

CHAPTER

34

NAVIGATION



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-EFFECTIVE PAGES			34-11-00 (cont)			34-11-00 (cont)		
1 thru 8	SEP 05/2018		203	Jul 25/2018		511	Jul 25/2018	
34-CONTENTS			204	Jul 25/2018		512	Jul 25/2018	
1	Jan 05/2015		205	Jul 25/2018		513	Jul 25/2018	
2	Jul 25/2018		206	Jul 25/2018		514	Jul 25/2018	
3	Jul 25/2018		207	Jul 25/2018		515	Jul 25/2018	
4	Jul 25/2018		208	Jul 25/2018		516	Jul 25/2018	
R 5	Sep 05/2018		209	Jul 25/2018		517	Jul 25/2018	
O 6	Sep 05/2018		210	Jul 25/2018		518	Jul 25/2018	
O 7	Sep 05/2018		211	Jul 25/2018		519	Jul 25/2018	
O 8	Sep 05/2018		212	BLANK		520	Jul 25/2018	
O 9	Sep 05/2018		34-11-00			521	Jul 25/2018	
O 10	Sep 05/2018		301	May 05/2015		522	Jul 25/2018	
O 11	Sep 05/2018		302	Sep 05/2017		523	Jul 25/2018	
O 12	Sep 05/2018		303	Sep 05/2017		524	Jul 25/2018	
O 13	Sep 05/2018		304	Sep 05/2017		525	Jul 25/2018	
O 14	Sep 05/2018		305	Sep 05/2017		526	Jul 25/2018	
O 15	Sep 05/2018		306	Sep 05/2017		527	Jul 25/2018	
O 16	Sep 05/2018		307	Sep 05/2017		528	Jul 25/2018	
O 17	Sep 05/2018		308	Sep 05/2017		529	Jul 25/2018	
O 18	Sep 05/2018		309	Sep 05/2017		530	Jul 25/2018	
O 19	Sep 05/2018		310	Sep 05/2017		531	Jul 25/2018	
20	BLANK		311	Sep 05/2017		532	Jul 25/2018	
34-00-00			312	Sep 05/2017		533	Jul 25/2018	
901	Jan 05/2015		313	Sep 05/2017		534	Jul 25/2018	
902	Jan 05/2015		314	Sep 05/2017		535	Jul 25/2018	
903	Jul 25/2018		34-11-00			536	Jul 25/2018	
904	Jul 25/2018		501	Jan 05/2015		537	Jul 25/2018	
905	Jul 25/2018		502	Jul 25/2018		538	Jul 25/2018	
906	Jul 25/2018		503	Sep 05/2017		539	Jul 25/2018	
907	Jul 25/2018		504	Sep 05/2017		540	Jul 25/2018	
908	Jul 25/2018		505	Sep 05/2017		541	Jul 25/2018	
909	Jan 05/2015		506	Jan 05/2015		542	Jul 25/2018	
910	Jan 05/2015		507	Jan 05/2015		543	Jul 25/2018	
34-11-00			508	May 05/2015		544	Jul 25/2018	
201	Jul 25/2018		509	Jul 25/2018		545	Jul 25/2018	
202	Jul 25/2018		510	Jul 25/2018		546	BLANK	

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

34-EFFECTIVE PAGES



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-11-01			34-13-03 (cont)			34-21-01		
401	May 05/2018		406	Sep 05/2017		201	Sep 05/2017	
402	Sep 05/2017		407	Jan 05/2015		202	May 05/2018	
403	Sep 05/2017		408	Jan 05/2015		203	Sep 05/2017	
404	Sep 05/2017		409	Sep 05/2017		204	BLANK	
405	Sep 05/2017		410	Sep 05/2017		34-21-01		
406	Sep 05/2017		34-16-00			401	Jul 25/2018	
407	Sep 05/2017		501	Jan 05/2015		402	Jul 25/2018	
408	BLANK		502	Sep 05/2017		403	May 05/2018	
34-11-01			503	Sep 05/2017		404	Jan 05/2018	
601	Jan 05/2015		504	Sep 05/2017		405	May 05/2018	
602	Jan 05/2015		505	Jan 05/2015		406	Jan 05/2018	
603	Jan 05/2015		506	BLANK		407	Jul 25/2018	
604	Jan 05/2015		34-21-00			408	May 05/2018	
34-11-01			201	Jan 05/2016		409	May 05/2018	
701	Sep 05/2017		202	Jan 05/2016		410	May 05/2018	
702	Sep 05/2017		203	Jan 05/2016		34-21-02		
703	Sep 05/2017		204	Jan 05/2016		201	Sep 05/2017	
704	Sep 05/2017		205	Jan 05/2016		202	May 05/2018	
705	Sep 05/2017		206	Jan 05/2016		203	May 05/2018	
706	Sep 05/2017		207	Jan 05/2016		204	BLANK	
34-11-02			208	Sep 05/2016		34-21-02		
401	May 05/2018		209	Jan 05/2016		401	May 05/2018	
402	Sep 05/2017		210	BLANK		402	Jan 05/2018	
403	Jan 05/2015		34-21-00			403	Jan 05/2018	
404	Jan 05/2015		501	Jan 05/2015		404	Jan 05/2018	
405	Jan 05/2015		502	Jan 05/2015		405	Jan 05/2018	
406	Sep 05/2017		503	Jan 05/2015		406	BLANK	
34-11-02			504	May 05/2015		34-21-03		
601	Jul 25/2018		505	May 05/2015		201	Sep 05/2017	
602	Jul 25/2018		506	May 05/2015		202	May 05/2018	
34-13-03			507	May 05/2015		203	Sep 05/2017	
401	Sep 05/2017		508	May 05/2015		204	Sep 05/2017	
402	Jan 05/2015		509	May 05/2016		34-21-03		
403	Jan 05/2015		510	May 05/2016		401	May 05/2015	
404	Sep 05/2017					402	Sep 05/2017	
405	Sep 05/2017					403	Jan 05/2015	

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

34-EFFECTIVE PAGES



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-21-03 (cont)			34-21-05			34-24-02		
404	Jan 05/2015		601	Sep 05/2017		501	Jan 05/2015	
405	Jan 05/2015		602	Sep 05/2017		502	Jan 05/2015	
406	Sep 05/2017		603	Jan 05/2015		503	May 05/2015	
407	Sep 05/2017		604	Jan 05/2015		504	Jul 25/2018	
408	Jan 05/2015		34-23-00			505	Jul 25/2018	
409	Jan 05/2015		201	May 05/2015		506	Sep 05/2017	
410	Jan 05/2015		202	Sep 05/2016		507	Sep 05/2017	
411	Jan 05/2015		203	Sep 05/2017		508	Sep 05/2017	
412	May 05/2015		204	Sep 05/2016		509	Sep 05/2017	
413	Sep 05/2017		205	Sep 05/2016		510	Sep 05/2017	
414	Sep 05/2017		206	Jan 05/2015		34-24-03		
415	Sep 05/2017		207	Jan 05/2015		401	Sep 05/2017	
416	Sep 05/2017		208	Jan 05/2015		402	Sep 05/2017	
417	Sep 05/2017		209	Sep 05/2017		403	Sep 05/2017	
418	BLANK		210	Sep 05/2017		404	BLANK	
34-21-04			211	Jan 05/2015		34-31-00		
401	May 05/2018		212	BLANK		201	Sep 05/2017	
402	Sep 05/2017		34-23-01			202	Sep 05/2017	
403	Jan 05/2015		301	Sep 05/2017		203	Sep 05/2017	
404	May 05/2017		302	Jan 05/2015		204	BLANK	
405	May 05/2016		303	Jan 05/2018		34-31-00		
406	Jan 05/2015		304	Jan 05/2015		501	Jan 05/2015	
407	Sep 05/2017		34-23-01			502	Jan 05/2015	
408	BLANK		401	Sep 05/2017		503	Jan 05/2015	
34-21-04 Config 1			402	Jan 05/2016		504	Jan 05/2017	
A 601	Sep 05/2018		403	Sep 05/2017		505	Jan 05/2017	
A 602	Sep 05/2018		404	Jan 05/2018		506	Jan 05/2017	
A 603	Sep 05/2018		34-24-02			507	Jan 05/2017	
A 604	Sep 05/2018		401	Sep 05/2017		508	Jan 05/2017	
34-21-05			402	Sep 05/2017		509	Jan 05/2017	
401	May 05/2018		403	Jan 05/2015		510	Jan 05/2017	
402	Sep 05/2017		404	Sep 05/2017		34-31-01		
403	Jan 05/2015		405	Jan 05/2017		401	May 05/2015	
404	May 05/2017		406	May 05/2018		402	Sep 05/2017	
405	Sep 05/2017					403	Jan 05/2015	
406	Sep 05/2017					R 404	Sep 05/2018	

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

34-EFFECTIVE PAGES



777-200/300 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34 NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-31-01 (cont)			34-31-06 (cont)			34-33-00 (cont)		
405	Jan 05/2015		404	Jan 05/2015		506	Sep 05/2015	
406	BLANK		34-31-07			34-33-01		
34-31-02			401	Jan 05/2015		401	May 05/2015	
401	Sep 05/2017		402	Jan 05/2015		402	Jan 05/2015	
402	Jan 05/2015		403	Jan 05/2015		403	Jan 05/2015	
403	May 05/2017		404	BLANK		404	May 05/2015	
404	Sep 05/2017		34-32-00			405	May 05/2018	
405	Sep 05/2017		201	Sep 05/2017		406	May 05/2018	
406	BLANK		202	Sep 05/2017		34-33-02		
34-31-03			34-32-00			401	May 05/2018	
401	Sep 05/2017		501	Jan 05/2015		402	Sep 05/2017	
402	Sep 05/2017		502	Jan 05/2017		403	Jan 05/2015	
403	Sep 05/2017		503	Jan 05/2017		404	Jan 05/2015	
404	Sep 05/2017		504	BLANK		405	May 05/2018	
405	Sep 05/2017		34-32-01			406	Jan 05/2018	
406	Sep 05/2017		401	May 05/2018		407	Sep 05/2017	
34-31-04			402	Sep 05/2017		408	Sep 05/2017	
401	May 05/2018		403	Jan 05/2015		409	Sep 05/2017	
402	Sep 05/2017		404	May 05/2017		410	BLANK	
403	May 05/2015		405	Jan 05/2018		34-43-00		
404	May 05/2015		406	Sep 05/2017		201	Sep 05/2017	
405	May 05/2018		407	Sep 05/2017		202	Sep 05/2017	
406	Sep 05/2017		408	Sep 05/2017		203	Sep 05/2017	
407	Sep 05/2017		34-33-00			204	BLANK	
408	Sep 05/2017		201	Sep 05/2017		34-43-00 Config 2		
409	Sep 05/2017		202	Sep 05/2017		501	Jul 25/2018	
410	BLANK		203	May 05/2018		502	Sep 05/2017	
34-31-05			204	May 05/2018		503	Jan 05/2015	
401	Jan 05/2015		205	May 05/2018		504	Jan 05/2015	
402	Jan 05/2015		206	May 05/2018		505	Jan 05/2015	
403	Jan 05/2015		34-33-00			506	Sep 05/2017	
404	Jan 05/2015		501	Jan 05/2015		507	Sep 05/2017	
34-31-06			502	Sep 05/2017		508	Sep 05/2017	
401	Jan 05/2015		503	Sep 05/2017		509	May 05/2018	
402	Jan 05/2015		504	Sep 05/2017		510	May 05/2018	
403	May 05/2015		505	Sep 05/2015				

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

34-EFFECTIVE PAGES



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-43-01			34-43-10 (cont)			34-45-00 (cont)		
401	Sep 05/2017		403	Jan 05/2015		529	Sep 05/2017	
402	Jan 05/2015		404	Jan 05/2015		530	Sep 05/2017	
403	Sep 05/2017		405	Jan 05/2015		531	Jul 25/2018	
404	Sep 05/2017		406	Jan 05/2015		532	Sep 05/2017	
34-43-02			34-45-00			533	Sep 05/2017	
401	Jul 25/2018		201	Sep 05/2017		534	Sep 05/2015	
402	Jul 25/2018		202	Sep 05/2017		535	May 05/2018	
403	Jan 05/2015		34-45-00			536	May 05/2018	
404	Jul 25/2018		501	May 05/2016		537	May 05/2018	
405	Jul 25/2018		502	Jan 05/2015		538	May 05/2018	
406	Jul 25/2018		503	Jan 05/2015		539	May 05/2018	
34-43-03			504	Jan 05/2015		540	May 05/2018	
401	Sep 05/2016		505	May 05/2016		34-45-01		
402	Sep 05/2017		506	Jan 05/2016		201	Sep 05/2017	
403	Jan 05/2015		507	Sep 05/2017		202	May 05/2018	
404	Jul 25/2018		508	Sep 05/2017		203	May 05/2018	
405	Jul 25/2018		509	Sep 05/2017		204	BLANK	
406	Jul 25/2018		510	Jul 25/2018		34-45-01		
407	Jul 25/2018		511	May 05/2018		401	Sep 05/2017	
408	Jul 25/2018		512	May 05/2018		402	Sep 05/2015	
409	Jul 25/2018		513	May 05/2018		403	Sep 05/2017	
410	Jul 25/2018		514	May 05/2018		404	Sep 05/2017	
411	Jul 25/2018		515	May 05/2018		405	Sep 05/2017	
412	Jul 25/2018		516	May 05/2018		406	BLANK	
413	Jul 25/2018		517	May 05/2018		34-45-02		
414	Jul 25/2018		518	May 05/2018		401	May 05/2018	
34-43-09			519	May 05/2018		402	Sep 05/2017	
401	Jan 05/2015		520	May 05/2018		403	Jan 05/2015	
402	Jan 05/2015		521	May 05/2018		404	May 05/2017	
403	Jan 05/2015		522	May 05/2018		405	Sep 05/2017	
404	May 05/2018		523	May 05/2018		406	Sep 05/2017	
405	May 05/2018		524	Sep 05/2015		407	Sep 05/2017	
406	May 05/2018		525	Sep 05/2015		408	Sep 05/2017	
34-43-10			526	Sep 05/2017		34-46-00		
401	Jan 05/2015		527	Sep 05/2017		201	Jan 05/2018	
402	Jan 05/2015		528	Sep 05/2015		202	Jan 05/2018	

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

34-EFFECTIVE PAGES



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-46-00 (cont)			34-46-01			34-53-00 (cont)		
203	Jul 25/2018		401	May 05/2015		O 506	Sep 05/2018	
204	Jul 25/2018		402	Sep 05/2017		R 507	Sep 05/2018	
205	Jan 05/2016		403	May 05/2015		R 508	Sep 05/2018	
206	May 05/2017		404	May 05/2015		O 509	Sep 05/2018	
207	May 05/2017		405	Sep 05/2017		O 510	Sep 05/2018	
208	May 05/2017		406	May 05/2015		O 511	Sep 05/2018	
209	May 05/2017		407	May 05/2017		R 512	Sep 05/2018	
210	May 05/2017		408	BLANK		R 513	Sep 05/2018	
211	Jan 05/2018		34-51-00			O 514	Sep 05/2018	
212	May 05/2017		201	Sep 05/2017		O 515	Sep 05/2018	
213	May 05/2017		202	Jan 05/2016		O 516	Sep 05/2018	
214	May 05/2017		34-51-00			O 517	Sep 05/2018	
215	May 05/2017		501	Jan 05/2015		R 518	Sep 05/2018	
216	Jan 05/2018		502	Jan 05/2015		O 519	Sep 05/2018	
217	May 05/2017		503	Jan 05/2017		O 520	Sep 05/2018	
218	May 05/2017		504	May 05/2015		O 521	Sep 05/2018	
219	May 05/2017		505	May 05/2015		O 522	Sep 05/2018	
220	May 05/2017		506	BLANK		O 523	Sep 05/2018	
221	May 05/2017		34-51-01			R 524	Sep 05/2018	
222	May 05/2017		401	May 05/2015		R 525	Sep 05/2018	
223	May 05/2017		402	May 05/2015		O 526	Sep 05/2018	
224	May 05/2017		403	May 05/2015		O 527	Sep 05/2018	
225	Jul 25/2018		404	May 05/2015		O 528	Sep 05/2018	
226	Jul 25/2018		405	May 05/2015		O 529	Sep 05/2018	
			406	BLANK		R 530	Sep 05/2018	
34-46-00 Config 2			34-51-02			R 531	Sep 05/2018	
501	May 05/2017		401	Jan 05/2015		O 532	Sep 05/2018	
502	May 05/2017		402	Jan 05/2015		O 533	Sep 05/2018	
503	May 05/2017		403	Jan 05/2015		O 534	Sep 05/2018	
504	May 05/2017		404	Jan 05/2015		O 535	Sep 05/2018	
505	Jan 05/2018		34-53-00			R 536	Sep 05/2018	
506	May 05/2017		501	Jan 05/2015		O 537	Sep 05/2018	
507	May 05/2017		R 502	Sep 05/2018		R 538	Sep 05/2018	
508	May 05/2017		O 503	Sep 05/2018		O 539	Sep 05/2018	
509	May 05/2017		R 504	Sep 05/2018		O 540	Sep 05/2018	
510	BLANK		O 505	Sep 05/2018		O 541	Sep 05/2018	

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

34-EFFECTIVE PAGES



777-200/300 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34 NAVIGATION

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-53-00 (cont)			34-55-00 (cont)			34-57-00 (cont)		
O 542	Sep 05/2018		203	May 05/2018		506	BLANK	
A 543	Sep 05/2018		204	BLANK		34-57-01		
A 544	BLANK		34-55-00			401	Sep 05/2017	
34-53-01			501	Jan 05/2015		402	Sep 05/2017	
401	May 05/2015		502	May 05/2015		403	Sep 05/2017	
402	Jan 05/2015		503	Sep 05/2017		404	Sep 05/2017	
403	May 05/2015		504	Sep 05/2017		405	Sep 05/2017	
404	Jan 05/2015		505	Sep 05/2017		406	Sep 05/2017	
34-53-02			506	BLANK		34-57-02		
401	Sep 05/2017		34-55-01			401	May 05/2018	
402	Jan 05/2015		401	May 05/2015		402	Sep 05/2017	
403	Sep 05/2017		402	May 05/2018		403	Sep 05/2017	
404	Sep 05/2017		403	May 05/2018		404	Sep 05/2017	
34-53-03			404	May 05/2018		405	Sep 05/2017	
401	May 05/2018		405	May 05/2018		406	Sep 05/2017	
402	Sep 05/2017		406	BLANK		407	Sep 05/2017	
403	Jan 05/2015		34-55-02			408	Sep 05/2017	
404	May 05/2017		401	May 05/2018		34-58-00		
405	Jan 05/2018		402	Sep 05/2017		201	Sep 05/2017	
406	Sep 05/2017		403	Jan 05/2015		202	Sep 05/2017	
407	Sep 05/2017		404	May 05/2017		203	Sep 05/2017	
408	Sep 05/2017		405	Jan 05/2018		204	BLANK	
409	Sep 05/2017		406	Sep 05/2017		34-58-00		
410	Sep 05/2017		407	Sep 05/2017		501	Jan 05/2015	
34-53-04			408	Sep 05/2017		502	Jan 05/2015	
401	Jan 05/2015		409	Sep 05/2017		503	Jan 05/2015	
402	Jan 05/2015		410	BLANK		504	BLANK	
403	Jan 05/2015		34-57-00			34-58-02		
404	Jan 05/2015		201	Sep 05/2017		401	May 05/2018	
405	Jan 05/2015		202	Sep 05/2017		402	Sep 05/2017	
406	Jan 05/2015		34-57-00			403	Jan 05/2016	
407	Jan 05/2015		501	Sep 05/2017		404	May 05/2017	
408	BLANK		502	Sep 05/2017		405	Jan 05/2018	
34-55-00			503	Sep 05/2017		406	Sep 05/2017	
201	Jan 05/2016		504	Sep 05/2017		407	Sep 05/2017	
202	May 05/2018		505	Sep 05/2017		408	Sep 05/2017	

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

34-EFFECTIVE PAGES



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 34
NAVIGATION**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
34-58-02 (cont)			34-61-02 (cont)					
409	Sep 05/2017		405	Sep 05/2017				
410	Sep 05/2017		406	Sep 05/2017				
34-61-00			407	Sep 05/2017				
201	Sep 05/2017		408	BLANK				
202	Sep 05/2017		34-61-02					
203	Sep 05/2017		701	Sep 05/2017				
204	Sep 05/2017		702	Sep 05/2017				
205	May 05/2018		703	Sep 05/2017				
206	Sep 05/2017		704	BLANK				
207	Sep 05/2017							
208	Sep 05/2017							
209	Sep 05/2017							
210	Sep 05/2017							
211	Jan 05/2018							
212	Jan 05/2018							
213	Jan 05/2018							
214	Jan 05/2018							
34-61-00								
501	Jan 05/2015							
502	Jan 05/2015							
503	Jan 05/2015							
504	May 05/2016							
505	Jan 05/2015							
506	May 05/2015							
507	Sep 05/2017							
508	Sep 05/2017							
34-61-02								
201	Sep 05/2017							
202	May 05/2018							
203	Sep 05/2017							
204	BLANK							
34-61-02								
401	May 05/2015							
402	Sep 05/2017							
403	Jan 05/2015							
404	Jan 05/2016							

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

34-EFFECTIVE PAGES



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>NAVIGATION - DDG MAINTENANCE PROCEDURES</u>	34-00-00		901	ARO ALL
MMEL 34-21-3 (DDG) Preparation - Air Data Inertial Reference Unit (ADIRU) Inoperative TASK 34-00-00-040-803			901	ARO ALL
MMEL 34-21-3 (DDG) Restoration - Air Data Inertial Reference Unit (ADIRU) Inoperative TASK 34-00-00-440-803			902	ARO ALL
MMEL 34-21-4 (DDG) Preparation - Pitot Air Data Modules (Primary - ARINC 629) Inoperative TASK 34-00-00-040-804			903	ARO ALL
MMEL 34-21-4 (DDG) Restoration - Pitot Air Data Modules (Primary - ARINC 629) Inoperative TASK 34-00-00-440-804			904	ARO ALL
MMEL 34-21-5 (DDG) Preparation - Static Air Data Modules (Primary - ARINC 629) Inoperative TASK 34-00-00-040-805			905	ARO ALL
MMEL 34-21-5 (DDG) Restoration - Static Air Data Modules (Primary - ARINC 629) Inoperative TASK 34-00-00-440-805			906	ARO ALL
MMEL 34-21-8 (DDG) Preparation - Integrated Standby Flight Display (ISFD) Inoperative TASK 34-00-00-040-807			906	ARO ALL
MMEL 34-21-8 (DDG) Restoration - Integrated Standby Flight Display (ISFD) Inoperative TASK 34-00-00-440-808			907	ARO ALL
MMEL 34-45-1 (DDG) Preparation - Traffic Collision and Avoidance System (TCAS) Inoperative TASK 34-00-00-040-801			908	ARO ALL
MMEL 34-45-1 (DDG) Restoration - Traffic Collision and Avoidance System (TCAS) Inoperative TASK 34-00-00-440-801			908	ARO ALL
MMEL 34-61-1 (DDG) Preparation - Flight Management Computing System (FMCS) Inoperative TASK 34-00-00-040-806			909	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
MMEL 34-61-1 (DDG) Restoration - Flight Management Computing System (FMCS) Inoperative TASK 34-00-00-440-806			910	ARO ALL
<u>STATIC AND TOTAL AIR PRESSURE SYSTEM - MAINTENANCE PRACTICES</u>	34-11-00		201	ARO ALL
Static and Total Air Pressure System - Pressurization TASK 34-11-00-780-801			201	ARO ALL
<u>STATIC AND TOTAL AIR PRESSURE SYSTEM - SERVICING</u>	34-11-00		301	ARO ALL
Static and Total Air Pressure System - Servicing TASK 34-11-00-170-802			301	ARO ALL
<u>STATIC AND TOTAL AIR PRESSURE SYSTEM - ADJUSTMENT/TEST</u>	34-11-00		501	ARO ALL
Left Static System Low-range Leak Test TASK 34-11-00-790-801			501	ARO ALL
Center Static System Low-range Leak Test TASK 34-11-00-700-801			508	ARO ALL
Right Static System Low-range Leak Test TASK 34-11-00-700-802			512	ARO ALL
Left Pitot System Leak Test TASK 34-11-00-700-803			517	ARO ALL
Center Pitot System Leak Test TASK 34-11-00-700-804			522	ARO ALL
Right Pitot System Leak Test TASK 34-11-00-700-805			526	ARO ALL
Left Static System Full-range Leak Test TASK 34-11-00-700-806			531	ARO ALL
Center Static System Full-range Leak Test TASK 34-11-00-700-807			536	ARO ALL
Right Static System Full-range Leak Test TASK 34-11-00-700-808			540	ARO ALL
<u>PITOT PROBE - REMOVAL/INSTALLATION</u>	34-11-01		401	ARO ALL
Pitot Probe Removal TASK 34-11-01-000-801			401	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Pitot Probe Installation TASK 34-11-01-400-801			405	ARO ALL
<u>PITOT PROBE - INSPECTION/CHECK</u>	34-11-01		601	ARO ALL
Pitot Probe Inspection TASK 34-11-01-200-801			601	ARO ALL
<u>PITOT PROBE - CLEANING/PAINTING</u>	34-11-01		701	ARO ALL
Pitot Probe Cleaning with Pitot Probe Installed TASK 34-11-01-100-802			701	ARO ALL
Pitot Probe Cleaning with Pitot Probe Removed TASK 34-11-01-100-801			703	ARO ALL
<u>STATIC PORT - REMOVAL/INSTALLATION</u>	34-11-02		401	ARO ALL
Static Port Removal TASK 34-11-02-000-801			401	ARO ALL
Static Port Installation TASK 34-11-02-400-801			405	ARO ALL
<u>STATIC PORT - INSPECTION/CHECK</u>	34-11-02		601	ARO ALL
Static Port Inspection TASK 34-11-02-200-801			601	ARO ALL
<u>STANDBY AIR DATA MODULE - REMOVAL/INSTALLATION</u>	34-13-03		401	ARO ALL
Pitot Standby Air Data Module Removal TASK 34-13-03-000-801			401	ARO ALL
Pitot Standby Air Data Module Installation TASK 34-13-03-400-802			404	ARO ALL
Static Standby Air Data Module Removal TASK 34-13-03-000-802			405	ARO ALL
Static Standby Air Data Module Installation TASK 34-13-03-400-801			409	ARO ALL
<u>ALTITUDE ALERT SYSTEM - ADJUSTMENT/TEST</u>	34-16-00		501	ARO ALL
Altitude Alert System - Operational Test TASK 34-16-00-730-801			501	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

SUBJECT	CHAPTER SECTION	CONF	PAGE	EFFECT
<u>AIR DATA INERTIAL REFERENCE SYSTEM - MAINTENANCE PRACTICES</u>	<u>34-21-00</u>		201	ARO ALL
Air Data Inertial Reference Unit - Deactivation TASK 34-21-00-040-801			201	ARO ALL
Air Data Inertial Reference Unit - Activation TASK 34-21-00-440-801			203	ARO ALL
Air Data Inertial Reference Unit - Alignment TASK 34-21-00-820-801			204	ARO ALL
Secondary Attitude Air Data Reference Unit - Alignment TASK 34-21-00-820-802			207	ARO ALL
Mach Bias Modification Procedure TASK 34-21-00-820-803			208	ARO ALL
<u>AIR DATA INERTIAL REFERENCE SYSTEM - ADJUSTMENT/TEST</u>	<u>34-21-00</u>		501	ARO ALL
Air Data Inertial Reference System - System Test TASK 34-21-00-730-801			501	ARO ALL
Air Data Sensor - System Test TASK 34-21-00-730-802			504	ARO ALL
<u>AIR DATA INERTIAL REFERENCE UNIT - MAINTENANCE PRACTICES</u>	<u>34-21-01</u>		201	ARO ALL
Air Data Inertial Reference Unit (ADIRU) Software Installation TASK 34-21-01-420-801			201	ARO ALL
<u>AIR DATA INERTIAL REFERENCE UNIT - REMOVAL/INSTALLATION</u>	<u>34-21-01</u>		401	ARO ALL
Air Data Inertial Reference Unit - Removal TASK 34-21-01-000-801			401	ARO ALL
Air Data Inertial Reference Unit - Installation TASK 34-21-01-400-801			407	ARO ALL
<u>SECONDARY ATTITUDE AIR DATA REFERENCE UNIT - MAINTENANCE PRACTICES</u>	<u>34-21-02</u>		201	ARO ALL
Secondary Attitude Air Data Reference Unit (SAARU) Software Installation TASK 34-21-02-420-801			201	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

SUBJECT	CHAPTER SECTION	CONF	PAGE	EFFECT
<u>SECONDARY ATTITUDE AIR DATA REFERENCE UNIT - REMOVAL/INSTALLATION</u>	<u>34-21-02</u>		401	ARO ALL
Secondary Attitude Air Data Reference Unit Removal TASK 34-21-02-000-801			401	ARO ALL
Secondary Attitude Air Data Reference Unit Installation TASK 34-21-02-400-801			404	ARO ALL
<u>AIR DATA MODULE (ADM) - MAINTENANCE PRACTICES</u>	<u>34-21-03</u>		201	ARO ALL
Air Data Module (ADM) Software Installation TASK 34-21-03-420-801			201	ARO ALL
<u>AIR DATA MODULE - REMOVAL/INSTALLATION</u>	<u>34-21-03</u>		401	ARO ALL
Pitot Air Data Module Removal TASK 34-21-03-000-801			401	ARO ALL
Static Air Data Module Removal TASK 34-21-03-000-802			406	ARO ALL
Pitot Air Data Module Installation TASK 34-21-03-400-801			412	ARO ALL
Static Air Data Module Installation TASK 34-21-03-400-802			415	ARO ALL
<u>ANGLE OF ATTACK SENSOR - REMOVAL/INSTALLATION</u>	<u>34-21-04</u>		401	ARO ALL
Angle of Attack Sensor Removal TASK 34-21-04-000-801			401	ARO ALL
Angle of Attack Sensor Installation TASK 34-21-04-400-801			404	ARO ALL
<u>ANGLE OF ATTACK SENSOR - INSPECTION/CHECK</u>	<u>34-21-04</u>	1	601	ARO ALL
Angle of Attack Sensor - Inspection/Check TASK 34-21-04-200-801-001		1	601	ARO ALL
<u>TOTAL AIR TEMPERATURE PROBE - REMOVAL/INSTALLATION</u>	<u>34-21-05</u>		401	ARO ALL
Total Air Temperature Probe - Removal TASK 34-21-05-000-801			401	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Total Air Temperature Probe - Installation TASK 34-21-05-400-801			404	ARO ALL
<u>TOTAL AIR TEMPERATURE PROBE - INSPECTION/CHECK</u>	34-21-05		601	ARO ALL
Total Air Temperature Probe - Inspection TASK 34-21-05-200-802			601	ARO ALL
<u>STANDBY MAGNETIC COMPASS - MAINTENANCE PRACTICES</u>	34-23-00		201	ARO ALL
Standby Magnetic Compass Calibrator Procedure TASK 34-23-00-820-802			201	ARO ALL
Standby Magnetic Compass Tow Around Procedure TASK 34-23-00-820-801			208	ARO ALL
<u>Standby Compass Lamp - Servicing</u>	34-23-01		301	ARO ALL
Standby Compass Lamp Removal TASK 34-23-01-000-801			301	ARO ALL
Standby Compass Lamp Installation TASK 34-23-01-400-801			304	ARO ALL
<u>STANDBY MAGNETIC COMPASS - REMOVAL/INSTALLATION</u>	34-23-01		401	ARO ALL
Standby Magnetic Compass Removal TASK 34-23-01-020-801			401	ARO ALL
Standby Magnetic Compass Installation TASK 34-23-01-420-801			403	ARO ALL
<u>INTEGRATED STANDBY FLIGHT DISPLAY - REMOVAL/INSTALLATION</u>	34-24-02		401	ARO ALL
Integrated Standby Flight Display Removal TASK 34-24-02-000-801			401	ARO ALL
Integrated Standby Flight Display Installation TASK 34-24-02-400-801			404	ARO ALL
<u>INTEGRATED STANDBY FLIGHT DISPLAY - ADJUSTMENT/TEST</u>	34-24-02		501	ARO ALL
Integrated Standby Flight Display - Operational Test TASK 34-24-02-710-801			501	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Integrated Standby Flight Display - System Test TASK 34-24-02-730-801			502	ARO ALL
Air Data Module Power Supply - Operational Test TASK 34-24-02-710-802			509	ARO ALL
<u>AIR DATA MODULE POWER SUPPLY - REMOVAL/INSTALLATION</u>	34-24-03		401	ARO ALL
Air Data Module Power Supply Removal TASK 34-24-03-020-801			401	ARO ALL
Air Data Module Power Supply Installation TASK 34-24-03-420-801			402	ARO ALL
<u>INSTRUMENT LANDING SYSTEM - MAINTENANCE PRACTICES</u>	34-31-00		201	ARO ALL
Instrument Landing System - Deactivation TASK 34-31-00-040-801			201	ARO ALL
Instrument Landing System - Activation TASK 34-31-00-440-801			202	ARO ALL
<u>INSTRUMENT LANDING SYSTEM - ADJUSTMENT/TEST</u>	34-31-00		501	ARO ALL
Instrument Landing System - Operational Test TASK 34-31-00-710-801			501	ARO ALL
Instrument Landing System - System Test TASK 34-31-00-730-801			503	ARO ALL
<u>RECEIVER FOR ILS - REMOVAL/INSTALLATION</u>	34-31-01		401	ARO ALL
Receiver for ILS - Removal TASK 34-31-01-000-801			401	ARO ALL
Receiver for ILS - Installation TASK 34-31-01-400-801			404	ARO ALL
<u>ILS LOCALIZER ANTENNA - REMOVAL/INSTALLATION</u>	34-31-02		401	ARO ALL
ILS Localizer Antenna Removal TASK 34-31-02-000-801			401	ARO ALL
ILS Localizer Antenna Installation TASK 34-31-02-400-801			403	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>ILS G/S CAPTURE ANTENNA - REMOVAL/INSTALLATION</u>	34-31-03		401	ARO ALL
ILS G/S Capture Antenna Removal TASK 34-31-03-000-801			401	ARO ALL
ILS G/S Capture Antenna Installation TASK 34-31-03-400-801			404	ARO ALL
<u>ILS G/S TRACK ANTENNA - REMOVAL/INSTALLATION</u>	34-31-04		401	ARO ALL
ILS G/S Track Antenna Removal TASK 34-31-04-000-801			401	ARO ALL
ILS G/S Track Antenna Installation TASK 34-31-04-400-801			405	ARO ALL
<u>ILS LOCALIZER ANTENNA SWITCH - REMOVAL/INSTALLATION</u>	34-31-05		401	ARO ALL
ILS Localizer Antenna Switch Removal TASK 34-31-05-000-801			401	ARO ALL
ILS Localizer Antenna Switch Installation TASK 34-31-05-400-801			403	ARO ALL
<u>ILS G/S ANTENNA SWITCH - REMOVAL/INSTALLATION</u>	34-31-06		401	ARO ALL
ILS G/S Antenna Switch Removal TASK 34-31-06-000-801			401	ARO ALL
ILS G/S Antenna Switch Installation TASK 34-31-06-400-801			403	ARO ALL
<u>ILS RF POWER DIVIDER - REMOVAL/INSTALLATION</u>	34-31-07		401	ARO ALL
ILS RF Power Divider Removal TASK 34-31-07-000-801			401	ARO ALL
ILS RF Power Divider Installation TASK 34-31-07-400-801			403	ARO ALL
<u>MARKER BEACON SYSTEM - MAINTENANCE PRACTICES</u>	34-32-00		201	ARO ALL
Marker Beacon System - Deactivation TASK 34-32-00-040-801			201	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Marker Beacon System - Activation TASK 34-32-00-440-801			202	ARO ALL
<u>MARKER BEACON SYSTEM - ADJUSTMENT/TEST</u>	34-32-00		501	ARO ALL
Marker Beacon System - Operational Test TASK 34-32-00-710-801			501	ARO ALL
Marker Beacon System - System Test TASK 34-32-00-730-801			502	ARO ALL
<u>MARKER BEACON ANTENNA - REMOVAL/INSTALLATION</u>	34-32-01		401	ARO ALL
Marker Beacon Antenna Removal TASK 34-32-01-000-801			401	ARO ALL
Marker Beacon Antenna Installation TASK 34-32-01-400-801			404	ARO ALL
<u>RADIO ALTIMETER (RA) SYSTEM - MAINTENANCE PRACTICES</u>	34-33-00		201	ARO ALL
Radio Altimeter (RA) System - Deactivation TASK 34-33-00-040-801			201	ARO ALL
Radio Altimeter (RA) System - Activation TASK 34-33-00-440-801			202	ARO ALL
Radio Altitude Simulation Test TASK 34-33-00-700-801			203	ARO ALL
<u>RADIO ALTIMETER (RA) SYSTEM - ADJUSTMENT/TEST</u>	34-33-00		501	ARO ALL
Radio Altimeter System - Operational Test TASK 34-33-00-710-801			501	ARO ALL
Radio Altimeter System - System Test TASK 34-33-00-730-801			502	ARO ALL
<u>RADIO ALTIMETER (RA) TRANSCEIVER - REMOVAL/INSTALLATION</u>	34-33-01		401	ARO ALL
Radio Altimeter Transceiver Removal TASK 34-33-01-000-801			401	ARO ALL
Radio Altimeter Transceiver Installation TASK 34-33-01-400-801			404	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>RADIO ALTIMETER (RA) ANTENNA - REMOVAL/INSTALLATION</u>	34-33-02		401	ARO ALL
Radio Altimeter Antenna Removal TASK 34-33-02-000-801			401	ARO ALL
Radio Altimeter Antenna Installation TASK 34-33-02-400-801			405	ARO ALL
<u>WEATHER RADAR SYSTEM - MAINTENANCE PRACTICES</u>	34-43-00		201	ARO ALL
Weather Radar System - Deactivation TASK 34-43-00-040-801			201	ARO ALL
Weather Radar System - Activation TASK 34-43-00-440-801			202	ARO ALL
<u>WEATHER RADAR SYSTEM - ADJUSTMENT/TEST</u>	34-43-00	2	501	ARO ALL
Weather Radar System - Operational Test TASK 34-43-00-710-804-002		2	501	ARO ALL
Weather Radar System - System Test TASK 34-43-00-730-803-002		2	506	ARO ALL
<u>WEATHER RADAR CONTROL PANEL - REMOVAL/INSTALLATION</u>	34-43-01		401	ARO ALL
WXR Control Panel Removal TASK 34-43-01-000-801			401	ARO ALL
WXR Control Panel Installation TASK 34-43-01-400-801			403	ARO ALL
<u>WEATHER RADAR TRANSCEIVER - REMOVAL/INSTALLATION</u>	34-43-02		401	ARO ALL
WXR Transceiver Removal TASK 34-43-02-000-801			401	ARO ALL
WXR Transceiver Installation TASK 34-43-02-400-801			404	ARO ALL
<u>WEATHER RADAR (WXR) ANTENNA ASSEMBLY - REMOVAL/INSTALLATION</u>	34-43-03		401	ARO ALL
WXR Antenna Flat Plate Removal TASK 34-43-03-000-801			401	ARO ALL
WXR Antenna Flat Plate Installation TASK 34-43-03-400-802			404	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
WXR Antenna Drive Unit Removal TASK 34-43-03-000-802			406	ARO ALL
WXR Antenna Drive Unit Installation TASK 34-43-03-400-801			410	ARO ALL
WXR Antenna Drive Unit Installation Test TASK 34-43-03-400-803			412	ARO ALL
<u>WEATHER RADAR PROCESSOR - REMOVAL/INSTALLATION</u>	34-43-09		401	ARO ALL
WXR Radar Processor Removal TASK 34-43-09-000-801			401	ARO ALL
WXR Radar Processor Installation TASK 34-43-09-400-801			404	ARO ALL
<u>WEATHER RADAR PROCESSOR MOUNT - REMOVAL/INSTALLATION</u>	34-43-10		401	ARO ALL
WXR Radar Processor Mount Removal TASK 34-43-10-000-801			401	ARO ALL
WXR Radar Processor Mount Installation TASK 34-43-10-400-801			404	ARO ALL
<u>TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) - MAINTENANCE PRACTICES</u>	34-45-00		201	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - Deactivation TASK 34-45-00-040-801			201	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - Activation TASK 34-45-00-440-801			202	ARO ALL
<u>TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) - ADJUSTMENT/TEST</u>	34-45-00		501	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - Ground Test TASK 34-45-00-740-801			501	ARO ALL
Traffic Alert and Collision Avoidance System - Operational Test TASK 34-45-00-710-801			502	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Traffic Alert and Collision Avoidance System (TCAS) - Software Installation Verification Test TASK 34-45-00-750-801			505	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - System Interface Test TASK 34-45-00-730-801			505	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - System Simulation Test (With the IFR TCAS-201 Test Set) TASK 34-45-00-730-802			509	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the TIC TR-220 Test Set) TASK 34-45-00-730-807			518	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the TIC T-49 Test Set) TASK 34-45-00-730-803			526	ARO ALL
Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the IFR-6000 Test Set) TASK 34-45-00-730-804			530	ARO ALL
<u>TCAS COMPUTER - MAINTENANCE PRACTICES</u>	34-45-01		201	ARO ALL
TCAS Computer Software Installation TASK 34-45-01-400-802			201	ARO ALL
<u>TCAS COMPUTER - REMOVAL/INSTALLATION</u>	34-45-01		401	ARO ALL
TCAS Computer Removal TASK 34-45-01-000-801			401	ARO ALL
TCAS Computer Installation TASK 34-45-01-400-801			403	ARO ALL
<u>TCAS DIRECTIONAL ANTENNA - REMOVAL/INSTALLATION</u>	34-45-02		401	ARO ALL
TCAS Antenna Removal TASK 34-45-02-000-801			401	ARO ALL
TCAS Antenna Installation TASK 34-45-02-400-801			404	ARO ALL

34-CONTENTS



777-200/300 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34 NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION</u>	<u>SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>GROUND PROXIMITY WARNING SYSTEM - MAINTENANCE PRACTICES</u>		34-46-00		201	ARO ALL
Ground Proximity Warning System - Deactivation TASK 34-46-00-040-801				201	ARO ALL
Ground Proximity Warning System - Activation TASK 34-46-00-440-801				202	ARO ALL
Load the Operational Program Configuration (OPC) Software with PMAT 2000/615A Portable Data Loader via the EGPWS Front Panel RJ45 TASK 34-46-00-470-806				203	ARO 009-999; ARO 001-008 POST SB 777-34-0232
Load the Operational Program Configuration (OPC) Software via ONS TASK 34-46-00-470-809				206	ARO ALL
Verify the Operational Program Configuration (OPC) Part Number TASK 34-46-00-700-803				207	ARO 009-999; ARO 001-008 POST SB 777-34-0232
Load the Terrain Database with PCMCIA Flash Card TASK 34-46-00-470-802				208	ARO 001-008 PRE SB 777-34-0232
Verify the Terrain Database Part Number for PCMCIA Flash Card Load TASK 34-46-00-700-801				211	ARO 001-008 PRE SB 777-34-0232
Load the Terrain Database with an ARINC 615A Data Loader TASK 34-46-00-470-807				212	ARO 009-999; ARO 001-008 POST SB 777-34-0232
Verify the Terrain Database Part Number for ARINC 615A Data Loader TASK 34-46-00-700-804				216	ARO 009-999; ARO 001-008 POST SB 777-34-0232
Load the Terrain Database with USB Drive Load TASK 34-46-00-470-805				218	ARO 009-999; ARO 001-008 POST SB 777-34-0232
Verify the Terrain Database Part Number for USB Drive Load TASK 34-46-00-700-802				221	ARO 009-999; ARO 001-008 POST SB 777-34-0232
RAAS ACTIVATION TASK 34-46-00-470-803				222	ARO ALL; AIRPLANES WITH RUNWAY AWARENESS AND ADVISORY SYSTEM (RAAS) ENABLED

34-CONTENTS



777-200/300 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34 NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Flight History Data Download TASK 34-46-00-970-801			223	ARO 001-008 PRE SB 777-34-0232
Flight History Data Download TASK 34-46-00-970-802			225	ARO 009-999; ARO 001-008 POST SB 777-34-0232
<u>GROUND PROXIMITY WARNING SYSTEM - ADJUSTMENT/TEST</u>	34-46-00	2	501	ARO ALL
Ground Proximity Warning System - Operational Test TASK 34-46-00-710-803-002		2	501	ARO ALL
Ground Proximity Warning System - System Test TASK 34-46-00-730-804-002		2	505	ARO ALL
<u>GROUND PROXIMITY WARNING COMPUTER - REMOVAL/INSTALLATION</u>	34-46-01		401	ARO ALL
Ground Proximity Warning Computer Removal TASK 34-46-01-000-801			401	ARO ALL
Ground Proximity Warning Computer Installation TASK 34-46-01-400-801			405	ARO ALL
<u>VHF OMNIDIRECTIONAL RANGE (VOR) SYSTEM - MAINTENANCE PRACTICES</u>	34-51-00		201	ARO ALL
VOR System - Deactivation TASK 34-51-00-040-801			201	ARO ALL
VOR System - Activation TASK 34-51-00-440-801			202	ARO ALL
<u>VHF OMNIDIRECTIONAL RANGE (VOR) SYSTEM - ADJUSTMENT/TEST</u>	34-51-00		501	ARO ALL
VOR System - Operational Test TASK 34-51-00-740-801			501	ARO ALL
VOR System - System Test TASK 34-51-00-730-801			503	ARO ALL
<u>VOR/MB RECEIVER - REMOVAL/INSTALLATION</u>	34-51-01		401	ARO ALL
VOR/MB Receiver Removal TASK 34-51-01-000-801			401	ARO ALL
VOR/MB Receiver Installation TASK 34-51-01-400-801			404	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

SUBJECT	CHAPTER SECTION	CONF	PAGE	EFFECT
<u>VOR ANTENNA - REMOVAL/INSTALLATION</u>	34-51-02		401	ARO ALL
VOR Antenna Removal TASK 34-51-02-000-801			401	ARO ALL
VOR Antenna Installation TASK 34-51-02-400-801			403	ARO ALL
<u>AIR TRAFFIC CONTROL/MODE S TRANSPONDER SYSTEM - ADJUSTMENT/TEST</u>	34-53-00		501	ARO ALL
Air Traffic Control/Mode S Transponder System - Operational Test TASK 34-53-00-710-801			501	ARO ALL
Air Traffic Control/Mode S Transponder Functional Test (With the ATC-601 Series Test Set) TASK 34-53-00-730-806			502	ARO ALL
Air Traffic Control/Mode S Transponder Functional Test (With the TIC TR-220 Test Set) TASK 34-53-00-730-807			518	ARO ALL
Air Traffic Control/Mode S Transponder Functional Test (With the IFR-6000 Test Set) - (Alternate Method) TASK 34-53-00-730-808			530	ARO ALL
Air Traffic Control / Mode S Transponder Functional Test (With ARINC 429 Test Unit) TASK 34-53-00-720-803			542	ARO ALL
<u>ATC/MODE S TRANSPONDER - REMOVAL/INSTALLATION</u>	34-53-01		401	ARO ALL
ATC/Mode S Transponder Removal TASK 34-53-01-000-801			401	ARO ALL
ATC/Mode S Transponder Installation TASK 34-53-01-400-801			403	ARO ALL
<u>TCAS/ATC CONTROL PANEL - REMOVAL/INSTALLATION</u>	34-53-02		401	ARO ALL
TCAS/ATC Control Panel Removal TASK 34-53-02-000-801			401	ARO ALL
TCAS/ATC Control Panel Installation TASK 34-53-02-400-801			403	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>ATC ANTENNA - REMOVAL/INSTALLATION</u>	34-53-03		401	ARO ALL
ATC Antenna Removal TASK 34-53-03-000-801			401	ARO ALL
ATC Antenna Installation TASK 34-53-03-400-801			404	ARO ALL
<u>ATC COAX RELAY - REMOVAL/INSTALLATION</u>	34-53-04		401	ARO ALL
ATC Coax Relay Removal TASK 34-53-04-000-801			401	ARO ALL
ATC Coax Relay Installation TASK 34-53-04-400-801			405	ARO ALL
<u>DISTANCE MEASURING EQUIPMENT SYSTEM - MAINTENANCE PRACTICES</u>	34-55-00		201	ARO ALL
Distance Measuring Equipment System - Deactivation TASK 34-55-00-040-801			201	ARO ALL
Distance Measuring Equipment System - Activation TASK 34-55-00-440-801			202	ARO ALL
<u>DISTANCE MEASURING EQUIPMENT SYSTEM - ADJUSTMENT/TEST</u>	34-55-00		501	ARO ALL
Distance Measuring Equipment System - Operational Test TASK 34-55-00-710-801			501	ARO ALL
Distance Measuring Equipment System - System Test TASK 34-55-00-730-801			502	ARO ALL
<u>DME INTERROGATOR - REMOVAL/INSTALLATION</u>	34-55-01		401	ARO ALL
DME Interrogator Removal TASK 34-55-01-000-801			401	ARO ALL
DME Interrogator Installation TASK 34-55-01-400-801			404	ARO ALL
<u>DME ANTENNA - REMOVAL/INSTALLATION</u>	34-55-02		401	ARO ALL
DME Antenna Removal TASK 34-55-02-000-801			401	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
DME Antenna Installation TASK 34-55-02-400-801			404	ARO ALL
<u>AUTOMATIC DIRECTION FINDER SYSTEM - MAINTENANCE PRACTICES</u>	34-57-00		201	ARO ALL
Automatic Direction Finder System - Deactivation TASK 34-57-00-040-801			201	ARO ALL
Automatic Direction Finder System - Activation TASK 34-57-00-440-801			202	ARO ALL
<u>AUTOMATIC DIRECTION FINDER SYSTEM - ADJUSTMENT/TEST</u>	34-57-00		501	ARO ALL
Automatic Direction Finder System - Operational Test TASK 34-57-00-710-801			501	ARO ALL
Automatic Direction Finder System - System Test TASK 34-57-00-730-801			502	ARO ALL
<u>ADF RECEIVER - REMOVAL/INSTALLATION</u>	34-57-01		401	ARO ALL
ADF Receiver Removal TASK 34-57-01-000-801			401	ARO ALL
ADF Receiver Installation TASK 34-57-01-400-801			405	ARO ALL
<u>ADF ANTENNA - REMOVAL/INSTALLATION</u>	34-57-02		401	ARO ALL
ADF Antenna Removal TASK 34-57-02-000-801			401	ARO ALL
ADF Antenna Installation TASK 34-57-02-400-801			405	ARO ALL
<u>GLOBAL POSITIONING SYSTEM - MAINTENANCE PRACTICES</u>	34-58-00		201	ARO ALL
Global Positioning System - Deactivation TASK 34-58-00-040-801			201	ARO ALL
Global Positioning System - Activation TASK 34-58-00-440-801			202	ARO ALL
<u>GLOBAL POSITIONING SYSTEM - ADJUSTMENT/TEST</u>	34-58-00		501	ARO ALL
Global Positioning System - Operational Test TASK 34-58-00-710-801			501	ARO ALL

34-CONTENTS



777-200/300
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 34
NAVIGATION

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Global Positioning System - System Test TASK 34-58-00-730-801			502	ARO ALL
<u>GPS ANTENNA - REMOVAL/INSTALLATION</u>	34-58-02		401	ARO ALL
GPS Antenna Removal TASK 34-58-02-000-801			401	ARO ALL
GPS Antenna Installation TASK 34-58-02-400-801			404	ARO ALL
<u>FLIGHT MANAGEMENT COMPUTER SYSTEM - MAINTENANCE PRACTICES</u>	34-61-00		201	ARO ALL
Flight Management Computer System - Deactivation TASK 34-61-00-040-801			201	ARO ALL
Flight Management Computer System - Activation TASK 34-61-00-440-801			202	ARO ALL
Navigation Database Software Installation TASK 34-61-00-470-801			203	ARO ALL
Drag Factor/Fuel Flow Factor Modification Procedure TASK 34-61-00-400-801			212	ARO ALL
<u>FLIGHT MANAGEMENT COMPUTING SYSTEM - ADJUSTMENT/TEST</u>	34-61-00		501	ARO ALL
Flight Management Computing System - Operational Test TASK 34-61-00-710-801			501	ARO ALL
Flight Management Computing System - System Test TASK 34-61-00-730-801			502	ARO ALL
<u>CONTROL DISPLAY UNIT - MAINTENANCE PRACTICES</u>	34-61-02		201	ARO ALL
Control Display Unit Software Installation TASK 34-61-02-400-801			201	ARO ALL
<u>CONTROL DISPLAY UNIT - REMOVAL/INSTALLATION</u>	34-61-02		401	ARO ALL
Control Display Unit (CDU) Removal TASK 34-61-02-020-801			401	ARO ALL

34-CONTENTS



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 34
NAVIGATION**

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Control Display Unit (CDU) Installation TASK 34-61-02-420-801			404	ARO ALL
<u>CONTROL DISPLAY UNIT - CLEANING/PAINTING</u>	34-61-02		701	ARO ALL
Cooling Air Inlet Screen Cleaning TASK 34-61-02-100-801			701	ARO ALL
CDU Display Screen Cleaning TASK 34-61-02-100-802			701	ARO ALL

34-CONTENTS



777-200/300 AIRCRAFT MAINTENANCE MANUAL

NAVIGATION - DDG MAINTENANCE PROCEDURES

1. General

- A. This procedure has the maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks prepare the airplane for flight with certain systems/components inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. These are the tasks for the components in the navigation system:
 - (1) MMEL 34-21-3 (DDG) Preparation - Air Data Inertial Reference Unit (ADIRU) Inoperative
 - (2) MMEL 34-21-3 (DDG) Restoration - Air Data Inertial Reference Unit (ADIRU) Inoperative
 - (3) MMEL 34-21-4 (DDG) Preparation - Pitot Air Data Modules (Primary - ARINC 629) Inoperative
 - (4) MMEL 34-21-4 (DDG) Restoration - Pitot Air Data Modules (Primary - ARINC 629) Inoperative
 - (5) MMEL 34-21-5 (DDG) Preparation - Static Air Data Modules (Primary - ARINC 629) Inoperative
 - (6) MMEL 34-21-5 (DDG) Restoration - Static Air Data Modules (Primary - ARINC 629) Inoperative
 - (7) MMEL 34-21-8 (DDG) Preparation - Integrated Standby Flight Display (ISFD) Inoperative
 - (8) MMEL 34-21-8 (DDG) Restoration - Integrated Standby Flight Display (ISFD) Inoperative
 - (9) MMEL 34-45-1 (DDG) Preparation - Traffic Collision and Avoidance System (TCAS) Inoperative
 - (10) MMEL 34-45-1 (DDG) Restoration - Traffic Collision and Avoidance System (TCAS) Inoperative
 - (11) MMEL 34-61-1 (DDG) Preparation - Flight Management Computing System (FMCS) Inoperative
 - (12) MMEL 34-61-1 (DDG) Restoration - Flight Management Computing System (FMCS) Inoperative

TASK 34-00-00-040-803

2. MMEL 34-21-3 (DDG) Preparation - Air Data Inertial Reference Unit (ADIRU) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the Air Data Inertial Reference Unit (ADIRU) that has an internal fault.
- (2) When adequate ground navigation facilities are available, the airplane may be dispatched with faults indicated by ADIRU status message provided:
 - (a) Non-stabilized magnetic compass operates normally.
 - (b) Approach minimums do not require use of triple channel autoland.
 - (c) SAARU data is verified available to both PFDs before each departure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

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

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 901
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

D. Verification of SAARU Data to PFDs

NOTE: Verify SAARU data is available to both PFDs before each departure.

SUBTASK 34-00-00-860-002

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-00-00-750-005

- (2) Set the two AIR DATA/ATT switches to the ALTN position.
 - (a) Make sure the EICAS advisory message, ALTN ATTITUDE, shows on the display.
 - (b) Make sure the PFDs show the normal sky/ground shading and pitch scale.
 - (c) Make sure no airspeed or altitude failure flags show on the either's PFDs.

SUBTASK 34-00-00-750-006

- (3) Set the two AIR DATA/ATT switches to the normal position.
 - (a) Make sure the EICAS advisory message, ALTN ATTITUDE, does not show on the display.

————— **END OF TASK** —————

TASK 34-00-00-440-803

3. M MEL 34-21-3 (DDG) Restoration - Air Data Inertial Reference Unit (ADIRU) Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with an Air Data Inertial Reference Unit (ADIRU) that has an internal fault.

B. Location Zones

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

C. ADIRU Repair

SUBTASK 34-00-00-740-002

- (1) Go to the MAT and find the EICAS status message.
 - (a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 34-00-00-810-004

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
 - (a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
 - (b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-005

- (3) Go to the task in the FIM, and do the steps in the task.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 902
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-00-00-040-804

4. MMEL 34-21-4 (DDG) Preparation - Pitot Air Data Modules (Primary - ARINC 629) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a Pitot Air Data Module (Primary - ARINC 629) inoperative.
- (2) One may be inoperative provided:
 - (a) The remaining two pitot probe heater systems operate normally.
 - (b) The remaining two pitot air data modules operate normally.
 - (c) The following static air data module operate normally:
 - 1) If the left pitot ADM is inoperative, the right pitot ADM operates normally.
 - 2) If the right pitot ADM is inoperative, the left pitot ADM operates normally.
 - 3) If the center pitot ADM is inoperative, the right and left pitot ADMs operate normally.
 - (d) Standby airspeed indication operates normally.
 - (e) The corresponding AIR DATA/ATT instrument source switch operates normally.
 - 1) If the center Pitot Air Data Module is inoperative, both AIR DATA/ATT instrument source switches operate normally.
 - (f) SAARU data is verified to be available to the corresponding PFD before each departure.
 - 1) If the center Pitot Air Data Module is inoperative, SAARU data is verified to be available to both PFDs before each departure.
 - (g) The remaining pitot probes are inspected before each departure.
 - (h) Approach minimums do not require its use.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-11-01-200-801	Pitot Probe Inspection (P/B 601)

C. Location Zones

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

D. Inspection of the Operative Pitot Probes

NOTE: The left, center and right Pitot and Static ADMs are interchangeable.

SUBTASK 34-00-00-210-001

- (1) Prior to each departure, visually examine the pitot probe external installations for damage and unwanted material in the pitot probe opening.
 - (a) If damage or unwanted material is noted, do this task: Pitot Probe Inspection, TASK 34-11-01-200-801.

E. Verification of SAARU Data to the PFD (If the left, right or center Pitot ADM is inoperative)

SUBTASK 34-00-00-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 903
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-00-00-750-008

- (2) If the left or right Pitot ADM is inoperative:

NOTE: An inoperative left or right Pitot ADM may also result in the AOA VANE L or AOA VANE R status message.

NOTE: If the left Pitot ADM is inoperative, the WINDSHEAR REAC status message and WINDSHEAR SYS advisory message may be displayed.

NOTE: If the left Pitot ADM is inoperative, the SATCOM SYSTEM and SATCOM HI GAIN status messages may also be displayed.

- (a) Set the inoperative ADM AIR DATA/ATT switch to the ALTN position.
- (b) Make sure the inoperative ADM PFD shows the normal sky/ground shading and pitch scale.
- (c) Set the inoperative ADM AIR DATA/ATT switch to the normal position.

SUBTASK 34-00-00-750-017

- (3) If the center Pitot ADM is inoperative:

- (a) Verify SAARU data is available to both PFDs:
 - 1) Set both AIR DATA/ATT switches to the ALTN position.
 - 2) Make sure both PFD show the normal sky/ground shading and pitch scale.
 - 3) Set both AIR DATA/ATT switches to the normal position.

————— **END OF TASK** —————

TASK 34-00-00-440-804

5. **M MEL 34-21-4 (DDG) Restoration - Pitot Air Data Modules (Primary - ARINC 629) Inoperative**

A. General

- (1) This task puts the airplane back to its usual condition after operation with a Pitot Air Data Module (Primary - ARINC 629) inoperative.

B. Location Zones

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

C. Pitot ADM Repair

SUBTASK 34-00-00-740-003

- (1) Go to the MAT and find the EICAS status message.
- (a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 34-00-00-810-006

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
- (a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
 - (b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-007

- (3) Go to the task in the FIM, and do the steps in the task.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 904
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-00-00-040-805

6. **MMEL 34-21-5 (DDG) Preparation - Static Air Data Modules (Primary - ARINC 629) Inoperative**

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a Static Air Data Module (Primary - ARINC 629) inoperative.
- (2) One may be inoperative provided:
 - (a) The remaining two static air data modules operate normally.
 - (b) The following pitot air data module operate normally:
 - 1) If the left Static Air Data Module is inoperative, the right pitot air data module operates normally.
 - 2) If the right Static Air Data Module is inoperative, the left pitot air data module operates normally.
 - 3) If the center Static Air Data Module is inoperative, the left and right pitot air data modules operate normally.
 - (c) The corresponding AIR DATA/ATT instrument source switch operates normally.
 - 1) If the center Static Air Data Module is inoperative, both AIR DATA/ATT instrument source switches operate normally.
 - (d) SAARU data is verified to be available to the left or right PFD before each departure.
 - 1) If the center Static Air Data Module is inoperative, SAARU data is verified to be available to both PFDs before each departure.
 - (e) If the center Static Air Data Module is inoperative, standby airspeed indication operates normally.
 - (f) Approach minimums do not require its use.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

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

D. Verification of SAARU Data to the PFD (If the left, right or center Static ADM is inoperative)

NOTE: The left, center and right Pitot and Static ADMs are interchangeable.

SUBTASK 34-00-00-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-00-00-750-012

- (2) If the left or right Static ADM is inoperative:

NOTE: If the left Static ADM is inoperative, the WINDSHEAR REAC status message and WINDSHEAR SYS advisory message may be displayed.

NOTE: If the left Static ADM is inoperative, the SATCOM SYSTEM and SATCOM HI GAIN status messages may also be displayed.

 - (a) Set the inoperative ADM AIR DATA/ATT switch to the ALTN position.

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 905
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Make sure the inoperative ADM PFD shows the normal sky/ground shading and pitch scale.
- (c) Set the inoperative ADM AIR DATA/ATT switch to the normal position.

SUBTASK 34-00-00-750-018

- (3) If the center Static ADM is inoperative:
 - (a) Verify SAARU data is available to both PFDs:
 - 1) Set both AIR DATA/ATT switches to the ALTN position.
 - 2) Make sure both PFD show the normal sky/ground shading and pitch scale.
 - 3) Set both AIR DATA/ATT switches to the normal position.

————— END OF TASK —————

TASK 34-00-00-440-805

7. M MEL 34-21-5 (DDG) Restoration - Static Air Data Modules (Primary - ARINC 629) Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with a Static Air Data Module (Primary - ARINC 629) inoperative.

B. Location Zones

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

C. Static ADM Repair

SUBTASK 34-00-00-740-004

- (1) Go to the MAT and find the EICAS status message.
 - (a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 34-00-00-810-008

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
 - (a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
 - (b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-009

- (3) Go to the task in the FIM, and do the steps in the task.

————— END OF TASK —————

TASK 34-00-00-040-807

8. M MEL 34-21-8 (DDG) Preparation - Integrated Standby Flight Display (ISFD) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with an Integrated Standby Flight Display (ISFD) inoperative.
- (2) The ISFD may be inoperative provided:
 - (a) All ARINC 629 pitot air data modules operate normally.
 - (b) All ARINC 629 static air data modules operate normally.

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 906
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (c) All pitot probe heater systems operate normally.
- (d) Both AIR DATA/ATT instrument source switches operate normally.
- (e) SAARU data is verified available to both PFDs before each departure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

C. Location Zones

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

D. Verification of SAARU Data to the PFD

SUBTASK 34-00-00-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-00-00-860-007

- (2) Set the ADIRU switch on the Overhead Panel, P5, to the ON position.

SUBTASK 34-00-00-750-016

- (3) Make sure SAARU alignment.
 - (a) Set both the AIR DATA/ATT switches to the ALTN position.
 - (b) Make sure ALTN ATTITUDE advisory message is displayed.
 - (c) Make sure the Attitude Indication on both the Primary Flight Displays (PDF) display the sky/ground shading and pitch scale.
 - (d) Make sure no airspeed or altitude failure flags should be displayed on either PFD.
 - (e) Set both AIR DATA/ATT switches to the normal position.
 - (f) Make sure ALTN ATTITUDE advisory message is not displayed.

————— END OF TASK —————

TASK 34-00-00-440-808

9. MMEL 34-21-8 (DDG) Restoration - Integrated Standby Flight Display (ISFD) Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with a Integrated Standby Flight Display (ISFD) inoperative.

B. References

Reference	Title
34-24-02-000-801	Integrated Standby Flight Display Removal (P/B 401)
34-24-02-400-801	Integrated Standby Flight Display Installation (P/B 401)

C. ISFD Repair

SUBTASK 34-00-00-960-001

- (1) Replace the ISFD, N34004
 - (a) These are the tasks:
 - Integrated Standby Flight Display Removal, TASK 34-24-02-000-801
 - Integrated Standby Flight Display Installation, TASK 34-24-02-400-801

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 907
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-00-00-810-012

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
 - (a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
 - (b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-013

- (3) Go to the task in the FIM, and do the steps in the task.

————— END OF TASK —————

TASK 34-00-00-040-801

10. MMEL 34-45-1 (DDG) Preparation - Traffic Collision and Avoidance System (TCAS) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the Traffic Collision and Avoidance System (TCAS) inoperative.
- (2) The TCAS may be inoperative provided:
 - (a) System is deactivated.

B. Location Zones

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

C. TCAS Deactivation

SUBTASK 34-00-00-040-001

- (1) Open this circuit breaker and install safety lock:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

SUBTASK 34-00-00-930-009

- (2) Make and install a TCAS INOP placard on the ATC/TCAS control panel.

————— END OF TASK —————

TASK 34-00-00-440-801

11. MMEL 34-45-1 (DDG) Restoration - Traffic Collision and Avoidance System (TCAS) Inoperative

A. General

- (1) This task puts the airplane back to its usual condition after operation with the Traffic Collision and Avoidance System (TCAS) inoperative.

B. Location Zones

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

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 908
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

C. TCAS Reactivation

SUBTASK 34-00-00-930-010

- (1) Remove the TCAS INOP placard from the ATC/TCAS control panel.

SUBTASK 34-00-00-440-001

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

D. TCAS Repair

SUBTASK 34-00-00-740-001

- (1) Go to the MAT and find the EICAS status message.
 - (a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 34-00-00-810-001

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
 - (a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
 - (b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-002

- (3) Go to the task in the FIM, and do the steps in the task.

————— END OF TASK —————

TASK 34-00-00-040-806

12. M MEL 34-61-1 (DDG) Preparation - Flight Management Computing System (FMCS) Inoperative

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with a Flight Management Computing System (FMCS) inoperative.
- (2) The FMCS may be inoperative provided:
 - (a) Remaining FMC is verified to operate normally.

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Verification of Single FMC Operation

SUBTASK 34-00-00-860-005

- (1) Set the FMC selector to the AUTO position.
 - (a) Make sure the EICAS status and advisory messages, FMC, do not show on the displays.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 909
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-00-00-440-806

13. **MMEL 34-61-1 (DDG) Restoration - Flight Management Computing System (FMCS) Inoperative**

A. General

- (1) This task puts the airplane back to its usual condition after operation with a Flight Management Computing System (FMCS) inoperative.

B. Location Zones

Zone	Area

211	Flight Compartment, Left

212	Flight Compartment, Right

C. FMCS Repair

SUBTASK 34-00-00-740-005

- (1) Go to the MAT and find the EICAS status message.
(a) Find the fault code and the correlated maintenance message numbers on the MAT.

SUBTASK 34-00-00-810-010

- (2) Go to the Fault Code Index in the FIM and find the fault code (the first two digits of the fault code are the FIM chapter).
(a) For each correlated maintenance message, find the maintenance message number to the right side of the fault code.
(b) Find the task number on the same line as the maintenance message number.

SUBTASK 34-00-00-810-011

- (3) Go to the task in the FIM, and do the steps in the task.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-00-00

D633W101-ARO

Page 910
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STATIC AND TOTAL AIR PRESSURE SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

- (1) Pressurization of the Static and Total Air Pressure System to simulate an altitude and airspeed.

TASK 34-11-00-780-801

2. Static and Total Air Pressure System - Pressurization

A. General

(1) These instructions apply to the task:

- (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.
- (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
- (c) When you apply pressure to a pitot system, the rate must not be more than 300 knots for each minute.
- (d) When you release pressure from a pitot system, the rate must not be more than 300 knots for each minute.
- (e) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (f) Make sure that you do these steps before installing the pitot test adapter, COM-1916 on the probe:
 - 1) Blow dry, filtered air through the pitot test adapter, COM-1916.
 - 2) Wipe the pitot probe with a damp cloth.
- (g) Make sure that the ATC transponders are in standby mode.
- (h) Make sure that the Autopilot/Flight Director System is off.
- (i) Make sure that the seals used on the static ports do not extend into the static ports.
- (j) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (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.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 201
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: 509767 Supplier: 53949 Part #: 884EH Supplier: 59885 Part #: 884EH-3 Supplier: 59885 Part #: CSA77700HT-3 Supplier: 3BSK6 Part #: P77796HT-3 Supplier: 38002
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 202
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Prepare for the Test

SUBTASK 34-11-00-860-001



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-002

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-003

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	7	C29618	RAT AUTO/MAN CTRL

- (a) Left power supply assembly (PSA-L) in the E1-6 rack:

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 203
Jul 25/2018

777-200/300
AIRCRAFT MAINTENANCE MANUAL



OPEN THE CIRCUIT BREAKER DURING THE TIME THAT THE PRIMARY FLIGHT CONTROL COMPUTER IS REMOVED. IF THIS CIRCUIT BREAKER IS CLOSED, THE POWER SUPPLY ASSEMBLY (PSA) WILL SUPPLY POWER TO THE FLIGHT CONTROL SYSTEM. THE PSA WILL USE ITS BACKUP BATTERY. THE BACKUP BATTERY CAN ONLY SUPPLY POWER FOR APPROXIMATELY ONE MINUTE. YOU CANNOT CHARGE THE BACKUP BATTERY. YOU MUST REPLACE THE BACKUP BATTERY WHEN IT USES ALL OF ITS POWER.

- 1) D8, PFC BATT INTLK
- 2) D2, PFC LANE 1
- 3) D4, PFC LANE 2
- 4) D6, PFC LANE 3

(b) Center power supply assembly (PSA-C) in the E2-6 rack:



OPEN THE CIRCUIT BREAKER DURING THE TIME THAT THE PRIMARY FLIGHT CONTROL COMPUTER IS REMOVED. IF THIS CIRCUIT BREAKER IS CLOSED, THE POWER SUPPLY ASSEMBLY (PSA) WILL SUPPLY POWER TO THE FLIGHT CONTROL SYSTEM. THE PSA WILL USE ITS BACKUP BATTERY. THE BACKUP BATTERY CAN ONLY SUPPLY POWER FOR APPROXIMATELY ONE MINUTE. YOU CANNOT CHARGE THE BACKUP BATTERY. YOU MUST REPLACE THE BACKUP BATTERY WHEN IT USES ALL OF ITS POWER.

- 1) D8, PFC BATT INTLK
- 2) D2, PFC LANE 1
- 3) D4, PFC LANE 2
- 4) D6, PFC LANE 3

(c) Right power supply assembly (PSA-R) in the E5-1 rack:



OPEN THE CIRCUIT BREAKER DURING THE TIME THAT THE PRIMARY FLIGHT CONTROL COMPUTER IS REMOVED. IF THIS CIRCUIT BREAKER IS CLOSED, THE POWER SUPPLY ASSEMBLY (PSA) WILL SUPPLY POWER TO THE FLIGHT CONTROL SYSTEM. THE PSA WILL USE ITS BACKUP BATTERY. THE BACKUP BATTERY CAN ONLY SUPPLY POWER FOR APPROXIMATELY ONE MINUTE. YOU CANNOT CHARGE THE BACKUP BATTERY. YOU MUST REPLACE THE BACKUP BATTERY WHEN IT USES ALL OF ITS POWER.

- 1) D8, PFC BATT INTLK
- 2) D2, PFC LANE 1
- 3) D4, PFC LANE 2
- 4) D6, PFC LANE 3

SUBTASK 34-11-00-860-004

(4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 204
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-005

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-006

- (6) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

SUBTASK 34-11-00-860-013

- (7) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-014

- (8) Make sure the standby attitude indicator shows an artificial horizon.

SUBTASK 34-11-00-860-015

- (9) Make sure the ADIRU switch on the overhead panel, P5, is OFF.

SUBTASK 34-11-00-860-016

- (10) Make sure the primary flight computers are in GROUND mode.

SUBTASK 34-11-00-860-007

- (11) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-008

- (12) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

G. Static System Pressurization

SUBTASK 34-11-00-860-009

- (1) For the left static system, open these circuit breakers and install DO-NOT-CLOSE tags:

- (a) Power Supply Assembly Center, M24301:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-017

- (2) For the center static system, open these circuit breakers and install DO-NOT-CLOSE tags:

- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-018

- (3) For the right static system, open these circuit breakers and install DO-NOT-CLOSE tags:

- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (b) Power Supply Assembly Center, M24301:

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 205
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) C07 PITOT ADM
- 2) C09 STATIC ADM

SUBTASK 34-11-00-480-001



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



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (4) Seal the applicable static port with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-002

- (5) Install the static test adapter, COM-1921 on the opposite static port of the static system to be tested.

SUBTASK 34-11-00-480-003

- (6) Connect the air data model test set, COM-1914 to the static test adapter, COM-1921.

SUBTASK 34-11-00-780-001



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.



WHEN YOU APPLY OR RELEASE PRESSURE FROM THE PITOT-STATIC SYSTEM, THE RATE OF CHANGE MUST NOT BE MORE THAN THE SPECIFIED RATE. DAMAGE TO EQUIPMENT CAN OCCUR.

- (7) Operate the air data model test set, COM-1914 to apply the desired pressure to the static system.

SUBTASK 34-11-00-790-001

- (8) Stop for one minute.

SUBTASK 34-11-00-790-002

- (9) Make sure the altitude does not decrease more than 400 feet (0.20 in Hg or 6.77 mB).

NOTE: During a static system leak check, altitude will decrease and pressure in the line will increase if a leak is present.

SUBTASK 34-11-00-710-001

- (10) Make sure the maintenance message 34-25201, for the Left static system, (34-25202 Center, 34-25203 Right) shows on the MAT existing faults display.

SUBTASK 34-11-00-710-002

- (11) Make sure the maintenance messages 34-25202 and 34-25203, for the Left static system, (34-25201 and 34-25203 Center, 34-25201 and 34-25202 Right) do not show on the MAT existing faults display.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 206
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-010



CAUTION

KEEP THE RATE OF PITOT PRESSURE CHANGE IN THE SPECIFIED LIMITS. DAMAGE TO THE EQUIPMENT CAN OCCUR.

- (12) Put the system back to ambient pressure.

SUBTASK 34-11-00-710-003

- (13) Stop for one minute.

SUBTASK 34-11-00-710-004

- (14) Make sure the maintenance messages that follow do not show on the MAT existing faults display:
- (a) 34-25201 Left (34-25202 Center, 34-25203 Right)
 - (b) 34-26201 Left (34-26202 Center, 34-26203 Right)
 - (c) 34-26211 Left (34-26212 Center, 34-26213 Right).

SUBTASK 34-11-00-080-001



CAUTION

DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (15) Disconnect the air data model test set, COM-1914 from the static test adapter, COM-1921.

SUBTASK 34-11-00-480-006

- (16) Remove the static test adapter, COM-1921 from the static port.

SUBTASK 34-11-00-480-007



WARNING

FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED SENSING AND ALTITUDE SENSING SIGNALS, MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (17) Remove the vinyl adhesive tape from the applicable static port.

SUBTASK 34-11-00-860-011

- (18) For the left static system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Center, M24301:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 207
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-019

- (19) For the center static system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-020

- (20) For the right static system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

H. Pitot System Pressurization

SUBTASK 34-11-00-860-021

- (1) For the left pitot system, open these circuit breakers and install DO-NOT-CLOSE tags:
- (a) Power Supply Assembly Center, M24301:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-022

- (2) For the center pitot system, open these circuit breakers and install DO-NOT-CLOSE tags:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-023

- (3) For the right pitot system, open these circuit breakers and install DO-NOT-CLOSE tags:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Center, M24301:

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 208
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) C07 PITOT ADM
- 2) C09 STATIC ADM

SUBTASK 34-11-00-170-050

- (4) Blow dry, filtered air through the pitot test adapter, COM-1916.

SUBTASK 34-11-00-170-051

- (5) Wipe the pitot probe with a damp cloth.

SUBTASK 34-11-00-480-004



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

- (6) Install the pitot test adapter, COM-1916 on the pitot probe.

SUBTASK 34-11-00-480-005

- (7) Connect the air data model test set, COM-1914 to the pitot test adapter, COM-1916.

SUBTASK 34-11-00-780-002



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.



WHEN YOU APPLY OR RELEASE PRESSURE FROM THE PITOT-STATIC SYSTEM, THE RATE OF CHANGE MUST NOT BE MORE THAN THE SPECIFIED RATE. DAMAGE TO EQUIPMENT CAN OCCUR.

- (8) Operate the air data model test set, COM-1914 to apply the desired pressure to the pitot system.

SUBTASK 34-11-00-790-003

- (9) Stop for one minute.

SUBTASK 34-11-00-790-004

- (10) Make sure the pressure does not decrease more than 0.16 inches Hg or 6.09 mB (approximately 5 knots).

SUBTASK 34-11-00-710-005

- (11) Make sure the maintenance message 34-25101, for the Left pitot system, (34-25102 Center, 34-25103 Right) shows on the MAT existing faults display.

SUBTASK 34-11-00-710-006

- (12) Make sure the maintenance messages 34-25102 and 34-25103, for the Left static system, (34-25101 and 34-25103 Center, 34-25101 and 34-25102 Right) do not show on the MAT existing faults display.

SUBTASK 34-11-00-860-012



WHEN YOU APPLY OR RELEASE PRESSURE FROM THE PITOT-STATIC SYSTEM, THE RATE OF CHANGE MUST NOT BE MORE THAN THE SPECIFIED RATE. DAMAGE TO EQUIPMENT CAN OCCUR.

- (13) Put the system back to ambient pressure.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 209
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-790-005

- (14) Stop for one minute.

SUBTASK 34-11-00-710-007

- (15) Make sure the maintenance messages that follow do not show on the MAT existing faults display:
- (a) 34-25101 Left (34-25102 Center, 34-25103 Right)
 - (b) 34-26101 Left (34-26102 Center, 34-26103 Right)
 - (c) 34-26111 Left (34-26112 Center, 34-26113 Right).

SUBTASK 34-11-00-080-002



CAUTION

DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. DAMAGE TO THE AIR DATA MODULES CAN OCCUR IF THE SYSTEM IS NOT AT AMBIENT PRESSURE.

- (16) Disconnect the air data model test set, COM-1914 from the pitot test adapter, COM-1916.

SUBTASK 34-11-00-480-008

- (17) Remove the pitot test adapter, COM-1916 from the pitot probe.

SUBTASK 34-11-00-860-024

- (18) For the left pitot system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Center, M24301:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-025

- (19) For the center pitot system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Right, M24201:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-860-026

- (20) For the right pitot system, remove the DO-NOT-CLOSE tags and close these circuit breakers:
- (a) Power Supply Assembly Left, M24101:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
 - (b) Power Supply Assembly Center, M24301:
 - 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 210
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

I. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-860-028

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	7	C29618	RAT AUTO/MAN CTRL

- (a) Left power supply assembly (PSA-L) in the E1-6 rack:
- 1) D8, PFC BATT INTLK
 - 2) D2, PFC LANE 1
 - 3) D4, PFC LANE 2
 - 4) D6, PFC LANE 3
- (b) Center power supply assembly (PSA-C) in the E2-6 rack:
- 1) D8, PFC BATT INTLK
 - 2) D2, PFC LANE 1
 - 3) D4, PFC LANE 2
 - 4) D6, PFC LANE 3
- (c) Right power supply assembly (PSA-R) in the E5-1 rack:
- 1) D8, PFC BATT INTLK
 - 2) D2, PFC LANE 1
 - 3) D4, PFC LANE 2
 - 4) D6, PFC LANE 3

————— END OF TASK —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 211
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STATIC AND TOTAL AIR PRESSURE SYSTEM - SERVICING

1. General

- A. This procedure supplies instructions for the servicing of the Static and Total Air Pressure System.

TASK 34-11-00-170-802

2. Static and Total Air Pressure System - Servicing

A. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
25-52-09-000-801	Ceiling Liner Removal (P/B 401)
25-52-09-400-801	Ceiling Liner - Installation (P/B 401)
26-21-01-000-801	Engine Fire Extinguishing Bottle Removal (P/B 401)
26-21-01-400-801	Engine Fire Extinguishing Bottle Installation (P/B 401)
34-11-00-700-801	Center Static System Low-range Leak Test (P/B 501)
34-11-00-700-802	Right Static System Low-range Leak Test (P/B 501)
34-11-00-700-803	Left Pitot System Leak Test (P/B 501)
34-11-00-700-804	Center Pitot System Leak Test (P/B 501)
34-11-00-700-805	Right Pitot System Leak Test (P/B 501)
34-11-00-790-801	Left Static System Low-range Leak Test (P/B 501)
34-11-01-200-801	Pitot Probe Inspection (P/B 601)
34-11-02-200-801	Static Port Inspection (P/B 601)

B. Tools/Equipment

Reference	Description
STD-1114	Air Source - Regulated, Dry, Filtered 0-150 PSIG with Pressure Gauge range 100 PSIG, 1 PSIG increment and +/-1 psi minimum accuracy

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Prepare to Flush the Static and Total Air Pressure System

SUBTASK 34-11-00-010-008

- (1) To get access to the main equipment center, open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 301
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-041

- (2) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C

- (a) Power Supply Assembly Center, M24301:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (b) Power Supply Assembly Left, M24101:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (c) Power Supply Assembly Right, M24201:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

F. Flush the Center Static System

SUBTASK 34-11-00-010-002

- (1) For the ceiling liner located at STA 676, RBL 9.65 in the forward cargo compartment, do this task: Ceiling Liner Removal, TASK 25-52-09-000-801

SUBTASK 34-11-00-020-021



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (2) Disconnect the static hose from the Standby Air Data Module-Static located at STA 664, WL 196, RBL 12.
- (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-020-022

- (3) Disconnect the static hose from the Air Data Module-Static Center located at STA 688, WL 196, RBL 12.
- (a) Put a protective cover on the static-hose.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 302
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-010-003

- (4) For the sidewall liner located at STA 688, WL 158, on the left side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

SUBTASK 34-11-00-020-023

- (5) Disconnect the static hose from the left flush-mounted port located at STA 688, WL 158.
- (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-010-004

- (6) For the sidewall liner located at STA 688, WL 158, on the right side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

SUBTASK 34-11-00-010-005

- (7) If necessary, remove the Engine Fire Extinguishing Bottle, do this task: Engine Fire Extinguishing Bottle Removal, TASK 26-21-01-000-801.

SUBTASK 34-11-00-020-024

- (8) Disconnect the static hose from the right flush-mounted port located at STA 688, WL 158.
- (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-020-025



YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (9) Temporarily attach the hoses to prevent movement.

SUBTASK 34-11-00-480-019



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (10) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the static hose located at STA 664, WL 196, RBL 12.

SUBTASK 34-11-00-170-022

- (11) Apply 15 to 20 psi of dry filtered air to the Center Static hoses.

SUBTASK 34-11-00-750-013

- (12) Make sure that you cannot feel air come out of the static ports at these locations:
- (a) Right side STA 746, WL 139
 - (b) Right side STA 764, WL 139
 - (c) Left side STA 746, WL 139
 - (d) Left side STA 764, WL 139

SUBTASK 34-11-00-170-023

- (13) Make sure that you can feel air come out of the disconnected hoses.

SUBTASK 34-11-00-170-024

- (14) Continue for three minutes or more.

SUBTASK 34-11-00-910-001

- (15) Stop blowing air through the center static hose.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 303
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-042

- (16) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-013

- (17) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the static hose located at STA 664, WL 196, RBL 12.

SUBTASK 34-11-00-480-020



CAUTION

DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (18) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the static hose located at STA 688, WL 196, RBL 12.

SUBTASK 34-11-00-170-025

- (19) Apply 15 to 20 psi of dry filtered air to the Center Static hoses.

SUBTASK 34-11-00-750-014

- (20) Make sure that you can feel air come out of the disconnected hoses.

SUBTASK 34-11-00-170-026

- (21) Continue for three minutes or more.

SUBTASK 34-11-00-910-002

- (22) Stop blowing air through the center static hose.

SUBTASK 34-11-00-860-043

- (23) Put the system back to ambient pressure.

SUBTASK 34-11-00-480-021



CAUTION

DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (24) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the static hose located at STA 664, WL 196, RBL 12.

SUBTASK 34-11-00-170-027

- (25) Apply 15 to 20 psi of dry filtered air to the Center Static hoses at the two locations.

NOTE: Make sure that you apply pressure to the static hoses at the same time.

SUBTASK 34-11-00-750-015

- (26) Make sure that you can feel air come out of the disconnected hoses.

SUBTASK 34-11-00-170-028

- (27) Continue for three minutes or more.

SUBTASK 34-11-00-910-003

- (28) Stop blowing air through the center static hose.

SUBTASK 34-11-00-860-044

- (29) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-014

- (30) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the static hose located at STA 688, WL 196, RBL 12.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 304
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-015

- (31) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the static hose located at STA 664, WL 196, RBL 12.

SUBTASK 34-11-00-420-012



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (32) Connect the static hose to the Standby Air Data Module-Static located at STA 664, WL 196, RBL 12.

SUBTASK 34-11-00-420-013



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (33) Connect the static hose to the Air Data Module-Static Center located at STA 688, WL 196, RBL 12.
- (a) Visually examine of the static-hose for a complete seal.

SUBTASK 34-11-00-210-007

- (34) For the two flush-mounted static ports at STA 688, WL 158, on the left and right sides, do this task: Static Port Inspection, TASK 34-11-02-200-801.

SUBTASK 34-11-00-420-014

- (35) Connect the static hoses to the two flush-mounted static ports.

SUBTASK 34-11-00-410-001

- (36) If removed the Engine Fire Extinguishing Bottle, re-install it, do this task: Engine Fire Extinguishing Bottle Installation, TASK 26-21-01-400-801.

SUBTASK 34-11-00-410-002

- (37) Do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

SUBTASK 34-11-00-410-003

- (38) Do this task: Ceiling Liner - Installation, TASK 25-52-09-400-801.

G. Flush the Left Static System

SUBTASK 34-11-00-020-026



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (1) Disconnect the static hose from the Air Data Module-Static Left located at STA 748, WL 195, RBL 21.
- (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-020-027

- (2) For the sidewall liner located at STA 746, WL 139, on the left side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 305
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-020-028

- (3) Disconnect the static hose from the flush-mounted static port on the left side located at STA 746, WL 139.
 - (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-020-029

- (4) For the sidewall liner located at STA 746, WL 139, on the right side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

SUBTASK 34-11-00-020-030

- (5) Disconnect the static hose from the flush-mounted static port on the right side located at STA 746, WL 139.
 - (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-020-031



YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Temporarily attach the hoses to prevent movement.

SUBTASK 34-11-00-480-022



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (7) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the static hose located at STA 748, WL 195, RBL 21.

SUBTASK 34-11-00-170-029

- (8) Apply 15 to 20 psi of dry filtered air to the Left Static hoses.

SUBTASK 34-11-00-750-016

- (9) Make sure that you can feel air come out of the disconnected hoses.

SUBTASK 34-11-00-750-017

- (10) Make sure that you cannot feel air come out of the static ports at these locations:
 - (a) Right side STA 764, WL 139
 - (b) Right side STA 688, WL 158
 - (c) Left side STA 764, WL 139
 - (d) Left side STA 688, WL 158

SUBTASK 34-11-00-170-030

- (11) Continue for three minutes or more.

SUBTASK 34-11-00-910-004

- (12) Stop blowing air through the left static hose.

SUBTASK 34-11-00-860-045

- (13) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-016

- (14) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the static hose located at STA 748, WL 195, RBL 21.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 306
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-420-015



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (15) Connect the static hose to the Air Data Module-Static Left located at STA 748, WL 195, RBL 21.
 - (a) Visually examine the static-hose for a complete seal.

SUBTASK 34-11-00-210-008

- (16) For the two flush-mounted static ports at STA 746, WL 139, on the left and right sides, do this task: Static Port Inspection, TASK 34-11-02-200-801.

SUBTASK 34-11-00-420-016

- (17) Connect the static hoses to the two flush-mounted static ports.

SUBTASK 34-11-00-420-017

- (18) Do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

H. Flush the Right Static System

SUBTASK 34-11-00-020-032



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (1) Disconnect the static hose from the Air Data Module-Static Right located at STA 765, WL 195, RBL 21.
 - (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-010-006

- (2) For the sidewall liner located at STA 764, WL 139, on the right side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

SUBTASK 34-11-00-020-033

- (3) Disconnect the static hose from the flush-mounted static port on the right side located at STA 764, WL 139.
 - (a) Put a protective cover on the static-hose.

SUBTASK 34-11-00-010-007

- (4) For the sidewall liner located at STA 764, WL 139, on the left side, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801

SUBTASK 34-11-00-020-034

- (5) Disconnect the static hose from the flush-mounted static port on the left side located at STA 764, WL 139.
 - (a) Put a protective cover on the static-hose.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 307
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-020-035



WARNING

YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (6) Temporarily attach the hoses to prevent movement.

SUBTASK 34-11-00-480-023



CAUTION

DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (7) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the static hose located at STA 765, WL 195, RBL 21.

SUBTASK 34-11-00-170-031

- (8) Apply 15 to 20 psi of dry filtered air to the Right Static hoses.

SUBTASK 34-11-00-750-018

- (9) Make sure that you can feel air come out of the disconnected hoses.

SUBTASK 34-11-00-750-019

- (10) Make sure that you cannot feel air come out of the static ports at these locations:
- (a) Right side STA 746, WL 139
 - (b) Right side STA 688, WL 158
 - (c) Left side STA 746, WL 139
 - (d) Left side STA 688, WL 158

SUBTASK 34-11-00-170-032

- (11) Continue for three minutes or more.

SUBTASK 34-11-00-910-005

- (12) Stop blowing air through the right static hose.

SUBTASK 34-11-00-860-046

- (13) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-017

- (14) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the static hose located at STA 765, WL 195, RBL 21.

SUBTASK 34-11-00-420-018



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (15) Connect the static hose to the Air Data Module-Static Right located at STA 765, WL 195, RBL 21.
- (a) Visually examine of the static-hose for a complete seal.

SUBTASK 34-11-00-210-009

- (16) For the two flush-mounted static ports at STA 746, WL 139, on the left and right sides, do this task: Static Port Inspection, TASK 34-11-02-200-801.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 308
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-420-019

- (17) Connect the static hoses to the two flush-mounted static ports.

SUBTASK 34-11-00-420-020

- (18) Do this task: Sidewall Liner Installation, TASK 25-52-06-400-801.

I. Flush the Center Pitot System

SUBTASK 34-11-00-020-036



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (1) Disconnect the pitot hose from the Air Data Module-Pitot Center located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.
 - (a) Put a protective cover on the pitot-hose.

SUBTASK 34-11-00-020-037

- (2) Disconnect the pitot hose from the Standby Air Data Module-Pitot located at STA 225, WL 175, RBL 35 or STA 237, WL 204.8, RBL 41.5, as applicable.
 - (a) Put a protective cover on the pitot-hose.

SUBTASK 34-11-00-020-038



YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Temporarily attach the hoses to prevent movement.

SUBTASK 34-11-00-480-024



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (4) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the pitot hose located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.

SUBTASK 34-11-00-170-033

- (5) Apply 15 to 20 psi of dry filtered air to the Center Pitot hoses.

SUBTASK 34-11-00-750-020

- (6) Make sure that you can feel air come out of the bottom right pitot probe located at STA 201, WL 156.

SUBTASK 34-11-00-170-034

- (7) Continue for three minutes or more.

SUBTASK 34-11-00-910-006

- (8) Stop blowing air through the center pitot hose.

SUBTASK 34-11-00-860-047

- (9) Put the system back to ambient pressure.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 309
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-018

- (10) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the pitot hose located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.

SUBTASK 34-11-00-480-025



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (11) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the pitot hose located at STA 225, WL 175, RBL 35 or STA 237, WL 204.8, RBL 41.5, as applicable.

SUBTASK 34-11-00-170-035

- (12) Apply 15 to 20 psi of dry filtered air to the Center Pitot hoses.

SUBTASK 34-11-00-750-021

- (13) Make sure that you can feel air come out of the bottom right pitot probe located at STA 201, WL 156.

SUBTASK 34-11-00-170-036

- (14) Continue for three minutes or more.

SUBTASK 34-11-00-910-007

- (15) Stop blowing air through the center pitot hose.

SUBTASK 34-11-00-860-048

- (16) Put the system back to ambient pressure.

SUBTASK 34-11-00-480-026



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (17) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the pitot hose located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.

SUBTASK 34-11-00-170-037

- (18) Apply 15 to 20 psi of dry filtered air to the Center Pitot hoses at the two locations.
NOTE: Make sure that you apply pressure to the two pitot hoses at the same time.

SUBTASK 34-11-00-750-022

- (19) Make sure that you can feel air come out of the bottom right pitot probe located at STA 201, WL 156.

SUBTASK 34-11-00-170-038

- (20) Continue for three minutes or more.

SUBTASK 34-11-00-910-008

- (21) Stop blowing air through the center pitot hose.

SUBTASK 34-11-00-860-049

- (22) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-019

- (23) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the pitot hose located at STA 225, WL 175, RBL 35 or STA 237, WL 204.8, RBL 41.5, as applicable.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 310
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-020

- (24) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the pitot hose located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.

SUBTASK 34-11-00-420-021



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (25) Connect the pitot hose to the Air Data Module-Pitot Center located at STA 225, WL 181, RBL 35 or STA 221, WL 205.5, RBL 41.5, as applicable.
- (a) Visually examine of the pitot-hose for a complete seal.

SUBTASK 34-11-00-420-022



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (26) Connect the pitot hose to the Standby Air Data Module-Pitot located at STA 225, WL 175, RBL 35 or STA 237, WL 204.8, RBL 41.5, as applicable.
- (a) Visually examine of the pitot-hose for a complete seal.

SUBTASK 34-11-00-210-010

- (27) For the bottom right pitot probe, do this task: Pitot Probe Inspection, TASK 34-11-01-200-801.

J. Flush the Left Pitot System

SUBTASK 34-11-00-020-039



MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (1) Disconnect the pitot hose from the Air Data Module-Pitot Left located at STA 225, WL 175, LBL 35 or STA 199, WL 170, LBL 57.4, as applicable.
- (a) Put a protective cover on the pitot hose.

SUBTASK 34-11-00-020-040



YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Temporarily attach the hoses to prevent movement.

SUBTASK 34-11-00-480-027



DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (3) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the pitot hose located at STA 225, WL 175, LBL 35 or STA 199, WL 170, LBL 57.4, as applicable.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 311
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-170-039

- (4) Apply 15 to 20 psi of dry filtered air to the Left Pitot hoses.

SUBTASK 34-11-00-750-023

- (5) Make sure that you can feel air come out of the bottom left pitot probe located at STA 201, WL 156 or STA 199, WL 170, as applicable.

SUBTASK 34-11-00-170-040

- (6) Continue for three minutes or more.

SUBTASK 34-11-00-910-009

- (7) Stop blowing air through the left pitot hose.

