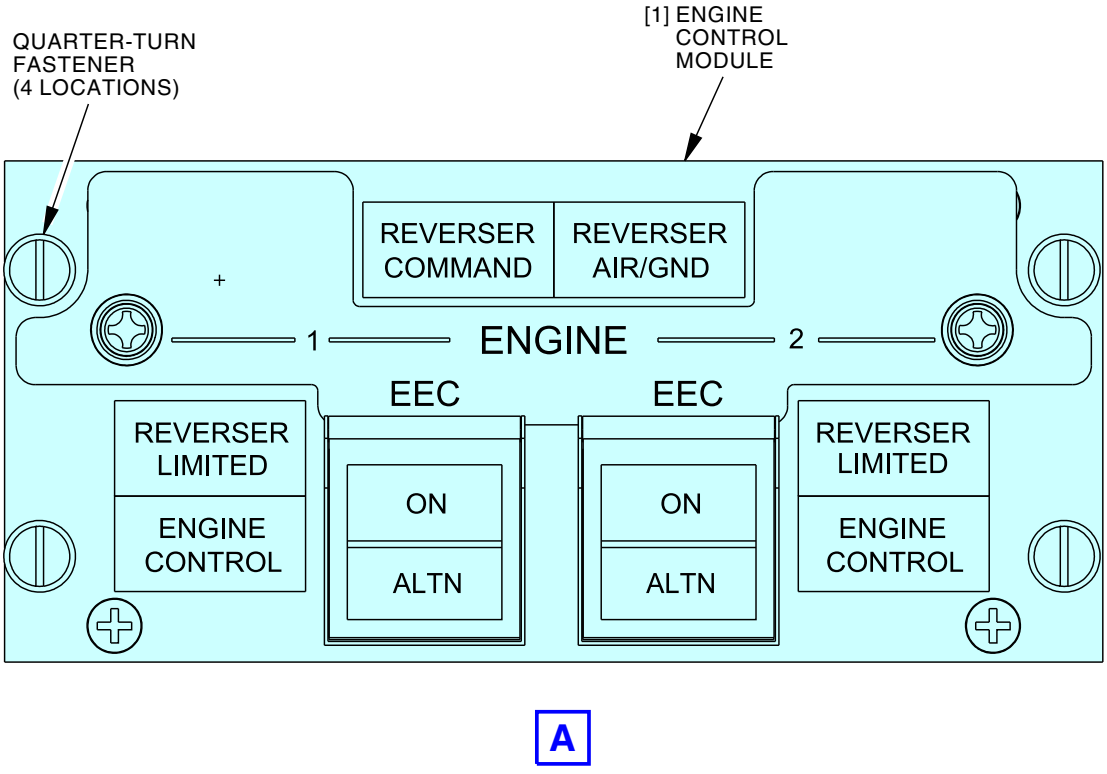
(c) Remove the two electrical connectors from the rear of the module.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



FLIGHT COMPARTMENT



2828679 S0000655708_V1

Engine Control Module Installation
Figure 401/73-21-12-990-801-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-12-400-801-G00

3. Engine Control Module Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the engine control module (P5-68).

(2) The engine control module (P5-68) is on the P5 Aft Overhead Panel in the flight compartment.

B. References

Reference	Title
20-40-12-400-802	ESDS Handling for Metal Encased Unit Installation (P/B 201)
71-00-00-700-809-G00	Test No. 33 - Lamp Check Out Special Functions Test (P/B 501)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Engine control module	73-21-12-01-050	SIA ALL

D. Location Zones

Zone	Area
211	Flight Compartment - Left

E. Engine Control Module Installation

SUBTASK 73-21-12-910-002-G00

CAUTION

DO NOT TOUCH THE UNIT BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE UNIT.

(1) Do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-40-12-400-802.

SUBTASK 73-21-12-420-001-G00

(2) Do these steps to install the engine control module [1]:

(a) Connect the two electrical connectors at the rear of the module.

(b) Install the module into the P5 Aft Overhead Panel.

(c) Tighten the four quarter-turn fasteners on the front of the module.

SUBTASK 73-21-12-860-002-G00

(3) Do these steps:

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
F	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F. Engine Control Module Installation Test

SUBTASK 73-21-12-710-001-G00

(1) For each EEC, do this task: Test No. 33 - Lamp Check Out Special Functions Test, TASK 71-00-00-700-809-G00.

SUBTASK 73-21-12-710-002-G00

(2) Do these steps to examine the EEC ON/ALTN switch:

(a) Do this task to supply power to both ENG 1 and ENG 2 EECs: EEC Maintenance Power Selection, TASK 73-21-00-800-801-G00.

(b) On the engine control module, put both Engine 1 and Engine 2 EEC ON switches to the ON position.

(c) Make sure that both EEC ON lights (white) come on.

(d) Push the Engine 1 EEC ON switch so that ON goes off.

(e) Make sure that the Engine 1 amber ALTN light comes on.

(f) Push the Engine 1 EEC ON switch so that the ON shows.

(g) Make sure that the Engine 1 amber ALTN light goes off.

(h) Push the Engine 2 EEC ON switch so that ON goes off.

(i) Make sure that the Engine 2 amber ALTN light comes on.

(j) Push the Engine 2 EEC ON switch so that the ON shows.

(k) Make sure that the Engine 2 amber ALTN light goes off.

(l) Remove power to both ENG 1 and ENG 2 EECs to put the airplane back to the usual condition (TASK 73-21-00-800-801-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T25 SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) T25 sensor removal

(2) T25 sensor installation.

TASK 73-21-63-000-801-G00

2. T25 Sensor Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the T25 Sensor.

(2) The T25 sensor is installed at the 3:00 o'clock position on the fan hub frame.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
72-23-04-000-801-G00	Fan Frame Module Segment Shrouds Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-63-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-63-860-002-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-63-010-001-G00

(3) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

WARNING

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

CAUTION

IF FAN COWLS ARE INSTALLED, MAKE SURE THAT LEFT AND RIGHT FAN COWLS ARE IN THE FULL OPEN POSITION. MAKE SURE THAT THE SPRING DOOR OPENING-SYSTEM (SDOS) AND HOLD OPEN RODS (HOR) ARE LOCKED IN THEIR POSITION. IF YOU DO NOT, STRUCTURAL DAMAGE TO THE FAN COWL AND THRUST REVERSER CAN OCCUR.

(b) Open both fan cowl panels (TASK 71-11-04-010-801-G00).

NOTE: Because the center line of the thrust reversers is off 6:00 o'clock position, both fan cowl panels must be opened to prevent damaging the fan cowl panel if either thrust reverser needs to be opened.

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable right thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 73-21-63-010-002-G00

(4) Remove the segment shroud 2 (TASK 72-23-04-000-801-G00).

G. T25 Sensor Removal

SUBTASK 73-21-63-030-001-G00

(1) Remove the T25 sensor [3]:

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(a) Use the teflon-jawed pliers, STD-664 to disconnect the channel B electrical connector [1] and the channel A electrical connector [5] from the T25 sensor [3] (TASK 70-00-01-910-803-G00).

1) Disconnect the channel B electrical connector [1] and the channel A electrical connector [5] from the T25 sensor [3].

2) Install the protective covers on the T25 sensor [3] and its receptacles and on the channel B electrical connector [1] and the channel A electrical connector [5].

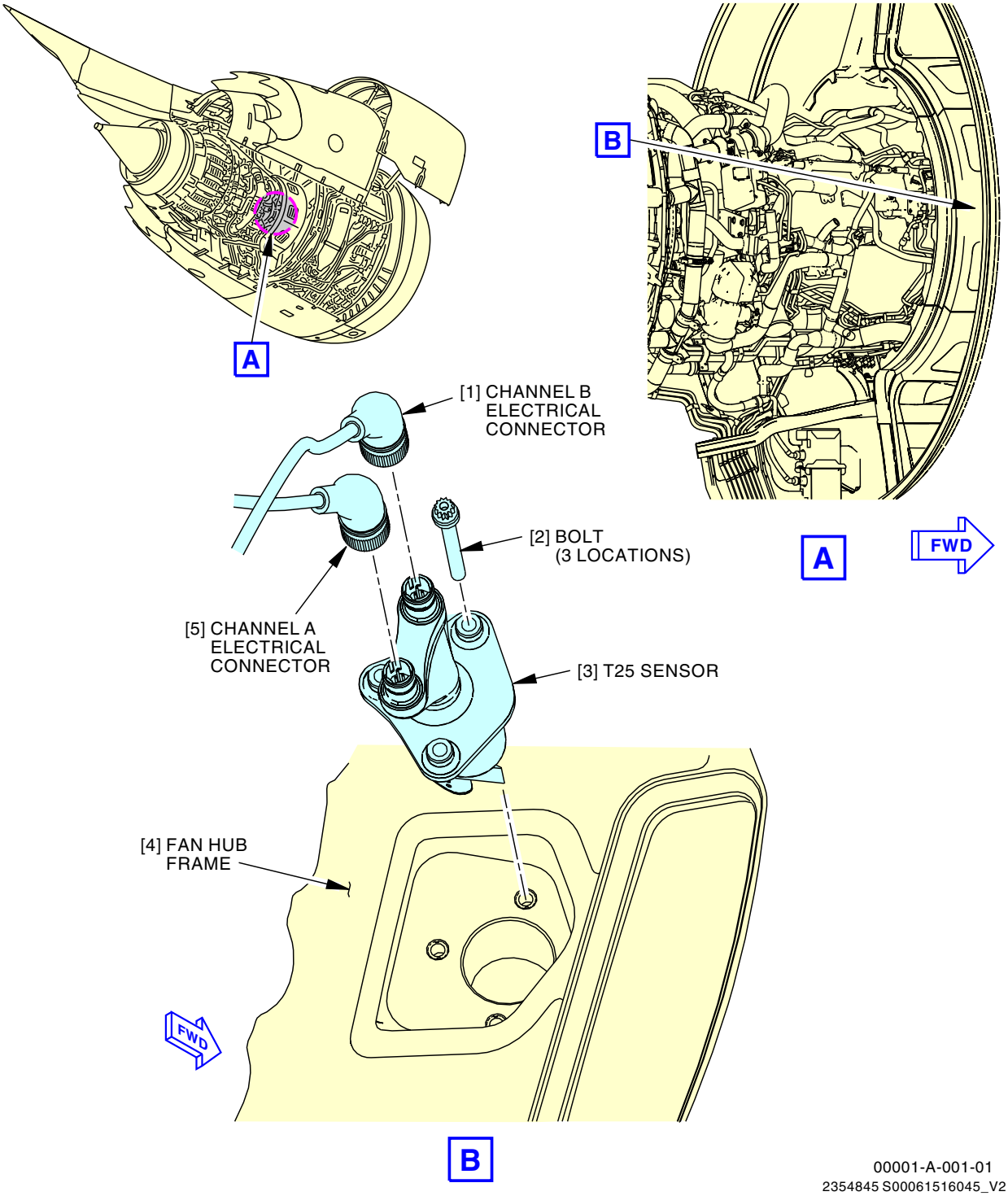
(b) Remove the three bolts [2] that attach the T25 sensor [3] to the fan hub frame [4].

1) Remove the T25 sensor [3].

(c) Install the protective covers on the T25 sensor [3] and the open port on the fan hub frame [4].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T25 Sensor Installation
Figure 401/73-21-63-990-801-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-63-400-801-G00

3. T25 Sensor Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the T25 Sensor.

(2) You must do the tests that are listed in the power plant test reference table after you install the T25 sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-23-04-400-801-G00	Fan Frame Module Segment Shrouds Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	T25 sensor	73-21-63-01-010	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

H. T25 Sensor Installation

SUBTASK 73-21-63-090-001-G00

(1) Install the T25 sensor [3]:

(a) Remove the protective covers from the T25 sensor [3] and the open port on the fan hub frame [4].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Lubricate the threads and friction surfaces of the three bolts [2] with engine oil, D00599 [CP2442].

(c) Put the T25 sensor [3] in its position on the fan hub frame [4].

(d) Install the three bolts [2] that attach the T25 sensor [3] to the fan hub frame [4].

1) Tighten the three bolts [2] to 109 in-lb (12.3 N·m) - 121 in-lb (13.7 N·m).

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(e) Use the teflon-jawed pliers, STD-664 to connect the channel B electrical connector [1] and the channel A electrical connector [5] to the T25 sensor [3] as follows (TASK 70-00-01-910-803-G00):

1) Remove the protective covers from the channel B electrical connector [1], the channel A electrical connector [5] and the T25 sensor [3] receptacles.

2) Connect the channel B electrical connector [1] and the channel A electrical connector [5] to the T25 sensor [3].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-63-410-002-G00

(1) Install the segment shroud 2 (TASK 72-23-04-400-801-G00).

SUBTASK 73-21-63-860-003-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-63-860-004-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-63-410-001-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(4) Do these tasks in sequence to safely close the right thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

(b) Close the fan cowl panels (TASK 71-11-04-410-801-G00).

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

J. T25 Sensor Installation Test

SUBTASK 73-21-63-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T25 SENSOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) T25 Sensor inspection.

TASK 73-21-63-210-801-G00

2. T25 Sensor Inspection

(Figure 601)

A. General

(1) This task gives the instructions to inspect the T25 Sensor.

(2) The T25 sensor is installed at the 3:00 o'clock position on the fan hub frame.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-23-04-000-801-G00	Fan Frame Module Segment Shrouds Removal (P/B 401)
72-23-04-400-801-G00	Fan Frame Module Segment Shrouds Installation (P/B 401)
73-21-63-400-801-G00	T25 Sensor Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-63-860-005-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-63-860-006-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-63-010-003-G00

(3) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

CAUTION IF FAN COWLS ARE INSTALLED, MAKE SURE THAT LEFT AND RIGHT FAN COWLS ARE IN THE FULL OPEN POSITION. MAKE SURE THAT THE SPRING DOOR OPENING-SYSTEM (SDOS) AND HOLD OPEN RODS (HOR) ARE LOCKED IN THEIR POSITION. IF YOU DO NOT, STRUCTURAL DAMAGE TO THE FAN COWL AND THRUST REVERSER CAN OCCUR.

(b) Open both fan cowl panels (TASK 71-11-04-010-801-G00).

NOTE: Because the center line of the thrust reversers is off 6:00 o'clock position, both fan cowl panels must be opened to prevent damaging the fan cowl panel if either thrust reverser needs to be opened.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable right thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

SUBTASK 73-21-63-010-004-G00

(4) Remove the segment shroud 2 (Fan Frame Module Segment Shrouds Removal, TASK 72-23-04-000-801-G00).

G. T25 Sensor Inspection

SUBTASK 73-21-63-210-001-G00

(1) Inspect the T25 sensor:

(a) Make sure that the T25 sensor is not loose.

1) If the sensor is loose, tighten the bolts that attach the sensor to the fan hub frame (T25 Sensor Installation, TASK 73-21-63-400-801-G00).

(b) Make sure that the electrical connector is not loose.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-63-410-003-G00

(1) Install the segment shroud 2 (Fan Frame Module Segment Shrouds Installation, TASK 72-23-04-400-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-21-63-410-004-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(2) Do these tasks in sequence to safely close the right thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

(b) Close the fan cowl panels (TASK 71-11-04-410-801-G00).

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-21-63-860-007-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-63-860-008-G00

(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

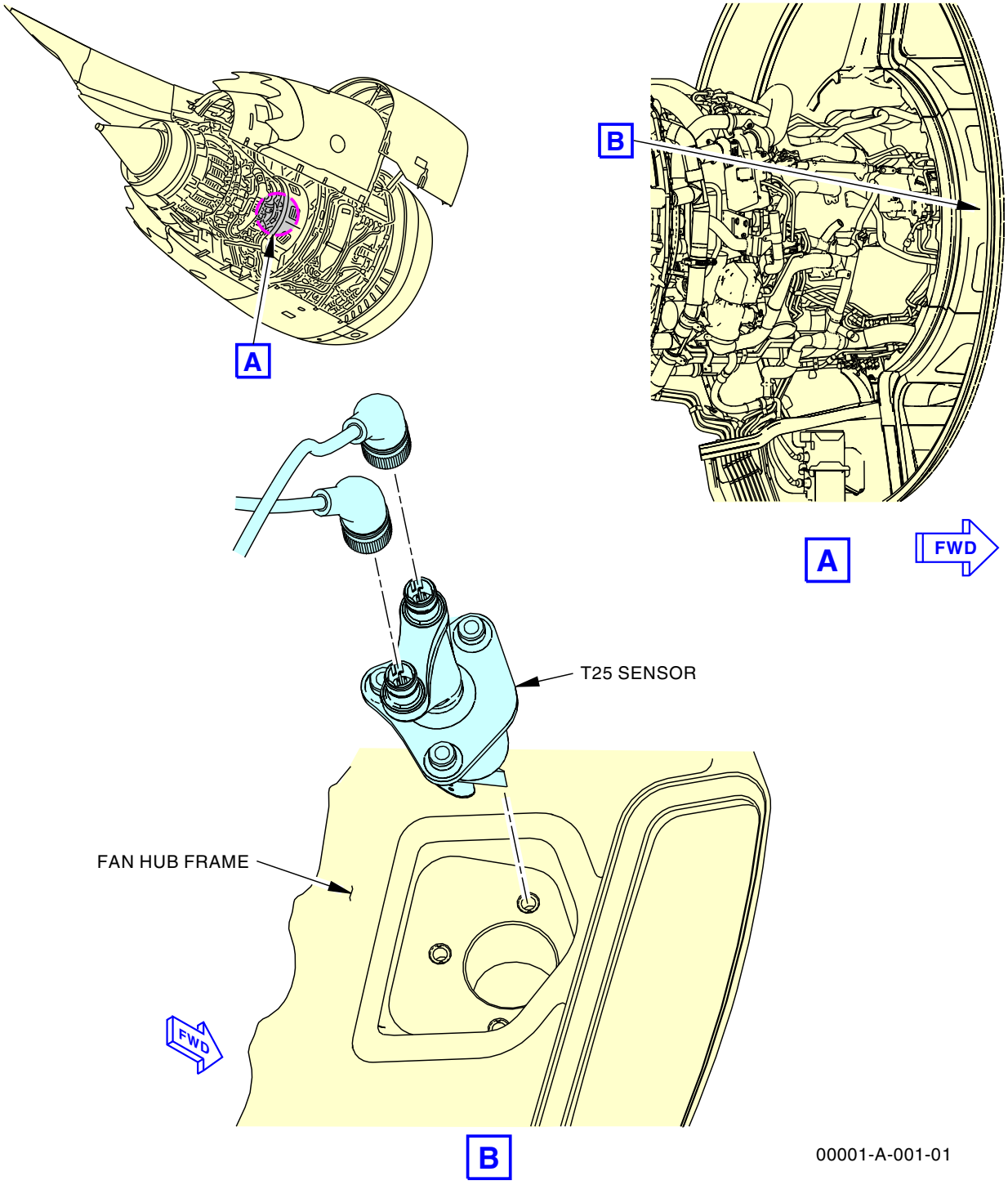
(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T25 Sensor Inspection
Figure 601/73-21-63-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T3 SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) T3 Sensor Removal

(2) T3 Sensor Installation.

TASK 73-21-64-000-801-G00

2. T3 Sensor Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the T3 sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-10718	Fiberscope (Meets General Electric or CFM Standard Practices Manual Specification)

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-64-010-004-G00

(1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

G. T3 Sensor Removal

SUBTASK 73-21-64-020-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connectors as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the HJ8A electrical connector CH A [21] from the T3 sensor [7] CH A.

(b) Disconnect the HJ8B electrical connector CH B [22] from the T3 sensor [7] CH B.

(c) Install protective covers on the HJ8A electrical connector CH A [21] and HJ8B electrical connector CH B [22].

(d) Install a protective cover on the T3 sensor [7] and its receptacles.

SUBTASK 73-21-64-030-001-G00

(2) Remove the T3 sensor [7] as follows:

(a) Remove the bolt [8] that attaches the loop clamp [9] to the support bracket [20].

(b) Remove the bolt [18] that attaches the loop clamp [19] to the support bracket [10].

(c) Remove the bolt [11] that attaches the loop clamp [12] to the support bracket [17].

(d) Remove the safety cable or lockwire that secures the T3 sensor [7] to the combustor case threaded insert adapter [16].

(e) Disconnect the T3 sensor [7] nut from the combustor case threaded insert adapter [16].

(f) Remove the bolt [13] that attaches the loop clamp [14] to the support bracket [15].

(g) Remove the HJ8A electrical harness [26] from the clip on the support bracket [20].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Remove the bolt [25] that attaches the loop clamp [24] and HJ8A electrical harness [26] to the support bracket [20].

(i) Remove the two bolts [27] that attach the T3 sensor [7] to the support bracket [28].

(j) Remove the T3 sensor [7] with the attached support bracket [20] from the engine.

NOTE: Do not bend the sensor cable when you remove T3 sensor [7].

(k) Remove the two bolts [23] that attach the T3 sensor [7].

(l) Examine the T3 sensor [7] inlet for loose metal particles.

1) If you see metal particles on the inlet, remove the particles for more analysis.

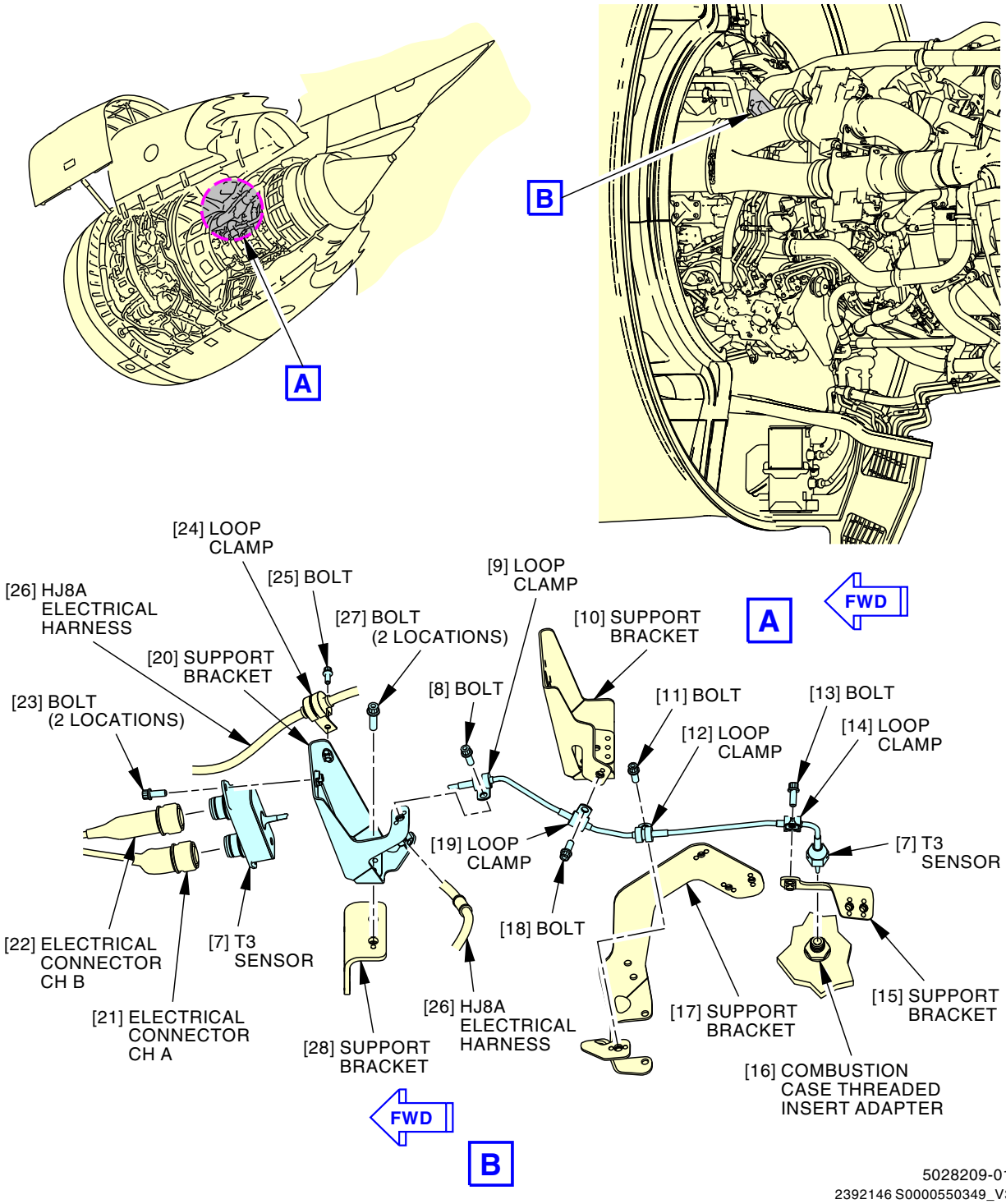
2) Examine the inner section of the T3 sensor [7] with a fiberscope, STD-10718 after you remove the particles.

3) If you see metal particles in the sensor, remove the particles for more analysis.

(m) Install protective covers on the T3 sensor [7] and combustor case threaded insert adapter [16].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T3 Sensor Installation
Figure 401/73-21-64-990-801-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-64-400-801-G00

3. T3 Sensor Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the T3 sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
70-41-00-400-801-G00	Lockwire Installation (P/B 201)
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D50355 [CP2961]	Lubricant - Anti-Seize Compound	D6Y31C2
G01505	Lockwire - Safety And Lock	NASM20995
G02325 [C10-145]	Cable, Safety - GE P/N J1285P01	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

G. T3 Sensor Installation

SUBTASK 73-21-64-420-001-G00

(1) Install the T3 sensor [7] as follows:

(a) Remove the protective cover from the T3 sensor [7] and combustor case threaded insert adapter [16].

(b) Put a light layer of oil, D00599 [CP2442] on the threads of the two bolts [23].

(c) Install the two bolts [23] that attach the T3 sensor [7] to the support bracket [20].

NOTE: Make sure that you do not bend the sensor cable when you attach the T3 sensor [7] to the bracket.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(d) Put the T3 sensor [7] with the support bracket [20] into its position on the support bracket [28].

(e) Put a light layer of engine oil, D00599 [CP2442] on the threads of the two bolts [27].

(f) Install the two bolts [27] that attach the T3 sensor [7] to the support bracket [28].

1) Do not tighten at this time.

(g) Put a light layer of Tiodize T8E-H grease, D50355 [CP2961] on the threads of the combustor case threaded insert adapter [16].

(h) Connect the T3 sensor [7] nut on the combustor case threaded insert adapter [16].

(i) Put a light layer of engine oil, D00599 [CP2442] on the threads of the bolt [8], bolt [11], and bolt [13].

(j) Put a light layer of engine oil, D00599 [CP2442] on the threads of the bolt [18] and bolt [25].

(k) Install the bolt [25] that attaches the loop clamp [24] and HJ8A electrical harness [26] to the support bracket [20].

1) Do not tighten at this time.

(l) Install the HJ8A electrical harness [26] in the clip on the support bracket [20].

(m) Install the bolt [13] that attaches the loop clamp [14] to the support bracket [15].

(n) Install the bolt [11] that attaches the loop clamp [12] to the support bracket [17].

(o) Install the bolt [18] that attaches the loop clamp [19] to the support bracket [10].

(p) Install the bolt [8] that attaches the loop clamp [9] to the support bracket [20].

(q) Tighten the T3 sensor [7] nut to 262.0 in-lb (29.60 N·m) - 308.0 in-lb (34.80 N·m).

(r) Tighten the two bolts [23] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(s) Tighten the two bolts [27] to 106.0 in-lb (11.98 N·m) - 124.0 in-lb (14.01 N·m).

(t) Tighten the bolt [25] to 60.0 in-lb (6.8 N·m) - 70.0 in-lb (7.9 N·m).

(u) Tighten the bolt [8] and bolt [11] to 60.0 in-lb (6.8 N·m) - 70.0 in-lb (7.9 N·m).

(v) Tighten the bolt [13] and bolt [18] to 60.0 in-lb (6.8 N·m) - 70.0 in-lb (7.9 N·m).

(w) Install a lockwire, G01505 or safety cable, G02325 [C10-145] on the T3 sensor [7] and combustor case threaded insert adapter [16] (TASK 70-41-00-400-801-G00 or TASK 70-41-00-400-802-G00).

SUBTASK 73-21-64-420-002-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(2) Use a teflon-jawed pliers, STD-664 to connect these electrical connectors (TASK 70-00-01-910-803-G00):

(a) Remove the protective covers from the HJ8A electrical connector CH A [21], HJ8B electrical connector CH B [22], and T3 sensor [7] receptacles.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Connect and tighten the HJ8A electrical connector CH A [21] to the T3 sensor [7] CH A.

(c) Connect and tighten the HJ8B electrical connector CH B [22] to the T3 sensor [7] CH B.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-64-410-004-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the left thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

(b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

I. T3 Sensor Installation Test

SUBTASK 73-21-64-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

T3 SENSOR - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) T3 Sensor Inspection.

TASK 73-21-64-210-801-G00

2. T3 Sensor Inspection

(Figure 601)

A. General

(1) This task gives the instructions to inspect the T3 Sensor.

(a) The T3 sensor is located on the left side of the HPC case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-64-000-801-G00	T3 Sensor Removal (P/B 401)
73-21-64-400-801-G00	T3 Sensor Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-64-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-64-860-002-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-64-010-005-G00

(3) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. T3 Sensor Inspection

SUBTASK 73-21-64-210-001-G00

(1) Inspect the T3 sensor:

(a) Look for signs of air leaks.

1) If you see signs of air leaks, tighten the sensor nut and if it is necessary, the combustor case adapter (T3 Sensor Installation, TASK 73-21-64-400-801-G00).

(b) Make sure that the T3 sensor is not loose.

1) If the T3 sensor is loose, tighten the sensor nut and if it is necessary, the combustor case adapter (T3 Sensor Installation, TASK 73-21-64-400-801-G00).

(c) Look for cracks.

1) If you see cracks, replace the T3 sensor (T3 Sensor Removal, TASK 73-21-64-000-801-G00 and T3 Sensor Installation, TASK 73-21-64-400-801-G00).

(d) Look for signs of chaffing or wear on the electrical lead.

1) If you see chaffing or wear, do the steps in these tasks to replace the electrical lead for the T3 sensor (T3 Sensor Removal, TASK 73-21-64-000-801-G00 and T3 Sensor Installation, TASK 73-21-64-400-801-G00).

(e) Make sure that the electrical connector is not loose.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-64-410-005-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the left thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

(b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-21-64-860-003-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-21-64-860-004-G00

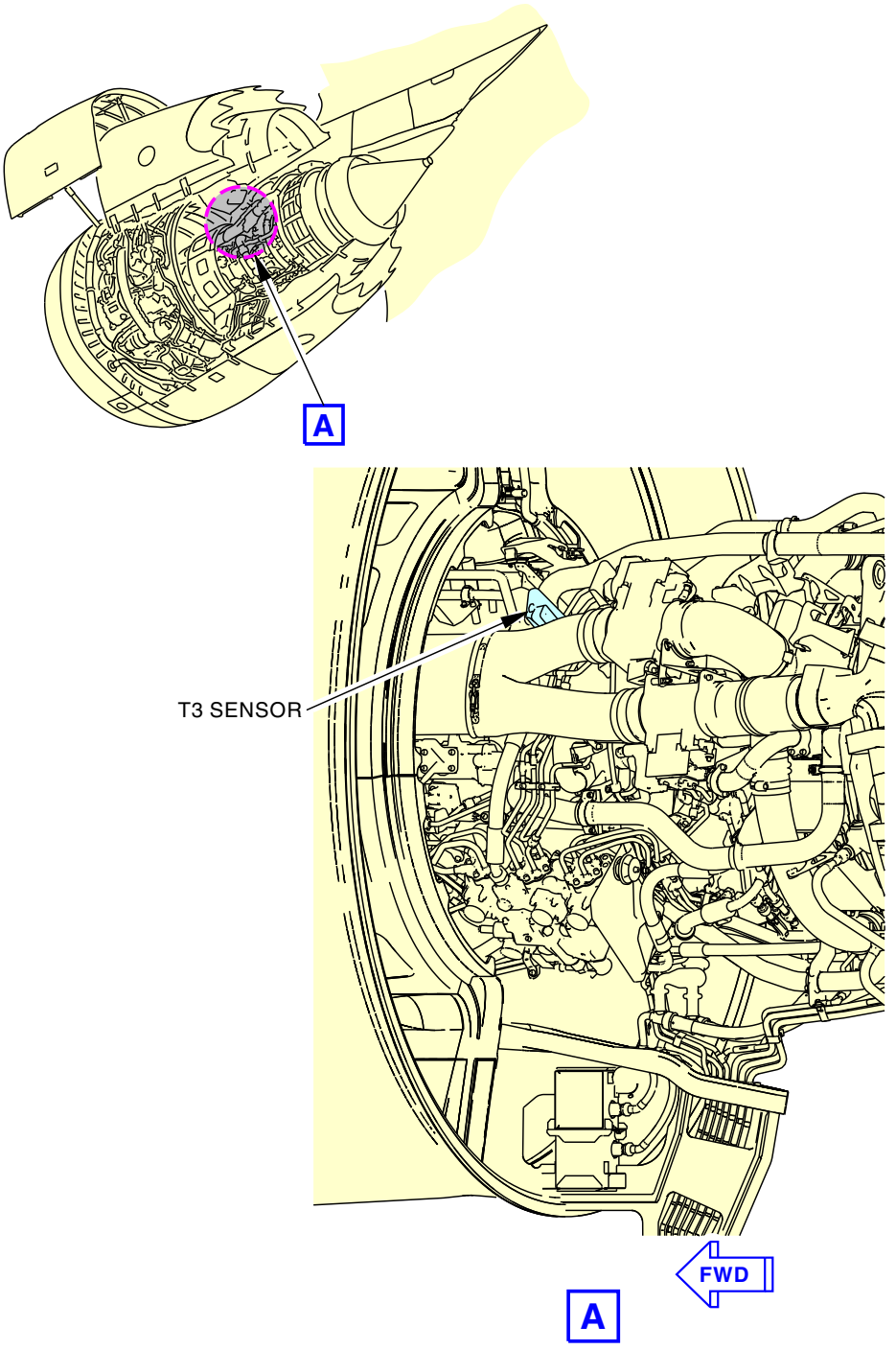
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



T3 Sensor Inspection
Figure 601/73-21-64-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL MANIFOLD PRESSURE TRANSDUCER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel manifold pressure transducer removal

(2) Fuel manifold pressure transducer Installation.

TASK 73-21-67-000-801-G00

2. Fuel Manifold Pressure Transducer Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the fuel manifold pressure transducer.

(2) The fuel manifold pressure transducer is referred to as the FMP transducer.

(3) The FMP transducer is installed on the split control unit at the 7:00 o'clock position.

(4) You must open the left thrust reverser to get access to the FMP transducer.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-21-67-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-67-860-002-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-21-67-010-001-G00

(3) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

G. Fuel Manifold Pressure Transducer Removal

SUBTASK 73-21-67-020-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [4] from the FMP transducer [6] (TASK 70-00-01-910-803-G00).

(a) Disconnect the electrical connector [4] from the FMP transducer [6].

(b) Install the protective covers on the electrical connector [4] and the electrical receptacle on the FMP transducer [6].

SUBTASK 73-21-67-020-002-G00

(2) Remove the FMP transducer [6] as follows:

(a) Remove the two bolts [5] that attach FMP transducer [6] to the split control unit [1].

(b) Remove the FMP transducer [6].

(c) Remove the packing retainers [3] and the preformed packing [2] from the FMP transducer [6].

1) Discard the preformed packing [2].

2) Examine the two packing retainers [3] for damage.

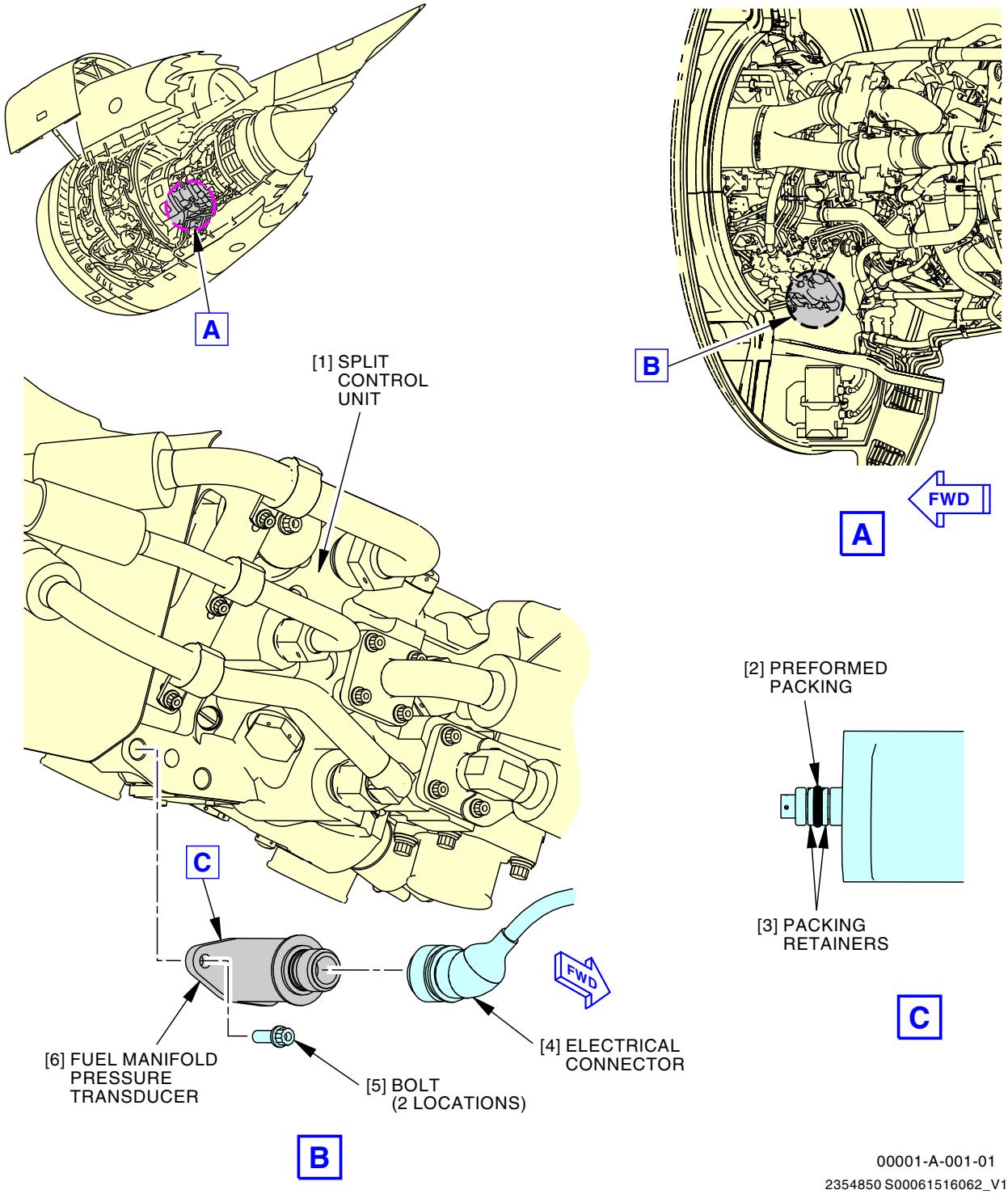
a) If the two packing retainers [3] are not damaged, keep them for the subsequent installation.

b) If the two packing retainers [3] are damaged, replace the packing retainers [3].

(d) Install the protective covers on the split control unit [1] and the FMP transducer [6].

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Manifold Pressure Transducer Installation
Figure 401/73-21-67-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-21-67-400-801-G00

3. Fuel Manifold Pressure Transducer Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the fuel manifold pressure transducer.

(2) The fuel manifold pressure transducer is referred to as the FMP transducer.

(3) You must do the tests that are listed in the power plant test reference table after you install the FMP transducer.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Preformed packing	73-21-67-01-040	SIA ALL
3	Packing retainer	73-21-67-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

H. Fuel Manifold Pressure Transducer Installation

SUBTASK 73-21-67-420-001-G00

(1) Install the FMP transducer [6] as follows:

(a) Remove the protective covers from the FMP transducer [6] and the split control unit [1].

(b) Lubricate the new preformed packing [2] with clean engine oil, D00599 [CP2442].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION INSTALL THE PACKING RETAINERS AND THE PREFORMED PACKING IN THE CORRECT SEQUENCE. IF YOU DO NOT INSTALL THE RETAINERS AND PACKING CORRECTLY, FUEL LEAKS CAN OCCUR. FUEL CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT CAUSE DAMAGE TO THE PREFORMED PACKINGS AND PACKING RETAINERS WHEN YOU INSTALL THE FUEL SYSTEM COMPONENTS. A DAMAGED PACKING CAN CAUSE ENGINE FUEL LEAKS.

(c) Install the two packing retainers [3] and the new preformed packing [2] in this sequence.

NOTE: If you open the packing retainer more than is necessary, you can permanently change the shape or break the packing retainer.

1) Install the first packing retainer [3] on the FMP transducer [6].

a) Twist the first packing retainer [3] open and carefully slide it down the fitting into the groove.

2) Install the new preformed packing [2] on the FMP transducer [6].

3) Install the second packing retainer [3] on the FMP transducer [6].

a) Twist the second packing retainer [3] open and carefully slide it down the fitting into the groove.

(d) Lubricate the threads of the two bolts [5] with engine oil, D00599 [CP2442].

(e) Put the FMP transducer [6] in the correct position on the split control unit [1].

(f) Install the FMP transducer [6] on the split control unit [1] with the two bolts [5].

1) Tighten the two bolts [5] to 106.0 in-lb (12.0 N·m)-124.0 in-lb (14.0 N·m).

SUBTASK 73-21-67-420-002-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(2) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [4] to the FMP transducer [6] (TASK 70-00-01-910-803-G00).

(a) Remove the protective covers from the electrical connector [4] and the electrical receptacle on the FMP transducer [6].

(b) Connect the electrical connector [4] to the FMP transducer [6].

1) Tighten the electrical connector [4].

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-67-860-004-G00

(1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 73-21-67-860-005-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-21-67-410-001-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(3) Do these tasks in sequence to safely close the left thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

(b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

J. Fuel Manifold Pressure Transducer Installation Test

SUBTASK 73-21-67-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL MANIFOLD PRESSURE TRANSDUCER - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel Manifold Pressure Transducer Inspection

TASK 73-21-67-210-801-G00

2. Fuel Manifold Pressure Transducer Inspection

(Figure 601)

A. General

(1) This task gives the instructions to inspect the fuel manifold pressure transducer.

(2) The fuel manifold pressure transducer is located on the split control unit at the 7:00 o'clock position.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-67-000-801-G00	Fuel Manifold Pressure Transducer Removal (P/B 401)
73-21-67-400-801-G00	Fuel Manifold Pressure Transducer Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-21-67-860-007-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-21-67-860-008-G00

(2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-21-67-010-002-G00

(3) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

G. Fuel Manifold Pressure Transducer Inspection

SUBTASK 73-21-67-210-001-G00

(1) Inspect the fuel manifold pressure transducer.

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, do the steps in these tasks to replace the preformed packings (Fuel Manifold Pressure Transducer Removal, TASK 73-21-67-000-801-G00 and Fuel Manifold Pressure Transducer Installation, TASK 73-21-67-400-801-G00).

(b) Make sure that the fuel manifold pressure transducer is not loose.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) If the transducer is loose, tighten the bolts that attach the transducer to the Split Control Unit (SCU) (Fuel Manifold Pressure Transducer Installation, TASK 73-21-67-400-801-G00).

(c) Make sure that the electrical connector is not loose.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If an electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-21-67-410-002-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the left thrust reverser:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

(b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-21-67-860-009-G00

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 73-21-67-860-010-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

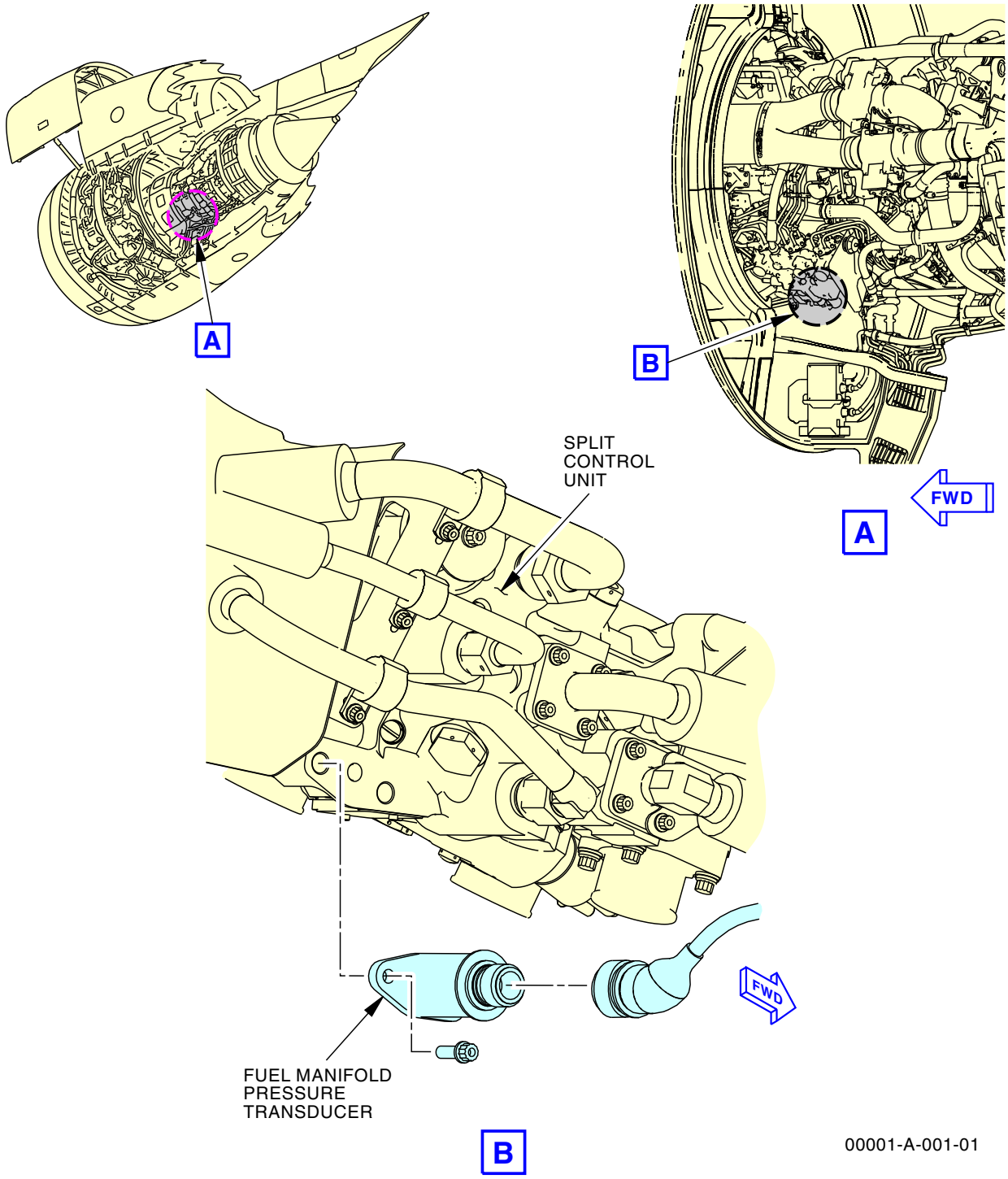
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Manifold Pressure Transducer Inspection
Figure 601/73-21-67-990-803-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL (EEC) ELECTRICAL HARNESSES - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

(1) Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap.

TASK 73-22-01-390-802-G00

2. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap

(Figure 201)

A. General

(1) This task is only applicable to the Electronic Engine Control (EEC) electrical harness (HJ8A) P/N 364-083-811-0. Other EEC electrical harness (HJ8A) part numbers do not require the tape wrap.

(2) This task gives the instructions to apply sealant and aluminum tape to the EEC electrical harness (HJ8A). The tape wrap is required to prevent fluid leaks from migrating down the wire harness through the firewall at the 6 o'clock location.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A00335	Adhesive - Silicone Rubber, 2 Part, RTV	BAC5010 Type 68
B00130	Alcohol - Isopropyl	TT-I-735
B50073	Alcohol - Isopropyl	ASTM D 770
C00511	Primer - Adhesion, Momentive SS4155	BAC5010 Type 68 Class P
D00599 [CP2442]	Oil - Engine	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G50739	Tape - High Temperature Aluminum Foil/Glass Cloth Tape, (3M 363 Tape)	
G51293	Cotton Wiper - Knit, Process Cleaning Absorbent Wiper	BMS15-5 Class B

ECCN 9E991 BOEING PROPRIETARY - See title page for details

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Prepare for the Tape Wrap

SUBTASK 73-22-01-860-108-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-109-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-110-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-111-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-036-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap

SUBTASK 73-22-01-080-001-G00

(1) Carefully remove the TBV and start bleed/booster anti-ice valve ID tags.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-020-029-G00

CAUTION	MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION	USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(2) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ8A) [1] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ8A) [1] connector from the TBV receptacle [2].

(b) Disconnect the EEC electrical harness (HJ8A) [1] connector from the start bleed/booster anti-ice valve receptacle [3].

(c) Install the protective covers on all of the harness connectors and the component receptacles.

SUBTASK 73-22-01-020-030-G00

(3) Remove the bolt [4] that attaches the EEC electrical harness (HJ8A) [1] to the tube bracket.

SUBTASK 73-22-01-020-031-G00

(4) Remove the bolt [5] from the clamp [6] that attaches the EEC electrical harness (HJ8A) [1] to the fan case bracket.

SUBTASK 73-22-01-100-001-G00

(5) Clean the external of the EEC electrical harness (HJ8A) [1] wire bundle metallic overbraid with alcohol, B00130 or alcohol, B50073.

(a) Dry the EEC electrical harness (HJ8A) [1] with a cotton wiper, G00034 or knit cotton wiper, G51293.

SUBTASK 73-22-01-390-004-G00

(6) Apply an adhesion primer, C00511 to the external surface of the EEC electrical harness (HJ8A) [1] wire bundle metallic overbraid, extend 0.25 in. (6.35 mm) past overbraid.

(a) Let the primer, C00511 dry before you continue.

SUBTASK 73-22-01-390-005-G00

(7) Use a brush to apply 0.02 in. (0.51 mm) - 0.03 in. (0.76 mm) thick of adhesive, A00335 to the external surface of the EEC electrical harness (HJ8A) [1] wire bundle metallic overbraid.

SUBTASK 73-22-01-390-006-G00

(8) Do these steps to apply 3M 363 Tape, G50739 onto the EEC electrical harness (HJ8A) [1] wire bundle metallic overbraid:

(a) Start at the electrical plug backshell connectors, spiral wrap over adhesive 2.0 in. (50.8 mm) wide with 3M 363 Tape, G50739.

(b) Start with full wrap perpendicular to the wire harness centerline and over lap a minimum of 0.5 in. (12.7 mm) per wrap.

(c) Make sure that you pull the tape tightly onto the wire bundle metallic overbraid.

(d) At the end of the spiral wrap, use one full wrap perpendicular to the wire harness centerline.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Tape down edges of all tape until adhesive has cured.

(f) Wipe clean any excess adhesive.

(g) As necessary, do the procedure again for the remaining two sections of the EEC electrical harness (HJ8A) [1] wire bundle metallic overbraid.

SUBTASK 73-22-01-420-029-G00

(9) Install the EEC electrical harness (HJ8A) [1] as follows:

(a) Lubricate the threads of the bolt [4] and bolt [5] with oil, D00599 [CP2442].

(b) Install the bolt [4] that attaches the EEC electrical harness (HJ8A) [1] to the tube bracket.

(c) Install the bolt [5] to the clamp [6] that attaches the EEC electrical harness (HJ8A) [1] to the fan case bracket.

(d) Tighten the bolt [4] to 110 in-lb (12 N·m) - 120 in-lb (14 N·m).

(e) Tighten the bolt [5] to 32 in-lb (4 N·m) - 38 in-lb (4 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(f) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ8A) [1] as follows (TASK 70-00-01-910-803-G00):

1) Remove the protective covers from the connectors and receptacles.

2) Connect the EEC electrical harness (HJ8A) [1] connector to the TBV receptacle [2].

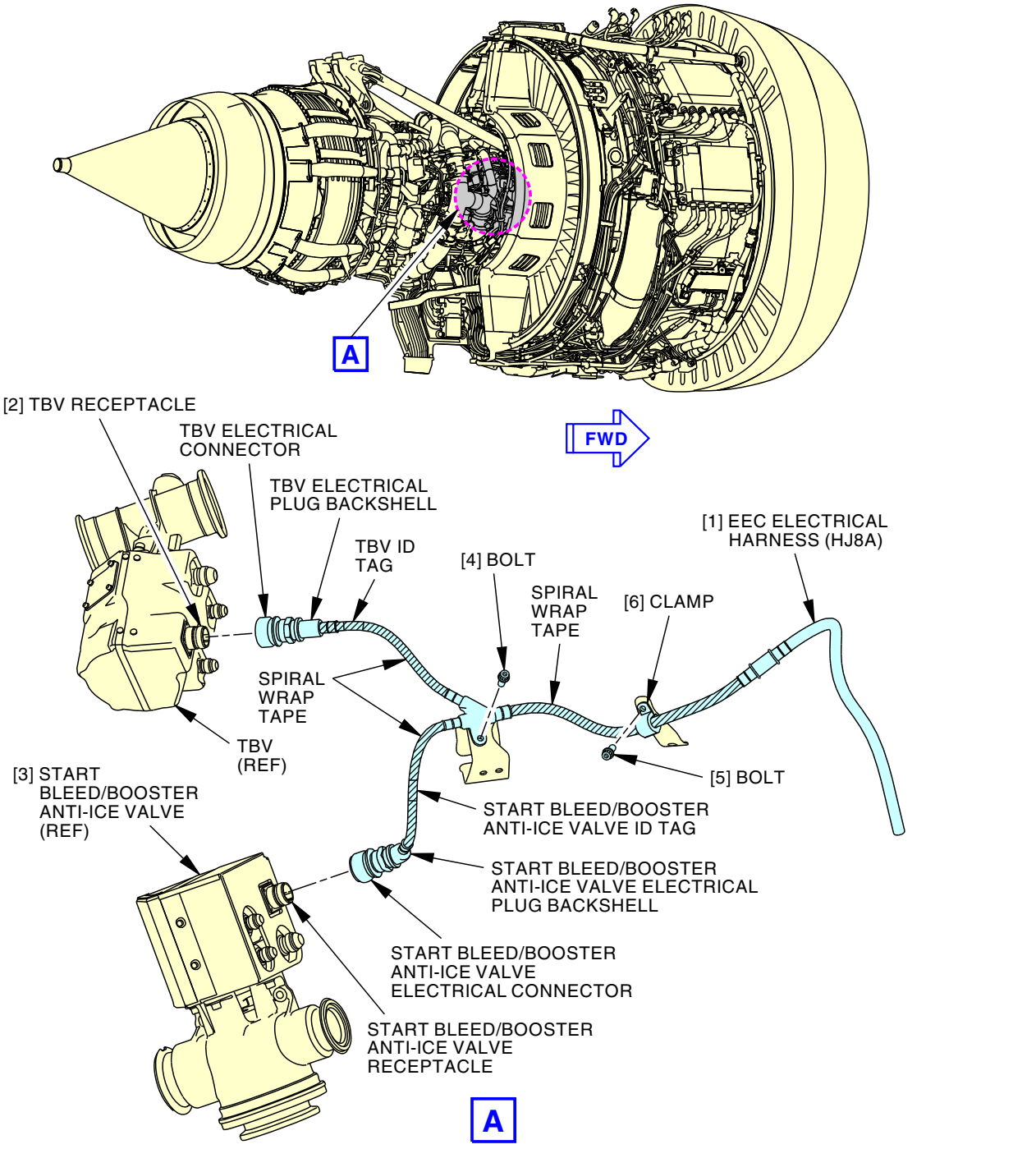
3) Connect the EEC electrical harness (HJ8A) [1] connector to the start bleed/booster anti-ice valve receptacle [3].

SUBTASK 73-22-01-480-001-G00

(10) Install the TBV and start bleed/booster anti-ice valve ID tags.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap
Figure 201/73-22-01-990-865-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ELECTRONIC ENGINE CONTROL (EEC) ELECTRICAL HARNESSES - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

(1) Electronic Engine Control (EEC) Electrical Harness (HJ3A) Removal
(2) Electronic Engine Control (EEC) Electrical Harness (HJ3A) Installation
(3) Electronic Engine Control (EEC) Electrical Harness (HJ3B) Removal
(4) Electronic Engine Control (EEC) Electrical Harness (HJ3B) Installation
(5) Electronic Engine Control (EEC) Electrical Harness (HJ5A) Removal
(6) Electronic Engine Control (EEC) Electrical Harness (HJ5A) Installation
(7) Electronic Engine Control (EEC) Electrical Harness (HJ5B) Removal
(8) Electronic Engine Control (EEC) Electrical Harness (HJ5B) Installation
(9) Electronic Engine Control (EEC) Electrical Harness (HJ6A) Removal
(10) Electronic Engine Control (EEC) Electrical Harness (HJ6A) Installation
(11) Electronic Engine Control (EEC) Electrical Harness (HJ6B) Removal
(12) Electronic Engine Control (EEC) Electrical Harness (HJ6B) Installation
(13) Electronic Engine Control (EEC) Electrical Harness (HJ7) Removal
(14) Electronic Engine Control (EEC) Electrical Harness (HJ7) Installation
(15) Electronic Engine Control (EEC) Electrical Harness (HJ8A) Removal
(16) Electronic Engine Control (EEC) Electrical Harness (HJ8A) Installation
(17) Electronic Engine Control (EEC) Electrical Harness (HJ8B) Removal
(18) Electronic Engine Control (EEC) Electrical Harness (HJ8B) Installation
(19) Electronic Engine Control (EEC) Electrical Harness (W4A) Removal
(20) Electronic Engine Control (EEC) Electrical Harness (W4A) Installation
(21) Electronic Engine Control (EEC) Electrical Harness (W4B) Removal
(22) Electronic Engine Control (EEC) Electrical Harness (W4B) Installation
(23) Electronic Engine Control (EEC) Electrical Harness (W2) Removal
(24) Electronic Engine Control (EEC) Electrical Harness (W2) Installation.

TASK 73-22-01-000-801-G00

2. Electronic Engine Control (EEC) Electrical Harness (HJ3A) Removal

(Figure 401)

A. General

(1) This task gives the instructions on how to remove the electronic engine control (EEC) electrical harness (HJ3A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Reference	Title
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-002-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-003-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-004-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-001-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ3A) Removal

(Figure 401)

SUBTASK 73-22-01-030-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ3A) [1] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ3A) [1] connector from the EEC channel A J3 receptacle [2].

(b) Disconnect the EEC electrical harness (HJ3A) [1] connector from the PMA channel A receptacle [3].

(c) Remove the nut [4] and the bolt [5] from the clamp [6] that attach the EEC electrical harness (HJ3A) [1] to the engine.

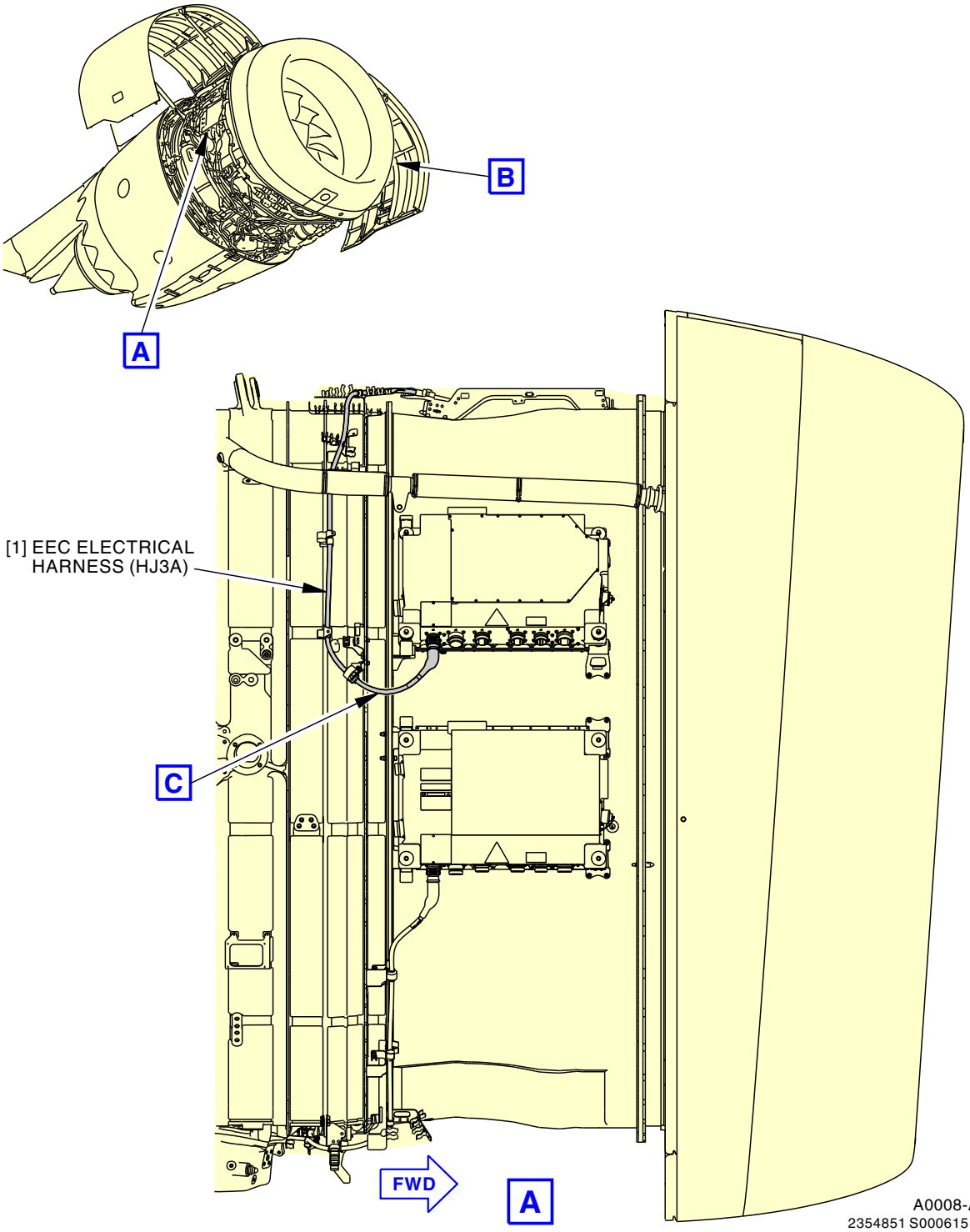
(d) Remove the EEC electrical harness (HJ3A) [1] from the 15 clips [7] along its routing.

(e) Carefully remove the EEC electrical harness (HJ3A) [1] from the engine.

(f) Install the protective covers on all of the harness connectors and the component receptacles.

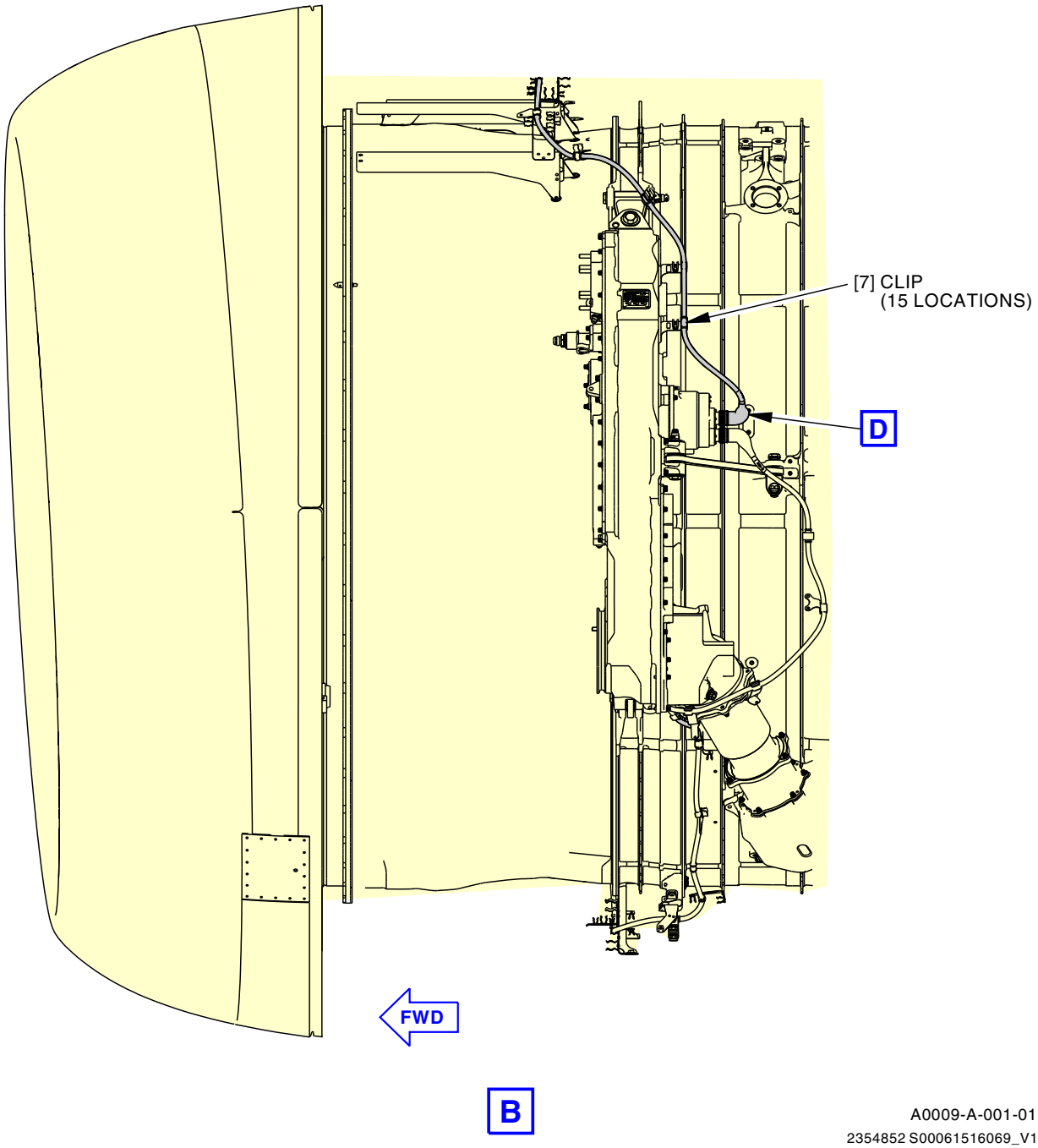
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



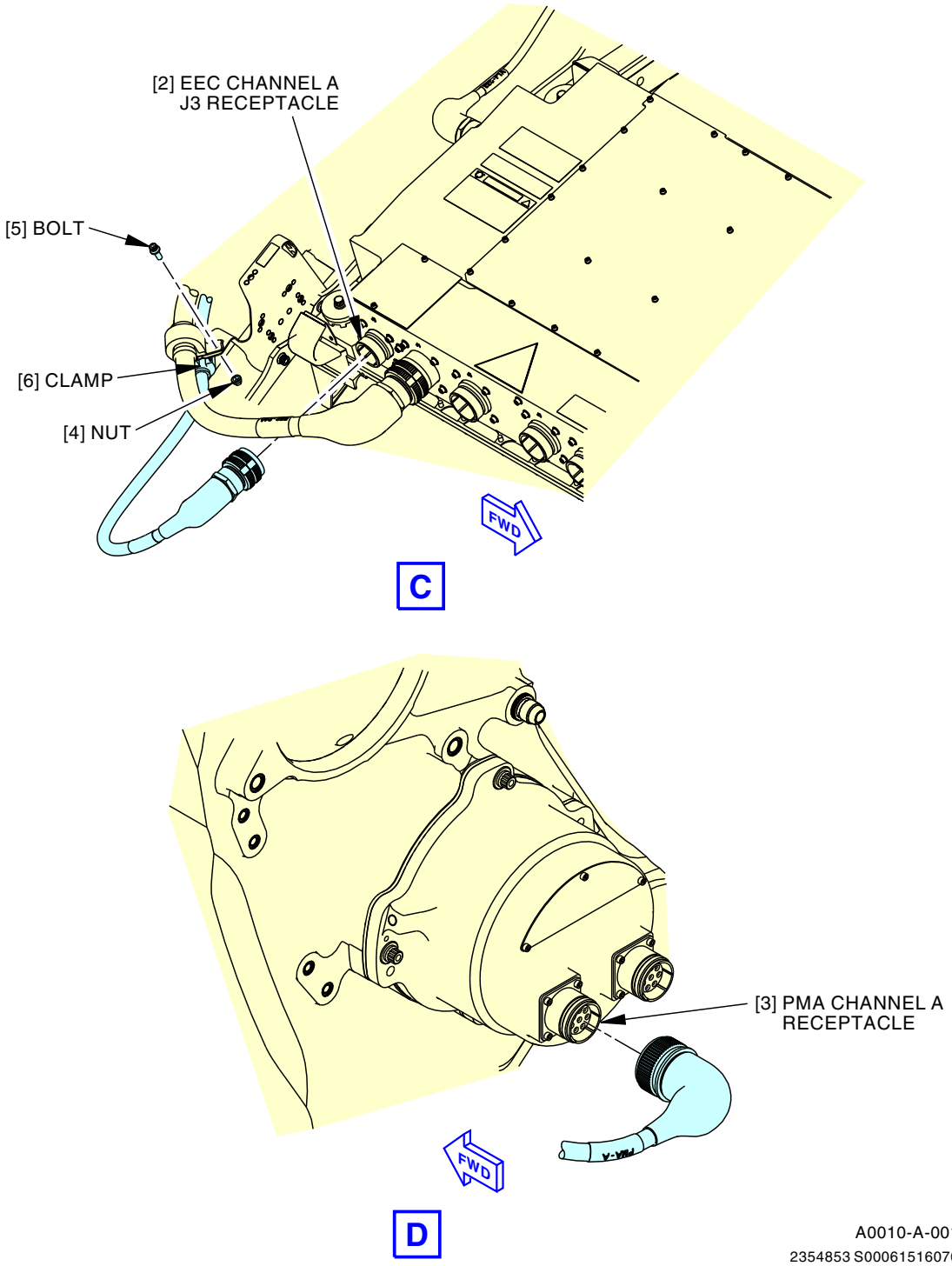
EEC Electrical Harness (HJ3A) Installation
Figure 401/73-22-01-990-801-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ3A) Installation
Figure 401/73-22-01-990-801-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ3A) Installation
Figure 401/73-22-01-990-801-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-801-G00

3. Electronic Engine Control (EEC) Electrical Harness (HJ3A) Installation

(Figure 401)

A. General

(1) This task gives the instructions on how to install the electronic engine control (EEC) electrical harness (HJ3A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 2
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (HJ3A) Installation

(Figure 401)

SUBTASK 73-22-01-410-021-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (HJ3A) [1] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ3A) [1] in a correct position with the 15 clips [7] along its routing.

(d) Install the bolt [5], the nut [4], and the clamp [6] that attach the EEC electrical harness (HJ3A) [1] to the engine.

(e) Tighten the nut [4] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(f) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ3A) [1] to the EEC CH A as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ3A) [1] connector to the PMA channel A receptacle [3].

2) Connect the EEC electrical harness (HJ3A) [1] connector to the EEC channel A J3 receptacle [2].

(g) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-022-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-005-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-006-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-007-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-008-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ3A) Installation Test

SUBTASK 73-22-01-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-802-G00

4. Electronic Engine Control (EEC) Electrical Harness (HJ3B) Removal

(Figure 402)

A. General

(1) This task gives the instructions on how to remove the electronic engine control (EEC) electrical harness (HJ3B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-009-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-010-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-011-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-012-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-024-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ3B) Removal

(Figure 402)

SUBTASK 73-22-01-020-001-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ3B) [28] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ3B) [28] connector from the EEC channel B J3 receptacle [30].

(b) Remove the bolt [32] and the clamp [31] that attaches the EEC electrical harness (HJ3B) [28] to the engine.

(c) Disconnect the EEC electrical harness (HJ3B) [28] connector from the PMA channel B receptacle [33].

(d) Remove the bolt [36] and the clamp [35] that attaches the EEC electrical harness (HJ3B) [28] to the oil tube [34].

(e) Remove the EEC electrical harness (HJ3B) [28] from the 10 clips [7] along its routing.

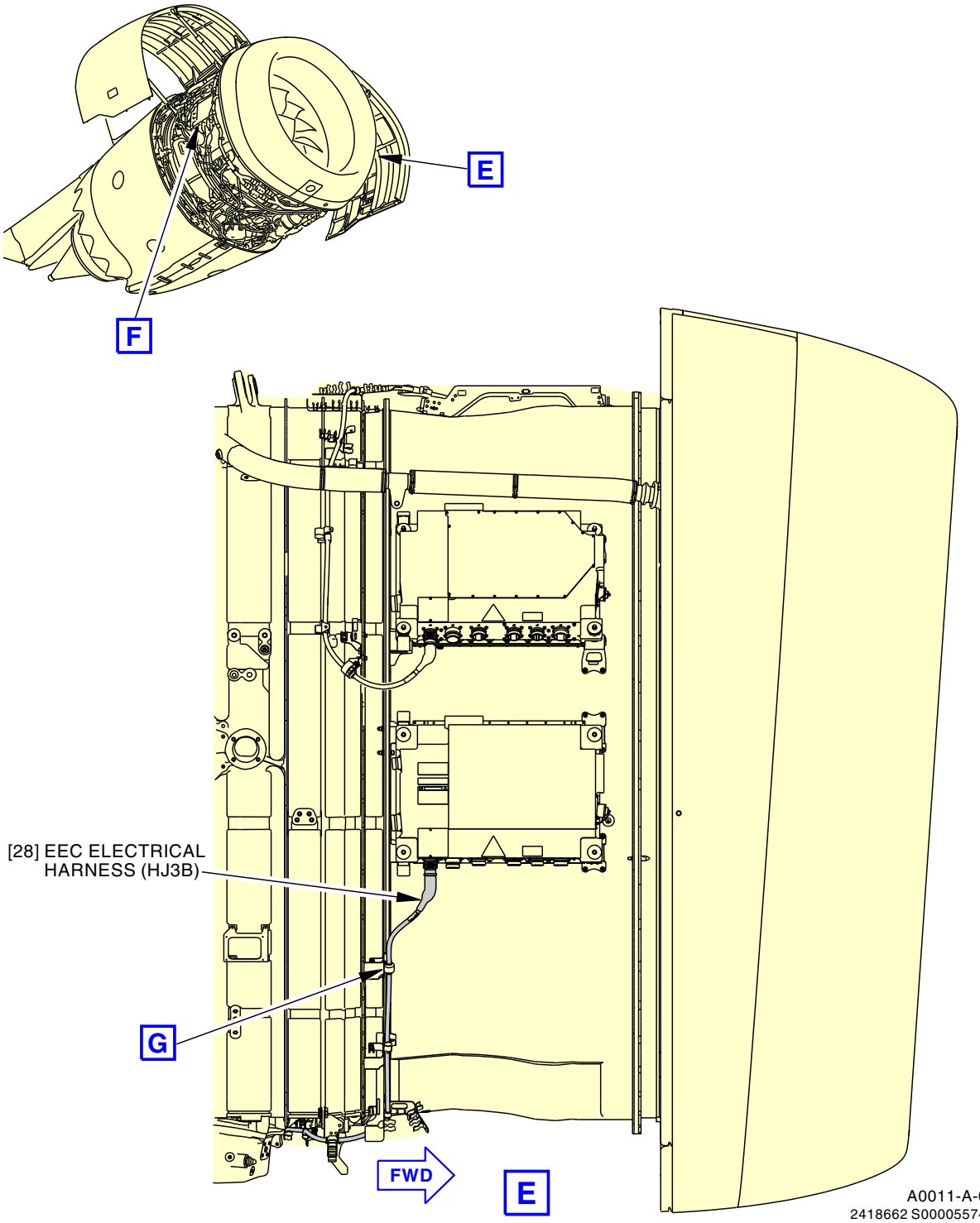
(f) Carefully remove the EEC electrical harness (HJ3B) [28] from the engine.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Install the protective covers on all of the harness connectors and the component receptacles.

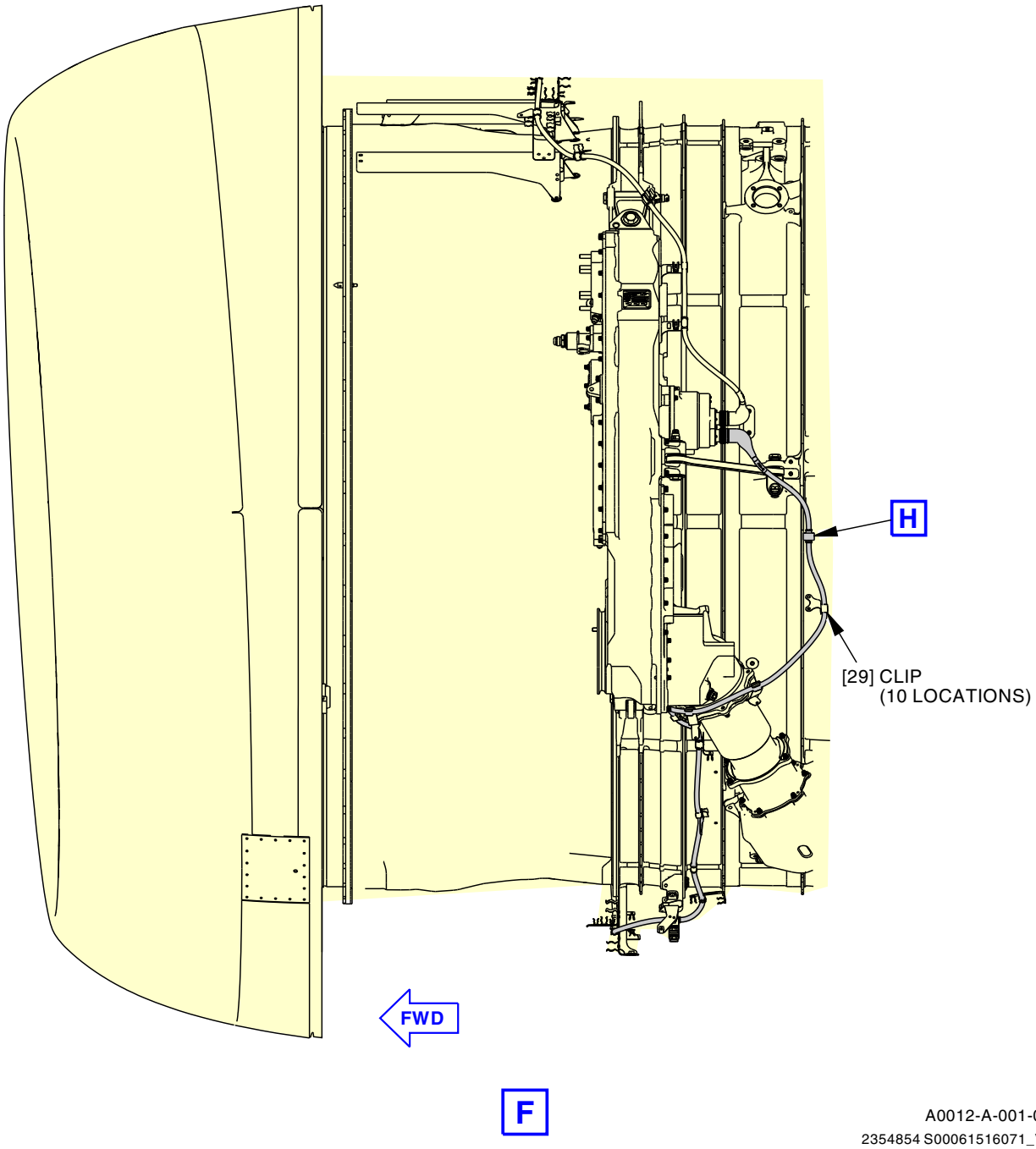
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



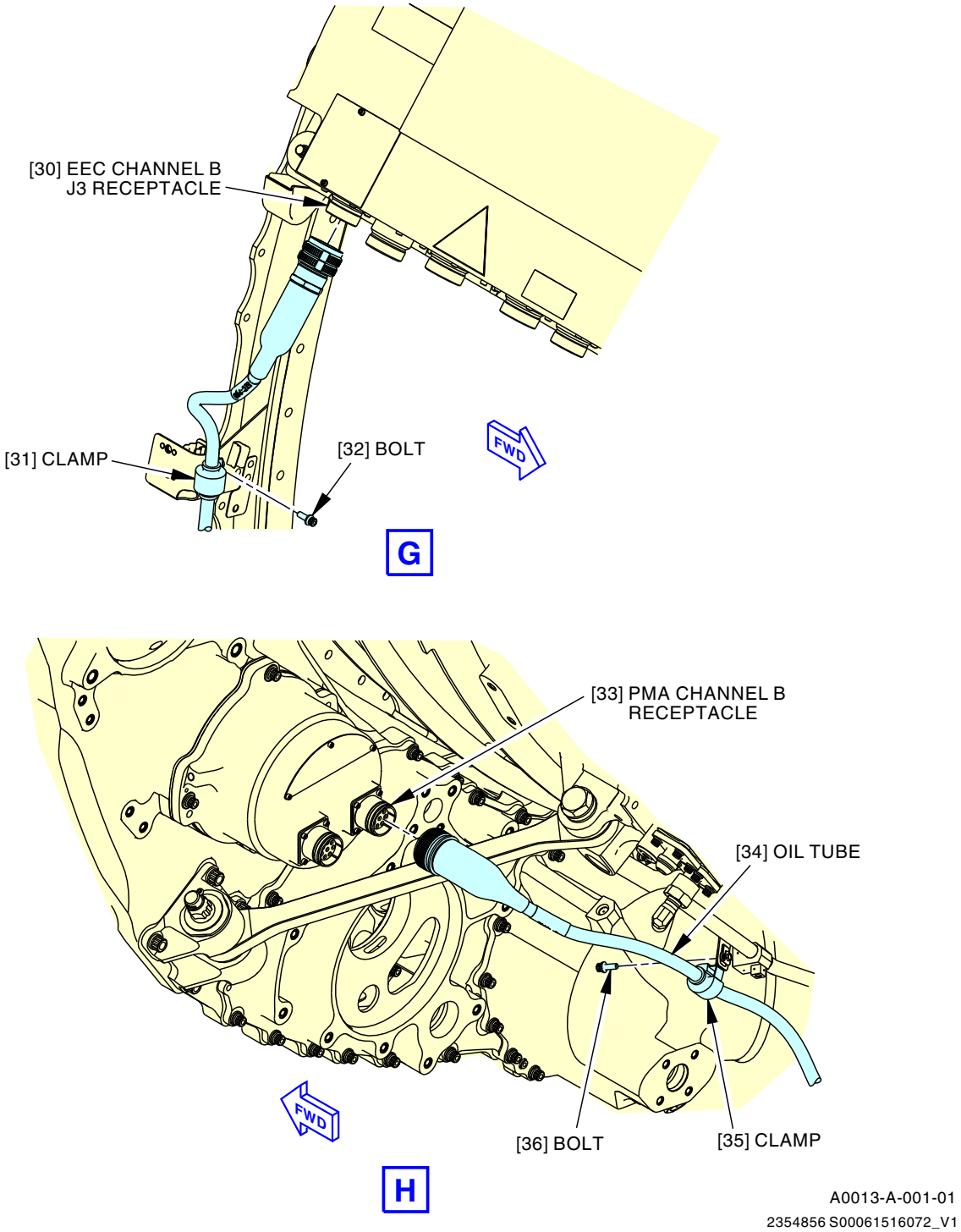
EEC Electrical Harness (HJ3B) Installation
Figure 402/73-22-01-990-860-G00 (Sheet 1 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ3B) Installation
Figure 402/73-22-01-990-860-G00 (Sheet 2 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ3B) Installation
Figure 402/73-22-01-990-860-G00 (Sheet 3 of 3)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-802-G00

5. Electronic Engine Control (EEC) Electrical Harness (HJ3B) Installation

(Figure 402)

A. General

(1) This task gives the instructions on how to install the electronic engine control (EEC) electrical harness (HJ3B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 2
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (HJ3B) Installation

(Figure 402)

SUBTASK 73-22-01-420-001-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (HJ3B) [28] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ3B) [28] in a correct position with the 10 clips [7] along its routing.

(d) Install the bolt [36] and the clamp [35] that attach the EEC electrical harness (HJ3B) [28] to the oil tube [34].

(e) Tighten the bolt [36] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(f) Install the bolt [32] and the clamp [31] that attach the EEC electrical harness (HJ3B) [28] to the engine.

(g) Tighten the bolt [32] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(h) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ3B) [28] to the EEC CH B as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ3B) [28] connector to the PMA channel B receptacle [33].

2) Connect the EEC electrical harness (HJ3B) [28] connector to the EEC channel B J3 receptacle [30].

(i) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-023-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-013-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-014-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-015-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-016-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ3B) Installation Test

SUBTASK 73-22-01-730-002-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-803-G00

6. Electronic Engine Control (EEC) Electrical Harness (HJ5A) Removal

(Figure 403, Figure 404, and Figure 405)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (HJ5A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
72-23-06-000-801-G00	Fan Frame Strut Panels Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-017-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-018-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-019-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-020-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-025-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ5A) Removal

SUBTASK 73-22-01-020-002-G00

(1) Remove the segment shroud 2 [68].

SUBTASK 73-22-01-020-003-G00

(2) Remove the segment shroud 3 [69].

SUBTASK 73-22-01-020-004-G00

(3) Remove the segment shroud 4 [71].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-020-005-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(4) Use the teflon-jawed pliers, STD-664, to disconnect the EEC electrical harness (HJ5A) [67] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ5A) [67] connector from the EEC channel A J5 receptacle [72].

(b) Disconnect the EEC electrical harness (HJ5A) [67] connector from the fuel flow transmitter meter receptacle [75].

(c) Disconnect the EEC electrical harness (HJ5A) [67] connector from the FMU channel A receptacle [76].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

(d) Disconnect the EEC electrical harness (HJ5A) [67] from the lower overheat sensor [114].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

(e) Disconnect the EEC electrical harness (HJ5A) [67] from the bracket assembly [115].

SIA ALL

(f) Remove the EEC electrical harness (HJ5A) [67] as follows:

1) Remove the bolt [74] from the clamp [73] that attaches the EEC electrical harness (HJ5A) [67] to the fan case bracket.

2) Remove the bolt [78] from the clamp [77] that attaches the EEC electrical harness (HJ5A) [67] to the fan case bracket.

(g) Disconnect the connector socket [82] of the EEC electrical harness (HJ5A) [67] as follows:

1) Disconnect the EEC electrical harness (HJ6B) [80] from the EEC HJ6A harness receptacle [79].

2) Disconnect the HJ5B engine wiring harness electrical connector [84] (at 5:00 o'clock) from the connector socket [82].

NOTE: If the HJ5B engine wiring harness has been removed, do not do this step.

3) Remove the four nuts [85] and four bolts [81] that attach the connector socket [82] to the bracket [83].

4) Disconnect the connector socket [82] from the bracket [83].

(h) Disconnect the EEC electrical harness (HJ5A) [67] connector from the T25 sensor channel A receptacle [86].

(i) Disconnect the EEC electrical harness (HJ5A) [67] connector from the N1 speed sensor Channel A receptacle [147A].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(j) Disconnect the EEC electrical harness (HJ5A) [67] connector from the fuel manifold transducer receptacle [93].

(k) Disconnect the EEC electrical harness (HJ5A) [67] connector from the SCU/SVA channel A receptacle [96].

(l) Disconnect the EEC electrical harness (HJ5A) [67] connector from the left VBV actuator receptacle [97].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

(m) Disconnect the EEC electrical harness (HJ5A) [67] connector from the left MTC actuator receptacle [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

(n) Disconnect the EEC electrical harness (HJ5A) [67] connector from the electrical stow bracket [117].

SIA ALL

(o) Disconnect the EEC electrical harness (HJ5A) [67] connector from the left VSV actuator receptacle [99].

(p) Remove the bolt [88] from the clamp [87] that attaches the EEC electrical harness (HJ5A) [67] to the fan hub bracket.

(q) Remove the bolt [90] from the clamp [89] that attaches the EEC electrical harness (HJ5A) [67] to the fan hub bracket.

(r) Remove the bolt [91] from the clamp [92] that attaches the EEC electrical harness (HJ5A) [67] to the fan case bracket.

(s) Remove the bolt [94] from the clamp [95] that attaches the EEC electrical harness (HJ5A) [67] to the fan frame module bracket.

(t) Remove the bolt [100] from the clamp [101] that attaches the EEC electrical harness (HJ5A) [67] to the fan frame module bracket.

(u) Remove the EEC electrical harness (HJ5A) [67] from the 24 clips [70] along its routing.

(v) Remove blanket [190] from the strut 5 outer fitting [109] (View B, Figure 404).

(w) Remove the EEC electrical harness (HJ5A) [67] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the Fan Frame Strut 5 Panel (left) (TASK 72-23-06-000-801-G00).

2) Remove the bolt [102] from the clamp [103] that attaches the EEC electrical harness (HJ5A) [67] to the harness strut (6:00 o'clock) [104].

3) Remove the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] from the strut 5 outer fitting [109] as follows:

a) Remove the five bolts [106] that attach the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

b) Cut and remove the sealant between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Move the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] rearward from the electrical harnesses.

d) Remove the two nuts [107] and two bolts [108] to disassemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Cut and remove the sealant on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and around the harnesses.

f) Remove the harnesses from the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

g) Remove any remaining sealant residue.

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

4) Remove the harness support block [504], harness support block [505], harness support block [506] from the harness strut (6:00 o'clock) [104] as follows:

a) Remove the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

b) Cut and remove the sealant between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

c) Move the assembly of the harness support block [504], harness support block [505], and harness support block [506] upward and away from the harness strut (6:00 o'clock) [104].

d) Remove the two nuts [112] and two bolts [113] to disassemble the harness support block [504], harness support block [505], and harness support block [506].

e) Cut and remove the sealant on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses.

f) Remove the harnesses from the harness support block [504], harness support block [505], and harness support block [506].

g) Remove any remaining sealant residue.

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

5) Remove the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] from the harness strut (6:00 o'clock) [104] as follows:

a) Remove the four bolts [124] that attach the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

b) Cut and remove the sealant between the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

c) Move the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] upward and away from the harness strut (6:00 o'clock) [104].

d) Remove the four nuts [126] and four bolts [125] to disassemble the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

e) Cut and remove the sealant on the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and around the harnesses.

f) Remove the harnesses from the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

g) Remove any remaining sealant residue.

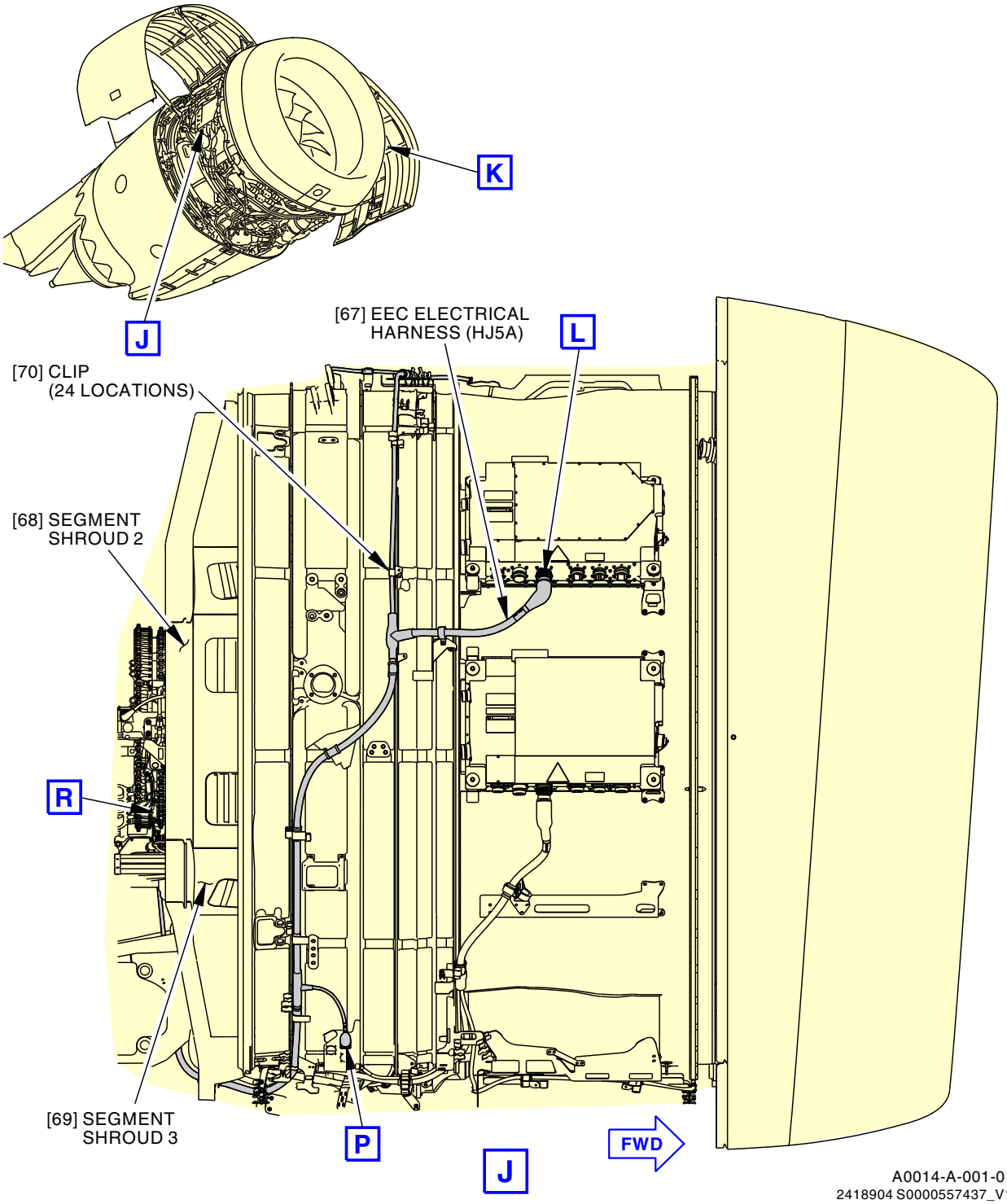
SIA ALL

(x) Carefully remove the EEC electrical harness (HJ5A) [67] from the engine.

(y) Install the protective covers on all of the harness connectors and the component receptacles.

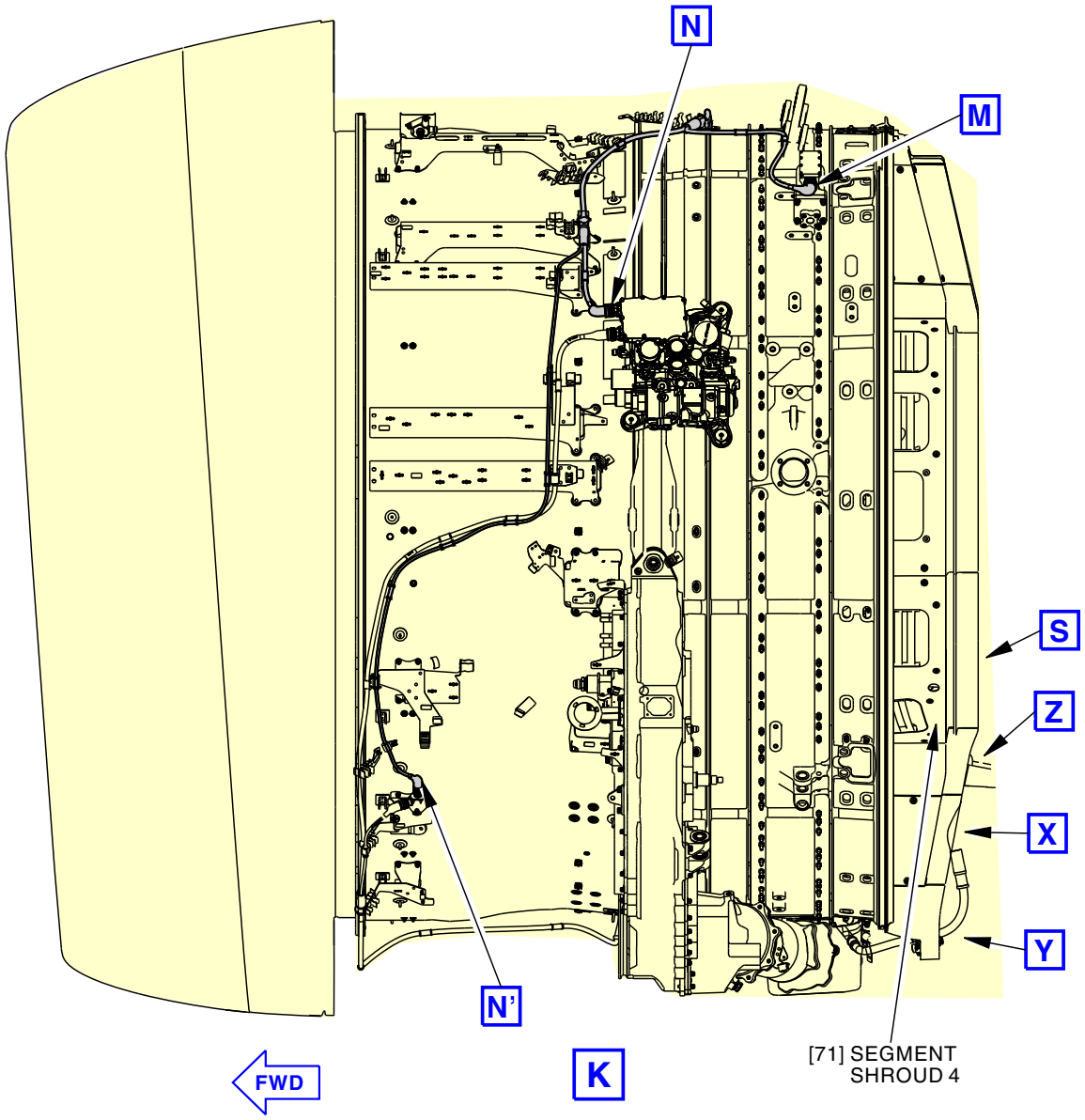
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 1 of 10)

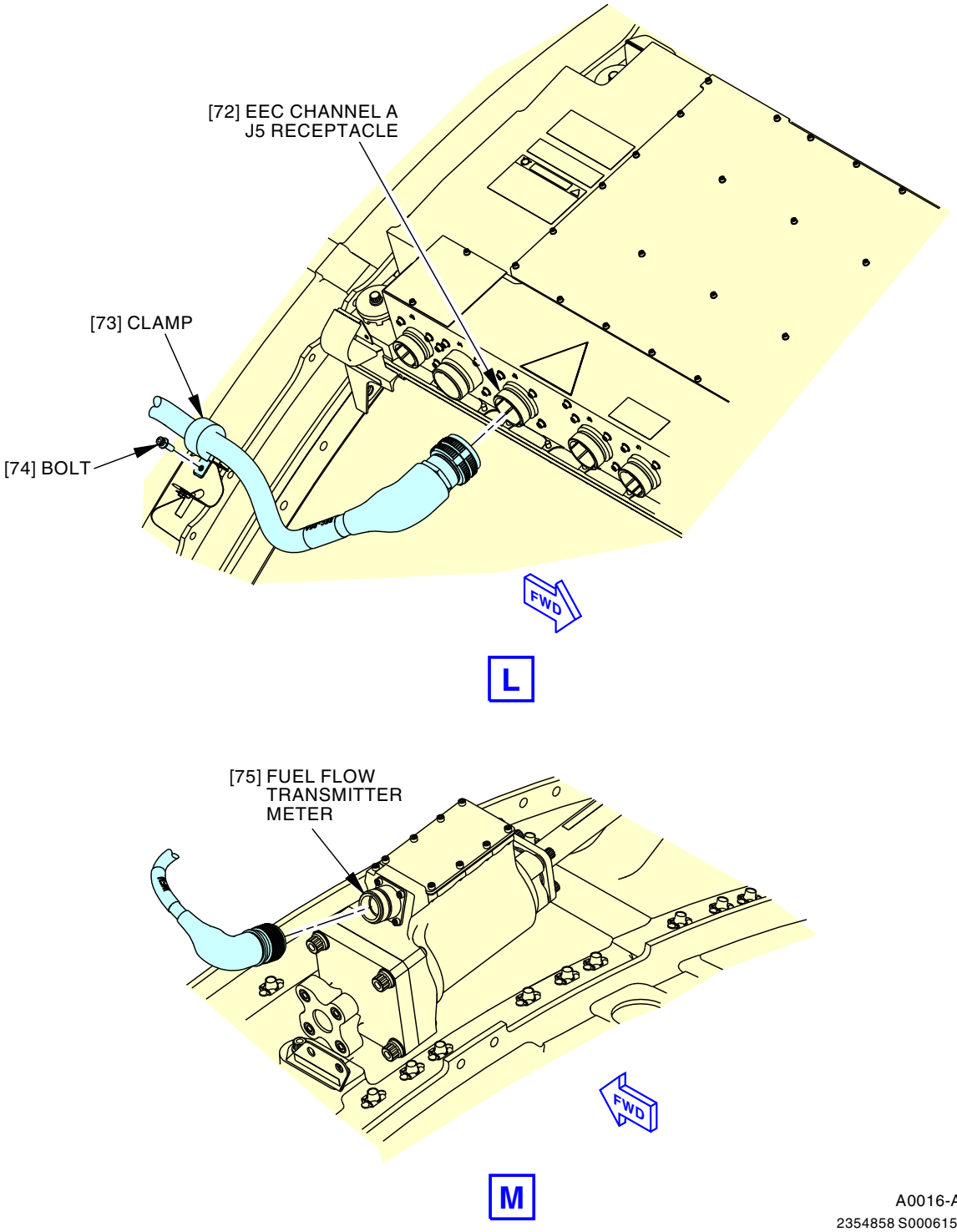
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-B-F0301-A0015-A-001-01
2354857 S00061516073_V2

EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 2 of 10)

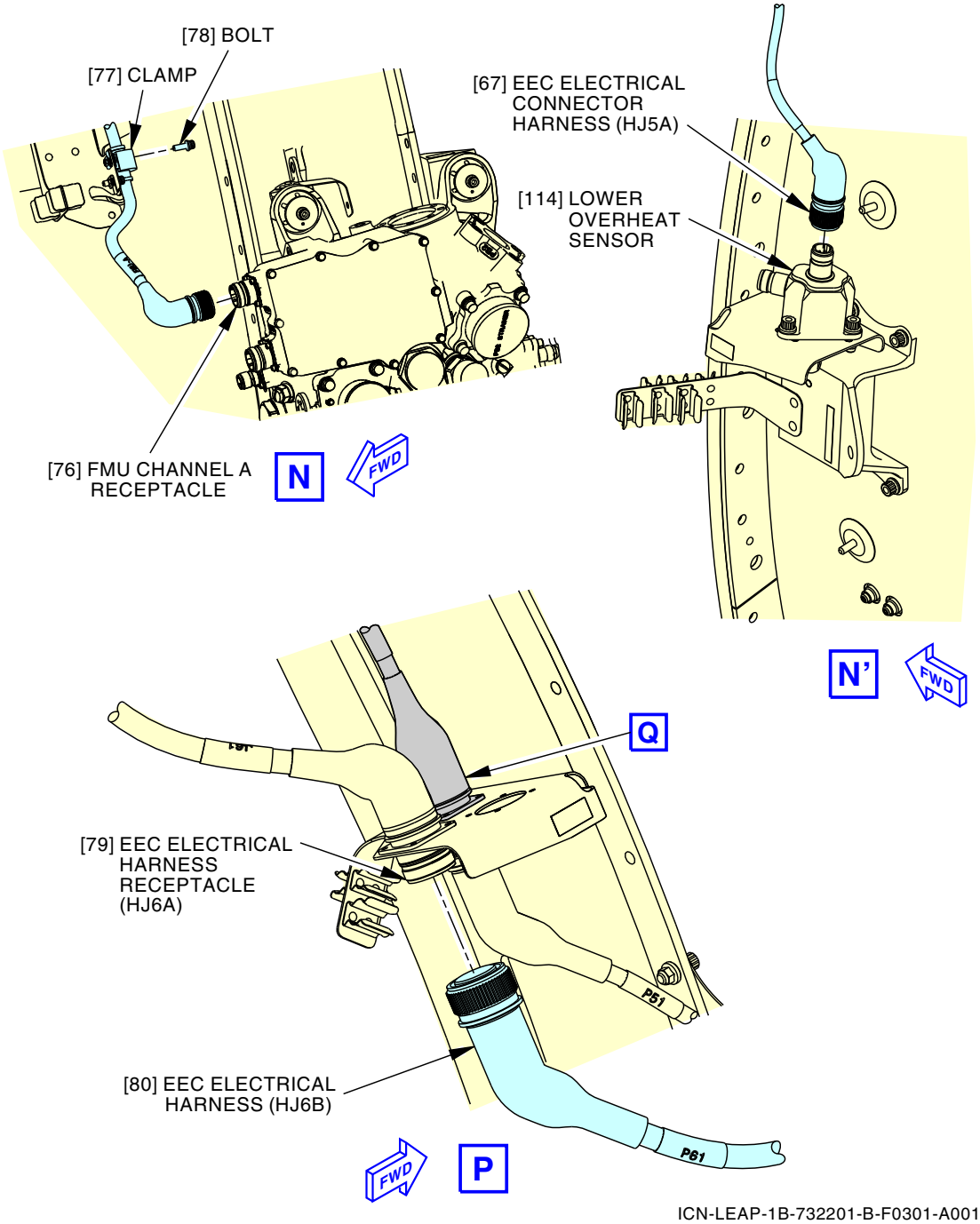
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0016-A-001-01
2354858 S00061516074_V1

EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 3 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

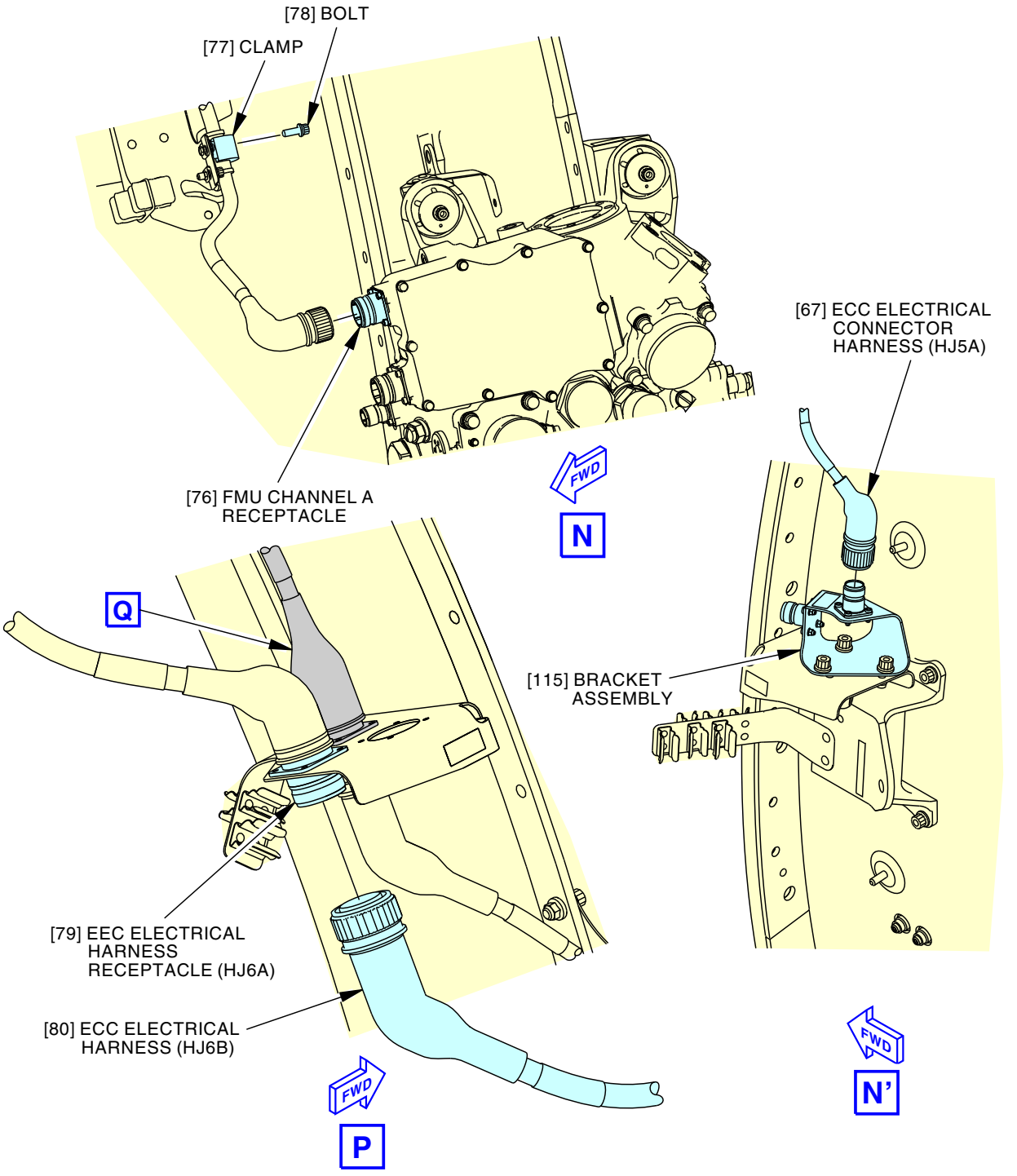


ICN-LEAP-1B-732201-B-F0301-A0017-A-001-01

2354859 S00061516075_V2

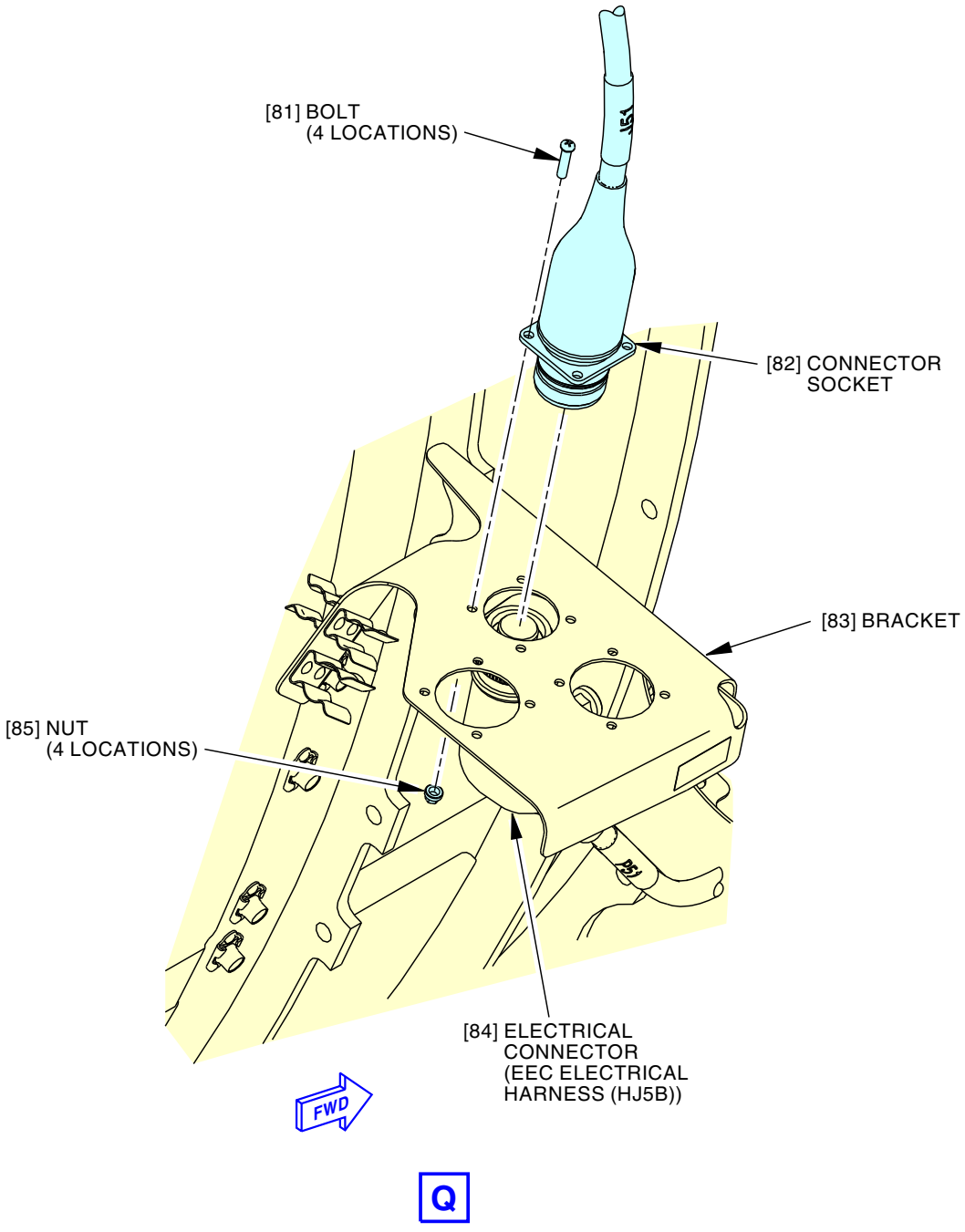
EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 4 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



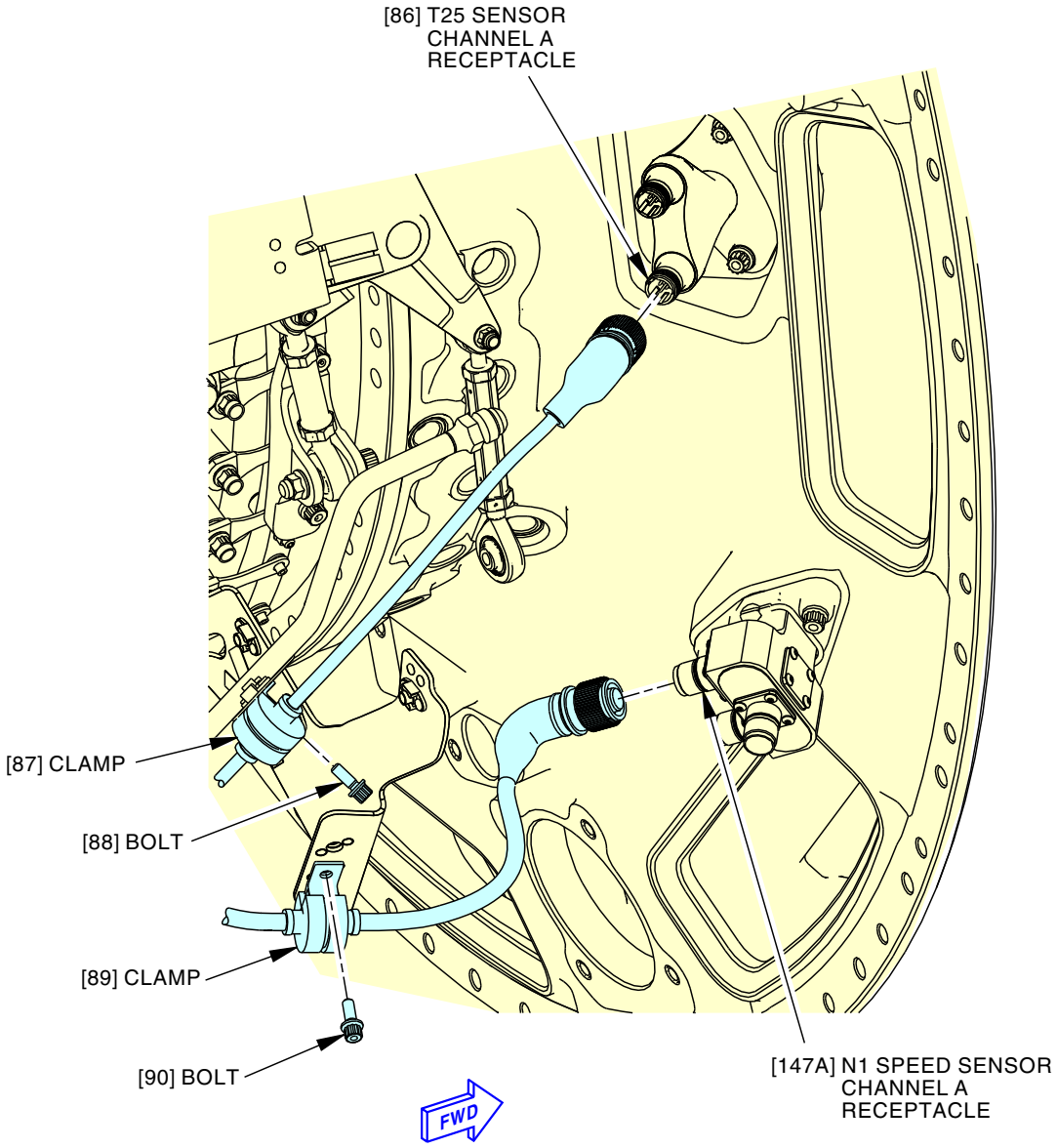
EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 5 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 6 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

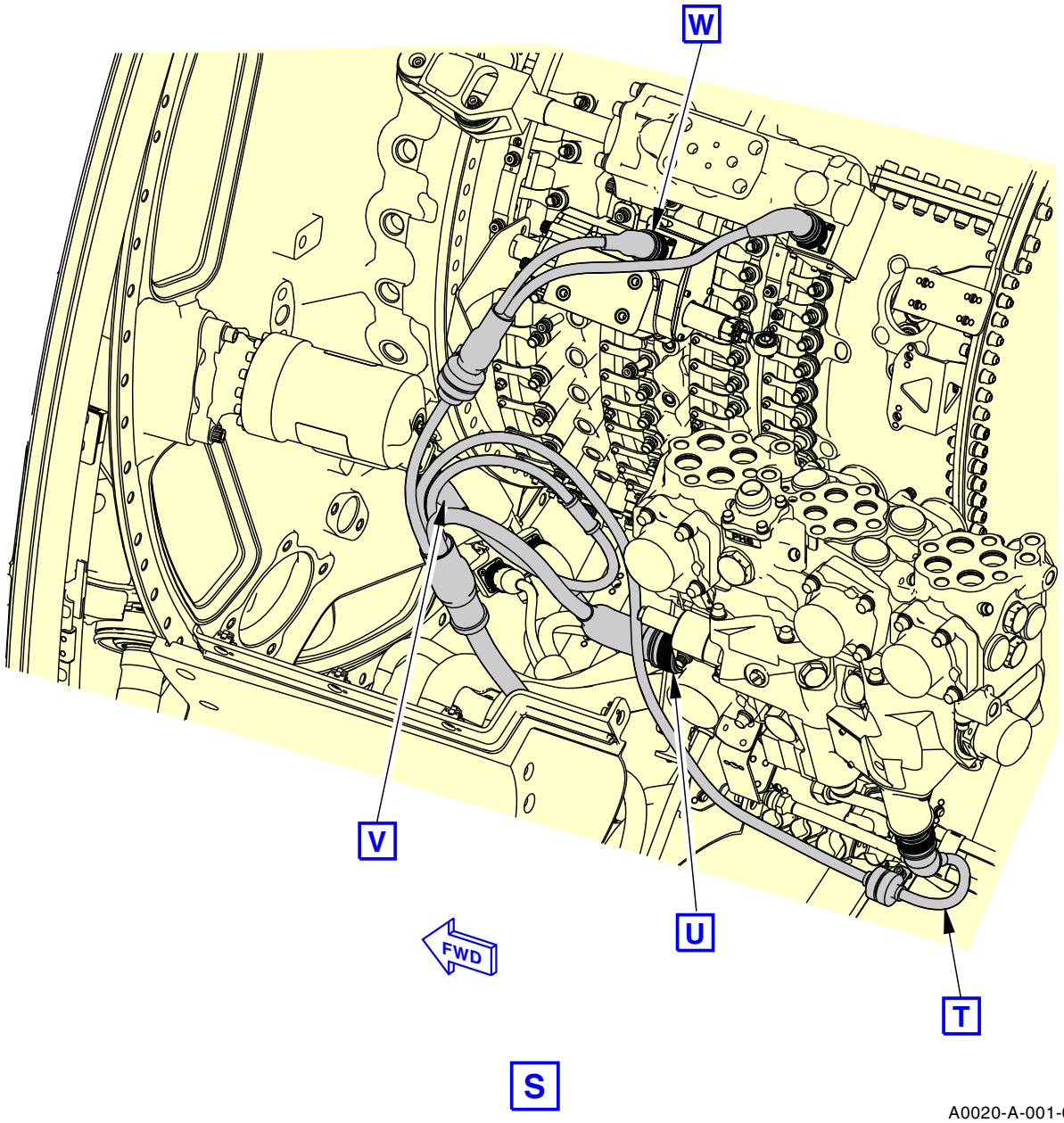


R

A0019-A-001-01
2354861 S00061516077_V1

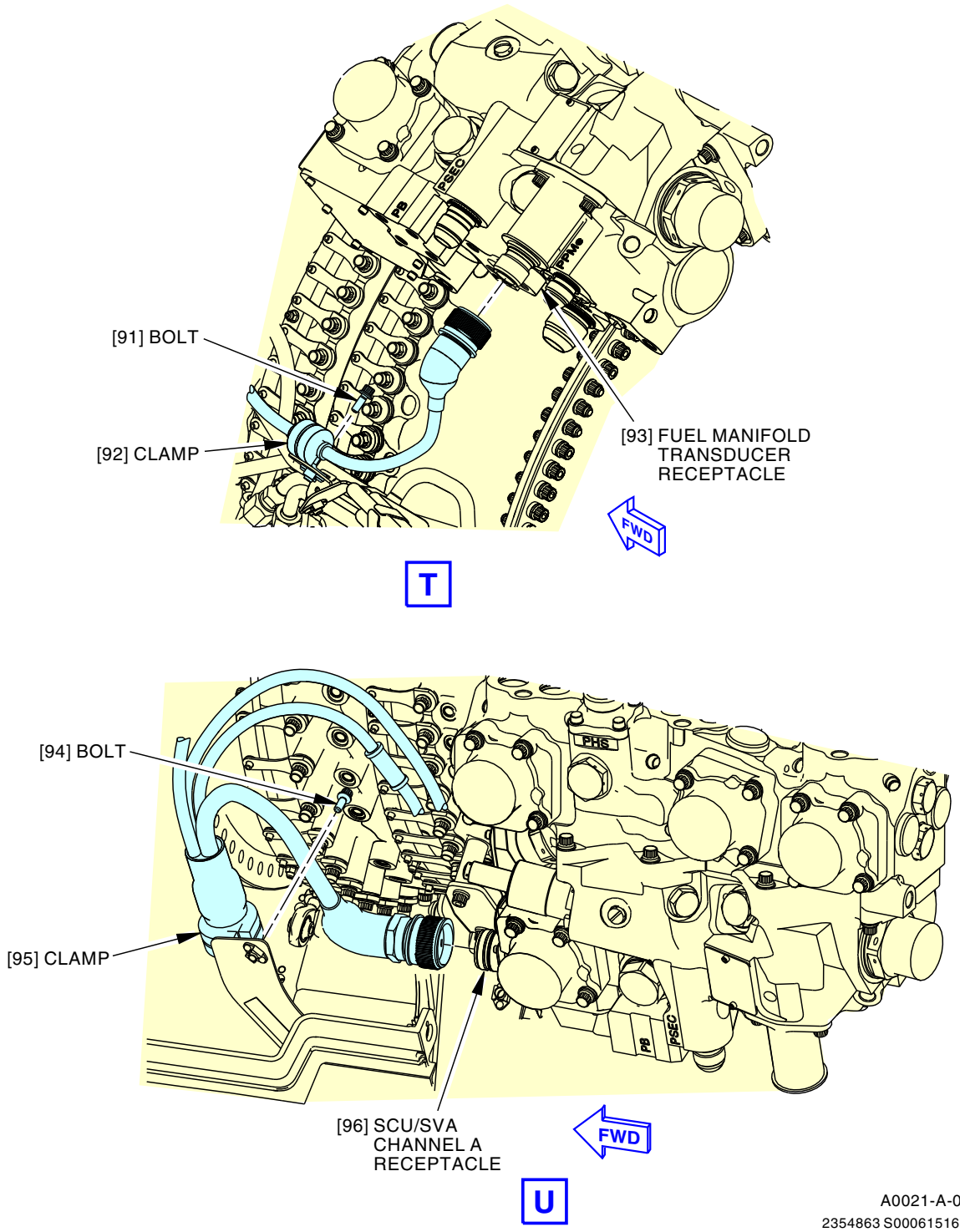
EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 7 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



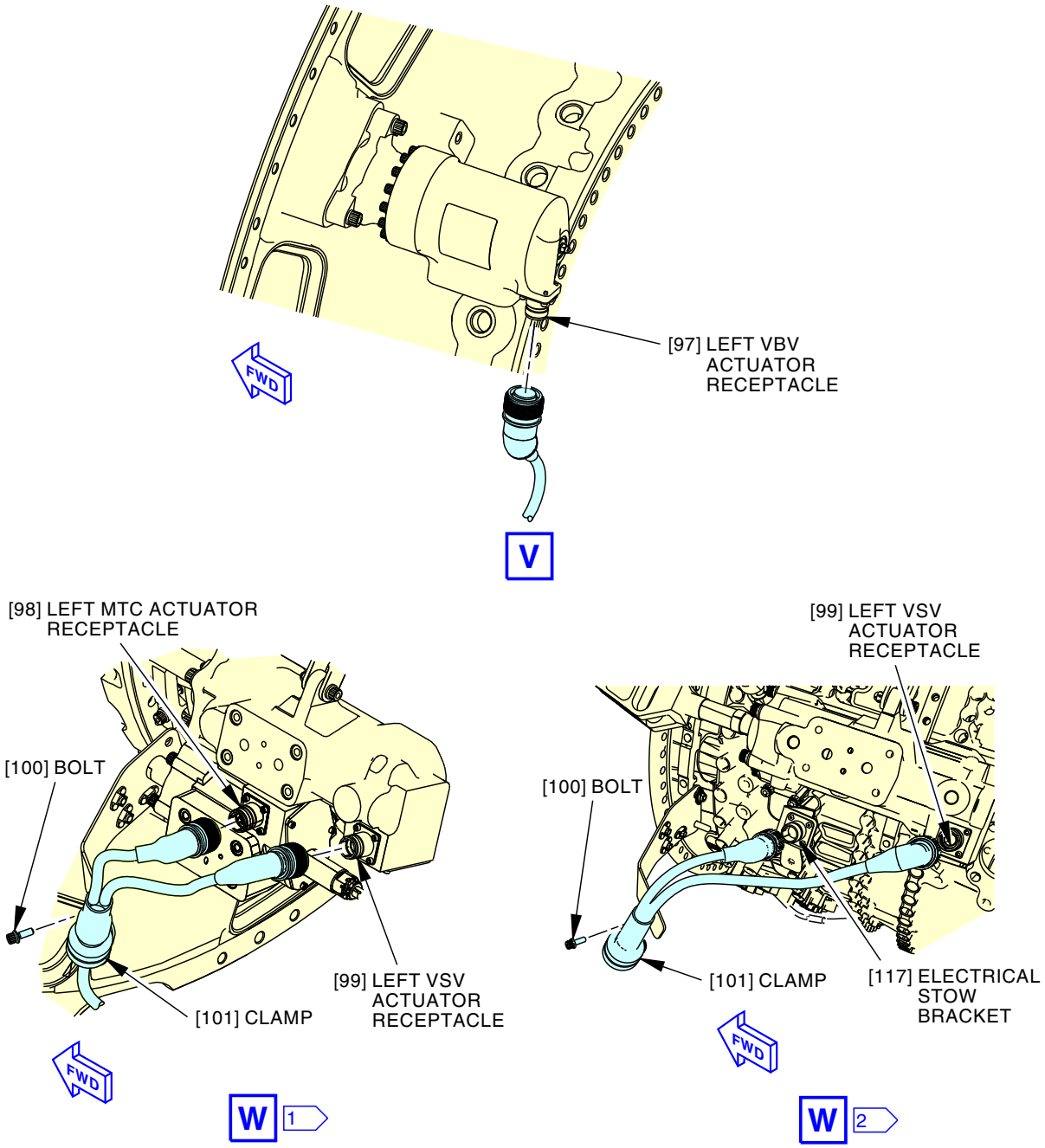
EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 8 of 10)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 9 of 10)

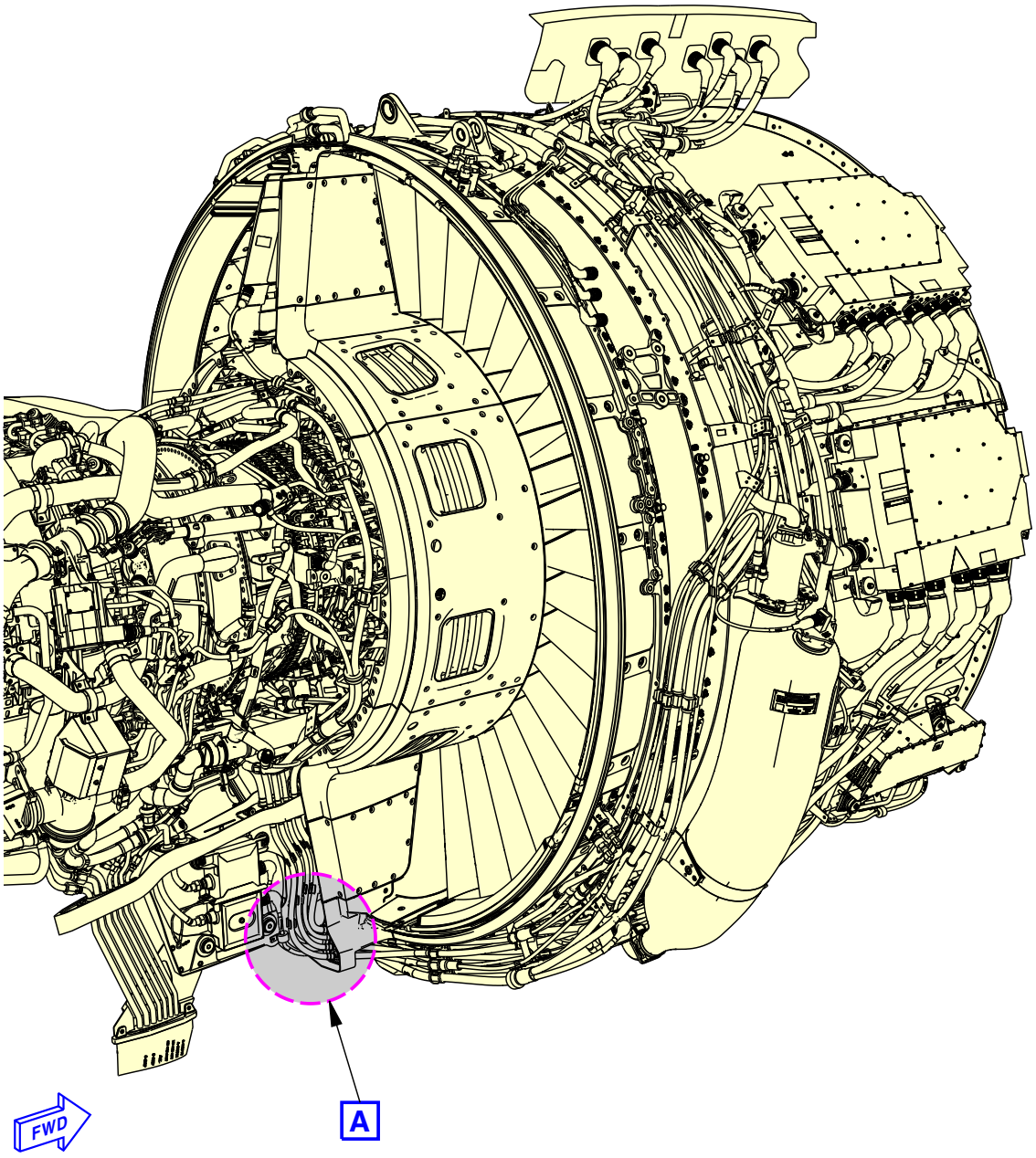
ECCN 9E991 BOEING PROPRIETARY - See title page for details



5057792-00
2354864 S00061516080_V3

EEC Electrical Harness (HJ5A) Installation
Figure 403/73-22-01-990-861-G00 (Sheet 10 of 10)

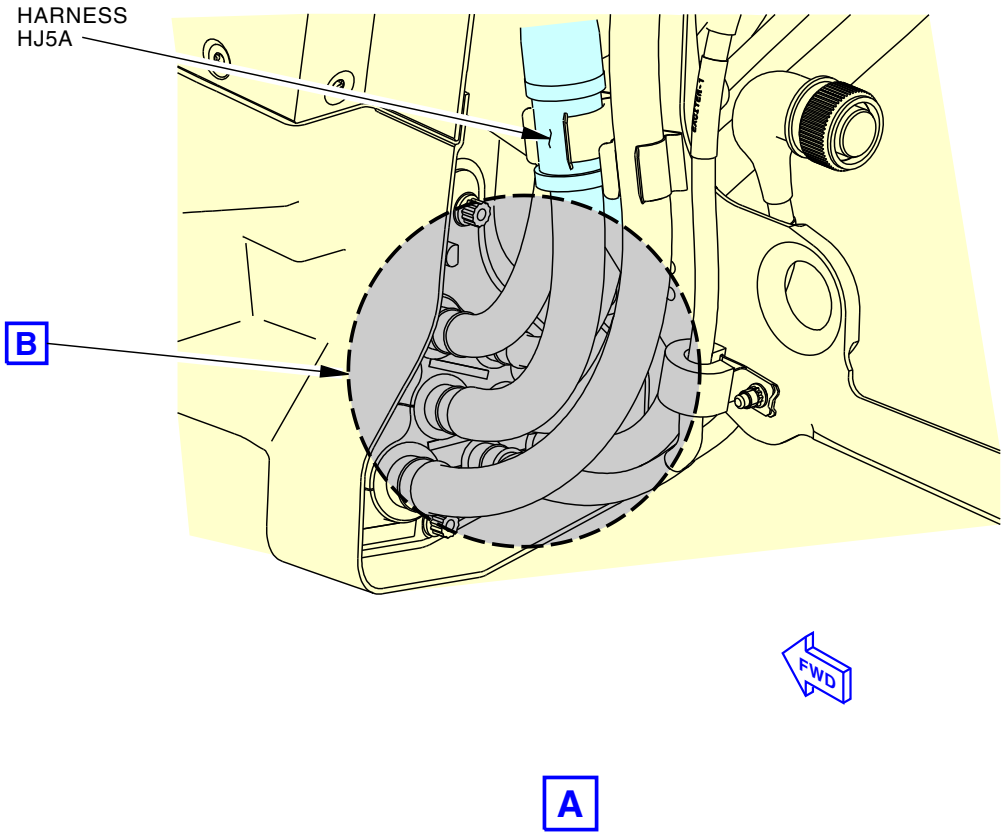
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937794 S0000713383_V2

Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 1 of 9)

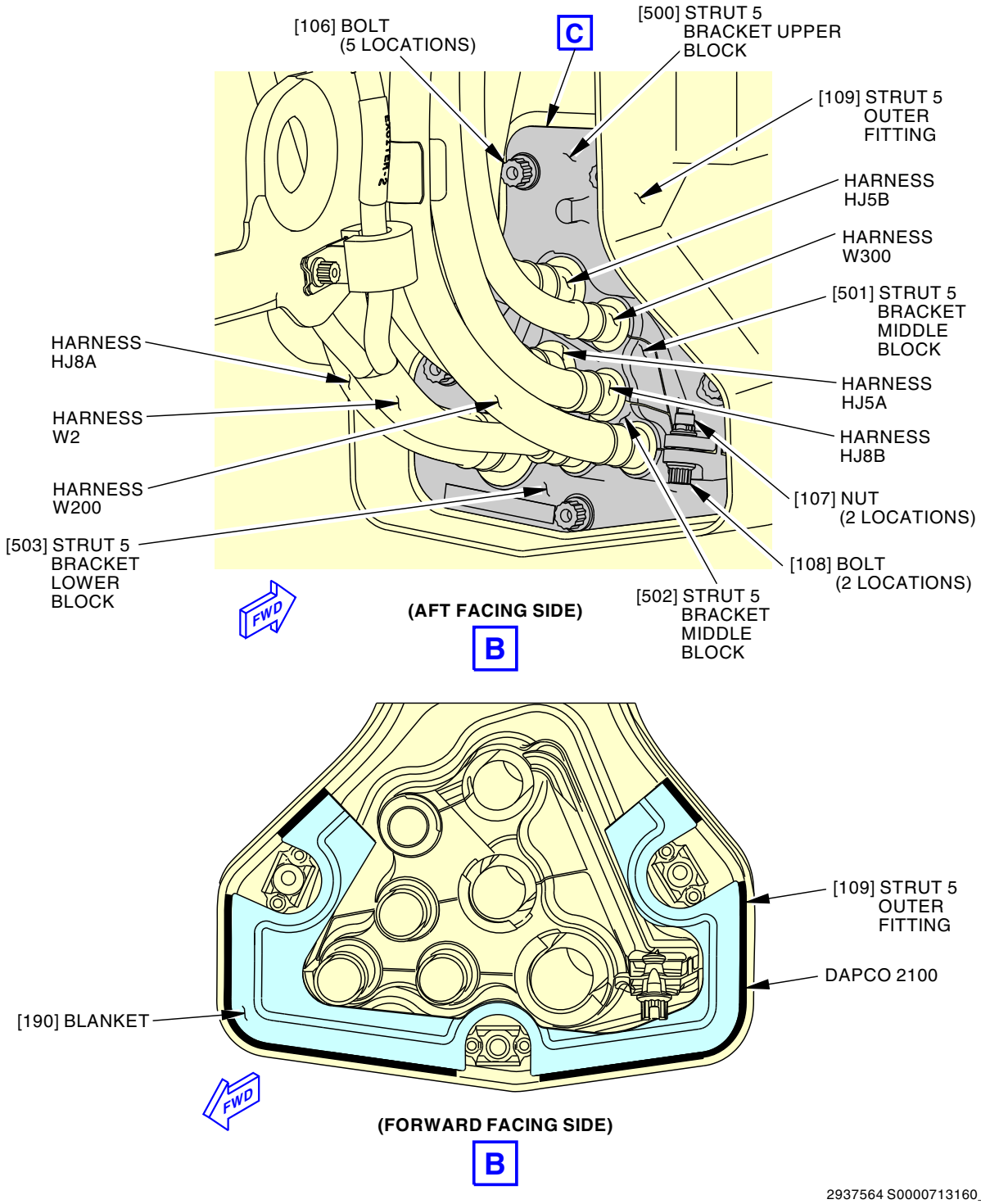
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937795 S0000713384_V2

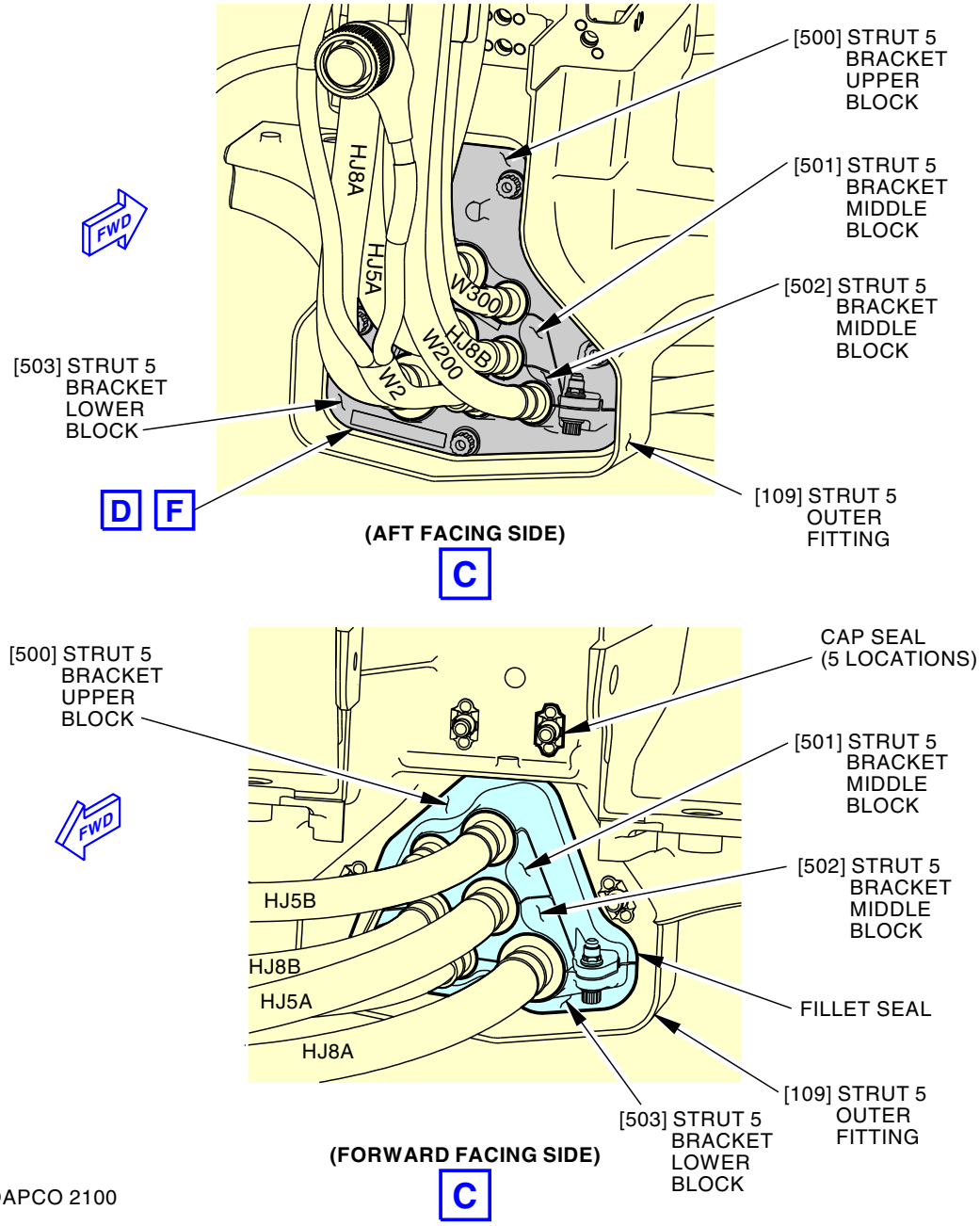
Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

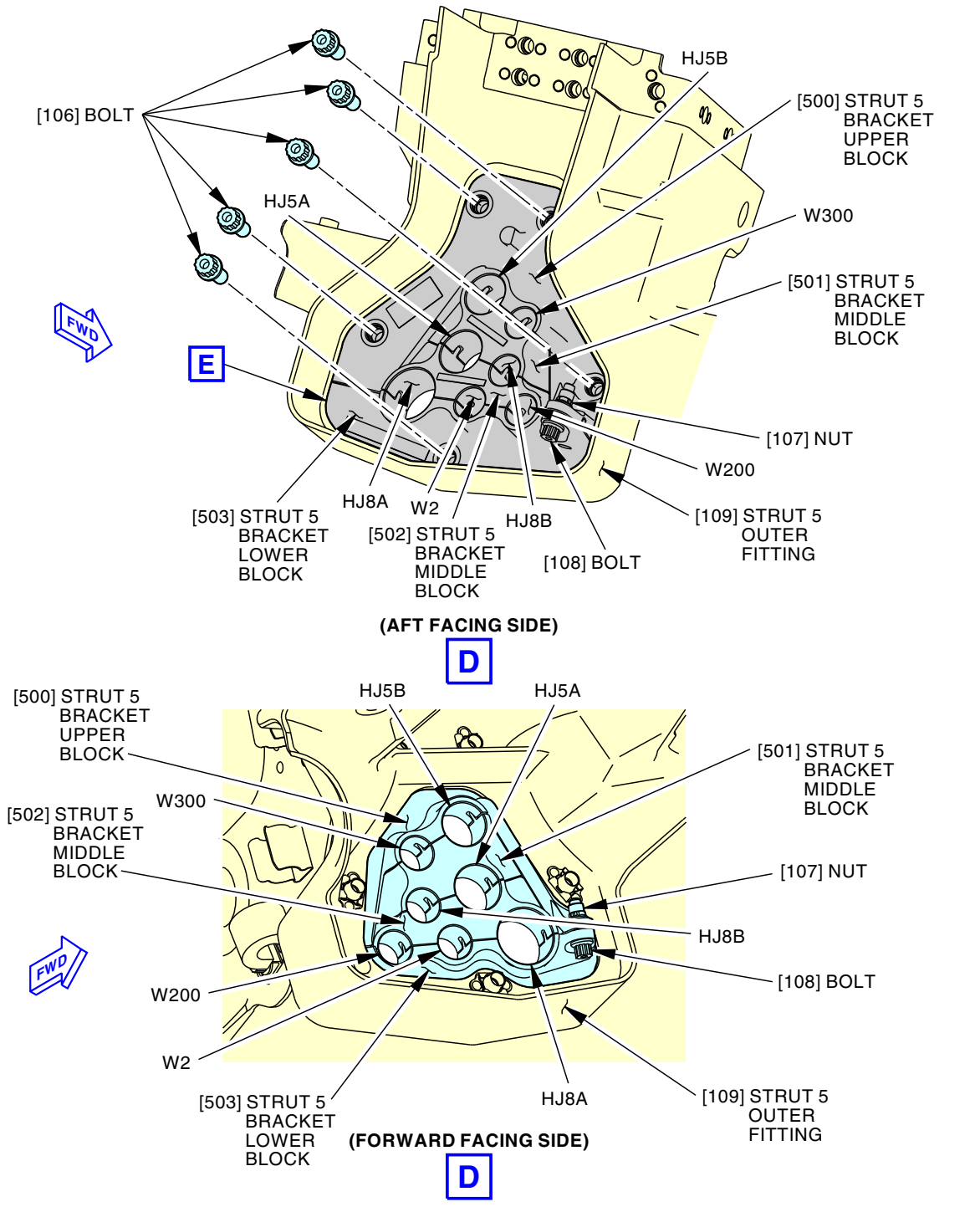
FAY SEAL PER AMM 51-22-00 ON INNER CONTOUR OF THE FITTING (AFT SIDE). SEALANT SQUEEZE-OUT SHOULD BE CONTINUOUS AND EVEN.

IT IS ACCEPTABLE TO APPLY THE FILLET SEAL ALONG INNER CONTOUR OF THE FITTING ON THE FORWARD SIDE.

2937801 S0000713390_V3

Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

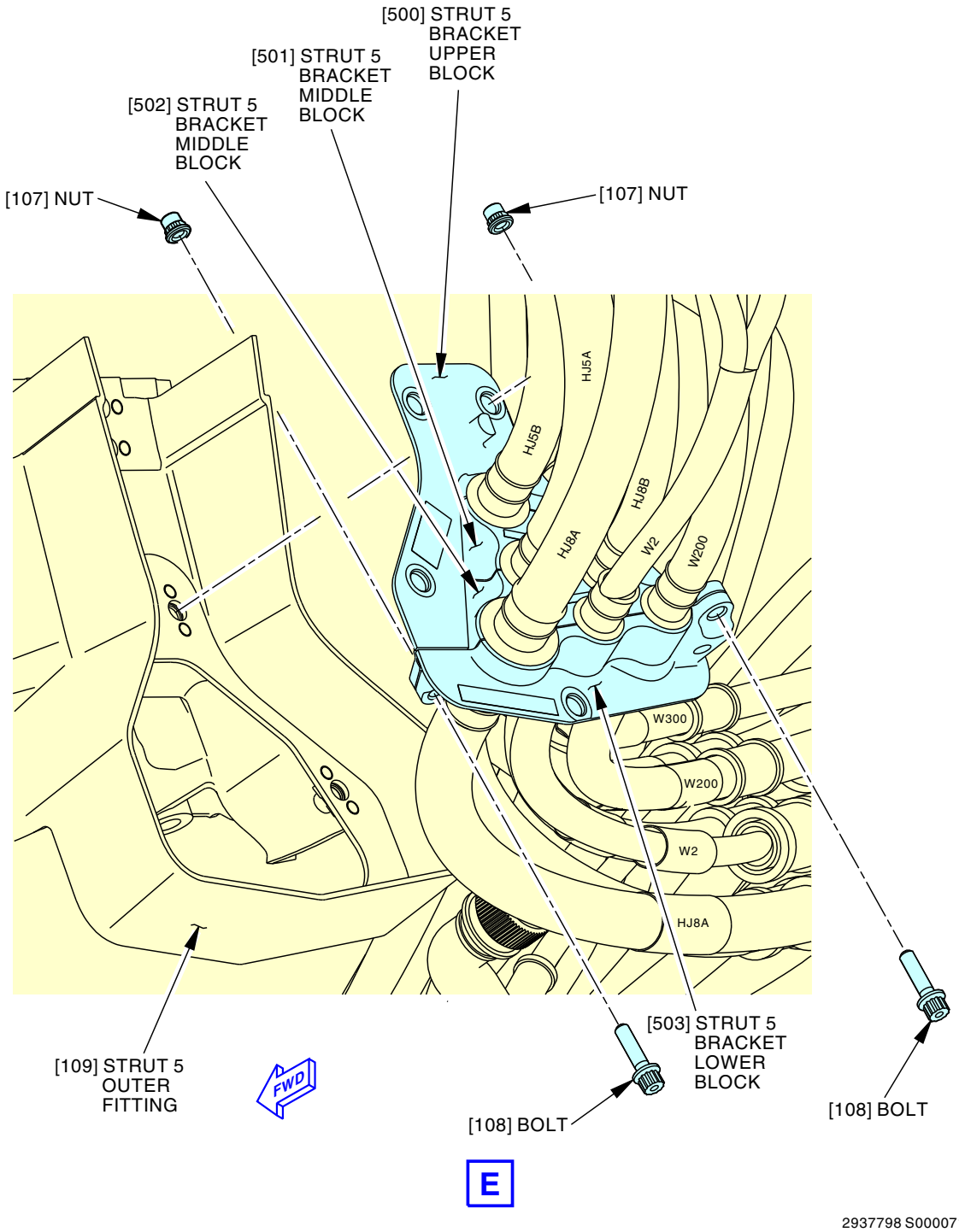


NOTE:
HARNESSES NOT SHOWN

2943980 S0000720369_V2

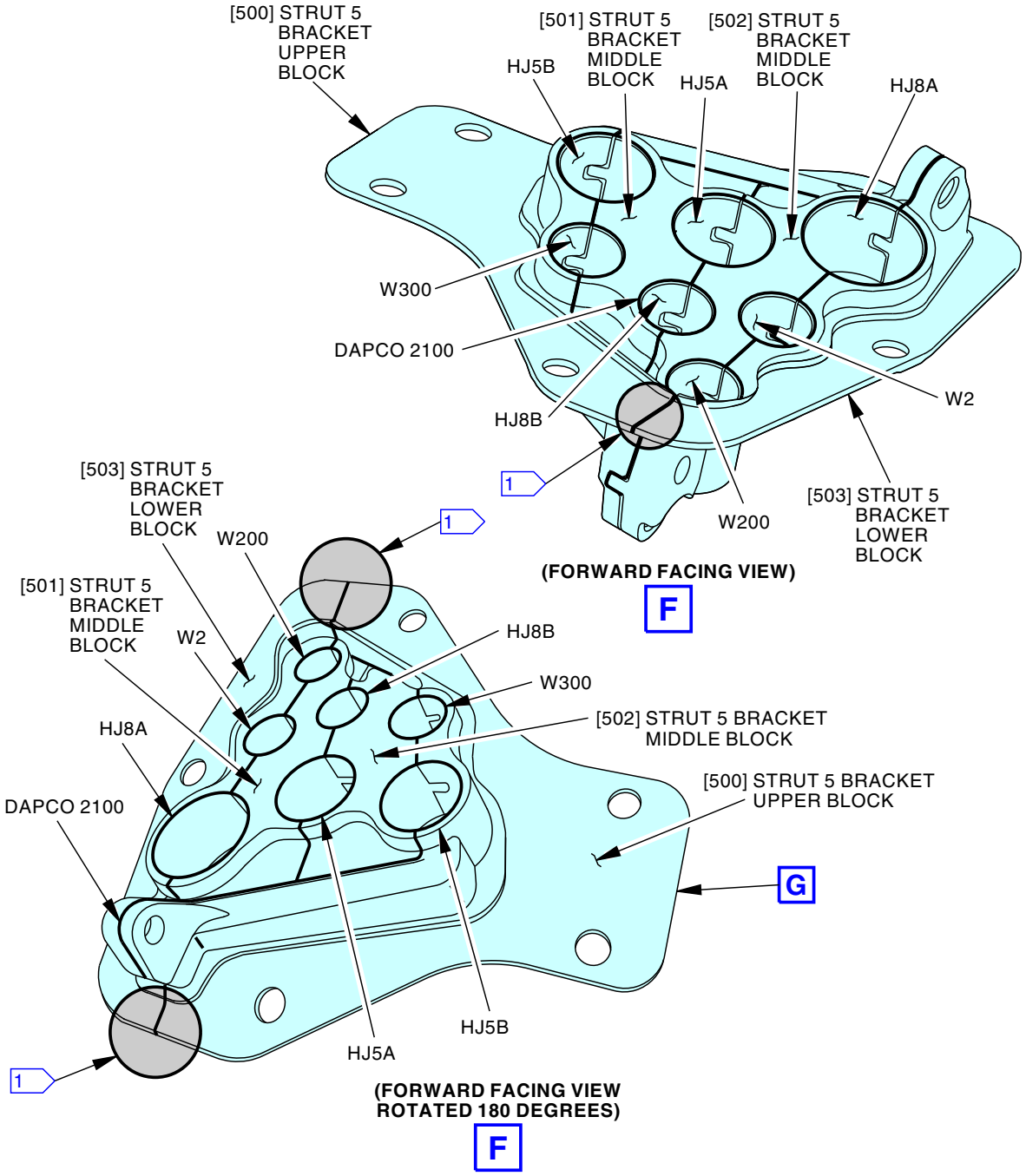
Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

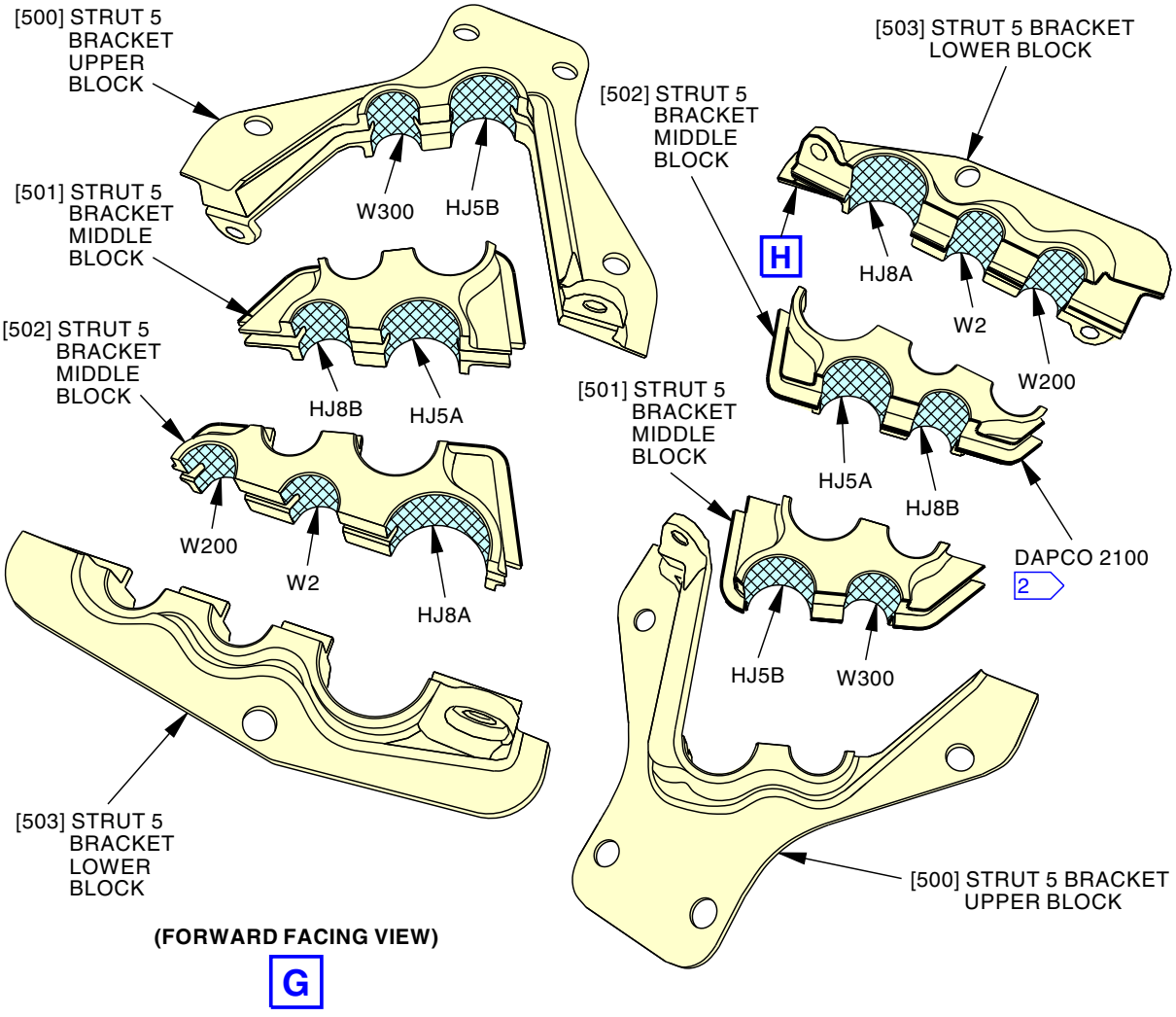
HARNESSES NOT SHOWN.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

2937800 S0000713389_V3

Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DAPCO 2100

NOTE:

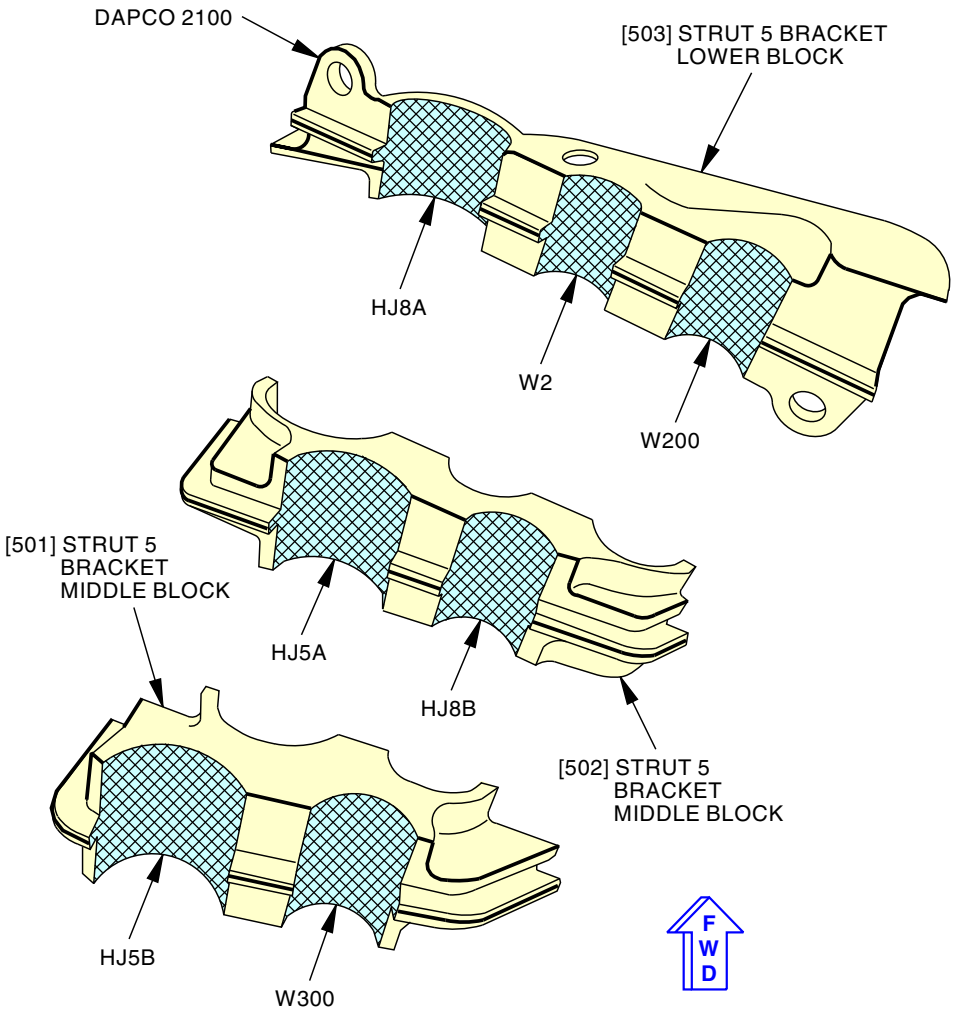
SEALANT PROVIDES FAY SEAL BETWEEN WIRE HARNESS AND BLOCKS AND SHOULD BE APPLIED TO THE BOTH SIDES OF BLOCKS.

2 SEALANT APPLIED TO ONE SIDE (TOP OR BOTTOM) OF THE BLOCKS.

2937799 S0000713388_V3

Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 8 of 9)

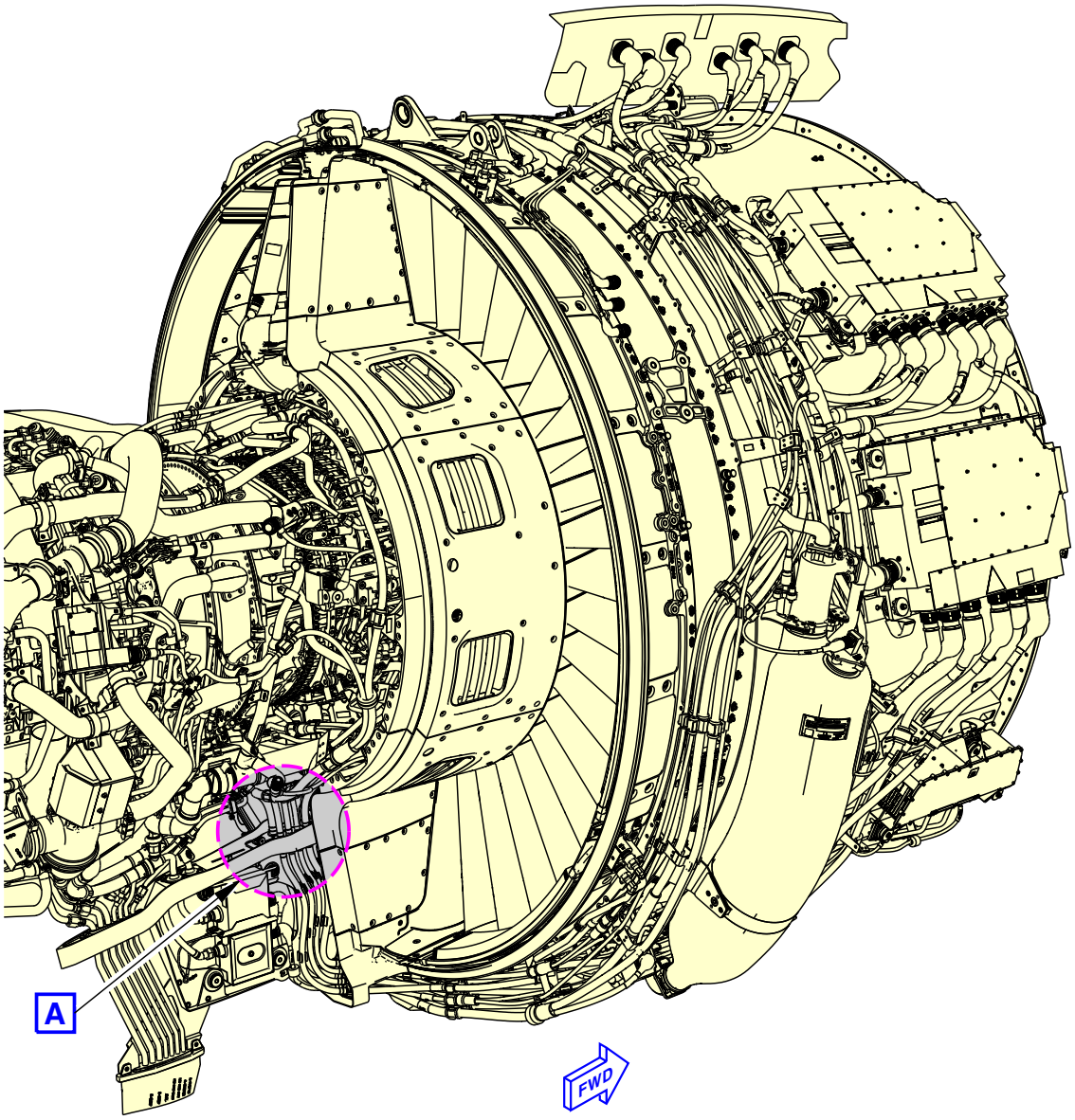
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2949941 S0000726813_V1

Strut Bracket Block Installation
Figure 404/73-22-01-990-870-G00 (Sheet 9 of 9)

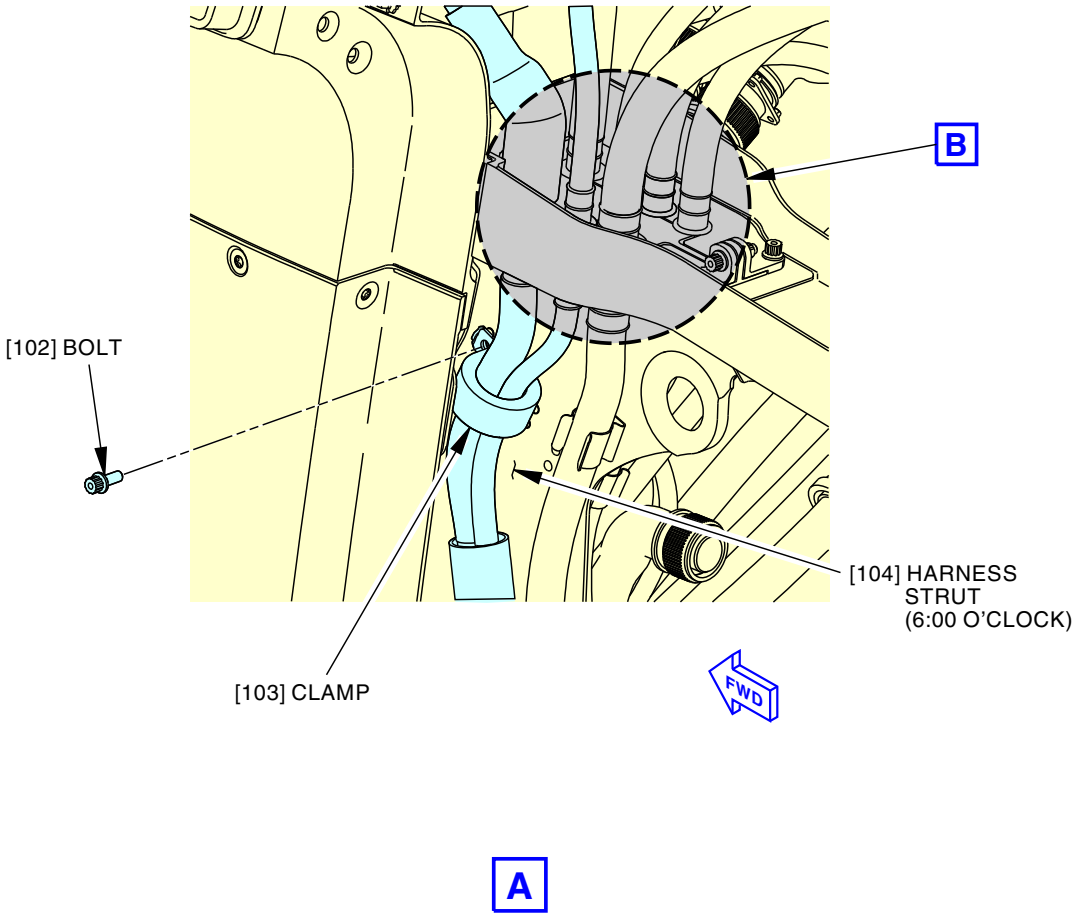
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-D-58828-00045-A-001-01
2938818 S0000714836_V2

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 1 of 11)

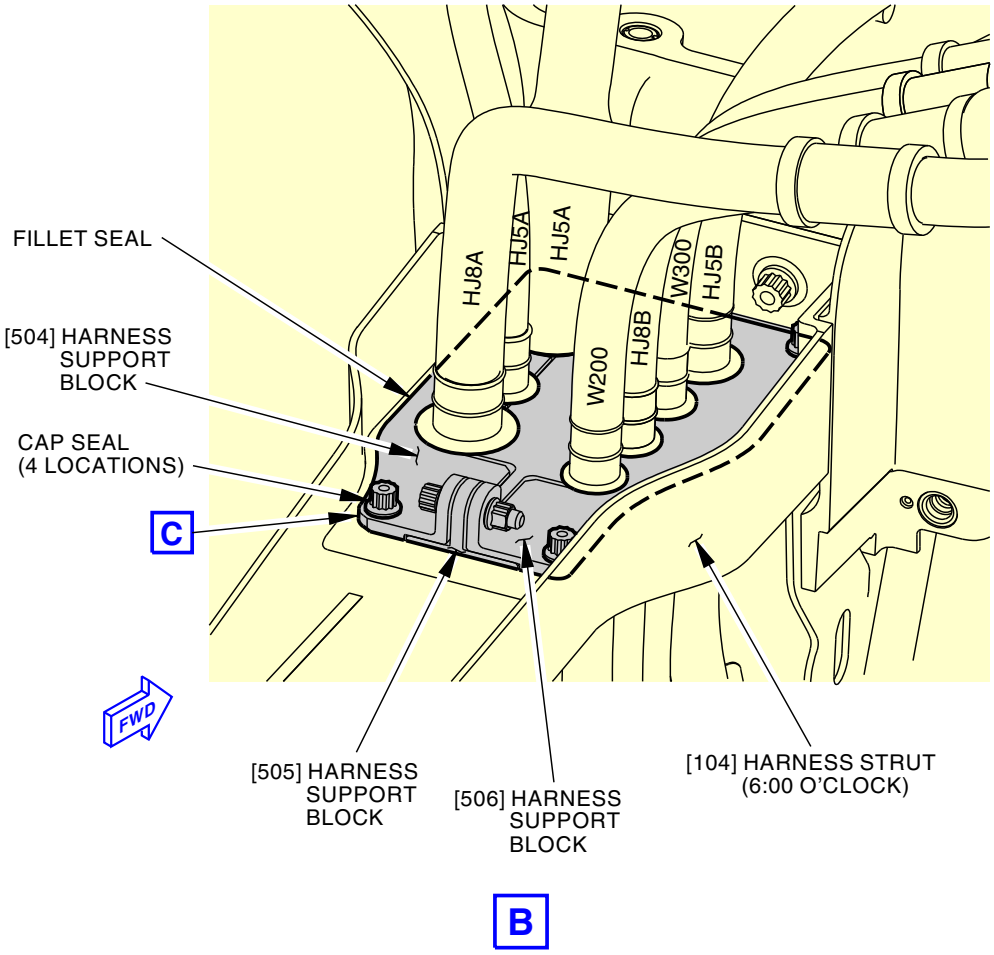
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937554 S0000713159_V2

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 2 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

——— DAPCO 2100

NOTE:

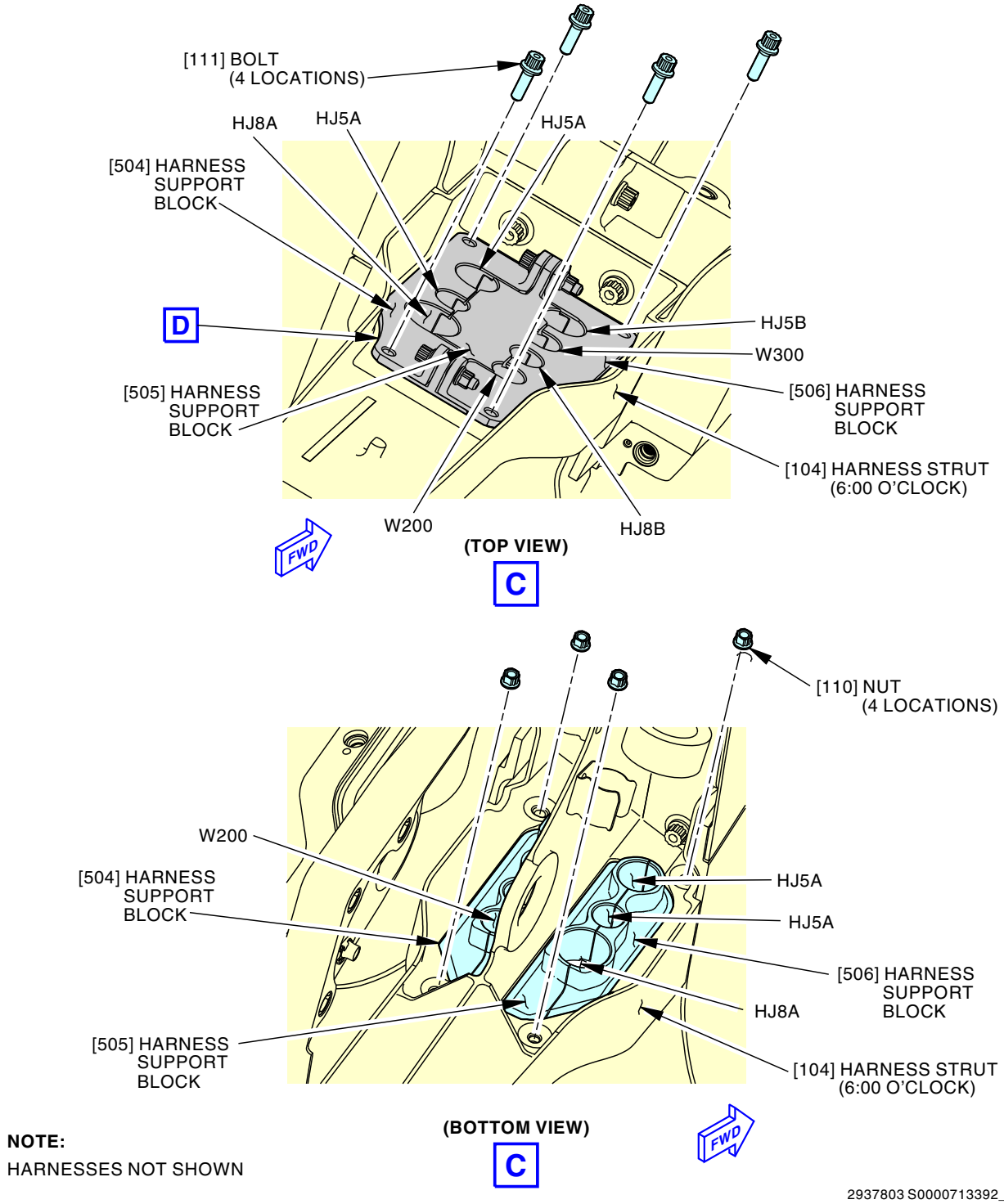
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE HARNESS SUPPORT BLOCK. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937807 S0000713396_V4

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 3 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



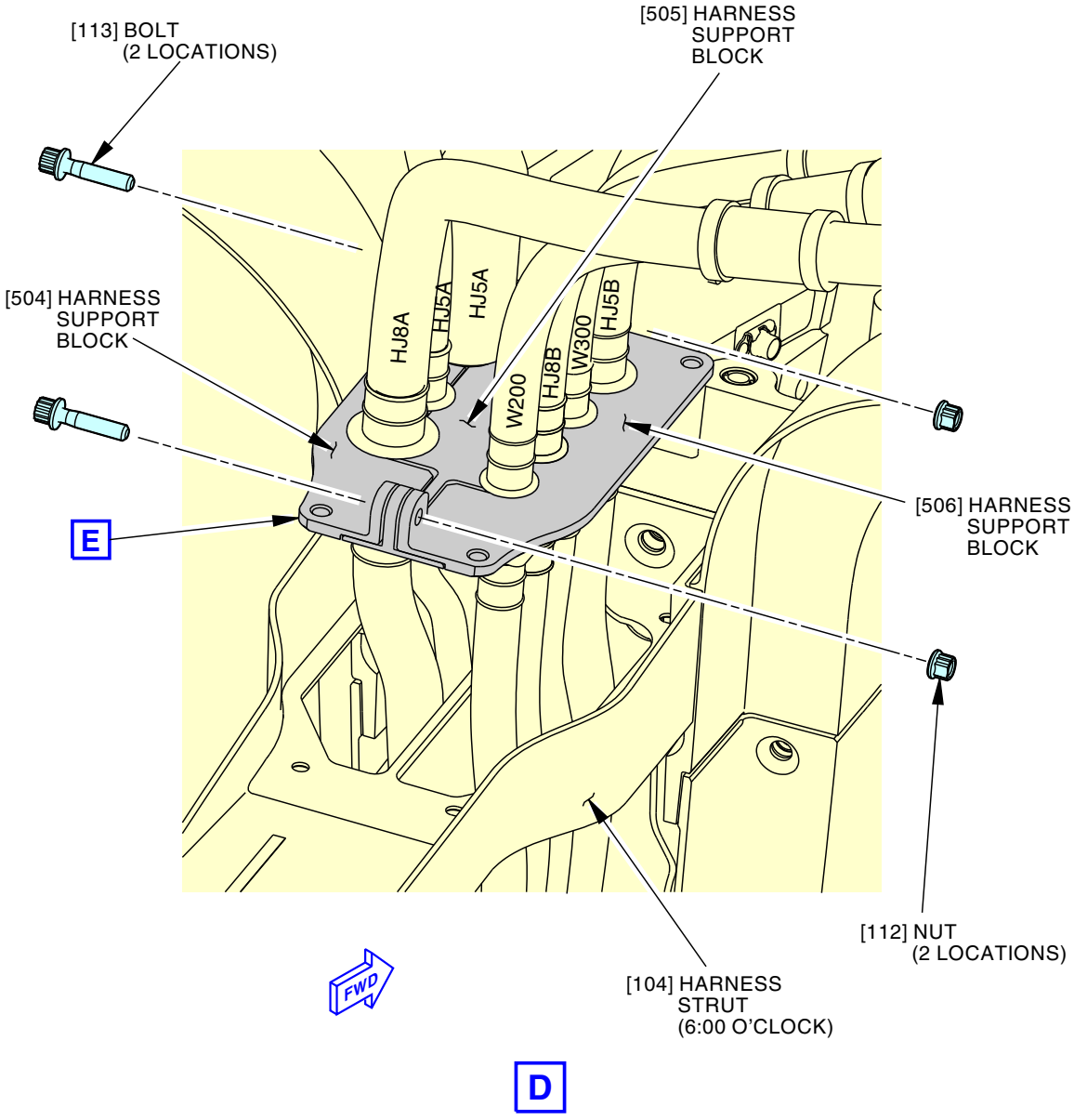
NOTE:

HARNESSES NOT SHOWN

2937803 S0000713392_V2

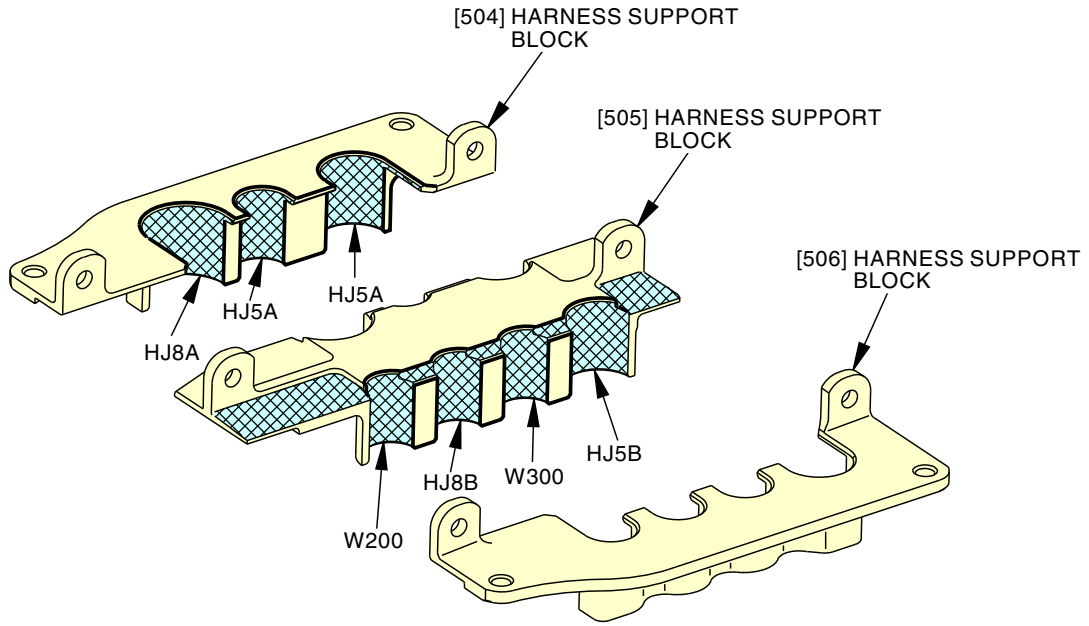
Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 4 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



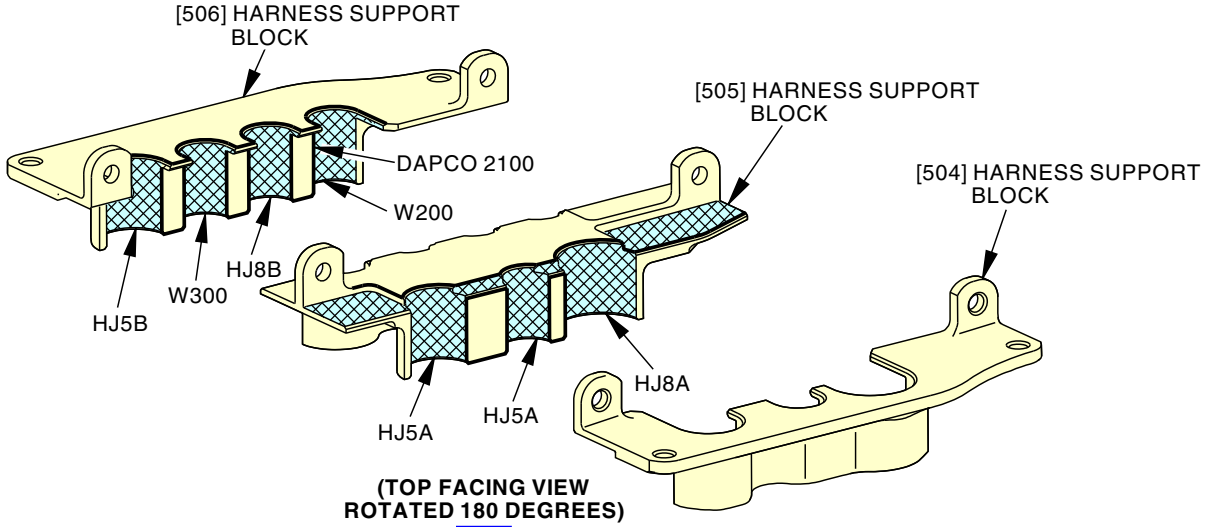
Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

E



(TOP FACING VIEW ROTATED 180 DEGREES)

E

LEGEND:

DAPCO 2100

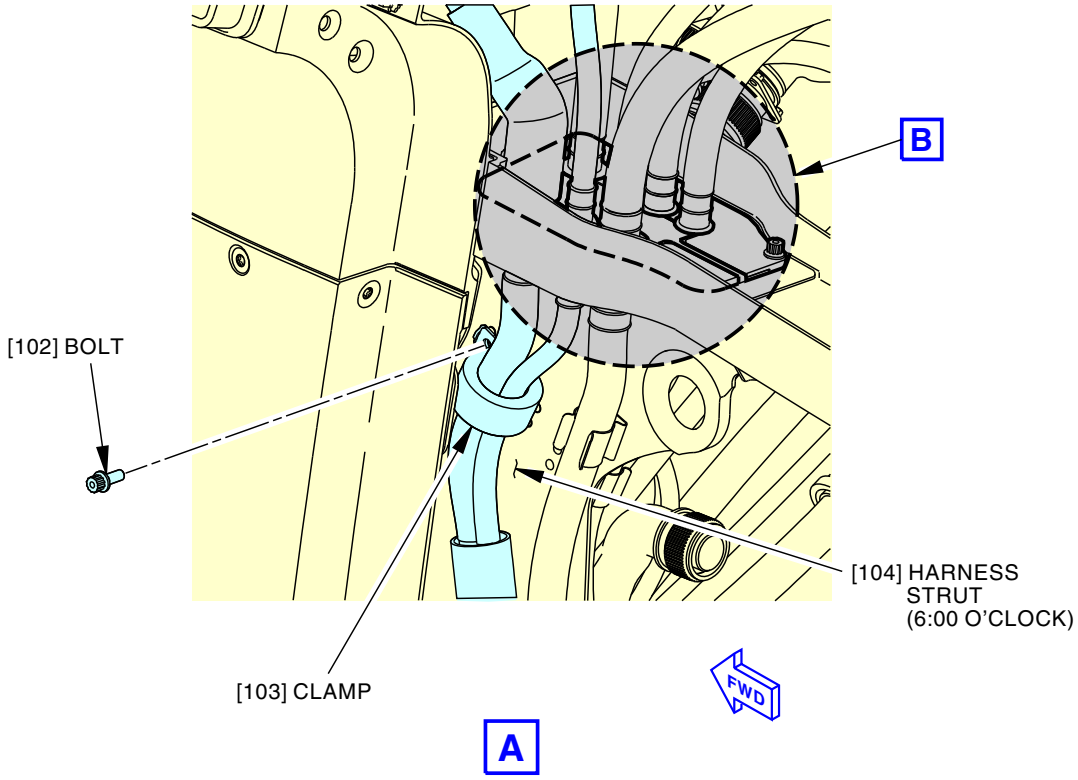
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937805 S0000713394_V4

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 6 of 11)

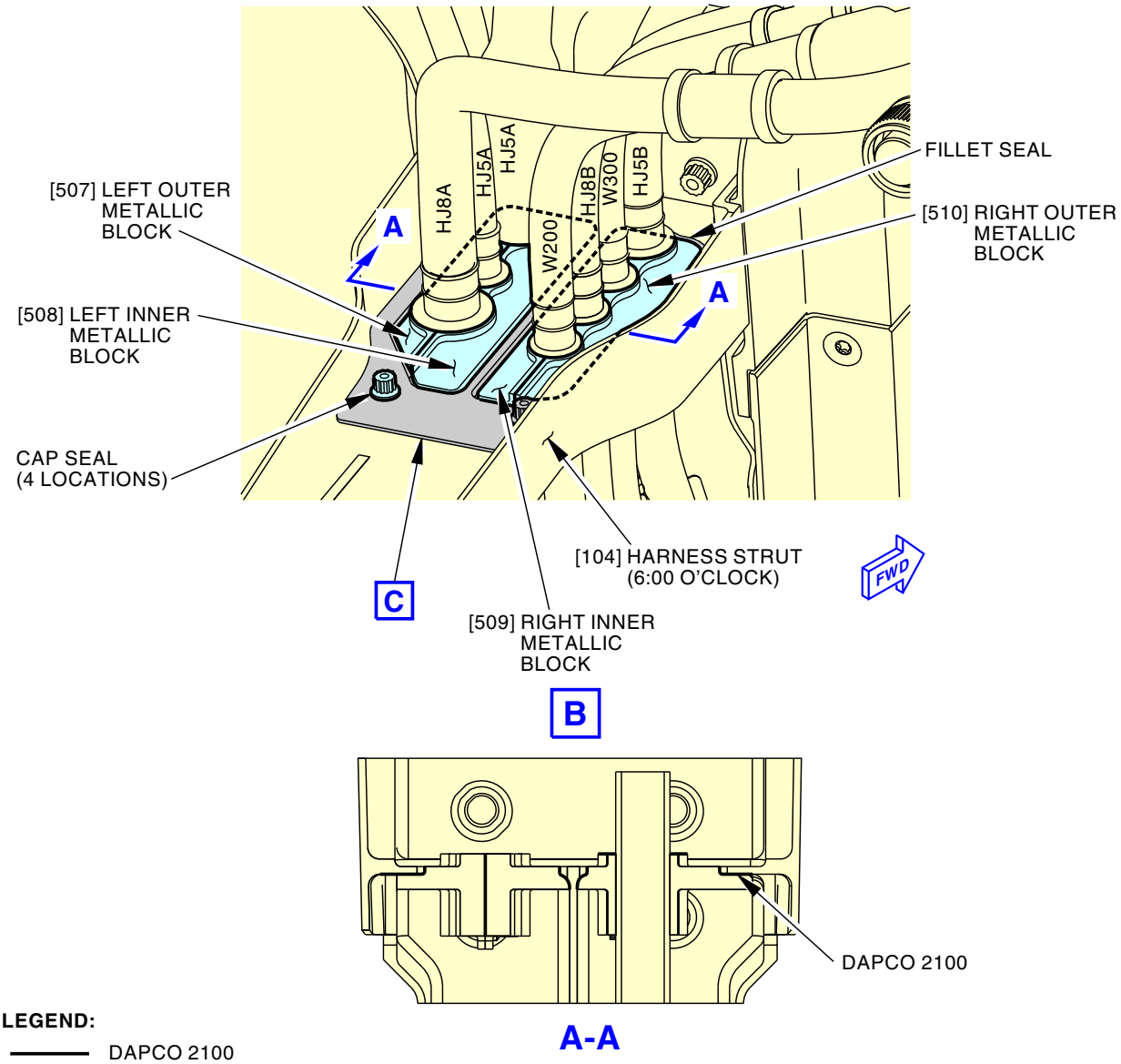
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2962027 S0000739197_V1

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 7 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

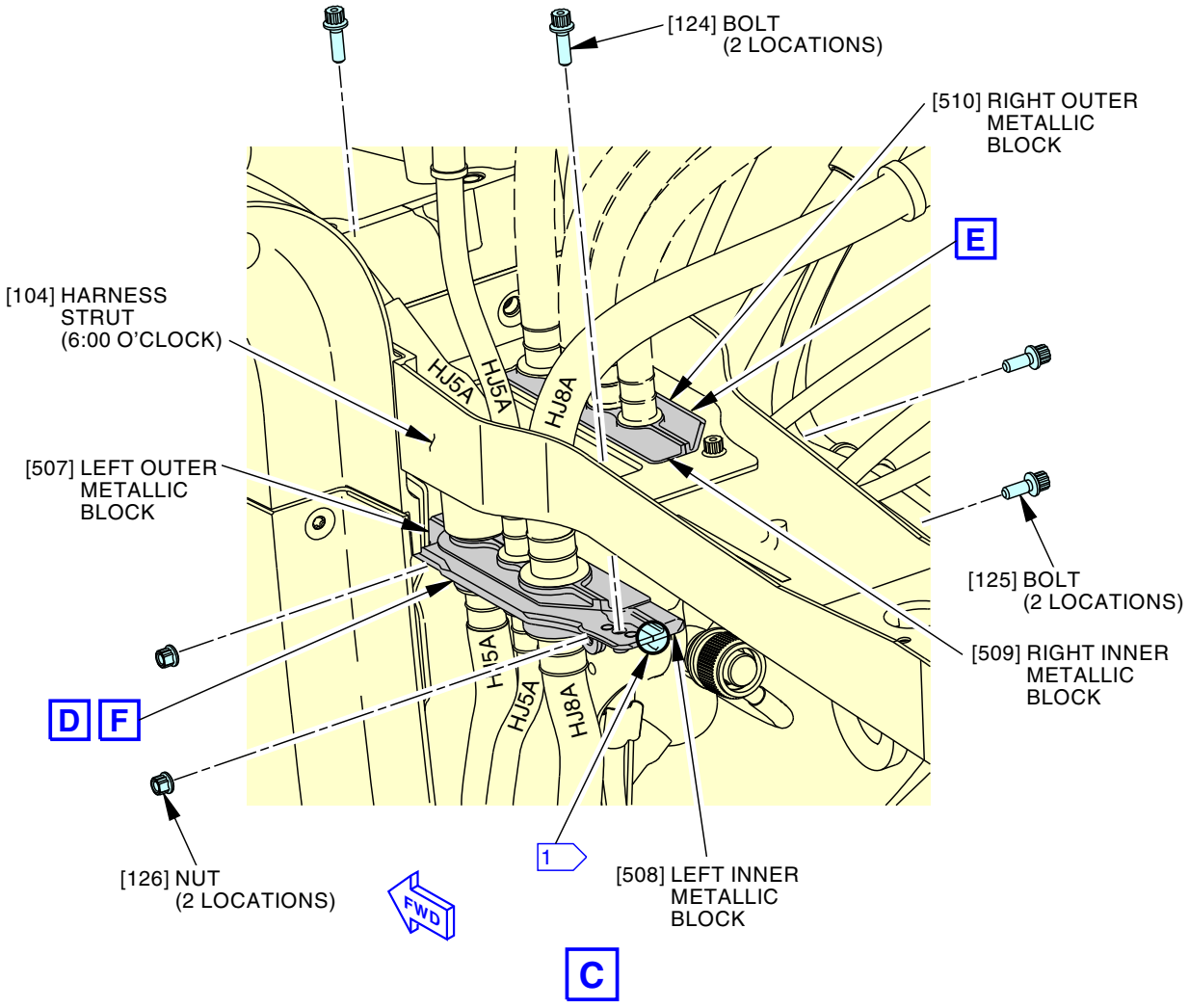
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE METALLIC BLOCKS. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN BOTH RIGHT AND LEFT METALLIC BLOCKS HAVE BEEN REMOVED.

2962029 S0000739198_V2

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 8 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

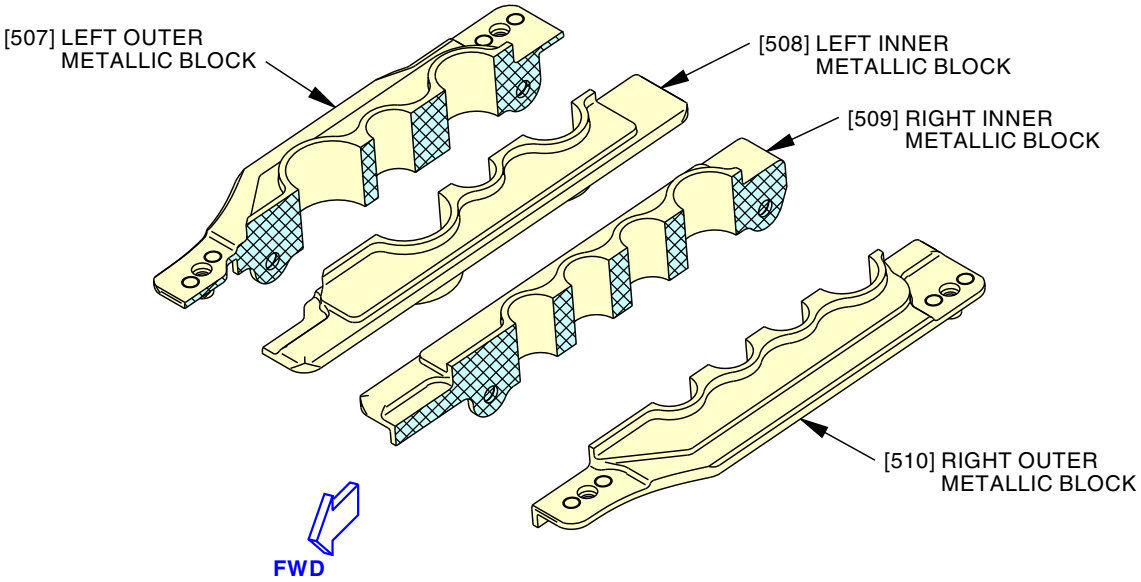
THIS VIEW IS SPECIFIC FOR LEFT INNER AND OUTER METALLIC BLOCKS. SAME LOGIC IS APPLIED FOR RIGHT INNER AND OUTER METALLIC BLOCKS.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

ICNLEAP1B732201D5882800060A00101
2962028 S0000739199_V2

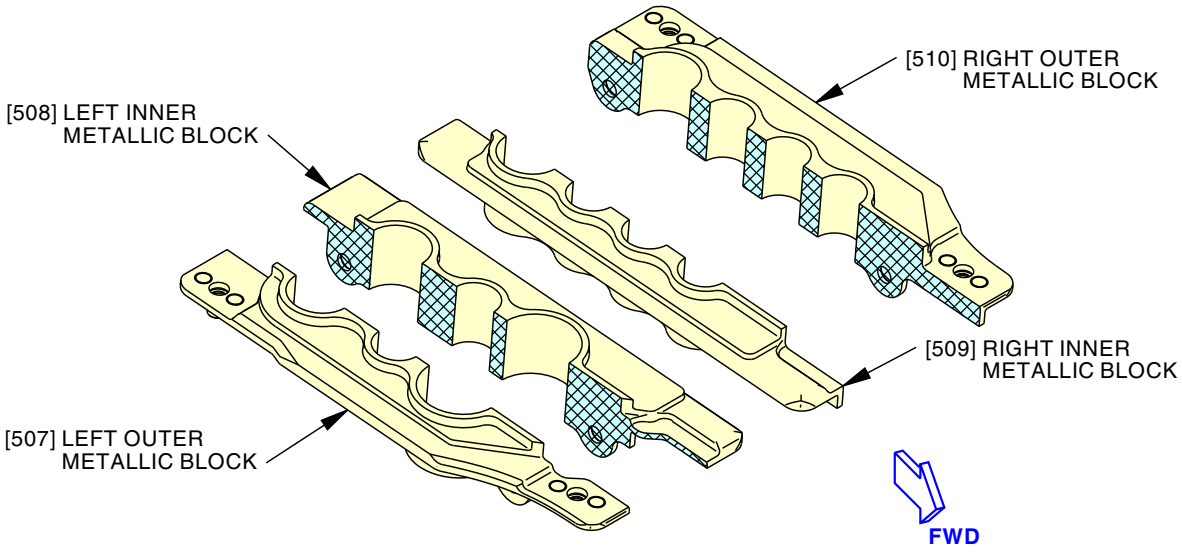
Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 9 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

D



(TOP FACING VIEW ROTATED 90 DEGREES)

D

LEGEND:

DAPCO 2100

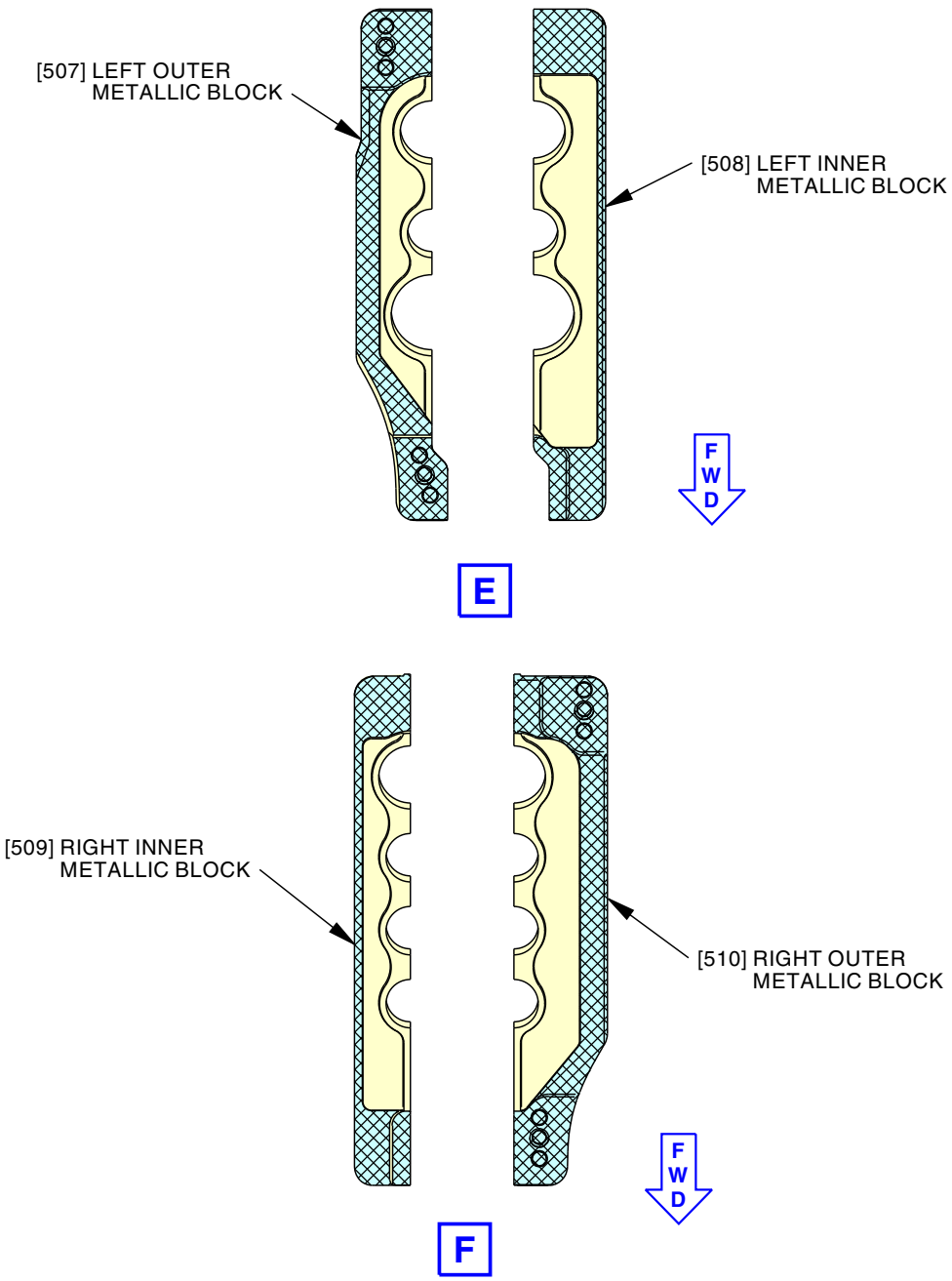
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994662 S0000771309_V1

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994663 S0000771310_V1

Harness Support Block Installation
Figure 405/73-22-01-990-871-G00 (Sheet 11 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-803-G00

7. Electronic Engine Control (EEC) Electrical Harness (HJ5A) Installation

(Figure 403, Figure 404, and Figure 405)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (HJ5A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-23-06-400-801-G00	Fan Frame Strut Panels Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Electronic Engine Control (EEC) Electrical Harness (HJ5A) Installation

SUBTASK 73-22-01-210-001-G00

(1) During the installation, make sure that EEC electrical harness (HJ5A) [67] is not stressed or damage.

SUBTASK 73-22-01-210-002-G00

(2) Make sure that all components are clean and free of old sealant prior to adding new sealant.

SUBTASK 73-22-01-420-002-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(3) Install the EEC electrical harness (HJ5A) [67] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ5A) [67] in a correct position with the 24 clips [70] along its routing.

(d) Install the EEC electrical harness (HJ5A) [67] on the harness strut (6:00 o'clock) [104] as follows:

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

1) Install the harness support block [504], harness support block [505], and harness support block [506] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the four bolts [111] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses (View E, Figure 405).

c) Make sure that the EEC electrical harness (HJ5A) [67] and harnesses are in the correct position on the harness support block [504], harness support block [505], and harness support block [506] (View D, Figure 405).

d) Install the two bolts [113] and two nuts [112] to assemble the harness support block [504], harness support block [505], and harness support block [506] in the correct position with the harnesses.

e) Tighten the nuts [112] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

f) Make sure that there is minimum amount of the squeeze-out on the lower side.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

g) Install the harness support block [504], harness support block [505], and harness support block [506] in the correct position on the harness strut (6:00 o'clock) [104].

h) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104] (View B, Figure 405).

i) Install the four bolts [111] and four nuts [110] that attach the assembly of the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

j) Tighten the nuts [110] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

k) Make sure that there is minimum amount of the squeeze-out on the lower side.

l) Apply more sealant to form a correct fillet seal around the contour of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

m) Clean the four nuts [110] and four bolts [111] that will have sealant applied to them.

n) Apply Dapco 2100 sealant, A50483 [CP2927], to the heads of the four bolts [111].

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

2) Remove any remaining of old sealant residue left on the harnesses or harness strut (6:00 o'clock) [104].

3) Install the left outer metallic block [507] and left inner metallic block [508] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507] and left inner metallic block [508].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

c) Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507], left inner metallic block [508], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the left outer metallic block [507] and left inner metallic block [508] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the left outer metallic block [507] and left inner metallic block [508] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the left outer metallic block [507] and left inner metallic block [508] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of left outer metallic block [507] and left inner metallic block [508].

4) Install the new right inner metallic block [509] and right outer metallic block [510] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509] and right outer metallic block [510].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

d) Install the two bolts [125] and two nuts [126] to assemble the right inner metallic block [509] and right outer metallic block [510] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the right inner metallic block [509] and right outer metallic block [510] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the right inner metallic block [509] and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the two bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of right inner metallic block [509] and right outer metallic block [510].

SIA ALL

5) Install the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109] as follows:

a) Lubricate the five bolts [106] and two nuts [107] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], to the one side (either top or bottom) of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

NOTE: Fay seal applies to the two sides of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Make sure that the EEC electrical harness (HJ5A) [67] and harnesses are in the correct position on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] (View E, Figure 404).

d) Install the two bolts [108] and two nuts [107] to assemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Tighten the nuts [107] to 42 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

f) Make sure that the fillet seal of the squeeze-out is on the forward facing side.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

g) Make the sealant squeeze-out flush with the surface on the outer edges of the strut 5 bracket upper block [500] and strut 5 bracket lower block [503] (View F, Figure 404).

h) Install the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] in a correct position on the strut 5 outer fitting [109].

i) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 outer fitting [109] (View C, Figure 404).

j) Install the five bolts [106] that attach the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109].

k) Tighten the bolts [106] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

l) Make sure that there is a minimum amount of the squeeze-out on the aft side around the edges of the block assembly and that the sealant is flush with the block assembly (View C, Figure 404).

m) Make sure that the squeeze-out on the forward facing side is finished as a fillet seal.

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

n) Clean the nut plate side of the bolts [106] and nut plates.

o) Apply Dapco 2100 sealant, A50483 [CP2927], to the nut plate side of the bolts [106] and nut plates.

(e) Lubricate the bolt [102] with the graphite mineral vaseline, D00601 [CP2101].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Install the bolt [102] on the clamp [103] that attaches the EEC electrical harness (HJ5A) [67] to the harness strut (6:00 o'clock) [104].

(g) Tighten the bolt [102] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(h) Install the Fan Frame Strut 5 Panel (left) (TASK 72-23-06-400-801-G00).

(i) Attach blanket [190] to the strut 5 outer fitting [109].

1) Apply Dapco 2100 sealant, A50483 [CP2927], between the blanket [190] and strut 5 outer fitting [109] (View B, Figure 404).

NOTE: Dapco 2200 firewall sealant, A50396, may use as optional. If this consumable meets the local regulatory requirements of the operator, it is acceptable as a chemical sealant for further usage.

(j) Lubricate the threads of the bolt [100], bolt [94], bolt [91], bolt [90], and bolt [88] with oil, D00599 [CP2442].

(k) Install the bolt [100] and clamp [101] that attach the EEC electrical harness (HJ5A) [67] to the fan case bracket.

(l) Tighten the bolt [100] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(m) Install the bolt [94] and clamp [95] that attach the EEC electrical harness (HJ5A) [67] to the fan frame module bracket.

(n) Tighten the bolt [94] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(o) Install the bolt [91] and clamp [92] that attach the EEC electrical harness (HJ5A) [67] on the fan frame module bracket.

(p) Tighten the bolt [91] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(q) Install the bolt [90] and clamp [89] that attach the EEC electrical harness (HJ5A) [67] to the fan hub bracket.

(r) Tighten the bolt [90] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(s) Install the bolt [88] and clamp [87] that attach the EEC electrical harness (HJ5A) [67] to the fan hub bracket.

(t) Tighten the bolt [88] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(u) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ5A) [67] as follows (TASK 70-00-01-910-803-G00):

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

1) Connect the EEC electrical harness (HJ5A) [67] to the lower overheat sensor [114].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

2) Connect the EEC electrical harness (HJ5A) [67] to the bracket assembly [115].

SIA ALL

3) Connect the EEC electrical harness (HJ5A) [67] connector to the left VSV actuator receptacle [99].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0124

4) Connect the EEC electrical harness (HJ5A) [67] connector to the left MTC actuator receptacle [98].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0124 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

5) Connect the EEC electrical harness (HJ5A) [67] connector to the electrical stow bracket [117].

SIA ALL

6) Connect the EEC electrical harness (HJ5A) [67] connector to the left VBV actuator receptacle [97].

7) Connect the EEC electrical harness (HJ5A) [67] connector to the SCU/SVA channel A receptacle [96].

8) Connect the EEC electrical harness (HJ5A) [67] connector to the fuel manifold transducer receptacle [93].

9) Connect the EEC electrical harness (HJ5A) [67] connector to the T25 sensor channel A receptacle [86].

10) Connect the EEC electrical harness (HJ5A) [67] connector to the N1 speed sensor Channel A receptacle [147A].

(v) Connect the connector socket [82] of the EEC electrical harness (HJ5A) [67] as follows:

1) Make sure that the mating faces are clean and free of unwanted materials.

2) Install the four bolts [81] and four nuts [85] that attach the connector socket [82] to the bracket [83].

3) Tighten the four nuts [85] to 10.2 in-lb (1.15 N·m) - 11.1 in-lb (1.25 N·m).

4) Connect the HJ5B engine wiring harness electrical connector [84] (at 5:00 o'clock) to the connector socket [82].

NOTE: If the HJ5B engine wiring harness has been installed, do not do this step.

5) Connect the EEC electrical harness (HJ6B) [80] to the EEC HJ6A harness receptacle [79].

(w) Install the bolt [78] and clamp [77] that attach the EEC electrical harness (HJ5A) [67] to the fan case bracket.

(x) Tighten the bolt [78] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(y) Install the bolt [74] and clamp [73] that attach the EEC electrical harness (HJ5A) [67] to the fan case bracket.

(z) Tighten the bolt [74] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(aa) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ5A) [67] to the EEC CH A as follows:

1) Connect the EEC electrical harness (HJ5A) [67] connector to the FMU channel A receptacle [76].
2) Connect the EEC electrical harness (HJ5A) [67] connector to the fuel flow transmitter meter receptacle [75].
3) Connect the EEC electrical harness (HJ5A) [67] connector to the EEC channel A J5 receptacle [72].

(ab) Make sure that the work area is clean of all tools and other items.

SUBTASK 73-22-01-420-003-G00

(4) Install the segment shroud 4 [71].

SUBTASK 73-22-01-420-004-G00

(5) Install the segment shroud 3 [69].

SUBTASK 73-22-01-420-005-G00

(6) Install the segment shroud 2 [68].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-024-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-021-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-022-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-023-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-024-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ5A) Installation Test

SUBTASK 73-22-01-730-003-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-804-G00

8. Electronic Engine Control (EEC) Electrical Harness (HJ5B) Removal

(Figure 406, Figure 407, and Figure 408)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (HJ5B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-025-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-026-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-027-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-028-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-026-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ5B) Removal

SUBTASK 73-22-01-020-006-G00

(1) Remove the segment shroud 2 [68].

SUBTASK 73-22-01-020-007-G00

(2) Remove the segment shroud 3 [69].

SUBTASK 73-22-01-020-008-G00

(3) Remove the segment shroud 4 [71].

SUBTASK 73-22-01-020-009-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(4) Use the teflon-jawed pliers, STD-664, to disconnect the EEC electrical harness (HJ5B) [135] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ5B) [135] connector from the EEC channel B J5 receptacle [136].

(b) Disconnect the EEC electrical harness (HJ5B) [135] connector from the FMU channel B receptacle [139].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

(c) Disconnect the EEC electrical harness (HJ5B) [135] from the lower overheat sensor [114].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

(d) Disconnect the EEC electrical harness (HJ5B) [135] from the bracket assembly [115].

SIA ALL

(e) Disconnect the HJ6B engine wiring harness electrical connector [142] from the EEC HJ6A harness receptacle [143].

(f) Disconnect the HJ8B engine wiring harness electrical connector [146] from the EEC HJ8A harness receptacle [145].

(g) Disconnect the EEC electrical harness (HJ5B) [135] from the EEC HJ5A harness receptacle [144].

(h) Remove the EEC electrical harness (HJ5B) [135] as follows:

1) Remove the bolt [137] from the clamp [138] that attaches the EEC electrical harness (HJ5B) [135] to the fan case bracket.

2) Remove the bolt [140] from the clamp [141] that attaches the EEC electrical harness (HJ5B) [135] to the fan case bracket.

(i) Disconnect the EEC electrical harness (HJ5B) [135] connector from the T25 sensor channel B receptacle [155].

(j) Disconnect the EEC electrical harness (HJ5B) [135] connector from the N1 speed sensor channel B receptacle [147].

(k) Disconnect the EEC electrical harness (HJ5B) [135] connector from the SCU/SVA channel B receptacle [160].

(l) Disconnect the EEC electrical harness (HJ5B) [135] connector from the right VBV actuator receptacle [154].

(m) Disconnect the EEC electrical harness (HJ5B) [135] connector from the right VSV actuator (top) receptacle [158].

(n) Disconnect the EEC electrical harness (HJ5B) [135] connector from the right VSV actuator (bottom) receptacle [159].

(o) Remove the bolt [148] from the clamp [149] that attaches the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(p) Remove the bolt [150] from the clamp [151] that attaches the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(q) Remove the bolt [153] from the clamp [152] that attaches the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(r) Remove the bolt [157] from the clamp [156] that attaches the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(s) Remove the EEC electrical harness (HJ5B) [135] from the 24 clips [136A] along its routing.

(t) Remove blanket [190] from the strut 5 outer fitting [109] (View B, Figure 407).

(u) Remove the EEC electrical harness (HJ5B) [135] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] from the strut 5 outer fitting [109] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

a) Remove the five bolts [106] that attach the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

b) Cut and remove the sealant between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502],strut 5 bracket lower block [503], and strut 5 outer fitting [109].

c) Move the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] rearward from the electrical harnesses.

d) Remove the two nuts [107] and two bolts [108] to disassemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Cut and remove the sealant on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and around the harnesses.

f) Remove harnesses from the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

g) Remove any remaining sealant residue.

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

2) Remove the harness support block [504], harness support block [505], and harness support block [506] from the harness strut (6:00 o'clock) [104] as follows:

a) Remove the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

b) Cut and remove the sealant between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

c) Move the assembly of the harness support block [504], harness support block [505], and harness support block [506] upward and away from the harness strut (6:00 o'clock) [104].

d) Remove the two nuts [112] and two bolts [113] to disassemble the harness support block [504], harness support block [505], and harness support block [506].

e) Cut and remove the sealant on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses.

f) Remove the harnesses from the harness support block [504], harness support block [505], and harness support block [506].

g) Remove any remaining sealant residue.

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

3) Remove the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] from the harness strut (6:00 o'clock) [104] as follows:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

a) Remove the four bolts [124] that attach the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

b) Cut and remove the sealant between the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

c) Move the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] upward and away from the harness strut (6:00 o'clock) [104].

d) Remove the four nuts [126] and four bolts [125] to disassemble the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

e) Cut and remove the sealant on the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and around the harnesses.

f) Remove the harnesses from the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

g) Remove any remaining sealant residue.

SIA ALL

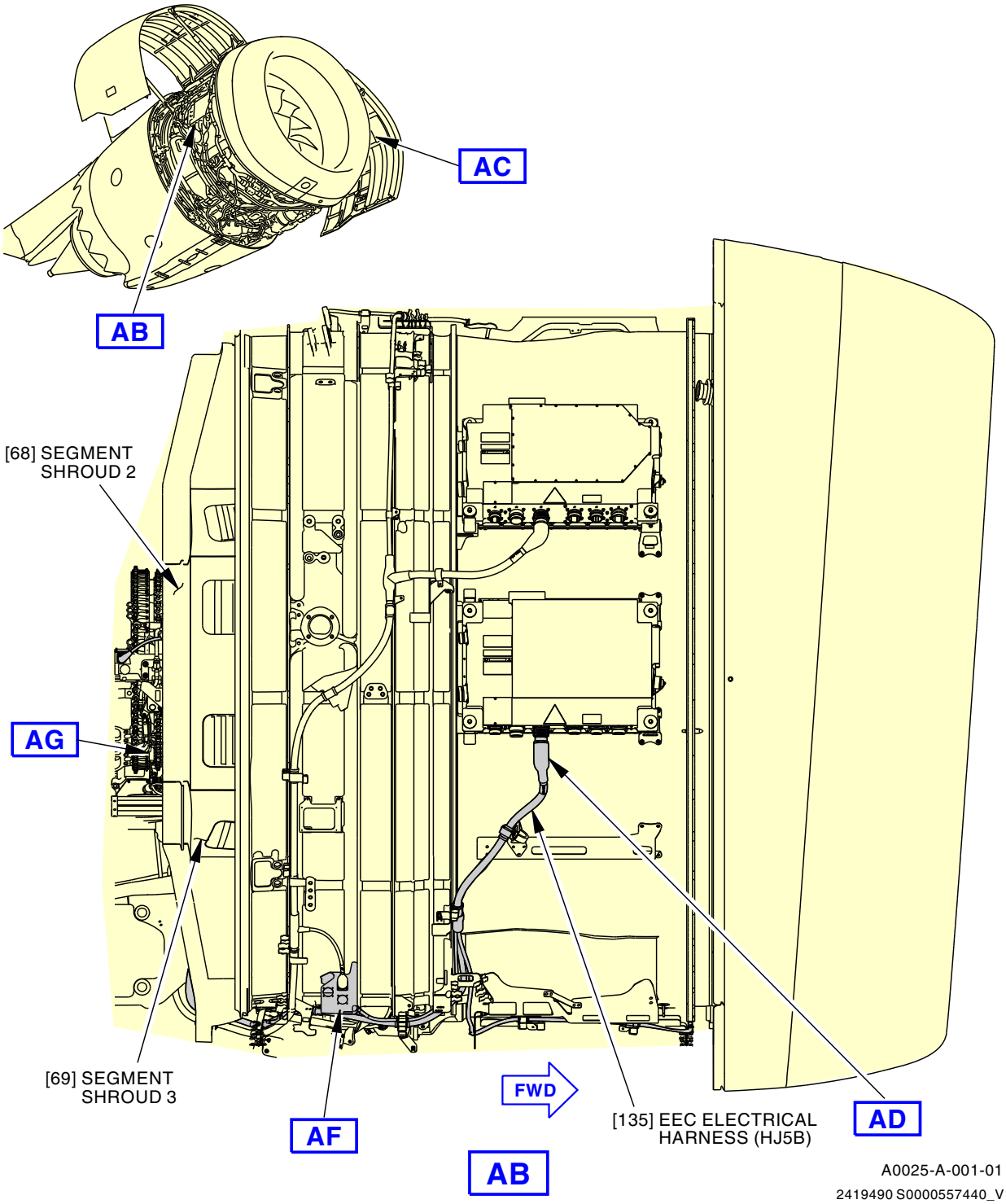
4) Remove the EEC electrical harness (HJ5B) [135] from the harness strut (6:00 o'clock) [104].

(v) Carefully remove the EEC electrical harness (HJ5B) [135] from the engine.

(w) Install the protective covers on all of the harness connectors and the component receptacles.