SUBTASK 34-11-00-860-050

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-021

- (9) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the pitot hose located at STA 225, WL 175, LBL 35 or STA 199, WL 170, LBL 57.4, as applicable.

SUBTASK 34-11-00-420-023



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (10) Connect the pitot hose to the Air Data Module-Pitot Left located at STA 225, WL 175, LBL 35 or STA 199, WL 170, LBL 57.4, as applicable.
 - (a) Visually examine of the pitot-hose for a complete seal.

SUBTASK 34-11-00-210-011

- (11) For the bottom left pitot probe, do this task: Pitot Probe Inspection, TASK 34-11-01-200-801.

K. Flush the Right Pitot System

SUBTASK 34-11-00-020-041



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT A HOSE FROM AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (1) Disconnect the pitot hose from the Air Data Module-Pitot Right located at STA 233, WL 203, RBL 61.
 - (a) Put a protective cover on the pitot hose.

SUBTASK 34-11-00-020-042



WARNING

YOU MUST MAKE SURE THAT THE DISCONNECTED HOSES ARE TEMPORARILY ATTACHED TO PREVENT MOVEMENT. IF YOU DO NOT, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Temporarily attach the hoses to prevent movement.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 312
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-480-028



CAUTION

DO NOT APPLY PRESSURE TO THE SYSTEM WHEN AN AIR DATA MODULE IS CONNECTED TO THE SYSTEM. IF YOU DO, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (3) Connect the dry filtered Regulated Dry Filtered Air Source, STD-1114 to the pitot hose located at STA 233, WL 203, RBL 61.

SUBTASK 34-11-00-170-041

- (4) Apply 15 to 20 psi of dry filtered air to the Right Pitot hoses.

SUBTASK 34-11-00-750-024

- (5) Make sure that you can feel air come out of the top right pitot probe located at STA 217, WL 171.

SUBTASK 34-11-00-170-042

- (6) Continue for three minutes or more.

SUBTASK 34-11-00-910-010

- (7) Stop blowing air through the right pitot hose.

SUBTASK 34-11-00-860-051

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-080-022

- (9) Disconnect the dry filtered Regulated Dry Filtered Air Source, STD-1114 from the pitot hose located at STA 233, WL 203, RBL 61.

SUBTASK 34-11-00-420-024



CAUTION

MAKE SURE THAT THE SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU CONNECT A HOSE TO AN AIR DATA MODULE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULE CAN OCCUR.

- (10) Connect the pitot hose to the Air Data Module-Pitot Right located at STA 233, WL 203, RBL 61.
 - (a) Visually examine of the pitot hose for a complete seal.

SUBTASK 34-11-00-210-012

- (11) For the top right pitot probe, do this task: Pitot Probe Inspection, TASK 34-11-01-200-801.

L. Leak Tests

SUBTASK 34-11-00-790-204

- (1) Do these leak tests:
 - (a) Do this task: Left Static System Low-range Leak Test, TASK 34-11-00-790-801.
 - (b) Do this task: Right Static System Low-range Leak Test, TASK 34-11-00-700-802.
 - (c) Do this task: Center Static System Low-range Leak Test, TASK 34-11-00-700-801.
 - (d) Do this task: Left Pitot System Leak Test, TASK 34-11-00-700-803.
 - (e) Do this task: Right Pitot System Leak Test, TASK 34-11-00-700-805.
 - (f) Do this task: Center Pitot System Leak Test, TASK 34-11-00-700-804.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 313
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

M. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-860-052

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C

- (a) Power Supply Assembly Center, M24301:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (b) Power Supply Assembly Left, M24101:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM
- (c) Power Supply Assembly Right, M24201:
- 1) C07 PITOT ADM
 - 2) C09 STATIC ADM

SUBTASK 34-11-00-410-004

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door (TASK 06-41-00-800-801).

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

34-11-00

Page 314
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STATIC AND TOTAL AIR PRESSURE SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- (1) Left Static System Low-range Leak Test.
- (2) Center Static System Low-range Leak Test.
- (3) Right Static System Low-range Leak Test.
- (4) Left Pitot System Leak Test.
- (5) Center Pitot System Leak Test.
- (6) Right Pitot System Leak Test.
- (7) Left Static System Full-range Leak Test
- (8) Center Static System Full-range Leak Test.
- (9) Right Static System Full-range Leak Test.

TASK 34-11-00-790-801

2. Left Static System Low-range Leak Test

(Figure 501)

A. General

- (1) These instructions apply to the task:
 - (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.
 - (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
 - (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
 - (d) You must do the static system low-range leak test when you remove a fitting other than a quick disconnect. You must do the low-range leak test after you flush the pitot-static system.
 - (e) Make sure that the seals used on the static ports do not extend into the static ports.
 - (f) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
 - (g) Make sure that the ATC transponders are in standby mode.
 - (h) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

C. Tools/Equipment

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

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 502
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Prepare for the Leak Test

SUBTASK 34-11-00-860-053



WARNING

MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-068

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-054

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-055

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-056

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-069

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-071

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801

SUBTASK 34-11-00-860-058

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-059

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 503
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL

G. Left Static System Low-range Leak Test

SUBTASK 34-11-00-840-007



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 746, WL 139 (TASK 06-21-00-800-801) with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-070

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 746, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-071

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

SUBTASK 34-11-00-790-127



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (4) Operate the air data test set to apply a vacuum to the static system equal to 5,000 feet of altitude above field elevation (ambient pressure minus 5.25 ± 0.25 in. Hg).

NOTE: The pressure values used are absolute values.

SUBTASK 34-11-00-790-128

- (5) Stop for one minute.

SUBTASK 34-11-00-790-129

- (6) Make sure the altitude does not decrease more than 80 feet (0.07 in. Hg).

SUBTASK 34-11-00-790-130

- (7) Make sure that the maintenance message 34-25201 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-131

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-132

- (9) Stop for one minute.

SUBTASK 34-11-00-790-133

- (10) Make sure that the maintenance message 34-25201 does not show on the MAT existing faults display.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 504
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-067



CAUTION

DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

SUBTASK 34-11-00-080-068

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 746, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-069



WARNING

FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 746, WL 139 (TASK 06-21-00-800-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-860-116

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— END OF TASK —————

EFFECTIVITY
ARO ALL

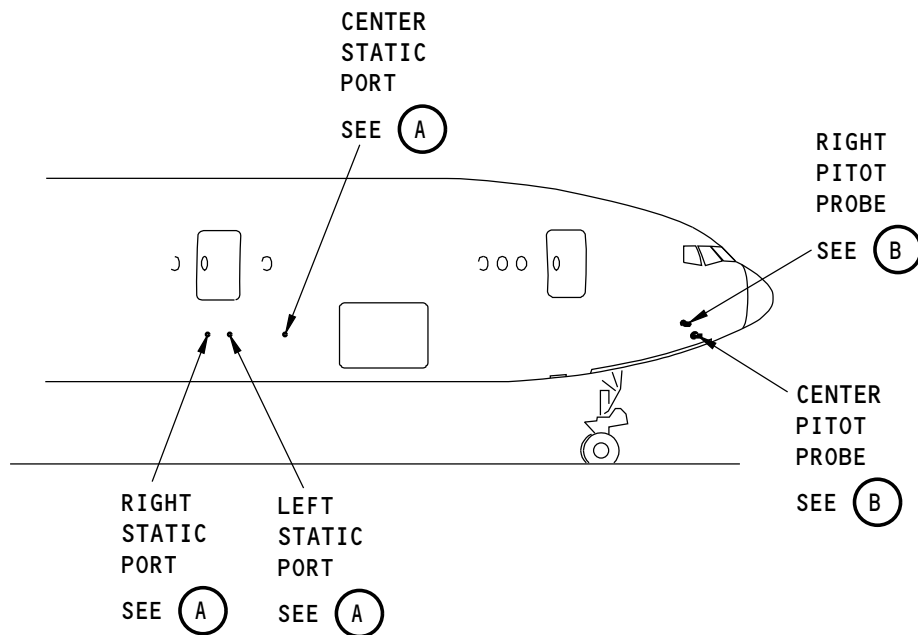
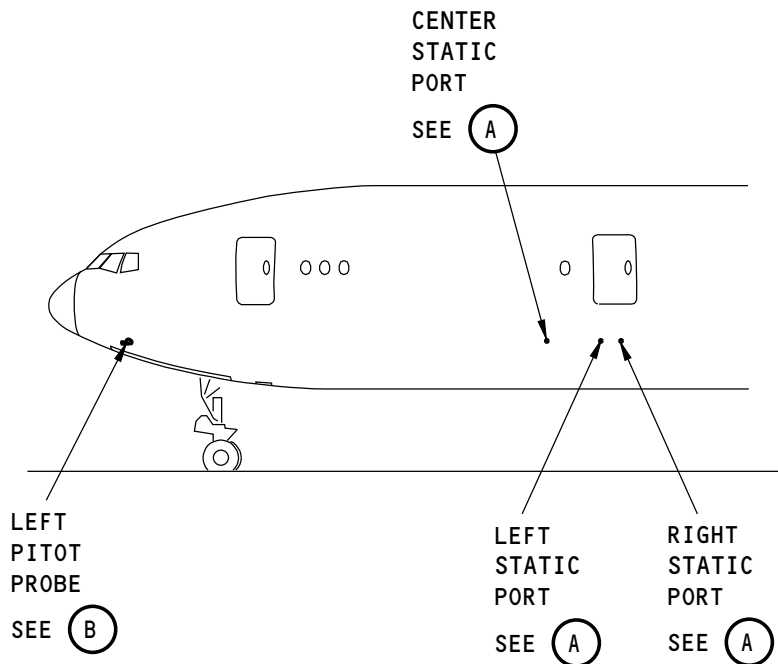
34-11-00

D633W101-ARO

Page 505
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



D13453 S0006420481_V1

Static and Total Air Pressure System
Figure 501/34-11-00-990-801 (Sheet 1 of 2)

EFFECTIVITY
ARO ALL

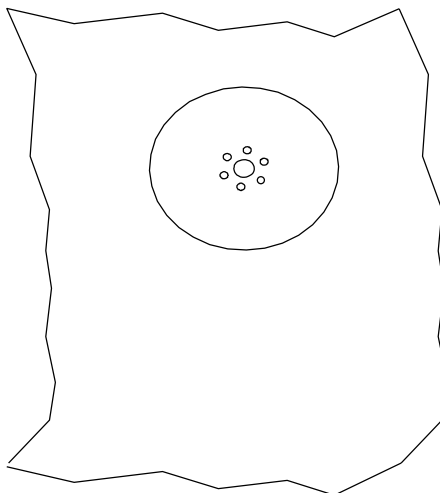
D633W101-ARO

34-11-00

Page 506
Jan 05/2015

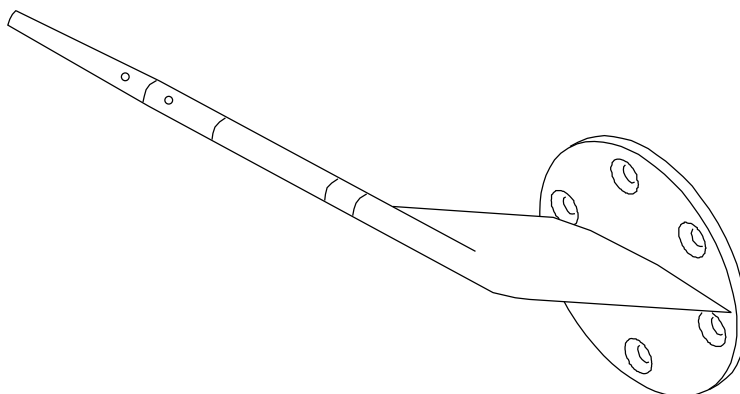


777-200/300
AIRCRAFT MAINTENANCE MANUAL



LEFT, RIGHT AND CENTER STATIC PORT

A



PITOT PROBE
(LEFT SHOWN, RIGHT AND CENTER OPPOSITE)

B

E07129 S0006420482_V1

Static and Total Air Pressure System
Figure 501/34-11-00-990-801 (Sheet 2 of 2)

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 507
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-11-00-700-801

3. Center Static System Low-range Leak Test

A. General

- (1) These instructions apply to the task:
 - (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.
 - (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
 - (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
 - (d) You must do the static system low-range leak test when you remove a fitting other than a quick disconnect. You must do the low-range leak test after you flush the pitot-static system.
 - (e) Make sure that the seals used on the static ports do not extend into the static ports.
 - (f) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
 - (g) Make sure that the ATC transponders are in standby mode.
 - (h) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (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.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 508
May 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 509
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Prepare for the Leak Test

SUBTASK 34-11-00-860-117



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-118

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-119

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-120

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-121

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-122

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-123

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801

SUBTASK 34-11-00-860-124

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-125

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 510
Jul 25/2018

777-200/300
AIRCRAFT MAINTENANCE MANUAL

G. Center Static System Low-range Leak Test

SUBTASK 34-11-00-840-010



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801) with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-088

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-089

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

SUBTASK 34-11-00-790-148



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (4) Operate the air data test set to apply a vacuum to the static system equal to 5,000 feet of altitude above field elevation (ambient pressure minus 5.25 ± 0.25 in. Hg).

NOTE: The pressure values used are absolute values.

SUBTASK 34-11-00-790-149

- (5) Stop for one minute.

SUBTASK 34-11-00-790-150

- (6) Make sure the altitude does not decrease more than 80 feet (0.07 in. Hg).

SUBTASK 34-11-00-790-151

- (7) Make sure the maintenance message 34-25202 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-152

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-153

- (9) Stop for one minute.

SUBTASK 34-11-00-790-154

- (10) Make sure that the maintenance message 34-25202 does not show on the MAT existing faults display.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 511
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-076



CAUTION

DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

SUBTASK 34-11-00-080-077

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-078



WARNING

FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-860-126

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— END OF TASK —————

TASK 34-11-00-700-802

4. Right Static System Low-range Leak Test

A. General

- (1) These instructions apply to the task:
- (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 512
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
- (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (d) You must do the static system low-range leak test when you remove a fitting other than a quick disconnect. You must do the low-range leak test after you flush the pitot-static system.
- (e) Make sure that the seals used on the static ports do not extend into the static ports.
- (f) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
- (g) Make sure that the ATC transponders are in standby mode.
- (h) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

C. Tools/Equipment

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

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

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 513
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Prepare for the Leak Tests

SUBTASK 34-11-00-860-127



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-128

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-129

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 514
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-130

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-131

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-132

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-133

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-134

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-135

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

G. Right Static System Low-range Leak Test

SUBTASK 34-11-00-840-011



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 764, WL 139 (TASK 06-21-00-800-801) with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-090

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 764, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-091

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 515
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-790-155



WARNING

MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (4) Operate the air data test set to apply a vacuum to the static system equal to 5,000 feet of altitude above field elevation (ambient pressure minus 5.25 ± 0.25 in. Hg).

NOTE: The pressure values used are absolute values.

SUBTASK 34-11-00-790-156

- (5) Stop for one minute.

SUBTASK 34-11-00-790-157

- (6) Make sure the altitude does not decrease more than 80 feet (0.07 in. Hg).

SUBTASK 34-11-00-790-158

- (7) Make sure the maintenance message 34-25203 shows on the MAT existing fault display.

SUBTASK 34-11-00-790-159

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-160

- (9) Stop for one minute.

SUBTASK 34-11-00-790-161

- (10) Make sure that the maintenance message 34-25203 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-079



CAUTION

DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

SUBTASK 34-11-00-080-080

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 764, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-081



WARNING

FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 764, WL 139 (TASK 06-21-00-800-801).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 516
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-860-136

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— END OF TASK —————

TASK 34-11-00-700-803

5. Left Pitot System Leak Test

A. General

- (1) These instructions apply to the task:
- (a) When you apply pressure to a pitot system, the rate must not be more than 300 knots for each minute.
 - (b) When you release pressure from a pitot system, the rate must not be more than 300 knots for each minute.
 - (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
 - (d) Make sure that you do these steps before installing the pitot test adapter, COM-1916 on the probe:
 - 1) Blow dry, filtered air through the pitot test adapter, COM-1916.
 - 2) Wipe the pitot probe with a damp cloth.
 - (e) You must do the applicable pitot system leak test when you remove a fitting other than a quick disconnect. You must do the leak test after you flush the pitot-static system.
 - (f) Make sure that the ATC transponders are in standby mode.
 - (g) Make sure that the Autopilot/Flight Director System is off.

B. References

<u>Reference</u>	<u>Title</u>
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 517
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

C. Tools/Equipment

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

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: 509767 Supplier: 53949 Part #: 884EH Supplier: 59885 Part #: 884EH-3 Supplier: 59885 Part #: CSA77700HT-3 Supplier: 3BSK6 Part #: P77796HT-3 Supplier: 38002
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 518
Jul 25/2018

777-200/300 AIRCRAFT MAINTENANCE MANUAL

E. Prepare for the Leak Tests

SUBTASK 34-11-00-860-137



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-138

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-139

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

SUBTASK 34-11-00-860-140

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-141

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-142

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 519
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-143

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-144

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-145

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

F. Left Pitot System Leak Test

SUBTASK 34-11-00-480-092

- (1) Blow dry, filtered air through the pitot test adapter, COM-1916.

SUBTASK 34-11-00-480-093

- (2) Wipe the pitot probe with a damp cloth.

SUBTASK 34-11-00-480-094



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

- (3) Install the pitot test adapter, COM-1916, on the left pitot probe located at STA 201, WL 156 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-095

- (4) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the pitot test adapter, COM-1916.

SUBTASK 34-11-00-790-162



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (5) Operate the air data test set to apply pressure of 4.53 ± 0.16 inches Hg (gauge), (2.22 ± 0.08 psig), (153.4 ± 5.4 mB), or 300 ± 5 knots on the test set airspeed indicator.

SUBTASK 34-11-00-790-163

- (6) Stop for one minute.

SUBTASK 34-11-00-790-164

- (7) Make sure the pressure does not decrease more than 0.16 inches Hg (5.4 mB), (approximately 5 knots) in one minute.

SUBTASK 34-11-00-790-165

- (8) Make sure the maintenance message 34-25101 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-166

- (9) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-167

- (10) Stop for one minute.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 520
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-790-168

- (11) Make sure that the maintenance message 34-25101 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-082



DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. DAMAGE TO THE AIR DATA MODULES CAN OCCUR IF THE SYSTEM IS NOT AT AMBIENT PRESSURE.

- (12) Disconnect the air data test set from the pitot test adapter, COM-1916.

SUBTASK 34-11-00-080-083

- (13) Remove the pitot test adapter, COM-1916 from the pitot probe.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-016

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-00-860-146

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 521
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

————— END OF TASK —————

TASK 34-11-00-700-804

6. Center Pitot System Leak Test

A. General

(1) These instructions apply to the task:

- (a) When you apply pressure to a pitot system, the rate must not be more than 300 knots for each minute.
- (b) When you release pressure from a pitot system, the rate must not be more than 300 knots for each minute.
- (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (d) Make sure that you do these steps before installing the pitot test adapter, COM-1916 on the probe:
 - 1) Blow dry, filtered air through the pitot test adapter, COM-1916.
 - 2) Wipe the pitot probe with a damp cloth.
- (e) You must do the applicable pitot system leak test when you remove a fitting other than a quick disconnect. You must do the leak test after you flush the pitot-static system.
- (f) Make sure that the ATC transponders are in standby mode.
- (g) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (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.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 522
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: ORDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: 509767 Supplier: 53949 Part #: 884EH Supplier: 59885 Part #: 884EH-3 Supplier: 59885 Part #: CSA77700HT-3 Supplier: 3BSK6 Part #: P77796HT-3 Supplier: 38002
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: ORDZ5 Opt Part #: ADC800 Supplier: 41364

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Prepare for the Leak Tests

SUBTASK 34-11-00-860-147



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Make sure that the ATC transponders are in standby mode.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 523
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-148

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-149

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

SUBTASK 34-11-00-860-150

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-151

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-152

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-153

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-154

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-155

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 524
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Center Pitot System Leak Test

SUBTASK 34-11-00-480-096

- (1) Blow dry, filtered air through the pitot test adapter, COM-1916.

SUBTASK 34-11-00-480-097

- (2) Wipe the pitot probe with a damp cloth.

SUBTASK 34-11-00-480-098



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

- (3) Install the pitot test adapter, COM-1916 on the bottom right pitot probe located at STA 201, WL 156 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-099

- (4) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the pitot test adapter, COM-1916.

SUBTASK 34-11-00-790-169



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (5) Operate the air data test set to apply pressure of 4.53 ± 0.16 inches Hg (gauge), (2.22 ± 0.08) psig, $(153.4 \pm 5.4\text{mB})$, or 300 ± 5 knots on the test set airspeed indicator.

SUBTASK 34-11-00-790-170

- (6) Stop for one minute.

SUBTASK 34-11-00-790-171

- (7) Make sure that the maintenance message 34-25102 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-172

- (8) Make sure the pressure does not decrease more than 0.16 inches Hg (5.4 mB), (approximately 5 knots) in one minute.

SUBTASK 34-11-00-790-173

- (9) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-174

- (10) Stop for one minute.

SUBTASK 34-11-00-790-175

- (11) Make sure that the maintenance message 34-25102 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-084



DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. DAMAGE TO THE AIR DATA MODULES CAN OCCUR IF THE SYSTEM IS NOT AT AMBIENT PRESSURE.

- (12) Disconnect the air data test set from the pitot test adapter, COM-1916.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 525
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-085

- (13) Remove the pitot test adapter, COM-1916 from the pitot probe.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-017

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-00-860-156

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

————— END OF TASK —————

TASK 34-11-00-700-805

7. Right Pitot System Leak Test

A. General

- (1) These instructions apply to the task:
- (a) When you apply pressure to a pitot system, the rate must not be more than 300 knots for each minute.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 526
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) When you release pressure from a pitot system, the rate must not be more than 300 knots for each minute.
- (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (d) Make sure that you do these steps before installing the pitot test adapter, COM-1916 on the probe:
 - 1) Blow dry, filtered air through the pitot test adapter, COM-1916.
 - 2) Wipe the pitot probe with a damp cloth.
- (e) You must do the applicable pitot system leak test when you remove a fitting other than a quick disconnect. You must do the leak test after you flush the pitot-static system.
- (f) Make sure that the ATC transponders are in standby mode.
- (g) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

C. Tools/Equipment

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

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

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 527
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: 509767 Supplier: 53949 Part #: 884EH Supplier: 59885 Part #: 884EH-3 Supplier: 59885 Part #: CSA77700HT-3 Supplier: 3BSK6 Part #: P77796HT-3 Supplier: 38002
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Prepare for the Leak Tests

SUBTASK 34-11-00-860-157



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-158

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-159

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

APU Auxiliary Panel, P49

Row	Col	Number	Name
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
D	13	C29619	RAT AUTO CONTROL

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 528
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

SUBTASK 34-11-00-860-160

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-161

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-162

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-163

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-164

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-165

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

F. Right Pitot System Leak Test

SUBTASK 34-11-00-480-100

- (1) Blow dry, filtered air through the pitot test adapter, COM-1916.

SUBTASK 34-11-00-480-101

- (2) Wipe the pitot probe with a damp cloth.

SUBTASK 34-11-00-480-102



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

- (3) Install the pitot test adapter, COM-1916 on the top right pitot probe located at STA 217, WL 171 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-103

- (4) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the pitot test adapter, COM-1916.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 529
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-790-176



CAUTION

MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH. PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE TO THE ADM.

- (5) Operate the air data test set to apply pressure of 4.53 ± 0.16 inches Hg (gauge), (2.22 ± 0.08 psig), (153.4 ± 5.4 mB), or 300 ± 5 knots on the test set airspeed indicator.

SUBTASK 34-11-00-790-177

- (6) Stop for one minute.

SUBTASK 34-11-00-790-178

- (7) Make sure the pressure does not decrease more than 0.16 inches Hg (5.4 mB), (approximately 5 knots) in one minute.

SUBTASK 34-11-00-790-179

- (8) Make sure the maintenance message 34-25103 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-180

- (9) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-181

- (10) Stop for one minute.

SUBTASK 34-11-00-790-182

- (11) Make sure that the maintenance message 34-25103 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-086



CAUTION

DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. DAMAGE TO THE AIR DATA MODULES CAN OCCUR IF THE SYSTEM IS NOT AT AMBIENT PRESSURE.

- (12) Disconnect the air data test set from the pitot test adapter, COM-1916.

SUBTASK 34-11-00-080-087

- (13) Remove the pitot test adapter, COM-1916 from the pitot probe.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-018

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-00-860-166

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 530
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

————— END OF TASK —————

TASK 34-11-00-700-806

8. Left Static System Full-range Leak Test

A. General

(1) These instructions apply to the task:

- When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.
- When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
- Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- The static system full-range leak test is not required. However, leaks are easier to detect with the higher pressure.
- Make sure that the seals used on the static ports do not extend into the static ports.
- Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
- Make sure that the ATC transponders are in standby mode.
- Make sure that the Autopilot/Flight Director System is off.

B. References

<u>Reference</u>	<u>Title</u>
06-21-00-800-801	Fuselage Station Diagram (P/B 201)

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 531
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 532
Jul 25/2018

777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Zone	Area
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Prepare for the Leak Tests

SUBTASK 34-11-00-860-167



WARNING

MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-168

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-169

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-170

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-171

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-172

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-173

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-174

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 533
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-175

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

G. Left Static System Full-range Leak Test

SUBTASK 34-11-00-840-012



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 746, WL 139 (TASK 06-21-00-800-801), with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-104

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 746, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-105

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

SUBTASK 34-11-00-790-183

- (4) Use the air data test set to simulate an altitude 25,000 feet above the airport altitude, +/-200 feet.

SUBTASK 34-11-00-790-184

- (5) Stop for one minute.

SUBTASK 34-11-00-790-185

- (6) Make sure the altitude does not decrease more than 400 feet (0.20 inches Hg or 6.77 mB).

NOTE: During a static system leak check, altitude will decrease and pressure in the line will increase if a leak is present.

SUBTASK 34-11-00-790-186

- (7) Make sure that the maintenance message 34-25201 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-187

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-188

- (9) Stop for one minute.

SUBTASK 34-11-00-790-189

- (10) Make sure that the maintenance message 34-25201 does not show on the MAT existing faults display.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 534
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-088



CAUTION

DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

SUBTASK 34-11-00-080-089

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 746, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-090



WARNING

FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 746, WL 139 (TASK 06-21-00-800-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-019

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-00-860-176

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 535
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-11-00-700-807

9. Center Static System Full-range Leak Test

A. General

(1) These instructions apply to the task:

- (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.
- (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
- (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (d) The static system full-range leak test is not required. However, leaks are easier to detect with the higher pressure.
- (e) Make sure that the seals used on the static ports do not extend into the static ports.
- (f) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
- (g) Make sure that the ATC transponders are in standby mode.
- (h) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (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.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 536
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 537
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Prepare for the Leak Tests

SUBTASK 34-11-00-860-177



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-178

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-179

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-180

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-181

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-182

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-183

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-184

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-185

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 538
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

G. Center Static System Full-range Leak Test

SUBTASK 34-11-00-840-013



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801) with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-106

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-107

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

SUBTASK 34-11-00-790-190

- (4) Use the air data test set to simulate an altitude 25,000 feet above the airport altitude, +/-200 feet.

SUBTASK 34-11-00-790-191

- (5) Stop for one minute.

SUBTASK 34-11-00-790-192

- (6) Make sure the altitude does not decrease more than 400 feet (0.20 inches Hg or 6.77 mB).

NOTE: During a static system leak check, altitude will decrease and pressure in the line will increase if a leak is present.

SUBTASK 34-11-00-790-193

- (7) Make sure the maintenance message 34-25202 shows on the MAT existing faults display.

SUBTASK 34-11-00-790-194

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-195

- (9) Stop for one minute.

SUBTASK 34-11-00-790-196

- (10) Make sure that the maintenance message 34-25202 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-091



DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 539
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-080-092

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-093



FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-020

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
 - (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-00-860-186

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— END OF TASK —————

TASK 34-11-00-700-808

10. Right Static System Full-range Leak Test

A. General

- (1) These instructions apply to the task:
 - (a) When you apply a vacuum to a static system, the rate must not be more than 5,000 feet for each minute.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 540
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) When you release a vacuum from a static system, the rate must not be more than 5,000 feet for each minute.
- (c) Do not connect or disconnect the test equipment when you apply pressure or a vacuum to the pitot-static system.
- (d) The static system full-range leak test is not required. However, leaks are easier to detect with the higher pressure.
- (e) Make sure that the seals used on the static ports do not extend into the static ports.
- (f) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
- (g) Make sure that the ATC transponders are in standby mode.
- (h) Make sure that the Autopilot/Flight Director System is off.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (P/B 201)

C. Tools/Equipment

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

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

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 541
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6
COM-13545	Air Data Test Set (non RVSM) used for Leak Checks Part #: 6005KTQA1-103 Supplier: 35012 Part #: MODEL 6150 Supplier: 0RDZ5 Opt Part #: ADC800 Supplier: 41364

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Prepare for the Leak Tests

SUBTASK 34-11-00-860-187



WARNING

MAKE SURE THAT THE ATC TRANSPONDERS ARE IN STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE FALSE TCAS TARGETS. THESE TCAS TARGETS CAN CAUSE AIR TRAFFIC IN THE VICINITY TO EXECUTE UNNECESSARY EVASIVE MANEUVERS.

- (1) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-11-00-860-188

- (2) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-11-00-860-189

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

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 542
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-11-00-860-190

- (4) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-00-860-191

- (5) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-11-00-860-192

- (6) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

SUBTASK 34-11-00-860-193

- (7) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-11-00-860-194

- (8) Make sure that the BARO control on the captain's EFIS control panel is in its usual position (29.92 inches Hg).

SUBTASK 34-11-00-860-195

- (9) Make sure that the BARO control on the first officer's EFIS control panel is in its usual position (29.92 inches Hg).

G. Right Static System Full-range Leak Test

SUBTASK 34-11-00-840-014



WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (1) Seal the static port on the right side located at STA 764, WL 139 (TASK 06-21-00-800-801), with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-11-00-480-108

- (2) Install the static test adapter, COM-1921, on the static port on the left side located at STA 764, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-480-109

- (3) Connect the air data model test set, COM-1914 or the Air Data Test Set (non RVSM), COM-13545 to the static test adapter, COM-1921.

SUBTASK 34-11-00-790-197

- (4) Use the air data test set to simulate an altitude 25,000 feet above the airport altitude, +/-200 feet.

SUBTASK 34-11-00-790-198

- (5) Stop for one minute.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 543
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-790-199

- (6) Make sure the altitude does not decrease more than 400 feet (0.20 inches Hg or 6.77 mB).

NOTE: During a static system leak check, altitude will decrease and pressure in the line will increase if a leak is present.

SUBTASK 34-11-00-790-200

- (7) Make sure the maintenance message 34-25203 shows on the MAT existing fault display.

SUBTASK 34-11-00-790-201

- (8) Put the system back to ambient pressure.

SUBTASK 34-11-00-790-202

- (9) Stop for one minute.

SUBTASK 34-11-00-790-203

- (10) Make sure that the maintenance message 34-25203 does not show on the MAT existing faults display.

SUBTASK 34-11-00-080-094



DO NOT DISCONNECT THE STATIC SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. IF YOU DO NOT, DAMAGE TO THE AIR DATA MODULES CAN OCCUR.

- (11) Disconnect the air data test set from the static test adapter, COM-1921.

SUBTASK 34-11-00-080-095

- (12) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 764, WL 139 (TASK 06-21-00-800-801).

SUBTASK 34-11-00-080-096



FAILURE TO REMOVE THE VINYL ADHESIVE TAPE FROM THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED-SENSING AND ALTITUDE-SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



MAKE SURE THAT YOU REMOVE ALL OF THE PIECES OF TAPE FROM EACH STATIC PORT. IF YOU DO NOT, THE SYSTEM WILL NOT OPERATE CORRECTLY.

- (13) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 764, WL 139 (TASK 06-21-00-800-801).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-11-00-210-021

- (1) Do a visual inspection of the quick-disconnect fittings if it is used.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

EFFECTIVITY
ARO ALL

34-11-00

D633W101-ARO

Page 544
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-00-860-196

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-00

Page 545
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL
PITOT PROBE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the pitot probe
 - (2) An installation of the pitot probe.

TASK 34-11-01-000-801

2. Pitot Probe Removal

(Figure 401)

A. Tools/Equipment

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Removal Procedure

SUBTASK 34-11-01-860-001

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-01

Page 401
May 05/2018

777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

SUBTASK 34-11-01-140-001



MAKE SURE THAT THE AREA AROUND THE PITOT PROBE IS CLEAR OF UNWANTED MATERIAL. CONTAMINATION OF THE PITOT SYSTEM CAN OCCUR.

- (2) Use the sealant removal tool, COM-2481 to remove the sealant from around the baseplate [1] of the pitot probe [7].

SUBTASK 34-11-01-020-001

- (3) Remove the screws [5] from the baseplate [1] of the pitot probe [7].

SUBTASK 34-11-01-020-002



MAKE SURE THAT THE PITOT PROBE HEAT IS OFF. INJURY TO PERSONS CAN OCCUR.



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

- (4) Do these steps to loosen the pitot probe [7] from the airplane skin:
 - (a) Hold the probe strut [6].
 - (b) Disconnect the bonding jumper [9] from the bonding plate [8].
 - (c) Loosen the bonding plate [8]

NOTE: The gasket [2] is bonded to the bonding plate [8].

 - (d) Pull the pitot probe [7] out from the airplane skin until you can get access to the pitot hose fitting [3] and electrical connector [4] on the base of the pitot probe [7].

SUBTASK 34-11-01-020-003



USE WRENCHES TO APPLY COUNTER PRESSURE ON EACH SIDE OF THE FITTING DURING DISASSEMBLY. DAMAGE TO THE TUBE OR FITTING CAN OCCUR.

- (5) Disconnect the pitot hose fitting [3] at the base of the pitot probe [7].

SUBTASK 34-11-01-020-005

- (6) Disconnect the electrical connector [4].

SUBTASK 34-11-01-020-006

- (7) Remove the pitot probe [7].

SUBTASK 34-11-01-020-007

- (8) Temporarily attach the electrical connector [4] and pitot hose fitting [3] so they do not fall inside the fuselage.

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 402
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-01-020-008

- (9) Put a cap on the pitot hose fitting [3] that stays on the airplane to keep out unwanted material.

NOTE: This step is not necessary when you replace the pitot probe [7] immediately.

SUBTASK 34-11-01-020-012

- (10) Remove the gasket [2] from the bonding plate [8] and discard it.

———— **END OF TASK** ————

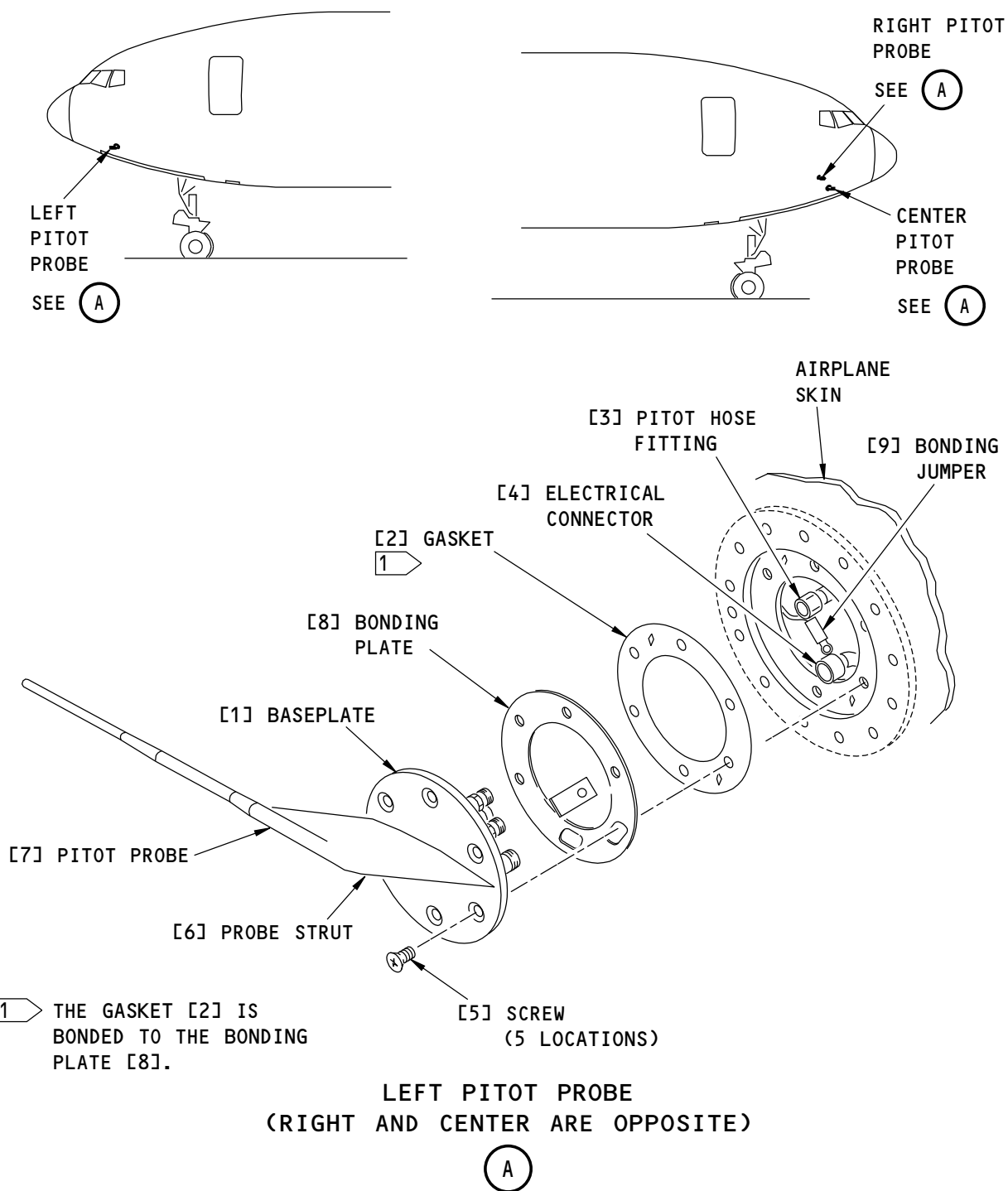
EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-01

Page 403
Sep 05/2017

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



D74454 S0000164769_V2

**Pitot Probe Installation
Figure 401/34-11-01-990-801**

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-11-01-400-801

3. Pitot Probe Installation

(Figure 401)

A. References

Reference	Title
20-10-22-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-31-00-700-802	Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available) (P/B 501)
34-11-00-700-803	Left Pitot System Leak Test (P/B 501)
34-11-00-700-804	Center Pitot System Leak Test (P/B 501)
34-11-00-700-805	Right Pitot System Leak Test (P/B 501)
51-31-01-390-803	Hole and Slot Seal Application (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

C. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
A50057	Adhesive - Silicone Rubber, RTV157	BAC5010 Type 60

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
7	Pitot probe	34-11-01-01-350	ARO ALL
		34-11-01-01-355	ARO ALL

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Installation Procedure

SUBTASK 34-11-01-110-005

- (1) For the surface of the baseplate [1] and the bonding plate [8], do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-01-390-005

- (2) Make sure the two index pin locations are filled with sealant in the baseplate [1].
 - (a) If not, fill the two index pin locations in the baseplate [1] with sealant, A00247.

SUBTASK 34-11-01-110-006

- (3) Bond a new gasket [2] to the bonding plate [8] with adhesive, A50057.

SUBTASK 34-11-01-420-012

- (4) Put the bonding plate [8] with the new, bonded gasket [2] into position on the baseplate [1].

SUBTASK 34-11-01-420-013

- (5) Connect the bonding jumper [9] to the bonding plate [8].

SUBTASK 34-11-01-420-006



USE WRENCHES TO APPLY COUNTER PRESSURE ON EACH SIDE OF THE FITTING DURING ASSEMBLY. DAMAGE TO THE TUBE OR FITTING CAN OCCUR.

- (6) Connect the pitot hose fitting [3] at the base of the pitot probe [7].
 - (a) Tighten the pitot hose fitting [3] to 110 in-lb (12 N·m).

SUBTASK 34-11-01-210-001

- (7) Examine the electrical connector [4] for loose, bent, or broken pins.

SUBTASK 34-11-01-420-007

- (8) Connect the electrical connector [4].

SUBTASK 34-11-01-420-009

- (9) Do these steps to put the pitot probe [7] into position:
 - (a) Hold the probe strut [6].
 - (b) Put the pitot hose fitting [3] and electrical connector [4] in the installation hole.
 - (c) Put the pitot probe [7] into position on the airplane skin.
 - 1) Make sure the airplane skin and the baseplate [1] are aligned in ± 0.04 inch or less.

SUBTASK 34-11-01-420-010

- (10) Install the screws [5] in the baseplate [1] of the pitot probe [7].

SUBTASK 34-11-01-420-011

- (11) Tighten the screws [5] to 32-39 pound-inches.

SUBTASK 34-11-01-760-001

- (12) Measure the resistance between the base of the pitot probe [7] and the airplane skin with an intrinsically safe approved bonding meter, COM-1550.
 - (a) If the resistance is more than 0.010 ohms, do these steps:
 - 1) Remove the pitot probe [7].
 - 2) Clean the bonding surfaces, including the countersunk holes in the pitot probe [7] (SWPM 20-20-00 Removal of Contamination with Cleaning Solvent).
 - 3) Replace the screws with new screws.
 - 4) Install the pitot probe [7].
 - 5) Measure the resistance between the strut of the pitot probe [7] and the airplane skin with an ohmmeter.
 - 6) If the resistance is more than 0.010 ohms, do these steps:

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 406
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- a) Remove the pitot probe [7].
- b) Replace the nutplates and rivets that attach the pitot probe [7] (SRM 51-40-02).
- c) Reinstall the pitot probe [7] and make sure the bonding resistance is not more than 0.010 ohm.

SUBTASK 34-11-01-860-002

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

G. Installation Test

SUBTASK 34-11-01-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-11-01-790-001

- (2) Do the low-range leak test for the applicable pitot probe [7]:
- (a) Do this task: Left Pitot System Leak Test, TASK 34-11-00-700-803.
 - (b) Do this task: Right Pitot System Leak Test, TASK 34-11-00-700-805.
 - (c) Do this task: Center Pitot System Leak Test, TASK 34-11-00-700-804.

SUBTASK 34-11-01-710-001

- (3) For the probe heater circuit on the pitot probe [7], do this task: Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available), TASK 30-31-00-700-802.

SUBTASK 34-11-01-390-002



DO NOT USE TOO MUCH SEALANT. TOO MUCH SEALANT CAN CAUSE DAMAGE WHEN YOU REMOVE THE PROBE. IF YOU DO NOT USE SUFFICIENT SEALANT, CORROSION CAN OCCUR.

- (4) Fill the gap between the baseplate [1] and the airplane skin with sealant, A00247, (TASK 51-31-01-390-803).

NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. But, you must apply the sealant as soon as possible to keep moisture out of the area between the probe and airplane skin. The sealant deferral must not exceed a maximum of eight weeks.

- (a) Make sure the baseplate [1] and sealant are flat with the airplane skin.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 407
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

PITOT PROBE - INSPECTION/CHECK

1. General

- A. This procedure has these tasks:
- (1) An inspection of the pitot probe
- B. Replace the pitot probe for one or more of the following conditions:
- (1) The flight crew saw a cross panel airspeed difference that is not acceptable.
 - (2) The damage or wear limits are out of tolerance.

TASK 34-11-01-200-801

2. Pitot Probe Inspection

(Figure 601)

A. **References**

Reference	Title
34-11-01-000-801	Pitot Probe Removal (P/B 401)
34-11-01-400-801	Pitot Probe Installation (P/B 401)

B. **Location Zones**

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

C. **Pitot Probe Inspection**

SUBTASK 34-11-01-860-005

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
G	5	C30405	PH B PITOT PROBE HTR L

Right Power Management Panel, P210

Row	Col	Number	Name
D	5	C30404	PH B PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C

SUBTASK 34-11-01-210-002

- (2) Visually examine the pitot probe for damage or unwanted material in the drain holes, the pitot opening, or the contour of the probe.

SUBTASK 34-11-01-220-001

- (3) Make sure the edge of the pitot opening is sharp (Figure 601).

NOTE: New probes are sharpened to 0.012 inch maximum flat.

- (a) Replace the pitot probe if the pitot opening dimension is more than 0.015 inch.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 34-11-01-210-003

- (4) Make sure the inner surface of the probe tip is smooth and rounded.

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 601
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure the pitot probe has no dents more than 0.030 inch.

NOTE: The dent can be at any location around the opening, but must not affect more than 1/5 (20%) of the lip area (Figure 601).

- (b) Replace the pitot probe if the damage is more than these limits.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 34-11-01-220-004

- (5) Make sure that the outer surface of the probe tip is smooth and rounded (Figure 601).

- (a) Replace the probe if the tip is flared out.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 34-11-01-220-005

- (6) Make sure the leading edge of the pitot probe does not have nicks (Figure 601).

- (a) Replace the probe if there are two nicks that are between 0.025 and 0.035 inch in depth.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

- (b) Replace the probe if there is a nick more 0.035 inch in depth.

These are the tasks:

Pitot Probe Removal, TASK 34-11-01-000-801,

Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 34-11-01-860-006

- (7) Do these steps after completion of the pitot probe inspection:

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	5	C30405	PH B PITOT PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C30404	PH B PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

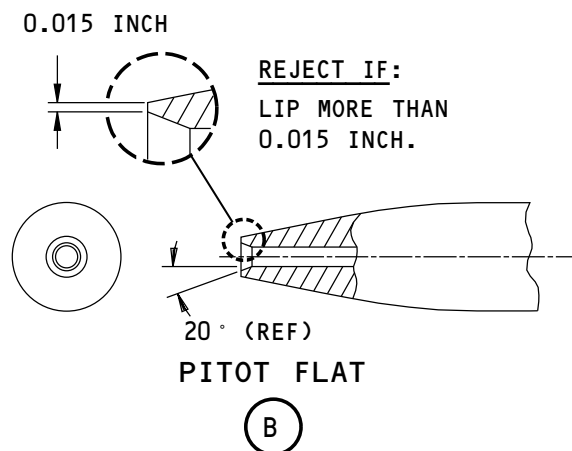
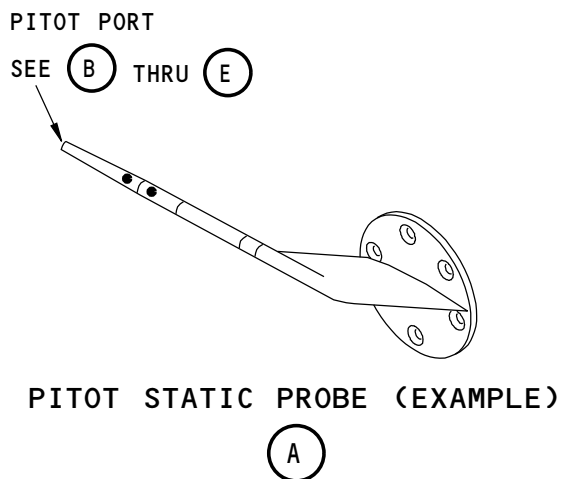
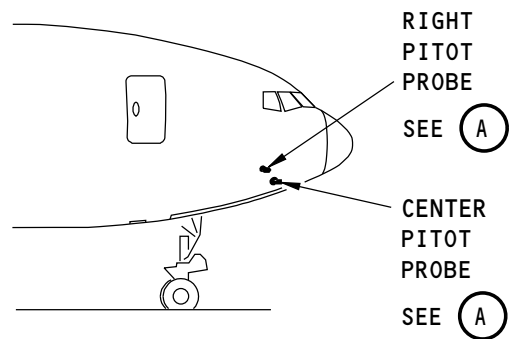
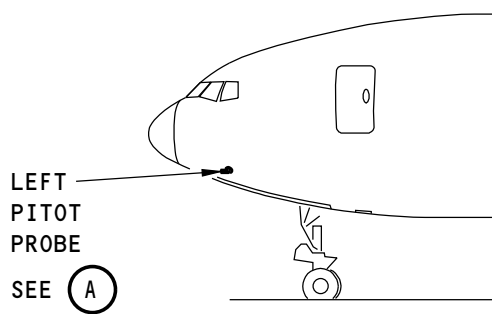
34-11-01

D633W101-ARO

Page 602
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



E43049 S0006420501_V1

Pitot Probe Inspection
Figure 601/34-11-01-990-802 (Sheet 1 of 2)

EFFECTIVITY
ARO ALL

34-11-01

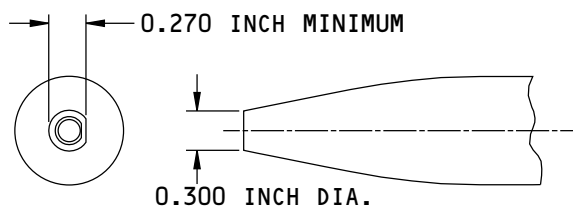
D633W101-ARO

Page 603
Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

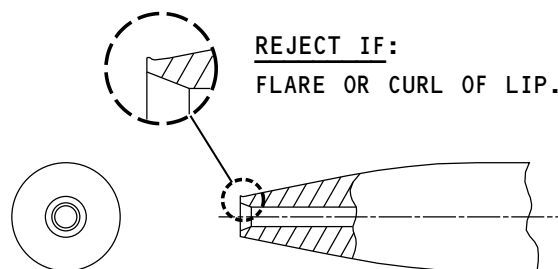
REJECT IF:

1. DENT THAT IS MORE THAN 0.030 INCH.
2. DENT THAT AFFECTS MORE THAN 20% OF THE TIP.



DENT IN PITOT OPENING

(C)

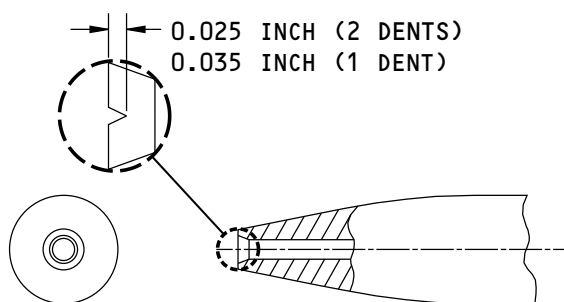


FLARE OF LIP

(D)

REJECT IF:

1. A SINGLE NICK THAT IS MORE THAN 0.035 INCH DEEP.
2. TWO NICKS BETWEEN 0.025 INCH AND 0.035 INCH DEEP.



NICK(S) IN PROBE TIP

(E)

F62453 S0006420502_V1

**Pitot Probe Inspection
Figure 601/34-11-01-990-802 (Sheet 2 of 2)**

**EFFECTIVITY
ARO ALL**

D633W101-ARO

34-11-01

Page 604
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

PITOT PROBE - CLEANING/PAINTING

1. General

A. This procedure contains these tasks:

- (1) Clean the inner surfaces of the pitot probe with the pitot probe installed.
- (2) Clean the inner and outer surfaces of the pitot probe with the pitot probe removed.



DO NOT PAINT THE PITOT PROBE. PAINT ON THE PITOT PROBE CAN CAUSE THE PITOT SYSTEM TO MALFUNCTION.

B. The pitot probe must not be painted.

C. To make sure the pitot probes do not have any damage, do this task: Pitot Probe Inspection, TASK 34-11-01-200-801.

TASK 34-11-01-100-802

2. Pitot Probe Cleaning with Pitot Probe Installed

A. Tools/Equipment

Reference	Description
STD-1108	Bit - Drill, 0.026 Inch Diameter
STD-1109	Bit - Drill, 0.031 Inch Diameter

B. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Clean the Inner Surface of the Pitot Probe

SUBTASK 34-11-01-860-010

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

Row	Col	Number	Name
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 701
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-01-140-004



WARNING

MAKE SURE THAT THE PITOT PROBE HEAT IS OFF. A HOT PROBE CAN CAUSE INJURIES TO PERSONNEL.



CAUTION

DO NOT USE THE MOTOR-OPERATED DRILL TO CLEAN THE DRAIN HOLE. DAMAGE TO THE PITOT PROBE CAN OCCUR.



CAUTION

MAKE SURE THE DRILL BIT DOES NOT MAKE THE DRAIN HOLE LARGER WHEN YOU CLEAN IT. DAMAGE TO THE PITOT PROBE CAN OCCUR.

- (2) Manually insert a 0.026 Inch diameter drill bit, STD-1108 and then a 0.031 Inch diameter drill bit, STD-1109 into the drain hole.

- (a) Manually insert the 0.031 Inch diameter drill bit, STD-1109 until it touches the internal dam feature, the drain hole debris will be cleaned out of the drain hole.

NOTE: The drain hole extends approximately 0.187 inches deep into the probe shaft (perpendicular) before the drain hole meets an internal dam feature in the pitot probe. Once the 0.031-inch drill bit touches the internal dam feature, the drain hole debris will be cleaned out of the drain hole.

E. Clean the Outer Surface of the Pitot Probe

SUBTASK 34-11-01-110-004



CAUTION

DO NOT PERMIT SOLVENTS, OIL, OR GREASE TO GET ON THE PITOT PROBE. SOLVENTS, OIL, OR GREASE CAN CAUSE DAMAGE TO THE PITOT PROBE.

- (1) Use clean water to remove unwanted materials from the outer surface of the pitot probe.

SUBTASK 34-11-01-940-002

- (2) Dry the pitot probe with a cotton wiper, G00034.

SUBTASK 34-11-01-860-011

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 702
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-11-01-100-801

3. Pitot Probe Cleaning with Pitot Probe Removed

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
30-31-00-700-802	Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available) (P/B 501)
34-11-00-700-803	Left Pitot System Leak Test (P/B 501)
34-11-00-700-804	Center Pitot System Leak Test (P/B 501)
34-11-00-700-805	Right Pitot System Leak Test (P/B 501)
34-11-01-000-801	Pitot Probe Removal (P/B 401)
34-11-01-400-801	Pitot Probe Installation (P/B 401)

B. Tools/Equipment

Reference	Description
STD-1082	Source - Air, Regulated, Dry Filtered, 0-50 PSIG
STD-1108	Bit - Drill, 0.026 Inch Diameter
STD-1109	Bit - Drill, 0.031 Inch Diameter

C. Consumable Materials

Reference	Description	Specification
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

E. Clean the Inner Surface of the Pitot Probe

SUBTASK 34-11-01-860-007

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

Row	Col	Number	Name
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 703
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-01-020-014



WARNING

MAKE SURE THAT THE PITOT PROBE HEAT IS OFF. A HOT PROBE CAN CAUSE INJURIES TO PERSONNEL.



CAUTION

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



CAUTION

USE TWO WRENCHES TO LOOSEN OR TIGHTEN THE FITTING. IF YOU TWIST THE TUBE OR FITTING, YOU CAN CAUSE DAMAGE TO THEM.

- (2) Disconnect the pitot hose fitting at the base of the pitot probe.

SUBTASK 34-11-01-020-015

- (3) Put a cap on the pitot hose fitting that stays on the airplane to keep out unwanted material.

SUBTASK 34-11-01-140-002



CAUTION

DO NOT USE MORE THAN 60 PSI OF DRY, COMPRESSED AIR IN THE PITOT PROBE. AIR PRESSURE MORE THAN 60 PSI CAN CAUSE DAMAGE TO THE PITOT PROBE.

- (4) Use the 0-50 psig dry filtered regulated air source, STD-1082 to force air through the line and out the ports on the pitot probe.

SUBTASK 34-11-01-110-002

- (5) If the unwanted material remains, do the steps that follow:
- (a) Do this task: Pitot Probe Removal, TASK 34-11-01-000-801.
 - (b) Soak or flush the pitot probe with clean water.
 - (c) Drain the probe.
 - (d) Repeat these steps until the pitot probe is clean.
 - (e) Do this task: Pitot Probe Installation, TASK 34-11-01-400-801.

SUBTASK 34-11-01-140-003



CAUTION

DO NOT USE THE MOTOR-OPERATED DRILL TO CLEAN THE DRAIN HOLE. DAMAGE TO THE PITOT PROBE CAN OCCUR.



CAUTION

MAKE SURE THE DRILL BIT DOES NOT MAKE THE DRAIN HOLE LARGER WHEN YOU CLEAN IT. DAMAGE TO THE PITOT PROBE CAN OCCUR.

- (6) If the forced air and soak methods do not clean the drain hole, manually insert a 0.026 Inch diameter drill bit, STD-1108 and then a 0.031 Inch diameter drill bit, STD-1109 into the drain hole.

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 704
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Manually insert the 0.031 Inch diameter drill bit, STD-1109 until it touches the internal dam feature, the drain hole debris will be cleaned out of the drain hole.

NOTE: The drain hole extends approximately 0.187 inches deep into the probe shaft (perpendicular) before the drain hole meets an internal dam feature in the pitot probe. Once the 0.031-inch drill bit touches the internal dam feature, the drain hole debris will be cleaned out the drain hole.

SUBTASK 34-11-01-420-014

- (7) Connect the pitot hose fitting at the base of the pitot probe.

- (a) Tighten the pitot hose fitting to 110 in-lb (12 N·m).

SUBTASK 34-11-01-210-005

- (8) Do a visual inspection of the quick-disconnect fittings that you connected.

- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

F. Clean the Outer Surface of the Pitot Probe

SUBTASK 34-11-01-110-003



DO NOT PERMIT SOLVENTS, OIL, OR GREASE TO GET ON THE PITOT PROBE. SOLVENTS, OIL, OR GREASE CAN CAUSE DAMAGE TO THE PITOT PROBE.

- (1) Use clean water to remove unwanted materials from the outer surface of the pitot probe.

SUBTASK 34-11-01-940-001

- (2) Dry the pitot probe with a cotton wiper, G00034.

SUBTASK 34-11-01-860-008

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	5	C30405	PH B PITOT PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C30404	PH B PITOT PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
E	20	C30406	PH B PITOT PROBE HTR C
G	26	C30425	PH C PITOT PROBE HTR C

G. Installation Test

SUBTASK 34-11-01-860-009

- (1) Do this task Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 34-11-01-790-002

- (2) Do the low-range leak test for the applicable pitot probe.
- (a) Do this task: Left Pitot System Leak Test, TASK 34-11-00-700-803
- (b) Do this task: Center Pitot System Leak Test, TASK 34-11-00-700-804

EFFECTIVITY
ARO ALL

34-11-01

D633W101-ARO

Page 705
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(c) Do this task: Right Pitot System Leak Test, TASK 34-11-00-700-805

SUBTASK 34-11-01-710-002

- (3) For the probe heater circuit on the pitot probe, do this task: Pitot/Angle of Attack Probe Heat and Current Sensing Relay Operational Test (CMCF Available), TASK 30-31-00-700-802

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-01

Page 706
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL
STATIC PORT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the static port
 - (2) An installation of the static port.

TASK 34-11-02-000-801

2. Static Port Removal

(Figure 401)

A. References

Reference	Title
20-10-23-000-801	Lockwire, Cotter Pins, and Lockrings - Removal (P/B 401)
25-52-06-000-801	Sidewall Liner Removal (P/B 401)

B. Tools/Equipment

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Removal Procedure

SUBTASK 34-11-02-010-001

- (1) For the applicable cargo liner, do this task: Sidewall Liner Removal, TASK 25-52-06-000-801.

SUBTASK 34-11-02-020-001

- (2) Loosen the fitting [1] that connects the hose [2] to the static port [5].

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-02

Page 401
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-02-020-002



CAUTION

DO NOT BEND OR TWIST THE STATIC HOSE [2] WHEN YOU DISCONNECT THE HOSE [2]. A BENT OR TWISTED STATIC HOSE [2] CAN CAUSE THE STATIC SYSTEM TO MALFUNCTION.

- (3) Disconnect the hose [2].

SUBTASK 34-11-02-420-006

- (4) Put a cap on the hose [2] to prevent contamination.

SUBTASK 34-11-02-010-002

- (5) Use the sealant removal tool, COM-2481 to remove the sealant from around the static port [5] and the retaining nut [3].

SUBTASK 34-11-02-020-003

- (6) For the lockwires on the retaining nut [3], do this task: Lockwire, Cotter Pins, and Lockrings - Removal, TASK 20-10-23-000-801.

SUBTASK 34-11-02-020-004



CAUTION

DO NOT CAUSE DAMAGE TO THE OUTER SURFACE OF THE AIRPLANE SKIN. THIS CAN CAUSE THE STATIC SYSTEM TO BE INACCURATE.

- (7) Remove the retaining nut [3] and washer [4].

SUBTASK 34-11-02-020-005

- (8) Remove the static port [5] from its mounting hole.

————— **END OF TASK** —————

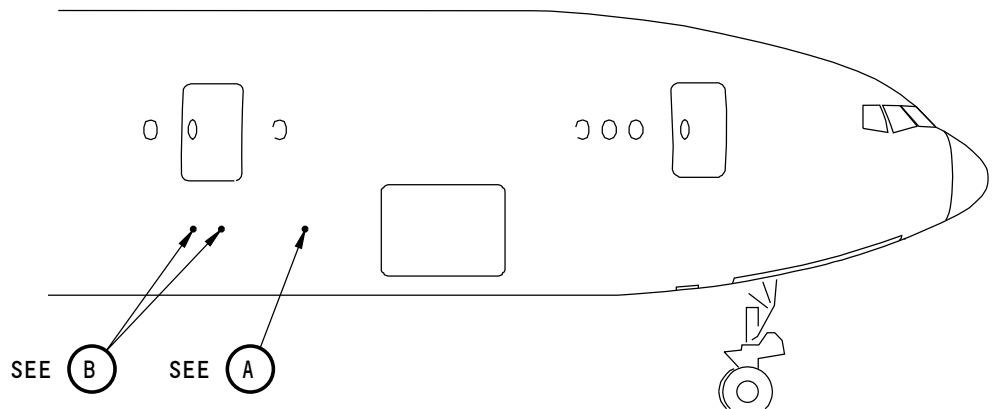
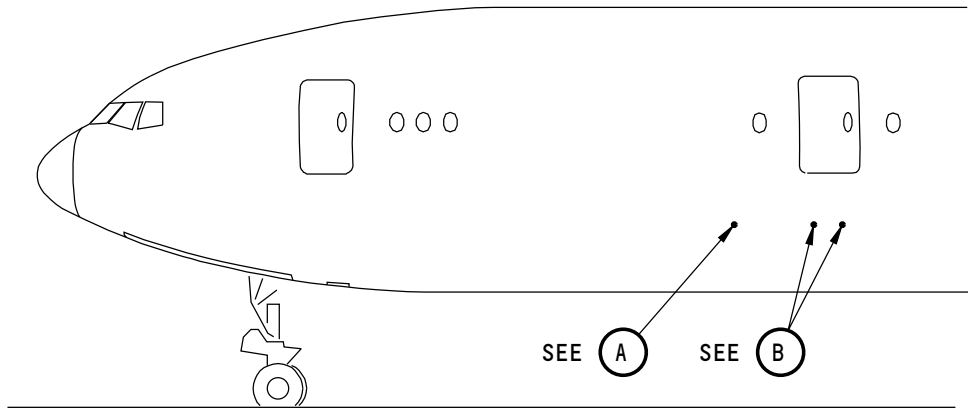
EFFECTIVITY
ARO ALL

34-11-02

D633W101-ARO

Page 402
Sep 05/2017

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



E43922 S0006420508_V1

Static Port Installation
Figure 401/34-11-02-990-801 (Sheet 1 of 2)

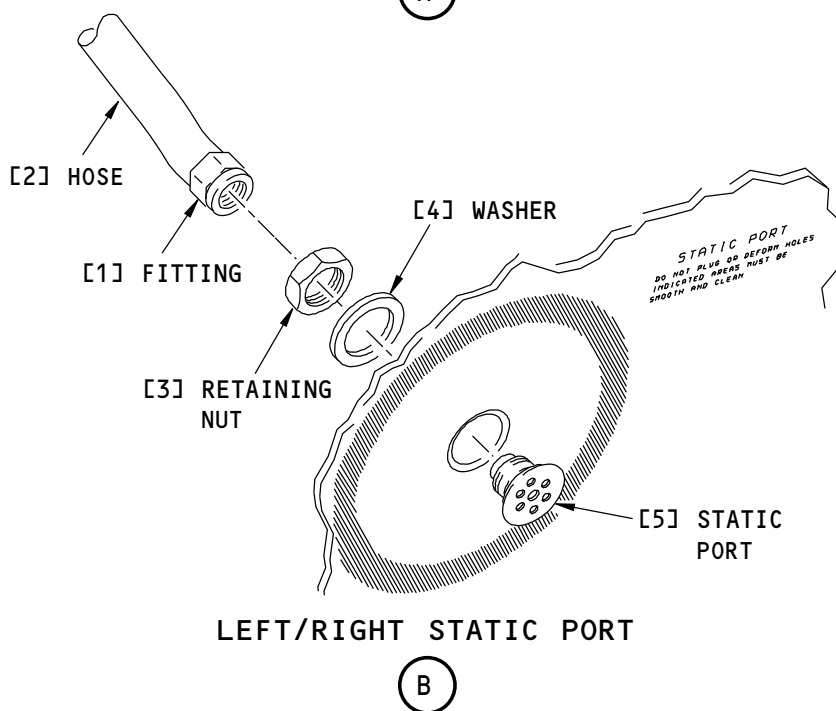
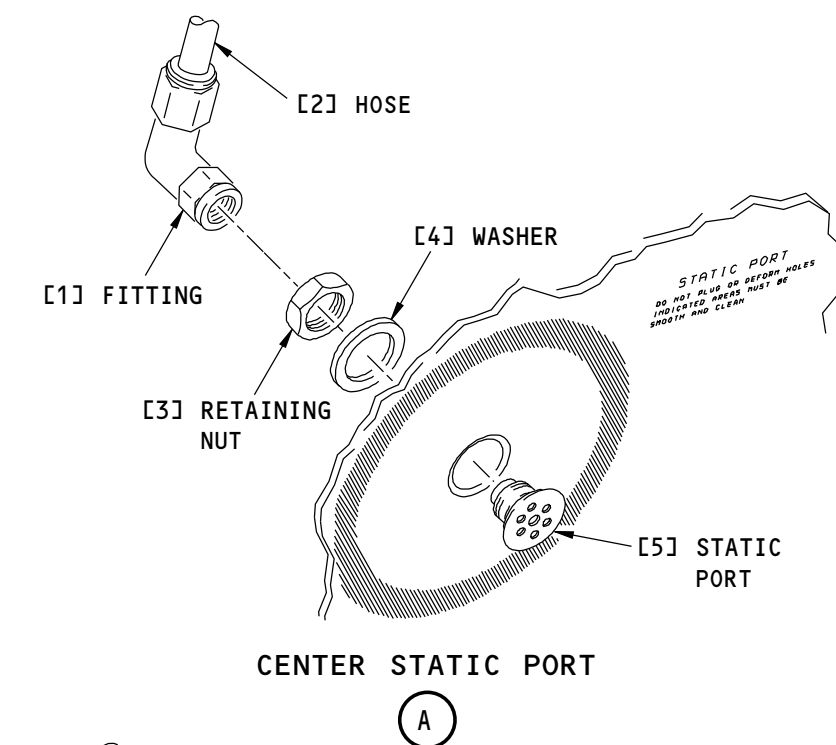
EFFECTIVITY
 ARO ALL

34-11-02

D633W101-ARO

Page 403
 Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



E43954 S0006420509_V1

**Static Port Installation
Figure 401/34-11-02-990-801 (Sheet 2 of 2)**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-11-02

Page 404
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-11-02-400-801

3. Static Port Installation

(Figure 401)

A. References

Reference	Title
20-10-23-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
25-52-06-400-801	Sidewall Liner Installation (P/B 401)
34-11-00-700-801	Center Static System Low-range Leak Test (P/B 501)
34-11-00-700-802	Right Static System Low-range Leak Test (P/B 501)
34-11-00-790-801	Left Static System Low-range Leak Test (P/B 501)
51-10-00-200-801	Examine the Skin Waviness at the Static Ports (P/B 601)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
51-31-01-390-805	Fastener Seal Application (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Static port	34-11-02-02-015	ARO ALL
		34-11-02-02-115	ARO ALL

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Installation Procedure

SUBTASK 34-11-02-420-001

- (1) Put the static port [5] in the mounting hole.

SUBTASK 34-11-02-860-001

- (2) Adjust the static port [5] until the face of the static port [5] is flat with the surface of the airplane skin.

SUBTASK 34-11-02-420-002

- (3) Install the washer [4] and retaining nut [3] on the static port [5].

SUBTASK 34-11-02-420-003

- (4) For the retaining nut [3], do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-23-400-801.

SUBTASK 34-11-02-860-002

- (5) Make the external surface of the static port [5] smooth until it is flat with the airplane skin to + 0.003/- 0.00 inch (TASK 51-10-00-200-801).

SUBTASK 34-11-02-860-003

- (6) Make sure that there are no scratches, burrs, or deformations on the static port [5] finish and around the sensing holes in the static port.

SUBTASK 34-11-02-860-004

- (7) Make sure that no unwanted material is in the static port [5].

EFFECTIVITY
ARO ALL

34-11-02

D633W101-ARO

Page 405
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-11-02-860-005

- (8) For the surface of the static port [5], do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.

SUBTASK 34-11-02-860-007

- (9) For the retaining nut [3] and the static port [5], do this task: Fastener Seal Application, TASK 51-31-01-390-805.

SUBTASK 34-11-02-020-006

- (10) Remove the cap from the hose [2].

SUBTASK 34-11-02-420-004



DO NOT BEND OR TWIST THE STATIC HOSE [2] WHEN YOU CONNECT THE HOSE [2]. A BENT OR TWISTED STATIC HOSE [2] CAN CAUSE THE STATIC SYSTEM TO MALFUNCTION.

- (11) Connect the hose [2] to the static port [5].

SUBTASK 34-11-02-210-004

- (12) Do a visual inspection of the quick-disconnect fittings that you connected.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-11-02-420-005

- (13) Tighten the fitting [1] that connects to the static port [5].

SUBTASK 34-11-02-790-001

- (14) Do the low-range leak test for the applicable static system:
- (a) Do this task: Left Static System Low-range Leak Test, TASK 34-11-00-790-801.
- (b) Do this task: Right Static System Low-range Leak Test, TASK 34-11-00-700-802.
- (c) Do this task: Center Static System Low-range Leak Test, TASK 34-11-00-700-801.

SUBTASK 34-11-02-410-001

- (15) For the applicable sidewall liner, do this task: Sidewall Liner Installation, TASK 25-52-06-400-801

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-11-02

D633W101-ARO

Page 406
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STATIC PORT - INSPECTION/CHECK

1. General

A. This procedure has this task:

- (1) An inspection of the static ports and the skin surface near the port.

TASK 34-11-02-200-801

2. Static Port Inspection

A. References

Reference	Title
34-11-02-000-801	Static Port Removal (P/B 401)
34-11-02-400-801	Static Port Installation (P/B 401)
51-10-00-200-801	Examine the Skin Waviness at the Static Ports (P/B 601)
SRM 51-10-01	Structural Repair Manual
SRM 51-10-03	Structural Repair Manual

B. Tools/Equipment

Reference	Description
STD-757	Steel Scale - 6 in (152.4 mm)
STD-1096	Micrometer - Depth, 0-1 inch, Readable to 1/1000 inch
STD-1097	Caliper - Vernier, 0-6 inch, Readable to 1/1000 inch

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Inspection Procedure

SUBTASK 34-11-02-210-001

- (1) Visually examine the port for damage.
 - (a) Use a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097 to make sure that the depth of any scratches on the port are less than 0.010 inch (0.254 mm).

SUBTASK 34-11-02-210-002

- (2) Visually examine the holes in the port for contamination.

SUBTASK 34-11-02-900-001

- (3) If there is a problem with a primary static port, replace the port.

These are the tasks:

Static Port Removal, TASK 34-11-02-000-801,
Static Port Installation, TASK 34-11-02-400-801.

SUBTASK 34-11-02-900-002

- (4) Measure the step height of the primary static ports.

NOTE: The step height is the distance between the surface of the skin and the primary static port.

EFFECTIVITY
ARO ALL

34-11-02

D633W101-ARO

Page 601
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (a) Use a micrometer (0-1 inch, readable to 1/1000 inch), STD-1096 or a vernier caliper (0 - 6 inch, readable to 1/1000 inch), STD-1097 to make sure that the primary static ports have a step height less than 0.002 inch (0.051mm) below the skin, and less than 0.006 inch (0.152 mm) above the skin.
- (b) If the step height is too low, then replace the port.
These are the tasks:
Static Port Removal, TASK 34-11-02-000-801,
Static Port Installation, TASK 34-11-02-400-801.
- (c) If the step height is too high, then use a microshaving tool to decrease the port step height (SRM 51-10-03).

SUBTASK 34-11-02-210-003

- (5) Visually examine the surface of the airplane skin in a three inch radius around the static port:
 - (a) Use a scale, 6 in (152.4 mm), STD-757 and a set of feeler gages to make sure that the surface of the skin is smooth and does not change more than 0.010 inch (0.254 mm) (TASK 51-10-00-200-801).
 - (b) If the skin is rough, refer to the Structural Repair Manual (SRM 51-10-01).

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-11-02

D633W101-ARO

Page 602
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STANDBY AIR DATA MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the pitot standby air data module.
- (2) An installation of the pitot standby air data module.
- (3) A removal of the static standby air data module.
- (4) An installation of the static standby air data module.

TASK 34-13-03-000-801

2. Pitot Standby Air Data Module Removal

(Figure 401)

A. References

Reference	Title
20-41-01-000-802	Conductive Dust Cap and Connector Cover Installation (P/B 201)
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

B. Location Zones

Zone	Area
114	Nose Landing Gear Wheel Well, Right

C. Removal Procedure

SUBTASK 34-13-03-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-910-001



DO NOT TOUCH THE STANDBY AIR DATA MODULE BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STANDBY AIR DATA MODULE.

- (2) Before you touch the standby air data module [1] - pitot, do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 34-13-03-020-001

- (3) Remove the pitot standby air data module [1]:
 - (a) Disconnect the electrical connector [3] from the module [1].
 - (b) Do this task: Conductive Dust Cap and Connector Cover Installation, TASK 20-41-01-000-802.
 - (c) Disconnect the quick-disconnect [4] from the module [1].
 - (d) Put a protective cover on the quick-disconnect [4] on the front of the module [1].
 - (e) Hold the module [1].
 - (f) Loosen the four captive screws [5] at each corner of the module [1].

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 401
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (g) Remove the module [1] from the bracket [2].

———— **END OF TASK** ————

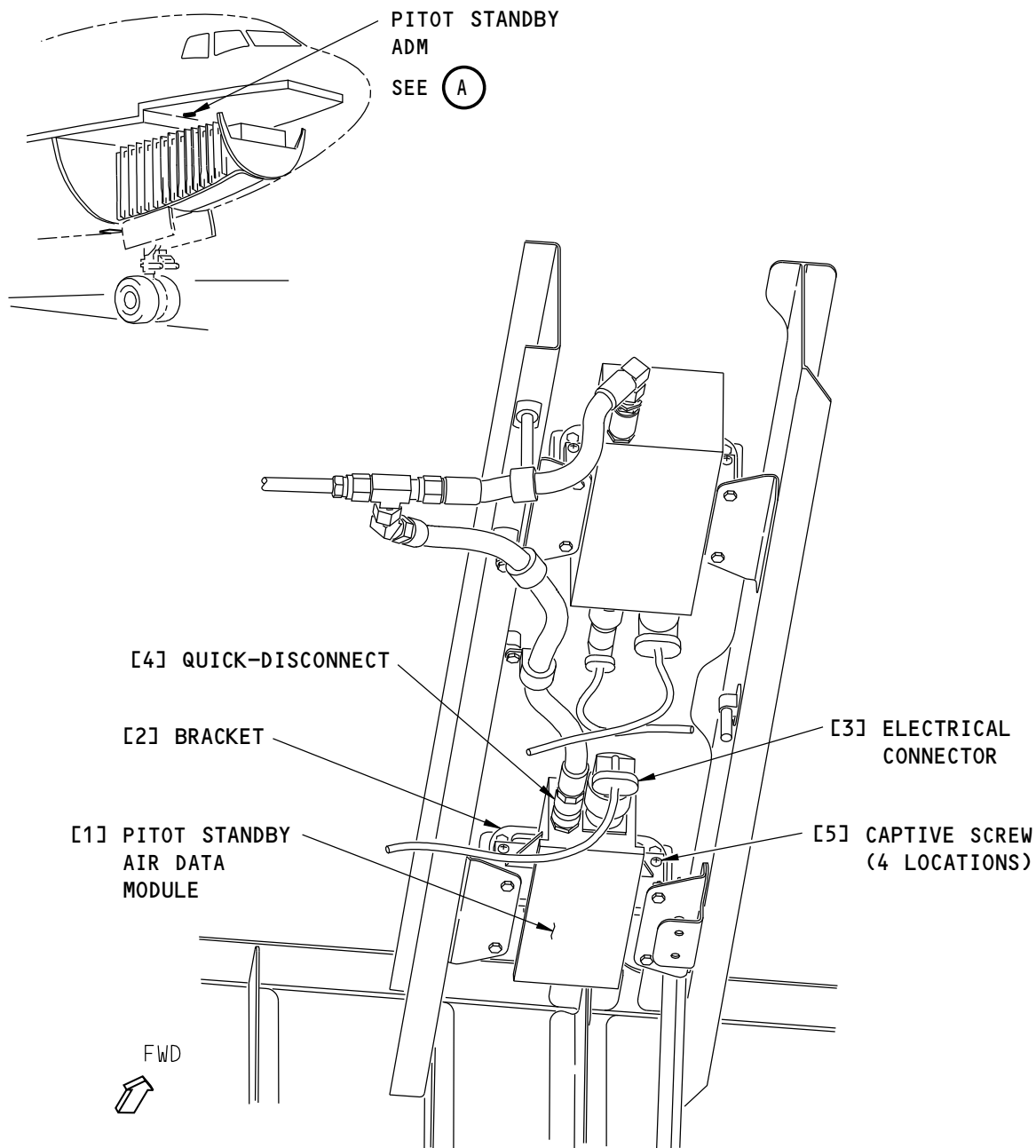
EFFECTIVITY
ARO ALL

D633W101-ARO

34-13-03

Page 402
Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



PITOT STANDBY ADM

(A)

L64983 S0006420533_V1

**Standby Air Data Module (ADM) Installation
Figure 401/34-13-03-990-801**

**EFFECTIVITY
ARO ALL**

34-13-03

D633W101-ARO

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-13-03-400-802

3. Pitot Standby Air Data Module Installation

(Figure 401)

A. General

- (1) You do not have to do a leak test when you connect a quick-disconnect fitting. A visual examination of the quick-disconnect for a complete seal is necessary. You must do a low-range leak test (TASK 34-11-00-700-804) when you cannot make sure that the quick-disconnect has a complete seal.

B. References

Reference	Title
20-41-01-400-802	Conductive Dust Cap and Connector Cover Removal (P/B 201)
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-11-00-700-804	Center Pitot System Leak Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	34-13-03-01-015	ARO ALL
		34-13-03-01-060	ARO ALL
		34-13-03-01-061	ARO 001-014

D. Location Zones

Zone	Area
114	Nose Landing Gear Wheel Well, Right

E. Installation Procedure

SUBTASK 34-13-03-860-007

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-910-004



DO NOT TOUCH THE STANDBY AIR DATA MODULE BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STANDBY AIR DATA MODULE.

- (2) Before you touch the pitot standby air data module [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 34-13-03-420-002

- (3) Install the pitot standby air data module [1]:
 - (a) Put the module [1] into position on the bracket [2].
 - (b) Tighten the four captive screws [5] at each corner of the module [1].
 - (c) Do this task: Conductive Dust Cap and Connector Cover Removal, TASK 20-41-01-400-802.

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (d) Examine the electrical connector [3] for bent or broken pins.
- (e) Connect the electrical connector [3] to the module [1].
- (f) Remove the protective cover from the pitot quick-disconnect [4] on the front of the module [1].
- (g) Connect the pitot quick-disconnect [4] to the module [1].

SUBTASK 34-13-03-210-001

- (4) Do a visual inspection of the quick-disconnect fittings that you connected.
 - (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

F. Installation Test

SUBTASK 34-13-03-860-009

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-13-03-860-011

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-710-001

- (3) Make sure the ISFD has completed its initialization.
 - (a) Make sure that attitude is displayed

NOTE: If ISFD goes through an initialization, it may take six minutes to complete.

SUBTASK 34-13-03-710-002

- (4) Make sure that the ALT and SPD fault flags on the ISFD go out and are replaced with altitude and airspeed displays.

————— **END OF TASK** —————

TASK 34-13-03-000-802

4. Static Standby Air Data Module Removal

(Figure 402)

A. References

<u>Reference</u>	<u>Title</u>
20-41-01-000-802	Conductive Dust Cap and Connector Cover Installation (P/B 201)
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-09-000-801	Ceiling Liner Removal (P/B 401)

B. Location Zones

<u>Zone</u>	<u>Area</u>
122	Forward Cargo Compartment, Right

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

C. Removal Procedure

SUBTASK 34-13-03-860-002

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-010-001

- (2) For the ceiling liner in the forward cargo compartment located at STA 676, RBL 9.65, do this task: Ceiling Liner Removal, TASK 25-52-09-000-801.

SUBTASK 34-13-03-910-002



DO NOT TOUCH THE STANDBY AIR DATA MODULE BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STANDBY AIR DATA MODULE.

- (3) Before you touch the static standby air data module [1], do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.

SUBTASK 34-13-03-020-002

- (4) Remove the static standby air data module [1]:
- (a) Disconnect the electrical connector [3] from the module [1].
 - (b) Do this task: Conductive Dust Cap and Connector Cover Installation, TASK 20-41-01-000-802.
 - (c) Disconnect the quick-disconnect [4] from the module [1].
 - (d) Put a protective cover on the quick-disconnect [4] on the front of the module [1].
 - (e) Hold the module [1].
 - (f) Loosen the four captive screws [5] at each corner of the module [1].
 - (g) Remove the static standby air data module [1] from the bracket [2].

————— END OF TASK —————

EFFECTIVITY
ARO ALL

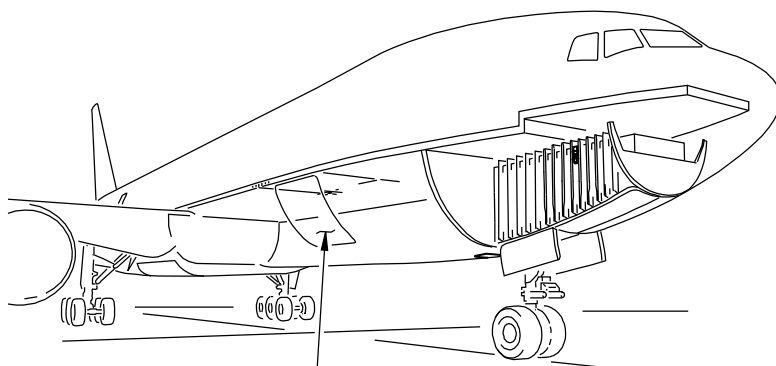
34-13-03

D633W101-ARO

Page 406
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

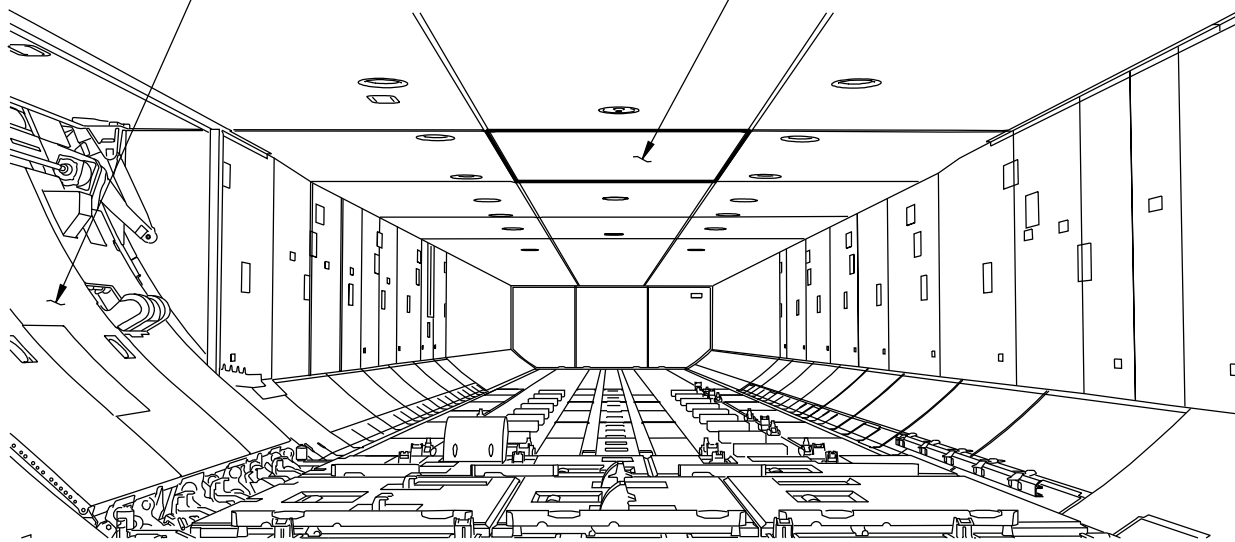


CARGO
COMPARTMENT
SEE (A)

STATIC STANDBY
AIR DATA MODULE
(BEHIND CEILING LINER)

SEE (B)

CARGO
DOOR



FWD

CARGO COMPARTMENT

(A)

E44539 S0006420536_V1

Standby Air Data Module Installation
Figure 402/34-13-03-990-802 (Sheet 1 of 2)

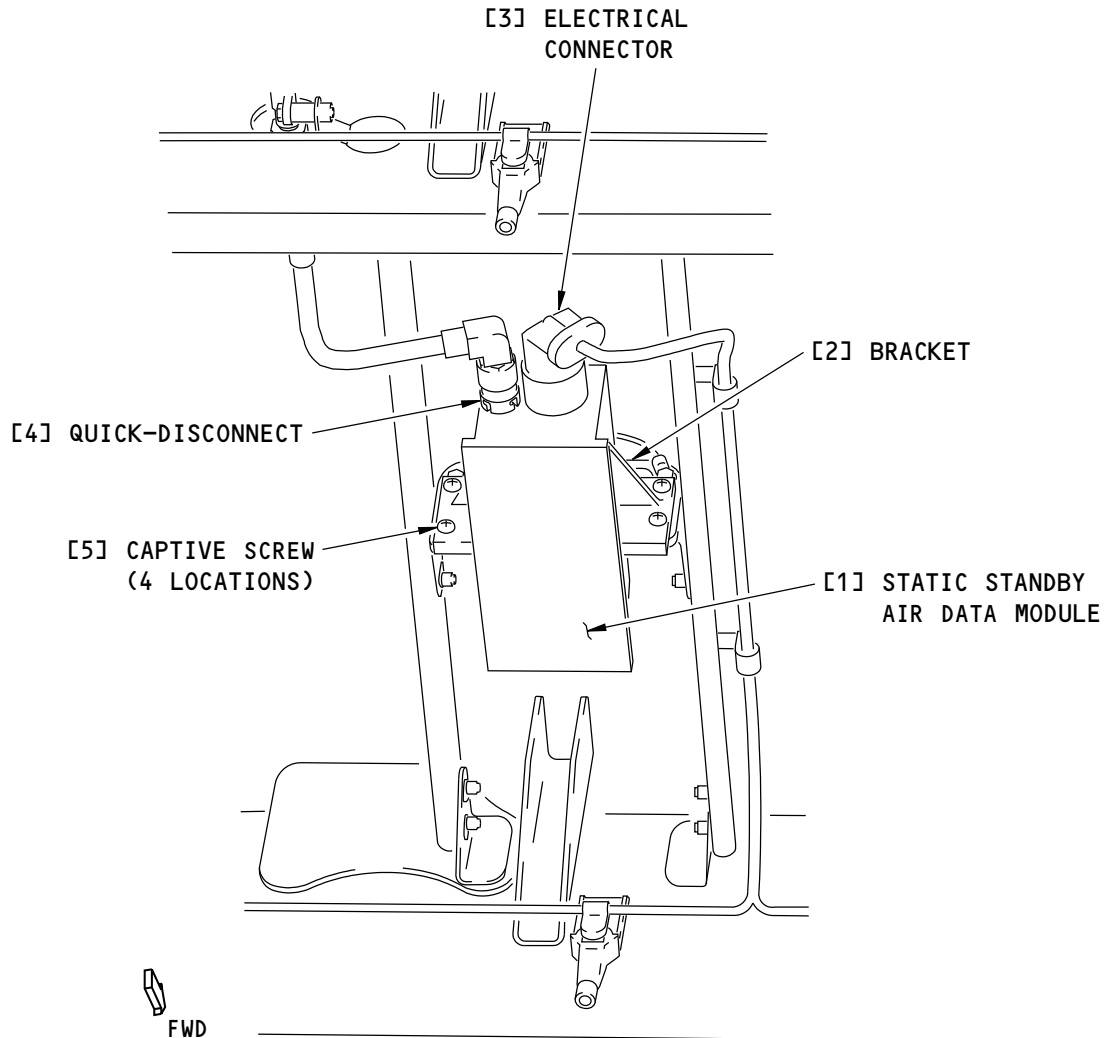
EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 407
Jan 05/2015

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



STATIC STANDBY AIR DATA MODULE

(B)

E31078 S0006420537_V1

Standby Air Data Module Installation
Figure 402/34-13-03-990-802 (Sheet 2 of 2)

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 408
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-13-03-400-801

5. Static Standby Air Data Module Installation

(Figure 402)

A. General

- (1) You do not have to do a leak test when you connect a quick-disconnect fitting. A visual examination of the quick-disconnect for a complete seal is necessary. You must do a low-range leak test (TASK 34-11-00-700-801) when you cannot make sure that the quick-disconnect has a complete seal.

B. References

Reference	Title
20-41-01-400-802	Conductive Dust Cap and Connector Cover Removal (P/B 201)
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-09-400-801	Ceiling Liner - Installation (P/B 401)
34-11-00-700-801	Center Static System Low-range Leak Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Module	34-13-03-01-015	ARO ALL
		34-13-03-01-060	ARO ALL
		34-13-03-01-061	ARO 001-014

D. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right

E. Installation Procedure

SUBTASK 34-13-03-860-003

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-910-003

 CAUTION	DO NOT TOUCH THE STANDBY AIR DATA MODULE BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE STANDBY AIR DATA MODULE.

- (2) Before you touch the static standby air data module [1], do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.

SUBTASK 34-13-03-420-001

- (3) Install the static standby air data module [1]:
 - (a) Put the module [1] into position on the bracket [2].
 - (b) Tighten the four captive screws [5] at each corner of the module [1].

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 409
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (c) Do this task: Conductive Dust Cap and Connector Cover Removal, TASK 20-41-01-400-802.
- (d) Examine the electrical connector [3] for bent or broken pins.
- (e) Connect the electrical connector [3] to the module [1].
- (f) Remove the protective cover from the quick-disconnect [4] on the front of the module [1].
- (g) Connect the quick-disconnect [4] to the module [1].

SUBTASK 34-13-03-210-002

- (4) Do a visual inspection of the quick-disconnect fittings that you connected.
 - (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-13-03-410-001

- (5) For the ceiling liner in the forward cargo compartment located at STA 676, RBL 9.65, do this task: Ceiling Liner - Installation, TASK 25-52-09-400-801.

F. Installation Test

SUBTASK 34-13-03-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-13-03-860-010

- (2) Close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-13-03-710-005

- (3) Make sure the ISFD has completed its initialization.
 - (a) Make sure that attitude is displayed

NOTE: If ISFD goes through an initialization, it may take six minutes to complete.

SUBTASK 34-13-03-710-006

- (4) Make sure that the ALT and SPD fault flags on the ISFD go out and are replaced with altitude and airspeed displays.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-13-03

D633W101-ARO

Page 410
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ALTITUDE ALERT SYSTEM - ADJUSTMENT/TEST

1. **General**

A. This procedure has one task. The task is to do an operational test of the Altitude Alert System.

TASK 34-16-00-730-801

2. **Altitude Alert System - Operational Test**

(Figure 501)

A. General

(1) This procedure makes sure that the altitude alert system is operational.

B. References

Reference	Title
22-11-00-730-801	Autopilot Flight Director System (AFDS) - System Test (P/B 501)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-41-00-710-801	Airplane Information Management System (AIMS) - Operational Test (P/B 501)
31-51-00-730-801	Warning Electronic System - System Test (P/B 501)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)

C. Location Zones

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

D. Prepare for the Test

SUBTASK 34-16-00-860-001

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-16-00-860-002

(2) Make sure the Warning Electronic System is on (TASK 31-51-00-730-801).

SUBTASK 34-16-00-860-003

(3) Make sure the Primary Display System is on (TASK 31-61-00-710-801).

SUBTASK 34-16-00-860-004

(4) Make sure the Air Data Inertial Reference System is on (TASK 34-21-00-820-801).

SUBTASK 34-16-00-860-005

(5) Make sure the Autopilot/Flight Director System is on (TASK 22-11-00-730-801).

SUBTASK 34-16-00-860-006

(6) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

SUBTASK 34-16-00-860-007

(7) Set the parking brake.

EFFECTIVITY
ARO ALL

34-16-00

D633W101-ARO

Page 501
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-16-00-860-011



WARNING

DO NOT SET THE FUEL CONTROL SWITCH TO RUN BEFORE YOU OPEN THE APPLICABLE CIRCUIT BREAKERS. FUEL IN THE COMBUSTION CHAMBER CAN CAUSE A FIRE WHICH CAN INJURE PERSONS OR DAMAGE AN ENGINE.

- (8) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C74401	L ENG STBY IGN 1
A	5	C28001	L ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
E	1	C74403	L ENG IGN 1
E	14	C74405	L ENG IGN 2

SUBTASK 34-16-00-860-012

- (9) Set the FUEL CONTROL switch for the left engine to RUN.

SUBTASK 34-16-00-860-008

- (10) Make sure that these circuit breakers are closed:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C31001	WARNING SPEAKER-L
C	14	C31606	WARNING SPEAKER-R

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	13	C31652	WEU R1
M	14	C31654	WEU R2

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C31653	WEU L1
C	9	C31655	WEU L2
C	10	C27636	WARN SPKR/STICK SHAKER-L

E. Altitude Alert System - Operational Test

SUBTASK 34-16-00-750-001

- (1) Make sure these indications show on the primary flight displays (PFDs):
- (a) A barometric altitude tape
 - (b) A selected altitude numeric display above the tape
 - (c) A white altitude readout box.

SUBTASK 34-16-00-750-002

- (2) Make sure the EICAS caution message, ALTITUDE ALERT, does not show on the primary EICAS display.

SUBTASK 34-16-00-750-003

- (3) Make sure you do not hear the caution aural warning.

EFFECTIVITY
ARO ALL

34-16-00

D633W101-ARO

Page 502
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-16-00-970-001

- (4) Record the barometric altitude from the PFDs.

SUBTASK 34-16-00-860-009

- (5) Use the altitude select control on the mode control panel (MCP) to set the selected altitude to 1000 feet above the barometric altitude.

SUBTASK 34-16-00-750-004

- (6) Use the altitude select control on the MCP to slowly decrease the selected altitude.
 - (a) Make sure these indications show on the PFDs when the selected altitude value goes thru an altitude 900 feet above the barometric altitude:
 - 1) A chord aural warning comes on for 2 seconds
 - 2) A thicker white altitude readout box
 - 3) A white highlight box around the selected altitude.

SUBTASK 34-16-00-750-005

- (7) Continue to decrease the selected altitude until the selected altitude value goes thru an altitude 200 feet above the barometric altitude.
 - (a) Make sure these indications show on the PFDs:
 - 1) A white altitude readout box
 - 2) A highlight box does not show around the selected altitude.