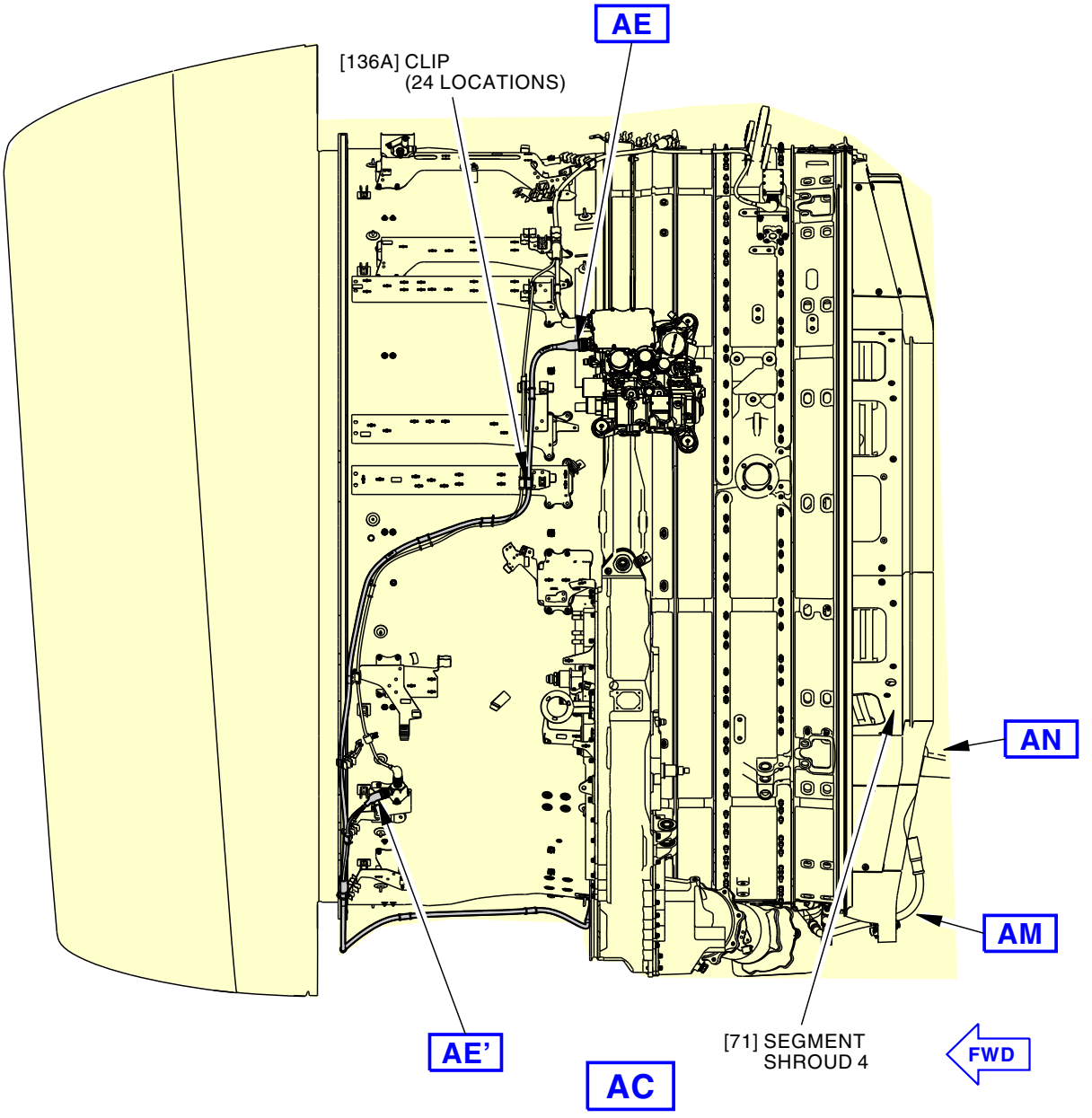
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



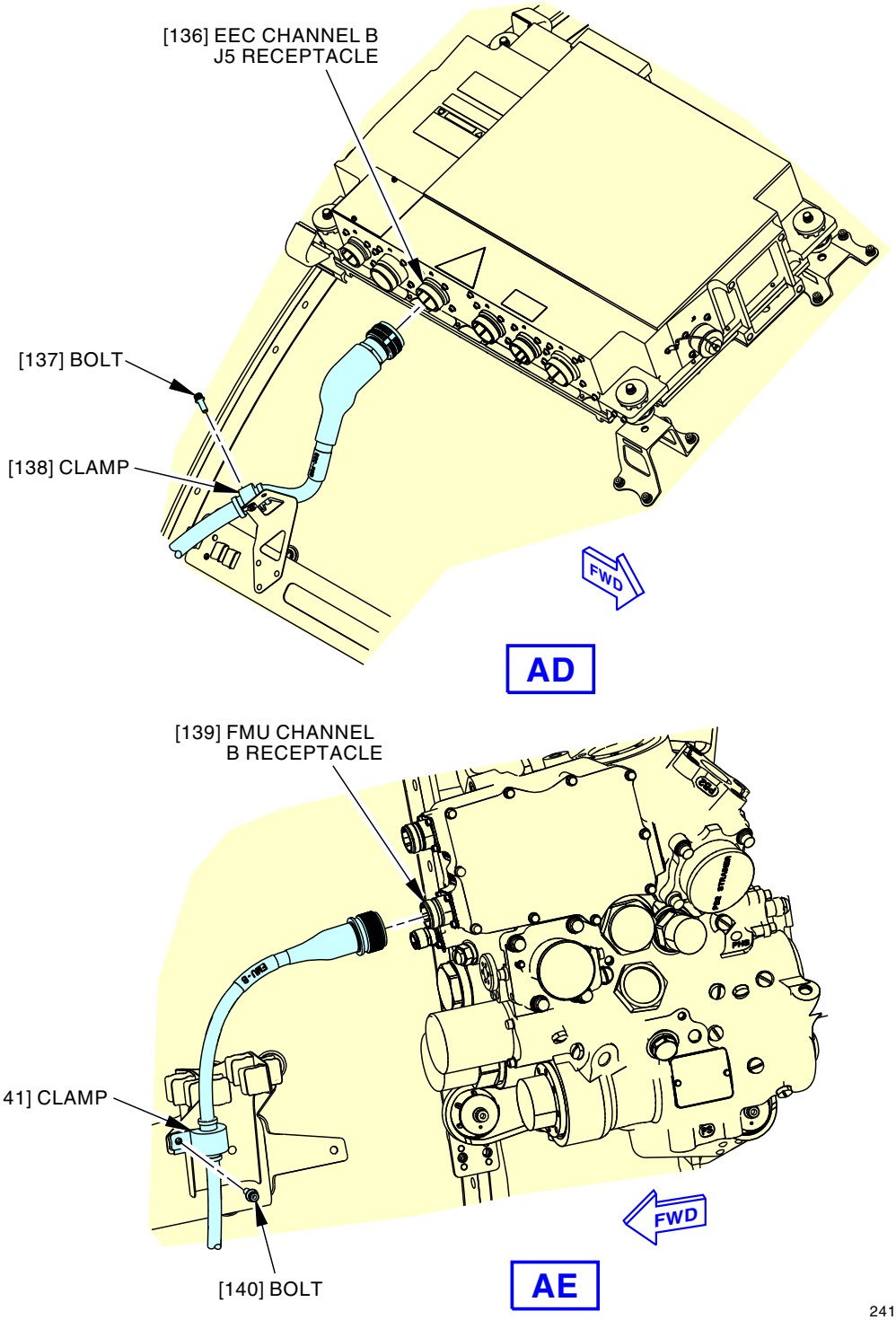
EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 2 of 9)

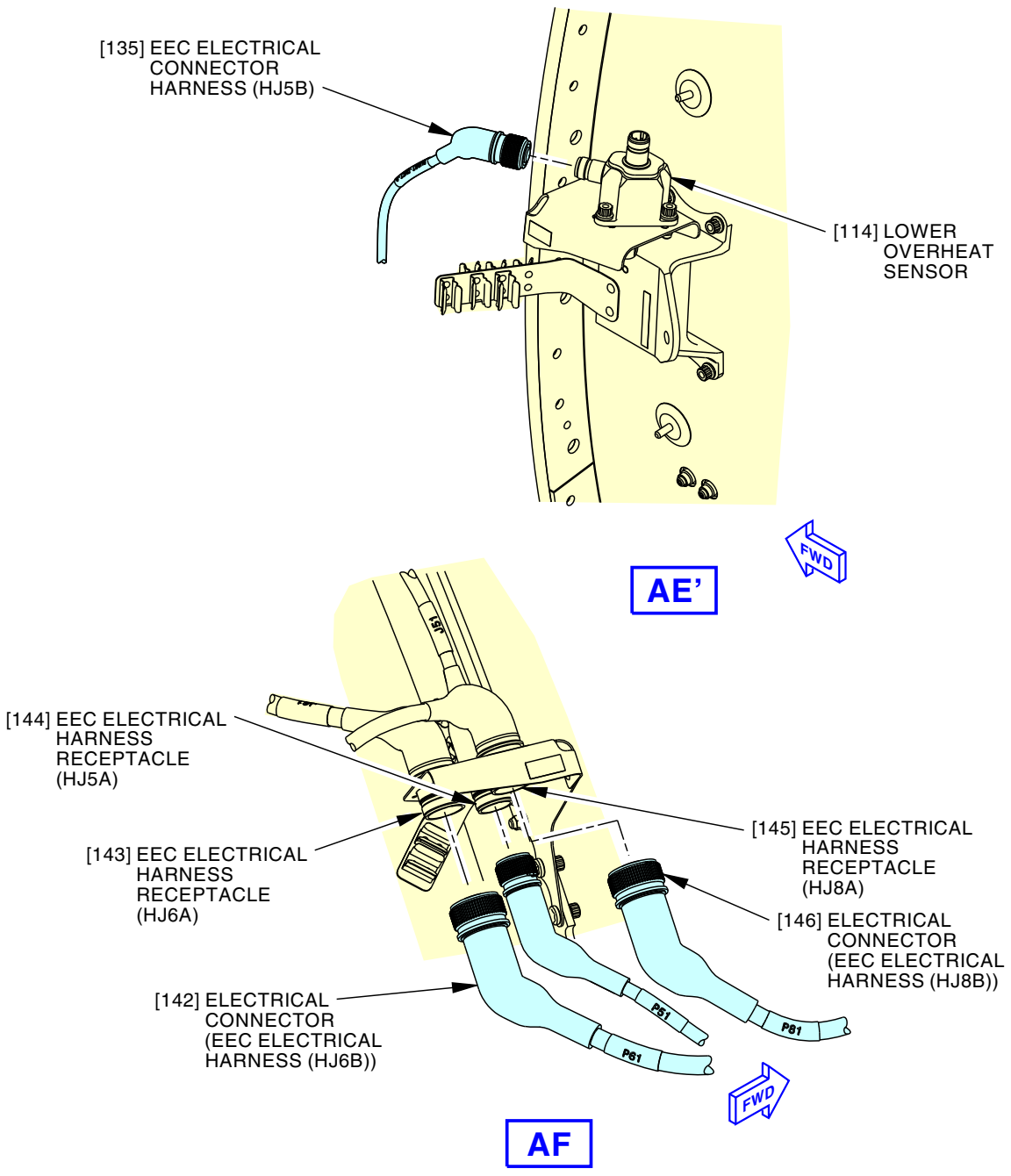
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0027-A-001-01
2419523 S0000557442_V1

EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

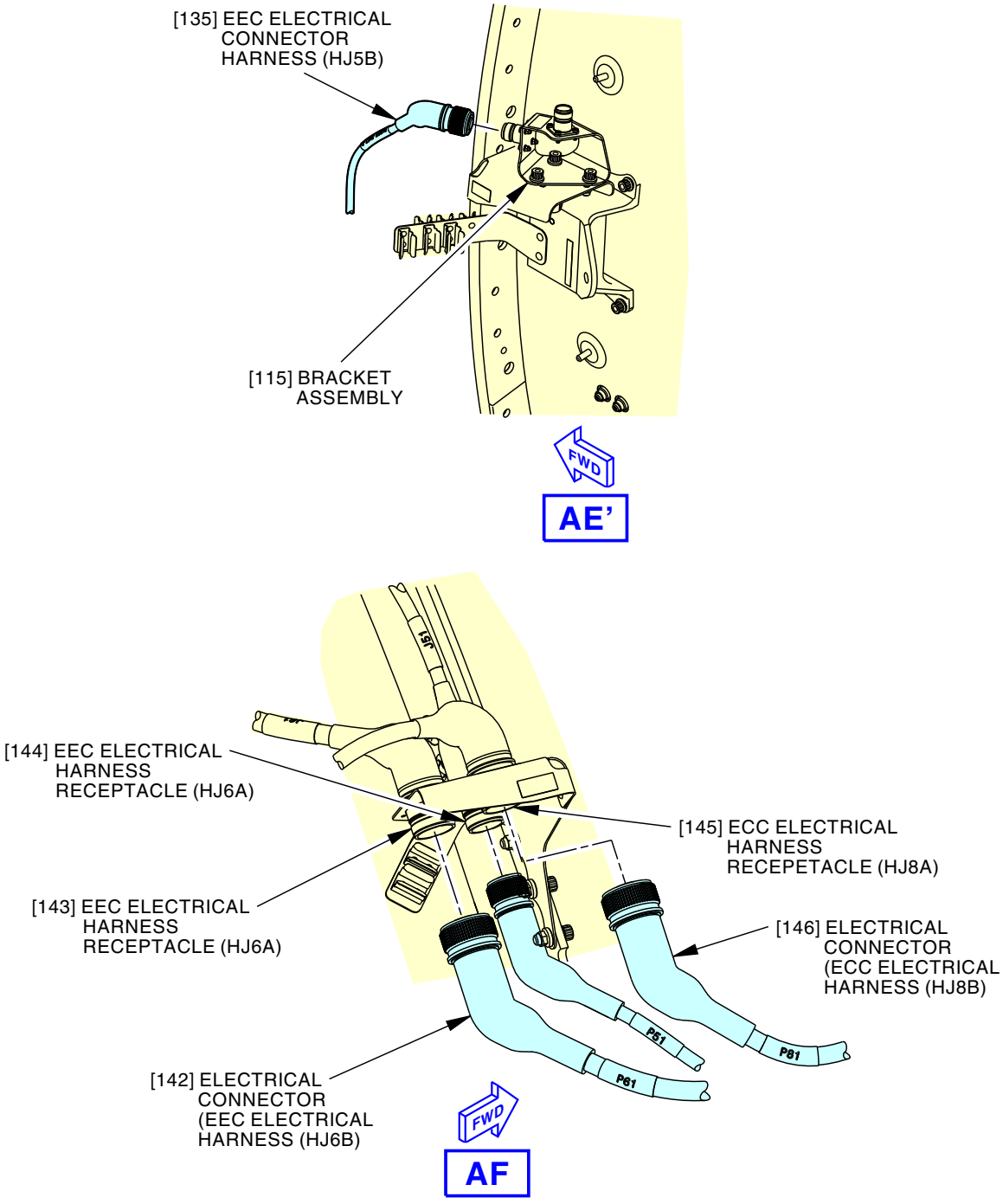


ICN-LEAP-1B-732201-B-F0301-A0028-A-001-01

2419528 S0000557443_V2

EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 4 of 9)

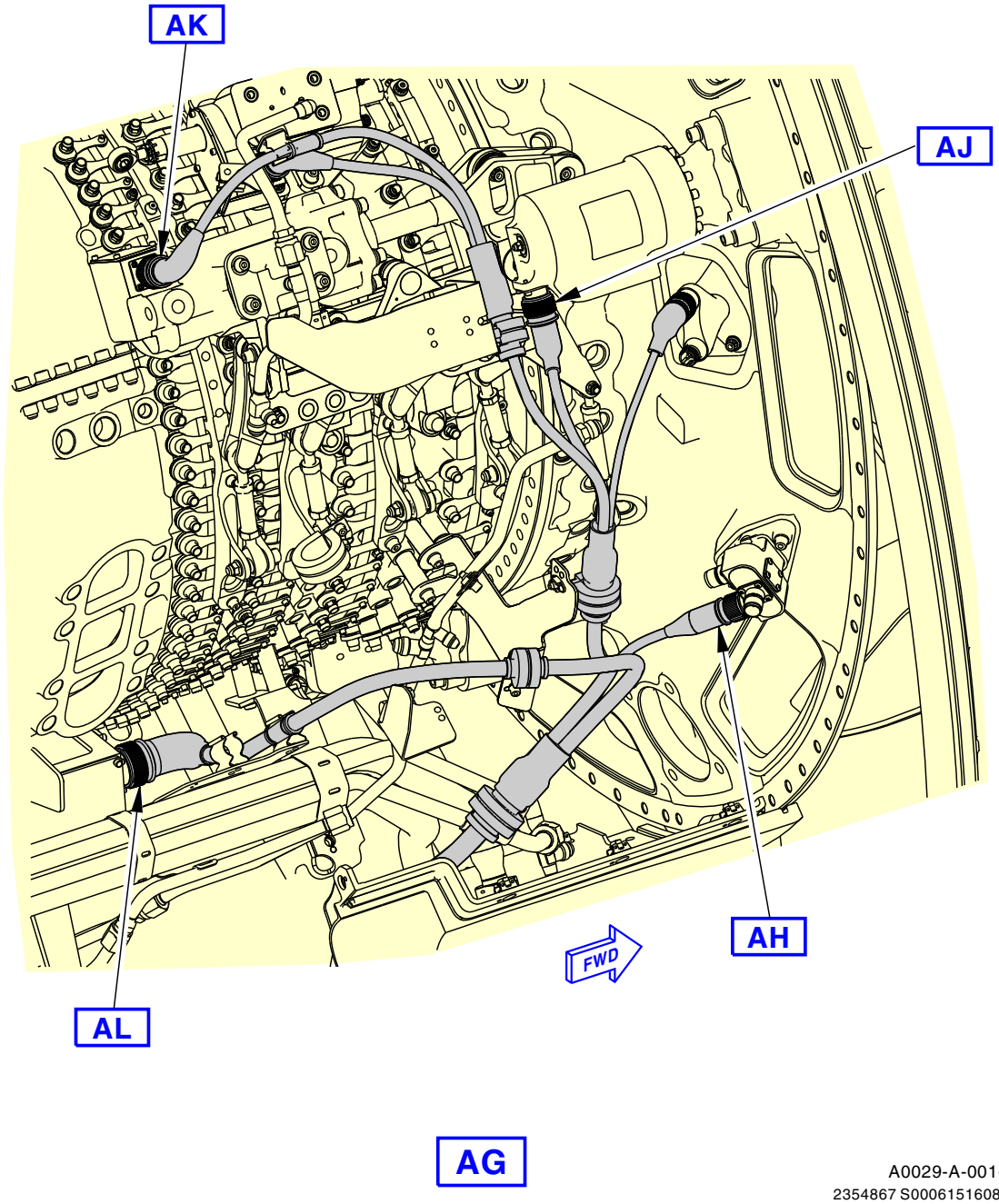
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2833197 S0000658225_V1

EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 5 of 9)

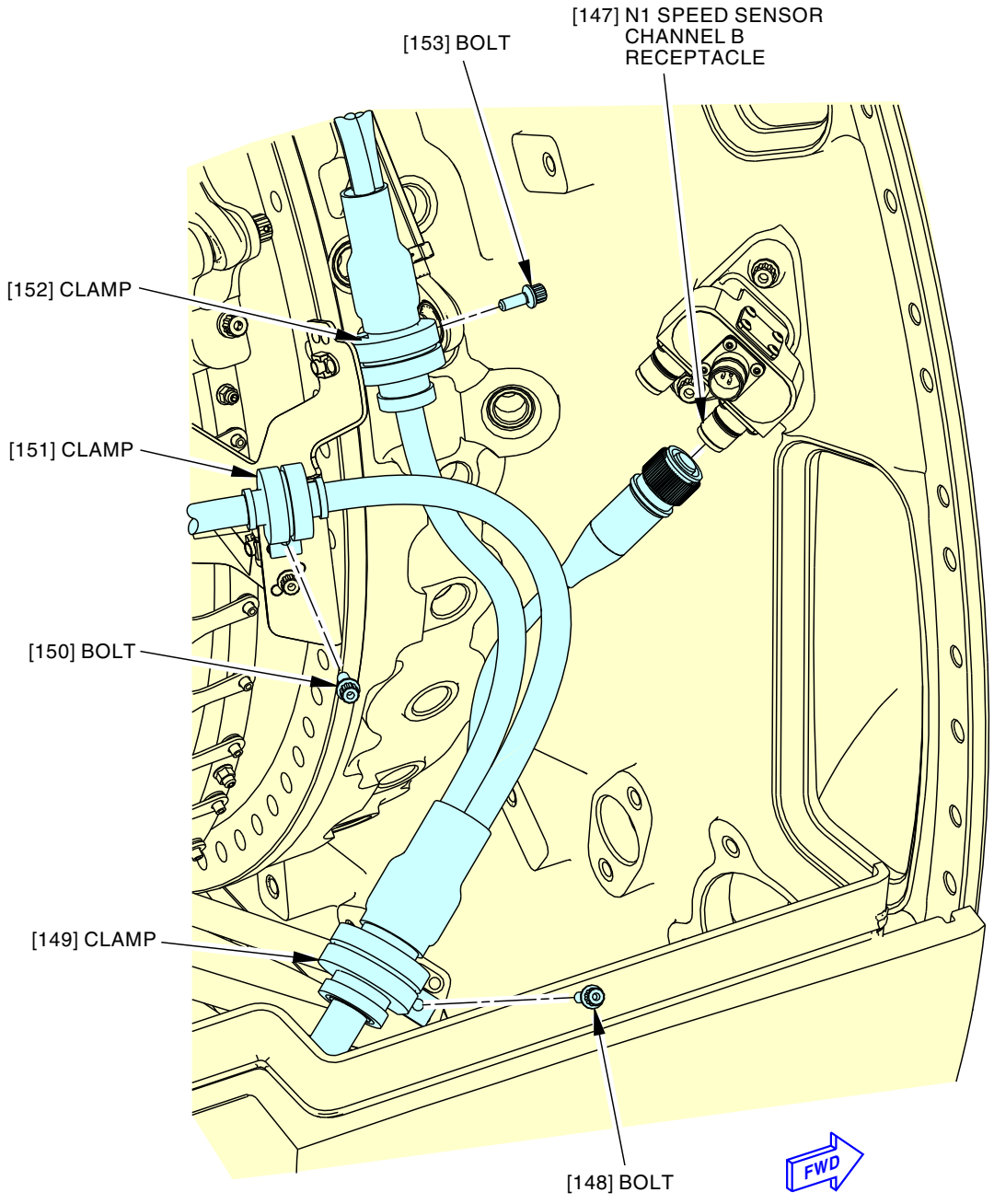
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0029-A-001-01
2354867 S00061516083_V1

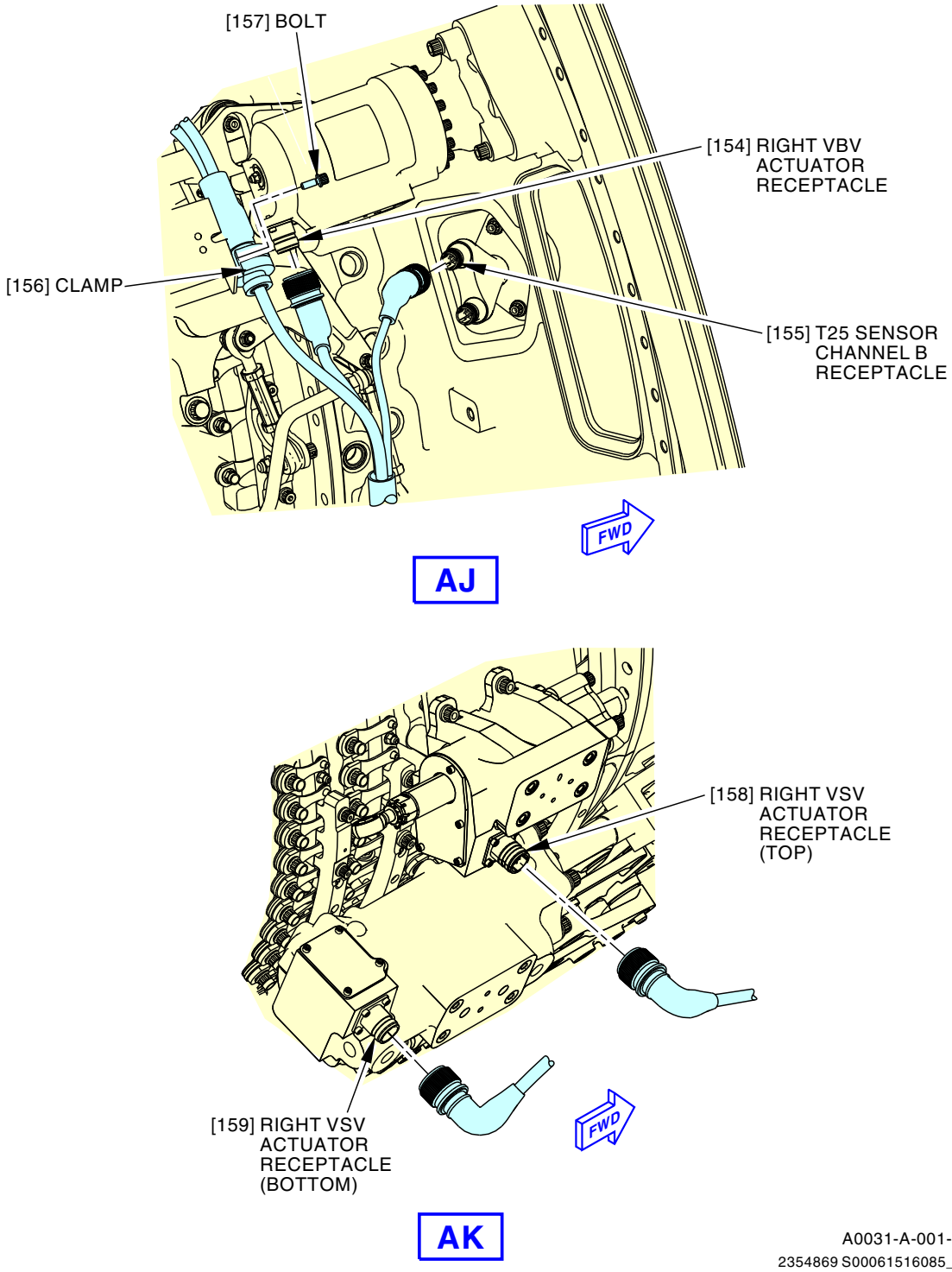
EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



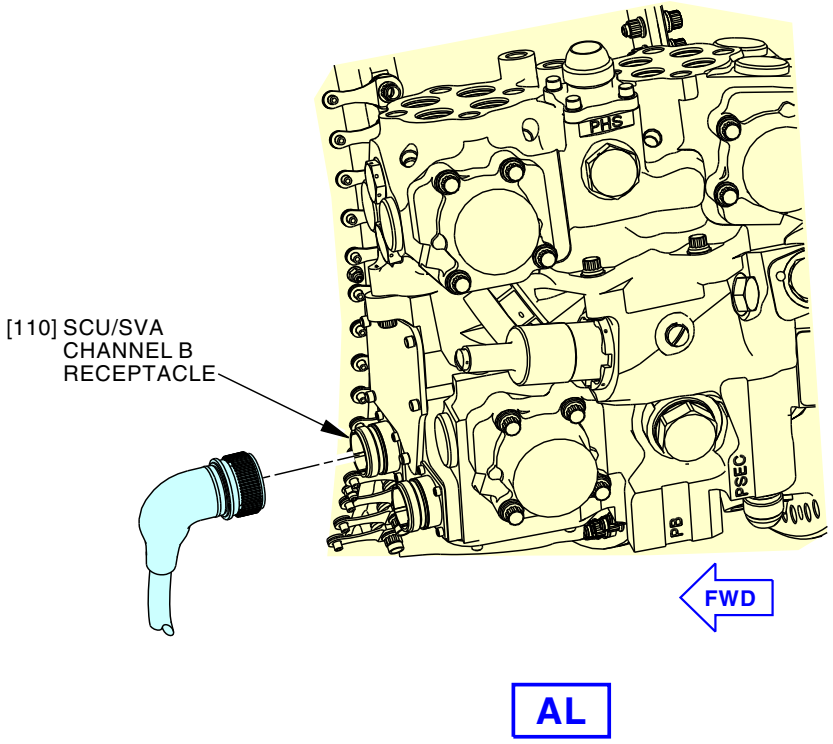
EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 8 of 9)

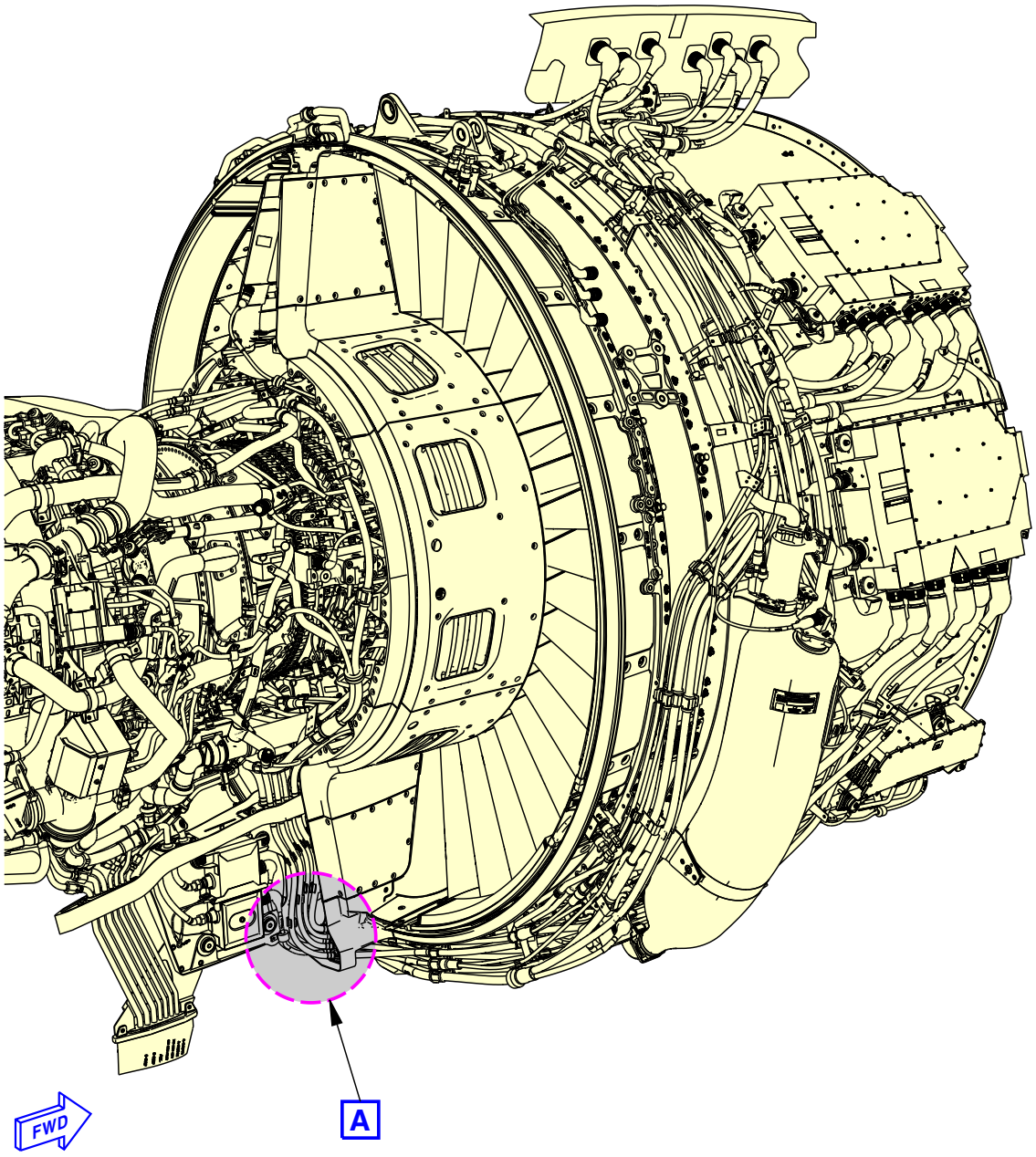
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0032-A-001-01
2354870 S00061516086_V2

EEC Electrical Harness (HJ5B) Installation
Figure 406/73-22-01-990-854-G00 (Sheet 9 of 9)

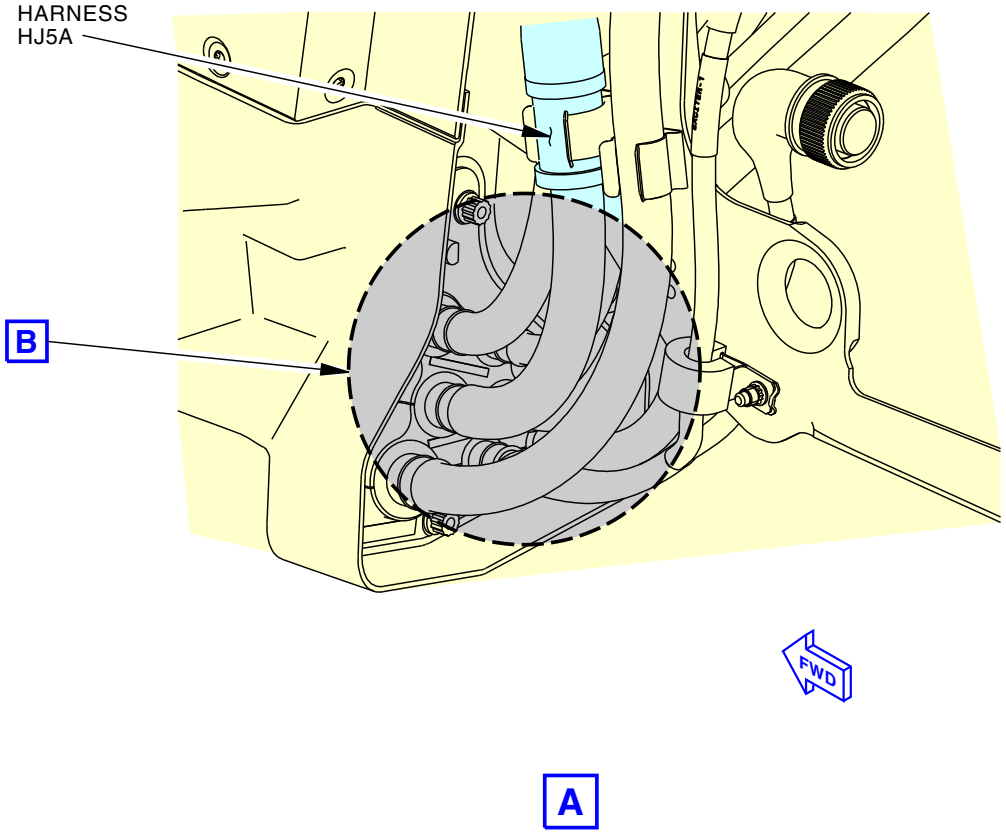
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937794 S0000713383_V2

Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 1 of 9)

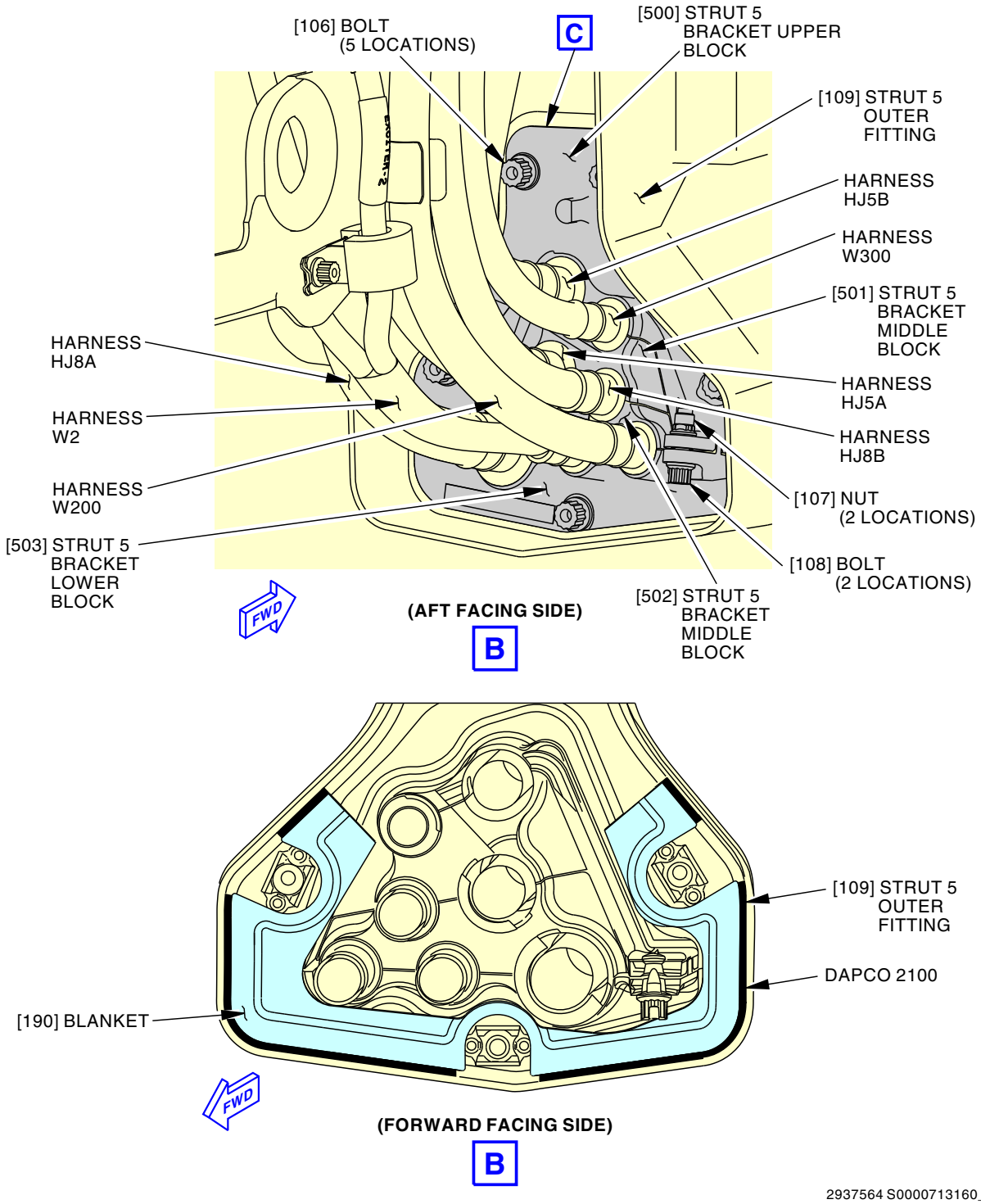
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937795 S0000713384_V2

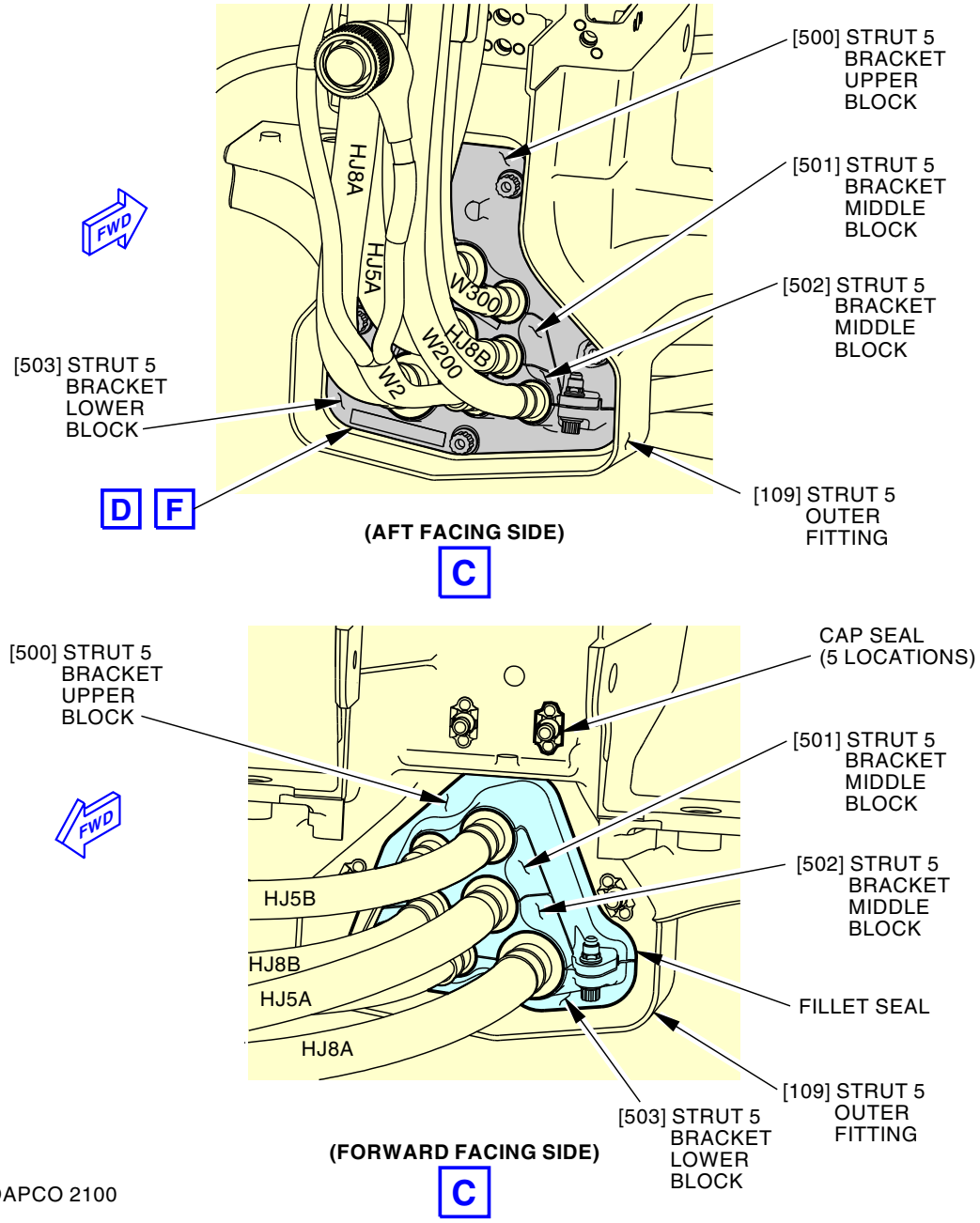
Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

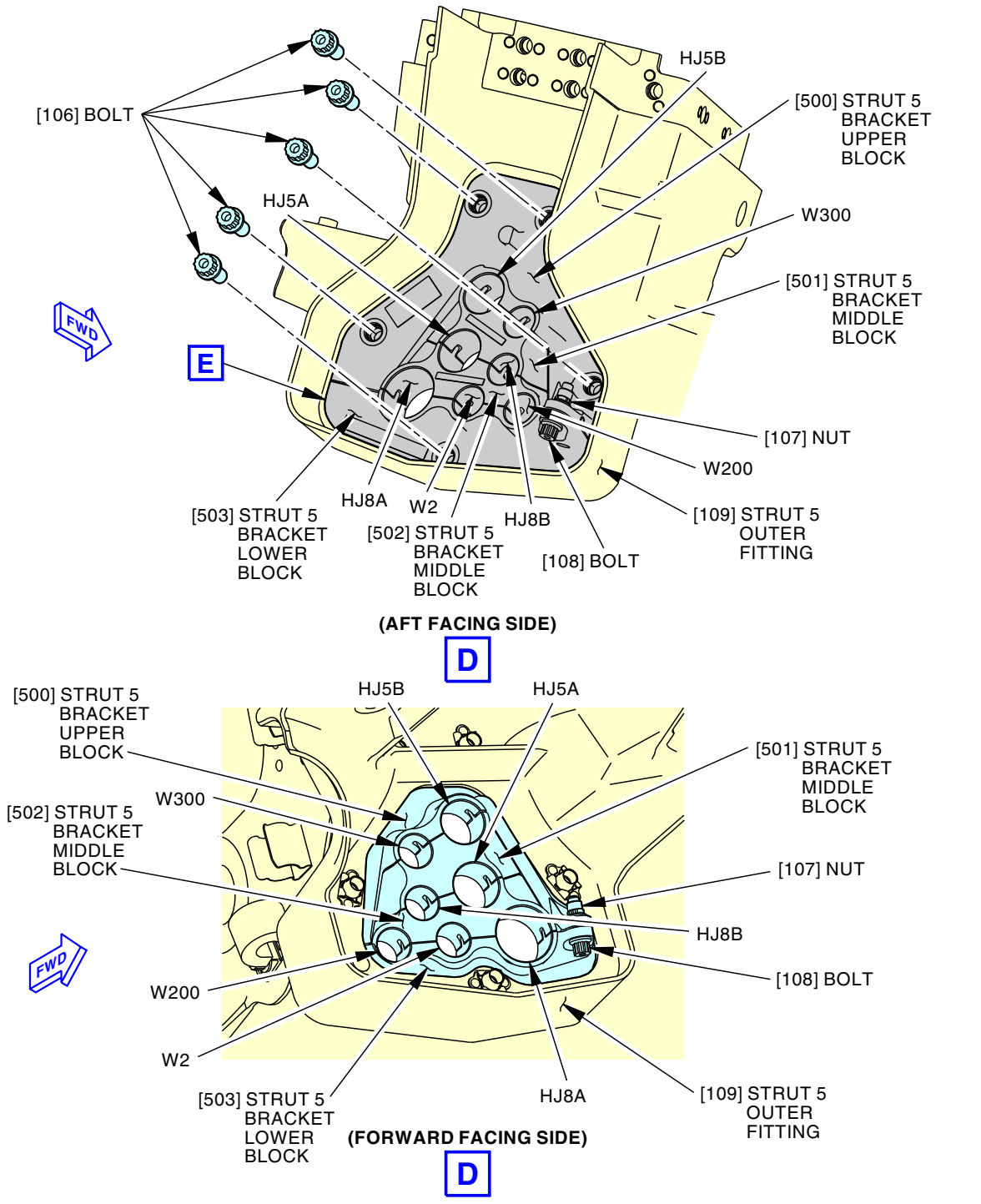
FAY SEAL PER AMM 51-22-00 ON INNER CONTOUR OF THE FITTING (AFT SIDE). SEALANT SQUEEZE-OUT SHOULD BE CONTINUOUS AND EVEN.

IT IS ACCEPTABLE TO APPLY THE FILLET SEAL ALONG INNER CONTOUR OF THE FITTING ON THE FORWARD SIDE.

2937801 S0000713390_V3

Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

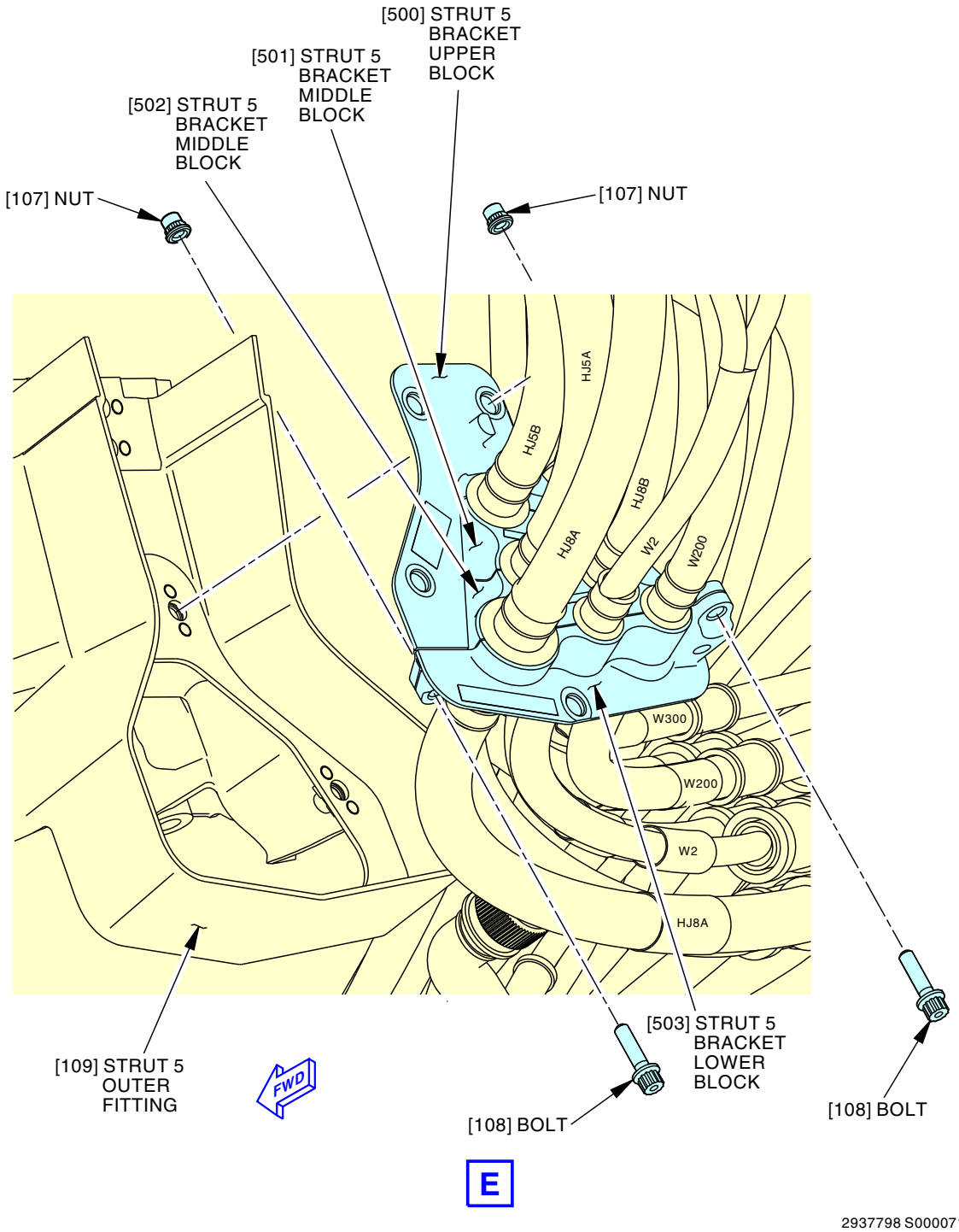


NOTE:
HARNESSES NOT SHOWN

2943980 S0000720369_V2

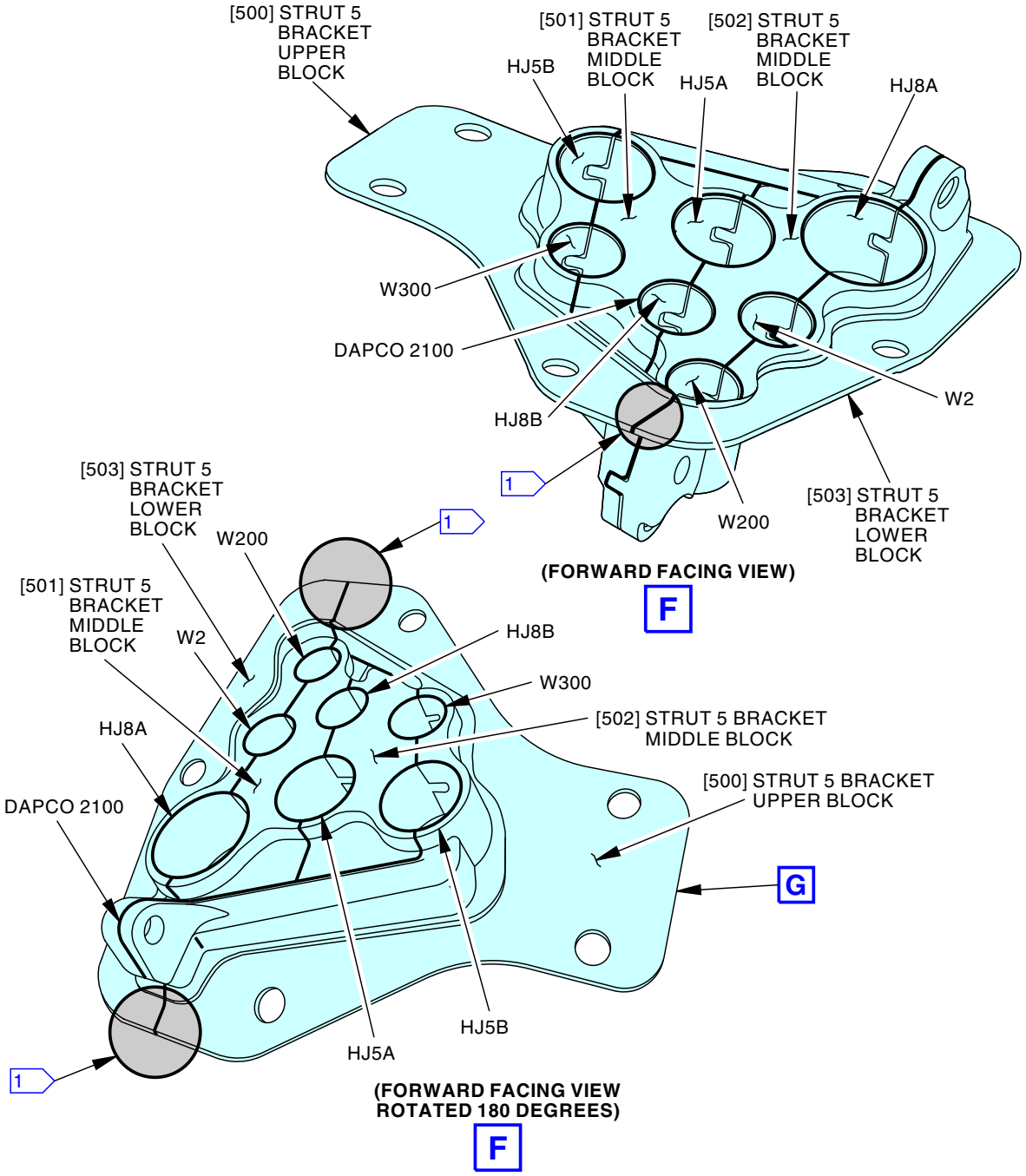
Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

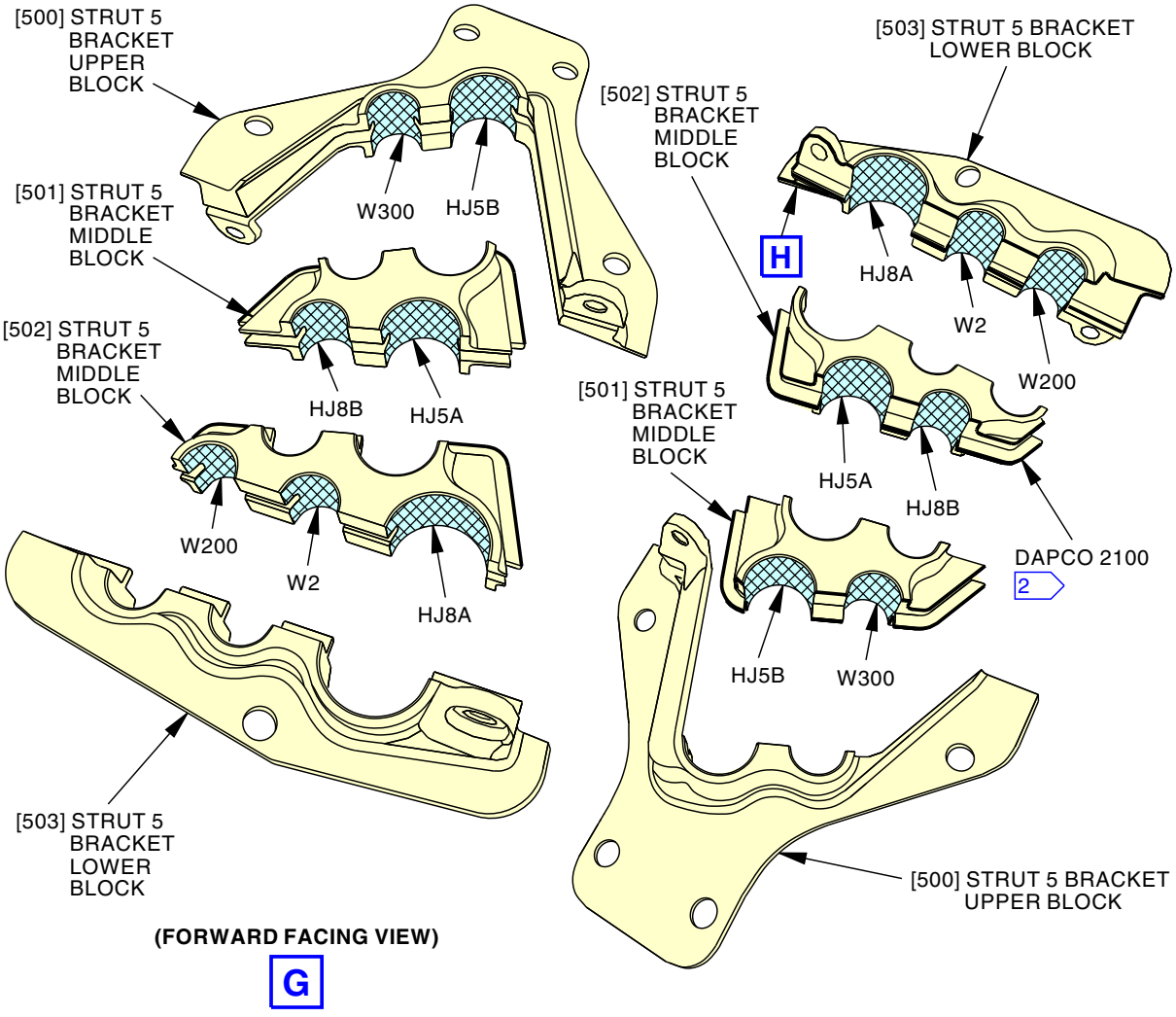
HARNESSES NOT SHOWN.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

2937800 S0000713389_V3

Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

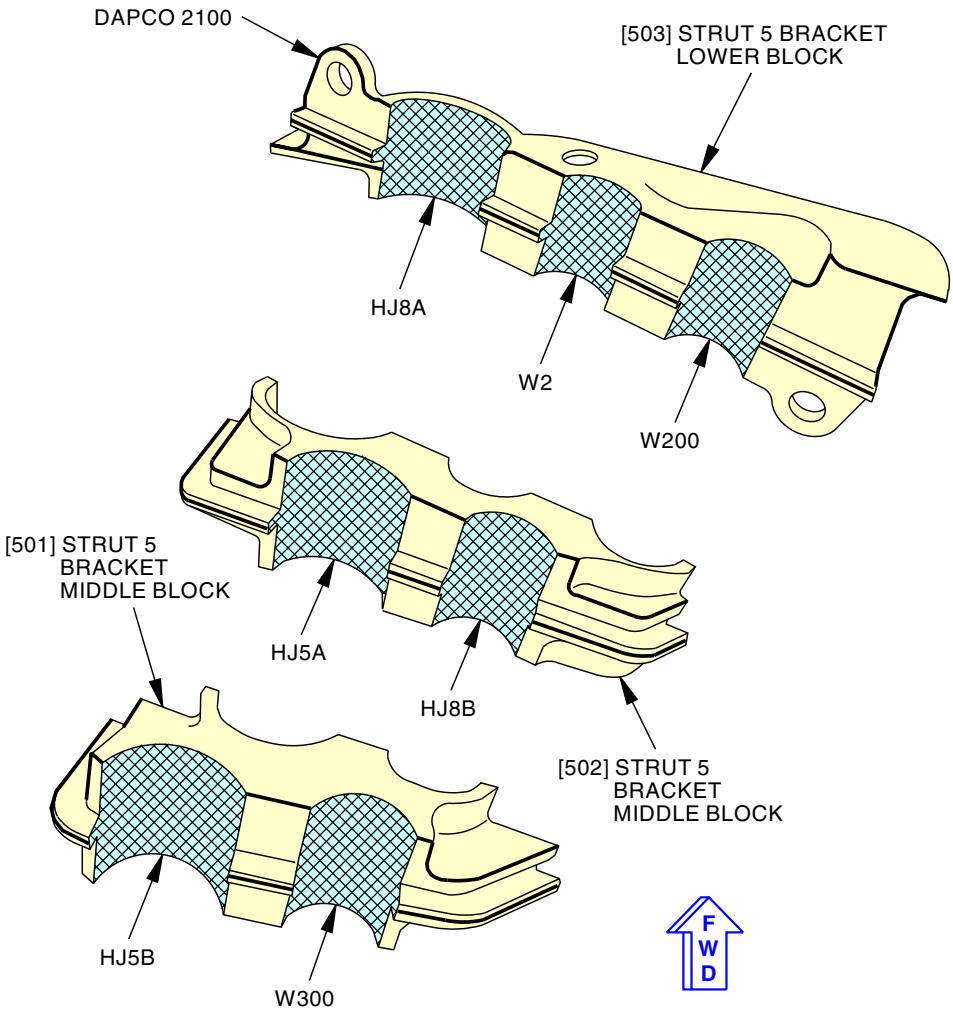
SEALANT PROVIDES FAY SEAL BETWEEN WIRE HARNESS AND BLOCKS AND SHOULD BE APPLIED TO THE BOTH SIDES OF BLOCKS.

2 SEALANT APPLIED TO ONE SIDE (TOP OR BOTTOM) OF THE BLOCKS.

2937799 S0000713388_V3

Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

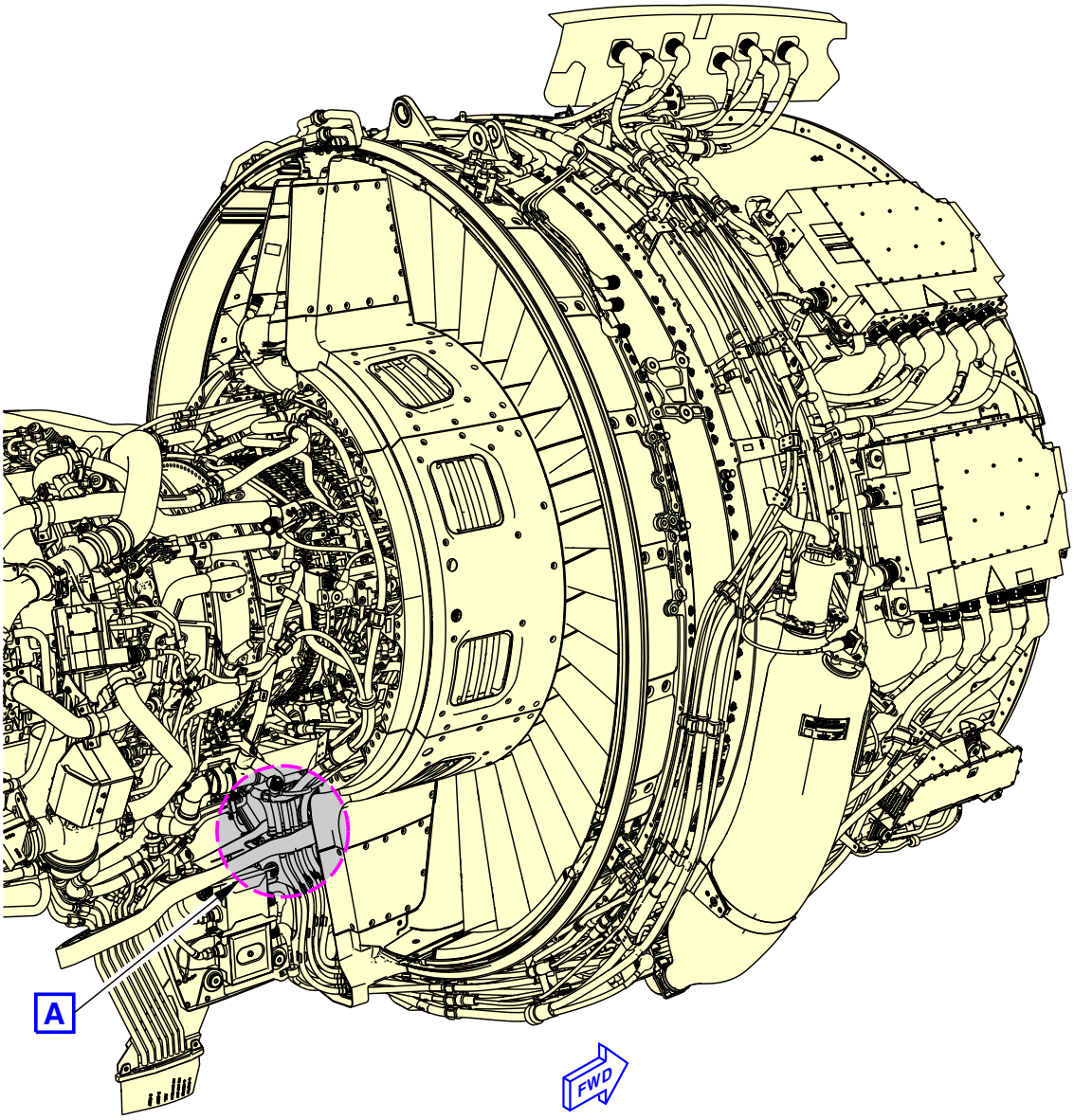


H

2949941 S0000726813_V1

Strut Bracket Block Installation
Figure 407/73-22-01-990-872-G00 (Sheet 9 of 9)

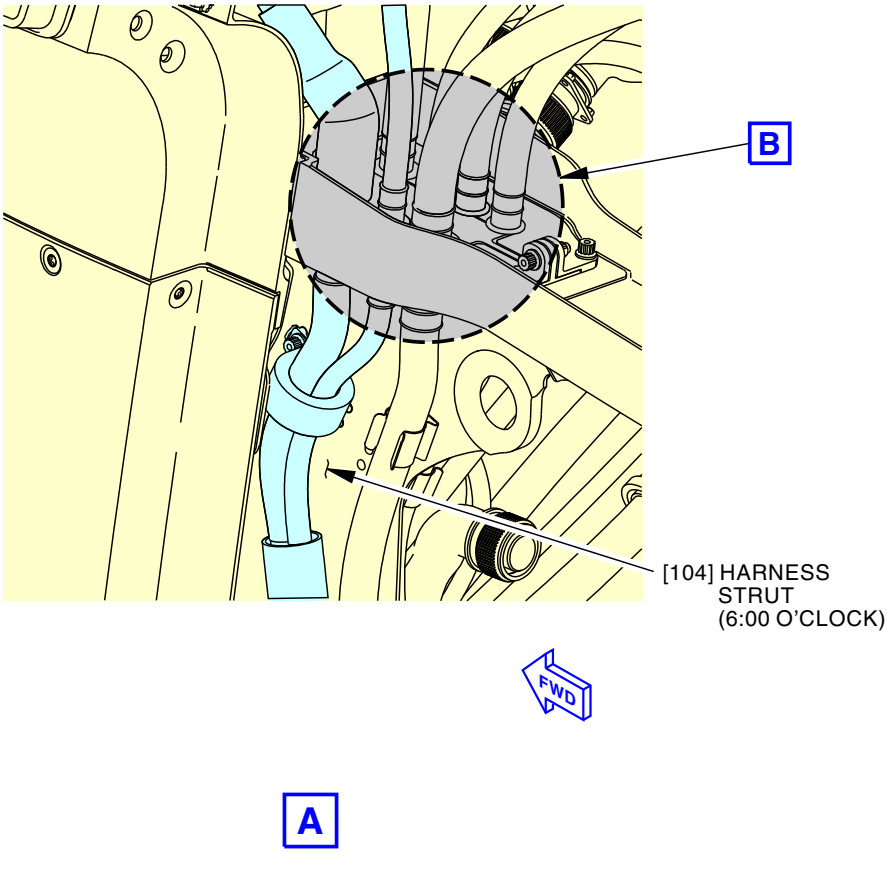
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-D-58828-00045-A-001-01
2938818 S0000714836_V2

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 1 of 11)

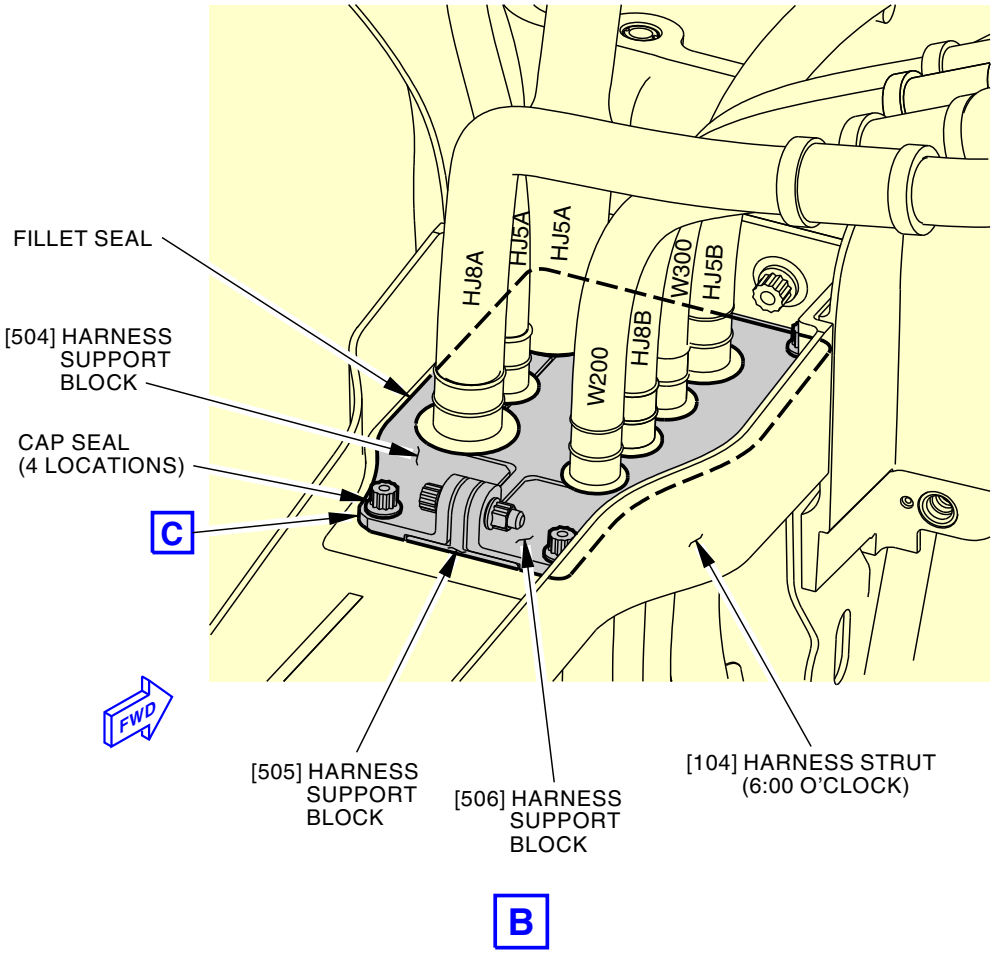
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2952925 S0000730238_V1

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 2 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

——— DAPCO 2100

NOTE:

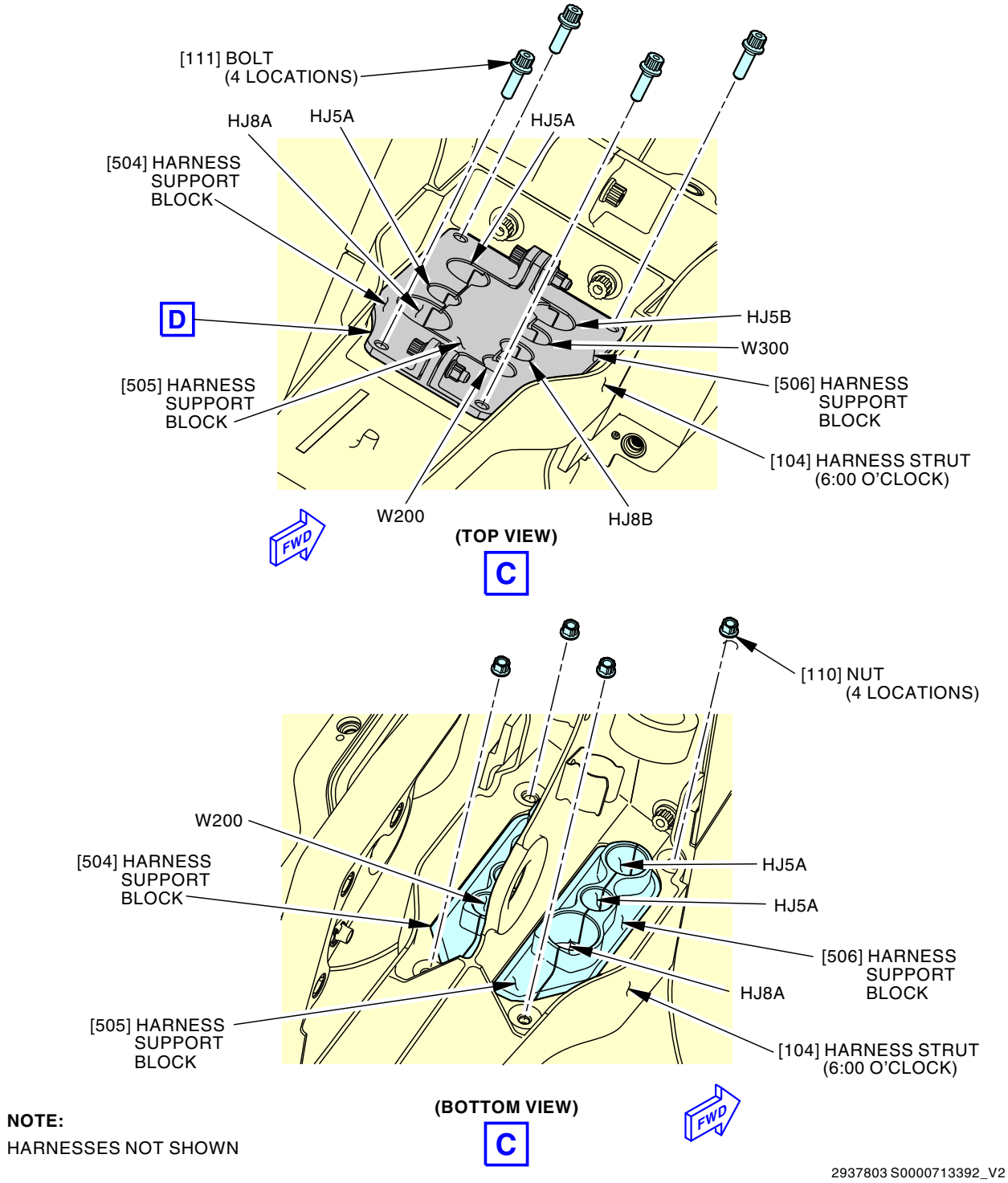
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE HARNESS SUPPORT BLOCK. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937807 S0000713396_V4

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 3 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

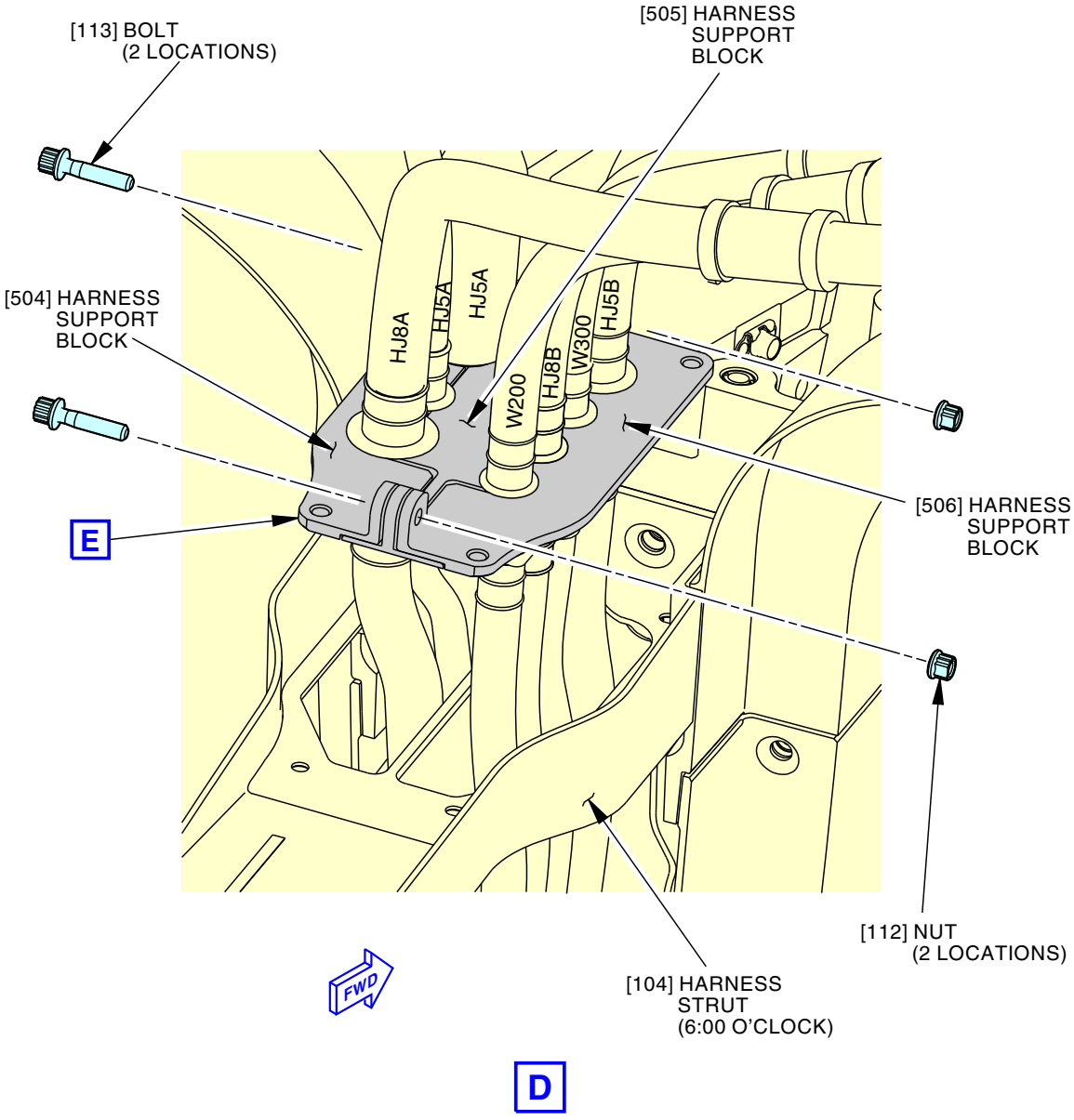


NOTE:
HARNESSES NOT SHOWN

2937803 S0000713392_V2

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 4 of 11)

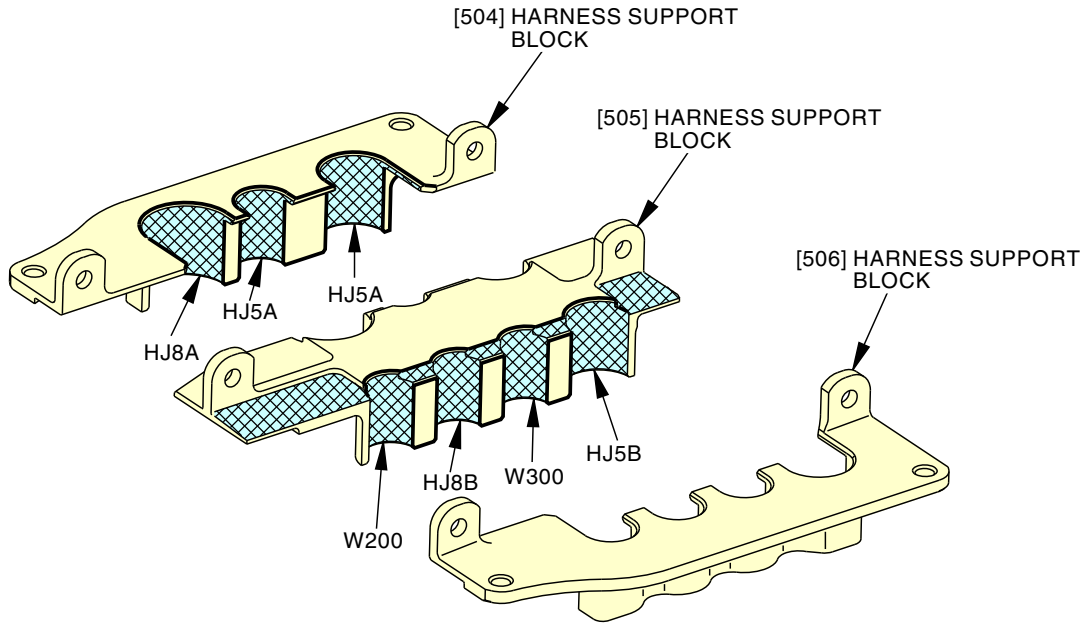
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937804 S0000713393_V2

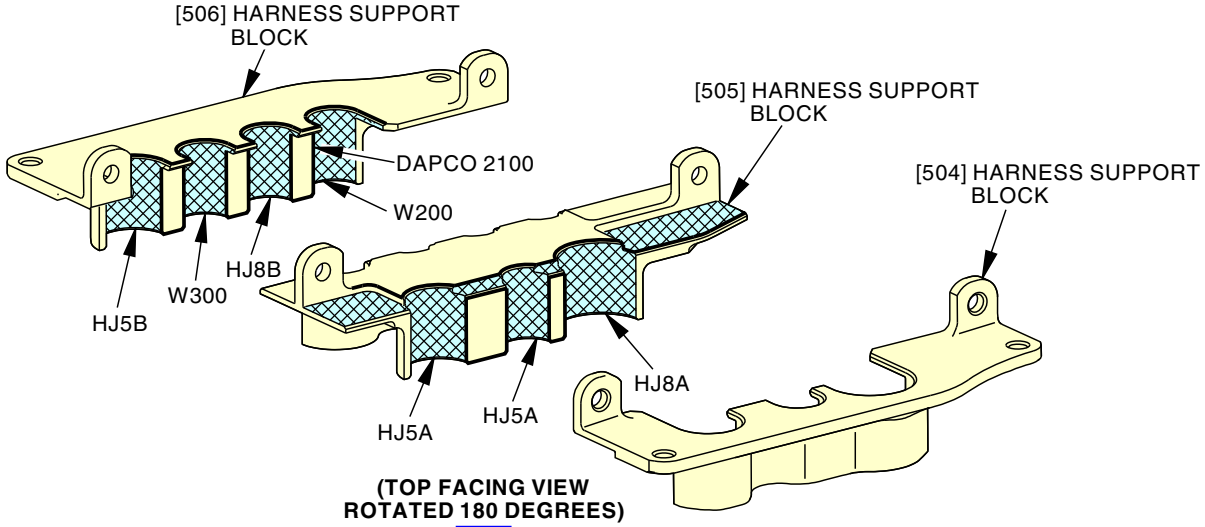
Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

E



(TOP FACING VIEW ROTATED 180 DEGREES)

E

LEGEND:

DAPCO 2100

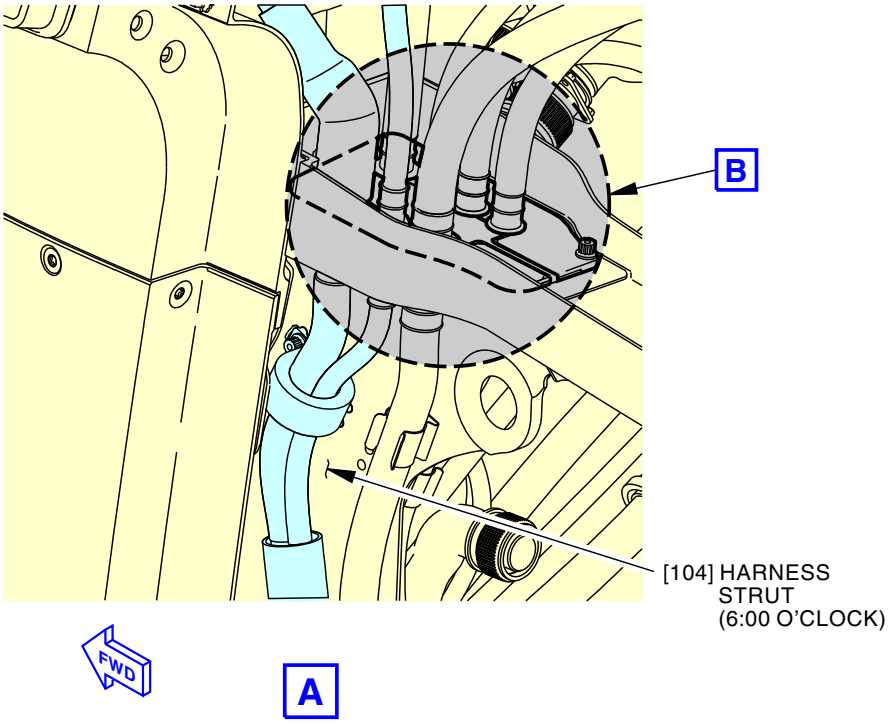
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937805 S0000713394_V4

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 6 of 11)

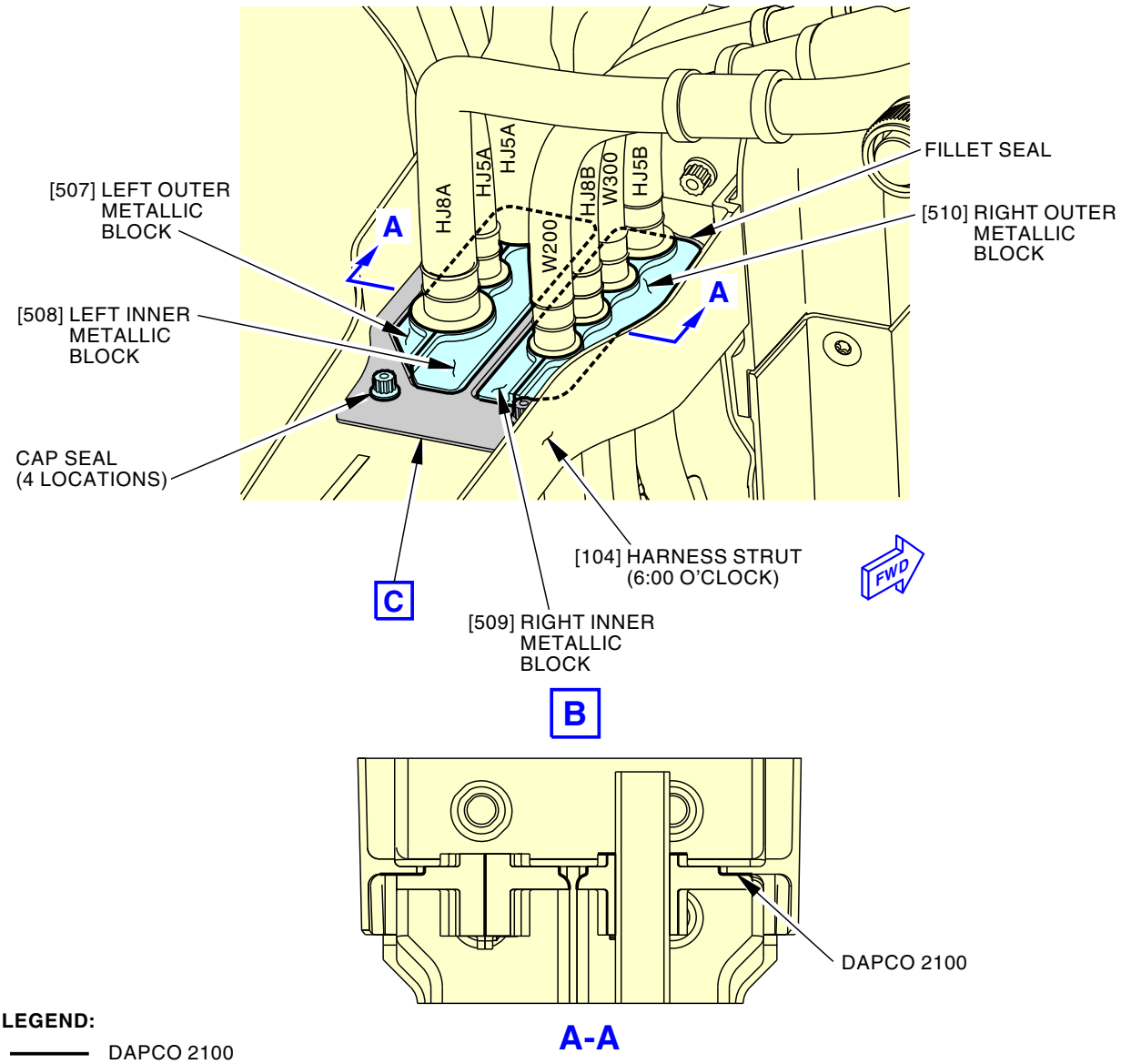
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2962032 S0000739201_V1

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 7 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

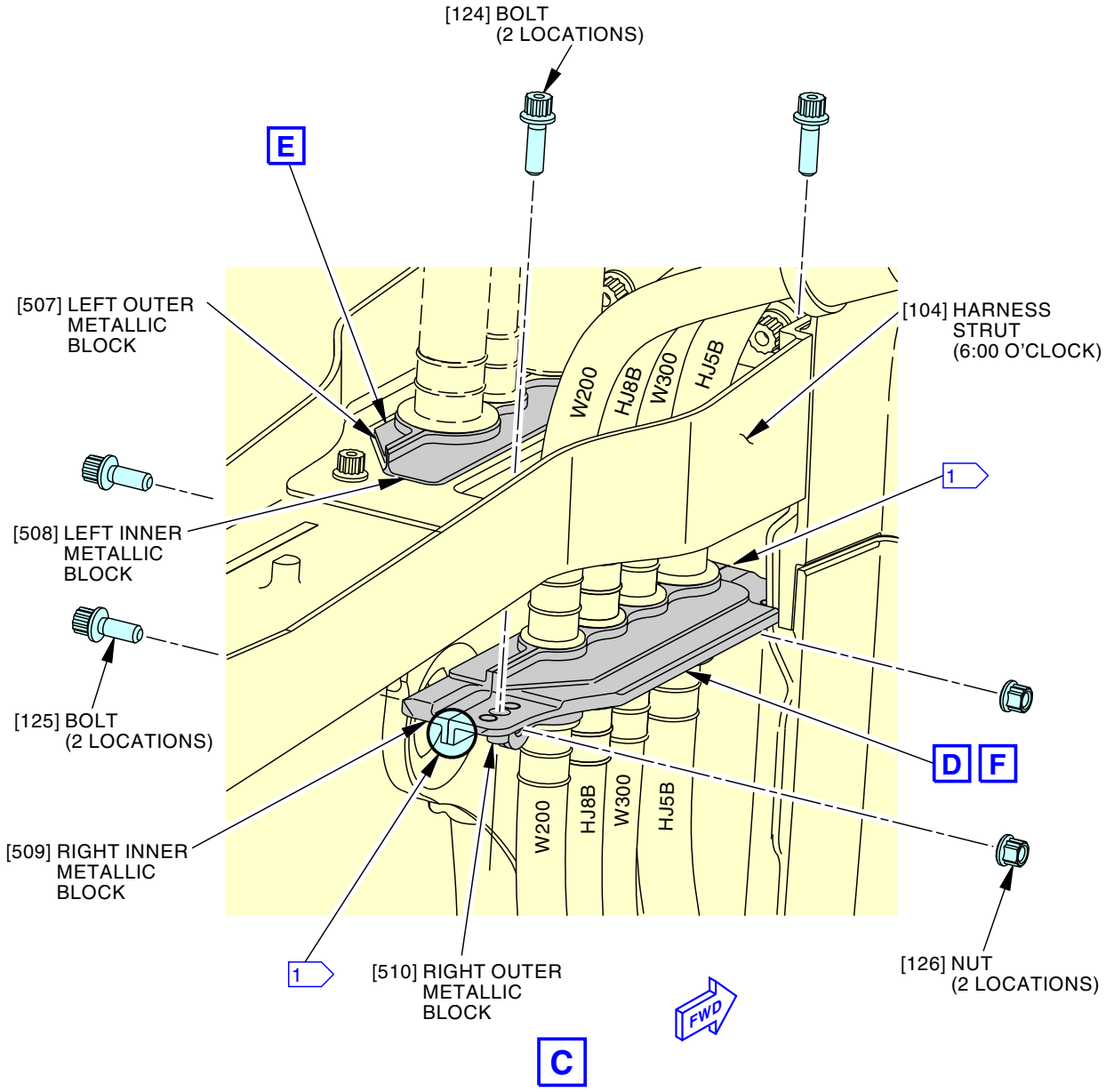
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE METALLIC BLOCKS. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN BOTH RIGHT AND LEFT METALLIC BLOCKS HAVE BEEN REMOVED.

ICNLEAP1B732201D5882800059A00101
2962033 S0000739202_V2

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 8 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

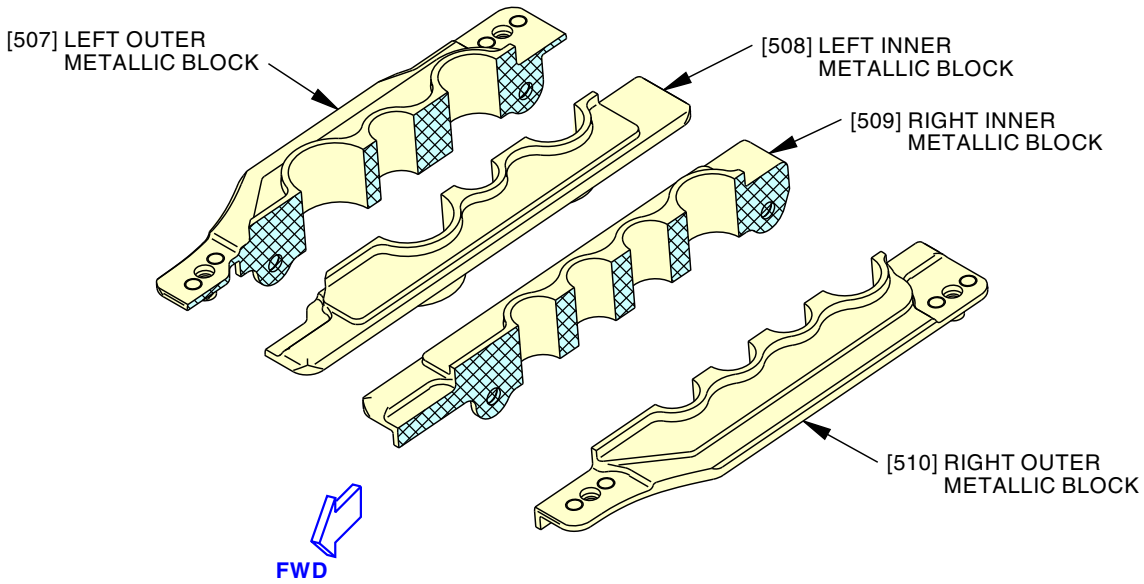
THIS VIEW IS SPECIFIC FOR RIGHT INNER AND OUTER METALLIC BLOCKS. SAME LOGIC IS APPLIED FOR LEFT INNER AND OUTER METALLIC BLOCKS.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

ICNLEAP1B732201D5882800063A00101
2962034 S0000739203_V2

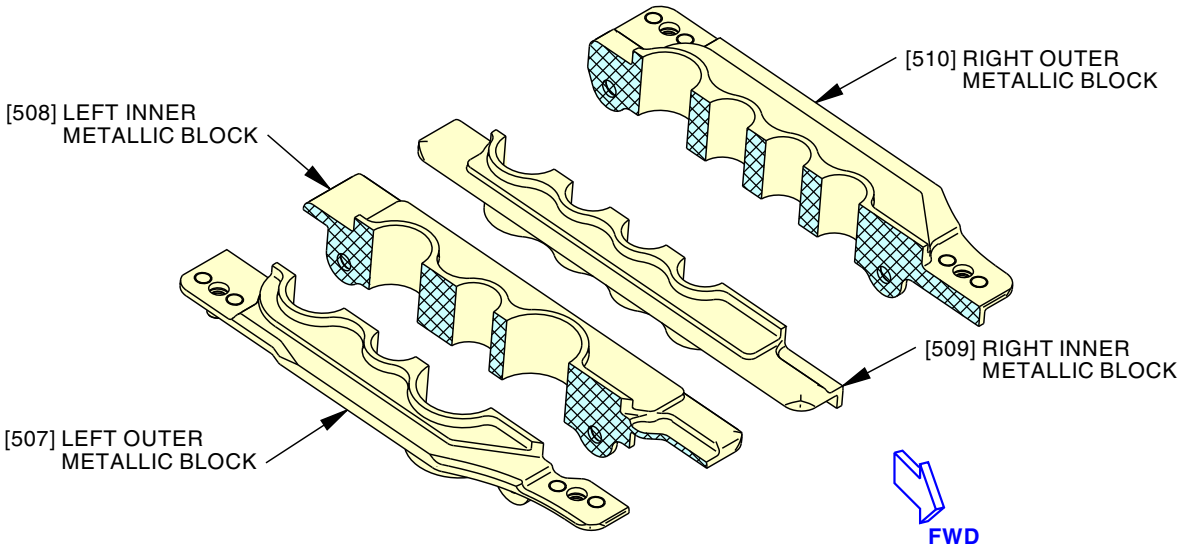
Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 9 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

D



(TOP FACING VIEW ROTATED 90 DEGREES)

D

LEGEND:

DAPCO 2100

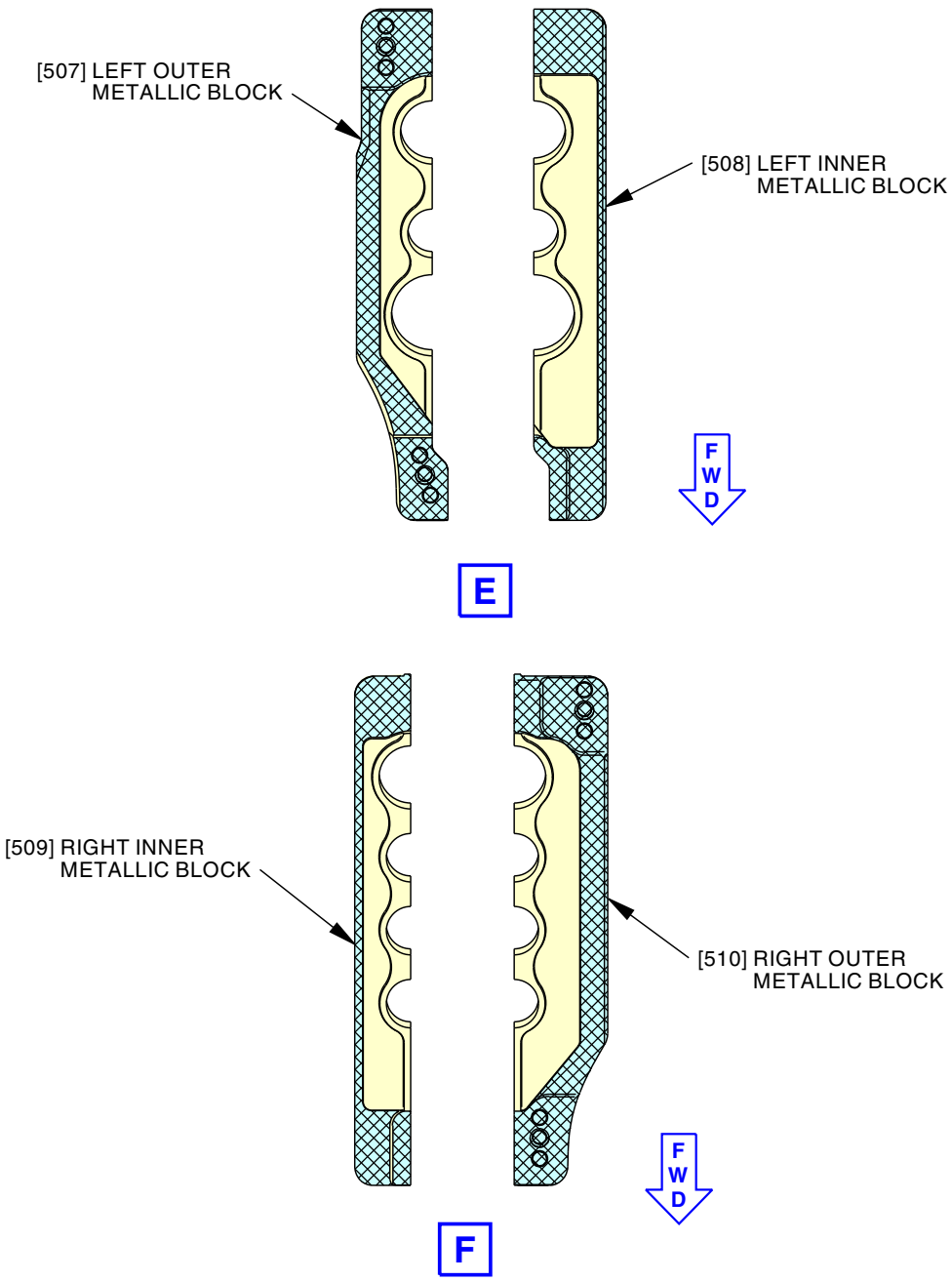
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994662 S0000771309_V1

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994663 S0000771310_V1

Harness Support Block Installation
Figure 408/73-22-01-990-873-G00 (Sheet 11 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-804-G00

9. Electronic Engine Control (EEC) Electrical Harness (HJ5B) Installation

(Figure 406, Figure 407, and Figure 408)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (HJ5B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (HJ5B) Installation

SUBTASK 73-22-01-210-003-G00

(1) During the installation, make sure that the EEC electrical harness (HJ5B) [135] is not stressed or damaged.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-210-004-G00

(2) Make sure that all components are clean and free of old sealant prior to adding new sealant.

SUBTASK 73-22-01-420-006-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(3) Install the EEC electrical harness (HJ5B) [135] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ5B) [135] in the correct position with the 24 clips [136A] along its routing.

(d) Install the EEC electrical harness (HJ5B) [135] on the harness strut (6:00 o'clock) [104] as follows:

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

1) Install the harness support block [504], harness support block [505], and harness support block [506] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the four bolts [111] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses (View E, Figure 408).

c) Make sure that the EEC electrical harness (HJ5B) [135] and harnesses are in the correct position on the harness support block [504], harness support block [505], and harness support block [506] (View D, Figure 408).

d) Install the two bolts [113] and two nuts [112] to assemble the harness support block [504], harness support block [505], and harness support block [506] in the correct position with the harnesses.

e) Tighten the nuts [112] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

f) Make sure that there is minimum amount of the squeeze-out on the lower side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

g) Install the harness support block [504], harness support block [505], and harness support block [506] in the correct position on the harness strut (6:00 o'clock) [104].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

h) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104] (View B, Figure 408).

i) Install the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

j) Tighten the nuts [110] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

k) Make sure that the minimum amount of the sealant squeeze out is on the lower side.

l) Apply more sealant to form a correct fillet seal around the contour of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

m) Clean the four nuts [110] and four bolts [111] that will have sealant applied to them.

n) Apply Dapco 2100 sealant, A50483 [CP2927], to the heads of the four bolts [111].

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

2) Remove any remaining of old sealant residue left on the harnesses or harness strut (6:00 o'clock) [104].

3) Install the left outer metallic block [507] and left inner metallic block [508] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507] and left inner metallic block [508].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507], left inner metallic block [508], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the left outer metallic block [507] and left inner metallic block [508] in the correct position with the harnesses.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the left outer metallic block [507] and left inner metallic block [508] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the left outer metallic block [507] and left inner metallic block [508] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of left outer metallic block [507] and left inner metallic block [508].

4) Install the new right inner metallic block [509] and right outer metallic block [510] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509] and right outer metallic block [510].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the right inner metallic block [509] and right outer metallic block [510] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

f) Install the right inner metallic block [509] and right outer metallic block [510] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the right inner metallic block [509] and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the two bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of right inner metallic block [509] and right outer metallic block [510].

SIA ALL

5) Install the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109] as follows:

a) Lubricate the five bolts [106] and two nuts [107] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply the Dapco 2100 sealant, A50483 [CP2927], to the one side (either top or bottom) of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

NOTE: Fay seal applies to the two sides of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

c) Make sure that the EEC electrical harness (HJ5B) [135] and harnesses are in the correct position on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503](View E, Figure 407).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

d) Install the two bolts [108] and two nuts [107] to assemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Tighten the nuts [107] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

f) Make sure that the fillet seal of the squeeze out is on the forward facing side.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

g) Make the sealant squeeze-out flush on the outer edges of the strut 5 bracket upper block [500] and strut 5 bracket lower block [503] (View F, Figure 407).

h) Install the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] in a correct position on the strut 5 outer fitting [109].

i) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 outer fitting [109] (View C, Figure 408).

j) Install the five bolts [106] that attach the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109].

k) Tighten the bolts [106] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

l) Make sure that there is a minimum amount of the squeeze-out on the aft side around the edges of the block assembly and that the sealant is flush with the block assembly (View C, Figure 407).

m) Make sure that the squeeze-out on the forward facing side is finished as a fillet seal.

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

n) Clean the nut plate side of the bolts [106] and nut plates.

o) Apply Dapco 2100 sealant, A50483 [CP2927], to the nut plate side of the bolts [106] and nut plates.

(e) Attach blanket [190] to the strut 5 outer fitting [109].

1) Apply Dapco 2100 sealant, A50483 [CP2927], between the blanket [190] and strut 5 outer fitting [109] (View B, Figure 407).

NOTE: Dapco 2200 firewall sealant, A50396, may use as optional. If this consumable meets the local regulatory requirements of the operator, it is acceptable as a chemical sealant for further usage.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(f) Lubricate the threads of the bolt [148], bolt [150], bolt [153], and bolt [157] with the oil, D00599 [CP2442].

(g) Install the bolt [157] and clamp [156] that attach the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(h) Tighten the bolt [157] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(i) Install the bolt [153] and clamp [152] that attach the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(j) Tighten the bolt [153] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(k) Install the bolt [150] and clamp [151] that attach the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(l) Tighten the bolt [150] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(m) Install the bolt [148] and clamp [149] that attach the EEC electrical harness (HJ5B) [135] to the forward stator case bracket.

(n) Tighten the bolt [148] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(o) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ5B) [135] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ5B) [135] connector to the SCU/SVA channel B receptacle [160].

2) Connect the EEC electrical harness (HJ5B) [135] connector to the right VSV actuator (bottom) receptacle [159].

3) Connect the EEC electrical harness (HJ5B) [135] connector to the right VSV actuator (top) receptacle [158].

4) Connect the EEC electrical harness (HJ5B) [135] connector to the right VBV actuator receptacle [154].

5) Connect the EEC electrical harness (HJ5B) [135] connector to the T25 sensor channel B receptacle [155].

6) Connect the EEC electrical harness (HJ5B) [135] connector to the N1 speed sensor channel B receptacle [147].

(p) Install the bolt [140] and clamp [141] that attach the EEC electrical harness (HJ5B) [135] to the fan case bracket.

(q) Tighten the bolt [140] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(r) Install the bolt [137] and clamp [138] that attach the EEC electrical harness (HJ5B) [135] to the fan case bracket.

(s) Tighten the bolt [137] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(t) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ5B) [135] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ5B) [135] connector to the EEC HJ5A harness receptacle [144].

2) Connect the HJ8B engine wiring harness electrical connector [146] connector to the EEC HJ8A harness receptacle [145].

3) Connect the HJ6B engine wiring harness electrical connector [142] connector to the EEC HJ6A harness receptacle [143].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

4) Connect the EEC electrical harness (HJ5B) [135] to the lower overheat sensor [114].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

5) Connect the EEC electrical harness (HJ5B) [135] to the bracket assembly [115].

SIA ALL

6) Connect the EEC electrical harness (HJ5B) [135] connector to the FMU channel B receptacle [139].

7) Connect the EEC electrical harness (HJ5B) [135] connector to the EEC channel B J5 receptacle [136].

(u) Make sure that the work area is clean of all tools and other items.

SUBTASK 73-22-01-420-007-G00

(4) Install the segment shroud 4 [71].

SUBTASK 73-22-01-420-008-G00

(5) Install the segment shroud 3 [69].

SUBTASK 73-22-01-420-009-G00

(6) Install the segment shroud 2 [68].

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-025-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-029-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-030-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-031-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-032-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ5B) Installation Test

SUBTASK 73-22-01-730-004-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-805-G00

10. Electronic Engine Control (EEC) Electrical Harness (HJ6A) Removal

(Figure 409)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (HJ6A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-033-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-034-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-035-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-036-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-010-027-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ6A) Removal

(Figure 409)

SUBTASK 73-22-01-020-011-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ6A) [192] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ6A) [192] connector from the EEC channel A J6 receptacle [219].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Disconnect the EEC electrical harness (HJ6A) [192] connector from the PSS channel A receptacle [199].

(c) Disconnect the EEC electrical harness (HJ6A) [192] connector from the main f/o heat exchanger DP sensor receptacle [202].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

(d) Disconnect the EEC electrical harness (HJ6A) [192] from the upper overheat sensor [220].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

(e) Disconnect the EEC electrical harness (HJ6A) [192] from the bracket assembly [116].

SIA ALL

(f) Disconnect the EEC electrical harness (HJ6A) [192] connector from the T12 Channel A receptacle [203].

(g) Disconnect the EEC electrical harness (HJ6A) [192] connector from the FMU fuel strainer DP transducer receptacle [204].

(h) Disconnect the EEC electrical harness (HJ6A) [192] connector from the fuel filter DP transducer receptacle [207].

(i) Disconnect the EEC electrical harness (HJ6A) [192] connector from the oil filter DP sensor receptacle [208].

(j) Disconnect the EEC electrical harness (HJ6A) [192] connector from the SAV receptacle [209].

(k) Disconnect the EEC electrical harness (HJ6A) [192] connector from the N2 speed sensor channel A receptacle [210].

(l) Disconnect the EEC electrical harness (HJ6A) [192] connector from the oil P/T sensor channel A receptacle [214].

(m) Disconnect the connector socket [216] of the EEC electrical harness (HJ6A) [192] as follows:

1) Disconnect the HJ6B engine wiring harness electrical connector [215] (at 5:00 o'clock) from the connector socket [216].

NOTE: If the HJ6B engine wiring harness has been removed, do not do this step.

2) Remove the four nuts [217] and four bolts [218] that attach the connector socket [216] on the bracket [83].

3) Disconnect the connector socket [216] from the bracket [83].

(n) Remove the bolt [195] from the clamp [196] that attaches the EEC electrical harness (HJ6A) [192] to the fan case bracket.

(o) Remove the bolt [197] from the clamp [198] that attaches the EEC electrical harness (HJ6A) [192] to the fan case bracket.

(p) Remove the bolt [200] from the clamp [201] that attaches the EEC electrical harness (HJ6A) [192] to the fan case bracket.

(q) Remove the bolt [205] from the clamp [206] that attaches the EEC electrical harness (HJ6A) [192] to the fan case bracket.

(r) Remove the nut [211] and bolt [212] from the clamp [213] that attaches the EEC electrical harness (HJ6A) [192] to the fan case bracket.

(s) Remove the EEC electrical harness (HJ6A) [192] from the 44 clips [194] along its routing.

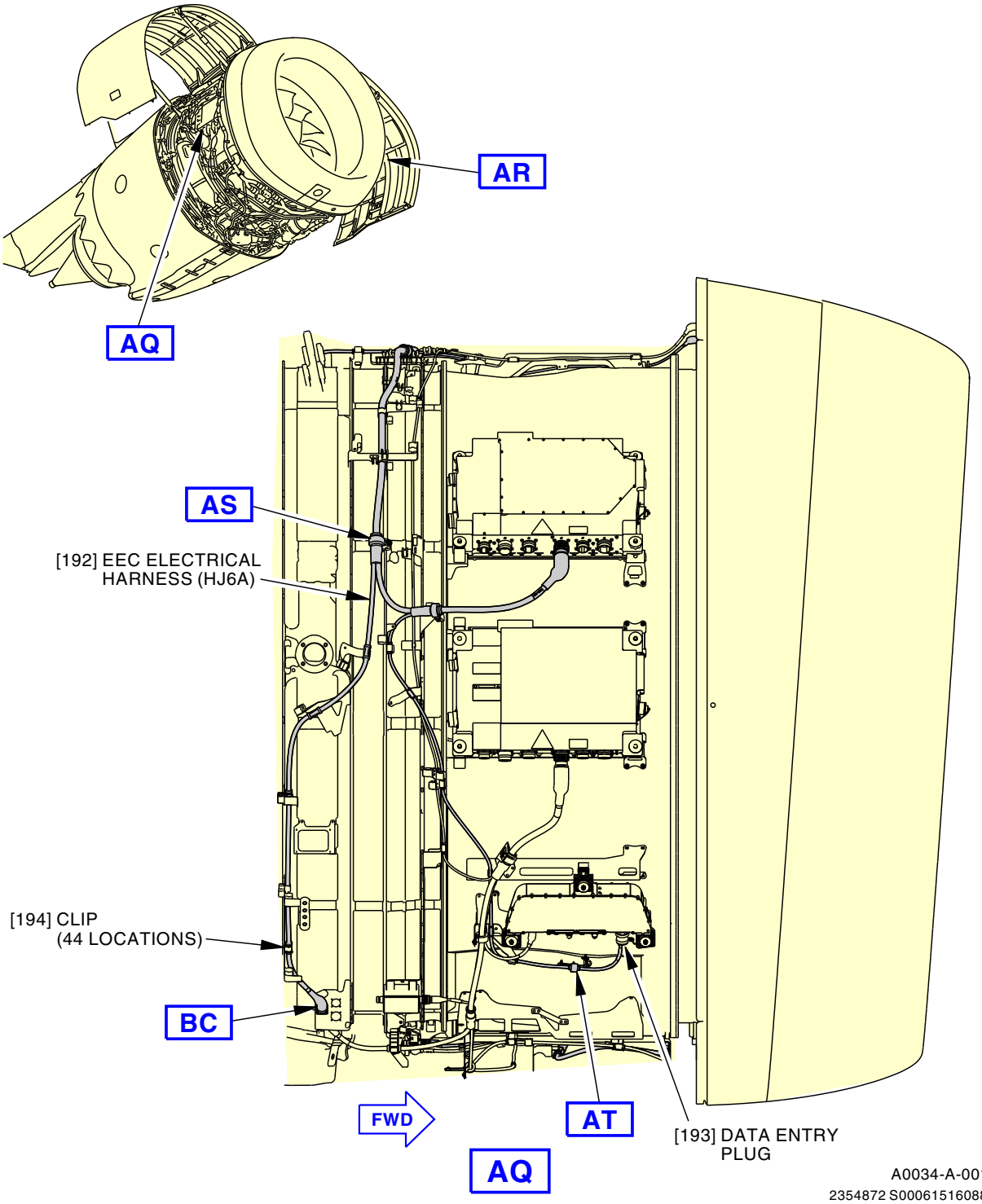
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(t) Carefully remove the EEC electrical harness (HJ6A) [192] from the engine.

(u) Install the protective covers on all of the harness connectors and the component receptacles.

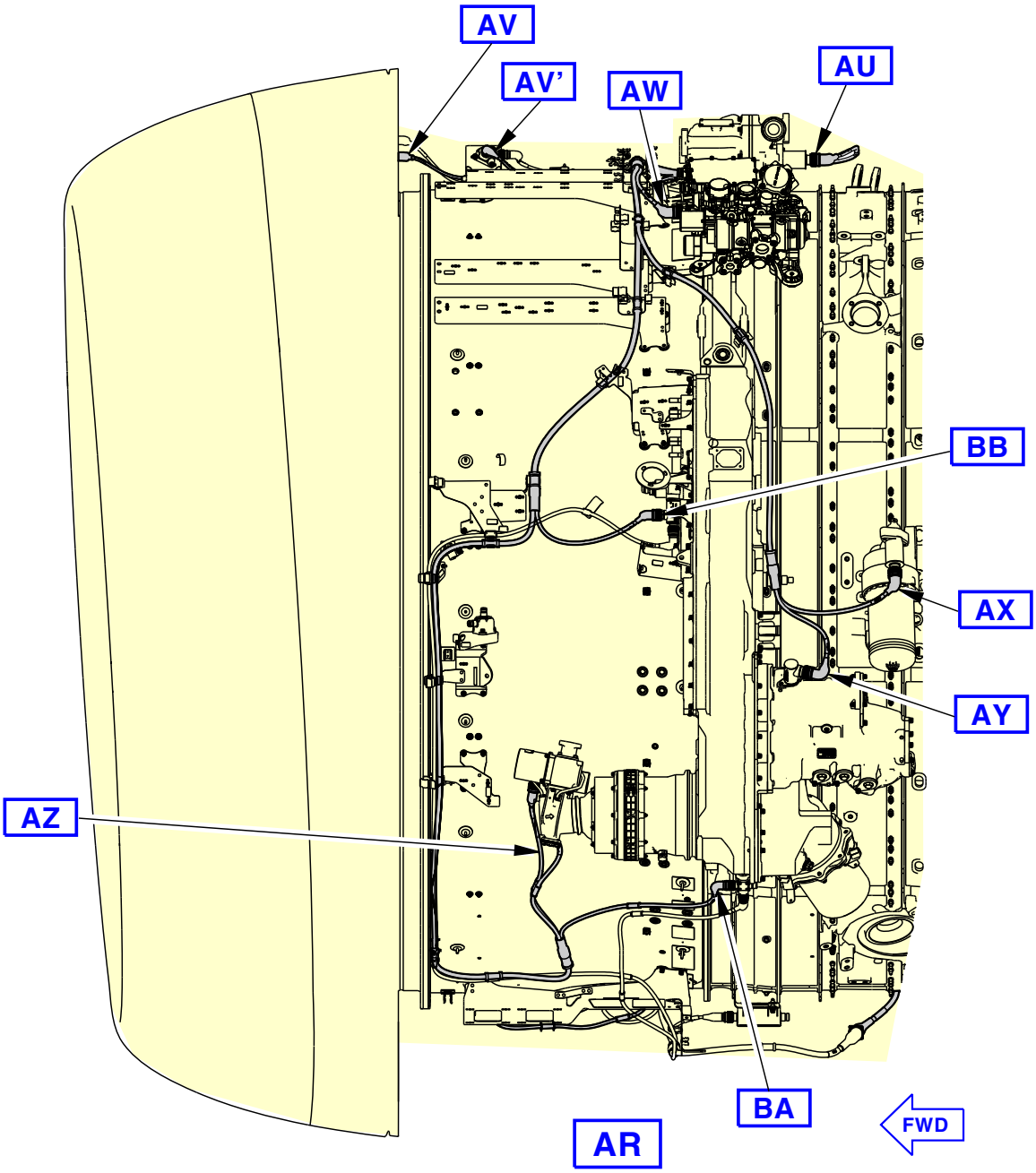
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 1 of 9)

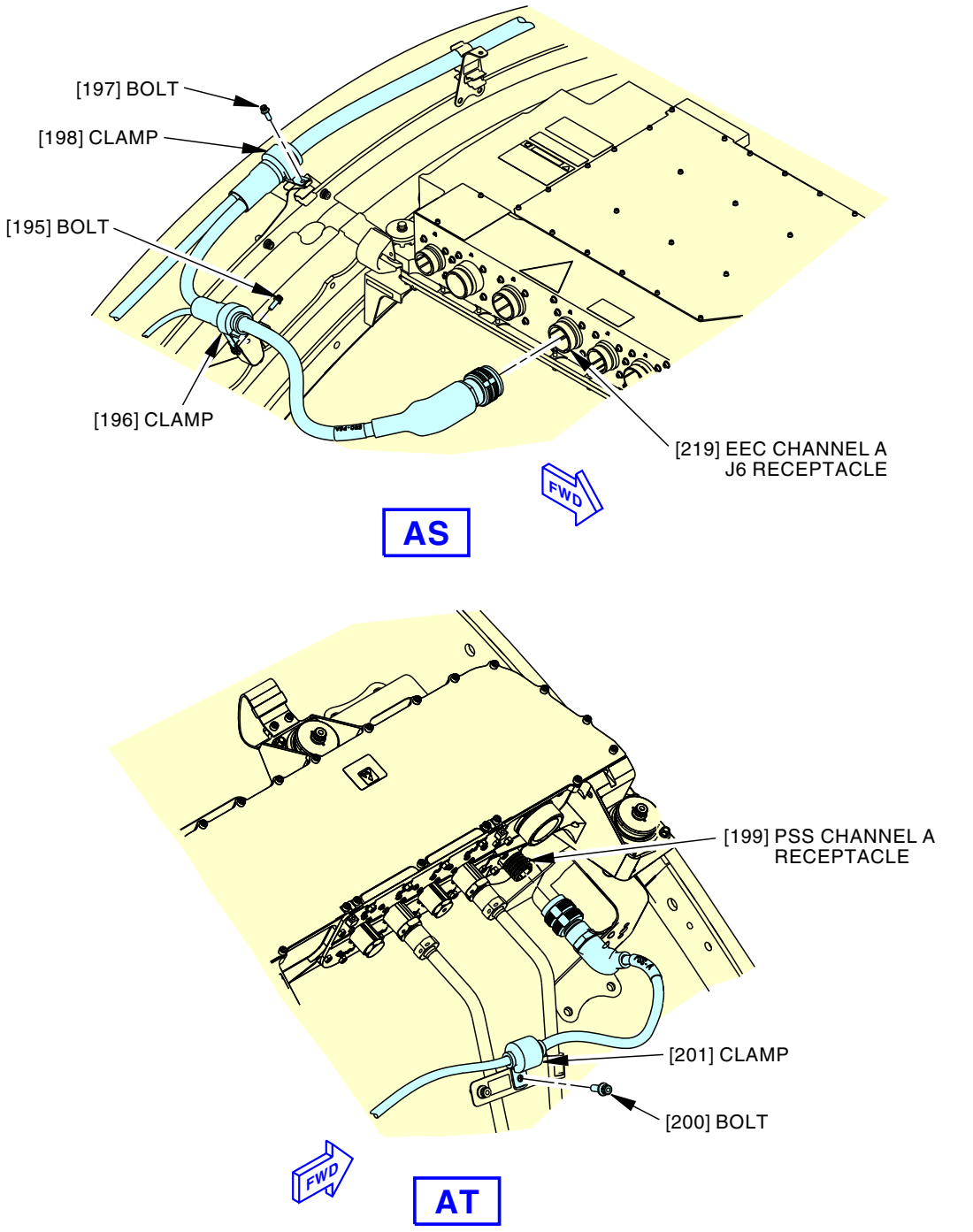
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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2354873 S00061516089_V2

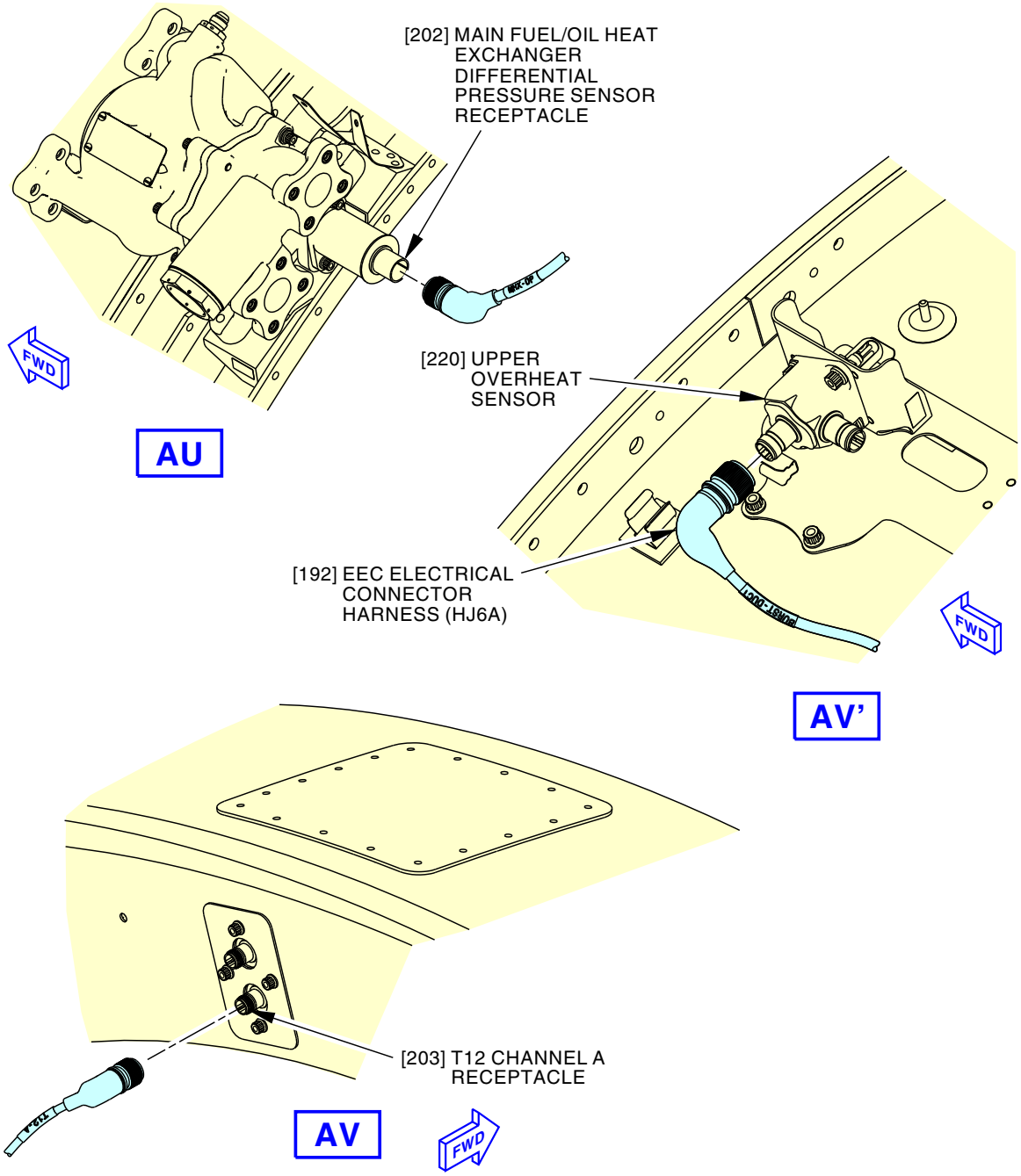
EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 3 of 9)

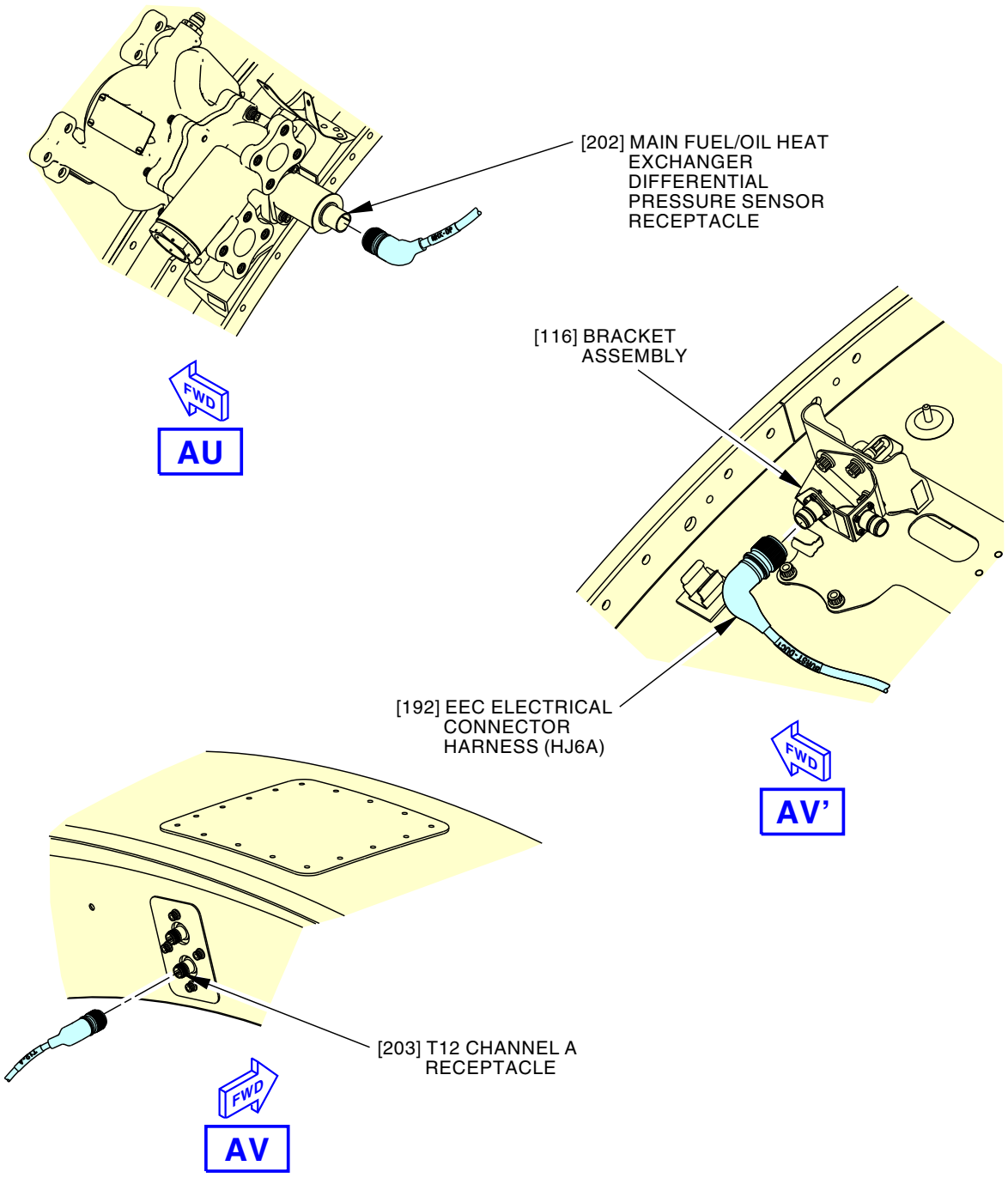
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-B-F0301-A0037-A-001-01
2354875 S00061516091_V2

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 4 of 9)

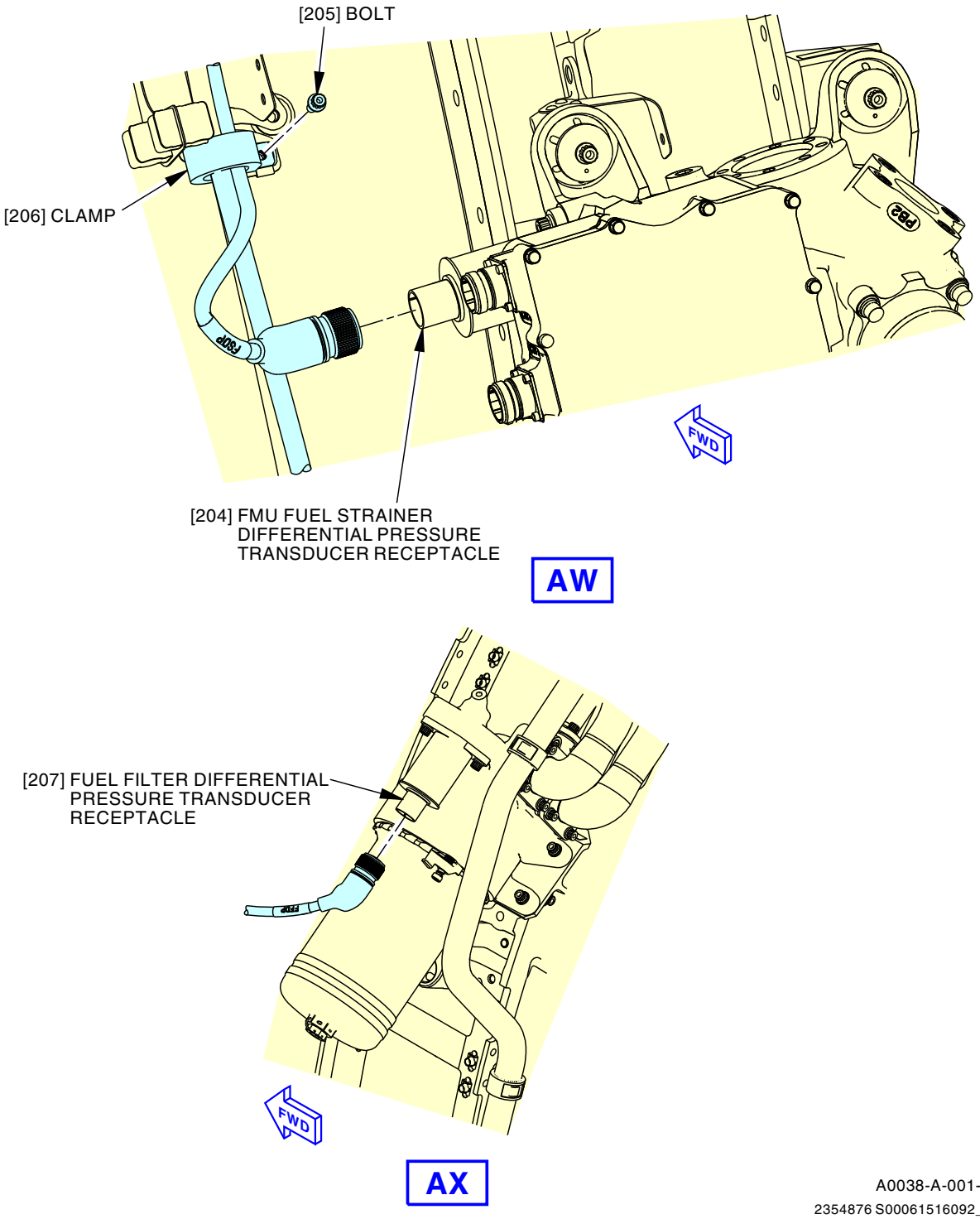
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2833208 S0000658227_V1

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 5 of 9)

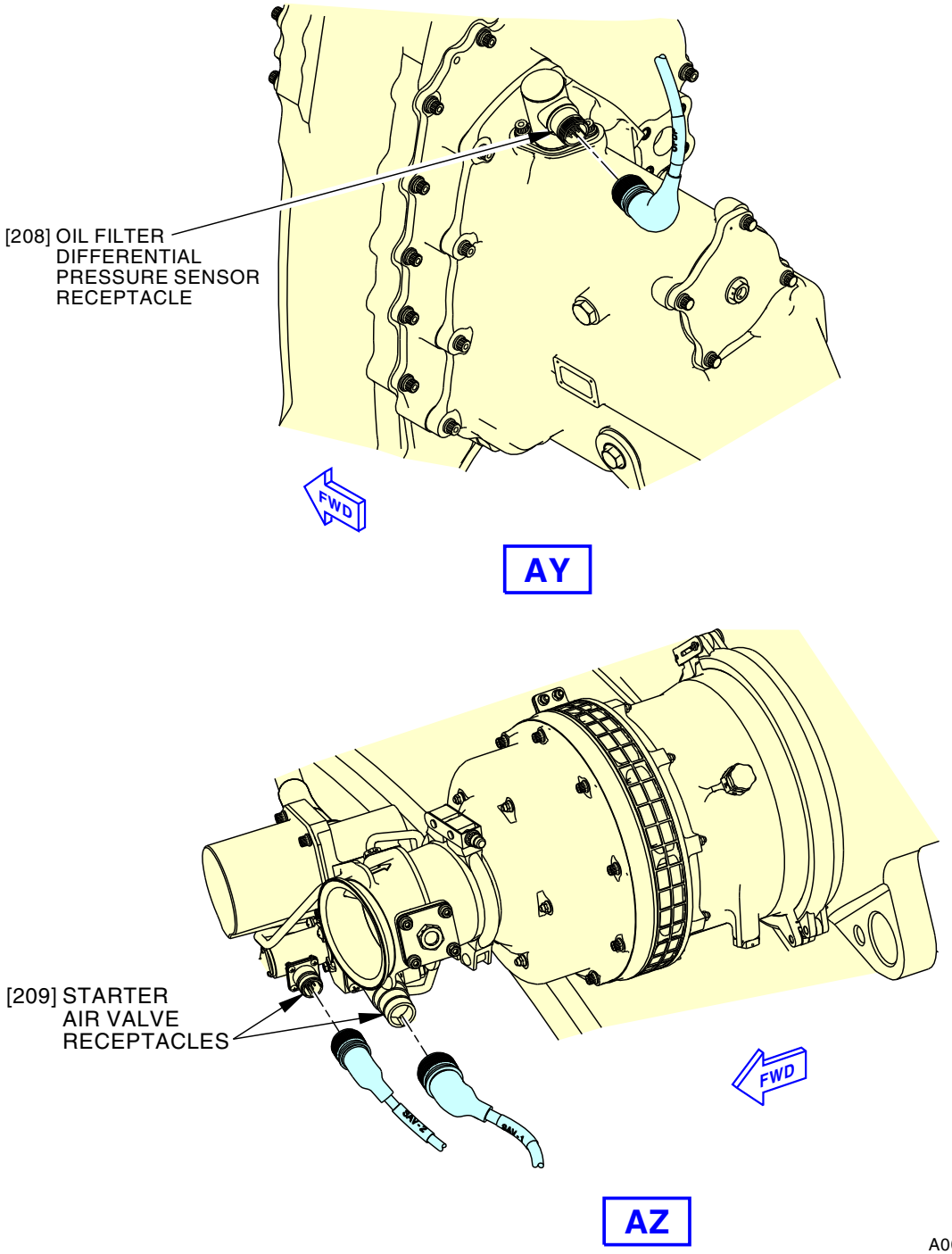
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0038-A-001-01
2354876 S00061516092_V1

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 6 of 9)

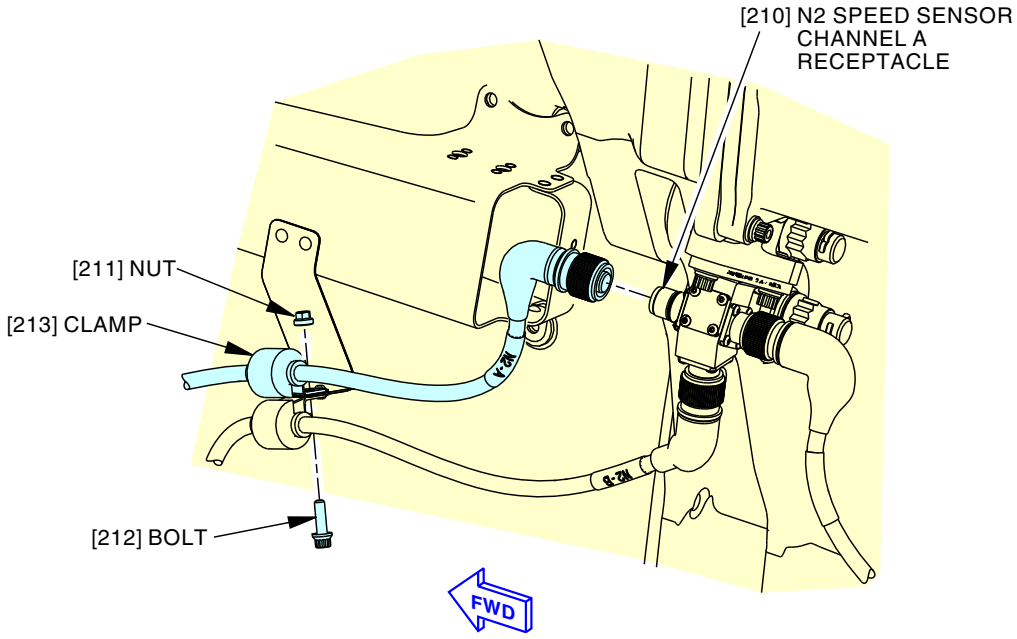
ECCN 9E991 BOEING PROPRIETARY - See title page for details

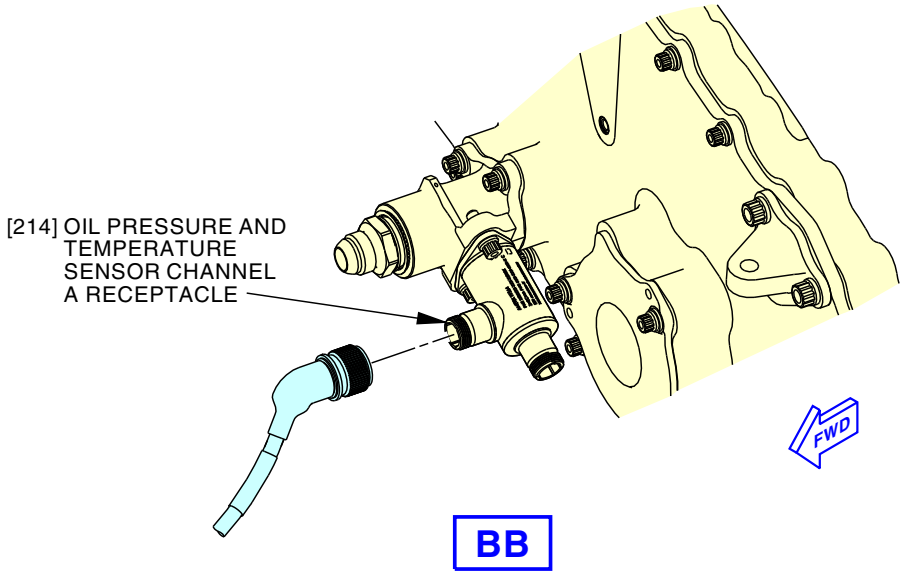


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2354877 S00061516093_V1

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

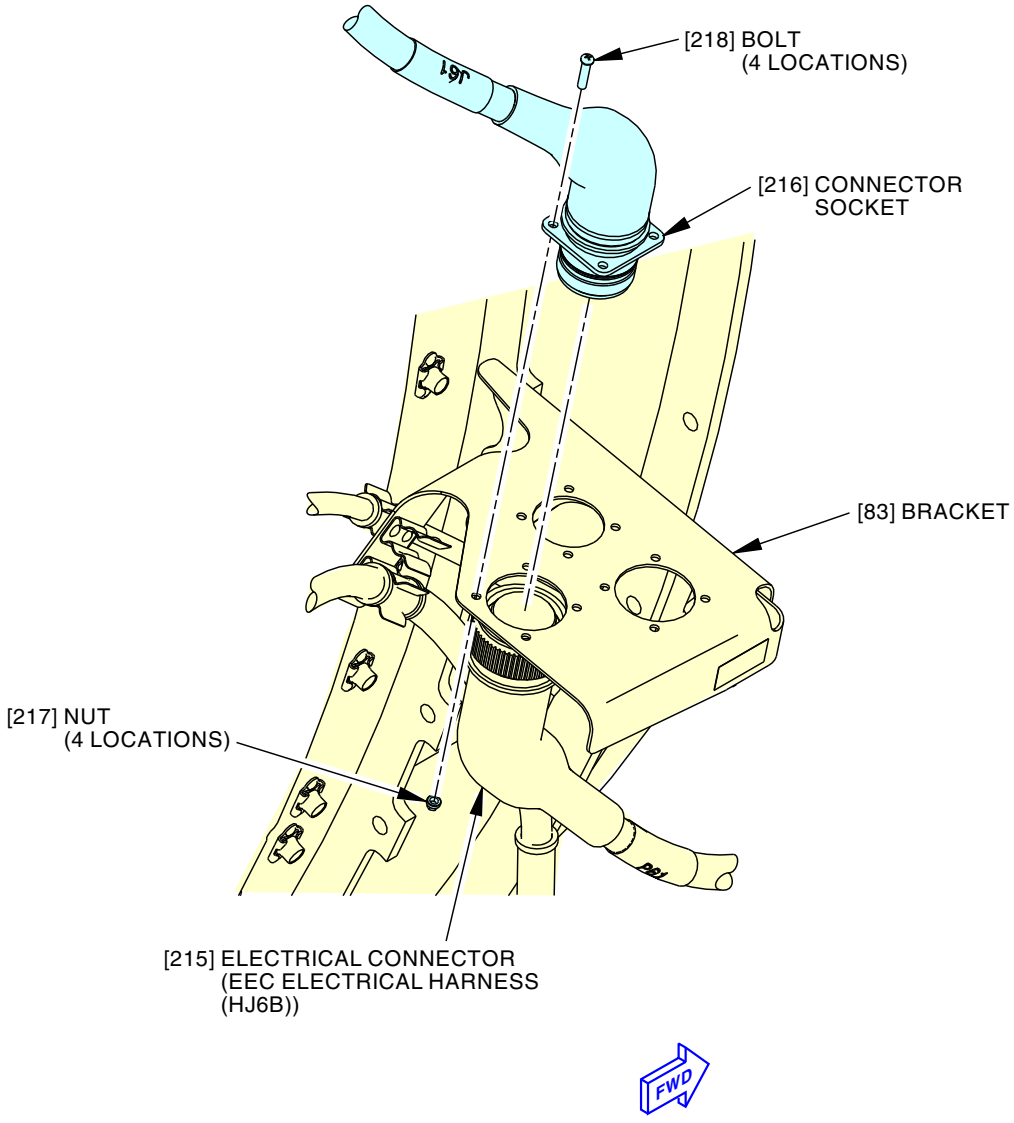




A0040-A-001-01
2354878 S00061516094_V1

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0041-A-001-01
2354879 S00061516095_V1

EEC Electrical Harness (HJ6A) Installation
Figure 409/73-22-01-990-855-G00 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-805-G00

11. Electronic Engine Control (EEC) Electrical Harness (HJ6A) Installation

(Figure 409)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (HJ6A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 2
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (HJ6A) Installation

(Figure 409)

SUBTASK 73-22-01-420-010-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (HJ6A) [192] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ6A) [192] in the correct position with the 44 clips [194] along its routing.

(d) Install the bolt [212] and clamp [213] that attach the EEC electrical harness (HJ6A) [192] to the engine.

(e) Tighten the nut [211] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(f) Install the bolt [205] and clamp [206] that attach the EEC electrical harness (HJ6A) [192] to the engine.

(g) Tighten the bolt [205] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(h) Install the bolt [200] and clamp [201] that attach the EEC electrical harness (HJ6A) [192] to the engine.

(i) Tighten the bolt [200] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(j) Install the bolt [197] and clamp [198] that attach the EEC electrical harness (HJ6A) [192] to the engine.

(k) Tighten the bolt [197] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(l) Install the bolt [195] and clamp [196] that attach the EEC electrical harness (HJ6A) [192] to the engine.

(m) Tighten the bolt [195] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(n) Connect the connector socket [216] of the EEC electrical harness (HJ6A) [192] as follows:

1) Make sure that the mating faces are clean and free of unwanted materials.

2) Install the four nuts [217] and four bolts [218] to attach the connector socket [216] to the bracket [83].

3) Tighten the four nuts [217] to 10.2 in-lb (1.15 N·m) - 11.1 in-lb (1.25 N·m).

4) Connect the HJ6B engine wiring harness electrical connector [215] to the connector socket [216].

NOTE: If the HJ6B engine wiring harness has been removed, do not do this step.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(o) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ6A) [192] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ6A) [192] connector to the oil P/T sensor channel A receptacle [214].
2) Connect the EEC electrical harness (HJ6A) [192] connector to the N2 speed sensor channel A receptacle [210].
3) Connect the EEC electrical harness (HJ6A) [192] connector to the SAV receptacle [209].
4) Connect the EEC electrical harness (HJ6A) [192] connector to the oil filter DP sensor receptacle [208].
5) Connect the EEC electrical harness (HJ6A) [192] connector to the fuel filter DP transducer receptacle [207].
6) Connect the EEC electrical harness (HJ6A) [192] connector to the FMU fuel strainer DP transducer receptacle [204].
7) Connect the EEC electrical harness (HJ6A) [192] connector to the T12 Channel A receptacle [203].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

8) Connect the EEC electrical harness (HJ6A) [192] to the upper overheat sensor [220].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

9) Connect the EEC electrical harness (HJ6A) [192] to the bracket assembly [116].

SIA ALL

10) Connect the EEC electrical harness (HJ6A) [192] connector to the main f/o heat exchanger DP sensor receptacle [202].
11) Connect the EEC electrical harness (HJ6A) [192] connector to the PSS channel A receptacle [199].
12) Connect the EEC electrical harness (HJ6A) [192] connector to the EEC channel A J6 receptacle [219].

(p) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-026-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-037-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-038-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-039-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-040-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ6A) Installation Test

SUBTASK 73-22-01-730-005-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-806-G00

12. Electronic Engine Control (EEC) Electrical Harness (HJ6B) Removal

(Figure 410)

A. General

(1) This task gives the instructions on how to remove the electronic engine control (EEC) electrical harness (HJ6B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-21-09-000-801-G00	Data Entry Plug Removal (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-041-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-042-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-043-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-044-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-028-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ6B) Removal

(Figure 410)

SUBTASK 73-22-01-020-012-G00

(1) Remove the data entry plug [193] (TASK 73-21-09-000-801-G00).

SUBTASK 73-22-01-020-013-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(2) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ6B) [240] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ6B) [240] connector from the EEC channel B J6 receptacle [241].

(b) Disconnect the EEC electrical harness (HJ6B) [240] connector from the PSS channel B receptacle [244].

(c) Disconnect the EEC electrical harness (HJ6B) [240] connector from the ODMS unit conditioner receptacle [247].

(d) Disconnect the EEC electrical harness (HJ6B) [240] connector from the EEC HJ6A harness receptacle [143].

(e) Disconnect the EEC electrical harness (HJ6B) [240] connector from the N2 speed sensor channel B receptacle [250].

(f) Disconnect the EEC electrical harness (HJ6B) [240] connector from the oil P/T sensor channel B receptacle [252].

(g) Disconnect the EEC electrical harness (HJ6B) [240] connector from the T12 channel B receptacle [253].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

(h) Disconnect the EEC electrical harness (HJ6B) [240] from the upper overheat sensor [220].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

(i) Disconnect the EEC electrical harness (HJ6B) [240] from the bracket assembly [116].

SIA ALL

(j) Remove the bolt [242] from the clamp [243] that attaches the EEC electrical harness (HJ6B) [240] to the fan case bracket.

(k) Remove the bolt [245] from the clamp [246] that attaches the EEC electrical harness (HJ6B) [240] to the fan case bracket.

(l) Remove the bolt [248] from the clamp [249] that attaches the EEC electrical harness (HJ6B) [240] to the fan case bracket.

(m) Remove the nut [211] and bolt [212] from the clamp [251] that attaches the EEC electrical harness (HJ6B) [240] to the fan case bracket.

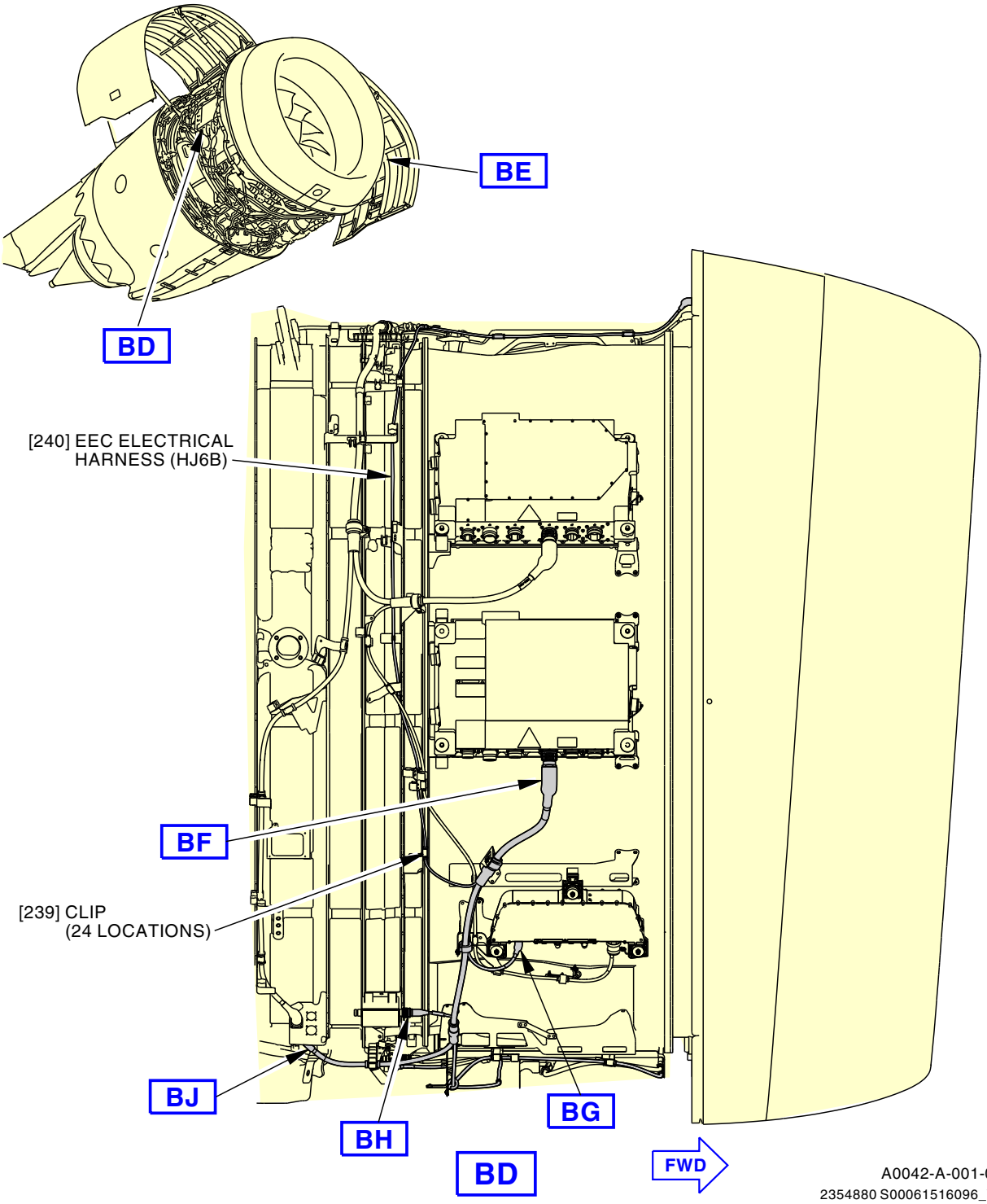
(n) Remove the EEC electrical harness (HJ6B) [240] from the 24 clips [239] along its routing.

(o) Carefully remove the EEC electrical harness (HJ6B) [240] from the engine.

(p) Install the protective covers on all of the harness connectors and the component receptacles.

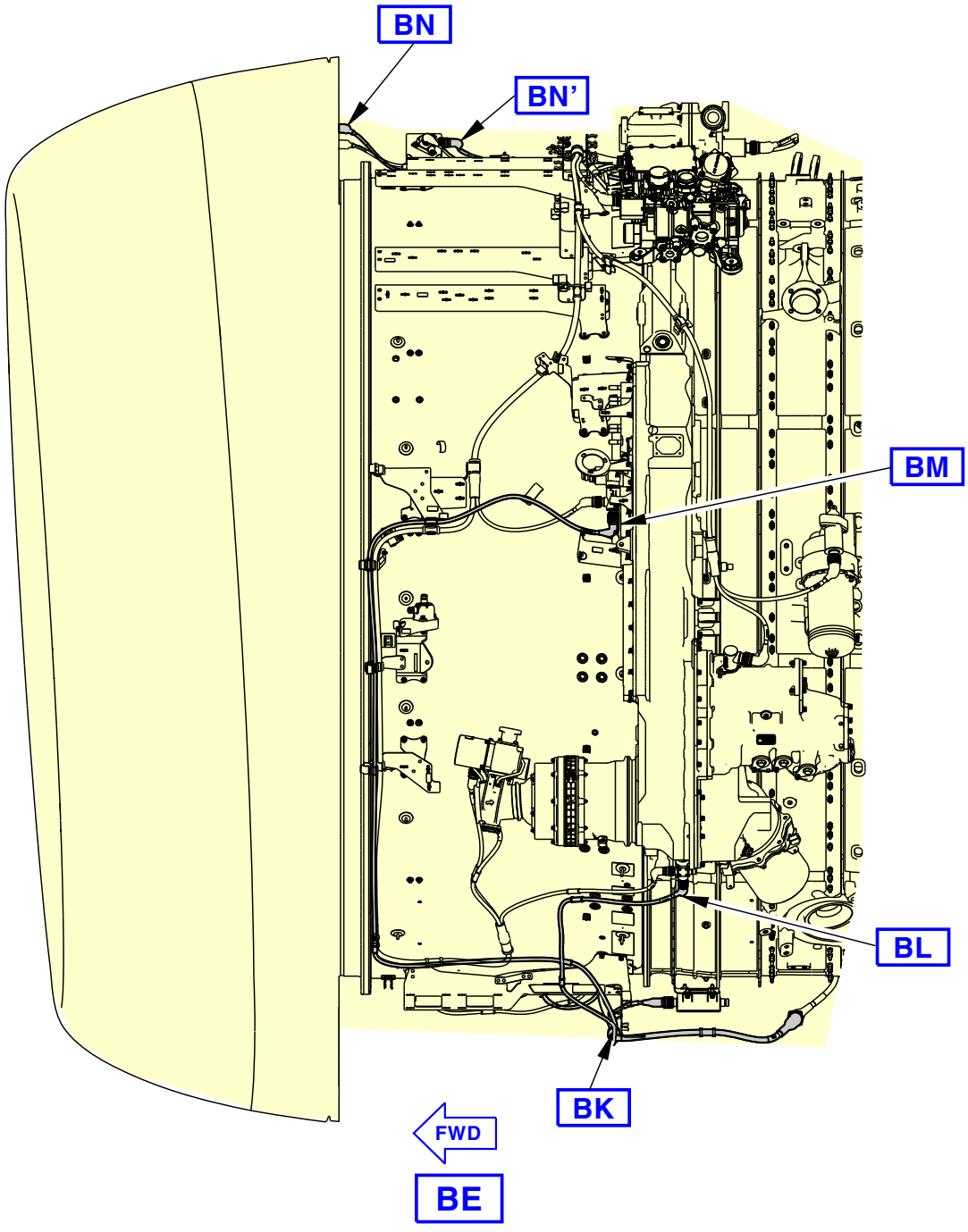
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 1 of 7)

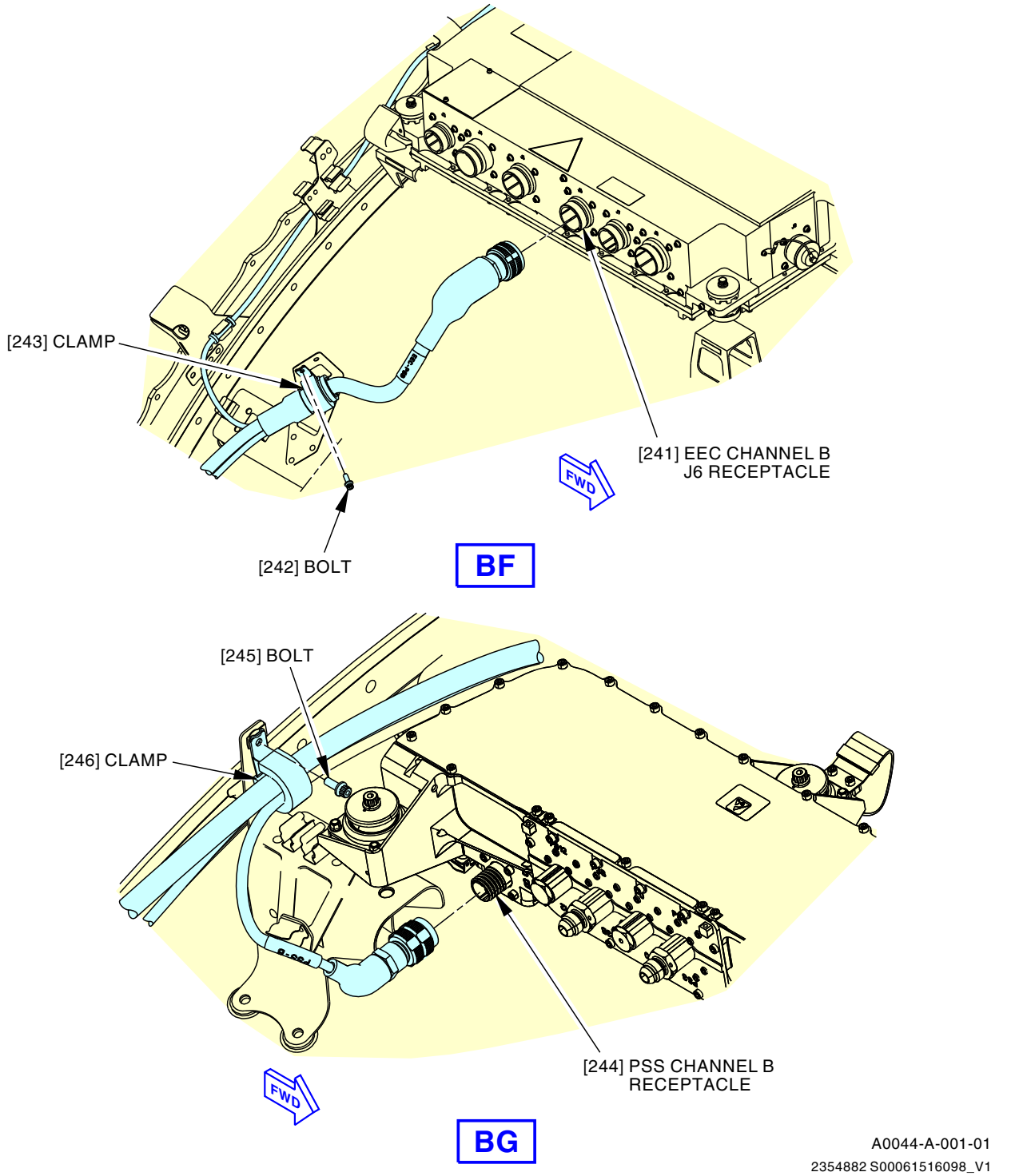
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 2 of 7)

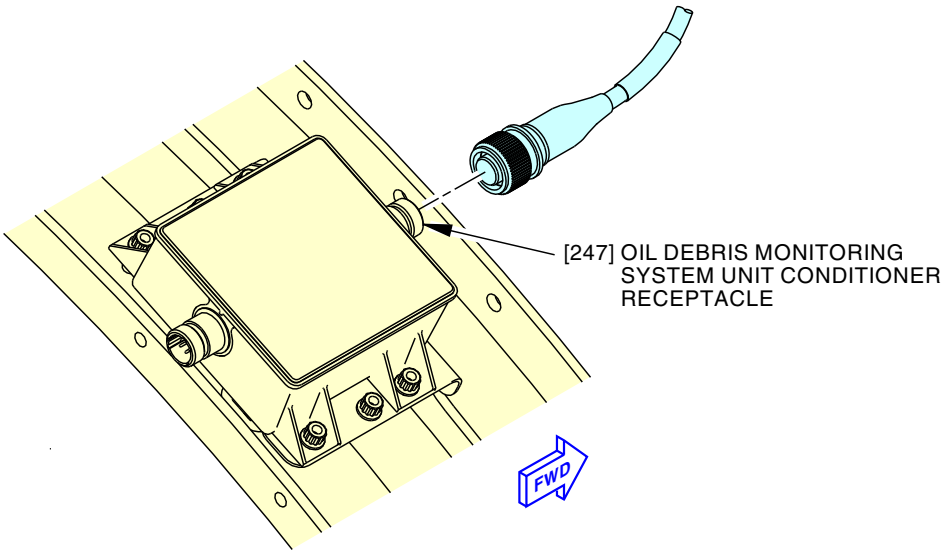
ECCN 9E991 BOEING PROPRIETARY - See title page for details



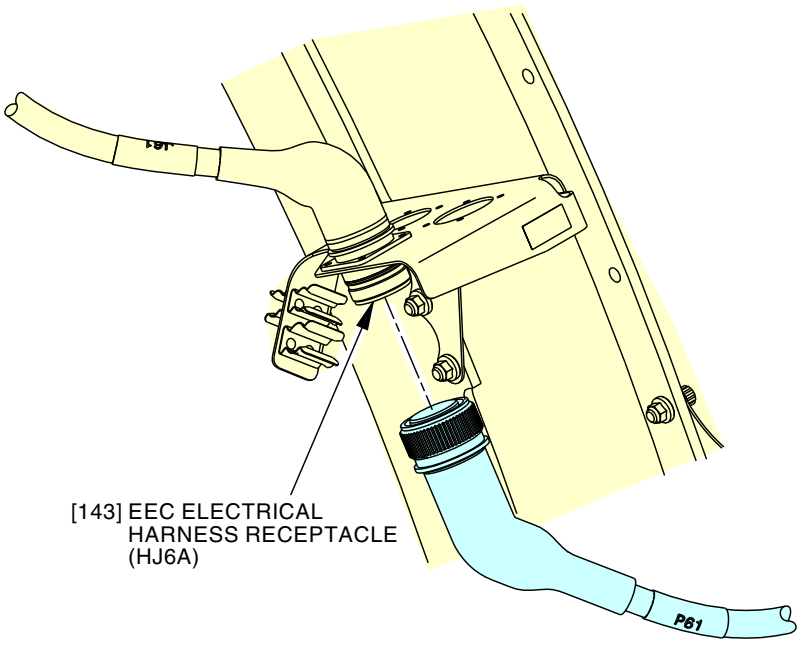
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2354882 S00061516098_V1

EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 3 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



BH

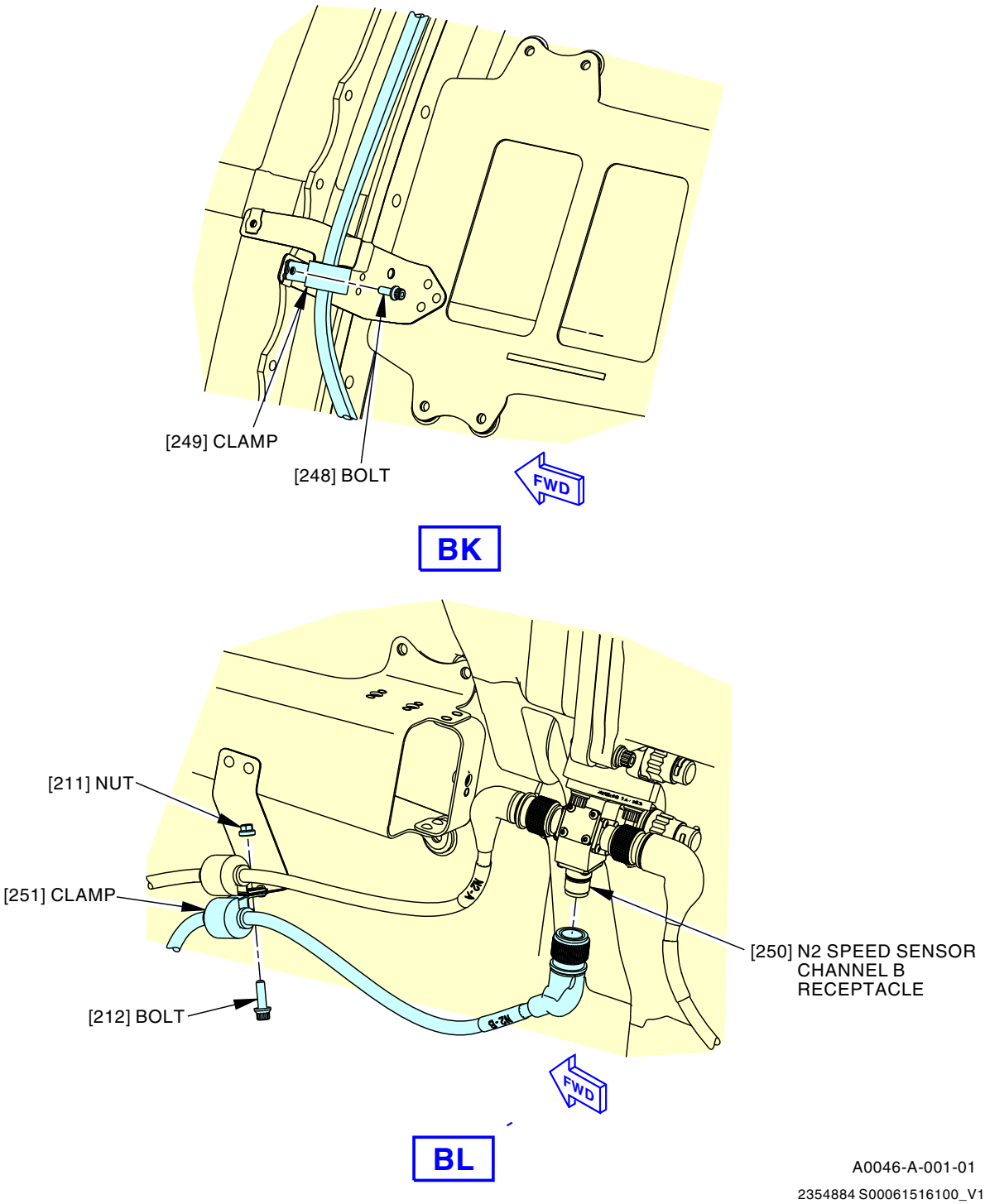


BJ

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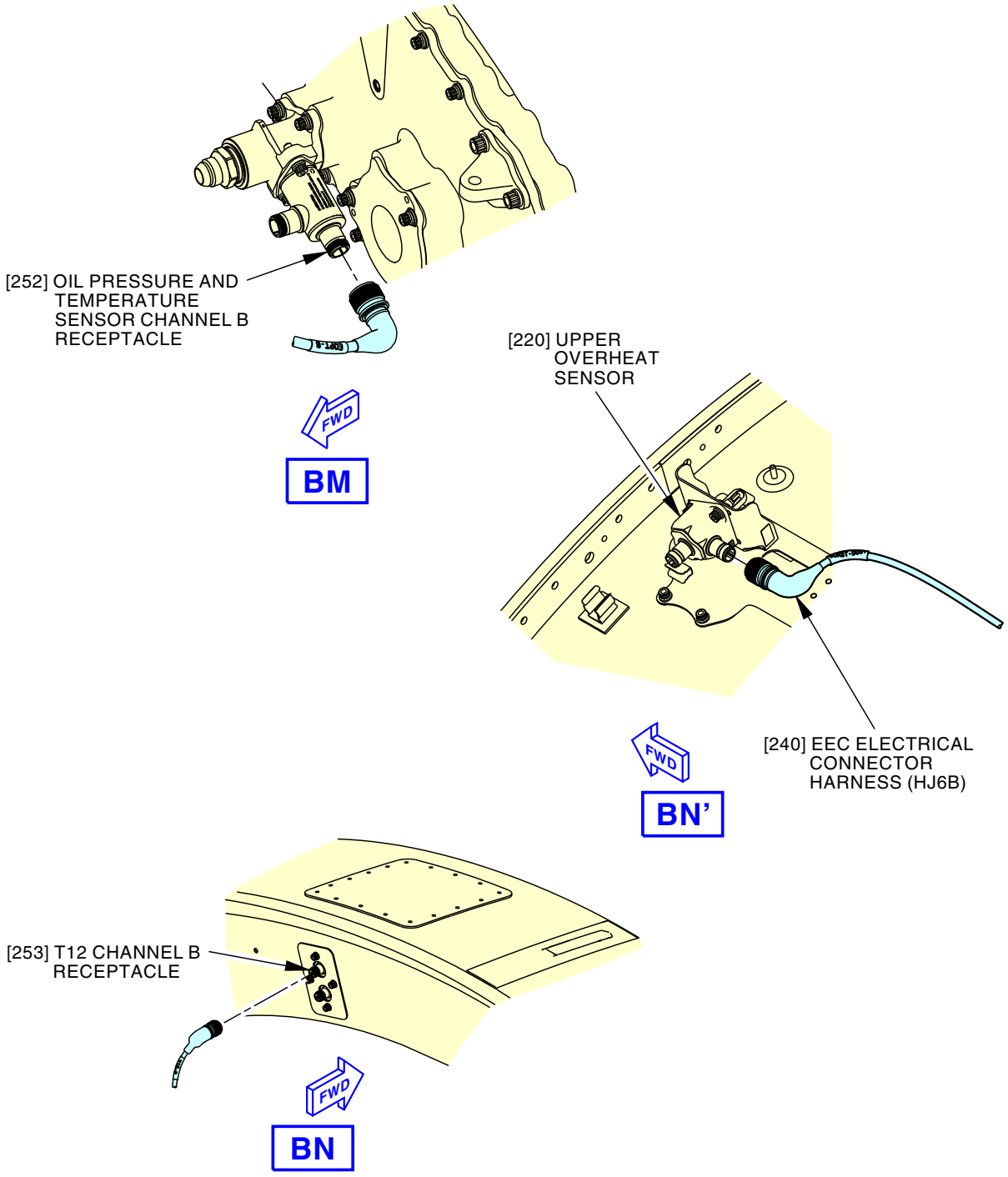
EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 4 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 5 of 7)

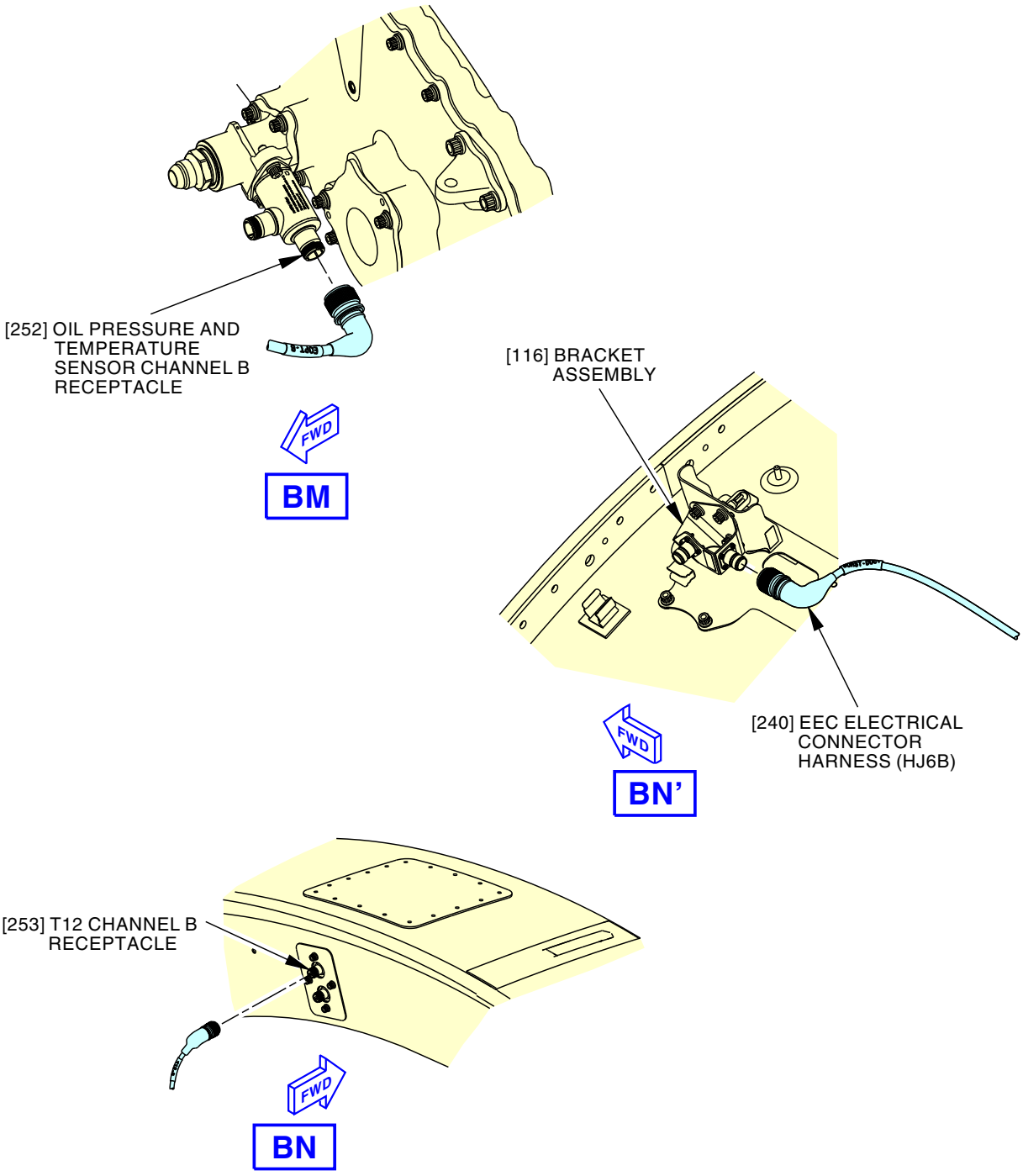
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2354885 S00061516101_V3

EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 6 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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EEC Electrical Harness (HJ6B) Installation
Figure 410/73-22-01-990-856-G00 (Sheet 7 of 7)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-806-G00

13. Electronic Engine Control (EEC) Electrical Harness (HJ6B) Installation

(Figure 410)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (HJ6B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-21-09-400-801-G00	Data Entry Plug Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F. Electronic Engine Control Electrical Harness (HJ6B) Installation

(Figure 410)

SUBTASK 73-22-01-420-012-G00

CAUTION	MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION	USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (HJ6B) [240] as follows (TASK 70-00-01-910-803-G00):

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ6B) [240] in a correct position with the 24 clips [239] along its routing.

(d) Install the bolt [212] and clamp [251] that attach the EEC electrical harness (HJ6B) [240] to the engine.

(e) Tighten the nut [211] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(f) Install the bolt [248] and clamp [249] that attach the EEC electrical harness (HJ6B) [240] to the engine.

(g) Tighten the bolt [248] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(h) Install the bolt [245] and clamp [246] that attach the EEC electrical harness (HJ6B) [240] to the engine.

(i) Tighten the bolt [245] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(j) Install the bolt [242] and clamp [243] that attach the EEC electrical harness (HJ6B) [240] to the engine.

(k) Tighten the bolt [242] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION	MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION	USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(l) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ6B) [240] as follows (TASK 70-00-01-910-803-G00):

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0178

1) Connect the EEC electrical harness (HJ6B) [240] to the upper overheat sensor [220].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0178 AND PRE LEAP-1B SERVICE BULLETIN 73-0019

2) Connect the EEC electrical harness (HJ6B) [240] to the bracket assembly [116]

SIA ALL

3) Connect the EEC electrical harness (HJ6B) [240] connector to the T12 channel B receptacle [253].
4) Connect the EEC electrical harness (HJ6B) [240] connector to the oil P/T sensor channel B receptacle [252].
5) Connect the EEC electrical harness (HJ6B) [240] connector to the N2 speed sensor channel B receptacle [250].
6) Connect the EEC electrical harness (HJ6B) [240] connector to the EEC HJ6A harness receptacle [143].
7) Connect the EEC electrical harness (HJ6B) [240] connector to the ODMS unit conditioner receptacle [247].
8) Connect the EEC electrical harness (HJ6B) [240] connector to the PSS channel B receptacle [244].
9) Connect the EEC electrical harness (HJ6B) [240] connector to the EEC channel B J6 receptacle [241].

(m) Make sure that the work area is clean of all tools and other items.

SUBTASK 73-22-01-420-013-G00

(2) Install the data entry plug [193] (TASK 73-21-09-400-801-G00).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-027-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-045-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-046-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-047-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-048-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ6B) Installation Test

SUBTASK 73-22-01-730-006-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-807-G00

14. Electronic Engine Control (EEC) Electrical Harness (HJ7) Removal

(Figure 411)

A. General

(1) This task gives the instructions on how to remove the electronic engine control (EEC) electrical harness (HJ7).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-049-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-050-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-051-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-052-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-029-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ7) Removal

(Figure 411)

SUBTASK 73-22-01-020-014-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (HJ7) [285] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ7) [285] connector from the EEC channel A J7 receptacle [286].

(b) Disconnect the EEC electrical harness (HJ7) [285] connector from the EEC channel B J7 receptacle [287].

SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED

(c) Remove the bolt [288] from the clamp [289] that attaches the EEC electrical harness (HJ7) [285] to the EEC cooling duct (out) [292].

(d) Remove the bolt [290] from the clamp [291] that attaches the EEC electrical harness (HJ7) [285] to the EEC cooling duct (out) [292].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA 006-999; SIA 001-005 POST SB 737-CFM-LEAP-1B-75-0010 OR POST SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM REMOVAL

(e) (e) Remove the bolt bolt [288] from the clamp [289] that attaches the EEC electrical harness (HJ7) [285] to the bracket [293].

(f) Remove the bolt [290] from the clamp [291] that attaches the EEC electrical harness (HJ7) [285] to the bracket [294].

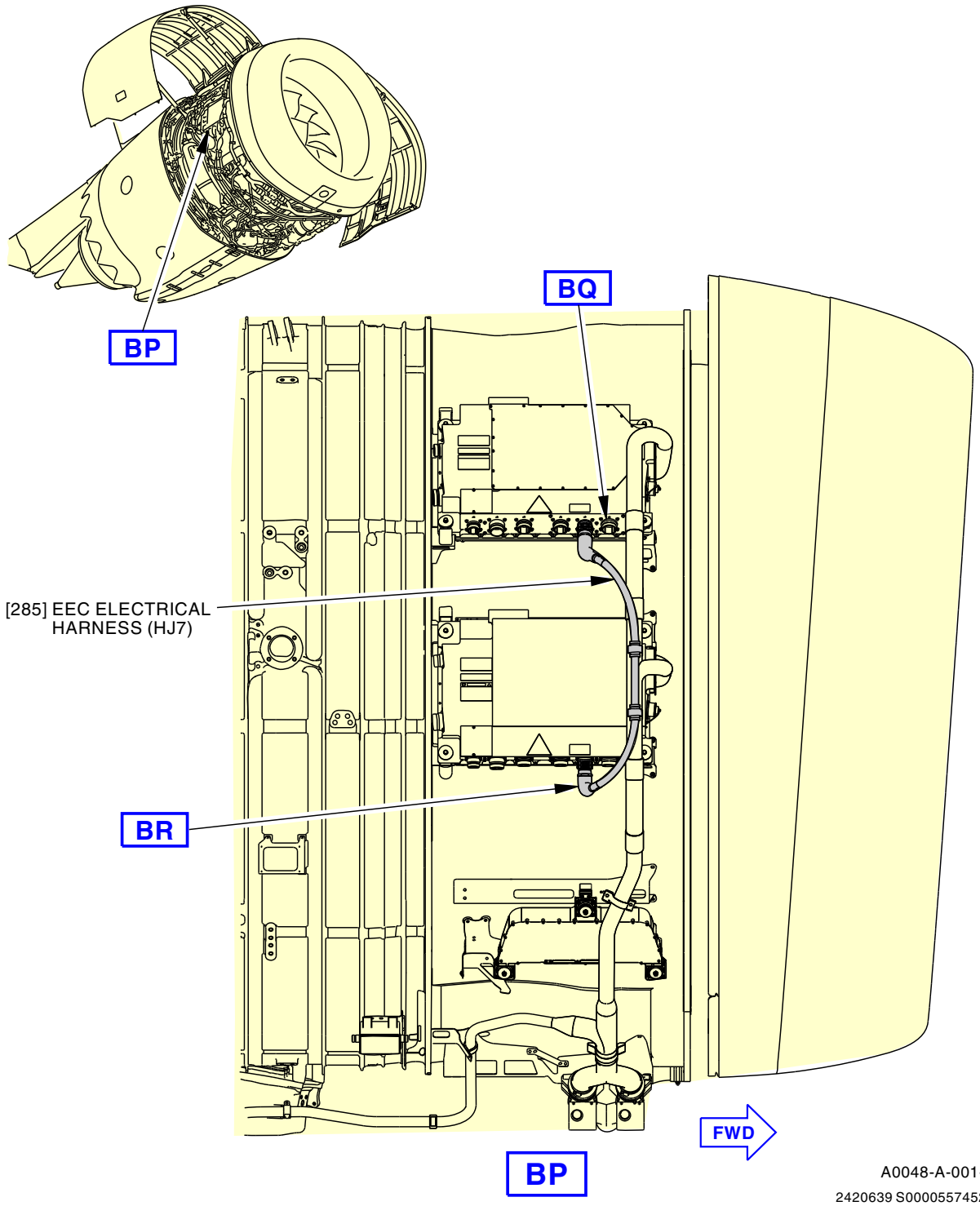
SIA ALL

(g) Carefully remove the EEC electrical harness (HJ7) [285] from the engine.

(h) Install the protective covers on all harness connectors and component receptacles.

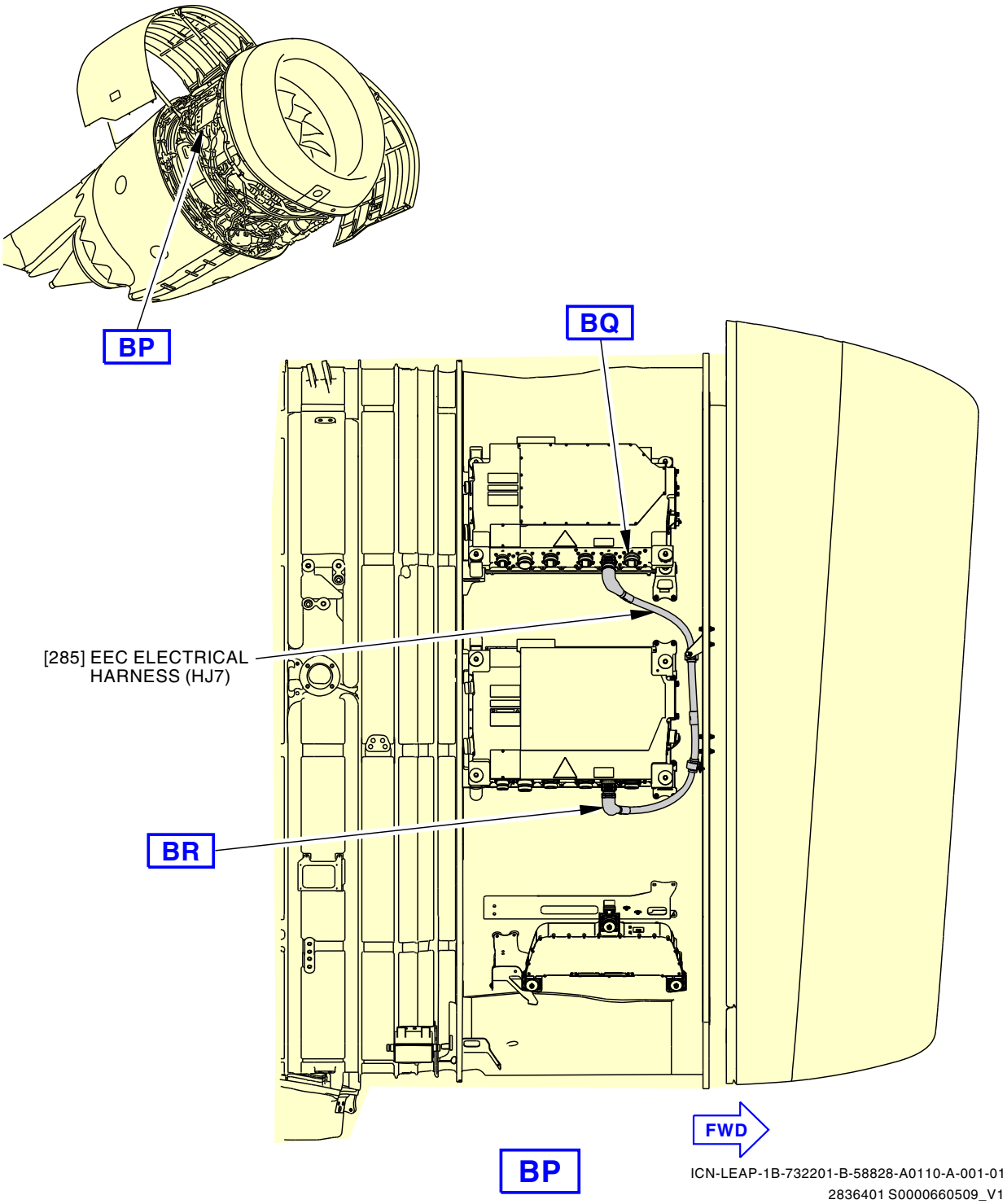
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



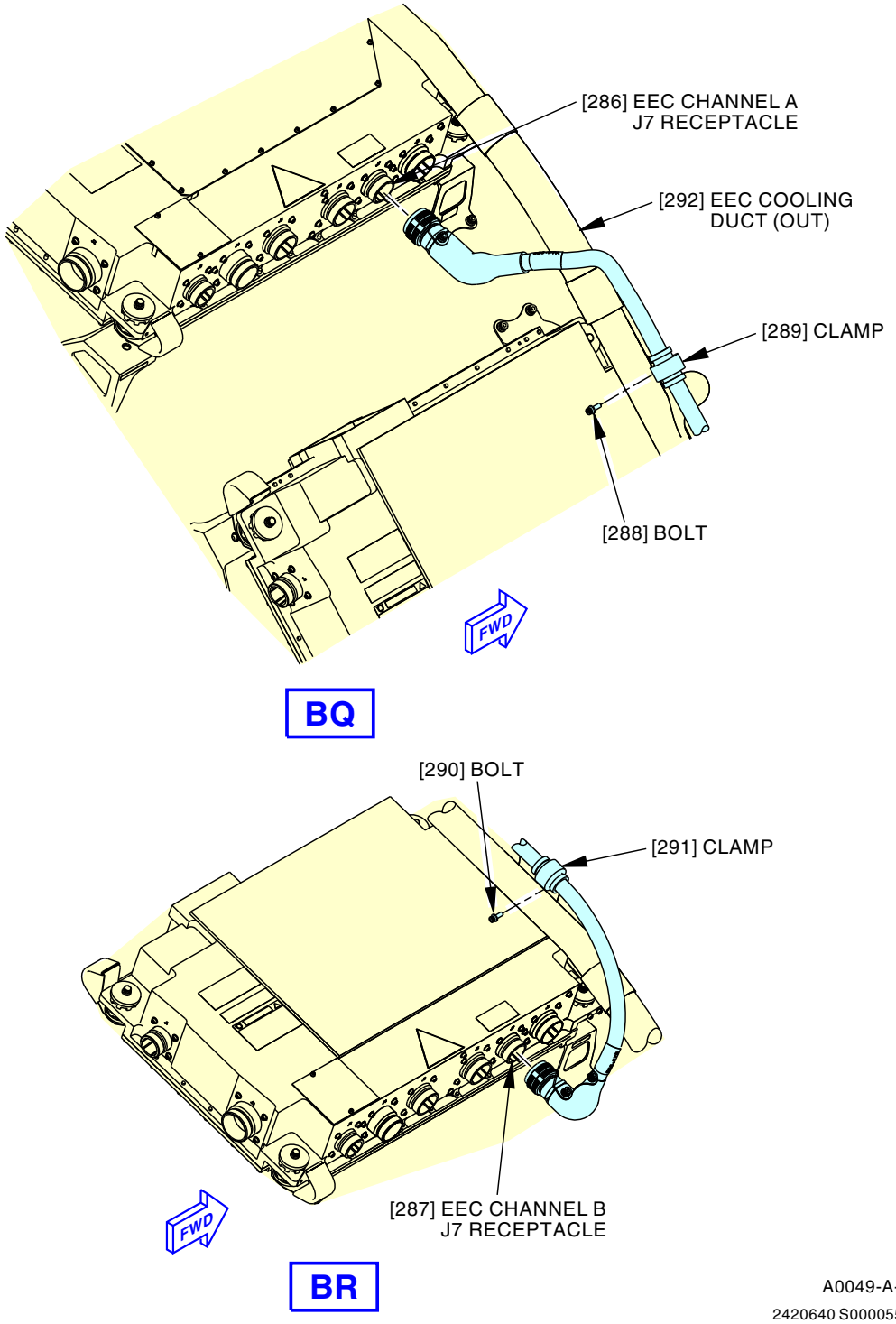
EEC Electrical Harness (HJ7) Installation
Figure 411/73-22-01-990-857-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



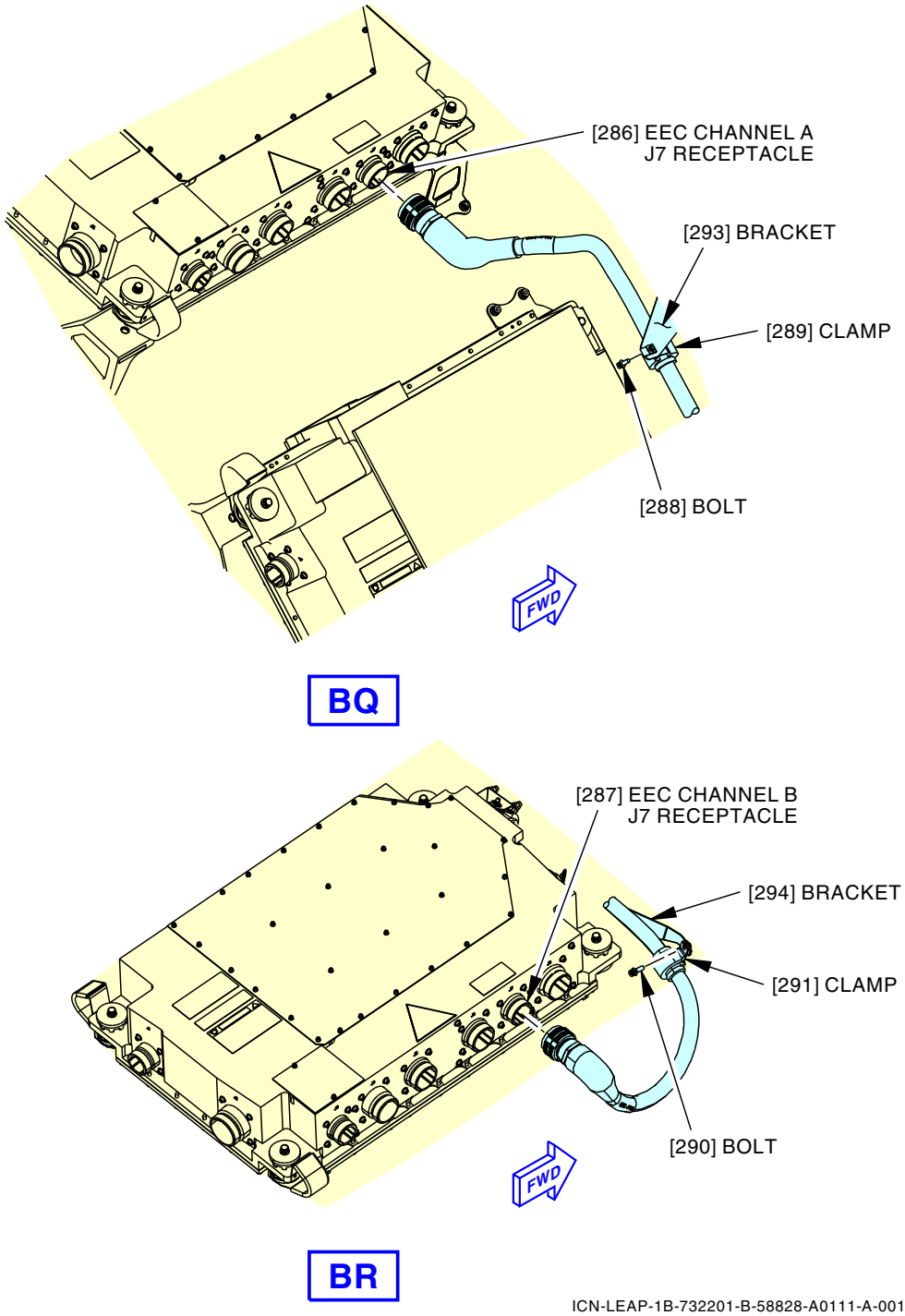
EEC Electrical Harness (HJ7) Installation
Figure 411/73-22-01-990-857-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ7) Installation
Figure 411/73-22-01-990-857-G00 (Sheet 3 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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2836411 S0000660610_V1

EEC Electrical Harness (HJ7) Installation
Figure 411/73-22-01-990-857-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-807-G00

15. Electronic Engine Control (EEC) Electrical Harness (HJ7) Installation

(Figure 411)

A. General

(1) This task gives the instructions on how to install the electronic engine control (EEC) electrical harness (HJ7).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 2
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (HJ7) Installation

(Figure 411)

SUBTASK 73-22-01-420-014-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (HJ7) [285] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ7) [285] in a correct position along its routing.

SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED

(d) Install the bolt [290] and the clamp [291] that attach the EEC electrical harness (HJ7) [285] to the EEC cooling duct (out) [292].

SIA 006-999; SIA 001-005 POST SB 737-CFM-LEAP-1B-75-0010 OR POST SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM REMOVAL

(e) Install the bolt [290] and the clamp [291] that attach the EEC electrical harness (HJ7) [285] to the bracket [294].

SIA ALL

(f) Tighten the bolt [290] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM INSTALLED

(g) Install the bolt [288] and the clamp [289] that attach the EEC electrical harness (HJ7) [285] to the EEC cooling duct (out) [292].

SIA 006-999; SIA 001-005 POST SB 737-CFM-LEAP-1B-75-0010 OR POST SB 737-CFM-LEAP-1B-75-0011; EEC HARDWARE BLOWER SYSTEM REMOVAL

(h) Install the bolt [288] and the clamp [289] that attach the EEC electrical harness (HJ7) [285] to the bracket [293].

SIA ALL

(i) Tighten the bolt [288] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(j) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (HJ7) [285] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ7) [285] connector to the EEC channel B J7 receptacle [287].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Connect the EEC electrical harness (HJ7) [285] connector to the EEC channel A J7 receptacle [286].

(k) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-028-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-053-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-054-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-055-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-056-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ7) Installation Test

SUBTASK 73-22-01-730-007-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-808-G00

16. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Removal

(Figure 412, Figure 413, and Figure 414)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (HJ8A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-057-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-058-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-059-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-060-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-030-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Removal

SUBTASK 73-22-01-020-015-G00

(1) Remove the segment shroud 1 [304].

SUBTASK 73-22-01-020-016-G00

(2) Remove the segment shroud 2 [68].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-020-017-G00

(3) Remove the segment shroud 5 [305].

SUBTASK 73-22-01-020-018-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(4) Use the teflon-jawed pliers, STD-664, to disconnect the EEC electrical harness (HJ8A) [303] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ8A) [303] connector from the EEC channel A J8 receptacle [306].

(b) Remove the bolt [307] from the clamp [308] that attaches the EEC electrical harness (HJ8A) [303] to the fan case bracket.

(c) Remove the bolt [312] from the clamp [313] that attaches the EEC electrical harness (HJ8A) [303] to the fan case bracket.

(d) Disconnect the connector socket [309] of the EEC electrical harness (HJ8A) [303] as follows:

1) Disconnect the HJ8B engine wiring harness electrical connector [215] (at 5:00 o'clock) from the connector socket [309].

NOTE: If the HJ8B engine wiring harness has been removed, do not do this step.

2) Remove the four nuts [310] and four bolts [311] that attach the connector socket [309] on the bracket [83].

3) Disconnect the connector socket [309] from the bracket [83].

(e) Disconnect the EEC electrical harness (HJ8A) [303] connector from the start bleed/booster anti-ice valve receptacle [314].

(f) Disconnect the EEC electrical harness (HJ8A) [303] connector from the TBV receptacle [315].

(g) Disconnect the EEC electrical harness (HJ8A) [303] connector from the HPTACC valve receptacle [328].

(h) Disconnect the EEC electrical harness (HJ8A) [303] connector from the LPTACC valve receptacle [331].

(i) Disconnect the EEC electrical harness (HJ8A) [303] connector from the TCF accelerometer receptacle [334].

(j) Disconnect the EEC electrical harness (HJ8A) [303] connector from the EGT harness 1 (left) receptacle [335].

(k) Disconnect the EEC electrical harness (HJ8A) [303] connector from the T3 sensor channel A receptacle [336].

(l) Remove the bolt [316] that attaches the EEC electrical harness (HJ8A) [303] to the bracket [317].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(m) Remove the bolt [318] from the clamp [319] that attaches the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(n) Remove the bolt [320] from the clamp [321] that attaches the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(o) Remove the bolt [326] from the clamp [327] that attaches the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(p) Remove the bolt [329] from the clamp [330] that attaches the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(q) Remove the bolt [332] from the clamp [333] that attaches the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(r) Remove the EEC electrical harness (HJ8A) [303] from the 22 clips [302] along its routing.

(s) Remove blanket [190] from the strut 5 outer fitting [109] (View B, Figure 413).

(t) Remove the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] from the strut 5 outer fitting [109] as follows:

1) Remove the five bolts [106] that attach the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

2) Cut and remove the sealant between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and strut 5 outer fitting [109].

3) Move the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] rearward from the electrical harnesses.

4) Remove the two nuts [107] and two bolts [108] to disassemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

5) Cut and remove the sealant on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and around the harnesses.

6) Remove the harnesses from the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

7) Remove any remaining sealant residue.

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

(u) Remove the harness support block [504], harness support block [505], and harness support block [506] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

2) Cut and remove the sealant between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

3) Move the assembly of the harness support block [504], harness support block [505], and harness support block [506] upward and away from the harness strut (6:00 o'clock) [104].

4) Remove the two nuts [112] and two bolts [113] to disassemble the harness support block [504], harness support block [505], and harness support block [506].

5) Cut and remove the sealant on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses.

6) Remove the harnesses from the harness support block [504], harness support block [505], and harness support block [506].

7) Remove any remaining sealant residue.

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

(v) Remove the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the four bolts [124] that attach the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

2) Cut and remove the sealant between the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

3) Move the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] upward and away from the harness strut (6:00 o'clock) [104].

4) Remove the four nuts [126] and four bolts [125] to disassemble the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

5) Cut and remove the sealant on the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and around the harnesses.

6) Remove the harnesses from the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

7) Remove any remaining sealant residue.

SIA ALL

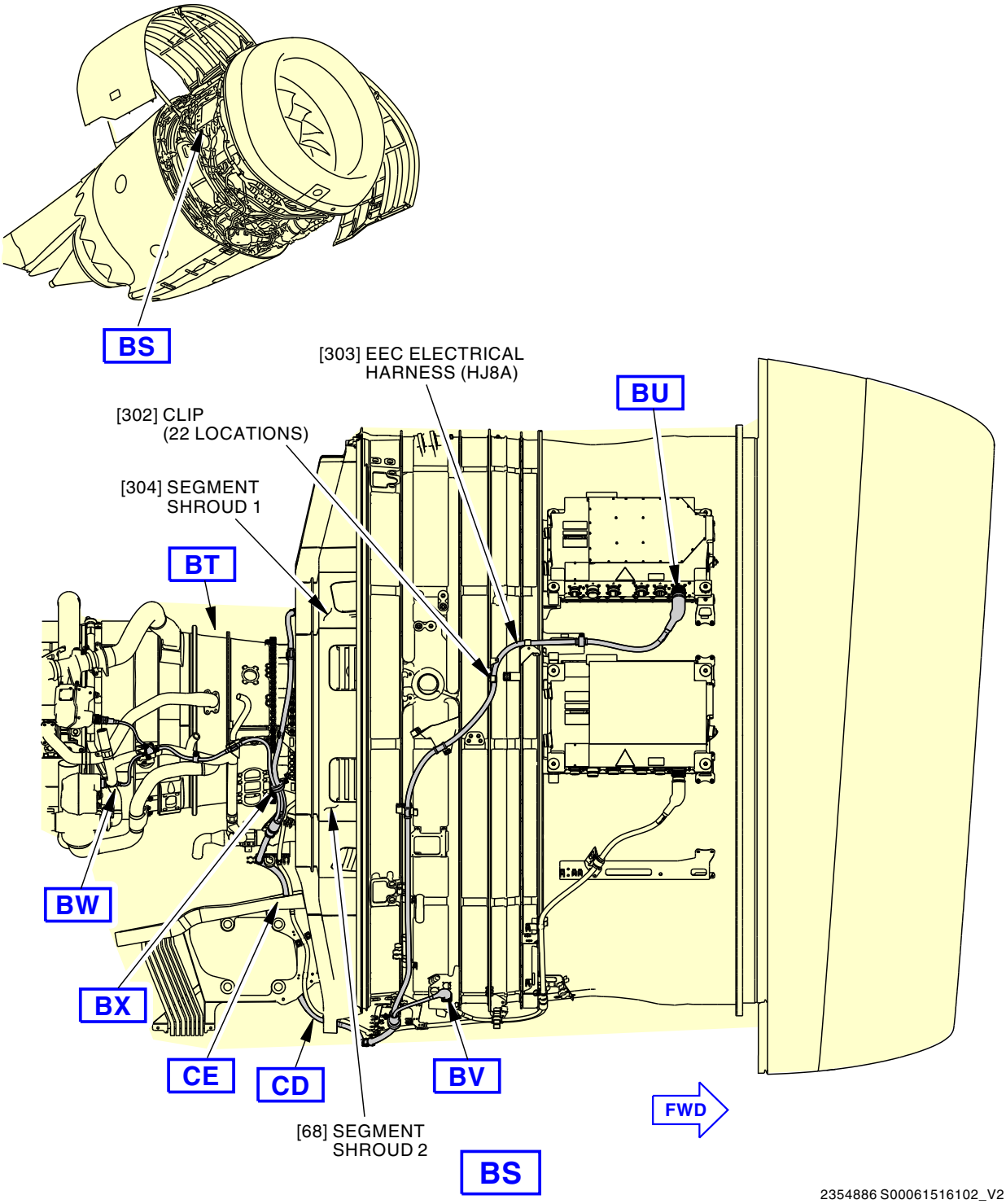
(w) Remove the EEC electrical harness (HJ8A) [303] from the harness strut (6:00 o'clock) [104].

(x) Carefully remove the EEC electrical harness (HJ8A) [303] from the engine.

(y) Install the protective covers on all of the harness connectors and the component receptacles.

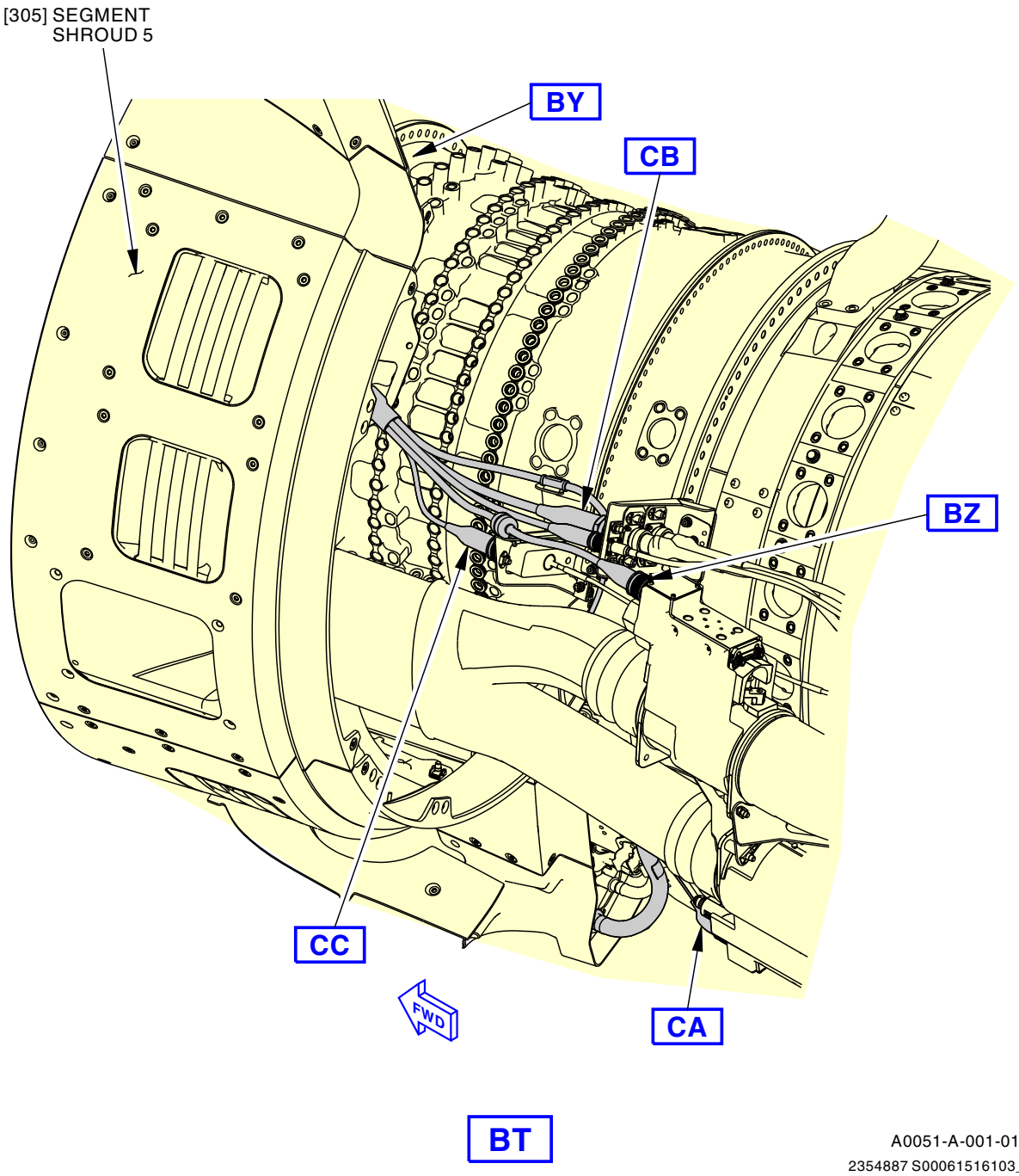
END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 1 of 9)

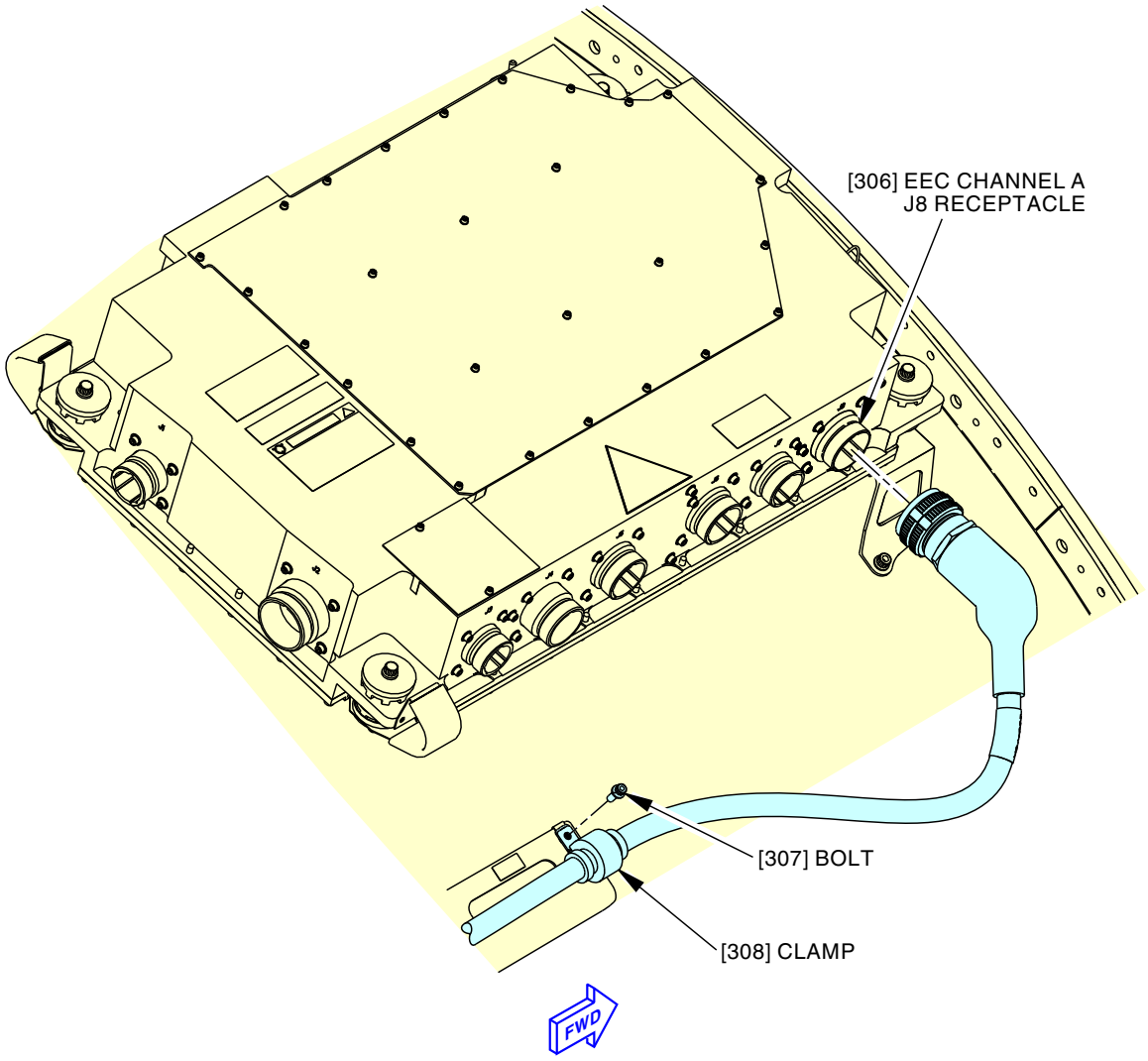
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0051-A-001-01
2354887 S00061516103_V1

EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



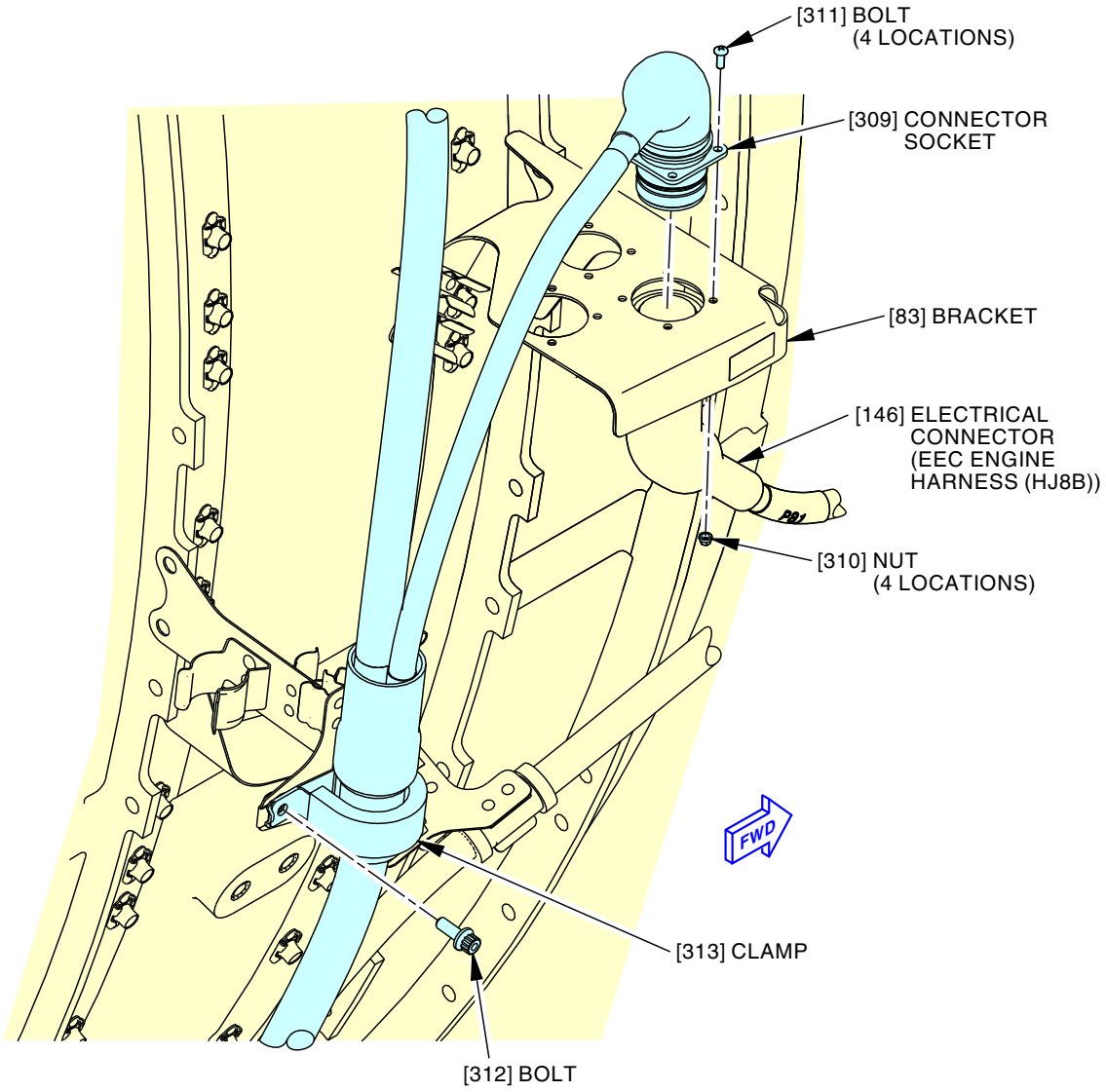
BU

A0052-A-001-01

2354888 S00061516104_V1

EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 3 of 9)

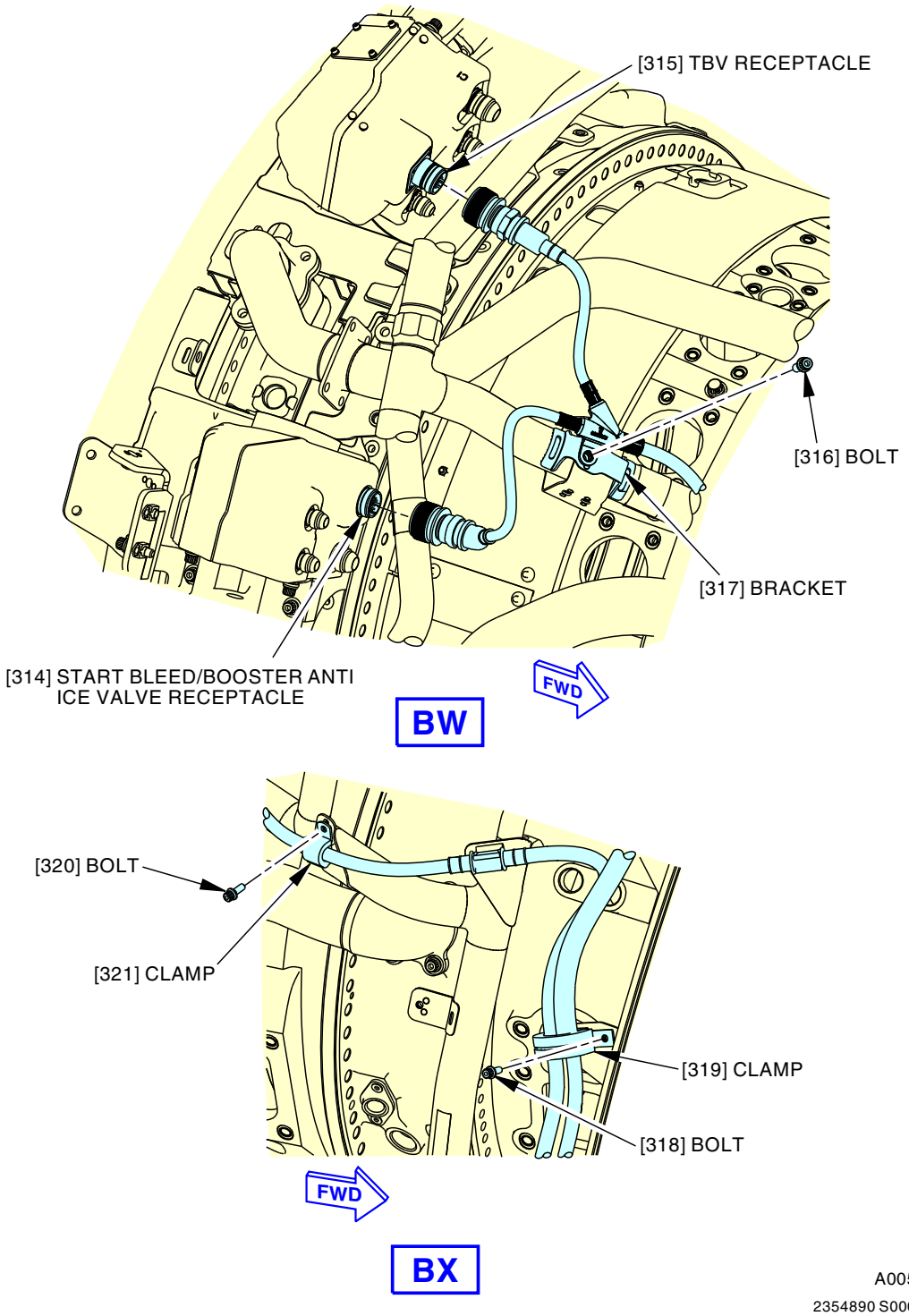
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0053-A-001-01
2354889 S00061516105_V1

EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 4 of 9)

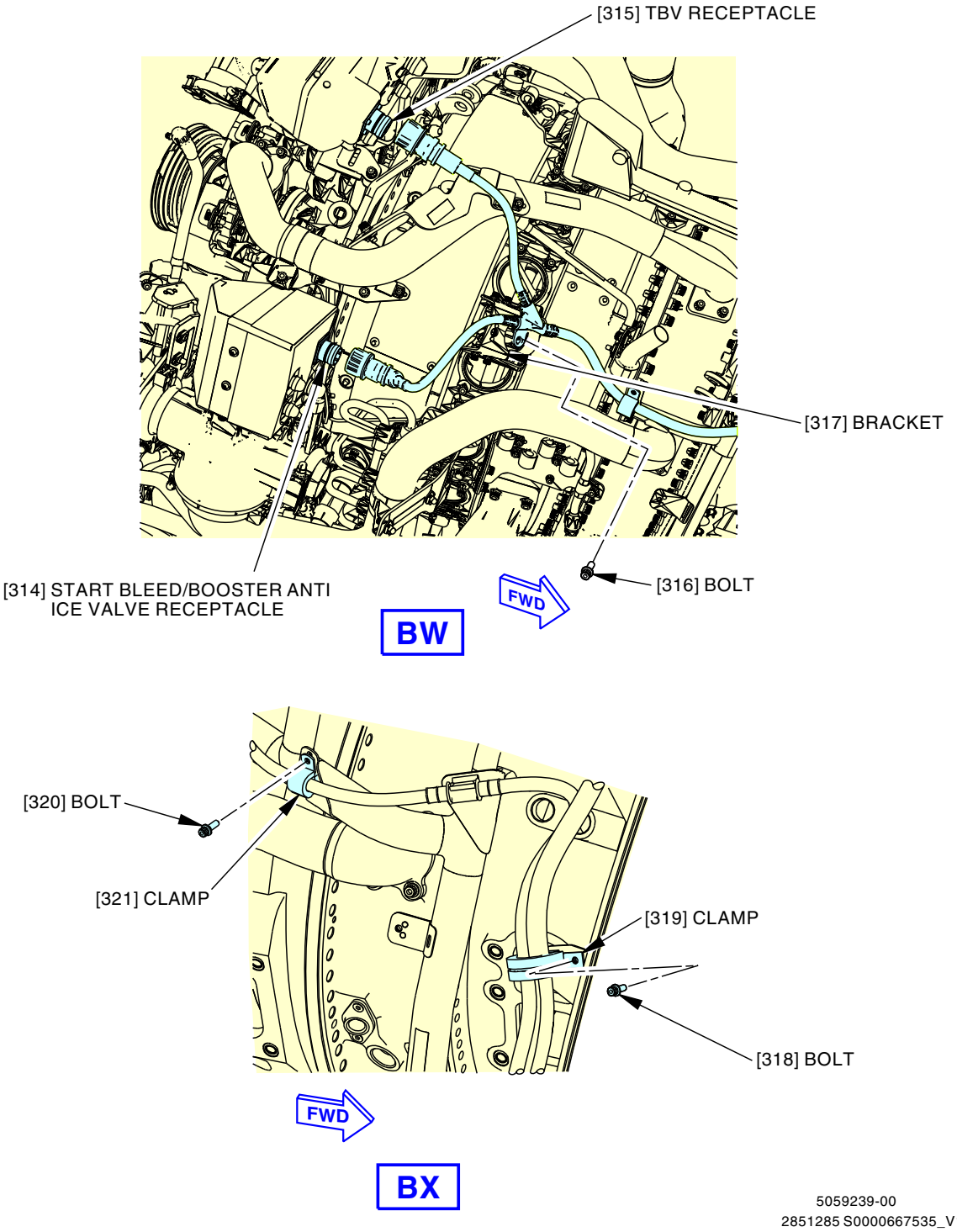
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0054-A-001-01
2354890 S00061516106_V2

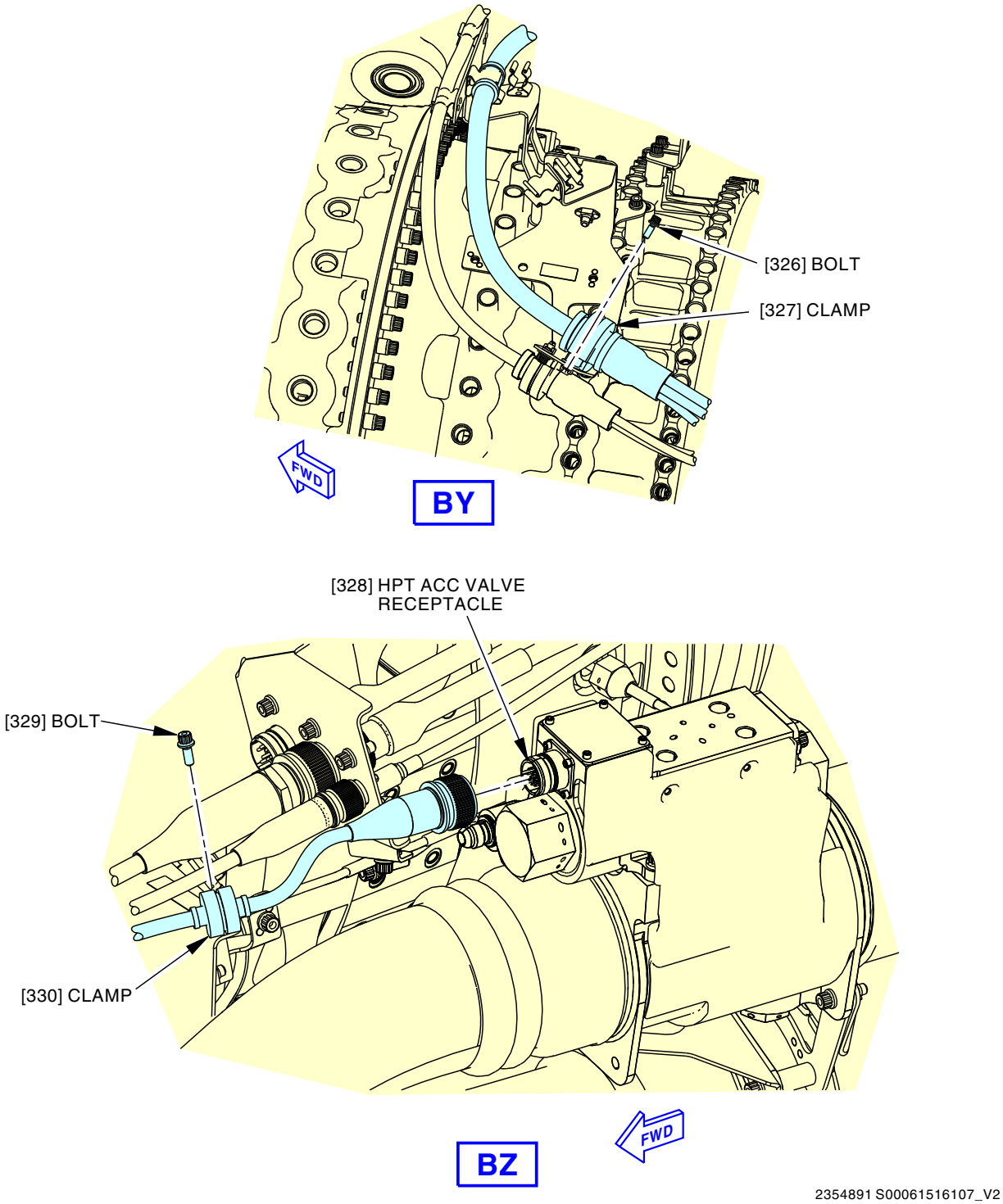
EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



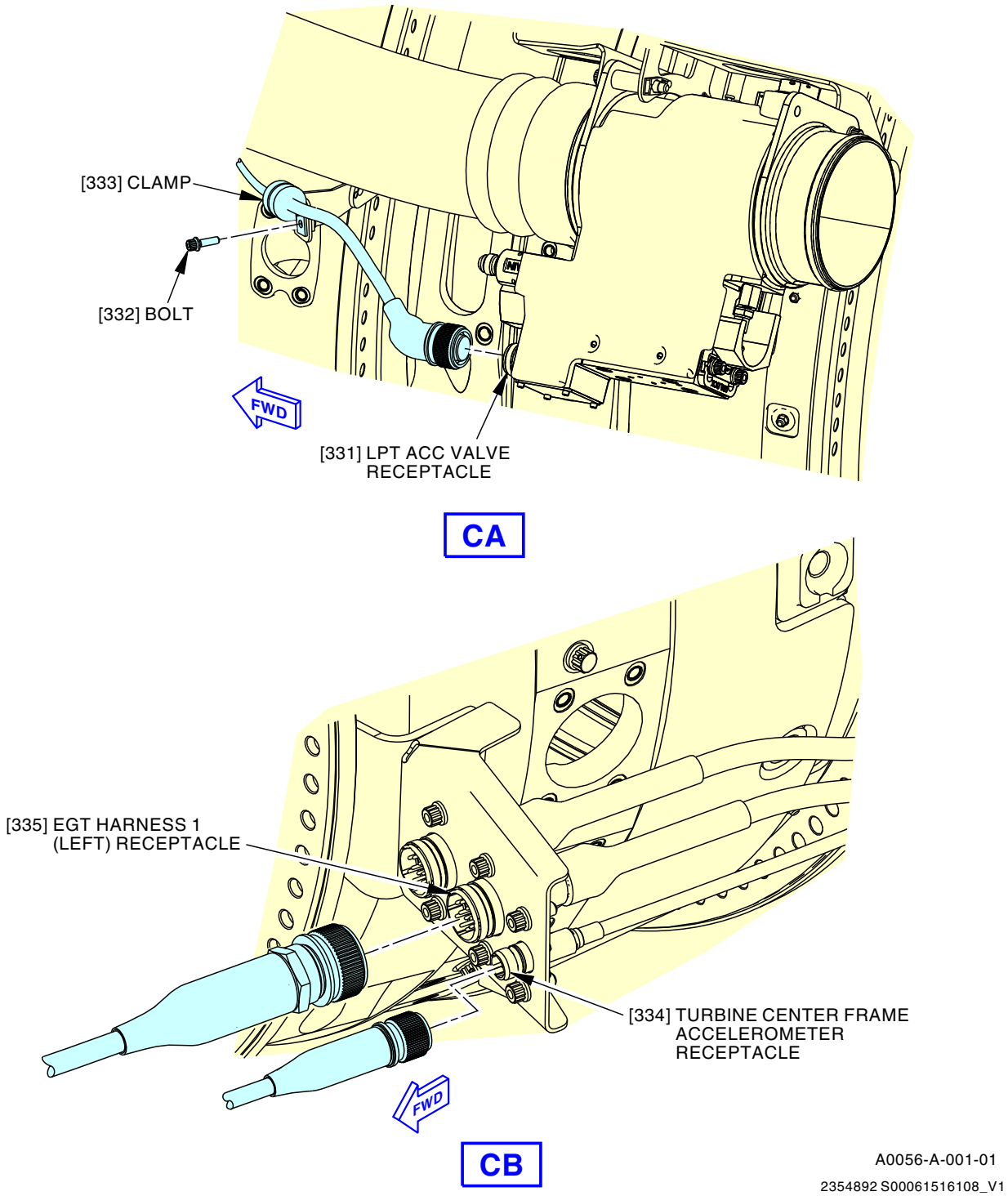
EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



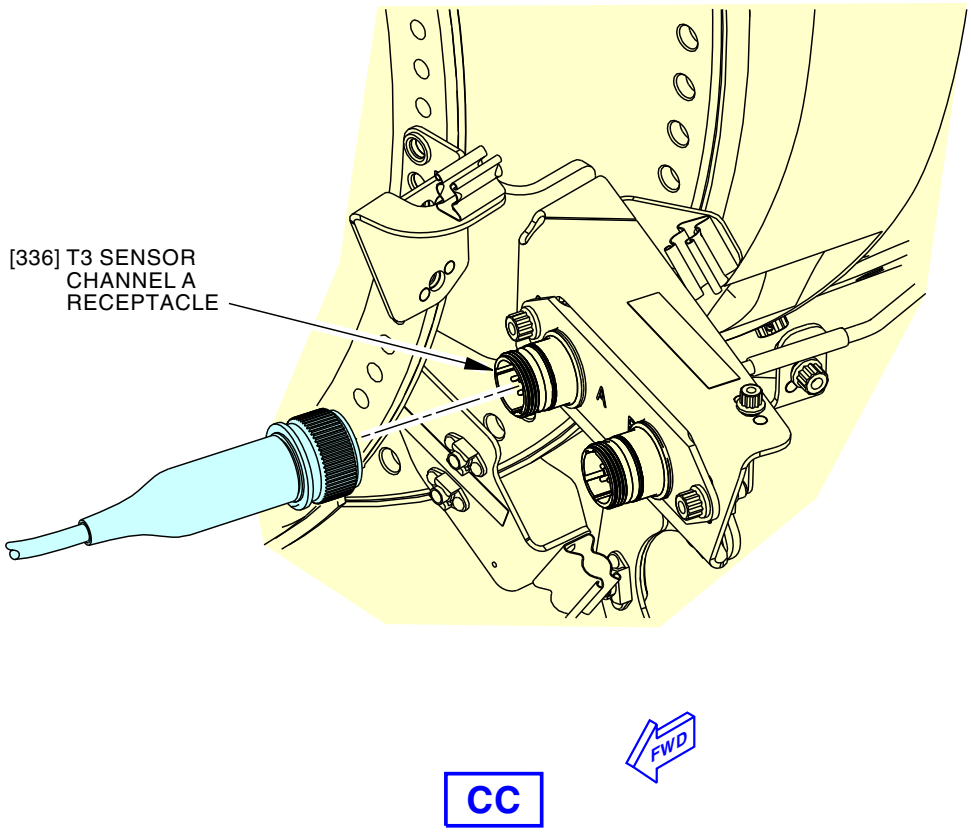
EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 8 of 9)

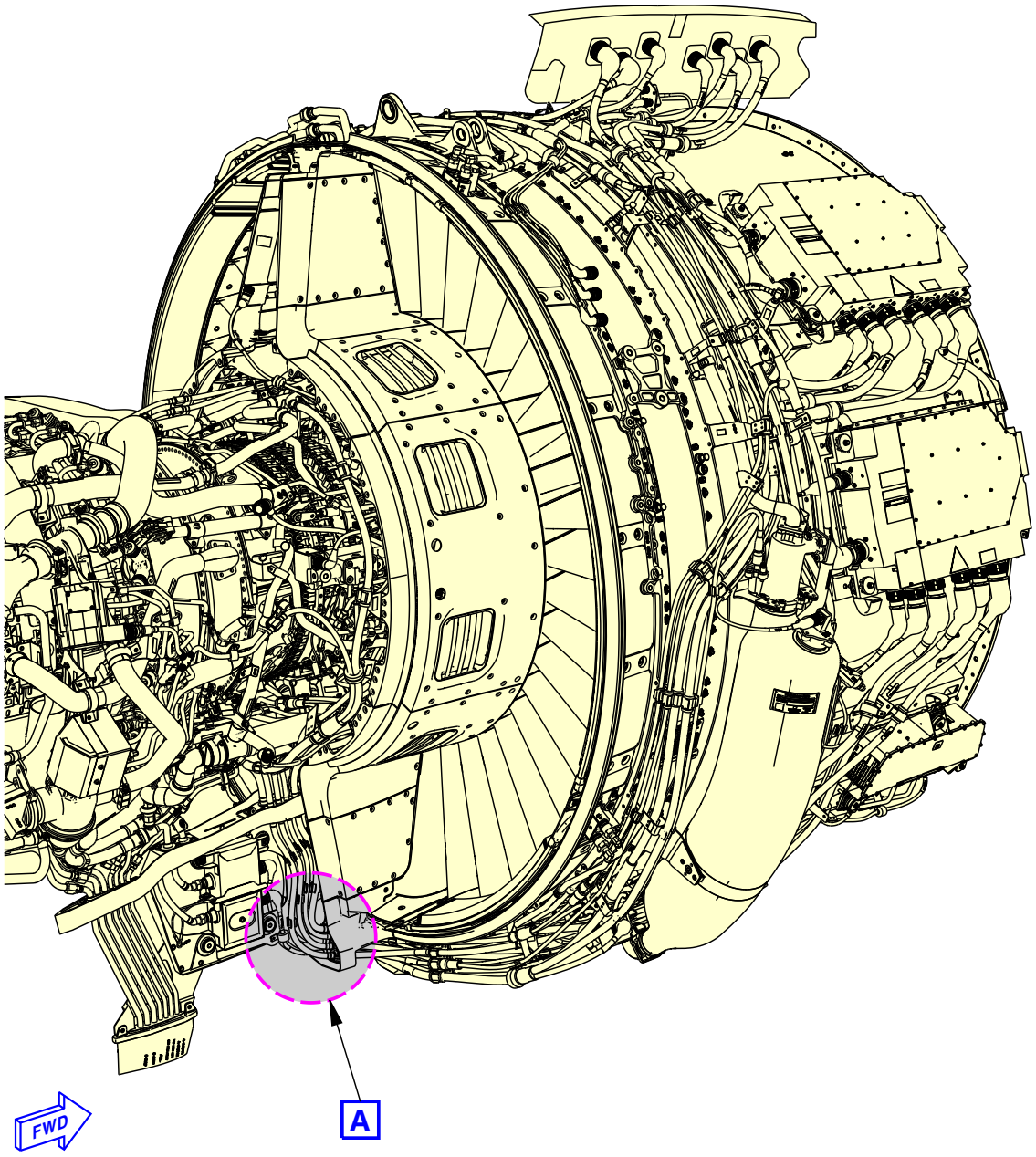
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0057-A-001-01
2354893 S00061516109_V2

EEC Electrical Harness (HJ8A) Installation
Figure 412/73-22-01-990-858-G00 (Sheet 9 of 9)

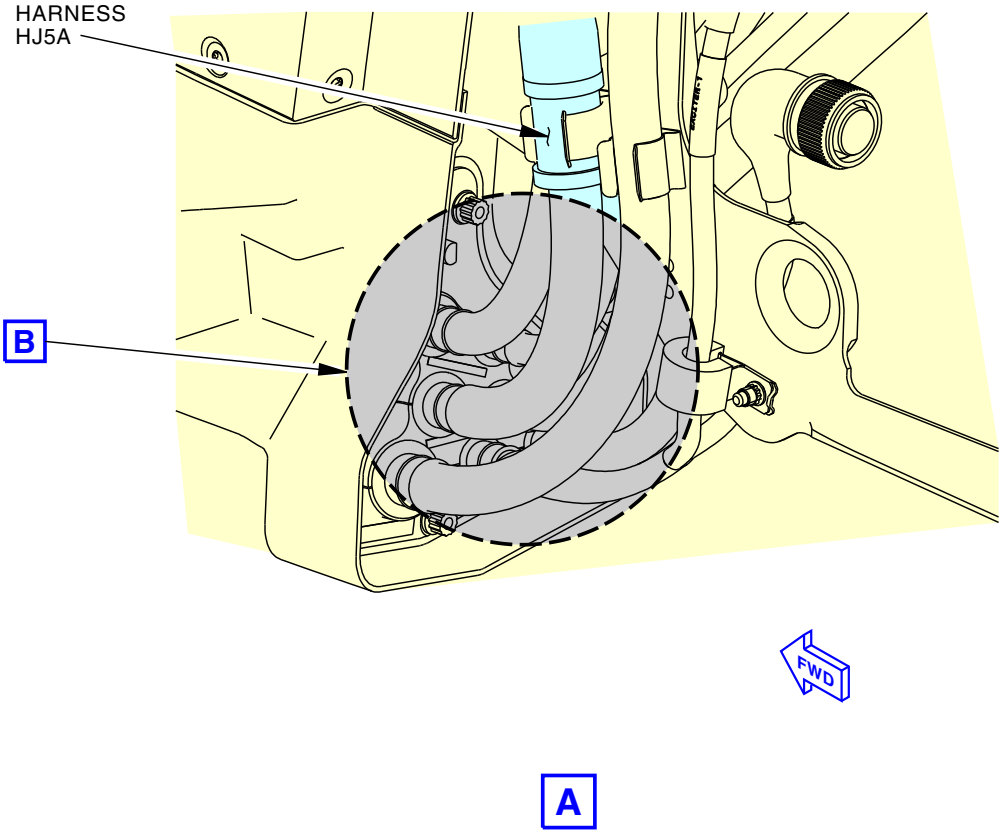
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937794 S0000713383_V2

Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 1 of 9)

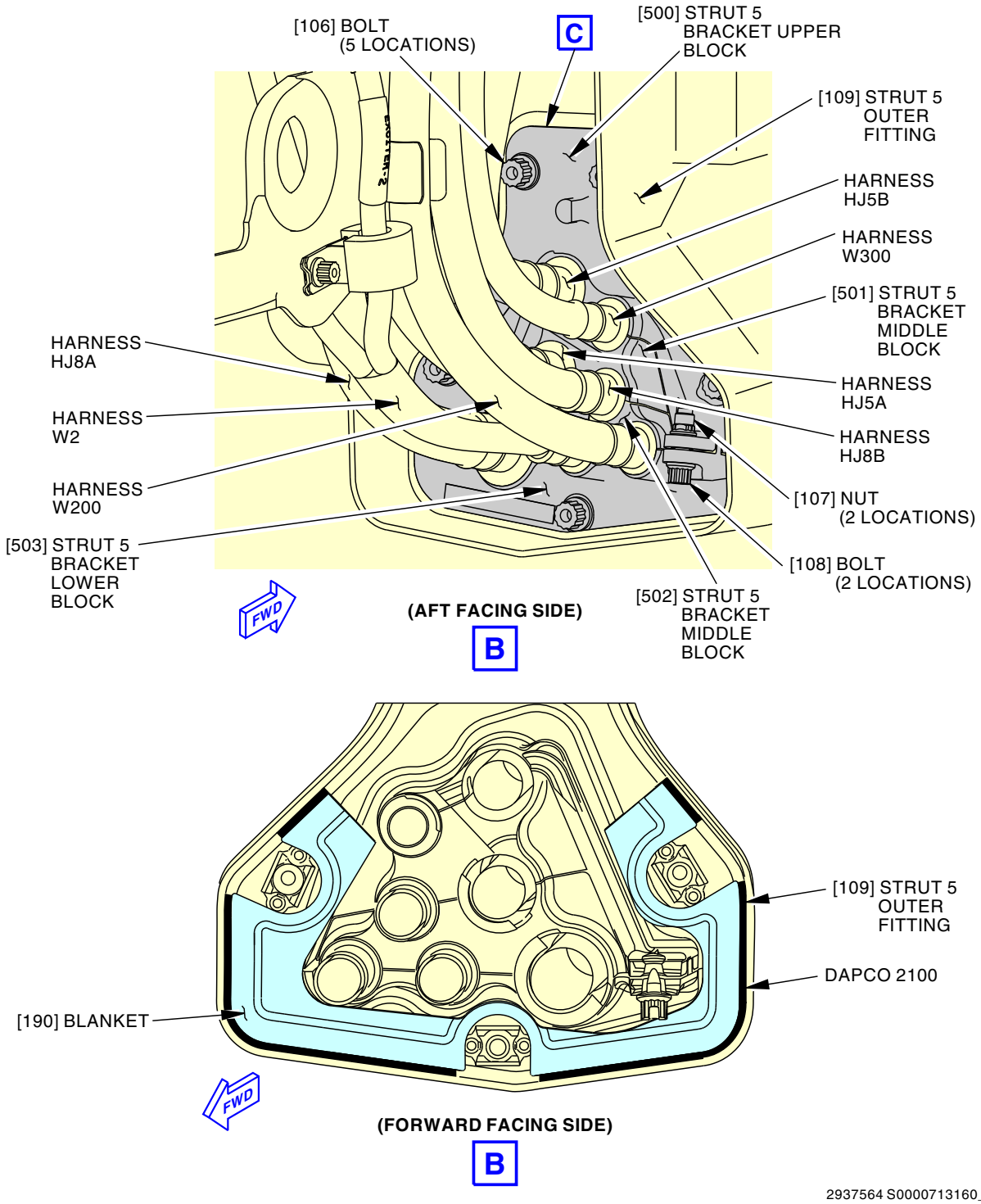
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937795 S0000713384_V2

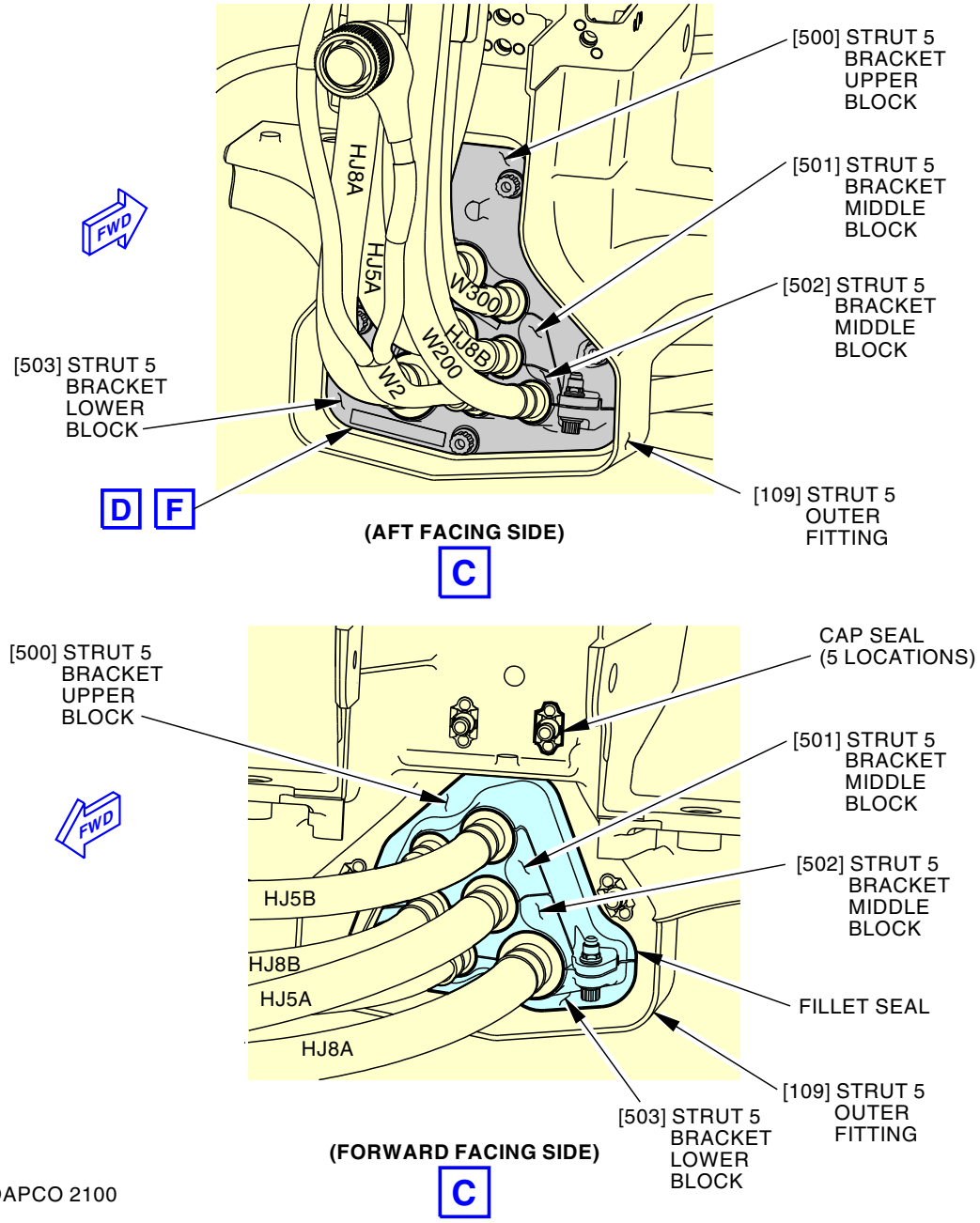
Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

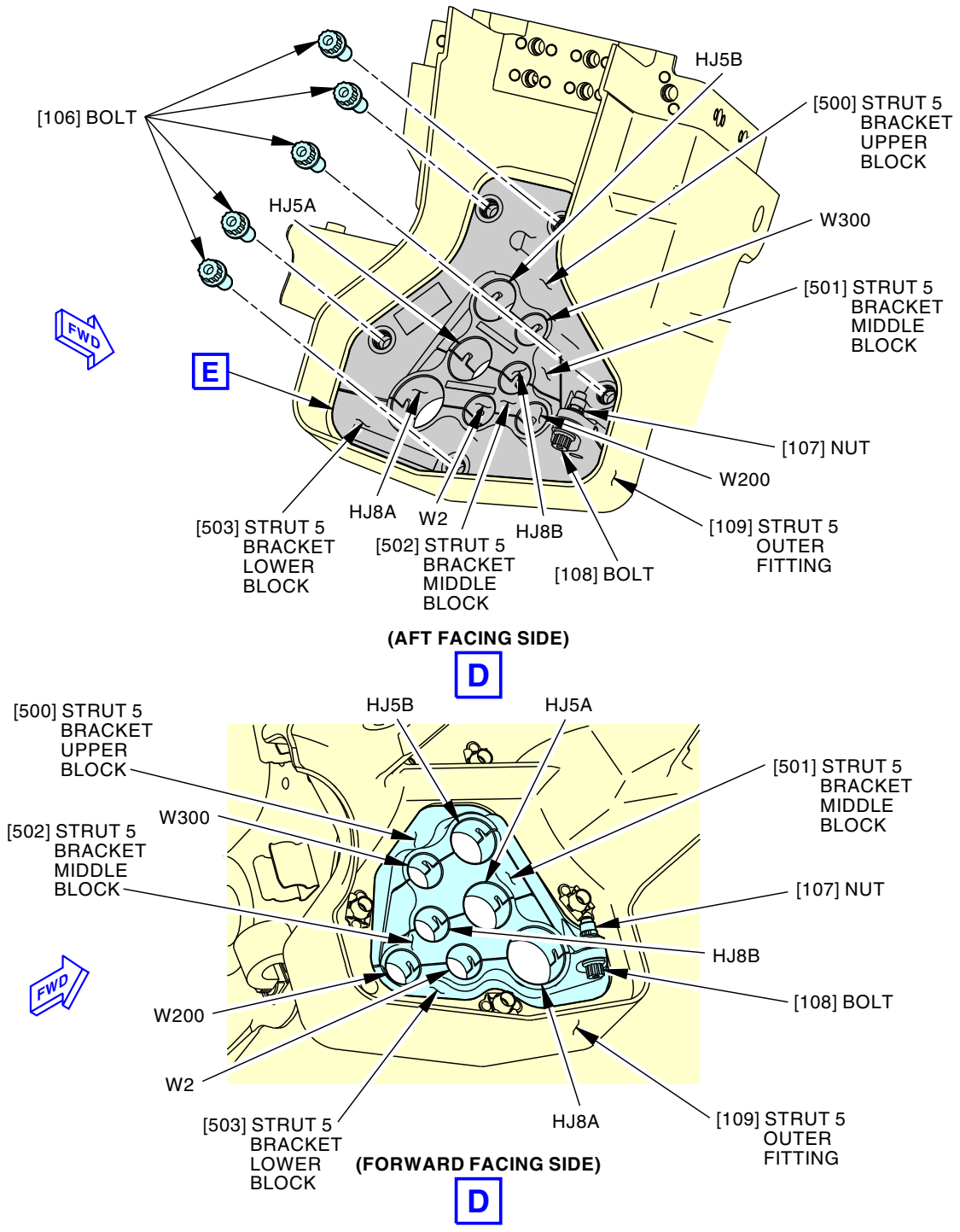
FAY SEAL PER AMM 51-22-00 ON INNER CONTOUR OF THE FITTING (AFT SIDE). SEALANT SQUEEZE-OUT SHOULD BE CONTINUOUS AND EVEN.