SUBTASK 34-16-00-750-006

- (8) Use the altitude select control on the MCP to slowly increase the selected altitude.
 - (a) Make sure these indications occur when the selected altitude value goes thru an altitude 200 feet above the barometric altitude:
 - 1) The EICAS caution message, ALTITUDE ALERT, shows on the primary EICAS display
 - 2) The master caution lights come on
 - 3) The altitude readout box changes to yellow
 - 4) The caution aural warning comes on.

SUBTASK 34-16-00-750-007

- (9) Continue to increase the selected altitude to a value of 900 feet above the barometric altitude.
 - (a) Make sure these indications show on the PFDs:
 - 1) A white altitude readout box
 - 2) The highlight box does not show around the selected altitude.
 - (b) Make sure the EICAS caution message, ALTITUDE ALERT, does not show on the primary EICAS display.
 - (c) Make sure you do not hear the caution aural warning.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 34-16-00-860-015

- (1) Set the FUEL CONTROL switch for the left engine to CUTOFF.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-16-00

Page 503
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-16-00-860-013

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C74401	L ENG STBY IGN 1
A	5	C28001	L ENGINE FUEL SPAR VALVE
B	4	C76601	L ENG FUEL VALVE
E	1	C74403	L ENG IGN 1
E	14	C74405	L ENG IGN 2

———— **END OF TASK** ————

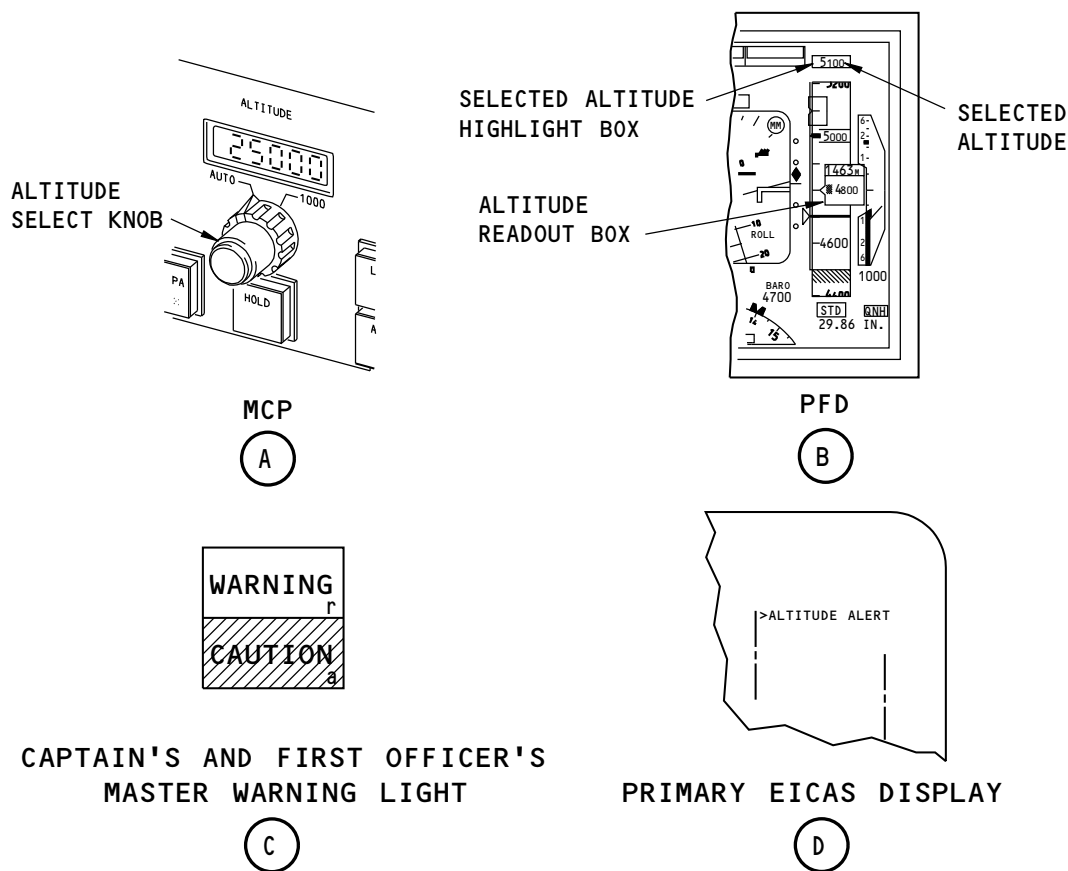
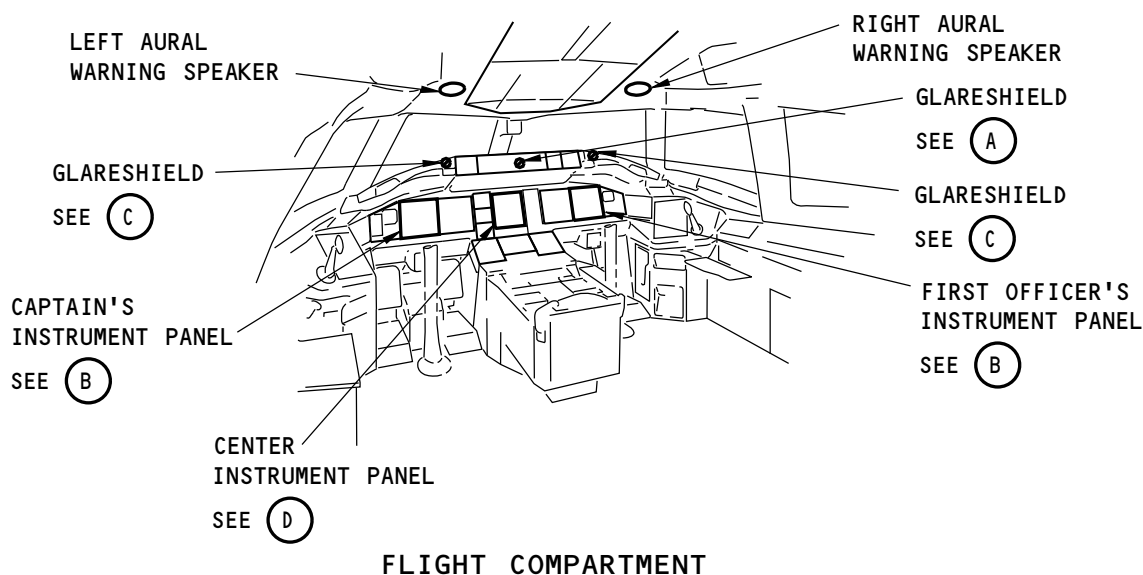
EFFECTIVITY
ARO ALL

D633W101-ARO

34-16-00

Page 504
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



C48207 S0006420543_V1

Altitude Alert System Component Location
Figure 501/34-16-00-990-801

EFFECTIVITY
ARO ALL

34-16-00

D633W101-ARO

Page 505
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

AIR DATA INERTIAL REFERENCE SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has two tasks. The first task is to align the air data inertial reference unit (ADIRU). The second task is to align the secondary attitude air data reference unit (SAARU).
- (1) Air Data Inertial Reference Unit Deactivation.
 - (2) Air Data Inertial Reference Unit Activation.
 - (3) Align the air data inertial reference unit (ADIRU).
 - (4) Align the secondary attitude air data reference unit (SAARU).

TASK 34-21-00-040-801

2. Air Data Inertial Reference Unit - Deactivation

A. **General**

- (1) This task removes electrical power from the following components of the Air Data Inertial Reference Unit:
- (a) Air Data Inertial Reference Unit
 - (b) Secondary Attitude Air Data Reference Unit

B. **Tools/Equipment**

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. **Access Panels**

Number	Name/Location
117AL	Main Equipment Center Access Door

E. **Procedure**

SUBTASK 34-21-00-860-039

- (1) At the pilot's overhead panel, P5, put the ADIRU switch is in the OFF position and attach a DO NOT OPERATE tag, STD-858.

SUBTASK 34-21-00-010-001

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

SUBTASK 34-21-00-860-040

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	25	C34617	ADIRU PRI PWR L

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 201
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

F. Air Data Inertial Reference Unit - Tryout

NOTE: This tryout is to make sure the Air Data Inertial Reference Unit is in a zero energy state.

SUBTASK 34-21-00-860-041

- (1) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-00-700-001

- (2) Use a maintenance access terminal (MAT) to do the operational test of the ADIRU.
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Air Data Inertial Reference System
 - 5) SYSTEM TEST
 - 6) Air Data Inertial Reference System
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 202
Jan 05/2016



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (c) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

————— END OF TASK —————

TASK 34-21-00-440-801

3. Air Data Inertial Reference Unit - Activation

A. General

- (1) This task adds electrical power to the following components of the Air Data Inertial Reference Unit:
- (a) Air Data Inertial Reference Unit
 - (b) Secondary Attitude Air Data Reference Unit

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-21-00-860-042

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

Left Power Management Panel, P110

Row	Col	Number	Name
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

Row	Col	Number	Name
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

Row	Col	Number	Name
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-00-860-043

- (2) At the pilot's overhead panel, P5, put the ADIRU switch is in the ON position and remove the DO NOT OPERATE tag, STD-858.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 203
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-00-820-801

4. Air Data Inertial Reference Unit - Alignment

(Figure 201)

A. General

- (1) This procedure shows how to set the present position for ADIRU alignment.
- (2) You cannot move the airplane while you align the ADIRU.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-41-00-710-801	Airplane Information Management System (AIMS) - Operational Test (P/B 501)
31-61-00-730-801	Primary Display System - System Test (P/B 501)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-21-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-00-860-002

- (2) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

SUBTASK 34-21-00-860-003

- (3) Make sure the Primary Display System is on (TASK 31-61-00-730-801).

SUBTASK 34-21-00-860-005

- (4) Make sure that these circuit breakers are closed:

Left Power Management Panel, P110

Row	Col	Number	Name
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

Row	Col	Number	Name
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

Row	Col	Number	Name
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-00-860-006

- (5) Set the ADIRU switch on the overhead panel, P5, to the ON position.

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 204
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure the EICAS memo message, ADIRU ALIGN MODE, shows on the primary EICAS display.

SUBTASK 34-21-00-860-007

- (6) Push the INIT REF key on a control display unit (CDU).

SUBTASK 34-21-00-860-008

- (7) Push the line-select-key (LSK) adjacent to the <INDEX prompt.
 - (a) Make sure the CDU shows the INIT/REF INDEX page.

SUBTASK 34-21-00-860-009

- (8) Push the LSK adjacent to the <POS prompt.
 - (a) Make sure the CDU shows the POS INIT page.

SUBTASK 34-21-00-860-010

- (9) Push the CLR key on the CDU to erase the scratch pad.

SUBTASK 34-21-00-860-011

- (10) Put the latitude and longitude data in the scratch pad line of the CDU.

NOTE: Do not put a space between the latitude and longitude. The format of the latitude and longitude data is as follows:

Latitude and Longitude: XDDMM.MYDDMM.M

X is N or S for latitude

Y is E or W for longitude

D is the number of degrees

M is the number of minutes

SUBTASK 34-21-00-860-012

- (11) Push the LSK adjacent to the SET INERTIAL POS message on the CDU.
 - (a) After the ADIRU is aligned, make sure the EICAS memo message, ADIRU ALIGN MODE, does not show on the primary EICAS display.

NOTE: The ADIRU can take up to 15 minutes to align.

————— **END OF TASK** —————

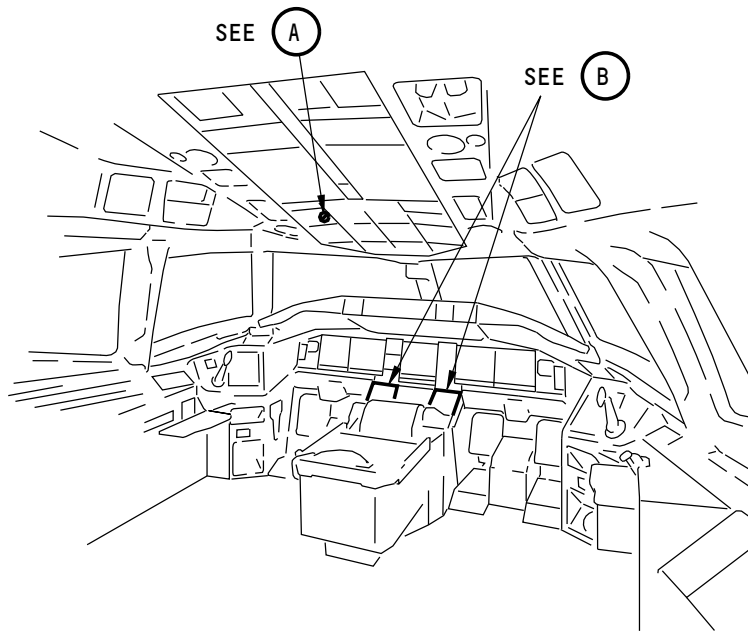
EFFECTIVITY
ARO ALL

34-21-00

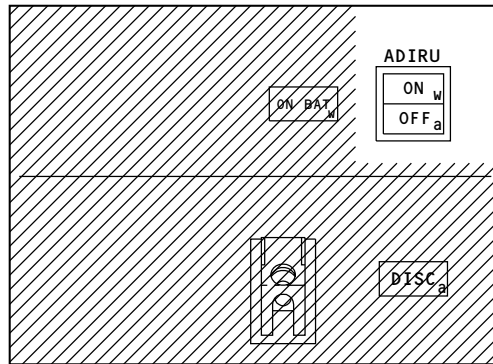
D633W101-ARO

Page 205
Jan 05/2016

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL

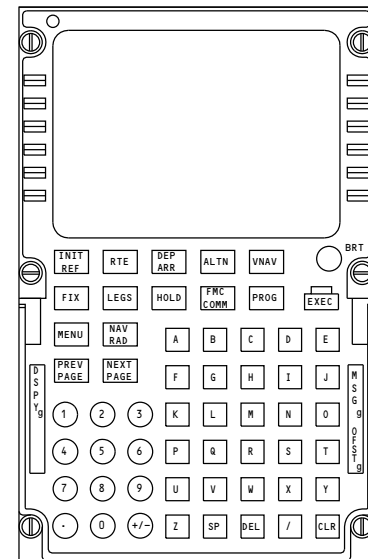


FLIGHT COMPARTMENT



ADIRU SWITCH

(A)



CONTROL DISPLAY UNIT (CDU)

(B)

C73832 S0006420548_V1

ADIRS - Initialization
Figure 201/34-21-00-990-801

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 206
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-00-820-802

5. Secondary Attitude Air Data Reference Unit - Alignment

A. General

- (1) This procedure shows how to align the SAARU.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-41-00-710-801	Airplane Information Management System (AIMS) - Operational Test (P/B 501)
31-61-00-730-801	Primary Display System - System Test (P/B 501)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-21-00-860-013

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-00-860-014

- (2) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

SUBTASK 34-21-00-860-015

- (3) Make sure the Primary Display System is on (TASK 31-61-00-730-801).

SUBTASK 34-21-00-860-016

- (4) Make sure that these circuit breakers are closed:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

- (a) On the power supply assembly center, M24301:

- 1) C01, STBY IND
- 2) C03, SAARU

SUBTASK 34-21-00-860-017

- (5) After the SAARU is aligned, make sure the ATT flag does not show on the standby attitude display.

NOTE: The SAARU can take up to 5 minutes to align.

SUBTASK 34-21-00-860-018

- (6) Make sure the horizon line shows on the standby attitude display.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 207
Jan 05/2016



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-00-820-803

6. Mach Bias Modification Procedure

Figure 202

A. General

- (1) This procedure provides instruction to change the Mach Bias factor. The Mach Bias function modifies the ADIRU Mach number output to improve agreement between the flight deck instruments derived fuel mileage and performance manual predicted fuel mileage. Mach Bias will allow maintenance personnel to input a Mach factor between 0.000 and 0.005 Mach, in 0.001 increments. The input will consist of a CDU entry of a single digit from 0 to 5, corresponding to the entered bias value in units of Milli-Mach. The applied bias will decrease linearly from the entered value at 0.83 Mach, to 0.000 at 0.75 Mach, with no bias applied below 0.75 Mach.

B. Location Zones

Zone	Area

211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-21-00-869-001

- (1) Do these steps to change the Mach Bias:
- (a) Push the INIT REF pushbutton.
 - (b) Push the LSK next to INDEX.
 - (c) Push the LSK next to IDENT and verify aircraft model & engine type.
 - (d) Push the INIT REF pushbutton.
 - (e) Push the LSK next to INDEX.
 - (f) Push the LSK next to MAINT.
 - (g) Push the LSK next to INERTIAL MONITOR.
 - (h) Push the LSK next to MACH BIAS.
 - (i) Enter Mach Bias value into scratch pad.

NOTE: Contact Flight Operations or Flight Dispatch to obtain the appropriate Mach Bias value for a given airplane. If no value is provided then enter the recommended mach bias value in table below.

Default Mach Bias Value (If dash (-) is shown on CDU INERTIAL MONITOR page)	Recommended Mach Bias Value
0	3

- (j) Push the LSK 5L.

SUBTASK 34-21-00-869-002

- (2) Put the Airplane Back to its Usual Condition.

————— END OF TASK —————

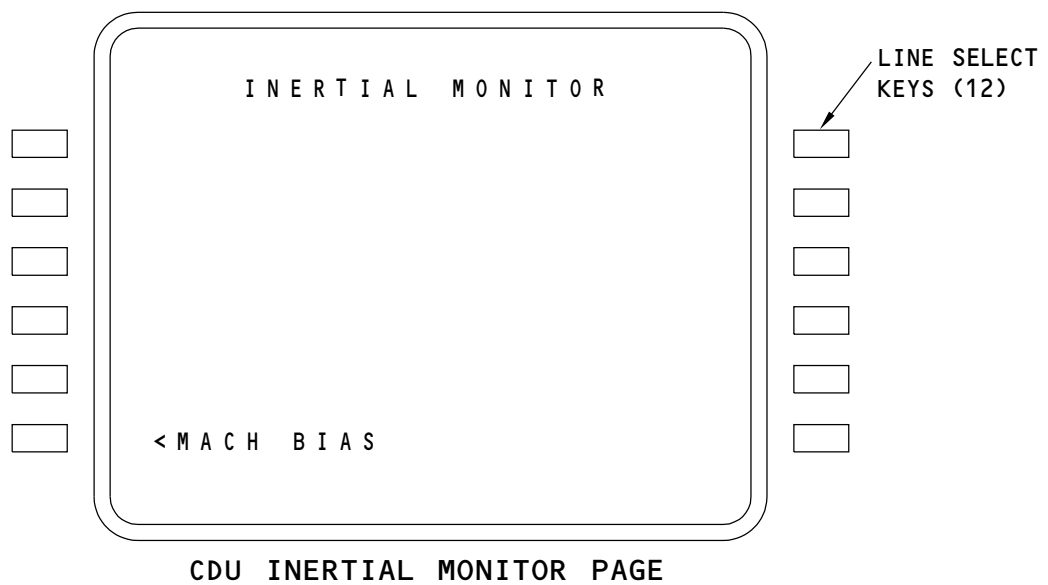
EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 208
Sep 05/2016

 BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



U55884 S0000207560_V1

Mach Bias Input
Figure 202/34-21-00-990-802

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-00

Page 209
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

AIR DATA INERTIAL REFERENCE SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has two tasks:

- (1) The air data inertial reference system (ADIRS) - system test
- (2) The air data sensor - system test.

TASK 34-21-00-730-801

2. Air Data Inertial Reference System - System Test

A. General

- (1) This procedure does a full system test of the ADIRS.
- (2) The configuration check makes sure that the ADIRS has correct software.
- (3) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
27-02-01-400-801	Primary Flight Computer (PFC) Reset Test (P/B 501)
31-41-00-710-801	Airplane Information Management System (AIMS) - Operational Test (P/B 501)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
34-21-01-420-801	Air Data Inertial Reference Unit (ADIRU) Software Installation (P/B 201)
34-21-02-420-801	Secondary Attitude Air Data Reference Unit (SAARU) Software Installation (P/B 201)
34-21-03-420-801	Air Data Module (ADM) Software Installation (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. System Test

SUBTASK 34-21-00-860-019

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-00-860-030

- (2) Make sure the ADIRU switch on the overhead panel, P5, is in the OFF position.

SUBTASK 34-21-00-860-020

- (3) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

SUBTASK 34-21-00-860-021

- (4) Make sure the Primary Flight Computers are on (TASK 27-02-01-400-801).

SUBTASK 34-21-00-860-022

- (5) Make sure the Primary Display System is on (TASK 31-61-00-710-801).

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-00-860-023

- (6) Make sure these circuit breakers are closed:
- (a) On the power supply assembly left, M24101:
 - 1) C07, PITOT ADM
 - 2) C09, STATIC ADM
 - (b) On the power supply assembly right, M24201:
 - 1) C07, PITOT ADM
 - 2) C09, STATIC ADM
 - (c) On the power supply assembly center, M24301:
 - 1) C01, STBY IND
 - 2) C03, SAARU
 - 3) C07, PITOT ADM
 - 4) C09, STATIC ADM

SUBTASK 34-21-00-860-024

- (7) Make sure that these circuit breakers are closed:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	8	C34501	AOA RESOLVER 1
P	25	C34617	ADIRU PRI PWR L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	22	C34502	AOA RESOLVER 2
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-00-750-001

- (8) Set the ADIRU switch on the overhead panel, P5, to the ON position.
- (a) Make sure these EICAS status messages do not show on the multi-function display (MFD):
 - 1) ADIRU
 - 2) AOA VANE L
 - 3) AOA VANE R

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 502
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 4) PITOT ADM C
 - 5) PITOT ADM L
 - 6) PITOT ADM R
 - 7) SAARU
 - 8) STATIC ADM C
 - 9) STATIC ADM L
 - 10) STATIC ADM R
 - 11) TAT.
- (b) Make sure the NAV ADIRU INERTIAL caution message does not show on the primary EICAS display.
- (c) Make sure the ATT flag does not show on the standby attitude display.
- NOTE: This can take up to 4 minutes.

E. Configuration Check

SUBTASK 34-21-00-750-003

- (1) Use a maintenance access terminal (MAT) to do a software configuration check of the ADIRS:

NOTE: Make sure you know the correct software part numbers for the ADIRS when you look at the software part numbers on the display. For the ADIRS to be an approved installation, the correct software part numbers must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Air Data Inertial Reference System
 - 5) CONTINUE
- (b) Do these steps if these messages show: CONFIGURATION DATA NOT AVAILABLE. CANNOT CONNECT TO Air Data Inertial Reference System. Air Data Inertial Reference System DOES NOT GIVE A REPLY.
- 1) Set the ADIRU switch on the overhead panel, P5, to the OFF position.
NOTE: The switch needs to be set to the OFF position less than 2 seconds after you select CONTINUE.
 - 2) Make sure these messages show on the MAT: CONFIGURATION DATA NOT AVAILABLE. CANNOT CONNECT TO Air Data Inertial Reference System. Air Data Inertial Reference System IS INACTIVE/FAULTED.
 - 3) Set the ADIRU switch on the overhead panel, P5, to the ON position.
 - 4) Wait 30 seconds.
 - 5) Select SELECT NEW ATA on the MAT.
 - 6) Select 34 Air Data Inertial Reference System.
 - 7) Select CONTINUE.
- (c) Find these items on the display and make sure that the software part numbers are correct:
- 1) Air Data Inertial Reference Unit

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 503
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) Air Data Module (Center Pitot)
 - 3) Air Data Module (Center Static)
 - 4) Air Data Module (Left Pitot)
 - 5) Air Data Module (Left Static)
 - 6) Air Data Module (Right Pitot)
 - 7) Air Data Module (Right Static)
 - 8) Secondary Attitude Air Data Reference Unit.
- (d) Select GO BACK to remove the display.

SUBTASK 34-21-00-750-004

- (2) If one or more part numbers are incorrect, install the correct software in the applicable unit:
- (a) ADIRU (TASK 34-21-01-420-801).
 - (b) ADM (TASK 34-21-03-420-801).
 - (c) SAARU (TASK 34-21-02-420-801).

F. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-00-860-027

- (1) Set the ADIRU switch on the overhead panel, P5, to the OFF position if it is not necessary.

————— END OF TASK —————

TASK 34-21-00-730-802

3. Air Data Sensor - System Test

A. General

- (1) This test does a check of the installation and wiring of the angle of attack vanes and the total air temperature probe.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
27-02-01-400-801	Primary Flight Computer (PFC) Reset Test (P/B 501)
31-41-00-710-801	Airplane Information Management System (AIMS) - Operational Test (P/B 501)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
45-10-00-760-801	How to Use Input Monitoring (P/B 201)
45-10-00-860-810	How to Change the Primary CMCF (P/B 201)
45-10-00-910-810	How to Operate the MAT in the Flight Compartment (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-1917	Fixture - Test, Angle of Attack Sensor, ROSEMOUNT AOA's Part #: J34002-19 Supplier: 81205 Opt Part #: A34012-19 Supplier: 81205 Opt Part #: A34012-24 Supplier: 81205 Opt Part #: J34002-18 Supplier: 81205

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 504
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
STD-1336	Thermometer - Digital, 0-150 +/- 2 Degrees F, with a Probe, Thermocouple or Equivalent

D. Prepare for the Tests

SUBTASK 34-21-00-860-031

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-00-860-032

- (2) Do this task: Airplane Information Management System (AIMS) - Operational Test, TASK 31-41-00-710-801.

SUBTASK 34-21-00-860-033

- (3) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-21-00-860-034

- (4) Do this task: Primary Flight Computer (PFC) Reset Test, TASK 27-02-01-400-801.

SUBTASK 34-21-00-750-005

- (5) Set the ADIRU switch on the overhead panel, P5, to the ON position.

E. AOA Vane Wiring Test

SUBTASK 34-21-00-730-001

- (1) Do these steps to do the AOA vane wiring test:

- (a) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R

- (b) Make sure that this circuit breaker is closed:

Right Power Management Panel, P210

Row	Col	Number	Name
F	22	C34502	AOA RESOLVER 2

- (c) Install the angle of attack probe test fixture, SPL-1917, on the left and right AOA vanes.
- (d) Set the right AOA vane to 0 °.
- (e) Set the left AOA vane to 45 °.
- (f) Put the right CMCF in control (TASK 45-10-00-910-810), (TASK 45-10-00-860-810).
- (g) Use the maintenance access terminal (MAT) to monitor the AOA angle (TASK 45-10-00-760-801).

NOTE: The format for the signal specification follows:

"X"/629/"Bus"/"Label"/"CID"/"Word"-"Word", where

"X" = L or R,

"Bus" = the ARINC 629 Flight Control Bus,

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 505
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

"Label" = the ARINC 629 label,

"CID" = Channel Identification label, and

"Word" = the ARINC 629 word.

- 1) Make these selections on the MAT:
 - a) ONBOARD MAINTENANCE
 - b) OTHER FUNCTIONS
 - c) INPUT MONITORING
 - d) GENERAL INPUT
 - e) CONTINUE
 - 2) Put the cursor in the first direct entry field.
 - 3) Use the keyboard to type the signal specification,
R/629/FC L/405/1/1-1.
 - 4) On the MAT, select RUN to start the input monitoring.
 - a) If you do not see 'SAMPLING' on the MAT, use CID = 7 instead of CID = 1.
NOTE: Left AIMS monitors label 405, CID 1 or 7, word 1, the validity status word, of the left flight control bus.
 - 5) On the MAT, make sure bit 1 of label 405, CID 1 or 7, word 1, is set to 0.
NOTE: Bit 1 of the validity status word set to 0 indicates the AOA signal is valid.
 - 6) Put the cursor in the second direct entry field.
 - 7) Use the keyboard to type the signal specification,
R/629/FC L/405/1/3-3.
 - 8) On the MAT, make these selections to change the units to degrees (TASK 45-10-00-760-801):
 - a) UNITS
 - b) ENGINEERING THROUGH ALIASES
 - c) Alias entry # 3
 - d) CONTINUE.
 - 9) On the MAT, select RUN to start the input monitoring.
 - a) If you do not see 'SAMPLING' on the MAT, use CID = 7 instead of CID = 1.
NOTE: Left AIMS monitors label 405, CID 1 or 7, word 3, the left AOA angle value, of the left flight control bus.
 - b) On the MAT, make sure the left AOA angle is $45 \pm 2^\circ$.
 - 10) Set the left AOA angle to -45° .
 - a) On the MAT, make sure the left AOA angle is $-45 \pm 2^\circ$.
- (h) Remove the safety tag and close this circuit breaker:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	8	C34501	AOA RESOLVER 1

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 506
May 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (i) Open this circuit breaker and install safety tag:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	22	C34502	AOA RESOLVER 2

- (j) On the MAT, make sure bit 1 of label 405, CID 1 or 7, word 1, still sets to 0.
- (k) On the MAT, make sure the left AOA angle still shows $-45 \pm 2^\circ$.
- (l) Set the left AOA vane to 45° .
- 1) On the MAT, make sure the left AOA angle shows $45 \pm 2^\circ$.
- (m) Set the left AOA vane to 0° .
- (n) Set the right AOA vane to 45° .
- (o) Put the left CMCF in control (TASK 45-10-00-860-810).
- (p) Use the MAT to monitor the AOA angle (TASK 45-10-00-760-801).
- 1) Make these selections on the MAT:
- a) ONBOARD MAINTENANCE
- b) OTHER FUNCTIONS
- c) INPUT MONITORING
- d) GENERAL INPUT
- e) CONTINUE
- 2) Put the cursor in the first direct entry field.
- 3) Use the keyboard to type the signal specification,
L/629/FC R/405/2/1-1.
- 4) On the MAT, select RUN to start the input monitoring.
- a) If you do not see 'SAMPLING' on the MAT, use CID = 4 instead of CID = 2.
- NOTE: Right AIMS monitors label 405, CID 2 or 4, word 1, the validity status word, of the right flight control bus.
- 5) On the MAT, make sure bit 1 of label 405, CID 2 or 4, word 1, is set to 0.
- NOTE: Bit 1 of the validity status word set to 0 indicates the AOA signal is valid.
- 6) Put the cursor in the second direct entry field.
- 7) Use the keyboard to type the signal specification,
L/629/FC R/405/2/3-3.
- 8) On the MAT, make these selections to change the units to degrees (TASK 45-10-00-760-801):
- a) UNITS
- b) ENGINEERING THROUGH ALIASES
- c) Alias entry # 3
- d) CONTINUE.
- 9) On the MAT, select RUN to start the input monitoring.
- a) If you do not see 'SAMPLING' on the MAT, use CID = 4 instead of CID = 2.
- NOTE: Right AIMS monitors label 405, CID 2 or 4, word 3, the right AOA angle value, of the right flight control bus.

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 507
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- b) On the MAT, make sure the right AOA angle is $45 \pm 2^\circ$.
- 10) Set the right AOA angle to -45° .
 - a) On the MAT, make sure the right AOA angle is $-45 \pm 2^\circ$.
- (q) Remove the safety tag and close this circuit breaker:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	22	C34502	AOA RESOLVER 2

- (r) Remove the angle of attack probe test fixture, SPL-1917, from the AOA vanes.
- (s) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R

F. TAT Probe Wiring Test

SUBTASK 34-21-00-730-002

- (1) Do these steps to do the TAT probe wiring test:
 - (a) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR
M	24	C30619	TAT PROBE HTR CTRL

- (b) Make sure the SAARU circuit breaker, CBC3, on the E2-6 panel is closed.
- (c) Use the 0-150 +/- 2 degrees F digital thermometer, STD-1336 to measure the ambient air temperature at the TAT probe.
- (d) Record the measured ambient air temperature in degrees Celsius _____.
- (e) Record the total air temperature that shows on the upper EICAS display in degrees Celsius _____.
- (f) Put the right CMCF in control (TASK 45-10-00-860-810).
- (g) Use the maintenance access terminal (MAT) to monitor the total air temperature (TASK 45-10-00-760-801).
 - 1) Make these selections on the MAT:
 - a) ONBOARD MAINTENANCE
 - b) OTHER FUNCTIONS
 - c) INPUT MONITORING
 - d) GENERAL INPUT
 - e) CONTINUE
 - 2) Put the cursor in the first direct entry field.
 - 3) Use the keyboard to type the signal specification,

EFFECTIVITY
ARO ALL

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

34-21-00

Page 508
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

R/629/FC L/405/1/1-1.

- 4) On the MAT, select RUN to start the input monitoring.
 - a) If you do not see 'SAMPLING' on the MAT, use CID = 7 instead of CID = 1.
NOTE: Left AIMS monitors label 405, CID 1 or 7, word 1, the validity status word, of the left flight control bus.

- 5) On the MAT, make sure bit 0 of label 405, CID 1 or 7, word 1, is set to 0.
NOTE: Bit 0 of the validity status word set to 0 indicates the TAT signal is valid.

- 6) Put the cursor in the second direct entry field.
- 7) Use the keyboard to type the signal specification,

R/629/FC L/405/1/2-2.

- 8) On the MAT, change the units to degrees Celsius (TASK 45-10-00-760-801).
 - a) Select UNITS.
 - b) Select ENGINEERING.
 - c) Type the following values on the INPUT MONITORING UNITS page:
LWR BND = -8192,
UPR BND = 8192,
SIGN BIT = 15,
MSB = 14,
LSB = 0,
UNITS = degrees C.
 - d) Select CONTINUE.

- 9) On the MAT, select RUN to start the input monitoring.
 - a) If you do not see 'SAMPLING' on the MAT, use CID = 7 instead of CID = 1.
NOTE: Left AIMS monitors label 405, CID 1 or 7, word 2, the TAT value, of the left flight control bus.
 - b) Record the total air temperature that shows on the MAT in degrees Celsius
_____.

- (h) Put the left CMCF in control (TASK 45-10-00-860-810).

- (i) Use the MAT to monitor the TAT value (TASK 45-10-00-760-801).

- 1) Make these selections on the MAT:
 - a) ONBOARD MAINTENANCE
 - b) OTHER FUNCTIONS
 - c) INPUT MONITORING
 - d) GENERAL INPUT
 - e) CONTINUE
- 2) Put the cursor in the first direct entry field.
- 3) Use the keyboard to type the signal specification,
L/629/FC R/405/2/1-1.
- 4) On the MAT, select RUN to start the input monitoring.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-00

Page 509
May 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- a) If you do not see 'SAMPLING' on the MAT, use CID = 4 instead of CID = 2.
NOTE: Right AIMS monitors label 405, CID 2 or 4, word 1, the validity status word, of the right flight control bus.
- 5) On the MAT, make sure bit 0 of label 405, CID 2 or 4, word 1, is set to 0.
NOTE: Bit 0 of the validity status word set to 0 indicates the TAT signal is valid.
- 6) Put the cursor in the second direct entry field.
- 7) Use the keyboard to type the signal specification,
L/629/FC R/405/2/2-2.
- 8) On the MAT, change the units to degrees Celsius (TASK 45-10-00-760-801).
 - a) Select UNITS.
 - b) Select ENGINEERING.
 - c) Type the following values on the INPUT MONITORING UNITS page:
LWR BND = -8192,
UPR BND = 8192,
SIGN BIT = 15,
MSB = 14,
LSB = 0,
UNITS = degrees C.
 - d) Select CONTINUE.
- 9) On the MAT, select RUN to start the input monitoring.
 - a) If you do not see 'SAMPLING' on the MAT, use CID = 4 instead of CID = 2.
NOTE: Right AIMS monitors label 405, CID 2 or 4, word 2, the TAT value, of the right flight control bus.
- 10) Record the total air temperature that shows on the MAT in degrees Celsius
_____.
- 11) Make sure the temperature between the left and right flight control busses are within one degree of each other.
- 12) Make sure the temperature from the flight control busses is within four degrees of the temperature on the upper EICAS display.
- 13) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR
M	24	C30619	TAT PROBE HTR CTRL

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-00-860-037

- (1) Set the ADIRU switch on the overhead panel, P5, to the OFF position if it is not necessary.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-00

D633W101-ARO

Page 510
May 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

AIR DATA INERTIAL REFERENCE UNIT - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

- (1) An installation of the Air Data Inertial Reference Unit (ADIRU) software.

TASK 34-21-01-420-801

2. Air Data Inertial Reference Unit (ADIRU) Software Installation

A. General

- (1) This procedure tells you how to install software in the Air Data Inertial Reference Unit (ADIRU).
 - (a) The names of the two software parts loaded into an ADIRU:
ADIRU Operational Program Software (OPS)
ADIRU Operational Program Configuration (OPC)
Using the name, the specific software part numbers for an aircraft can be identified in the IPC.
- (2) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the ADIRU needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Air Data Inertial Reference Unit - Installation, TASK 34-21-01-400-801.
- (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.

NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.

- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the ADIRU, the load process first erases the old software and then installs the new software. If you install software directly to the ADIRU from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the ADIRU.

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

ARO 014-999

- (6) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 014-999 (Continued)

- (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

ARO ALL

- (7) The airplane must be on the ground with the engines off before you can install software.
- (8) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-01-400-801	Air Data Inertial Reference Unit - Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
46-13-00-070-801	Mass Storage Device Software Removal (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-5704	Device - Maintenance Part #: G45004-1 Supplier: 81205 Part #: G45004-3 Supplier: 81205 Opt Part #: G45002-20 Supplier: 81205 Opt Part #: G45002-25 Supplier: 81205 Opt Part #: G45002-29 Supplier: 81205 Opt Part #: J45001-1 Supplier: 81205 Opt Part #: J45003-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 34-21-01-860-017

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-01-860-018

- (2) Make sure the ADIRU switch on the overhead panel, P5, is in the ON position.

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 202
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-01-420-002

- (3) Use a MAT or PMAT connected to LH-Airplane Information Management System (AIMS) to install software in the ADIRU:

NOTE: Make sure you know the correct software part number for the ADIRU before you select the software part number on the display. For the ADIRU to be an approved installation, the correct software must be installed.

- (a) If the software is on a disk, put the correct disk in the disk drive.
- (b) Make these selections on the MAT or PMAT:
 - 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) DATA LOAD
- (c) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) 34 Air Data Inertial Reference System
 - 3) Air Data Inertial Reference Unit
 - 4) SELECT ADD
 - 5) CONTINUE
- (d) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) SELECT ADD
 - 5) CONTINUE
- (e) Select START to start the software installation.
- (f) When the software installation is completed, make sure the correct software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.

SUBTASK 34-21-01-860-019

- (4) Set the ADIRU switch on the overhead panel, P5, to the OFF position.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-01

Page 203
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

AIR DATA INERTIAL REFERENCE UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:



DO NOT CHANGE OR REMOVE THE E3-3 SHELF. THE AIR-DATA INERTIAL-REFERENCE UNIT IS A CRITICAL ALIGNMENT. IF YOU DO, THEN YOU WILL HAVE TO DO A REALIGNMENT. YOU MUST USE BOEING AOG PERSONNEL TO DO THIS WITH SPECIAL ALIGNMENT TOOLING. CONTACT BOEING BEFORE YOU CHANGE THE MOUNTING SHELVES.

- (1) A removal of the ADIRU.
- (2) An installation of the ADIRU.

TASK 34-21-01-000-801

2. Air Data Inertial Reference Unit - Removal

(Figure 401)



DO NOT CHANGE OR REMOVE THE E3-3 SHELF. THE AIR-DATA INERTIAL-REFERENCE UNIT IS A CRITICAL ALIGNMENT. IF YOU DO, THEN YOU WILL HAVE TO DO A REALIGNMENT. YOU MUST USE BOEING AOG PERSONNEL TO DO THIS WITH SPECIAL ALIGNMENT TOOLING. CONTACT BOEING BEFORE YOU CHANGE THE MOUNTING SHELVES.

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to remove the ADIRU [1].

NOTE: The air data inertial reference unit is referred to as the Air Data Inertial Reference Unit (ADIRU) in this task.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (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-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1573	Hoist - LRU, Main EE Bay (J20001-52 CE marked per EU Directive 2006/42/EC.) Part #: J20001-62 Supplier: 81205 Part #: J20001-63 Supplier: 81205 Opt Part #: J20001-60 Supplier: 81205

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-01

Page 401
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
SPL-13356	Hoist - LRU, Main EE Bay (CE Marked per EU Directive 2006/42/EC.) Part #: J20001-62 Supplier: 81205 Part #: J20001-63 Supplier: 81205 Opt Part #: J20001-60 Supplier: 81205

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Removal Procedure

SUBTASK 34-21-01-860-008

- (1) Make sure the ADIRU switch on the overhead panel, P5, is in the OFF position.

SUBTASK 34-21-01-860-009

- (2) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

Row	Col	Number	Name
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

Row	Col	Number	Name
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-01-860-010

- (3) To get access to the main equipment center, open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

SUBTASK 34-21-01-860-011

- (4) Install the main EE bay LRU hoist, SPL-1573 or main EE bay LRU hoist, SPL-13356:
 - (a) Use the ball lock pins [9] to install the Line Replaceable Unit (LRU) hoist assembly in the airplane floor beam bracket.
 - (b) Install the fishpole hoist, COM-1582 to the LRU hoist assembly in the keyhole slot [12].

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 402
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-01-020-001

(5) Remove the ADIRU [1]:

- (a) Disconnect the electrical connectors [2] from the ADIRU [1]
- (b) Put protective covers on all electrical connectors [2]
- (c) Loosen the screws [4] that attach the ADIRU [1] to the mounting tray by pushing in and rotating counter-clockwise

NOTE: This allows for the locking bar [3] to be released.

- (d) Lift the locking bar [3] on the front of the ADIRU [1]
- (e) Pull the ADIRU [1] forward
- (f) Install the spreader bar assembly [13] on the side handle [6] of the ADIRU [1]
- (g) Use the fishpole hoist [7] to lift the ADIRU [1] from the E3 rack.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-01

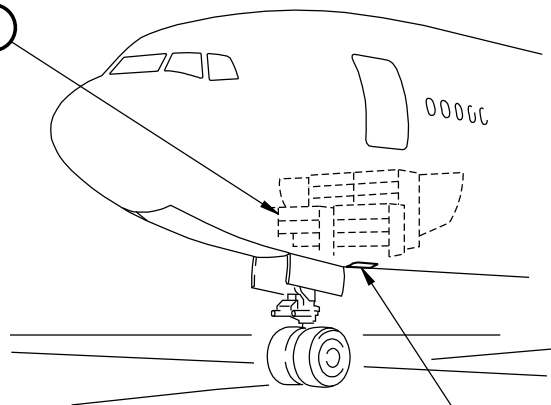
Page 403
May 05/2018



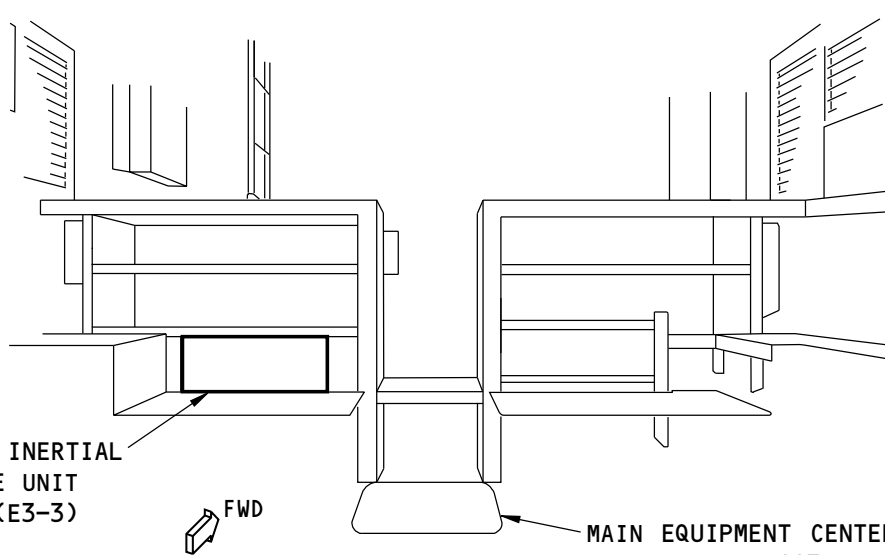
777-200/300
AIRCRAFT MAINTENANCE MANUAL

ELECTRONIC
EQUIPMENT
RACKS, E3,E4

SEE (A)



MAIN EQUIPMENT
CENTER ACCESS
DOOR, 117AL



AIR DATA INERTIAL
REFERENCE UNIT
(ADIRU) (E3-3)

SEE (B)

FWD

MAIN EQUIPMENT CENTER
ACCESS DOOR, 117AL

ELECTRONIC EQUIPMENT RACKS, E3,E4

(A)

D03728 S0006420558_V1

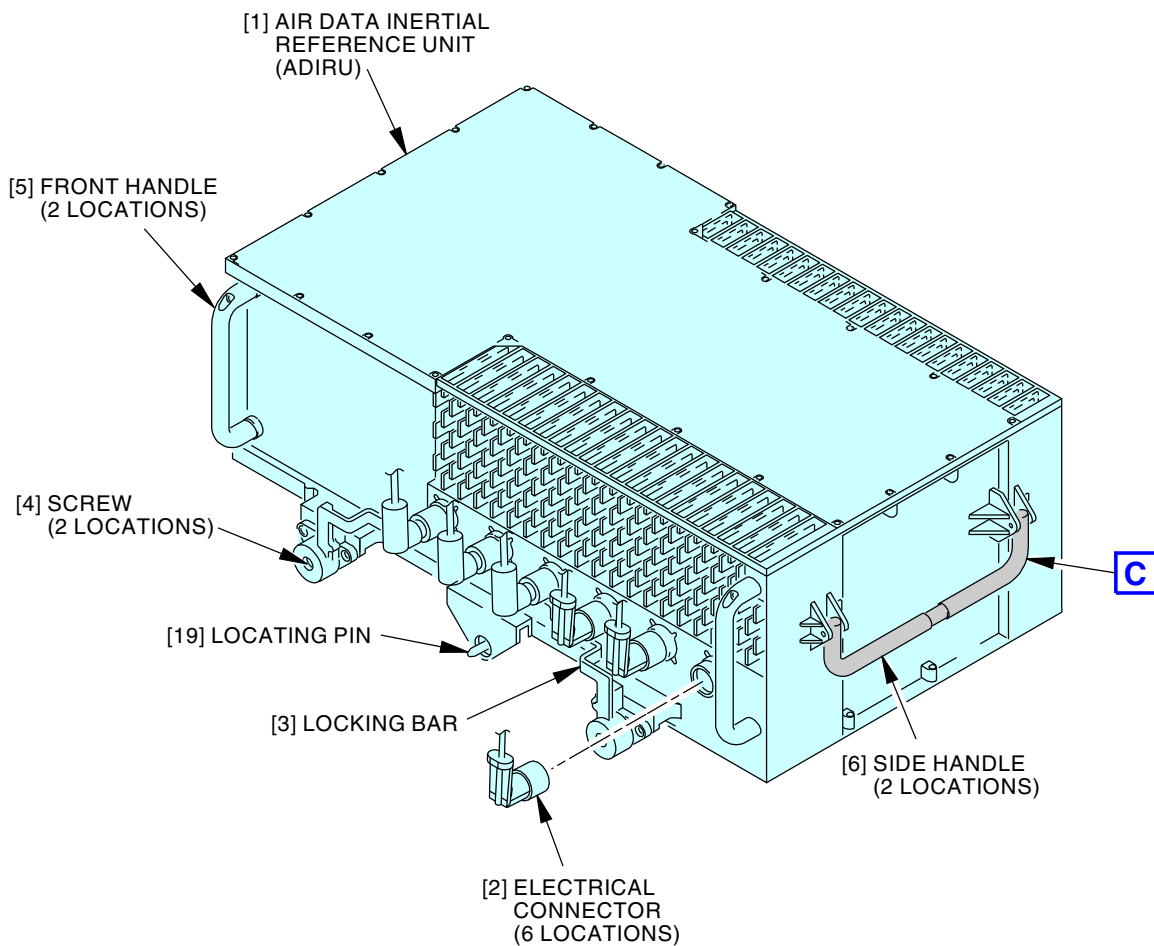
Air Data Inertial Reference Unit (ADIRU) Installation
Figure 401/34-21-01-990-801 (Sheet 1 of 3)

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 404
Jan 05/2018



AIR DATA INERTIAL REFERENCE UNIT (ADIRU)

B

D03733 S0006420559_V3

**Air Data Inertial Reference Unit (ADIRU) Installation
Figure 401/34-21-01-990-801 (Sheet 2 of 3)**

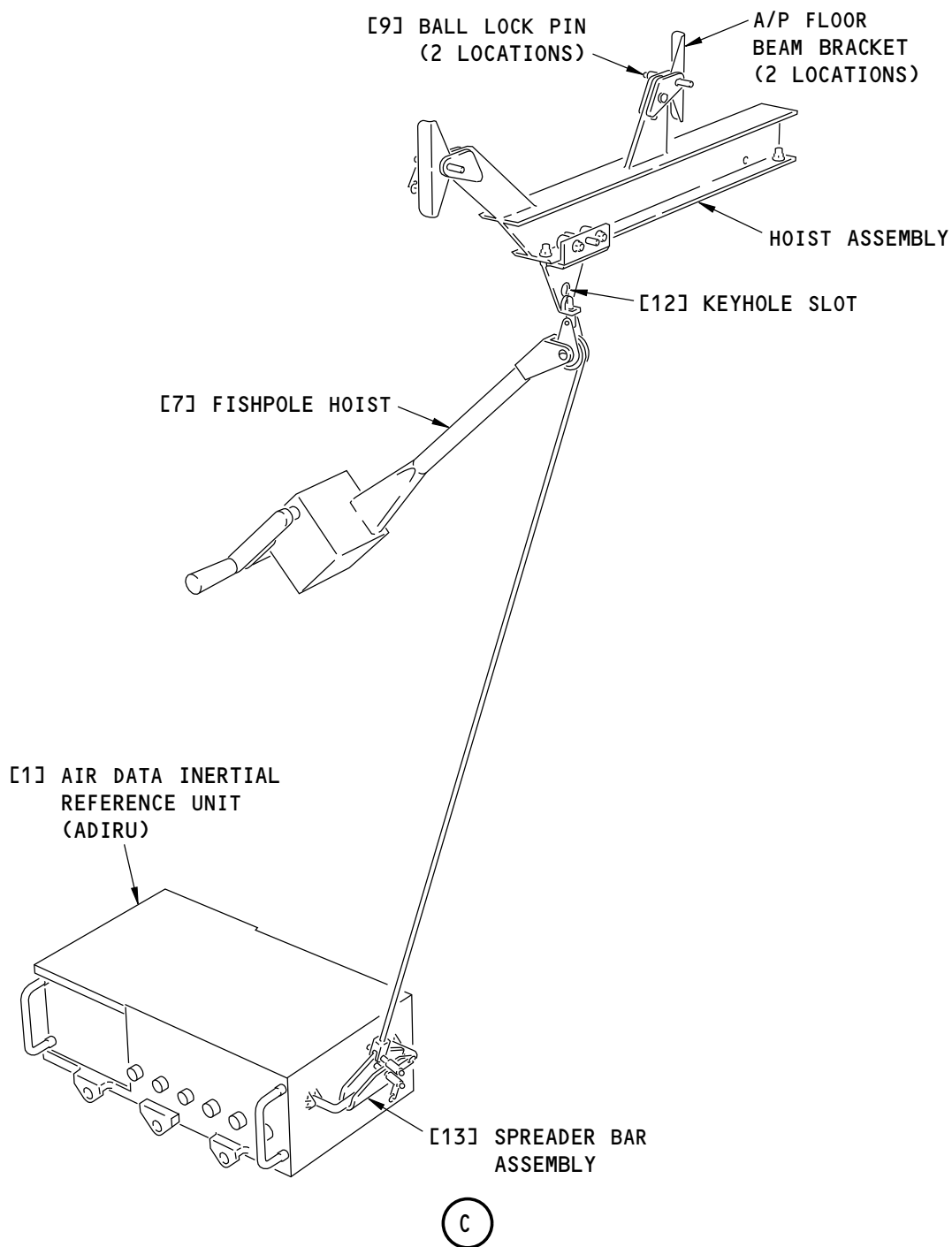
EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 405
May 05/2018

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



D07526 S0006420560_V2

**Air Data Inertial Reference Unit (ADIRU) Installation
Figure 401/34-21-01-990-801 (Sheet 3 of 3)**

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 406
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-01-400-801

3. Air Data Inertial Reference Unit - Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to install the ADIRU [1].

NOTE: The air data inertial reference unit is referred to as the ADIRU in this task.

- (2) The installation test makes sure that the ADIRU [1] has correct software.
(3) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
34-21-00-730-801	Air Data Inertial Reference System - System Test (P/B 501)
34-21-01-420-801	Air Data Inertial Reference Unit (ADIRU) Software Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1582	Hoist - Fishpole, Manually Powered Part #: PF51-009-1 Supplier: 1YRX6 Part #: PF51-103-5 Supplier: 1YRX6
SPL-1573	Hoist - LRU, Main EE Bay (J20001-52 CE marked per EU Directive 2006/42/EC.) Part #: J20001-62 Supplier: 81205 Part #: J20001-63 Supplier: 81205 Opt Part #: J20001-60 Supplier: 81205
SPL-13356	Hoist - LRU, Main EE Bay (CE Marked per EU Directive 2006/42/EC.) Part #: J20001-62 Supplier: 81205 Part #: J20001-63 Supplier: 81205 Opt Part #: J20001-60 Supplier: 81205

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ADIRU	25-71-91-50A-050	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 407
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

G. Installation Procedure

SUBTASK 34-21-01-860-014

- (1) Make sure the ADIRU switch on the overhead panel, P5, is in the OFF position.

SUBTASK 34-21-01-860-003

- (2) Make sure that these circuit breakers are open:

Left Power Management Panel, P110

Row	Col	Number	Name
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

Row	Col	Number	Name
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

Row	Col	Number	Name
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-01-420-001

- (3) Install the ADIRU [1]:
- Make sure the main EE bay LRU hoist, SPL-1573 or main EE bay LRU hoist, SPL-13356 is installed on the floor beams
 - Make sure that the locking bar [3] is up
 - Install the spreader bar assembly [13] on the side handle [6] of the ADIRU [1]
 - Use the fishpole hoist [7] to move the ADIRU [1] into the E3 rack
 - Remove the spreader bar assembly [13] from the side handle [6]
 - Push the locking bar [3] down
 - Tighten the screws [4] which attach the ADIRU [1] to the mounting tray
 - Remove the protective covers from the electrical connectors [2]
 - Connect the electrical connectors [2] to the ADIRU [1].

SUBTASK 34-21-01-080-001

- (4) Remove the main EE bay LRU hoist, SPL-1573 or main EE bay LRU hoist, SPL-13356:
- Remove the fishpole hoist, COM-1582 from the LRU hoist assembly.
 - Remove the ball lock pins [9] and the LRU hoist assembly from the floor beams.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-01

Page 408
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-01-860-005

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
P	25	C34617	ADIRU PRI PWR L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
N	2	C34618	ADIRU PRI PWR R
N	3	C34619	ADIRU PRI PWR C

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	1	C34603	ADIRU BAT PWR L
K	2	C34605	ADIRU BAT PWR C
K	3	C34604	ADIRU BAT PWR R

SUBTASK 34-21-01-410-001

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

H. Installation Test

SUBTASK 34-21-01-860-015

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-01-860-016

- (2) Set the ADIRU switch on the overhead panel, P5, to the ON position.

SUBTASK 34-21-01-750-001

- (3) Use a maintenance access terminal (MAT) to do a software configuration check of the ADIRU [1]:

NOTE: Make sure you know the correct software part number for the ADIRU [1] when you look at the software part number on the display. For the ADIRU [1] to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Air Data Inertial Reference System
 - 5) CONTINUE
- (b) Do these steps if these messages show: CONFIGURATION DATA NOT AVAILABLE. CANNOT CONNECT TO Air Data Inertial Reference System. Air Data Inertial Reference System DOES NOT GIVE A REPLY.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-01

Page 409
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Set the ADIRU switch on the overhead panel, P5, to the OFF position.
NOTE: The switch needs to be set to the OFF position less than 2 seconds after you select CONTINUE.
 - 2) Make sure these messages show on the MAT: CONFIGURATION DATA NOT AVAILABLE. CANNOT CONNECT TO Air Data Inertial Reference System. Air Data Inertial Reference System IS INACTIVE/FAULTED.
 - 3) Set the ADIRU switch on the overhead panel, P5, to the ON position.
 - 4) Wait 30 seconds.
 - 5) Select SELECT NEW ATA on the MAT.
 - 6) Select 34 Air Data Inertial Reference System.
 - 7) Select CONTINUE.
- (c) Find Air Data Inertial Reference Unit on the display and make sure that the software part number is correct.
- (d) Select GO BACK to remove the display.

SUBTASK 34-21-01-750-002

- (4) If the part number is incorrect, do this task: Air Data Inertial Reference Unit (ADIRU) Software Installation, TASK 34-21-01-420-801.

SUBTASK 34-21-01-840-001

- (5) Set the ADIRU switch on the overhead panel, P5, to the OFF position if it is not necessary.

SUBTASK 34-21-01-860-021

- (6) Do this task: Air Data Inertial Reference System - System Test, TASK 34-21-00-730-801.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-01-860-020

- (1) If electrical power is not necessary, do this task: Remove Electrical Power, TASK 24-22-00-860-806.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-01

D633W101-ARO

Page 410
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SECONDARY ATTITUDE AIR DATA REFERENCE UNIT - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

- (1) An installation of the Secondary Attitude Air Data Reference Unit (SAARU) software.

TASK 34-21-02-420-801

2. Secondary Attitude Air Data Reference Unit (SAARU) Software Installation

A. General

- (1) This procedure tells you how to install software in the Secondary Attitude Air Data Reference Unit (SAARU).
 - (a) The names of the two software parts loaded into an SAARU Computer follow:
SAARU Operational Program Software (OPS)
SAARU Operational Program Configuration (OPC)
Using the names, the specific software part numbers for an aircraft can be identified in the IPC.
- (2) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the SAARU needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Secondary Attitude Air Data Reference Unit Installation, TASK 34-21-02-400-801.
- (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.

NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.

- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the SAARU, the load process first erases the old software and then installs the new software. If you install software directly to the SAARU from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the SAARU.

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

ARO 014-999

- (6) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.

EFFECTIVITY
ARO ALL

34-21-02

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 014-999 (Continued)

- (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

ARO ALL

- (7) The airplane must be on the ground with the engines off before you can install software.
- (8) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-02-400-801	Secondary Attitude Air Data Reference Unit Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
46-13-00-070-801	Mass Storage Device Software Removal (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-5704	Device - Maintenance Part #: G45004-1 Supplier: 81205 Part #: G45004-3 Supplier: 81205 Opt Part #: G45002-20 Supplier: 81205 Opt Part #: G45002-25 Supplier: 81205 Opt Part #: G45002-29 Supplier: 81205 Opt Part #: J45001-1 Supplier: 81205 Opt Part #: J45003-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 34-21-02-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-02-420-002

- (2) Use a MAT to install software in the SAARU:

NOTE: Make sure you know the correct software part number for the SAARU before you select the software part number on the display. For the SAARU to be an approved installation, the correct software must be installed.

- (a) If the software is on a disk, put the correct disk in the disk drive.

EFFECTIVITY
ARO ALL

34-21-02

D633W101-ARO

Page 202
May 05/2018



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

- (b) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) DATA LOAD
- (c) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) 34 Air Data Inertial Reference System
 - 3) Secondary Attitude Air Data Reference Unit
 - 4) CONTINUE
- (d) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) CONTINUE
- (e) Select START to start the software installation.
- (f) When the software installation is completed, make sure the correct software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-02

Page 203
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SECONDARY ATTITUDE AIR DATA REFERENCE UNIT - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:



DUE TO THE CRITICAL ALIGNMENT OF THE AIR-DATA INERTIAL-REFERENCE UNITS, DISTURBANCE OR REMOVAL OF THE E5-2 SHELF REQUIRES RE-ALIGNMENT. THIS CAN ONLY BE ACCOMPLISHED BY BOEING AOG PERSONNEL USING SPECIALIZED ALIGNMENT TOOLING. CONTACT BOEING BEFORE DISTURBING THE MOUNTING SHELVES.

- (1) A removal of the secondary attitude air data reference unit (SAARU).
- (2) An installation of the SAARU.

TASK 34-21-02-000-801

2. Secondary Attitude Air Data Reference Unit Removal

(Figure 401)



DUE TO THE CRITICAL ALIGNMENT OF THE AIR-DATA INERTIAL-REFERENCE UNITS, DISTURBANCE OR REMOVAL OF THE E5-2 SHELF REQUIRES RE-ALIGNMENT. THIS CAN ONLY BE ACCOMPLISHED BY BOEING AOG PERSONNEL USING SPECIALIZED ALIGNMENT TOOLING. CONTACT BOEING BEFORE DISTURBING THE MOUNTING SHELVES.

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to remove the SAARU [1].

NOTE: The secondary attitude air data reference unit is referred to as the SAARU in this task.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-000-801	E/E Box Removal (P/B 401)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

D. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

E. Removal Procedure

SUBTASK 34-21-02-860-001

- (1) Open this circuit breaker and install safety tag:

Power Supply Assembly Center, M24301

Row	Col	Number	Name
C	3	CBC3-C	SAARU (C)

EFFECTIVITY
ARO ALL

34-21-02

D633W101-ARO

Page 401
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-02-010-001

- (2) To get access to the main equipment center, open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

SUBTASK 34-21-02-020-003

- (3) To remove the SAARU [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

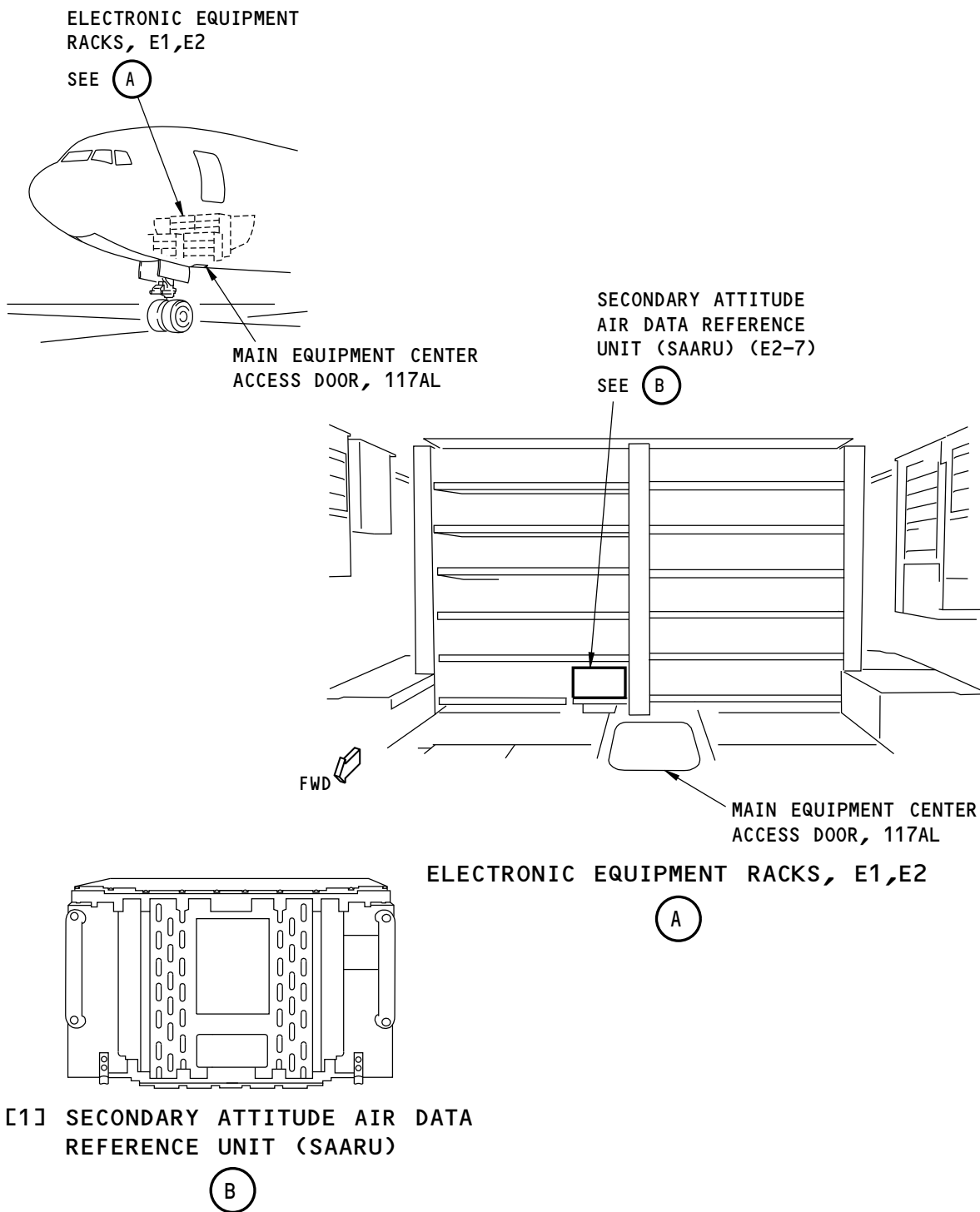
D633W101-ARO

34-21-02

Page 402
Jan 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL



E20786 S0006420567_V1

Secondary Attitude Air Data Reference Unit (SAARU) Installation
Figure 401/34-21-02-990-801

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-02

Page 403
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-02-400-801

3. Secondary Attitude Air Data Reference Unit Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to install the SAARU [1].

NOTE: The secondary attitude air data reference unit is referred to as the SAARU in this task.

- (2) The installation test makes sure that the SAARU [1] has correct software.
(3) A maintenance access terminal is necessary for this procedure.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-400-801	E/E Box Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-02-420-801	Secondary Attitude Air Data Reference Unit (SAARU) Software Installation (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	SAARU	34-21-02-01-015	ARO ALL

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Installation Procedure

SUBTASK 34-21-02-860-002

- (1) Make sure that this circuit breaker is open and has safety tag:

Power Supply Assembly Center, M24301

Row	Col	Number	Name
C	3	CBC3-C	SAARU (C)

SUBTASK 34-21-02-910-002

- (2) To install the SAARU [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-21-02-860-003

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

Power Supply Assembly Center, M24301

Row	Col	Number	Name
C	3	CBC3-C	SAARU (C)

EFFECTIVITY
ARO ALL

34-21-02

D633W101-ARO

Page 404
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-02-410-001

- (4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

G. Installation Test

SUBTASK 34-21-02-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-02-740-002

- (2) Use a maintenance access terminal (MAT) to do a software configuration check of the SAARU [1]:

NOTE: Make sure you know the correct software part number for the SAARU [1] when you look at the software part number on the display. For the SAARU [1] to be an approved installation, the correct OPS and OPC part numbers must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Air Data Inertial Reference System
 - 5) CONTINUE
- (b) Find Secondary Attitude Air Data Reference Unit on the display and make sure that the OPS and OPC parts number is correct.
- (c) Select GO BACK to remove the display.

SUBTASK 34-21-02-750-004

- (3) If the part number is incorrect, do this task: Secondary Attitude Air Data Reference Unit (SAARU) Software Installation, TASK 34-21-02-420-801.

SUBTASK 34-21-02-750-001

- (4) Make sure the EICAS status message, SAARU, does not show on the multi-function display (MFD).

SUBTASK 34-21-02-750-002

- (5) Make sure the ATT flag does not show on the standby attitude indicator.

NOTE: SAARU [1] alignment will take 5 minutes. The airplane attitude (artificial horizon) will show on the indicator when the alignment is completed.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-02

D633W101-ARO

Page 405
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

AIR DATA MODULE (ADM) - MAINTENANCE PRACTICES

1. General

A. This procedure has this task:

- (1) A software installation of the ADM.

TASK 34-21-03-420-801

2. Air Data Module (ADM) Software Installation

A. General

- (1) This procedure tells you how to install software in the Air Data Module (ADM).

- (a) The name of the software part loaded into an ADM follow:

ADM Operational Program Software (OPS)

Using the name, the specific software part number for an aircraft can be identified in the IPC. All ADM modules use the same software part number.

- - (2) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
 - (3) If you do not know if the ADM needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Pitot Air Data Module Installation, TASK 34-21-03-400-801 Static Air Data Module Installation, TASK 34-21-03-400-802.
 - (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.

NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.

- -
 -
 - (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the ADM, the load process first erases the old software and then installs the new software. If you install software directly to the ADM from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the ADM.

- -
 -
 - (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

ARO 014-999

- -
 -
 -
 -
 - (6) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 014-999 (Continued)

- (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

ARO ALL

- (7) The airplane must be on the ground with the engines off before you can install software.
- (8) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
27-02-01-400-801	Primary Flight Computer (PFC) Reset Test (P/B 501)
34-21-03-400-801	Pitot Air Data Module Installation (P/B 401)
34-21-03-400-802	Static Air Data Module Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
46-13-00-070-801	Mass Storage Device Software Removal (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-5704	Device - Maintenance Part #: G45004-1 Supplier: 81205 Part #: G45004-3 Supplier: 81205 Opt Part #: G45002-20 Supplier: 81205 Opt Part #: G45002-25 Supplier: 81205 Opt Part #: G45002-29 Supplier: 81205 Opt Part #: J45001-1 Supplier: 81205 Opt Part #: J45003-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 34-21-03-860-017

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-03-860-019

- (2) Make sure the Primary Flight Computers are on (TASK 27-02-01-400-801).

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 202
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-03-420-003

- (3) Use a MAT to install software in the ADM:

NOTE: Make sure you know the correct software part number for the ADM before you select the software part number on the display. For the ADM to be an approved installation, the correct software must be installed.

- (a) Make these selections on the MAT to see which CMCF is in control:
 - 1) ONBOARD MAINTENANCE
 - 2) OTHER FUNCTIONS
 - 3) CENTRAL MAINTENANCE COMPUTER SWITCH CONTROL
- (b) If you will install software in the left or center ADM, make sure the left CMCF is in control:
 - 1) If the MAT shows LEFT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select GO BACK.
 - 2) If the MAT shows RIGHT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select SWITCH TO LEFT.
- (c) If you will install software in the right ADM, make sure the right CMCF is in control:
 - 1) If the MAT shows RIGHT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select GO BACK.
 - 2) If the MAT shows LEFT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select SWITCH TO RIGHT.
- (d) If there is a loss of connection between the MAT or PMAT and the Central Maintenance Terminal:
 - 1) Open and close this circuit breaker:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	17	C46602	MAINT ACCESS TERM

NOTE: Certain conditions in past versions of AIMS software can cause a loss of connection between the MAT or PMAT and the central maintenance computing function.

- (e) If the software is on a disk, put the correct disk in the disk drive.
- (f) Make these selections on the MAT:
 - 1) EXTENDED MAINTENANCE
 - 2) DATA LOAD
- (g) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) 34 Air Data Inertial Reference System
 - 3) Air Data Module (Left Pitot, Right Pitot, Center Pitot, Left Static, Right Static, or Center Static)
 - 4) CONTINUE
- (h) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 203
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 3) Select the correct software part number from the display.
- 4) CONTINUE
- (i) Select START to start the software installation.
- (j) To make sure the software installation operates correctly, do this:
 - 1) Do not select STOP.
 - 2) Do not change to the other CMCF.
 - 3) If a dialog box with the TRY AGAIN selection shows, select GO BACK and then select START.
 - 4) Do not select TRY AGAIN.
- (k) If "No signal came back from the destination LRU. Make sure ATE or OEBS not active" message shows on the dialog box, do these steps:
 - 1) Select GO BACK on the dialog box.
 - 2) Select LINE MAINTENANCE on the MAT.
 - 3) Select EXISTING FLIGHT DECK EFFECTS on the MAT.
 - 4) Make a record of all Flight Deck Effects that show on the MAT.
 - 5) Look at the top right corner of the MAT to see if the data is from the left or the right CMCF.

NOTE: The data comes from the master CMCF.
 - 6) For the left ADM, remove the Input/Output Module (IOM) (M008) module from the Airplane Information Management System (AIMS) cabinet that contains the master CMCF.
 - 7) For the right ADM, remove the IOM (M003) module from the AIMS cabinet that contains the master CMCF.
 - 8) Select START to start the software installation.
 - 9) When the software installation is completed, install the IOM that you removed.
- (l) When the software installation is completed, make sure the correct software part number shows on the display.
- (m) Select CONTINUE to remove the configuration display.

————— **END OF TASK** —————



777-200/300
AIRCRAFT MAINTENANCE MANUAL

AIR DATA MODULE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the pitot air data module (ADM)
- (2) A removal of the static ADM
- (3) An installation of the pitot ADM
- (4) An installation of the static ADM.

TASK 34-21-03-000-801

2. Pitot Air Data Module Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to remove the pitot ADM [1]. There are three pitot ADMs [1] on the aircraft--left, right, and center. The pitot ADMs [1] are in the main equipment center.

NOTE: The pitot air data module is referred to as an ADM in this task.

- (2) The removal instructions are the same for all pitot ADMs [1].

B. References

<u>Reference</u>	<u>Title</u>
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)

C. Location Zones

<u>Zone</u>	<u>Area</u>
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Removal Procedure

SUBTASK 34-21-03-860-001

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	25	C30624	PROBE/VANE HTR CTRL L

Power Supply Assembly Center, M24301

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-C	PITOT ADM

Power Supply Assembly Left, M24101

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-L	PITOT ADM

Power Supply Assembly Right, M24201

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-R	PITOT ADM

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-03

Page 401
May 05/2015



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

SUBTASK 34-21-03-020-001



CAUTION

DO NOT TOUCH THE ADM BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADM.

- (2) Remove the applicable ADM [1] (left, right, or center):
- (a) Prepare to remove the ADM [1], do this task: TASK 20-41-01-000-803.
 - (b) Disconnect the quick-disconnect [4] from the ADM [1].
 - (c) Put a protective cover on the quick-disconnect [4] of the ADM [1].
 - (d) While you hold the ADM [1], loosen the captive screws [3] at each corner of the ADM [1].
 - (e) Disconnect the electrical connectors [2] from the ADM [1].
 - (f) Put protective covers on the electrical connectors [2] of the ADM [1].
 - (g) Remove the ADM [1].

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

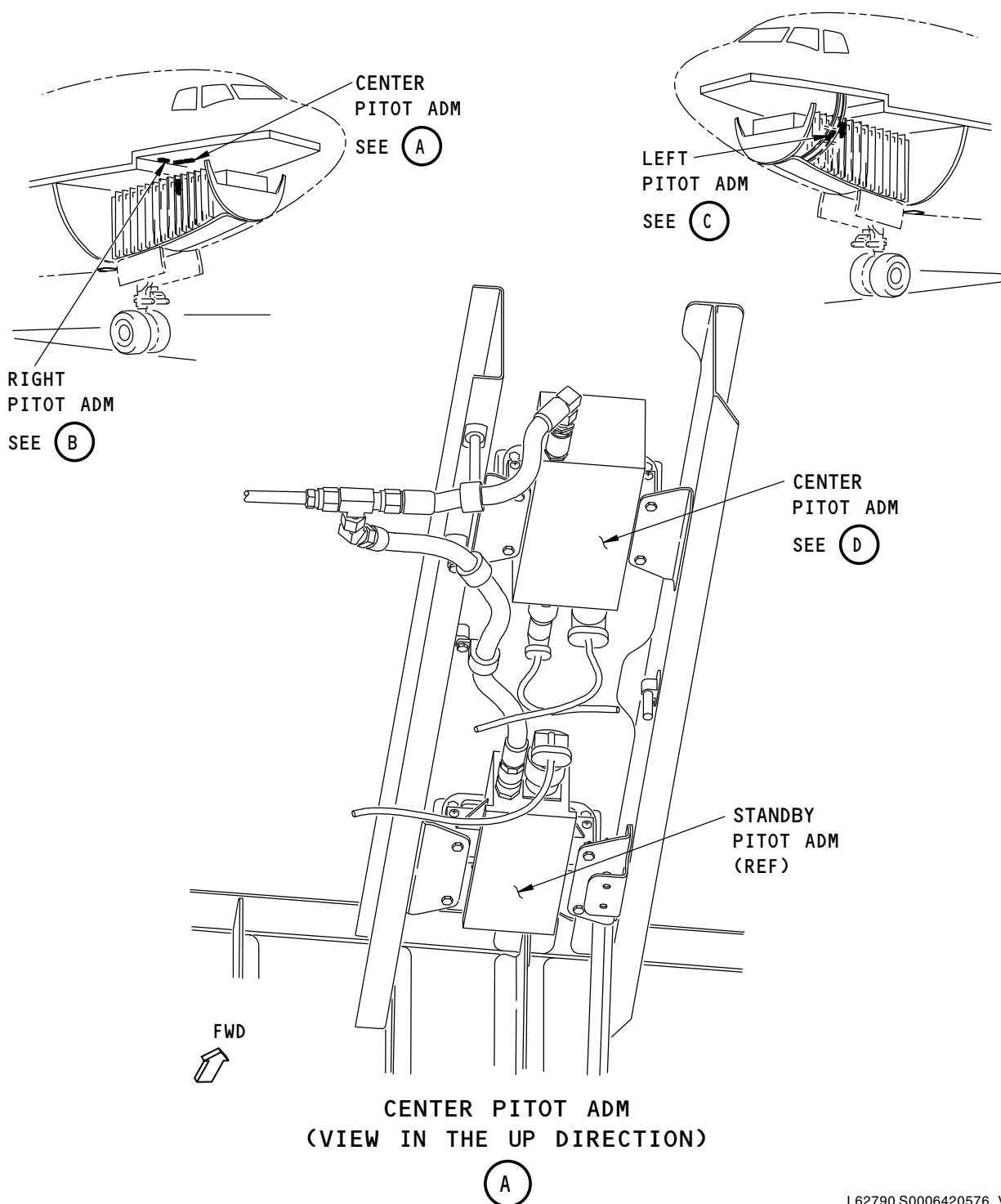
D633W101-ARO

34-21-03

Page 402
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



L62790 S0006420576_V1

Pitot Air Data Module (ADM) Installation
Figure 401/34-21-03-990-801 (Sheet 1 of 3)

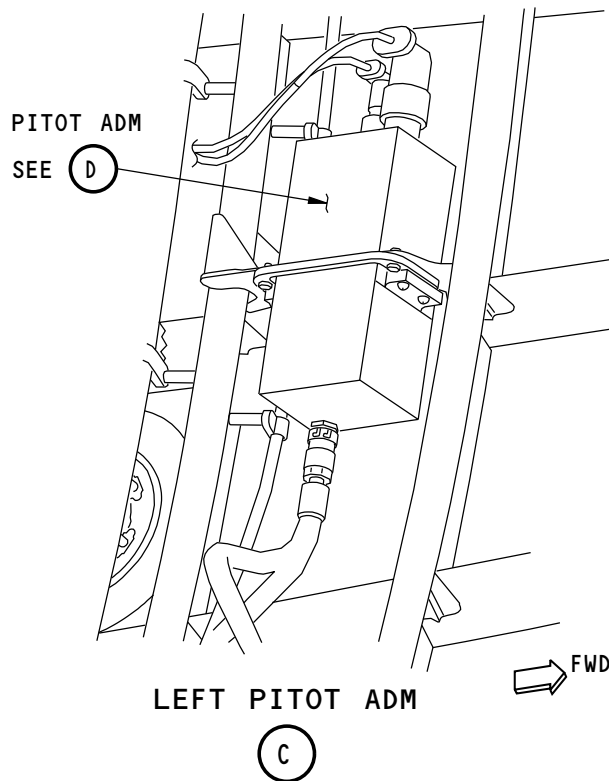
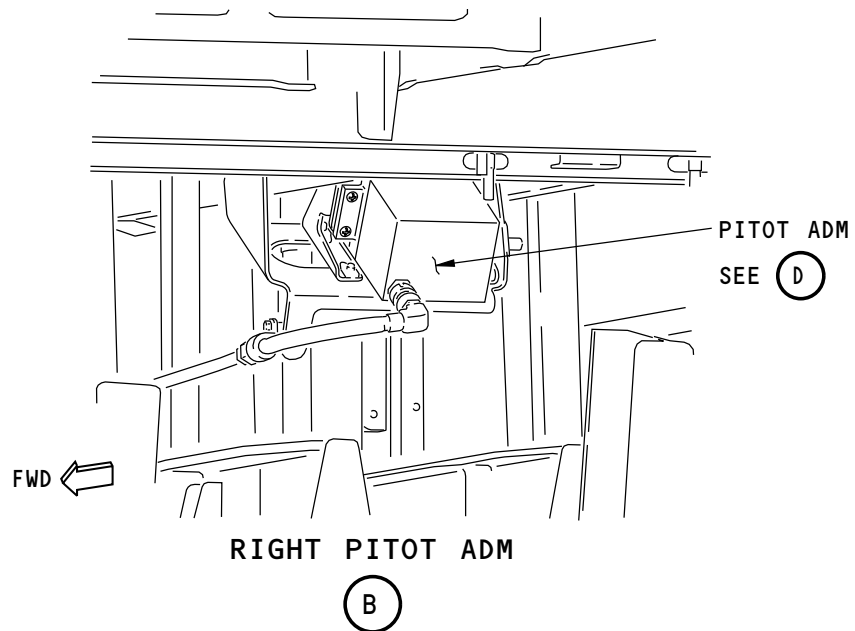
EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 403
Jan 05/2015

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



K24696 S0006420579_V1

Pitot Air Data Module (ADM) Installation
Figure 401/34-21-03-990-801 (Sheet 2 of 3)

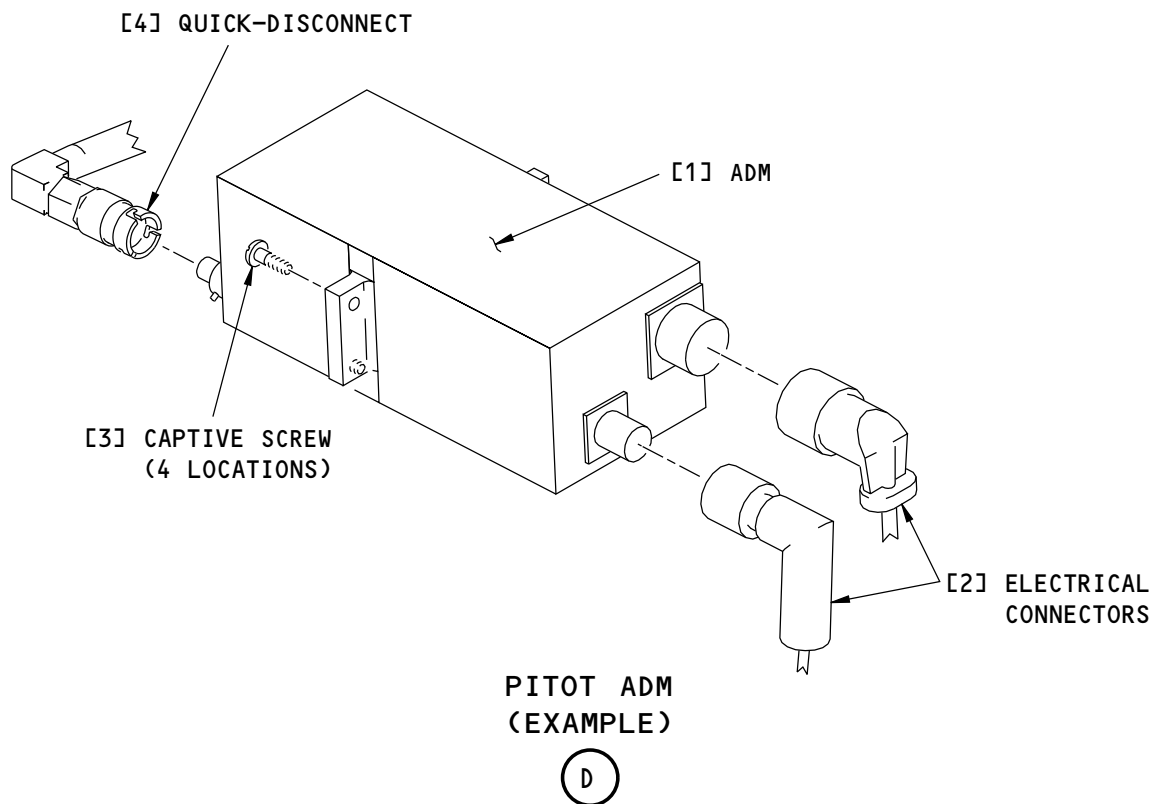
EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-03

Page 404
Jan 05/2015

777-200/300
AIRCRAFT MAINTENANCE MANUAL



L44278 S0006420580_V1

Pitot Air Data Module (ADM) Installation
Figure 401/34-21-03-990-801 (Sheet 3 of 3)

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-03

Page 405
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-03-000-802

3. Static Air Data Module Removal

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to remove the static ADM [1]. There are three static ADMs [1] on the aircraft--left, right, and center. The static ADMs [1] are in the ceiling of the forward cargo compartment.

NOTE: The static air data module is referred to as an ADM in this task.

- (2) The removal instructions are the same for all static ADMs [1].

B. References

Reference	Title
20-41-01-000-803	ESDS Handling for Metal Encased Unit Removal (P/B 201)
25-52-09-000-801	Ceiling Liner Removal (P/B 401)

C. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

D. Removal Procedure

SUBTASK 34-21-03-860-002

- (1) Open the applicable circuit breaker and attach a DO-NOT-CLOSE tag:
 - (a) Power Supply Assembly Left, M24101:
 - 1) C09, ADM L STATIC
 - (b) Power Supply Assembly Right, M24201:
 - 1) C09, ADM R STATIC
 - (c) Power Supply Assembly Center, M24301:
 - 1) C09, ADM C STATIC

SUBTASK 34-21-03-010-001

- (2) To remove the ceiling liner for the applicable static ADM [1] in the forward cargo compartment, do this task: Ceiling Liner Removal, TASK 25-52-09-000-801

NOTE: The left static ADM [1] is located at STA 748, WL 196. The right static ADM [1] is located at STA 765, WL 196. The center static ADM [1] is located at STA 688, WL 197.

SUBTASK 34-21-03-020-002

 CAUTION	DO NOT TOUCH THE ADM BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADM.

- (3) Remove the applicable ADM [1] (left, right, or center):
 - (a) Disconnect the quick-disconnect [4] from the ADM [1].
 - (b) Put a protective cover on the quick-disconnect [4] of the ADM [1].
 - (c) While you hold the ADM [1], loosen the captive screw [3] at each corner of the ADM [1].

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 406
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (d) Disconnect the electrical connectors [2] from the ADM [1]: do this task: ESDS Handling for Metal Encased Unit Removal, TASK 20-41-01-000-803.
- (e) Put protective covers on the electrical connector [2] of the ADM [1].
- (f) Remove the ADM [1].

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

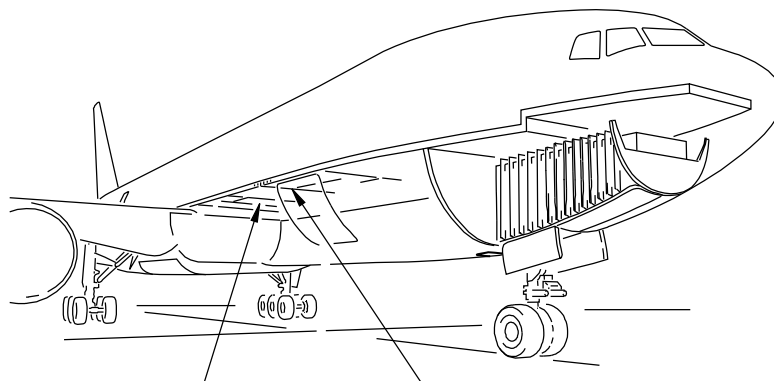
D633W101-ARO

34-21-03

Page 407
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

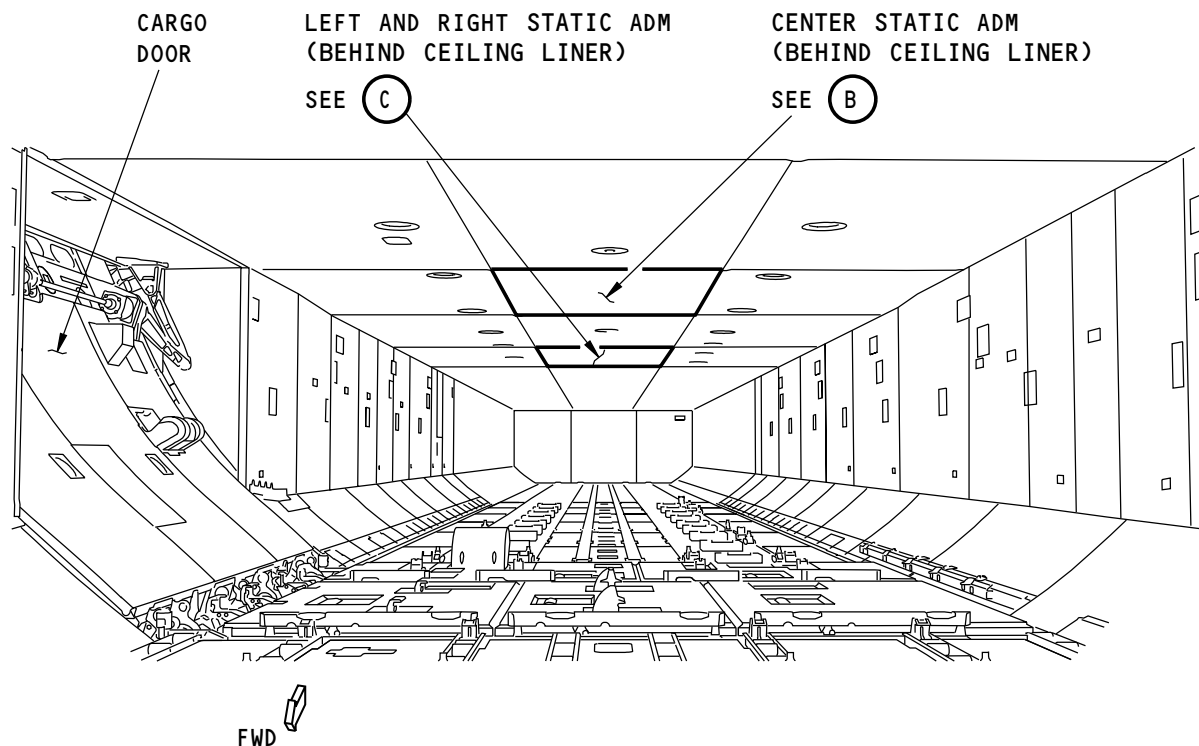


LEFT AND RIGHT
STATIC ADM

SEE (A)

CENTER STATIC ADM

SEE (A)



CARGO
DOOR

LEFT AND RIGHT STATIC ADM
(BEHIND CEILING LINER)

SEE (C)

CENTER STATIC ADM
(BEHIND CEILING LINER)

SEE (B)

FWD

CARGO COMPARTMENT

(A)

E79949 S0006420582_V1

Static Air Data Module (ADM) Installation
Figure 402/34-21-03-990-802 (Sheet 1 of 4)

EFFECTIVITY
ARO ALL

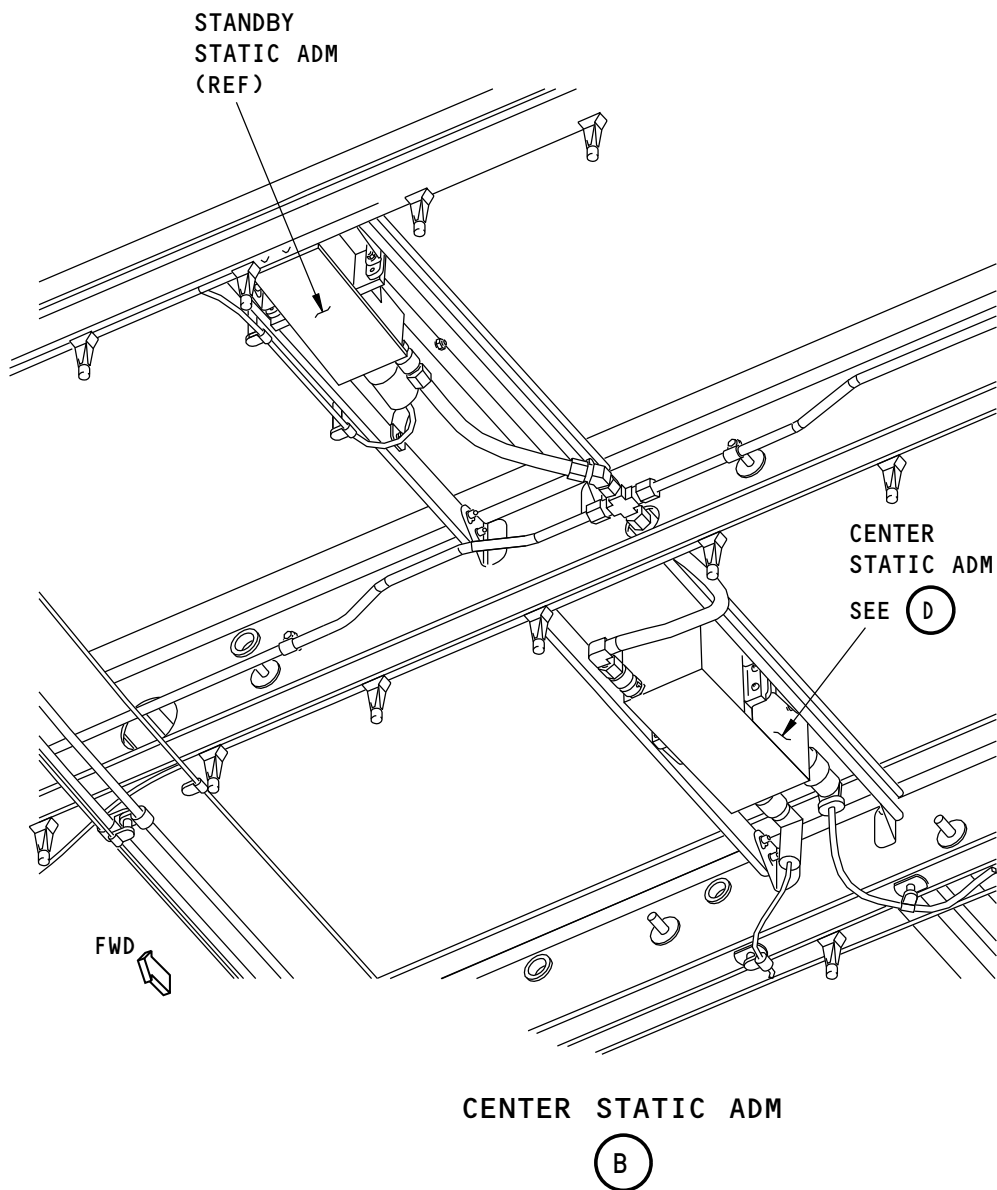
34-21-03

D633W101-ARO

Page 408
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



E79950 S0006420583_V1

Static Air Data Module (ADM) Installation
Figure 402/34-21-03-990-802 (Sheet 2 of 4)

EFFECTIVITY
ARO ALL

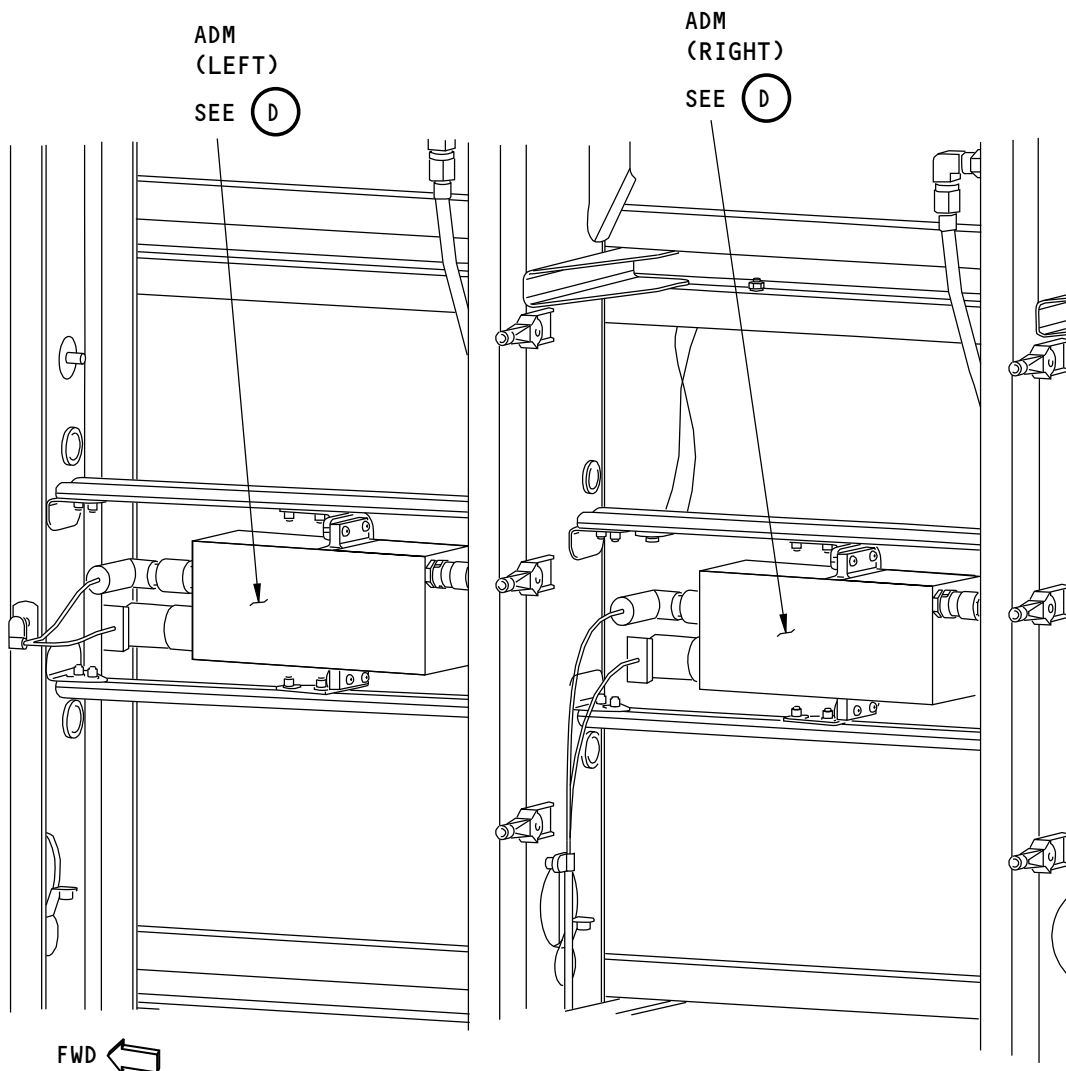
34-21-03

D633W101-ARO

Page 409
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



LEFT AND RIGHT STATIC ADM

(C)

E79951 S0006420584_V1

Static Air Data Module (ADM) Installation
Figure 402/34-21-03-990-802 (Sheet 3 of 4)

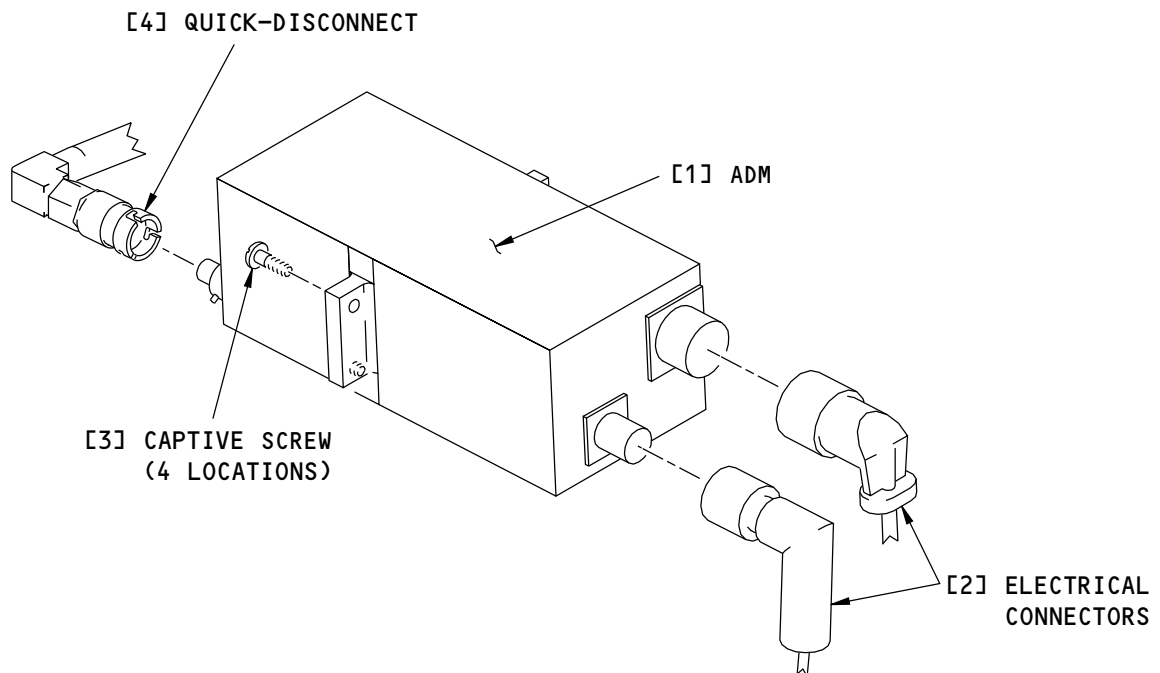
EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 410
Jan 05/2015

777-200/300
AIRCRAFT MAINTENANCE MANUAL



ADM



E81004 S0006420585_V1

Static Air Data Module (ADM) Installation
Figure 402/34-21-03-990-802 (Sheet 4 of 4)

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-03

Page 411
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-03-400-801

4. Pitot Air Data Module Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to install the pitot ADM [1]. There are three pitot ADMs [1] on the aircraft--left, right, and center. The pitot ADMs [1] are in the main equipment center.

NOTE: The pitot air data module is referred to as an ADM in this task.

- (2) The installation instructions are the same for all pitot ADMs [1].

B. References

Reference	Title
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-03-420-801	Air Data Module (ADM) Software Installation (P/B 201)

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Installation Procedure

SUBTASK 34-21-03-860-003

- (1) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
M	25	C30624	PROBE/VANE HTR CTRL L

Power Supply Assembly Center, M24301

Row	Col	Number	Name
C	7	CBC7-C	PITOT ADM

Power Supply Assembly Left, M24101

Row	Col	Number	Name
C	7	CBC7-L	PITOT ADM

Power Supply Assembly Right, M24201

Row	Col	Number	Name
C	7	CBC7-R	PITOT ADM

Right Power Management Panel, P210

Row	Col	Number	Name
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-03

Page 412
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-03-420-001



CAUTION

DO NOT TOUCH THE ADM BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADM.

- (2) Install the applicable ADM [1] (left, right, or center):
 - (a) Prepare to install the ADM [1], do this task: TASK 20-41-01-400-803.
 - (b) Remove the protective covers from the electrical connectors [2] of the ADM [1].
 - (c) Examine the electrical connectors [2] for bent or broken pins.
 - (d) Put the ADM [1] into position on the airplane.
 - (e) Connect the electrical connectors [2] to the ADM [1].
 - (f) Tighten the captive screws [3] at each corner of the ADM [1] to 15 in-lb (1.69 N·m) to 25 in-lb (2.82 N·m).
 - (g) Remove the protective cover from the quick-disconnect [4] of the ADM [1].
 - (h) Connect the quick-disconnect [4] to the ADM [1].

SUBTASK 34-21-03-210-001

- (3) Do a visual inspection of the quick-disconnect fittings that you connected.
 - (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-21-03-860-004

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
M	25	C30624	PROBE/VANE HTR CTRL L

Power Supply Assembly Center, M24301

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-C	PITOT ADM

Power Supply Assembly Left, M24101

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-L	PITOT ADM

Power Supply Assembly Right, M24201

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-R	PITOT ADM

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 413
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

E. Installation Test

SUBTASK 34-21-03-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-03-860-006

- (2) Set the ADIRU switch on the overhead panel, P5, to the ON position.

SUBTASK 34-21-03-860-007

- (3) Push the STAT button on the display select panel, P55.
 - (a) Make sure these EICAS status messages do not show on the multi-function display (MFD):
 - 1) PITOT ADM C
 - 2) PITOT ADM L
 - 3) PITOT ADM R
 - 4) HEAT PITOT C
 - 5) HEAT PITOT L
 - 6) HEAT PITOT R

SUBTASK 34-21-03-740-001

- (4) Use a maintenance access terminal (MAT) to do a software configuration check of the ADM [1]:

NOTE: Make sure you know the correct software part number for the ADM [1] when you look at the software part number on the display. For the ADM [1] to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Air Data Inertial Reference System
 - 5) CONTINUE
- (b) Find these items on the display and make sure that the software part numbers are correct:
 - 1) Air Data Module (Center Pitot)
 - 2) Air Data Module (Left Pitot)
 - 3) Air Data Module (Right Pitot)
- (c) Select GO BACK to remove the display.

SUBTASK 34-21-03-750-001

- (5) If the part number is incorrect or not correct, do this task: Air Data Module (ADM) Software Installation, TASK 34-21-03-420-801.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-03-860-008

- (1) Set the ADIRU switch on the overhead panel, P5, to the OFF position if it is not necessary.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 414
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-03-400-802

5. Static Air Data Module Installation

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to install the static ADM [1]. There are three static ADMs [1] on the aircraft--left, right, and center. The static ADMs [1] are in the ceiling of the forward cargo compartment.

NOTE: The static air data module is referred to as an ADM in this task.

- (2) The installation instructions are the same for all static ADMs [1].

B. References

Reference	Title
20-41-01-400-803	ESDS Handling for Metal Encased Unit Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
25-52-09-400-801	Ceiling Liner - Installation (P/B 401)
34-21-03-420-801	Air Data Module (ADM) Software Installation (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ADM	34-21-03-01-055	ARO ALL
		34-21-03-01-130	ARO ALL
		34-21-03-01-155	ARO ALL
		34-21-03-01-205	ARO ALL
		34-21-03-01-255	ARO ALL

D. Location Zones

Zone	Area
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right

E. Installation Procedure

SUBTASK 34-21-03-860-010

- (1) Make sure that the applicable circuit breaker is open:
 - (a) Power Supply Assembly left, M24101:
 - 1) C09, ADM L STATIC
 - (b) Power Supply Assembly Right, M24201:
 - 1) C09, ADM R STATIC
 - (c) Power Supply Assembly Center, M24301:
 - 1) C09, ADM C STATIC

SUBTASK 34-21-03-420-002



DO NOT TOUCH THE ADM BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADM.

- (2) Install the applicable ADM [1] (left, right, or center):

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 415
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Put the ADM [1] into position on the airplane.
- (b) Tighten the captive screws [3] at each corner of the ADM [1] to 15-25 inch-pounds.
- (c) Remove the protective covers from the electrical connectors [2] of the ADM [1]: do this task: ESDS Handling for Metal Encased Unit Installation, TASK 20-41-01-400-803.
- (d) Examine the electrical connectors [2] for bent or broken pins.
- (e) Connect the electrical connectors [2] to the ADM [1].
- (f) Remove the protective cover from the quick-disconnect [4] of the ADM [1].
- (g) Connect the quick-disconnect [4] to the ADM [1].
 - 1) Visually examine of the quick-disconnect [4] for a complete seal.

SUBTASK 34-21-03-210-002

- (3) Do a visual inspection of the quick-disconnect fittings that you connected.
 - (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

SUBTASK 34-21-03-010-002

- (4) To install the ceiling liner for the applicable static ADM [1] in the forward cargo compartment, do this task: Ceiling Liner - Installation, TASK 25-52-09-400-801

NOTE: The left static ADM [1] is located at STA 748, WL 196. The right static ADM [1] is located at STA 765, WL 196. The center static ADM [1] is located at STA 688, WL 197.

SUBTASK 34-21-03-860-011

- (5) Remove the DO-NOT-CLOSE tag and close the applicable circuit breaker:
 - (a) Power Supply Assembly Left, M24101:
 - 1) C09, ADM L STATIC
 - (b) Power Supply Assembly Right, M24201:
 - 1) C09, ADM R STATIC
 - (c) Power Supply Assembly Center, M24301:
 - 1) C09, ADM C STATIC

F. Installation Test

SUBTASK 34-21-03-860-012

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-03-860-013

- (2) Set the ADIRU switch on the overhead panel, P5, to the ON position.

SUBTASK 34-21-03-860-014

- (3) Push the STAT button on the display select panel, P55.
 - (a) Make sure these EICAS status messages do not show on the multi-function display (MFD):
 - 1) STATIC ADM C
 - 2) STATIC ADM L
 - 3) STATIC ADM R.



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-03-740-002

- (4) Use a maintenance access terminal (MAT) to do a software configuration check of the ADM [1]:

NOTE: Make sure you know the correct software part number for the ADM [1] when you look at the software part number on the display. For the ADM [1] to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Air Data Inertial Reference System
 - 5) CONTINUE
- (b) Find these items on the display and make sure that the software part numbers are correct:
- 1) Air Data Module (Center Static)
 - 2) Air Data Module (Left Static)
 - 3) Air Data Module (Right Static)
- (c) Select GO BACK to remove the display.

SUBTASK 34-21-03-750-002

- (5) If the part number is incorrect, do this task: Air Data Module (ADM) Software Installation, TASK 34-21-03-420-801.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-03-860-015

- (1) Set the ADIRU switch on the overhead panel, P5, to the OFF position if it is not necessary.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-21-03

D633W101-ARO

Page 417
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ANGLE OF ATTACK SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the angle of attack (AOA) sensor
- (2) An installation of the AOA sensor.

TASK 34-21-04-000-801

2. Angle of Attack Sensor Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to remove the AOA sensor [3].

NOTE: The angle of attack sensor is referred to as the AOA sensor in this task.

B. Tools/Equipment

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Removal Procedure

SUBTASK 34-21-04-860-001

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1
M	25	C30624	PROBE/VANE HTR CTRL L

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Page 401
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
F	22	C34502	AOA RESOLVER 2
L	10	C30623	PROBE/VANE HTR CTRL R

NOTE: Each AOA sensor [3] connects to resolver 1 and 2.

SUBTASK 34-21-04-020-001



WARNING

MAKE SURE THAT THE AOA HEAT IS NOT ON. IF YOU DO NOT, INJURY TO PERSONS CAN OCCUR.

- (2) Remove the AOA sensor [3]:
- (a) Use a sealant removal tool, COM-2481 to remove the sealant from around the AOA sensor [3].
 - (b) Remove the bolts [4] from the AOA sensor [3].



CAUTION

DO NOT PULL THE AOA AWAY FROM THE FUSELAGE WITH TOO MUCH FORCE. TOO MUCH FORCE ON THE AOA CAN CAUSE DAMAGE TO THE AOA, THE ELECTRICAL CONNECTOR [1], OR THE AIRPLANE SKIN.

- (c) Carefully pull the AOA sensor [3] out until you can get to the electrical connector [1].
- (d) Disconnect the electrical connector [1] from the AOA sensor [3].
- (e) Temporarily attach the electrical connector [1] to make sure that they cannot fall into the fuselage.
- (f) Install protective caps on the electrical connector [1].
- (g) Remove the gasket [2] and discard it.

————— **END OF TASK** —————

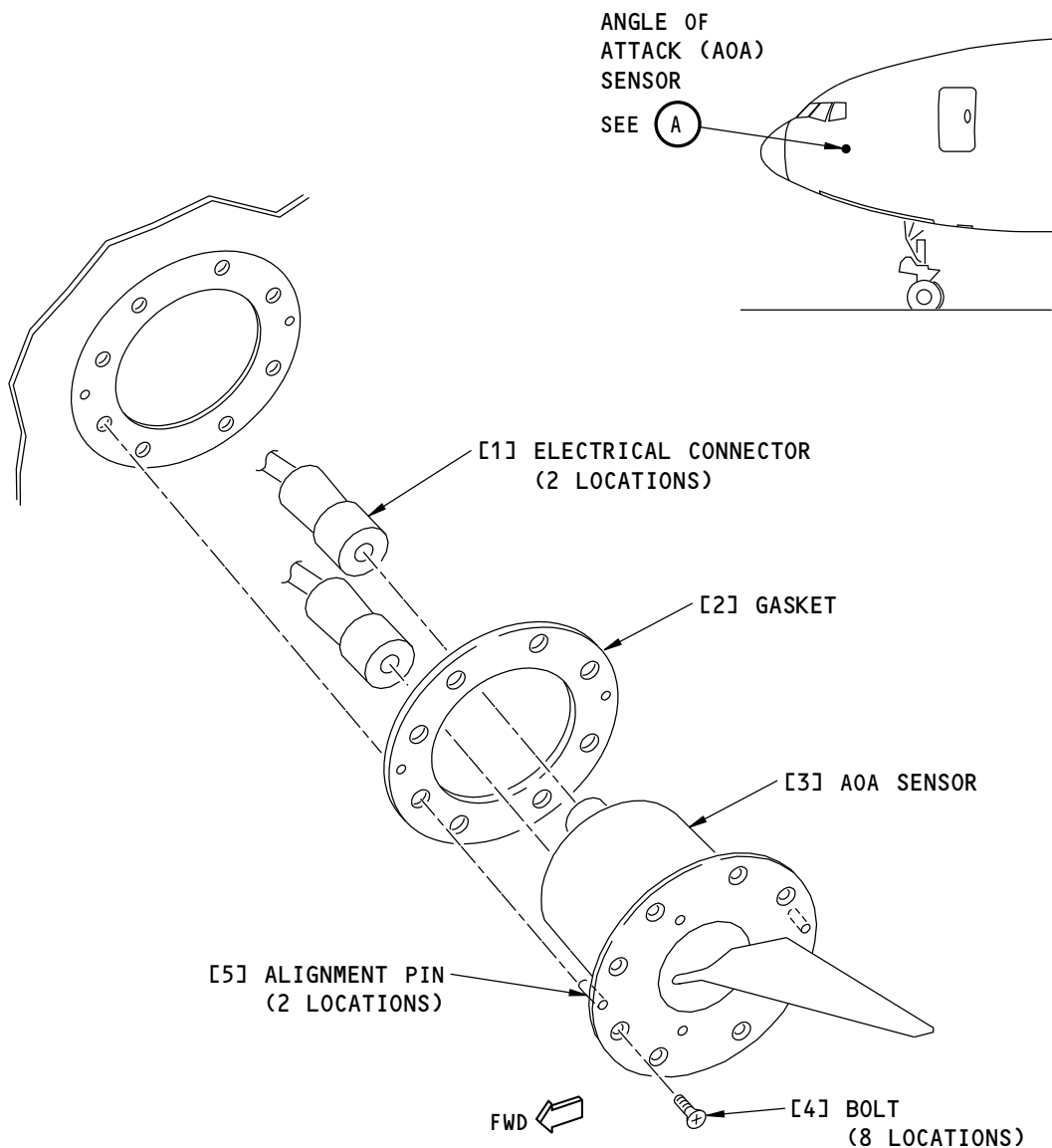
EFFECTIVITY
ARO ALL

34-21-04

D633W101-ARO

Page 402
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



NOTE: LEFT AOA SENSOR SHOWN,
RIGHT AOA SENSOR OPPOSITE.

ANGLE OF ATTACK (AOA) SENSOR



E54713 S0006420591_V1

**Angle of Attack (AOA) Sensor Installation
Figure 401/34-21-04-990-801**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-04-400-801

3. Angle of Attack Sensor Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This procedure gives instructions to install the AOA sensor [3].

NOTE: The angle of attack sensor is referred to as the AOA sensor in this task.

- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
20-10-22-120-801	Hand Clean Metal Surfaces with Abrasives (P/B 701)
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
D00633	Grease - Aircraft General Purpose	BMS3-33

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	Gasket	34-21-04-01-025	ARO ALL
3	Sensor	34-21-04-01-016	ARO ALL

F. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

EFFECTIVITY
ARO ALL

34-21-04

D633W101-ARO

Page 404
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

G. Installation Procedure

SUBTASK 34-21-04-860-002

- (1) Make sure that these circuit breakers are open:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
F	22	C34502	AOA RESOLVER 2
L	10	C30623	PROBE/VANE HTR CTRL R

SUBTASK 34-21-04-120-001

- (2) Clean and prepare the surface and the sides of the installation hole (TASK 20-10-22-120-801).

SUBTASK 34-21-04-390-001

- (3) Apply a thin layer of grease, D00633 to the alignment pin [5] on the AOA sensor [3].

SUBTASK 34-21-04-420-001

- (4) Install the AOA sensor [3]:
- Put the new gasket [2] into position on the AOA sensor [3].
 - Remove the protective caps from the electrical connector [1].
 - Examine the electrical connector [1] for loose, bent, or broken pins.
 - Connect the electrical connector [1] to the AOA sensor [3].
 - Carefully put the AOA sensor [3] into position.
 - Install the bolts [4] in the AOA sensor [3].
 - Tighten the bolts [4] to 32 in-lb (3.6 N·m) - 39 in-lb (4.4 N·m).
 - Make sure the surface of the AOA sensor [3] base is flush with the airplane skin surface, within ± 0.04 inch.
 - Measure the resistance between the base of the sensor [3] and the airplane skin with a intrinsically safe approved bonding meter, COM-1550.
 - If the resistance is more than 0.010 ohm, do these steps:
 - Remove the sensor [3].
 - Clean the bonding surfaces, including the countersunk holes in the sensor [3] (SWPM 20-20-00).
 - Replace the bolts [4] with new bolts [4].
 - Re-install the sensor [3].
 - Measure the resistance between the base of the sensor [3] and the airplane skin with a ohmmeter.
 - If the resistance is more than 0.010 ohms, do these steps:
 - <1> Remove the sensor [3].
 - <2> Replace the nutplates and rivets that attach the sensor [3] (SRM 51-40-02).

EFFECTIVITY
ARO ALL

34-21-04

D633W101-ARO

Page 405
May 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

<3> Re-install the sensor [3] and make sure the bonding resistance is not more than 0.010 ohm.

- (j) Apply sealant, A00247, around the AOA sensor [3].

NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. But, you must apply the sealant as soon as possible to keep moisture out of the area between the sensor and airplane skin. The sealant deferral must not exceed a maximum of eight weeks.

SUBTASK 34-21-04-860-003

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
F	22	C34502	AOA RESOLVER 2
L	10	C30623	PROBE/VANE HTR CTRL R

H. Installation Test

SUBTASK 34-21-04-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-04-740-001

- (2) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the AOA sensor [3]:
- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) EXTENDED MAINTENANCE
 - 3) MAINTENANCE PLANNING
 - 4) EXISTING MAINTENANCE MEMOS
 - 5) CONTINUE
- (b) Look at the maintenance messages that show and make sure there are no maintenance messages for the AOA sensor.
- (c) If a maintenance message for the AOA sensor shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 34-21-04-740-002

- (3) Use a maintenance access terminal (MAT) to do an operational test of the heater for the AOA sensor [3] you replaced.

EFFECTIVITY
ARO ALL

34-21-04

D633W101-ARO

Page 406
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



WARNING

KEEP PERSONS AND EQUIPMENT AWAY FROM THE LEFT PITOT PROBES AND THE LEFT ANGLE OF ATTACK VANE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Air Data Sensor Anti-Ice System
 - 5) OPERATIONAL TEST
 - 6) Pitot/AOA Heat (Left, Right) Test
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA, or refer to the applicable Maintenance Message Index in the FIM.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Page 407
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ANGLE OF ATTACK SENSOR - INSPECTION/CHECK

1. General

- A. This procedure does an inspection of the Angle-Of-Attack (AOA) sensor for damage and malfunction.
- B. Leading edge vane damage (nicks, dents, deformation) 0.050 in. (1.270 mm) or more is not permitted and a cause for removal. Non-trailing edge minor scratches are permitted and are not a cause for removal.

TASK 34-21-04-200-801-001

2. Angle of Attack Sensor - Inspection/Check

(Figure 601)

A. General

- (1) This procedure determines if the Angle-Of-Attack (AOA) sensors are serviceable for continued use or if they should be removed for replacement.

B. References

Reference	Title
34-21-04 P/B 401	ANGLE OF ATTACK SENSOR - REMOVAL/INSTALLATION

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-13690	Gage - Gram, Approx. 250 - 350 Gram Force Capacity, +/- 0.1% Part #: GD-25 Supplier: 27596 Part #: GD-30 Supplier: 27596

D. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

E. Prepare for the Inspection/Check

SUBTASK 34-21-04-860-008-001

- (1) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

Row	Col	Number	Name
D	1	C30408	AOA PROBE HTR R
F	22	C34502	AOA RESOLVER 2
L	10	C30623	PROBE/VANE HTR CTRL R

NOTE: Each AOA connects to resolver 1 and 2.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Config 1
Page 601
Sep 05/2018

777-200/300
AIRCRAFT MAINTENANCE MANUAL

F. Procedure

SUBTASK 34-21-04-280-005-001



MAKE SURE THAT THE AOA HEAT IS NOT ON. IF YOU DO NOT, INJURY TO PERSONS CAN OCCUR.

- (1) Make sure that the AOA probe heat is OFF.

SUBTASK 34-21-04-280-001-001

- (2) Move the AOA vane from stop to stop.
 - (a) Position the vane against one stop, then lightly tap the vane to cause movement to the other stop.
 - 1) The vane must move smoothly through a range of approximately 200 degrees with just a light resistance caused by the viscous damper.

NOTE: The vane movement gives the condition of the unit. For a satisfactory unit, the vane moves smoothly and the viscous damper will not let the vane touch the opposite stop. In a damaged unit, the vane moves easily with no resistance and hits the opposite stop, or a mechanical failure locks the mechanism.
- (3) Make sure that the vane counterweight of the AOA sensor does not stick against the upper vane end stop.
 - (a) Turn the vane up and put it against the vane end stop.
 - (b) Hold the vane tightly against the vane end stop manually for 3 seconds then release.
 - (c) Put the measurement arm of the gram gage, COM-13690 against the AOA vane at the bottom of the trailing edge as shown in Figure 601.
 - (d) As slowly as possible, move the vane away from the vane end stop position.
 - (e) Record the results.
 - 1) If the gage reads below 110 grams, then the sensor is serviceable.
 - 2) If the gage reads between 110 and 170 grams, you must replace the sensor within 90 (ninety) days.
 - 3) If the gage reads more than 170 grams, then replace the AOA sensor. Do this task: ANGLE OF ATTACK SENSOR - REMOVAL/INSTALLATION, PAGEBLOCK 34-21-04/401.

SUBTASK 34-21-04-280-002-001

- (4) Make sure that the vane counterweight of the AOA sensor does not stick against the lower vane end stop.
 - (a) Turn the vane down and put it against the vane end stop.
 - (b) Hold the vane tightly against the vane travel end stop manually for 3 seconds then release.
 - (c) Put the measurement arm of the gram gage, COM-13690 against the AOA vane at the bottom of the trailing edge as shown in Figure 601.
 - (d) As slowly as possible, move the vane away from the vane end stop position.
 - (e) Record the results.
 - 1) If the gage reads below 110 grams, then the sensor is serviceable.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Config 1
Page 602
Sep 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- 2) If the gage reads between 110 and 170 grams, you must replace the sensor within 90 (ninety) days.
- 3) If the gage reads more than 170 grams, replace the AOA sensor. Do this task:
ANGLE OF ATTACK SENSOR - REMOVAL/INSTALLATION,
PAGEBLOCK 34-21-04/401.

SUBTASK 34-21-04-280-003-001

- (5) Move the vane to a horizontal position away from the vane end stop.

SUBTASK 34-21-04-280-004-001

- (6) Do the same procedure to the other AOA vane.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-21-04-860-009-001

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	8	C34501	AOA RESOLVER 1
M	25	C30624	PROBE/VANE HTR CTRL L

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
F	22	C34502	AOA RESOLVER 2
L	10	C30623	PROBE/VANE HTR CTRL R

————— **END OF TASK** —————

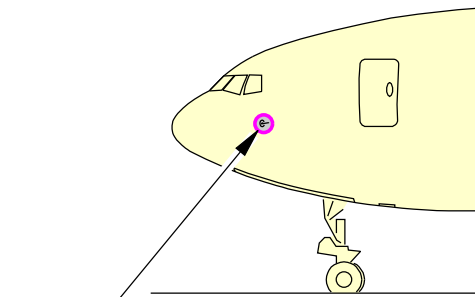
EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

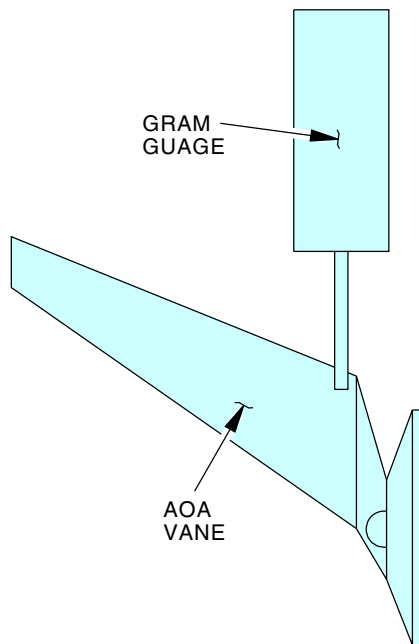
Config 1
Page 603
Sep 05/2018

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



ANGLE OF
ATTACK (AOA)
SENSOR

A



ANGLE OF ATTACK (AOA) SENSOR
(EXAMPLE)

A

2832990 S0000658559_V1

AOA Sensor - Inspection/Check
Figure 601/34-21-04-990-802-001

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-04

Config 1
Page 604
Sep 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TOTAL AIR TEMPERATURE PROBE - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the total air temperature (TAT) probe
- (2) An installation of the TAT probe.

TASK 34-21-05-000-801

2. Total Air Temperature Probe - Removal

(Figure 401)

A. General

- (1) This procedure gives instructions to remove the TAT probe [4].

NOTE: The total air temperature probe is referred to as the TAT probe in this task.

B. Tools/Equipment

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

D. Removal Procedure

SUBTASK 34-21-05-860-001

- (1) Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

Row	Col	Number	Name
D	25	C30411	TAT PROBE HTR

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-05

Page 401
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-21-05-020-001



WARNING

MAKE SURE THAT THE TAT PROBE HEAT IS OFF. THE PROBE BECOMES HOT IF IT IS ON. INJURIES TO PERSONNEL CAN OCCUR.

- (2) Remove the TAT probe [4]:
- (a) Use a sealant removal tool, COM-2481 to remove the sealant from around the TAT probe [4].
 - (b) Remove the bolts [5] from the TAT probe [4].



CAUTION

DO NOT PULL THE TAT PROBE AWAY FROM THE FUSELAGE WITH TOO MUCH FORCE. TOO MUCH FORCE ON THE TAT PROBE CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTOR [3], THE PNEUMATIC HOSE CONNECTOR [2], OR THE AIRPLANE SKIN.

- (c) Carefully pull the TAT probe [4] out until you can get to the electrical connector [1] and the pneumatic hose connector [2].



CAUTION

USE WRENCHES TO APPLY COUNTER PRESSURE ON EACH SIDE OF THE FITTING DURING DISASSEMBLY. DAMAGE TO THE TUBE OR THE FITTING CAN OCCUR.

- (d) Disconnect the electrical connector [1] from the TAT probe [4].
- (e) Disconnect the pneumatic hose connector [2] from the TAT probe [4]
- (f) Temporarily attach the electrical connector [1] and the pneumatic hose connector [2] to make sure they do not fall into the fuselage.
- (g) Install protective caps on the electrical connector [1] and the pneumatic hose connector [2].
- (h) Remove the gasket [3] and discard it.

————— **END OF TASK** —————

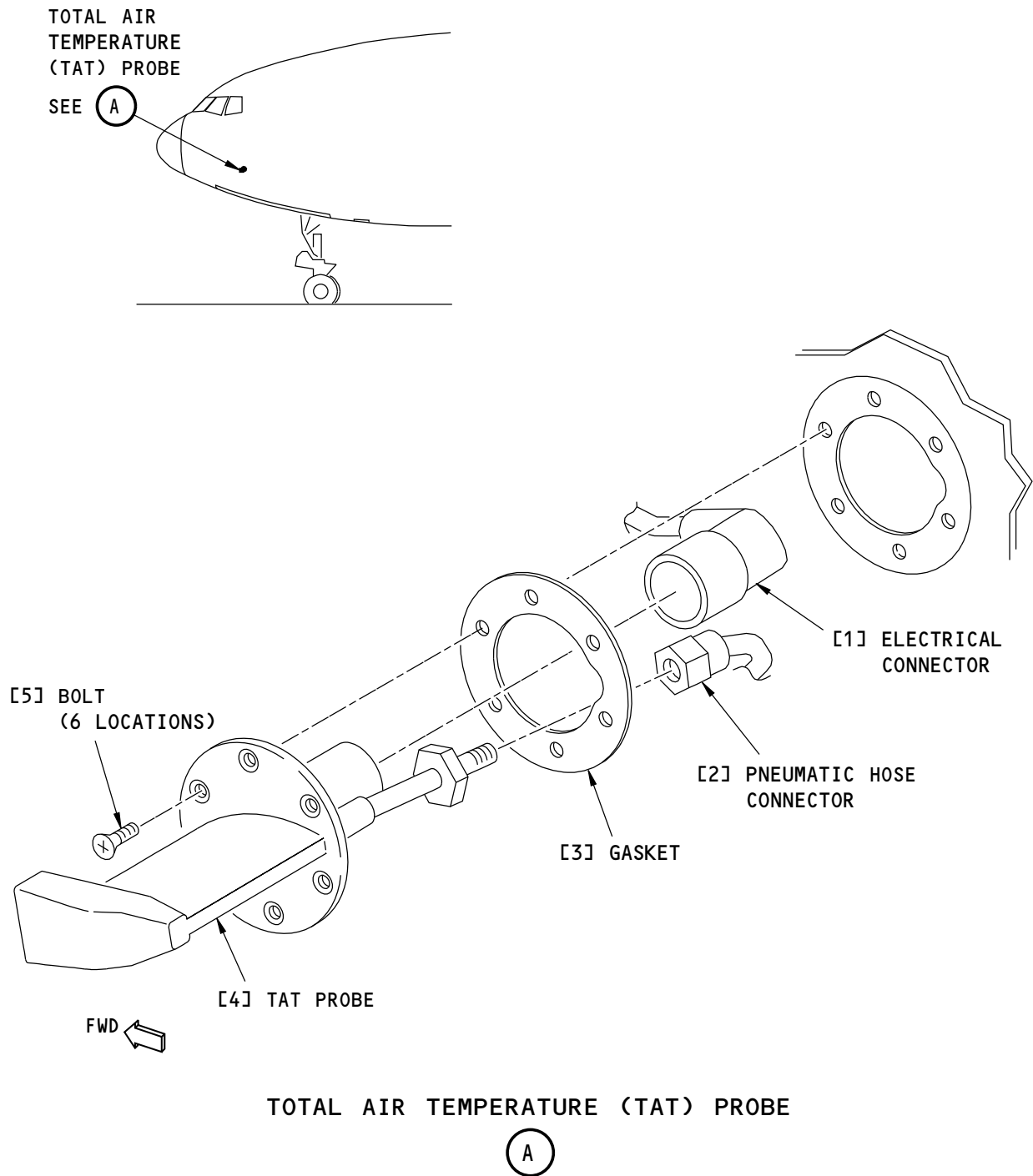
EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 402
Sep 05/2017

BOEING
777-200/300
AIRCRAFT MAINTENANCE MANUAL



E54721 S0006420598_V1

Total Air Temperature (TAT) Probe Installation
Figure 401/34-21-05-990-801

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-05

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-21-05-400-801

3. Total Air Temperature Probe - Installation

(Figure 401)

A. General

- (1) This procedure gives instructions to install the TAT probe [4].

NOTE: The total air temperature probe is referred to as the TAT probe in this task.

- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
20-10-22-120-801	Hand Clean Metal Surfaces with Abrasives (P/B 701)
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
SRM 51-40-02	Fastener Installation and Removal

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Gasket	34-21-05-02-120	ARO ALL
4	Probe	34-21-05-02-115	ARO ALL

F. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 404
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

G. Installation Procedure

SUBTASK 34-21-05-860-009

- (1) Make sure that this circuit breaker is open:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR

SUBTASK 34-21-05-100-001

- (2) Clean and prepare the surface and the sides of the installation hole (TASK 20-10-22-120-801)

SUBTASK 34-21-05-420-001

- (3) Install the TAT probe [4]:
- (a) Put the new gasket [3] into position on the TAT probe [4].
 - (b) Remove the protective caps from the electrical connector [1] and the pneumatic hose connector [2].
 - (c) Examine the electrical connector [1] for loose, bent, or broken pins.



CAUTION

USE WRENCHES TO APPLY COUNTER PRESSURE ON EACH SIDE OF THE FITTING DURING ASSEMBLY. DAMAGE TO THE TUBE OR THE FITTING CAN OCCUR.

- (d) Connect the electrical connector [1] to the TAT probe [4].
- (e) Connect the pneumatic hose connector [2] to the TAT probe [4].
- (f) Carefully put the TAT probe [4] into position.
NOTE: The large intake should point forward.
- (g) Install the bolts [5] in the TAT probe [4].
- (h) Tighten the bolts [5] to 18 in-lb (2.0 N·m) to 22 in-lb (2.5 N·m).
- (i) Make sure the face of the TAT probe [4] aligns to within 0.01 inch or less of the airplane skin.
- (j) Measure the resistance with a intrinsically safe approved bonding meter, COM-1550 between the base of the probe [4] and the airplane skin.
 - 1) If the resistance is more than 0.010 ohms, do these steps:
 - a) Remove the probe [4].
 - b) Clean the bonding surfaces, including the countersunk holes in the probe [4] (SWPM 20-20-00)
 - c) Replace the bolts [5] with new bolts [5].
 - d) Install the probe [4].
 - e) Measure the resistance between the body of the probe [4] and the airplane skin with a ohmmeter.
 - f) If the resistance is more than 0.010 ohms, do these steps:
 - <1> Remove the probe [4].
 - <2> Replace the nutplates and rivets that attach the probe [4] SRM 51-40-02.
 - <3> Reinstall the probe [4] and make sure the bonding resistance is not more than 0.010 ohms.

EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (k) Apply sealant, A00247, around the TAT probe [4].

NOTE: It is not necessary to apply the sealant immediately, if the cure time will cause a flight delay. But, you must apply the sealant as soon as possible to keep moisture out of the area between the probe and airplane skin. The sealant deferral must not exceed a maximum of eight weeks.

SUBTASK 34-21-05-860-005

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR

H. Installation Test

SUBTASK 34-21-05-860-007

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-21-05-740-002

- (2) Use a maintenance access terminal (MAT) to do an operational test of the heater for the TAT probe [4] you removed and replaced.



WARNING

KEEP PERSONS AND EQUIPMENT AWAY FROM THE TAT PROBE. THESE COMPONENTS WILL BECOME VERY HOT AND CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 30 Air Data Sensor Anti-Ice System
 - 5) OPERATIONAL TEST
 - 6) TAT Probe Heat
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 406
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TOTAL AIR TEMPERATURE PROBE - INSPECTION/CHECK

1. General

- A. This procedure does an inspection of the total air temperature (TAT) probe for damage.

TASK 34-21-05-200-802

2. Total Air Temperature Probe - Inspection

A. References

Reference	Title
34-21-05-000-801	Total Air Temperature Probe - Removal (P/B 401)
34-21-05-400-801	Total Air Temperature Probe - Installation (P/B 401)

B. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right

C. Prepare for Inspection

SUBTASK 34-21-05-860-010

- (1) Open this circuit breaker and install safety tag:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR

D. Procedure

SUBTASK 34-21-05-212-002



WARNING

MAKE SURE THAT THE TAT PROBE HEAT IS OFF. THE PROBE BECOMES HOT IF IT IS ON. INJURIES TO PERSONNEL CAN OCCUR.

- (1) Visually inspect the sensor for physical damage such as cracking or separation of parts on the air scoop and strut.
- (a) If one or more cracks or separation is visible, then replace the TAT probe.
- These are the tasks:
- Total Air Temperature Probe - Removal, TASK 34-21-05-000-801
- Total Air Temperature Probe - Installation, TASK 34-21-05-400-801
- (2) Do a check for wear and indentations greater than 0.17 inches deep, measured from the leading edge of the strut. When measuring from the trailing edge of the strut, any measurement less than 1.83 inches is unacceptable.
- (a) If one or more cracks or separation is visible, then replace the TAT probe.
- These are the tasks:
- Total Air Temperature Probe - Removal, TASK 34-21-05-000-801
- Total Air Temperature Probe - Installation, TASK 34-21-05-400-801
- (3) Check for wear and indentations greater than 0.04 inches deep, measured from the front of scoop. When measuring from back of scoop, any measurement less than 2.11 inches is unacceptable.

EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 601
Sep 05/2017



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

- (a) If one or more cracks or separation is visible, then replace the TAT probe.

These are the tasks:

Total Air Temperature Probe - Removal, TASK 34-21-05-000-801

Total Air Temperature Probe - Installation, TASK 34-21-05-400-801

E. Put the Airplane Back to its Usual Condition

SUBTASK 34-21-05-860-011

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

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	25	C30411	TAT PROBE HTR

———— **END OF TASK** ————

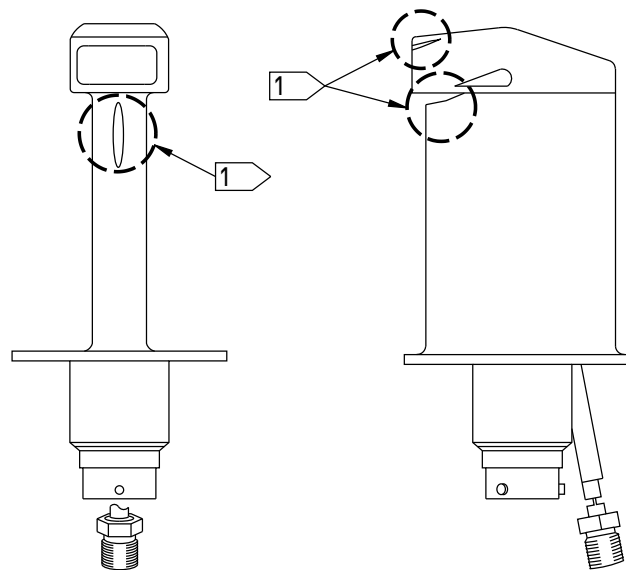
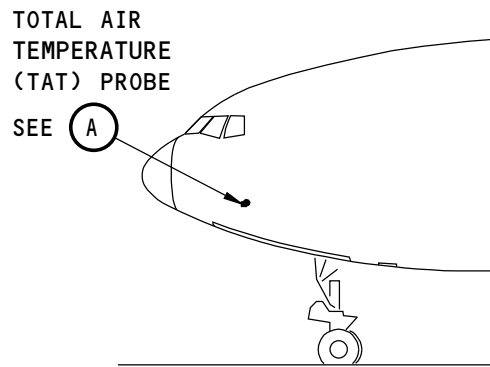
EFFECTIVITY
ARO ALL

34-21-05

D633W101-ARO

Page 602
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL



TOTAL AIR TEMPERATURE PROBE

(A)

1 REJECT: CRACKING AND/OR SEPARATION VISIBLE

1423530 S0000257560_V1

TAT Probe - Inspection/Check
Figure 601/34-21-05-990-802 (Sheet 1 of 2)

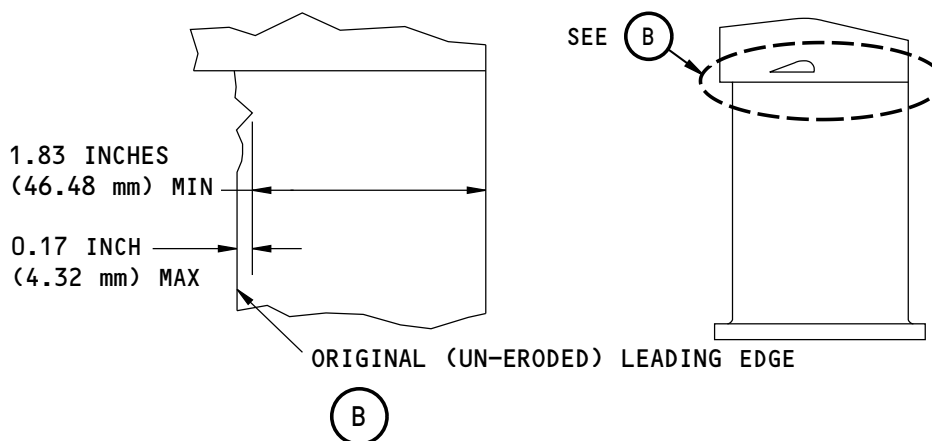
EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-05

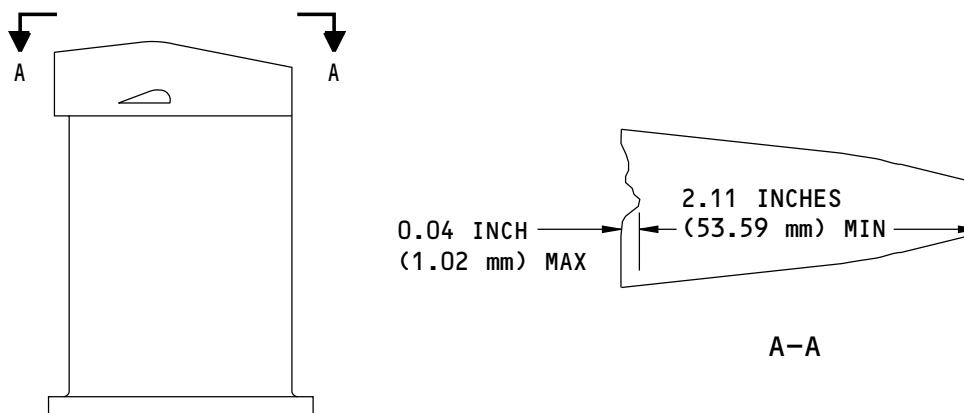
Page 603
Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



NOTE: DIMENSIONS ARE STRAIGHT LINE (NOT ALONG CURVED SURFACES).

REJECT: WEAR/INDENTATION EXCEEDING 0.17 INCH (4.32 mm) DEEP FROM FRONT OR MEASURING LESS THAN 1.83 INCHES (46.48 mm) FROM BACK.



NOTE: DIMENSIONS ARE STRAIGHT LINE (NOT ALONG CURVED SURFACES).

REJECT: WEAR/INDENTATION EXCEEDING 0.04 INCH (1.02 mm) DEEP FROM FRONT OR MEASURING LESS THAN 2.11 INCHES (53.59 mm) FROM BACK.

1423531 S0000257561_V1

**TAT Probe - Inspection/Check
Figure 601/34-21-05-990-802 (Sheet 2 of 2)**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-21-05

Page 604
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

STANDBY MAGNETIC COMPASS - MAINTENANCE PRACTICES

1. General

A. This procedure has two tasks:

- (1) Each task is a different procedure that you can use to do a compass swing of the standby magnetic compass. One procedure is to use a standby compass calibrator (Calibrator Procedure). The other procedure is to tow the airplane around a compass rose (Tow Around Procedure). Use only one of these procedures to do a swing of the standby compass.

NOTE: Air bubbles can occur in the standby magnetic compass because of temperature change and/or decrease of liquid. Maintenance limits made for liquid quantity make sure of satisfactory compass operation. When air bubble is larger than 3/8 inch wide and 1/8 inch high, with the glass approximately vertical position, replace the standby magnetic compass.

- (a) Each task has two parts. The first part is to do a swing of the standby compass through four compass points (north, east, south, west). Use this procedure for compass calibration. The second part is to do a swing the standby compass through 12 compass points that are approximately 30 degrees apart. Use this procedure to measure the remaining errors and to make sure the standby compass heading is accurate. Use this data to make the compass correction card. This card must stay with the standby compass.

B. It is not necessary to keep a constant radius or tangency during airplane tow around the compass rose or swing area. Tow direction is optional. These make no difference when you calculate the solutions.

C. Do not park vehicles less than 250 feet from the airplane during the compass swing.

D. You can use the auxiliary power unit (APU) during the compass swing.

TASK 34-23-00-820-802

2. Standby Magnetic Compass Calibrator Procedure

(Figure 201)

A. General

- (1) Use tools that are not magnetic to adjust the standby magnetic compass.

B. References

Reference	Title
09-11-00-580-801	Maintenance Towing (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (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-1925	Kit - Calibration, Standby Compass Part #: 2591553-901 Supplier: 3BMV1 Part #: 2591553-903 Supplier: 3BMV1
STD-1167	Tripod - Non-magnetic

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 201
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Compass Correction Card	34-23-51-01A-005	ARO ALL

E. Location Zones

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

F. Calibrator Adjustment

SUBTASK 34-23-00-820-003

- (1) Do this procedure to calibrate the standby compass calibrator (SCC) (standby compass calibration kit, COM-1925) to the magnetic field at the location of the designated compass swing area.
 - (a) Make sure that there are no vehicles or airplanes less than 250 feet away.
 - (b) Make sure that there are no buildings less than 250 feet away.
 - (c) Put a tripod, STD-1167 at the center of the compass swing area.
 - (d) Attach a master magnetic compass to the SCC with two mounting screws.

NOTE: You can use an accurate standby magnetic compass for a master magnetic compass. Make sure that the N-S and E-W adjustment screws are at neutral.
 - (e) Loosen the thumbscrew of the magnet assembly and remove the magnet assembly.
 - (f) Loosen the thumbscrew of the knob assembly and remove the knob assembly.
 - (g) Put the SCC/master compass assembly on the tripod.

NOTE: Make sure the assembly is level.
 - (h) Turn the assembly until the master magnetic compass displays an indication of magnetic north (N).
 - (i) Install the magnet assembly.
 - (j) Install the knob assembly.
 - (k) Turn the top and bottom SCC dials to show an indication of E at the index line.
 - (l) Make a record of the heading shown on the standby magnetic compass.
 - (m) Turn the top and bottom SCC dials to show an indication of W at the index line.
 - (n) Make a record of the heading shown on the standby magnetic compass.
 - (o) Turn the magnetic field cancellation adjustment screw on the SCC to decrease the heading errors in each direction (E and W) to a minimum.
 - (p) Continue to adjust the SCC dials for each direction (E and W). Then, use the magnetic field cancellation adjustment (MFCA) screw until the errors are at a minimum.

NOTE: Continue to do this procedure until the error in each direction is at a minimum. When the errors are at a minimum, do not move the MFCA screw until the compass swing is completed.

G. Procedure for the four point calibration swing

SUBTASK 34-23-00-580-008

- (1) To tow the airplane to the designated compass swing area or approved swing site, do this task: Maintenance Towing, TASK 09-11-00-580-801

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 202
Sep 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) An alternate procedure when a compass rose or an approved swing site is not available, is to position the aircraft on a ramp line having a known magnetic heading.

NOTE: The compass swing area must be a level area with a smooth surface. It must be sufficiently strong to hold the weight of the airplane. The area must be large enough to tow or taxi the airplane. Make sure all vehicles other than the tow vehicle are not less than 250 feet from the airplane. The horizontal component of the earth's magnetic field must be constant (± 1 degree) in the test area. Measure the direction of the horizontal component if magnetic material (such as a new building) is less than 600 feet from the compass swing area. Do not use the compass swing area if the horizontal component is not constant (± 1 degree).

SUBTASK 34-23-00-860-009

- (2) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-23-00-860-010

- (3) Energize all of the electronic equipment, radios, and control cabin lights for the usual conditions that occur in flight.

SUBTASK 34-23-00-860-011

- (4) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.
- (a) Make sure the heading shown on the ND is the same as the heading of the compass rose or approved location. If the compass rose heading or approved location is not the same as the ND heading, then get a corrected ND heading. The corrected ND heading can then be used until the procedure is completed.

SUBTASK 34-23-00-860-012

- (5) Set the ND mode selector on the left EFIS control panel on the glareshield to APP.

SUBTASK 34-23-00-860-013

- (6) Set the heading reference switch below the captain's ND to NORM.

SUBTASK 34-23-00-860-014

- (7) Make sure that the captain's ND shows a magnetic heading.

SUBTASK 34-23-00-860-015



USE TOOLS THAT ARE NOT MAGNETIC. MAGNETIC TOOLS CAN CAUSE COMPASS ADJUSTMENT ERRORS.

- (8) Make sure that the N-S and E-W adjustment screws on the standby compass are at neutral.

SUBTASK 34-23-00-580-009

- (9) Turn the airplane to a direction where the captain's ND shows a magnetic heading of 0 degrees.

SUBTASK 34-23-00-020-001

- (10) Remove and keep the lower left and upper right mounting screws on the standby magnetic compass.

SUBTASK 34-23-00-480-001

- (11) Use the two mounting screws to install the SCC on the face of the standby magnetic compass.

SUBTASK 34-23-00-820-004

- (12) Turn the top and bottom SCC dials to show an indication of E at the index line.

SUBTASK 34-23-00-970-013

- (13) Make a record of the heading shown on the standby magnetic compass.

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 203
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-23-00-820-005

- (14) Turn the top and bottom SCC dials to show an indication of W at the index line.

SUBTASK 34-23-00-970-014

- (15) Make a record of the heading shown on the standby magnetic compass.

SUBTASK 34-23-00-820-006

- (16) Turn the E-W adjustment screw on the standby magnetic compass until the error in the last two recorded values is at a minimum.

NOTE: Divide the error in each of the two directions as equally as possible.

SUBTASK 34-23-00-820-007

- (17) Turn the top and bottom SCC dials to show an indication of N at the index line.

SUBTASK 34-23-00-970-015

- (18) Make a record of the heading shown on the standby magnetic compass.

SUBTASK 34-23-00-820-008

- (19) Turn the top and bottom SCC dials to show an indication of S at the index line.

SUBTASK 34-23-00-970-016

- (20) Make a record of the heading shown on the standby magnetic compass.

SUBTASK 34-23-00-820-009

- (21) Turn the N-S adjustment screw on the standby magnetic compass until the error in the last two recorded values is at a minimum.

NOTE: Divide the error in each of the two directions as equally as possible.

SUBTASK 34-23-00-820-010

- (22) Continue to adjust the SCC dials for each pair of directions (E-W, N-S). Then turn the E-W and N-S adjustment screws until the errors are at a minimum.

NOTE: Continue to do this procedure until the error in each pair of directions is at a minimum. Start with E-W and turn the E-W adjustment screw. Then, do N-S and turn the N-S adjustment screw. When the errors are at a minimum, do the steps that follow for the 12-point accuracy swing.

H. Procedure for the twelve point accuracy swing

SUBTASK 34-23-00-580-010

- (1) Move the airplane to a location near the center of the compass swing area.

SUBTASK 34-23-00-580-011

- (2) Adjust the SCC dials to indicate these magnetic headings: 0, 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, and 330 degrees.

SUBTASK 34-23-00-970-017

- (3) Make a record of the magnetic heading, MH, and the standby compass heading, CH, for each 30 degree increment.

SUBTASK 34-23-00-970-035

- (4) Calculate and make a record of the difference for each 30 degree heading as follows:

$$D = MH - CH$$

NOTE: For each of the magnetic headings that follow, the remaining deviation for the standby magnetic compass must not be more than ± 8 degrees for FAA certification. For CAA certification, the remaining deviation must not be more than ± 5 degrees.

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 204
Sep 05/2016



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-23-00-970-018

- (5) Make a record of the standby compass heading, CH, in the STEER column of the Compass Correction Card [1] for each 30 degree heading increment.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 34-23-00-860-016

- (1) Set the ADIRU ON/OFF switch on the overhead panel (P5) to OFF.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

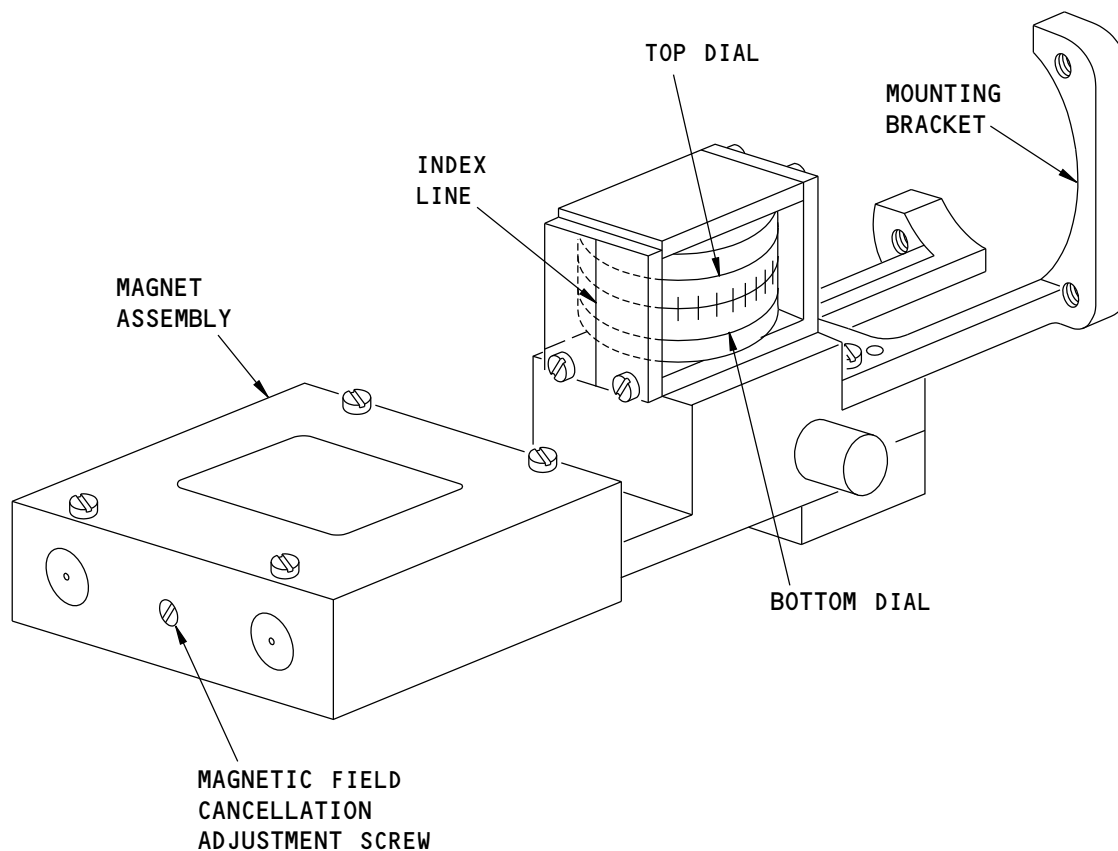
D633W101-ARO

34-23-00

Page 205
Sep 05/2016



777-200/300
AIRCRAFT MAINTENANCE MANUAL



H39143 S0006420605_V2

Standby Compass Calibrator
Figure 201/34-23-00-990-801

EFFECTIVITY
ARO ALL

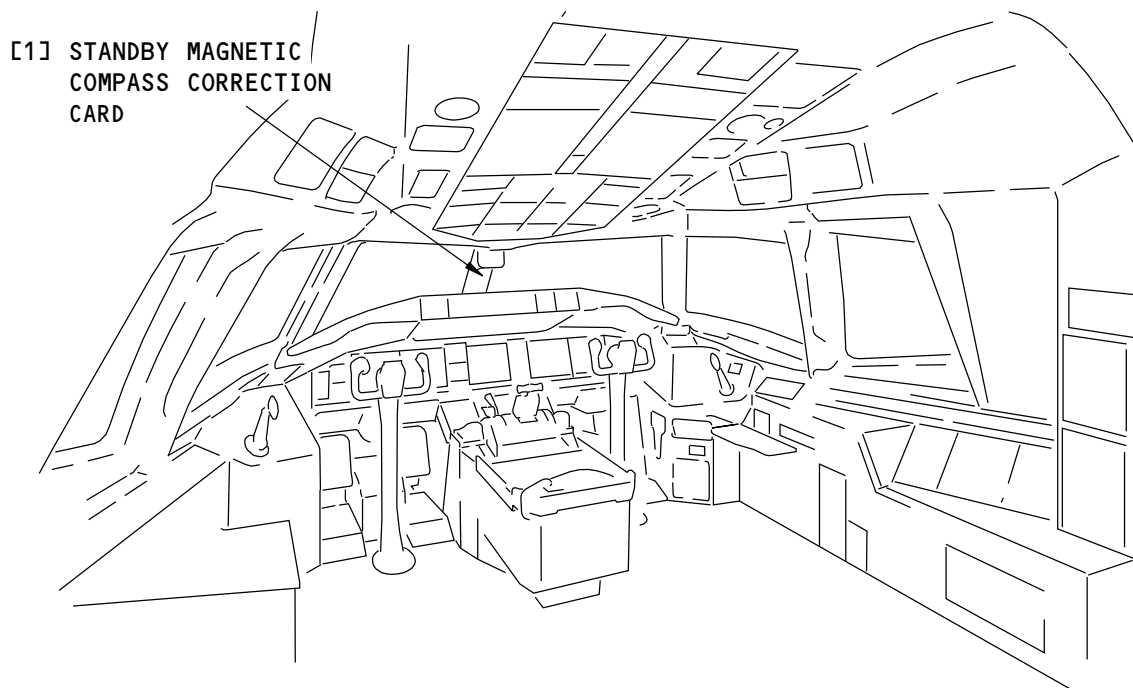
34-23-00

D633W101-ARO

Page 206
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



FLIGHT COMPARTMENT

2156667 S0000472526_V1

Standby Magnetic Compass
Figure 202/34-23-00-990-803

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 207
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-23-00-820-801

3. Standby Magnetic Compass Tow Around Procedure

A. General

- (1) Use tools that are not magnetic to adjust the standby magnetic compass.

B. References

Reference	Title
09-11-00-580-801	Maintenance Towing (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Compass Correction Card	34-23-51-01A-005	ARO ALL

D. Location Zones

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

E. Procedure for the four point calibration swing

SUBTASK 34-23-00-580-001

- (1) To tow the airplane to the compass swing area, do this task: Maintenance Towing, TASK 09-11-00-580-801

NOTE: The compass swing area must be a level area with a smooth surface. It must be sufficiently strong to hold the weight of the airplane. The area must be large enough to tow or taxi the airplane. Make sure all vehicles other than the tow vehicle are not less than 250 feet from the airplane. The horizontal component of the earth's magnetic field must be constant (± 1 degree) in the test area. Measure the direction of the horizontal component if magnetic material (such as a new building) is less than 600 feet from the compass rose. Do not use the compass rose if the horizontal component is not constant (± 1 degree).

SUBTASK 34-23-00-860-001

- (2) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-23-00-860-002

- (3) Energize all of the electronic equipment, radios, and control cabin lights for the usual conditions that occur in flight.

SUBTASK 34-23-00-860-003

- (4) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

SUBTASK 34-23-00-860-004

- (5) Set the ND mode selector on the left EFIS control panel on the glareshield to APP.

SUBTASK 34-23-00-860-005

- (6) Set the heading reference switch below the captain's ND to NORM.

SUBTASK 34-23-00-860-006

- (7) Make sure that the captain's ND shows a magnetic heading.

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 208
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-23-00-860-007



CAUTION

USE TOOLS THAT ARE NOT MAGNETIC. MAGNETIC TOOLS CAN CAUSE COMPASS ADJUSTMENT ERRORS.

- (8) Make sure that the N-S and E-W adjustment screws on the standby compass are at neutral.

SUBTASK 34-23-00-580-002

- (9) Turn the airplane to a direction where the captain's ND shows a heading (± 2 degrees) of magnetic north, (MH)_n.

SUBTASK 34-23-00-970-001

- (10) Make a record of the magnetic heading, (MH)_n, and the standby compass heading, (CH)_n.

SUBTASK 34-23-00-970-002

- (11) Calculate and make a record of the north heading deviation, D_n, as follows: $D_n = (MH)_n - (CH)_n$

SUBTASK 34-23-00-580-003

- (12) Turn the airplane to a direction where the captain's ND shows a heading (± 2 degrees) of magnetic east, (MH)_e.

SUBTASK 34-23-00-970-003

- (13) Make a record of the magnetic heading, (MH)_e, and the standby compass heading, (CH)_e.

SUBTASK 34-23-00-970-004

- (14) Calculate and make a record of the east heading deviation, D_e, as follows: $D_e = (MH)_e - (CH)_e$

SUBTASK 34-23-00-580-004

- (15) Turn the airplane to a direction where the captain's ND shows a heading (± 2 degrees) of magnetic south, (MH)_s.

SUBTASK 34-23-00-970-005

- (16) Make a record of the magnetic heading, (MH)_s, and the standby compass heading, (CH)_s.

SUBTASK 34-23-00-970-006

- (17) Calculate and make a record of the south heading deviation, D_s, as follows: $D_s = (MH)_s - (CH)_s$

SUBTASK 34-23-00-970-007

- (18) Calculate and make a record of the north-south single-cycle error coefficient, C, and its sign as follows: $C = 0.5(D_n - D_s)$

SUBTASK 34-23-00-820-001

- (19) Turn the N-S adjustment screw on the standby compass (while at the south magnetic heading) to give a compass heading indication of (CH)_s - C.

SUBTASK 34-23-00-580-005

- (20) Turn the airplane to a direction where the captain's ND shows a heading (± 2 degrees) of magnetic west, (MH)_w.

SUBTASK 34-23-00-970-008

- (21) Make a record of the magnetic heading, (MH)_w, and the standby compass heading, (CH)_w.

SUBTASK 34-23-00-970-009

- (22) Calculate and make a record of the west heading deviation, D_w, as follows: $D_w = (MH)_w - (CH)_w$

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 209
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-23-00-970-010

- (23) Calculate and make a record of the east-west single-cycle error coefficient, B, and its sign as follows: $B = 0.5(De - Dw)$

SUBTASK 34-23-00-820-002

- (24) Turn the E-W adjustment screw on the standby compass (while at the west magnetic heading) to give a compass heading indication of $(CH)_w - B$.

F. Procedure for the twelve point correction swing

SUBTASK 34-23-00-580-006

- (1) Move the airplane to a location near the center of the compass swing area.

SUBTASK 34-23-00-580-007

- (2) Turn the airplane to each of these ND magnetic headings: 0, 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, and 330 degrees.

SUBTASK 34-23-00-970-011

- (3) Make a record of the magnetic heading, MH, and the standby compass heading, CH, for each 30 degree increment.

SUBTASK 34-23-00-970-033

- (4) Calculate and make a record of the difference for each 30 degree heading as follows:

$$D = MH - CH$$

NOTE: For each of the magnetic headings that follow, the remaining deviation for the standby magnetic compass must not be more than ± 8 degrees on the ground to help ensure the FAA/EASA certification of ± 10 degrees in all directions, in level flight, is met. Check with the local agency to see if that local agency accepts certification to FAA/EASA regulations.

SUBTASK 34-23-00-970-034

- (5) Make a record of the standby compass heading, CH, in the STEER column of the Compass Correction Card [1] for each 30 degree heading increment.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-23-00-860-008

- (1) Set the ADIRU ON/OFF switch on the overhead panel (P5) to OFF.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

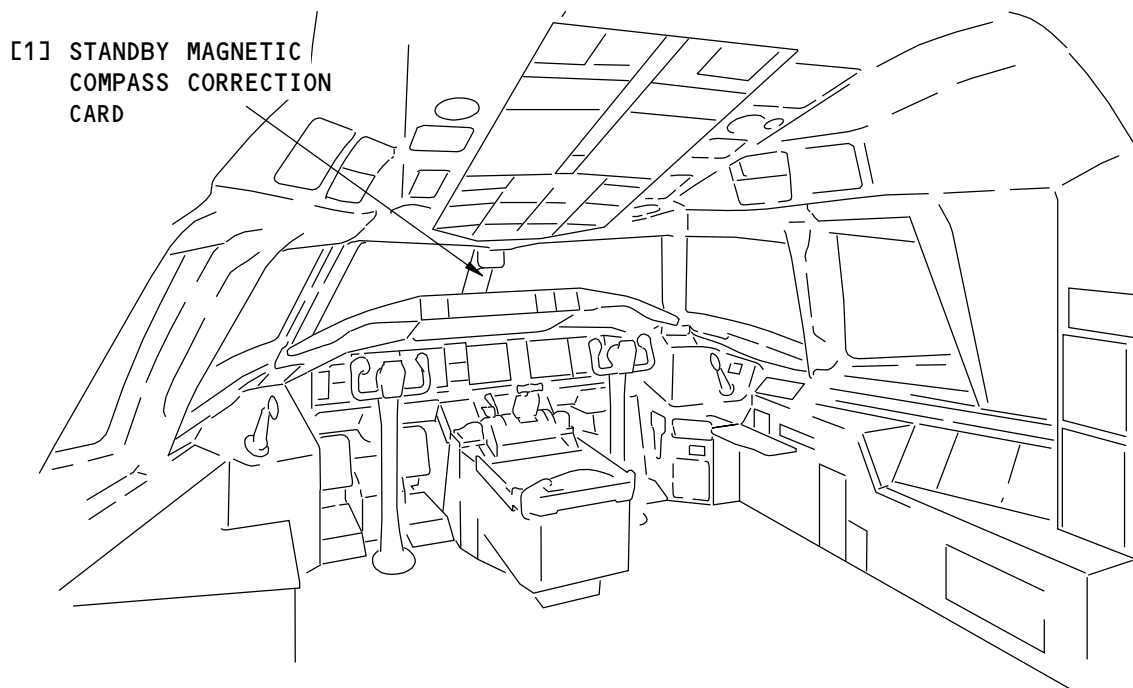
34-23-00

D633W101-ARO

Page 210
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



FLIGHT COMPARTMENT

2156667 S0000472526_V1

Standby Magnetic Compass
Figure 203/34-23-00-990-802

EFFECTIVITY
ARO ALL

34-23-00

D633W101-ARO

Page 211
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Standby Compass Lamp - Servicing

1. General

- A. This procedure contains two tasks. The first is for the removal of the standby compass lamp. The second one is for the installation of the replacement lamp.
- B. The standby compass (N100) is installed on the forward overhead panel (P43).

TASK 34-23-01-000-801

2. Standby Compass Lamp Removal

(Figure 301)

A. **Location Zones**

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

B. **Procedure**

SUBTASK 34-23-01-860-005

- (1) Open this circuit breaker and install safety tag:

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C33407	STBY INST LTS

SUBTASK 34-23-01-020-002



DO NOT PULL THE SPRING WHEN YOU REMOVE THE LAMP. THE SPRING CAN BREAK. THIS WILL CAUSE PERMANENT DAMAGE TO THE COMPASS.

- (2) Do these steps to remove the standby compass lamp:
 - (a) Remove the lampholder assembly and lamp.
 - (b) Remove the lamp from the lampholder assembly.
- NOTE: Gently twisting the lamp can assist in its removal.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-23-01

D633W101-ARO

Page 301
Sep 05/2017

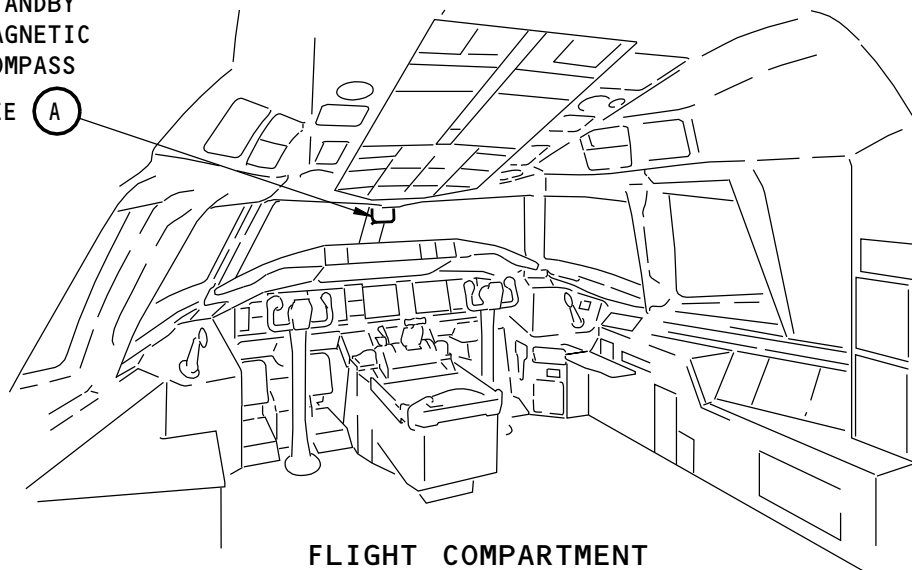


777-200/300
AIRCRAFT MAINTENANCE MANUAL

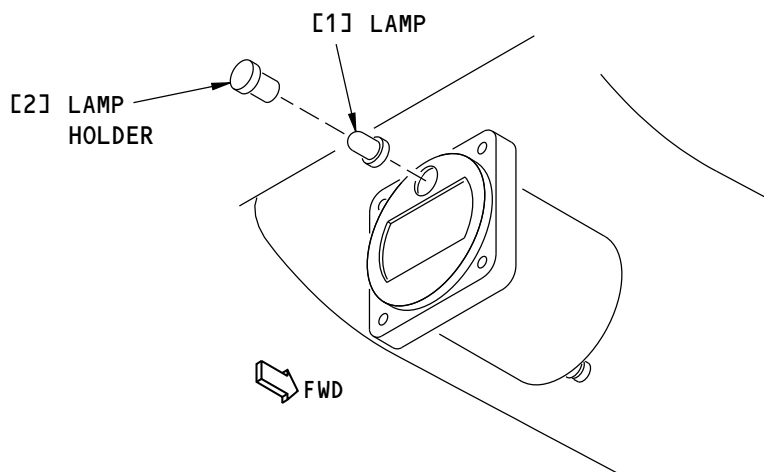
STANDBY
MAGNETIC
COMPASS

SEE

(A)



FLIGHT COMPARTMENT



STANDBY MAGNETIC COMPASS

(A)

D71500 S0000163752_V1

Standby Compass Lamp Servicing
Figure 301/34-23-01-990-803 (Sheet 1 of 2)

EFFECTIVITY
ARO ALL; AIRPLANES WITH STANDBY MAGNETIC
COMPASS P/N C-5H

D633W101-ARO

34-23-01

Page 302
Jan 05/2015

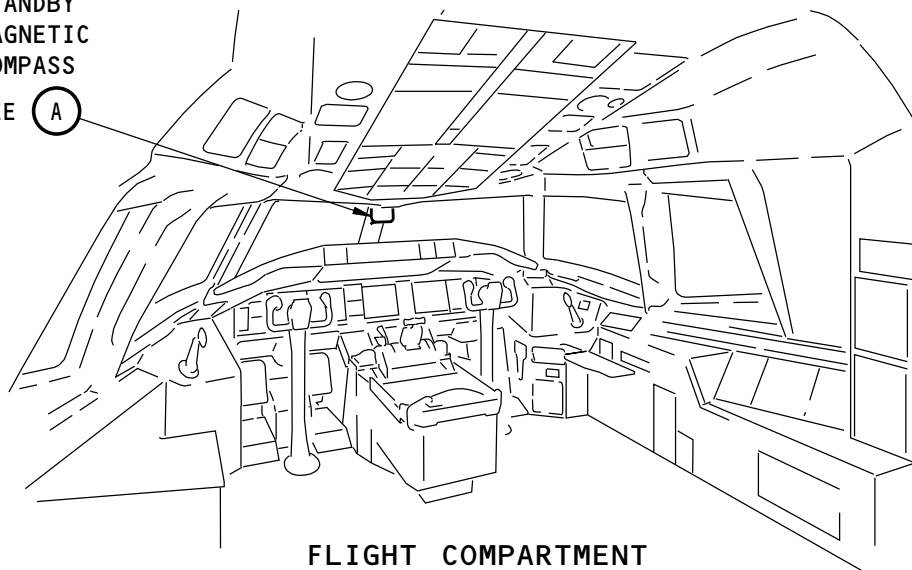


777-200/300
AIRCRAFT MAINTENANCE MANUAL

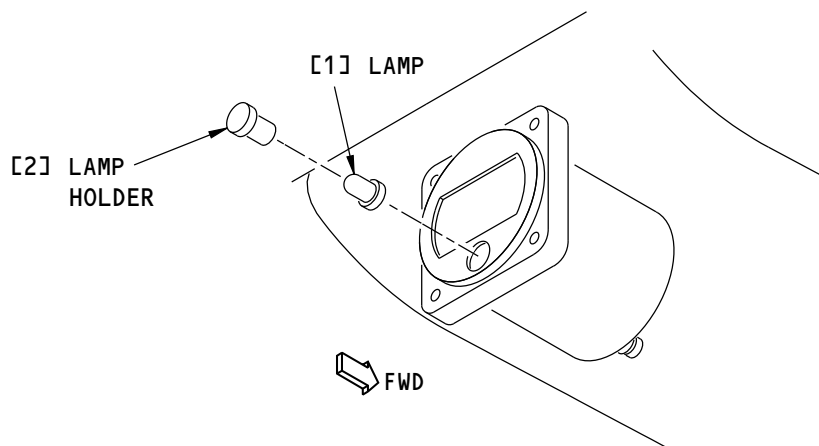
STANDBY
MAGNETIC
COMPASS

SEE

A



FLIGHT COMPARTMENT



STANDBY MAGNETIC COMPASS

A

U58941 S0000208616_V1

Standby Compass Lamp Servicing
Figure 301/34-23-01-990-803 (Sheet 2 of 2)

EFFECTIVITY
ARO ALL; AIRPLANES WITH STANDBY MAGNETIC
COMPASS P/N C-5M WITHOUT MOD-A

D633W101-ARO

34-23-01

Page 303
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-23-01-400-801

3. Standby Compass Lamp Installation

Figure 301

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-23-00 P/B 201	STANDBY MAGNETIC COMPASS - MAINTENANCE PRACTICES

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Lamp	34-23-51-01A-025	ARO ALL
2	Lamp Holder	34-23-51-01A-020	ARO ALL

C. Location Zones

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

D. Procedure

NOTE: Additional information useful in this procedure may be found in this reference: STANDBY MAGNETIC COMPASS - MAINTENANCE PRACTICES, PAGEBLOCK 34-23-00/201.

SUBTASK 34-23-01-860-006

- (1) Make sure that this circuit breaker is open and has safety tag:

Standby Power Management Panel, P310

Row	Col	Number	Name
A	2	C33407	STBY INST LTS

SUBTASK 34-23-01-860-007

- (2) Do these steps to install the standby compass lamp:
- (a) Put the Lamp [1] into the lampholder assembly.
 - (b) Install the Lamp Holder [2] assembly on the compass.

SUBTASK 34-23-01-860-008

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

Standby Power Management Panel, P310

Row	Col	Number	Name
A	2	C33407	STBY INST LTS

SUBTASK 34-23-01-860-009

- (4) Supply the electrical power TASK 24-22-00-860-805.

SUBTASK 34-23-01-860-010

- (5) Make sure the panel light switch is in the ON position.

SUBTASK 34-23-01-860-011

- (6) Make sure the standby compass internal lights are on.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-23-01

D633W101-ARO

Page 304
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

STANDBY MAGNETIC COMPASS - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the standby magnetic compass
- (2) An installation of the standby magnetic compass.

TASK 34-23-01-020-801

2. Standby Magnetic Compass Removal

(Figure 401)

A. **Location Zones**

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

B. **Removal Procedure**

SUBTASK 34-23-01-860-001

- (1) Open these circuit breakers and install safety tags:

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	25	C33411	GSHLD INST & PNL LTS

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C33407	STBY INST LTS

SUBTASK 34-23-01-020-001

 CAUTION	USE ONLY TOOLS THAT ARE NOT MAGNETIC FOR THE REMOVAL AND THE INSTALLATION OF THE STANDBY MAGNETIC COMPASS. MAGNETIC TOOLS CAN CAUSE INSTRUMENT DAMAGE.

- (2) Remove the standby magnetic compass [1]:
 - (a) Disconnect the electrical connector [4].
 - (b) Remove the four screws [2] that hold the standby magnetic compass [1] to the mounting enclosure [3].
 - (c) Remove the standby magnetic compass [1].
 - (d) Put protective covers on the electrical connector [4].

———— **END OF TASK** ————

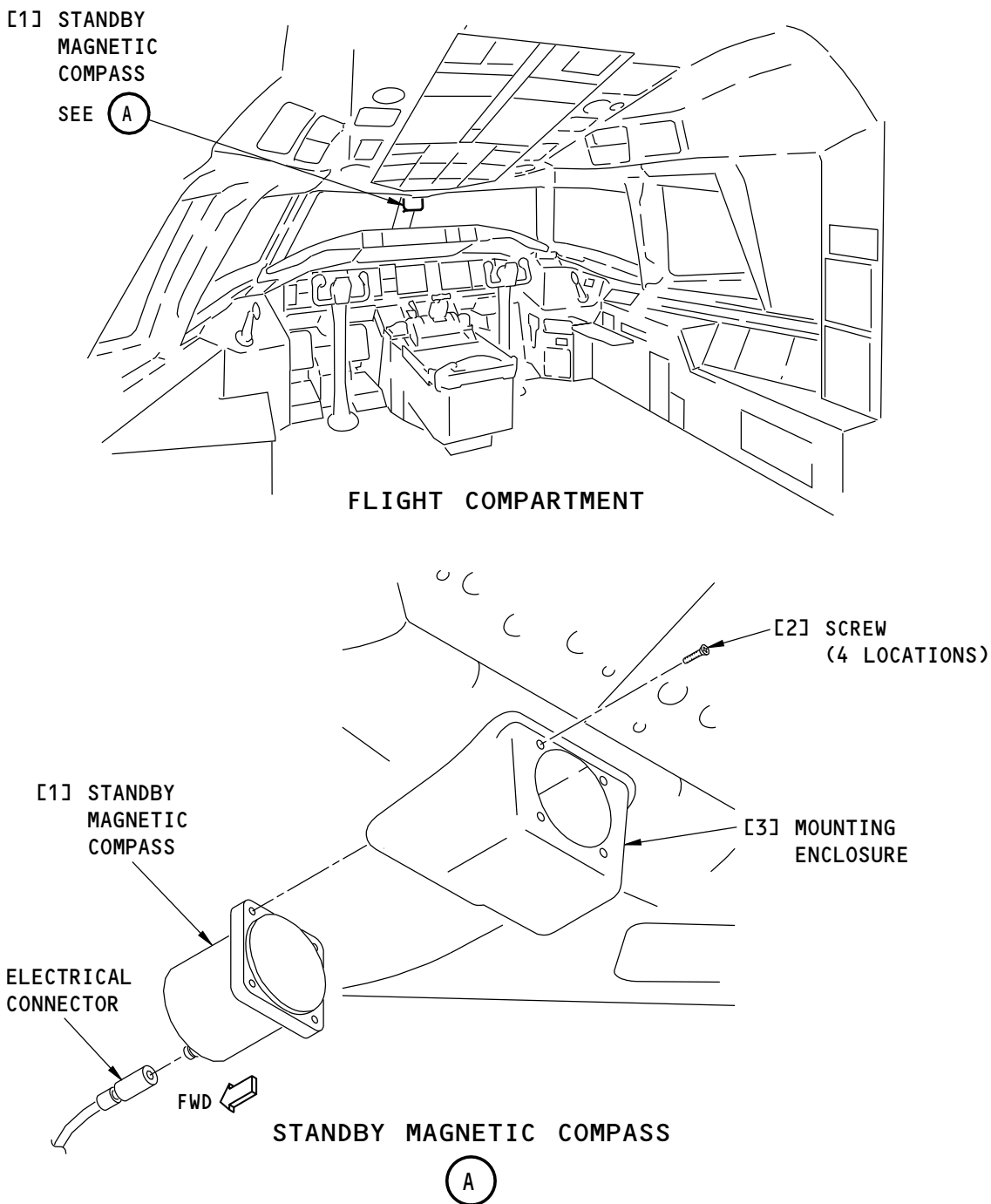
EFFECTIVITY
ARO ALL

D633W101-ARO

34-23-01

Page 401
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL



C91546 S0006420610_V3

Standby Magnetic Compass Installation
Figure 401/34-23-01-990-802

EFFECTIVITY
ARO ALL

34-23-01

D633W101-ARO

Page 402
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-23-01-420-801

3. Standby Magnetic Compass Installation

(Figure 401)

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-23-00-820-801	Standby Magnetic Compass Tow Around Procedure (P/B 201)
34-23-00-820-802	Standby Magnetic Compass Calibrator Procedure (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Compass	34-23-51-01A-010	ARO ALL

C. Location Zones

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

D. Installation Procedure

SUBTASK 34-23-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Right Power Management Panel, P210

Row	Col	Number	Name
G	25	C33411	GSHLD INST & PNL LTS

Standby Power Management Panel, P310

Row	Col	Number	Name
A	2	C33407	STBY INST LTS

SUBTASK 34-23-01-420-001

 CAUTION	USE ONLY TOOLS THAT ARE NOT MAGNETIC FOR THE REMOVAL AND THE INSTALLATION OF THE STANDBY MAGNETIC COMPASS. MAGNETIC TOOLS CAN CAUSE INSTRUMENT DAMAGE.

- (2) Install the standby magnetic compass [1]:
- Remove the protective covers from the electrical connector [4].
 - Examine the electrical connector [4] for bent or broken pins, dirt, and damage.
 - Install the standby magnetic compass [1] into the mounting enclosure [3].
 - Connect the electrical connector [4] to the rear of the standby magnetic compass. Push the electrical connector [4] until it locks into its position with a click.

EFFECTIVITY
ARO ALL

34-23-01

D633W101-ARO

Page 403
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO ALL; AIRPLANES WITH STANDBY MAGNETIC COMPASS P/N C-5M WITHOUT MOD-A

- 1) Wind 1 inch wide Scotch No. 24 wire mesh tape around the junction of the electrical connector and standby magnetic compass a minimum of three times. Temporarily secure the end of the tape.

NOTE: The tape must touch against the rear of the standby magnetic compass case. Keep sufficient tension on the tape while you wind the junction to make it the shape of the connector. You can use thinner tape, if you wind the connector with a minimum overlap of 50 percent. Wind all parts of the connector within 1 inch of the compass with a minimum of three wrappings.

- 2) Wind the mesh tape a minimum of two times with 1 inch wide Scotch No. 70 or A-A-59163 Type I self-fusing silicone rubber tape.

NOTE: Keep sufficient tension on the tape while you wind the junction to make it the shape of the connector. You can use thinner tape, if you wind the connector with a minimum overlap of 50 percent. Wind all of the wire mesh tape with a minimum of two wrappings of the silicone rubber tape.

- a) If the connector is removed for any reason, discard all tape and repeat steps 1-2 above using new tape.

ARO ALL

- (e) Install the four screws [2] at the corners of the standby magnetic compass [1].

SUBTASK 34-23-01-860-003

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

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	25	C33411	GSHLD INST & PNL LTS

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	2	C33407	STBY INST LTS

E. Installation Test

SUBTASK 34-23-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-23-01-710-001

- (2) Make sure the light for the standby magnetic compass [1] is on.

NOTE: If the installation location has no repairs and the same compass re-installed, you do not have to do the tow around or calibrator procedure.

SUBTASK 34-23-01-820-001

- (3) Do this task: Standby Magnetic Compass Tow Around Procedure, TASK 34-23-00-820-801.

SUBTASK 34-23-01-820-002

- (4) Or do this task: Standby Magnetic Compass Calibrator Procedure, TASK 34-23-00-820-802.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-23-01

D633W101-ARO

Page 404
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

INTEGRATED STANDBY FLIGHT DISPLAY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the integrated standby flight display.
- (2) An installation of the integrated standby flight display.

TASK 34-24-02-000-801

2. Integrated Standby Flight Display Removal

(Figure 401)

A. References

Reference	Title
20-41-01-000-802	Conductive Dust Cap and Connector Cover Installation (P/B 201)

B. Tools/Equipment

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

Reference	Description
SPL-12596	Tool - Extracting Part #: F1402369 Supplier: F9111

C. Location Zones

Zone	Area
211	Flight Compartment, Left

D. Removal Procedure

SUBTASK 34-24-02-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-24-02-020-001



CAUTION

DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE INTEGRATED STANDBY FLIGHT DISPLAY. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE DISPLAY.

- (2) Remove the ISFD [1]:
 - (a) Loosen, but do not remove, the adjustment screws [5] adjacent to the ISFD [1] until the ISFD [1] can be removed.



CAUTION

DO NOT USE THE BARO KNOB TO PULL THE DISPLAY FROM THE INSTRUMENT PANEL. YOU WILL CAUSE DAMAGE TO THE DISPLAY IF YOU USE THE BARO KNOB TO REMOVE THE DISPLAY.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 401
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(CAUTION PRECEDES)



CAUTION

CAREFULLY PULL THE DISPLAY FROM THE INSTRUMENT PANEL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE ELECTRICAL CABLE.

- (b) Use the ISFD extracting tool, SPL-12596 to pull the ISFD [1] from the instrument panel until you can get access to the electrical connector [3].
 - 1) If the ISFD [1] is not easy to remove, loosen the attachment screws [4] to make the removal easier.



CAUTION

MAKE SURE THAT THE PITOT-STATIC SYSTEM IS AT AMBIENT PRESSURE BEFORE YOU DISCONNECT THE PITOT AND STATIC HOSES. IF THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE, DAMAGE TO THE DISPLAY CAN OCCUR.

- (c) Disconnect the electrical connector [3].
- (d) Remove the ISFD [1].
- (e) Do this task: Conductive Dust Cap and Connector Cover Installation, TASK 20-41-01-000-802.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-24-02

Page 402
Sep 05/2017

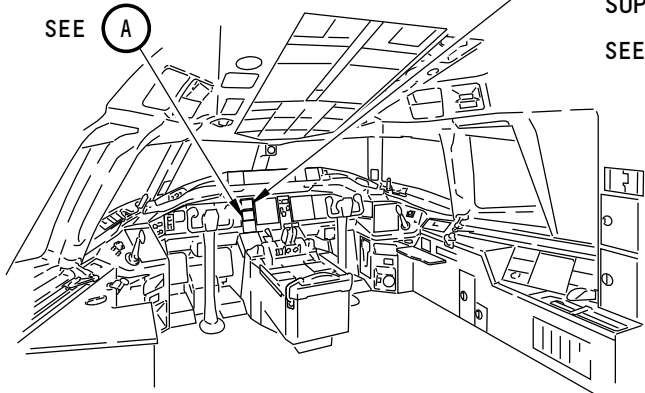
777-200/300 AIRCRAFT MAINTENANCE MANUAL

[1] INTEGRATED
STANDBY FLIGHT
DISPLAY

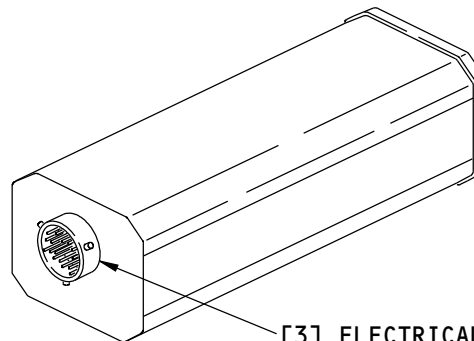
SEE (A)

[2] ADM POWER
SUPPLY

SEE (B)



FLIGHT COMPARTMENT



[3] ELECTRICAL
CONNECTOR

[4] ATTACHMENT
SCREW

APPROACH
MODE SWITCH

BAROMETRIC
REFERENCE
SWITCH

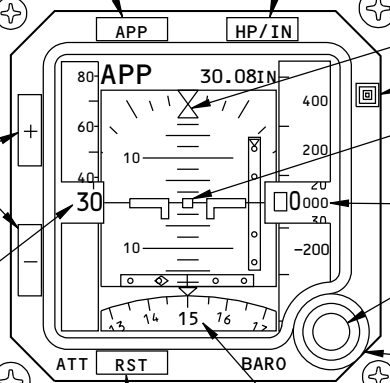
[5] ADJUSTMENT
SCREW

ADM POWER SUPPLY

(B)

DISPLAY
BRIGHTNESS
SWITCHES

INDICATED
AIRSPEED



ROLL ATTITUDE

LIGHT SENSOR

PITCH
ATTITUDE

ALTITUDE

STANDARD
SELECT SWITCH

BAROMETRIC
CONTROL

[5] ADJUSTMENT
SCREW

ATTITUDE
RESET SWITCH

HEADING

[4] ATTACHMENT
SCREW

INTEGRATED STANDBY FLIGHT DISPLAY

(A)

W48837 S0000124909_V2

Integrated Standby Flight Display System
Figure 401/34-24-02-990-801

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 403
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-24-02-400-801

3. Integrated Standby Flight Display Installation

(Figure 401)

A. References

Reference	Title
20-41-01-400-802	Conductive Dust Cap and Connector Cover Removal (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ISFD	34-13-00-01-010	ARO ALL

C. Location Zones

Zone	Area
211	Flight Compartment, Left

D. Installation Procedure

SUBTASK 34-24-02-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-24-02-420-001



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE INTEGRATED STANDBY FLIGHT DISPLAY. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE DISPLAY.

- (2) Install the ISFD [1].
 - (a) Do this task: Conductive Dust Cap and Connector Cover Removal, TASK 20-41-01-400-802.
 - (b) Examine the electrical connector [3] for bent or broken pins.
 - (c) Connect the electrical connector [3] at the rear of the display.
 - (d) Install the ISFD [1] into the instrument panel.
 - (e) Tighten the adjustment screws [5] adjacent to the display.
 - (f) If necessary, tighten the attachment screws [4].

SUBTASK 34-24-02-710-001

- (3) Do the installation test for the integrated standby flight display.

E. Installation Test

SUBTASK 34-24-02-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-24-02-860-011

- (2) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801

SUBTASK 34-24-02-800-001

- (3) Make sure that the display shows the following flags in approximately 15 seconds after power up:
- (a) SPD flag
 - (b) ATT flag
 - (c) ALT flag
 - (d) INIT 90S flag.

SUBTASK 34-24-02-869-001

- (4) Make sure the following flags and indications show in approximately 15 to 90 seconds after power up:
- (a) ATT flag
 - (b) INIT 90S flag
 - (c) Airspeed indication with no SPD flag
 - (d) Altitude indication with no ALT flag.

SUBTASK 34-24-02-869-002

- (5) Make sure the following is displayed on the ISFD [1] after approximately 90 seconds:
- (a) Attitude (normal) display with the following indications with no flags:
 - 1) Fixed aircraft symbol
 - 2) Roll scale
 - 3) Roll index
 - 4) Pitch scale.

SUBTASK 34-24-02-740-001

- (6) Push APP and HP/IN, on the face of the ISFD [1], for approximately two seconds.

ARO ALL; AIRPLANES WITH ISFD PN C16786FA02

SUBTASK 34-24-02-720-003

- (7) Use the BARO knob to select FUNCTIONAL TESTS on the maintenance page.
- (a) To move the menu selection box, turn the knob in either direction.
 - (b) To select, press the knob.

NOTE: The TEST screen will display IN PROGRESS 110s.

ARO ALL

SUBTASK 34-24-02-869-003

- (8) Make sure the TEST result displays TEST OK.

SUBTASK 34-24-02-869-004

- (9) Push and release the RST (reset) button.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 405
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-710-006

- (10) Compare the ISFD [1] roll pointer position with the roll pointer position on the captain's Primary Flight Display (PFD).
- (a) Make sure that the position of the roll pointer on the ISFD [1] are visually the same as the roll pointer shown on the captains PFD.
- NOTE: A visual alignment can be made to within ± 0.5 degrees
- (b) If the ISFD [1] and the captains roll pointer are not in tolerance, do the following steps
- 1) Loosen the adjustment screws [5] and adjust the ISFD [1] until the ISFD [1] roll pointer and captains roll pointer indications are within 0.5 degrees.
 - 2) Tighten the adjustment screws [5].