IT IS ACCEPTABLE TO APPLY THE FILLET SEAL ALONG INNER CONTOUR OF THE FITTING ON THE FORWARD SIDE.

2937801 S0000713390_V3

Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

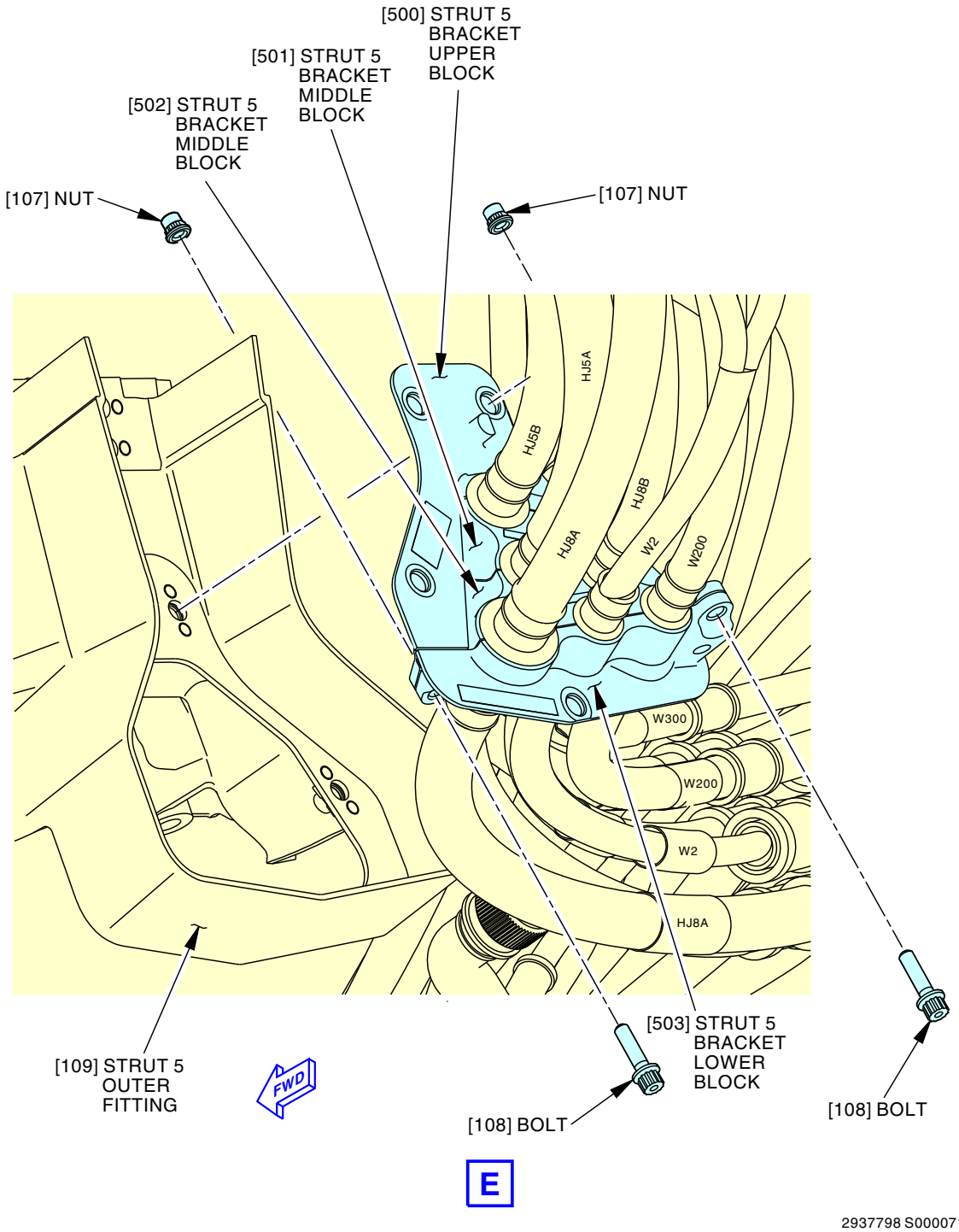


NOTE:
HARNESSES NOT SHOWN

2943980 S0000720369_V2

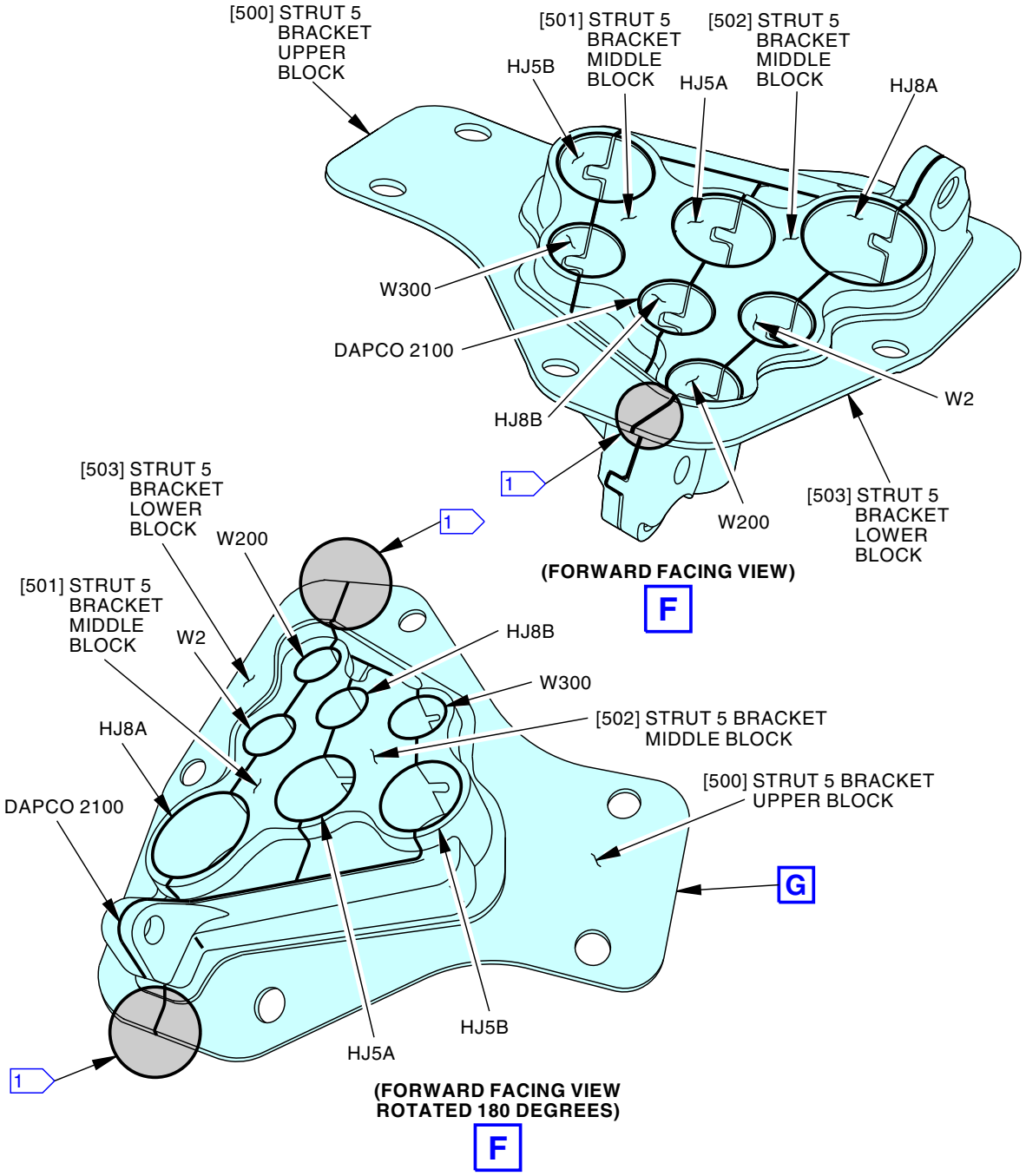
Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

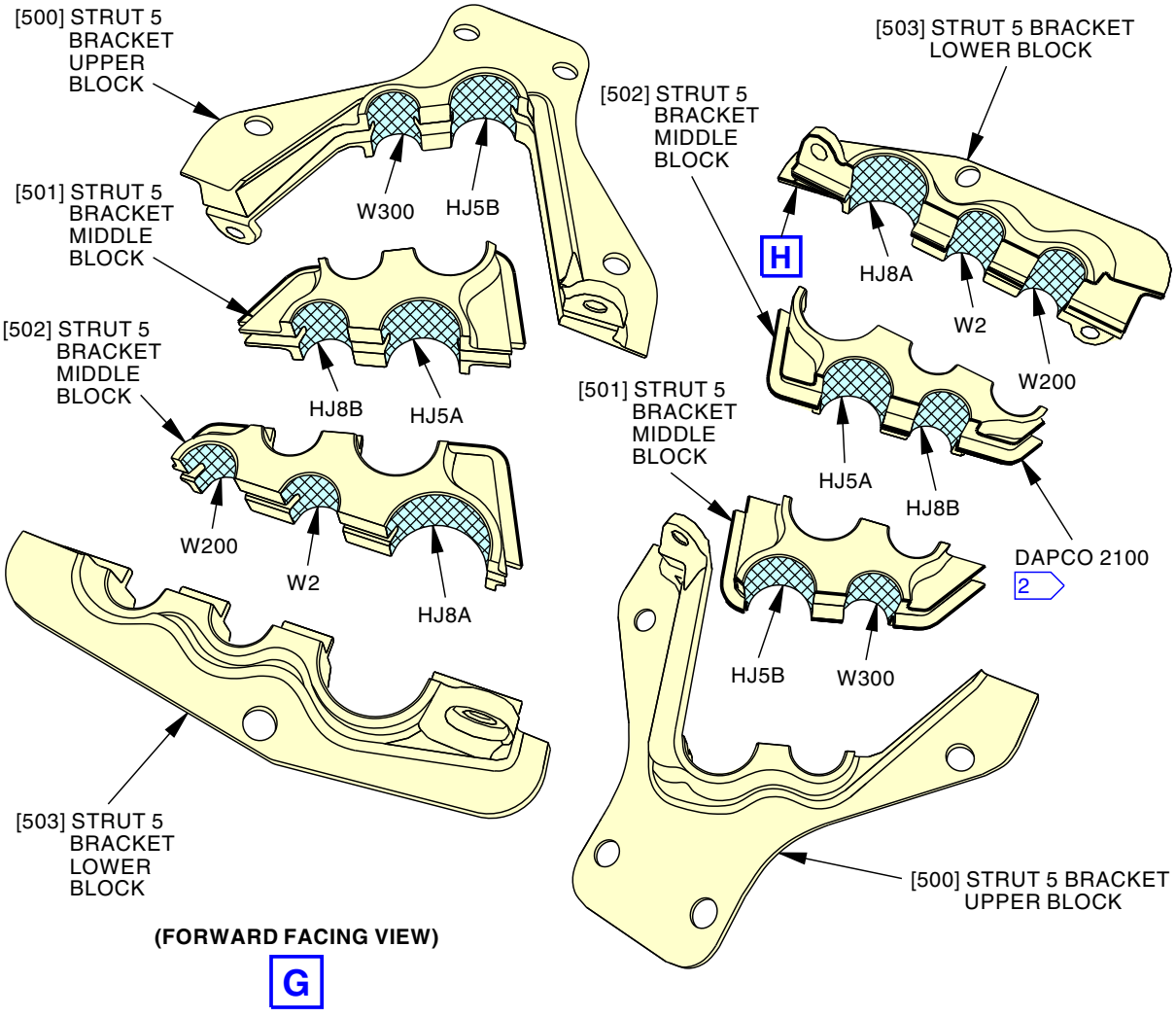
HARNESSES NOT SHOWN.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

2937800 S0000713389_V3

Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DAPCO 2100

NOTE:

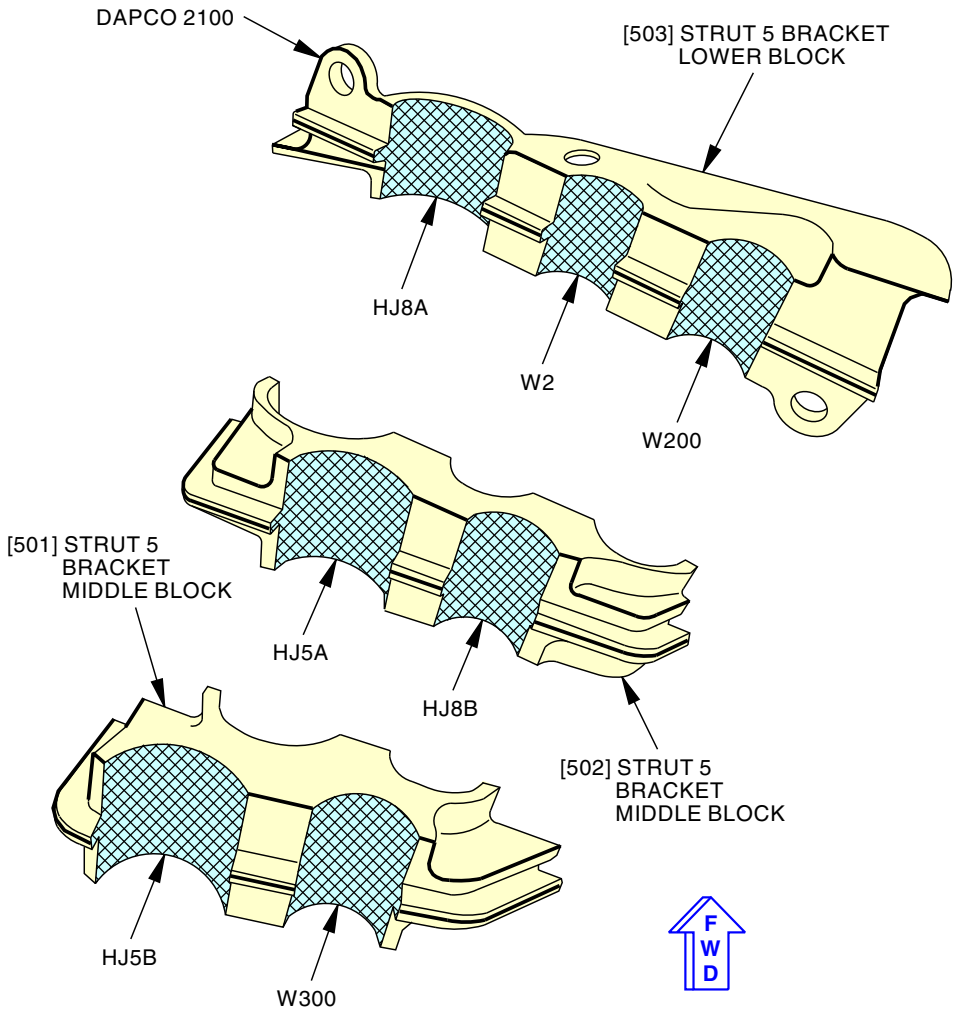
SEALANT PROVIDES FAY SEAL BETWEEN WIRE HARNESS AND BLOCKS AND SHOULD BE APPLIED TO THE BOTH SIDES OF BLOCKS.

2 SEALANT APPLIED TO ONE SIDE (TOP OR BOTTOM) OF THE BLOCKS.

2937799 S0000713388_V3

Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

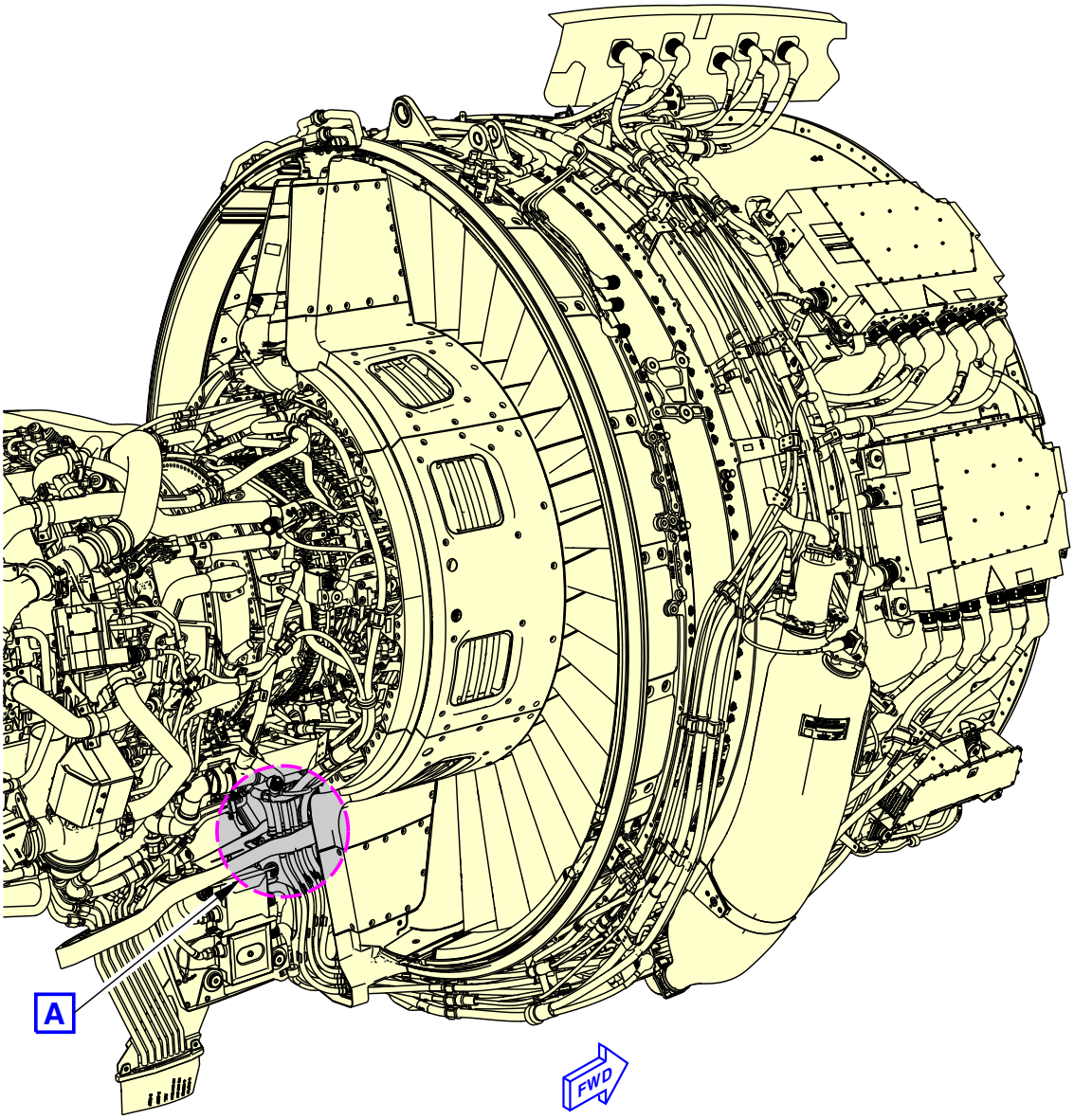


H

2949941 S0000726813_V1

Strut Bracket Block Installation
Figure 413/73-22-01-990-874-G00 (Sheet 9 of 9)

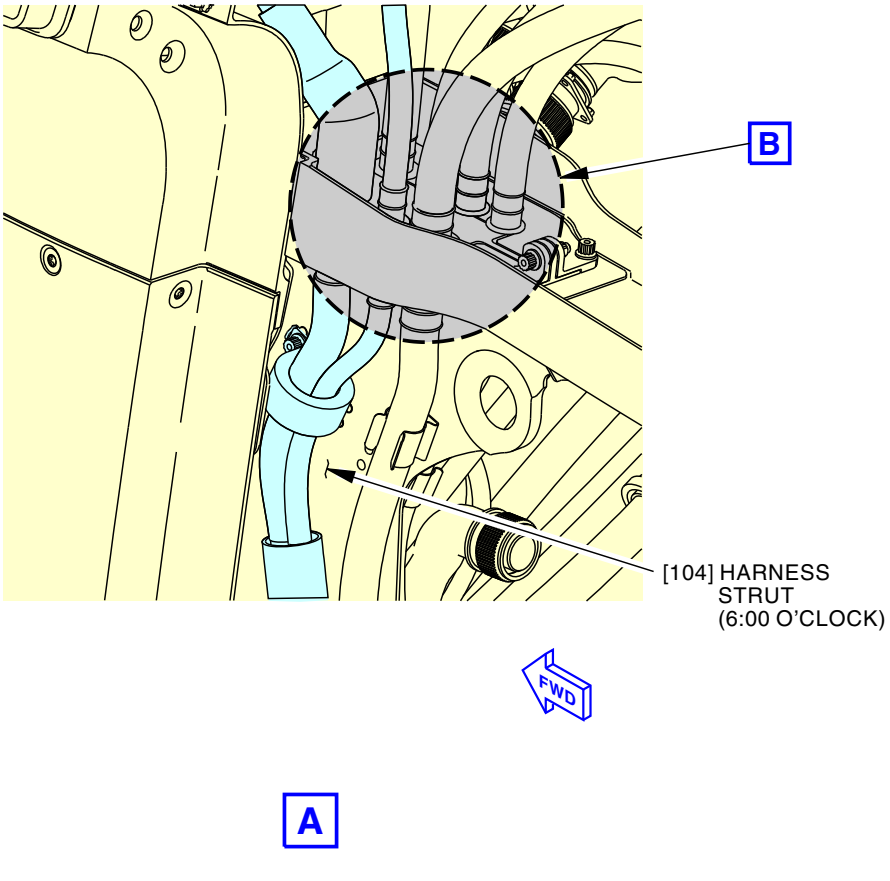
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-D-58828-00045-A-001-01
2938818 S0000714836_V2

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 1 of 11)

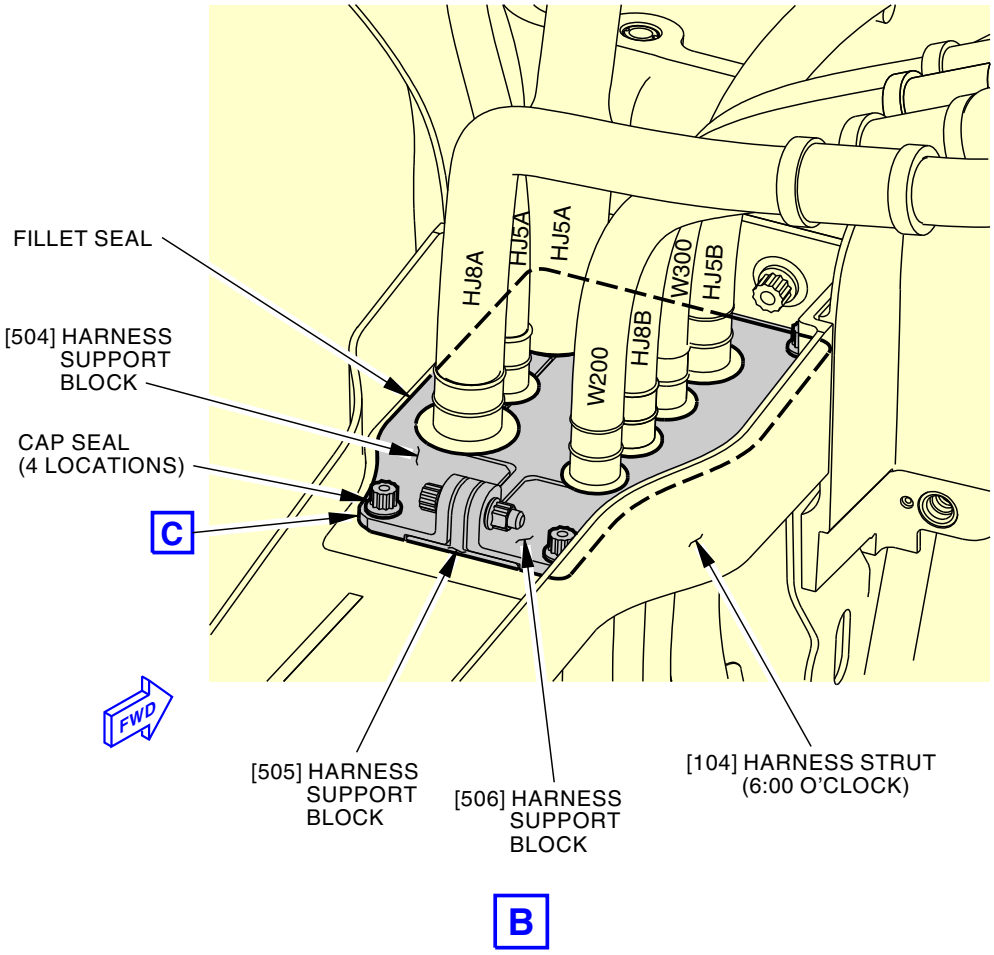
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2952925 S0000730238_V1

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 2 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

——— DAPCO 2100

NOTE:

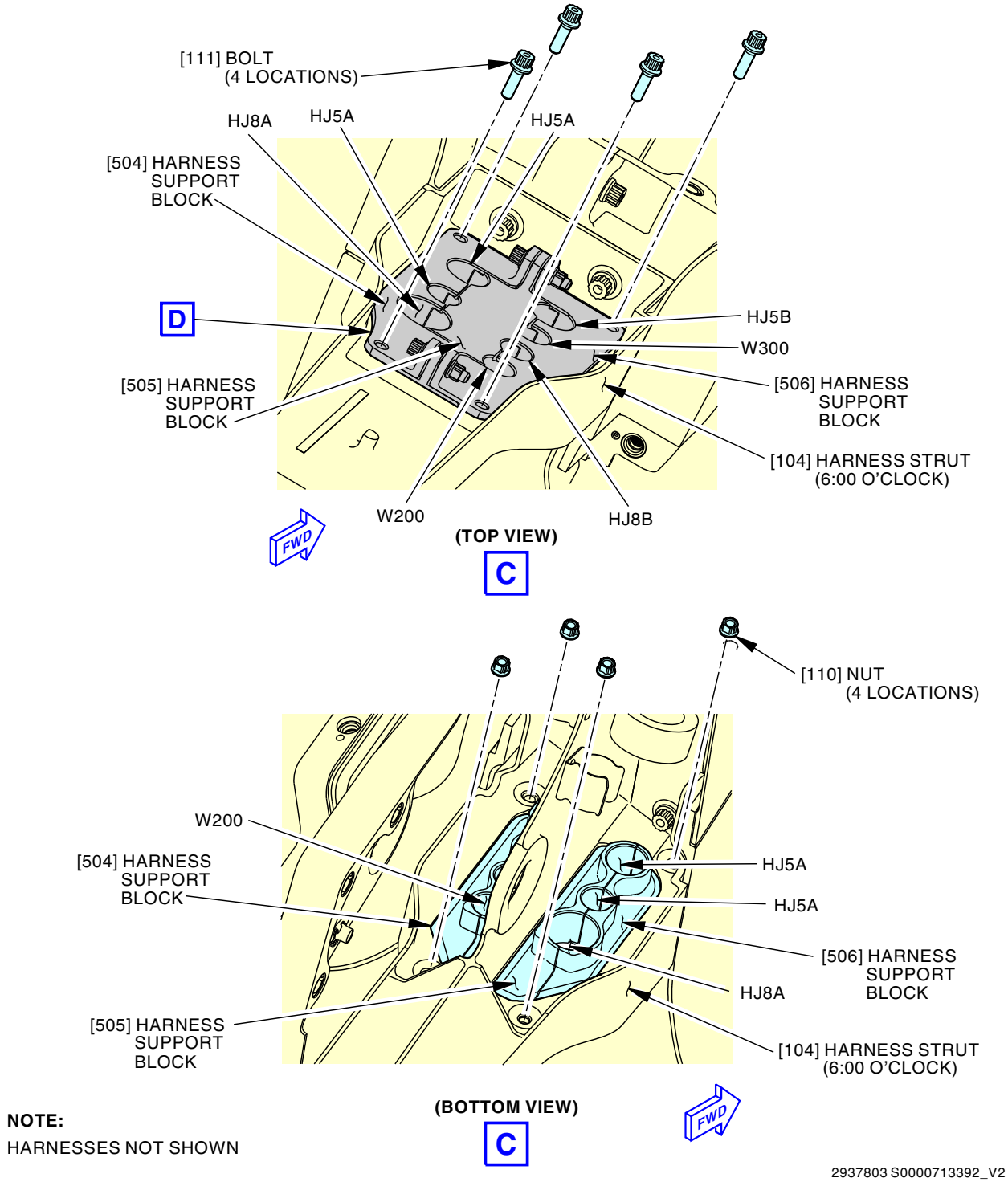
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE HARNESS SUPPORT BLOCK. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937807 S0000713396_V4

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 3 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

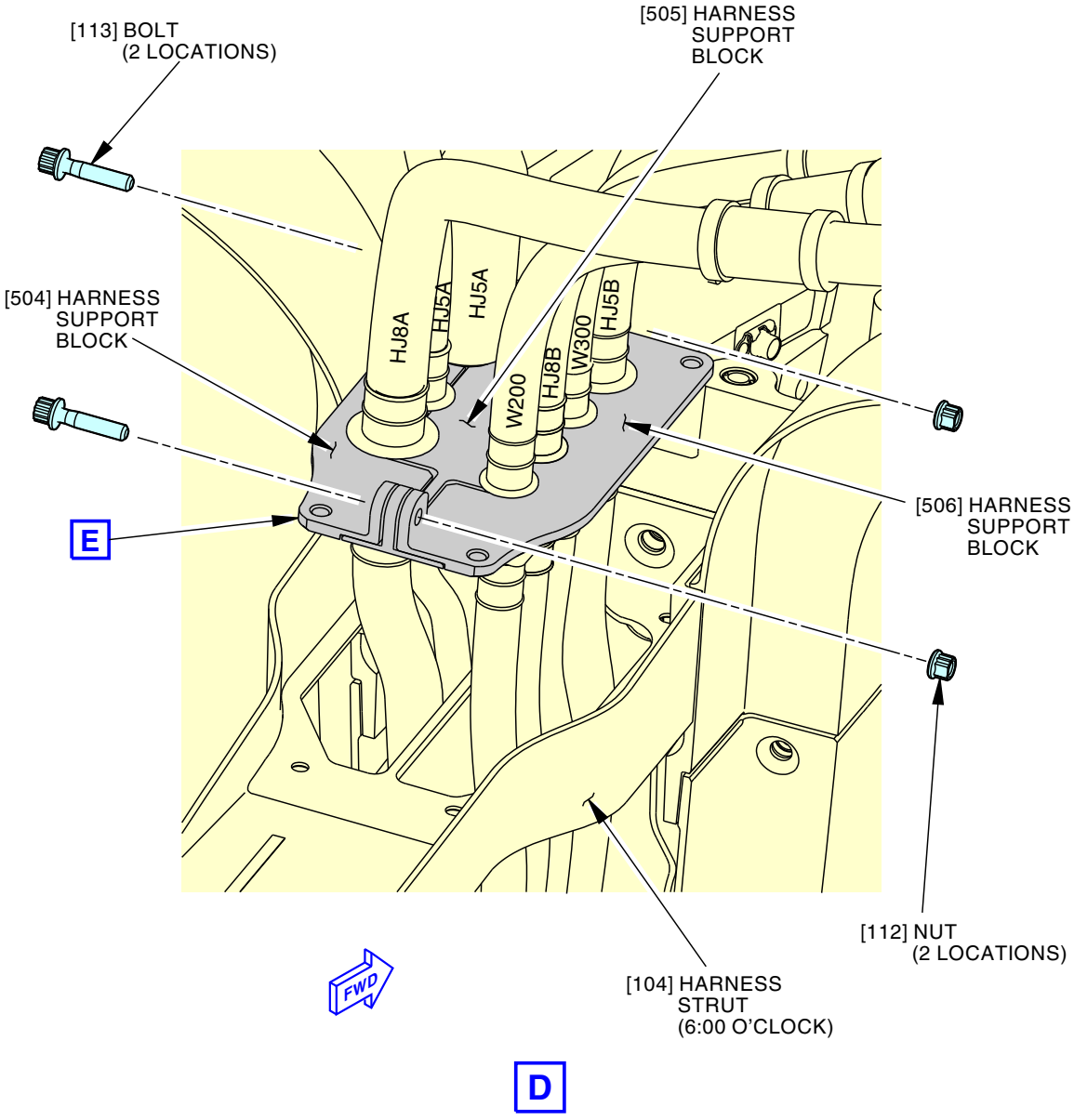


NOTE:
HARNESSES NOT SHOWN

2937803 S0000713392_V2

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 4 of 11)

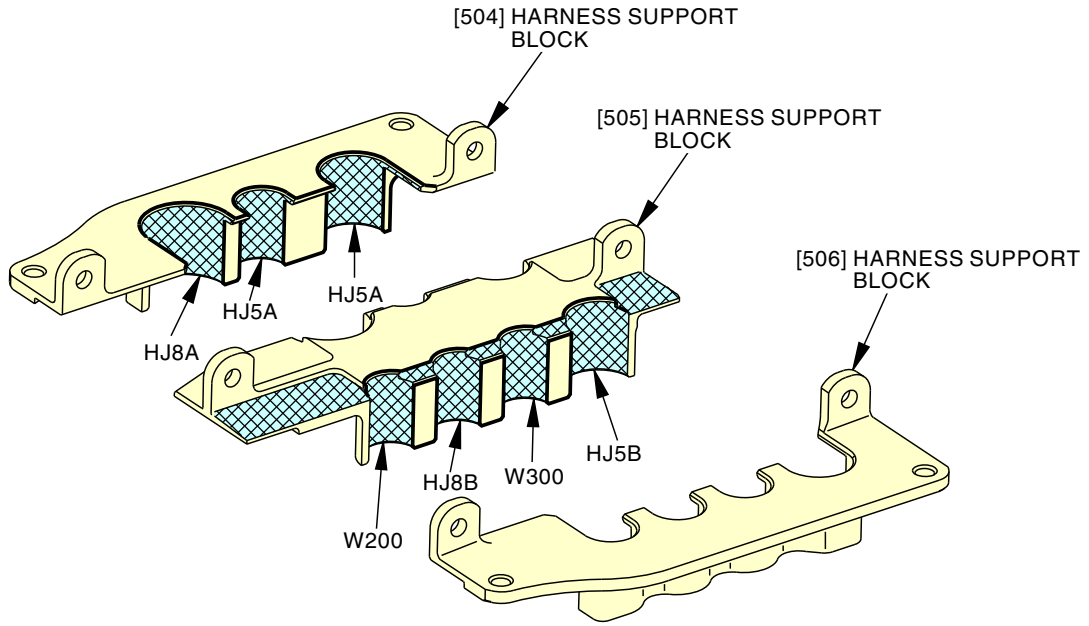
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937804 S0000713393_V2

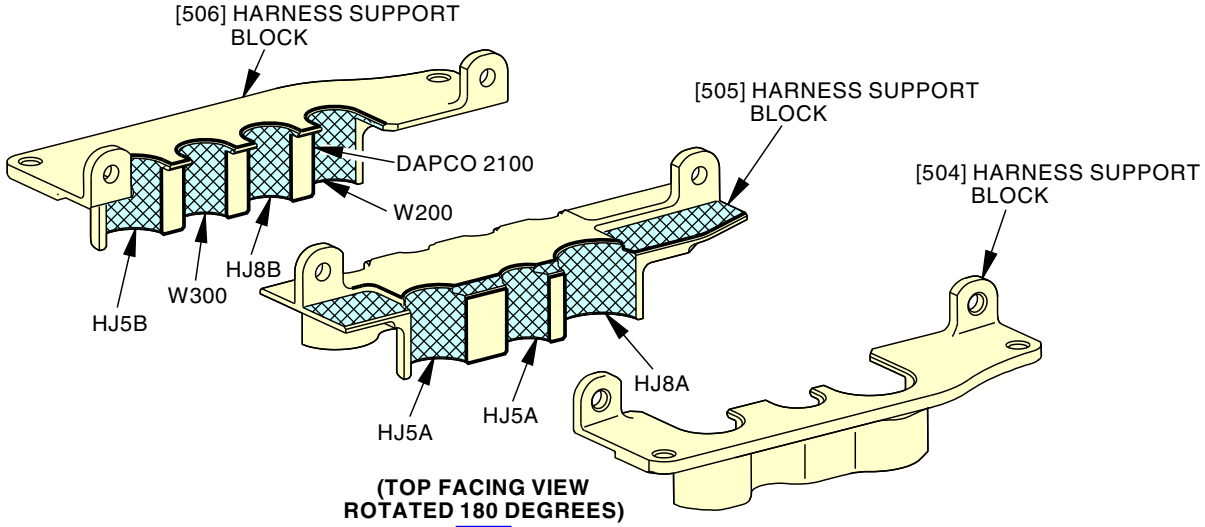
Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

E



(TOP FACING VIEW ROTATED 180 DEGREES)

E

LEGEND:

DAPCO 2100

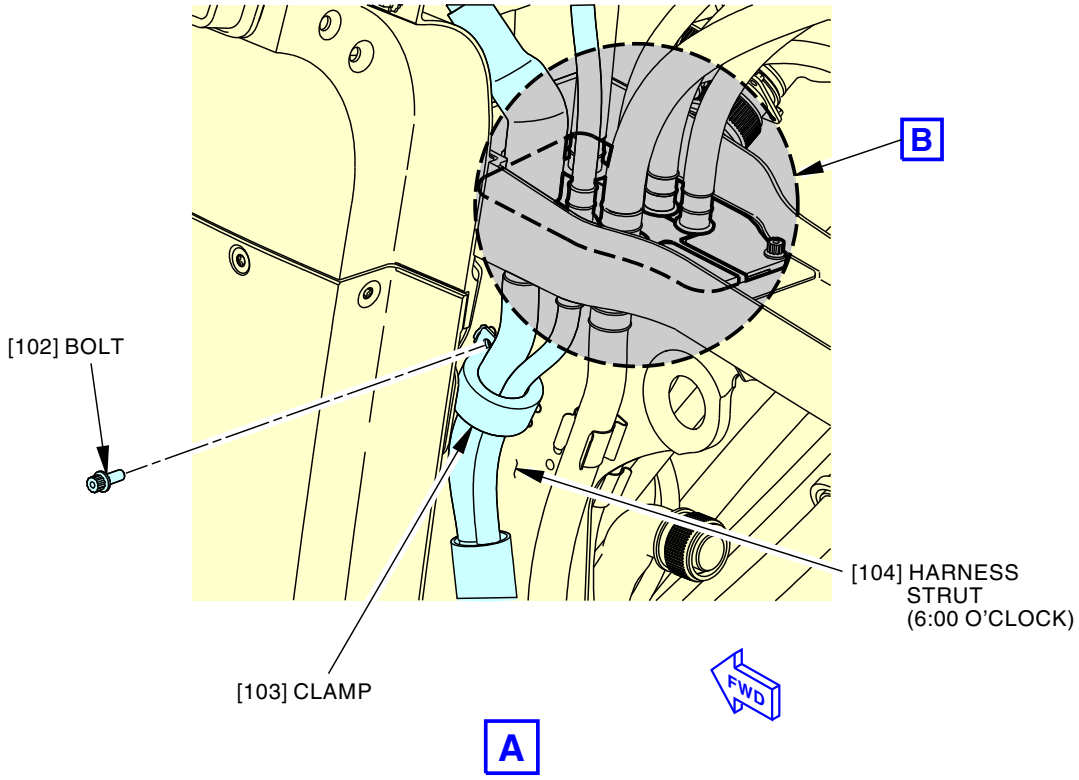
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937805 S0000713394_V4

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 6 of 11)

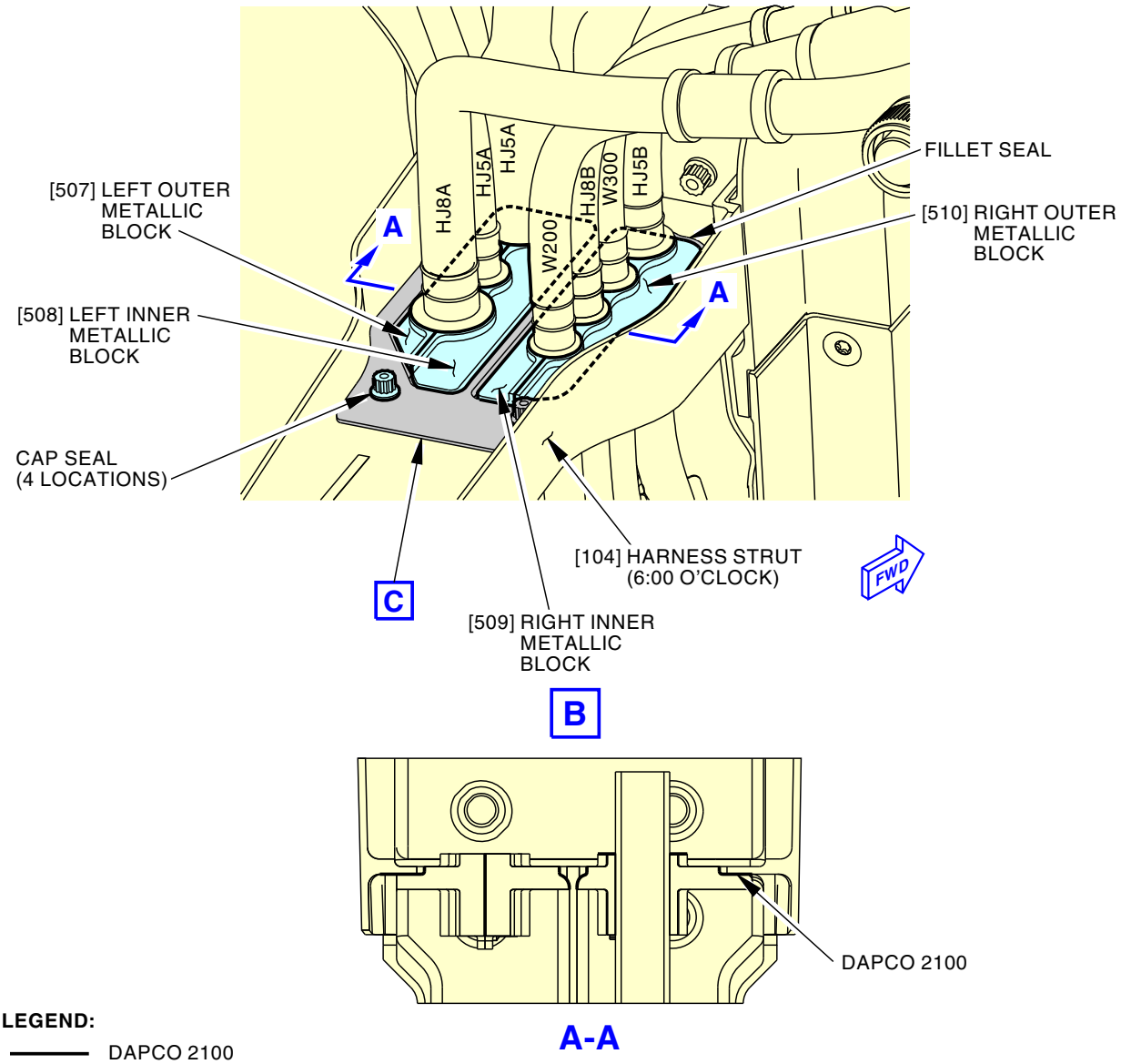
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2962027 S0000739197_V1

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 7 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

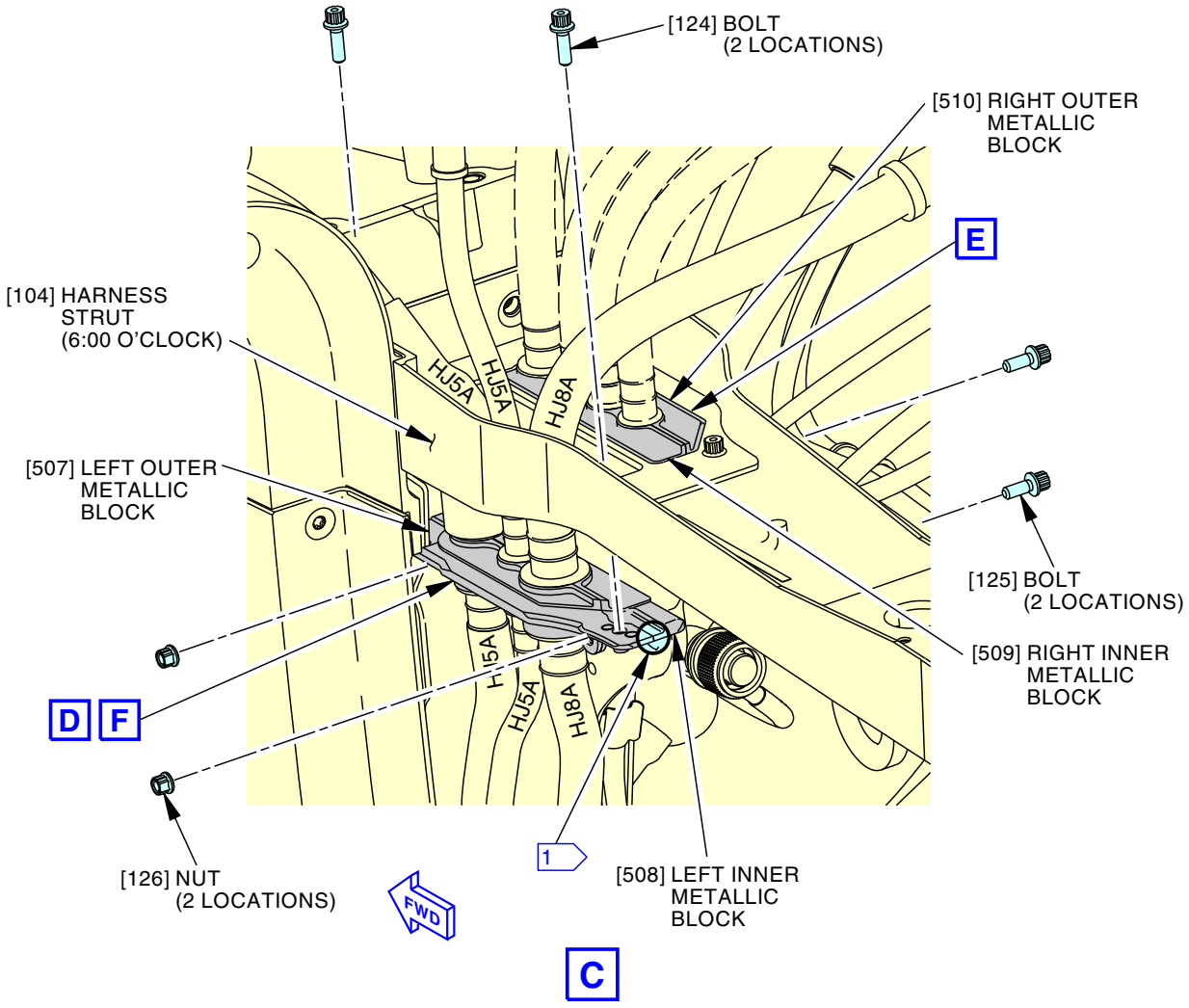
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE METALLIC BLOCKS. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN BOTH RIGHT AND LEFT METALLIC BLOCKS HAVE BEEN REMOVED.

2962029 S0000739198_V2

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 8 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

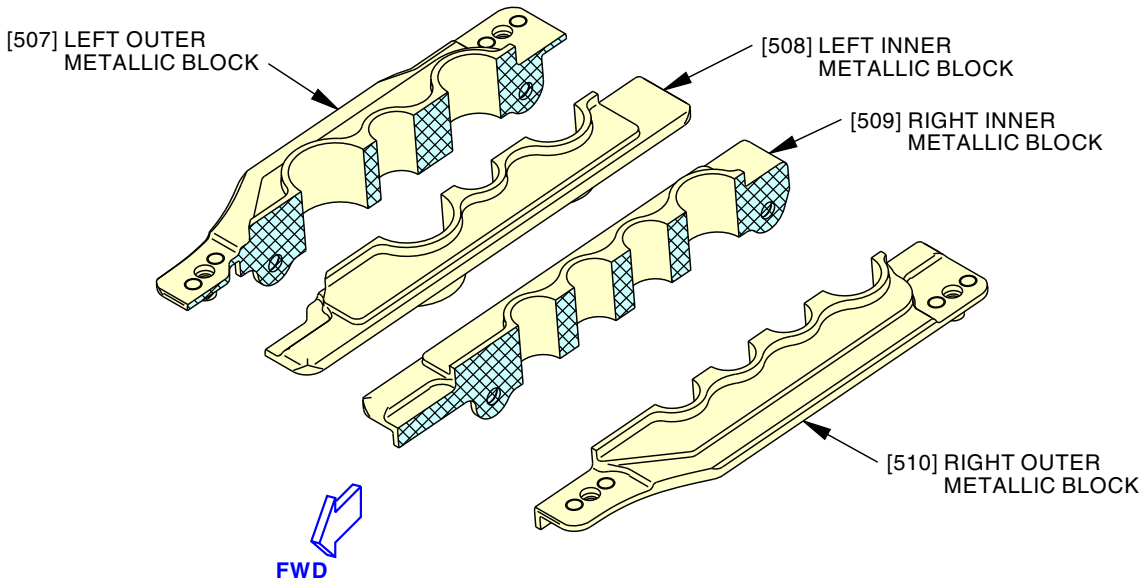
THIS VIEW IS SPECIFIC FOR LEFT INNER AND OUTER METALLIC BLOCKS. SAME LOGIC IS APPLIED FOR RIGHT INNER AND OUTER METALLIC BLOCKS.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

ICNLEAP1B732201D5882800060A00101
2962028 S0000739199_V2

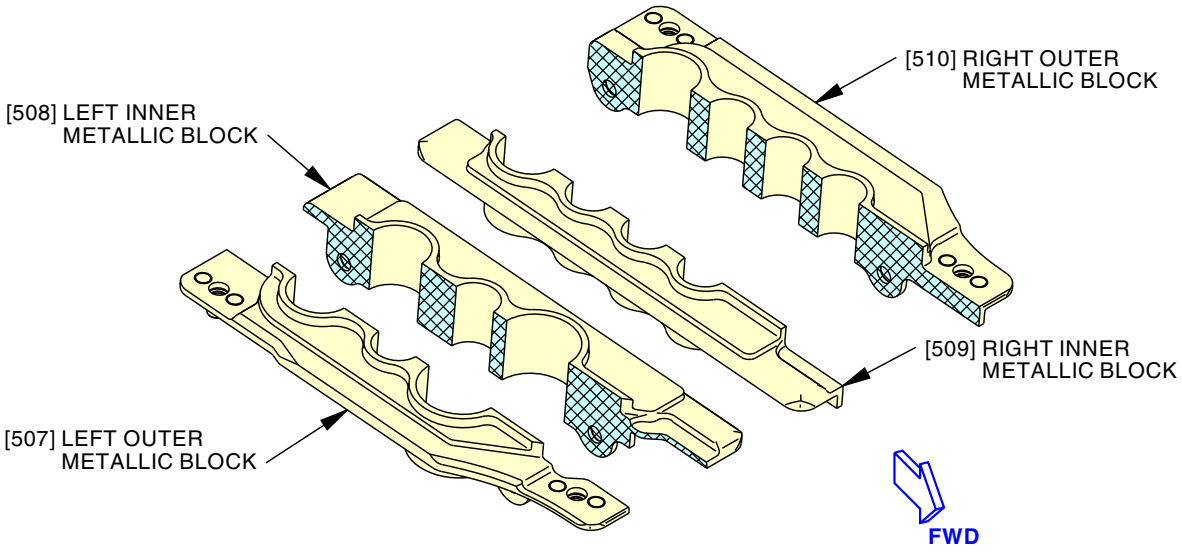
Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 9 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

D



(TOP FACING VIEW ROTATED 90 DEGREES)

D

LEGEND:

DAPCO 2100

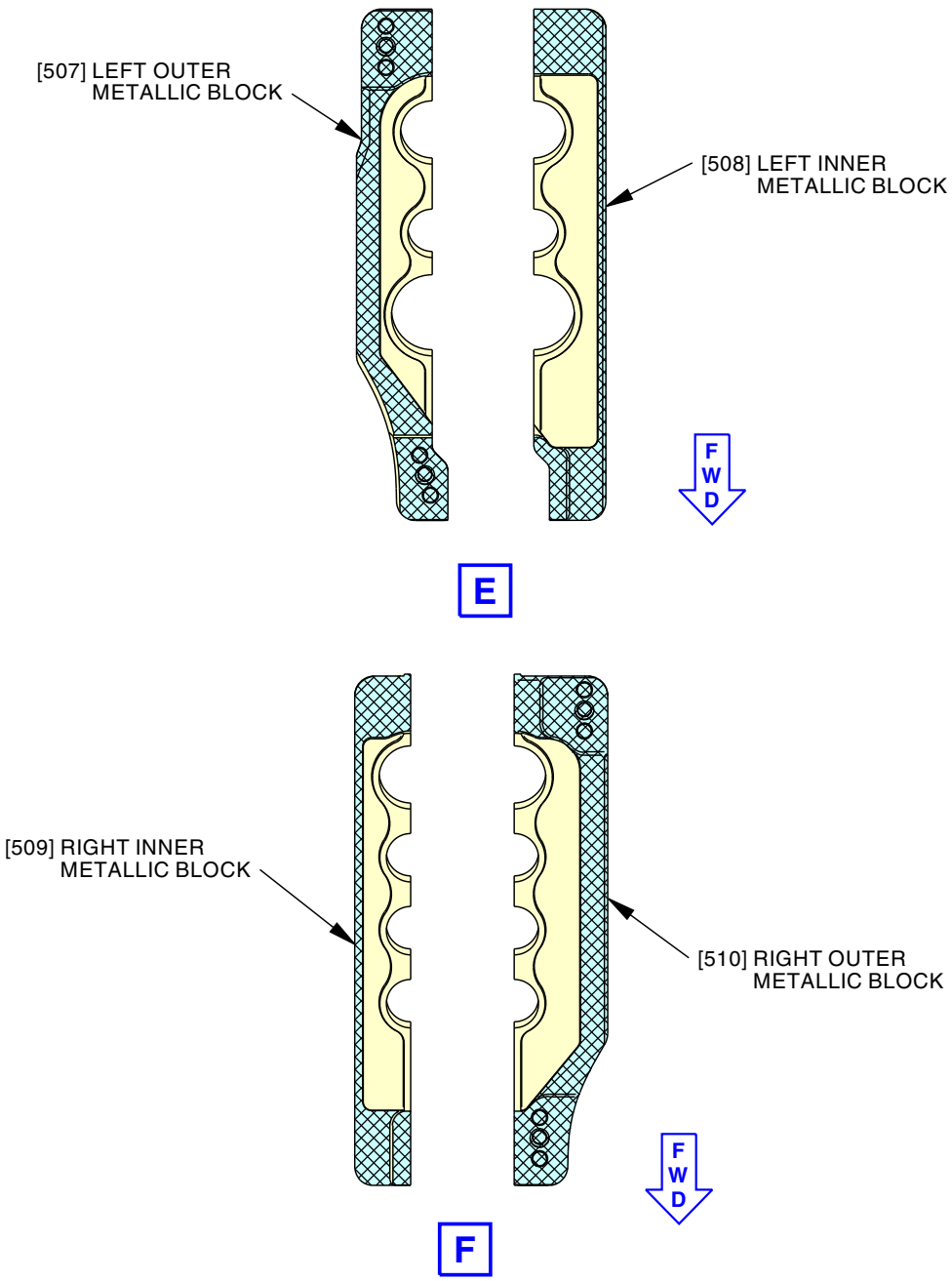
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994662 S0000771309_V1

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994663 S0000771310_V1

Harness Support Block Installation
Figure 414/73-22-01-990-875-G00 (Sheet 11 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-808-G00

17. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Installation

(Figure 412, Figure 413, and Figure 414)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (HJ8A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-22-01-390-802-G00	Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ8A) Installation

SUBTASK 73-22-01-210-005-G00

(1) During the installation, make sure that EEC electrical harness (HJ8A) [303] is not stressed or damaged.

SUBTASK 73-22-01-210-006-G00

(2) Make sure that all components are clean and free of old sealant prior to adding new sealant.

SUBTASK 73-22-01-390-007-G00

(3) For the EEC electrical harness (HJ8A) [303] P/N 364-083-811-0, do this task: Electronic Engine Control (EEC) Electrical Harness (HJ8A) Tape Wrap, TASK 73-22-01-390-802-G00.

NOTE: For the EEC electrical harness (HJ8A) [303] P/N 364-083-811-0, it is necessary to apply sealant and aluminum tape over the new wire bundle before installation. Other EEC electrical harness (HJ8A) [303] part numbers do not require the sealant and aluminum tape. The sealant and aluminum tape is required to prevent fluid leak from migrating down the wire harness through the firewall at the 6 o'clock location.

SUBTASK 73-22-01-420-015-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(4) Install the EEC electrical harness (HJ8A) [303] as follows (TASK 70-00-01-910-803-G00):

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ8A) [303] in a correct position with the 22 clips [302] along its routing.

(d) Install the EEC electrical harness (HJ8A) [303] on the harness strut (6:00 o'clock) [104] as follows:

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

1) Install the harness support block [504], harness support block [505], and harness support block [506] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the four bolts [111] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses (View E, Figure 414).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

c) Make sure that the EEC electrical harness (HJ8A) [303] and harnesses are in the correct position on the harness support block [504], harness support block [505], harness support block [506], (View D, Figure 414).

d) Install the two bolts [113] and two nuts [112] to assemble the harness support block [504], harness support block [505], and harness support block [506] in the correct position with the harnesses.

e) Tighten the nuts [112] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

f) Make sure that there is minimum amount of the squeeze-out on the lower side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

g) Install the harness support block [504], harness support block [505], and harness support block [506] in the correct position on the harness strut (6:00 o'clock) [104].

h) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104] (View B, Figure 414).

i) Install the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

j) Tighten the nuts [110] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

k) Make sure that there is minimum amount of the squeeze-out on the lower side.

l) Apply more sealant to form a correct fillet seal around the contour of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

m) Clean the four nuts [110] and four bolts [111] that will have sealant applied to them.

n) Apply Dapco 2100 sealant, A50483 [CP2927], to the heads of the four bolts [111].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

2) Remove any remaining of old sealant residue left on the harnesses or harness strut (6:00 o'clock) [104].

3) Install the left outer metallic block [507] and left inner metallic block [508] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507] and left inner metallic block [508].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507], left inner metallic block [508], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the left outer metallic block [507] and left inner metallic block [508] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the left outer metallic block [507] and left inner metallic block [508] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the left outer metallic block [507] and left inner metallic block [508] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of left outer metallic block [507] and left inner metallic block [508].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

4) Install the new right inner metallic block [509] and right outer metallic block [510] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509] and right outer metallic block [510].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the right inner metallic block [509] and right outer metallic block [510] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the right inner metallic block [509] and right outer metallic block [510] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the right inner metallic block [509] and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION

MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the two bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of right inner metallic block [509] and right outer metallic block [510].

SIA ALL

ECCN 9E991 BOEING PROPRIETARY - See title page for details

5) Install the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109] as follows:

a) Lubricate the five bolts [106] and two nuts [107] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927] to the one side (either top or bottom) of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

NOTE: Fay seal applies to the two sides of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

c) Make sure that the EEC electrical harness (HJ8A) [303] and harnesses are in the correct position on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] (View E, Figure 413).

d) Install the two bolts [108] and two nuts [107] to assemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Tighten the nuts [107] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

f) Make sure that the fillet seal of the squeeze out is on the forward facing side.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

g) Make the sealant squeeze-out flush on the outer edges of the strut 5 bracket upper block [500] and strut 5 bracket lower block [503] (View F, Figure 413).

h) Install the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] in a correct position on the strut 5 outer fitting [109].

i) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 outer fitting [109] (View C, Figure 413).

j) Install the five bolts [106] that attach the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109].

k) Tighten the bolts [106] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

l) Make sure that there is a minimum amount of the squeeze-out on the aft side around the edges of the block assembly and that the sealant is flush with the block assembly (View C, Figure 413).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

m) Make sure that the squeeze-out on the forward facing side is finished as a fillet seal.

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

n) Clean the nut plate side of the bolts [106] and nut plates.

o) Apply Dapco 2100 sealant, A50483 [CP2927], to the nut plate side of the bolts [106] and nut plates.

(e) Attach blanket [190] to the strut 5 outer fitting [109].

1) Apply Dapco 2100 sealant, A50483 [CP2927], between the blanket [190] and strut 5 outer fitting [109] (View B, Figure 413).

NOTE: Dapco 2200 firewall sealant, A50396, may use as optional. If this consumable meets the local regulatory requirements of the operator, it is acceptable as a chemical sealant for further usage.

(f) Lubricate the threads of the bolt [332], bolt [329], bolt [326], bolt [320], bolt [318], and bolt [316] with the engine oil, D00599 [CP2442].

(g) Install the bolt [332] and clamp [333] that attach the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(h) Tighten the bolt [332] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(i) Install the bolt [329] and clamp [330] that attach the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(j) Tighten the bolt [329] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(k) Install the bolt [326] and clamp [327] that attach the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(l) Tighten the bolt [326] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(m) Install the bolt [320] and clamp [321] that attach the EEC electrical harness (HJ8A) [303] to the forward stator case bracket.

(n) Tighten the bolt [320] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(o) Install the bolt [318] and clamp [319] that attach the EEC electrical harness (HJ8A) [303] on the forward stator case bracket.

(p) Tighten the bolt [318] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

(q) Install the bolt [316] that attaches the EEC electrical harness (HJ8A) [303] to the bracket [317].

(r) Tighten the bolt [316] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(s) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ8A) [303] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (HJ8A) [303] connector to the T3 sensor channel A receptacle [336].
2) Connect the EEC electrical harness (HJ8A) [303] connector to the EGT harness 1 (left) receptacle [335].
3) Connect the EEC electrical harness (HJ8A) [303] connector to the TCF accelerometer receptacle [334].
4) Connect the EEC electrical harness (HJ8A) [303] connector to the LPTACC valve receptacle [331].
5) Connect the EEC electrical harness (HJ8A) [303] connector to the HPTACC valve receptacle [328].
6) Connect the EEC electrical harness (HJ8A) [303] connector to the TBV receptacle [315].
7) Connect the EEC electrical harness (HJ8A) [303] connector to the start bleed/booster anti-ice valve receptacle [314].

(t) Connect the connector socket [309] of the EEC electrical harness (HJ8A) [303] as follows:

1) Install the four bolts [311] and four nuts [310] that attach the connector socket [309] to the bracket [83].
2) Tighten the four nuts [310] to 10.2 in-lb (1.15 N·m) - 11.1 in-lb (1.25 N·m).
3) Connect the HJ8B engine wiring harness electrical connector [215] (at 5:00 o'clock) to the connector socket [309].

NOTE: If the HJ8B engine wiring harness has been installed, do not do this step.

(u) Install the bolt [312] and clamp [313] that attach the EEC electrical harness (HJ8A) [303] to the fan case bracket.

(v) Tighten the bolt [312] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(w) Install the bolt [307] and clamp [308] that attach the EEC electrical harness (HJ8A) [303] to the fan case bracket.

(x) Tighten the bolt [307] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(y) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ8A) [303] connector to the EEC channel A J8 receptacle [306].

(z) Make sure that the work area is clean of all tools and other items.

SUBTASK 73-22-01-420-016-G00

(5) Install the segment shroud 5 [305].

SUBTASK 73-22-01-420-017-G00

(6) Install the segment shroud 2 [68].

SUBTASK 73-22-01-420-018-G00

(7) Install the segment shroud 1 [304].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-029-G00

WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-061-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-062-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-063-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-064-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ8A) Installation Test

SUBTASK 73-22-01-730-008-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-000-809-G00

18. Electronic Engine Control (EEC) Electrical Harness (HJ8B) Removal

(Figure 415, Figure 416, and Figure 417)

A. General

(1) This task gives the instructions on how to remove the electronic engine control (EEC) electrical harness (HJ8B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-065-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-066-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-067-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-068-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-031-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (HJ8B) Removal

SUBTASK 73-22-01-020-019-G00

(1) Remove the segment shroud 1 [304].

SUBTASK 73-22-01-020-020-G00

(2) Remove the segment shroud 2 [68].

SUBTASK 73-22-01-020-021-G00

(3) Remove the segment shroud 5 [305].

SUBTASK 73-22-01-020-022-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(4) Use the teflon-jawed pliers, STD-664, to disconnect the EEC electrical harness (HJ8B) [378] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (HJ8B) [378] connector from the EEC channel B J8 receptacle [379].

(b) Disconnect the EEC electrical harness (HJ8B) [378] (at 5:00 o'clock) from the EEC HJ8A harness receptacle [145].

NOTE: If the HJ8A engine wiring harness has been removed, do not do this step.

(c) Remove the bolt [380] from the clamp [381] that attaches the EEC electrical harness (HJ8B) [378] to the fan case bracket.

(d) Disconnect the EEC electrical harness (HJ8B) [378] connector from the No. 1 bearing acclerometer receptacle [382].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(e) Disconnect the EEC electrical harness (HJ8B) [378] connector from the alternate No. 1 bearing acclerometer receptacle [383].

(f) Disconnect the EEC electrical harness (HJ8B) [378] connector from the EGT harness 2 (right) receptacle [386].

(g) Disconnect the EEC electrical harness (HJ8B) [378] connector from the T3 sensor channel B receptacle [387].

(h) Remove the bolt [384] from the clamp [385] that attaches the EEC electrical harness (HJ8B) [378] to the forward stator case bracket.

(i) Remove the EEC electrical harness (HJ8B) [378] from the 16 clips [377] along its routing.

(j) Remove blanket [190] from the strut 5 outer fitting [109] (View B, Figure 416).

(k) Remove the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] from strut 5 outer fitting [109] as follows:

1) Remove the five bolts [106] that attach the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

2) Cut and remove the sealant between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and strut 5 outer fitting [109].

3) Move the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] rearward from the electrical harnesses.

4) Remove the two nuts [107] and two bolts [108] to disassemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

5) Cut and remove the sealant on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503] and around the harnesses.

6) Remove the harnesses from the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

7) Remove any remaining sealant residue.

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

(l) Remove the harness support block [504], harness support block [505], and harness support block [506] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

2) Cut and remove the sealant between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

3) Move the harness support block [504], harness support block [505], and harness support block [506] upward and away from the harness strut (6:00 o'clock) [104].

4) Remove the two nuts [112] and two bolts [113] to disassemble the harness support block [504], harness support block [505], and harness support block [506].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

5) Cut and remove the sealant on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses.

6) Remove the harnesses from the harness support block [504], harness support block [505] and the harness support block [506].

7) Remove any remaining sealant residue.

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

(m) Remove the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] from the harness strut (6:00 o'clock) [104] as follows:

1) Remove the four bolts [124] that attach the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

2) Cut and remove the sealant between the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

3) Move the assembly of the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510] upward and away from the harness strut (6:00 o'clock) [104].

4) Remove the four nuts [126] and four bolts [125] to disassemble the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

5) Cut and remove the sealant on the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], right outer metallic block [510], and around the harnesses.

6) Remove the harnesses from the left outer metallic block [507], left inner metallic block [508], right inner metallic block [509], and right outer metallic block [510].

7) Remove any remaining sealant residue.

SIA ALL

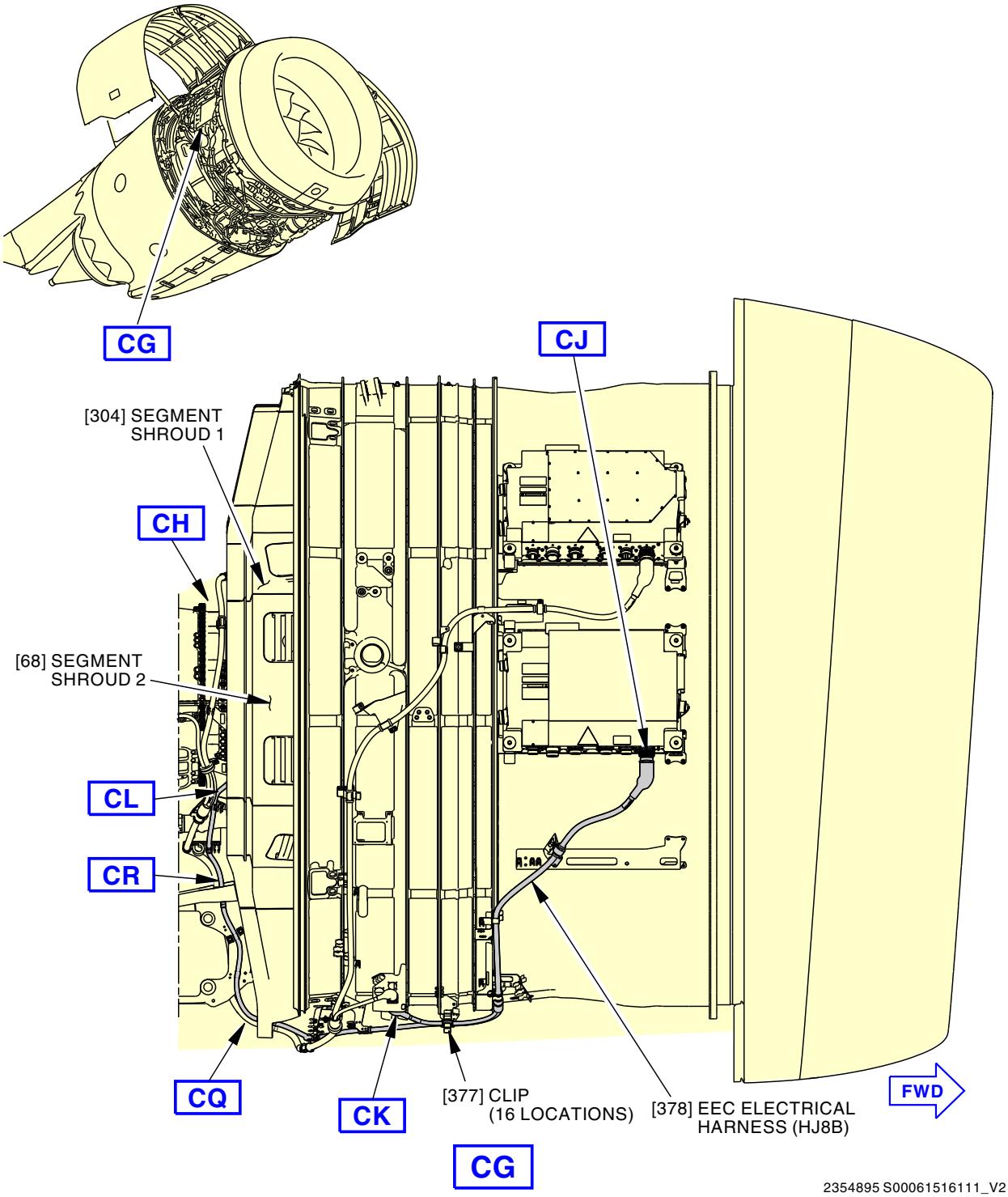
(n) Remove the EEC electrical harness (HJ8B) [378] from the harness strut (6:00 o'clock) [104].

(o) Carefully remove the EEC electrical harness (HJ8B) [378] from the engine.

(p) Install the protective covers on all of the harness connectors and the component receptacles.

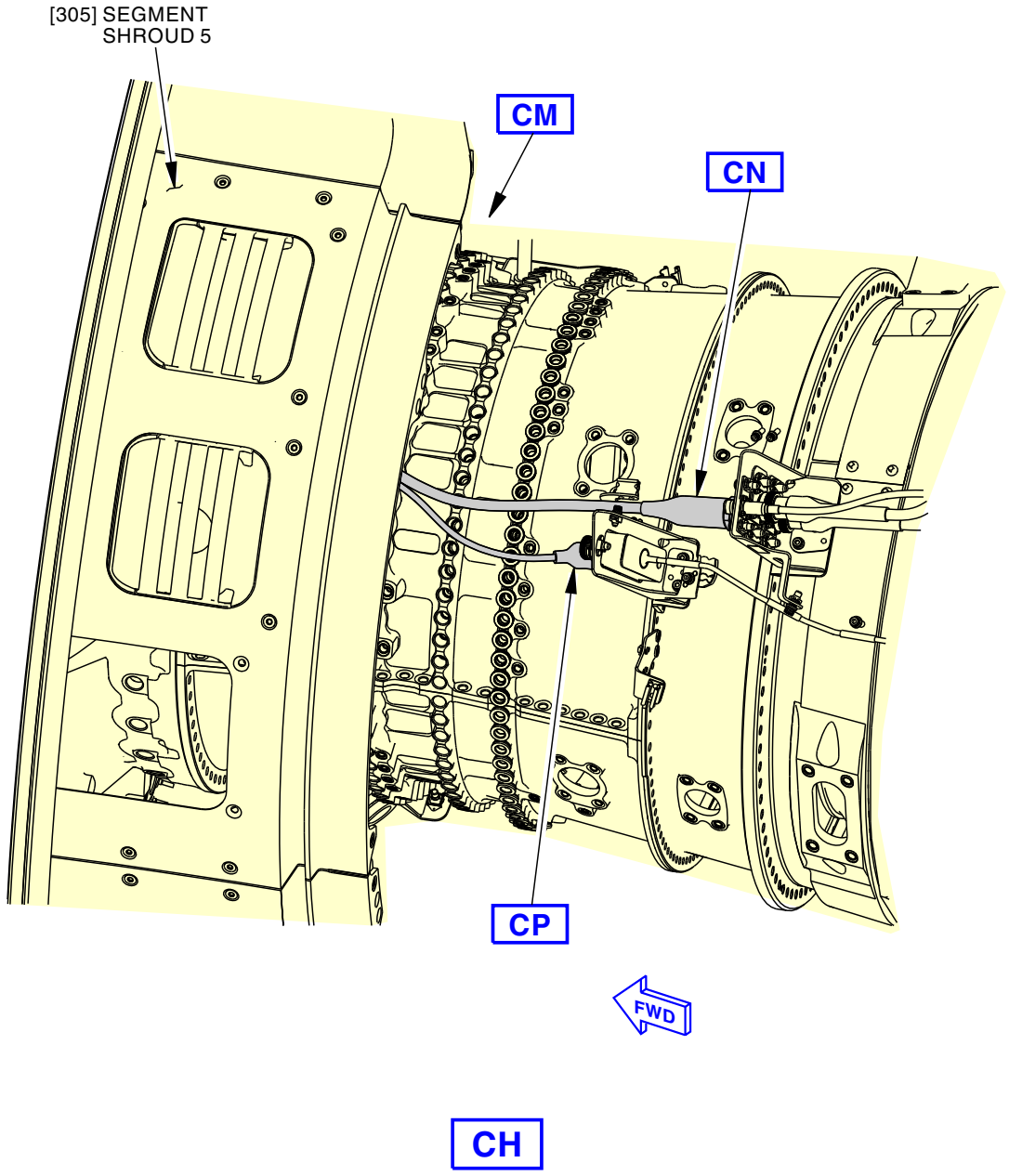
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ8B) Installation
Figure 415/73-22-01-990-859-G00 (Sheet 1 of 5)

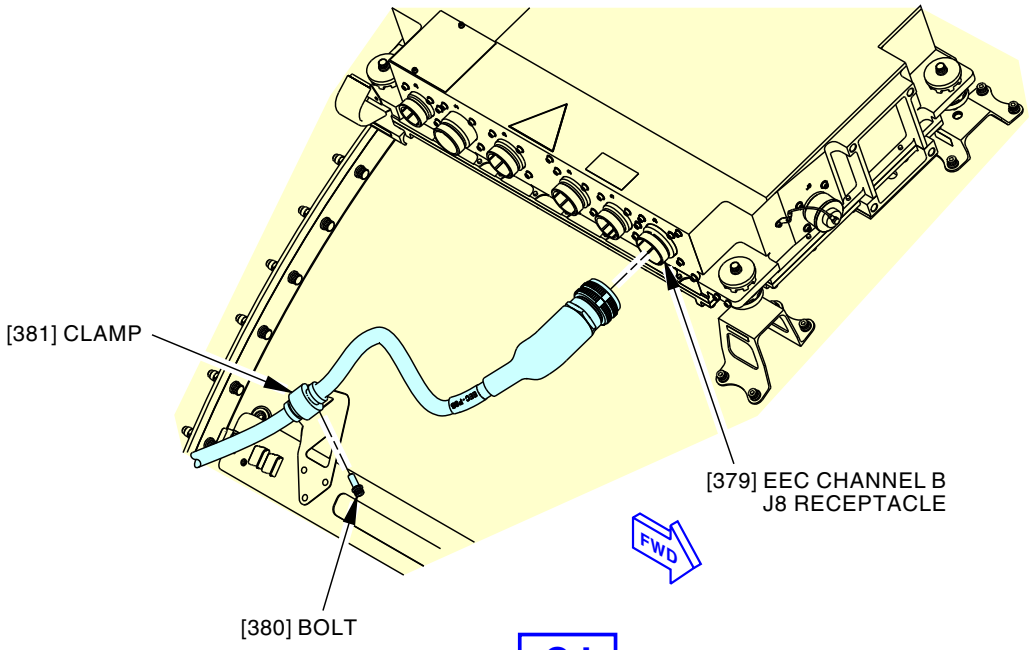
ECCN 9E991 BOEING PROPRIETARY - See title page for details

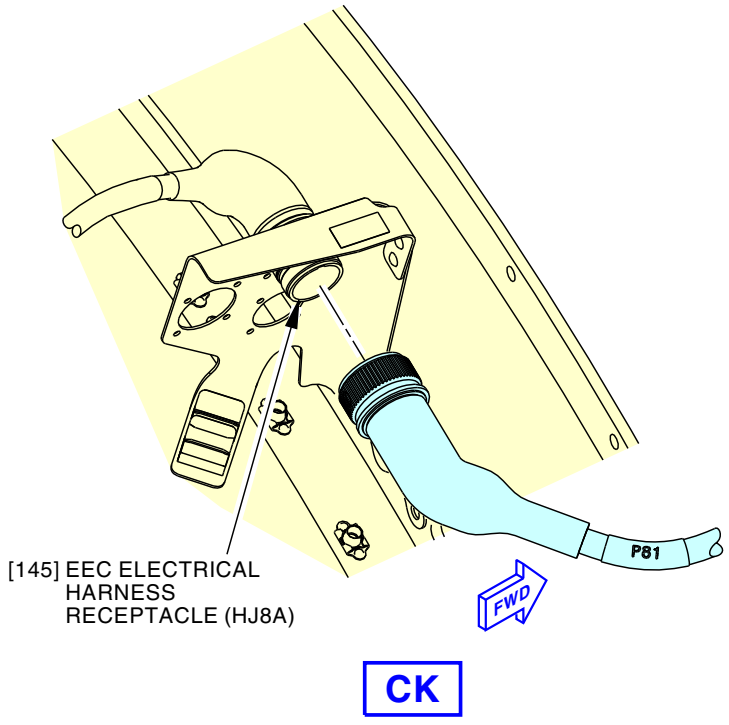


A0060-A-001-01
2420974 S0000557454_V1

EEC Electrical Harness (HJ8B) Installation
Figure 415/73-22-01-990-859-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

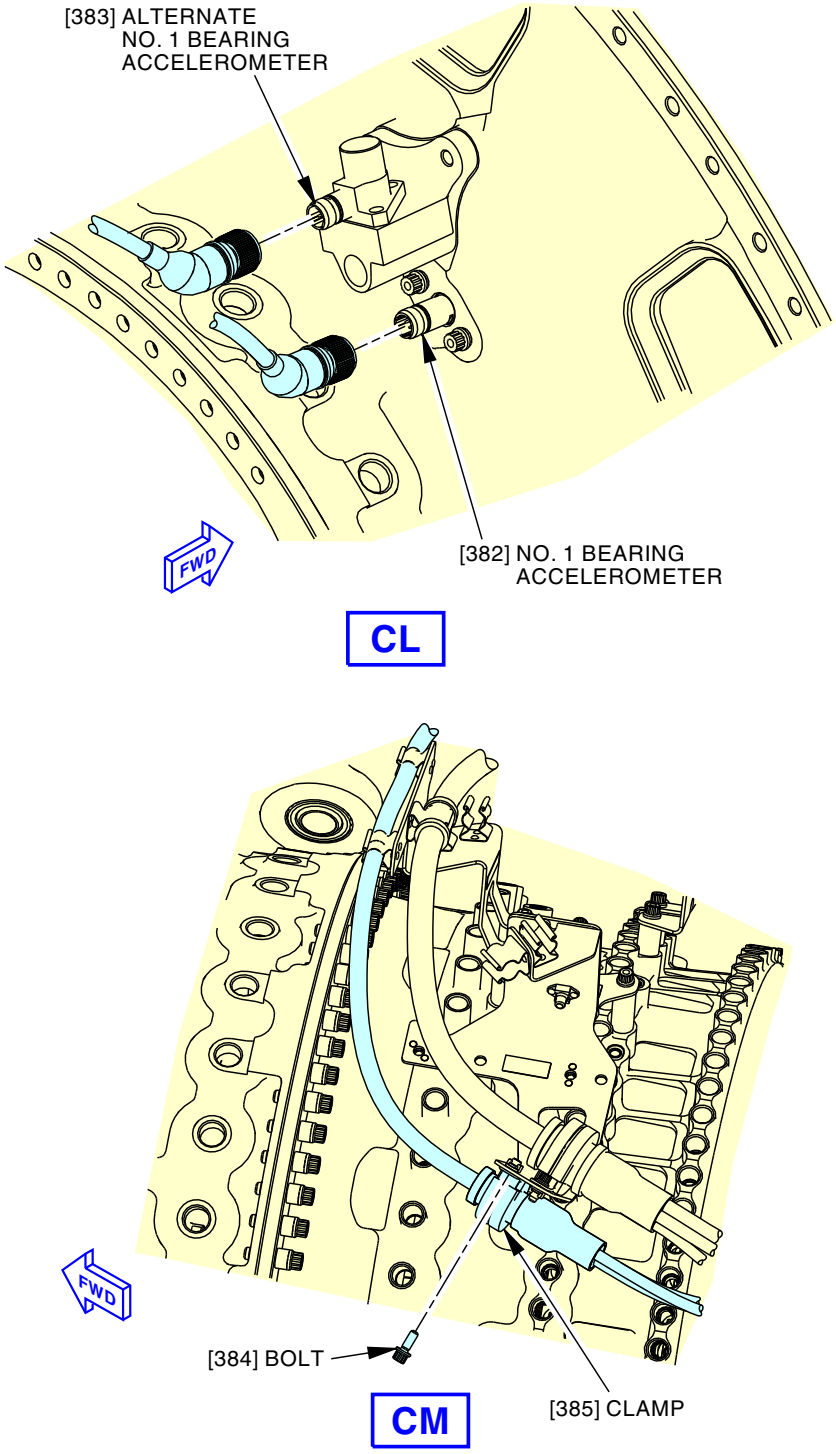




A0061-A-001-01
2420988 S0000557455_V1

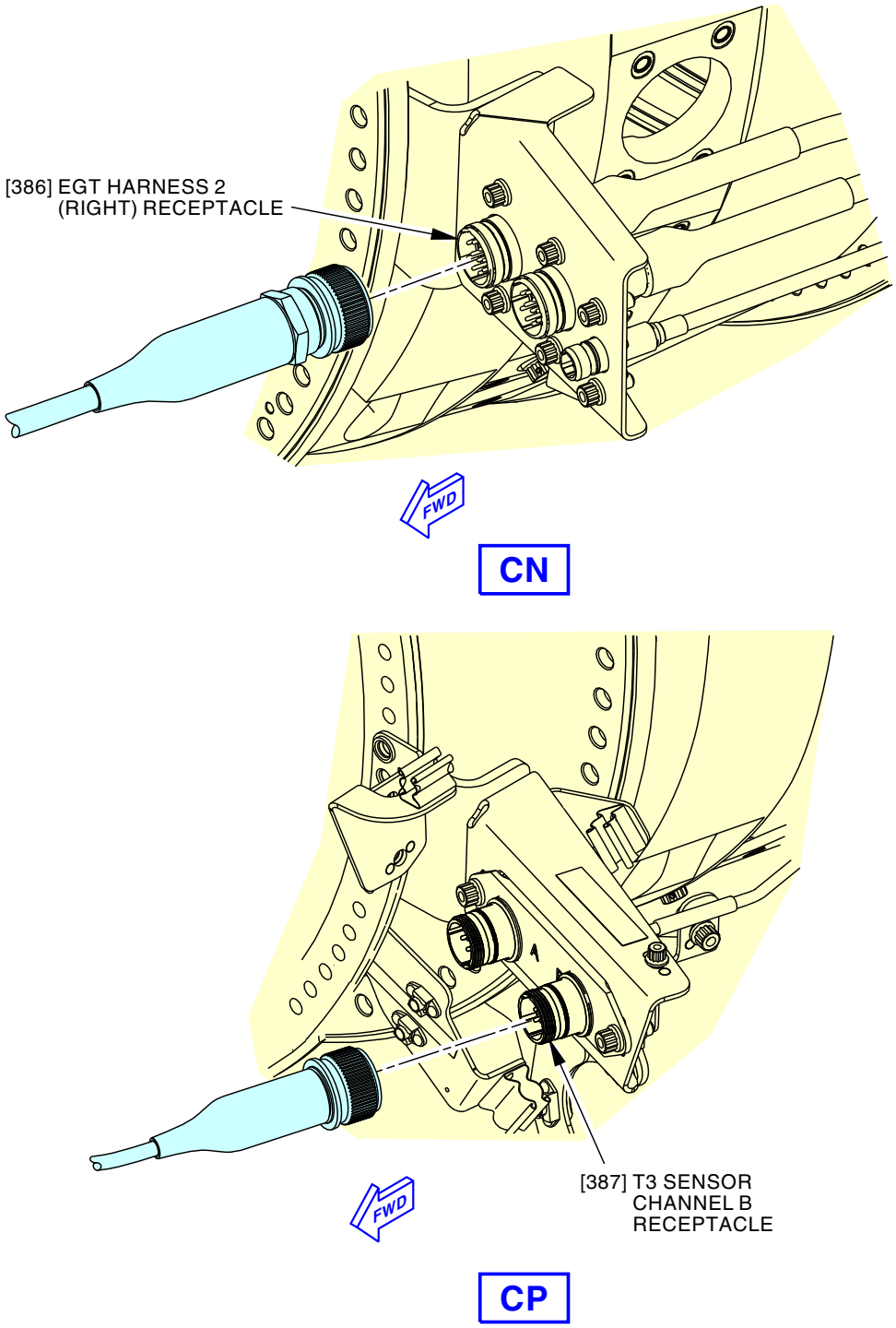
EEC Electrical Harness (HJ8B) Installation
Figure 415/73-22-01-990-859-G00 (Sheet 3 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (HJ8B) Installation
Figure 415/73-22-01-990-859-G00 (Sheet 4 of 5)

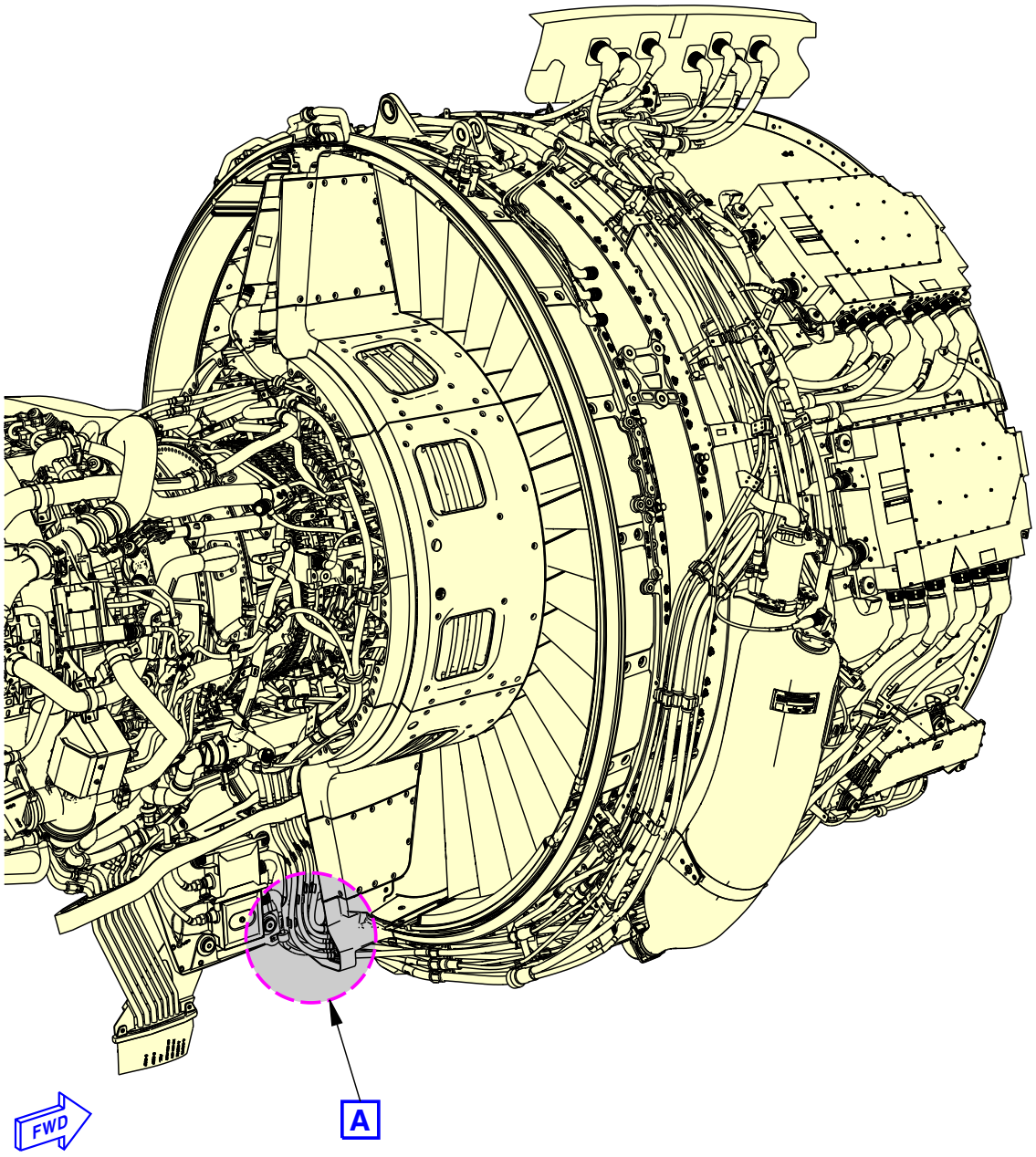
ECCN 9E991 BOEING PROPRIETARY - See title page for details



A0063-A-001-01
2421019 S0000557457_V1

EEC Electrical Harness (HJ8B) Installation
Figure 415/73-22-01-990-859-G00 (Sheet 5 of 5)

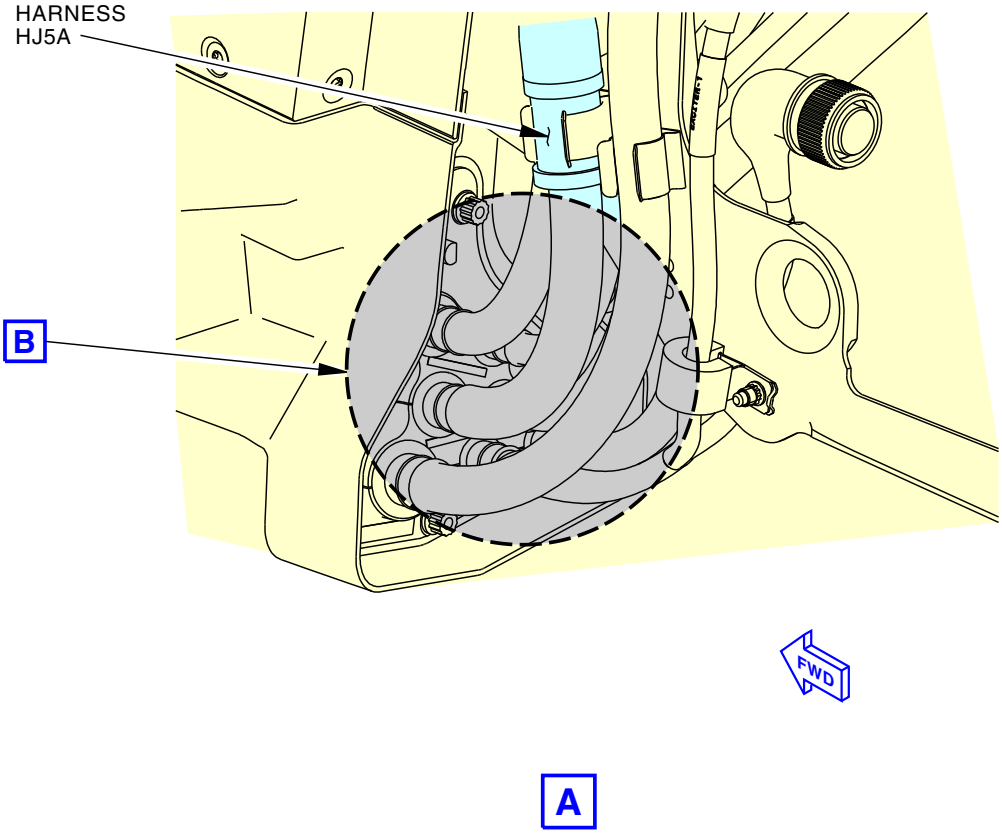
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937794 S0000713383_V2

Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 1 of 9)

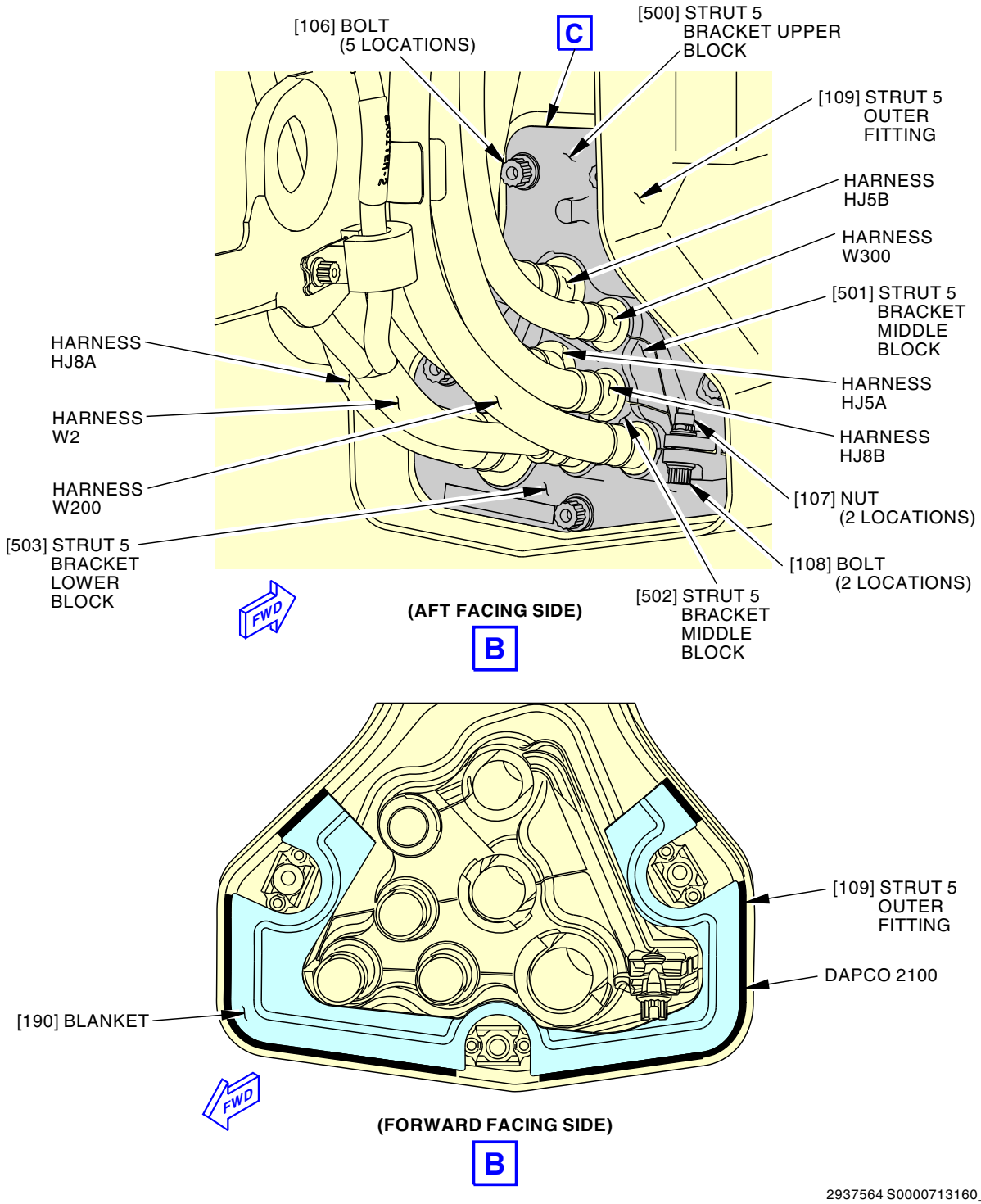
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937795 S0000713384_V2

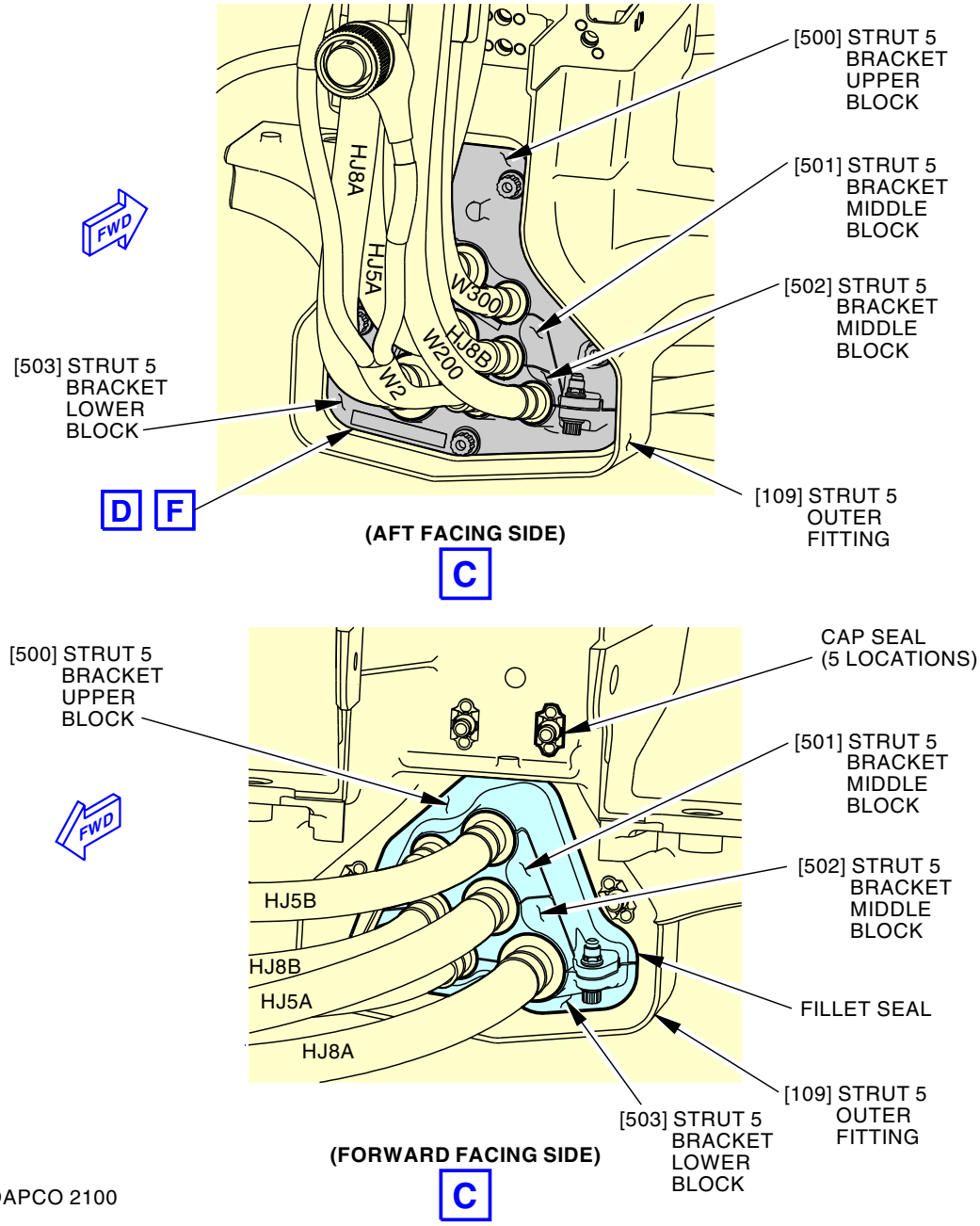
Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

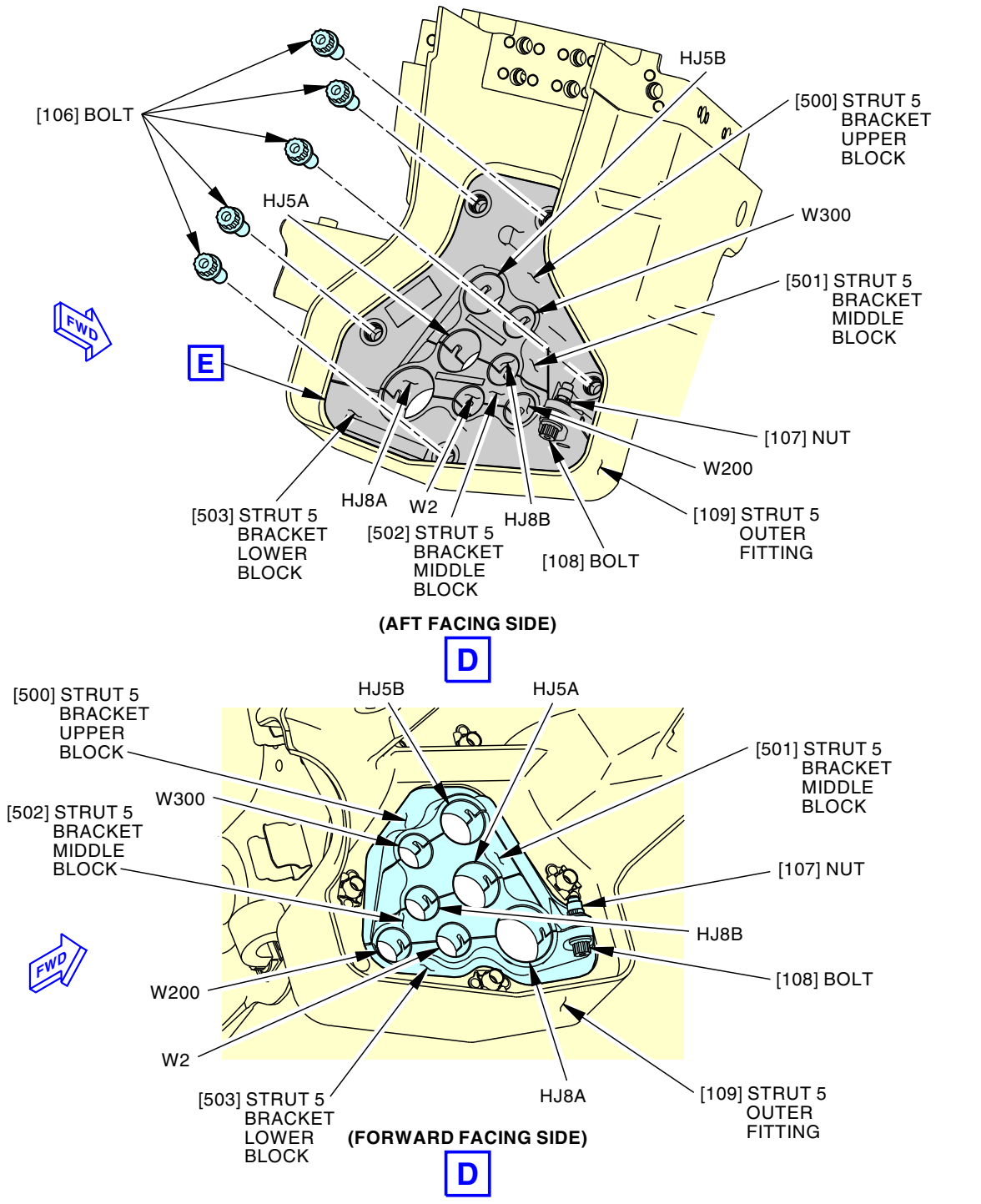
FAY SEAL PER AMM 51-22-00 ON INNER CONTOUR OF THE FITTING (AFT SIDE). SEALANT SQUEEZE-OUT SHOULD BE CONTINUOUS AND EVEN.

IT IS ACCEPTABLE TO APPLY THE FILLET SEAL ALONG INNER CONTOUR OF THE FITTING ON THE FORWARD SIDE.