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-24-02

Page 406
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

INTEGRATED STANDBY FLIGHT DISPLAY - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- (1) An operational test of the Integrated Standby Flight Display.
- (2) A system test of the Integrated Standby Flight Display.
- (3) An operational test of the Air Data Module Power Supply.

TASK 34-24-02-710-801

2. Integrated Standby Flight Display - Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Location Zones

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

C. Procedure

SUBTASK 34-24-02-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 34-24-02-865-001

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-24-02-212-001

- (3) Make sure that the display shows the following flags in approximately 15 seconds after power up:
 - (a) SPD flag
 - (b) ATT flag
 - (c) ALT flag
 - (d) INIT 90S flag.

SUBTASK 34-24-02-212-002

- (4) Make sure the following flags and indications show in approximately 15 to 90 seconds after power up:
 - (a) ATT flag
 - (b) INIT 90S flag
 - (c) Airspeed indication with no SPD flag
 - (d) Altitude indication with no ALT flag.

SUBTASK 34-24-02-730-001

- (5) Make sure the following is displayed on the ISFD after approximately 90 seconds:

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Attitude (normal) display with the following indications with no flags:
- 1) Fixed aircraft symbol
 - 2) Roll scale
 - 3) Roll index
 - 4) Pitch scale.

SUBTASK 34-24-02-710-005

- (6) Make sure that the pitch and roll attitude is 0.0 ± 1.0 degree of the airplane attitude.

SUBTASK 34-24-02-860-015

- (7) Press the APP button once.

SUBTASK 34-24-02-210-003

- (8) Make sure that both localizer and glideslope scales are displayed and that there is no LOC or G/S flag displayed.

SUBTASK 34-24-02-860-013

- (9) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C

SUBTASK 34-24-02-210-005

- (10) Make sure that the LOC and G/S flags on the ISFD appear.

NOTE: It may take 15 seconds for LOC and G/S flags to appear.

SUBTASK 34-24-02-860-014

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C

SUBTASK 34-24-02-210-004

- (12) Make sure that the LOC and G/S flags on the ISFD disappear.

SUBTASK 34-24-02-860-016

- (13) Press the APP button twice (return to the standard ISFD display).

————— END OF TASK —————

TASK 34-24-02-730-801

3. Integrated Standby Flight Display - System Test

A. General

- (1) These instructions apply to the task:
- (a) When you apply pressure to a pitot system, the rate must not be more than 300 knots for each minute.
 - (b) When you apply pressure to a static system, the rate must not be more than 5,000 feet for each minute.
 - (c) When you release pressure from a pitot system, the rate must not be more than 300 knots for each minute.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 502
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (d) When you release pressure from a static system, the rate must not be more than 5,000 feet for each minute.
- (e) Do not connect or disconnect the test equipment when you apply pressure to the pitot-static system.
- (f) You must do the applicable pitot or static system low-range leak test when you remove a fitting other than a quick disconnect. You must do the low-range leak test after you flush the pitot-static system.
- (g) Make sure that the seals used on the static ports do not extend into the static ports.
- (h) Make sure that you do not cause damage to the surface of the static ports when you remove the seals.
- (i) Make sure that you do these steps before installing the pitot test adapter, COM-1916 on the pitot probe:
 - 1) Flush the pitot test adapter, COM-1916 with water.
NOTE: Use equal parts of ethylene glycol and water when the temperature is between 32 ° and -40 °F.
 - 2) Blow dry, filtered air through the pitot test adapter, COM-1916.
 - 3) Wipe the pitot probe with a damp cloth.

B. References

Reference	Title
06-21-00-800-801	Fuselage Station Diagram (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
31-61-00-710-801	Primary Display System - Operational Test (P/B 501)
32-09-00-860-801	Air/Ground Mode Simulation (P/B 201)
34-21-00-820-802	Secondary Attitude Air Data Reference Unit - Alignment (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.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 503
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1916	Adapter - Pitot Test (Typically included in Air Data Accessory Kit) Part #: 509767 Supplier: 53949 Part #: 884EH Supplier: 59885 Part #: 884EH-3 Supplier: 59885 Part #: CSA77700HT-3 Supplier: 3BSK6 Part #: P77796HT-3 Supplier: 38002
COM-1921	Adapter - Static Test Part #: 33410LH-125-4 Supplier: 38002 Part #: CSTL19725-4 Supplier: 3BSK6

D. Consumable Materials

Reference	Description	Specification
G02219	Tape - Yellow Vinyl Adhesive, Scotch Brand No.471, 1.5 Inches (38.1 mm) Wide	

E. Location Zones

Zone	Area
115	Area Outboard and Above Nose Landing Gear Wheel Well, Left
116	Area Outboard and Above Nose Landing Gear Wheel Well, Right
121	Forward Cargo Compartment, Left
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Prepare for the Test

SUBTASK 34-24-02-710-002

- (1) Do the Operational Test for the integrated standby flight display.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-24-02

Page 504
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-710-003

- (2) Do the Operational Test for the pitot and static standby air data modules.

SUBTASK 34-24-02-860-006



MAKE SURE THAT THE ATC TRANSPONDERS ARE IN THE STANDBY MODE WHEN YOU SIMULATE ALTITUDE. YOU CAN ACCIDENTALLY CAUSE TCAS TARGETS. AIR TRAFFIC IN THE AREA WILL CHANGE DIRECTION QUICKLY TO GO AWAY FROM THESE TARGETS. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) Make sure that the ATC transponders are in standby mode.

SUBTASK 34-24-02-860-007

- (4) Make sure that the Autopilot/Flight Director System is off.

SUBTASK 34-24-02-865-003

- (5) Open these circuit breakers and install safety tags:

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

SUBTASK 34-24-02-861-001

- (6) Do this task: Supply Electrical Power, TASK 24-22-00-860-805

SUBTASK 34-24-02-710-004

- (7) Do this task: Primary Display System - Operational Test, TASK 31-61-00-710-801.

SUBTASK 34-24-02-710-007

- (8) Do this task: Secondary Attitude Air Data Reference Unit - Alignment, TASK 34-21-00-820-802.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 505
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-860-008

- (9) Make sure that the Primary Flight Computers (PFC) are in ground mode. To put the PFC's in ground mode, do this task: Air/Ground Mode Simulation, TASK 32-09-00-860-801.

SUBTASK 34-24-02-860-009

- (10) Make sure that the BARO control on the ISFD front panel is in its usual position (29.92 inches Hg).

G. ISFD System Test - Center Pitot System Pressure Test

SUBTASK 34-24-02-170-001



CAUTION

FLUSH THE PITOT SYSTEM TEST ADAPTER WITH WATER BEFORE YOU ATTACH THE ADAPTER TO THE PROBE. DAMAGE TO THE PROBE OR THE ADAPTER CAN OCCUR.

- (1) Flush the adapter, P77796HT-3, with water.

NOTE: Use equal parts of water and ethylene glycol when the temperature is between 32 ° and -40 °F.

SUBTASK 34-24-02-160-001

- (2) Blow dry, filtered air through the pitot test adapter, COM-1916.

SUBTASK 34-24-02-160-002

- (3) Wipe the pitot probe with a damp cloth.

SUBTASK 34-24-02-480-001



CAUTION

MAKE SURE THAT THE WEIGHT OF THE TEST HOSE IS NOT ON THE PITOT PROBE. THE WEIGHT OF THE HOSE CAN BEND OR TWIST THE PROBE UNTIL IT IS NOT IN TOLERANCE.

- (4) Install the pitot test adapter, COM-1916 on the bottom right pitot probe located at STA 201, WL 156 (TASK 06-21-00-800-801).

SUBTASK 34-24-02-480-002

- (5) Connect the air data model test set, COM-1914, to the pitot test adapter, COM-1916.

SUBTASK 34-24-02-400-001



WARNING

WHEN THE STATIC PORTS ARE COVERED, MAKE SURE THAT CONDITION IS VISIBLE FROM THE GROUND. FAILURE TO OBSERVE AND REMOVE COVERINGS OVER THE STATIC PORTS BEFORE FLIGHT MAY CAUSE LARGE ERRORS IN AIRSPEED SENSING AND ALTITUDE SENSING SIGNALS, WHICH MAY LEAD TO LOSS OF SAFE FLIGHT.



CAUTION

DO NOT EXTEND THE SEALS INTO THE STATIC PORTS. DAMAGE TO THE SURFACE OF THE PORT CAN OCCUR WHEN YOU REMOVE THE SEAL.

- (6) Seal the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801) with vinyl adhesive Scotch Brand No.471 tape, G02219.

SUBTASK 34-24-02-400-002

- (7) Install the static test adapter, COM-1921, on the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 506
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-420-002

- (8) Connect the air data model test set, COM-1914, to the static test adapter, COM-1921.

SUBTASK 34-24-02-700-001



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH.
PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE
TO THE ADM.

- (9) Operate the air data model test set, COM-1914, to apply a vacuum to the static system equal to 5,000 feet of altitude above field elevation (ambient pressure minus 5.25 ± 0.25 in. Hg).

NOTE: The pressure values used are absolute values.

SUBTASK 34-24-02-863-001



MAKE SURE THAT THE PRESSURE IN THE ADM IS NOT TOO HIGH.
PRESSURE THAT IS MORE THAN 39.865 INCHES HG WILL CAUSE DAMAGE
TO THE ADM.

- (10) Operate the air data model test set, COM-1914, to apply pressure of 4.53 ± 0.16 inches Hg (gauge), (2.22 ± 0.08 psig), (153.4 ± 5.4 mB), or 300 ± 5 knots on the test set airspeed indicator.

NOTE: Airspeed can be observed on the integrated standby flight display in the flight deck.

SUBTASK 34-24-02-863-002

- (11) Apply altitude and airspeed (static and pitot probes) input using the air data test set in accordance with the following table(s) (Table 501):
- (a) When you apply pressure to the static system, make sure that the rate is less than 5,000 feet for each minute.
- (b) When you apply pressure to the pitot system, make sure that the rate is less than 300 knots for each minute.

Table 501/34-24-02-993-811 PITOT-STATIC SYSTEM

TEST POINT	ALTITUDE INPUT (feet)	STATIC PRESS. INPUT (In.Hg)	AIRSPEED INPUT (Knots)	DIFF. PRESS. INPUT (In.Hg)	PITOT PRESS. (In.Hg)	ISFD ALTITUDE DISPLAY (feet)	ISFD ALTITUDE DISPLAY (meters)	ISFD AIRSPEED DISPLAY (knots)
1	0	29.921	90	0.390	30.311	-20 +/-30		84 +/-3.5
2	5,000	24.896	250	3.100	27.996	4,930 +/-70		246 +/-5
3	15,000	16.886	260	3.363	20.249	14,920 +/-110		257 +/-5

SUBTASK 34-24-02-869-005

- (12) Stop for one minute.

SUBTASK 34-24-02-200-001

- (13) Verify the corresponding displayed ISFD values are within the limits.

SUBTASK 34-24-02-800-002

- (14) Make sure that the maintenance message 34-25102 shows on the MAT existing faults display.

SUBTASK 34-24-02-869-006

- (15) Make sure that the maintenance message 34-25202 shows on the MAT existing faults display.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 507
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-780-001

- (16) Make sure the pitot pressure does not decrease more than 0.16 inches Hg (5.4 mB), (approximately 5 knots) in one minute.

SUBTASK 34-24-02-800-003

- (17) Make sure that the altitude on the static system does not decrease more than 80 feet (0.07 in. Hg).

SUBTASK 34-24-02-840-001

- (18) Put the system back to ambient pressure.

SUBTASK 34-24-02-869-007

- (19) Stop for one minute.

SUBTASK 34-24-02-869-008

- (20) Make sure that the maintenance message 34-25102 does not show on the MAT existing faults display.

SUBTASK 34-24-02-810-001

- (21) Make sure that the maintenance message 34-25202 does not show on the MAT existing faults display.

SUBTASK 34-24-02-080-001



DO NOT DISCONNECT THE PITOT SYSTEM TEST ADAPTER WHEN THE PITOT-STATIC SYSTEM IS NOT AT AMBIENT PRESSURE. DAMAGE TO THE AIR DATA MODULES CAN OCCUR IF THE SYSTEM IS NOT AT AMBIENT PRESSURE.

- (22) Disconnect the air data model test set, COM-1914, from the pitot test adapter, COM-1916.

SUBTASK 34-24-02-080-002

- (23) Remove the pitot test adapter, COM-1916 from the pitot probe.

SUBTASK 34-24-02-000-001



MAKE SURE THAT YOU REMOVE ALL TAPE AND ADHESIVE FROM THE STATIC PORT. IF YOU DO NOT REMOVE THE TAPE AND ADHESIVE, IT CAN CAUSE A MALFUNCTION OF THE AIRCRAFT IN FLIGHT. THIS CAN KILL PERSONS AND CAN CAUSE DAMAGE TO THE AIRCRAFT.

- (24) Remove the vinyl adhesive Scotch Brand No.471 tape, G02219, from the static port on the right side located at STA 688, WL 158 (TASK 06-21-00-800-801).

SUBTASK 34-24-02-020-003

- (25) Disconnect the air data model test set, COM-1914, from the static test adapter, COM-1921.

SUBTASK 34-24-02-020-004

- (26) Remove the static test adapter, COM-1921, from the static port on the left side located at STA 688, WL 158 (TASK 06-21-00-800-801).

H. Put the Airplane back To Its Usual Condition

SUBTASK 34-24-02-212-006

- (1) Do a visual inspection of the quick-disconnect fittings that you connected.
- (a) Make sure that the actuation ring of the quick-disconnect fitting is fully engaged on the lock pins, and make sure that you see the colored lock ring indicator that shows a correct connection of the quick-disconnect fitting.

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 508
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-840-003

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

APU Auxiliary Panel, P49

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C29621	RAT AUTO/MANUAL CONTROL

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	26	C30409	AOA PROBE HTR L
H	6	C30424	PH C PITOT PROBE HTR L
M	25	C30624	PROBE/VANE HTR CTRL L

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C29619	RAT AUTO CONTROL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C30408	AOA PROBE HTR R
E	4	C30423	PH C PITOT PROBE HTR R
G	26	C30425	PH C PITOT PROBE HTR C
L	10	C30623	PROBE/VANE HTR CTRL R
L	11	C30625	PITOT PROBE HTR C CTRL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
K	6	C24619	ELMS RAT DEPLOY
K	7	C29618	RAT AUTO/MAN CTRL

————— END OF TASK —————

TASK 34-24-02-710-802

4. Air Data Module Power Supply - Operational Test

A. References

<u>Reference</u>	<u>Title</u>
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-24-02-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 509
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-24-02-865-002

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD
B	11	C34005	STBY ADM

SUBTASK 34-24-02-212-003

- (3) Make sure that the display shows the following flags in approximately 15 seconds after power up:
- (a) SPD flag
 - (b) ATT flag
 - (c) ALT flag
 - (d) INIT 90S flag.

SUBTASK 34-24-02-212-004

- (4) Make sure the following flags and indications show in approximately 15 to 90 seconds after power up:
- (a) ATT flag
 - (b) INIT 90S flag
 - (c) Airspeed indication with no SPD flag
 - (d) Altitude indication with no ALT flag.

SUBTASK 34-24-02-212-005

- (5) Make sure the following is displayed on the ISFD after approximately 90 seconds:
- (a) Attitude (normal) display with the following indications with no flags:
 - 1) Fixed aircraft symbol
 - 2) Roll scale
 - 3) Roll index
 - 4) Pitch scale.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-24-02

D633W101-ARO

Page 510
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

AIR DATA MODULE POWER SUPPLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the air data module power supply.
 - (2) An installation of the air data module power supply.

TASK 34-24-03-020-801

2. Air Data Module Power Supply Removal

A. **References**

<u>Reference</u>	<u>Title</u>
20-41-01-000-802	Conductive Dust Cap and Connector Cover Installation (P/B 201)

B. **Location Zones**

<u>Zone</u>	<u>Area</u>
211	Flight Compartment, Left

C. **Procedure**

SUBTASK 34-24-03-865-001

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	11	C34005	STBY ADM

SUBTASK 34-24-03-020-001



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE UNIT.

- (2) Remove the ADM power supply:
- (a) Loosen, but do not remove, the two adjustment screws adjacent to the ADM power supply until the power supply can be removed.
 - (b) Pull the ADM power supply from the instrument panel until you can get access to the electrical connector.
 - (c) If the ADM power supply is not easy to remove, loosen the two mounting screws to make the removal easier
 - (d) Disconnect the electrical connector.
 - (e) Remove the ADM power supply.
 - (f) Do this task: Conductive Dust Cap and Connector Cover Installation, TASK 20-41-01-000-802.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-24-03

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 401
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-24-03-420-801

3. Air Data Module Power Supply Installation

A. References

Reference	Title
20-41-01-400-802	Conductive Dust Cap and Connector Cover Removal (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Location Zones

Zone	Area
211	Flight Compartment, Left

C. Procedure

SUBTASK 34-24-03-865-002

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	11	C34005	STBY ADM

SUBTASK 34-24-03-420-001



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE UNIT. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE UNIT.



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE INTEGRATED STANDBY FLIGHT DISPLAY. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE DISPLAY.

- (2) Install the ADM power supply.
 - (a) Do this task: Conductive Dust Cap and Connector Cover Removal, TASK 20-41-01-400-802.
 - (b) Examine the electrical connector for bent or broken pins.
 - (c) Connect the electrical connector at the rear of the ADM power supply.
 - (d) Install the ADM power supply into the instrument panel.
 - (e) Tighten the two adjustment screws adjacent to the ADM power supply.
 - (f) If necessary, tighten the two mounting screws.

SUBTASK 34-24-03-740-001

- (3) Do the installation test for the integrated standby flight display.

D. Installation Test

SUBTASK 34-24-03-861-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.
Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
B	10	C34004	ISFD

EFFECTIVITY
ARO ALL

34-24-03

D633W101-ARO

Page 402
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	11	C34005	STBY ADM

SUBTASK 34-24-03-740-002

- (2) Make sure that the display shows the following flags in approximately 15 seconds after power up:
- (a) SPD flag
 - (b) ATT flag
 - (c) ALT flag
 - (d) INIT 90S flag.

SUBTASK 34-24-03-740-003

- (3) Make sure the following flags and indications show in approximately 15 to 90 seconds after power up:
- (a) ATT flag
 - (b) INIT 90S flag
 - (c) Airspeed indication with no SPD flag
 - (d) Altitude indication with no ALT flag.

SUBTASK 34-24-03-740-004

- (4) Make sure the following is displayed on the ISFD after approximately 90 seconds:
- (a) Attitude (normal) display with the following indications with no flags:
 - 1) Fixed aircraft symbol
 - 2) Roll scale
 - 3) Roll index
 - 4) Pitch scale.

SUBTASK 34-24-03-740-005

- (5) Push APP and HP/IN, on the face of the ISFD, for approximately two seconds.

SUBTASK 34-24-03-720-001

- (6) Use the BARO knob to select FUNCTIONAL TESTS on the maintenance page.
- (a) To move the menu selection box, turn the knob in either direction.
 - (b) To select, press the knob.

NOTE: The TEST screen will display IN PROGRESS 110s.

SUBTASK 34-24-03-740-008

- (7) Make sure the TEST result displays TEST OK.

SUBTASK 34-24-03-741-001

- (8) Push and release the RST (reset) button.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-24-03

D633W101-ARO

Page 403
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

INSTRUMENT LANDING SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has two task:
- (1) Instrument Landing System Deactivation
 - (2) Instrument Landing System Activation

TASK 34-31-00-040-801

2. Instrument Landing System - Deactivation

A. **General**

- (1) This task removes electrical power from the following components of the Instrument Landing System:
- (a) ILS/Multi-Mode Receiver
 - (b) ILS Localizer Antenna
 - (c) ILS G/S Capture Antenna
 - (d) ILS G/S Track Antenna

B. **Location Zones**

Zone	Area
111	Radome
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Access Panels**

Number	Name/Location
117AL	Main Equipment Center Access Door

D. **Procedure**



REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-31-00-860-015



MAKE SURE THE WEATHER RADAR POWER IS OFF AND THE ANTENNA CANNOT SCAN. INJURY TO PERSONS CAN OCCUR IF THE WEATHER RADAR TRANSMITS OR IF THE ANTENNA IS PERMITTED TO SCAN.

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C
A	10	C34630	ILS ANT SWITCH C

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L
E	22	C34425	MMR R
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

E. Instrument Landing System - Tryout

NOTE: This tryout is to make sure the Instrument Landing System is in a zero energy state.

SUBTASK 34-31-00-860-016

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C
A	10	C34630	ILS ANT SWITCH C
E	9	C34426	MMR L
E	22	C34425	MMR R
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-00-010-001

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

SUBTASK 34-31-00-700-001

- (3) Press the test switch on the front panel of the Multi-Mode Receiver.

NOTE: There are three (3) MMR receivers located in the E/E bay. The right MMR receiver is located on the E2-3 shelf, the center MMR is located on the E1-3 shelf and the left MMR receiver is located on the E1-2 shelf.

- (a) Make sure none of the status lights illuminate.

————— **END OF TASK** —————

TASK 34-31-00-440-801

3. Instrument Landing System - Activation

A. General

- (1) This task adds electrical power to the following components of the Instrument Landing System:
- (a) ILS/Multi-Mode Receiver
 - (b) ILS Localizer Antenna
 - (c) ILS G/S Capture Antenna
 - (d) ILS G/S Track Antenna

B. Location Zones

<u>Zone</u>	<u>Area</u>
111	Radome

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 202
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-31-00-860-017

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	9	C34427	MMR C
A	10	C34630	ILS ANT SWITCH C
E	9	C34426	MMR L
E	22	C34425	MMR R
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-00-700-002

- (2) Press the test switch on the front panel of the Multi-Mode Receiver.
- (a) Make sure the status lights illuminate.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 203
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

INSTRUMENT LANDING SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks for the instrument landing system (ILS):
 - (1) An operational test.
 - (2) A system test.
- B. There are three instrument landing systems (left, right, and center) on the airplane. Each system has a multi-mode receiver (MMR), a glide slope (G/S) capture antenna, a G/S track antenna, a localizer antenna, a VOR antenna, a G/S antenna switch, a localizer antenna switch, and a RF power divider.

TASK 34-31-00-710-801

2. Instrument Landing System - Operational Test

A. General

- (1) The operational test makes sure that the instrument landing system (ILS) is serviceable.
- (2) The operational test does not use external test equipment and thus it can do a system check quickly.
- (3) The same sequence of steps can be used for the left, center, and right instrument landing system.
- (4) A maintenance access terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

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

D. Procedure

SUBTASK 34-31-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-31-00-860-002

- (2) Set the mode select switch on the captain's and first officer's EFIS control panels to the APP position.

SUBTASK 34-31-00-740-001

- (3) Use a maintenance access terminal (MAT) to do the operational test of the left (center, right) instrument landing system:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Instrument Landing System

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 5) OPERATIONAL TEST
 - 6) Center Instrument Landing System (Using MMR), Left Instrument Landing System (Using MMR), or Right Instrument Landing System (Using MMR)
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

E. ISFD Approach Display Test

SUBTASK 34-31-00-710-004

- (1) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C34004	ISFD

Remove the safety tag and close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C

- (a) Press the "APP" button once on the ISFD
- 1) Verify that both localizer and glideslope scales are displayed and there is no "LOC" or "G/S" flag displayed.

SUBTASK 34-31-00-710-005

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C

- (a) Verify that the "LOC" and "G/S" flags on the ISFD appear.

NOTE: It may take 15 seconds for the "LOC" and "G/S" flags to appear.

SUBTASK 34-31-00-710-006

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C

- (a) Verify that the "LOC" and "G/S" flags on the ISFD disappear.
- (b) Press the "APP" button twice (return to the standard ISFD display).

F. Tuning Test

SUBTASK 34-31-00-710-001

- (1) Tune the multi-mode receivers to an ILS frequency using the FMC as the tuning source:

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 502
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (a) Set the mode select switch on the EFIS control panel to the APP mode.
- (b) Push the NAV RAD key on the left CDU until you find the NAV RADIO page.
- (c) Put an ILS frequency and a course of 000 degrees into the PRESELECT area of the CDU display.

NOTE: If you enter the course and frequency together, you must enter the forward slash (/) between the course and frequency.

- (d) Push the LSK that is adjacent to the ILS frequency display.
 - 1) Make sure the tuned frequency shows on the PFDs and the NDs.
 - 2) Make sure the source annunciation ILS L and ILS R show on the captain's ND and the first officer's ND, respectively.

SUBTASK 34-31-00-710-002

- (2) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the tuned frequency remains the same.
- (b) Make sure the captain's ND source annunciation changes from ILS L to ILS C.

SUBTASK 34-31-00-710-003

- (3) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the tuned frequency remains the same.
- (b) Make sure the captain's ND source annunciation changes from ILS C to ILS L.

———— **END OF TASK** ————

TASK 34-31-00-730-801

3. Instrument Landing System - System Test

A. General

- (1) The system test uses a ramp test set to supply test signals, which test the condition of the instrument landing system (ILS). This test makes sure the ILS operates correctly.
- (2) A maintenance access terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) This test contains these procedures:
 - (a) Prepare for the System Test
 - (b) Audio Test
 - (c) G/S and Localizer Antenna Switch Test
 - (d) G/S Antenna Test
 - (e) Localizer Antenna Test
 - (f) VOR Antenna Test

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 503
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (4) You can do the above tests in any order or do a single test after you do the prepare for the system test section.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (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-1539	Stand - Work, General Purpose Height 5-10 Feet Part #: AM-1020 Supplier: 9M323 Opt Part #: AM1020 Supplier: 9M323
COM-1913	Test Set - NAV/COMM Ramp Part #: 90000136 Supplier: 92606 Part #: IFR 4000 Supplier: 51190 Opt Part #: 402AP-110 Supplier: 51190 Opt Part #: 972Q-4 Supplier: 4V792 Opt Part #: NAV-402AP-2 Supplier: 51190 Opt Part #: T-30C Supplier: 92606 Opt Part #: T-30D Supplier: 92606 Opt Part #: T-36C Supplier: 92606

D. Location Zones

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Prepare for the System Test

SUBTASK 34-31-00-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-31-00-860-005

- (2) Put the NAV/COMM ramp test set, COM-1913, or alternative tool in the front of the nose radome and set the output:
- (a) RF FREQ - approved test frequency
 - (b) RF LEVEL - middle scale
 - (c) MODULATION:
 - 1) 30 percent at 1020 Hz (ident tone)
 - 2) 20 percent for the localizer 90 and 150 Hz tones
 - 3) 40 percent for the glide slope 90 and 150 Hz tones.

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 504
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-31-00-860-006

- (3) To make sure the air data inertial reference system is aligned in the NAV mode, do this task:
Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

SUBTASK 34-31-00-860-007

- (4) Set the mode select switch on the captain's and first officer's EFIS control panels to the APP position.

SUBTASK 34-31-00-860-008

- (5) Set the HDG (heading) on the AFDS mode control panel to 000 degrees.

SUBTASK 34-31-00-860-009

- (6) Prepare the CDU for the system test:
 - (a) Push the NAV RAD key on the CDU to show the NAV RADIO page on the display.
 - (b) Put the approved test frequency and a course of 000 degrees into the CDU.
 - (c) Push the LSK that is adjacent to the ILS frequency display.
 - (d) Make sure these results occur:
 - 1) The PFDs and the NDs show the test frequency.
 - 2) ILS L shows on the captain's ND as the source receiver.
 - 3) ILS R shows on the first officer's ND as the source receiver.

F. Audio Test

SUBTASK 34-31-00-730-001

- (1) Do the audio test:
 - (a) Push the volume control knob for the APP switch on the audio control panel (ACP).
 - (b) Adjust the volume control knob to a nominal sound level.
 - (c) Set the VBR switch on the ACP to B.
 - (d) Set the APP switch on the ACP to R, C, and then L.

NOTE: Stop momentarily at each position to hear the local ILS frequency.

 - 1) Make sure the local ILS frequency is heard over the flight interphone speakers and headsets for each multi-mode receiver.

G. G/S and Localizer Antenna Switch Test

SUBTASK 34-31-00-740-002

- (1) Use a MAT to do a test of the glide slope (G/S) and localizer antenna switches:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 22 Autopilot Flight Director System
 - 5) SYSTEM TEST
 - 6) ILS Interface
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 505
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

H. G/S Antenna Test

SUBTASK 34-31-00-860-010

- (1) Use a MAT to select the G/S track antennas:
 - (a) Make these selections on the MAT:
 - 1) OTHER FUNCTIONS
 - 2) SPECIAL FUNCTIONS
 - 3) 22 Autopilot Flight Director System
 - 4) ILS Glideslope Antenna Switching
 - 5) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START FUNCTION
 - (c) Do the instructions that show on the MAT to select the track antennas.

SUBTASK 34-31-00-730-002

- (2) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot above the glide slope.
 - (a) Make sure the G/S deviation pointer on the NDs and the PFDs moves 1 dot above the glide slope.

SUBTASK 34-31-00-730-003

- (3) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot below the glide slope.
 - (a) Make sure the G/S deviation pointer on the NDs and the PFDs moves 1 dot below the glide slope.

SUBTASK 34-31-00-730-004

- (4) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.
 - (a) Make sure the G/S deviation pointer on the NDs and the PFDs shows on-course.

SUBTASK 34-31-00-730-005

- (5) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the G/S deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS C.

SUBTASK 34-31-00-730-006

- (6) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot above the glide slope.

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 506
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure the G/S deviation pointer on the NDs and the PFDs moves 1 dot above the glide slope.

SUBTASK 34-31-00-730-007

- (7) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot below the glide slope.

- (a) Make sure the G/S deviation pointer on the NDs and the PFDs moves 1 dot below the glide slope.

SUBTASK 34-31-00-730-008

- (8) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.

- (a) Make sure the G/S deviation pointer on the NDs and the PFDs shows on-course.

SUBTASK 34-31-00-730-009

- (9) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the G/S deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS L.
- (c) Make this selection on the MAT:
 - 1) STOP FUNCTION

SUBTASK 34-31-00-860-011

- (10) Use a MAT to select the glide slope capture antennas:

- (a) Make these selections on the MAT:
 - 1) OTHER FUNCTIONS
 - 2) SPECIAL FUNCTIONS
 - 3) 22 Autopilot Flight Director System
 - 4) ILS Glideslope Antenna Switching
 - 5) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START FUNCTION
- (c) Do the instructions that show on the MAT to select the capture antennas.

SUBTASK 34-31-00-730-010

- (11) Do the steps again to do a test of the glide slope capture antennas:
 - (a) Make sure the same results occur.

I. Localizer Antenna Test

SUBTASK 34-31-00-860-012

- (1) Use a MAT to select the localizer antennas:
 - (a) Make these selections on the MAT:
 - 1) OTHER FUNCTIONS
 - 2) SPECIAL FUNCTIONS

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 507
Jan 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- 3) 22 Autopilot Flight Director System
 - 4) ILS Localizer Antenna Switching
 - 5) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START FUNCTION
- (c) Do the instructions that show on the MAT to select the localizer antennas.

SUBTASK 34-31-00-730-011

- (2) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the left direction.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs moves 1 dot left.

SUBTASK 34-31-00-730-012

- (3) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the right direction.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs moves 1 dot right.

SUBTASK 34-31-00-730-013

- (4) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs shows on-course.

SUBTASK 34-31-00-730-014

- (5) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS C.

SUBTASK 34-31-00-730-015

- (6) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the left direction.
- (a) Make sure the LOC deviation pointer on the captain's ND and PFD moves 1 dot left.

SUBTASK 34-31-00-730-016

- (7) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the right direction.
- (a) Make sure the LOC deviation pointer on the captain's ND and PFD moves 1 dot right.

SUBTASK 34-31-00-730-017

- (8) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.
- (a) Make sure the LOC deviation pointer on the captain's ND and PFD shows on-course.

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 508
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-31-00-730-018

- (9) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS L.
- (c) Make this selection on the MAT:
 - 1) STOP FUNCTION

J. VOR Antenna Test

SUBTASK 34-31-00-860-013

- (1) Put the NAV/COMM ramp test set, COM-1913, on a 5-10 foot work stand (5-10 feet), COM-1539, behind the airplane.

SUBTASK 34-31-00-860-014

- (2) Use a MAT to select the VOR antenna:
- (a) Make these selections on the MAT:
 - 1) OTHER FUNCTIONS
 - 2) SPECIAL FUNCTIONS
 - 3) 22 Autopilot Flight Director System
 - 4) ILS Localizer Antenna Switching
 - 5) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START FUNCTION
 - (c) Do the instructions that show on the MAT to select the VOR antenna.

SUBTASK 34-31-00-730-019

- (3) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the left direction.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs moves 1 dot left.

SUBTASK 34-31-00-730-020

- (4) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the right direction.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs moves 1 dot right.

SUBTASK 34-31-00-730-021

- (5) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.
- (a) Make sure the LOC deviation pointer on the NDs and the PFDs to shows on-course.

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 509
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-31-00-730-022

- (6) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS C.

SUBTASK 34-31-00-730-023

- (7) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the left direction.

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD moves 1 dot left.

SUBTASK 34-31-00-730-024

- (8) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is 1 dot in the right direction.

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD moves 1 dot right.

SUBTASK 34-31-00-730-025

- (9) Adjust the output of the NAV/COMM ramp test set, COM-1913, to supply a signal that is on-course.

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD shows on-course.

SUBTASK 34-31-00-730-026

- (10) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	9	C34426	MMR L

- (a) Make sure the LOC deviation pointer on the captain's ND and PFD does not move.
- (b) Make sure the source annunciation on the captain's ND changes to ILS L.
- (c) Make this selection on the MAT:
 - 1) STOP FUNCTION

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-31-00

D633W101-ARO

Page 510
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

RECEIVER FOR ILS - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the receiver for ILS.
 - (2) An installation and an installation test of the receiver for ILS.
- B. The receiver for ILS is the multi-mode receiver (MMR).
- C. The receivers for ILS are in the main equipment center. The left receiver is on the E1 electronics equipment rack, shelf No. 2. The center receiver is on the E1 electronics equipment rack, shelf No. 3. The right receiver is on the E2 electronics equipment rack, shelf No. 3.

TASK 34-31-01-000-801

2. Receiver for ILS - Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. **General**

- (1) This procedure removes the Receiver for ILS.
- (2) The receiver for ILS is the multi-mode receiver (MMR).

B. **References**

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-000-801	E/E Box Removal (P/B 401)

C. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. **Access Panels**

Number	Name/Location
117AL	Main Equipment Center Access Door

E. **Removal Procedure**

SUBTASK 34-31-01-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	9	C34427	MMR C
E	9	C34426	MMR L
E	22	C34425	MMR R

SUBTASK 34-31-01-010-001

- (2) To get access to the receiver for the ILS, open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

EFFECTIVITY
ARO ALL

34-31-01

D633W101-ARO

Page 401
May 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(TASK 06-41-00-800-801).

SUBTASK 34-31-01-020-001



CAUTION

DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE ILS RECEIVER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ILS RECEIVER.

- (3) To remove the receiver for ILS [1], (TASK 20-10-01-000-801).

———— **END OF TASK** ————

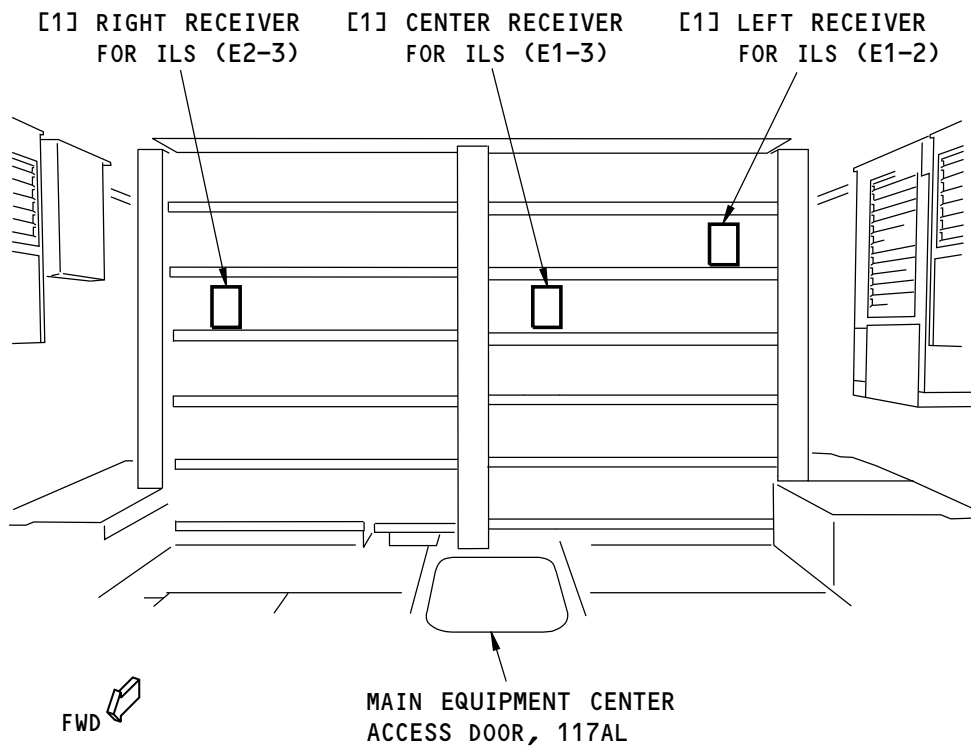
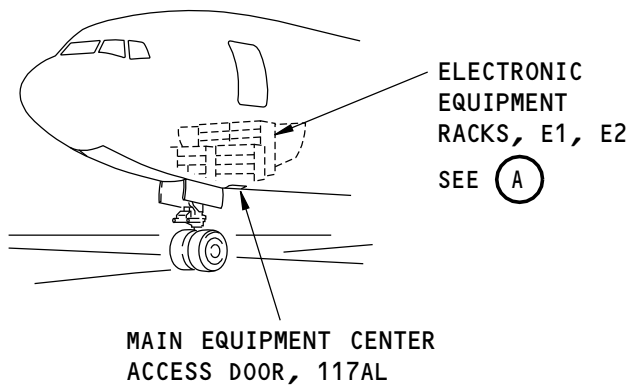
EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-01

Page 402
Sep 05/2017

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



ELECTRONIC EQUIPMENT RACKS, E1, E2

(A)

C80880 S0006420630_V1

**Receiver for ILS - Installation
Figure 401/34-31-01-990-802**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-01

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-01-400-801

3. Receiver for ILS - Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) The receiver for ILS is the multi-mode receiver (MMR).
- (2) A maintenance access terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808

B. References

Reference	Title
20-10-01-400-801	E/E Box Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-58-00-710-801	Global Positioning System - Operational Test (P/B 501)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Receiver for ILS	34-31-01-02-055	ARO 001-017

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Installation Procedure

SUBTASK 34-31-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	9	C34427	MMR C
E	9	C34426	MMR L
E	22	C34425	MMR R

SUBTASK 34-31-01-420-001



CAUTION

DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE ILS RECEIVER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ILS RECEIVER.

- (2) To install the receiver for ILS [1], (TASK 20-10-01-400-801).

EFFECTIVITY
ARO ALL

34-31-01

D633W101-ARO

Page 404
Sep 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-31-01-410-001

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

SUBTASK 34-31-01-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C34427	MMR C
E	9	C34426	MMR L
E	22	C34425	MMR R

G. Installation Test

SUBTASK 34-31-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-31-01-710-001

- (2) Use a maintenance access terminal (MAT) to do the operational test of the left (center, right) instrument landing system:
- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Instrument Landing System
 - 5) OPERATIONAL TEST
 - 6) Center Instrument Landing System (Using MMR), Left Instrument Landing System (Using MMR), or Right Instrument Landing System (Using MMR)
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-31-01-710-002

- (3) Do this task: Global Positioning System - Operational Test, TASK 34-58-00-710-801.

NOTE: No GPS Operational Test - TASK 34-58-00-710-801 is required for Center MMR.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-31-01

D633W101-ARO

Page 405
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ILS LOCALIZER ANTENNA - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the ILS localizer antenna.
 - (2) An installation of the ILS localizer antenna.
- B. There are two ILS localizer antennas behind the nose radome. The left ILS localizer antenna (M34016) is above the weather radar antenna. The right and center ILS localizer antenna (M34017) is below the weather radar antenna.
- C. The removal and installation procedures are the same for each ILS localizer antenna.

TASK 34-31-02-000-801

2. ILS Localizer Antenna Removal

(Figure 401)

A. **References**

Reference	Title
53-12-00-010-801	Open the Nose Radome (P/B 201)

B. **Location Zones**

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Removal Procedure**

SUBTASK 34-31-02-860-001



MAKE SURE THE WEATHER RADAR POWER IS OFF AND THE ANTENNA CANNOT SCAN. INJURY TO PERSONS CAN OCCUR IF THE WEATHER RADAR TRANSMITS OR IF THE ANTENNA IS PERMITTED TO SCAN.

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-02-010-001

- (2) To get access to the ILS localizer antenna [3], do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-31-02-020-001

- (3) Remove the ILS localizer antenna [3]:
 - (a) Disconnect the coaxial connectors [1] from the ILS localizer antenna [3].
 - (b) Put protective covers on the coaxial connectors.
 - (c) Remove the screws [2] that attach the ILS localizer antenna [3] to the airplane structure.

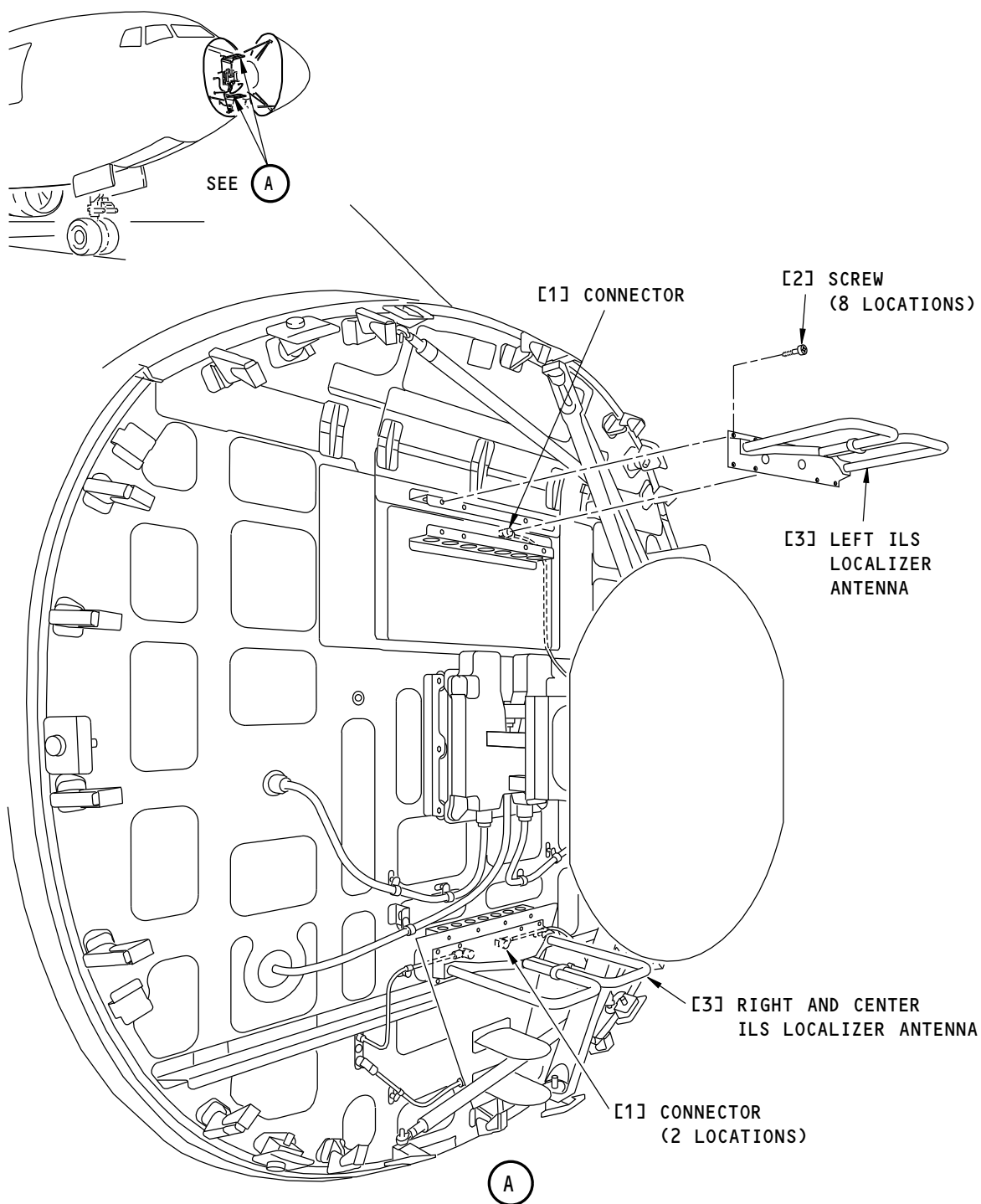
———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-31-02

D633W101-ARO

Page 401
Sep 05/2017



D22084 S0006420635_V1

ILS Localizer Antenna Installation
Figure 401/34-31-02-990-802

EFFECTIVITY
ARO ALL

34-31-02

D633W101-ARO

Page 402
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-02-400-801

3. ILS Localizer Antenna Installation

(Figure 401)

A. General

- (1) The installation task has an installation test. The installation test makes sure that the ILS localizer antenna operates correctly.

B. References

Reference	Title
20-10-22-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)
51-21-03-100-801	Corrosion Removal and Control (P/B 701)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
53-12-00-010-801	Open the Nose Radome (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

D. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00308	Compound - Corrosion Preventive, Petrolatum Hot Application	MIL-C-11796
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	ILS localizer antenna	34-31-02-01-015	ARO ALL

EFFECTIVITY
ARO ALL

34-31-02

D633W101-ARO

Page 403
May 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL

F. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

G. Installation Procedure

SUBTASK 34-31-02-860-002



WARNING MAKE SURE THE WEATHER RADAR POWER IS OFF AND THE ANTENNA CANNOT SCAN. INJURY TO PERSONS CAN OCCUR IF THE WEATHER RADAR TRANSMITS OR IF THE ANTENNA IS PERMITTED TO SCAN.

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-02-010-002

- (2) To get access to the ILS localizer antenna [3], do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-31-02-110-001

- (3) Clean the mating surfaces of the ILS localizer antenna [3] and the airplane structure, (TASK 20-10-22-110-802).
 - (a) Apply solvent, B00083 to the mating surfaces of the ILS localizer antenna [3] and the airplane structure with a clean cotton wiper, G00034.
 - (b) Use a clean cotton wiper, G00034 and clean the surfaces again.
 - (c) Do these two steps until the mating surfaces are bright, clean, and dry.

SUBTASK 34-31-02-110-002

- (4) If the airplane surface has corrosion or other damage, do these steps to prepare the airplane mating surface:
 - (a) Apply a layer of coating, C00064 to the airplane mating surface. To apply the coating, do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.
 - (b) Apply a layer of primer, C00259 to the screw holes.
 - (c) Allow the primer, C00259 to dry before installing the screws.

SUBTASK 34-31-02-420-001

- (5) Install the ILS localizer antenna [3]:
 - (a) Align the screw holes in the ILS localizer antenna [3] with the airplane structure.
 - (b) Apply a layer of corrosion preventive compound, C00308 on the screw threads, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
 - (c) Install the screws [2] to attach the ILS localizer antenna [3] base to the airplane structure.
 - (d) Remove the protective covers from the coaxial connectors [1].
 - (e) Examine the coaxial connectors for bent or broken pins, dirt, and damage.

EFFECTIVITY
ARO ALL

34-31-02

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (f) Connect the coaxial connectors.

SUBTASK 34-31-02-760-001

- (6) Measure the resistance between the ILS localizer antenna base and the antenna mounting structure with a intrinsically safe approved bonding meter, COM-1550.
- (a) The resistance should be 0.0005 ohms or less.

SUBTASK 34-31-02-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

H. Installation Test

SUBTASK 34-31-02-720-001

- (1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-31-02

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ILS G/S CAPTURE ANTENNA - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the ILS G/S capture antenna.
 - (2) An installation of the ILS G/S capture antenna.
- B. There are two ILS G/S capture antennas behind the nose radome installed below the weather radar antenna. The center and right dual ILS G/S capture antenna (M34019) is located below the left ILS G/S capture antenna (M34018).
- C. The removal and installation procedures are the same for each ILS G/S capture antenna.

TASK 34-31-03-000-801

2. ILS G/S Capture Antenna Removal

(Figure 401)

A. **References**

Reference	Title
53-12-00-010-801	Open the Nose Radome (P/B 201)

B. **Location Zones**

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Removal Procedure**

SUBTASK 34-31-03-860-001



MAKE SURE THE WEATHER RADAR POWER IS OFF AND THE ANTENNA CANNOT SCAN. INJURY TO PERSONS CAN OCCUR IF THE WEATHER RADAR TRANSMITS OR IF THE ANTENNA IS PERMITTED TO SCAN.

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-03-010-001

- (2) To get access to the ILS G/S capture antenna [3], do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-31-03-020-001

- (3) Remove the ILS G/S capture antenna [3]:
 - (a) Remove the screws [2] that attach the ILS G/S capture antenna [3] to the airplane structure.
 - (b) Disconnect the coaxial connectors [1] from the ILS G/S capture antenna [3].

EFFECTIVITY
ARO ALL

34-31-03

D633W101-ARO

Page 401
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (c) Put protective covers on the coaxial connectors.

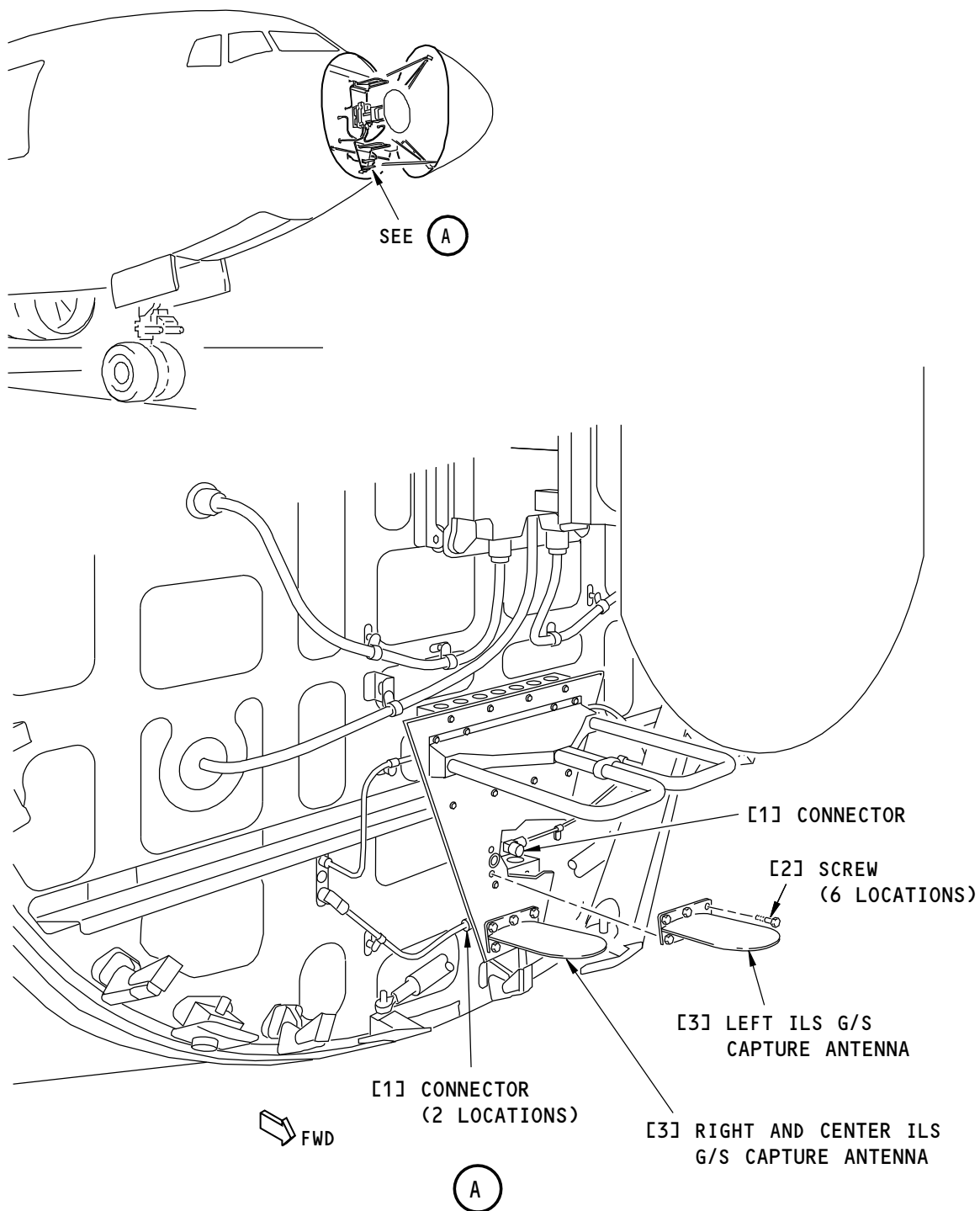
———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-03

Page 402
Sep 05/2017



E02082 S0006420640_V1

**ILS G/S Capture Antenna Installation
Figure 401/34-31-03-990-802**

EFFECTIVITY
ARO ALL

34-31-03

D633W101-ARO

Page 403
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-03-400-801

3. ILS G/S Capture Antenna Installation

(Figure 401)

A. General

- (1) The installation task has an installation test. The installation test makes sure that the ILS G/S capture antennas operate correctly.

B. References

Reference	Title
20-10-22-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)
51-21-03-100-801	Corrosion Removal and Control (P/B 701)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
53-12-00-010-801	Open the Nose Radome (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

D. Consumable Materials

Reference	Description	Specification
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00259	Coating - Chemical And Solvent Resistant Finish, Corrosion Inhibiting Primer	BMS10-11 Type I
C00308	Compound - Corrosion Preventive, Petrolatum Hot Application	MIL-C-11796

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	ILS G/S capture antenna	34-31-03-01-015	ARO ALL

F. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

34-31-03

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

G. Installation Procedure

SUBTASK 34-31-03-860-002



MAKE SURE THE WEATHER RADAR POWER IS OFF AND THE ANTENNA CANNOT SCAN. INJURY TO PERSONS CAN OCCUR IF THE WEATHER RADAR TRANSMITS OR IF THE ANTENNA IS PERMITTED TO SCAN.

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-03-010-002

- (2) To get access to the ILS G/S capture antenna [3], do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-31-03-110-001

- (3) Clean the mating surfaces of the antenna and the airplane structure. To clean the mating surfaces, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.

SUBTASK 34-31-03-110-002

- (4) If the airplane surface has corrosion or other damage, do these steps to prepare the airplane mating surface:
- (a) Apply a layer of coating, C00064 to the airplane mating surface. To apply the coating, do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.
 - (b) Apply a layer of primer, C00259 to the screw holes.
 - (c) Allow the primer, C00259 to dry before installing the screws.

SUBTASK 34-31-03-420-001

- (5) Install the ILS G/S capture antenna [3]:
- (a) Align the screw holes in the ILS G/S capture antenna [3] with the airplane structure.
 - (b) Apply a layer of corrosion preventive compound, C00308 on the screw threads. To apply the compound, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
 - (c) Install the screws [2] to attach the ILS G/S capture antenna [3] base to the airplane structure.
 - (d) Remove the protective covers from the coaxial connectors [1].
 - (e) Examine the coaxial connectors for bent or broken pins, dirt, and damage.
 - (f) Connect the coaxial connectors.

SUBTASK 34-31-03-760-001

- (6) Measure the resistance between the antenna plate and the airplane structure using a intrinsically safe approved bonding meter, COM-1550.
- (a) The resistance should be 0.0005 ohms or less.

EFFECTIVITY
ARO ALL

34-31-03

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-31-03-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

H. Installation Test

SUBTASK 34-31-03-720-001

- (1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-03

Page 406
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ILS G/S TRACK ANTENNA - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has these tasks:
- (1) A removal of the ILS G/S track antenna.
 - (2) An installation of the ILS G/S track antenna and an installation test.
- B. There are two ILS G/S track antennas installed on the aft wheel well doors of the nose gear. The left and center ILS G/S track antenna (M34020) is on the leading edge of the left door. The right ILS G/S track antenna (M34021) is on the leading edge of the right door.
- C. The removal and installation procedures are the same for each ILS G/S track antenna.

TASK 34-31-04-000-801

2. **ILS G/S Track Antenna Removal**

(Figure 401)

A. **References**

Reference	Title
32-00-15-480-801	Landing Gear Door Safety Pins Installation (P/B 201)
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. **Tools/Equipment**

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. **Location Zones**

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-04

Page 401
May 05/2018

777-200/300 AIRCRAFT MAINTENANCE MANUAL

D. Removal Procedure

SUBTASK 34-31-04-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-04-480-001



YOU MUST CAREFULLY INSTALL THE DOOR LOCKS ON THE FORWARD LANDING GEAR DOORS. THE DOORS CAN CLOSE QUICKLY IF YOU DO NOT INSTALL THE DOOR LOCKS CORRECTLY. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) To install the forward landing gear door locks, do this task: Landing Gear Door Safety Pins Installation, TASK 32-00-15-480-801.

SUBTASK 34-31-04-020-001

- (3) Remove the fillet seal compound from around the ILS G/S TRACK ANTENNA [2] with a sealant removal tool, COM-2481 (TASK 51-31-01-160-801).

SUBTASK 34-31-04-020-003

- (4) Remove the door seal [5]:
 - (a) Remove the five bolts [10], washers [11], and nut [12] that attach the ILS G/S TRACK ANTENNA [2], door seal [5], and seal retainer [4] to the nose gear door.
 - (b) Remove the ten bolts [7], washers [8], and nuts [9] that attach the door seal [5] and seal retainer [4] to the nose gear door.
 - (c) Remove the door seal [5], seal retainer [4], and spacers [6] from the nose gear door.

SUBTASK 34-31-04-020-002

- (5) Remove the ILS G/S TRACK ANTENNA [2]:
 - (a) Remove the lockwire [3] and disconnect the coaxial connector(s) [1] from the ILS G/S TRACK ANTENNA [2].
 - (b) Remove the six bolts [15] and washers [16] that attach the ILS G/S TRACK ANTENNA [2] to the nose gear door.
 - (c) Remove the two bolts [13] and washers [14] that attach the ILS G/S TRACK ANTENNA [2] to the ramp section of the nose gear door.



BE CAREFUL WHEN YOU USE A SEALANT REMOVAL TOOL TO BREAK THE SEAL AROUND THE ILS G/S TRACK ANTENNA. TOO MUCH FORCE OR THE USE OF AN INCORRECT TOOL CAN CAUSE DAMAGE TO THE DOOR OR TO THE ANTENNA.

- (d) Use force around the ILS G/S TRACK ANTENNA [2] with a sealant removal tool, COM-2481 until the seal is fully broken.
- (e) Pull the ILS G/S TRACK ANTENNA [2] away from the nose gear door.
- (f) Remove the gasket [17] from the nose gear door.

————— END OF TASK —————

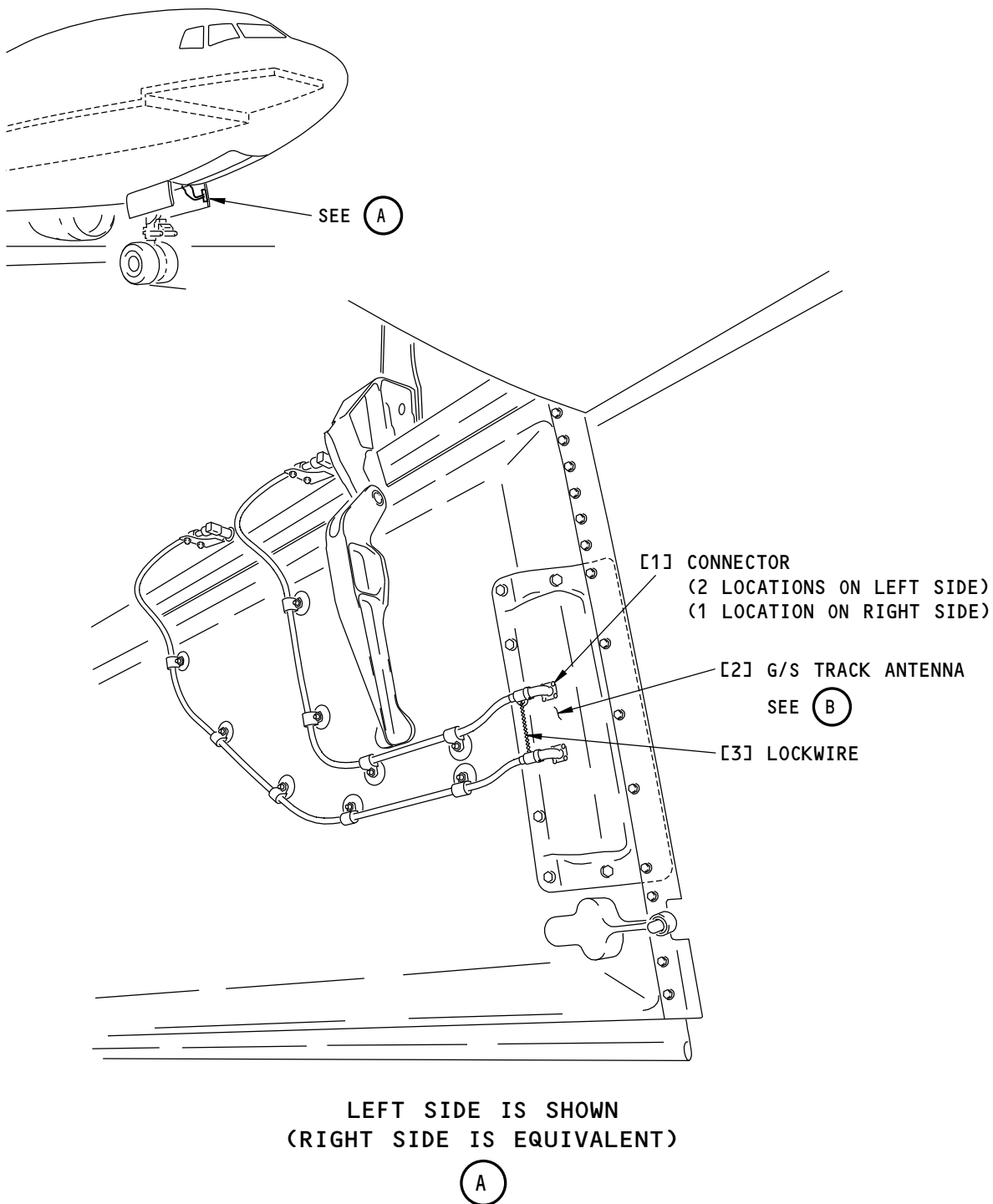
EFFECTIVITY
ARO ALL

34-31-04

D633W101-ARO

Page 402
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL



D01571 S0006420645_V1

ILS G/S Track Antenna Installation
Figure 401/34-31-04-990-802 (Sheet 1 of 2)

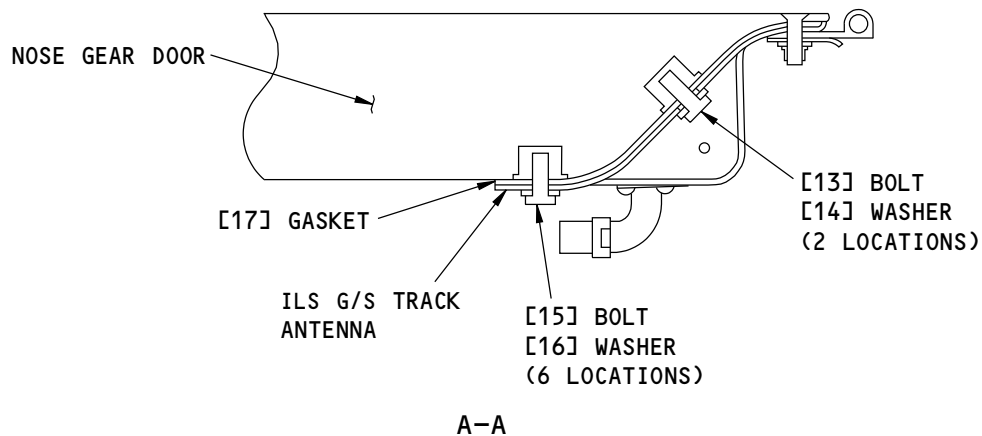
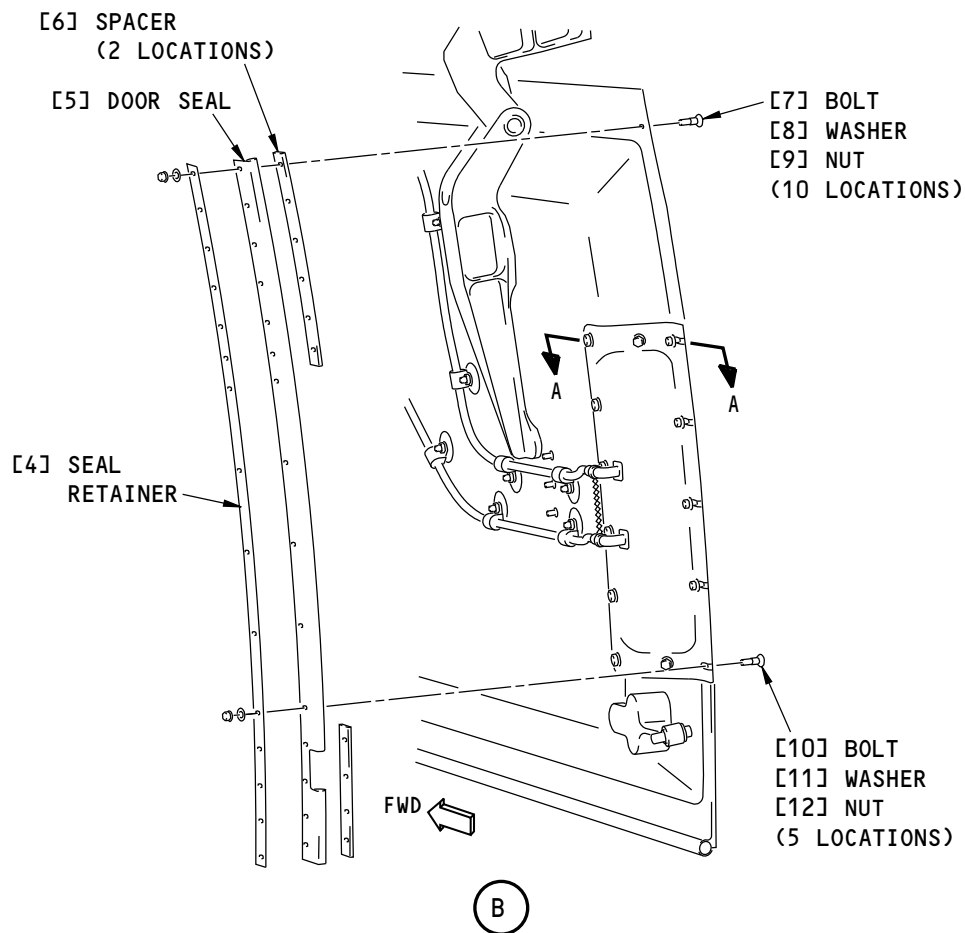
EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-04

Page 403
May 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



E23014 S0006420646_V1

**ILS G/S Track Antenna Installation
Figure 401/34-31-04-990-802 (Sheet 2 of 2)**

EFFECTIVITY
ARO ALL

34-31-04

D633W101-ARO

Page 404
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-04-400-801

3. ILS G/S Track Antenna Installation

(Figure 401)

A. General

- (1) An installation test is done after the installation of the ILS G/S track antenna. The installation test makes sure that the ILS G/S track antenna is installed correctly.

B. References

Reference	Title
20-10-23-400-801	Lockwire, Cotter Pins, and Lockrings - Installation (P/B 401)
32-00-15-080-801	Landing Gear Door Safety Pins Removal (P/B 201)
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)
51-21-00-100-801	Airplane Surface Preparation for Application of Finish (P/B 701)
51-21-03-100-801	Corrosion Removal and Control (P/B 701)

C. Tools/Equipment

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

Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5
STD-449	Gun - Sealant

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-04

Page 405
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

D. Consumable Materials

Reference	Description	Specification
A00247	Sealant - Pressure And Environmental - Chromate Type	BMS5-95
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
B00184	Solvent - Presealing, Cleaning Solvent	BMS11-7
B00666	Solvent - Methyl Propyl Ketone	BMS11-9
B01026	Solvent - FCC-55	
C00032	Coating - Protective Enamel, General Use	BMS10-60 Type I
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G00270	Tape - Scotch Flatback Masking 250	ASTM D6123 (Supersedes A-A-883)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	ILS G/S TRACK ANTENNA	34-31-04-01-025	ARO ALL
17	Gasket	34-31-04-01-090	ARO ALL

F. Location Zones

Zone	Area
113	Nose Landing Gear Wheel Well, Left
114	Nose Landing Gear Wheel Well, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

G. Installation Procedure

SUBTASK 34-31-04-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-04-110-001

- (2) Clean the mating surfaces of the ILS G/S TRACK ANTENNA [2] and the nose gear door:

EFFECTIVITY
ARO ALL

34-31-04

D633W101-ARO

Page 406
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL



APPLY THE SOLVENT TO THE MATING SURFACES ONLY. MAKE SURE YOU REMOVE THE SOLVENT FROM THE OTHER SURFACES. IF THE SOLVENT STAYS ON A SURFACE FOR A LONG TIME, IT CAN CAUSE DAMAGE TO THE SURFACE FINISH.

- (a) Clean the mating surfaces of the ILS G/S TRACK ANTENNA [2] and the nose gear door with a clean cotton wiper, G00034 and solvent, B00184, FCC-55 solvent, B01026, solvent, B00148, or solvent, B00666. To clean it, (TASK 51-21-03-100-801).
- (b) Use a clean cotton wiper, G00034 and clean the surfaces again.
- (c) Do these two steps until the mating surfaces are clean and dry.

SUBTASK 34-31-04-420-001

- (3) Install the ILS G/S TRACK ANTENNA [2]:

- (a) Apply the Scotch Flatback Masking Tape 250, G00270 to the nose gear door surfaces.

NOTE: The masking tape must be put on the nose gear door surface immediately outside of the ILS G/S track antenna mating surface. This will limit the silicone sealant to the necessary surfaces.



WEAR PROTECTIVE/DISPOSABLE GLOVES WHEN YOU MOVE THE SILICONE GASKET. DO NOT ALLOW THE SILICONE GASKET OR PROTECTIVE GLOVES TO CONTACT THE AIRPLANE STRUCTURE THAT IS NOT UNDER THE ILS G/S TRACK ANTENNA. THE SILICONE GEL CAN CAUSE PAINT BOND FAILURES. DISCARD THE PROTECTIVE GLOVES IMMEDIATELY AFTER THE GASKET IS INSTALLED.

- (b) Put the antenna gasket [17] on the mounting side of the ILS G/S TRACK ANTENNA [2].
- (c) Put the ILS G/S TRACK ANTENNA [2] into position against the leading edge of the nose gear door.
- (d) Install the six washers [16] and bolts [15] that thread into the inserts in the nose gear door.
- (e) Install the two washers [14] and bolts [13] that thread into the inserts in the ramp section of the nose gear door.



MAKE SURE THAT THE ILS G/S TRACK ANTENNA AND THE GASKET ARE TIGHTLY ON THE RAMP SECTION OF THE NOSE GEAR DOOR. AIR GAPS CAN NOT SHOW BETWEEN THE GASKET AND THE ILS G/S TRACK ANTENNA OR BETWEEN THE GASKET AND THE NOSE GEAR DOOR. AIR GAPS CAN LET DIRT AND FLUIDS GET TO THE ANTENNA ELECTRONICS AND DAMAGE THE ANTENNA.

- (f) Tighten the eight bolts to 14-16 inch-pounds of torque.

NOTE: To aid in the seal of the ILS G/S TRACK ANTENNA [2] and the gasket on the ramp section of the nose gear door, the two bolts on the ramp section can be lightly tightened before the other six bolts are tightened. Tighten the two bolts on the ramp section of the nose gear door to 14-16 inch-pounds of torque last.

777-200/300
AIRCRAFT MAINTENANCE MANUAL



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.



KEEP THE AREA TO BE CLEANED SMALL TO PREVENT SPREADING THE SILICONE GEL TO OTHER SURFACES. THE SILICONE GEL WILL CAUSE PAINT BOND PROBLEMS.

- (g) Remove any excess silicone gel with a clean cotton wiper, G00034 and solvent, B00184, FCC-55 solvent, B01026, solvent, B00148, solvent, B00666.

SUBTASK 34-31-04-420-002

- (4) Install the door seal [5]:

- (a) Put the spacers [6], door seal, and seal retainer [4] on the nose gear door.
- (b) Install the ten bolts [7], washers [8], and nuts [9] on the nose gear door.
- (c) Apply a layer of sealant, A00247 on the five bolts [10] that go through the nose gear door, ILS G/S TRACK ANTENNA [2], door seal [5], and seal retainer [4].
- (d) Install four of the bolts [10], washers [11], and nut [12] on the nose gear door.
- (e) Tighten the four bolts to 14-16 inch-pounds of torque.

SUBTASK 34-31-04-200-001

- (5) Make sure the bonding jumper for the nose landing gear door is installed.

SUBTASK 34-31-04-760-001

- (6) Measure the resistance:

- (a) Do a test of the continuity between the outside of the connectors on the ILS G/S TRACK ANTENNA [2] and the graphite ply of the nose gear door with a digital/analog multimeter, COM-1793.

NOTE: You can use the empty bolt hole to get access to the graphite plies of the ILS G/S TRACK ANTENNA [2].

- (b) Make sure the resistance is less than 5.0 ohms.
- (c) Install the last bolt, washer, and nut on the nose gear door.
- (d) Tighten the last bolt to 14-16 inch-pounds of torque.

SUBTASK 34-31-04-390-001

- (7) Apply the sealant:

- (a) Apply DC 1200 primer to the surfaces around the ILS G/S TRACK ANTENNA [2].
- (b) Apply the DC 93-006 silicone sealant with a sealant gun, STD-449 on the DC 1200 primer.
- (c) Apply more sealant than necessary to make sure the fillet is smooth.
- (d) Use a hardwood or plastic fillet smoothing spatula, STD-810 to make sure the sealant is a smooth symmetrical 45-degree fillet.
- (e) Remove the Scotch Flatback Masking Tape 250, G00270 after the seal is smooth or let the masking tape stay during the curing time.



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (f) Apply a layer of sealant, A00247 to the five bolt heads, washers, and nuts on the leading edge of the ILS G/S TRACK ANTENNA [2].
- (g) Remove the unwanted sealant with a sealant removal tool, COM-2481.

SUBTASK 34-31-04-370-001

- (8) Apply the protective finish (TASK 51-21-00-100-801):
 - (a) Apply a layer of primer, C00175 on all of the sealant and carbon fibers that show.
 - (b) Apply a layer of coating, C00032 on the primer, C00175.

SUBTASK 34-31-04-420-003

- (9) Install the coaxial connector(s) [1]:
 - (a) Remove the protective covers from the coaxial connector(s).
 - (b) Examine the coaxial connector(s) for bent or broken pins, dirt, and damage.
 - (c) Connect the coaxial connector(s) to the ILS G/S TRACK ANTENNA [2].
 - (d) Install the lockwire [3] on the coaxial connector(s). To install the lockwire [3], do this task: Lockwire, Cotter Pins, and Lockrings - Installation, TASK 20-10-23-400-801.

SUBTASK 34-31-04-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

H. Installation Test

SUBTASK 34-31-04-720-001

- (1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

I. Put the Airplane back to its Usual Condition

SUBTASK 34-31-04-080-001

- (1) Remove the forward landing gear door locks. Do this task: Landing Gear Door Safety Pins Removal Landing Gear Door Safety Pins Removal, TASK 32-00-15-080-801.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-31-04

D633W101-ARO

Page 409
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ILS LOCALIZER ANTENNA SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the ILS localizer antenna switch.
 - (2) An installation of the ILS localizer antenna switch.
- B. There are three ILS localizer antenna switches installed in the main equipment center. The left ILS localizer antenna switch (S34102), is on the left side of the E1-2 shelf of the electronic equipment rack. The right (S34202) and center (S34302) ILS localizer antenna switches are on the structure of the E2-3 and E1-3 shelves of the E1/E2 electronic equipment rack, respectively.
- C. The removal and installation procedures are the same for each ILS localizer antenna switch.

TASK 34-31-05-000-801

2. ILS Localizer Antenna Switch Removal

(Figure 401)

A. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

B. **Removal Procedure**

SUBTASK 34-31-05-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-05-020-001

- (2) Remove the ILS localizer antenna switch [3]:
- (a) Disconnect the connectors [1] from the ILS localizer antenna switch.
 - (b) Remove the screws [2] that attach the ILS localizer antenna switch to the E1/E2 electronic equipment rack.

———— **END OF TASK** ————

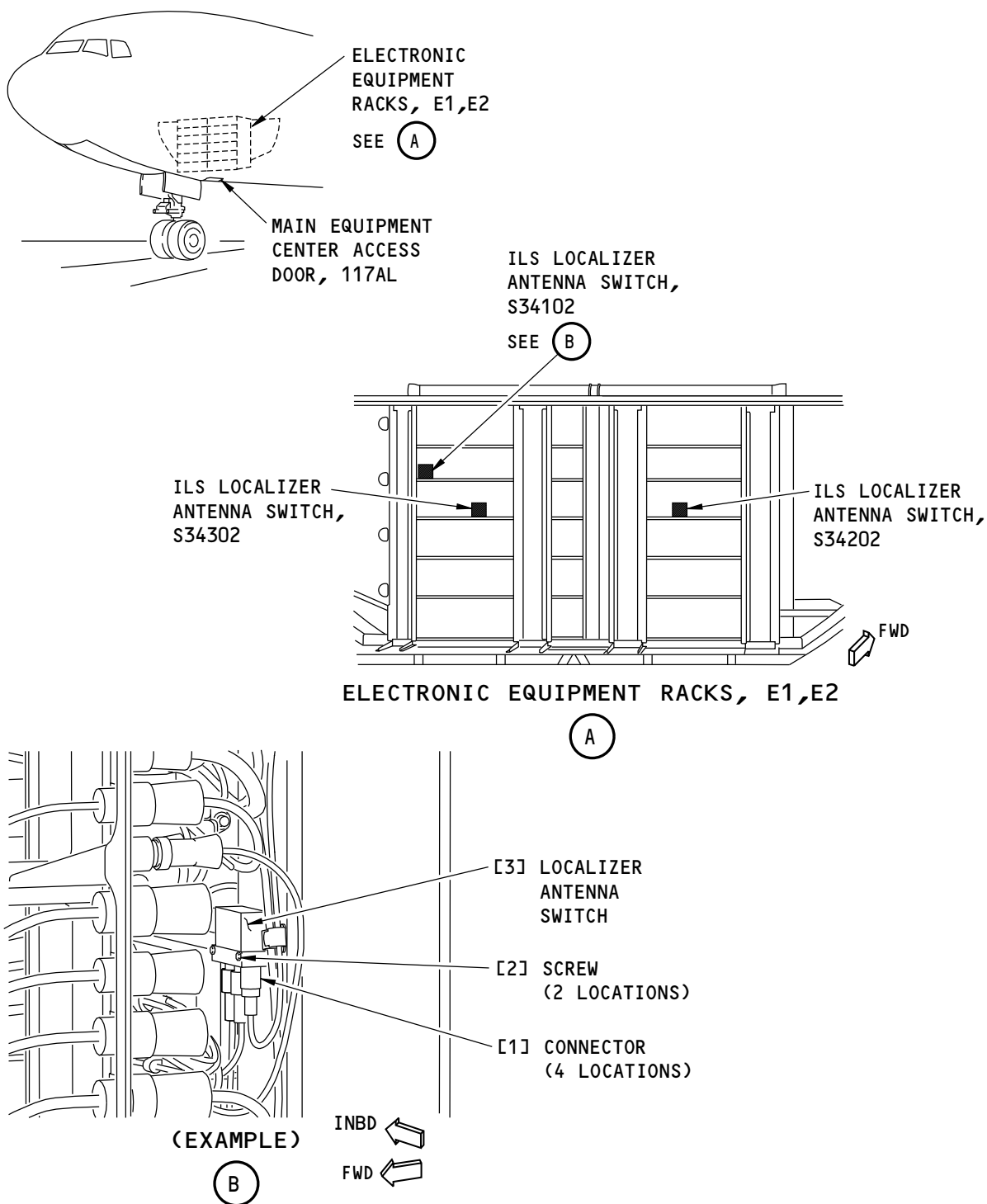
EFFECTIVITY
ARO ALL

34-31-05

D633W101-ARO

Page 401
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL



E13010 S0006420651_V1

ILS Localizer Antenna Switch Installation
Figure 401/34-31-05-990-802

EFFECTIVITY
ARO ALL

34-31-05

D633W101-ARO

Page 402
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-05-400-801

3. **ILS Localizer Antenna Switch Installation**

(Figure 401)

A. General

- (1) An installation test is done after the ILS localizer antenna switches are installed. The installation test makes sure that the ILS localizer antenna switches operate correctly.

B. References

Reference	Title
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Switch	34-31-05-01-010	ARO ALL

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Installation Procedure

SUBTASK 34-31-05-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-05-420-001

- (2) Install the ILS localizer antenna switch [3]:
- (a) Align the left, center, or right ILS localizer antenna switch [3] to the holes in the E1/E2 electronic equipment rack.
 - (b) Install the screws [2] to attach the ILS localizer antenna switch [3] to the E1/E2 electronic equipment rack.
 - (c) Connect the connectors [1] to the ILS localizer antenna switch [3].

SUBTASK 34-31-05-860-003

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

EFFECTIVITY
ARO ALL

34-31-05

D633W101-ARO

Page 403
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

F. Installation Test

SUBTASK 34-31-05-720-001

(1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-05

Page 404
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ILS G/S ANTENNA SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the ILS G/S antenna switch.
 - (2) An installation of the ILS G/S antenna switch.
- B. There are three ILS G/S antenna switches on the inside of the airplane on the structure of the nose wheel well. The left and center G/S antenna switches are on the left side of the nose wheel well structure. The right G/S antenna switch is on the right side of the nose wheel well structure.
- C. The removal and installation procedures are the same for each ILS G/S antenna switch.

TASK 34-31-06-000-801

2. ILS G/S Antenna Switch Removal

(Figure 401)

A. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

B. **Removal Procedure**

SUBTASK 34-31-06-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-06-010-001

- (2) For the right ILS G/S antenna switch, remove the floor panel adjacent to the P212 data bus panel-R to get access to the switch.

SUBTASK 34-31-06-020-002

- (3) Remove the insulation blanket at these locations:
- (a) For the left and center ILS G/S antenna switch:
 - 1) Aft end of the P313 data bus panel-CTR
 - (b) For the right ILS G/S antenna switch:
 - 1) Below the P212 data bus panel-R

SUBTASK 34-31-06-020-001

- (4) Remove the ILS G/S antenna switch [3]:
- (a) Disconnect the connectors [1] from the ILS G/S antenna switch.
 - (b) Remove the screws [2] and washers [4] that attach the ILS G/S antenna switch to the airplane structure.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

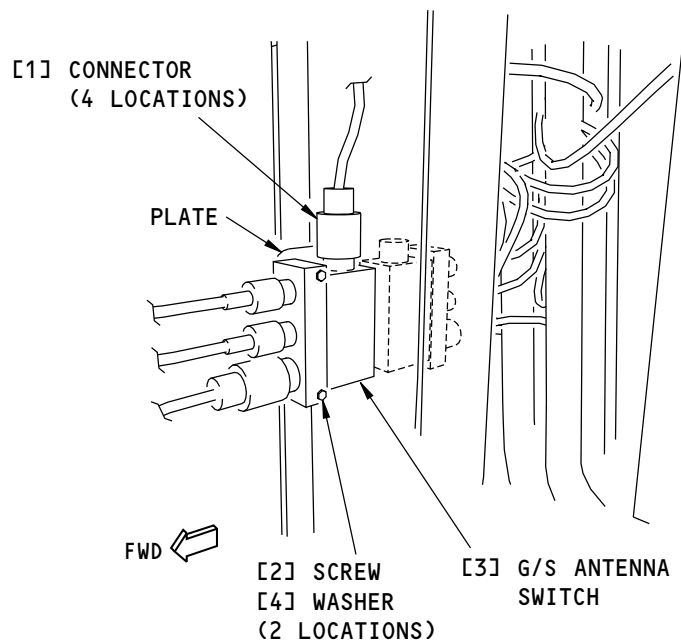
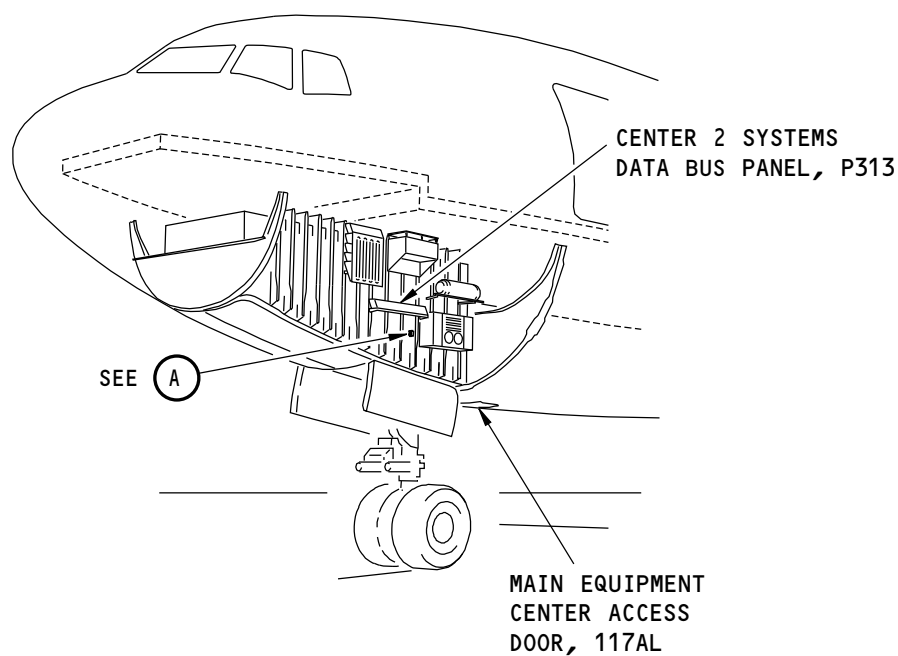
34-31-06

D633W101-ARO

Page 401
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



(LEFT SIDE IS SHOWN, RIGHT SIDE IS EQUIVALENT)

(A)

D01361 S0006420656_V1

ILS G/S Antenna Switch Installation
Figure 401/34-31-06-990-802

EFFECTIVITY
ARO ALL

34-31-06

D633W101-ARO

Page 402
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-06-400-801

3. ILS G/S Antenna Switch Installation

(Figure 401)

A. General

- (1) The installation test makes sure that the ILS G/S antenna switches are correctly installed.

B. References

Reference	Title
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)

C. Tools/Equipment

Reference	Description
STD-1330	Wrench - Hexdrive, Allen Wrench

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Switch	34-31-06-01-020	ARO ALL

E. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

F. Installation Procedure

SUBTASK 34-31-06-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

SUBTASK 34-31-06-420-001

- (2) Install the ILS G/S antenna switch [3]:
- (a) Align the left, center, or right ILS G/S antenna switch [3] to the holes in the airplane structure.
 - (b) Install the washers [4] and screws [2] to attach the ILS G/S antenna switch [3] to the airplane structure.
 - (c) Tighten the connectors [1] to the ILS G/S antenna switch [3] with your hand.
 - (d) Tighten the connectors [1] one quarter turn with a hexdrive allen wrench, STD-1330.

SUBTASK 34-31-06-410-001

- (3) For the right ILS G/S antenna switch [3], install the floor panel adjacent to the P212 data bus panel-R.

SUBTASK 34-31-06-420-002

- (4) Install the insulation blanket at these locations:
- (a) For the left and center ILS G/S antenna switch [3]:

EFFECTIVITY
ARO ALL

34-31-06

D633W101-ARO

Page 403
May 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- 1) Aft end of the P313 data bus panel-CTR
- (b) For the right ILS G/S antenna switch [3]:
 - 1) Below the P212 data bus panel-R

SUBTASK 34-31-06-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C34630	ILS ANT SWITCH C
F	8	C34629	ILS ANT SWITCH L
F	21	C34628	ILS ANT SWITCH R

G. Installation Test

SUBTASK 34-31-06-720-001

- (1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-31-06

Page 404
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ILS RF POWER DIVIDER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the ILS RF power divider.
 - (2) An installation of the ILS RF power divider.
- B. There are two ILS RF power dividers installed in the E1/E2 electronic equipment rack in the main equipment center. The left (M34111) and right (M34211) ILS RF power dividers are installed on the structure on the back of the E1/E2 electronic equipment rack.
- C. The removal and installation procedures are the same for each ILS RF power divider.

TASK 34-31-07-000-801

2. ILS RF Power Divider Removal

(Figure 401)

A. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

B. **Removal Procedure**

SUBTASK 34-31-07-020-001

- (1) Remove the ILS RF power divider [1]:
- (a) Disconnect the coaxial connectors [3] from the ILS RF power divider [1].
 - (b) Remove the screws [2] that attach the ILS RF power divider [1] to the E1/E2 electronic equipment rack.

———— **END OF TASK** ————

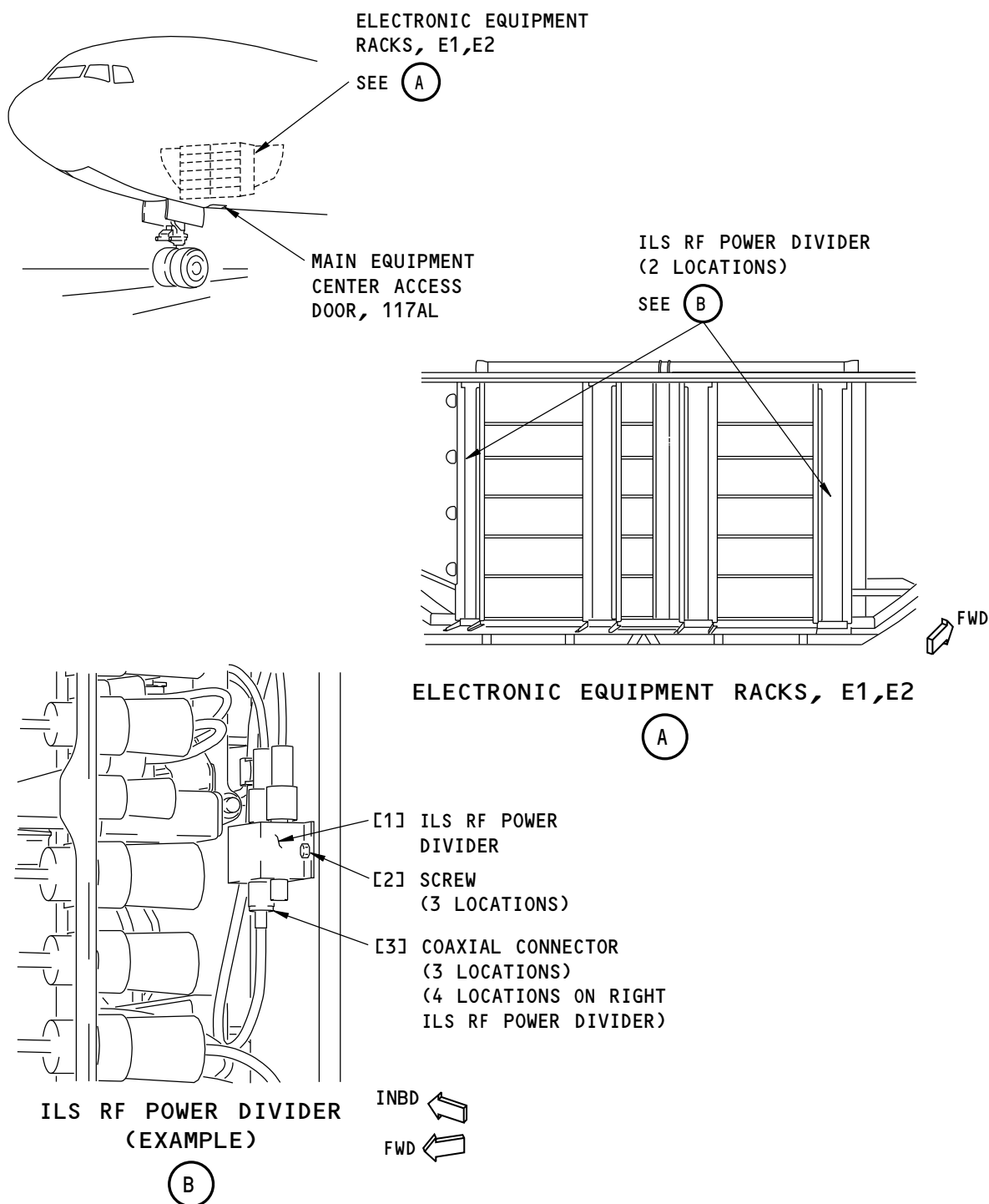
EFFECTIVITY
ARO ALL

34-31-07

D633W101-ARO

Page 401
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL



E23088 S0006420661_V1

**ILS RF Power Divider Installation
Figure 401/34-31-07-990-802**

EFFECTIVITY
ARO ALL

34-31-07

D633W101-ARO

Page 402
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-31-07-400-801

3. ILS RF Power Divider Installation

(Figure 401)

A. General

- (1) An installation test is done after the ILS RF power divider [1] is installed. The installation test makes sure that the ILS RF power divider [1] operate correctly.

B. References

Reference	Title
34-31-00-730-801	Instrument Landing System - System Test (P/B 501)
34-51-00-730-801	VOR System - System Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ILS RF power divider	34-31-07-01-015	ARO ALL

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Installation Procedure

SUBTASK 34-31-07-420-001

- (1) Install the ILS RF power divider [1]:
 - (a) Align the left or right ILS RF power divider [1] to the holes in the E1/E2 electronic equipment rack.
 - (b) Install the screws [2] to attach the ILS RF power divider [1] to the E1/E2 electronic equipment rack.
 - (c) Connect the coaxial connectors [3] to the ILS RF power divider [1].

F. Installation Test

SUBTASK 34-31-07-720-001

- (1) Do this task: Instrument Landing System - System Test, TASK 34-31-00-730-801.

SUBTASK 34-31-07-720-002

- (2) Do this task: VOR System - System Test, TASK 34-51-00-730-801.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-31-07

D633W101-ARO

Page 403
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

MARKER BEACON SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Marker Beacon System Deactivation
 - (2) Marker Beacon System Activation

TASK 34-32-00-040-801

2. Marker Beacon System - Deactivation

A. **General**

- (1) This task removes electrical power from the Marker Beacon System.

B. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Access Panels**

Number	Name/Location
117AL	Main Equipment Center Access Door

D. **Procedure**



WARNING

REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-32-00-860-010

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C34443	VOR MKR L

E. **Marker Beacon System - Tryout**

NOTE: This tryout is to make sure the Marker Beacon System is in a zero energy state.

SUBTASK 34-32-00-860-011

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C34443	VOR MKR L

SUBTASK 34-32-00-010-001

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

EFFECTIVITY
ARO ALL

34-32-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-32-00-700-001

- (3) Press the self test switch on the front panel of the VOR/MB.

NOTE: The VOR/MB is located in the E/E bay on the E1-3 shelf.

- (a) Make sure none of the status lights are illuminated.

————— **END OF TASK** —————

TASK 34-32-00-440-801

3. Marker Beacon System - Activation

A. General

- (1) This task adds electrical power to the Marker Beacon System.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

D. Procedure

SUBTASK 34-32-00-860-012

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C34443	VOR MKR L

SUBTASK 34-32-00-700-002

- (2) Press the self test switch on the front panel of the VOR/ MB.

- (a) Make sure the status lights are illuminated.

SUBTASK 34-32-00-410-001

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-32-00

Page 202
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

MARKER BEACON SYSTEM - ADJUSTMENT/TEST

1. General

A. This procedure has two tasks for the marker beacon system:

- (1) An operational test.
- (2) A system test.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

TASK 34-32-00-710-801

2. Marker Beacon System - Operational Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Location Zones

Zone	Area
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-32-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-32-00-710-001

- (2) Use a maintenance access terminal (MAT) to do the operational test of the marker beacon system:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 VOR/Marker Beacon System
 - 5) OPERATIONAL TEST
 - 6) Left VOR M/B System
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-32-00

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-32-00-730-801

3. Marker Beacon System - System Test

A. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

B. Tools/Equipment

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

Reference	Description
COM-1913	Test Set - NAV/COMM Ramp Part #: 90000136 Supplier: 92606 Part #: IFR 4000 Supplier: 51190 Opt Part #: 402AP-110 Supplier: 51190 Opt Part #: 972Q-4 Supplier: 4V792 Opt Part #: NAV-402AP-2 Supplier: 51190 Opt Part #: T-30C Supplier: 92606 Opt Part #: T-30D Supplier: 92606 Opt Part #: T-36C Supplier: 92606

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-32-00-860-003

(1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-32-00-710-002

(2) Do this task: Marker Beacon System - Operational Test, TASK 34-32-00-710-801.

SUBTASK 34-32-00-860-004

(3) Prepare the test set:

- (a) Position the NAV/COMM ramp test set, COM-1913 for testing the marker beacon antenna.
- (b) Set the signal generator to give a 75 Mhz signal with 400 Hz modulation.

SUBTASK 34-32-00-860-005

(4) Set the switches on an Audio Control Panel (ACP) for marker beacon audio as follows:

- (a) Put the APP switch to the MKR position.
- (b) Push the APP volume control switch which is found to the left of the APP switch.
- (c) Put the VBR switch to the B position.
- (d) Push the switch for the flight deck speaker.
- (e) Adjust the volume control knob to a nominal sound level.

SUBTASK 34-32-00-730-001

(5) Operate the test set at 400 Hz.

- (a) Make sure the letters OM (outer marker) show on the Captain's and the First Officer's PFD.

EFFECTIVITY
ARO ALL

34-32-00

D633W101-ARO

Page 502
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Make sure you hear a sound from the flight deck speaker.

SUBTASK 34-32-00-730-002

- (6) Operate the test set at 1300 Hz.
 - (a) Make sure the letters MM (middle marker) show on the Captain's and the First Officer's PFD.
 - (b) Make sure you hear a sound from the flight deck speaker.

SUBTASK 34-32-00-730-003

- (7) Operate the test set at 3000 Hz.
 - (a) Make sure the letters IM (inner marker) show on the Captain's and the First Officer's PFD.
 - (b) Make sure you hear a sound from the flight deck speaker.

E. Put the airplane back to its usual condition.

SUBTASK 34-32-00-860-006

- (1) Push the APP volume control switch to make the marker beacon audio go off.

SUBTASK 34-32-00-860-007

- (2) Put the APP switch on the ACP that was used for the test to the usual position.

SUBTASK 34-32-00-860-009

- (3) Remove the NAV/COMM ramp test set, COM-1913.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-32-00

D633W101-ARO

Page 503
Jan 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

MARKER BEACON ANTENNA - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) A removal of the marker beacon antenna.
- (2) An installation of the marker beacon antenna.

B. There is one marker beacon antenna (M34023) installed on the bottom of the airplane.

TASK 34-32-01-000-801

2. Marker Beacon Antenna Removal

(Figure 401)

A. **References**

<u>Reference</u>	<u>Title</u>
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. **Tools/Equipment**

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

<u>Reference</u>	<u>Description</u>
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. **Location Zones**

<u>Zone</u>	<u>Area</u>
100	Lower Half of Fuselage

D. **Removal Procedure**

SUBTASK 34-32-01-860-001

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C34443	VOR MKR L

SUBTASK 34-32-01-020-001

- (2) Remove the marker beacon antenna [1]:
 - (a) To remove the aerodynamic sealant from around the base of the marker beacon antenna [1] and the heads of the bolts [4] with a sealant removal tool, COM-2481, do this task: Prepare For Sealing, TASK 51-31-01-160-801.

EFFECTIVITY
ARO ALL

34-32-01

D633W101-ARO

Page 401
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (b) Remove the bolts from the marker beacon antenna [1].



CAUTION

BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (c) Use force around the marker beacon antenna [1] with the sealant removal tool, COM-2481 until the seal is fully broken.



CAUTION

LOWER THE ANTENNA ONLY AS FAR AS NECESSARY TO DISCONNECT THE COAXIAL CONNECTOR [2]. DAMAGE TO THE CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (d) Lower the marker beacon antenna [1] until you can get access to the coaxial connector [2].
- (e) Disconnect the coaxial connector [2] from the marker beacon antenna [1].
- (f) Remove the marker beacon antenna [1].
- (g) To remove the sealant from the airplane skin and the mating surfaces with a sealant removal tool, COM-2481, do this task: Prepare For Sealing, TASK 51-31-01-160-801.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

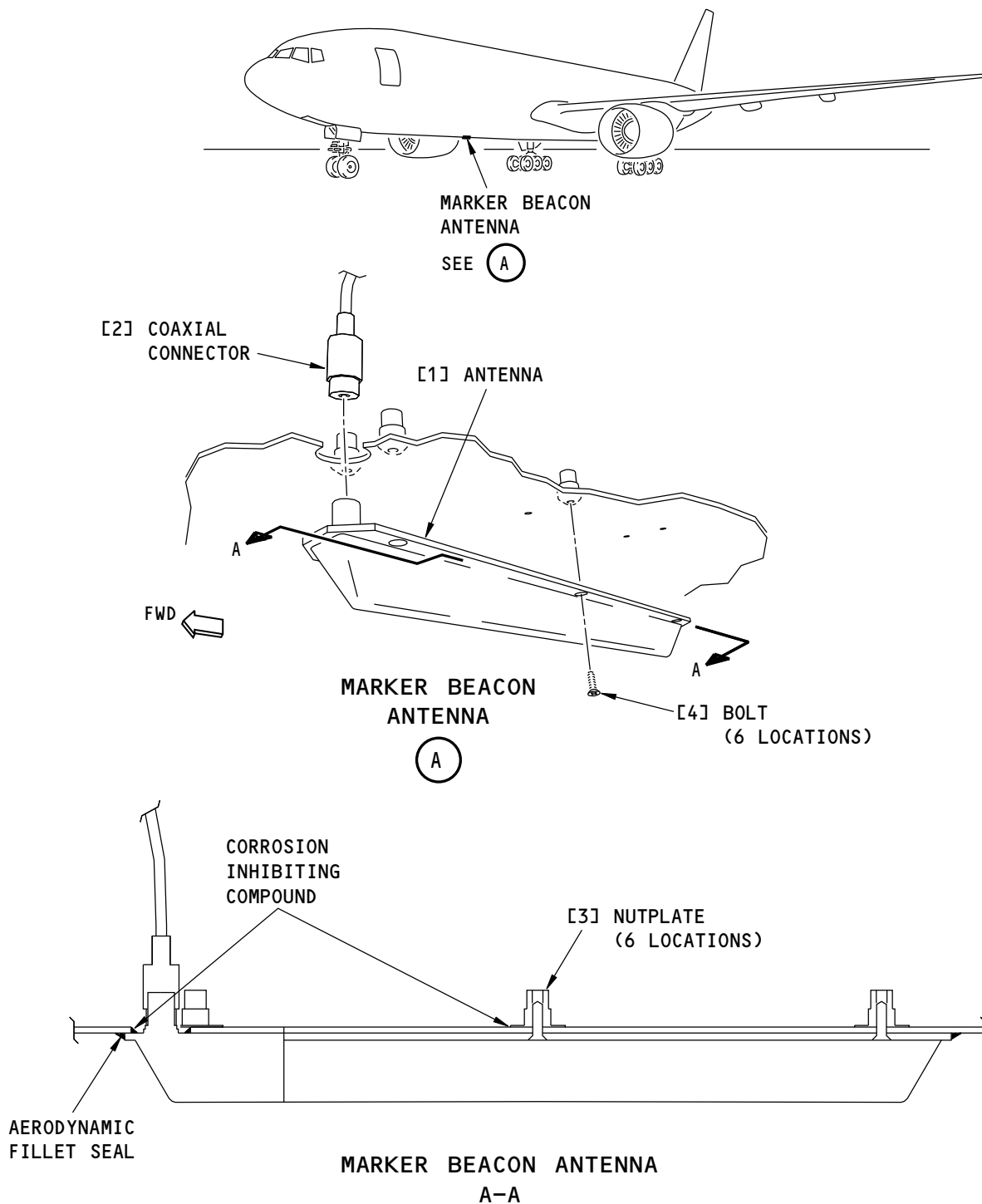
34-32-01

D633W101-ARO

Page 402
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



C37644 S0006420671_V1

Marker Beacon Antenna Installation
Figure 401/34-32-01-990-802

EFFECTIVITY
ARO ALL

D633W101-ARO

34-32-01

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-32-01-400-801

3. Marker Beacon Antenna Installation

(Figure 401)

A. General

- (1) An installation test is done after the installation of the marker beacon antenna [1]. The installation test makes sure that the marker beacon antenna [1] operates correctly.

B. References

Reference	Title
20-30-88-910-801	Final Cleaning of Metal Prior to Non-structural Bonding (Series 88) (P/B 201)
20-30-95-910-801	Final Cleaning Prior to Aerodynamic Smoothing and Fairing (Series 95) (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
51-31-01-390-807	Electrical Fitting Seal Application (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17
COM-1913	Test Set - NAV/COMM Ramp Part #: 90000136 Supplier: 92606 Part #: IFR 4000 Supplier: 51190 Opt Part #: 402AP-110 Supplier: 51190 Opt Part #: 972Q-4 Supplier: 4V792 Opt Part #: NAV-402AP-2 Supplier: 51190 Opt Part #: T-30C Supplier: 92606 Opt Part #: T-30D Supplier: 92606 Opt Part #: T-36C Supplier: 92606
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

D. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
B01008	Solvent - Final Cleaning Of Metal Prior To Non-Structural Bonding - Series 88	
B01015	Solvent - Final Cleaning Prior To Aerodynamic Smoothing And Fairing - Series 95	

EFFECTIVITY
ARO ALL

D633W101-ARO

34-32-01

Page 404
May 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description	Specification
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79 Type III
C00913	Compound - Corrosion Inhibiting Material, Nondrying Resin Mix	BMS3-27
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Marker beacon antenna	34-32-01-01-010	ARO ALL

F. Location Zones

Zone	Area
100	Lower Half of Fuselage
117	Main Equipment Center, Left
212	Flight Compartment, Right

G. Installation Procedure

SUBTASK 34-32-01-860-002

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	4	C34443	VOR MKR L

SUBTASK 34-32-01-100-002

- (2) Clean the airplane mating surface:



WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (a) Clean the airplane mating surface with a cotton wiper, G00034 moistened with Series 88 solvent, B01008 (TASK 20-30-88-910-801).
- (b) Use a clean cotton wiper, G00034 and clean the airplane mating surface again.
- (c) Do these two steps until the airplane mating surface is clean and dry.

SUBTASK 34-32-01-100-001

- (3) If the airplane surface has corrosion or other damage, do these steps to prepare the airplane mating surface:

EFFECTIVITY
ARO ALL

34-32-01

D633W101-ARO

Page 405
Jan 05/2018

777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (a) To apply a layer of coating, C00064 to the airplane mating surface, do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.

NOTE: This task removes corrosion, cleans the surface, and applies the alodine.

- (b) Apply two layers of primer, C00175 to the airplane mating surface.
(c) Let each layer dry for the correct cure time.

SUBTASK 34-32-01-420-003

- (4) Install the marker beacon antenna [1]:



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to the surfaces that follow:
- 1) The opening for the coaxial cable.
 - 2) The nutplates.
 - 3) The threads and shanks of the bolts (Cadmium-plated stainless steel).



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (b) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to the mating surfaces of the marker beacon antenna [1].
(c) Connect the coaxial connector [2] to the marker beacon antenna [1].
(d) Put the marker beacon antenna [1] in the correct position on the airplane surface.

EFFECTIVITY
ARO ALL

34-32-01

D633W101-ARO

Page 406
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (e) Install five of the six bolts [4] in the base of the marker beacon antenna [1] (Use cadmium-plated stainless steel bolts).
- (f) Tighten the bolts to 12 in-lb (1.36 N·m) - 15 in-lb (1.69 N·m).

SUBTASK 34-32-01-010-001

- (5) Get access to the antenna coaxial connector above the marker beacon antenna [1].

SUBTASK 34-32-01-390-003

- (6) Apply a pressure fillet seal around the skin cutout of the antenna coaxial connector to the marker beacon antenna [1] TASK 51-31-01-390-807.

SUBTASK 34-32-01-700-001

- (7) Measure the resistance:
 - (a) Measure the resistance between the baseplate of the marker beacon antenna [1] and the airplane skin with a intrinsically safe approved bonding meter, COM-1550:
NOTE: Use the empty bolt hole to get access to the antenna baseplate.
 - (b) Make sure the resistance is less than 25 milliohms.

SUBTASK 34-32-01-400-003

- (8) Install the last bolt:
 - (a) Install the bolt in the base of the marker beacon antenna [1] .
 - (b) Tighten the bolt to 12 in-lb (1.36 N·m) - 15 in-lb (1.69 N·m).



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (c) Remove the excess Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 from around the antenna base and the heads of the bolts with a cotton wiper, G00034 moistened with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

NOTE: Aerodynamic sealant will not bond to BMS 3-38 or BMS 3-27.

SUBTASK 34-32-01-390-001

- (9) Apply aerodynamic sealant:
 - (a) Apply an aerodynamic fillet seal around the base of the marker beacon antenna [1] with sealant, A02315.
 - (b) Use the hardwood or plastic fillet smoothing spatula, STD-810 to make a smooth 45-degree fillet.
 - (c) Let the sealant dry for the correct cure time.

EFFECTIVITY
ARO ALL

34-32-01

D633W101-ARO

Page 407
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-32-01-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C34443	VOR MKR L

H. Installation Test

SUBTASK 34-32-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-32-01-730-001

- (2) Test the marker beacon antenna [1]:
- (a) Set up the NAV/COMM ramp test set, COM-1913.
 - (b) Set the controls to transmit a 75 MHz signal with 400 Hz modulation.
 - (c) Make sure that the letters OM are displayed on the PFD.

SUBTASK 34-32-01-080-001

- (3) Remove the test set.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-32-01

D633W101-ARO

Page 408
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

RADIO ALTIMETER (RA) SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Radio Altimeter (RA) System Deactivation.
 - (2) Radio Altimeter (RA) System Activation.
 - (3) Simulation test of radio altitude.

TASK 34-33-00-040-801

2. Radio Altimeter (RA) System - Deactivation

A. General

- (1) This task removes electrical power from the following components of the Radio Altimeter (RA) System:
- (a) Radio Altimeter (RA) Transceiver.
 - (b) Radio Altimeter (RA) Antenna.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
821	Forward Large Cargo Door

D. Procedure



WARNING

REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-33-00-860-029

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

E. Radio Altimeter (RA) System - Tryout

NOTE: This tryout is to make sure the Radio Altimeter (RA) System is in a zero energy state.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-00-860-030

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-010-003

- (2) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
821	Forward Large Cargo Door

SUBTASK 34-33-00-700-001

- (3) Press the test switch on the front panel of the Radio Altimeter Transceivers.

NOTE: There are three (3) Radio Altimeter Transceivers located in the E5 rack in the forward cargo compartment.

- (a) Make sure that the status lights or LCD screen is not illuminated.

————— **END OF TASK** —————

TASK 34-33-00-440-801

3. Radio Altimeter (RA) System - Activation

A. General

- (1) This task adds electrical power to the following components of the Radio Altimeter (RA) System:
 - (a) Radio Altimeter (RA) Transceiver.
 - (b) Radio Altimeter (RA) Antenna.

B. Location Zones

<u>Zone</u>	<u>Area</u>
117	Main Equipment Center, Left
118	Main Equipment Center, Right
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-33-00-860-031

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-700-002

- (2) Press the test switch on the front panel of the Radio Altimeter Transceivers.

NOTE: There are three (3) Radio Altimeter Transceivers.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 202
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure that the status lights or LCD screen is illuminated.

————— END OF TASK —————

TASK 34-33-00-700-801

4. Radio Altitude Simulation Test

A. General

- (1) This task uses an Atlantis DRA707B1 RA test set to do a simulation test of radio altitude.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-33-00-710-801	Radio Altimeter System - Operational Test (P/B 501)
34-33-01-000-801	Radio Altimeter Transceiver Removal (P/B 401)
34-33-01-400-801	Radio Altimeter Transceiver Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
COM-1922	Test Set - Radio Altimeter Part #: 110-0430-100-02 Supplier: L04V3 Part #: 9599-607-15902 Supplier: F0052 Opt Part #: 110-0430-100 Supplier: L04V3
COM-1929	Test Cable - Radio Altimeter Part #: AY969-00666-002 Supplier: L04V3 Part #: AY969-00668-001 Supplier: L04V3 Opt Part #: 110-0440-101 Supplier: L04V3
SPL-1928	Box - Extender, Radio Altimeter Receiver Transmitter Part #: C34005-16 Supplier: 81205 Opt Part #: C34005-1 Supplier: 81205

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Prepare for the Test

SUBTASK 34-33-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-33-00-710-001

- (2) Do this task: Radio Altimeter System - Operational Test, TASK 34-33-00-710-801.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 203
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-00-860-002

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-010-001

- (4) To get access to the main equipment center, open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

TASK 06-41-00-800-801.

SUBTASK 34-33-00-080-002

- (5) Remove the applicable RA receiver/transmitter. To remove it, do this task: Radio Altimeter Transceiver Removal, TASK 34-33-01-000-801.

NOTE: You do a test of each radio altimeter (No. 1 or No. 2) separately.

SUBTASK 34-33-00-420-001

- (6) Install the radio altimeter receiver transmitter extender box, SPL-1928.

SUBTASK 34-33-00-480-002

- (7) Connect the Radio Altimeter test cable, COM-1929 to the radio altimeter test set, COM-1922.

- (a) Set the POWER switch on the radio altimeter test set, COM-1922 to OFF.
- (b) Connect the Radio Altimeter test cable, COM-1929 to the radio altimeter receiver transmitter extender box, SPL-1928.

NOTE: You do a test of each radio altimeter (No. 1 or No. 2) separately.

- (c) Connect the power cable to the correct primary power source shown on the front panel of the radio altimeter test set, COM-1922.

NOTE: If the batteries in the radio altimeter test set, COM-1922 have the correct charge, the connection to a primary power source is not necessary.

G. Procedure

SUBTASK 34-33-00-860-004

- (1) Prepare the radio altimeter test set, COM-1922 for the altitude simulation:

- (a) Set the power ON/OFF switch to the ON position.
- 1) Make sure the 5 VDC and HOLDING lights come on.
- (b) Set the NO COMPUTED DATA switches to the NORMAL position.
- (c) Push and release the PRES ALT key.
- 1) Make sure PRES ALT shows on the LEDs.
- (d) Use the keypad to put in a value of +4000 feet.
- (e) Push and release the ENTER key.
- 1) Make sure the radio altitude value shown on the PFDs is blank.

SUBTASK 34-33-00-860-005

- (2) Prepare the captain's and the first officer's EFIS control panels for the simulation.

- (a) Push and release the RST (reset) button.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 204
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (b) Turn the DH control to show DH 450 at the captain's PFD.
- (c) Turn the DH control to show DH 400 at the first officer's PFD.

SUBTASK 34-33-00-860-006

- (3) Set these controls on the radio altimeter test set, COM-1922:
 - (a) Push and release the STOP ALT key.
 - 1) Make sure the LEDs show STOP ALT.
 - (b) Use the keypad to put in a value of -20 feet.
 - (c) Push and release the ENTER key.
 - 1) Make sure the LEDs show STOP ALT -20.
 - (d) Push and release the VERT SPD key.
 - 1) Make sure the LEDs show VERT SPD.
 - (e) Use the keypad to put in a value of -4000 (feet per minute).
 - (f) Push and release the ENTER key.
 - 1) Make sure the LEDs show VERT SPD -4000.

SUBTASK 34-33-00-730-001

- (4) Do the altitude ramp-down procedure (typical).
 - (a) Push the RAMP/HOLD key on the radio altimeter test set, COM-1922.
 - 1) Make sure the RAMPING light comes on.
 - (b) Look for these indications on the captain's and the first officer's PFDs.
 - 1) The radio altitude goes out of view for approximately 22.5 seconds while the altitude on the radio altimeter test set, COM-1922 decreases from 4000 to 2500 feet.
 - (c) After the time-out of 22.5 seconds (previous step), a radio altitude of 2500 feet comes into view on the PFDs and decreases to zero.

NOTE: The PFDs indicate the radio altitude set on the radio altimeter test set, COM-1922 within the limit of 2500 feet to -20 feet.
 - (d) Look for these indications on the captain's PFD when the radio altitude decreases to 450 feet:
 - 1) The DH value changes to a yellow color and flashes for 3 seconds.
 - 2) The radio altitude continues to decrease to zero.
 - (e) Look for these indications on the first officer's PFD when the radio altitude decreases to 400 feet:
 - 1) The DH value changes to a yellow color and flashes for 3 seconds.
 - 2) The DH value flashes for approximately 3 seconds.
 - 3) The radio altitude continues to decrease toward zero.
 - (f) Look for these indications on the PFDs while the radio altitude decreases to zero feet:
 - 1) The radio altitude value changes to a white color.
 - 2) The DH value changes to the numbers set at the captain's and the first officer's EFIS control panels.



777-200/300 AIRCRAFT MAINTENANCE MANUAL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 34-33-00-860-007

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-080-003

- (2) Remove the radio altimeter test set, COM-1922.

- (a) Set the POWER ON/OFF switch on the radio altimeter test set, COM-1922 to the OFF position.
- (b) Disconnect the power cable for the radio altimeter test set, COM-1922 from the primary power source (if the power cable was used).
- (c) Disconnect the test cable(s) from the radio altimeter test set, COM-1922 and the applicable transceivers.
- (d) Put the test cables in the box for the radio altimeter test set, COM-1922.

SUBTASK 34-33-00-020-001

- (3) Remove the radio altimeter receiver transmitter extender box, SPL-1928.

SUBTASK 34-33-00-400-001

- (4) Install the applicable RA receiver/transmitter. To install it, do this task: Radio Altimeter Transceiver Installation, TASK 34-33-01-400-801.

SUBTASK 34-33-00-860-027

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-410-003

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

TASK 06-41-00-800-801.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 206
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

RADIO ALTIMETER (RA) SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks for the radio altimeter system:
 - (1) An operational test
 - (2) A system test.
- B. There are three radio altimeter systems (left, right, and center) on the airplane. Each radio altimeter system has a transceiver, a receive antenna, and a transmit antenna.
- C. The radio altimeter system measures the altitude of the airplane from 2500 feet until the airplane makes a landing. This altitude will show on each of the two primary flight displays (PFDs).

TASK 34-33-00-710-801

2. Radio Altimeter System - Operational Test

A. General

- (1) The purpose of this test is to verify the operation and functionality of the radio altimeter system.
- (2) The same sequence of steps can be used for the left, center, and right radio altimeter transceivers.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

Zone	Area
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-33-00-860-010

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-33-00-740-001

- (2) Use a maintenance access terminal (MAT) to do the operational test for the radio altimeter system:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Radio Altimeter System
 - 5) OPERATIONAL TEST
 - 6) Center Radio Altimeter System (Left Radio Altimeter System, Right Radio Altimeter System)
 - 7) CONTINUE

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 501
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

————— END OF TASK —————

TASK 34-33-00-730-801

3. Radio Altimeter System - System Test

A. General

- (1) The system test makes sure the interface between the AIR/GND relays is serviceable and the transmit and receive antennas operate correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (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-1047	Material - RF Absorbent, Eccosorb AN74 Emerson Cumming or Equivalent Part #: 78084099 Supplier: 30817 Opt Part #: AN74 Supplier: 30817
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 260 Supplier: 55026 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 502
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
STD-1046	Detector - Crystal, Hewlett Packard HPX421A or HPX421B or Generic 1N23 Crystal Diode
STD-4050	Detector Kit - Crystal (Generic 1N23 or p/n HPX421A, HPX421B, 1N23WE, 423B use with front end adapter p/n 8817A or equivalent).

D. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Operational Test

SUBTASK 34-33-00-710-002

- (1) Do this task: Radio Altimeter System - Operational Test, TASK 34-33-00-710-801.

F. AIR/GND Inhibit Test

SUBTASK 34-33-00-860-012

- (1) Open these circuit breakers:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

SUBTASK 34-33-00-710-003

- (2) Use a maintenance access terminal (MAT) to make sure there are no maintenance messages for the radio altimeter system:
- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Radio Altimeter System
 - 5) OPERATIONAL TEST
 - 6) Center Radio Altimeter System (Left Radio Altimeter System, Right Radio Altimeter System)
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
- (c) When the test is completed, make sure that INHIBITED shows adjacent to TEST CONDITION on the MAT.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 503
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-00-860-013

- (3) Close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

G. Left Antenna Verification Test

SUBTASK 34-33-00-860-014

- (1) Connect the digital/analog multimeter, COM-1793 to the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046.
or the crystal detector kit, STD-4050

SUBTASK 34-33-00-860-015

- (2) Open these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-860-016

- (3) Make sure that this circuit breaker is closed:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

SUBTASK 34-33-00-750-001

- (4) Make sure the PFDs show a radio altitude between -0 and -6 feet.

SUBTASK 34-33-00-760-001

- (5) Hold the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 against the left transmit (front) antenna for the radio altimeter system.
- (a) Make sure a value more than 30 mVDC shows on the multimeter.

NOTE: To get the correct value, you can turn the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 slowly against the transmit antenna.

SUBTASK 34-33-00-750-002

- (6) Put the RF absorbent material, COM-1047 against the left receive (aft) antenna to absorb the signal reflection from the transmit antenna.

NOTE: You can use many layers of the RF absorbent material, COM-1047 to fully absorb the signal reflection.

- (a) Make sure no altitude shows on the PFDs.

NOTE: It is acceptable if the altitude on the PFDs increases and then goes out of view above 2500.

SUBTASK 34-33-00-860-017

- (7) Remove the RF absorbent material, COM-1047 from the left receive antenna.

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 504
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

H. Right Antenna Verification Test

SUBTASK 34-33-00-860-018

- (1) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

SUBTASK 34-33-00-860-019

- (2) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-750-003

- (3) Make sure the PFDs show a radio altitude between -0 and -6 feet.

SUBTASK 34-33-00-760-002

- (4) Hold the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 against the right transmit (front) antenna for the radio altimeter system.

- (a) Make sure a value more than 30 mVDC shows on the multimeter.

NOTE: To get the correct value, you can turn the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 slowly against the transmit antenna.

SUBTASK 34-33-00-750-004

- (5) Put the RF absorbent material, COM-1047 against the right receive (aft) antenna to absorb the signal reflection from the transmit antenna.

NOTE: You can use many layers of the RF absorbent material, COM-1047 to fully absorb the signal reflection.

- (a) Make sure no altitude shows on the PFDs.

NOTE: It is acceptable if the altitude on the PFDs increases and then goes out of view above 2500.

SUBTASK 34-33-00-860-020

- (6) Remove the RF absorbent material, COM-1047 from the right receive antenna.

I. Center Antenna Verification Test

SUBTASK 34-33-00-860-021

- (1) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

SUBTASK 34-33-00-860-022

- (2) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 505
Sep 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-00-750-005

- (3) Make sure the PFDs show a radio altitude between -0 and -6 feet.

SUBTASK 34-33-00-760-003

- (4) Hold the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 against the center transmit (front) antenna for the radio altimeter system.

- (a) Make sure a value more than 30 mVDC shows on the multimeter.

NOTE: To get the correct value, you can turn the Hewlett Packard HPX421A or HPX421B or generic 1N23 crystal diode detector, STD-1046 or the crystal detector kit, STD-4050 slowly against the transmit antenna.

SUBTASK 34-33-00-750-006

- (5) Put the RF absorbent material, COM-1047 against the center receive (aft) antenna to absorb the signal reflection from the transmit antenna.

NOTE: You can use many layers of the RF absorbent material, COM-1047 to fully absorb the signal reflection.

- (a) Make sure no altitude shows on the PFDs.

NOTE: It is acceptable if the altitude on the PFDs increases and then goes out of view above 2500.

SUBTASK 34-33-00-860-023

- (6) Remove the RF absorbent material, COM-1047 from the center receive antenna.

SUBTASK 34-33-00-860-024

- (7) Close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-33-00

D633W101-ARO

Page 506
Sep 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

RADIO ALTIMETER (RA) TRANSCEIVER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the radio altimeter transceiver
 - (2) An installation and a test of the radio altimeter transceiver.
- B. The three radio altimeter (RA) transceivers are on the E5 electronics equipment rack in the forward cargo compartment. The left RA transceiver is on shelf No. 4. The center RA transceiver is on shelf No. 3. The right RA transceiver is on shelf No. 2.

TASK 34-33-01-000-801

2. Radio Altimeter Transceiver Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. **References**

Reference	Title
06-46-00-800-801	Finding an Access Door or Panel in the Cargo Compartment Doors or Passenger Compartment Doors (P/B 201)
20-10-01-000-801	E/E Box Removal (P/B 401)

B. **Location Zones**

Zone	Area
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Access Panels**

Number	Name/Location
821	Forward Large Cargo Door

D. **Removal Procedure**

SUBTASK 34-33-01-860-001

- (1) For the left radio altimeter,
Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

SUBTASK 34-33-01-860-006

- (2) For the center radio altimeter,
Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C

SUBTASK 34-33-01-860-007

- (3) For the right radio altimeter,

EFFECTIVITY
ARO ALL

34-33-01

D633W101-ARO

Page 401
May 05/2015



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

SUBTASK 34-33-01-010-001

- (4) To get access to the electronic equipment rack, E5, open this access panel:

<u>Number</u>	<u>Name/Location</u>
821	Forward Large Cargo Door

(TASK 06-46-00-800-801).

SUBTASK 34-33-01-010-002

- (5) Open the access door for the electronic equipment rack, E5, to gain access to the radio altimeter transceiver.

SUBTASK 34-33-01-020-001

- (6) To remove the radio altimeter transceiver [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

———— **END OF TASK** ————

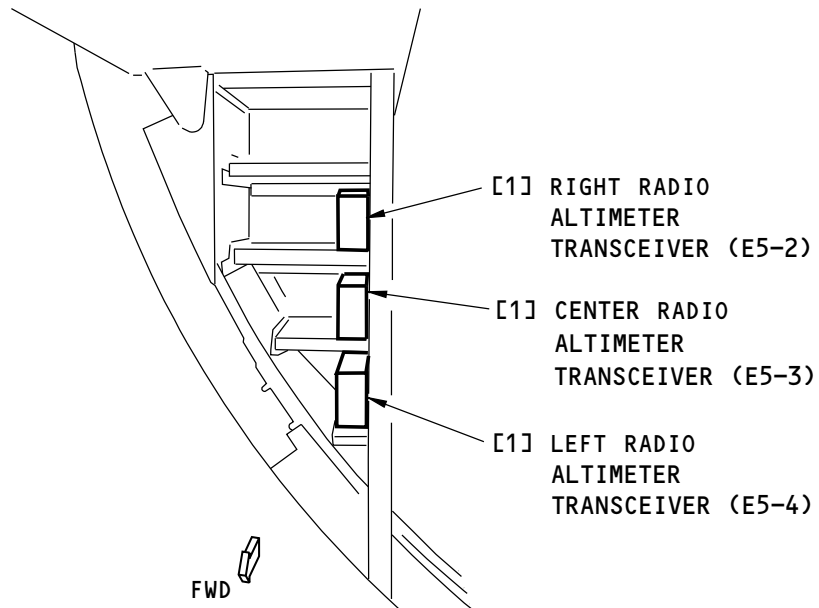
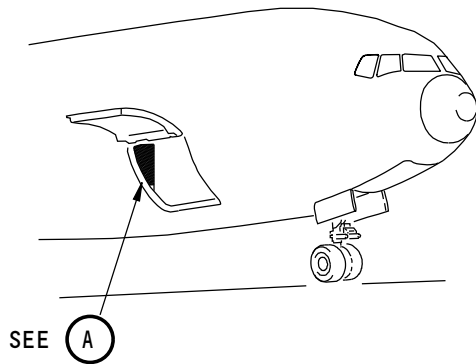
EFFECTIVITY
ARO ALL

34-33-01

D633W101-ARO

Page 402
Jan 05/2015

777-200/300
AIRCRAFT MAINTENANCE MANUAL



ELECTRONIC EQUIPMENT RACK, E5

A

C85086 S0006420683_V1

Radio Altimeter Transceiver Installation
Figure 401/34-33-01-990-802

EFFECTIVITY
ARO ALL

D633W101-ARO

34-33-01

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-33-01-400-801

3. Radio Altimeter Transceiver Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
06-46-00-800-801	Finding an Access Door or Panel in the Cargo Compartment Doors or Passenger Compartment Doors (P/B 201)
20-10-01-400-801	E/E Box Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Radio altimeter transceiver	25-17-05-01-072	ARO ALL
		34-33-01-01-005	ARO ALL

D. Location Zones

Zone	Area
122	Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
821	Forward Large Cargo Door

F. Installation Procedure

SUBTASK 34-33-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-01-420-001

- (2) To install the radio altimeter transceiver [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-33-01-410-001

- (3) Close the access door for the electronic equipment rack, E5.

EFFECTIVITY
ARO ALL

34-33-01

D633W101-ARO

Page 404
May 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-01-410-002

- (4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
821	Forward Large Cargo Door

(TASK 06-46-00-800-801).

SUBTASK 34-33-01-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

G. Installation Test

SUBTASK 34-33-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-33-01-700-001

- (2) Use the maintenance access terminal (MAT) to do a check of the primary flight control (PFC) option configuration, for the installed radio altimeter:
- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 27 Primary Flight Control System
 - (b) Make sure the MAT show these PFC options for the Honeywell radio altimeter:

ARO 001-013

- 1) 777-301 LEFT##04, 777-301 CENTER04, 777-301 RIGHT#04.

ARO 014-999

- 2) 777-301 LEFT##20, 777-301 CENTER20, 777-301 RIGHT#20.

ARO ALL

SUBTASK 34-33-01-740-001

- (3) Use a maintenance access terminal (MAT) to do the operational test of the left (center, right) radio altimeter transceiver:
- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Radio Altimeter System
 - 5) OPERATIONAL TEST
 - 6) Center Radio Altimeter System (Left Radio Altimeter System, Right Radio Altimeter System)
 - 7) CONTINUE

EFFECTIVITY
ARO ALL

34-33-01

D633W101-ARO

Page 405
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-33-01

Page 406
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

RADIO ALTIMETER (RA) ANTENNA - REMOVAL/INSTALLATION

1. **General**

- A. This procedure has two tasks:
- (1) A removal of the radio altimeter antenna
 - (2) An installation of the radio altimeter antenna.
- B. There are six radio altimeter antennas installed on the bottom of the airplane. The left (M34113), right (M34213), and center (M34313) transmit antennas are located forward of the left (M34114), right (M34214), and center (M34314) receive antennas.
- C. The left and right antennas have a fairing between the base of the antenna and the airplane skin.

TASK 34-33-02-000-801

2. **Radio Altimeter Antenna Removal**

(Figure 401)

A. General

- (1) It is not necessary to remove the fairing to remove the left or right antenna. The sealant will hold the fairing to the airplane skin.

B. Tools/Equipment

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

D. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

EFFECTIVITY
ARO ALL

D633W101-ARO

34-33-02

Page 401
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

E. Removal Procedure

SUBTASK 34-33-02-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-02-020-001

- (2) Remove the radio altimeter antenna [3]:
- (a) Remove the sealant, A02315 from around the base of the antenna [3] and the heads of the bolts [4] with a sealant removal tool, COM-2481.
 - (b) Remove the bolts [4] from the antenna [3].



BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE ANTENNA SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN OR THE ANTENNA.

- (c) Use the sealant removal tool, COM-2481 to remove the sealant from around the antenna [3].



LOWER THE ANTENNA ONLY AS FAR AS NECESSARY TO DISCONNECT THE COAXIAL CONNECTOR [1]. DAMAGE TO THE CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (d) Lower the antenna [4] until you can get access to the coaxial connector [1].
- (e) Disconnect the coaxial connector [1] from the antenna [4].
- (f) Remove the radio altimeter antenna [3].
- (g) Remove the sealant from the airplane skin and the antenna using the sealant removal tool, COM-2481.

————— **END OF TASK** —————

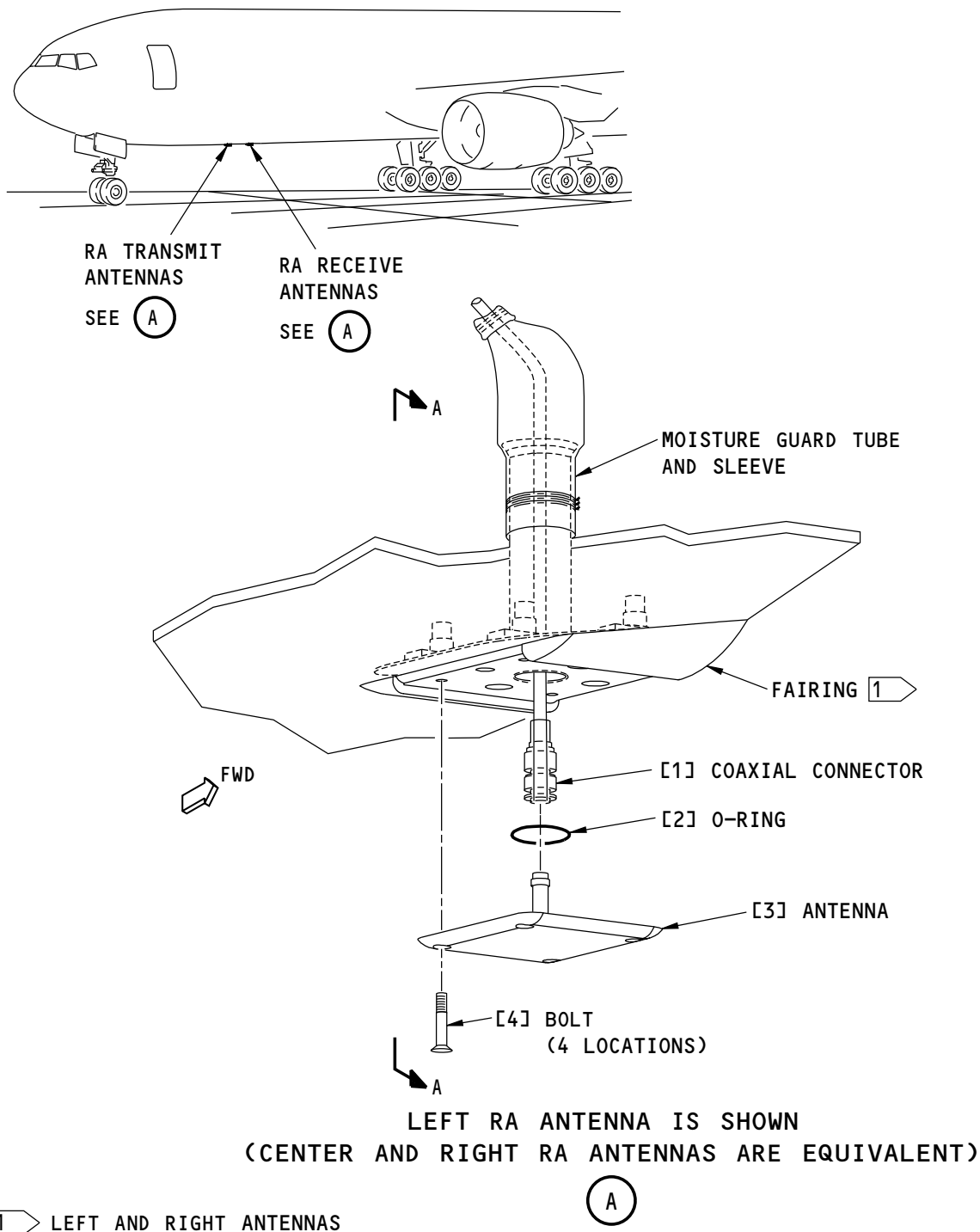
EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 402
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



E20430 S0006420688_V2

LRA Antenna Installation
Figure 401/34-33-02-990-802 (Sheet 1 of 2)

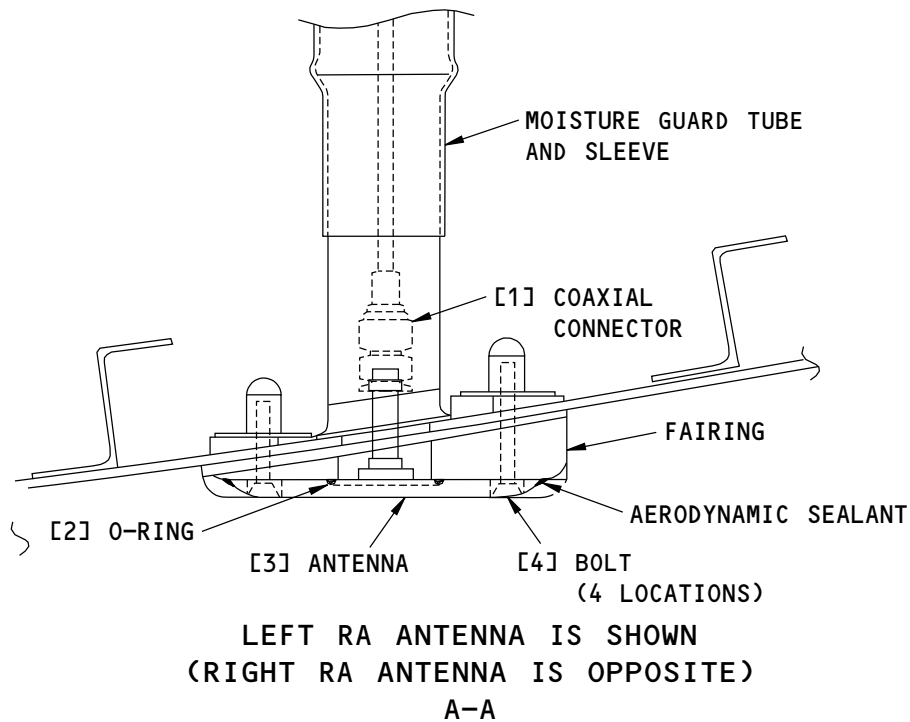
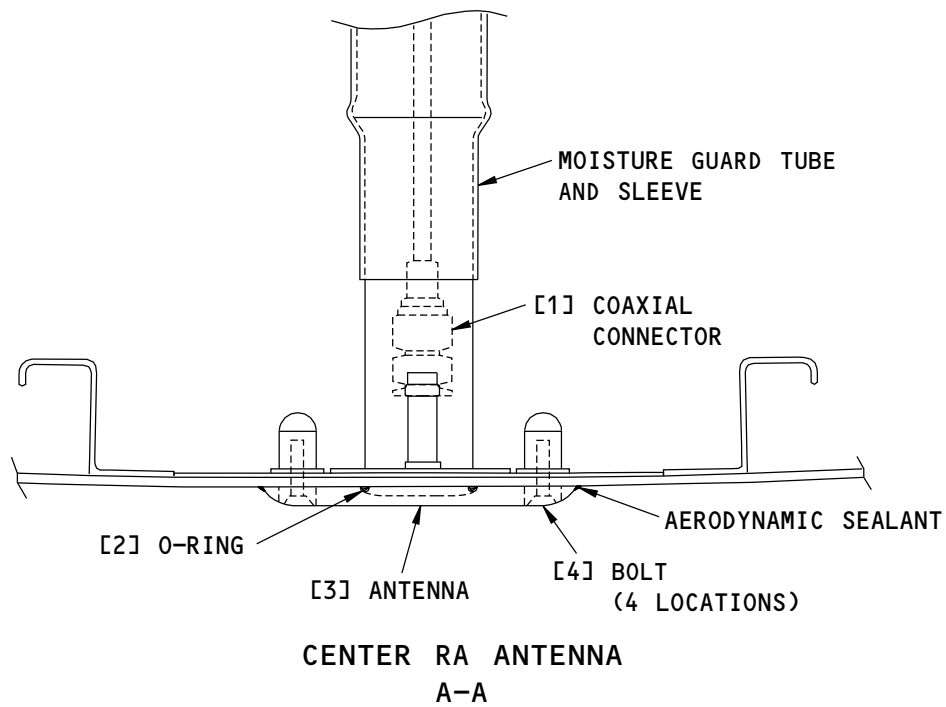
EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 403
Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



E20444 S0006420689_V2

**LRRA Antenna Installation
Figure 401/34-33-02-990-802 (Sheet 2 of 2)**

EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 404
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-33-02-400-801

3. Radio Altimeter Antenna Installation

(Figure 401)

A. General

- (1) An installation test is done after the installation of the antenna. The installation test makes sure that the antenna operates correctly.

B. References

Reference	Title
20-11-00-910-801	Standard Torque Values (P/B 201)
20-30-01-910-801	Structure Adhesives, Cements, and Sealants (P/B 201)
20-30-88-910-801	Final Cleaning of Metal Prior to Non-structural Bonding (Series 88) (P/B 201)
20-30-95-910-801	Final Cleaning Prior to Aerodynamic Smoothing and Fairing (Series 95) (P/B 201)
34-33-00-710-801	Radio Altimeter System - Operational Test (P/B 501)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
51-24-09-620-802	Apply the Corrosion Inhibiting Compound (P/B 701)
51-31-01-390-804	Fillet Seal Application (P/B 201)
SL 20-016	DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS
SWPM 20-20-00	Standard Wiring Practices Manual

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

D. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II
B01008	Solvent - Final Cleaning Of Metal Prior To Non-Structural Bonding - Series 88	
B01015	Solvent - Final Cleaning Prior To Aerodynamic Smoothing And Fairing - Series 95	

EFFECTIVITY
ARO ALL

D633W101-ARO

34-33-02

Page 405
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description	Specification
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
C00175	Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines)	BMS10-79 Type III
C00913	Compound - Corrosion Inhibiting Material, Nondrying Resin Mix	BMS3-27
D00254	Compound - Silicone	SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660)
D00633	Grease - Aircraft General Purpose	BMS3-33
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A
G50237	Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L	BMS3-38

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Radio altimeter antenna	34-33-02-01-020	ARO ALL
		34-33-02-01-070	ARO ALL

F. Location Zones

Zone	Area
123	Area Below Forward Cargo Compartment, Left
124	Area Below Forward Cargo Compartment, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

G. Installation Procedure

SUBTASK 34-33-02-860-002

- (1) Make sure that these circuit breakers are open:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-02-100-001

- (2) Clean the airplane mating surface:



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (a) Clean the airplane mating surface with a cotton wiper, G00034 moistened with Series 88 solvent, B01008 (TASK 20-30-88-910-801).

EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 406
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Use a cotton wiper, G00034 and clean the mating surface again.
- (c) Do these two steps until the mating surface is clean and dry.

SUBTASK 34-33-02-100-002

- (3) If the airplane surface has corrosion or other damage, do these steps to prepare the airplane mating surface:
 - (a) Apply a layer of coating, C00064 to the airplane mating surface. Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.

NOTE: This task removes corrosion, cleans the surface, and applies the alodine.
 - (b) Apply two layers of primer, C00175 to the airplane mating surface.
 - 1) Let each layer dry for the correct cure time.

SUBTASK 34-33-02-420-001



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Install the radio altimeter antenna [3]:
 - (a) Apply a thin layer of Cor-Ban 27L Compound, G50237 (preferred) or Mastinox 6856 K, C00913 (alternate) to the antenna baseplate on the pressurized and unpressurized sides of the O-ring. Apply the Corrosion Inhibiting Compound, TASK 51-24-09-620-802.

NOTE: Do not apply Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to the O-ring or to the O-ring groove. if you apply Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to these areas, the O-ring will not seal correctly.
 - (b) Apply a thick layer of Cor-Ban 27L Compound, G50237 (preferred) or Mastinox 6856 K, C00913 (alternate) to the bolt holes, the connector hole, and the threads and shank of each cadmium-plated stainless steel bolt.
 - (c) Apply a layer of grease, D00633 to the O-ring [2] and the O-ring groove.

NOTE: Install a new O-ring. Do not install the used O-ring.
 - (d) Connect the self-locking coaxial connector [1] to the antenna [3].
 - (e) Apply a thick layer of silicone compound, D00254 to the coaxial connector [1].
 - (f) Put the radio altimeter antenna [3] in the correct position on the airplane surface.
 - (g) Install three of the four bolts [4].

EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 407
Sep 05/2017

777-200/300
AIRCRAFT MAINTENANCE MANUAL



TIGHTEN THE BOLTS MANUALLY TO THE CORRECT TORQUE VALUE. DO NOT USE POWER OR AIR-TOOLS TO TIGHTEN THE BOLTS. DAMAGE TO THE ANTENNA SURFACE CAN OCCUR.

- 1) Make sure you manually tighten each bolt [4]. Refer to Standard Torque Values, TASK 20-11-00-910-801.

SUBTASK 34-33-02-760-001

- (5) Measure the resistance between the antenna baseplate and the airplane skin with an intrinsically safe approved bonding meter, COM-1550 (SWPM 20-20-00).

NOTE: Use the empty bolt hole to get access to the antenna baseplate.

- (a) Make sure the resistance is less than 25 milliohms.

SUBTASK 34-33-02-420-002

- (6) Install the last bolt [4].



TIGHTEN THE BOLT MANUALLY TO THE CORRECT TORQUE VALUE. DO NOT USE POWER OR AIR TOOLS TO TIGHTEN THE BOLTS. DAMAGE TO THE ANTENNA SURFACE CAN OCCUR.

- (a) Make sure you manually tighten the bolt [4]. Refer to Standard Torque Values, TASK 20-11-00-910-801.



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (b) Remove the excess Cor-Ban 27L Compound, G50237 (preferred) or Mastinox 6856 K, C00913 (alternate) from around the antenna base and bolt heads with a cotton wiper, G00034 moistened with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

NOTE: BMS 5-142 will not bond to Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913.

EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 408
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-33-02-390-001

- (7) Apply sealant, A02315 or substitute (refer to TASK 20-30-01-910-801):

NOTE: Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).

- (a) Apply sealant, A02315 around the base of the antenna. Fillet Seal Application, TASK 51-31-01-390-804.
- (b) Use the hardwood or plastic fillet smoothing spatula, STD-810 to make a smooth 45-degree fillet.
- (c) Let sealant, A02315 dry for the correct cure time.

SUBTASK 34-33-02-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

H. Installation Test

SUBTASK 34-33-02-710-002

- (1) Do this task: Radio Altimeter System - Operational Test, TASK 34-33-00-710-801.

SUBTASK 34-33-02-010-001

- (2) Make sure that these circuit breakers are closed:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C34433	RAD ALT C
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

SUBTASK 34-33-02-700-001

- (3) Make sure the Primary Flight Displays (PFDs) show a radio altitude between -6 to 0 feet (-2 to 0 meters).

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-33-02

D633W101-ARO

Page 409
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) Weather Radar System Deactivation.
 - (2) Weather Radar System Activation.

TASK 34-43-00-040-801

2. Weather Radar System - Deactivation

A. **General**

- (1) This task removes electrical power to the following components of the Weather Radar System:
- (a) Weather Radar Transceiver
 - (b) Weather Radar Antenna
 - (c) Weather Radar (WXR) Antenna Assembly
 - (d) Weather Radar Processor

B. **Location Zones**

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Procedure**



REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPERATE THE WEATHER RADAR WHEN PERSONNEL ARE IN THE AREA USUALLY CONTAINED BY THE AIRCRAFT NOSE RADOME. DO NOT OPERATE THE WEATHER RADAR IN A HANGAR. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURIES TO PERSONNEL CAN OCCUR.



IF THERE IS FUEL LEAKAGE OR AN OPEN FUEL CELL LESS THAN 50 FT (15 M) FROM THE RADAR, DO NOT OPERATE THE WEATHER RADAR. IF THERE IS FUEL IN THE 50-FOOT RADIUS AROUND THE RADAR, IT CAN CAUSE A FIRE AND EXPLOSION. THESE CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT. THESE CAN KILL PERSONNEL.

SUBTASK 34-43-00-860-108

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

EFFECTIVITY
ARO ALL

34-43-00

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

D. Weather Radar System - Tryout

SUBTASK 34-43-00-860-109

NOTE: This tryout is to make sure the Weather Radar System is in a zero energy state.

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-00-700-037

- (2) At the EFIS control panel, P55 Glareshield:

- (a) Push the WXR button. This will result in WXR FAIL on the Navigation Display.

NOTE: The failure display on the Navigation Display could take up to 3 seconds to appear.

- (b) Push the WXR button a second time to remove the failure indication.

————— **END OF TASK** —————

TASK 34-43-00-440-801

3. Weather Radar System - Activation

A. General

- (1) This task removes electrical power to the following components of the Weather Radar System:

- (a) Weather Radar Transceiver
- (b) Weather Radar Antenna
- (c) Weather Radar (WXR) Antenna Assembly
- (d) Weather Radar Processor

B. Location Zones

<u>Zone</u>	<u>Area</u>
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure



DO NOT OPERATE THE WEATHER RADAR WHEN PERSONNEL ARE IN THE AREA USUALLY CONTAINED BY THE AIRCRAFT NOSE RADOME. DO NOT OPERATE THE WEATHER RADAR IN A HANGAR. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURIES TO PERSONNEL CAN OCCUR.

EFFECTIVITY
ARO ALL

34-43-00

D633W101-ARO

Page 202
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



IF THERE IS FUEL LEAKAGE OR AN OPEN FUEL CELL LESS THAN 50 FT (15 M) FROM THE RADAR, DO NOT OPERATE THE WEATHER RADAR. IF THERE IS FUEL IN THE 50-FOOT RADIUS AROUND THE RADAR, IT CAN CAUSE A FIRE AND EXPLOSION. THESE CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT. THESE CAN KILL PERSONNEL.

SUBTASK 34-43-00-860-110

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-00-700-038

- (2) At the EFIS control panel, P55 Glareshield:
- (a) Push the WXR button.
- 1) Make sure no WXR FAIL indication shows on the Navigation Display.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-43-00

D633W101-ARO

Page 203
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR SYSTEM - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Weather Radar System operational test.
 - (2) Weather Radar System system test.

TASK 34-43-00-710-804-002

2. Weather Radar System - Operational Test

(Figure 501)

A. General

- (1) The operational test lasts approximately 50 seconds with the transceiver operating for the first 1 second transmitting a series of short duration pulses.

B. References

Reference	Title
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)

C. Procedure

SUBTASK 34-43-00-860-042-002

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	7	C34433	RAD ALT C
E	6	C34439	WXR L R/T
E	7	C34431	RAD ALT L
E	16	C34438	WXR R R/T
E	20	C34432	RAD ALT R

SUBTASK 34-43-00-860-044-002

- (2) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.
 - (a) Make sure the ATT flags on the Captain's and the First Officer's PFDs are not in view.

SUBTASK 34-43-00-700-033

- (3) Do these steps at the Captain's and First Officer's EFIS control panels:



DO NOT OPERATE THE WEATHER RADAR WHEN PERSONNEL ARE IN THE AREA USUALLY CONTAINED BY THE AIRCRAFT NOSE RADOME. DO NOT OPERATE THE WEATHER RADAR IN A HANGAR. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURIES TO PERSONNEL CAN OCCUR.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 501
Jul 25/2018

777-200/300
AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



IF THERE IS FUEL LEAKAGE OR AN OPEN FUEL CELL LESS THAN 50 FT (15 M) FROM THE RADAR, DO NOT OPERATE THE WEATHER RADAR. IF THERE IS FUEL IN THE 50-FOOT RADIUS AROUND THE RADAR, IT CAN CAUSE A FIRE AND EXPLOSION. THESE CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT. THESE CAN KILL PERSONNEL.

- (a) Push the WXR switch to the ON position.

NOTE: The hangar warning restriction DOES NOT apply to the weather radar test mode.

NOTE: The fuel spill or open fuel cell warning DOES apply to the weather radar test mode.

- (b) Set the left and right ADF/VOR control to OFF.
(c) Set the mode selector to VOR.

SUBTASK 34-43-00-710-042-002

- (4) Use a maintenance access terminal (MAT) to do the left (right) WXR system test:

- (a) Make these selections on the MAT:

- 1) ONBOARD MAINTENANCE
- 2) LINE MAINTENANCE
- 3) GROUND TESTS
- 4) 34 Weather Radar System
- 5) SYSTEM TEST
- 6) Left (Right) WXR System
- 7) CONTINUE

- (b) Do the instructions that show on the MAT and then make these selections:

- 1) CONTINUE
- 2) START TEST

- a) Make sure TEST PASSED is displayed next to TEST CONDITION on the MAT

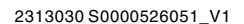
NOTE: Units with Honeywell Mod 6 upgrade, "TEST COMPLETE" label will show on the ND display at the completion of this test.

- (c) To put the MAT back to its initial condition, make these selections.

- 1) LINE MAINTENANCE
- 2) EXIT MAINTENANCE

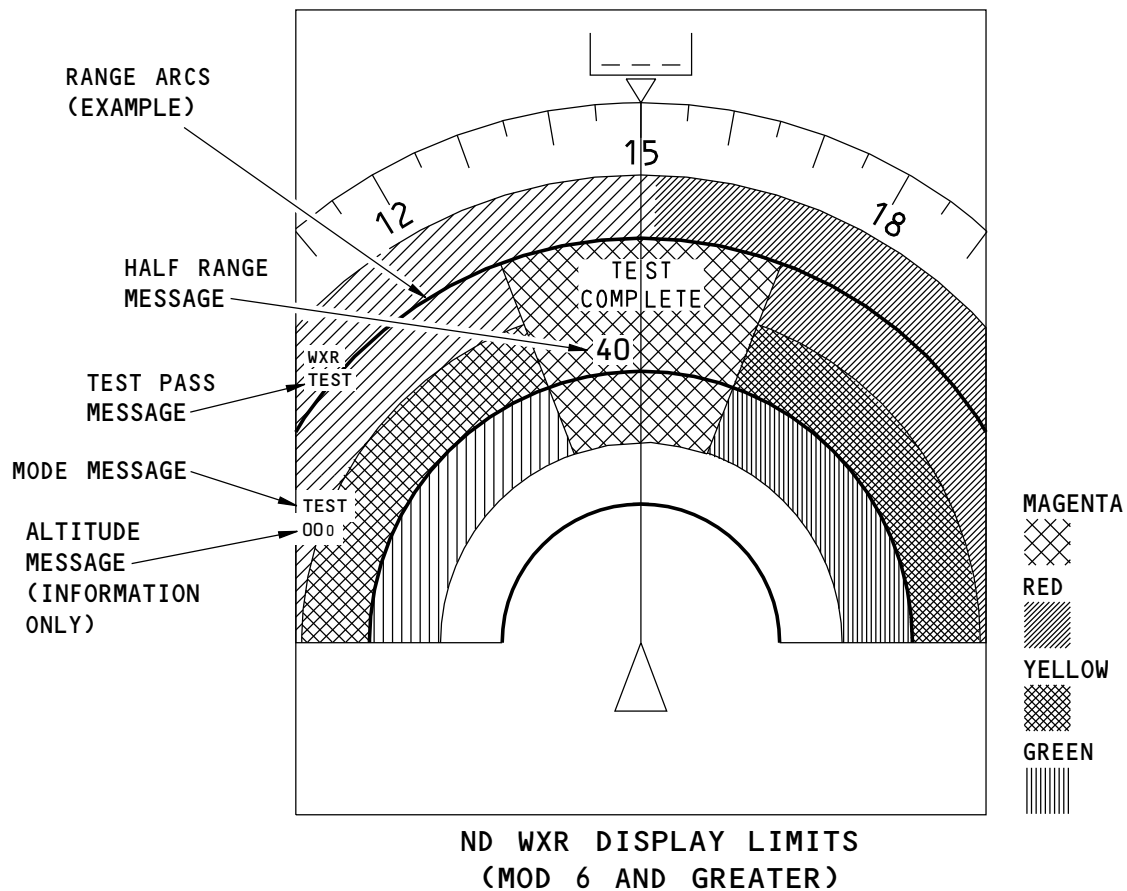
- (d) To return the weather radar to the initial condition, push the WXR switch on the EFIS control panels to the OFF position.

———— **END OF TASK** ————



— EFFECTIVITY
ARO ALL

Config 2
Page 503
Jan 05/2015



U90375 S0000220919_V3

Weather Radar Test Pattern
Figure 501/34-43-00-990-803-002 (Sheet 2 of 3)

EFFECTIVITY
ARO ALL

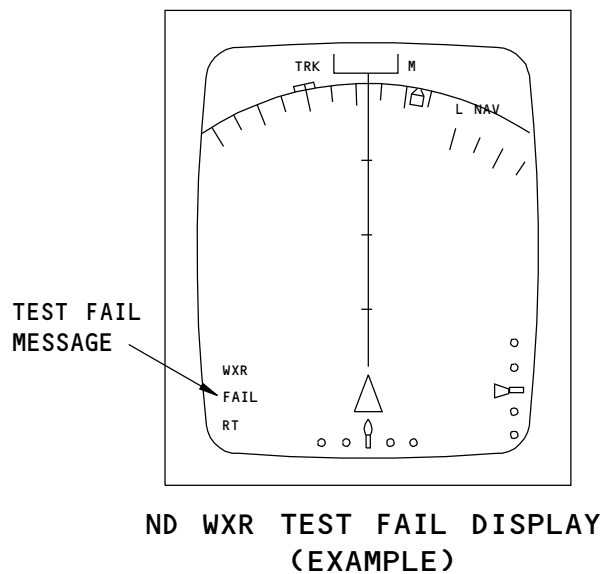
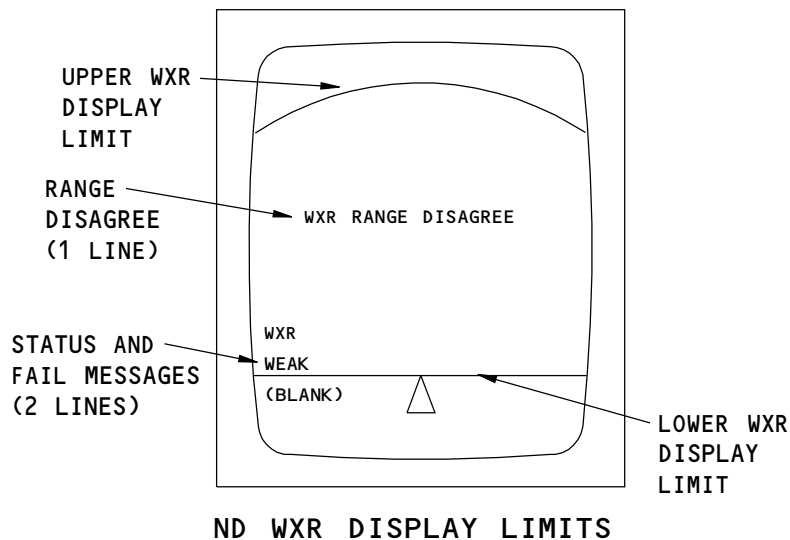
D633W101-ARO

34-43-00

Config 2
Page 504
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



2312993 S0000526052_V1

Weather Radar Test Pattern
Figure 501/34-43-00-990-803-002 (Sheet 3 of 3)

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 505
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-00-730-803-002

3. Weather Radar System - System Test

A. General

- (1) The system test supplies a full test of the weather radar system. Some of the tests contained in the System Test call for selection of Weather Targets for video display. In the event that no precipitation is present the ground can be substituted provided that the user obey all safety conditions.
- (2) The system test are as follows:
 - (a) The Mode Test
 - (b) The Gain Test
 - (c) The Altitude Test
 - (d) WXR System Display Test
- (3) Point the airplane away from all large metal objects and to an open area. The antenna scan can include hills or mountains at different heights in the distance.

B. References

Reference	Title
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)

C. Location Zones

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

D. Prepare for the Weather Radar System Test



DO NOT OPERATE THE WEATHER RADAR WHEN PERSONNEL ARE IN THE AREA USUALLY CONTAINED BY THE AIRCRAFT NOSE RADOME. DO NOT OPERATE THE WEATHER RADAR IN A HANGAR. IF YOU DO NOT OBEY THESE PRECAUTIONS, INJURIES TO PERSONNEL CAN OCCUR.



IF THERE IS FUEL LEAKAGE OR AN OPEN FUEL CELL LESS THAN 50 FT (15 M) FROM THE RADAR, DO NOT OPERATE THE WEATHER RADAR. IF THERE IS FUEL IN THE 50-FOOT RADIUS AROUND THE RADAR, IT CAN CAUSE A FIRE AND EXPLOSION. THESE CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT. THESE CAN KILL PERSONNEL.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 506
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



MAKE SURE YOU DIRECT THE NOSE OF THE AIRPLANE SO THAT THE FORWARD 180-DEGREE SECTOR IS FREE OF LARGE METALLIC OBJECTS WHEN THE WEATHER RADAR IS OPERATED IN ANY MODE OTHER THAN "STBY" OR "TEST." HANGARS, TRUCKS OR AIRPLANES WITHIN THAN 300 FEET OF THE RADAR CAN CAUSE INCORRECT RADAR SIGNALS. TILT THE ANTENNA UP 10 DEGREES OR RECEIVER DAMAGE CAN OCCUR.

SUBTASK 34-43-00-860-046-002

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-00-860-106

- (2) On the Captain's and First Officer's display switching panel set the INBOARD DISPLAY switch to NAV.

SUBTASK 34-43-00-700-009-002

- (3) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.
 - (a) Make sure the ATT flags on the Captain's and the First Officer's PFDs are not in view.

SUBTASK 34-43-00-860-047-002

- (4) Do these steps at the Captain's and First Officer's EFIS control panels:
 - (a) Set the range selector to 40.
 - (b) Push the WXR switch to the ON position.

NOTE: The hangar warning restriction DOES NOT apply to the weather radar test mode.

NOTE: The fuel spill or open fuel cell warning DOES apply to the weather radar test mode.
 - (c) Set the left and right ADF/VOR control to OFF.
 - (d) Set the mode selector to VOR.
 - (e) Push the CTR push-button as required.
 - 1) Make sure the Captain and First Officer displays are in expanded scale.

SUBTASK 34-43-00-860-103

- (5) Do the following steps on the WXR control panel:
 - (a) Select SYS L (SYS R).
 - (b) Set the Mode switch to AUTO.
 - (c) Set the GAIN control to CAL.

E. Mode Test

SUBTASK 34-43-00-700-036

- (1) Do the steps that follows to complete the mode test:

SUBTASK 34-43-00-700-031

- (2) Select these positions with the Weather Radar Control Panel Mode Switch.
 - (a) Make sure the mode messages are shown on the captain's ND as given below:

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 507
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Rotate the MODE switch to the MAN position.
 - a) Make sure that WX M appears on the Captain's and First Officer's ND.
- 2) Rotate the MODE switch to the AUTO position.
 - a) Make sure that WX A appears on the Captain's and First Officer's ND.
- 3) Rotate the MODE switch to the MAP position.
 - a) Make sure that MAP appears on the Captain's and First Officer's ND.

F. Gain Test

NOTE: The full gain test will not be possible when there are no radar targets from weather, mountains or large buildings. When there are no targets only the gain message part of this test will be done.

SUBTASK 34-43-00-730-015-002

- (1) Do the Gain Test as follows:
 - (a) Make sure SYS L (SYS R) is selected.
 - (b) Select MAP mode switch on the WXR control panel.
 - (c) Slowly rotate the GAIN control counterclockwise and set it in between CAL and MIN.
 - 1) Make sure the Captain's (First Officer's) ND mode message reads VAR.
 - 2) Make sure the radar returns intensity decreases on each ND.
 - (d) Slowly rotate the GAIN control clockwise to the MAX position.
 - 1) Make sure the radar returns intensity increases on each ND.
 - (e) Set the GAIN control to the CAL position.
 - 1) Make sure VAR is OFF on the ND.

G. Antenna Altitude Test

SUBTASK 34-43-00-720-015

- (1) Do the antenna altitude test as follows:
 - (a) Select the MAN MODE switch on the WXR control panel.
 - (b) Set the range switch on the EFIS control panel to adjust the radar returns in the center of each ND.
 - (c) Select the weather radar control panel SYS L (SYS R).
 - (d) Make sure WX-M is displayed on the ND.
 - (e) Turn the control in 1000 feet increments from 0 to 60,000 feet.
 - 1) Make sure the altitude messages on the Captain's (First Officer's) ND show the correct altitude.

H. WXR System Displays Test

SUBTASK 34-43-00-710-026-002

- (1) Use a maintenance access terminal (MAT) to do the left (right) WXR system test:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Weather Radar System

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 508
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 5) SYSTEM TEST
 - 6) Left (Right) WXR System
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START TEST

SUBTASK 34-43-00-700-012-002

- (2) Make sure these indications occur:
- (a) The half range message is the correct value.
 - (b) The arcs (marks) have equal space between them.
 - (c) Make sure the WXR test pattern shows on the Captain's and the First Officer's display (see Figure 501).
 - (d) Make sure TEST PASSED is displayed next to TEST CONDITION on the MAT.

ARO 001-013, 017-999

SUBTASK 34-43-00-710-027-002

- (3) Make sure these indications occur:

NOTE: Read through these indications before you do the test. If necessary, you can do the test more than once to do a check of the indications.

NOTE: Anytime the PWS automatic activation criteria are active or the airplane is in the air, no flight deck effects of the PWS will show when you do the WXR test. If the WXR is in the test mode and an actual PWS alert occurs, the WXR Radar Processor switches to the WXR mode and shows a WXR return and PWS icon data on the map display with the WXR mode annunciation. As a result, no valid PWS icons will show with the WXR TEST pattern. If the mode switch on the WXR control panel is still in the TEST position, the WXR will go back to the test pattern on the map display when the PWS alert stops.

NOTE: All times are approximate.

- (a) Make sure these indications occur in 0-2 seconds;
 - 1) WINDSHEAR SYS (Advisory) EICAS Message is ON.
 - 2) Make sure that the Captain's and First Officer's displays show the TEST pattern (See Figure 501).
 - 3) MONITOR RADAR DISPLAY is heard over the flight deck aural speakers.
- (b) Make sure these indications occur in 2-12 seconds:
 - 1) Red WINDSHEAR shows on the Captain's and First Officers ND's.
 - 2) Master Warning Light is ON.
 - 3) WINDSHEAR SYS (Advisory) EICAS Message is OFF.
 - 4) Display - Make sure the WXR test pattern shows on the Captain's and the First Officer's ND's.
 - 5) Make sure that the altitude display reads 00.
 - 6) The aural message on the Captain's and First Officer's loudspeaker is GO AROUND - WINDSHEAR AHEAD, (Pause) WINDSHEAR AHEAD, WINDSHEAR AHEAD.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 509
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ARO 001-013, 017-999 (Continued)

- (c) When the test is complete, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

NOTE: "TEST COMPLETE" label will show on the ND display at the completion of this test.

- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

ARO ALL

I. Put the Airplane Back to Its Usual Condition

SUBTASK 34-43-00-860-050-002

- (1) Push the WXR switch on the Captain's and the First Officer's EFIS control panels to the off position.

SUBTASK 34-43-00-860-051-002

- (2) If the air data inertial reference unit (ADIRU) is not necessary, set the ADIRU switch on the overhead panel, P5, to the OFF position.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-00

Config 2
Page 510
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR CONTROL PANEL - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the weather radar (WXR) control panel.
 - (2) An installation of the WXR control panel.
- B. After the installation task there is a test. The installation test will make sure the WXR control panel is installed correctly.
- C. The WXR control panel is on the left side of the Aisle Stand panel, P8, in the flight compartment.

TASK 34-43-01-000-801

2. WXR Control Panel Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. **Location Zones**

Zone	Area

211	Flight Compartment, Left
212	Flight Compartment, Right

B. **Removal Procedure**

SUBTASK 34-43-01-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-01-020-001

- (2) Remove the WXR CONTROL PANEL [1]:
 - (a) Disengage the quarter-turn fasteners [2] on the WXR CONTROL PANEL [1].



CAUTION

CAREFULLY REMOVE THE WXR CONTROL PANEL. THIS WILL PREVENT DAMAGE TO THE ELECTRICAL CABLES AT THE REAR OF THE WXR CONTROL PANEL.

- (b) Pull the WXR CONTROL PANEL [1] carefully out from the aisle stand to get access to the electrical connectors [3].
- (c) Disconnect the electrical connectors [3] from the WXR CONTROL PANEL [1].
- (d) Put protective covers on the electrical connectors [3].

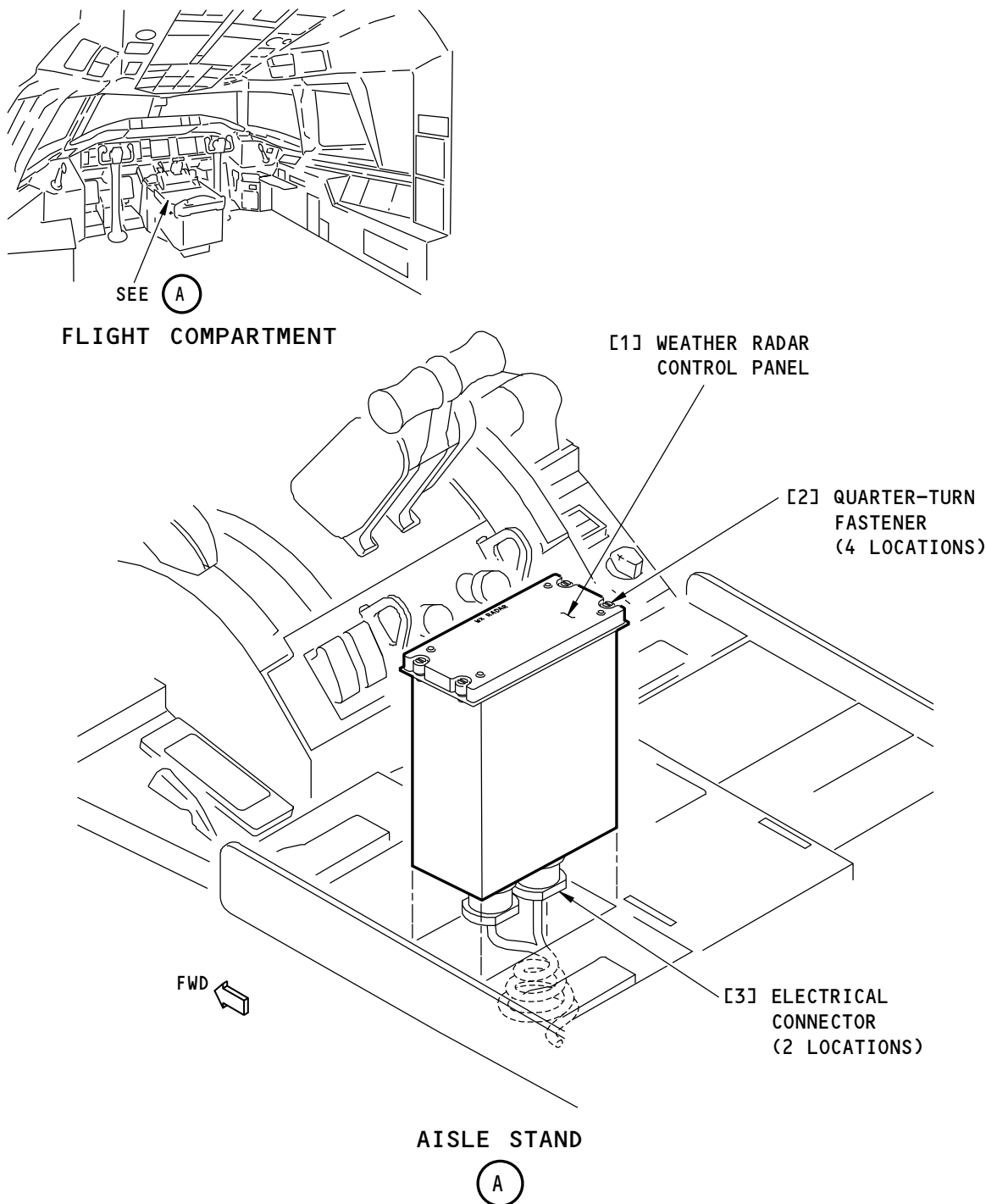
———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-43-01

D633W101-ARO

Page 401
Sep 05/2017



C91852 S0006420728_V1

Weather Radar Control Panel Installation
Figure 401/34-43-01-990-802

EFFECTIVITY
ARO ALL

34-43-01

D633W101-ARO

Page 402
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-01-400-801

3. WXR Control Panel Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	WXR CONTROL PANEL	34-43-01-01-010	ARO ALL

D. Location Zones

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

E. Installation Procedure

SUBTASK 34-43-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-01-420-001

- (2) Install the WXR CONTROL PANEL [1]:
 - (a) Remove the protective covers from the electrical connectors [3].
 - (b) Examine the electrical connectors [3] for bent or broken pins, dirt and damage.
 - (c) Connect the electrical connectors [3] to the WXR CONTROL PANEL [1].



CAUTION

CAREFULLY INSTALL THE WXR CONTROL PANEL. THIS WILL PREVENT DAMAGE TO THE ELECTRICAL CABLES AT THE REAR OF THE WXR CONTROL PANEL.

- (d) Put the WXR CONTROL PANEL [1] in the aisle stand.
- (e) Engage the quarter-turn fasteners [2] on the WXR CONTROL PANEL [1].

SUBTASK 34-43-01-860-003

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T

EFFECTIVITY
ARO ALL

34-43-01

D633W101-ARO



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C34438	WXR R R/T

F. Installation Test

SUBTASK 34-43-01-730-001

- (1) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR CONTROL PANEL [1]:

- (a) Select WXR to ON from the EFIS Control Panel.
- (b) Select TEST on the WXR Control Panel.
- (c) Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on the WXR Control Panel operator should allow the system to operate for 5 minutes. During this time, you may see fail messages as the WXR system updates individual component software. After 5 minutes has expired, proceed to the next step.

- (d) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Weather Radar System
 - 5) LRU REPLACEMENT TEST
 - 6) Left (Right) WXR System
 - 7) CONTINUE
- (e) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (f) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (g) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-43-01-700-001

- (2) Turn off the WXR from the EFIS Control Panel.

SUBTASK 34-43-01-700-002

- (3) Return the WXR switch to NORM position.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-43-01

D633W101-ARO

Page 404
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR TRANSCEIVER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the weather radar (WXR) Transceiver.
 - (2) An installation of the WXR Transceiver.
- B. The WXR Transceivers are in the nose radome.

TASK 34-43-02-000-801

2. WXR Transceiver Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

<u>Reference</u>	<u>Title</u>
53-12-00-010-801	Open the Nose Radome (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
111	Radome
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

D. Removal Procedure

SUBTASK 34-43-02-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-02-010-003



DO NOT LET THE WORKSTANDS OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR ANTENNA. THIS CAN CAUSE DAMAGE TO THE WEATHER RADAR ANTENNA.

- (2) If necessary, open and lock in the open position this access panel:

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

- (a) To open it, do this task: Open the Nose Radome, TASK 53-12-00-010-801.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-02

Page 401
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-02-020-002



CAUTION

KEEP THE WEATHER-RADAR FLAT-PLATE ANTENNA AND THE TWO TRANSMITTER RECEIVER ASSEMBLIES COVERED DURING RAINFALL TO KEEP LIQUID OUT. IF YOU LET LIQUID LEAK IN, IT CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) To remove the WXR transceiver [1], do these tasks:
- (a) Remove the electrical connectors from the WXR transceiver [1]
 - (b) Remove the screw [2].
 - (c) Disconnect the WXR transceiver [1] from the antenna.

SUBTASK 34-43-02-860-002

- (4) Put protective covers on the electrical connectors.

———— **END OF TASK** ————

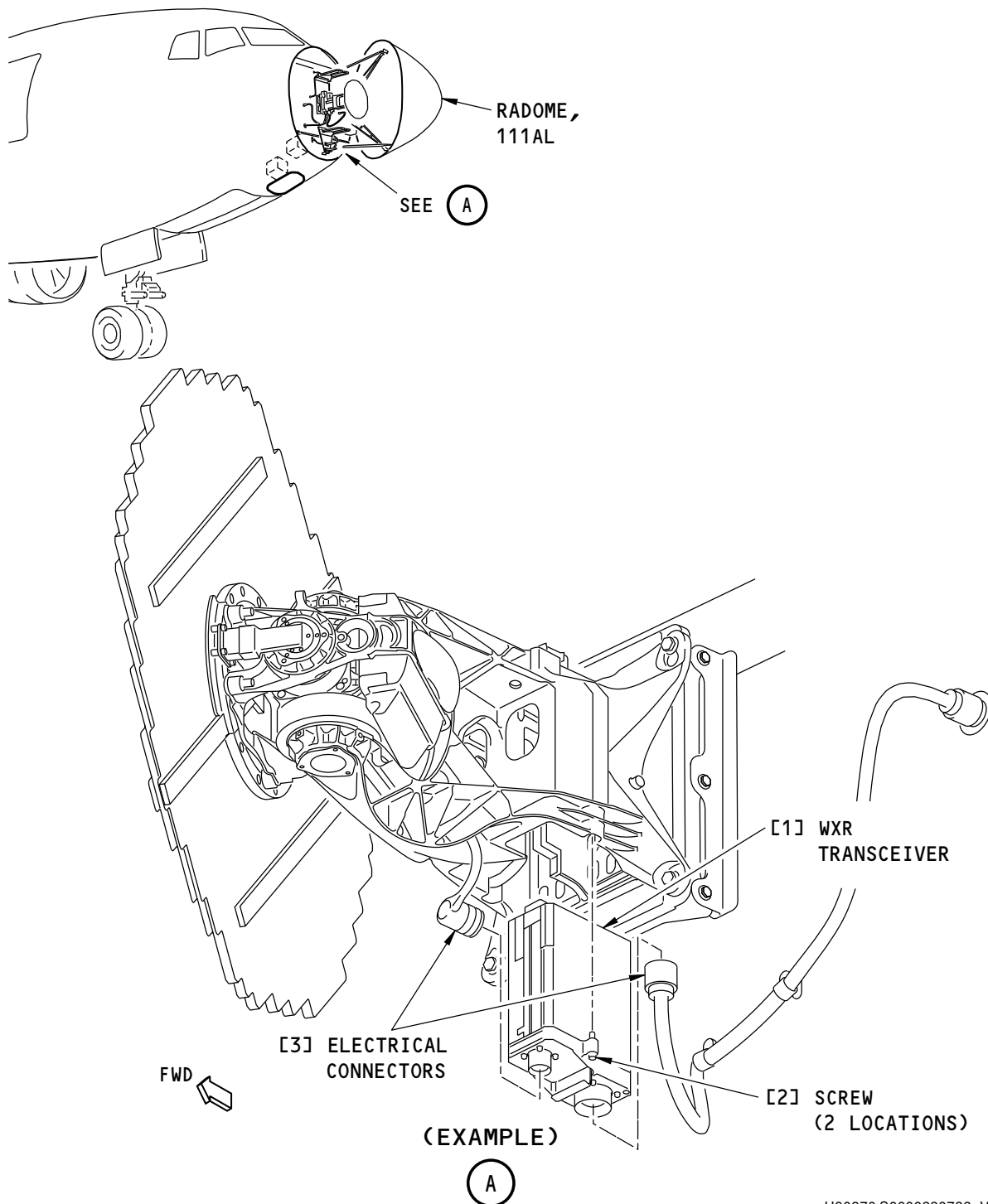
EFFECTIVITY
ARO ALL

34-43-02

D633W101-ARO

Page 402
Jul 25/2018

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



U90370 S0000220732_V2

**Weather Radar Transceiver Installation
Figure 401/34-43-02-990-802**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-02

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-02-400-801

3. WXR Transceiver Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
53-12-00-010-801	Open the Nose Radome (P/B 201)
53-12-00-410-802	Close the Nose Radome (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	WXR transceiver	34-43-02-10A-010	ARO 001-013
		34-43-02-10A-060	ARO 001-013

D. Location Zones

Zone	Area
111	Radome
112	Area Forward of Nose Landing Gear Wheel Well
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
111AL	Radome

F. Installation Procedure

SUBTASK 34-43-02-010-004



CAUTION

DO NOT LET THE WORKSTANDS OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR ANTENNA. THIS CAN CAUSE DAMAGE TO THE WEATHER RADAR ANTENNA.

- (1) If necessary, open and lock in the open position this access panel:

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

- (a) To open it, do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-43-02-860-004

- (2) Remove the protective covers from the electrical connectors.

EFFECTIVITY
ARO ALL

34-43-02

D633W101-ARO

Page 404
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-02-420-002



CAUTION

KEEP THE WEATHER-RADAR FLAT-PLATE ANTENNA AND THE TWO TRANSMITTER RECEIVER ASSEMBLIES COVERED DURING RAINFALL TO KEEP LIQUID OUT. IF YOU LET LIQUID LEAK IN, IT CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) Install the WXR transceiver [1], do these steps:
- Install the screw [2] to connect the WXR transceiver [1] to the antenna.
 - Examine the electrical connectors for bent or broken pin, dirt and damage.
 - Connect the electrical connectors to the WXR transceiver [1].

SUBTASK 34-43-02-410-003

- (4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>

111AL	Radome

(TASK 53-12-00-410-802).

SUBTASK 34-43-02-860-005

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

G. Installation Test

SUBTASK 34-43-02-730-001

- (1) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR transceiver:

NOTE: The installation test should be carried out separately for the Left and Right WXR System.

- Select WXR to ON from the EFIS Control Panel.
- Select TEST on the WXR Control Panel
- Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on the WXR Control Panel, operator should allow the system to operate for 5 minutes. During this time, you may see fail messages as WXR system updates individual component software. After 5 minutes has expired, proceed to the next step.

- (d) Make these selections on the MAT:
- ONBOARD MAINTENANCE
 - LINE MAINTENANCE
 - GROUND TESTS
 - 34 Weather Radar System
 - LRU REPLACEMENT TEST
 - Left (Right) WXR System
 - CONTINUE

EFFECTIVITY
ARO ALL

34-43-02

D633W101-ARO

Page 405
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (e) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (f) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (g) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-02

Page 406
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR (WXR) ANTENNA ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the antenna flat plate from the antenna drive unit.
 - (2) A removal of the antenna drive unit from the antenna mount.
 - (3) An installation of the antenna drive unit to the antenna mount.
 - (4) An installation of the antenna flat plate to the antenna drive unit.
 - (5) An installation test of the WXR antenna drive unit.
- B. You can remove both of the antenna flat plate and unit drive together as an assembly by using Task 34-43-00-802 WXR Antenna Drive Unit Removal which include steps with the antenna flat plate already installed. The mechanic can also install the full antenna (flat plate and drive unit together) on the base assembly per Task 34-43-03-400-801 WXR Antenna Drive Unit Installation. It is much easier to mount the antenna onto the drive unit before installing the whole assembly onto the airplane (and removing the whole assembly together) without damaging the waveguide.
- C. After each of the installation tasks there is a test. The installation test will make sure the antenna is installed correctly.
- D. The weather radar (WXR) antenna assembly is on the forward pressure bulkhead in the nose radome.

TASK 34-43-03-000-801

2. WXR Antenna Flat Plate Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
53-12-00-010-801	Open the Nose Radome (P/B 201)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Antenna flat plate	Not Specified	

C. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
111AL	Radome

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 401
Sep 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

E. Removal Procedure

SUBTASK 34-43-03-860-022

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-03-010-003



DO NOT LET THE WORKSTAND OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR (WXR) ANTENNA. THIS CAN CAUSE DAMAGE TO THE WXR ANTENNA.

- (2) Open and lock in the open position this access panel:

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

NOTE: If the water such as the raindrop remain on the flat plate, transmitting and receiving radio wave becomes weak, and the radar performance gets worse. Thus, do not open the radome in the rainy condition, If the water remains on the flat plate, wipe off the water completely before the radome is closed

- (a) To open it, do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-43-03-020-012

- (3) Remove the antenna flat plate [5]:

- (a) Unscrew the captive screws [11] that holds the antenna flat plate [5] to the ANTENNA DRIVE UNIT [1].



USE TWO PERSONS AND A SAFELY INSTALLED WORKSTAND. THIS WILL PREVENT INJURY TO YOU OR DAMAGE TO THE WXR ANTENNA.

- (b) Carefully slide the antenna flat plate [5] away from the ANTENNA DRIVE UNIT [1].
(c) Put a protective cover on the waveguide [8].

SUBTASK 34-43-03-000-004

- (4) If it is necessary to remove the ANTENNA DRIVE UNIT [1] after you remove the antenna flat plate [5], do this task: WXR Antenna Drive Unit Removal, TASK 34-43-03-000-802.

————— **END OF TASK** —————

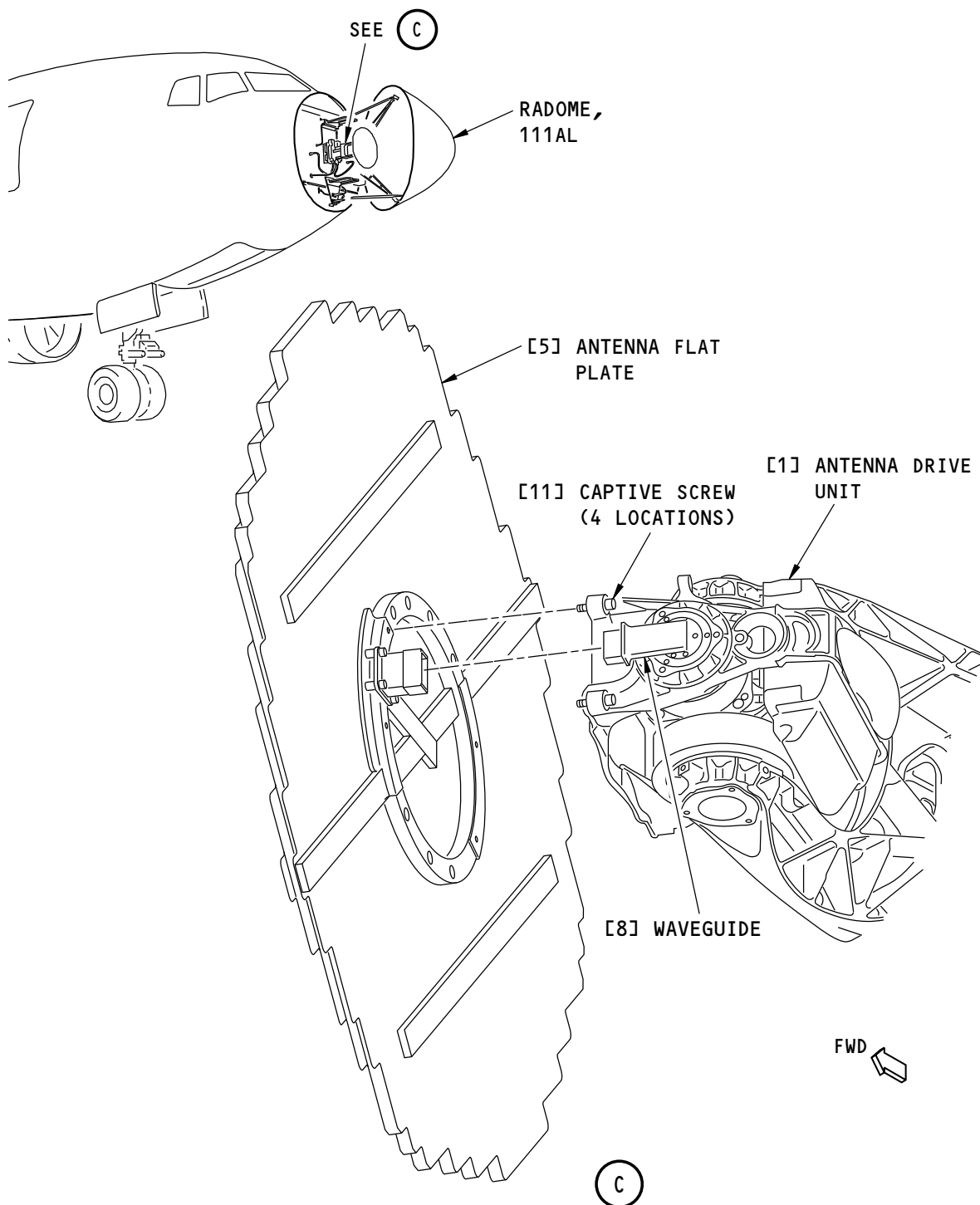
EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 402
Sep 05/2017

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



2090541 S0000438878_V1

**Weather Radar Antenna Flat Plate Installation
Figure 401/34-43-03-990-803**

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-03

Page 403
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-03-400-802

3. WXR Antenna Flat Plate Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808

B. References

Reference	Title
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
53-12-00-410-802	Close the Nose Radome (P/B 201)

C. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
111AL	Radome

E. Installation Procedure

SUBTASK 34-43-03-860-008

- (1) Make sure that these circuit breakers are open:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-03-410-003



DO NOT LET THE WORKSTAND OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR (WXR) ANTENNA. THIS CAN CAUSE DAMAGE TO THE WXR ANTENNA.

- (2) Make sure this access panel is open:

Number	Name/Location
111AL	Radome

NOTE: If the water such as the raindrop remain on the flat plate, transmitting and receiving radio wave becomes weak, and the radar performance gets worse. Thus, do not open the radome in the rainy condition, If the water remains on the flat plate, wipe off the water completely before the radome is closed

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 404
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-420-009



KEEP THE WEATHER-RADAR FLAT-PLATE ANTENNA AND THE TWO TRANSMITTER RECEIVER ASSEMBLIES COVERED DURING RAINFALL TO KEEP LIQUID OUT. IF YOU LET LIQUID LEAK IN, IT CAN CAUSE DAMAGE TO EQUIPMENT.

- (3) Install the antenna flat plate [5]:
- (a) Remove the protective cover from the waveguide [8].



USE TWO PERSONS AND A SAFELY INSTALLED WORKSTAND. THIS WILL PREVENT INJURY TO YOU OR DAMAGE TO THE WXR ANTENNA.

- (b) Carefully attach the antenna flat plate waveguide with the waveguide [8].
- (c) Attach the antenna flat plate [5] to the ANTENNA DRIVE UNIT [1] with captive screws [11].
- (d) Torque the screws [11] to 20-23 inch-pounds.

SUBTASK 34-43-03-860-009

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

F. Installation Test

SUBTASK 34-43-03-730-002

- (1) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR antenna:

- (a) Select WXR to ON from the EFIS Control Panel.
- (b) Select TEST on WXR Control Panel.
- (c) Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on WXR Control Panel, operator should allow the system operate for 5 minutes. During this time, you may see fail messages as the WXR system updates individual component software. After 5 minutes has expired, proceed to the next step.

- (d) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Weather Radar System
 - 5) LRU REPLACEMENT TESTS
 - 6) Left (Right) WXR System
 - 7) CONTINUE
- (e) Do the instructions that show on the MAT and then make these selections:

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 405
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) CONTINUE
- 2) START TEST
- (f) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (g) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-43-03-410-004

- (2) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

- (a) To close it, do this task: Close the Nose Radome, TASK 53-12-00-410-802.