2937801 S0000713390_V3

Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

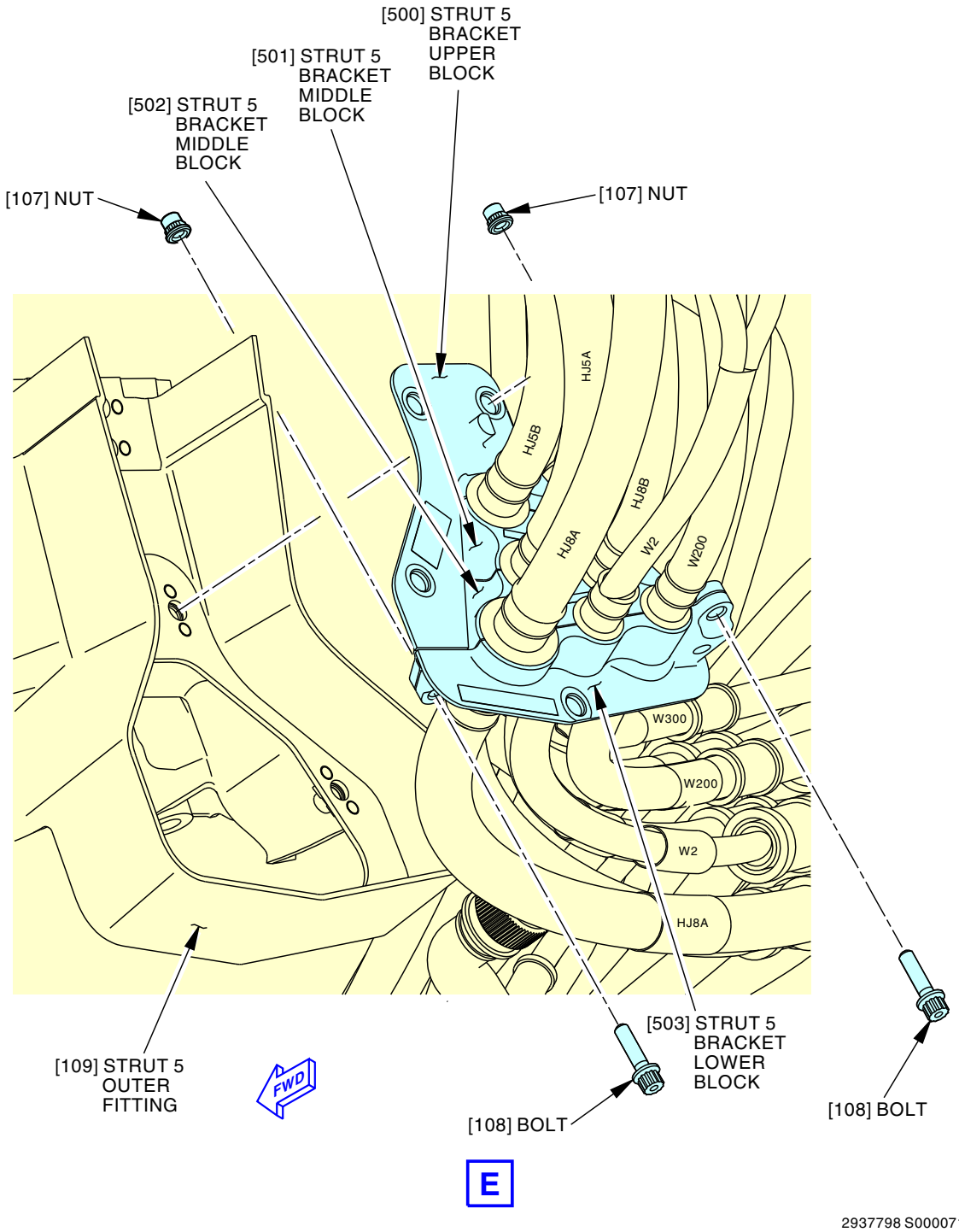


NOTE:
HARNESSES NOT SHOWN

2943980 S0000720369_V2

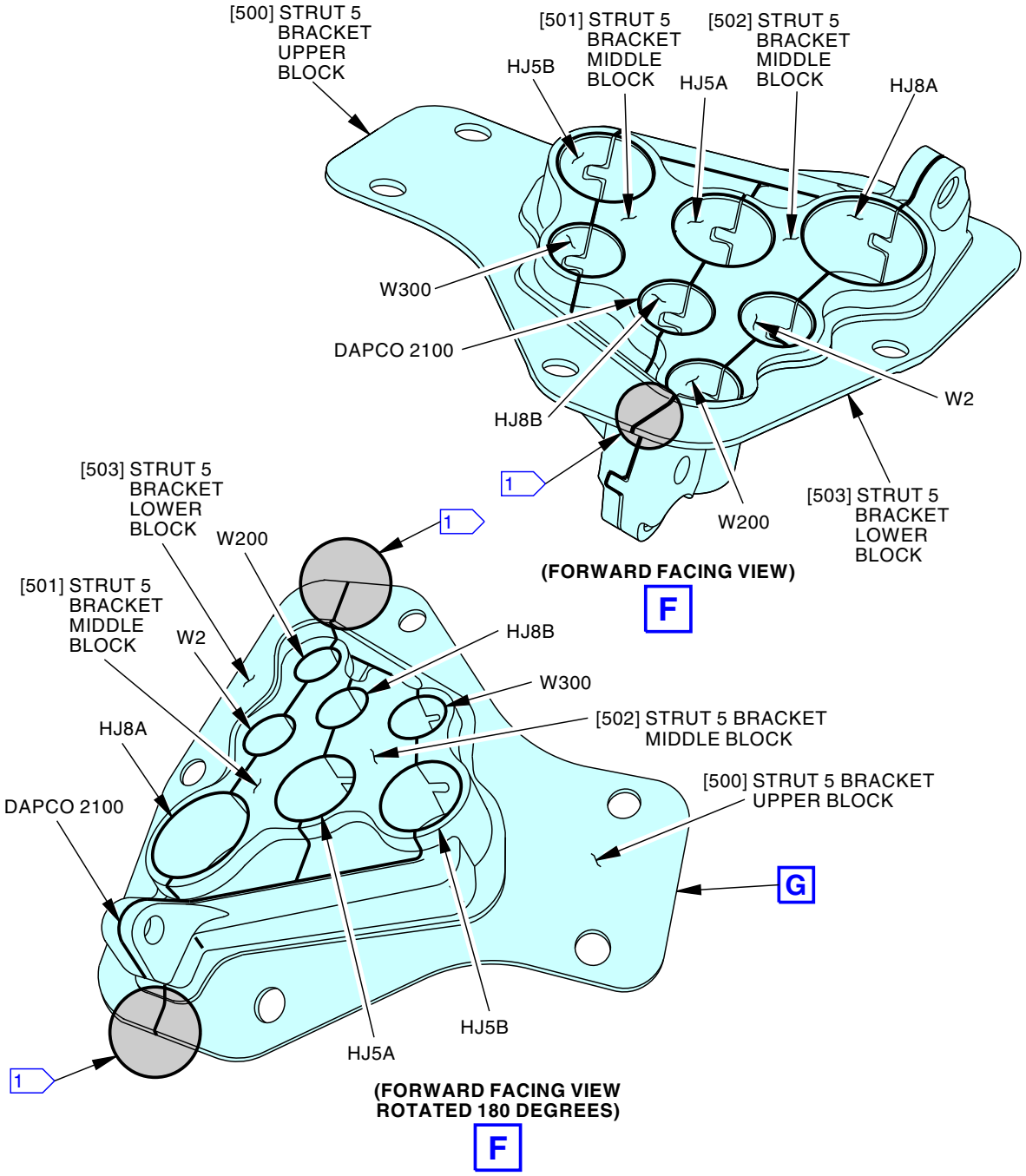
Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

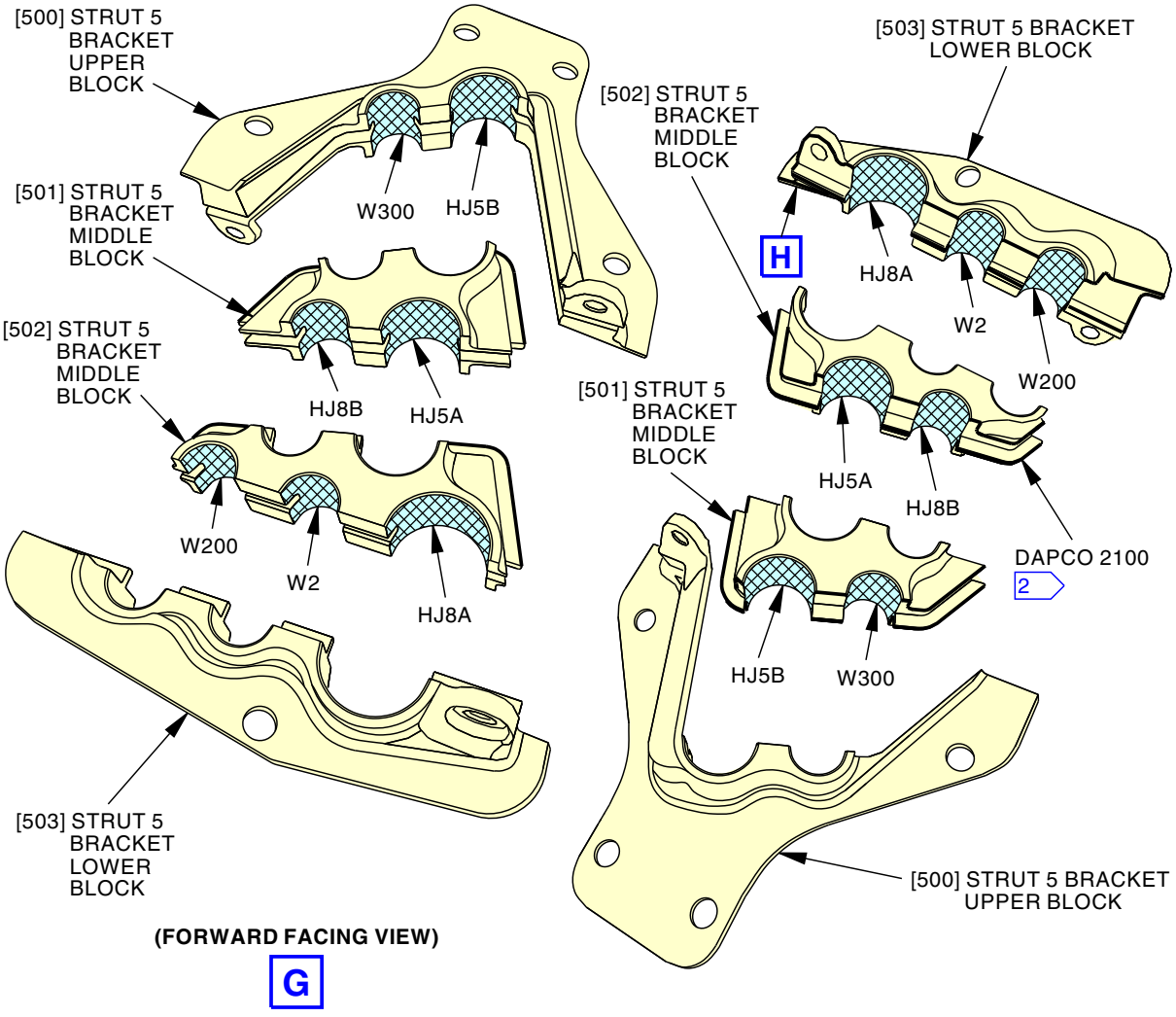
HARNESSES NOT SHOWN.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

2937800 S0000713389_V3

Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DAPCO 2100

NOTE:

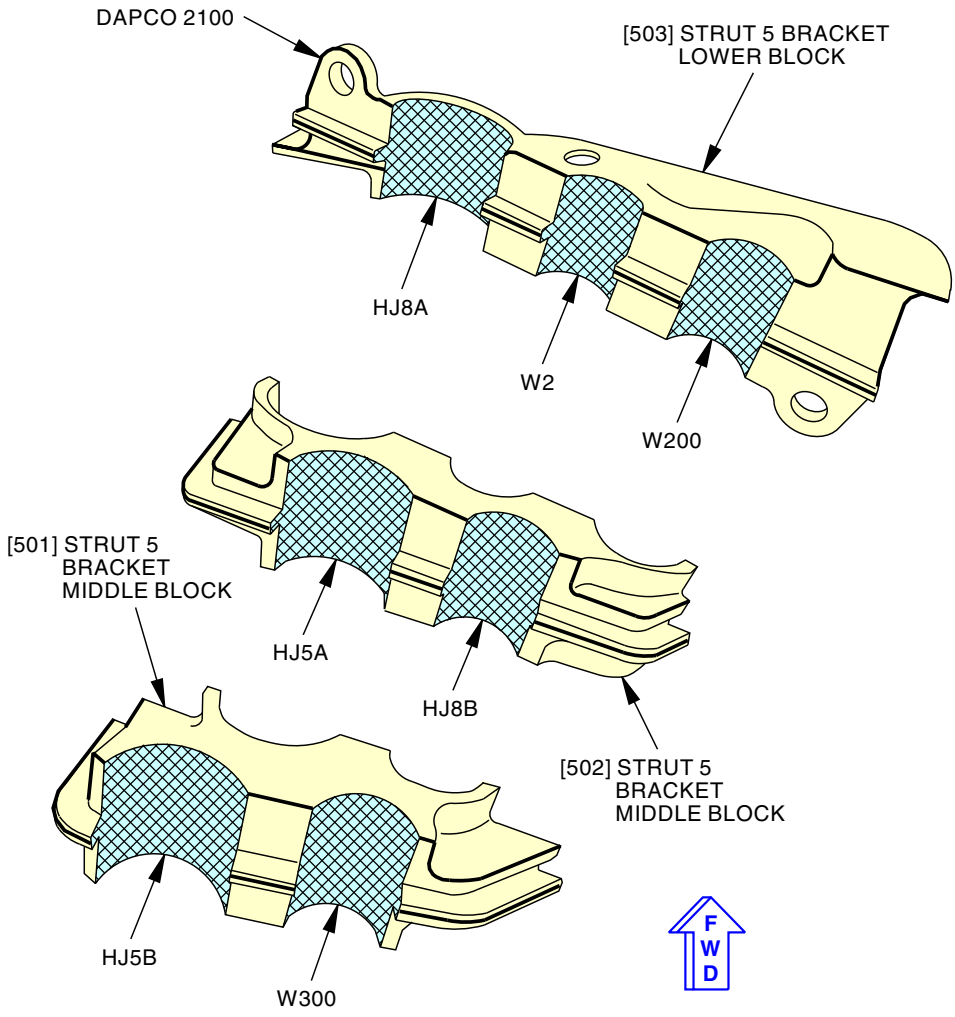
SEALANT PROVIDES FAY SEAL BETWEEN WIRE HARNESS AND BLOCKS AND SHOULD BE APPLIED TO THE BOTH SIDES OF BLOCKS.

2 SEALANT APPLIED TO ONE SIDE (TOP OR BOTTOM) OF THE BLOCKS.

2937799 S0000713388_V3

Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

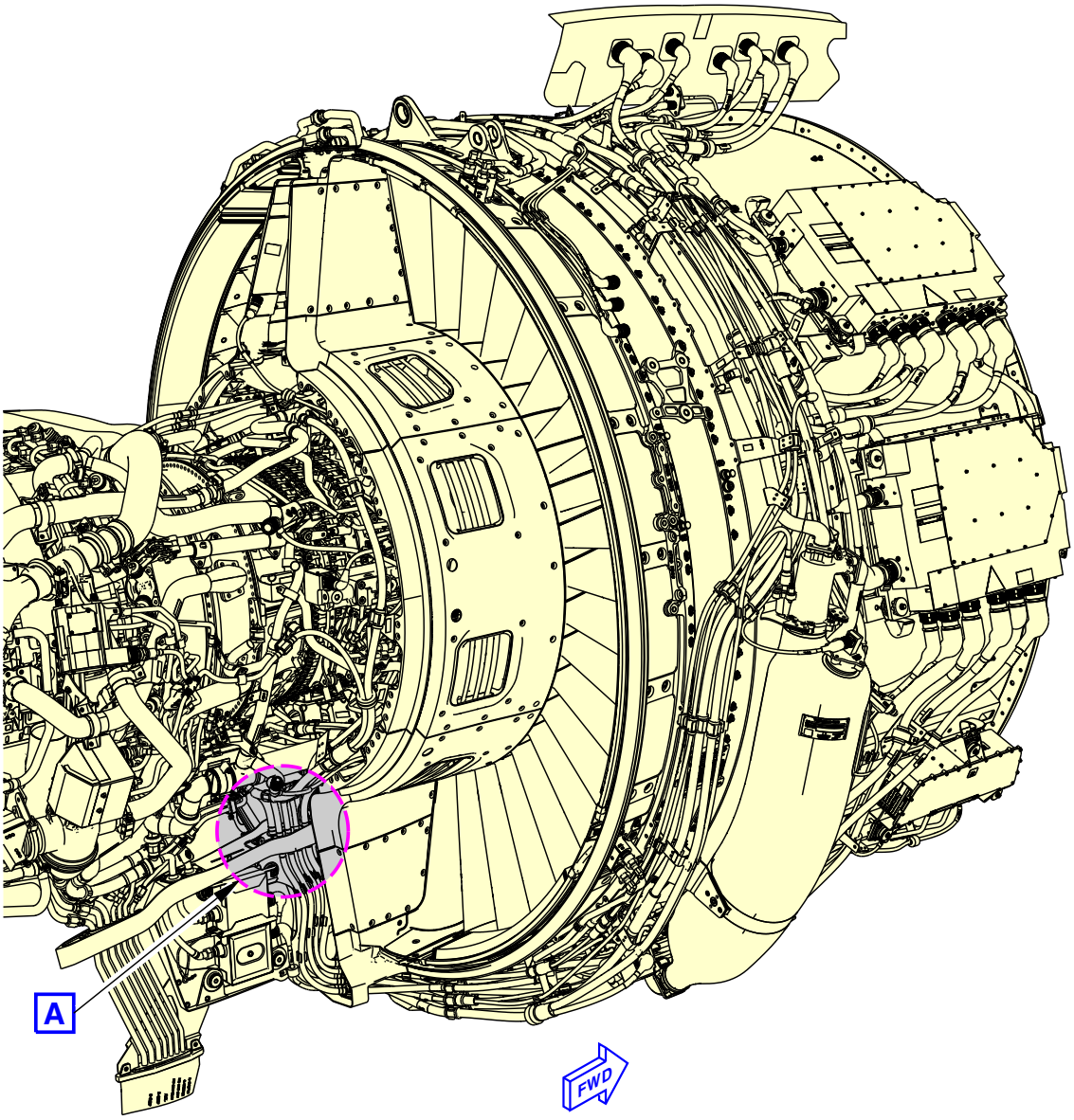


H

2949941 S0000726813_V1

Strut Bracket Block Installation
Figure 416/73-22-01-990-878-G00 (Sheet 9 of 9)

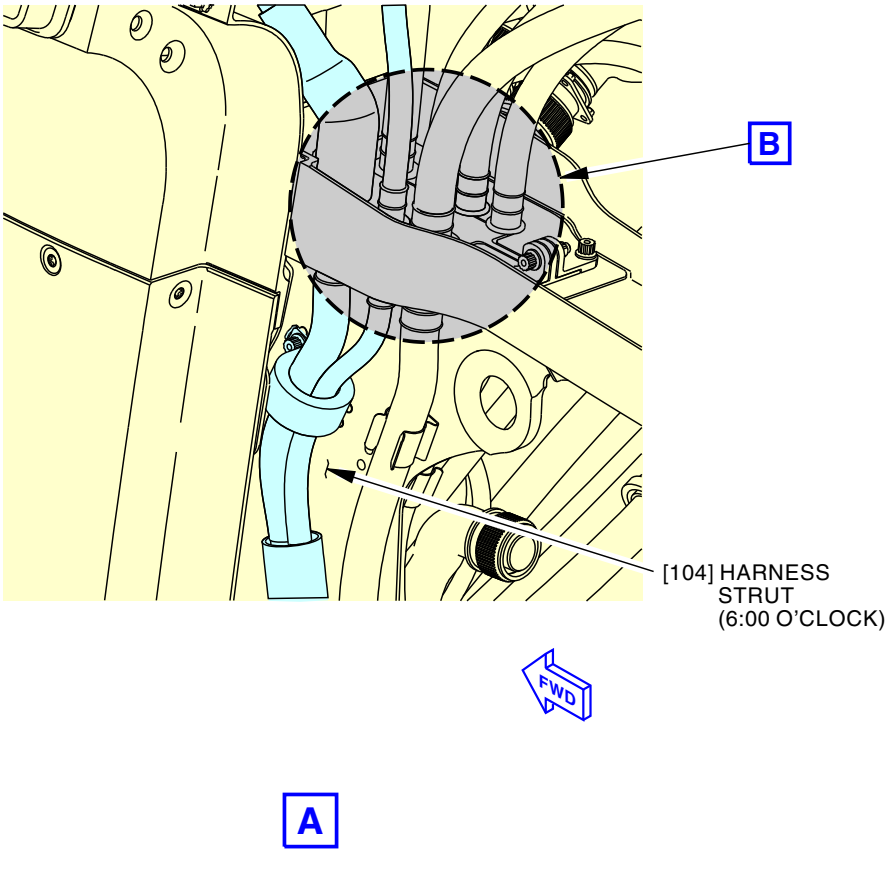
ECCN 9E991 BOEING PROPRIETARY - See title page for details



ICN-LEAP-1B-732201-D-58828-00045-A-001-01
2938818 S0000714836_V2

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 1 of 11)

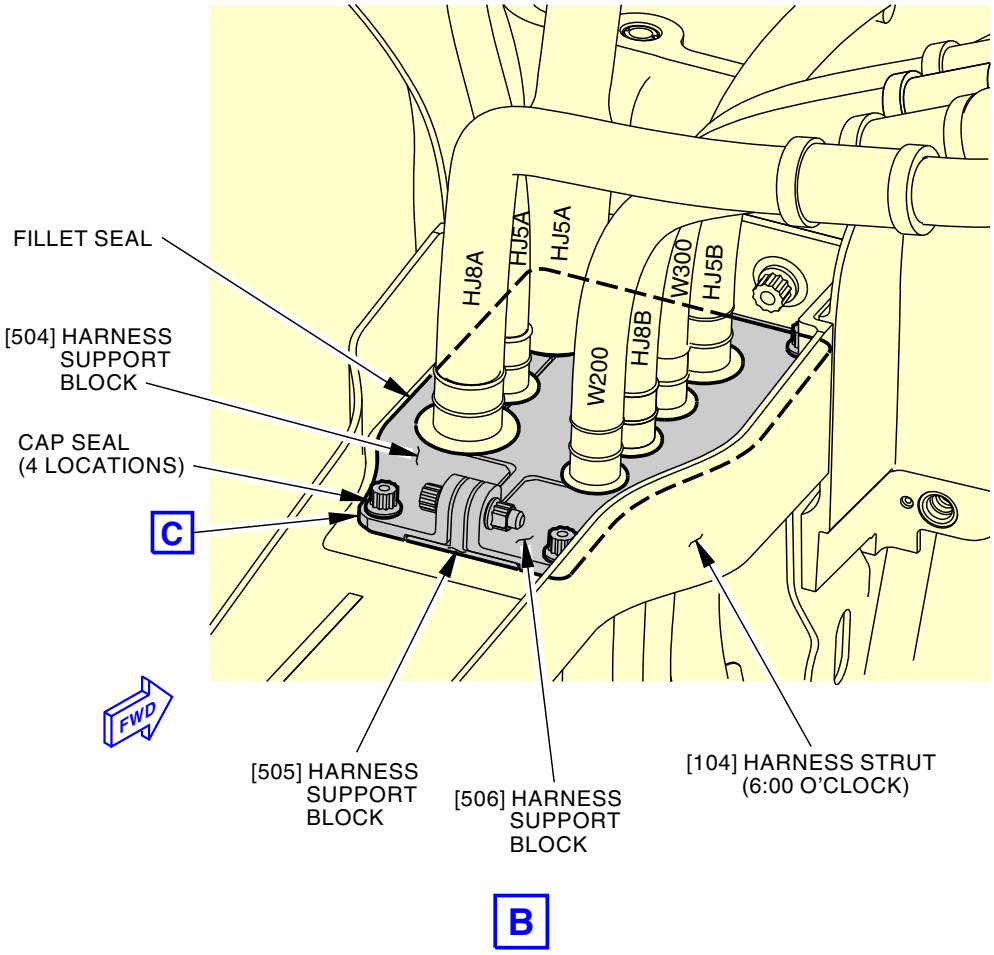
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2952925 S0000730238_V1

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 2 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

——— DAPCO 2100

NOTE:

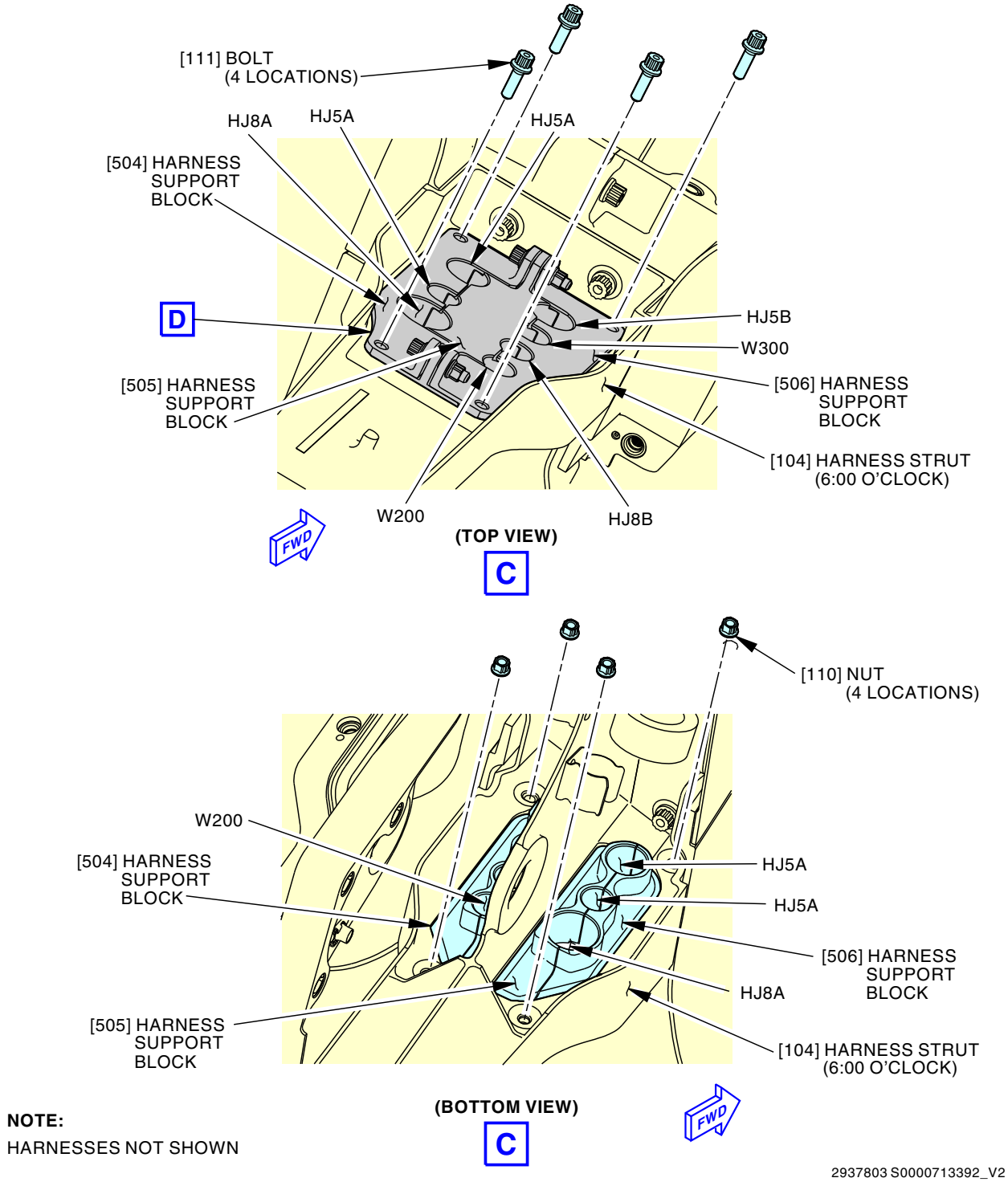
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE HARNESS SUPPORT BLOCK. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937807 S0000713396_V4

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 3 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

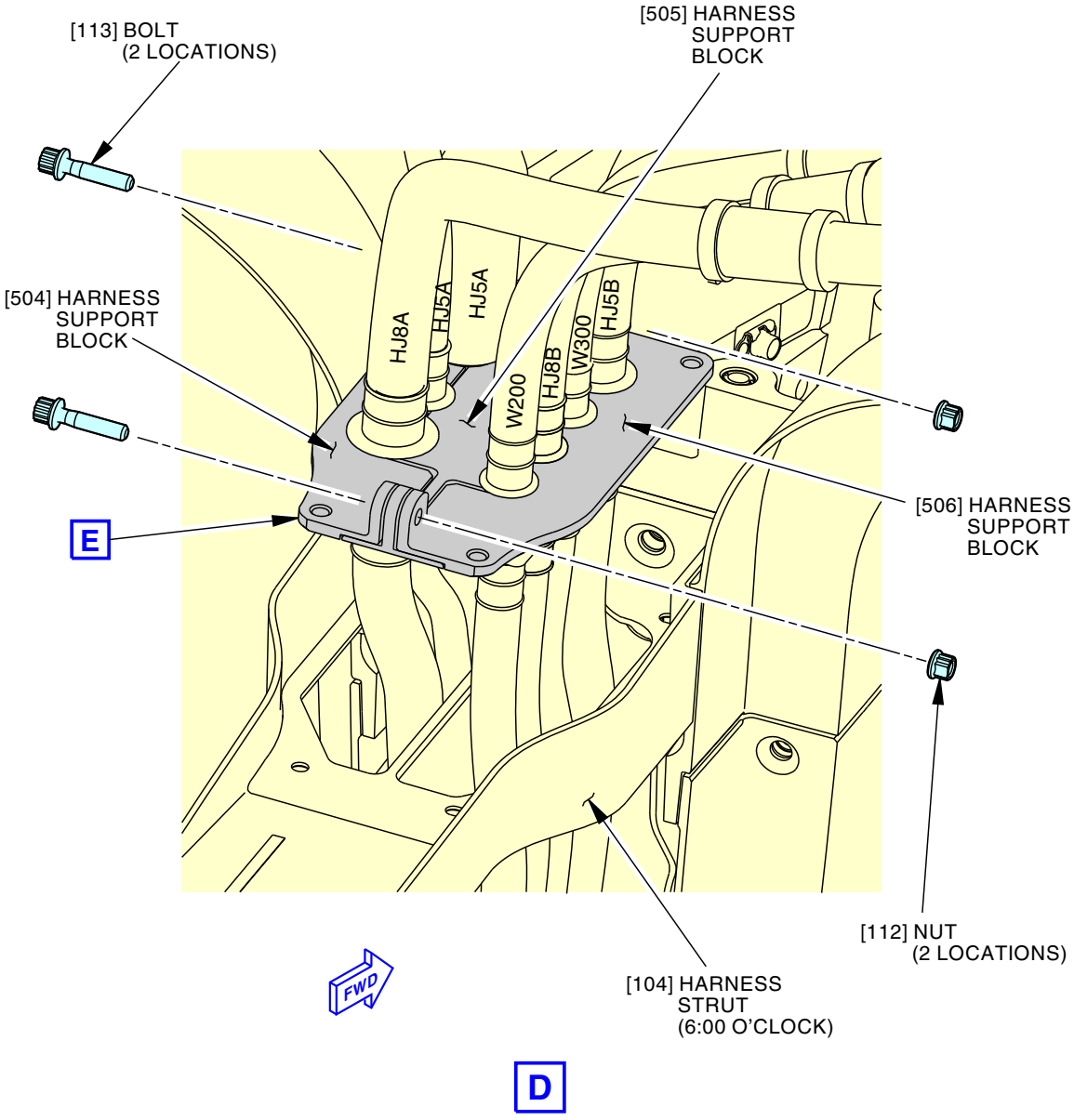


NOTE:
HARNESSES NOT SHOWN

2937803 S0000713392_V2

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 4 of 11)

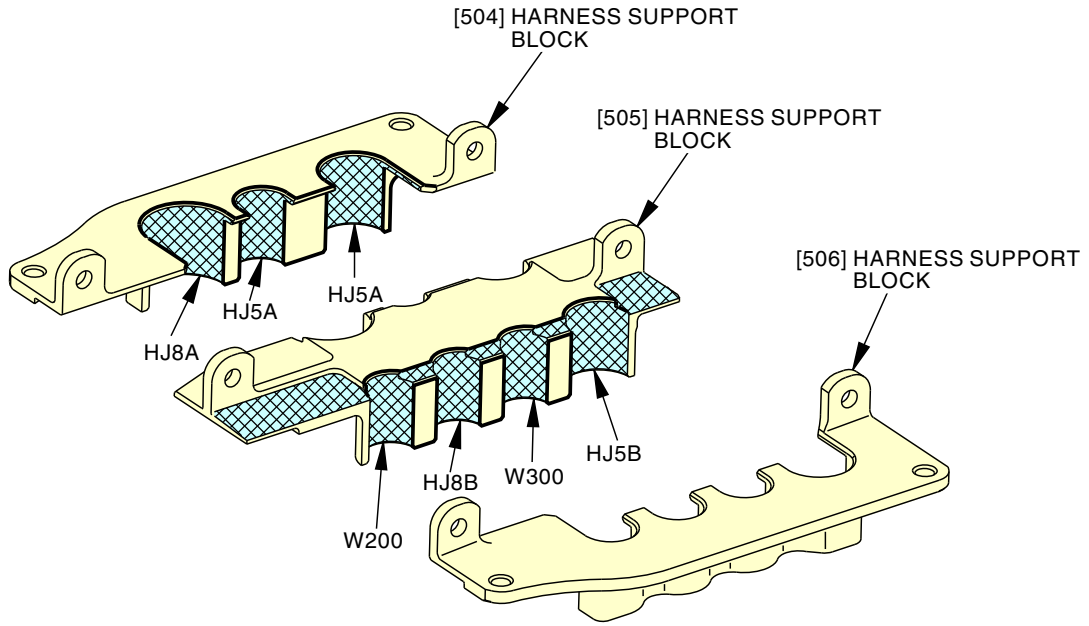
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937804 S0000713393_V2

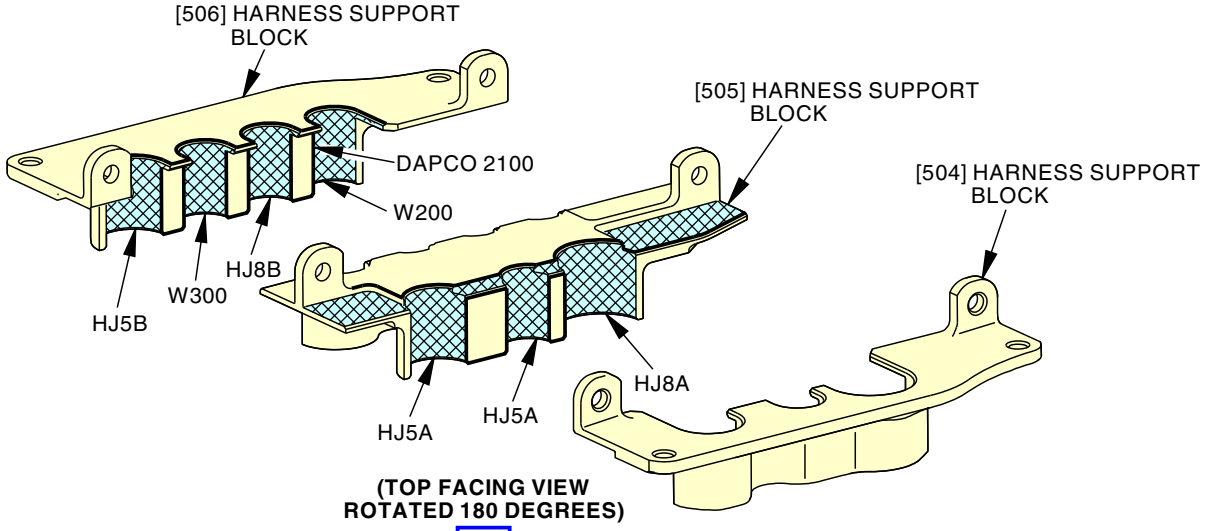
Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 5 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

E



(TOP FACING VIEW ROTATED 180 DEGREES)

E

LEGEND:

DAPCO 2100

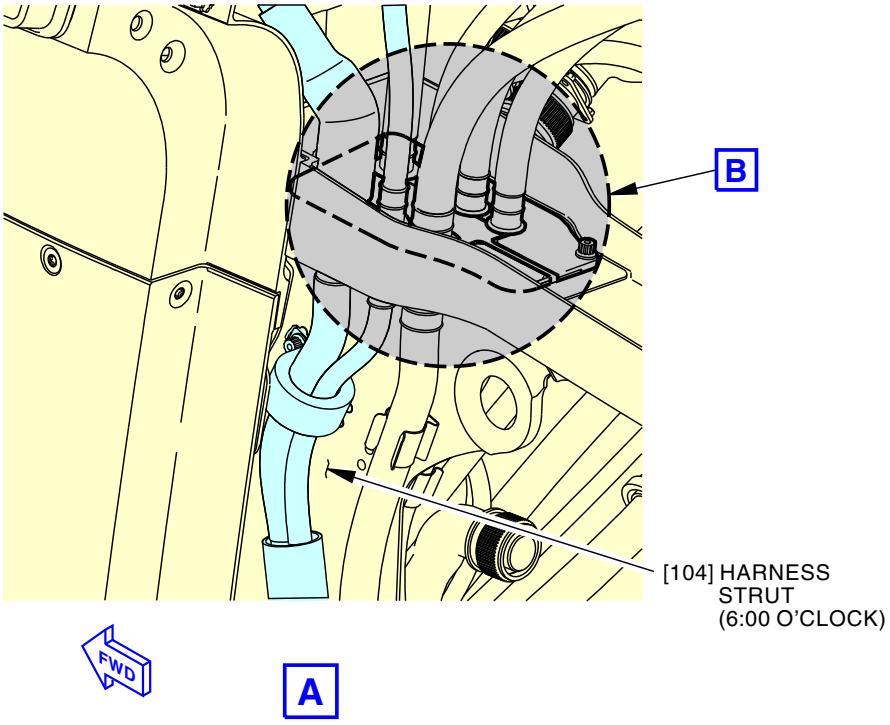
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2937805 S0000713394_V4

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 6 of 11)

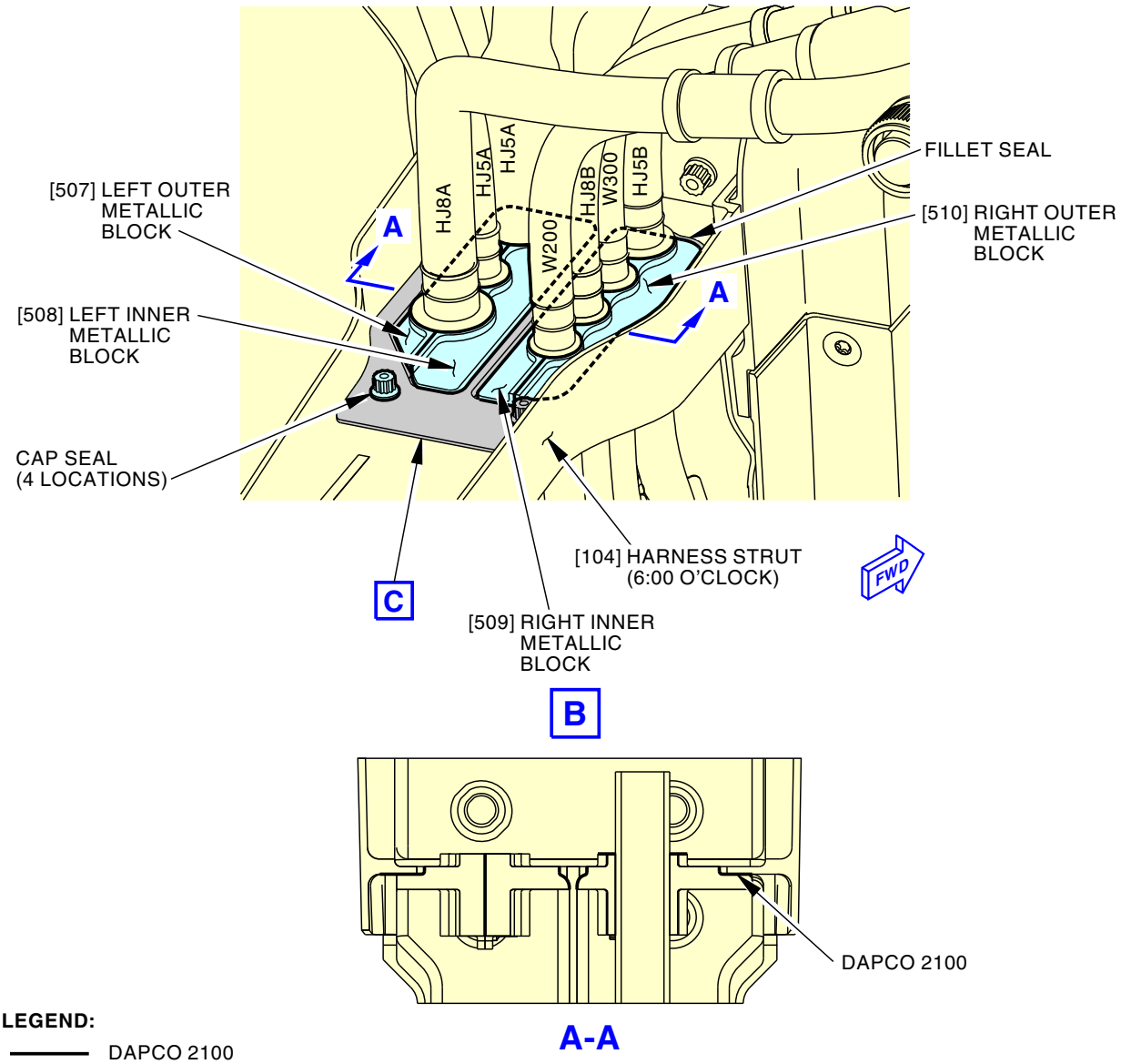
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2962032 S0000739201_V1

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 7 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

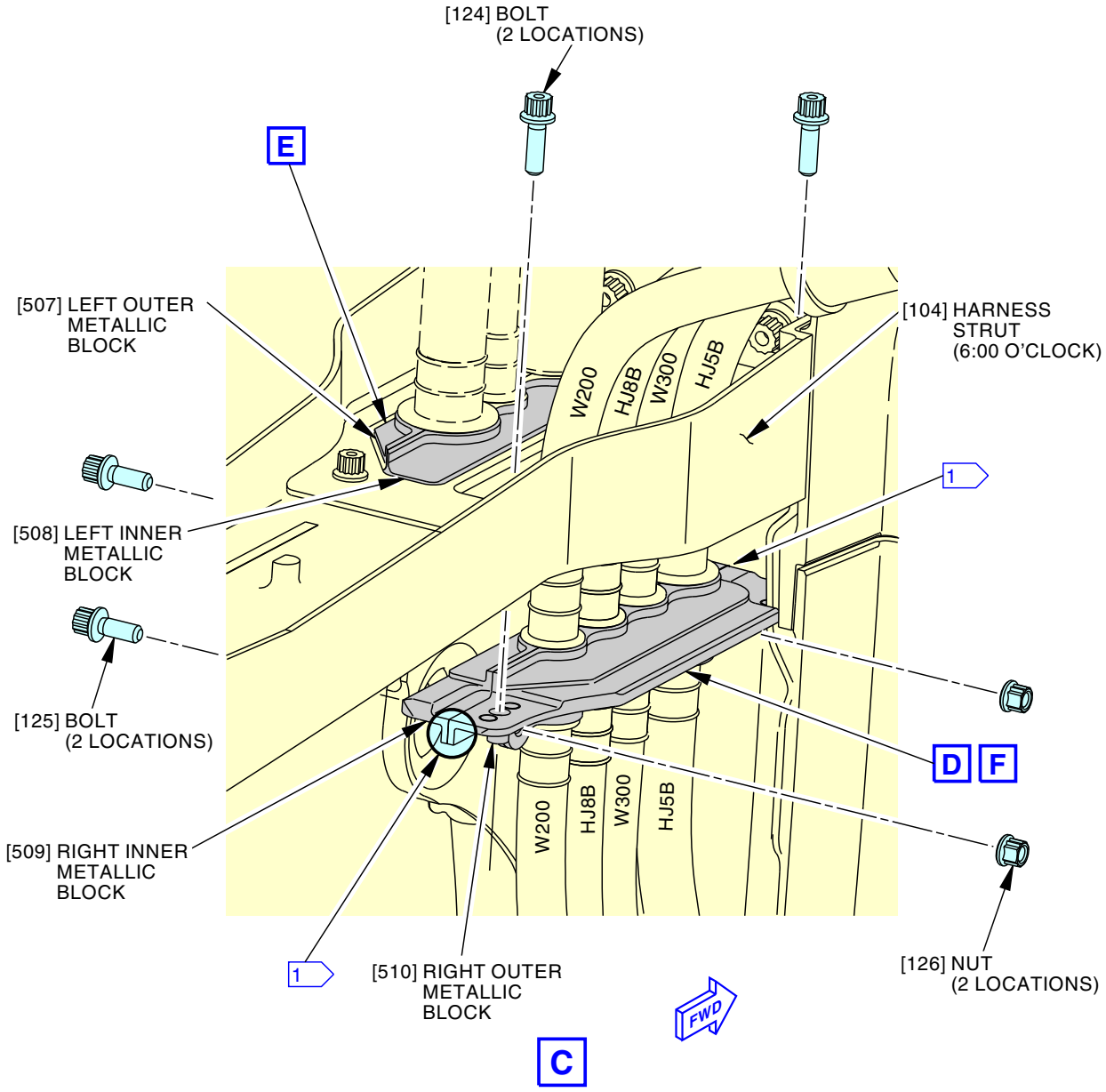
THE FILLET SEAL IS FINISH OF THE SQUEEZE OUT AROUND THE CONTOUR OF THE METALLIC BLOCKS. IT IS ACCEPTABLE TO APPLY A FILLET SEAL AROUND THE CONTOUR OF THE BLOCK AFTER IT IS INSTALLED.

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN BOTH RIGHT AND LEFT METALLIC BLOCKS HAVE BEEN REMOVED.

ICNLEAP1B732201D5882800059A00101
2962033 S0000739202_V2

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 8 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

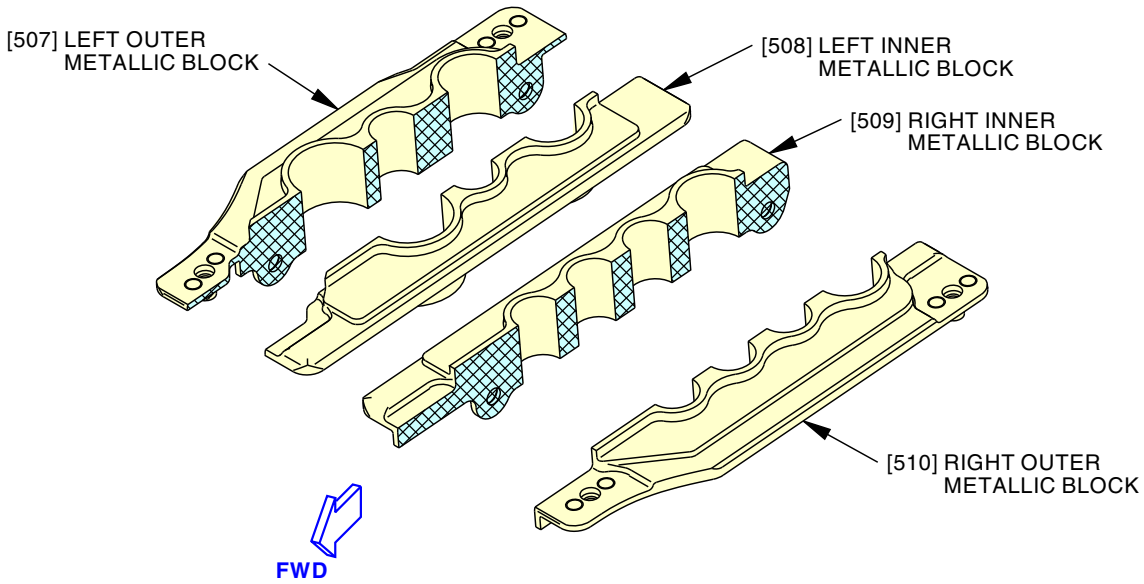
THIS VIEW IS SPECIFIC FOR RIGHT INNER AND OUTER METALLIC BLOCKS. SAME LOGIC IS APPLIED FOR LEFT INNER AND OUTER METALLIC BLOCKS.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

ICNLEAP1B732201D5882800063A00101
2962034 S0000739203_V2

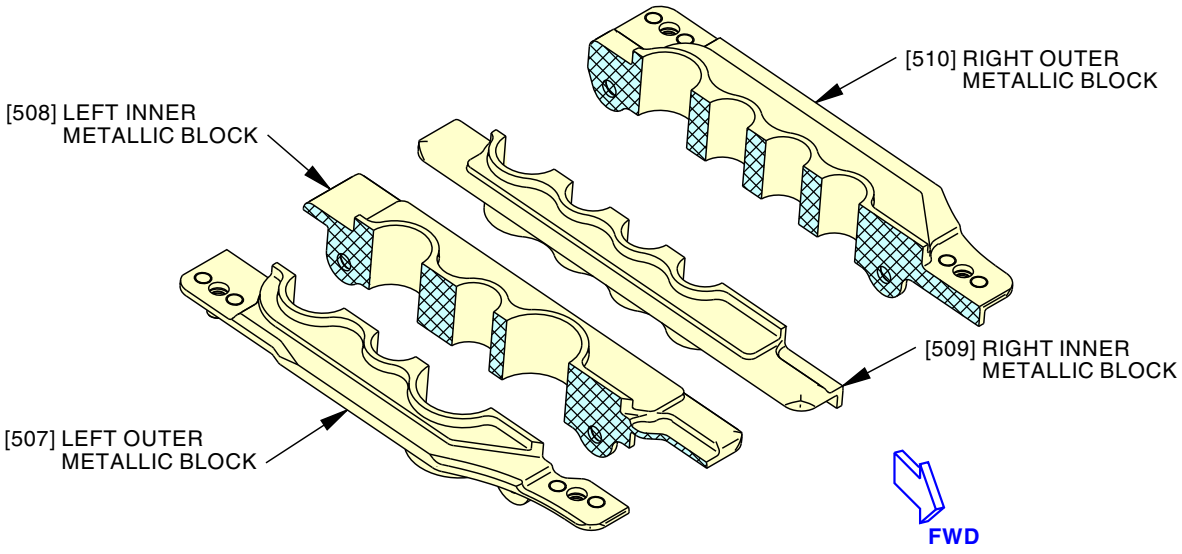
Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 9 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(TOP FACING VIEW)

D



(TOP FACING VIEW ROTATED 90 DEGREES)

D

LEGEND:

DAPCO 2100

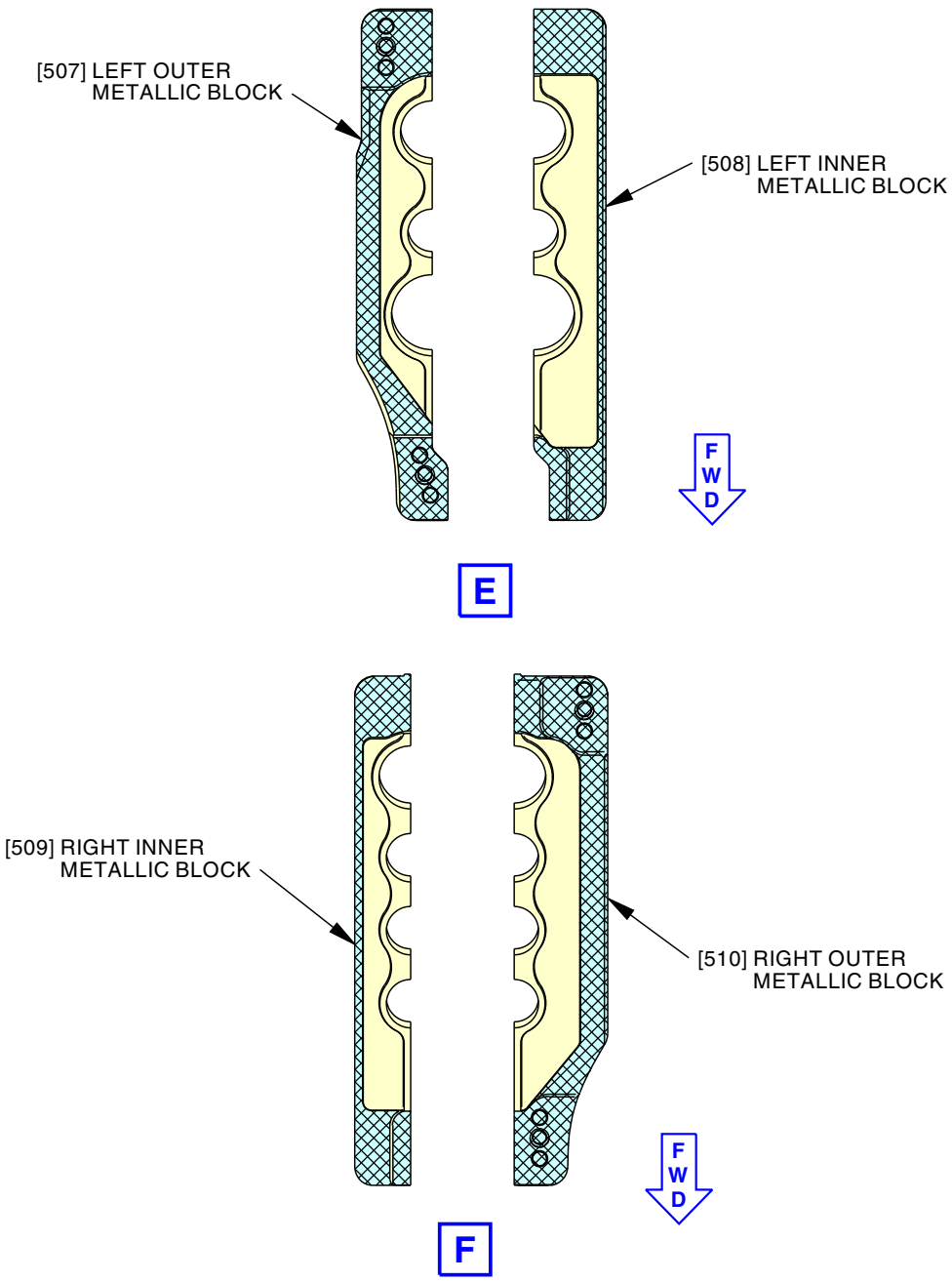
NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994662 S0000771309_V1

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 10 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



LEGEND:

DAPCO 2100

NOTE:

THIS VIEW SHOWS DAPCO 2100 APPLICATION WHEN ALL HARNESS SUPPORT BLOCKS HAVE BEEN REMOVED.

2994663 S0000771310_V1

Harness Support Block Installation
Figure 417/73-22-01-990-879-G00 (Sheet 11 of 11)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-809-G00

19. Electronic Engine Control (EEC) Electrical Harness (HJ8B) Installation

(Figure 415, Figure 416, and Figure 417)

A. General

(1) This task gives the instructions on how to install the electronic engine control (EEC) electrical harness (HJ8B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Electronic Engine Control (EEC) Electrical Harness (HJ8B) Installation

SUBTASK 73-22-01-210-007-G00

(1) During the installation, make sure that EEC electrical harness (HJ8B) [378] is not stressed or damaged.

SUBTASK 73-22-01-210-008-G00

(2) Make sure that all components are clean and free of old sealant prior to adding new sealant.

SUBTASK 73-22-01-420-019-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(3) Install the EEC electrical harness (HJ8B) [378] as follows (TASK 70-00-01-910-803-G00):

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the EEC electrical harness (HJ8B) [378] in a correct position with the 16 clips [377] along its routing.

(d) Install the EEC electrical harness (HJ8B) [378] on the harness strut (6:00 o'clock) [104] as follows:

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288

1) Install the harness support block [504], harness support block [505], and harness support block [506] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the four bolts [111] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the harness support block [504], harness support block [505], harness support block [506], and around the harnesses (View E, Figure 417).

c) Make sure that the EEC electrical harness (HJ8B) [378] and harnesses are in the correct position on the harness support block [504], harness support block [505], and harness support block [506] (View D, Figure 417).

d) Install the two bolts [113] and two nuts [112] to assemble the harness support block [504], harness support block [505], and harness support block [506] in the correct position with the harnesses.

e) Tighten the nuts [112] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

f) Make sure that there is minimum amount of the squeeze-out on the lower side.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL PRE SB 737-CFM-LEAP-1B-72-0288 (Continued)

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

g) Install the harness support block [504], harness support block [505], and harness support block [506] in the correct position on the harness strut (6:00 o'clock) [104].

h) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104] (View B, Figure 417).

i) Install the four bolts [111] and four nuts [110] that attach the harness support block [504], harness support block [505], and harness support block [506] to the harness strut (6:00 o'clock) [104].

j) Tighten the nuts [110] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

k) Make sure that there is minimum amount of the squeeze-out on the lower side.

l) Apply more sealant to form a correct fillet seal around the contour of the harness support block [504], harness support block [505], harness support block [506], and harness strut (6:00 o'clock) [104].

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

m) Clean the four nuts [110] and four bolts [111] that will have sealant applied to them.

n) Apply Dapco 2100 sealant, A50483 [CP2927], to the heads of the four bolts [111].

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288

2) Remove any remaining of old sealant residue left on the harnesses or harness strut (6:00 o'clock) [104].

3) Install the left outer metallic block [507] and left inner metallic block [508] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507] and left inner metallic block [508].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

c) Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the left outer metallic block [507], left inner metallic block [508], and harness strut (6:00 o'clock) [104].

d) Install the two bolts [125] and two nuts [126] to assemble the left outer metallic block [507] and left inner metallic block [508] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the left outer metallic block [507] and left inner metallic block [508] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the left outer metallic block [507] and left inner metallic block [508] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of left outer metallic block [507] and left inner metallic block [508].

4) Install the new right inner metallic block [509] and right outer metallic block [510] on the harness strut (6:00 o'clock) [104] as follows:

a) Lubricate the two bolts [124] and two bolts [125] with graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509] and right outer metallic block [510].

NOTE: Dapco 2100 sealant, A50483 [CP2927], must be evenly applied in large quantity on each hatching area to make sure that there is enough Dapco 2100 sealant, A50483 [CP2927], between parts after the squeeze out when assembling and tightening the bolts and nuts.

c) Apply Dapco 2100 sealant, A50483 [CP2927], on the mating faces between the right inner metallic block [509], right outer metallic block [510], and harness strut (6:00 o'clock) [104].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SIA ALL POST SB 737-CFM-LEAP-1B-72-0288 (Continued)

d) Install the two bolts [125] and two nuts [126] to assemble the right inner metallic block [509] and right outer metallic block [510] in the correct position with the harnesses.

e) Tighten the two nuts [126] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

f) Install the right inner metallic block [509] and right outer metallic block [510] in the correct position on the harness strut (6:00 o'clock) [104] by the bottom side.

g) Install the two bolts [124] that attach the right inner metallic block [509] and right outer metallic block [510] to the harness strut (6:00 o'clock) [104].

h) Tighten the two bolts [124] to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).

i) Remove the squeezed out excedent and remainings of Dapco 2100 sealant, A50483 [CP2927], using a profiler tool, a swipe or with fingers using protective gloves.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE BOTTOM SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

j) Make sure that there is minimum amount of the squeeze-out on the bottom side.

<1> Make sure that the sealant squeeze-out is finished flush with the surface.

<2> Make sure that the visible faces of the two bolts [124] and harness strut (6:00 o'clock) [104] are clean and clear of graphite mineral vaseline, D00601 [CP2101].

k) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around the head of the two bolts [124], in contact with the harness strut (6:00 o'clock) [104].

l) Apply Dapco 2100 sealant, A50483 [CP2927], fillet around each electrical harness, between the metal bobbin of each wire harness and top side of right inner metallic block [509] and right outer metallic block [510].

SIA ALL

5) Install the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109] as follows:

a) Lubricate the five bolts [106] and two nuts [107] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927] to the one side (either top or bottom) of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

NOTE: Fay seal applies to the two sides of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

c) Make sure that the EEC electrical harness (HJ8B) [378] and harnesses are in the correct position on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] (View E, Figure 416).

d) Install the two bolts [108] and two nuts [107] to assemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Tighten the nuts [107] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

f) Make sure that the fillet seal of the squeeze-out is on the forward facing side.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

g) Make the sealant squeeze-out flush with the surface on the outer edges of the strut 5 bracket upper block [500] and strut 5 bracket lower block [503] (View F, Figure 416).

h) Install the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] in a correct position on the strut 5 outer fitting [109].

i) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 outer fitting [109] (View C, Figure 417).

j) Install the five bolts [106] that attach the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109].

k) Tighten the bolts [106] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

l) Make sure that there is a minimum amount of the squeeze-out on the aft side around the edges of the block assembly and that the sealant is flush with the block assembly (View C, Figure 417).

m) Make sure that the squeeze-out on the forward facing side is finished as a fillet seal.

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

n) Clean the nut plate side of the bolts [106] and nut plates.

o) Apply Dapco 2100 sealant, A50483 [CP2927], to the nut plate side of the bolts [106] and nut plates.

(e) Attach blanket [190] to the strut 5 outer fitting [109].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Apply Dapco 2100 sealant, A50483 [CP2927], between the blanket [190] and strut 5 outer fitting [109] (View B, Figure 416).

NOTE: Dapco 2200 firewall sealant, A50396, may use as optional. If this consumable meets the local regulatory requirements of the operator, it is acceptable as a chemical sealant for further usage.

(f) Lubricate the threads of the bolt [384] with oil, D00599 [CP2442].

(g) Install the bolt [384] and clamp [385] that attach the EEC electrical harness (HJ8B) [378] to the forward stator case bracket.

(h) Tighten the bolt [384] to 33.25 in-lb (3.8 N·m) - 36.75 in-lb (4.2 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(i) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ8B) [378] as follows:

1) Connect the EEC electrical harness (HJ8B) [378] connector to the T3 sensor channel B receptacle [387].

2) Connect the EEC electrical harness (HJ8B) [378] connector to the EGT harness 2 (right) receptacle [386].

3) Connect the EEC electrical harness (HJ8B) [378] connector to the alternate No. 1 bearing acclerometer receptacle [383].

4) Connect the EEC electrical harness (HJ8B) [378] connector to the No. 1 bearing acclerometer receptacle [382].

(j) Install the bolt [380] and clamp [381] that attach the EEC electrical harness (HJ8B) [378] to the fan case bracket.

(k) Tighten the bolt [380] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(l) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (HJ8B) [378] as follows:

(m) Connect the EEC electrical harness (HJ8B) [378] to the EEC HJ8A harness receptacle [145].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(n) Connect the EEC electrical harness (HJ8B) [378] connector to the EEC channel B J8 receptacle [379].

(o) Make sure that the work area is clean of all tools and other items.

SUBTASK 73-22-01-420-020-G00

(4) Install the segment shroud 5 [305].

SUBTASK 73-22-01-420-021-G00

(5) Install the segment shroud 2 [68].

SUBTASK 73-22-01-420-022-G00

(6) Install the segment shroud 1 [304].

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-030-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-069-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-070-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-071-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-072-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Electronic Engine Control Electrical (EEC) Electrical Harness (HJ8B) Installation Test

SUBTASK 73-22-01-730-009-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-810-G00

20. Electronic Engine Control (EEC) Electrical Harness (W4A) Removal

(Figure 418)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (W4A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-084-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-085-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-086-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-087-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-035-G00

(5) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (W4A) Removal

SUBTASK 73-22-01-020-025-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (W4A) [400] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (W4A) [400] connector from the EEC channel A J4 receptacle [401].

(b) Disconnect the EEC electrical harness (W4A) [400] connector from the EEC channel A J1 receptacle [402].

(c) Disconnect the EEC electrical harness (W4A) [400] connector from the fan cowl support beam.

(d) Remove the nut [403], bolt [404], and clamp [405] that attach the EEC electrical harness (W4A) [400] to the engine.

(e) Remove the EEC electrical harness (W4A) [400] from the four clips [406] along its routing.

(f) Remove the bolt [407], clip nut [409], and clamp [408] that attach the EEC electrical harness (W4A) [400] to the engine.

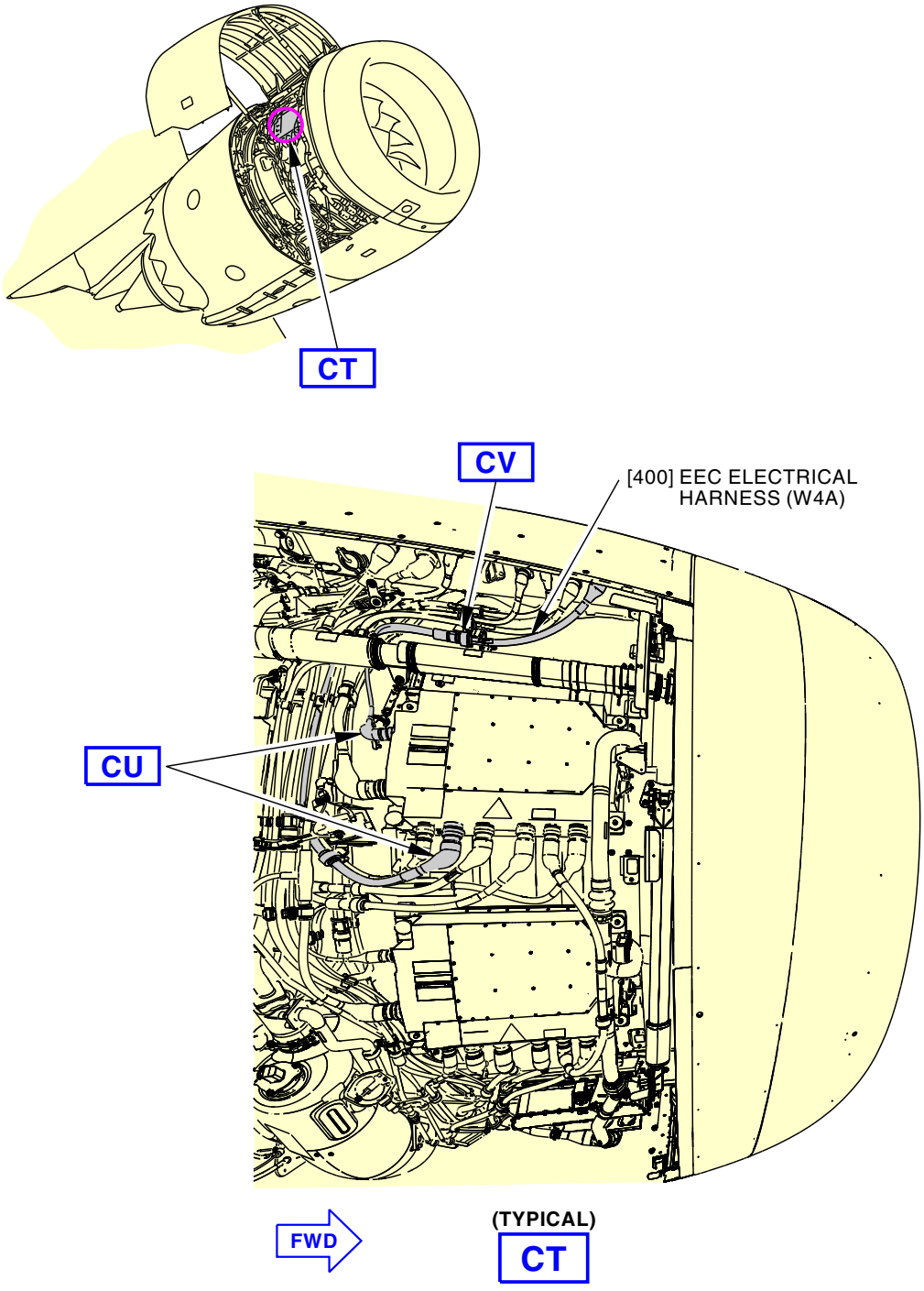
(g) Carefully remove the EEC electrical harness (W4A) [400] from the engine.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(h) Install the protective covers on all of the harness connectors and the component receptacles.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

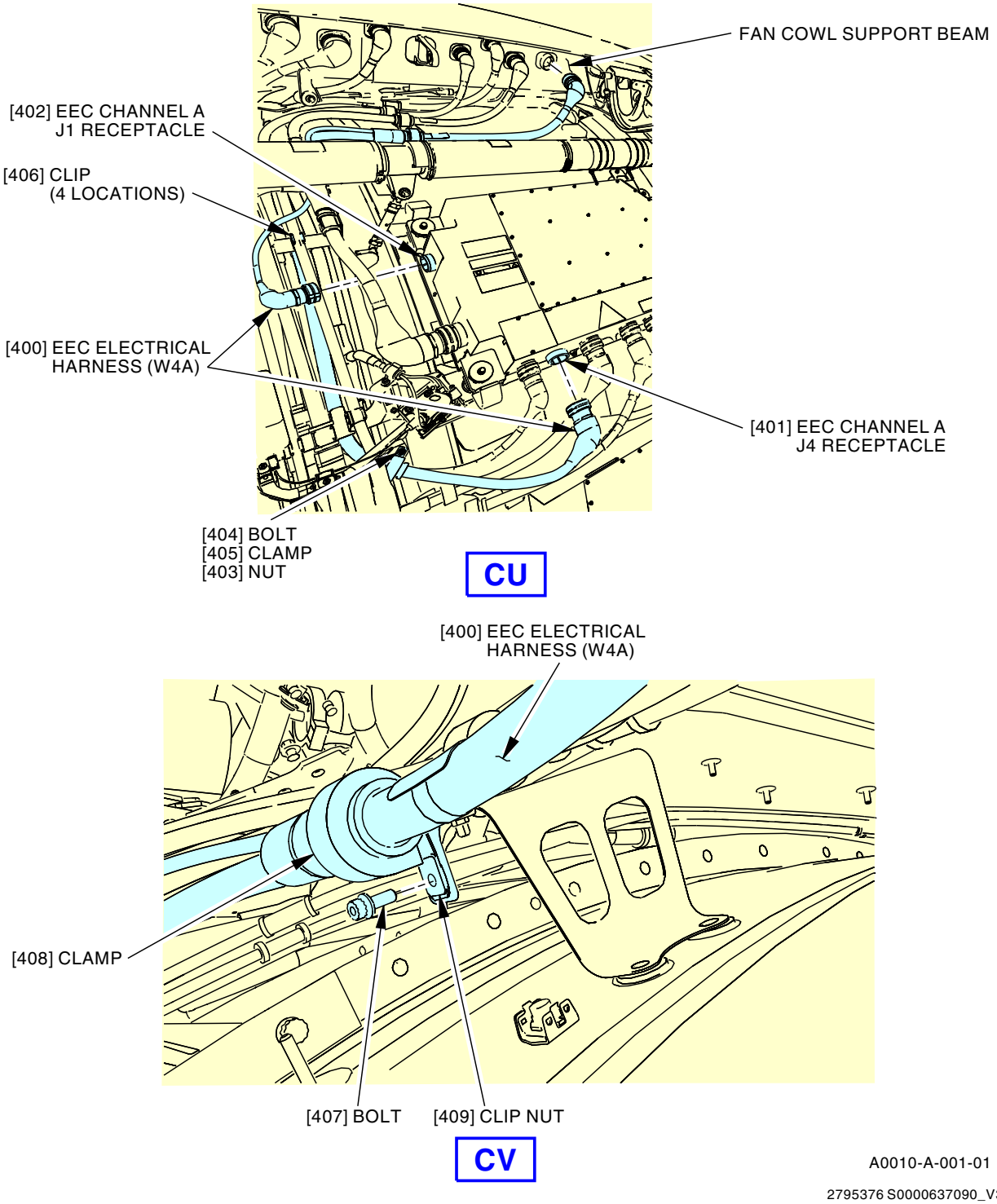


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EEC Electrical Harness (W4A) Installation
Figure 418/73-22-01-990-862-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (W4A) Installation
Figure 418/73-22-01-990-862-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-810-G00

21. Electronic Engine Control (EEC) Electrical Harness (W4A) Installation

(Figure 418)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (W4A).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (W4A) Installation

SUBTASK 73-22-01-420-025-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (W4A) [400] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Install the bolt [407], clip nut [409], and clamp [408] that attach the EEC electrical harness (W4A) [400] to the engine.

(d) Tighten the bolt [407] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(e) Install the EEC electrical harness (W4A) [400] in a correct position with the four clips [406] along its routing.

(f) Install the nut [403], bolt [404], and clamp [405] that attach the EEC electrical harness (W4A) [400] to the engine.

(g) Tighten the nut [403] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(h) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (W4A) [400] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (W4A) [400] connector to the fan cowl support beam.

2) Connect the EEC electrical harness (W4A) [400] connector to the EEC channel A J1 receptacle [402].

3) Connect the EEC electrical harness (W4A) [400] connector to the EEC channel A J4 receptacle [401].

(i) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-034-G00

(1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 73-22-01-860-088-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-089-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-090-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-860-091-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (W4A) Installation Test

SUBTASK 73-22-01-730-010-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-811-G00

22. Electronic Engine Control (EEC) Electrical Harness (W4B) Removal

(Figure 419)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harness (W4B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-092-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-093-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

ECCN 9E991 BOEING PROPRIETARY - See title page for details

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-094-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-095-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 73-22-01-010-033-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (W4B) Removal

SUBTASK 73-22-01-020-026-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664 to disconnect the EEC electrical harness (W4B) [420] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (W4B) [420] connector from the EEC channel B J4 receptacle [421].

(b) Disconnect the EEC electrical harness (W4B) [420] connector from the EEC channel B J1 receptacle [422].

(c) Disconnect the EEC electrical harness (W4B) [420] connector from the fan cowl support beam.

(d) Remove the bolt [423], clip nut [426], and clamp [424] that attach the EEC electrical harness (W4B) [420] to the engine.

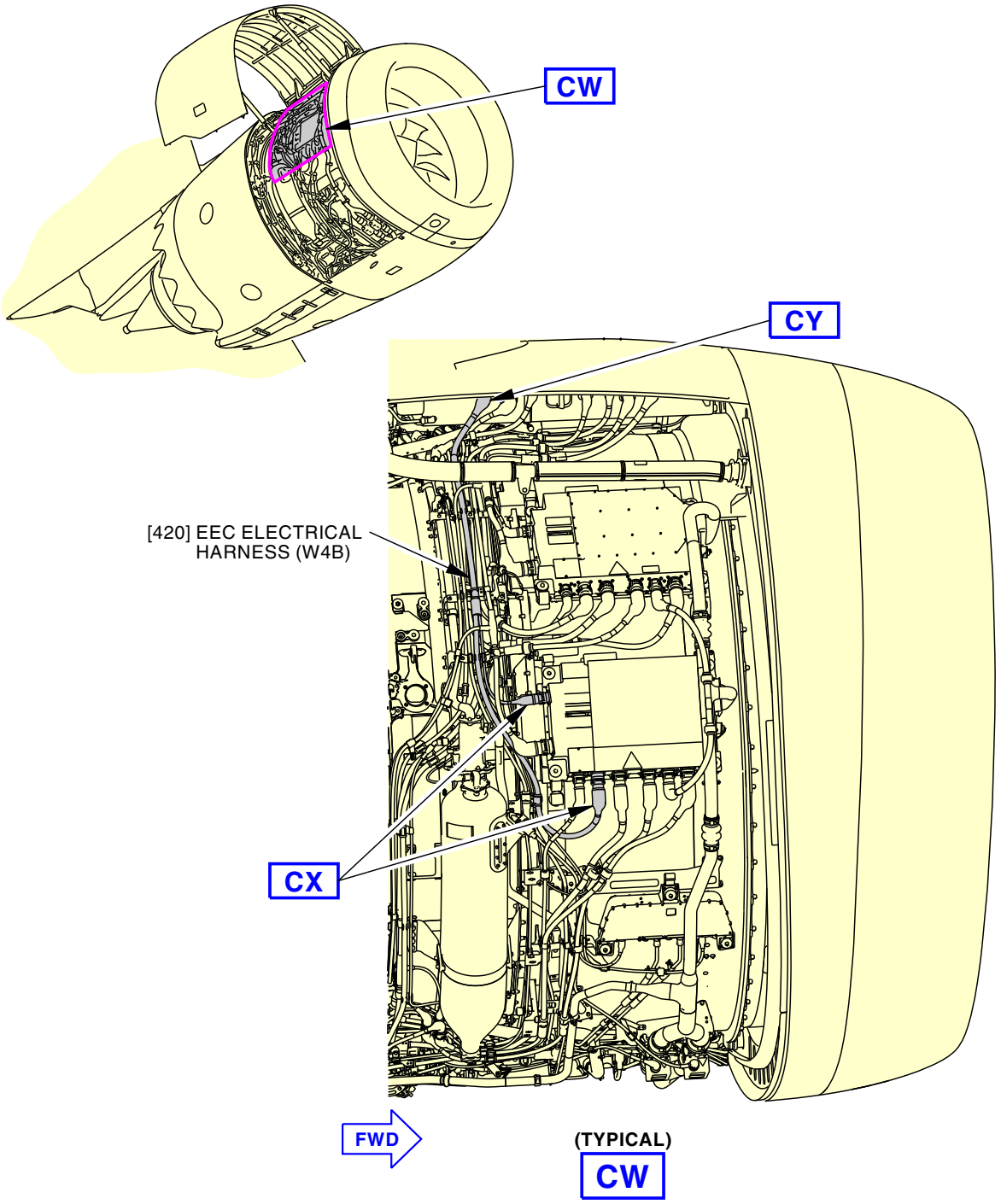
(e) Remove the EEC electrical harness (W4B) [420] from the six clips [425] along its routing.

(f) Carefully remove the EEC electrical harness (W4B) [420] from the engine.

(g) Install the protective covers on all of the harness connectors and the component receptacles.

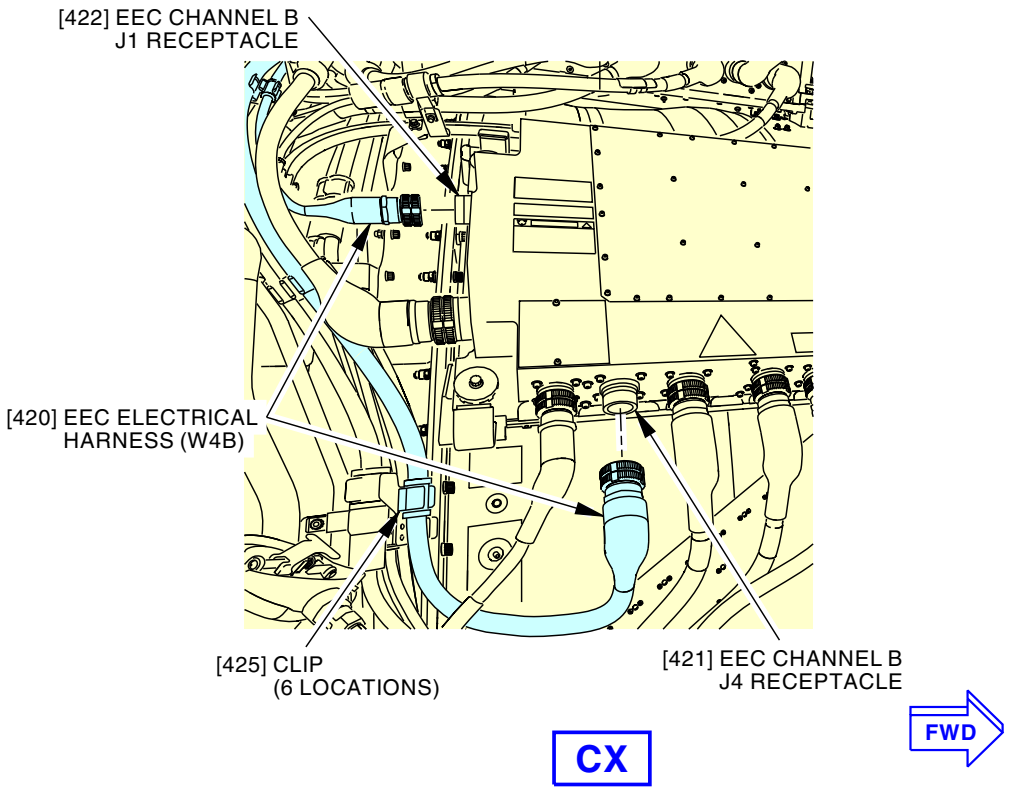
END OF TASK

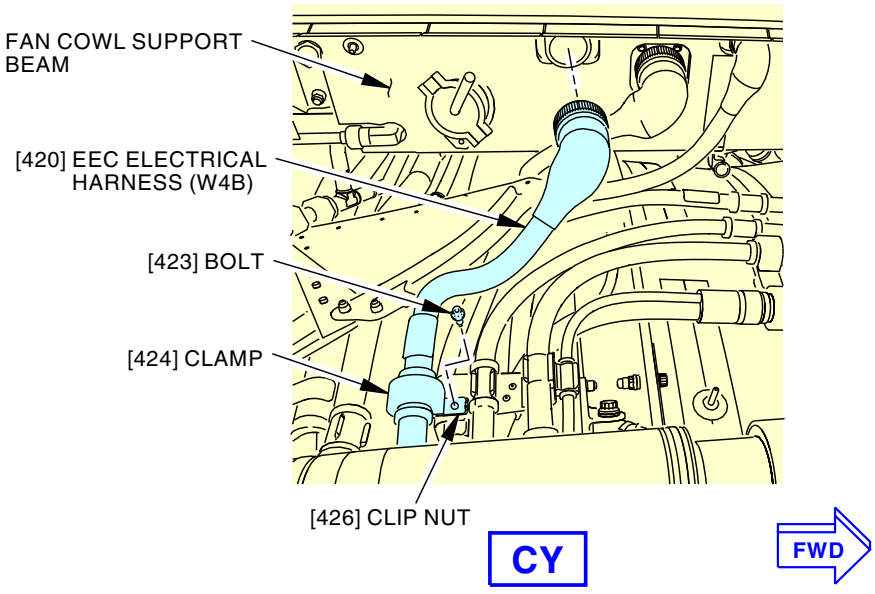
ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (W4B) Installation
Figure 419/73-22-01-990-863-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





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EEC Electrical Harness (W4B) Installation
Figure 419/73-22-01-990-863-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-811-G00

23. Electronic Engine Control (EEC) Electrical Harness (W4B) Installation

(Figure 419)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (W4B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Electronic Engine Control (EEC) Electrical Harness (W4B) Installation

SUBTASK 73-22-01-420-026-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(1) Install the EEC electrical harness (W4B) [420] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the bolt [423], clip nut [426], and clamp [424] that attach the EEC electrical harness (W4B) [420] to the engine.

(d) Tighten the bolt [423] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(e) Install the EEC electrical harness (W4B) [420] in a correct position with the six clips [425] along its routing.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(f) Use the teflon-jawed pliers, STD-664 to connect the EEC electrical harness (W4B) [420] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (W4B) [420] connector to the fan cowl support beam.

2) Connect the EEC electrical harness (W4B) [420] connector to the EEC channel B J1 receptacle [422].

3) Connect the EEC electrical harness (W4B) [420] connector to the EEC channel B J4 receptacle [421].

(g) Make sure that the work area is clean of all tools and other items.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-032-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-096-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-097-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-098-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-099-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

H. Electronic Engine Control Electrical (EEC) Electrical Harness (W4B) Installation Test

SUBTASK 73-22-01-730-011-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

TASK 73-22-01-000-812-G00

24. Electronic Engine Control (EEC) Electrical Harness (W2) Removal

(Figure 420 and Figure 421)

A. General

(1) This task gives the instructions to remove the electronic engine control (EEC) electrical harnesses (W2A and W2B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 73-22-01-860-100-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-101-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-102-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-103-G00

(4) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-010-034-G00

(5) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Electronic Engine Control (EEC) Electrical Harness (W2A and W2B) Removal

SUBTASK 73-22-01-020-027-G00

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(1) Use the teflon-jawed pliers, STD-664, to disconnect the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] as follows (TASK 70-00-01-910-803-G00):

(a) Disconnect the EEC electrical harness (W2A) [430] connector from the EEC channel A J2 receptacle [432].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Disconnect the EEC electrical harness (W2B) [431] connector from the EEC channel B J2 receptacle [433].

(c) Disconnect the EEC electrical harness (W2A) [430] connector from the fan cowl support beam.

(d) Disconnect the EEC electrical harness (W2B) [431] connector from the fan cowl support beam.

SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011

(e) Disconnect the EEC electrical harness (W2A) [430] connector from the EEC cooling blower (FWD/channel A) [434].

(f) Disconnect the EEC electrical harness (W2B) [431] connector from the EEC cooling blower (AFT/channel B) [435].

SIA ALL

(g) Disconnect the EEC electrical harness (W2A) [430] connector from the ignition exciter 1 [436].

(h) Disconnect the EEC electrical harness (W2B) [431] connector from the ignition exciter 2 [437].

(i) Remove the nut [440], bolt [441], and clamps [442] that attach the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] to the engine.

(j) Remove the bolts [438], clip nuts [444], and clamps [439] that attach the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] to the engine.

(k) Remove the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] from the 24 clips [443] along its routing.

(l) Remove blanket [190] from the strut 5 outer fitting [109] (View B, Figure 421).

(m) Remove the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] from the strut 5 outer fitting [109] as follows:

1) Remove the five bolts [106] that attach the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] to the strut 5 outer fitting [109].

2) Cut and remove the sealant between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and strut 5 outer fitting [109].

3) Move the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] rearward from the electrical harnesses.

4) Remove the two nuts [107] and two bolts [108] to disassemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

5) Cut and remove the sealant on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], strut 5 bracket lower block [503], and around the harnesses.

6) Remove the harnesses from the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

7) Remove any remaining sealant residue.

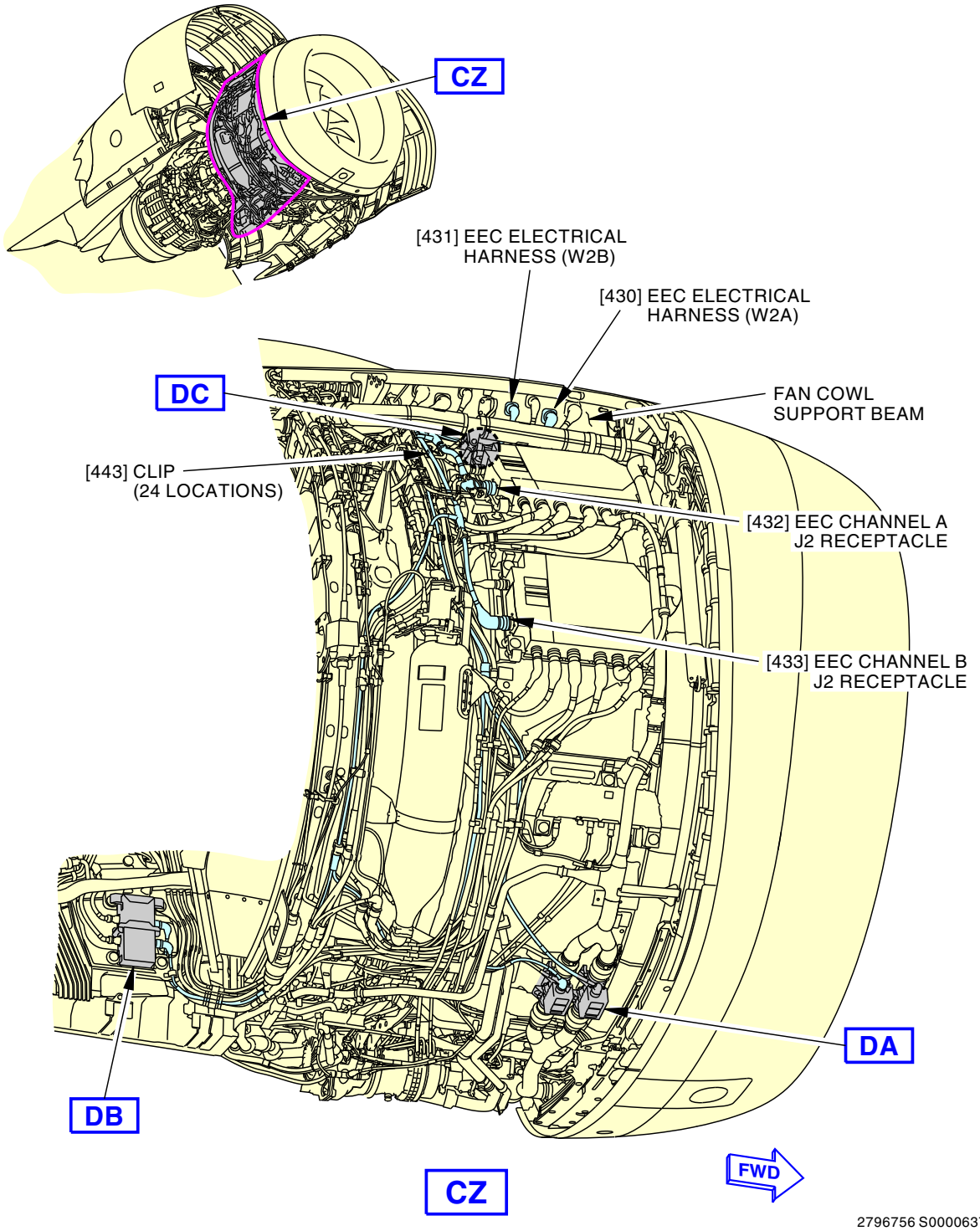
ECCN 9E991 BOEING PROPRIETARY - See title page for details

(n) Carefully remove the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] from the engine.

(o) Install the protective covers on all of the harness connectors and the component receptacles.

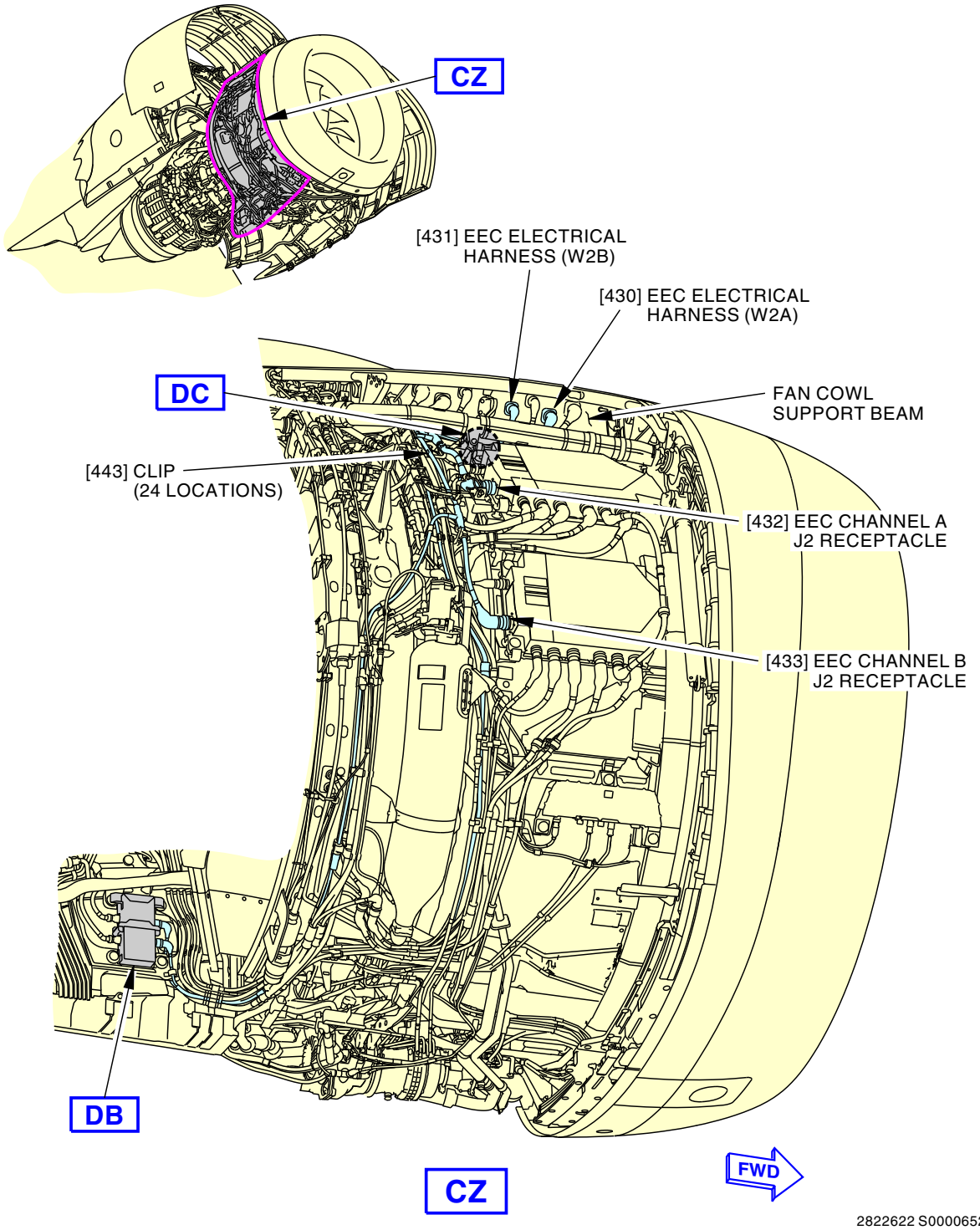
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



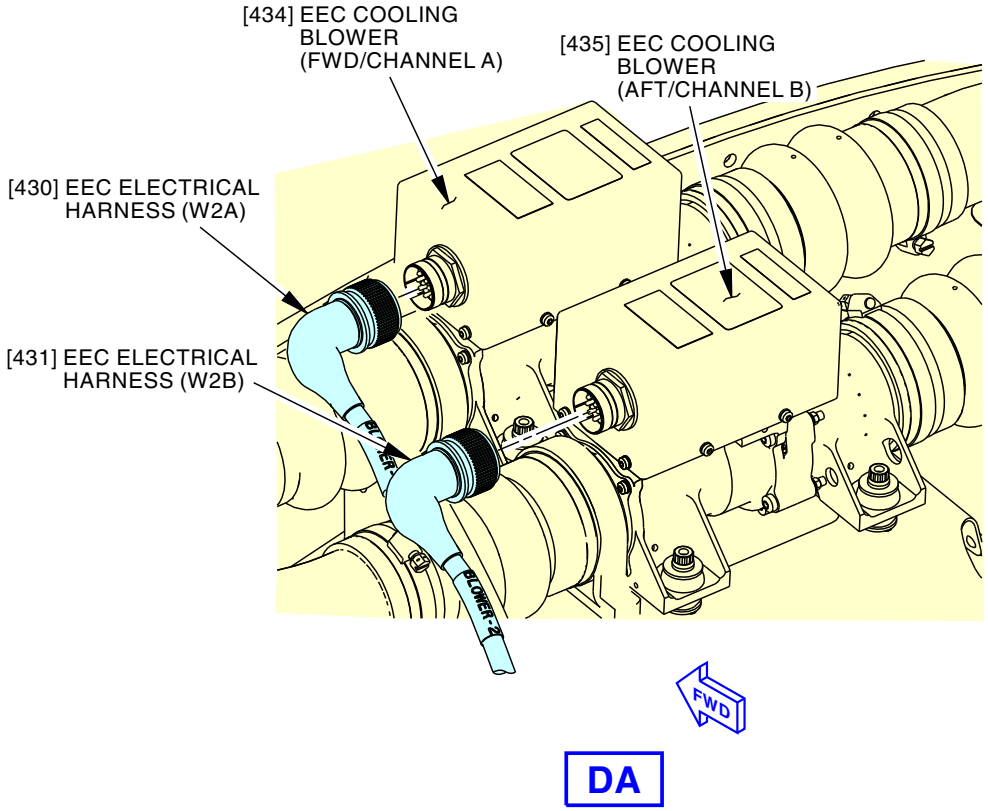
EEC Electrical Harness (W2A and W2B) Installation
Figure 420/73-22-01-990-864-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



EEC Electrical Harness (W2A and W2B) Installation
Figure 420/73-22-01-990-864-G00 (Sheet 2 of 4)

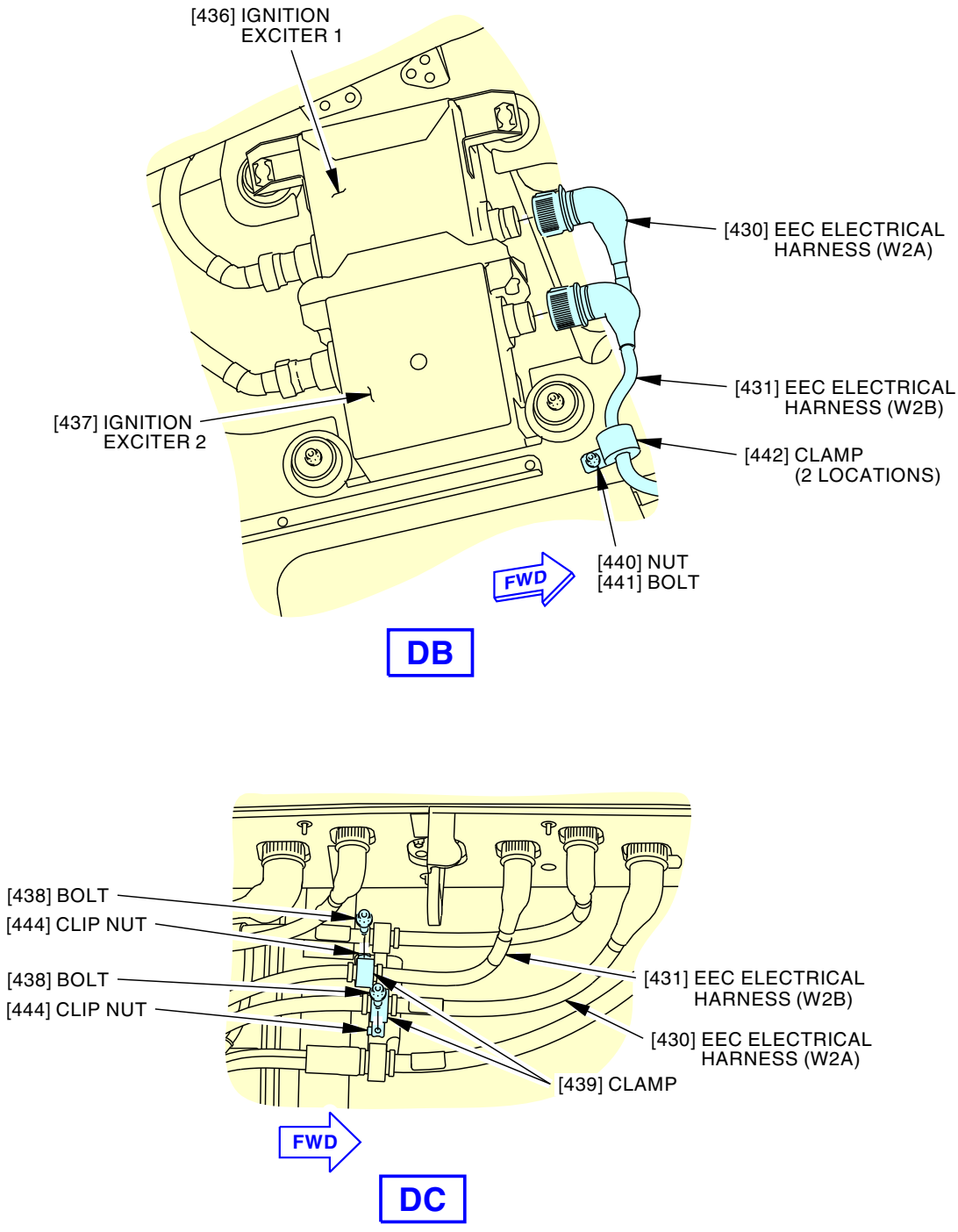
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2797229 S0000637328_V1

EEC Electrical Harness (W2A and W2B) Installation
Figure 420/73-22-01-990-864-G00 (Sheet 3 of 4)

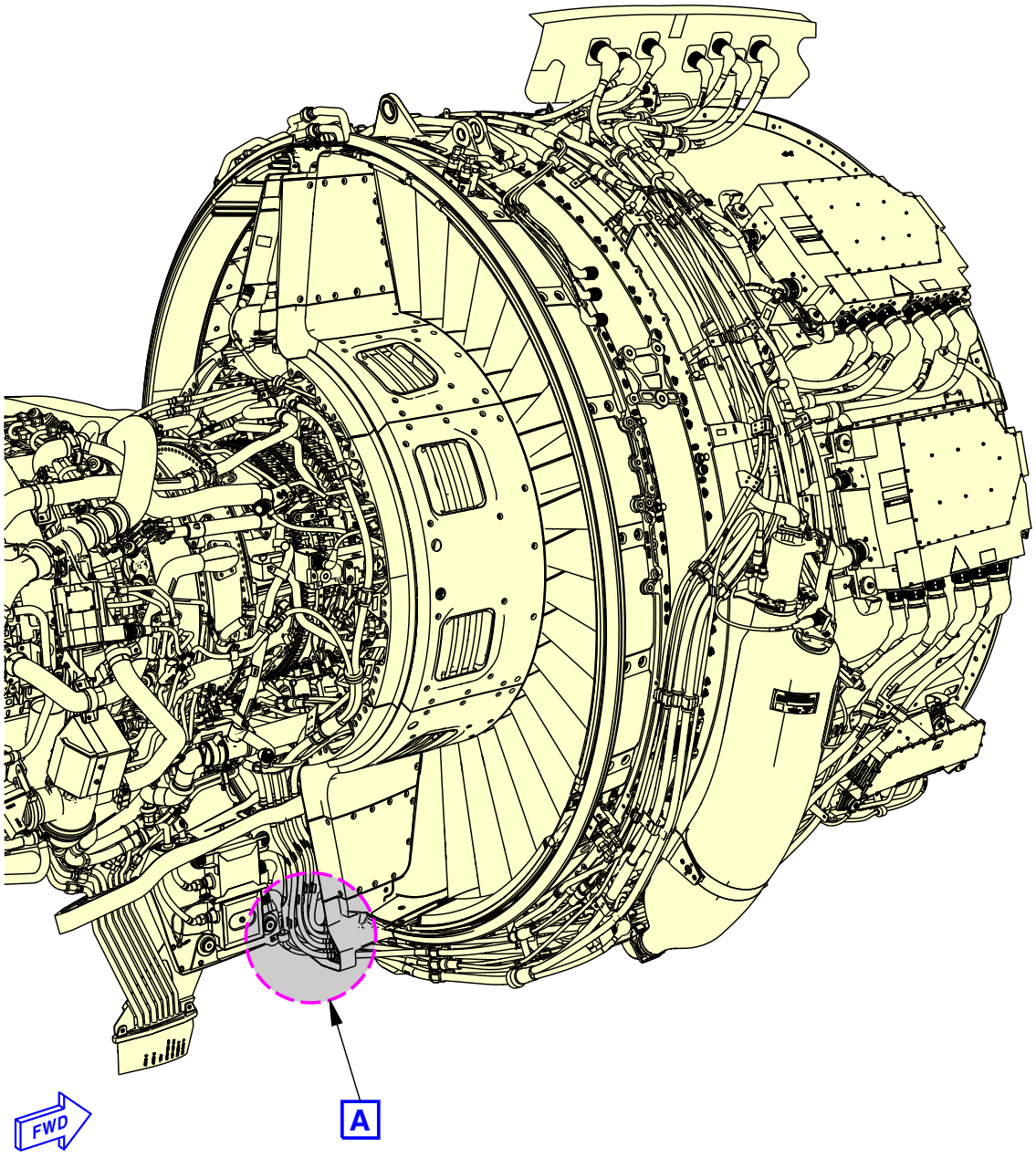
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2797245 S0000637329_V2

EEC Electrical Harness (W2A and W2B) Installation
Figure 420/73-22-01-990-864-G00 (Sheet 4 of 4)

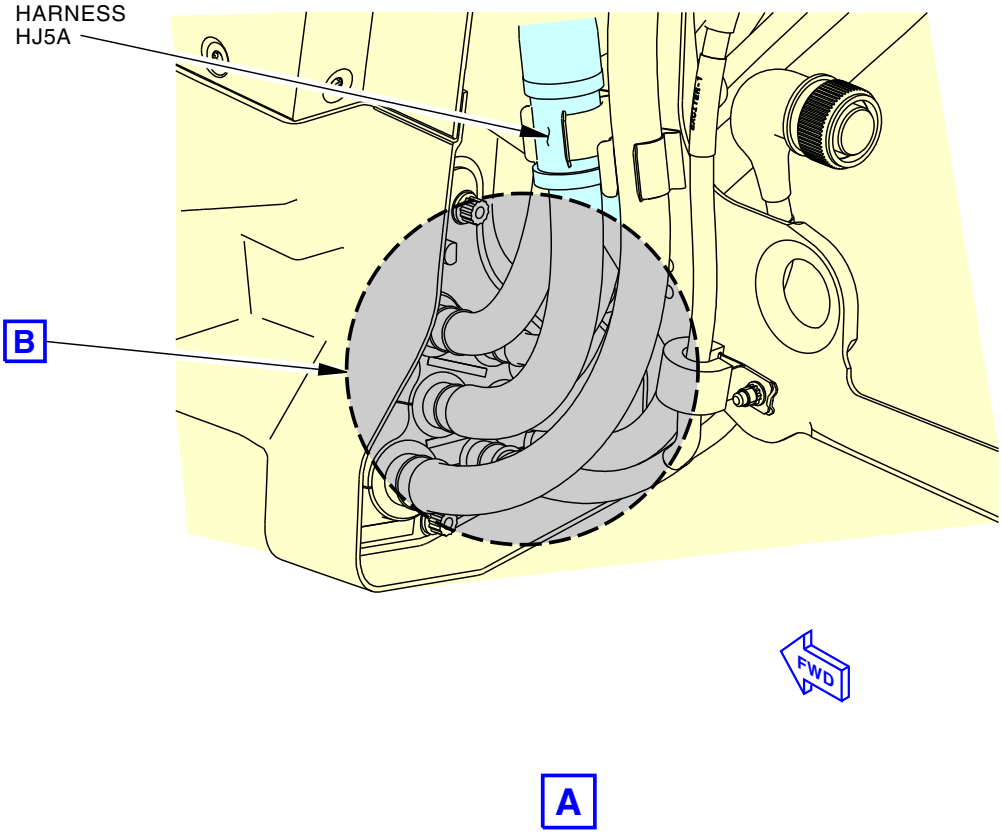
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937794 S0000713383_V2

Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 1 of 9)

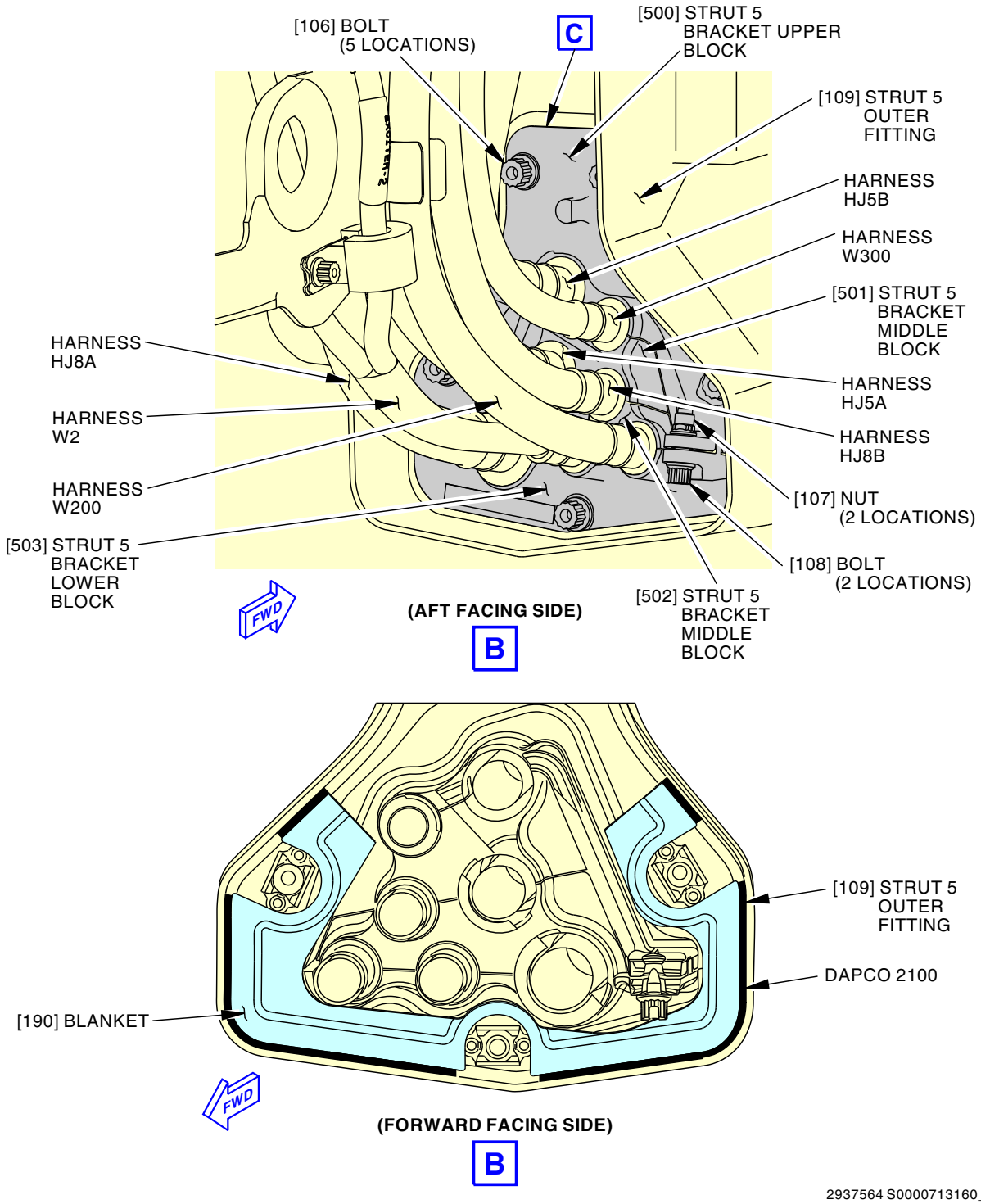
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2937795 S0000713384_V2

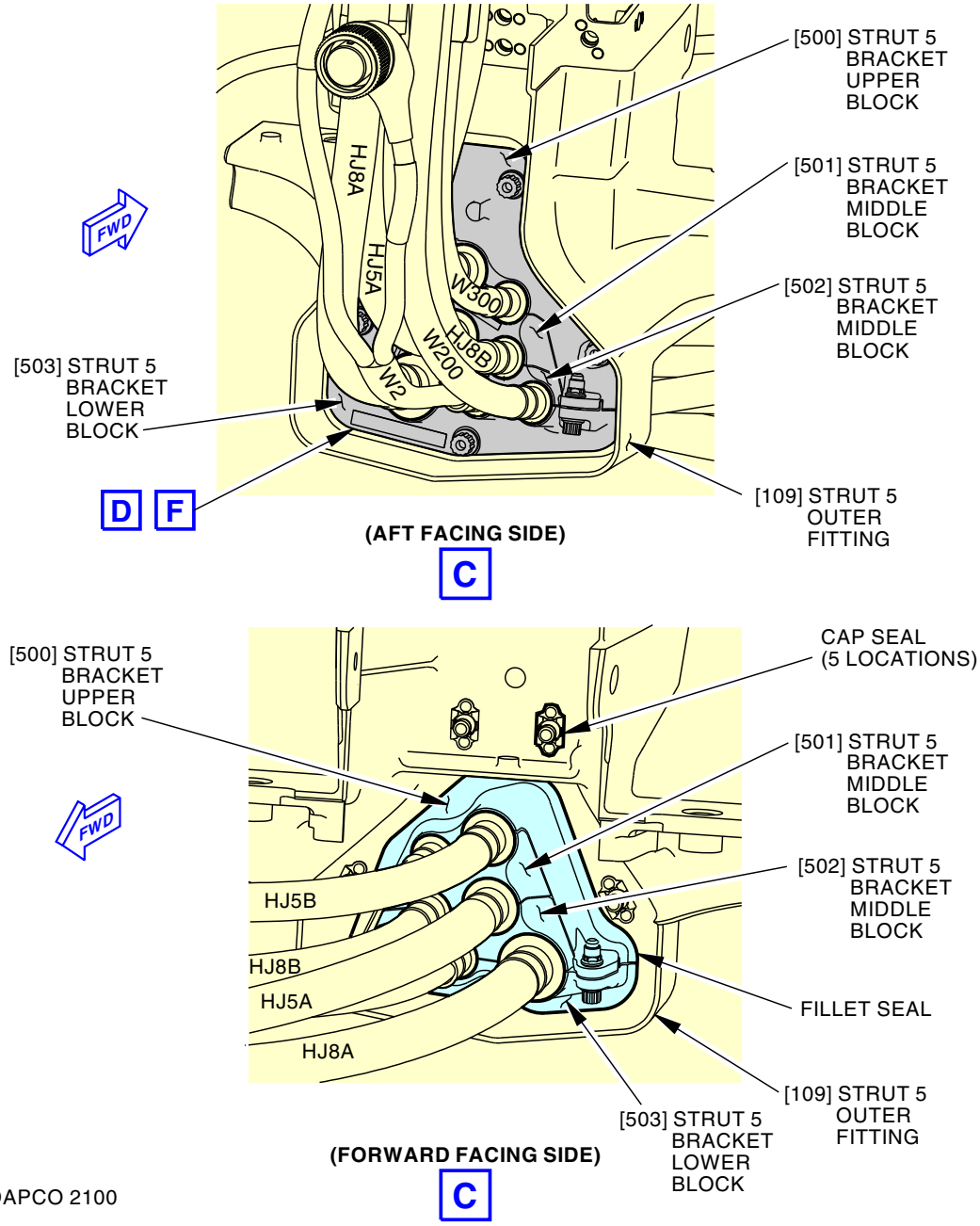
Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

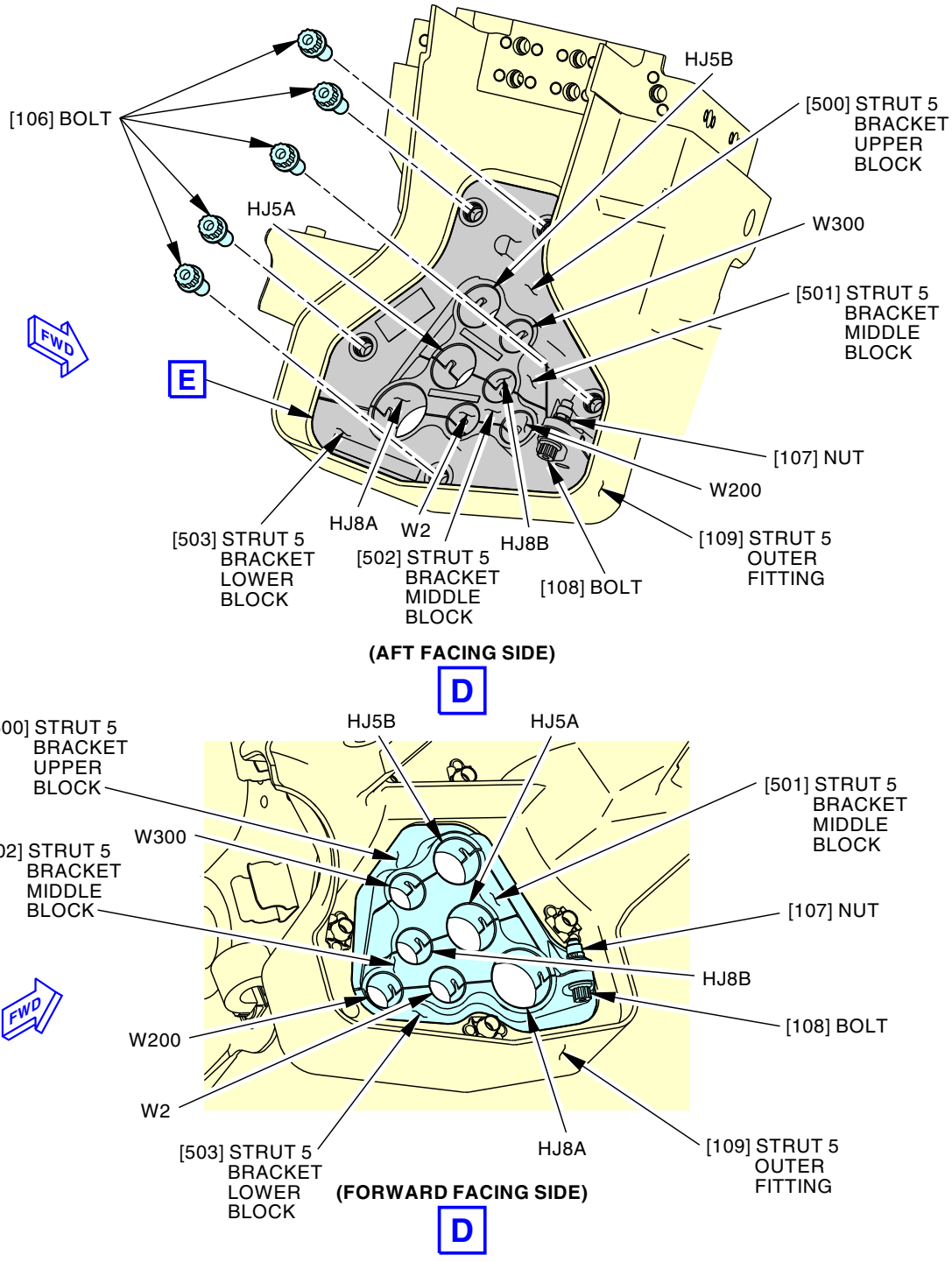
FAY SEAL PER AMM 51-22-00 ON INNER CONTOUR OF THE FITTING (AFT SIDE). SEALANT SQUEEZE-OUT SHOULD BE CONTINUOUS AND EVEN.

IT IS ACCEPTABLE TO APPLY THE FILLET SEAL ALONG INNER CONTOUR OF THE FITTING ON THE FORWARD SIDE.