————— **END OF TASK** —————

TASK 34-43-03-000-802

4. WXR Antenna Drive Unit Removal

(Figure 401, Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. References

<u>Reference</u>	<u>Title</u>
34-43-02-000-801	WXR Transceiver Removal (P/B 401)
53-12-00-010-801	Open the Nose Radome (P/B 201)

B. Location Zones

<u>Zone</u>	<u>Area</u>
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

D. Removal Procedure

SUBTASK 34-43-03-860-002

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 406
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-010-002



CAUTION

DO NOT LET THE WORKSTAND OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR (WXR) ANTENNA. THIS CAN CAUSE DAMAGE TO THE WXR ANTENNA.

- (2) Open and lock in the open position this access panel:

<u>Number</u>	<u>Name/Location</u>

111AL	Radome

NOTE: If the water such as the raindrop remain on the flat plate, transmitting and receiving radio wave becomes weak, and the radar performance gets worse. Thus, do not open the radome in the rainy condition, If the water remains on the flat plate, wipe off the water completely before the radome is closed

- (a) To open it, do this task: Open the Nose Radome, TASK 53-12-00-010-801.

SUBTASK 34-43-03-840-001

- (3) If the antenna flat plate [5] is installed, do the steps that follow:

- (a) Align the antenna flat plate [5] until it points directly forward.
(b) Install the two lock pins in the ANTENNA DRIVE UNIT [1]

SUBTASK 34-43-03-020-013



CAUTION

KEEP THE WEATHER-RADAR FLAT-PLATE ANTENNA AND THE TWO TRANSMITTER RECEIVER ASSEMBLIES COVERED DURING RAINFALL TO KEEP LIQUID OUT. IF YOU LET LIQUID LEAK IN, IT CAN CAUSE DAMAGE TO EQUIPMENT.

- (4) To remove the antenna drive, do the following:

- (a) If necessary to remove the antenna flat plate, do this task WXR Antenna Flat Plate Removal, TASK 34-43-03-000-801
(b) If necessary to remove the WXR transceiver, do this task WXR Transceiver Removal, TASK 34-43-02-000-801
(c) Remove the electrical connectors [22] from the WXR Transceiver [26].
 1) Make sure each connector is tagged for proper installation.
(d) Put protective covers on the electrical connectors [22].
(e) Remove the two bottom bolt [24] and washer [25] that hold the ANTENNA DRIVE UNIT [1] to the antenna mount [21].
(f) Remove the two top bolt [24] and washer [25] that hold the ANTENNA DRIVE UNIT [1] to the antenna mount [21].



WARNING

USE TWO PERSONS AND A SAFELY INSTALLED WORKSTAND. THIS WILL PREVENT INJURY TO YOU OR DAMAGE TO THE WXR ANTENNA.

- (g) Remove the ANTENNA DRIVE UNIT [1].

SUBTASK 34-43-03-210-001

- (5) Make sure the antenna mount [21] does not have a crack or is not damaged.

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 407
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-860-023

- (6) Put protective covers on the electrical connectors [22].

———— **END OF TASK** ————

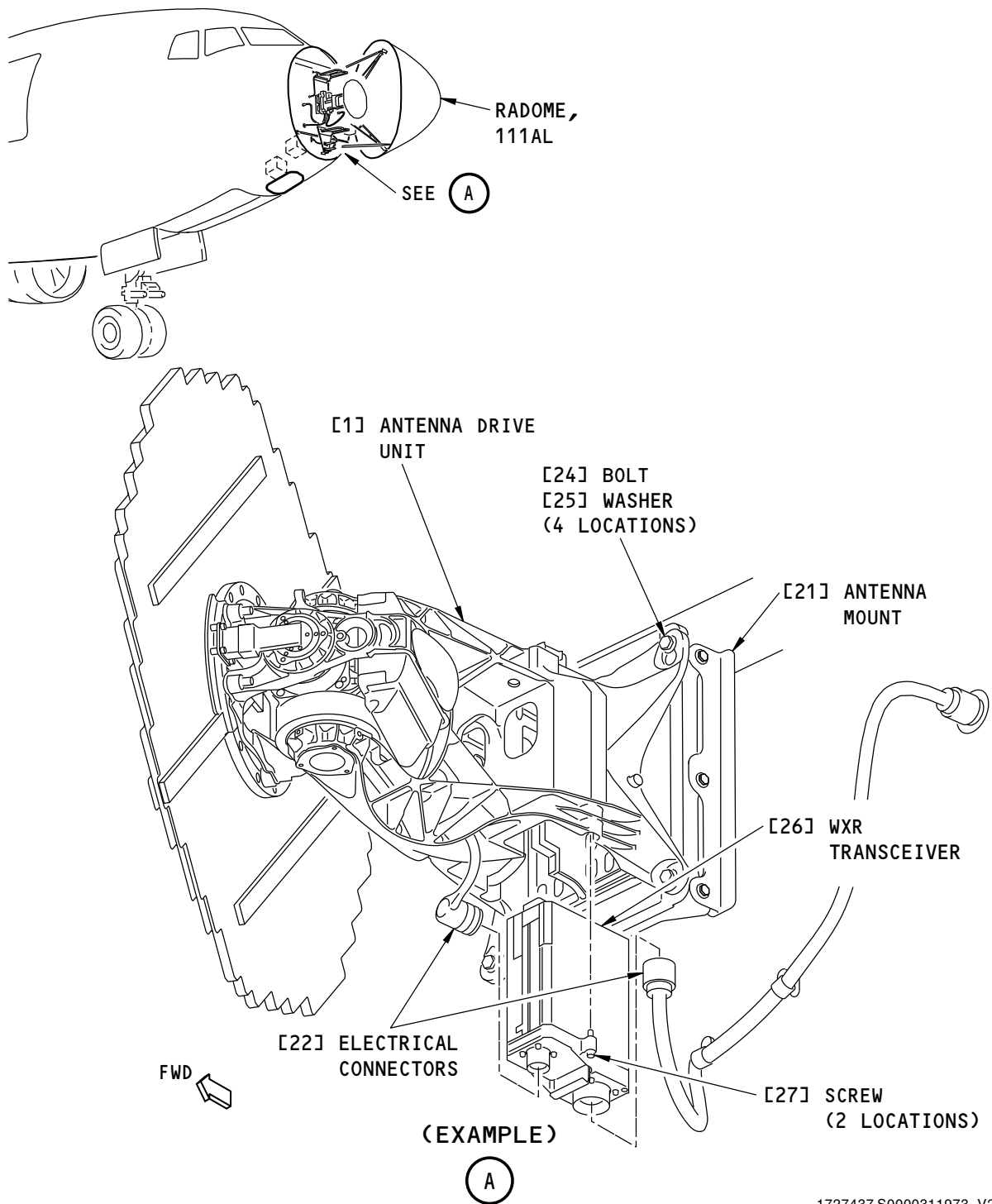
EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-03

Page 408
Jul 25/2018

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



1727437 S0000311973_V2

**Weather Radar Antenna Drive Unit Installation
Figure 402/34-43-03-990-804**

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 409
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-03-400-801

5. WXR Antenna Drive Unit Installation

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. References

Reference	Title
20-10-22-110-802	Clean Bare, Clad, or Plated Metal with Solvent (P/B 701)
34-43-02-400-801	WXR Transceiver Installation (P/B 401)
SWPM 20-20-00	Standard Wiring Practices Manual

B. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17

C. Consumable Materials

Reference	Description	Specification
B00083	Solvent - VM&P Naphthas	TT-N-95 Type II, ASTM D-3735 Type III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	BMS15-5 Class A

D. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
111AL	Radome

F. Installation Procedure

SUBTASK 34-43-03-860-004

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 410
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-410-001



CAUTION

DO NOT LET THE WORKSTAND OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR (WXR) ANTENNA. THIS CAN CAUSE DAMAGE TO THE WXR ANTENNA.

- (2) Make sure this access panel is open:

<u>Number</u>	<u>Name/Location</u>

111AL	Radome

NOTE: If the water such as the raindrop remain on the flat plate, transmitting and receiving radio wave becomes weak, and the radar performance gets worse. Thus, do not open the radome in the rainy condition, If the water remains on the flat plate, wipe off the water completely before the radome is closed

SUBTASK 34-43-03-110-001

- (3) Clean the mating surfaces of the ANTENNA DRIVE UNIT [1] and the antenna mount [21]. To clean the mating surfaces, do this task: Clean Bare, Clad, or Plated Metal with Solvent, TASK 20-10-22-110-802.
- (a) Apply solvent, B00083 to the mating surfaces of the ANTENNA DRIVE UNIT [1] and the antenna mount [21] with a cotton wiper, G00034.
- (b) Use a cotton wiper, G00034 and clean the mating surfaces again.
- 1) Do these two steps until the mating surfaces are bright, clean, and dry.

SUBTASK 34-43-03-420-010



CAUTION

KEEP THE WEATHER-RADAR FLAT-PLATE ANTENNA AND THE TWO TRANSMITTER RECEIVER ASSEMBLIES COVERED DURING RAINFALL TO KEEP LIQUID OUT. IF YOU LET LIQUID LEAK IN, IT CAN CAUSE DAMAGE TO EQUIPMENT.

- (4) Install the ANTENNA DRIVE UNIT [1]:



WARNING

USE TWO PERSONS AND A SAFELY INSTALLED WORKSTAND. THIS WILL PREVENT INJURY TO YOU OR DAMAGE TO THE WXR ANTENNA.

- (a) Put the four bolt [24] and washer [25] through the ANTENNA DRIVE UNIT [1] and into the antenna mount [21].
- (b) Tighten all four bolt [24].
- (c) Torque the bolt [24] to 200-240 inch-pounds.
- (d) Remove the protective covers from the electrical connectors [22].
- (e) Examine the electrical connectors [22] for bent or broken pins, dirt and damage.
- (f) If necessary to install the WXR transceiver, do this task WXR Transceiver Installation, TASK 34-43-02-400-801.
- (g) If necessary to install the antenna flat plate, do this task WXR Antenna Flat Plate Installation, TASK 34-43-03-400-802.
- (h) Connect the electrical connectors [22] to the WXR transceiver [26].

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 411
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-760-001

- (5) Use a intrinsically safe approved bonding meter, COM-1550 to measure the resistance between the ANTENNA DRIVE UNIT [1] and the antenna mount [21] (SWPM 20-20-00).
 - (a) Maximum resistance must be no more than 0.0025 ohms.

SUBTASK 34-43-03-860-024



REMOVE THE LOCK PINS FROM THE ANTENNA DRIVE UNIT BEFORE YOU OPERATE THE WEATHER RADAR SYSTEM. IF YOU DO NOT REMOVE THE LOCK PINS, YOU CAN CAUSE DAMAGE TO THE WXR ANTENNA.

- (6) Remove the lock pins from the ANTENNA DRIVE UNIT [1], if installed.

SUBTASK 34-43-03-860-005

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

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

————— END OF TASK —————

TASK 34-43-03-400-803

6. WXR Antenna Drive Unit Installation Test

(Figure 402)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
53-12-00-410-802	Close the Nose Radome (P/B 201)

C. Location Zones

Zone	Area
111	Radome
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
111AL	Radome

E. Installation Test

NOTE: Only do the installation test when the ANTENNA DRIVE UNIT [1] and the antenna flat plate [5] are installed together.

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 412
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-03-710-001

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-03-710-006



DO NOT LET THE WORKSTANDS OR EQUIPMENT HIT OR TOUCH THE WEATHER RADAR ANTENNA. THIS CAN CAUSE DAMAGE TO THE WEATHER RADAR ANTENNA.

- (2) Make sure that this access panel is open:

<u>Number</u>	<u>Name/Location</u>
111AL	Radome

SUBTASK 34-43-03-710-002

- (3) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-43-03-710-003

- (4) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR antenna:

- (5) Select WXR to ON from the EFIS Control Panel.

- (a) Select TEST on WXR Control Panel.
- (b) Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on WXR Control Panel, operator should allow the system operate for 5 minutes. During this time, you may see fail messages as the WXR system updates individual component software. After 5 minutes has expired, proceed to next step.

- (c) Make these selections on the MAT:

- 1) ONBOARD MAINTENANCE
- 2) LINE MAINTENANCE
- 3) GROUND TESTS
- 4) 34 Weather Radar System
- 5) LRU REPLACEMENT TEST
- 6) Left (Right) WXR System
- 7) Left WXR System
- 8) CONTINUE

- (d) Do the instructions that show on the MAT and then make these selections:

- 1) CONTINUE
- 2) START TEST

- (e) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 413
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (f) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-43-03-710-004

- (6) Make sure the compartment service light is off.

SUBTASK 34-43-03-710-005

- (7) Close this access panel:

<u>Number</u>	<u>Name/Location</u>

111AL	Radome

- (a) To close it, do this task: Close the Nose Radome, TASK 53-12-00-410-802.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-43-03

D633W101-ARO

Page 414
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR PROCESSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the weather radar processor.
 - (2) An installation of the weather radar processor.
- B. After the installation task there is a test. The installation test will make sure the WXR radar processor is installed correctly.
- C. The WXR radar processor are in the forward lower electrical equipment bay in the forward equipment center.

TASK 34-43-09-000-801

2. WXR Radar Processor Removal

(Figure 401)

A. **References**

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-000-801	E/E Box Removal (P/B 401)

B. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Access Panels**

Number	Name/Location
112AL	Forward Access Door

D. **Removal Procedure**

SUBTASK 34-43-09-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-09-860-002

- (2) To get access to the WXR radar processor [1], open this access panel:

Number	Name/Location
112AL	Forward Access Door

TASK 06-41-00-800-801.

SUBTASK 34-43-09-020-001

- (3) Remove the WXR Radar Processor [1] from the radar processor mount. To remove it, do this task: E/E Box Removal, TASK 20-10-01-000-801.

EFFECTIVITY
ARO ALL

34-43-09

D633W101-ARO

Page 401
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-09-860-003

- (4) Put protective covers on the electrical connectors.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

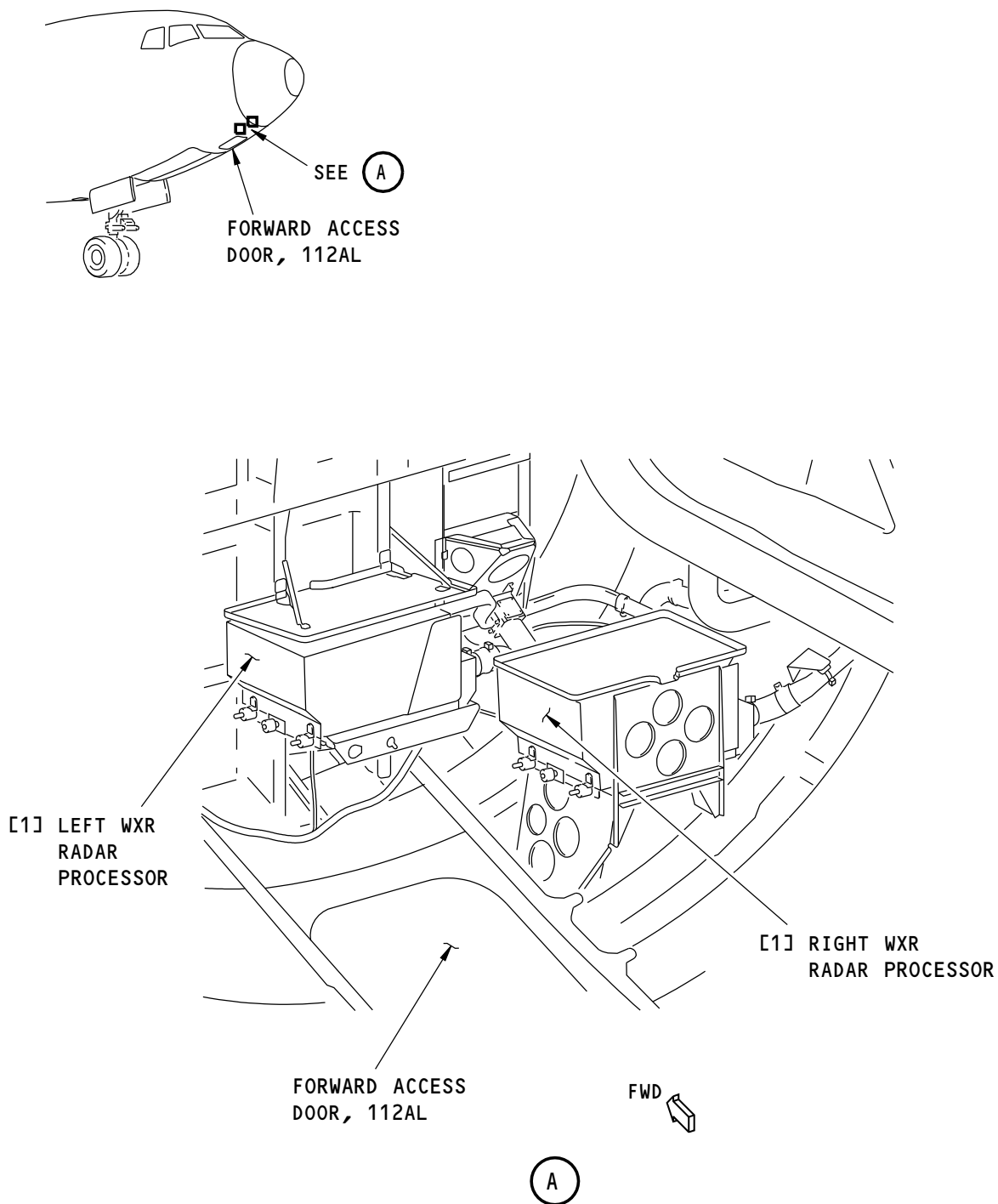
D633W101-ARO

34-43-09

Page 402
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL



U90371 S0000220656_V1

Weather Radar Processor Installation
Figure 401/34-43-09-990-801

EFFECTIVITY
ARO ALL

34-43-09

D633W101-ARO

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-09-400-801

3. WXR Radar Processor Installation

(Figure 34-43-02-990-802)

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-400-801	E/E Box Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-43-02-990-802	Figure: Weather Radar Transceiver Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	WXR Radar Processor	34-43-02-10A-010	ARO 001-013
		34-43-02-10A-060	ARO 001-013

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
112AL	Forward Access Door

F. Installation Procedure

SUBTASK 34-43-09-010-001

- (1) To get access to the WXR radar processor [1], open this access panel:

Number	Name/Location
112AL	Forward Access Door

TASK 06-41-00-800-801.

SUBTASK 34-43-09-860-004

 CAUTION	DO NOT TOUCH THE CONNECTOR PINS, OR OTHER CONDUCTORS. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE COMPONENTS.

- (2) Remove the protective covers from the electrical connectors.

EFFECTIVITY
ARO ALL

34-43-09

D633W101-ARO

Page 404
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-09-420-001

- (3) Install the WXR Radar Processor [1] in the radar processor mount. To install it, do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-43-09-860-005

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

G. Installation Test

SUBTASK 34-43-09-860-006

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-43-09-730-001

- (2) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR Radar Processor [1]:

- (a) Select WXR to ON from the EFIS Control Panel.
- (b) Select TEST on the WXR Control Panel.
- (c) Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on the WXR Control Panel, operator should allow the system to operate for 5 minutes. During this time, you may see fail messages as the WXR system updates individual component software. After 5 minutes has expired, proceed to the next step.

- (d) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Weather Radar System
 - 5) LRU REPLACEMENT TEST
 - 6) Left (Right) WXR System
 - 7) CONTINUE
- (e) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (f) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (g) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-43-09-410-001

- (3) Make sure the compartment service light is off.

EFFECTIVITY
ARO ALL

34-43-09

D633W101-ARO

Page 405
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-09-410-002

(4) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

TASK 06-41-00-800-801.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-09

Page 406
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

WEATHER RADAR PROCESSOR MOUNT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the weather radar (WXR) processor mount
 - (2) An installation of the WXR processor mount.
- B. The WXR processor mount is in the forward lower electrical equipment bay in the forward equipment center.

TASK 34-43-10-000-801

2. WXR Radar Processor Mount Removal

Figure 401

A. General

- (1) There are drip shields installed directly above the WXR processor. These drip shields do not need to be removed. You can slide the WXR processor and processor mount out from under the drip shields.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
34-43-09-000-801	WXR Radar Processor Removal (P/B 401)

C. Location Zones

Zone	Area
111	Radome
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Access Panels

Number	Name/Location
112AL	Forward Access Door

E. Removal Procedure

SUBTASK 34-43-10-860-001

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-10-010-001

- (2) To get access to the WXR processor mount, open this access panel:

Number Name/Location

112AL Forward Access Door

Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

EFFECTIVITY
ARO ALL

34-43-10

D633W101-ARO

Page 401
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-10-010-003

(3) Do this task: WXR Radar Processor Removal, TASK 34-43-09-000-801.

SUBTASK 34-43-10-020-001

(4) Remove the WXR Processor mount:

- (a) Disconnect the air hose clamp [6] that attaches the air hose [7] to the air inlet [8] on the rear of the processor mount [1].
- (b) Remove the air hose [7] from the air inlet [8].
- (c) Remove the nuts [3] that connect the ARINC connector [5] to the WXR processor mount [1].
- (d) Remove the ARINC connector [5] from the rear of the WXR processor mount [1].
 - 1) Tag each connector for identification.
- (e) Remove the 4 screws [2] on the bottom of the WXR processor mount [1].
- (f) For the left WXR processor mount, lift the processor mount from the support structure.
- (g) For the right WXR processor mount, move the processor mount horizontally until it is free from the support structure.

————— END OF TASK —————

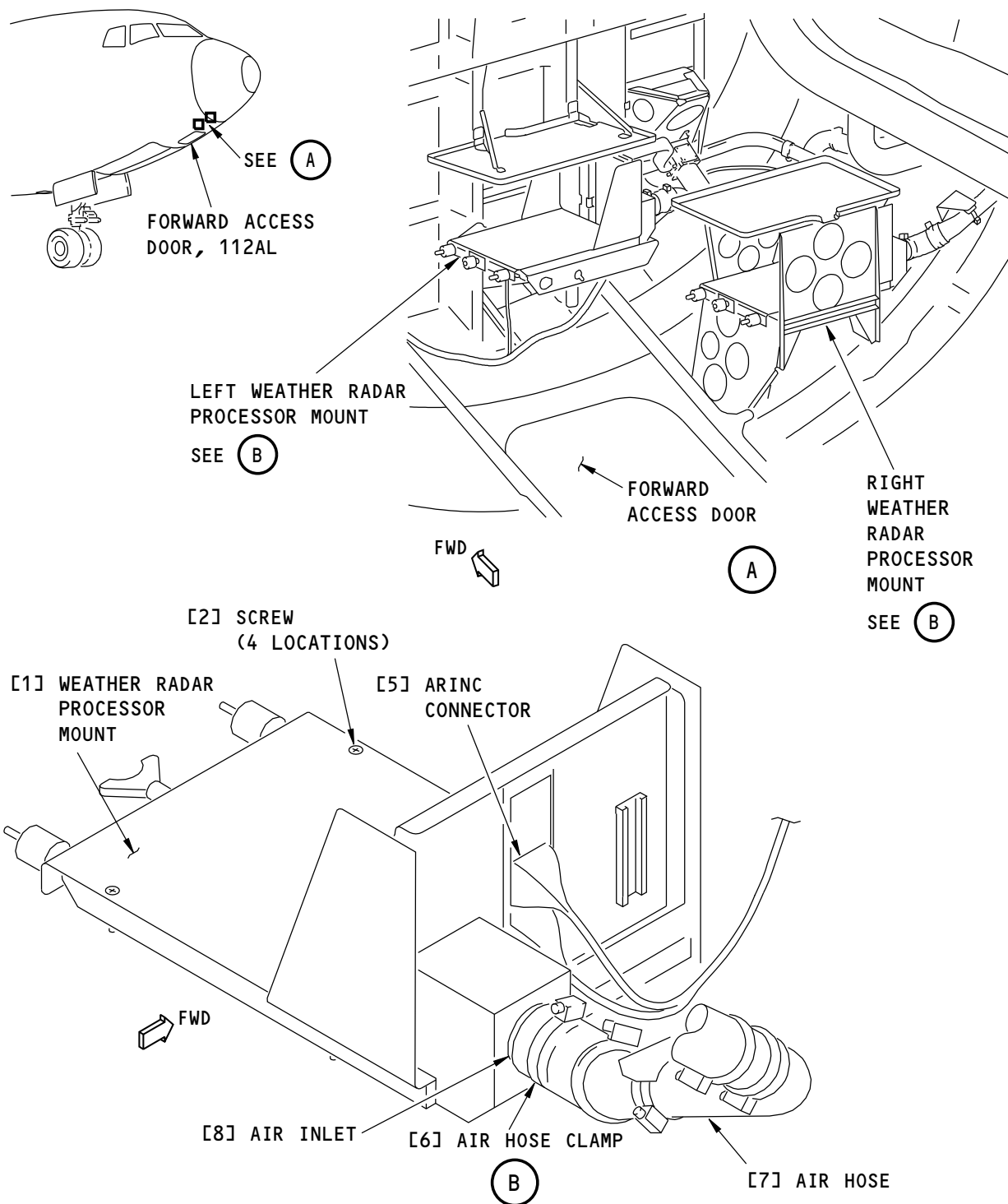
EFFECTIVITY
ARO ALL

34-43-10

D633W101-ARO

Page 402
Jan 05/2015

**777-200/300
AIRCRAFT MAINTENANCE MANUAL**



1489811 S0000270945_V2

**Weather Radar Processor Mount Installation
Figure 401/34-43-10-990-801**

EFFECTIVITY
ARO ALL

34-43-10

D633W101-ARO

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-43-10-400-801

3. WXR Radar Processor Mount Installation

Figure 401

A. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
34-43-09-400-801	WXR Radar Processor Installation (P/B 401)

B. Location Zones

Zone	Area
111	Radome
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Access Panels

Number	Name/Location
112AL	Forward Access Door

D. Installation Procedure

SUBTASK 34-43-10-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-10-860-003

- (2) To get access to the WXR processor mounts, open this access panel:

Number	Name/Location
112AL	Forward Access Door

Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

SUBTASK 34-43-10-010-002

- (3) Install the WXR processor mount:
- (a) Remove the cover from the air inlet [8] on the rear of the processor mount [1].
 - (b) Examine the electrical connectors for bent or broken pins, dirt and damage.
 - (c) For the left WXR processor mount, put the processor mount on top of the support structure.
 - (d) For the right WXR processor mount, move the processor mount horizontally into its position on top of the support structure.
 - (e) Install the four screws [2] that attach the processor mount [1] to the support structure.
 - (f) Put the ARINC connector [5] on the rear of the processor mount [1].
 - (g) Install the four nuts [3] that attach the ARINC connector [5] to the rear of the processor mount [1].
 - (h) Install the air hose [7] to the air inlet on the rear of the processor mount [1].

EFFECTIVITY
ARO ALL

34-43-10

D633W101-ARO

Page 404
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Connect the air hose clamp [6] to the processor mount [1].

E. Installation Test

SUBTASK 34-43-10-410-001

- (1) Do this task: WXR Radar Processor Installation, TASK 34-43-09-400-801.

SUBTASK 34-43-10-860-004

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C34439	WXR L R/T
E	16	C34438	WXR R R/T

SUBTASK 34-43-10-700-001

- (3) Use the blower test switch on the radar mount to make sure the blower operates.

SUBTASK 34-43-10-730-001

- (4) Use the Maintenance Access Terminal (MAT) to do the LRU replacement test of the WXR transceiver:

- (a) Select WXR to ON from the EFIS Control Panel.
- (b) Select TEST on the WXR Control Panel.
- (c) Wait 5 minutes.

NOTE: After the selection of WXR to ON from the EFIS Control Panel and TEST on the WXR Control Panel, operator should allow the system to operate for 5 minutes. During this time, you may see fail messages as the WXR system updates individual component software. After 5 minutes has expired, proceed to the next step.

- (d) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Weather Radar System
 - 5) LRU REPLACEMENT TEST
 - 6) Left (Right) WXR System
 - 7) CONTINUE
- (e) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (f) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (g) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

SUBTASK 34-43-10-410-002

- (5) Make sure the compartment service light is off.

EFFECTIVITY
ARO ALL

34-43-10

D633W101-ARO

Page 405
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-43-10-410-003

(6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112AL	Forward Access Door

Finding an Access Door or Panel on the Fuselage, TASK 06-41-00-800-801

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-43-10

Page 406
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) - MAINTENANCE PRACTICES

1. **General**

A. This procedure has these tasks:

- (1) Traffic Alert and Collision Avoidance System (TCAS) Deactivation.
- (2) Traffic Alert and Collision Avoidance System (TCAS) Activation.

TASK 34-45-00-040-801

2. **Traffic Alert and Collision Avoidance System (TCAS) - Deactivation**

A. **General**

- (1) This task removes electrical power to the Traffic Alert and Collision Avoidance System (TCAS).

B. **Location Zones**

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. **Access Panels**

Number	Name/Location
117AL	Main Equipment Center Access Door

D. **Procedure**



WARNING

REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-45-00-860-076

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

E. **Traffic Alert and Collision Avoidance System (TCAS) - Tryout**

NOTE: This tryout is to make sure the Traffic Alert and Collision Avoidance System (TCAS) is in a zero energy state.

SUBTASK 34-45-00-860-075

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

SUBTASK 34-45-00-010-003

- (2) Open this access panel:

Number	Name/Location
117AL	Main Equipment Center Access Door

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-00-710-008

- (3) Make sure that the upper EICAS shows the TCAS SYSTEM advisory.

SUBTASK 34-45-00-710-007

- (4) At the Aft Electronics Panel, P8, set the mode switch on the TCAS control panel to the TA ONLY position.
 - (a) Make sure that the Navigation Displays (ND) show the TCAS FAIL indication

SUBTASK 34-45-00-710-009

- (5) Run the self test for TCAS from the Portable Maintenance Access Terminal (PMAT)
 - (a) Make sure that a TCAS self-test does not occur.
 - (b) Make sure no TCAS patterns appear on the ND.

SUBTASK 34-45-00-710-010

- (6) On the front panel of the TCAS computer push and release the TEST switch.

NOTE: TCAS Computer is on the E1-2 rack in the main equipment center.

 - (a) Make sure none of the LED lights come on.
 - (b) Make sure that a self test does not start.

————— END OF TASK —————

TASK 34-45-00-440-801

3. Traffic Alert and Collision Avoidance System (TCAS) - Activation

A. General

- (1) This task adds electrical power to the following components of the Traffic Alert and Collision Avoidance System (TCAS):
 - (a) TCAS Computer
 - (b) TCAS Directional Antenna

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-45-00-410-001

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

SUBTASK 34-45-00-710-011

- (2) On the front panel of the TCAS computer push and release the TEST switch.

NOTE: TCAS Computer is on the E1-2 rack in the main equipment center.

 - (a) Make sure the LED lights come on.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 202
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM (TCAS) - ADJUSTMENT/TEST

1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
 - (1) Traffic alert and collision avoidance system (TCAS) ground test.
 - (2) TCAS software installation verification test.
 - (3) TCAS operational test.
 - (4) TCAS system test.

TASK 34-45-00-740-801

2. Traffic Alert and Collision Avoidance System (TCAS) - Ground Test

A. Location Zones

Zone	Area
212	Flight Compartment, Right

B. TCAS Ground Test

SUBTASK 34-45-00-710-002

- (1) Use a maintenance access terminal (MAT) to do the ground test of the TCAS system:
 - (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) SYSTEM TEST
 - 6) TCAS System
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) Make sure you see the TCAS test pattern on the Primary Flight Displays (PFDs) and Navigation Displays (NDs).
 - (d) Make sure you hear the "TCAS SYSTEM TEST OKAY" announcement from the aural warning speakers in the flight deck.
 - (e) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - (f) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 501
May 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-45-00-710-801

3. Traffic Alert and Collision Avoidance System - Operational Test

A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
34-21-00-820-801	Air Data Inertial Reference Unit - Alignment (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Location Zones

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

D. Operational Test

SUBTASK 34-45-00-860-002

- (1) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

SUBTASK 34-45-00-710-003

- (2) Do the TCAS operational test as follows:
 - (a) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

- (b) Wait for 30 Seconds before closing the TCAS circuit breaker.
- (c) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

- (d) Set the ATC/TCAS mode switch on the ATC/TCAS panel to TA/RA.
- (e) Set the EFIS mode switch on the EFIS control panel to MAP.
- (f) Push the TFC switch on the EFIS control panel.
 - 1) Make sure you see the TFC message on the Navigation Display (ND).
- (g) Set the mode selector on the ATC/TCAS control panel to the STBY position.
 - 1) Make sure you see the TCAS OFF message on the ND.
- (h) Set the mode selector on the ATC/TCAS control panel to the TA ONLY position.
 - 1) Make sure you see the TA ONLY message on the ND.
- (i) Set the mode selector on the ATC/TCAS control panel to the TA/RA position.
 - 1) Make sure you see the TA ONLY message on the ND.

SUBTASK 34-45-00-710-001

- (3) Use a maintenance access terminal (MAT) to do the ground test of the TCAS system:

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 502
Jan 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) SYSTEM TEST
 - 6) TCAS System
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and make these selections:
 - 1) CONTINUE
 - 2) START TEST
- (c) Make sure you see the TCAS test pattern on the Primary Flight Displays (PFDs) and Navigation Displays (NDs) (Figure 501).
- (d) Make sure you hear the "TCAS SYSTEM TEST OK" announcement from the aural warning speakers in the flight deck.
- (e) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (f) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
- (g) Return the ATC/TCAS mode switch on the ATC/TCAS panel to STBY position.

———— **END OF TASK** ————

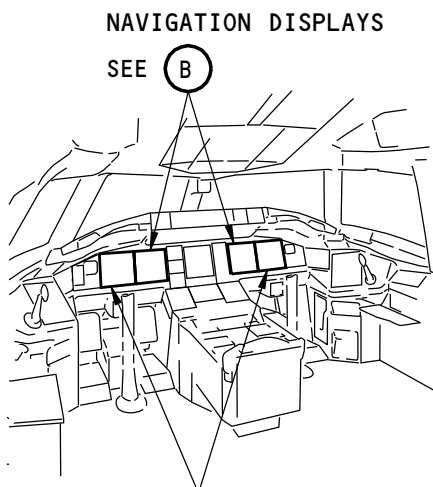
EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 503
Jan 05/2015

777-200/300 AIRCRAFT MAINTENANCE MANUAL



NAVIGATION DISPLAYS

SEE (B)

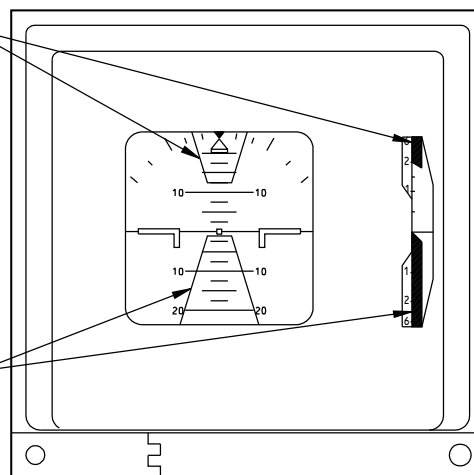
PRIMARY FLIGHT DISPLAYS

SEE (A)

FLIGHT COMPARTMENT

DO NOT CLIMB
RESOLUTION
ADVISORY

DO NOT DESCEND
RESOLUTION
ADVISORY



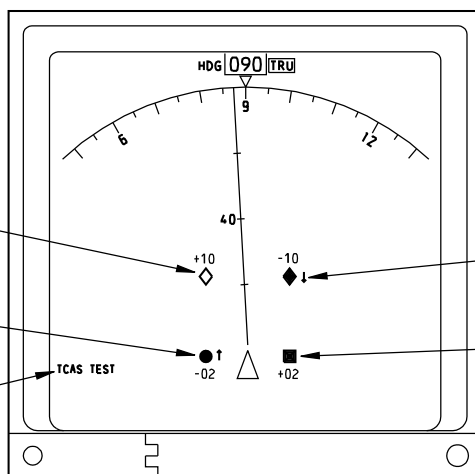
PRIMARY FLIGHT DISPLAY (PFD)

(A)

OTHER TRAFFIC
TEST (WHITE)

TRAFFIC ADVISORY
TEST (AMBER)

TEST MESSAGES
TCAS TEST
OR
TCAS FAIL



NAVIGATION DISPLAY (ND)

(B)

PROXIMATE TRAFFIC
TEST (WHITE)

RESOLUTION ADVISORY
TEST (RED)

E23752 S0006420798_V1

TCAS Test Pattern
Figure 501/34-45-00-990-802

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 504
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-45-00-750-801

4. Traffic Alert and Collision Avoidance System (TCAS) - Software Installation Verification Test

A. Location Zones

Zone	Area
212	Flight Compartment, Right

B. TCAS Software Verification Test

SUBTASK 34-45-00-750-003

- (1) Use a maintenance access terminal (MAT) to do a software configuration check of the TCAS computer:

NOTE: Make sure you know the correct software part number for the TCAS computer when you look at the software part number on the display. For the TCAS computer to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) CONTINUE
- (b) Find TCAS Computer on the display and make sure that the software part number is correct.
- (c) Select GO BACK to remove the configuration display.

————— END OF TASK —————

TASK 34-45-00-730-801

5. Traffic Alert and Collision Avoidance System (TCAS) - System Interface Test

A. General

- (1) The TCAS system interface test tests the TCAS to GPWS, LRRRA and Warning System interfaces.
- (2) A special ground test tool is necessary for this task.

B. References

Reference	Title
32-09-00-040-801	Air Mode Simulation - Preparation (P/B 201)
32-09-00-440-801	Air Mode Simulation - Restoration (P/B 201)
34-46-00-710-803-002	Ground Proximity Warning System - Operational 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
COM-1922	Test Set - Radio Altimeter Part #: 110-0430-100-02 Supplier: L04V3 Part #: 9599-607-15902 Supplier: F0052 Opt Part #: 110-0430-100 Supplier: L04V3

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 505
May 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

D. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Prepare for the System Test

SUBTASK 34-45-00-730-001

- (1) Do the Low Range Radio Altimeter (LRR) and Warning Electronics System (WES) Interface Test:
 - (a) Make sure the radio altitude is between 0 feet and -10 feet.
 - (b) Use the MAT to do the ground test on TCAS system.
 - (c) Use a maintenance access terminal (MAT) to do the SYSTEM TEST of the TCAS system:
 - 1) Make these selections on the MAT:
 - a) ONBOARD MAINTENANCE
 - b) LINE MAINTENANCE
 - c) GROUND TESTS
 - d) 34 Traffic Alert and Collision Avoidance System
 - e) SYSTEM TEST
 - f) TCAS System
 - g) CONTINUE
 - 2) Do the instructions that show on the MAT and make these selections:
 - a) CONTINUE
 - b) START TEST
 - 3) Make sure the Primary Flight Displays (PFDs) and Navigation Displays (NDs) shows the TCAS test pattern (Figure 501).
 - 4) Make sure the left and right warning speakers annunciate "TCAS SYSTEM TEST OK".
 - 5) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

- (d) Do the TCAS SYSTEM TEST again with the MAT.
 - 1) Verify the left and right warning speakers annunciate "TCAS SYSTEM TEST OK".
NOTE: The CMCS WILL SHOW FAILED.
- (e) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 506
Jan 05/2016

777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (f) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (g) Do the TCAS SYSTEM TEST again with the MAT.

- 1) Verify the left and right warning speakers annunciate "TCAS SYSTEM TEST OK".

NOTE: THE CMCS WILL SHOW FAILED.

- (h) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	20	C34432	RAD ALT R

- (i) Do the TCAS SYSTEM TEST again with the MAT.

- 1) Make sure the CMCS shows FAILED.

NOTE: The left and right warning speakers annunciate "TCAS SYSTEM TEST FAIL".

- (j) Close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L
E	20	C34432	RAD ALT R

- (k) If necessary do these steps to clear the latched fail state:

- 1) Open this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

- 2) Close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

- (l) Set the mode knob to the TA/RA position on the ATC/TCAS control panel.

- (m) Make sure TFC is selected on the two EFIS control panels.

- 1) Make sure TFC shows on the two ND's.



WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS BEFORE YOU MOVE THE FLAP CONTROL LEVER. WITH HYDRAULIC POWER REMOVED, THE FLAPS WILL MOVE AUTOMATICALLY BY ELECTRICAL POWER WHEN YOU MOVE THE FLAP CONTROL LEVER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (n) Make sure the flaps are set to 20 degrees or less.

777-200/300 AIRCRAFT MAINTENANCE MANUAL



PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE YOU OPEN THE AIR/GROUND CIRCUIT BREAKERS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (o) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801.
- (p) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

NOTE: This will put the airplane in air mode.

- (q) Connect the radio altimeter test set, COM-1922, to the front connector of the left and right radio altimeter transceivers.
- (r) Set a simulated radio altitude to 1100 feet as shown on the two PFDs.

NOTE: TCAS will fail if the radio altitude is increased before the airplane is put in air mode.

- 1) Make sure the two NDs do not show TA ONLY, TCAS FAIL, or TCAS OFF.
- (s) Decrease the simulated radio altitude to 900 feet.
 - 1) Make sure the two NDs show TA ONLY.
- (t) Decrease the simulated radio altitude to 0 feet.
- (u) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

SUBTASK 34-45-00-730-002

- (2) Do the Ground Proximity Warning System (GPWS) Interface Test
 - (a) Make sure the mode selector on the ATC/TCAS control panel is set to TA/RA position.
 - (b) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

NOTE: This will cause the TCAS computer to look at the right radio altimeter transceiver for radio altitude data.

- (c) Disconnect the radio altimeter test set from the left radio altimeter transceiver.
- (d) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 508
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

- (e) Set a simulated radio altitude to 1100 feet on the right radio altimeter test set.
- (f) Remove the safety tag and close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (g) Make sure the airspeed is less than 80 knots.

NOTE: With left radio altitude near zero feet and the airspeed less than 80 knots, the GPWS will not be inhibited from CMC initiated self-test while in the air mode.

- (h) Do this task: Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002.
 - 1) Make sure while the amber ground prox light is illuminated, and while the "PULL UP" and the "WINDSHEAR" advisories show on the PFDs, the NDs show TA ONLY.

NOTE: It is possible that the NDs will show TA ONLY between the ground prox warnings.

- (i) Return the simulated radio altitude to 0 feet.

SUBTASK 34-45-00-860-059

- (3) Put the Airplane Back to Its Usual Condition
 - (a) Return the ATC/TCAS mode switch on the ATC/TCAS panel to STBY position.
 - (b) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

SUBTASK 34-45-00-860-060

- (4) Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

————— **END OF TASK** —————

TASK 34-45-00-730-802

6. Traffic Alert and Collision Avoidance System (TCAS) - System Simulation Test (With the IFR TCAS-201 Test Set)

A. General

- (1) The TCAS system test makes sure that the TCAS system operates with a simulated target.
- (2) Special ground test tools are necessary for this task.
- (3) The TCAS system simulation test can be done with the IFR TCAS-201.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 509
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-09-00-040-801	Air Mode Simulation - Preparation (P/B 201)
32-09-00-440-801	Air Mode Simulation - Restoration (P/B 201)
34-33-01-000-801	Radio Altimeter Transceiver Removal (P/B 401)
34-33-01-400-801	Radio Altimeter Transceiver Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
COM-1579	Analyzer - Databus, Datatrac Models 600, 650, 650H Part #: DT-600 Supplier: 0Z3C6 Opt Part #: 01-1405-00 Supplier: 41364 Opt Part #: 01-1406-00 Supplier: 41364 Opt Part #: 01-1407-00 Supplier: 41364 Opt Part #: 100-600-001 Supplier: 41364 Opt Part #: 100-650-001 Supplier: 41364 Opt Part #: 100-655-001 Supplier: 41364
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1922	Test Set - Radio Altimeter Part #: 110-0430-100-02 Supplier: L04V3 Part #: 9599-607-15902 Supplier: F0052 Opt Part #: 110-0430-100 Supplier: L04V3
COM-1929	Test Cable - Radio Altimeter Part #: AY969-00666-002 Supplier: L04V3 Part #: AY969-00668-001 Supplier: L04V3 Opt Part #: 110-0440-101 Supplier: L04V3

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 510
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
COM-4112	Test Set - Ramp, TCAS-201 Opt Part #: TCAS-201 Supplier: 51190
SPL-1928	Box - Extender, Radio Altimeter Receiver Transmitter Part #: C34005-16 Supplier: 81205 Opt Part #: C34005-1 Supplier: 81205

D. Location Zones

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

E. TCAS System Test

SUBTASK 34-45-00-000-003

- (1) Remove the left radio altimeter transceiver. To remove it, do this task: Radio Altimeter Transceiver Removal, TASK 34-33-01-000-801.

SUBTASK 34-45-00-480-006

- (2) Install the radio altimeter receiver transmitter extender box, SPL-1928.

SUBTASK 34-45-00-860-062

- (3) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-45-00-860-068

- (4) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801

SUBTASK 34-45-00-730-005

- (5) Do the TCAS bearing accuracy test:
- (a) Make sure that the ADIRU is in NAV mode and SAARU is operational.
 - (b) Do the test setup for TCAS-201 test set, COM-4112:
 - (c) Make sure that the flaps setting is at 5 units or less.
NOTE: An aural warning from the aural speakers will sound if the flaps setting is greater than 5 units.
 - (d) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

NOTE: This will put the airplane in air mode.

- (e) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

Row	Col	Number	Name
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

Row	Col	Number	Name
L	13	C32601	PSEU 2 PRI PWR

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 511
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

NOTE: This enables the bottom TCAS antenna.

- (f) Connect the Radio Altimeter test cable, COM-1929 to the radio altimeter receiver transmitter extender box, SPL-1928.
- (g) Connect the radio altimeter test set, COM-1922 to the Radio Altimeter test cable, COM-1929.

NOTE: The TCAS will latch in the fail state if the radio altitude is more than 50 feet and the airplane is in the ground mode.

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (i) Open and close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

- (j) Set the simulated altitude to 1100 feet as shown on the two PFDs.



DO NOT OPERATE THE TEST SET WHEN THE TEST SET ANTENNA IS WITHIN 15 INCHES OF AIRPLANE ANTENNA. DAMAGE TO THE TEST SET MAY OCCUR.

- 1) Set up the test set antenna in an appropriate location (less than 50 feet (± 2 feet) from the bottom TCAS antenna) in front of the airplane at 45 degrees (± 2 degrees) left or right of the center line.

NOTE: Follow the operation's manual to set up the test set antenna. Make sure there is no obstruction between the TCAS antennas and the test set antenna. Face the test set antenna in the direction so that the TCAS antenna under test receives the strongest signal. Use the antenna stand to prevent movements to the test set antenna which can cause TCAS to loose tracking. If there are ground equipment, walkways or other objects that could cause a signal obstruction or a multipath problem, choose a more suitable location for the test set and change the setup in the test set accordingly.

- 2) Push the POWER switch to supply power to the TCAS test set.
- 3) Push the SET/CONT key on the TCAS test set.
- 4) Enter a distance measurement from the test set antenna to the TCAS bottom antenna in the HORIZ field and 6 feet in the VERT field.
- 5) Enter the gain of the TCAS test set antenna in the GAIN field.

NOTE: The antenna gain value is on the TCAS test set antenna.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 512
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 6) Enter the loss of the cable in the LOSS field.

NOTE: The cable loss values are on the cable.

- (k) Set the mode selector on the ATC/TCAS control panel to the TA ONLY position.
(l) Shield the top TCAS antenna.

NOTE: This is to test the bottom TCAS antenna. You will possibly have to get up high to interrogate the bottom TCAS antenna from the rear of the airplane.

- (m) Push the SCEN key on the TCAS test set to show the scenario menu.
(n) Set up this scenario:
 1) INTRUDER TYPE: ATCRBS ALT = OFF
 2) RANGE: 8.0 nm RATE: 0 kt
(o) Push the RUN/STOP key to start the test.
 1) Make sure that the NDs show the intruder's bearing ± 15 degrees.
(p) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

NOTE: This disables the bottom TCAS antenna.

- (q) Do the steps in the TCAS bearing accuracy test again for the top antenna.

NOTE: If you move the TCAS test set, you have to change the setup values accordingly.

SUBTASK 34-45-00-730-006

(6) TCAS Intruder Scenario Test

- (a) Push the TEST switch on the TCAS computer.
 1) Make sure that the TCAS self-test does not occur in cockpit.
(b) Set the mode selector on the TCAS/ATC transponder panel to the TA/RA position.
(c) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the center Flight Control Power Supply Assembly on the E2 electronics equipment rack, shelf No. 6, in the main equipment center.
(d) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the left Flight Control Power Supply Assembly on the E1 electronics equipment rack, shelf No. 6, in the main equipment center.
(e) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the right Flight Control Power Supply Assembly on the E5 electronics equipment rack, shelf No. 1, in the forward cargo area.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 513
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (f) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

- (g) Set the altimeter baro correction to 29.92 in hg.
- (h) Use the databus analyzer, COM-1579 or air data model test set, COM-1914 to simulate aircraft altitude.
- (i) Do these steps for the databus analyzer method to simulate aircraft altitude.

NOTE: This step requires transmitting 629 data on two separate channels. Depending on the tooling used, may require more than one bus analyzer.

- 1) Connect a 629 databus analyzer, COM-1579 to the couplers, B34101 and B34102, on the flight controls left bus, in the P112 bus panel located in the Main Equipment Center.
- 2) Simulate an aircraft altitude by setting the transmitter to transmit these ARINC 629 wordstrings on the left flight control bus with this data:

Table 501/34-45-00-993-808

LABEL	FE0
CID	1
TI	5
TG	16
SG	32
WORD 1	(HEXM) 0 0 0 0
WORD 2	(HEXM) 0 E E 8
WORD 3	(HEXM) 0 0 0 0
WORD 4	(HEXM) F 1 1 7
WORD 5	(HEXM) 0 0 0 0
WORD 6	(HEXM) 0 0 0 0
WORD 7	(HEXM) 0 0 0 0

Table 502/34-45-00-993-809

LABEL	FE0
CID	0

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 514
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

Table 502/34-45-00-993-809 (Continued)

TI	5
TG	17
SG	32
WORD 1	(HEXM) 0 0 0 0
WORD 2	(HEXM) 0 E E 8
WORD 3	(HEXM) 0 0 0 0
WORD 4	(HEXM) F 1 1 7
WORD 5	(HEXM) 0 0 0 0
WORD 6	(HEXM) 0 0 0 0
WORD 7	(HEXM) 0 0 0 0

- 3) Make sure the altimeters show an altitude between 34,950 through 35,050 feet.

NOTE: The TCAS is capable of communicating with other aircraft's TCAS computers. The other aircraft could see your aircraft at this altitude.

- (j) Do this step for the air data test set method to simulate aircraft altitude.

- 1) Use the air data model test set, COM-1914, to apply an altitude of 35,000 feet for the Captain's static system.

NOTE: Let the VSI go back to zero after the altitude is reached.

- 2) Make sure the altimeters show an altitude between 34,950 through 35,050 feet.

- (k) Use the radio altimeter test set to apply a 2400 feet radio altitude as shown on the PFD's.

NOTE: Increase the radio altitude by 600 feet per minute (fpm) or less.

- 1) Make sure that the TA ONLY message goes away on the ND when the radio altitude is greater than 1,100 feet.

- (l) Set the mode switch on the two EFIS control panels to map mode.

- (m) Set the range switch on the two EFIS control panels to 10.

- (n) Push the SCEN key on the TCAS test set to show the scenario menu.

- (o) Set up this scenario:

- 1) INTRUDER TYPE: ATCRBS ALT = ON

- 2) RANGE: 4.2 nm RATE: +500 kt

- 3) ALTITUDE: 35,200 ft RATE: 0 fpm

NOTE: Make sure the intruder's altitude is 200 feet above your airplane as shown on the ND. You can change the airplane's altitude or intruder setup on the TCAS test set to achieve this.

- (p) Push the RUN/STOP key on the TCAS test set.

- (q) Make sure that the NDs show the intruder's bearing ± 20 degrees.

- (r) Make sure you heard an aural annunciation of "DESCEND, DESCEND" when the intruder symbol becomes a resolution advisory (red square) on the ND.

NOTE: The resolution advisory can possibly go into an INCREASE DESCEND.

- (s) Set the transponder selector switch on the TCAS/ATC transponder panel to the RIGHT position.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 515
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (t) Push the SCEN key on the TCAS test set to show the scenario menu.
- (u) Set up this scenario:
 - 1) INTRUDER TYPE: ATCRBS ALT = ON
 - 2) RANGE: 4.2 nm RATE: +500 kt
 - 3) ALTITUDE: 35,200 ft RATE: 0 fpm
NOTE: Make sure the intruder's altitude is 200 feet above your airplane as shown on the ND. You can change the airplane's altitude or intruder setup on the TCAS test set to achieve this.
 - 4) Push the RUN/STOP key on the TCAS test set.
 - a) Make sure that the ND shows the intruder's bearing ± 20 degrees.
 - 5) Make sure you heard an aural annunciation of "DESCEND, DESCEND" when the intruder symbol becomes a resolution advisory (red square) on the ND.
NOTE: The resolution advisory can possibly go into an INCREASE DESCEND.
 - 6) Make a simulated radio altitude of 0 feet.
NOTE: Decrease the radio altitude by 600 fpm or less.
- (v) Make sure the TA ONLY message appears when the radio altitude is less than 900 feet.

SUBTASK 34-45-00-730-008

(7) High Altitude Climb Inhibit Test

- (a) Use the air data model test set, COM-1914, to apply an altitude of 49,000 feet for the Captain's static system.
NOTE: Let the VSI go back to zero after the altitude is reached.
- (b) Push the SCEN key on the TCAS-201 test set, COM-4112 to show the scenario menu.
- (c) Set up this scenario:
 - 1) INTRUDER TYPE: ATCRBS ALT = ON
 - 2) RANGE: 4.2 nm RATE: +500 kt
 - 3) ALTITUDE: 48,800 ft RATE: 0 fpm
- (d) Make sure that the relative altitude of the intruder is -02.
NOTE: If the relative altitude of the intruder is not -02, change the intruder setup altitude accordingly.
- (e) Push the RUN/STOP key to start the test.
 - 1) Make sure TCAS annunciates "Monitor Vertical Speed".
NOTE: A crossing descend resolution advisory may be given instead of the Monitor Vertical Speed resolution advisory. Decrease the intruder's altitude or increase the airplane's altitude appropriately to correct this.
- (f) Return the airplane back to field level altitude.
- (g) Set the radio altitude to 0 feet.
NOTE: Decrease the radio altitude by 600 feet per minute (fpm) or less. RAs are inhibited below 900 feet during descent so TA ONLY will show at low altitude.
 - 1) Make sure the ND shows the TA ONLY indication when the radio altitude is less than 900 feet.

SUBTASK 34-45-00-860-063

(8) Put the Airplane Back to Its Usual Condition

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 516
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Return the ATC/TCAS mode switch on the ATC/TCAS panel to STBY position.
- (b) Remove 629 databus analyzer, COM-1579 from the couplers, B34101 and B34102, on the flight controls left bus, in the P112 bus panel located in the Main Equipment Center.
- (c) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (d) Remove the radio altimeter test set, COM-1922 from the Radio Altimeter test cable, COM-1929.
- (e) Remove the Radio Altimeter test cable, COM-1929 from the radio altimeter receiver transmitter extender box, SPL-1928.
- (f) Remove the radio altimeter receiver transmitter extender box, SPL-1928.
- (g) Install the left radio altimeter transceiver. To install it, do this task: Radio Altimeter Transceiver Installation, TASK 34-33-01-400-801.
- (h) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

Remove the safety tags and close these circuit breakers:

Power Supply Assembly Center, M24301

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-C	PITOT ADM
C	9	CBC9-C	STATIC ADM

Power Supply Assembly Left, M24101

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-L	PITOT ADM
C	9	CBC9-L	STATIC ADM

Power Supply Assembly Right, M24201

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-R	PITOT ADM
C	9	CBC9-R	STATIC ADM

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 517
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Standby Power Management Panel, P310

Row	Col	Number	Name
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

SUBTASK 34-45-00-860-064

(9) Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

————— END OF TASK —————

TASK 34-45-00-730-807

7. Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the TIC TR-220 Test Set)

(Figure 502)

A. General

- (1) This task gives the instructions on how to do the Traffic Alert and Collision Avoidance System (TCAS) system test with the TR-220 test set.
- (2) The TR-220 lets the mechanic manually select a scenario already pre-programmed in the test set. The test set simulates an intruder aircraft converging on the position of the airplane under test. The mechanic can then observe the TCAS display to make sure that the correct TA (Traffic Advisory) and RA (Resolution Advisory) are presented on the display.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)
32-09-00-040-801	Air Mode Simulation - Preparation (P/B 201)
32-09-00-440-801	Air Mode Simulation - Restoration (P/B 201)
34-11-00-780-801	Static and Total Air Pressure System - Pressurization (P/B 201)

C. Tools/Equipment

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

Reference	Description
COM-906	Tester - Air Data/Pitot Static Part #: 6005KTQA1-103 Supplier: 35012 Part #: ADTS552F Supplier: U0427 Part #: MODEL 6300 Supplier: ORDZ5 Opt Part #: ADTS505 Supplier: U0427
COM-10728	Test Set - Ramp, TR-220 Part #: TR-220 Supplier: 92606

D. Location Zones

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

E. Prepare for the System Test

SUBTASK 34-45-00-860-084

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 518
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-00-730-013

- (2) Do the TCAS bearing accuracy test:
- (a) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801.
 - (b) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

NOTE: This will put the airplane in air mode.

- (c) Open the TR-220 ramp test set, COM-10728 cover.
- (d) Release the two push button holders and remove the test set cover.
- (e) Install the directional antenna for the TR-220 ramp test set, COM-10728 as follows:

NOTE: The directional antenna is the only antenna that can be used for the TCAS test.

- 1) If you will install the antenna on the test set case, slide the mounting tabs into the slots on the test set.

NOTE: The slots are located on the front of the test set case.

- 2) If you will hold the antenna by hand, attach the supplied handle to the bottom of the antenna and hand tighten only.

NOTE: You can also attach the antenna to a tripod. This will increase its stability in high wind conditions.

- (f) Prepare the TR-220 ramp test set, COM-10728 for the test as follows:

- 1) Set the UUT FUNCTION switch to the SETUP position.
- 2) Move the TEST SET switch to the ON position.
 - a) Make sure that the GREEN LED is on.
- 3) Toggle the AUTO/MANUAL switch to locate the ANT GAIN menu on the test set display.
- 4) Use the UP/FWD, DOWN/REV switch to enter the 1030 MHz and 1090 MHz gain values for the antenna.
- 5) Move the TEST SET switch to OFF position.

NOTE: The values will remain in the test set memory. You will only need to enter the values again if you will repair or replace the antenna.

- 6) Connect the antenna connectors to the ANTENNA SUM and DIFF ports on the test set front panel.

NOTE: If you will hand hold or install the antenna on a tripod, connect the extender cable that is supplied with the test set. Make sure that you match the color coded cables correctly. If the connections are reverse, the test set display will show a fault. This tells the mechanic to examine the connections.

- (g) Place the test set directional antenna 10 ft (3 m) to 170 ft (52 m) from the airplane under test as follows:
 - 1) Make sure that there is no obstruction between the antenna and the airplane under test.
 - 2) Point the directional antenna to the TCAS antenna on the airplane.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 519
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (h) Move the TEST SET switch to the ON position.
 - 1) Make sure that GREEN LED is on.
- (i) Toggle the AUTO/MANUAL switch to locate the T/S Distance menu on the test set display.
- (j) Use the UP/FWD, DOWN/REV switch to enter the approximate distance between the test set and the airplane TCAS antenna.
- (k) If it is necessary, turn the antenna to gain a strong RF signal as follows:

NOTE: A steady LED indicates a strong signal. Adjustment to the antenna orientation is not necessary.

 - 1) If you see a blinking LED on the antenna optical sight, turn the antenna to gain a strong RF signal.

NOTE: A TURN indicator may also appear on the display. By slowly turning the antenna, the TURN indicator will spin slower until a lock is obtained and the test set will show the appropriate display.

NOTE: When the test is inside a hangar, signal reflections can cause erroneous TURN indications. If this happens, remove the antenna cable connection from the DIFF port. This will not affect the test results.
- (l) Connect the air data/pitot static tester, COM-906 to the airplane (Static and Total Air Pressure System - Pressurization, TASK 34-11-00-780-801).

F. TCAS System Test (With the TIC TR-220)

SUBTASK 34-45-00-730-014

- (1) Move the UUT FUNCTION switch to the TCAS position.

NOTE: The test set will first measure transmit power and frequency. The measurements are approximate values and used for reference purposes only.

SUBTASK 34-45-00-211-001

- (2) Press the AUTO/TEST/MANUAL switch and look for the Mode S address in the test set display.

SUBTASK 34-45-00-730-015

- (3) Press the AUTO/TEST/MANUAL switch to access the TCAS scenario selection screen.

NOTE: Random scenario samples that will result in proper intruder convergence in an RA and/or TA on the display are listed in the table that follows.

Test Set TCAS Scenarios

Scenario # ^{*[1]}	Airplane Altitude (ft) (Pumped Up)	Intruder Starting Altitude (ft) ^{*[2]}	Intruder Speed (kts)	TCAS Distance (nmi)	Intruder Vertical Speed (fpm)
1	-1000	2000	180	10	-900
2	-500	1000 ft	300	15	-500
3	0	0	600	20	0
4	500	1000	300	25	-100
5	1000	3500	180	25	-300
6	5000	4000	300	25	200
7	7500	9500	600	40	-500

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 520
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Test Set TCAS Scenarios (Continued)

Scenario # ^{*[1]}	Airplane Altitude (ft) (Pumped Up)	Intruder Starting Altitude (ft) ^{*[2]}	Intruder Speed (kts)	TCAS Distance (nmi)	Intruder Vertical Speed (fpm)
8	10000	15000	180	50	-300
9	12500	7500	300	25	1000
10	15000	30000	600	30	-5000
11	17500	34000	180	15	-3300
12	20000	10000	300	50	1000
13	25000	41500	600	30	5500
14	33000	50000	180	30	-1700
15	42000	15000	300	25	5400
16	49000	31000	600	45	4000
17	3000	5000	300	25	-400
18	3500	2000	180	45	-100
19	4500	2500	300	50	200
20	7500	3000	600	45	1000
21	8500	10000	180	15	-300
22	9000	15000	300	30	1000

*[1] If these scenarios are not in the test set memory or a scenario with different parameters is necessary, refer to the test set operational manual to program the parameters into the test set memory.

*[2] Starting altitudes above or below the airplane altitude simulates an intruder converging from above or below the airplane under test.

SUBTASK 34-45-00-730-016

- (4) Use the UP/FWD, DOWN/REV switch to select the intruder scenario.

SUBTASK 34-45-00-730-017

- (5) Use the air data/pitot static tester, COM-906 to apply an altitude of 10,000 feet.

SUBTASK 34-45-00-730-018

- (6) If it is necessary, toggle the INCREASE-DECREASE VELOCITY switch to select the intruder speed.

SUBTASK 34-45-00-730-019

- (7) Do the test for each intruder type with the ATCRBS/AIR - MODE S/GND switch as follows:
- (a) For TCAS I type intruder, move the switch to the ATCRBS position.
 - (b) For TCAS II type intruder, move the switch to the Mode S position.

SUBTASK 34-45-00-860-085

- (8) Set the mode selector on the ATC/TCAS transponder panel to the TA/RA position.
- (a) Make sure you see the TCAS test pattern on the Primary Flight Displays (PFDs) and Navigation Displays (NDs) (Figure 501).

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 521
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-00-730-020

- (9) Press the AUTO/TEST/MANUAL switch to AUTO and do these steps:

NOTE: The test set is now simulating the intruder aircraft from the selected scenario. The STP that is on the test set display indicates that the intruder aircraft is stopped at the initial position.

- (a) If the airplane equipment is an ATCRBS transponder, make sure that the display show ACQ.
- (b) If the airplane equipment is a Mode S transponder, make sure that the display initially show ACQ then change to TRK.

SUBTASK 34-45-00-730-021

- (10) Toggle the TO/START - FROM/STOP switch to the TO position to start the intruder aircraft convergence on the airplane under test.

NOTE: The test set display will show the altitude, range, speed and climb rate of the intruder simulation.

SUBTASK 34-45-00-211-002

- (11) Make sure that the correct indications for traffic and resolution advisories show in the TCAS display.

NOTE: When the intruder simulation range reaches 0 nmi, the test set will reverse the heading. The intruder aircraft will then return to the start point. This will continue back and forth until the operator stops the simulation.

SUBTASK 34-45-00-730-022

- (12) Toggle the TO/START - FROM/STOP switch to the STOP position.

NOTE: During the simulation, you may stop and hold the intruder aircraft at any range.

SUBTASK 34-45-00-560-001

- (13) Move the TR-220 ramp test set, COM-10728 to a different location around the airplane under test.

NOTE: Place the directional antenna 10 ft (3 m) to 170 ft (52 m) from the airplane. If it is necessary, turn the antenna to gain a strong RF signal

SUBTASK 34-45-00-211-003

- (14) Make sure that the correct azimuth information is on the TCAS display.

SUBTASK 34-45-00-730-023

- (15) Toggle the TO/START - FROM/STOP switch to the START position to start the intruder simulation at the different location.

SUBTASK 34-45-00-940-001

- (16) If it is necessary, you can adjust the scenario parameters without changing the stored parameters as follows:

- (a) Make sure that the TCAS scenario is on the test set display.
- (b) Press the TO/START-FROM/STOP switch up twice.
- (c) Make sure that the scenario window show STP.
- (d) Move the CHN/ALT - DIST-VERT SPEED switch the relative position of the parameter you want to change.
- (e) Move the UP-DOWN switch to change the intruder altitude or distance or vertical speed.
- (f) Move the INCREASE - DECREASE VELOCITY as necessary to change the intruder speed.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 522
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(g) Press the TO/START - FROM/STOP switch up and verify that the simulation is on again.

SUBTASK 34-45-00-730-024

(17) Move the TEST SET switch to OFF after you finish the test.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-45-00-860-086

(1) Return the ATC/TCAS mode switch on the ATC/TCAS panel to STBY position.

SUBTASK 34-45-00-080-002

(2) Remove the directional antenna from the TR-220 ramp test set, COM-10728.

SUBTASK 34-45-00-410-003

(3) Install and close the TR-220 ramp test set, COM-10728 cover.

SUBTASK 34-45-00-080-003

(4) Disconnect the air data/pitot static tester, COM-906 from the airplane (Static and Total Air Pressure System - Pressurization, TASK 34-11-00-780-801).

SUBTASK 34-45-00-860-087

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

SUBTASK 34-45-00-860-088

(6) Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

SUBTASK 34-45-00-860-089

(7) Remove the electrical power if it is not necessary (Remove Electrical Power, TASK 24-22-00-860-806).

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

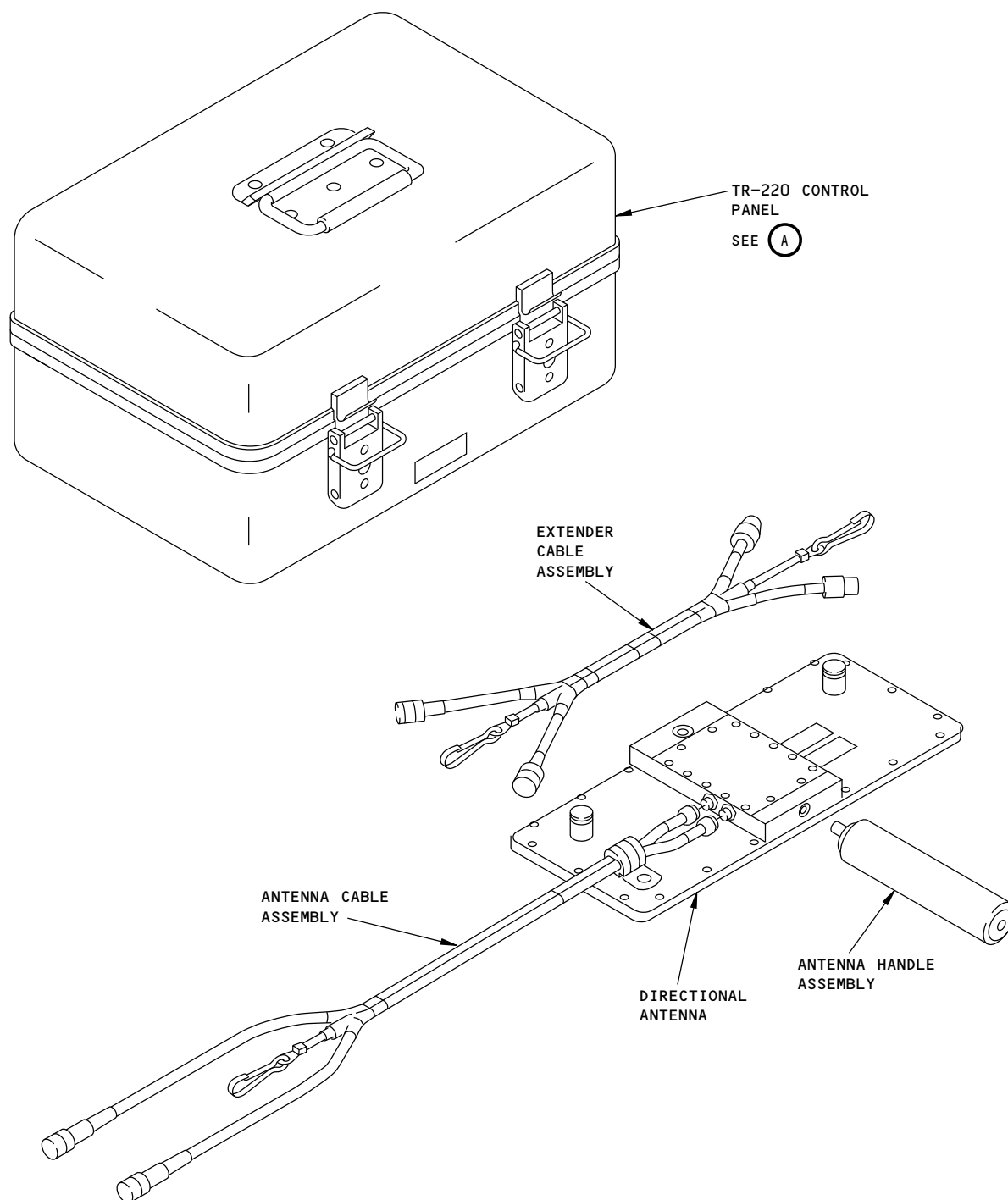
34-45-00

D633W101-ARO

Page 523
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL



2404990 S0000556253_V1

TR-220 Multifunction Test Set
Figure 502/34-45-00-990-806 (Sheet 1 of 2)

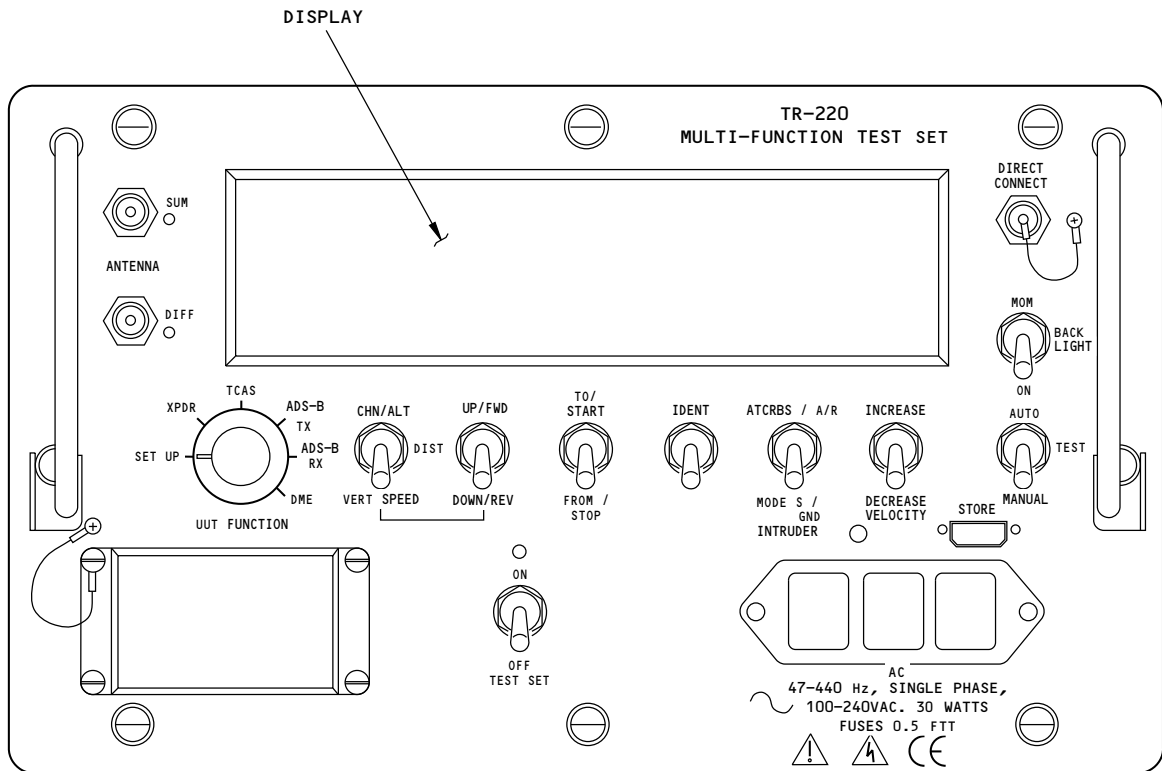
EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 524
Sep 05/2015

777-200/300
AIRCRAFT MAINTENANCE MANUAL



TR-220 CONTROL PANEL

A

2404792 S0000556264_V1

TR-220 Multifunction Test Set
Figure 502/34-45-00-990-806 (Sheet 2 of 2)

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 525
Sep 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-45-00-730-803

8. Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the TIC T-49 Test Set)

A. General

- (1) The TCAS system test completely tests the TCAS system functions.
- (2) A special ground test tool is necessary for this task.
- (3) The TCAS system simulation test can be done with either the IFR TCAS-201 or the TIC T-49, or a substitute piece of test equipment. Use the available or preferred test equipment to perform the System Simulation Test.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
32-00-30-480-801	Landing Gear Downlock Pins Installation (P/B 201)
32-09-00-040-801	Air Mode Simulation - Preparation (P/B 201)
32-09-00-440-801	Air Mode Simulation - Restoration (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-1922	Test Set - Radio Altimeter Part #: 110-0430-100-02 Supplier: L04V3 Part #: 9599-607-15902 Supplier: F0052 Opt Part #: 110-0430-100 Supplier: L04V3
COM-13601	Test Set - Ramp, T-49C Opt Part #: T-49C Supplier: 92606

D. Location Zones

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

E. Prepare for the System Test

SUBTASK 34-45-00-860-065

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-45-00-730-007

- (2) Do the following to test the TCAS with the T-49 test set.



WARNING

PREPARE THE SAFETY-SENSITIVE SYSTEMS FOR THE AIR MODE BEFORE YOU OPEN THE AIR/GROUND CIRCUIT BREAKERS. IN THE AIR MODE, MANY OF THE AIRPLANE SYSTEMS CAN OPERATE AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 526
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

NOTE: This will put the airplane in air mode.

- (c) Connect the radio altimeter test set, COM-1922, to the front connector of the left and right radio altimeter transceivers.

NOTE: The TCAS will latch in the fail state if the radio altitude is more than 50 feet and the airplane is in the ground mode.

- (d) Put the T-49C ramp test set, COM-13601 directional antenna about 50 feet in front of the airplane on the centerline.

NOTE: A 50 foot separation between the TCAS antenna and the directional antenna is recommended. A separation between 10 and 100 feet will provide satisfactory results. Make sure there is line of sight between the airplane's ATC and TCAS antennas and the test set antenna. Make sure the airplane under test is closer to the test set than other active transponders.

- (e) Connect the cable of the test set directional antenna to the T-49 connector.
- (f) Set the mode selector on the TCAS/ATC transponder panel to the TA/RA position.
- (g) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the Center Flight Control Power Supply Assembly on the E2 electronics equipment rack, shelf No. 6, in the main equipment center.
- (h) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the Left Flight Control Power Supply Assembly on the E1 electronics equipment rack, shelf No. 6, in the main equipment center.
- (i) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the Right Flight Control Power Supply Assembly on the E5 equipment rack, shelf No. 1, in the forward cargo area.
- (j) Open these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

- (k) Set the standby instrument altimeter baro correction to 29.92 in hg.
- (l) Connect the 629 data bus analyzer to the coupler, B34105, on the flight controls left bus, located on the P12 panel in the Main Equipment Center.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 527
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (m) Simulate an aircraft altitude by setting the transmitter to transmit these ARINC 629 wordstrings on the left flight control bus with this data:

Table 503/34-45-00-993-804

LABEL	FE0
CID	1
TI	5
TG	16
SG	32
WORD 1	(HEX) 0 0 0 0
WORD 2	(HEX) 0 E E 8
WORD 3	(HEX) 0 0 0 0
WORD 4	(HEX) F 1 1 7
WORD 5	(HEX) 0 0 0 0
WORD 6	(HEX) 0 0 0 0
WORD 7	(HEX) 0 0 0 0

Table 504/34-45-00-993-805

LABEL	FE0
CID	0
TI	5
TG	17
SG	32
WORD 1	(HEX) 0 0 0 0
WORD 2	(HEX) 0 E E 8
WORD 3	(HEX) 0 0 0 0
WORD 4	(HEX) F 1 1 7
WORD 5	(HEX) 0 0 0 0
WORD 6	(HEX) 0 0 0 0
WORD 7	(HEX) 0 0 0 0

- 1) Make sure the altimeters show an altitude between 34,950 through 35,050 feet.

NOTE: The T-49 test set will interrogate the aircraft transponder and use this altitude to create simulated TCAS targets. The TCAS is capable of communicating with other aircraft's TCAS computers. The other aircraft could see your aircraft at this altitude.

- (n) Use the radio altimeter test set to apply a 2400 feet radio altitude as shown on the PFD's.

NOTE: Increase the radio altitude by 600 feet per minute (fpm) or less.

- (o) Set the mode switch on the two EFIS control panels to map mode.
(p) Set the transponder select switch to the R or RIGHT transponder on the ATC/TCAS control panel.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 528
Sep 05/2015



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (q) Set the mode to TA/RA on the ATC/TCAS control panel.
- (r) Set the function switch on the test set to ATCRBS
- (s) Set the scenario switch on the test switch to a scenario.
- (t) Shield the bottom TCAS antenna, so that the top TCAS antenna may be tested alone.
- (u) Use the test set to interrogate each quadrant of the TCAS antenna at bearings of 0, 90, 180, and 270 degrees
- (v) Set the function switch on the test switch to both ATCRBS and MODE S to simulate both types of intruder transponders.
- (w) Set the scenario switch on the test switch to observe the other scenarios that are on the test set.
 - 1) Make sure the aircraft display shows the simulated intruder bearing and altitude from the test set within plus or minus 15 degrees.
- (x) Move the test set close (within 10 feet), or shield the top TCAS antenna, so that the bottom TCAS antenna may be tested alone.
- (y) Set the power setting to low on the T-49 HI/LO power setting switch.

NOTE: A high power setting can increase the possibility of reflected multipath bearings.
- (z) Make sure the flaps setting is at 5 degrees or less.

NOTE: An aural warning from the aural speakers will sound if the flaps setting is greater than 5 degree.



WARNING

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

- (aa) Make sure the downlock pins are installed on the nose and main landing gear (TASK 32-00-30-480-801) .
- (ab) Do the steps again to check that the TCAS target bearing and altitude show on the aircraft display.

SUBTASK 34-45-00-860-066

- (3) Put the Airplane Back to Its Usual Condition
 - (a) Return the ATC/TCAS mode switch on the ATC/TCAS panel to STBY position.
 - (b) Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 529
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

SUBTASK 34-45-00-860-067

(4) Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

————— **END OF TASK** —————

TASK 34-45-00-730-804

9. Traffic Alert and Collision Avoidance System (TCAS) - System Test (With the IFR-6000 Test Set)

A. General

- (1) The TCAS system test makes sure that the TCAS system operates with a simulated target.
- (2) Special ground test tools are necessary for this task.
- (3) The TCAS system simulation test can be done with the IFR-6000 test set.

B. References

<u>Reference</u>	<u>Title</u>
32-09-00-040-801	Air Mode Simulation - Preparation (P/B 201)
32-09-00-440-801	Air Mode Simulation - Restoration (P/B 201)
34-11-00-780-801	Static and Total Air Pressure System - Pressurization (P/B 201)
34-33-01-000-801	Radio Altimeter Transceiver Removal (P/B 401)
34-33-01-400-801	Radio Altimeter Transceiver 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.

<u>Reference</u>	<u>Description</u>
COM-1579	Analyzer - Databus, Datatrak Models 600, 650, 650H Part #: DT-600 Supplier: 0Z3C6 Opt Part #: 01-1405-00 Supplier: 41364 Opt Part #: 01-1406-00 Supplier: 41364 Opt Part #: 01-1407-00 Supplier: 41364 Opt Part #: 100-600-001 Supplier: 41364 Opt Part #: 100-650-001 Supplier: 41364 Opt Part #: 100-655-001 Supplier: 41364

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 530
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description
COM-1914	Test Set - Air Data Model FLMTS (Flight Line Maintenance) Part #: 18910920000 Supplier: 89944 Part #: ADTS405F Supplier: U0427 Part #: ADTS530 Supplier: U0427 Part #: ADTS552F Supplier: U0427 Part #: D60340MK Supplier: K1474 Part #: DPS1000 Supplier: 21844 Part #: DPS350 Supplier: 21844 Part #: DPS450 Supplier: 21844 Part #: MODEL 6300 Supplier: 0RDZ5 Part #: MPS34C Supplier: 48RQ2 Part #: MPS43B Supplier: A0197 Part #: MPS45 Supplier: 48RQ2 Part #: MPS49 Supplier: 48RQ2 Opt Part #: 01-0987-00 Supplier: 41364 Opt Part #: 18910480000 Supplier: 89944 Opt Part #: ADTS505 Supplier: U0427 Opt Part #: D60302 Supplier: K1474 Opt Part #: D60340 Supplier: K1474 Opt Part #: D60383 Supplier: K1474 Opt Part #: DPS500 Supplier: 21844 Opt Part #: MPS31C Supplier: 48RQ2 Opt Part #: MPS43 Supplier: A0197
COM-1922	Test Set - Radio Altimeter Part #: 110-0430-100-02 Supplier: L04V3 Part #: 9599-607-15902 Supplier: F0052 Opt Part #: 110-0430-100 Supplier: L04V3
COM-1929	Test Cable - Radio Altimeter Part #: AY969-00666-002 Supplier: L04V3 Part #: AY969-00668-001 Supplier: L04V3 Opt Part #: 110-0440-101 Supplier: L04V3
COM-10727	Test Set - Ramp, IFR-6000 Part #: IFR 6000 Supplier: 51190
SPL-1928	Box - Extender, Radio Altimeter Receiver Transmitter Part #: C34005-16 Supplier: 81205 Opt Part #: C34005-1 Supplier: 81205

D. Location Zones

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

E. Prepare for the System Test

SUBTASK 34-45-00-710-005

- (1) Do this task: Traffic Alert and Collision Avoidance System - Operational Test, TASK 34-45-00-710-801.

- (a) Make sure the Operational Test passes.

SUBTASK 34-45-00-860-069

- (2) Set the captain's and first officer's altimeter to 29.92 inches of mercury.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 531
Jul 25/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-00-860-070

- (3) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801

SUBTASK 34-45-00-700-001

- (4) Do the Self-Test inhibit test:

- (a) Make sure that the flaps setting is at 5 units or less.

NOTE: An aural warning from the aural speakers will sound if the flaps setting is greater than 5 units.

- (b) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

NOTE: This will put the airplane in air mode.

- (c) Push the TEST switch on the TCAS computer.

- 1) Make sure that the TCAS self-test does not occur in flight deck.

SUBTASK 34-45-00-860-071

- (5) Do the following steps to setup the IFR-6000 ramp test set, COM-10727:

NOTE: Refer to the IFR-6000 Operation Manual for more detailed information on the setup.



CAUTION

DO NOT OPERATE THE TEST SET WHEN ITS ANTENNA IS LESS THAN 15 IN. (381 MM) FROM THE AIRPLANE ANTENNA. DAMAGE TO THE TEST SET CAN OCCUR.

- (a) Mount the Directional Antenna on the IFR-6000 ramp test set, COM-10727 friction hinge and connect the Directional Antenna ANT Connector to the Test Set ANT Connector via the 12 in. coaxial cable.
- (b) Set the tester at a location forward of the airplane (50 feet or less) and 45 degrees from the center line of the airplane.
- (c) Face the test set antenna in the direction of the top TCAS antenna.
- (d) Make sure that there is no obstruction between the TCAS antenna and test set antenna.

NOTE: If ground equipment, walkways or other objects that could cause a signal obstruction or a multipath problem, choose a more suitable location for the test set and change the setup in the test set accordingly.

- (e) Push the POWER Key to energize the Test Set On.

NOTE: The IFR-6000 is equipped with a self-test for quick performance evaluation. An abbreviated self-test is run at Power-Up. The full self-test is initiated manually. Refer to the IFR-6000 Operation Manual for the full self-test procedure.

- (f) Push the SETUP Control Key to show the setup screens. Continue pushing the SETUP Control Key to cycle to the SETUP-TCAS Screen. Use the NEXT PARAM and PREV PARAM Soft Keys to select each parameter. Use the DATA keys to set the value of each parameter.
- 1) Select RF PORT: Set to ANTENNA.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 532
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) Select ANT RANGE: Set to setup range from IFR-6000 antenna to the top TCAS Antenna.
- 3) Select ANT HEIGHT: Set to setup height from IFR-6000 antenna to the top TCAS Antenna.
- 4) Select UUT ADDRESS: Set to AUTO.
NOTE: When the UUT ADDRESS is set to AUTO, the Mode S address is obtained from the airplane's ATC Transponder. When set to MANUAL, you must enter the airplane's Mode S address in the MANUAL AA field.
- 5) Select ANT CABLE LOSS: Set to the cable loss found on the cable.
- 6) Select ANT GAIN (dBi), 1.03 GHz and 1.09 GHz: Set antenna gain to the figures marked on the supplied Directional Antenna.
- 7) Select SQUITTERS: Set to ON.
- 8) Select ALT REPORTING: Set to ON.
- 9) Select DISPLAYED ALT: Set to ABSOLUTE.
- 10) Select TEST SET AA: Set to A92493.

NOTE: TEST SET AA is a simulated Mode S address and must be different than the UUT ADDRESS.

F. Test the TCAS system

SUBTASK 34-45-00-730-009

- (1) Do the TCAS Bearing Accuracy Test as follows:
 - (a) Set the transponder select switch on the TCAS/ATC control panel to the LEFT position.
 - (b) Set the mode select switch on the control panel to the TA ONLY position.
 - (c) On the IFR-6000 ramp test set, COM-10727, push the TCAS Mode Key to show the TCAS screen. Use the NEXT PARAM and PREV PARAM Soft Keys to select each parameter. Use the DATA keys to set the value of each parameter.
 - (d) Setup the scenario as follows:
 - 1) Select SCENARIO: Set to 0 CUSTOM.
 - 2) Select TCAS TYPE: Set to TCAS II.
 - 3) Select % REPLY: Set to 100.
 - 4) Select INTRUDER TYPE: Set to ATCRBS.
 - 5) Select RANGE START: Set to 8 nm.
 - 6) Select RANGE RATE: Set to 0 kts.
 - 7) Select ALT START: Set to -100 ft.
 - 8) Select ALT STOP: Set to -100 ft.
 - 9) Select UUT ALT: Enter altitude shown on Captain's altimeter.
 - 10) Select ALT DETECT: Set to OFF.
 - (e) Shield the bottom TCAS antenna with an antenna shield.
 - (f) Make sure that you face the test set antenna towards the top TCAS antenna.
 - (g) Push the RUN Soft Key to start the test.
 - 1) Make sure that the NDs shows the intruder's bearing ± 15 degrees.
 - (h) Push the STOP Soft Key to stop the test.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 533
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (i) Use the IFR-6000 ramp test set, COM-10727 to interrogate the four quadrants of the TCAS antenna at the approximate bearings of 0, 90, 180, 270 degrees.

NOTE: The bearing accuracy test at some aircraft bearings may not be possible. Aircraft landing gear, fuselage, wing or engine nacelles may block the signal between the TCAS antenna and the test set.

NOTE: If you moved the test set, you must change the test set setup accordingly.

- (j) Remove the antenna shield from the bottom TCAS antenna.
- (k) Shield the top TCAS antenna or move the IFR-6000 ramp test set, COM-10727 close to the bottom TCAS antenna (out of the line of sight from the top TCAS antenna).
- (l) Change the IFR-6000 ramp test set, COM-10727 setup parameters to test the bottom antenna.
- 1) Enter the vertical and horizontal distances to the bottom TCAS antenna.
- (m) Open these circuit breakers and install safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

- (n) Do the steps in the Bearing Accuracy Test again for the bottom antenna.

SUBTASK 34-45-00-860-072

- (2) Prepare to do the TCAS Intruder Scenario Test:

- (a) Set the mode select switch on the control panel to the STBY position
- (b) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the center Flight Control Power Supply Assembly on the E2 electronics equipment rack, shelf No. 6, in the main equipment center.
- (c) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the left Flight Control Power Supply Assembly on the E1 electronics equipment rack, shelf No. 6, in the main equipment center.
- (d) Open these circuit breakers, C9 STATIC ADM and C7 PITOT ADM, on the right Flight Control Power Supply Assembly on the E5 electronics equipment rack, shelf No. 1, in the forward cargo area.
- (e) Make sure that these circuit breakers are open and have safety tags:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 534
Sep 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR
D	2	C32624	PSEU 2 ALTN PWR

- (f) Remove the left radio altimeter transceiver. To remove it, do this task: Radio Altimeter Transceiver Removal, TASK 34-33-01-000-801.
- (g) Install the radio altimeter receiver transmitter extender box, SPL-1928.
- (h) Connect the Radio Altimeter test cable, COM-1929 to the radio altimeter receiver transmitter extender box, SPL-1928.
- (i) Connect the radio altimeter test set, COM-1922 to the Radio Altimeter test cable, COM-1929.

NOTE: The TCAS will latch in the fail state if the radio altitude is more than 50 feet and the airplane is in the ground mode.

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (k) Open and close this circuit breaker:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

- (l) Use the databus analyzer, COM-1579 or air data model test set, COM-1914 to simulate aircraft altitude.
- (m) Do these steps for the databus analyzer method to simulate aircraft altitude.

NOTE: This step requires transmitting 629 data on two separate channels. Depending on the tooling used, may require more than one bus analyzer.

- 1) Connect a 629 databus analyzer, COM-1579 to the couplers, B34101 and B34102, on the flight controls left bus, in the P112 bus panel located in the Main Equipment Center.
- 2) Simulate an aircraft altitude by setting the transmitter to transmit these ARINC 629 wordstrings on the left flight control bus with this data:

Table 505/34-45-00-993-812

LABEL	FE0
CID	1
TI	5
TG	16
SG	32

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 535
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

Table 505/34-45-00-993-812 (Continued)

WORD 1	(HEXM) 0 0 0 0
WORD 2	(HEXM) 0 E E 8
WORD 3	(HEXM) 0 0 0 0
WORD 4	(HEXM) F 1 1 7
WORD 5	(HEXM) 0 0 0 0
WORD 6	(HEXM) 0 0 0 0
WORD 7	(HEXM) 0 0 0 0

Table 506/34-45-00-993-811

LABEL	FE0
CID	0
TI	5
TG	17
SG	32
WORD 1	(HEXM) 0 0 0 0
WORD 2	(HEXM) 0 E E 8
WORD 3	(HEXM) 0 0 0 0
WORD 4	(HEXM) F 1 1 7
WORD 5	(HEXM) 0 0 0 0
WORD 6	(HEXM) 0 0 0 0
WORD 7	(HEXM) 0 0 0 0

- 3) Make sure the altimeters show an altitude between 34,950 through 35,050 feet.

NOTE: The TCAS is capable of communicating with other aircraft's TCAS computers. The other aircraft could see your aircraft at this altitude.

- (n) Do this step for the air data test set method to simulate aircraft altitude.

- 1) Use the air data model test set, COM-1914, to apply an altitude of 35,000 feet (Static and Total Air Pressure System - Pressurization, TASK 34-11-00-780-801).

NOTE: Let the VSI go back to zero after the altitude is reached.

- 2) Make sure the altimeters show an altitude between 34,950 through 35,050 feet.

- (o) Set the mode select switch on the control panel to the TA/RA position.

- (p) Use the radio altimeter test set to apply a 2400 feet radio altitude as shown on the PFD's.

NOTE: Increase the radio altitude by 600 feet per minute (fpm) or less.

- 1) Make sure that the TA ONLY message goes away on the NDs when the radio altitude is greater than 1,100 feet.

- (q) Set the mode switch on the two EFIS control panels to map mode.

- (r) Set the range switch on the two EFIS control panels to 10.

- (s) Set the IFR-6000 ramp test set, COM-10727 at a location forward of the airplane (50 feet or less) and 45 degrees from the center line of the airplane.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 536
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (t) Push the TCAS Mode Select Key to show the TCAS Test Screen. Use the NEXT PARAM and PREV PARAM Soft Keys to select each parameter. Use the DATA keys to set the value of each parameter.
- (u) Setup the scenario as follows:
 - 1) Select SCENARIO: Set to 0 CUSTOM.
 - 2) Select TCAS TYPE: Set to TCAS II.
 - 3) Select % REPLY: Set to 100.
 - 4) Select INTRUDER TYPE: Set to ATCRBS.
 - 5) Select RANGE START: Set to 8 nm.
 - 6) Select RANGE STOP: Set to 0.35nm.
 - 7) Select RANGE RATE: Set to 500 kts.
 - 8) Select ALT START: Set to +200 ft
 - 9) Select ALT STOP: Set to +200 ft
 - NOTE: Make sure that the intruder's altitude is 200 feet above your airplanes barometric altitude. In all IFR-6000 TCAS scenarios, altitude START and STOP parameters are Relative to UUT altitude.
 - 10) Select ALT RATE: Set to 0 fpm.
 - 11) Select CONVERGE: Set to OFF.
 - 12) Select ALT DETECT: Set to ON.
 - NOTE: When the ALT DETECT field is set to ON, the UUT ALT is automatically obtained from the airplane's ATC transponder.

SUBTASK 34-45-00-730-010

- (3) Do the TCAS Intruder Scenario Test:
 - (a) Push the RUN TEST soft key on the IFR-6000 ramp test set, COM-10727 to start the test.
 - (b) Make sure that the NDs show the intruder's bearing ± 20 degrees.
 - (c) Make sure you heard an aural annunciation of "DESCEND, DESCEND" or "DESCEND, DESCEND, DESCEND" when the intruder symbol becomes a resolution advisory (red square) on the NDs.
 - NOTE: The resolution advisory can possibly go into an INCREASE DESCEND.
 - (d) Push the STOP TEST soft key to stop the test.
 - (e) Set the transponder selector switch on the TCAS/ATC control panel to the RIGHT position.
 - (f) Push the RUN TEST soft key on the IFR-6000 ramp test set, COM-10727 to start the test.
 - (g) Make sure that the NDs show the intruder's bearing ± 20 degrees.
 - (h) Make sure you heard an aural annunciation of "DESCEND, DESCEND" or "DESCEND, DESCEND, DESCEND" when the intruder symbol becomes a resolution advisory (red square) on the NDs.
 - NOTE: The resolution advisory can possibly go into an INCREASE DESCEND.
 - (i) Push the STOP TEST soft key to stop the test.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 537
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-00-860-073

(4) Prepare to do the High Altitude Climb Inhibit Test:

- (a) Use the air data model test set, COM-1914, to apply an altitude of 49,000 feet (Static and Total Air Pressure System - Pressurization, TASK 34-11-00-780-801).