2937801 S0000713390_V3

Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

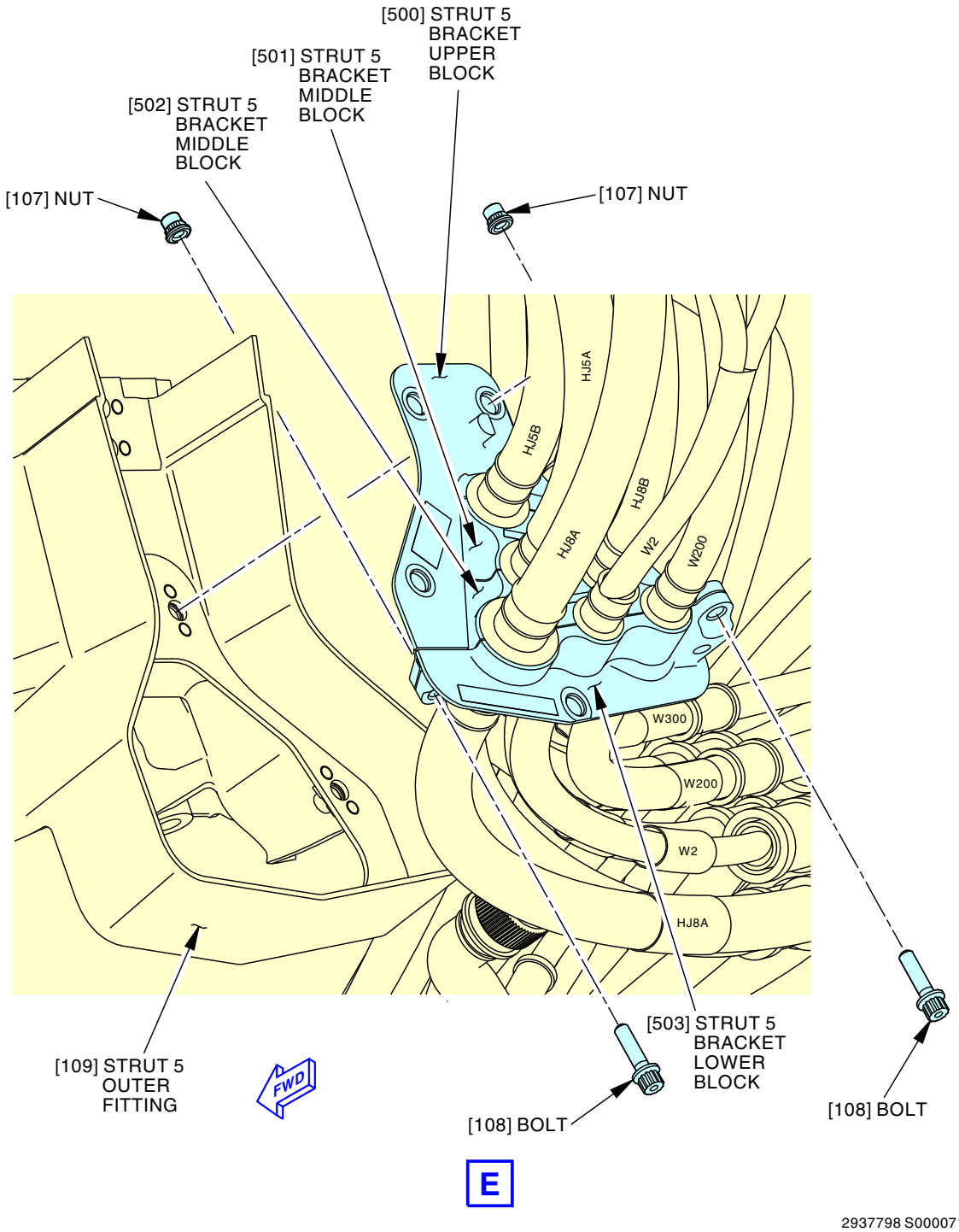


NOTE:
HARNESSES NOT SHOWN

2943980 S0000720369_V2

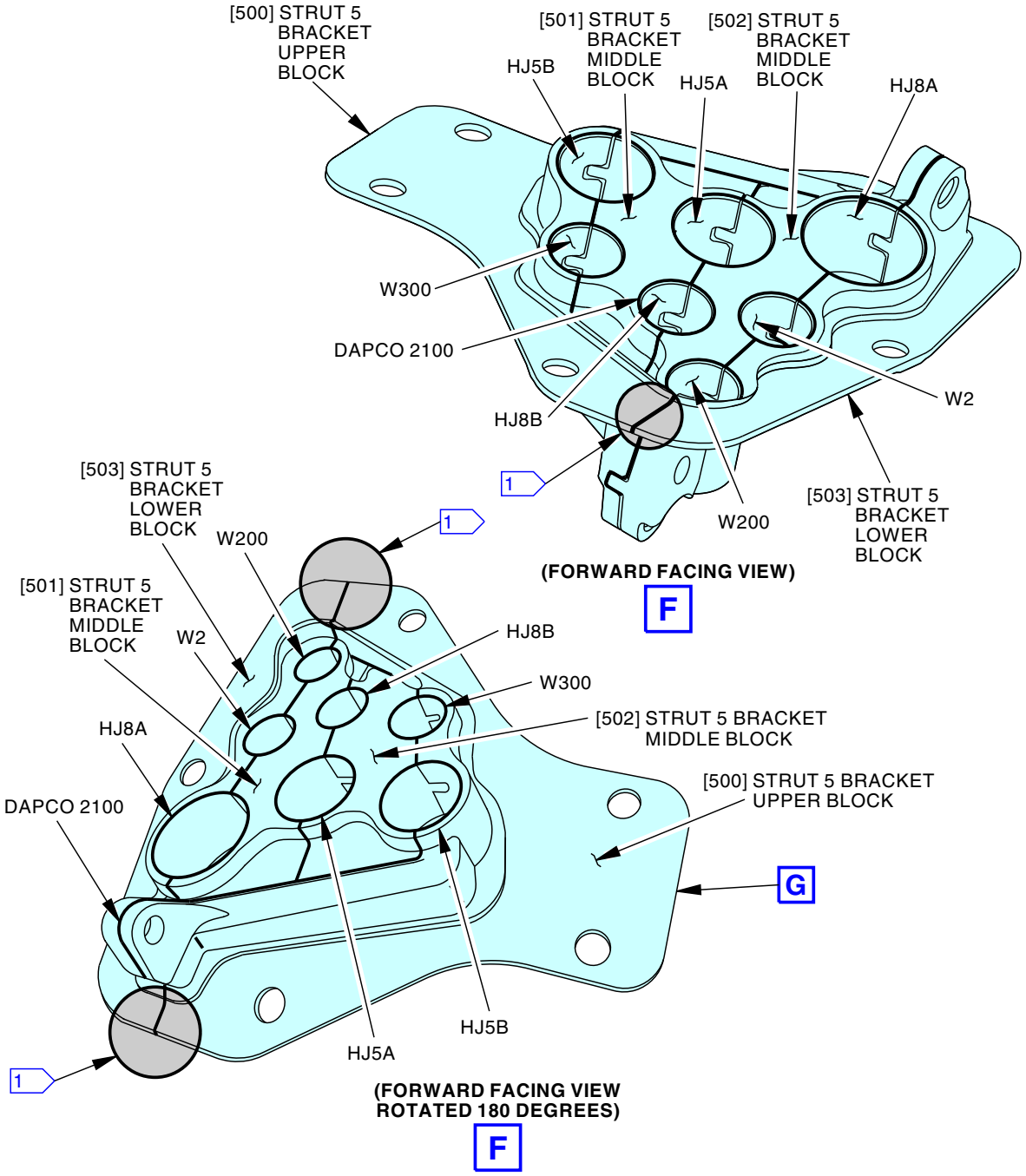
Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



NOTE:

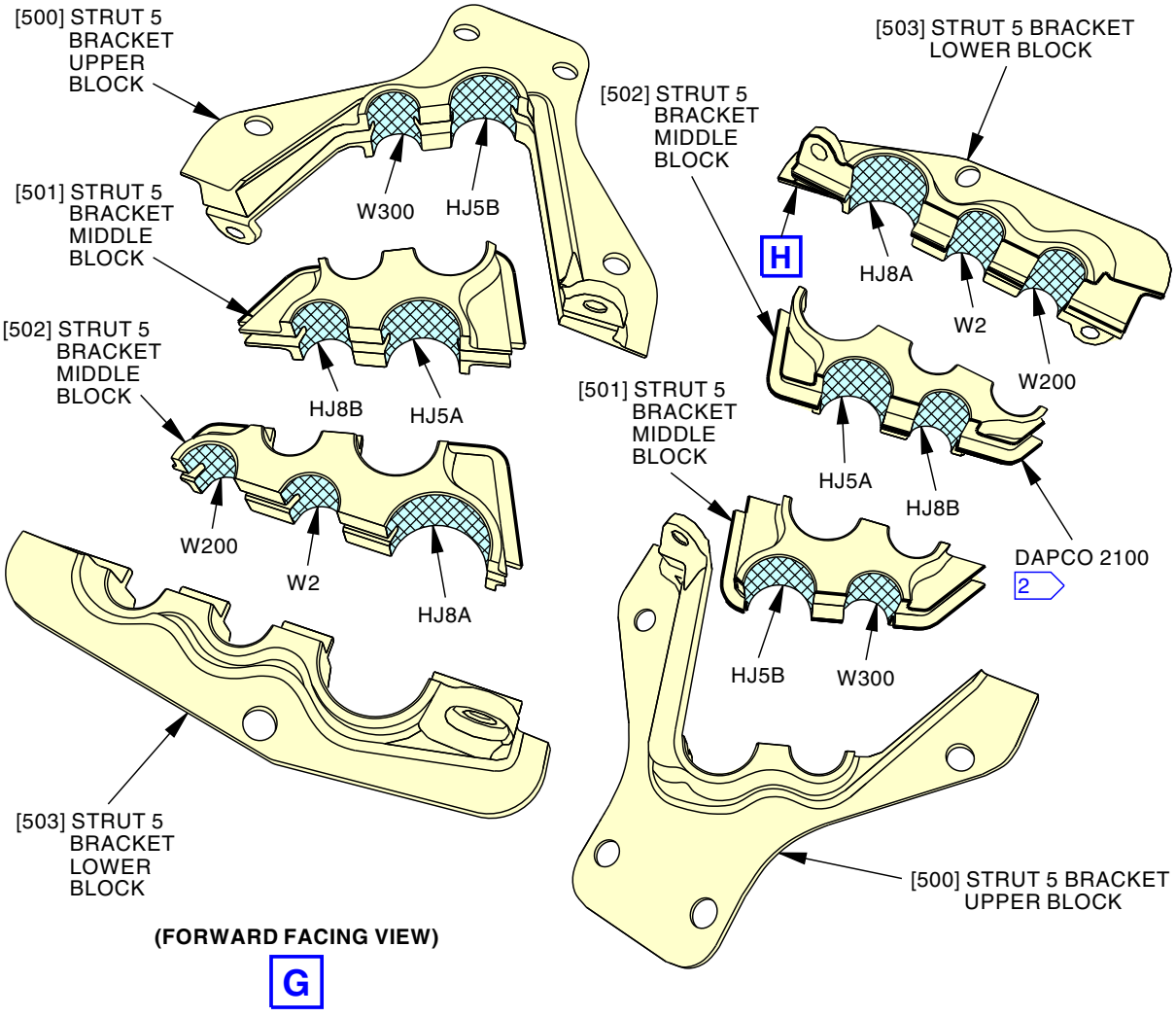
HARNESSES NOT SHOWN.

1 SEALANT SQUEEZE OUT IS FLUSH WITH SURFACE.

2937800 S0000713389_V3

Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DAPCO 2100

NOTE:

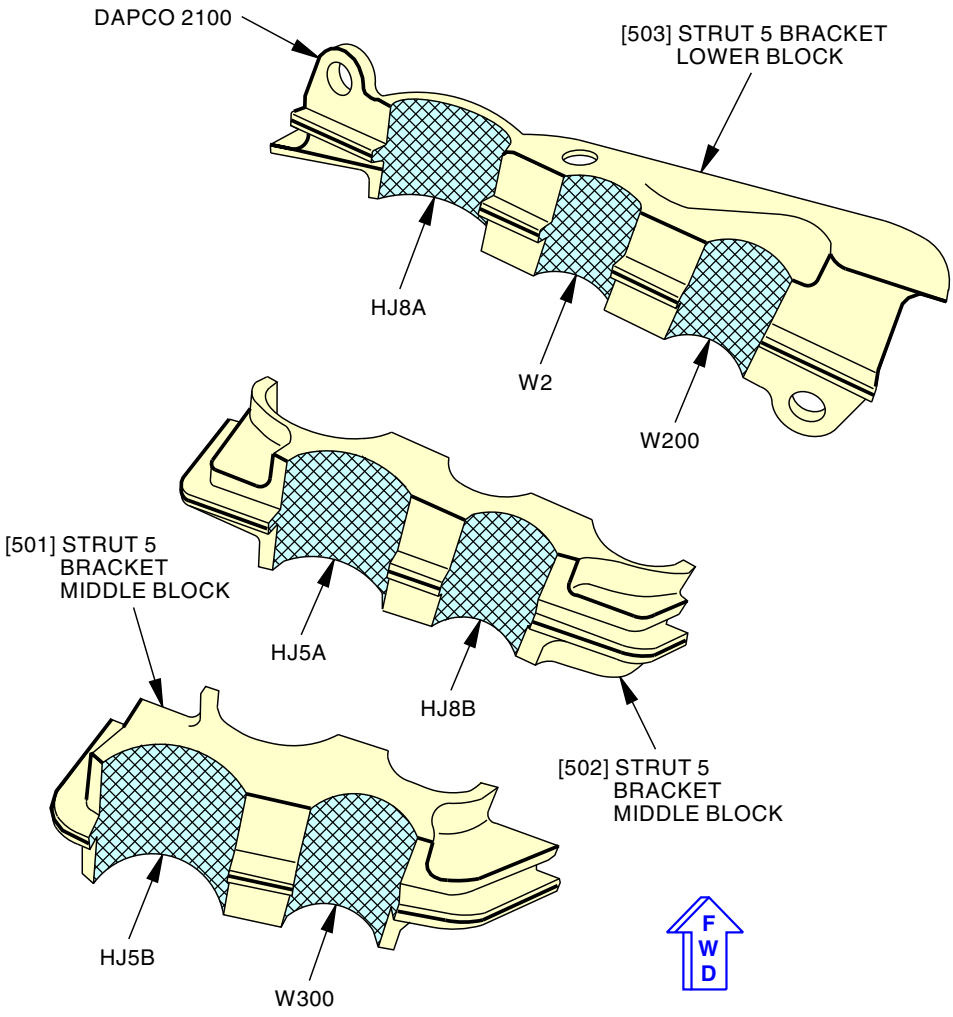
SEALANT PROVIDES FAY SEAL BETWEEN WIRE HARNESS AND BLOCKS AND SHOULD BE APPLIED TO THE BOTH SIDES OF BLOCKS.

2 SEALANT APPLIED TO ONE SIDE (TOP OR BOTTOM) OF THE BLOCKS.

2937799 S0000713388_V3

Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



H

2949941 S0000726813_V1

Strut Bracket Block Installation
Figure 421/73-22-01-990-880-G00 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-400-812-G00

25. Electronic Engine Control (EEC) Electrical Harness (W2) Installation

(Figure 420 and Figure 421)

A. General

(1) This task gives the instructions to install the electronic engine control (EEC) electrical harness (W2A and W2B).

(2) The electronic engine control (EEC) electrical harness is referred to as the EEC electrical harness.

(3) You must do the tests that are given in the power plant test reference table after you install the applicable engine control electrical harnesses.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50396	Sealant - Dapco 2200 Primerless Silicone Firewall Sealant	BMS5-63 Type II Class B-1/2
A50483 [CP2927]	Silicone Paste - Primerless, For Fire Resistance application ((Dapco 2100 Firewall Sealant)	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Electronic Engine Control (EEC) Electrical Harness (W2A and W2B) Installation

SUBTASK 73-22-01-210-009-G00

(1) During the installation, make sure that EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] are not stressed or damaged.

SUBTASK 73-22-01-210-010-G00

(2) Make sure that all components are clean and free of old sealant prior to adding new sealant.

SUBTASK 73-22-01-420-027-G00

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(3) Install the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] as follows:

(a) Make sure that the mating faces are clean and free of unwanted materials.

(b) Remove the protective covers on the connectors and receptacles.

(c) Install the bolts [438], clip nuts [444], and clamps [439] that attach the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] to the engine.

(d) Tighten the bolt [438] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

(e) Install the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] in a correct position with the 24 clips [443] along its routing.

(f) Install the nut [440], bolt [441], and clamps [442] that attach the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] to the engine.

(g) Tighten the nut [440] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

(h) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] in fan area as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (W2A) [430] connector to the fan cowl support beam.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) Connect the EEC electrical harness (W2B) [431] connector to the fan cowl support beam.

3) Connect the EEC electrical harness (W2A) [430] connector to the EEC channel A J2 receptacle [432].

4) Connect the EEC electrical harness (W2B) [431] connector to the EEC channel B J2 receptacle [433].

SIA 001-005 PRE SB 737-CFM-LEAP-1B-75-0010 AND PRE SB 737-CFM-LEAP-1B-75-0011

5) Connect the EEC electrical harness (W2A) [430] connector to the EEC cooling blower (FWD/channel A) [434].

6) Connect the EEC electrical harness (W2B) [431] connector to the EEC cooling blower (AFT/channel B) [435].

SIA ALL

(i) Install the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] on the strut 5 outer fitting [109] as follows:

1) Install the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on thestrut 5 outer fitting [109] as follows:

a) Lubricate the five bolts [106] and two nuts [107] with the graphite mineral vaseline, D00601 [CP2101].

b) Apply Dapco 2100 sealant, A50483 [CP2927], to the one side (either top or bottom) of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

NOTE: Fay seal applies to the two sides of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

c) Make sure that the EEC electrical harness (W2A) [430], EEC electrical harness (W2B) [431] and harnesses are in the correct position on the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] (View E, Figure 421).

d) Install the two bolts [108] and two nuts [107] to assemble the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503].

e) Tighten the nuts [107] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

f) Make sure that the fillet seal of the squeeze-out is on the forward facing side.

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

g) Make the sealant squeeze-out flush with the surface on the outer edges of the strut 5 bracket upper block [500] and strut 5 bracket lower block [503] (View F, Figure 421).

h) Install the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] in a correct position on the strut 5 outer fitting [109].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

i) Apply Dapco 2100 sealant, A50483 [CP2927], between the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 outer fitting [109] (View C, Figure 421).

j) Install the five bolts [106] that attach the assembly of the strut 5 bracket upper block [500], strut 5 bracket middle block [501], strut 5 bracket middle block [502], and strut 5 bracket lower block [503] on the strut 5 outer fitting [109].

k) Tighten the bolts [106] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

CAUTION MAKE SURE THAT YOU REMOVE UNWANTED SEALANT FROM THE AFT SIDE OF THE ASSEMBLY. THIS CAN DECREASE THE RISK OF IGNITION DURING A FIRE. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

l) Make sure that there is a minimum amount of the squeeze-out on the aft side around the edges of the block assembly and that the sealant is flush with the block assembly (View C, Figure 421).

m) Make sure that the squeeze-out on the forward facing side is finished as a fillet seal.

CAUTION MAKE SURE THAT THE BOLTS ARE CLEAN BEFORE YOU APPLY SEALANT TO THEM. IF YOU DO NOT REMOVE UNWANTED MATERIALS, THE SEALANT WILL NOT BOND. THIS CAN CAUSE DAMAGE TO EQUIPMENT.

n) Clean the nut plate side of the bolts [106] and nut plates.

o) Apply Dapco 2100 sealant, A50483 [CP2927], to the nut plate side of the bolts [106] and nut plates.

(j) Attach blanket [190] to the strut 5 outer fitting [109].

1) Apply Dapco 2100 sealant, A50483 [CP2927], between blanket and the strut 5 outer fitting [109] (View B, Figure 421).

NOTE: The Dapco 2200 firewall sealant, A50396, may use as optional. If this consumable meets the local regulatory requirements of the operator, it is acceptable as a chemical sealant for further usage.

(k) Use the teflon-jawed pliers, STD-664, to connect the EEC electrical harness (W2A) [430] and EEC electrical harness (W2B) [431] as follows (TASK 70-00-01-910-803-G00):

1) Connect the EEC electrical harness (W2A) [430] connector to the ignition exciter 1 [436].

2) Connect the EEC electrical harness (W2B) [431] connector to the ignition exciter 2 [437].

(l) Make sure that the work area is clean of all tools and other items.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-410-033-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-104-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-105-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 73-22-01-860-106-G00

(4) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-860-107-G00

(5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Electronic Engine Control Electrical (EEC) Electrical Harness (W2A and W2B) Installation Test

SUBTASK 73-22-01-730-012-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE CONTROL ELECTRICAL HARNESSES - INSPECTION/CHECK

1. General

A. This procedure has two tasks:

(1) Engine control electrical harnesses inspection

(2) Engine control electrical harness connectors inspection.

TASK 73-22-01-210-801-G00

2. Engine Control Electrical Harnesses Inspection

(Figure 601, Figure 602, and Figure 603)

A. General

(1) This task gives the instructions to do the visual inspection of the engine control electrical harness.

B. References

Reference	Title
24-11-63-000-801	W100 EDP and IDG Engine Wiring Harness Removal (P/B 401)
24-11-63-400-801	W100 EDP and IDG Engine Wiring Harness Installation (P/B 401)
26-11-02-000-801	Engine Fire Detection Harness Removal (P/B 401)
26-11-02-400-801	Engine Fire Detection Harness Installation (P/B 401)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-22-01 P/B 401	ELECTRONIC ENGINE CONTROL (EEC) ELECTRICAL HARNESSES - REMOVAL/INSTALLATION
73-22-01-900-801-G00	Engine Wiring Harness Repair (Application of Silicone Tape Patch) (P/B 801)
73-22-01-900-802-G00	Engine Wiring Harness Repair (Application of Stainless Steel Braid) (P/B 801)
73-22-01-900-803-G00	Engine Wiring Harness Heat-Shrinkable Boot Repair (P/B 801)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-22-01-860-073-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-074-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Engine Control Electrical Harnesses Inspection

SUBTASK 73-22-01-211-001-G00

(1) Do the visual inspection of the engine control electrical harness (HJ3A) [1], engine control electrical harness (HJ3B) [2], engine control electrical harness (HJ5A) [3], engine control electrical harness (HJ5B) [4], engine control electrical harness (HJ6A) [5], engine control electrical harness (HJ6B) [6], engine control electrical harness (HJ7) [7], engine control electrical harness (HJ8A) [8], engine control electrical harness (HJ8B) [9], engine wiring harness (W100) [10], engine control electrical harness (W2) [11], engine fire detection harness (W200) [12], engine fire detection harness (W300) [13], engine control electrical harness (W4A) [14], and engine control electrical harness (W4B) [15] as follows:

(a) Examine the identification sleeve [17] for these conditions (Figure 602):

1) Chafing, burn, cut, removed characters

a) Permitted even if characters are unreadable.

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Looseness

a) Permitted.

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(b) Examine the identification plate [16] for these conditions (Figure 602):

1) Burn, cut

a) Permitted even if characters are unreadable.

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Looseness

a) Permitted.

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

3) Removed characters

a) Permitted.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

4) Chafing

a) Permitted.

b) Replace the applicable engine harness at the next shop visit (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(c) Examine the heat-shrinkable bobbin [23] for these conditions (View B, Figure 602):

1) Burn, deformation, mark, chafing

a) Permitted, if it is not perforated.

b) If it is perforated, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Glue

a) Permitted.

3) Looseness

a) Not permitted.

b) If it is loose, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(d) Examine the heat-shrinkable transition [22] (Breakout) for these conditions (View B, Figure 602):

1) Burn, deformation, mark, chafing

a) Permitted, if not perforated.

b) If it is perforated, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Glue

a) Permitted.

3) Looseness

a) Not permitted.

b) If it is loose, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(e) Examine the heat-shrinkable boot [18] for these conditions (View A, Figure 602):

1) Burn, deformation, chafing

a) Permitted, if not perforated.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) If it is perforated, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Burn, deformation, chafing, mark (engine fire detection harness (W200) [12] only)

a) Permitted, if it is not perforated.

b) Repairable, if there is no finding on the shielding braid, if the hole in heat shrinkable boot is smaller than 0.39 in. (10 mm) x 0.19 in. (5 mm) and at least 0.39 in. (10 mm) from the end of the boot (TASK 73-22-01-900-803-G00).

c) If the shielding braid has finding, the hole in heat shrinkable boot is bigger than 0.39 in. (10 mm) x 0.19 in. (5 mm), or at least a part of the hole is within 0.39 in. (10 mm) from the end of the boot, replace the applicable engine control electrical harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801, TASK 24-11-63-400-801, TASK 26-11-02-000-801, and TASK 26-11-02-400-801).

3) Glue

a) Permitted.

4) Looseness

a) Not permitted.

b) If it is loose, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(f) Examine the connector [20] for these conditions (Figure 602):

1) Worn Master key

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Signs of short-circuit, carbonizing

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

3) Nicks, dents, scratches on connector locking ring

a) Permitted if the nicks, dents, scratches are not more than 0.08 in. (2 mm) long, 0.04 in. (1 mm) wide, 0.01 in. (0.3 mm) deep.

b) If the damage is more than the limits, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

4) Scratches on the connector and backshell parts

a) Permitted if below 0.01 in. (0.3 mm) deep.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) If the damage is more than the limits, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

5) Nicks, dents on the connector thread

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

6) Nicks, dents on the connector backshell [19]

a) Permitted if the nicks, dents, scratches are not more than 0.08 in. (2 mm) long, 0.04 in. (1 mm) wide, 0.01 in. (0.3 mm) deep.

b) If the damage is more than the limits, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

7) Connector interfacial face deteriorated

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

8) Cut or looseness and deformated on connector RFI Ring

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

9) Bad connector assembly

a) Permitted if the color mark on the receptacle is not visible.

b) If the color mark is visible, replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

10) Marking partially erased on connector and metallic parts

a) Permitted even if marking is unreadable.

b) Replace the component at the next shop visit.

(g) Examine the connector [20] and mechanical parts for these conditions (Figure 602):

1) Scratches on connectors and backshell

a) Permitted if the scratches are not more than 0.01 in. (0.3 mm).

b) If a scratch is more than the limit, replace the applicable engine control electrical component.

2) Nicks, dents on the connector backshell [19]

a) Permitted if the nicks, dents are not more than 0.08 in. (2 mm) long, 0.04 in. (1 mm) wide, 0.01 in. (0.3 mm) deep.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) If you find nicks or dents that are more the limits, replace the engine control electrical component.

3) Nicks, dents scratches on the connector mechanical parts (breakout type Y or T)

a) Permitted if the nicks, dents, scratches are not more than 0.08 in. (2 mm) long, 0.04 in. (1 mm) wide, 0.01 in. (0.3 mm) deep.

b) If you find nicks, dents, scratches that are more the limits, replace the engine control electrical component.

4) Marking partially erased on connector and metallic parts

a) Permitted even if marking is unreadable.

b) Replace the component at the next shop visit.

5) Cut or looseness on mechanical parts (stainless steel clamps)

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(h) Examine the heat-shrinkable tubing [21] for these conditions (Figure 602 and Figure 603):

1) Burn, deformation, chafing

a) Permitted, if the external heat-shrinkable tubing [24] is not perforated.

b) Maximum repairable limit:

<1> 2 in. (50.8 mm) maximum on heat-shrinkable tubing [21]

<2> 1.38 in. (35.052 mm) minimum between area to repair and nearest attachment point

<3> Out of attachment points

<4> No degradation of copper braid [25].

c) Do this task: Engine Wiring Harness Repair (Application of Silicone Tape Patch), TASK 73-22-01-900-801-G00.

2) Mark

a) Permitted, if the external tubing is not perforated.

b) If it is perforated, replace the applicable engine control electrical component (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801, TASK 24-11-63-400-801, TASK 26-11-02-000-801, and TASK 26-11-02-400-801).

3) Perforation, cut

a) Not permitted.

b) Maximum repairable limit:

<1> 2 in. (50.8 mm) maximum on heat-shrinkable tubing [21]

<2> 1.38 in. (35.052 mm) minimum between area to repair and nearest attachment point

<3> Out of attachment points

<4> No degradation of copper braid [25].

c) Do this task: Engine Wiring Harness Repair (Application of Silicone Tape Patch), TASK 73-22-01-900-801-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

4) Perforation, cut on terminal lug (TFER, engine fire detection harness (W200) [12] and engine fire detection harness (W300) [13])

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(i) Examine the stainless outer copper braid [25] for these conditions (Figure 602):

1) Burn, cut, fretting (TFER)

a) Maximum repairable limit:

<1> 1.18 in. (30.0 mm) max on stainless outer copper braid [25]

<2> Max defective area angle is 90°.

b) Do this task: Engine Wiring Harness Repair (Application of Stainless Steel Braid), TASK 73-22-01-900-802-G00.

(j) Examine the copper outer braid at the 6:00 o'clock bifurcation for these conditions (Figure 602):

1) Burn

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Radial cut

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

3) Holes between strands on Copper braid (Fire Wall Protection Area 1) for the engine control electrical harness (HJ5A) [3] and engine control electrical harness (W2) [11].

a) Permitted if there are no radial nicks of the copper outer braid and there is no visible heat shrinkable sheath under the copper braid.

b) If there are radial nicks and there is visible heat shrinkable sheath, replace the applicable engine harness (PAGEBLOCK 73-22-01/401).

4) Holes between strands on Copper braid (Fire Wall Protection Area 2) for the engine control electrical harness (HJ5A) [3] and engine control electrical harness (W2) [11].

a) Permitted if there are no radial nicks of the copper outer braid and the maximum visible surface of the heat shrinkable sheath is less than 0.03 in^2 (20 mm^2)

b) If there are radial nicks and there is visible heat shrinkable sheath, replace the applicable engine harness (PAGEBLOCK 73-22-01/401).

(k) Examine the wire [26] (engine fire detection harness (W200) [12] and engine fire detection harness (W300) [13]) for these conditions (Views X, Y, Z, and AA, Figure 601 and Figure 602):

1) Burn, hardening, cut on insulation sheath on specific cable for fire loop area (BMS1367)

a) Not permitted.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

b) Replace the applicable engine harness (TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Signs of short-circuit, carbonizing, tear, crushing on specific cable for fire loop area (BMS1367)

a) Not permitted.

b) Replace the applicable engine harness (TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(l) Examine the contact [27] for these conditions (Figure 602):

1) Signs of wear, arcing or carbonizing

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

2) Distortion

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

3) Missing or retracted

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

(m) Examine the receptacle connector mounting flange [28] for these conditions (Figure 602):

1) Scratches, dents, nicks

a) Permitted if the scratches, dent, nick is less than 0.012 in. (0.3 mm).

<1> Replace the component at the next shop visit.

b) If the condition is more than the limit, replace the engine electrical control component.

(n) Examine the anti-rotation lug for these conditions (Figure 602):

1) Distortion, crack or tear on the anti-rotation lug

a) Not permitted.

b) Replace the applicable engine harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801 and TASK 24-11-63-400-801, TASK 26-11-02-000-801 and TASK 26-11-02-400-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-860-075-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-076-G00

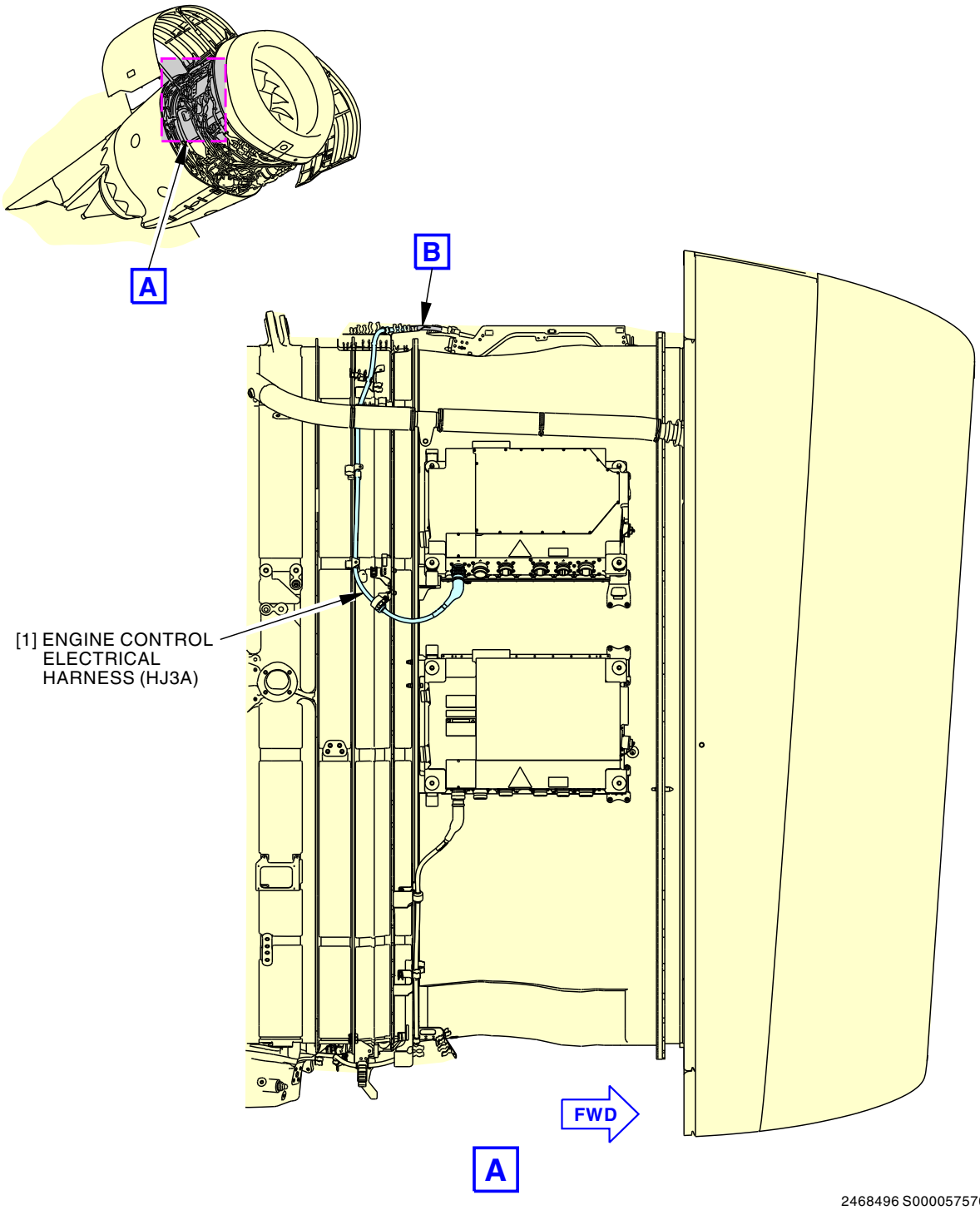
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

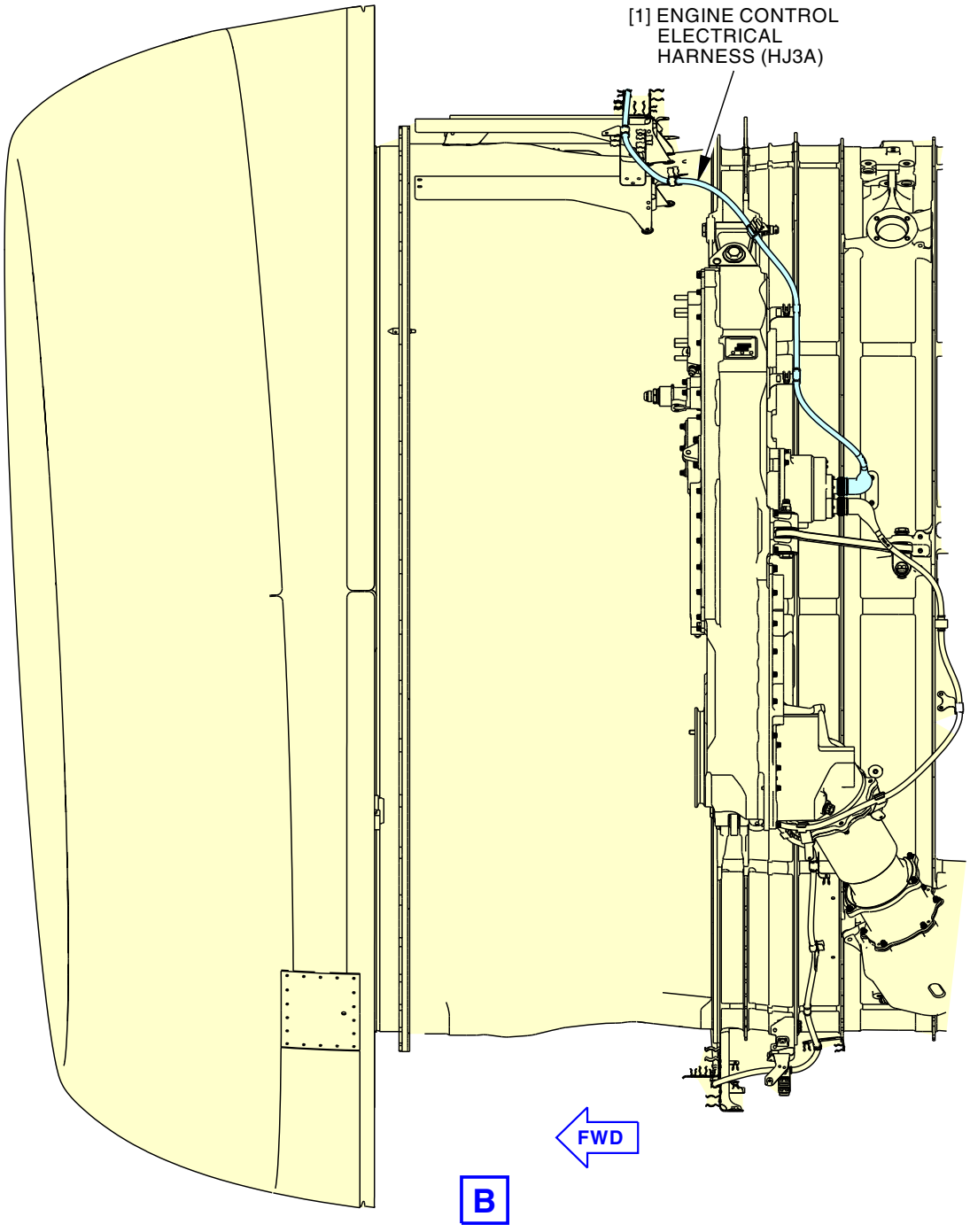
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



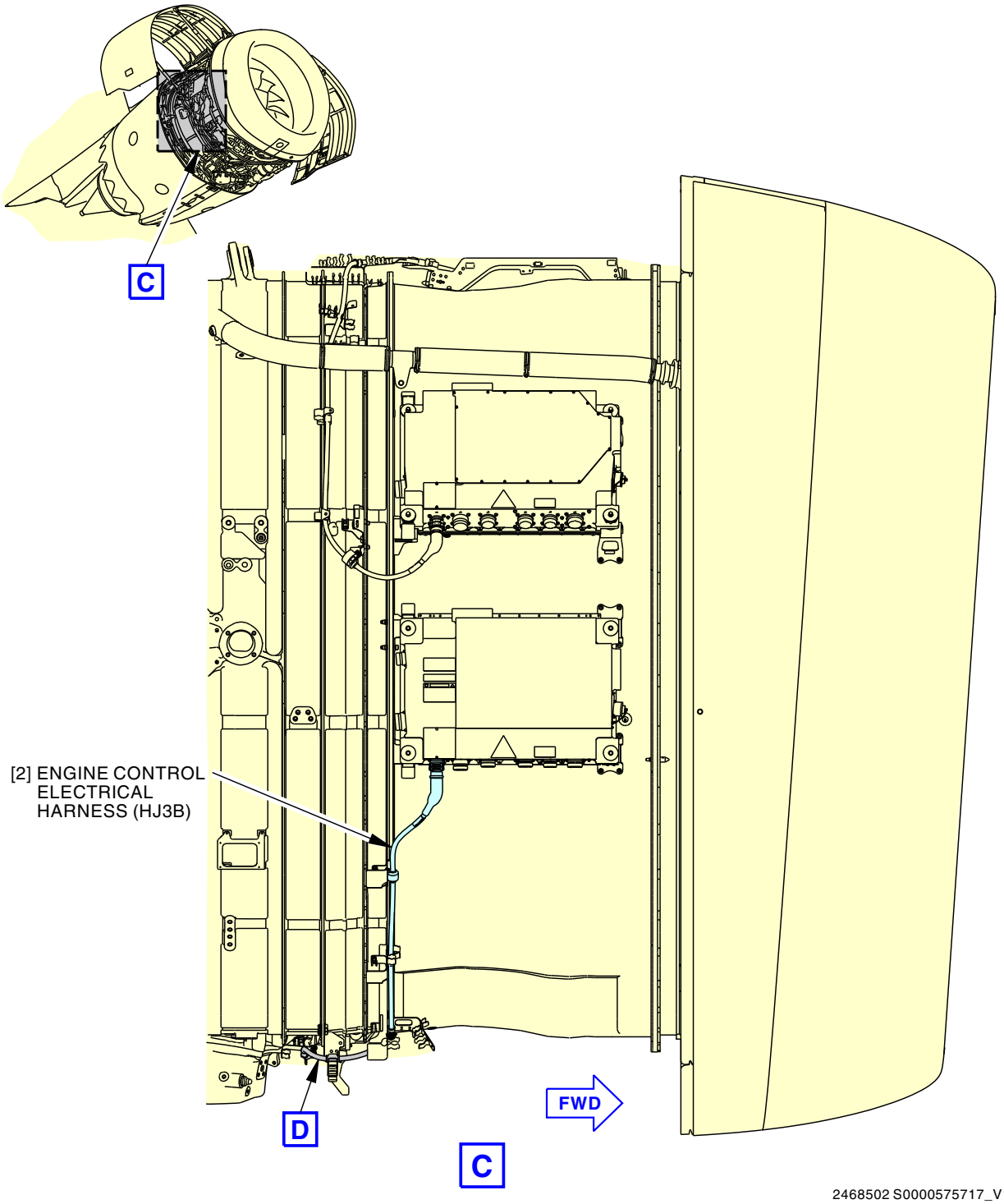
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 1 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



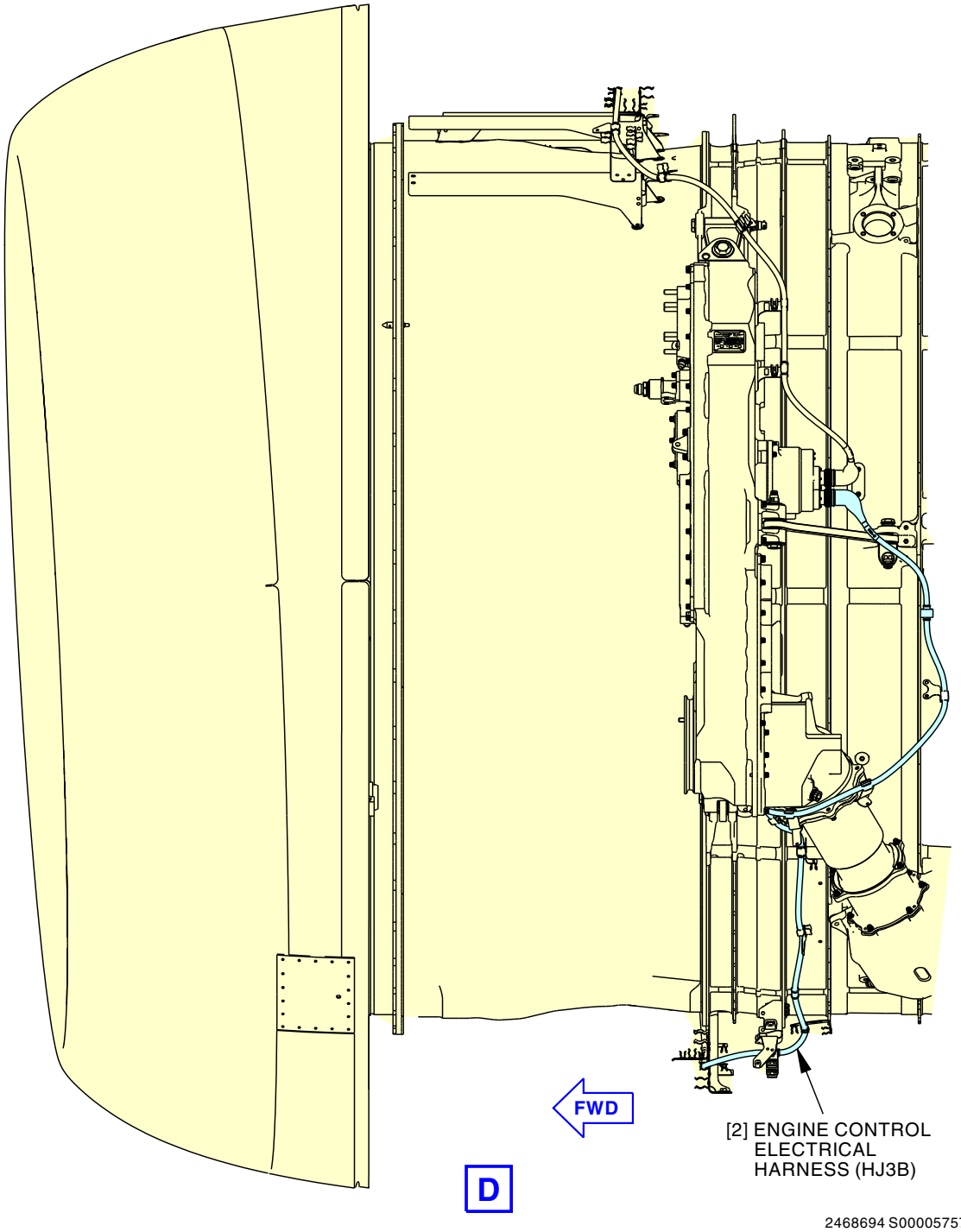
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 2 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



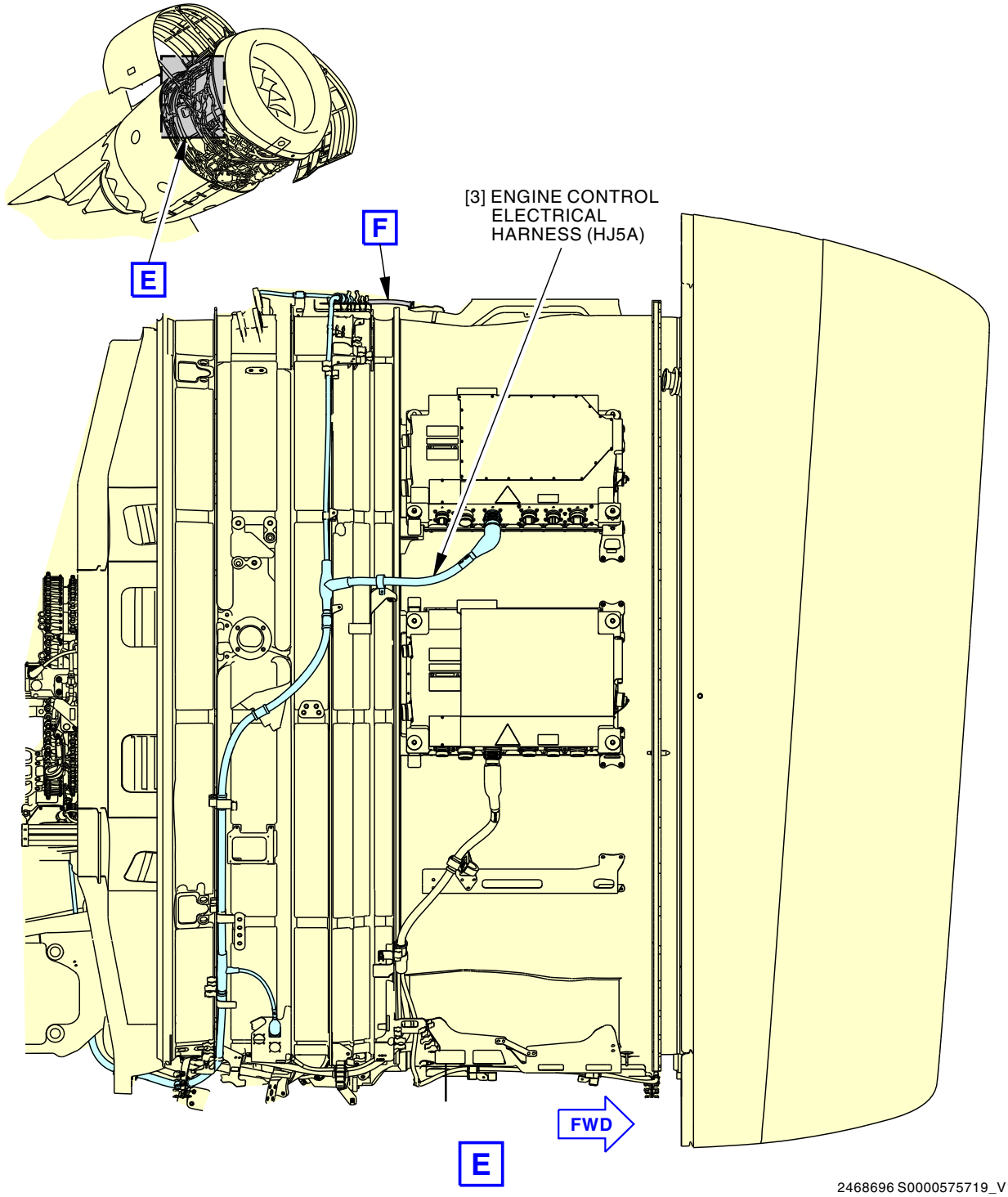
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 3 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



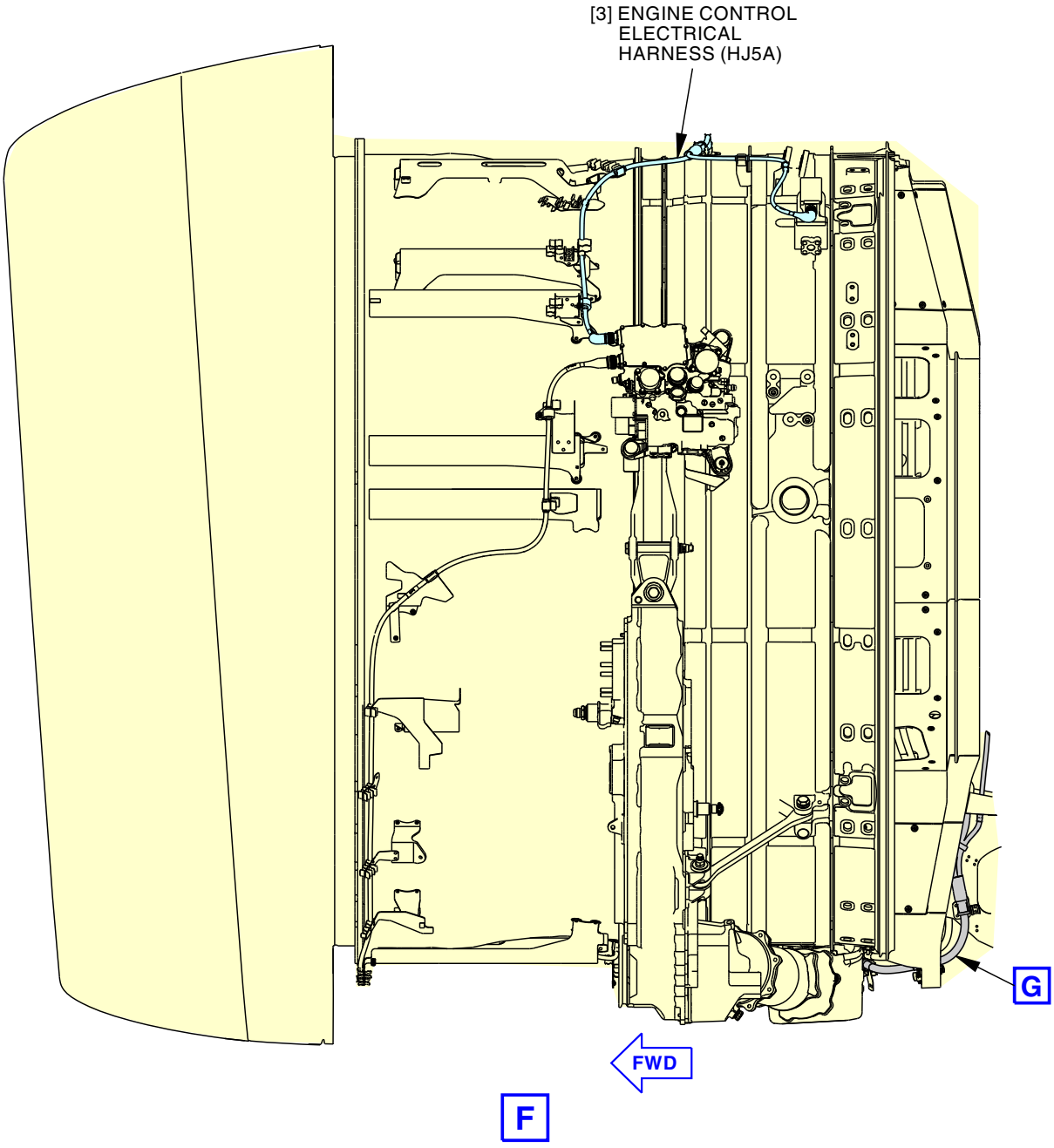
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 4 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



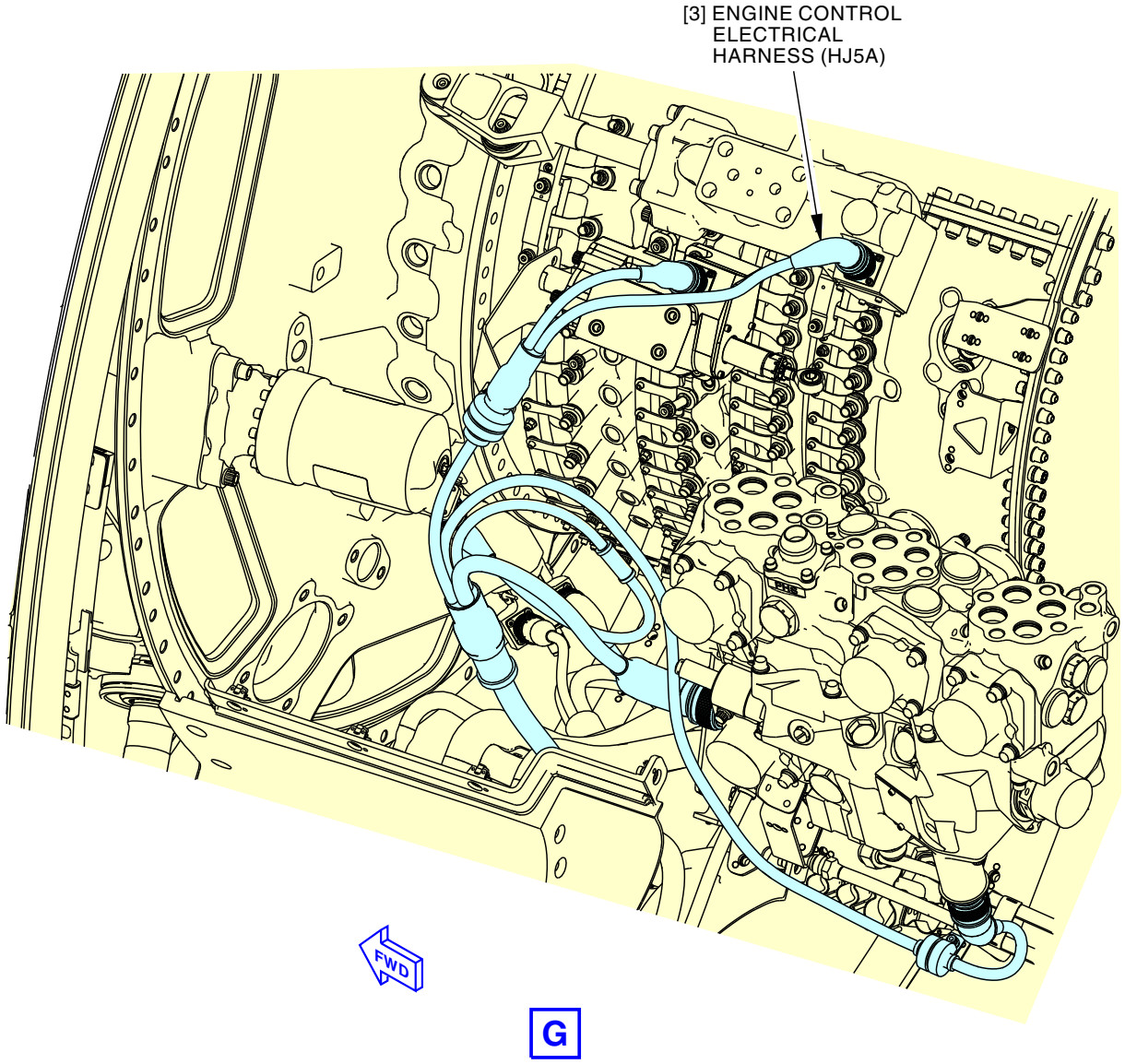
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 5 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 6 of 27)

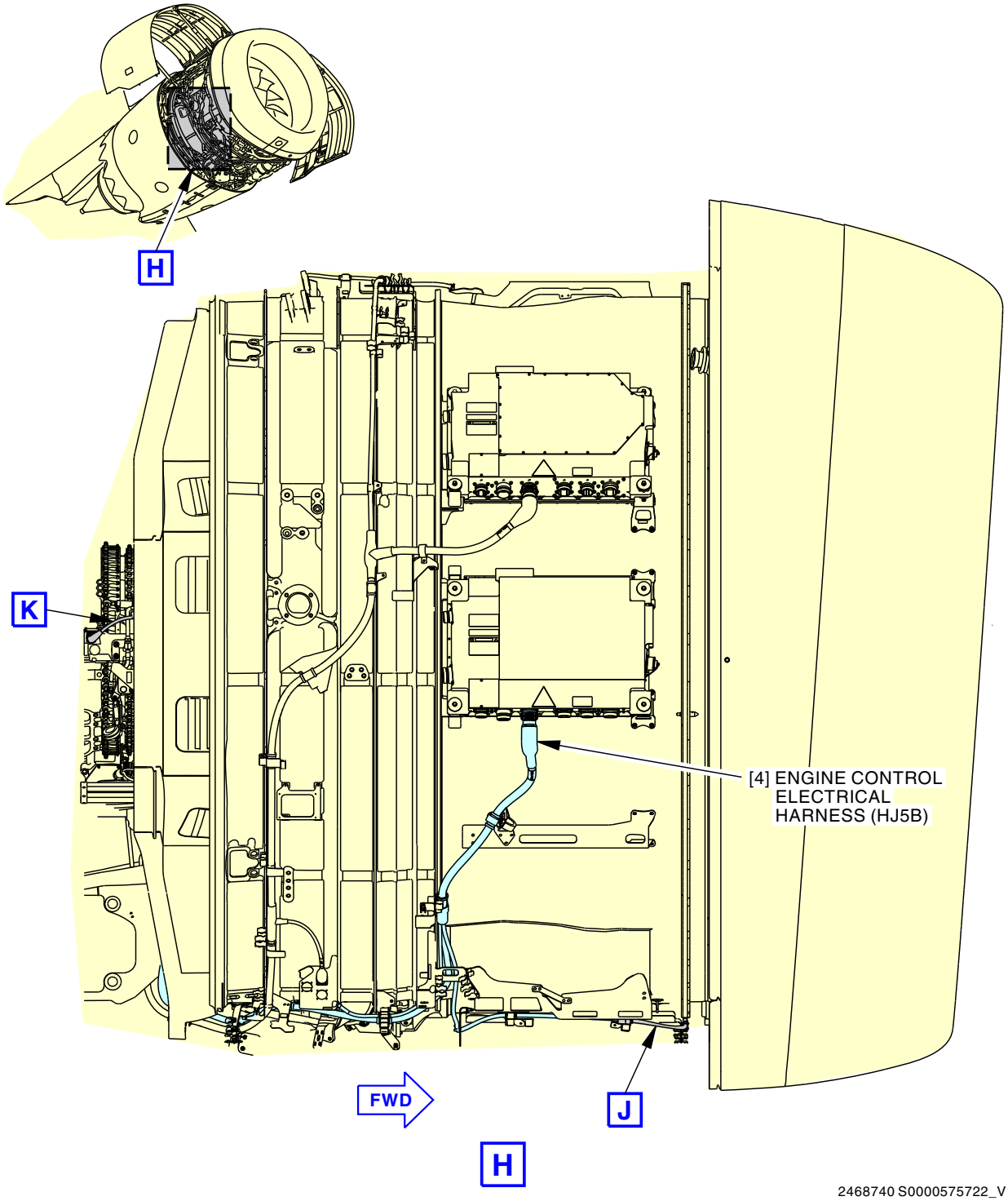
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2468739 S0000575721_V1

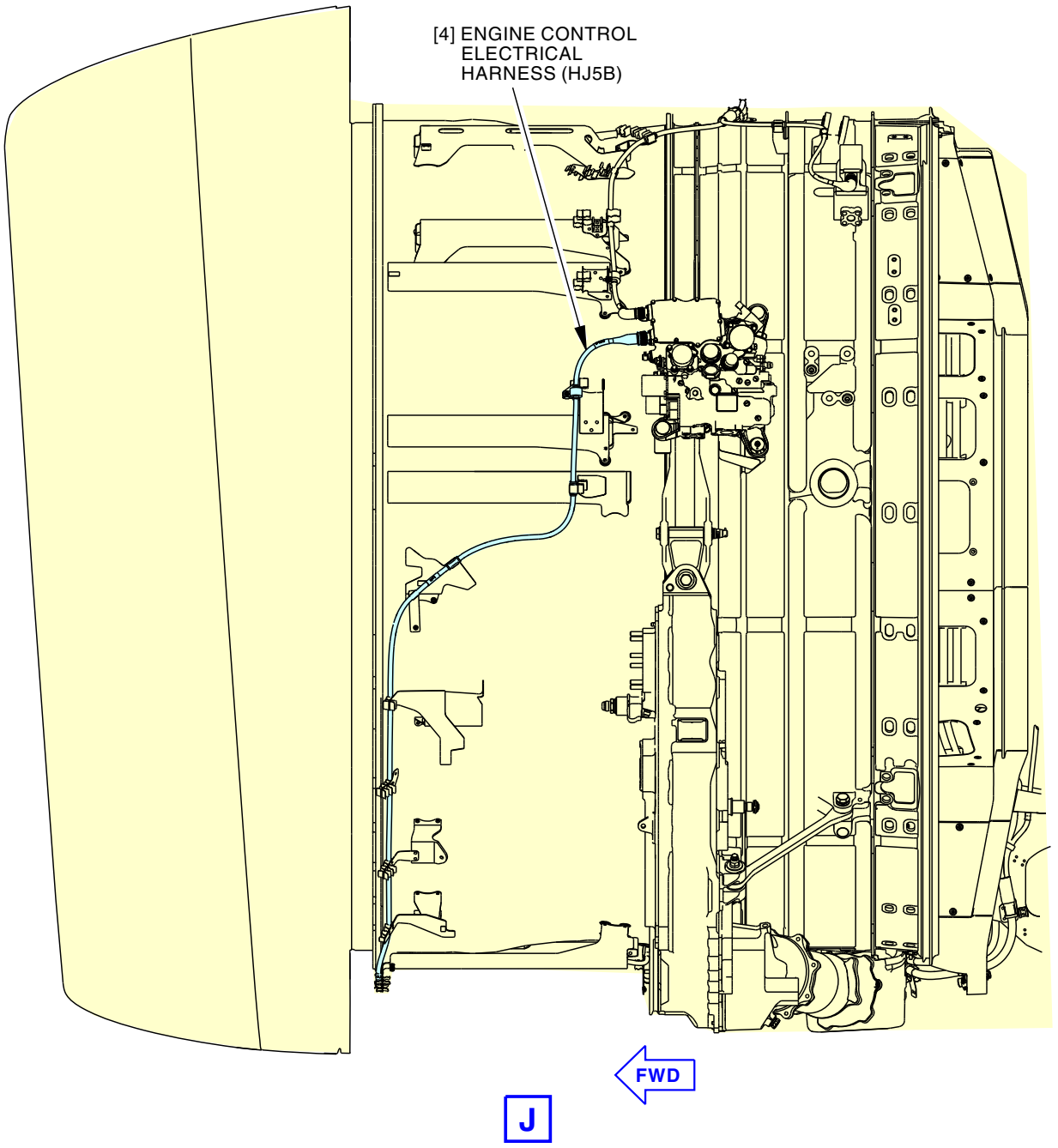
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 7 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



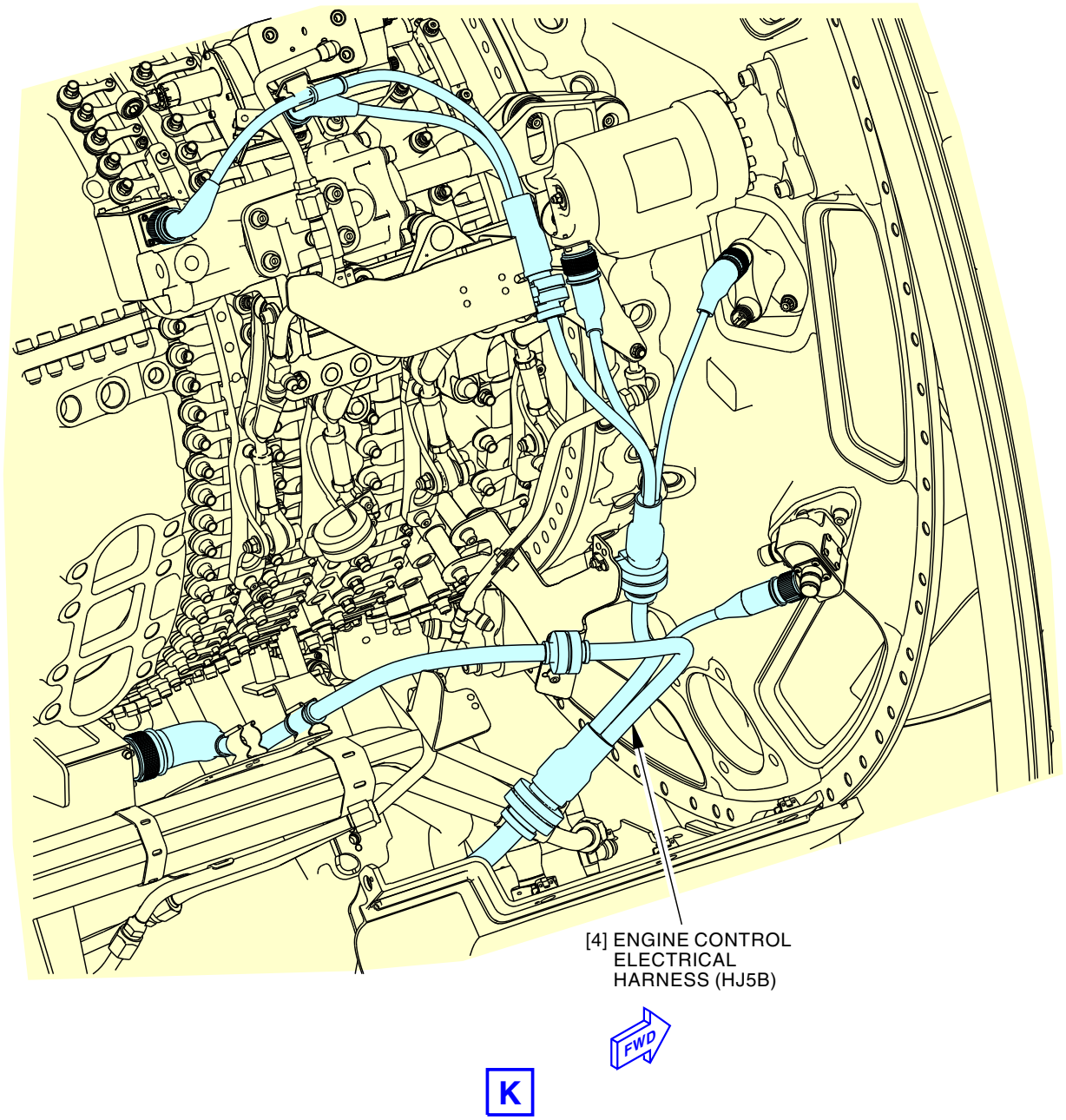
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 8 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 9 of 27)

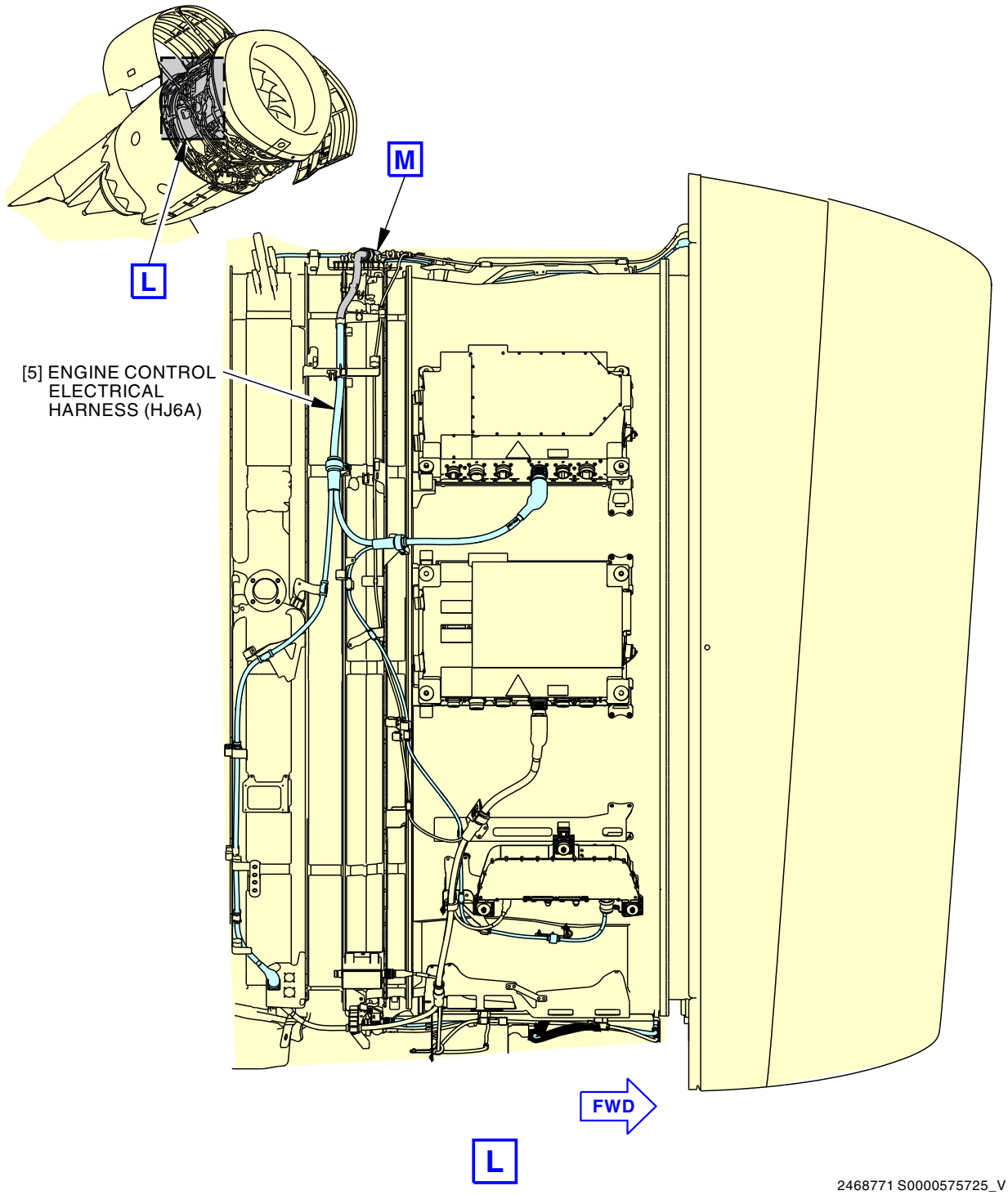
ECCN 9E991 BOEING PROPRIETARY - See title page for details



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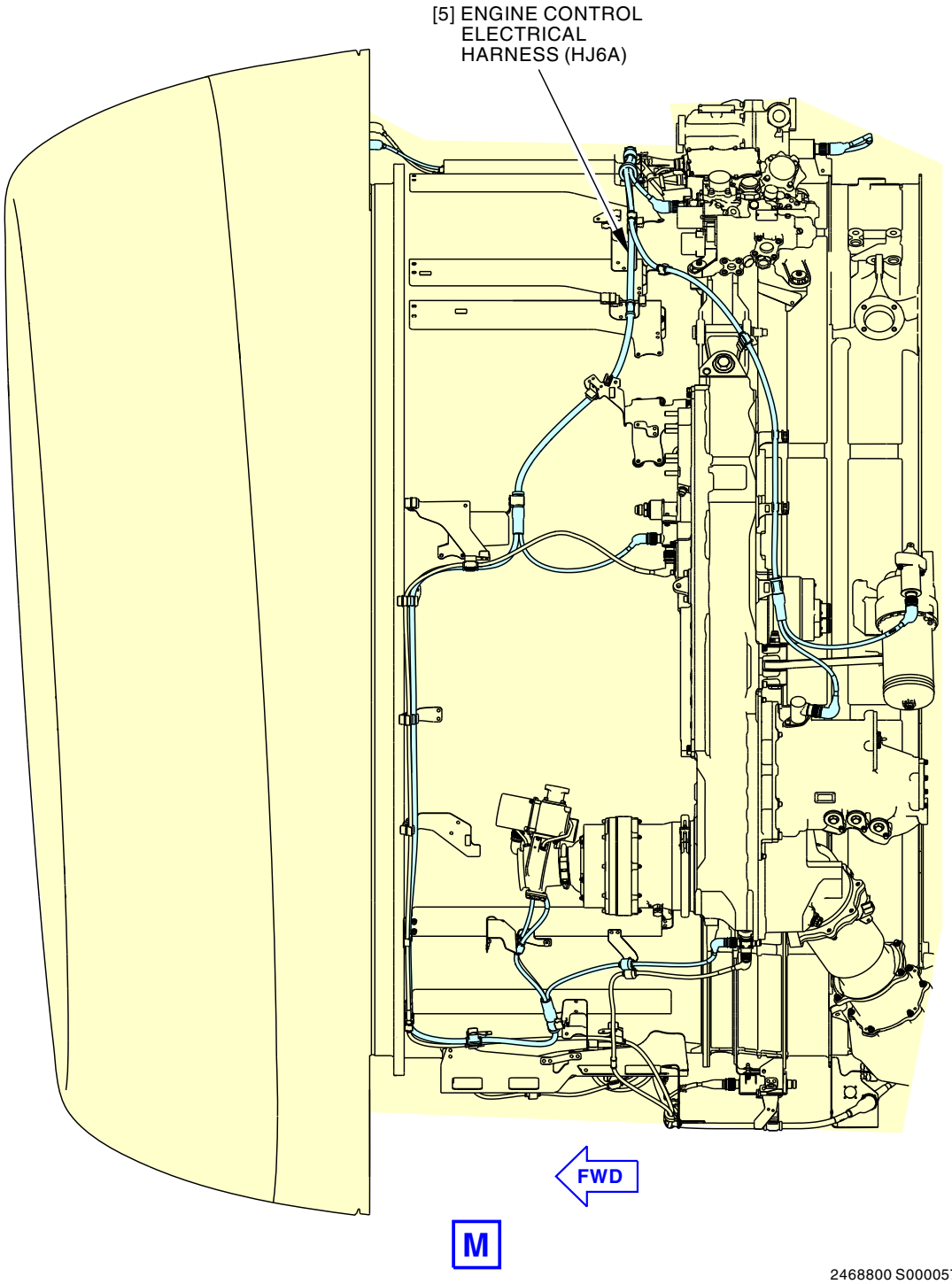
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 10 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



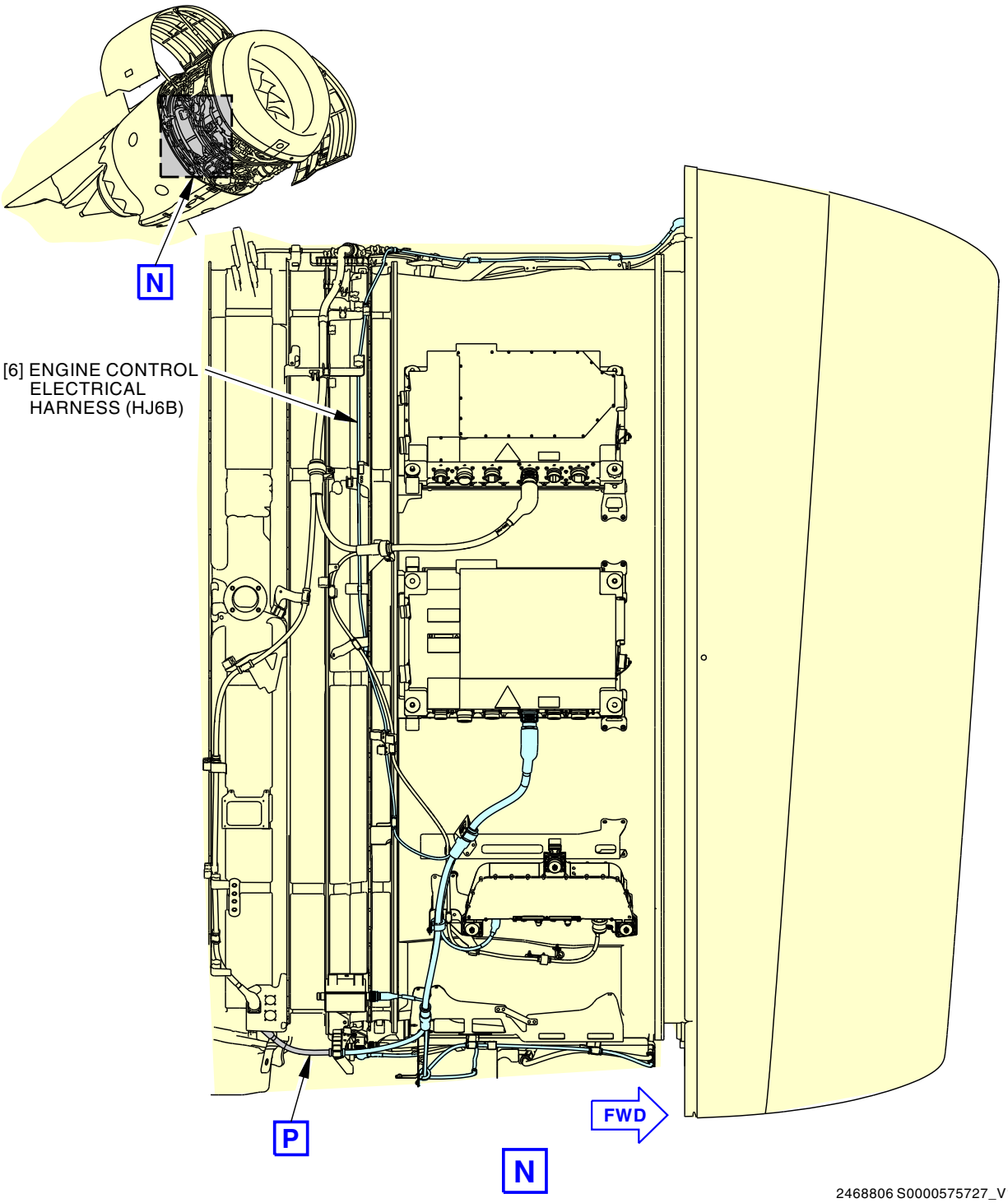
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 11 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



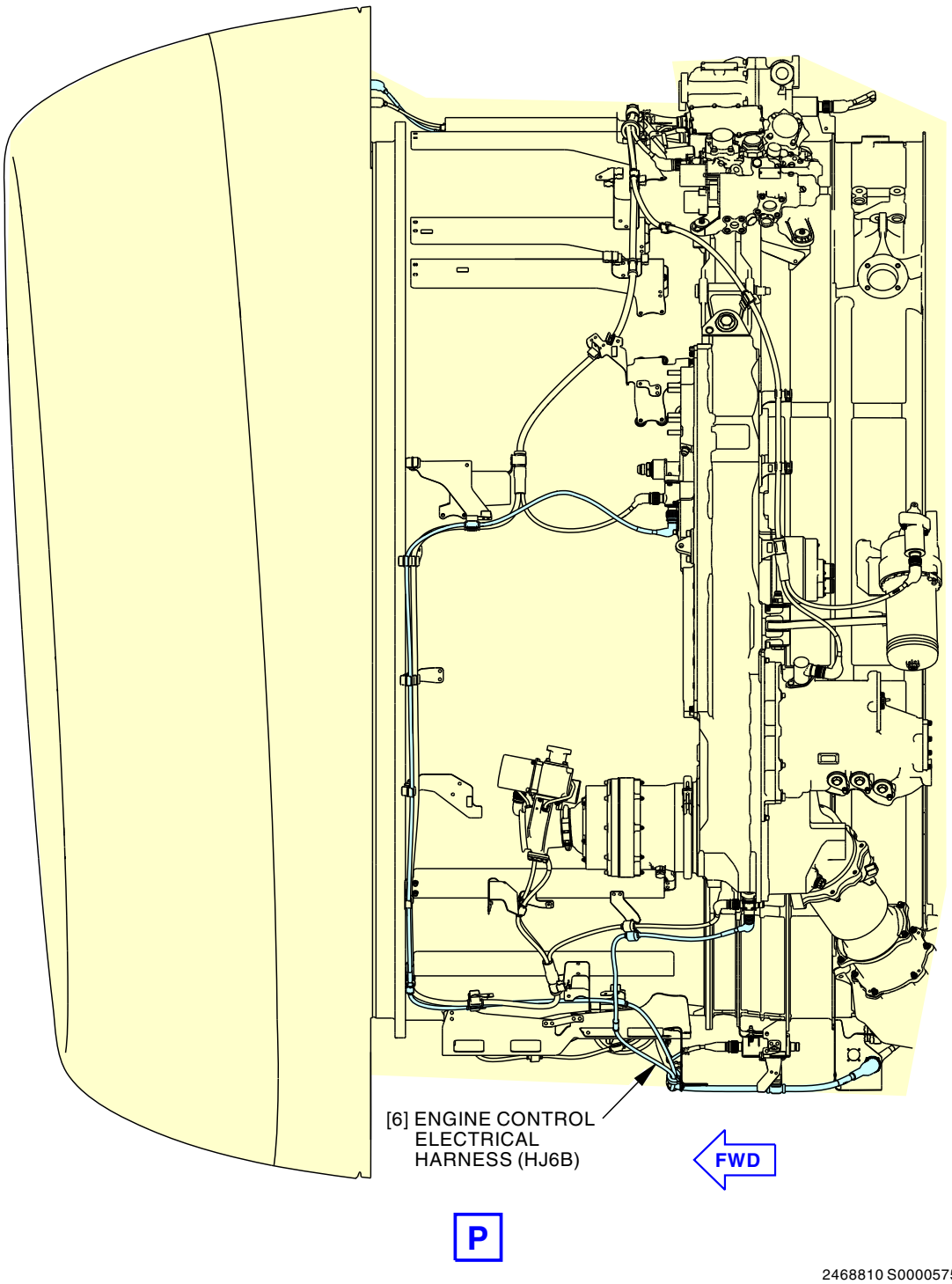
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 12 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



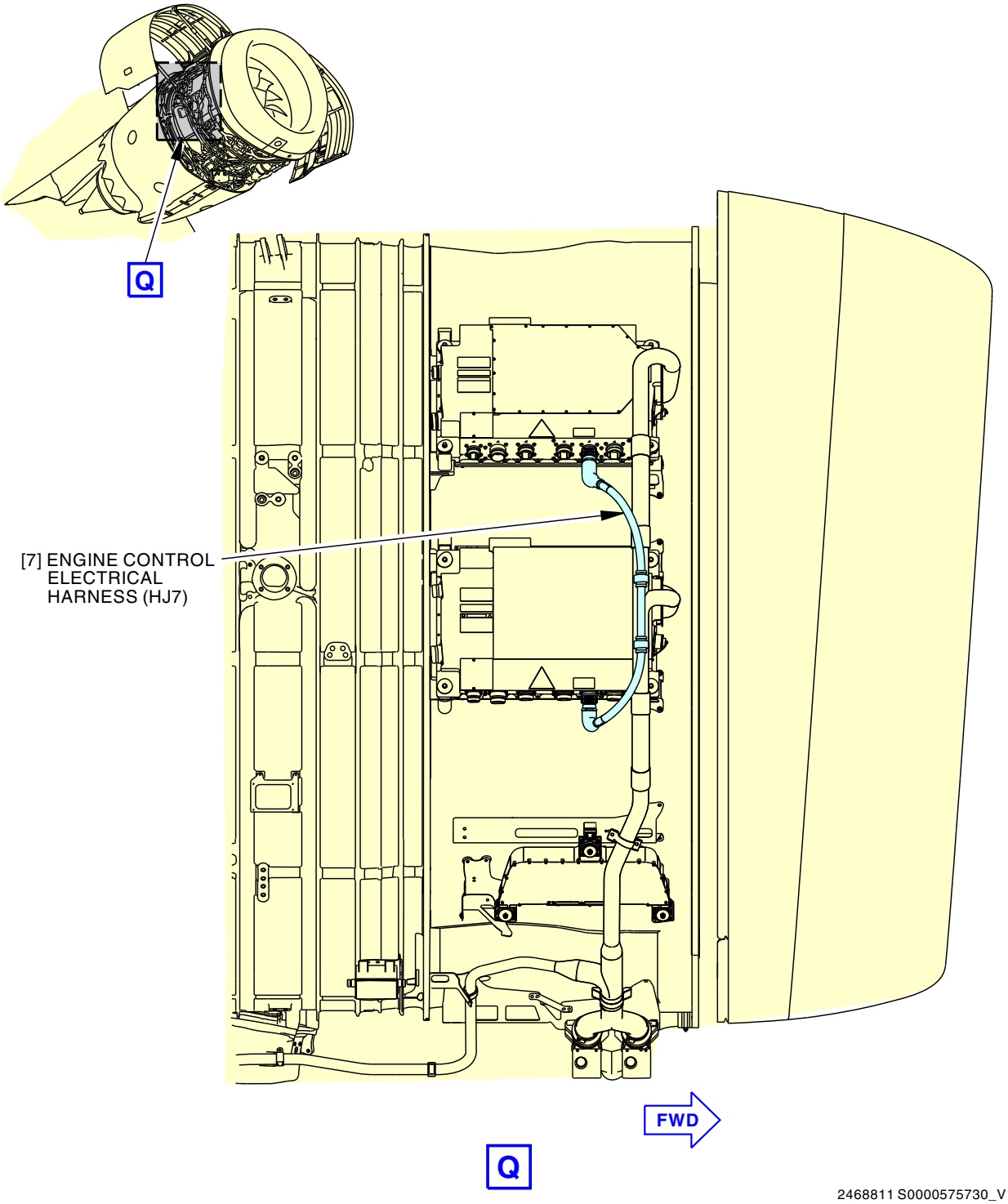
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 13 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



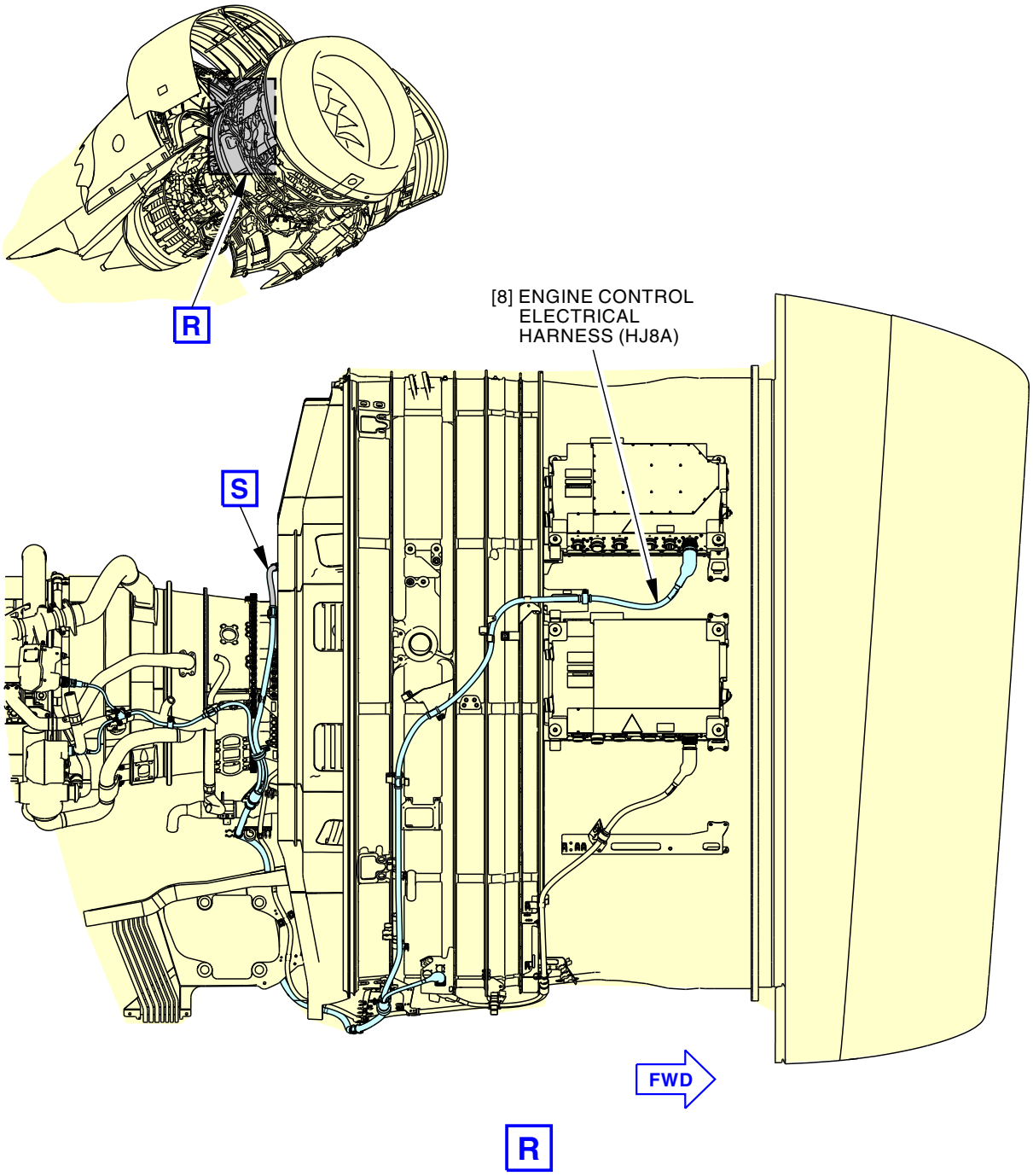
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 14 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



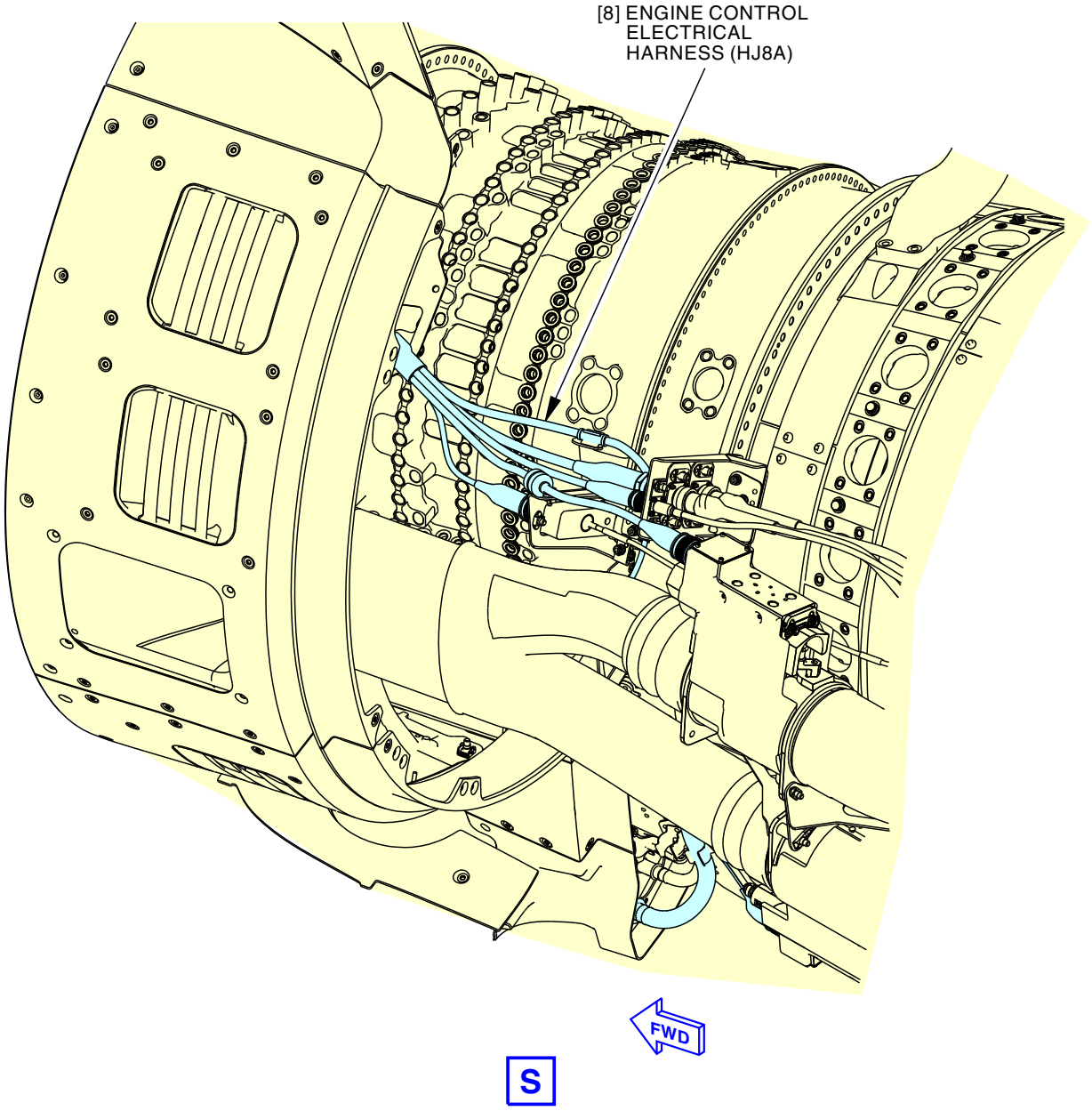
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 15 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



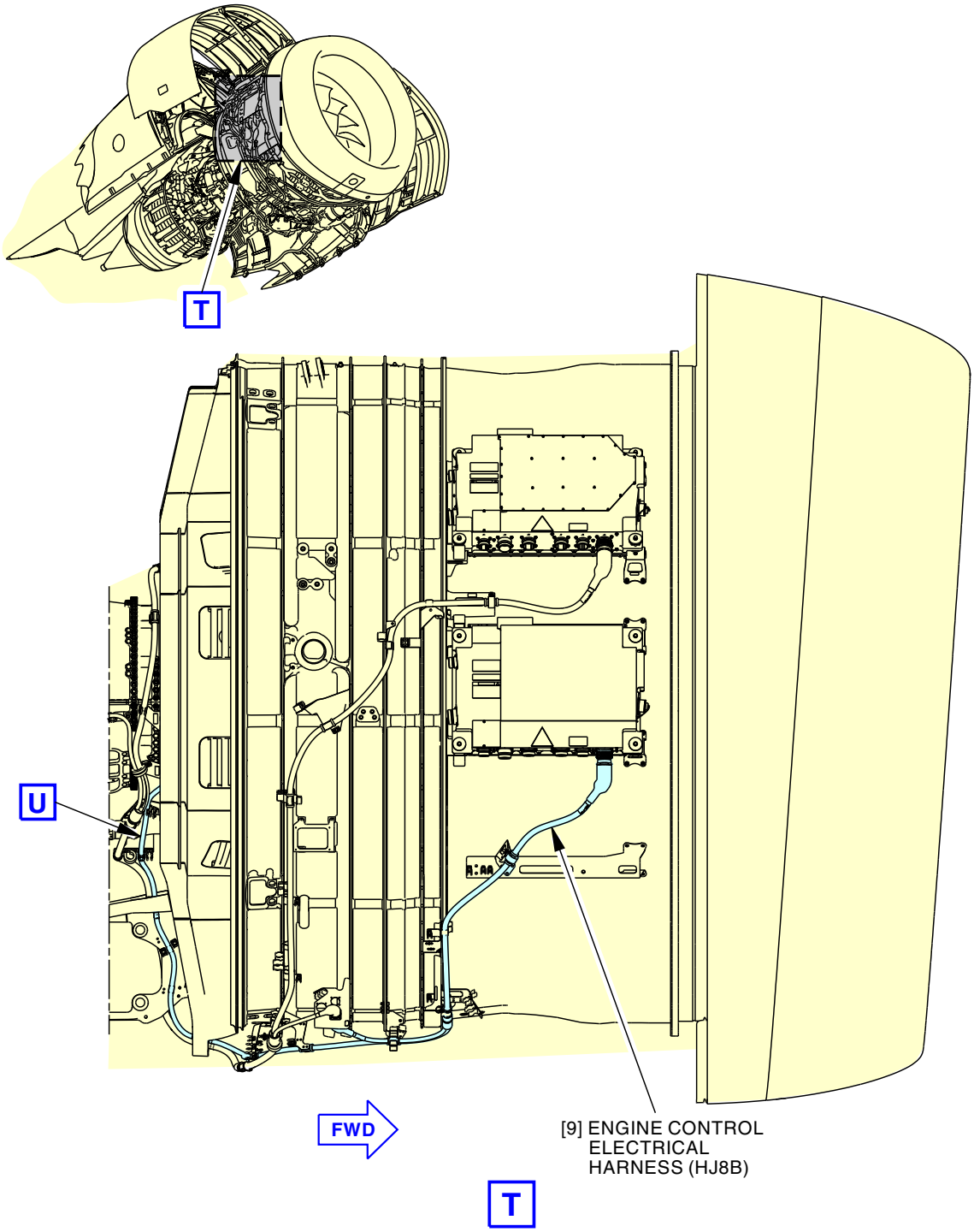
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 16 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



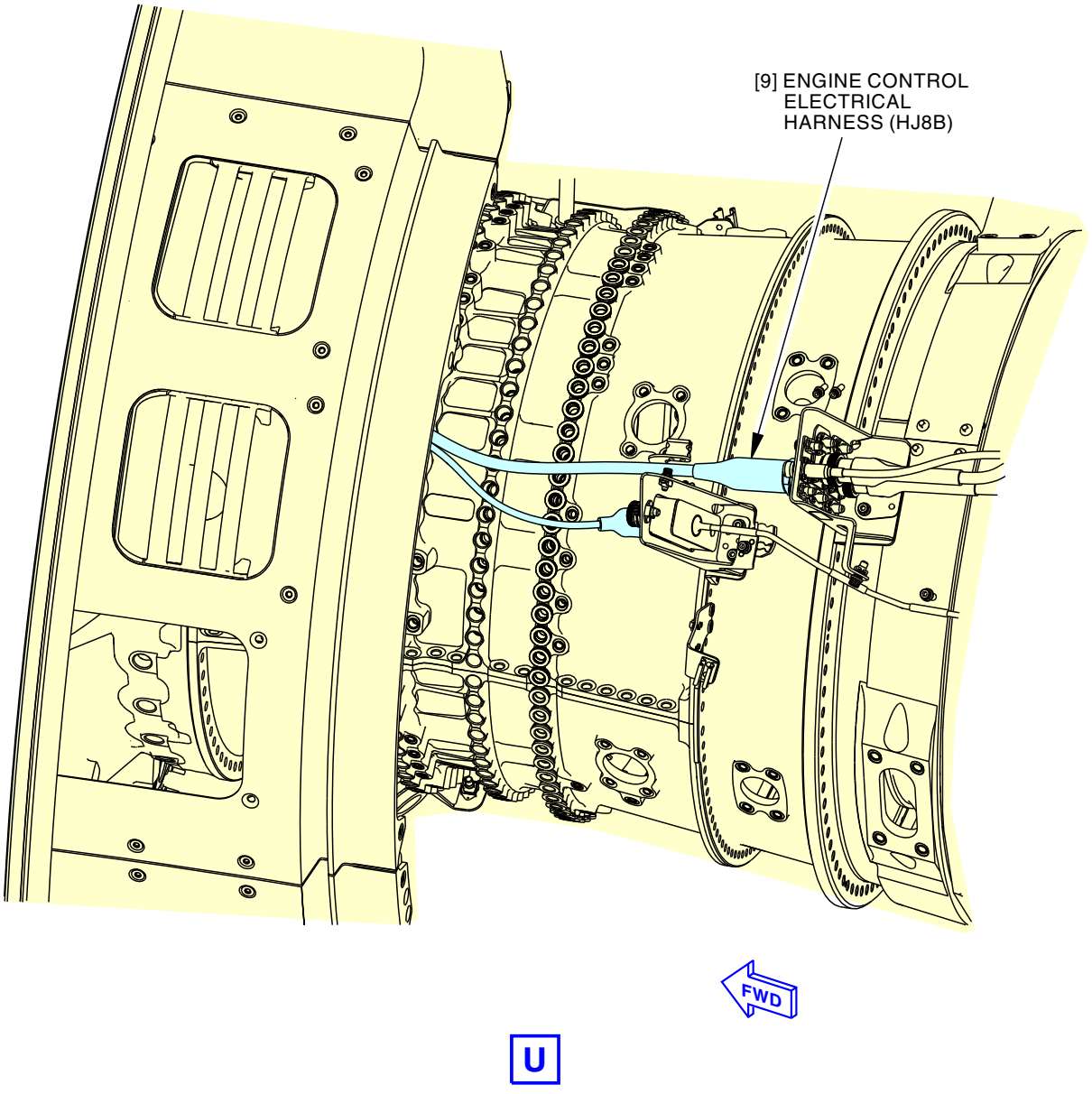
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 17 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 18 of 27)

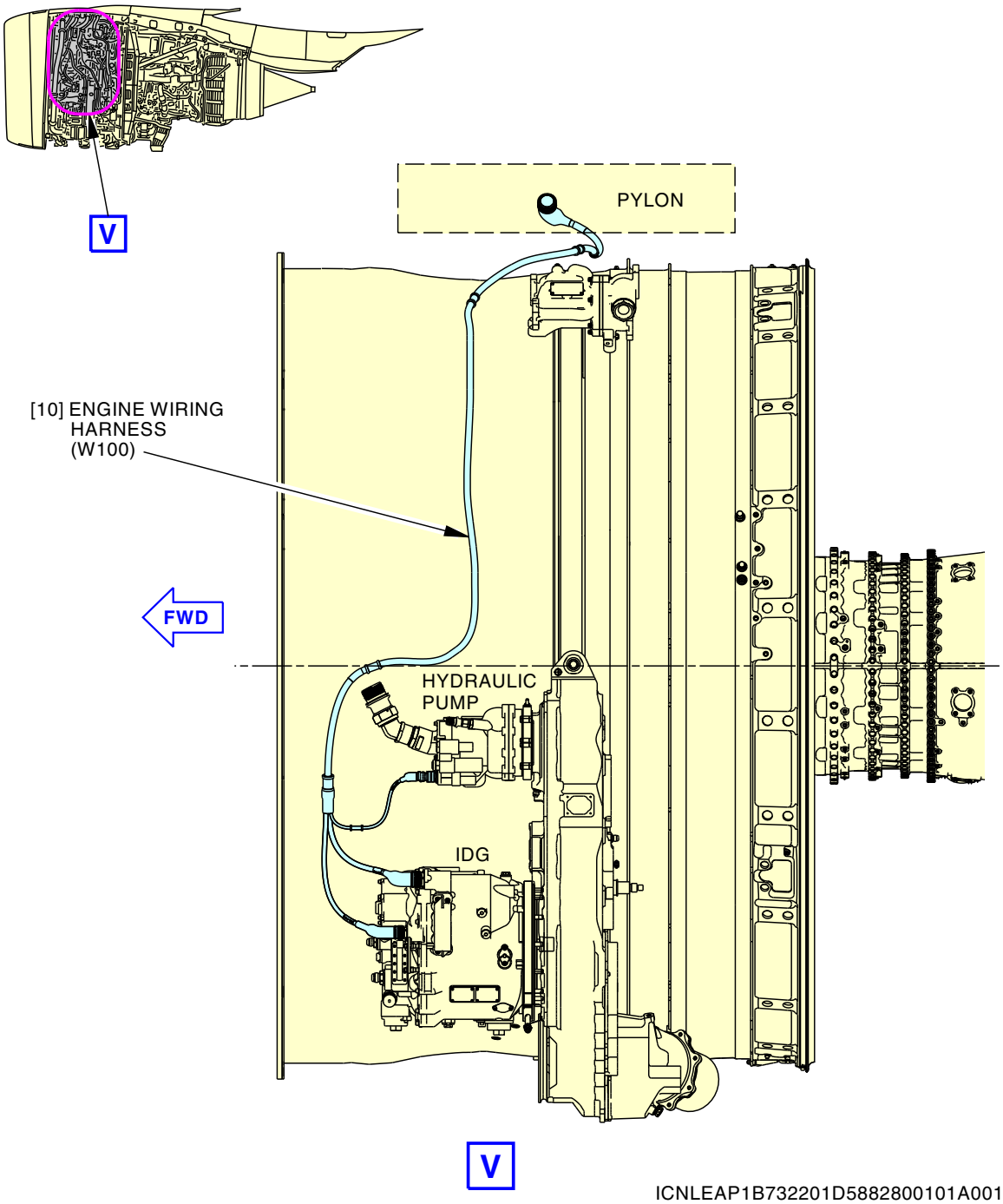
ECCN 9E991 BOEING PROPRIETARY - See title page for details



2468815 S0000575735_V1

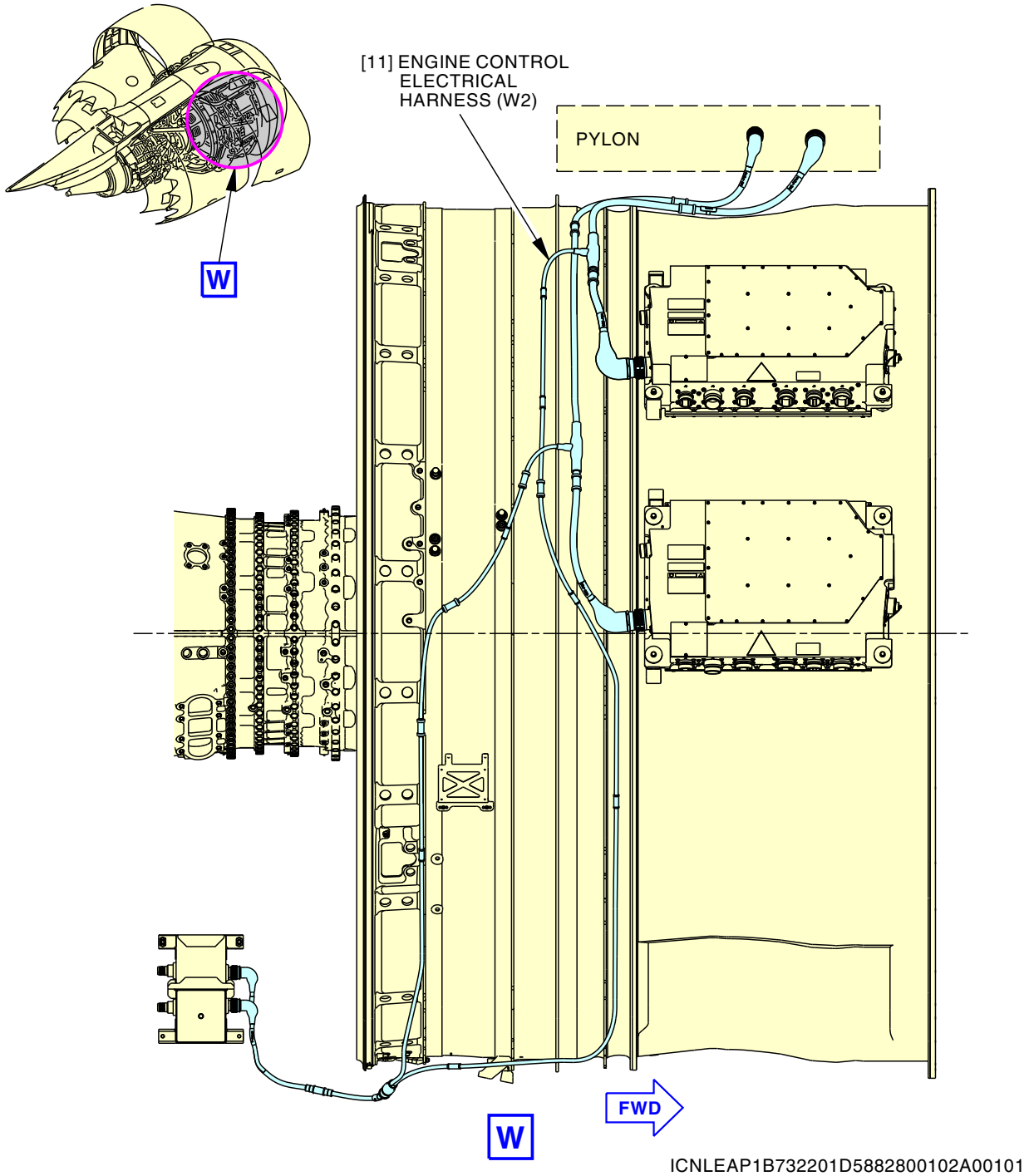
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 19 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



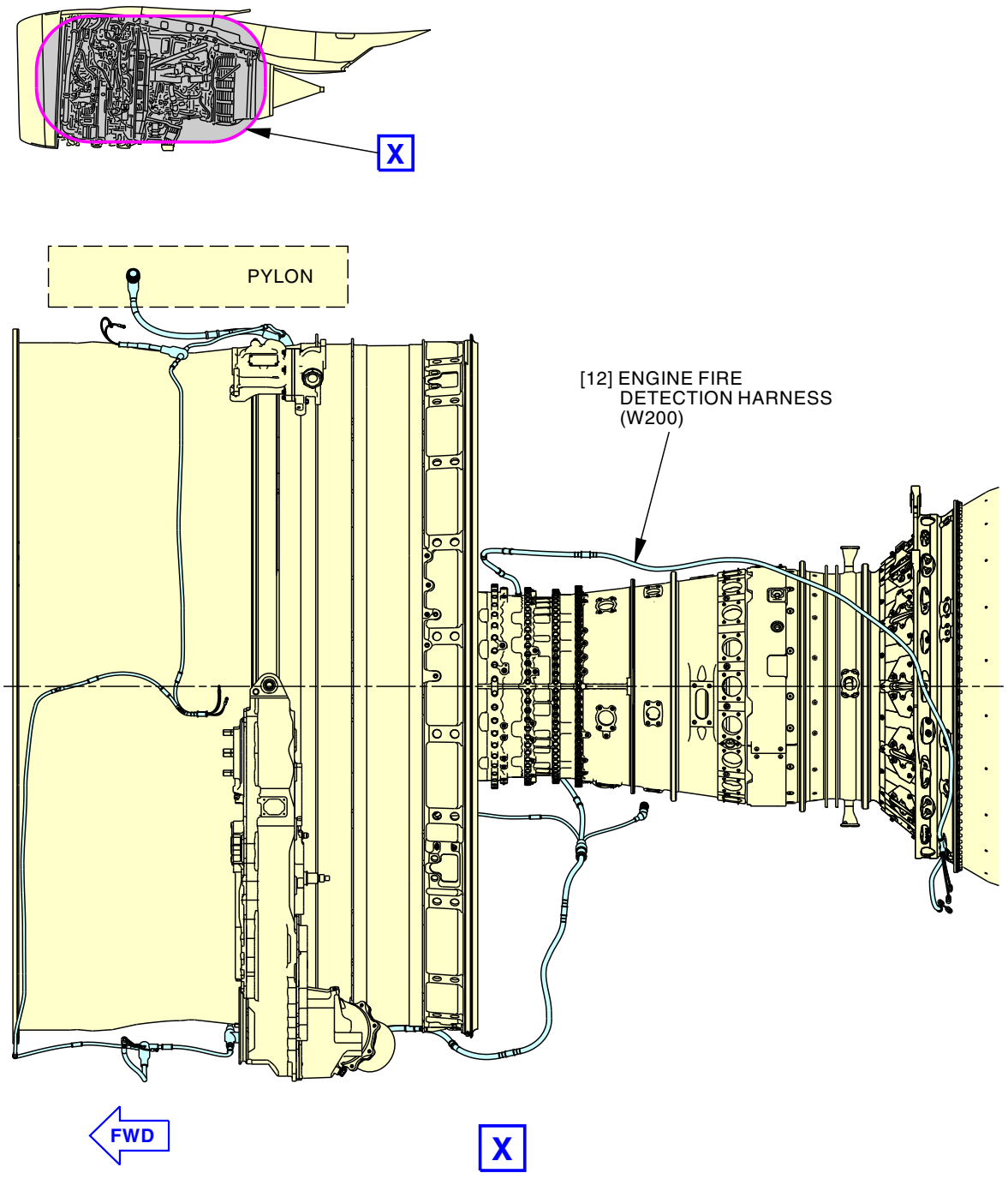
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 20 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



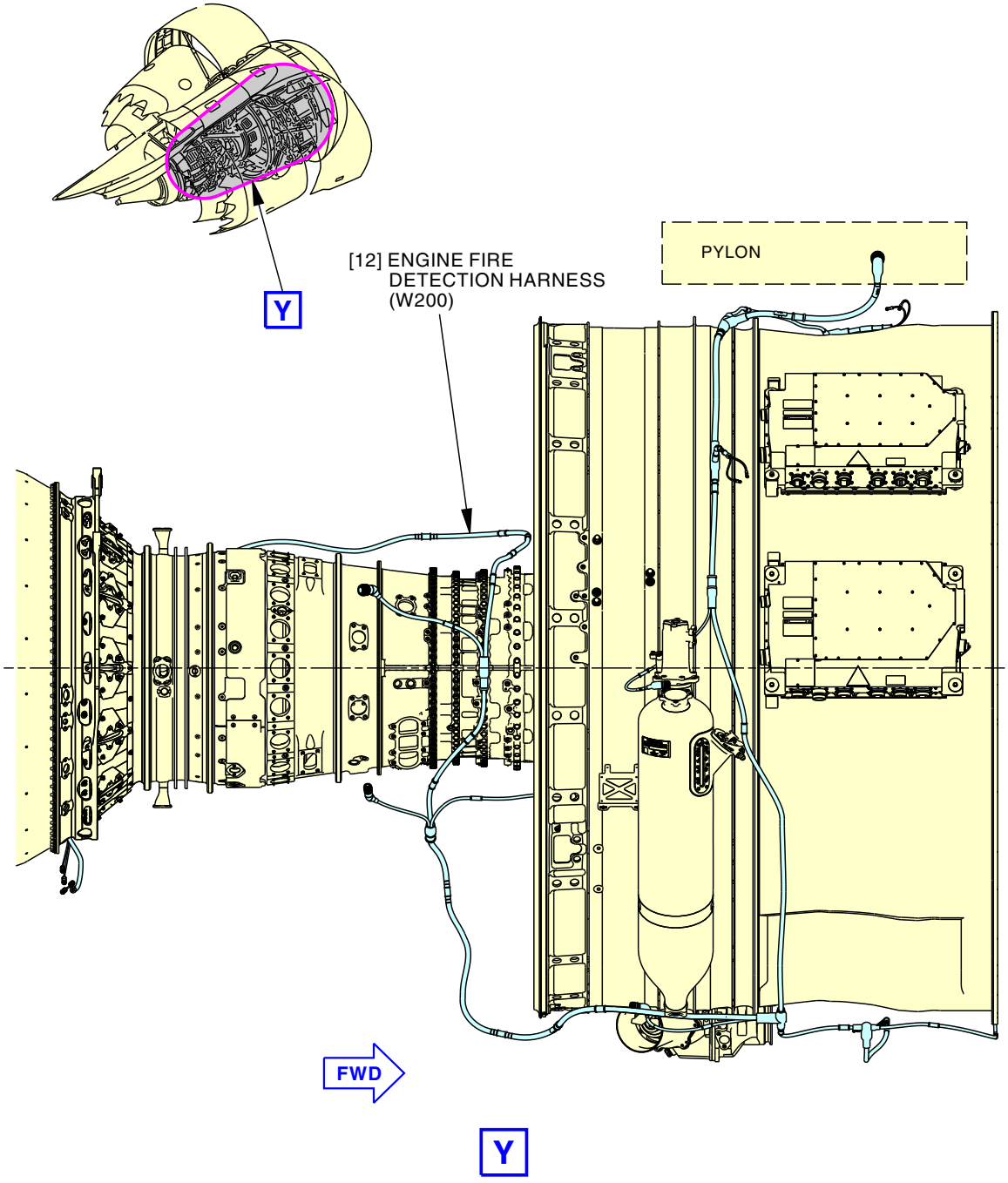
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 21 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 22 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

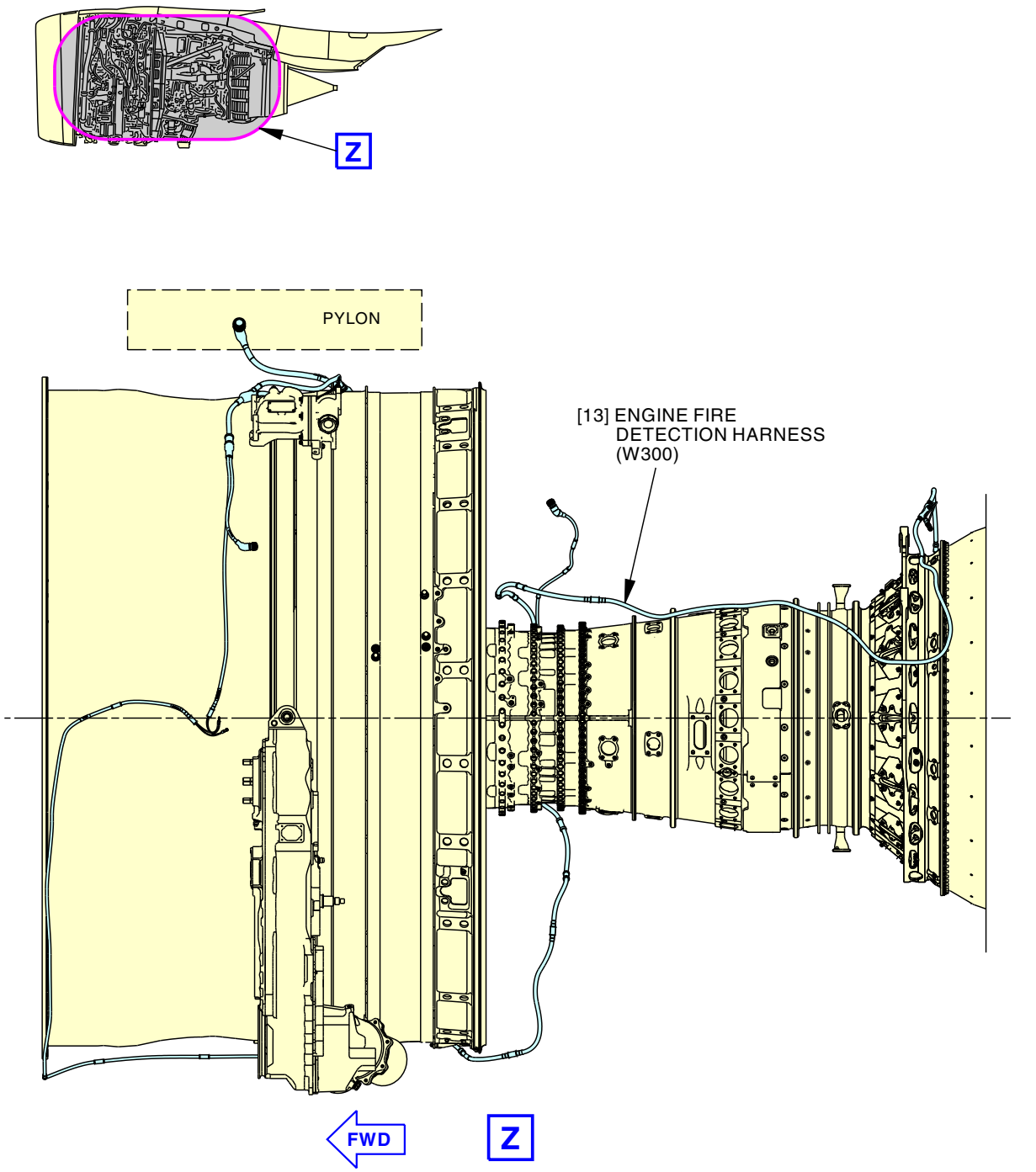


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2966489 S0000745032_V1

Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 23 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

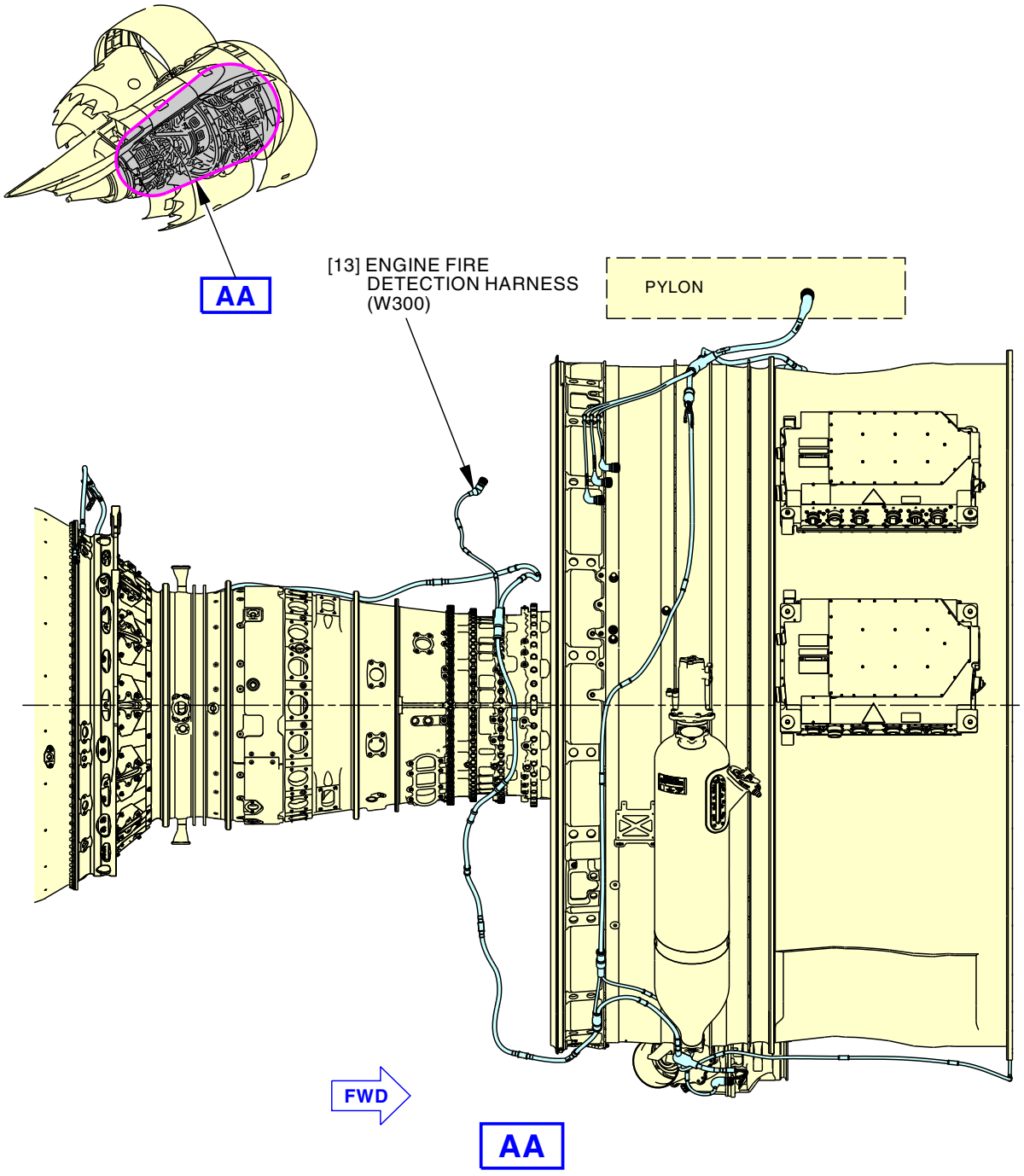


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Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 24 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

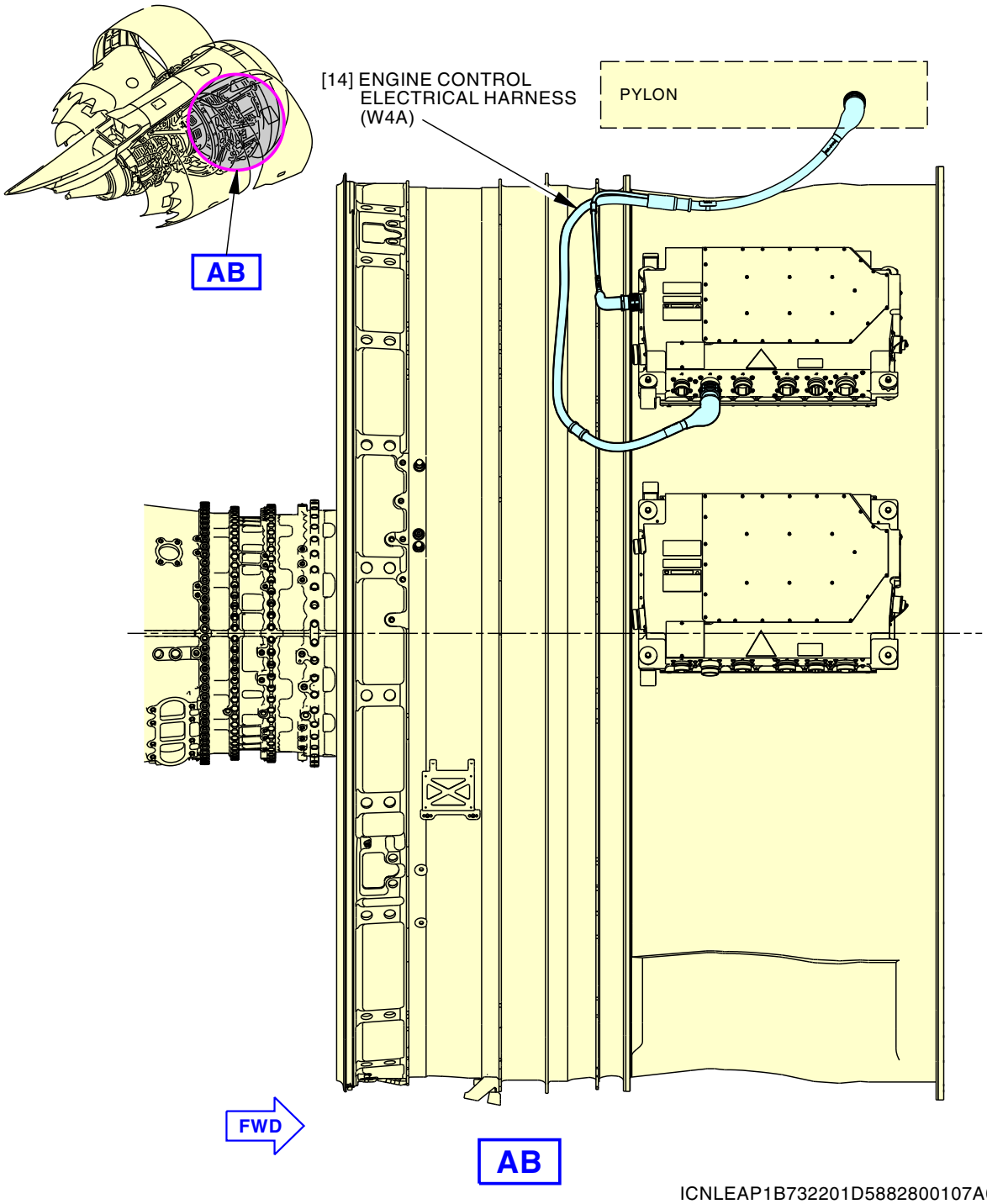


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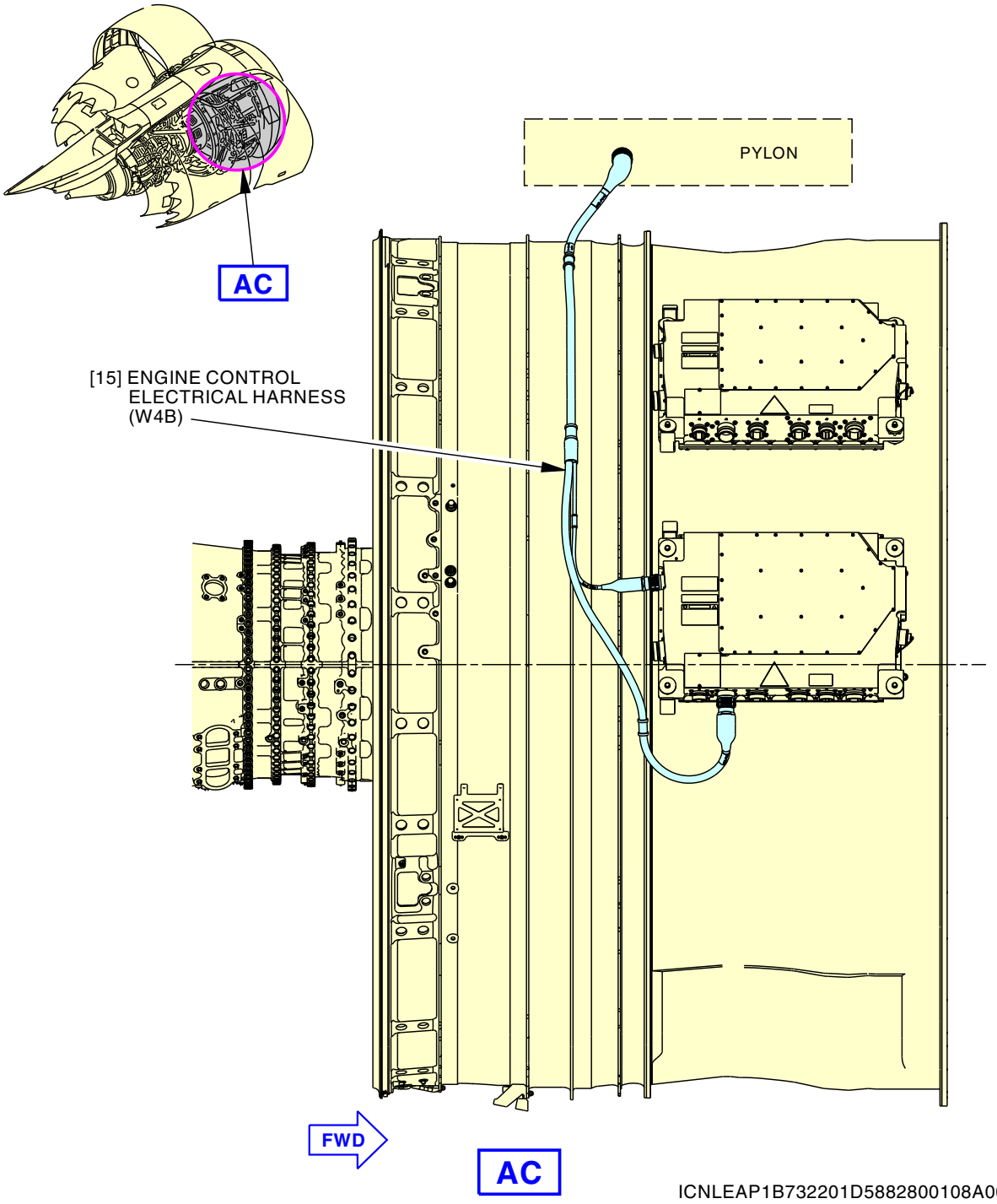
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 25 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



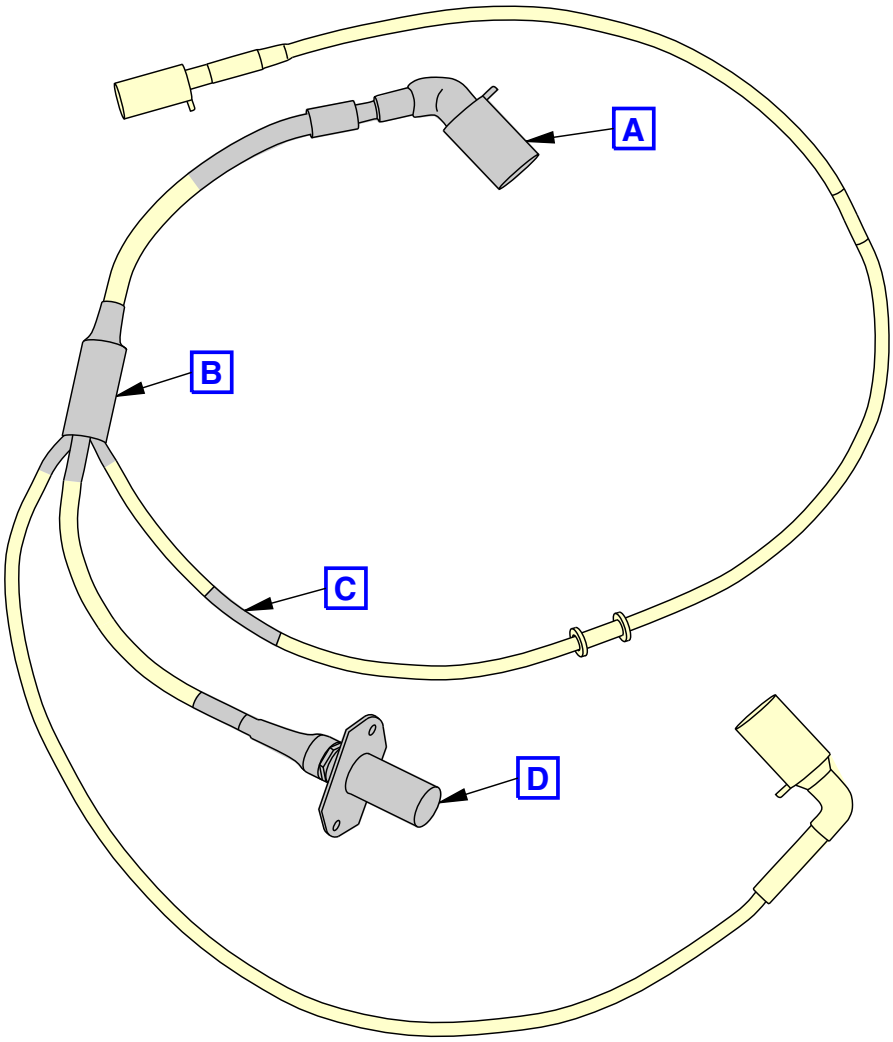
Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 26 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Harness Inspection
Figure 601/73-22-01-990-817-G00 (Sheet 27 of 27)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

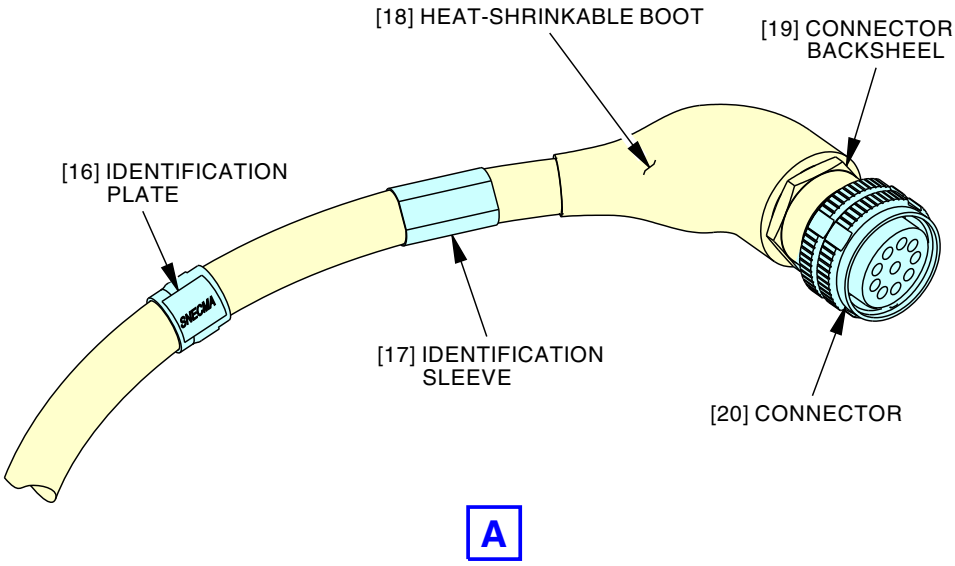


NOTE: THIS VIEW IS APPLICABLE TO THE HJ3A, HJ3B, HJ5A, HJ5B, HJ6A, HJ6B, HJ7, HJ8A AND HJ8B, W2, W4A, W4B, W100, W200, AND W300 ENGINE HARNESSES.

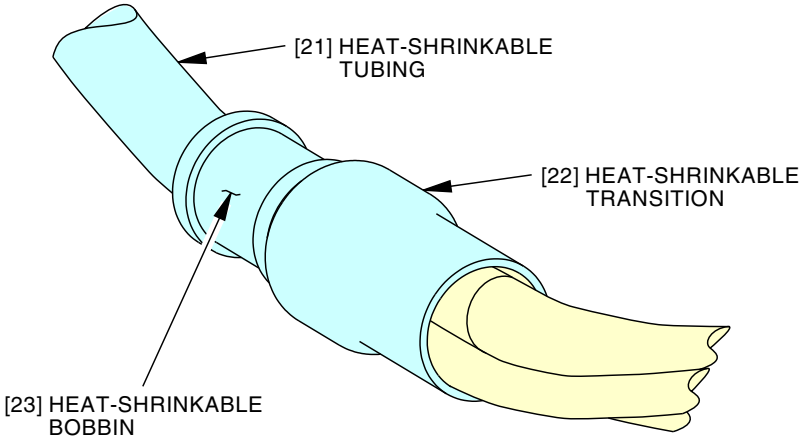
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Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 1 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



A



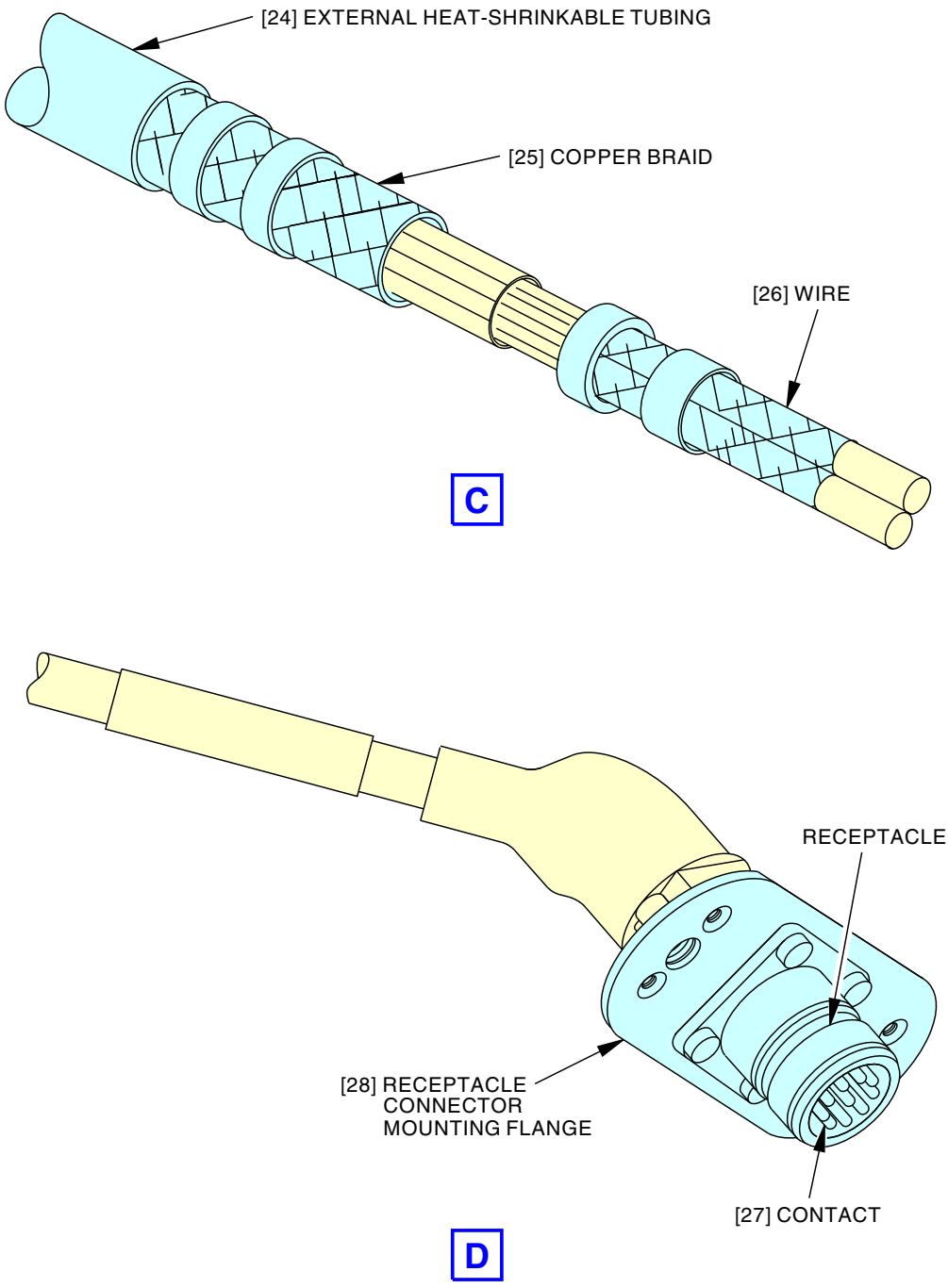
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ICN-LEAP-1B-732201-B-F0301-A0085-A-001-01

2468818 S0000575738_V3

Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 2 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 3 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



CHAFING, BURN, CUT, REMOVED CHARACTERS
IDENTIFICATION SLEEVE



BURN, CUT



CHAFING

IDENTIFICATION PLATE



BURN, DEFORMATION, CHAFING



LOOSENESS



GLUE

HEAT-SHRINKABLE PARTS



MARK, DEFORMATION

HEAT-SHRINKABLE PARTS, BOBBIN

ICN-LEAP-1B-732201-B-F0301-A0087-A-001-01
2468820 S0000575741_V2

Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 4 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONNECTOR





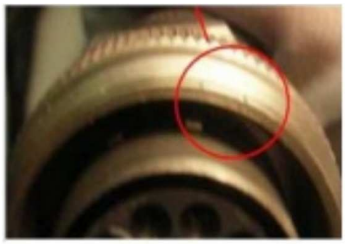
WORN MASTER KEY

CONNECTOR (THREAD)



WORN THREADS

CONNECTOR (LOCKING RING)



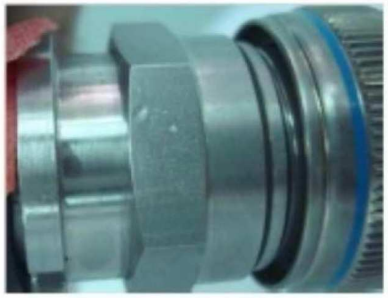


NICKS, DENTS, SCRATCHES

CONNECTOR AND BACKSHELL



SCRATCHES



NICKS, DENTS

ICN-LEAP-1B-732201-B-F0301-A0088-A-001-01

2468881 S0000575743_V2

Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 5 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONNECTOR AND METALLIC PARTS



MARKING PARTIALLY ERASED

CONNECTOR



INTERFACIAL FACE DETERIORATED

EXTERNAL HEAT-SHRINKABLE TUBING



BURN, CHAFING, DEFORMATION



PERFORATION, CUT

COPPER BRAID



BURN, CUT, FRETTING

STAINLESS BRAID



BURN, CUT, FRETTING

RECEPTACLE CONNECTOR COUNTERPLATE



SCRATCHES, DENTS, NICKS

CONTACT



DISTORTION

ICN-LEAP-1B-732201-B-F0301-A0089-A-001-01
2468882 S0000575744_V2

Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 6 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



BAD ASSEMBLY CONNECTOR



SPECIFIC CABLES (BMS1367)
CHAFING

CONTACT



SIGNS OF WEAR,
ARCING OR CARBONIZING



MISSING OR RETRACTED





LUG
DISTORTION, CRACK OR TEAR



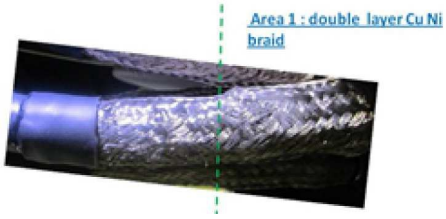
ANTI ROTATION LUG
CRACK OR TEAR

ICN-LEAP-1B-732201-B-F0301-A0090-A-001-01
2468883 S0000575745_V2

Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 7 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

HOLES BETWEEN STRANDS

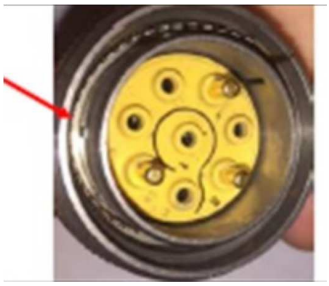


COPPER BRAID
(FIRE WALL PROTECTION AREA 1)

HOLES BETWEEN STRANDS



COPPER BRAID
(FIRE WALL PROTECTION AREA 2)



CONNECTOR RFI RING
CUT LOOSENESS AND DEFORMATED



STAINLESS STEEL CLAMPS
CUT OR LOOSENESS



EXTERNAL HEATSHRINKABLE TUBING FOR FIRE LOOP (TFER)
PERFORATION, CUT



MECHANICAL PARTS (BREAKOUT TYPE Y OR T)
NICKS, DENTS, SCRATCHES

ICN-LEAP-1B-732201-B-F0301-A0094-A-001-01

2549135 S0000606883_V1

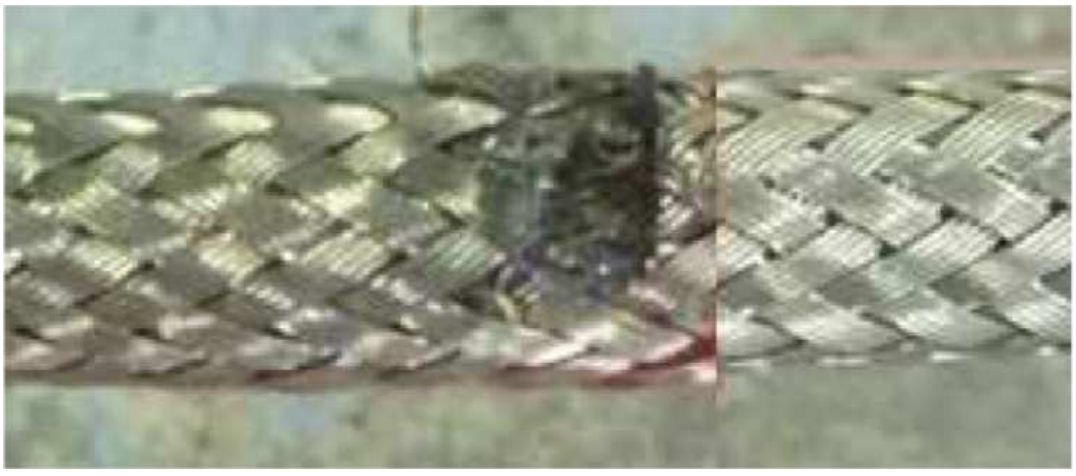
Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 8 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

STAINLESS OUTER COPPER BRAID



BURN, CUT



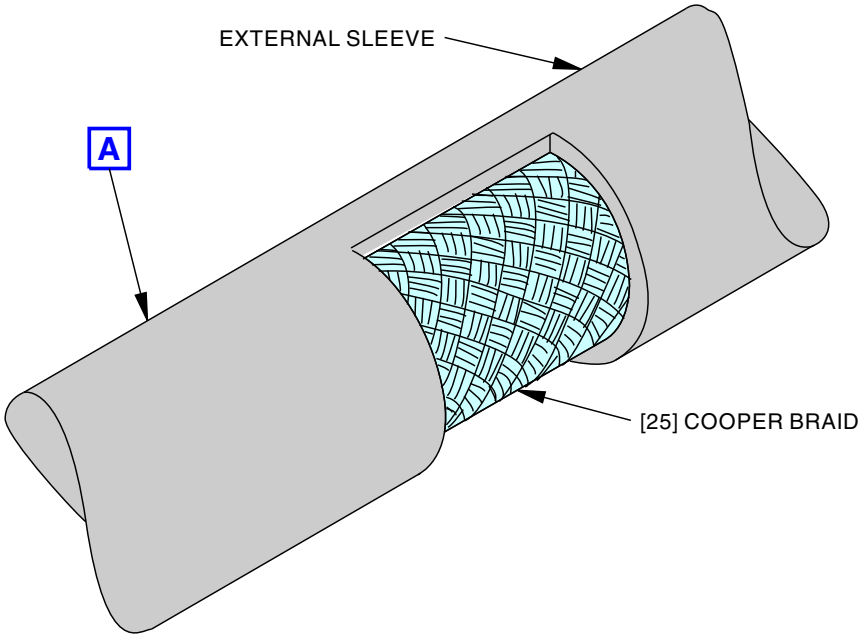
FRETTING

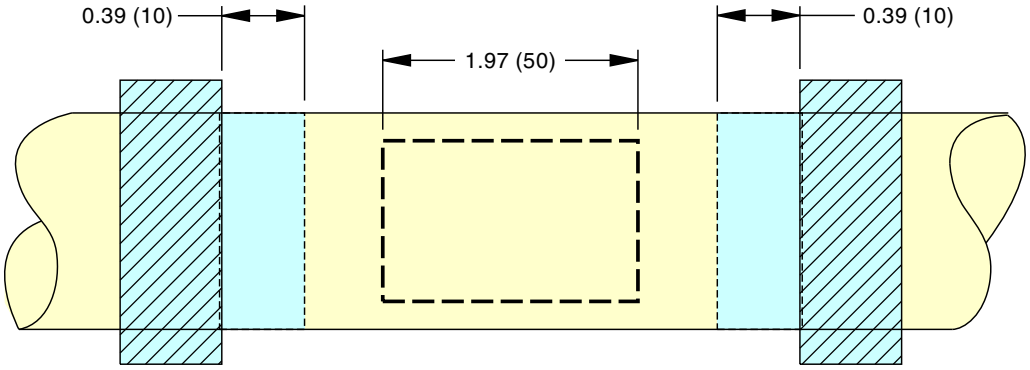
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Engine Control Electrical Harness Inspection
Figure 602/73-22-01-990-883-G00 (Sheet 9 of 9)

ECCN 9E991 BOEING PROPRIETARY - See title page for details





A

NOTE:

ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS ARE IN PARENTHESES).

MOUNTING POINT (OMEGA CLIP OR P CLAMP)

NO REPAIR AREA

ICNLEAP1B732201D5882800100A00101

2966522 S0000745037_V1

Heat-Shrinkable Tubing Inspection
Figure 603/73-22-01-990-884-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-210-802-G00

3. Engine Control Electrical Harness Connectors Inspection

(Figure 604)

A. General

(1) This task gives the instructions to do the visual inspection of the engine control electrical harness connectors.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-22-01-000-801-G00	Electronic Engine Control (EEC) Electrical Harness (HJ3A) Removal (P/B 401)
73-22-01-400-801-G00	Electronic Engine Control (EEC) Electrical Harness (HJ3A) Installation (P/B 401)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 73-22-01-860-077-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-078-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Engine Control Electrical Harness Connectors Inspection

SUBTASK 73-22-01-211-014-G00

(1) Do a visual inspection of the connector [1] for these conditions:

(a) Worn master key

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(b) Signs of short-circuit, carbonizing

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(c) Nicks, dents, scratches on the connector locking ring

ECCN 9E991 BOEING PROPRIETARY - See title page for details

1) Permitted, if the nicks, dents and scratches are not more than 0.1 in. (2.0 mm) long, 0.04 in. (1.0 mm) wide and 0.01 in. (0.3 mm) deep.

2) If findings arer more than the limits, replace the applicable engine control electrical component.

(d) Scratches on connector and backshell parts

1) Permitted, if scratches are not more than 0.01 in. (0.3 mm) in depth.

2) If scratches are more than the limits, replace the applicable engine control electrical component.

(e) Nicks, Dents on connector thread

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(f) Nicks and dents on connector backshell

1) Permitted, if the nicks and dents are not more than 0.1 in. (2.0 mm) long, 0.04 in. (1.0 mm) wide and 0.01 in. (0.3 mm) deep.

2) If findings are more than the limits, replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(g) Connector interfacial face deteriorated

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(h) Cut or looseness and deformated on connector RFI Ring

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(i) Bad connector assembly

1) Not permitted if color mark on the receptacle is visible

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(j) Marking partially erased on connector and metallic parts

1) Permitted even if marking is not readable.

2) Replace the component at the next shop visit.

SUBTASK 73-22-01-211-015-G00

(2) Do a visual inspection of the connectors and mechanical parts for this conditions:

(a) Scratches on connector and backshell parts

1) Permitted, if scratches are not more than 0.01 in. (0.3 mm) deep.

2) If scratches are more than the limit, replace the applicable engine control electrical component.

(b) Nicks and dents on connector backshell

1) Permitted, if the nicks and dents are not more than 0.1 in. (2.0 mm) long, 0.04 in. (1.0 mm) wide and 0.01 in. (0.3 mm) deep.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

2) If findings are more than the limits, replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(c) Nicks and dents on the connector mechanical parts (breakout type Y or T)

1) Permitted, if the nicks and dents are not more than 0.1 in. (2.0 mm) long, 0.04 in. (1.0 mm) wide and 0.01 in. (0.3 mm) deep.

2) If findings are more than the limits, replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(d) Marking partially erased on connector and metallic parts

1) Permitted even if marking is not readable.

2) Replace the component at the next shop visit.

(e) Cut or looseness on the mechanical parts (stainless steel clamps)

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

SUBTASK 73-22-01-211-016-G00

(3) Do the visual inspection of the heat-shrinkable boot [18] for these conditions:

(a) Signs of wear, arcing or carbonizing

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(b) Distortion

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

(c) Missing or retracted

1) Not permitted.

2) Replace the applicable engine control electrical harness (TASK 73-22-01-000-801-G00 and TASK 73-22-01-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-860-079-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-080-G00

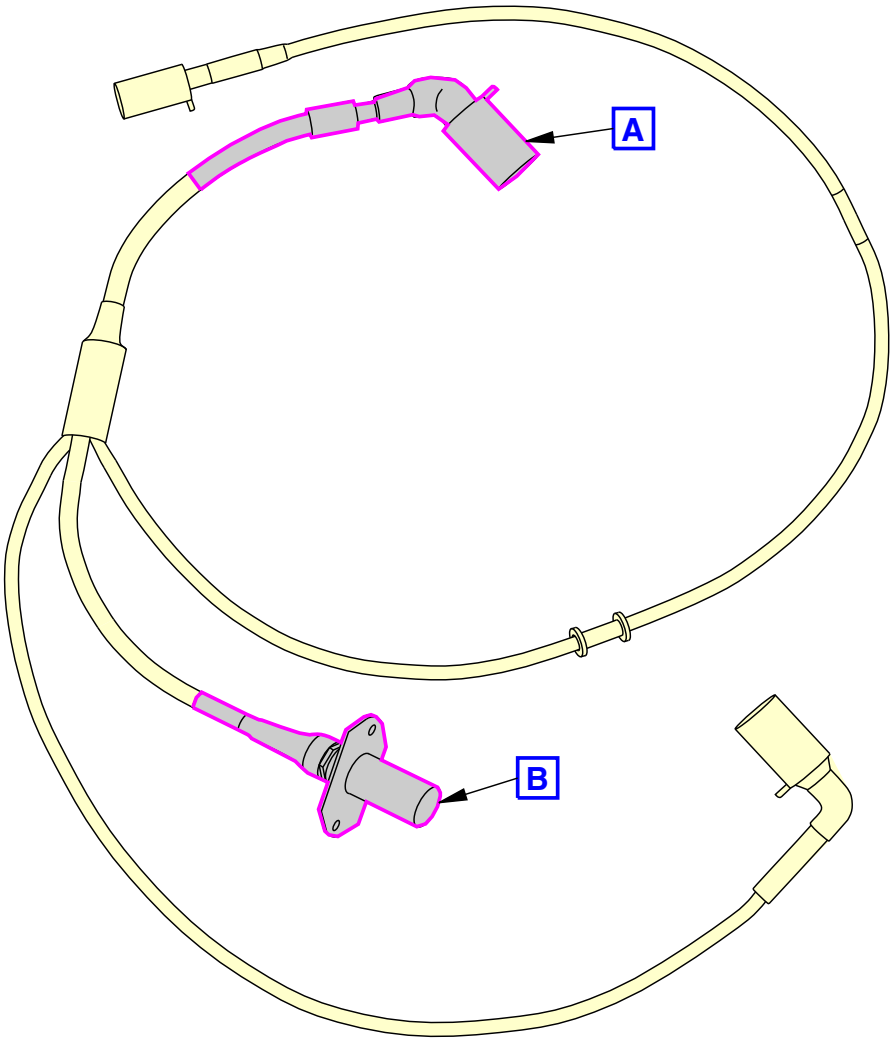
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

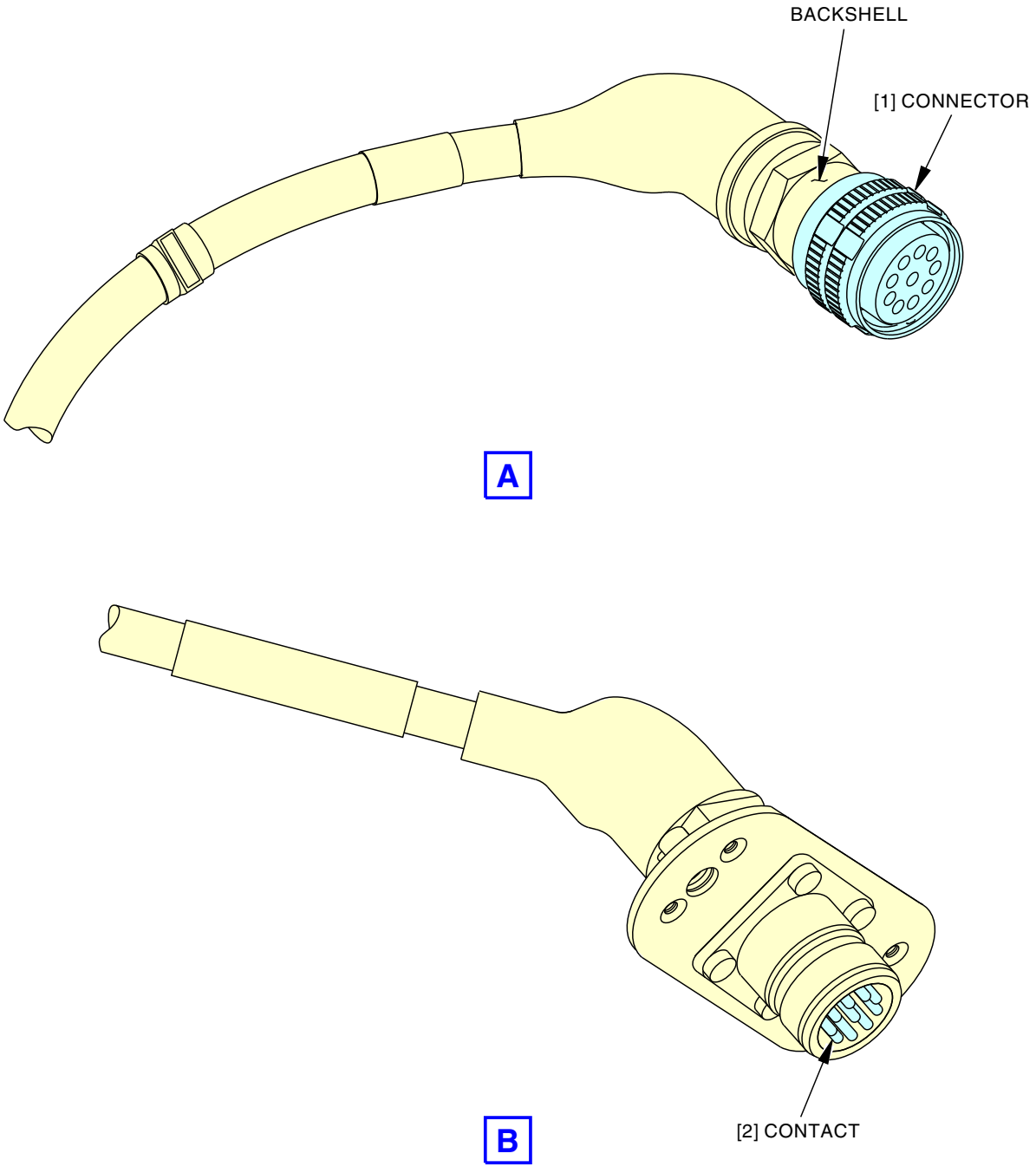


NOTE: THIS VIEW IS APPLICABLE TO THE HJ3A, HJ3B, HJ5A, HJ5B, HJ6A, HJ6B, HJ7, HJ8A AND HJ8B ENGINE CONTROL ELECTRICAL HARNESS.

2470325 S0000575954_V1

Engine Control Electrical Harness Connectors Inspection
Figure 604/73-22-01-990-834-G00 (Sheet 1 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Engine Control Electrical Harness Connectors Inspection
Figure 604/73-22-01-990-834-G00 (Sheet 2 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CONNECTOR

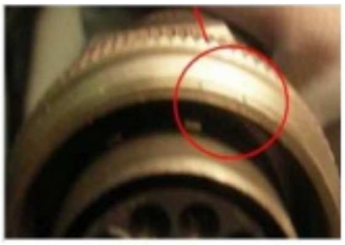




WORN MASTER KEY ON CONNECTOR



WORN THREADS ON CONNECTOR AND BACKSHELL





NICKS, DENTS, SCRATCHES ON CONNECTOR LOCKING RING

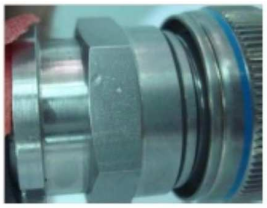


FAILURE OF MACHINING ON BACKSHELLS

2470330 S0000575959_V2

Engine Control Electrical Harness Connectors Inspection
Figure 604/73-22-01-990-834-G00 (Sheet 3 of 4)

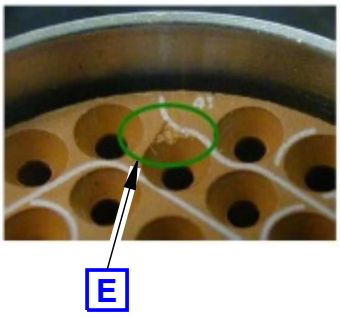
ECCN 9E991 BOEING PROPRIETARY - See title page for details



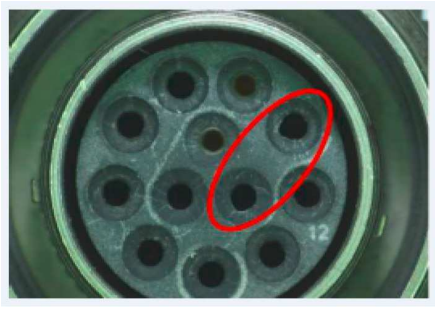
NICKS, DENTS ON BACKSHELLS



MARKING PARTIALLY ERASED ON BACKSHELL AND CONNECTOR



GROMMET DETERIORATED - PERMITTED ON CONNECTOR



INTERFACIAL FACE DETERIORATED



CONTACT DISTORTION

2470332 S0000575961_V2

Engine Control Electrical Harness Connectors Inspection
Figure 604/73-22-01-990-834-G00 (Sheet 4 of 4)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE CONTROL ELECTRICAL HARNESSES - CLEANING/PAINTING

1. General

A. This procedure contains one task:

(1) Engine control electrical harnesses cleaning.

TASK 73-22-01-100-801-G00

2. Engine Control Electrical Harness Cleaning

A. General

(1) This task gives the instructions to clean the engine control electrical harnesses.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)

D. Consumable Materials

Reference	Description	Specification
B00679 [C04-035]	Alcohol - Isopropyl	
C50233 [C04-258]	Cleaner - Electrical Contact Cleaner / Lubricant - ProGold GX100L or GX5L	
G50031 [C10-108]	Brush - Disposable, Natural Bristle - No. 7237T4 or 7798T2	
G50938 [C10-228]	Brushes - Nylon Miniature	
G50939 [C10-207]	Swab - Lint Free Rayon Tip	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

G. Prepare for the Cleaning

SUBTASK 73-22-01-860-081-G00

(1) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 73-22-01-020-023-G00

(2) Open these applicable circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-082-G00

(3) Make sure that the EEC Maint switch, on the P461 panel, is in the NORM position.

H. Engine Control Electrical Harness Cleaning

SUBTASK 73-22-01-020-024-G00

(1) Disconnect the electrical connector on the applicable EEC from the component.

SUBTASK 73-22-01-200-001-G00

(2) Examine the socket contacts and pins of the electrical connector for damage.

(a) If socket contacts or pins are heavily damaged, oxidized or blackened, replace the electrical connector and mated component or sensor.

SUBTASK 73-22-01-160-001-G00

WARNING DO NOT GET ISOPROPYL ALCOHOL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE ISOPROPYL ALCOHOL. KEEP THE ISOPROPYL ALCOHOL AWAY FROM SPARKS, FLAME, AND HEAT. ISOPROPYL ALCOHOL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

CAUTION USE ONLY ISOPROPYL ALCOHOL WHEN YOU CLEAN THE ELECTRICAL CONNECTORS. IF YOU USE SOME OTHER SOLVENT, YOU CAN CAUSE DAMAGE TO THE CONNECTOR OR CAUSE THE FAILURE OF A COMPONENT.

(3) Clean the electrical connector pins and connector face as follows:

(a) Flush the electrical connector with alcohol, B00679 [C04-035] to remove contamination and other unwanted materials.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(b) Use a No. 7237T4 or 7798T2 brush, G50031 [C10-108] and clean the electrical connector pins and connector face with alcohol, B00679 [C04-035].

(c) Flush the electrical connector again with alcohol, B00679 [C04-035] to remove the contamination that remains and other unwanted materials.

NOTE: Do the steps again as necessary to remove all contamination.

(d) Remove the alcohol, B00679 [C04-035] that remains from the connector.

WARNING

WHEN YOU USE THE COMPRESSED AIR TO CLEAN, TO COOL OR TO DRY, DO NOT EXCEED 30 PSIG (207 KPA). MAKE SURE YOU WEAR EYE PROTECTION AND DO NOT DIRECT COMPRESSED AIR AT YOURSELF AND OTHERS. INJURY TO PERSONNEL CAN OCCUR.

(e) Let the electrical connector dry fully.

NOTE: If it is necessary, blow the electrical connector dry with clean, filtered air at a maximum pressure of 30.0 PSI (2.07 bar).

CAUTION

DO NOT APPLY THE CLEANER/LUBRICANT TO THE INSIDE SURFACE OF THE CONNECTOR RECEPTACLE OR TO THE FACE OF THE INTERFACIAL SEAL. APPLY THE CLEANER/LUBRICANT ONLY TO THE TIP AND SIDES OF THE CONNECTOR PINS. USE A NATURAL BRISTLE BRUSH AND APPLY THE CLEANER/LUBRICANT WITH LIGHT PRESSURE SO YOU DO NOT DAMAGE THE CONNECTOR PINS.

(f) Apply a layer of electrical contact cleaner, C50233 [C04-258] to the electrical connector pins.

1) Use the liquid version of the electrical contact cleaner lubricant.

2) Use a No. 7237T4 or 7798T2 brush, G50031 [C10-108] and lightly apply the cleaner lubricant on the tips and sides of the connector pins.

NOTE: Keep the cleaner lubricant from the inside surface of the receptacle and interfacial seal, as much as possible.

(g) Clean unwanted electrical contact cleaner lubricant from the inside surface of the connector receptacle and from the face of the interfacial seal with clean, lint free swabs, G50939 [C10-207].

(h) Let the electrical connector pins and face air dry for 10 - 15 seconds.

SUBTASK 73-22-01-160-002-G00

WARNING

DO NOT GET ISOPROPYL ALCOHOL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE ISOPROPYL ALCOHOL. KEEP THE ISOPROPYL ALCOHOL AWAY FROM SPARKS, FLAME, AND HEAT. ISOPROPYL ALCOHOL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Clean the electrical connector socket contacts and connector face as follows:

(a) Flush the electrical connector with alcohol, B00679 [C04-035] to remove contamination and other unwanted materials from the socket contacts and connector face.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

CAUTION

MAKE SURE YOU USE THE CORRECT SIZE MINIATURE NYLON BRUSH TO CLEAN THE ELECTRICAL CONNECTOR SOCKET CONTACTS. USE A MINIATURE NYLON BRUSH THAT IS SIZED FOR THE SPECIFIC SOCKET CONTACT. OTHERWISE, DAMAGE TO THE SOCKET CONTACT CAN OCCUR OR THE SOCKET CONTACTS WILL NOT BE SUFFICIENTLY CLEANED.

(b) Use a nylon miniature brushes, G50938 [C10-228] and clean the electrical connector socket contacts with alcohol, B00679 [C04-035] as follows:

1) Use a 0.031 inch (0.79 mm) size nylon brush for the 20 gauge socket contact, or

2) Use a 0.062 inch (1.57 mm) brush for the 16 gauge socket contact.

(c) Use a No. 7237T4 or 7798T2 brush, G50031 [C10-108] and clean the electrical connector face with alcohol, B00679 [C04-035].

(d) Flush the electrical connector again with alcohol, B00679 [C04-035] to remove the contamination that remains and other unwanted materials.

NOTE: Do the steps again as necessary to remove all contamination.

(e) Remove the remaining alcohol, B00679 [C04-035] from the connector.

WARNING

WHEN YOU USE THE COMPRESSED AIR TO CLEAN, TO COOL OR TO DRY, DO NOT EXCEED 30 PSIG (207 KPA). MAKE SURE YOU WEAR EYE PROTECTION AND DO NOT DIRECT COMPRESSED AIR AT YOURSELF AND OTHERS. INJURY TO PERSONNEL CAN OCCUR.

1) Let the electrical connector dry fully.

NOTE: If it is necessary, blow the electrical connector dry with clean, filtered air at a maximum pressure of 30.0 PSI (2.07 bar).

(f) Apply a layer of electrical contact cleaner, C50233 [C04-258] to the electrical connector socket contacts.

1) If you use the spray version of the electrical contact cleaner, C50233 [C04-258], apply the cleaner lubricant with a short burst of spray directly into the socket contacts.

2) If you use a liquid version of electrical contact cleaner, C50233 [C04-258], apply the cleaner lubricant with nylon miniature brushes, G50938 [C10-228] as follows:

CAUTION

MAKE SURE YOU USE THE CORRECT SIZE MINIATURE NYLON BRUSH TO CLEAN THE ELECTRICAL CONNECTOR SOCKET CONTACTS. USE A MINIATURE NYLON BRUSH THAT IS SIZED FOR THE SPECIFIC SOCKET CONTACT. OTHERWISE, DAMAGE TO THE SOCKET CONTACT CAN OCCUR OR THE SOCKET CONTACTS WILL NOT BE SUFFICIENTLY CLEANED.

a) Use a miniature nylon brush that is sized for the specific socket contact.

<1> Use a 0.031 inch (0.79 mm) brush for 20 gauge socket contacts, or

<2> Use a 0.062 inch (1.57 mm) brush for 16 gauge socket contacts.

(g) Remove the electrical contact cleaner from the face of the electrical connector.

(h) Let the electrical connector socket contacts air dry for 10 - 15 seconds.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-22-01-420-023-G00

(5) Connect the electrical connector on the applicable EEC to the component.

(a) Tighten by hand then use teflon-jawed pliers, STD-664 to tighten the connector until the pliers slip.

NOTE: This will be approximately 1/8 turn more than hand-tight.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-420-024-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	3	C01312	ENGINE 1 RUN/PWR

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	5	C01313	ENGINE 2 RUN/PWR
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-5

Row	Col	Number	Name
E	3	C04018	ENG 1 STBY ALTN PWR RELAY CHAN A
E	4	C04019	ENG 1 STBY ALTN PWR CHAN A

SUBTASK 73-22-01-860-083-G00

(2) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

(a) On the applicable engine, close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

ENGINE WIRING HARNESS - REPAIRS

1. General

A. This procedure has these tasks:

(1) An engine wiring harness repair (application of silicone tape patch)

(2) An engine wiring harness repair (application of stainless steel braid)

(3) An engine wiring harness heat-shrinkable boot repair.

TASK 73-22-01-900-801-G00

2. Engine Wiring Harness Repair (Application of Silicone Tape Patch)

(Figure 801)

A. General

(1) This task gives instructions for the application of silicon rubber tape for interim protection of harness outer sheath.

(2) The Table 801 gives a list of the part numbers that are applicable to this repair. All part numbers are applicable to all paragraphs unless specified differently.

Table 801/73-22-01-993-802-G00

Part Number	Service Bulletin	Designation
364-083-111-0	72-0001	Harness HJ3A
364-083-211-0	72-0001	Harness HJ3B
364-083-311-0	72-0013	Harness HJ5A
364-083-312-0	72-0001	
364-083-313-0	73-0019	
364-083-411-0	72-0013	Harness HJ5B
364-083-412-0	72-0001	
364-083-413-0	73-0019	
364-083-511-0	72-0013	Harness HJ6A
364-083-512-0	72-0001	
364-083-513-0	73-0019	
364-083-514-0	73-0031	
364-083-611-0	72-0013	Harness HJ6B
364-083-612-0	72-0001	
364-083-613-0	73-0019	
364-083-614-0	73-0031	
364-083-710-0	72-0001	Harness HJ7
364-083-711-0	75-0010	
364-083-811-0	72-0001	Harness HJ8A
364-083-812-0	73-0021	

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 801/73-22-01-993-802-G00 (Continued)

Part Number	Service Bulletin	Designation
364-083-911-0	72-0001	Harness HJ8B
364-055-211-0	72-0001	Harness W2
364-055-212-0	75-0010	
364-055-311-0	72-0001	Harness W4A
364-055-411-0	72-0001	Harness W4B
364-056-511-0	72-0001	Harness W100
364-056-612-0	72-0001	Harness W200
364-056-613-0	72-0132	
364-056-614-0	72-0306	
364-056-711-0	72-0001	Harness W300
364-056-712-0	72-0132	
364-056-713-0	72-0214	
364-056-714-0	72-0214	
364-056-715-0	72-0306	

B. References

Reference	Title
70-21-23-100-801-G00	Hand Wipe Solvent Degreasing With Chemical Agent (P/B 701)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
B00676 [CP1041]	Alcohol - Isopropyl	
G51335 [CP2674]	Lint-Free Cloth	
G51695 [CP2940]	Tape - Silicone, Black - 69N	
G51696 [CP2939]	Tape - Silicone, Red/Brown - 68N	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Repairs

SUBTASK 73-22-01-860-112-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-113-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
426	Right Thrust Reverser, Engine 2

G. Engine Wiring Harness Repairs

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

SUBTASK 73-22-01-020-032-G00

(1) Loosen the clamps as required until the area to repair is clear.

SUBTASK 73-22-01-220-001-G00

(2) Do a visual inspection of the area to repair (Figure 801).

NOTE: This repair only applies on external heat shrinkable tubing.

NOTE: Repairs are allowed between attachments points only.

NOTE: Repairs under attachment points are not permitted.

SUBTASK 73-22-01-220-002-G00

(3) Do a dimensional inspection of the area to repair (View A, Figure 801).

(a) Do not use this repair if there is one of the following conditions:

1) The length of the area to repair is more than 1.97 in. (50 mm) (DIM. A), or

2) The distance between the area to repair and nearest repaired area is less than 1.38 in. (35 mm) (DIM. B + DIM. C), or

3) The distance between the area to repair and nearest attachment point is less than 1.38 in. (35 mm) (DIM. B + DIM. C).

SUBTASK 73-22-01-100-002-G00

(4) Clean the external heat shrinkable tubing in and around the area to repair with lint-free cloth, G51335 [CP2674], moist with alcohol, B00676 [CP1041] (TASK 70-21-23-100-801-G00).

SUBTASK 73-22-01-220-003-G00

(5) Examine the area to repair as follows:

(a) Remove all material on the area to repair (Figure 801).

NOTE: Degradation of copper braid is not permitted.

SUBTASK 73-22-01-350-001-G00

(6) Wind silicone tape 68N, G51696 [CP2939], or silicone tape 69N, G51695 [CP2940], around the harness branch as follows (View A, Figure 801):

(a) Extend the ribbon 0.99 in. (25 mm) (DIM. B) from the area to repair limits.

(b) Do an 50% overlap while winding.

(c) Continue the winding in the opposite direction with the same overlap.

1) Do a straight turn to complete the winding.

(d) Finish the winding with one complete turn.

SUBTASK 73-22-01-350-002-G00

(7) Do a visual inspection of the repaired area.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Make sure that the tape is fully attached.

NOTE: Nicks and perforations are not permitted.

SUBTASK 73-22-01-410-035-G00

(8) Put the harness back on its supports.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-860-114-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-115-G00

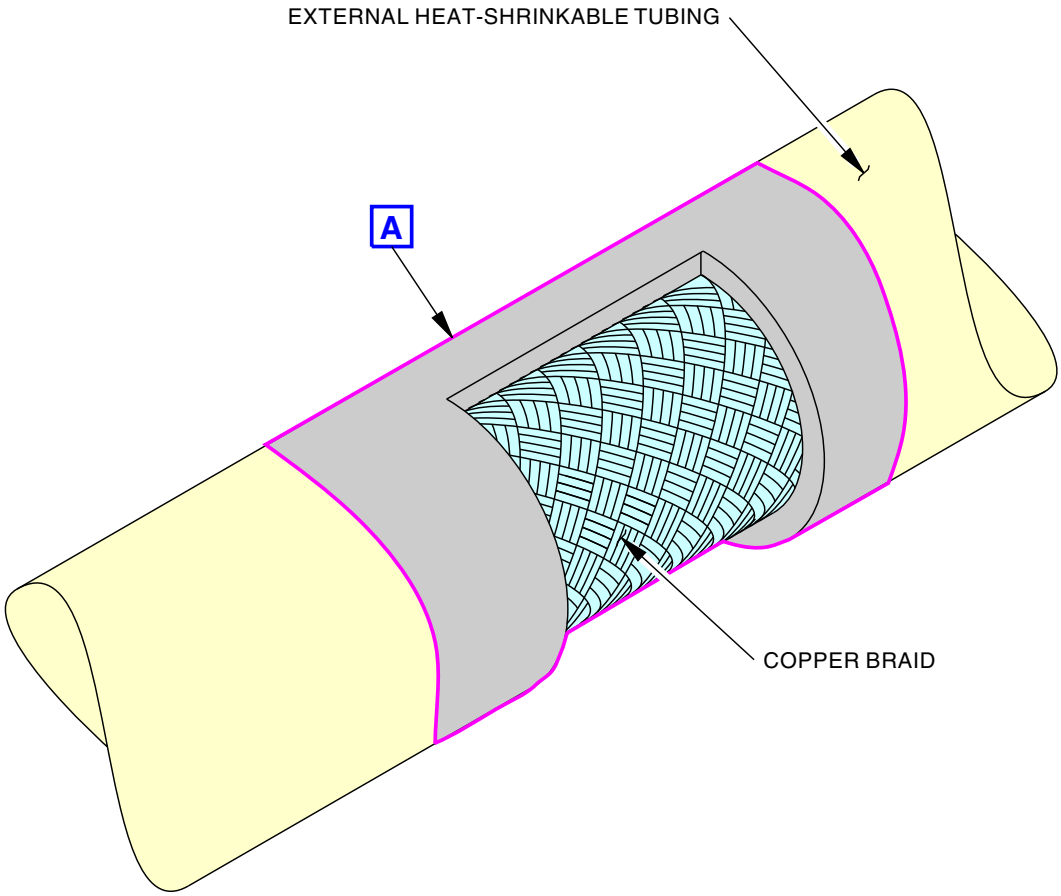
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

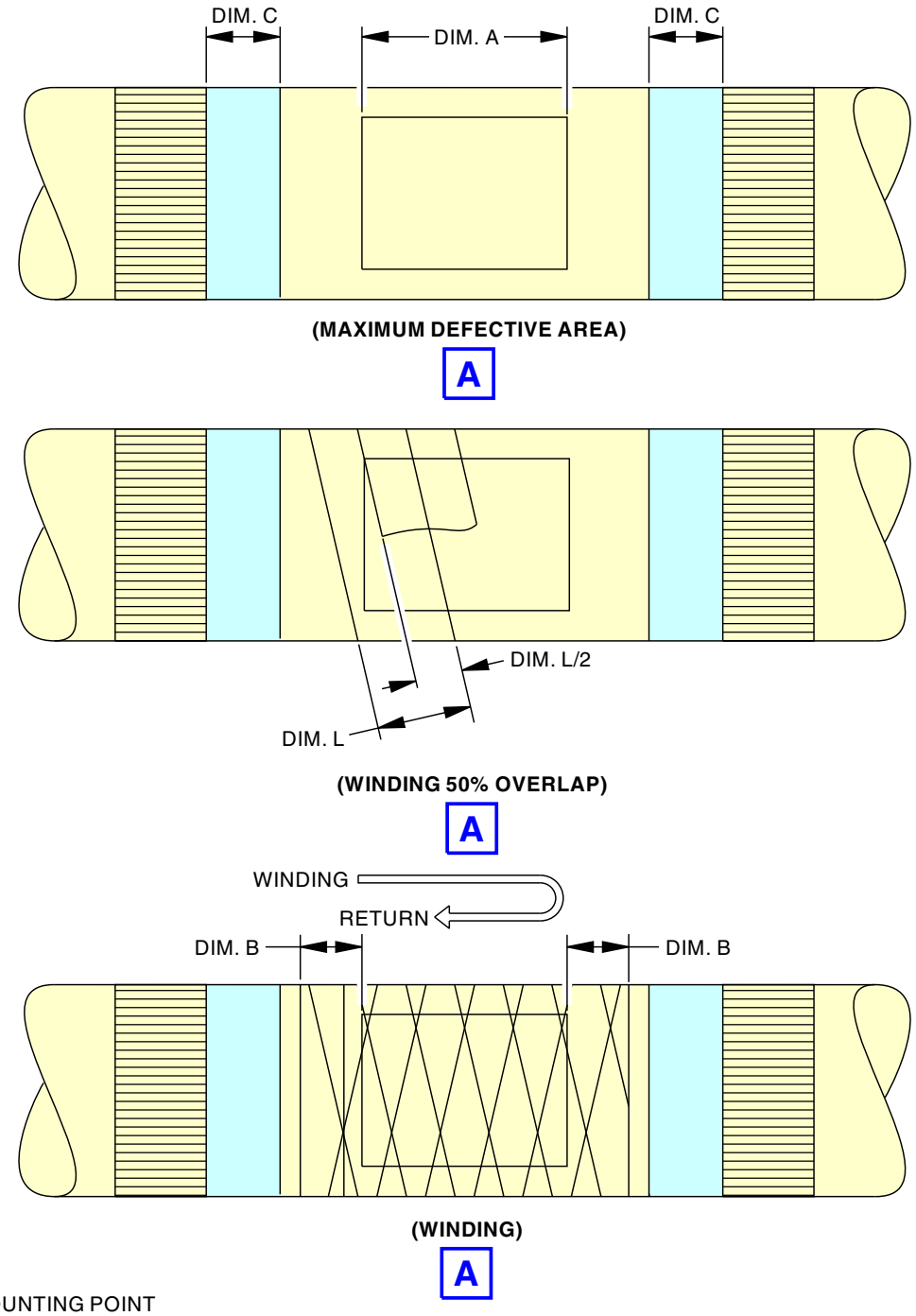


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Engine Wiring Harness Repair
Figure 801/73-22-01-990-882-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



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Engine Wiring Harness Repair
Figure 801/73-22-01-990-882-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-900-802-G00

3. Engine Wiring Harness Repair (Application of Stainless Steel Braid)

(Figure 802)

A. General

(1) This tasks gives instructions for the application of stainless steel wire for interim protection of harness outer stainless steel braid.

(2) The Table 802 gives a list of the part numbers that are applicable to this repair. All part numbers are applicable to all paragraphs unless specified differently.

Table 802/73-22-01-993-803-G00

Part Number	Service Bulletin	Designation	Engine
364-083-811-0	72-0001	Harness HJ8A	LEAP 1B
364-056-612-0	72-0001	Harness W200	
364-056-711-0	72-0001	Harness W300	

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
B00676 [CP1041]	Alcohol - Isopropyl	
G50142	Lockwire - MS20995C15, Corrosion Resistant Steel - 0.015 Inch (0.381 mm) Diameter	NASM20995
G50145 [CP2628]	Tape - High Temperature Aluminum Foil with Glass Cloth, Silicone Adhesive - 3M 363	
G51335 [CP2674]	Lint-Free Cloth	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
426	Right Thrust Reverser, Engine 2

F. Prepare for the Repairs

SUBTASK 73-22-01-860-116-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-117-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Engine Wiring Harness Repairs

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

SUBTASK 73-22-01-020-033-G00

(1) Loosen the clamps as required until the area to repair is clear.

SUBTASK 73-22-01-220-004-G00

(2) Do a visual inspection of the area to repair.

NOTE: This repair only applies on harness branches in stainless steel.

SUBTASK 73-22-01-220-005-G00

(3) Do a dimensional inspection of the area to repair (Figure 802).

(a) Do not use this repair if there is one of the following conditions:

1) The length of the area to repair is more than 1.18 in. (30.0 mm) (DIM. A) (View A, Figure 802)

2) The distance between the area to repair and nearest repaired area is less than 1.97 in. (50.0 mm)

3) The defective area angle is more than 90° (DIM. D) (View B, Figure 802).

SUBTASK 73-22-01-100-003-G00

(4) Clean the external sleeve in and around the area to repair with lint-free cloth, G51335 [CP2674], moist with alcohol, B00676 [CP1041].

SUBTASK 73-22-01-220-006-G00

(5) Examine the area to repair as follows:

(a) Remove all material on the area to repair.

(b) Degradation of copper braid is not permitted.

SUBTASK 73-22-01-350-003-G00

(6) Wind 3M 363 tape, G50145 [CP2628] (wide 2 in. (51 mm)), as follows (View C, Figure 802):

(a) Make two turns minimum with 3M 363 tape, G50145 [CP2628] (DIM. B).

(b) Center 3M 363 tape, G50145 [CP2628], with the defective area.

SUBTASK 73-22-01-350-004-G00

(7) Apply MS20995C15 lockwire, G50142, as follows (View C, Figure 802).

(a) Hold MS20995C15 lockwire, G50142, along the length of the worn area beginning from the left.

(b) Start at the opposite end and apply MS20995C15 lockwire, G50142, tightly and equally over the outer sheath to cover the repair area (DIM. X).

(c) Keep the short end of the loop and make sure that you can see it, when approximately two thirds of the wound lockwire length is completed.

(d) Continue to wind MS20995C15 lockwire, G50142, to complete the remaining distance DIM. X/3.

(e) Put MS20995C15 lockwire, G50142, “1” into the loop after the final turn.

(f) Pull the loop end “3” until MS20995C15 lockwire, G50142, “1” goes under the wound lockwire.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(g) Cut MS20995C15 lockwire, G50142, end “2” and “3” flush.

SUBTASK 73-22-01-350-005-G00

(8) Do a visual inspection of the repaired area.

(a) A bad wire wind up is not permitted, do the repair again.

SUBTASK 73-22-01-410-036-G00

(9) Put the harness back on its supports.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-860-118-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-119-G00

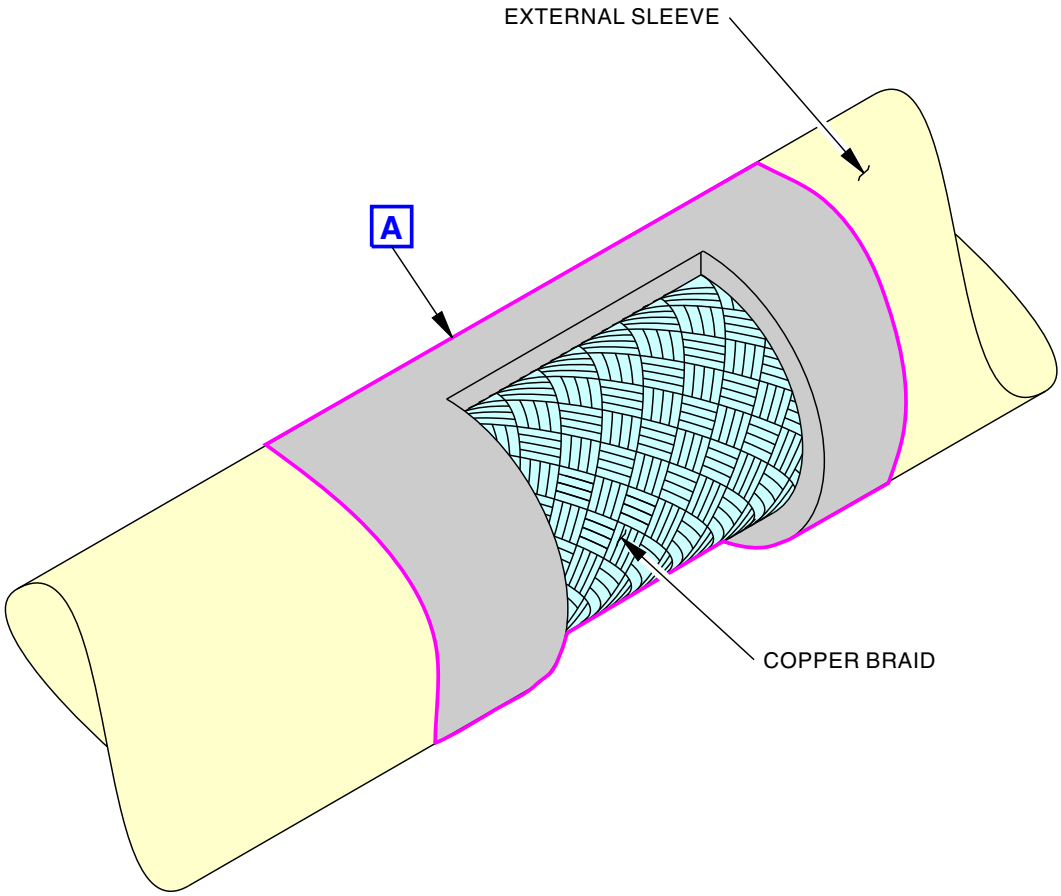
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

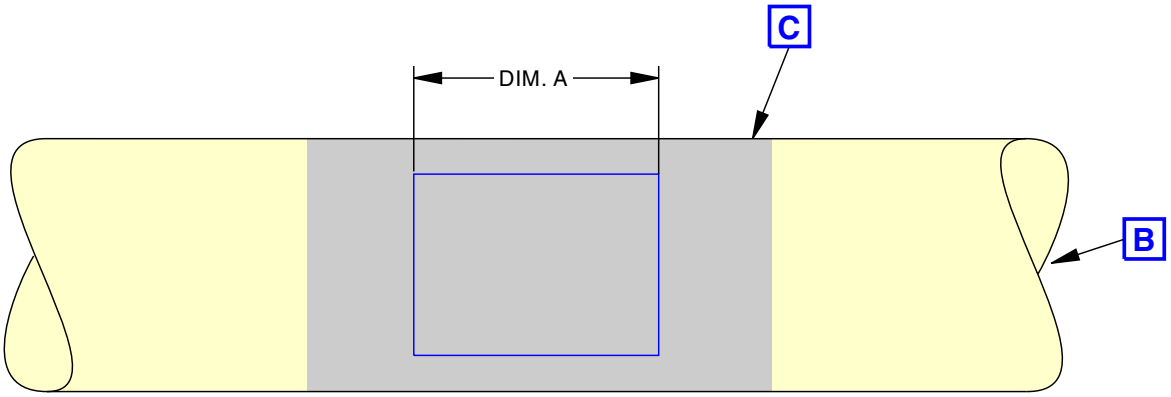


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Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(MAXIMUM DEFECTIVE AREA)

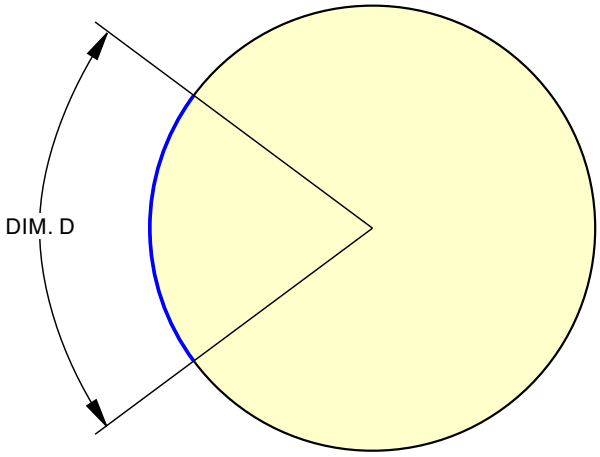
A

ICNLEAP1B72XXXXCF030100003A00101

2966864 S0000746057_V1

Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(MAXIMUM DEFECTIVE AREA ANGLE)

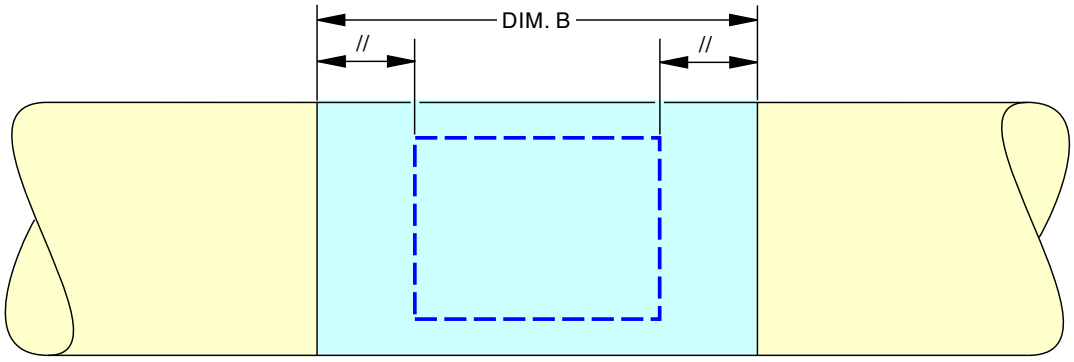
B

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Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(ADHESIVE TAPE)

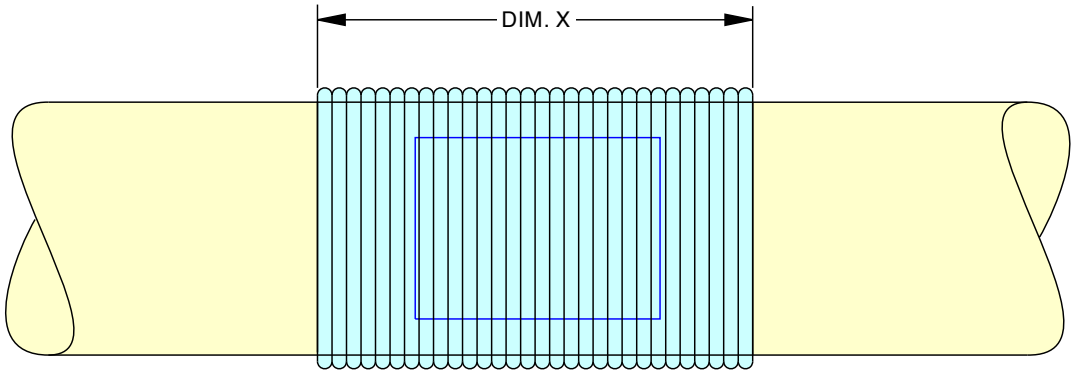
C

DOUBLE TURN MINIMUM

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Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(STAINLESS STEEL WIRE)

C

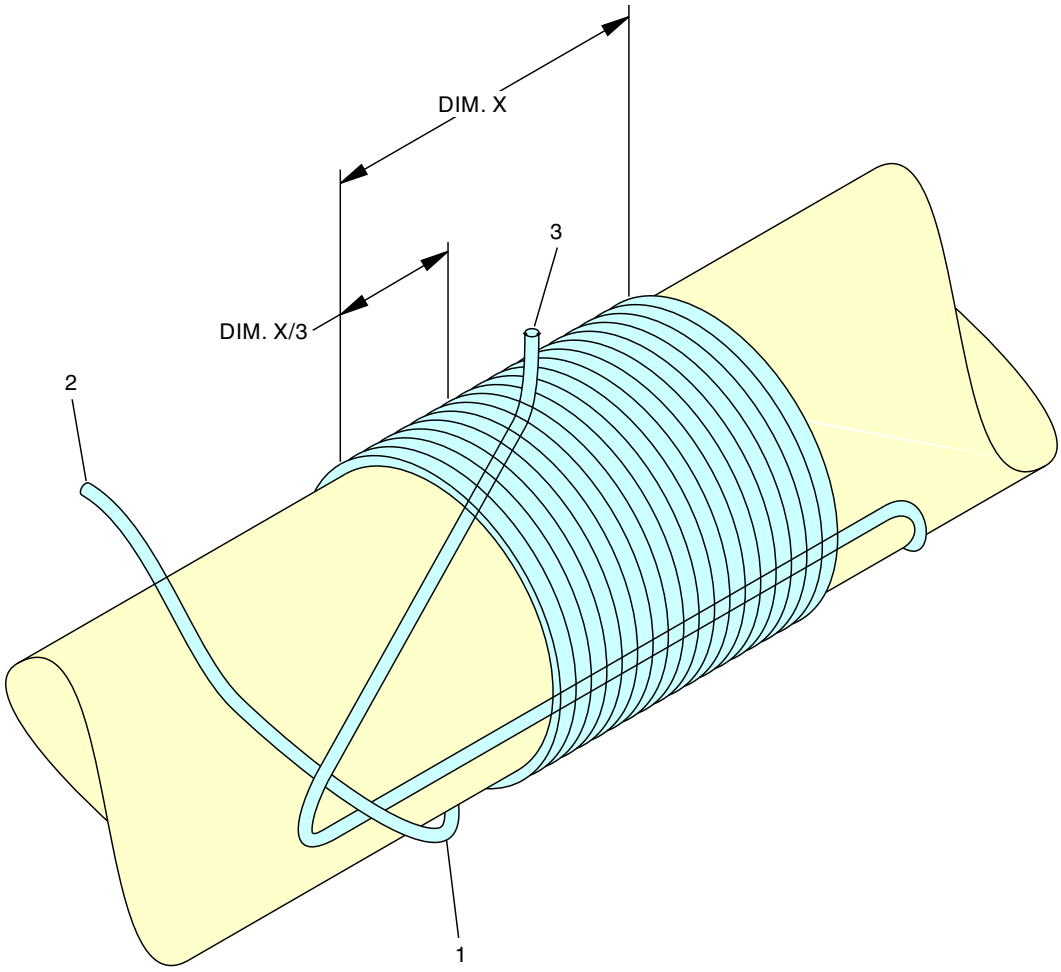
NOTE: STAINLESS STEEL WIRE OVER TAPE.

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Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(KNOT)

C

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2966874 S0000746061_V1

Engine Wiring Harness Repair (Application of Stainless Steel Braid)
Figure 802/73-22-01-990-885-G00 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-22-01-900-803-G00

4. Engine Wiring Harness Heat-Shrinkable Boot Repair

(Figure 803)

A. General

(1) This task gives instructions on how to repair harness heat-shrinkable boots with silicone tape and applies to the harness heat-shrinkable boots only.

(2) There are several geometries of heat-shrinkable boots. This repair is applicable to all boots geometries.

(3) The Table 803 gives a list of the part numbers that are applicable to this repair. All part numbers are applicable to all paragraphs unless specified differently.

Table 803/73-22-01-993-804-G00

Part Number	Service Bulletin	Designation
364-083-111-0	72-0001	Harness HJ3A
364-083-211-0	72-0001	Harness HJ3B
364-083-311-0	72-0013	Harness HJ5A
364-083-313-0	73-0019	
364-083-411-0	72-0013	Harness HJ5B
364-083-413-0	73-0019	
364-083-511-0	72-0013	Harness HJ6A
364-083-513-0	73-0019	
364-083-514-0	73-0031	
364-083-611-0	72-0013	Harness HJ6B
364-083-613-0	73-0019	
364-083-614-0	73-0031	
364-083-710-0	72-0001	Harness HJ7
364-083-711-0	75-0010	
364-083-811-0	72-0001	Harness HJ8A
364-083-812-0	73-0021	
364-083-911-0	72-0001	Harness HJ8B
364-055-211-0	72-0001	Harness W2
364-055-212-0	75-0010	
364-055-311-0	72-0001	Harness W4A
364-055-411-0	72-0001	Harness W4B
364-056-511-0	72-0001	Harness W100

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Table 803/73-22-01-993-804-G00 (Continued)

Part Number	Service Bulletin	Designation
364-056-612-0	72-0001	Harness W200
364-056-613-0	72-0132	
364-056-614-0	72-0306	
364-056-711-0	72-0001	Harness W300
364-056-712-0	72-0132	
364-056-713-0	72-0214	
364-056-714-0	72-0214	
364-056-715-0	72-0306	

B. References

Reference	Title
24-11-63-000-801	W100 EDP and IDG Engine Wiring Harness Removal (P/B 401)
24-11-63-400-801	W100 EDP and IDG Engine Wiring Harness Installation (P/B 401)
26-11-02-000-801	Engine Fire Detection Harness Removal (P/B 401)
26-11-02-400-801	Engine Fire Detection Harness Installation (P/B 401)
70-21-23-100-801-G00	Hand Wipe Solvent Degreasing With Chemical Agent (P/B 701)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-22-01 P/B 401	ELECTRONIC ENGINE CONTROL (EEC) ELECTRICAL HARNESSES - REMOVAL/INSTALLATION
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (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)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
B00676 [CP1041]	Alcohol - Isopropyl	
G51335 [CP2674]	Lint-Free Cloth	
G51741 [CP2990]	Tape - Silicone - 66N	

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Repairs

SUBTASK 73-22-01-860-120-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-22-01-860-121-G00

(2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

WARNING DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

(b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).

1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

ECCN 9E991 BOEING PROPRIETARY - See title page for details

G. Engine Wiring Harness Heat-Shrinkable Boot Repair

SUBTASK 73-22-01-020-034-G00

(1) Loosen the connectors and clamps as required until the area to repair is clear.

SUBTASK 73-22-01-210-011-G00

(2) Do a visual inspection of the harness and heat-shrinkable boots.

(a) If the harness or heat-shrinkable boots have been repaired and the silicone tape is damaged, replace the harness (PAGEBLOCK 73-22-01/401, TASK 24-11-63-000-801, TASK 24-11-63-400-801, TASK 26-11-02-000-801, and TASK 26-11-02-400-801).

SUBTASK 73-22-01-220-007-G00

(3) Do a dimensional inspection of the area to repair.

(a) Do not use this repair if there is one of the following conditions:

1) There is a damage of the heat-shrinkable boot over a 0.39 in. (10 mm) area on the connector side end (DIM. C).

2) There is a damage of the heat-shrinkable boot with dimension more than 0.39 in. (10 mm) x 0.19 in. (5 mm).

3) There is a damage of the shielding braid.

a) Cut strands and braid deformation are not permitted.

SUBTASK 73-22-01-100-004-G00

(4) Clean the area to repair as follows:

WARNING REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THESE PRODUCTS.

WARNING ISOPROPYL ALCOHOL IS POISONOUS AND FLAMMABLE. USE PROTECTION EQUIPMENT. MAKE SURE THAT YOU USE ISOPROPYL ALCOHOL IN AN AREA WITH AIRFLOW. IF YOU DO NOT OBEY, INJURY TO PERSONNEL CAN OCCUR.

(a) Clean the area with lint-free cloth, G51335 [CP2674], soaked with alcohol, B00676 [CP1041] (TASK 70-21-23-100-801-G00).

(b) Remove all material on the area to repair.

SUBTASK 73-22-01-350-006-G00

(5) Wind a silicone tapes 66N, G51741 [CP2990], around the boot as follows:

Dimensional Information

Description	Minimum In-Process Dimension	Maximum In-Process Dimension	Minimum Finish Dimension	Maximum Finish Dimension	Reference Dimension
DIM. A	0.40 in. (10 mm)*[1]*[2]	-	-	-	-*[3]
DIM. B	-	-	0 in. (0 mm)*[1]*[2]	0.12 in. (3 mm)*[1]*[2]	-*[3]

ECCN 9E991 BOEING PROPRIETARY - See title page for details

*[1] The dimensional data identified within this task was designed using millimeters as the base unit of measurement for dimensional values. The conversion to inches is rounded to two additional decimal digits than millimeters. For minimum dimensions, converted values are rounded up. For maximum dimensions, converted values are rounded down. To avoid conversion errors, do not re-convert from inches to millimeters.

*[2] Dimensions are in inches with millimeters in parentheses.

*[3] Reference dimensions do not require inspection.

(a) Start the winding on identification sleeve side with a complete turn of the tape on itself with the respect of DIM. A.

1) An overlap on the identification sleeve is permitted if reading the identification is possible.

(b) Wind tightly the silicone tape on the heat-shrinkable boot with an overlap.

(c) At DIM. B, continue the winding in the opposite direction with overlap.

(d) Finish the winding with one complete turn of the silicone tape on itself, perpendicularly to the harness branch, going over the first layer.

SUBTASK 73-22-01-350-007-G00

(6) Do a visual inspection of the part.

(a) Make sure that the part meet the following criteria:

1) No detachment of the silicone tape is permitted.

2) No nick and no perforation of the silicone tape are permitted.

3) Make sure that silicone tape has a complete overlap of heat-shrinkable boot respecting DIM. B.

(b) If one of the criteria is not eligible, remove the tape applied and do the repair again.

1) Start the repair at the step to clean the area.

SUBTASK 73-22-01-410-037-G00

(7) Put the harness back on its supports.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-22-01-860-122-G00

WARNING OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

(b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

1) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(Continued)

Number	Name/Location
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 73-22-01-860-123-G00

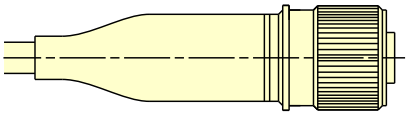
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

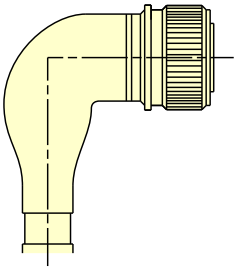
(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

——— END OF TASK ———

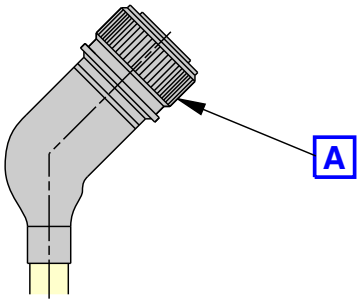
ECCN 9E991 BOEING PROPRIETARY - See title page for details



STRAIGHT BOOT



ELBOW BOOT



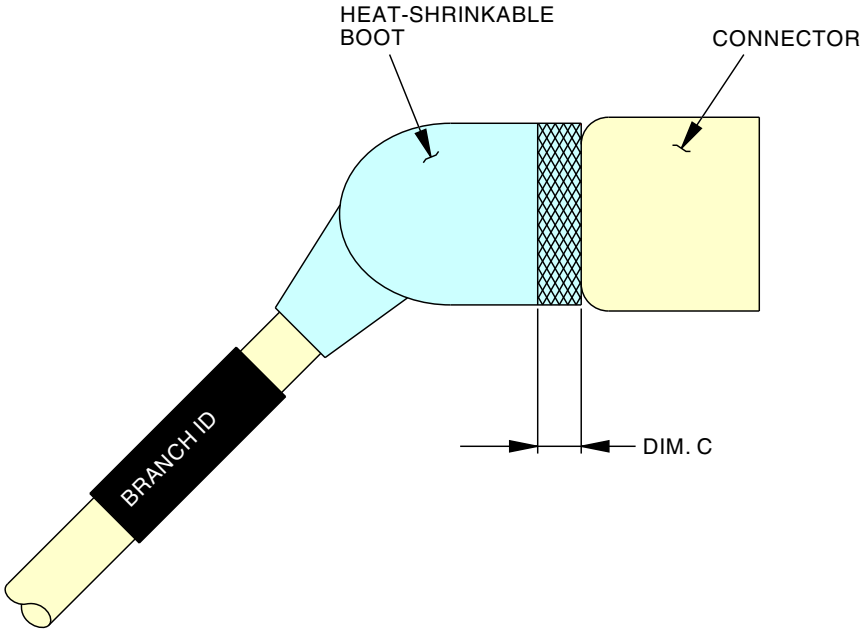
ELBOW BOOT

POSSIBLE GEOMETRIES OF
HEAT-SHRINKABLE BOOT

2979874 S0000758005_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 1 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(ELBOW BOOT IS SHOWN, STRAIGHT BOOT IS EQUIVALENT)

A

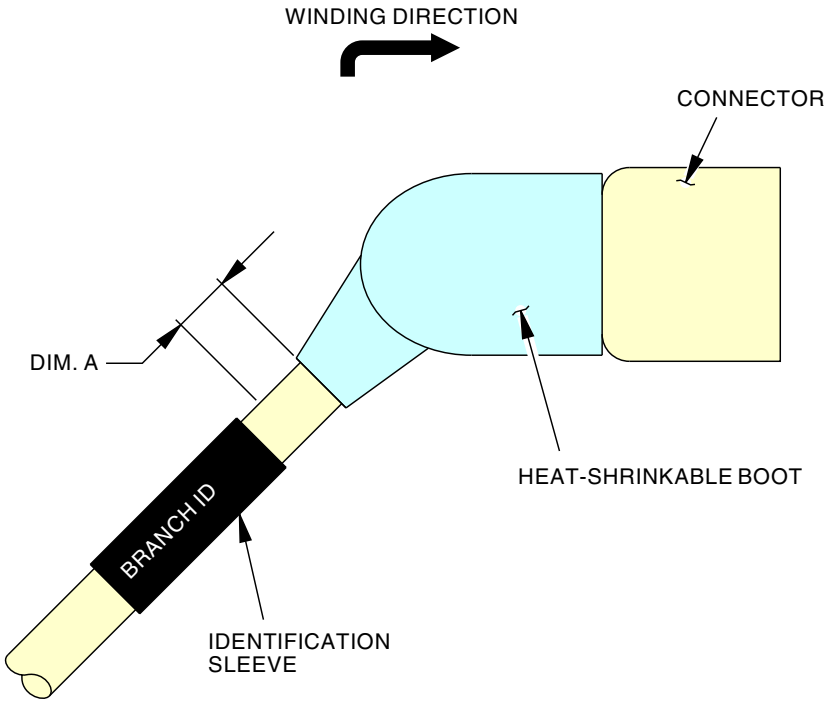
AREA WHERE DAMAGES ARE REPAIRABLE

AREA WHERE DAMAGES ARE NOT REPAIRABLE

2979875 S0000758017_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 2 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



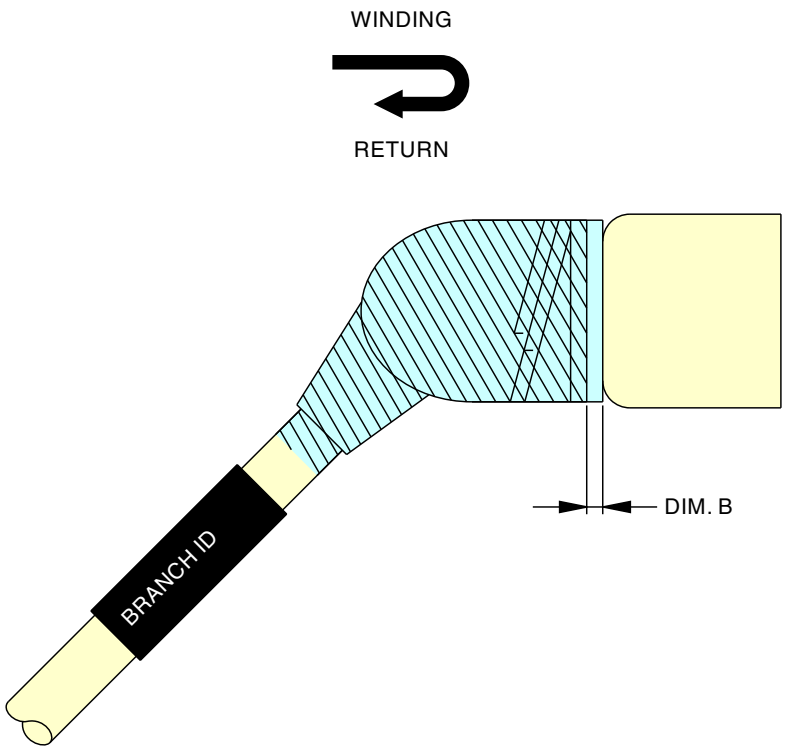
(WINDING START)
(EXAMPLE)

A

2979876 S0000758018_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 3 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



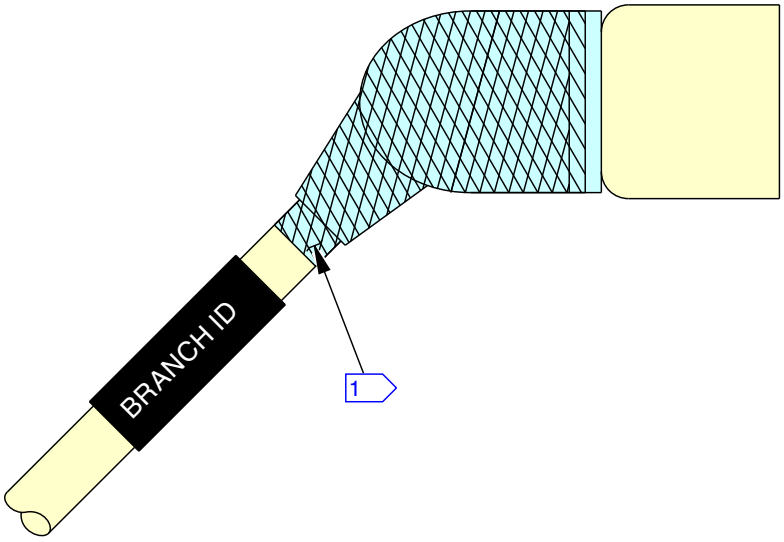
(WINDING HALF TURN)
(EXAMPLE)

A

2979878 S0000758019_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 4 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



(WINDING FINISH)
(EXAMPLE)

A

1 FINISH THE WINDING WITH ONE COMPLETE TURN OF THE SILICONE TAPE ON ITSELF, PERPENDICULARLY TO THE HARNESS BRANCH, GOING OVER THE FIRST LAYER.

2979881 S0000758020_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 5 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



DAMAGE
(EXAMPLE)

2979882 S0000758021_V1

Engine Wiring Harness Heat-Shrinkable Boot Repair
Figure 803/73-22-01-990-886-G00 (Sheet 6 of 6)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FLOW INDICATING SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel flow indicating system inspection.

TASK 73-31-00-200-801-G00

2. Fuel Flow Indicating System Inspection

A. General

(1) This task provides the instructions on how to examine the fuel flow indicating system.

B. 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)
27-81-00-860-804	Leading Edge Flaps and Slats Retraction (P/B 201)
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-31-01-000-801-G00	Fuel Flow Transmitter Removal (P/B 401)
73-31-01-400-801-G00	Fuel Flow Transmitter Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-31-00-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-31-00-860-002-G00

(2) 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 73-31-00-040-001-G00

(3) Do this task: Leading Edge Flaps and Slats - Deactivation, TASK 27-81-00-040-801.

SUBTASK 73-31-00-010-001-G00

(4) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Flow Indicating System Inspection

SUBTASK 73-31-00-212-001-G00

(1) Examine the fuel flow transmitter as follows:

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, replace the fuel flow transmitter gasket seals (TASK 73-31-01-000-801-G00 and TASK 73-31-01-400-801-G00).

(b) Make sure that the fuel flow transmitter is not loose.

1) If the fuel flow transmitter is loose, tighten the connection (TASK 73-31-01-400-801-G00).

a) Tighten the installation bolts.

(c) Look for dents or cracks in the fuel flow transmitter.

1) If you see dents or cracks, replace the fuel flow transmitter (TASK 73-31-01-000-801-G00 and TASK 73-31-01-400-801-G00).

(d) Make sure that the electrical connector is not loose.

1) If the electrical connector is loose, disconnect and connect the electrical connector on the fuel flow transmitter (TASK 70-00-01-910-803-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-31-00-410-001-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-31-00-440-001-G00

(2) Do this task: Leading Edge Flaps and Slats - Activation, TASK 27-81-00-440-801

SUBTASK 73-31-00-860-007-G00

(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FLOW TRANSMITTER- REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Fuel flow transmitter removal

(2) Fuel flow transmitter installation.

TASK 73-31-01-000-801-G00

2. Fuel Flow Transmitter Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the Fuel Flow Transmitter (FFT).

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-01-000-801-G00	Main Fuel Pump Removal (P/B 401)
73-11-02-000-801-G00	Fuel Filter Cartridge Removal (P/B 401)
73-11-04-000-801-G00	Fuel Metering Unit Strainer Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 73-31-01-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

SUBTASK 73-31-01-860-002-G00

(2) For the left engine, open these applicable circuit breakers and install safety tags:

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 73-31-01-860-003-G00

(3) For the right engine, open these applicable circuit breakers and install safety tags:

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 73-31-01-010-001-G00

(4) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Flow Transmitter Removal

SUBTASK 73-31-01-010-002-G00

WARNING

DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Remove the fuel flow transmitter [1] as follows:

(a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the fuel flow transmitter [1].

(b) Drain the fuel system as follows:

1) Drain the main fuel pump (TASK 73-11-01-000-801-G00).

2) Drain the fuel metering unit strainer (TASK 73-11-04-000-801-G00).

3) Drain the main fuel filter housing (TASK 73-11-02-000-801-G00).

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(CAUTION PRECEDES)

CAUTION

USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(c) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector from the fuel flow transmitter [1] as follows (TASK 70-00-01-910-803-G00):

1) Disconnect the electrical connector [2] from the fuel flow transmitter [1].

2) Put the protective covers on the electrical connector [2] and the electrical receptacle of the fuel flow transmitter [1].

(d) Disconnect the fuel tube [9] from the fuel flow transmitter [1] as follows:

1) Remove the four bolts [10] that attach the fuel tube [9] to the fuel flow transmitter [1].

2) Remove and discard the gasket seal [11].

3) Install the protective covers on the fuel tube [9].

(e) Disconnect the fuel tube [3] from the fuel flow transmitter [1] as follows:

1) Loosen the two nuts [4] and the two bolts [5] that attach the fuel tube [3] to the bracket [6].

2) Remove the four bolts [7] that attach the fuel tube [3] to the fuel flow transmitter [1].

3) Remove and discard the gasket seal [8].

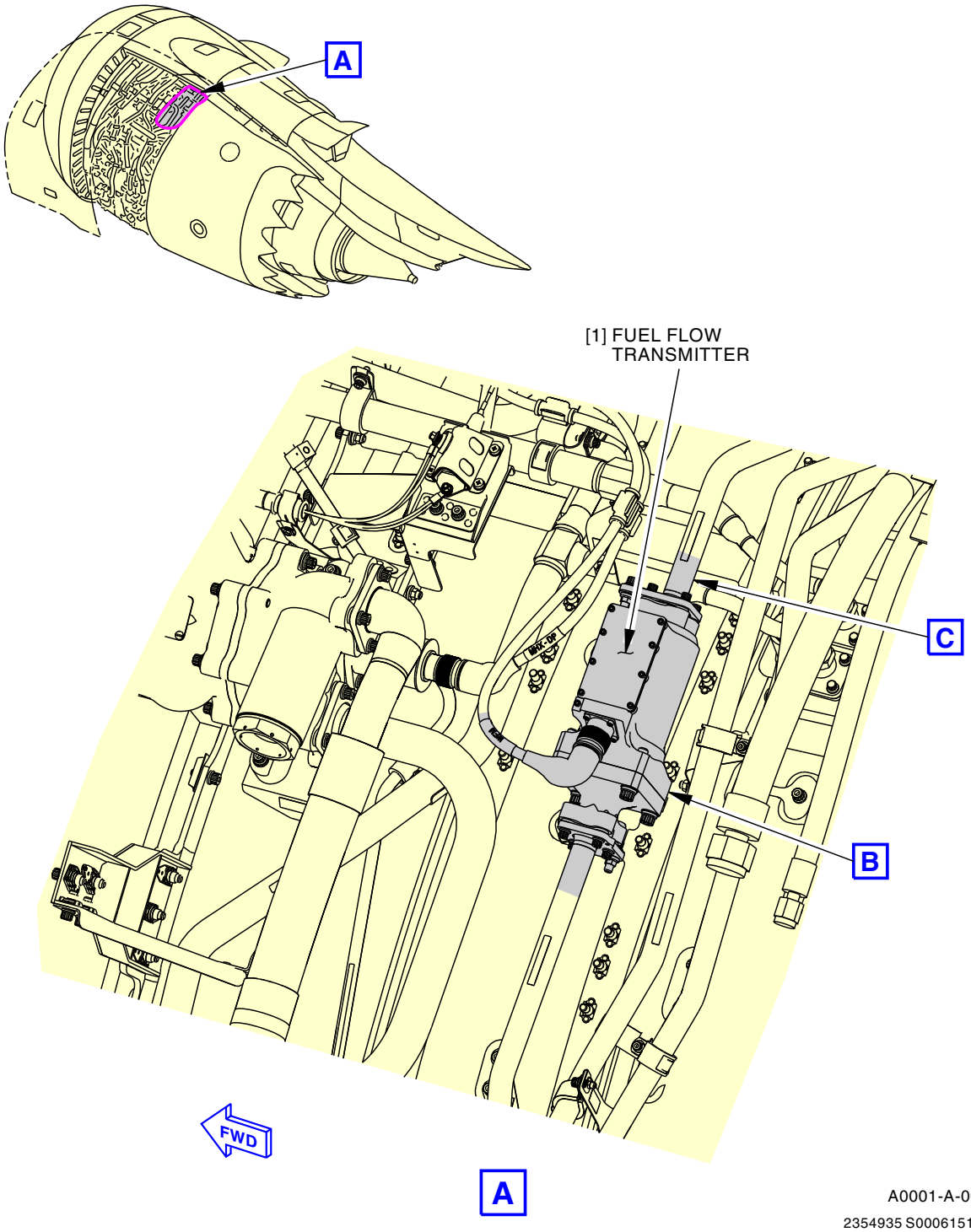
4) Install the protective covers on the fuel tube [3].

(f) Remove the fuel flow transmitter [1] from the engine.

(g) Install the protective covers on the fuel flow transmitter [1].

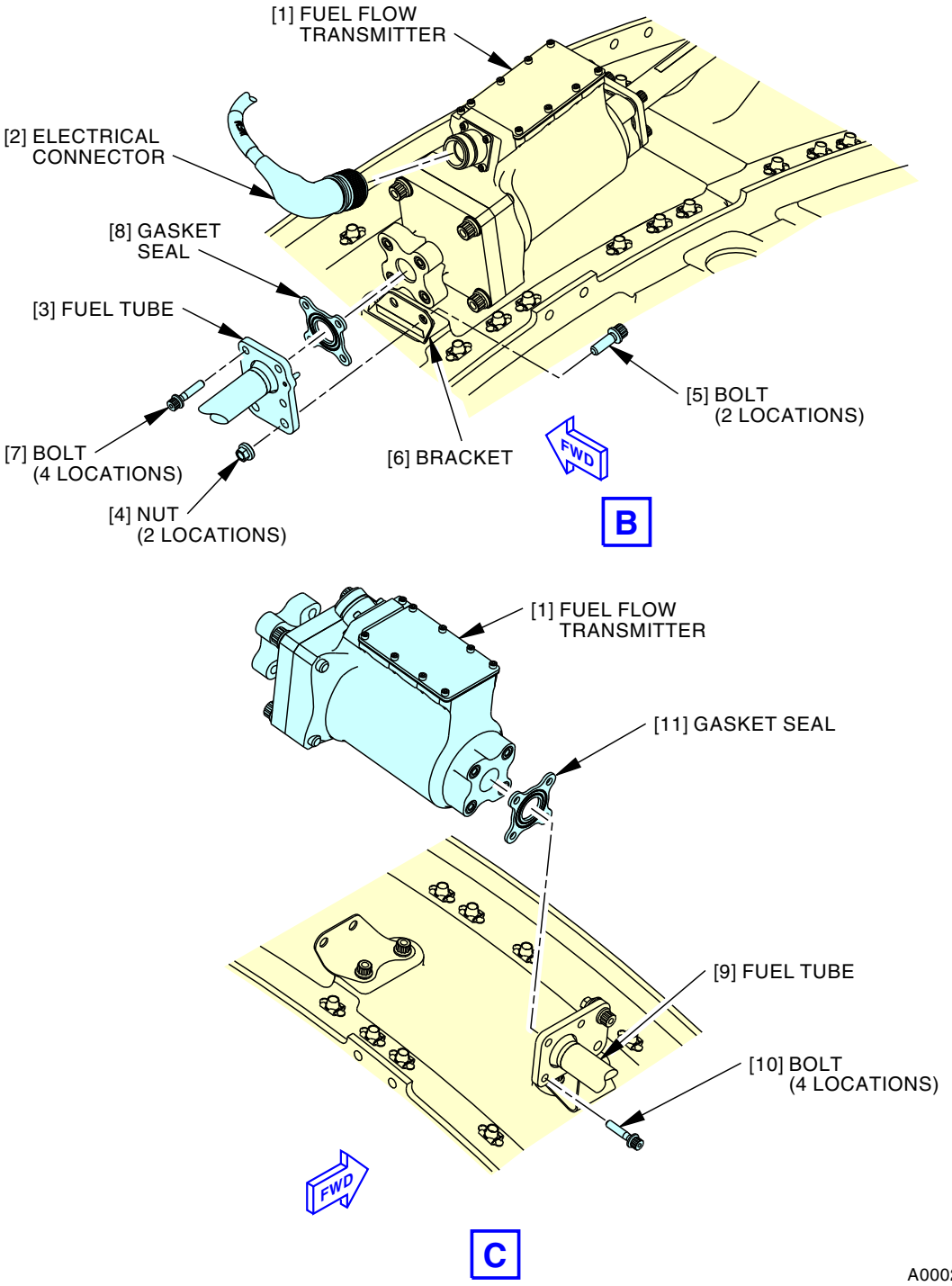
——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Flow Transmitter Installation
Figure 401/73-31-01-990-801-G00 (Sheet 1 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Flow Transmitter Installation
Figure 401/73-31-01-990-801-G00 (Sheet 2 of 2)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

TASK 73-31-01-400-801-G00

3. Fuel Flow Transmitter Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the Fuel Flow Transmitter (FFT).

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Fuel flow transmitter	73-31-01-01-010	SIA ALL
8	Gasket seal	73-31-01-01-050	SIA ALL
11	Gasket seal	73-31-01-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Fuel Flow Transmitter Installation

SUBTASK 73-31-01-410-001-G00

WARNING DO NOT GET FUEL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THE FUEL. KEEP THE FUEL AWAY FROM SPARKS, FLAME, AND HEAT. FUEL IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

(1) Install the fuel flow transmitter [1] as follows:

(a) Make sure that the mating surfaces are clean and clear of unwanted materials.

(b) Remove the protective covers from the fuel flow transmitter [1].

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(c) Put the fuel flow transmitter [1] on the engine.

(d) Connect the fuel tube [3] to the fuel flow transmitter [1] as follows:

1) Remove the protective covers from the fuel tube [3].
2) Lubricate the new gasket seal [8] with vaseline, D00672 [CP5070].
3) Install the new gasket seal [8] and the fuel tube [3] on the fuel flow transmitter [1].
4) Lubricate the threads of the four bolts [7] with graphite mineral vaseline, D00601 [CP2101].
5) Install the four bolts [7] to attach the fuel tube [3] to the fuel flow transmitter [1].
6) Tighten the bolts [7] in a crisscross pattern to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).
7) Verify the torque of the bolts [7] in a crisscross pattern.
8) Lubricate the threads of the two bolts [5] and the two nuts [4] with engine oil, D00599 [CP2442].
9) Install the two bolts [5] and the two nuts [4] to attach the fuel tube [3] to the bracket [6].
10) Tighten the nuts [4] to 109.2 in-lb (12.34 N·m) - 120.7 in-lb (13.64 N·m).

(e) Connect the fuel tube [9] to the fuel flow transmitter [1] as follows:

1) Remove the protective covers from the fuel tube [9].
2) Lubricate the new gasket seal [11] with vaseline, D00672 [CP5070].
3) Install the new gasket seal [11] and the fuel tube [9] on the fuel flow transmitter [1].
4) Lubricate the threads of the four bolts [10] with graphite mineral vaseline, D00601 [CP2101].
5) Install the four bolts [10] that attach the fuel tube [9] to the fuel flow transmitter [1].
6) Tighten the bolts [10] in a crisscross pattern to 41.8 in-lb (4.72 N·m) - 46.2 in-lb (5.22 N·m).
7) Verify the torque of the bolts [10] in a crisscross pattern.

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(f) Use the teflon-jawed pliers, STD-664, to connect the electrical connector to the fuel flow transmitter [1] as follows (TASK 70-00-01-910-803-G00):

1) Remove the protective covers from the electrical connector [2] and the electrical receptacle of the fuel flow transmitter [1].
2) Connect the electrical connector [2] to the fuel flow transmitter [1].

(g) Clean the work area and clear the tools and other items.

ECCN 9E991 BOEING PROPRIETARY - See title page for details

I. Put the Airplane Back to Its Usual Condition

SUBTASK 73-31-01-410-002-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-31-01-860-004-G00

(2) For the left engine, remove the safety tags and close these applicable circuit breakers:

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 73-31-01-860-005-G00

(3) For the right engine, remove the safety tags and close these applicable circuit breakers:

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 73-31-01-860-006-G00

(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Fuel Flow Transmitter Installation Test

SUBTASK 73-31-01-710-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

——— END OF TASK ———

ECCN 9E991 BOEING PROPRIETARY - See title page for details

FUEL FLOW TRANSMITTER - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Fuel Flow Transmitter Inspection

TASK 73-31-01-210-801-G00

2. Fuel Flow Transmitter Inspection

(Figure 601)

A. General

(1) This task provides the instructions to inspect the Fuel Flow Transmitter.

(2) The Fuel Flow Transmitter is located on the left side of the fan case.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-31-01-000-801-G00	Fuel Flow Transmitter Removal (P/B 401)
73-31-01-400-801-G00	Fuel Flow Transmitter Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Inspection

SUBTASK 73-31-01-860-007-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 73-31-01-010-003-G00

(2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

ECCN 9E991 BOEING PROPRIETARY - See title page for details

(a) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Fuel Flow Transmitter Inspection

SUBTASK 73-31-01-210-001-G00

(1) Inspect the fuel flow transmitter.

(a) Look for signs of fuel leaks.

1) If you see signs of fuel leaks, do these tasks to replace the transmitter preformed packings (Fuel Flow Transmitter Removal, TASK 73-31-01-000-801-G00 and Fuel Flow Transmitter Installation, TASK 73-31-01-400-801-G00).

(b) Make sure that the fuel flow transmitter is not loose.

1) If the fuel flow transmitter is loose, tighten the bolts that attach the fuel flow transmitter to the support brackets (Fuel Flow Transmitter Installation, TASK 73-31-01-400-801-G00).

(c) Make sure that the electrical connector is not loose.

CAUTION

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION

USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

1) If the electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 73-31-01-410-003-G00

(1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

(a) Close these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 73-31-01-860-008-G00

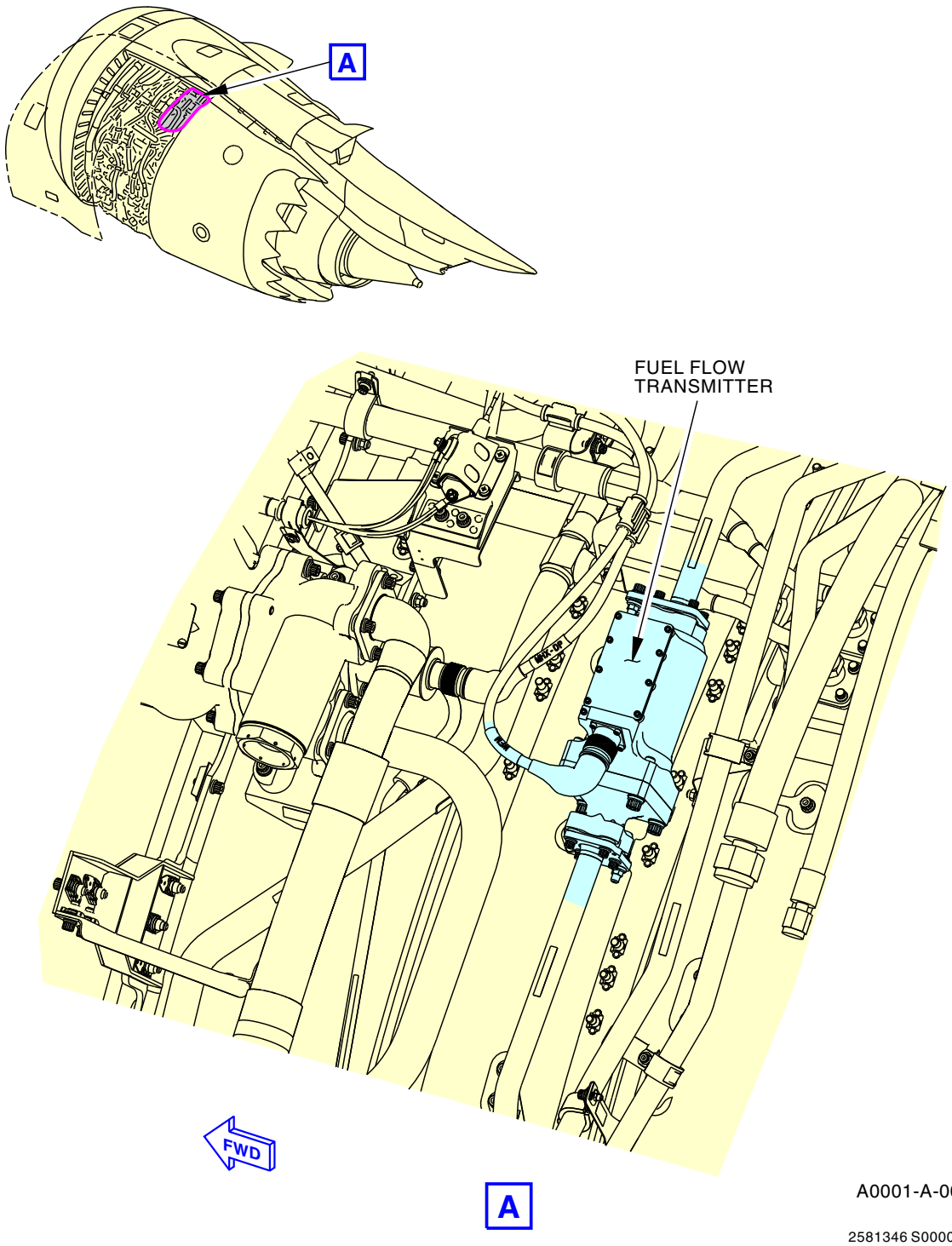
(2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

(a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

(b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

END OF TASK

ECCN 9E991 BOEING PROPRIETARY - See title page for details



Fuel Flow Transmitter Inspection
Figure 601/73-31-01-990-802-G00

ECCN 9E991 BOEING PROPRIETARY - See title page for details