NOTE: Let the VSI go back to zero after the altitude is reached.

- (b) Push the TCAS Mode Select Key on the IFR-6000 ramp test set, COM-10727 to show the TCAS Test Screen.

- (c) Change the scenario setup as follows:

- 1) Select INTRUDER TYPE: Set to ATCRBS.
- 2) Select ALT START: Set to -200 ft
- 3) Select ALT STOP: Set to -200 ft

NOTE: In all IFR-6000 TCAS scenarios, altitude START and STOP parameters are Relative to UUT altitude.

SUBTASK 34-45-00-730-011

(5) Do the High Altitude Climb Inhibit Test:

- (a) Push the RUN TEST soft key on the IFR-6000 ramp test set, COM-10727 to start the test.

- (b) Make sure that the relative altitude of the intruder is -02.

NOTE: If the relative altitude of the intruder is not -02, change the intruder setup altitude accordingly.

- (c) Make sure TCAS annunciates "Monitor Vertical Speed".

NOTE: A crossing descend resolution advisory may be given instead of the Monitor Vertical Speed resolution advisory. Decrease the intruder's altitude or increase the airplane's altitude appropriately to correct this.

- (d) Push the STOP TEST soft key to stop the test.

- (e) Set the radio altitude to 0 feet.

NOTE: Decrease the radio altitude by 600 feet per minute (fpm) or less. RAs are inhibited below 900 feet during descent, so TA ONLY will show at low altitude.

- 1) Make sure that the NDs shows the TA ONLY indication when the radio altitude is less than 900 feet.

- (f) Set the mode select switch on the TCAS/ATC control panel to the STBY position.

- (g) Return the airplane back to field level altitude.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-45-00-080-001

- (1) Remove the IFR-6000 ramp test set, COM-10727.
- (2) Remove the TCAS antenna shield, if installed.
- (3) Remove the air data model test set, COM-1914.
- (4) Remove 629 databus analyzer, COM-1579 from the couplers, B34101 and B34102, on the flight controls left bus, in the P112 bus panel located in the Main Equipment Center.

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 538
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (5) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C34431	RAD ALT L

- (6) Remove the radio altimeter test set, COM-1922 from the Radio Altimeter test cable, COM-1929.
- (7) Remove the Radio Altimeter test cable, COM-1929 from the radio altimeter receiver transmitter extender box, SPL-1928.
- (8) Remove the radio altimeter receiver transmitter extender box, SPL-1928.
- (9) Install the left radio altimeter transceiver. To install it, do this task: Radio Altimeter Transceiver Installation, TASK 34-33-01-400-801.
- (10) Remove the safety tags and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	26	C32626	AIR/GROUND 3
G	13	C32628	AIR/GROUND 1
G	26	C32627	AIR/GROUND 2

Remove the safety tags and close these circuit breakers:

Power Supply Assembly Center, M24301

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-C	PITOT ADM
C	9	CBC9-C	STATIC ADM

Power Supply Assembly Left, M24101

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-L	PITOT ADM
C	9	CBC9-L	STATIC ADM

Power Supply Assembly Right, M24201

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	CBC7-R	PITOT ADM
C	9	CBC9-R	STATIC ADM

Remove the safety tags and close these circuit breakers:

Left Power Management Panel, P110

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
H	26	C32600	PSEU 1 PRI PWR

Right Power Management Panel, P210

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
L	13	C32601	PSEU 2 PRI PWR

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C32603	PSEU 1 ALTN PWR

EFFECTIVITY
ARO ALL

34-45-00

D633W101-ARO

Page 539
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Standby Power Management Panel, P310

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C32624	PSEU 2 ALTN PWR

SUBTASK 34-45-00-860-074

(11) Do this task: Air Mode Simulation - Restoration, TASK 32-09-00-440-801.

———— END OF TASK ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-00

Page 540
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TCAS COMPUTER - MAINTENANCE PRACTICES

TASK 34-45-01-400-802

1. TCAS Computer Software Installation

A. General

- (1) This procedure tells you how to install software in the Traffic Alert and Collision Avoidance System (TCAS) Computer.
 - (a) The following names of software parts loaded into a TCAS computer are used in the IPC to identify the specific software part numbers required for a particular aircraft tail number.
 - TCAS Operational Program Software (OPS)
 - TCAS Operational Program Configuration (OPC)Using the name, the specific part number for an aircraft can be identified in the IPC.
- (2) A Maintenance Access Terminal (MAT) is necessary for this procedure. For instructions on how to use a MAT, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- (3) If you do not know if the TCAS computer needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: TCAS Computer Installation, TASK 34-45-01-400-801.
- (4) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.

NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.

- (5) You can install the software from disks, the MAT hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

NOTE: When new software is installed in the TCAS computer, the load process first erases the old software and then installs the new software. If you install software directly to the TCAS computer from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the TCAS computer.

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

ARO 014-999

- (6) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.
 - (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

ARO ALL

- (7) The airplane must be on the ground with the engines off before you can install software.

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 201
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (8) To read about the conditions and times necessary for software installation, do this task:
On-Airplane Software Installation, TASK 20-15-11-400-801.

B. References

Reference	Title
20-15-11-400-801	On-Airplane Software Installation (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-45-01-400-801	TCAS Computer Installation (P/B 401)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
45-10-00-860-812	How to Add Software to the Hard Drive (P/B 201)
45-10-00-860-813	How to Remove Software from the Hard Drive (P/B 201)
46-13-00-070-801	Mass Storage Device Software Removal (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)

C. Tools/Equipment

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

Reference	Description
SPL-5704	Device - Maintenance Part #: G45004-1 Supplier: 81205 Part #: G45004-3 Supplier: 81205 Opt Part #: G45002-20 Supplier: 81205 Opt Part #: G45002-25 Supplier: 81205 Opt Part #: G45002-29 Supplier: 81205 Opt Part #: J45001-1 Supplier: 81205 Opt Part #: J45003-1 Supplier: 81205

D. Location Zones

Zone	Area
212	Flight Compartment, Right

E. Procedure

SUBTASK 34-45-01-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-45-01-420-001

- (2) Use a MAT to install software in the TCAS computer:

NOTE: Make sure you know the correct software part number for the TCAS computer before you select the software part number on the display. For the TCAS computer to be an approved installation, the correct software must be installed.

- (a) Make these selections on the MAT to make sure the left CMCF is in control:
- 1) ONBOARD MAINTENANCE
 - 2) OTHER FUNCTIONS
 - 3) CENTRAL MAINTENANCE COMPUTER SWITCH CONTROL
 - 4) If the MAT shows LEFT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select GO BACK.
 - 5) If the MAT shows RIGHT CENTRAL MAINTENANCE COMPUTER IS IN CONTROL, select SWITCH TO LEFT.

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 202
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- (b) Put the correct disk in the disk drive.
- (c) Make these selections on the MAT:
 - 1) EXTENDED MAINTENANCE
 - 2) DATA LOAD
- (d) Make these selections to select the component that will receive the software:
 - 1) SELECT DESTINATION
 - 2) 34 Traffic Alert and Collision Avoidance System
 - 3) TCAS Computer
 - 4) CONTINUE
- (e) Make these selections to select the source of the software:
 - 1) SELECT SOURCE
 - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).
 - 3) Select the correct software part number from the display.
 - 4) CONTINUE
- (f) Select START to start the software installation.
- (g) When the software installation is completed, make sure the correct software part number shows on the display.
- (h) Select CONTINUE to remove the configuration display.
- (i) Remove the software disk from the disk drive.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-01

Page 203
May 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL
TCAS COMPUTER - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the TCAS computer
 - (2) An installation of the TCAS computer.
- B. The TCAS computer is on the E1 electronics equipment rack, shelf No. 2, in the main equipment center.

TASK 34-45-01-000-801

2. TCAS Computer Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

<u>Reference</u>	<u>Title</u>
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-000-801	E/E Box Removal (P/B 401)

B. Location Zones

<u>Zone</u>	<u>Area</u>
117	Main Equipment Center, Left
118	Main Equipment Center, Right

C. Access Panels

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

D. Removal Procedure

SUBTASK 34-45-01-860-001

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

SUBTASK 34-45-01-010-001

- (2) To get to the main equipment center, open this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

SUBTASK 34-45-01-910-001



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE TCAS COMPUTER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE TCAS COMPUTER.

- (3) To remove the TCAS computer [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

————— **END OF TASK** —————

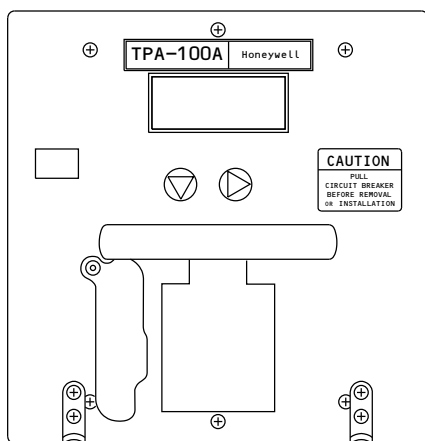
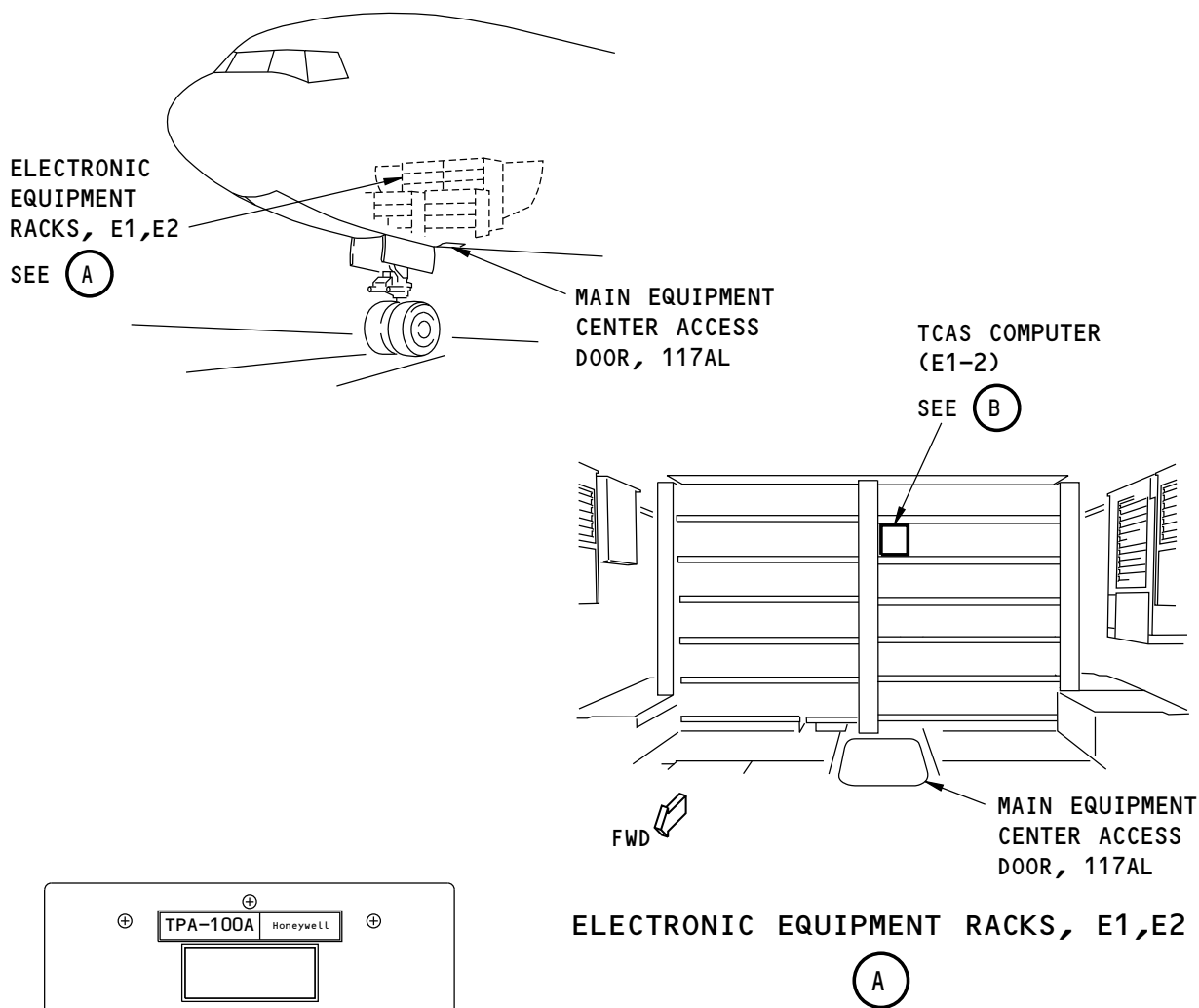
EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 401
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



[1] TCAS COMPUTER

(B)

J91038 S0000185776_V1

TCAS Computer Installation Figure 401/34-45-01-990-802

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 402
Sep 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-45-01-400-801

3. TCAS Computer Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) The installation test makes sure the TCAS computer [1] has correct software and is correctly installed.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
06-41-00-800-801	Finding an Access Door or Panel on the Fuselage (P/B 201)
20-10-01-400-801	E/E Box Installation (P/B 401)
24-22-00-860-805	Supply Electrical Power (P/B 201)
34-45-01-400-802	TCAS Computer Software Installation (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Computer	34-45-01-01-005	ARO ALL
		34-45-01-01-006	ARO 001-010

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Access Panels

Number	Name/Location
117AL	Main Equipment Center Access Door

F. Installation Procedure

SUBTASK 34-45-01-860-002

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 403
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-01-910-002



DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE TCAS COMPUTER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE TCAS COMPUTER.

- (2) To install the TCAS computer [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-45-01-410-001

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117AL	Main Equipment Center Access Door

(TASK 06-41-00-800-801).

SUBTASK 34-45-01-860-003

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

G. Installation Test

SUBTASK 34-45-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-45-01-750-001

- (2) Use a maintenance access terminal (MAT) to do a software configuration check of the TCAS computer [1]:

NOTE: Make sure you know the correct software part number for the TCAS computer [1] when you look at the software part number on the display. For the TCAS computer [1] to be an approved installation, the correct software part number must be installed.

- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) SYSTEM CONFIGURATION
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) CONTINUE
- (b) Find TCAS COMPUTER on the display and make sure that the software part number is correct.
- (c) Select GO BACK to remove the configuration display.

SUBTASK 34-45-01-750-002

- (3) If the part number is incorrect, do this task: TCAS Computer Software Installation, TASK 34-45-01-400-802.

SUBTASK 34-45-01-710-001

- (4) Use a maintenance access terminal (MAT) to do the system test of the TCAS:
- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 404
Sep 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) SYSTEM TEST
 - 6) TCAS
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, make sure there is no maintenance message for the TCAS computer [1].
- 1) If there is a maintenance message for the TCAS computer [1], refer to the applicable maintenance message index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

34-45-01

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TCAS DIRECTIONAL ANTENNA - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the TCAS directional antenna
 - (2) An installation of the TCAS directional antenna.
- B. There are two TCAS antennas installed on the airplane. The top antenna, M34121, is installed at station 456. The bottom antenna, M34221, is installed at station 539.
- C. The tasks are the same for the top and the bottom antenna.

TASK 34-45-02-000-801

2. TCAS Antenna Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. **References**

Reference	Title
51-31-01-160-801	Prepare For Sealing (P/B 201)

B. **Tools/Equipment**

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

Reference	Description
COM-2481	Tool - Sealant Removal, BAC5000, PSD 6-184 Approved Part #: 1-6390-A Supplier: 63318 Part #: 10810 Supplier: \$0855 Part #: 234350 Supplier: \$0857 Part #: 311 Supplier: F6892 Part #: 411B60 Supplier: 3DN12 Part #: 411B90 Supplier: 3DN12 Part #: DAD5013 Supplier: \$0856 Part #: DFD5019 Supplier: \$0856 Part #: J5-0275-2010 Supplier: 435R8 Part #: SCD5019 Supplier: \$0856 Part #: ST982LF-9 Supplier: 62176 Part #: TS1275-4 Supplier: 1DWR5

C. **Consumable Materials**

Reference	Description	Specification
G00237	Cotton - Balls	

D. **Location Zones**

Zone	Area
211	Flight Compartment, Left
212	Flight Compartment, Right
224	Area Above Passenger Compartment Ceiling, Right - Section 41

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-02

Page 401
May 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

E. Removal Procedure

SUBTASK 34-45-02-860-001

- (1) Open this circuit breaker and install safety tag:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

SUBTASK 34-45-02-020-001

- (2) Use a sealant removal tool, COM-2481 to remove the sealant from the edge of the TCAS antenna [3] (TASK 51-31-01-160-801).

SUBTASK 34-45-02-020-002

- (3) Remove the antenna [3]:
- (a) Remove the seal that covers the bolts that attach the antenna [3] to the airplane.
NOTE: The screws are in the forward and aft part of the antenna.
- (b) Remove the cotton balls, G00237 [5], from inside the bolt holes.
- (c) Remove the bolt [4] from the antenna [3].



CAUTION

BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (d) Use force around the antenna [3] with the sealant removal tool, COM-2481 until the seal is fully broken.



CAUTION

MOVE THE ANTENNA THE SMALLEST DISTANCE NECESSARY TO DISCONNECT THE COAXIAL CONNECTORS. DAMAGE TO THE COAXIAL CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (e) Move the antenna [3] until you can get access to the coaxial connectors [1].
- (f) Disconnect the coaxial connectors [1].
NOTE: Make sure the coaxial cables do not fall into the airplane fuselage.
- (g) Remove the TCAS antenna [3].
- (h) Put protective covers on the coaxial connectors [1] if necessary.

————— **END OF TASK** —————

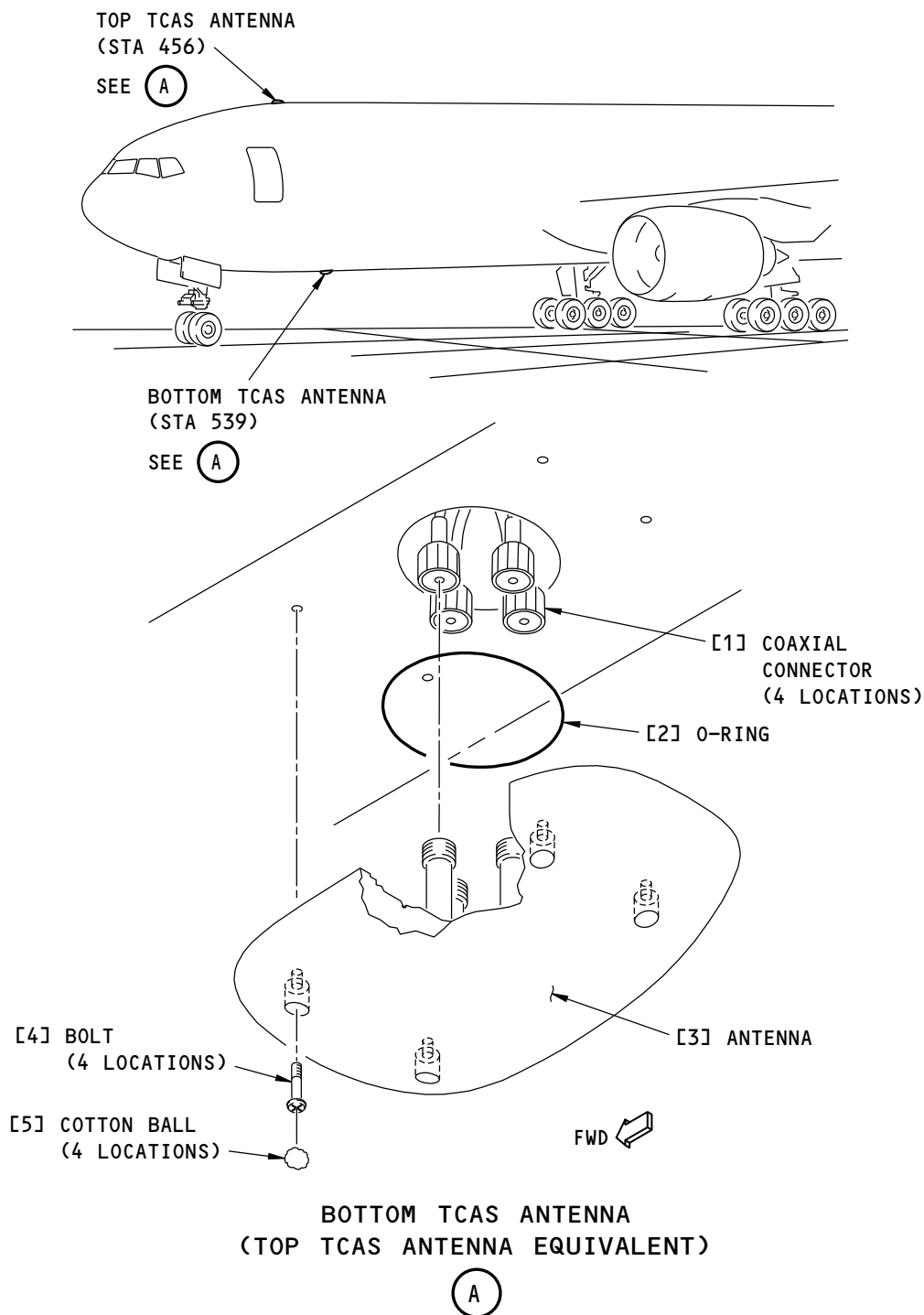
EFFECTIVITY
ARO ALL

34-45-02

D633W101-ARO

Page 402
Sep 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



E23951 S0006420833_V1

TCAS Directional Antenna Installation
Figure 401/34-45-02-990-802

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-02

Page 403
Jan 05/2015



777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-45-02-400-801

3. TCAS Antenna Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) The installation test makes sure that the TCAS antenna [3] is correctly installed.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

B. References

Reference	Title
20-30-01-910-801	Structure Adhesives, Cements, and Sealants (P/B 201)
20-30-88-910-801	Final Cleaning of Metal Prior to Non-structural Bonding (Series 88) (P/B 201)
20-30-95-910-801	Final Cleaning Prior to Aerodynamic Smoothing and Fairing (Series 95) (P/B 201)
24-22-00-860-805	Supply Electrical Power (P/B 201)
45-10-00-740-808	How to Use the Central Maintenance Computing System (P/B 201)
51-21-03-100-801	Corrosion Removal and Control (P/B 701)
51-21-04-620-801	Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)
51-24-09-620-802	Apply the Corrosion Inhibiting Compound (P/B 701)
51-31-01-160-801	Prepare For Sealing (P/B 201)
51-31-01-390-804	Fillet Seal Application (P/B 201)
SL 20-016	DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS

C. Tools/Equipment

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

Reference	Description
COM-1550	Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550). Part #: 620LK Supplier: 1CRL2 Part #: M1 Supplier: 3AD17 Part #: T477W Supplier: 01014 Opt Part #: M1B Supplier: 3AD17
STD-810	Spatula - Fillet Smoothing, Hardwood or Plastic

D. Consumable Materials

Reference	Description	Specification
A02315	Sealant - Low Density, Synthetic Rubber. 2 Part	BMS5-142 Type II

EFFECTIVITY
ARO ALL

34-45-02

D633W101-ARO

Page 404
May 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

Reference	Description	Specification
B00148	Solvent - Methyl Ethyl Ketone (MEK)	ASTM D740
B01008	Solvent - Final Cleaning Of Metal Prior To Non-Structural Bonding - Series 88	
B01015	Solvent - Final Cleaning Prior To Aerodynamic Smoothing And Fairing - Series 95	
C00064	Coating - Aluminum Chemical Conversion	BAC5719 Type II Class A (MIL-DTL-5541 Class 1A)
D00633	Grease - Aircraft General Purpose	BMS3-33
G00009	Compound - Organic Corrosion Inhibiting	BMS3-23
G00237	Cotton - Balls	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
2	O-ring	34-45-02-01-020	ARO ALL
		34-45-02-01-120	ARO ALL
3	Antenna	Not Specified	

F. Location Zones

Zone	Area
211	Flight Compartment, Left
212	Flight Compartment, Right
224	Area Above Passenger Compartment Ceiling, Right - Section 41

G. Installation Procedure

SUBTASK 34-45-02-860-002

- (1) Make sure that this circuit breaker is open and has safety tag:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	4	C34441	TCAS

SUBTASK 34-45-02-100-001

- (2) Clean the airplane skin as follows:
 - (a) Remove the remaining sealant from the airplane skin in the antenna area (TASK 51-31-01-160-801).



WARNING

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (b) Clean the airplane skin in the antenna area with Series 88 solvent, B01008 (TASK 20-30-88-910-801).

SUBTASK 34-45-02-390-003

- (3) If the airplane skin has no corrosion or no other damage, do this step:

EFFECTIVITY
ARO ALL

34-45-02

D633W101-ARO

Page 405
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Apply a layer of corrosion inhibiting compound, G00009, on the airplane skin in the area where the antenna [3] touches the skin (TASK 51-24-09-620-802).

SUBTASK 34-45-02-840-001

- (4) If the airplane skin has corrosion or other damage, do these steps to prepare the surface:
 - (a) To remove the corrosion, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
 - (b) Apply a layer of coating, C00064, or grease, D00633 on the airplane skin on the area where the antenna [3] touches the skin (TASK 51-21-04-620-801).
 - (c) Apply a layer of corrosion inhibiting compound, G00009, on the airplane skin in the area where the antenna [3] touches the skin (TASK 51-24-09-620-802).

SUBTASK 34-45-02-840-002

- (5) Prepare the antenna [3] as follows:
 - (a) Apply a layer of grease, D00633 on the o-ring [2] and the O-ring groove.
 - (b) Install the o-ring [2] on the antenna [3].
 - 1) Make sure the o-ring [2] is not damaged and is installed correctly in the O-ring groove.

SUBTASK 34-45-02-420-001

- (6) Install the TCAS antenna [3]:
 - (a) Remove the protective covers from the coaxial connectors [1] if installed.
 - (b) Examine the coaxial connectors [1] for bent or broken pins, dirt, and damage.
 - (c) Connect the coaxial connectors [1].

Table 401/34-45-02-993-801

CABLE SLEEVE COLOR	TCAS ANTENNA CONNECTOR
Yellow	J1
Black	J2
Blue	J3
Red	J4

- (d) Put the antenna [3] into its position on the airplane.



DO NOT GET METHYL ETHYL KETONE (MEK) IN YOUR MOUTH, OR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM MEK. PUT ON A RESPIRATOR, PROTECTIVE SPLASH GOGGLES, AND GLOVES WHEN YOU USE MEK. KEEP MEK AWAY FROM SPARKS, FLAME, AND HEAT. MEK IS A POISONOUS AND FLAMMABLE SOLVENT WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Remove the unwanted corrosion inhibiting compound, G00009, from around the antenna [3] with solvent, B00148.
- (f) Install all of the bolt [4] except one.

NOTE: One bolt [4] is left out so you can do the electrical bond check.

- 1) Tighten the bolts [4] to 20-25 inch-pounds of torque.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-02

Page 406
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-02-760-001

- (7) Do a check of the resistance between the antenna [3] and the airplane skin as follows:
- (a) Connect an intrinsically safe approved bonding meter, COM-1550 between the base of the antenna and the airplane skin.
- NOTE: You can get access to the base of the antenna [3] through the hole for the last bolt.
- 1) Make sure the measured resistance is 0.001 ohms or less.

SUBTASK 34-45-02-420-002

- (8) Install the last bolt [4].
- (a) Tighten the bolt [4] to 20-25 inch-pounds of torque.

SUBTASK 34-45-02-100-002

 WARNING	DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (9) Remove the unwanted corrosion inhibiting compound, G00009, from around the antenna [3] with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

H. Aerodynamic Fillet Seal Installation

SUBTASK 34-45-02-390-001

- (1) Seal the TCAS antenna [3]:
- (a) To apply a bead of sealant, A02315 or a substitute (refer to TASK 20-30-01-910-801), around the antenna [3] where it touches the airplane skin, do this task: Fillet Seal Application, TASK 51-31-01-390-804.
- NOTE: Apply the sealant completely around the antenna [3]. Make sure that no air gets caught under the sealant. Use a sufficient amount of sealant to permit you to make the surface smooth.
- NOTE: Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).
- (b) Make a smooth 45-degree bead of sealant with the hardwood or plastic fillet smoothing spatula, STD-810 or your finger.
 - (c) Remove the unwanted sealant from the area around the antenna [3].
 - (d) Put cotton balls, G00237 [5] in the bolt holes to cover the bolt heads.
 - (e) Fill the bolt holes with sealant, A02315.

I. Installation Test

SUBTASK 34-45-02-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-02

Page 407
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-45-02-860-004

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C34441	TCAS

SUBTASK 34-45-02-740-001

- (3) Use a maintenance access terminal (MAT) to do the system test of the TCAS:
- (a) Make these selections on the MAT:
 - 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Traffic Alert and Collision Avoidance System
 - 5) SYSTEM TEST
 - 6) TCAS
 - 7) CONTINUE
 - (b) Do the instructions that show on the MAT and then make these selections:
 - 1) CONTINUE
 - 2) START TEST
 - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
 - (d) If FAILED shows, make sure there is no maintenance message for the TCAS antenna.
 - 1) If there is a maintenance message for the TCAS antenna, refer to the applicable maintenance message index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

D633W101-ARO

34-45-02

Page 408
Sep 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

GROUND PROXIMITY WARNING SYSTEM - MAINTENANCE PRACTICES

1. General

A. This procedure has these tasks:

- (1) Ground Proximity Warning System Deactivation.
- (2) Ground Proximity Warning System Activation.
- (3) Load the terrain database into the ground proximity warning computer (GPWC).
- (4) Verify the terrain database part number.

ARO 009-999; ARO 001-008 POST SB 777-34-0232

- (5) Load the Operational Program Configuration (OPC) software.
- (6) Load the Operational Program Configuration (OPC) software via ONS
- (7) Verify the Operational Program Configuration (OPC) part number.

ARO ALL

TASK 34-46-00-040-801

2. Ground Proximity Warning System - Deactivation

A. General

- (1) This task removes electrical power from the Ground Proximity Warning System.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-46-00-860-131

- (1) Open these circuit breakers and install safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
D	12	C34633	TERR DSPL
E	12	C34442	GROUND PROX WARNING COMPUTER

D. Ground Proximity Warning System - Tryout

NOTE: This tryout is to make sure the Ground Proximity Warning System is in a zero energy state.

SUBTASK 34-46-00-860-132

- (1) Make sure that these circuit breakers are open and have safety tags:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
D	12	C34633	TERR DSPL
E	12	C34442	GROUND PROX WARNING COMPUTER

SUBTASK 34-46-00-700-037

- (2) Use a maintenance access terminal (MAT) to do the operational test of the ADIRU.
 - (a) Make these selections on the MAT:

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 201
Jan 05/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

- 1) ONBOARD MAINTENANCE
 - 2) LINE MAINTENANCE
 - 3) GROUND TESTS
 - 4) 34 Air Data Inertial Reference System
 - 5) OPERATIONAL REST
 - 6) Ground Proximity Warning System
 - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
 - 2) START TEST
- (c) When the test is completed, make sure that FAILED shows adjacent to TEST CONDITION on the MAT.

————— **END OF TASK** —————

TASK 34-46-00-440-801

3. Ground Proximity Warning System - Activation

A. General

- (1) This task adds electrical power to the Ground Proximity Warning System.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

C. Procedure

SUBTASK 34-46-00-860-130

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

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	12	C34633	TERR DSPL
E	12	C34442	GROUND PROX WARNING COMPUTER

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 202
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232

TASK 34-46-00-470-806

4. Load the Operational Program Configuration (OPC) Software with PMAT 2000/615A Portable Data Loader via the EGPWS Front Panel RJ45

Figure 201

A. General

- (1) This task tells you how to install OPC software into the ground proximity warning computer (GPWC) with a PMAT 2000/615A portable data loader. The data loader is connected to the GPWC data load (RJ45) port inside the units front panel. The name of the EGPWC OPC software is:
 - EGPWC OSSUsing the name, the specific software part number for an aircraft can be identified in the IPC.
- (2) A portable data loader (PDL) is not a Boeing supplied part. Refer to the PDL supplier manual for instructions for operation. Some PDLs have a disk drive for software installation from disks. If the PDL has an internal mass storage device, then disks are not necessary.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (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-1915	Data Loader - ARINC 615 Part #: 11615-50 Supplier: 0D4J3 Part #: 2231560-1-B Supplier: 98571 Part #: 465130-01-01 Supplier: 30782 Part #: 800-0631 Supplier: 1JSZ6 Part #: AE-615-MPDL Supplier: CD624 Part #: CEI-715-DL-2 Supplier: 0BPH5 Part #: P2K-615A-06 Supplier: 0BAW0 Opt Part #: 11615-02 Supplier: 0D4J3 Opt Part #: 11615-20 Supplier: 0D4J3 Opt Part #: 18000-02 Supplier: 0D4J3 Opt Part #: 30100 Supplier: 0BAW0 Opt Part #: 80000-03-01010203 Supplier: 0BAW0 Opt Part #: 80000-04-01020301 Supplier: 0BAW0 Opt Part #: 80000-05 Supplier: 0BAW0 Opt Part #: 964-0400-024 Supplier: 97896 Opt Part #: 964-0400-025 Supplier: 97896 Opt Part #: 964-0400-030 Supplier: 97896 Opt Part #: 964-0400-044 Supplier: 97896 Opt Part #: 964-0400-045 Supplier: 97896 Opt Part #: 964-0400-055 Supplier: 97896

D. Location Zones

Zone	Area
117	Main Equipment Center, Left

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 203
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

(Continued)

Zone	Area

118	Main Equipment Center, Right

E. Procedure

SUBTASK 34-46-00-760-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-46-00-700-031

- (2) Make sure the COMPUTER STATUS light on the GPWC front panel is green.

SUBTASK 34-46-00-840-001

- (3) Use a portable ARINC 615 data loader, COM-1915 to install software in the GPWC.

NOTE: Refer to the data loader supplier instructions to load software from disks or the units mass storage device.

SUBTASK 34-46-00-840-002

- (4) Do these steps to load software into the GPWC:



MAKE SURE THE POWER SWITCH FOR THE PORTABLE DATA LOADER IS SET TO OFF BEFORE YOU CONNECT OR REMOVE THE INTERFACE CABLE. IF THE POWER SWITCH IS NOT OFF, DAMAGE TO THE PORTABLE DATA LOADER CAN OCCUR.

- (a) Set the power switch on the PDL to the OFF position.
- (b) Connect the interface cable from the PDL to the GPWC RJ45 Ethernet data load connector inside the units front panel.
- (c) Set the power switch on the portable data loader to the ON position.
- (d) Follow the PDL supplier instructions to install the software.
- (e) Make sure the DATALOAD STATUS light is white during the data upload.
- (f) When the OPC dataload is complete the GPWC will reboot automatically.
- (g) Do these steps at the GPWC front panel:
 - 1) Make sure the COMPUTER STATUS light is GREEN.
 - 2) Make sure the EXTERNAL FAULT light is off.
- (h) Set the power switch on the PDL to the OFF position.
- (i) Remove the ARINC 615 data loader, COM-1915, interface cable from the GPWC RJ45 Ethernet data load connector.

SUBTASK 34-46-00-470-006

- (5) Do this task: Verify the Operational Program Configuration (OPC) Part Number, TASK 34-46-00-700-803.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

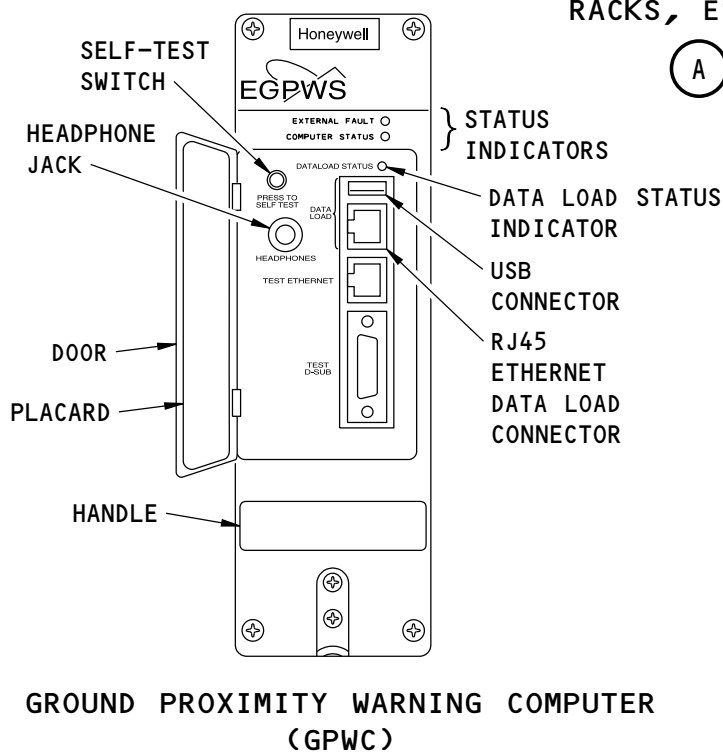
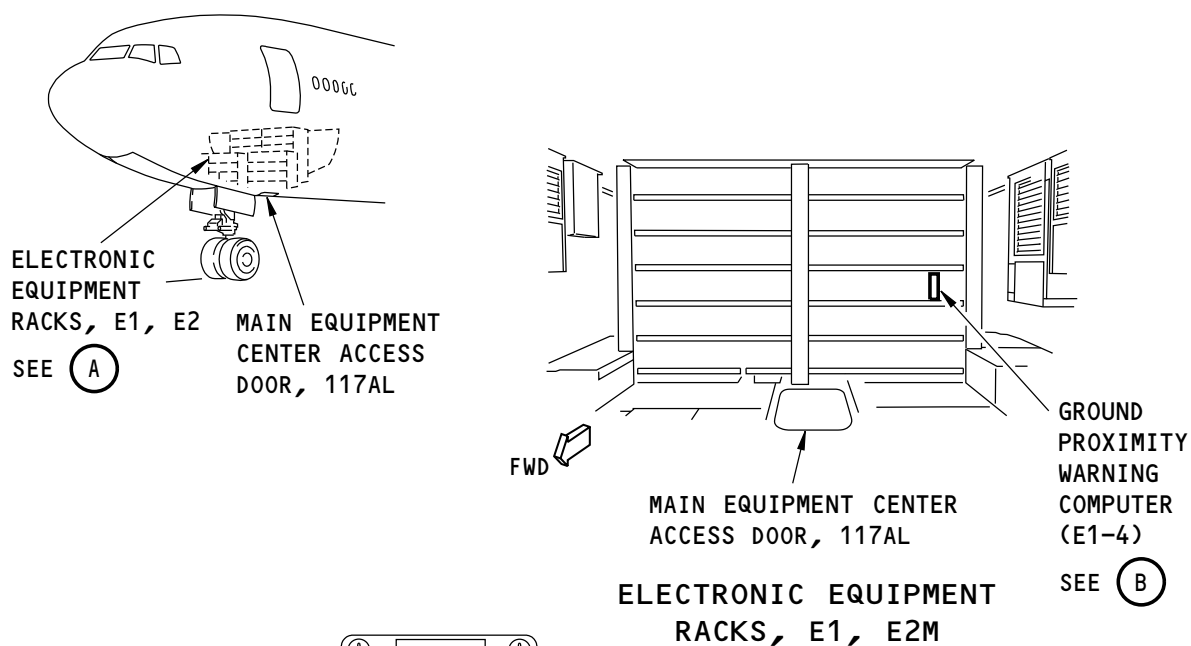
34-46-00

D633W101-ARO

Page 204
Jul 25/2018



777-200/300
AIRCRAFT MAINTENANCE MANUAL



GROUND PROXIMITY WARNING COMPUTER
(GPWC)

(B)

2327384 S0000528673_V1

EGPWS Software Installation
Figure 201/34-46-00-990-804

EFFECTIVITY
ARO 009-999; ARO 001-008 POST SB 777-34-0232

34-46-00

D633W101-ARO

Page 205
Jan 05/2016



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO ALL

TASK 34-46-00-470-809

5. Load the Operational Program Configuration (OPC) Software via ONS

(Figure 201)

A. General

- (1) This task tells you how to install OPC software into the ground proximity warning computer (GPWC) with the Onboard Network System (ONS). The ONS is connected to the GPWC via the system's rear connector. The name of the EGPWC OPC software is:

- EGPWC OSS

Using the name, the specific software part number for an aircraft can be identified in the IPC.

- (2) In order to load software to EGPWC via the ONS Data Load Function, the EGPWS software part is required to be staged on the ONS MSD. See ONS section TASK 46-13-00-720-805 to check if the part is already staged, and TASK 46-13-00-470-802 to stage it if it is not present.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)
46-13-00-470-801	Onboard Network System LRU Software Installation (P/B 201)
46-13-00-470-802	Mass Storage Device Software Part Installation (P/B 201)
46-13-00-720-805	Mass Storage Device Software Parts Check (P/B 201)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

D. Procedure

SUBTASK 34-46-00-860-133

- (1) Make sure the ground proximity warning system (EGPWS) is operational (TASK 34-46-00-710-803-002).
- (2) Verify the operational program configuration part number (TASK 34-46-00-700-803).
- (3) Install the new software part, or parts (TASK 46-13-00-470-801).

NOTE: During software installation to the EGPWS, the installation program will install the parts, shut down, and reboot the EGPWS.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 206
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232

TASK 34-46-00-700-803

6. Verify the Operational Program Configuration (OPC) Part Number

A. General

- (1) This task provides instructions to verify the operational program configuration part number. The GPWC self-test can be activated from the flight compartment.

NOTE: You can verify the operational program configuration part number in the flight compartment or electrical and electronics compartment. If you do the test from the electrical and electronics compartment, you must use the headphones and the SELF TEST switch on the front panel of the ground proximity warning computer. The GPWC level 3 self-test provides aural annunciations of the current configuration which includes the operational program configuration part number.

- (2) The name of the Operational Program Configuration software is EGPWC OSS.

Using the system name, EGPWS OPC, the specific software part number for an aircraft can be identified in the IPC.

- (3) The GPWC self-test can only be activated when the airplane is on the ground.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-46-00-700-032

- (1) Make sure the green COMPUTER STATUS light on the front panel of the GPWC is on.

SUBTASK 34-46-00-700-033

- (2) Make sure the EXTERNAL FAULT light on the front panel of the GPWC is off.

SUBTASK 34-46-00-700-034

- (3) Do this task: Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002.

- (a) Make sure the terrain test pattern shows on the navigation display (ND).

NOTE: The terrain test pattern is shown for 12 seconds on the navigation display (ND).

- (b) Record the operational program configuration (OPC) part number.

NOTE: The test pattern shows magenta text for the operational program configuration part number, i.e. OSSBCGXXXXXXXXXX. The name of the OPC software is EGPWC OSS, Using the system name, EGPWS OPC, the specific software part number for an aircraft can be identified in the IPC.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 207
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

- (c) If the operational program configuration is not correct, then do this task: Load the Operational Program Configuration (OPC) Software with PMAT 2000/615A Portable Data Loader via the EGPWS Front Panel RJ45, TASK 34-46-00-470-806.

— END OF TASK —

ARO 001-008 PRE SB 777-34-0232

TASK 34-46-00-470-802

7. Load the Terrain Database with PCMCIA Flash Card

(Figure 202)

A. General

- (1) This procedure tells you how to load the terrain database into the Ground Proximity Warning Computer (GPWC). The GPWS must contain this piece of software:
 - (a) The name of the software part loaded into the EGPWC Computer follow:
EGPWC TERRAIN DB
Using the name, the specific software part number for an aircraft can be identified in the IPC.
- (2) The terrain database load is inhibited when the airplane is in the air. The database will automatically load into the GPWC after you install the database flash card into the card slot on the front panel of the GPWC.
- (3) You can ignore caution notes (shown on the PCMCIA card) about damage if you put in or remove the card when the power is on. The EGPWC automatically applies or removes PCMCIA card power.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)

C. Tools/Equipment

Reference	Description
STD-1391	Card - Flash, PCMCIA, Loaded with the Terrain Database

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Procedure

SUBTASK 34-46-00-860-106

- (1) Make sure the ground proximity warning system (GPWS) is operational (Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002).

SUBTASK 34-46-00-860-107

- (2) Make sure the COMPUTER OK light on the front panel of the GPWC is on.

SUBTASK 34-46-00-860-108

- (3) Make sure the EXTERNAL FAULT and the COMPUTER FAIL lights on the front panel of the GPWC are off.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 208
May 05/2017



**777-200/300
AIRCRAFT MAINTENANCE MANUAL**

ARO 001-008 PRE SB 777-34-0232 (Continued)

SUBTASK 34-46-00-860-109

- (4) Open the door on the front panel of the GPWC.

SUBTASK 34-46-00-860-110

- (5) Make sure the IN PROG, CARD CHNG, XFER COMP, and XFER FAIL lights on the GPWC are off.

SUBTASK 34-46-00-470-002

- (6) Do these steps to load the terrain database:

NOTE: If you install a version of the terrain database that is not compatible with the hardware memory, then the EGPWC will not operate. Replacement of the EGPWC will be necessary. More information about version compatibility can be found in the applicable Honeywell Service Bulletin.

- (a) Insert the PCMCIA, Flash Card, STD-1391 for the terrain database into the card slot on the GPWC.

NOTE: After the card is installed, the terrain database will automatically load into the GPWC. Depending on the terrain database version, it takes between 5 and 45 minutes to load the terrain database.

- (b) Make sure the IN PROG light on the GPWC comes on.

- (c) If the CARD CHNG light on the GPWC comes on, do these steps to change the card:

NOTE: When the CARD CHNG light comes on, it indicates that more than one card is necessary to load the terrain database.

- 1) Push the eject button on the GPWC and remove the card.
- 2) Insert the next card for the terrain database into the card slot on the GPWC.
- 3) Make sure the IN PROG light on the GPWC comes on.

- (d) If the XFER FAIL light on the GPWC comes on, it indicates that the terrain database load has failed. You need to load the terrain database again.

- (e) After the load of the terrain database is complete, make sure the IN PROG light on the GPWC goes off and the XFER COMP light comes on.

- (f) Push the eject button on the GPWC and remove the card.

- (g) Make sure the COMPUTER OK light on the GPWC is on and all the other lights are off.

SUBTASK 34-46-00-700-003

- (7) Do this task: Verify the Terrain Database Part Number for PCMCIA Flash Card Load, TASK 34-46-00-700-801.

————— **END OF TASK** —————

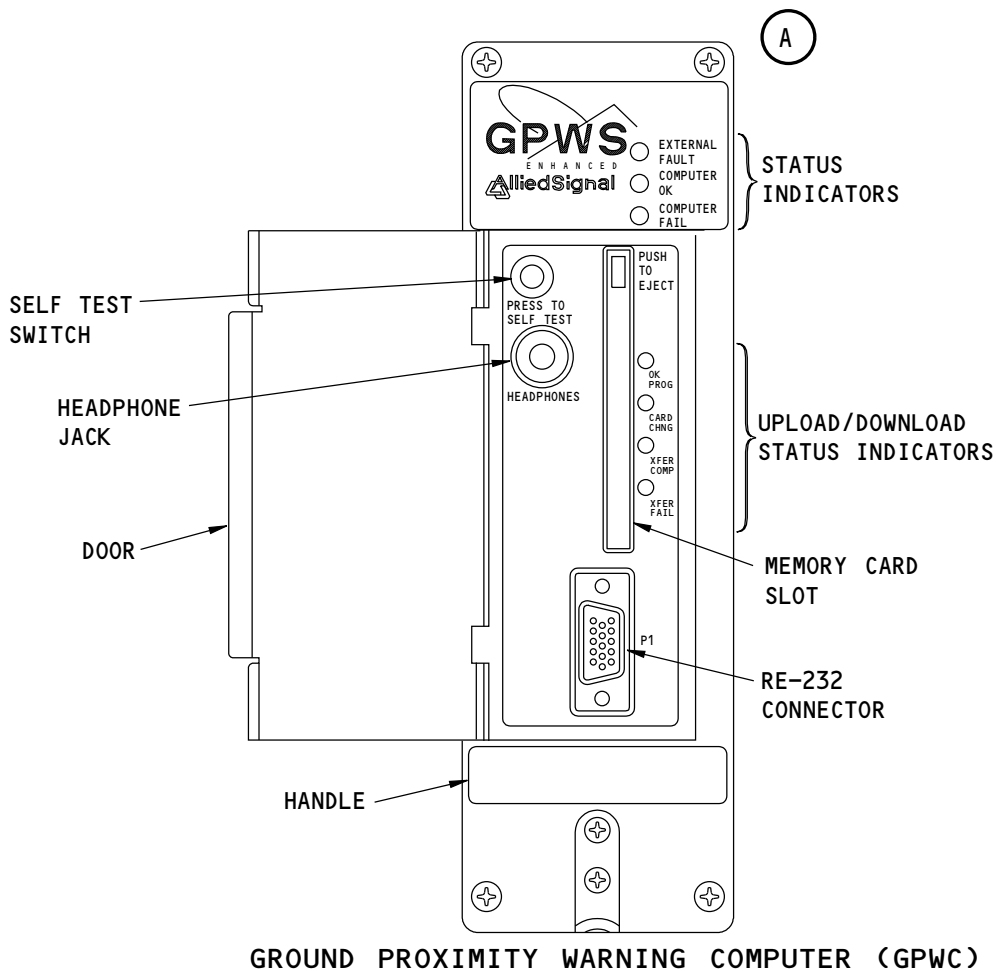
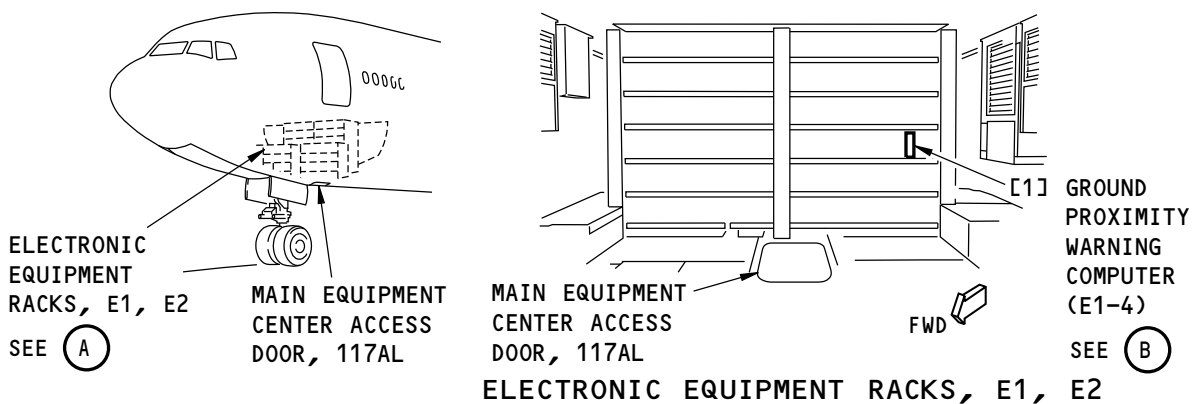
EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 209
May 05/2017

777-200/300 AIRCRAFT MAINTENANCE MANUAL



(B)

H68520 S0006420841_V1

Ground Proximity Warning Computer
Figure 202/34-46-00-990-802

EFFECTIVITY
ARO 001-008 PRE SB 777-34-0232

34-46-00

D633W101-ARO

Page 210
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 001-008 PRE SB 777-34-0232 (Continued)

TASK 34-46-00-700-801

8. Verify the Terrain Database Part Number for PCMCIA Flash Card Load

Figure 202

A. General

- (1) This task provides instructions to verify the terrain database part number. The GPWC level 3 self-test provides aural annunciations of the current configuration that include the terrain database part number.
- (2) The GPWC level 3 self-test can only be activated when the airplane is on the ground.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)

C. Tools/Equipment

Reference	Description
STD-1390	Headphone - 600 Ohm, with 1/4 Inch Mono Audio Plug

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Procedure

SUBTASK 34-46-00-860-074

- (1) Make sure the ground proximity warning system (GPWS) is operational (Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002).

SUBTASK 34-46-00-860-075

- (2) Make sure the COMPUTER OK light on the front panel of the GPWC is on and the other lights are off.

SUBTASK 34-46-00-860-076

- (3) Make sure the TERR switches on the EFIS control panels, P7, are on.

SUBTASK 34-46-00-860-077

- (4) Open the door on the front panel of the GPWC.

SUBTASK 34-46-00-860-078

- (5) Plug the headphone, STD-1390 into the headphone jack of the GPWC.

SUBTASK 34-46-00-860-079

- (6) Make sure there is no card in the card slot of the GPWC.

SUBTASK 34-46-00-700-001

- (7) Do these steps to do the level 3 self-test of the GPWC:

NOTE: The GPWC self-test has six levels that operate in sequence. The level 3 self-test will occur after the level 2 self-test.

- (a) Push the self-test switch on the GPWC for one second.
- (b) After the level 1 self-test starts, push the self-test switch for one second to go to the level 2 self-test.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 211
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 001-008 PRE SB 777-34-0232 (Continued)

- (c) After the level 2 self-test starts, wait until the PRESS TO CONTINUE annunciation occurs, then push the self-test switch for one second to go to the level 3 self-test.
- (d) You will hear a sequence of the configuration annunciations for the GPWS over the headphone.
 - 1) Make sure you hear the terrain database part number the TERRAIN DATABASE VERSION annunciation.
- NOTE: There are several configuration annunciations in the level 3 self-test. To advance to the terrain database part number annunciation, you need to push the self-test switch after each annunciation.
- (e) Record the terrain database part number.
 - NOTE: At the level 3 self-test, the EGPWS terrain database version also can be displayed on the Maintenance Access Terminal (MAT) regardless of the EGPWS part number.
- (f) After you hear the terrain database part number, continue to push the self-test switch until you hear the PRESS TO CONTINUE annunciation.
 - NOTE: After the PRESS TO CONTINUE annunciates, the level 3 self-test is complete. If you do not push the self-test switch again, the self-test sequence will stop.
- (g) If your airline maintains a terrain database version requirement, make sure the terrain database version is correct.
 - 1) If the terrain database version is not correct, then, do this task: Load the Terrain Database with PCMCIA Flash Card, TASK 34-46-00-470-802.

SUBTASK 34-46-00-860-080

- (8) Remove the headphone, STD-1390 from the headphone jack on the GPWC.

SUBTASK 34-46-00-860-081

- (9) Close the door on the front panel of the GPWC.

END OF TASK

ARO 009-999; ARO 001-008 POST SB 777-34-0232

TASK 34-46-00-470-807

9. Load the Terrain Database with an ARINC 615A Data Loader

(Figure 203)

A. General

- (1) This task gives instructions to load the terrain database into the ground proximity warning computer (GPWC) with an ARINC 615A data loader in the main equipment center.
- (2) Obtain a CD-ROM disc or a USB flash drive with the terrain database software and install it into the ARINC 615A data loader. Refer to the supplier manual for instructions.
- (3) The terrain database load is inhibited when the airplane is in the air.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 212
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

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: OBAW0 Opt Part #: 80000-05 Supplier: OBAW0

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Procedure

SUBTASK 34-46-00-860-124

- (1) Supply electrical power to the GPWC, do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-46-00-860-125

- (2) Make sure that this circuit breaker is closed:

Overhead Circuit Breaker Panel, P11

Row	Col	Number	Name
E	12	C34442	GROUND PROX WARNING COMPUTER

SUBTASK 34-46-00-860-126

- (3) Make sure the COMPUTER STATUS light on the front panel of the GPWC is GREEN.

SUBTASK 34-46-00-860-127

- (4) Make sure the EXTERNAL FAULT light on the front panel of the GPWC is OFF.

NOTE: The EXTERNAL FAULT light could be YELLOW if a required external signal is missing.

SUBTASK 34-46-00-010-003

- (5) Open the door on the front panel of the GPWC.

NOTE: A placard inside the door contains instructions for data loading.

SUBTASK 34-46-00-860-128

- (6) Make sure the DATALOAD STATUS light is OFF.

SUBTASK 34-46-00-470-009

- (7) Do these steps to load the terrain database:

NOTE: If you install a version of the terrain database that is not compatible with the hardware memory, then the GPWC will not operate. Replacement of the GPWC will be necessary.

- (a) Connect a Cat 5 Ethernet cable to the ARINC 615/615A data loader, COM-4963 and connect the other end of the Ethernet cable into the DATA LOAD port at the front panel of the GPWC.
- (b) Follow the manufacturer's instructions to boot-up the data loader.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 213
May 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

- (c) Navigate to the folder where the GPWC terrain database files are located on the data loader to start the download.
- (d) The DATALOAD STATUS light on the front panel of the GPWC will sequence as follows during the load:
 - 1) The DATALOAD STATUS light will be YELLOW during the application code load.
 - 2) The GPWC will reboot.
 - 3) The DATALOAD STATUS light will be YELLOW after the GPWC fully reboots.
 - 4) The DATALOAD STATUS light will change to GREEN when the terrain database data transfer is complete.

NOTE: The GPWC will reboot automatically after the transfer.

- (e) Make sure the COMPUTER STATUS light shows GREEN after a maximum of 25 seconds.
- (f) Make sure the EXTERNAL FAULT light is OFF.

NOTE: The EXTERNAL FAULT light could be YELLOW if a required external signal is missing.

SUBTASK 34-46-00-860-129

- (8) Follow the manufacturer's instructions to stop/close the data loader program.

SUBTASK 34-46-00-020-001

- (9) Disconnect the Ethernet cable from the DATA LOAD port on the GPWC.

SUBTASK 34-46-00-700-036

- (10) Do this task: Verify the Terrain Database Part Number for ARINC 615A Data Loader, TASK 34-46-00-700-804.

END OF TASK

EFFECTIVITY
ARO ALL

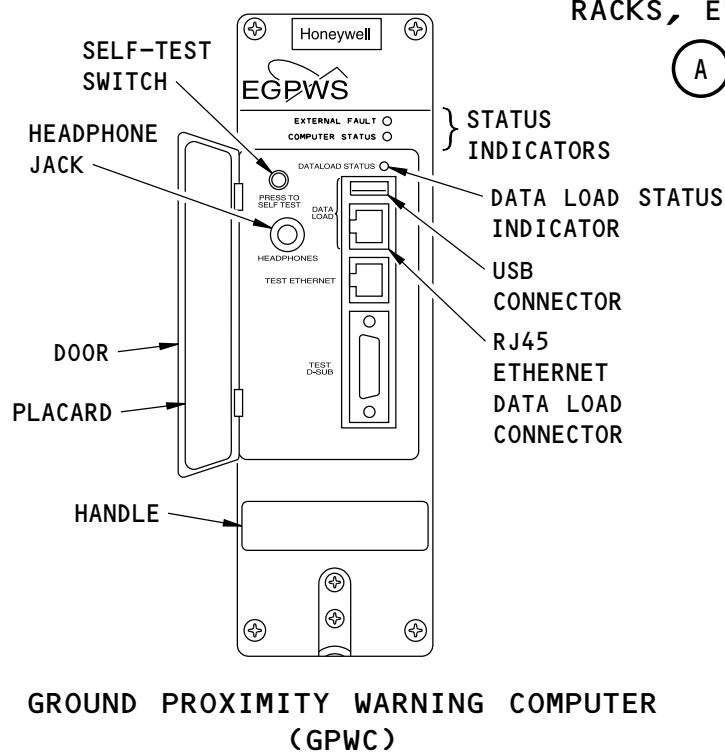
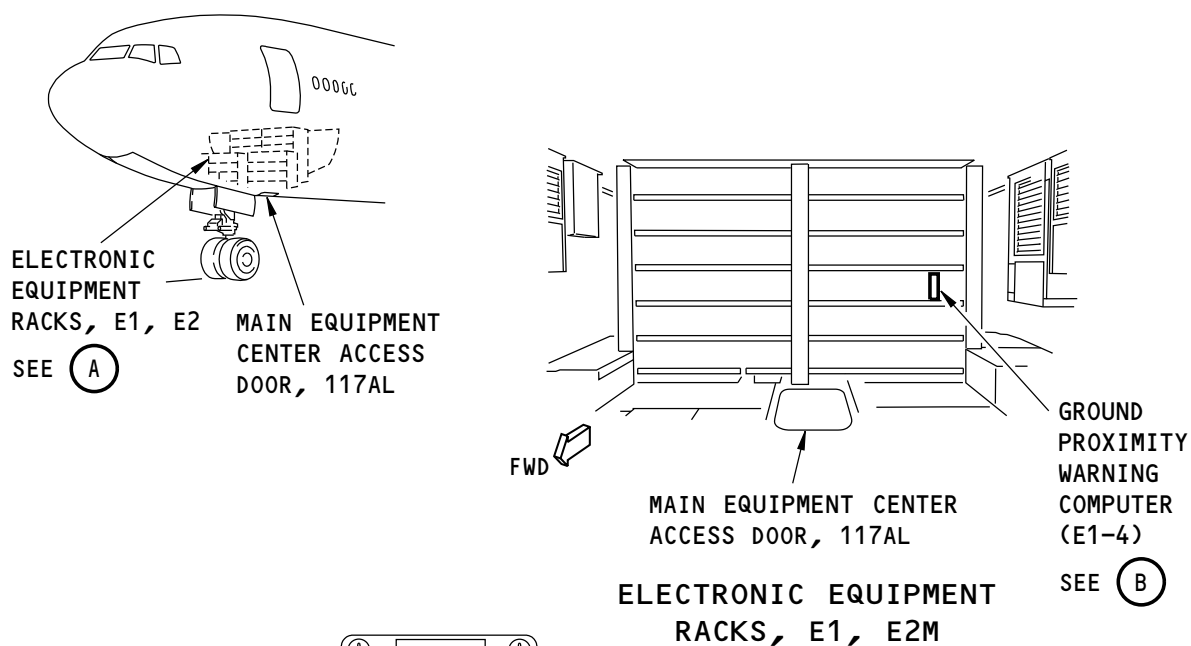
34-46-00

D633W101-ARO

Page 214
May 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



2327384 S0000528673_V1

EGPWS Software Installation
Figure 203/34-46-00-990-806

EFFECTIVITY
ARO 009-999; ARO 001-008 POST SB 777-34-0232

34-46-00

D633W101-ARO

Page 215
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

TASK 34-46-00-700-804

10. Verify the Terrain Database Part Number for ARINC 615A Data Loader

A. General

- (1) This task gives instructions to verify the terrain database part number with the use of the self-test function. The Level 3 self-test provides aural annunciations of the current configuration.

NOTE: The ground proximity warning computer (GPWC) self-test can only be activated when the airplane is on the ground.

- (2) The terrain database part number can be verified from two possible locations:
 - (a) The flight compartment, with the GPWC test switch.
 - (b) The main equipment center, with the use of headphones and the SELF TEST switch behind the front panel door of the GPWC.
- (3) To help go through the levels, there are two cancel functions:
 - (a) Short cancel (push and hold the SELF TEST switch for more than 0.5 seconds but less than 2 seconds).
 - (b) Long cancel (push and hold the SELF TEST switch for more than 2 seconds but less than 8 seconds).

NOTE: The short cancel is used to start the self-test sequence or to continue from one level to another.

NOTE: During the verify procedure when the instruction is given to "push the SELF TEST switch", use the short cancel.

B. References

Reference	Title
24-22-00-860-805	Supply Electrical Power (P/B 201)
24-22-00-860-806	Remove Electrical Power (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1390	Headphone - 600 Ohm, with 1/4 Inch Mono Audio Plug

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

E. Prepare for the Verify Procedure

SUBTASK 34-46-00-840-004

- (1) Do these steps to prepare for the GPWC Level 3 self-test:
 - (a) Supply electrical power, do this task: Supply Electrical Power, TASK 24-22-00-860-805.
 - (b) Open the door on the front panel of the GPWC.
 - 1) Make sure the COMPUTER STATUS light on the front panel is GREEN.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 216
Jan 05/2018



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

- 2) Make sure the EXTERNAL FAULT light on the front panel is OFF.
- (c) Plug the headphone, STD-1390 into the HEADPHONES connector.

F. Verify Procedure

SUBTASK 34-46-00-700-035

- (1) Do these steps to do the GPWC Level 3 self-test:
 - (a) Push and release the SELF TEST switch to start the Level 1 self-test.
 - (b) After the Level 1 self-test message starts, push the SELF TEST switch to cancel it and start the Level 2 self-test.
 - (c) After the Level 2 self-test CURRENT FAULTS message starts, push the SELF TEST switch to cancel it.
 - (d) Push and release the SELF TEST switch within 3 seconds when the message PRESS TO CONTINUE is heard. This starts the Level 3 self-test (system configuration).
 - (e) Make sure that the messages identified in Table 1 are heard.

Table 1. MKV-A EGPWS Messages

MKV-A EGPWS PN ^{*[1]}	MOD Status Message	Serial Number Message	Terrain Database Version	Terrain Database Part Number	Envelope Modulation Database Version	Remaining Messages
69000940-XXX	Ignore	Ignore	XXX ^{*[2]}	XXX ^{*[3]}	XXX ^{*[2]}	Ignore

*[1] The message is the spoken words for the EGPWS part number. The XXX will be numbers when annunciated.

*[2] Terrain Database Version and Envelope Modulation Database Version loaded and checked in accordance with the applicable service information letter.

*[3] Terrain Database Part Number is only annunciated and checked if the terrain database is updated in accordance with the ARINC 615A Data Loader.

- (f) When the Level 3 self-test is complete, the message PRESS TO CONTINUE comes on. If the SELF TEST switch is not pushed within 3 seconds, the self-test sequence will stop.

SUBTASK 34-46-00-470-010

- (2) If the terrain database version is not correct, then do this task: Load the Terrain Database with an ARINC 615A Data Loader, TASK 34-46-00-470-807.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 34-46-00-840-003

- (1) Do these steps after completion of the self-test sequence:
 - (a) Remove the headphone, STD-1390 from the HEADPHONES connector on the front panel of the GPWC.
 - (b) Close the door on the GPWC front panel.
 - (c) Remove electrical power if necessary, do this task: Remove Electrical Power, TASK 24-22-00-860-806.

————— END OF TASK —————

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 217
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

TASK 34-46-00-470-805

11. Load the Terrain Database with USB Drive Load

Figure 204

A. General

- (1) This task provides instructions to load the terrain database into the ground proximity warning computer (GPWC). The name of the terrain database software is:

- EGPWC TERRAIN DB

Using the name, the specific software part number for an aircraft can be identified in the IPC.

- (2) The terrain database load is inhibited when the airplane is in the air. The database will automatically load into the GPWC after you install the database USB 2.0 or 3.0 mass storage device into the USB port on the front panel. The GPWC is not compatible with USB hubs or encrypted drives.

B. References

Reference	Title
34-46-01-000-801	Ground Proximity Warning Computer Removal (P/B 401)
34-46-01-400-801	Ground Proximity Warning Computer Installation (P/B 401)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

D. Procedure

SUBTASK 34-46-00-700-024

- (1) Make sure the COMPUTER STATUS light on the front panel of the GPWC is GREEN.

SUBTASK 34-46-00-700-025

- (2) Make sure the EXTERNAL FAULT light on the front panel of the GPWC is off.

SUBTASK 34-46-00-010-002

- (3) Open the door on the front panel of the GPWC.

NOTE: A placard inside the door contains instructions for data loading.

SUBTASK 34-46-00-700-026

- (4) Make sure the DATALOAD STATUS light is off.

SUBTASK 34-46-00-470-005

- (5) Do these steps to load the terrain database:

NOTE: If you install a version of the terrain database that is not compatible with the hardware memory, then the GPWC will not operate. Replacement of the GPWC will be necessary.

- (a) Insert the USB drive which contains the terrain database into the USB port on the GPWC.

NOTE: After the USB drive is inserted, the terrain database automatically starts to load into the GPWC.

- (b) Make sure the DATALOAD STATUS light changes to yellow.
- (c) When the terrain database transfer is complete, the DATALOAD STATUS light changes to green.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 218
May 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

- (d) If the DATALOAD STATUS light changes to red, the terrain database load transfer failed. Do these steps to correct the fault:

- 1) Remove and apply power to the GPWC prior to the second attempt to load the terrain database.

NOTE: Reapplying power may be beneficial in recovering the computer.

Open and close these circuit breakers:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	12	C34633	TERR DSPL
E	12	C34442	GROUND PROX WARNING COMPUTER

- 2) Attempt to load the GPWC with a second USB terrain database drive, if available, to eliminate a corrupt USB drive as a cause of the transfer failure.
- 3) If the terrain database load fails, replace the Ground Proximity Warning Computer (GPWC), M34004. Do these tasks: Ground Proximity Warning Computer Removal, TASK 34-46-01-000-801 Ground Proximity Warning Computer Installation, TASK 34-46-01-400-801.
- 4) Load the terrain database into the new GPWC.
- (e) Remove the USB drive.
- NOTE: The GPWC will reboot automatically.
- (f) Make sure the DATALOAD STATUS light is off.
- (g) Make sure the COMPUTER STATUS light is GREEN.

SUBTASK 34-46-00-700-027

- (6) Do this task: Verify the Terrain Database Part Number for USB Drive Load, TASK 34-46-00-700-802.

———— **END OF TASK** ————

EFFECTIVITY
ARO ALL

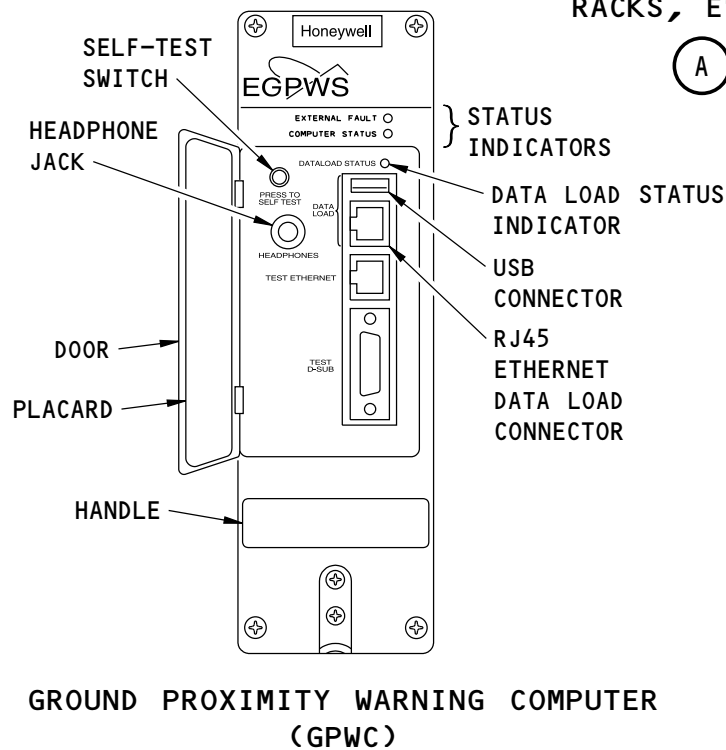
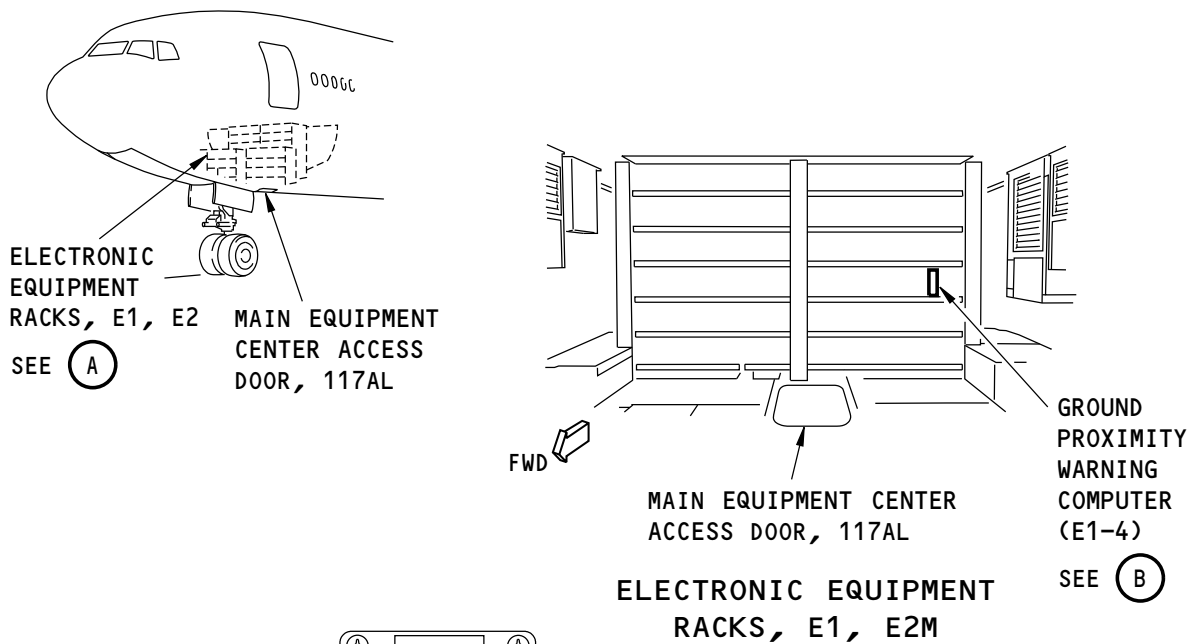
34-46-00

D633W101-ARO

Page 219
May 05/2017



777-200/300
AIRCRAFT MAINTENANCE MANUAL



2327384 S0000528673_V1

EGPWS Software Installation
Figure 204/34-46-00-990-805

EFFECTIVITY
ARO 009-999; ARO 001-008 POST SB 777-34-0232

34-46-00

D633W101-ARO

Page 220
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

TASK 34-46-00-700-802

12. Verify the Terrain Database Part Number for USB Drive Load

A. General

- (1) This task provides instructions to verify the terrain database part number. The GPWC self-test can be activated from the flight compartment.

NOTE: You can verify the terrain database part number in the flight compartment or electrical and electronics compartment. If you do the test from the electrical and electronics compartment, you must use the headphones and the SELF TEST switch on the front panel of the ground proximity warning computer. The GPWC level 3 self-test provides aural annunciations of the current configuration which includes the terrain database part number.

- (2) The GPWC self-test can only be activated when the airplane is on the ground.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right
211	Flight Compartment, Left
212	Flight Compartment, Right

D. Procedure

SUBTASK 34-46-00-700-028

- (1) Make sure the green COMPUTER STATUS light on the front panel of the GPWC is on.

SUBTASK 34-46-00-700-029

- (2) Make sure the EXTERNAL FAULT light on the front panel of the GPWC is off.

SUBTASK 34-46-00-700-030

- (3) Do this task: Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002.
- (a) Make sure the terrain test pattern shows on the navigation display (ND).
NOTE: The terrain test pattern is shown for 12 seconds on the navigation display (ND).
- (b) Record the terrain database part number.
NOTE: The test pattern shows magenta text for the terrain database part number, ie TDBXXXX. The name of the database software is:
- EGPWC TERRAIN DB
- Using the name, the specific software part number for an aircraft can be identified in the IPC.
- (c) If the terrain database version is not correct, then do this task: Load the Terrain Database with USB Drive Load, TASK 34-46-00-470-805.

————— **END OF TASK** —————

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 221
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO ALL; AIRPLANES WITH RUNWAY AWARENESS AND ADVISORY SYSTEM (RAAS) ENABLED

TASK 34-46-00-470-803

13. RAAS ACTIVATION

A. General

- (1) This task provides instructions to load the Runway Configuration Database (RCD) into the Enhanced Ground Proximity Warning Computer (EGPWC). The RCD is loaded on the EGPWC via PCMCIA card that is intended to be inserted into the front panel of the EGPWC.

NOTE: EGPWS software can not be loaded via MAT. It is self loadable via PCMCIA card.

- (2) The RCD loading is inhibited when the airplane is in the air. The database will automatically load into the EGPWC after you install the PCMCIA card into the card slot on the front panel of the EGPWC.

B. References

Reference	Title
34-46-00-710-803-002	Ground Proximity Warning System - Operational Test (P/B 501)

C. Tools/Equipment

Reference	Description
STD-8900	Card - Flash, RAAS RCD PCMCIA, RAAS Activation (Honeywell P/N 718-XXXX-XXX)

D. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

E. Procedure

SUBTASK 34-46-00-860-111

- (1) Make sure the Enhanced Ground Proximity Warning System (EGPWS) is operational (Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002).

SUBTASK 34-46-00-860-112

- (2) Make sure the "COMPUTER OK" LED on the front panel of the EGPWC is on.

SUBTASK 34-46-00-860-113

- (3) Make sure the "EXTERNAL FAULT" and the "COMPUTER FAIL" LEDs on the front panel of the EGPWC are off.

SUBTASK 34-46-00-860-114

- (4) Open the door on the front panel of the EGPWC.

SUBTASK 34-46-00-860-115

- (5) Make sure the "IN PROG", "CARD CHNG", "XFER COMP", and "XFER FAIL" LEDs on the EGPWC are off.

SUBTASK 34-46-00-860-116

- (6) Do these steps to load the RCD PCMCIA Card:
 - (a) Insert the RAAS RCD PCMCIA card, STD-8900 into the card slot on the EGPWC.
 - (b) Make sure the "IN PROG" LED is illuminated and "COMPUTER OK" LED will extinguish while the software loading is in progress.
 - (c) Make sure the "XFER COMP" LED on the EGPWC is illuminated when the software loading is complete.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 222
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO ALL; AIRPLANES WITH RUNWAY AWARENESS AND ADVISORY SYSTEM (RAAS) ENABLED (Continued)

- (d) Do this step to remove the RAAS RCD PCMCIA card, STD-8900:
 - 1) Push the eject button on the EGPWC and remove the RAAS RCD PCMCIA card, STD-8900.
- (e) After approximately 45 seconds make sure the "COMPUTER OK" LED on the EGPWC is on and all the other LEDs are off.

SUBTASK 34-46-00-860-117

- (7) Do these steps to make sure the software installation is correct.
 - (a) Push the self test switch on the EGPWC front panel for less than 2 seconds and release to initiate the Level 1 self test.
 - (b) After the Level 1 self test message starts, push the self test switch for less than 2 seconds and release to cancel the Level 1 self test and start the Level 2 self test.
 - (c) After the Level 2 self test starts, wait until the "PRESS TO CONTINUE" message is annunciated, push the self test switch for less than 2 seconds and release to start the Level 3 self test .
 - (d) Make sure the Level 3 self test begins with the aural annunciation of "SYSTEM CONFIGURATION".
 - (e) Record the RCD software P/N when this message is annunciated:
 - 1) "RCD PART NUMBER XXX-XXXX-XX".
 - (f) Make sure this message is annunciated:
 - 1) "RUNWAY AWARENESS ENABLED". The message will be issued at or near the end of the selected options.
 - (g) When the test finishes, close the door on the front panel of the EGPWC

———— END OF TASK ————

ARO 001-008 PRE SB 777-34-0232

TASK 34-46-00-970-801

14. Flight History Data Download

A. General

- (1) This procedure tells you how to download flight history data from the ground proximity warning computer (GPWC) through the PCMCIA interface.
- (2) A Honeywell programmed and formatted PCMCIA Card is required to start the download sequence and record the data. The part number for the PCMCIA Card is P/N 718-1592-001. Flight history download cards can only be used once.
- (3) You cannot use a database update card to download flight history data.

B. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 223
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 001-008 PRE SB 777-34-0232 (Continued)

C. Procedure

SUBTASK 34-46-00-860-118

- (1) Make sure that this circuit breaker is closed:

Overhead Circuit Breaker Panel, P11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	12	C34442	GROUND PROX WARNING COMPUTER

SUBTASK 34-46-00-700-007

- (2) Make sure the COMPUTER OK light on the front panel of the GPWC is on.

SUBTASK 34-46-00-700-008

- (3) Make sure the EXTERNAL FAULT and COMPUTER FAIL lights on the front panel of the GPWC are off.

NOTE: If the COMPUTER FAIL light is on, you cannot be sure of the integrity of the downloaded data.

If the EXTERNAL FAULT light is on, there is no effect on the download process.

SUBTASK 34-46-00-010-001

- (4) Open the front panel door on the GPWC.

SUBTASK 34-46-00-700-009

- (5) Make sure these status indicator lights are off.

- (a) IN PROG
- (b) CARD CHNG
- (c) XFER COMP
- (d) XFER FAIL

SUBTASK 34-46-00-700-010

- (6) Make sure the PCMCIA Card has its write protect function selector in the off (in-board) position.

SUBTASK 34-46-00-470-003

- (7) Insert the PCMCIA Card into the memory card slot.

NOTE: The notch on the bottom of the PCMCIA Card should be in the down position.
Carefully push the card in until the PUSH TO EJECT button on the front panel is fully extended.

SUBTASK 34-46-00-700-011

- (8) Make sure the flight history download automatically starts.

- (a) IN PROG light comes on.
- (b) COMPUTER OK light goes off.

SUBTASK 34-46-00-700-012

- (9) When the flight history download is completed:

NOTE: The maximum time required to complete the download is 10 minutes.

- (a) IN PROG light goes off.
- (b) XFER COMP light comes on.

NOTE: If the XFER FAIL light comes on, a new PCMCIA Card is required.

EFFECTIVITY
ARO ALL

34-46-00

D633W101-ARO

Page 224
May 05/2017



777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 001-008 PRE SB 777-34-0232 (Continued)

SUBTASK 34-46-00-800-001

- (10) Push the EJECT button to remove the PCMCIA Card.

SUBTASK 34-46-00-410-001

- (11) Close the front panel door on the GPWC.

SUBTASK 34-46-00-700-013

- (12) The GPWC should automatically return to normal operation.
- (a) Make sure the COMPUTER OK light comes on. It may take three minutes for the light to come on.

SUBTASK 34-46-00-510-001

- (13) Send the PCMCIA Card with the flight history data to the vendor.

————— **END OF TASK** —————

ARO 009-999; ARO 001-008 POST SB 777-34-0232

TASK 34-46-00-970-802

15. Flight History Data Download

A. General

- (1) This procedure gives the steps download flight history data from the Ground Proximity Warning Computer (GPWC) using the USB 2.0 Flash memory drive.
- (2) The Flash memory drive must be formatted before you can do the download.

B. Tools/Equipment

Reference	Description
STD-13649	Drive - Flash, USB (2GB Capacity Minimum)

C. Location Zones

Zone	Area
117	Main Equipment Center, Left
118	Main Equipment Center, Right

D. Prepare Memory Stick

SUBTASK 34-46-00-550-001

- (1) Obtain the USB Flash Drive, STD-13649.

SUBTASK 34-46-00-550-002

- (2) Create a text file by copying the four lines below and save it to a file named "FH.lst".
- HONEYWELL-EGPWS-MKVA-DOWN: Comments
- ```
{
DLNVM,fh.dat
}
```

SUBTASK 34-46-00-550-003

- (3) You can create a text file by download from the Honeywell website at:
- <http://www51.honeywell.com/aero/common/documents/FH.zip>
- When the "File Download" dialog box appear, click on "save" button to save the file to your PC.
- A file named FH.lst will be created when using WinZip to Unzip the file.

EFFECTIVITY  
ARO ALL

# 34-46-00

D633W101-ARO

Page 225  
Jul 25/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)

SUBTASK 34-46-00-860-134

- (4) Make sure the memory stick is formatted to a standard Windows/DOS FAT32 format, and does not have other files on it.

SUBTASK 34-46-00-970-001

- (5) Copy the FH.lst file onto the memory stick.

### E. Procedure

SUBTASK 34-46-00-860-135

- (1) Make sure the COMPUTER STATUS light on the front panel of the GPWC shows GREEN in color.

SUBTASK 34-46-00-860-136

- (2) Make sure the EXTERNAL FAULT light on the front panel of the GPWC is off.

SUBTASK 34-46-00-010-004

- (3) Open the front panel door on the GPWC.

NOTE: A placard inside the door contains instructions for data loading.

SUBTASK 34-46-00-860-137

- (4) Make sure the DATALOAD STATUS light is off.

SUBTASK 34-46-00-470-011

- (5) Do these steps to download the flight history data:
  - (a) Insert the USB drive, which contains the FH.1st file, into the USB port on the GPWC.
  - (b) Make sure the DATALOAD STATUS light shows YELLOW in color.
  - (c) If the DATALOAD STATUS light shows BLUE, the inserted device is unserviceable.
  - (d) When the flight history data transfer is completed, the DATALOAD STATUS light shows GREEN.
    - 1) If the DATALOAD STATUS light shows RED, the flight history data transfer failed.
  - (e) Remove the USB drive.

SUBTASK 34-46-00-410-004

- (6) Close the front panel door on the GPWC.

SUBTASK 34-46-00-710-013

- (7) Make sure the COMPUTER STATUS light is GREEN.
- (8) Make sure the EXTERNAL FAULT light is off.

SUBTASK 34-46-00-510-002

- (9) Send the USB memory stick with the flight history data to airline engineering.

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

**34-46-00**

D633W101-ARO

Page 226  
Jul 25/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### GROUND PROXIMITY WARNING SYSTEM - ADJUSTMENT/TEST

#### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) An operational test of the Ground Proximity Warning System (GPWS)
  - (2) A system test of the GPWS.

#### **TASK 34-46-00-710-803-002**

#### 2. Ground Proximity Warning System - Operational Test

##### A. **General**

- (1) This test makes sure that the Ground Proximity Warning Computer (GPWC) is operational.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808
- (3) The GPWS ground test is initiated from the MAT and you can only do the test when the airplane is on the ground.

##### B. **References**

| Reference        | Title                                                                      |
|------------------|----------------------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                          |
| 24-22-00-860-806 | Remove Electrical Power (P/B 201)                                          |
| 31-41-00-710-801 | Airplane Information Management System (AIMS) - Operational Test (P/B 501) |
| 31-51-00-730-801 | Warning Electronic System - System Test (P/B 501)                          |
| 31-61-00-710-801 | Primary Display System - Operational Test (P/B 501)                        |
| 34-21-00-730-801 | Air Data Inertial Reference System - System Test (P/B 501)                 |
| 34-31-00-710-801 | Instrument Landing System - Operational Test (P/B 501)                     |
| 34-33-00-710-801 | Radio Altimeter System - Operational Test (P/B 501)                        |
| 34-58-00-710-801 | Global Positioning System - Operational Test (P/B 501)                     |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201)              |

##### C. **Location Zones**

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

##### D. **Ground Proximity Warning System - Operational Test**

###### SUBTASK 34-46-00-860-029-002

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-46-00-860-030-002

- (2) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

###### SUBTASK 34-46-00-860-031-002

- (3) Make sure the Primary Display System is on (TASK 31-61-00-710-801).

###### SUBTASK 34-46-00-860-032-002

- (4) Make sure the Warning Electronic System is on (TASK 31-51-00-730-801).

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 501  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-46-00-860-033-002

- (5) Make sure the Air Data Inertial Reference System is on (TASK 34-21-00-730-801).

SUBTASK 34-46-00-860-034-002

- (6) Make sure the Instrument Landing System is on (TASK 34-31-00-710-801).

SUBTASK 34-46-00-860-035-002

- (7) Make sure the Global Positioning System is on (TASK 34-58-00-710-801).

**NOTE:** Make sure the airplane is in position where the GPS antennas have a clear view of the GPS satellites. Aural callout "RUNWAY AWARENESS NOT AVAILABLE" will be annunciated if GPS position accuracy is not capable of supporting RAAS operations.

SUBTASK 34-46-00-860-036-002

- (8) Make sure the Radio Altimeter System is on (TASK 34-33-00-710-801).

SUBTASK 34-46-00-860-102-002

- (9) Set the mode switch on the WXR control panel to the TEST position.

SUBTASK 34-46-00-860-103-002

- (10) Do these steps on the Captain's and First Officer's EFIS control panels:
- (a) Set the mode switch to the MAP position
  - (b) Set the range switch to 40 nautical miles
  - (c) Set the WXR switch to the on position
  - (d) Set the TERR switch to the on position.

SUBTASK 34-46-00-750-006-002

- (11) Make sure the terrain data and the TERR messages show on the displays.

SUBTASK 34-46-00-740-003-002

- (12) Use a maintenance access terminal (MAT) to do an operational test of the GPWC:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Ground Proximity Warning System
    - 5) SYSTEM TEST
    - 6) Ground Proximity Warning System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) Make sure the advisory and status messages in Table 501 will show at some time during this operational test.

**NOTE:** You will possibly have to do this test again to see all the messages. The messages are not necessary to show in the sequence as shown in Table 501.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 502  
May 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**Table 501/34-46-00-993-802**

| MESSAGE           | LEVEL    | DISPLAY |
|-------------------|----------|---------|
| GND PROX SYS      | ADVISORY | EICAS   |
| WINDSHEAR SYS     | ADVISORY | EICAS   |
| ALTITUDE CALLOUTS | ADVISORY | EICAS   |
| TERR POS          | ADVISORY | EICAS   |
| GND PROX SYS      | STATUS   | EICAS   |
| WINDSHEAR REAC    | STATUS   | EICAS   |
| TERR TEST         | ---      | NDs     |
| TERR FAIL         | ---      | NDs     |

(d) Make sure this sequence of visual and aural indications occurs:

**Table 502/34-46-00-993-803**

| GPWS INDICATIONS                                                                               |                                                                                                |                                              |
|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------|
| LIGHT/MESSAGE (ON)                                                                             | LIGHT/MESSAGE (OFF)                                                                            | AURAL SOUND FROM SPEAKERS                    |
| Amber GND PROX light                                                                           |                                                                                                | GLIDESLOPE                                   |
|                                                                                                | Amber GND PROX light                                                                           |                                              |
| Red PULL UP message on Captain's and F/O's PFD                                                 |                                                                                                | PULL UP                                      |
|                                                                                                | Red PULL UP message on Captain's and F/O's PFD                                                 |                                              |
| Red WINDSHEAR message on Captain's and F/O's PFD                                               |                                                                                                | Two tone siren WINDSHEAR WINDSHEAR WINDSHEAR |
|                                                                                                | Red WINDSHEAR message on Captain's and F/O's PFD                                               |                                              |
| Red PULL UP message on Captain's and F/O's PFD. Red TERRAIN message on Captain's and F/O's ND. |                                                                                                | TERRAIN TERRAIN PULL UP                      |
|                                                                                                | Red PULL UP message on Captain's and F/O's PFD. Red TERRAIN message on Captain's and F/O's ND. |                                              |
| Amber GND PROX light Amber TERRAIN message on Captain's and F/O's ND                           |                                                                                                |                                              |
|                                                                                                | Amber GND PROX light Amber TERRAIN message on Captain's and F/O's ND                           |                                              |
| Red PULL UP message on Captains's and F/O's PFD's. Red OBSTACLE on both ND.                    |                                                                                                | OBSTACLE OBSTACLE PULL UP                    |
|                                                                                                | Red PULL UP goes off OBSTACLE goes Amber.                                                      |                                              |

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 503  
May 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**Table 502/34-46-00-993-803 (Continued)**

| GPWS INDICATIONS   |                     |                                                                      |
|--------------------|---------------------|----------------------------------------------------------------------|
| LIGHT/MESSAGE (ON) | LIGHT/MESSAGE (OFF) | AURAL SOUND FROM SPEAKERS                                            |
|                    |                     | RUNWAY AWARENESS OK - FEET (METERS)                                  |
|                    |                     | SINK RATE                                                            |
|                    |                     | PULL UP                                                              |
|                    |                     | TERRAIN                                                              |
|                    |                     | PULL UP                                                              |
|                    |                     | DON'T SINK<br>DON'T SINK                                             |
|                    |                     | TOO LOW TERRAIN                                                      |
|                    |                     | TOO LOW GEAR                                                         |
|                    |                     | TOO LOW FLAPS                                                        |
|                    |                     | TOO LOW TERRAIN                                                      |
|                    |                     | GLIDESLOPE                                                           |
|                    |                     | BANK ANGLE BANK ANGLE                                                |
|                    |                     | APPROACHING MINIMUMS                                                 |
|                    |                     | MINIMUMS                                                             |
|                    |                     | ONE THOUSAND                                                         |
|                    |                     | FIVE HUNDRED                                                         |
|                    |                     | ONE HUNDRED                                                          |
|                    |                     | FIFTY                                                                |
|                    |                     | THIRTY                                                               |
|                    |                     | TWENTY                                                               |
|                    |                     | TEN                                                                  |
|                    |                     | Two tone siren WINDSHEAR<br>WINDSHEAR WINDSHEAR                      |
|                    |                     | TOO LOW TERRAIN                                                      |
|                    |                     | CAUTION TERRAIN CAUTION<br>TERRAIN                                   |
|                    |                     | TERRAIN TERRAIN PULL UP                                              |
|                    |                     | CAUTION OBSTACLE<br>CAUTION OBSTACLE<br>OBSTACLE OBSTACLE<br>PULL UP |

- (e) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 504  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (f) If failed shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.
- (g) To put the MAT back to its initial condition, make these selections:
  - 1) LINE MAINTENANCE
  - 2) EXIT MAINTENANCE

### E. Put the Airplane Back to its Usual Condition

SUBTASK 34-46-00-000-001-002

- (1) Do this task: Remove Electrical Power, TASK 24-22-00-860-806.

————— END OF TASK —————

### TASK 34-46-00-730-804-002

## 3. Ground Proximity Warning System - System Test

### A. General

- (1) This test does a check of the system interfaces to the Ground Proximity Warning Computer (GPWC).
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808
- (3) This test uses GPS data. The airplane must be in a location where the GPS antennas have a clear view of the GPS satellites.

### B. References

| Reference        | Title                                                                      |
|------------------|----------------------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                          |
| 31-41-00-710-801 | Airplane Information Management System (AIMS) - Operational Test (P/B 501) |
| 31-51-00-730-801 | Warning Electronic System - System Test (P/B 501)                          |
| 31-61-00-710-801 | Primary Display System - Operational Test (P/B 501)                        |
| 34-21-00-730-801 | Air Data Inertial Reference System - System Test (P/B 501)                 |
| 34-31-00-710-801 | Instrument Landing System - Operational Test (P/B 501)                     |
| 34-33-00-710-801 | Radio Altimeter System - Operational Test (P/B 501)                        |
| 34-58-00-710-801 | Global Positioning System - Operational Test (P/B 501)                     |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201)              |

### C. Tools/Equipment

| Reference | Description                                        |
|-----------|----------------------------------------------------|
| STD-1390  | Headphone - 600 Ohm, with 1/4 Inch Mono Audio Plug |

### D. Location Zones

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

### E. Procedure

SUBTASK 34-46-00-860-091-002

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-46-00

Config 2  
Page 505  
Jan 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-46-00-860-104-002

- (2) Make sure that the airplane is in a location where it can receive GPS signals.

SUBTASK 34-46-00-860-092-002

- (3) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801).

SUBTASK 34-46-00-860-093-002

- (4) Make sure the Primary Display System is on (TASK 31-61-00-710-801).

SUBTASK 34-46-00-860-094-002

- (5) Make sure the Warning Electronic System is on (TASK 31-51-00-730-801).

SUBTASK 34-46-00-860-095-002

- (6) Make sure the Air Data Inertial Reference System is on (TASK 34-21-00-730-801).

SUBTASK 34-46-00-860-096-002

- (7) Make sure the Instrument Landing System is on (TASK 34-31-00-710-801).

SUBTASK 34-46-00-860-097-002

- (8) Make sure the Global Positioning System is on (TASK 34-58-00-710-801).

SUBTASK 34-46-00-860-098-002

- (9) Make sure the Radio Altimeter System is on (TASK 34-33-00-710-801).

SUBTASK 34-46-00-860-099-002

- (10) Make sure the TERR switches on the Captain's and First Officer's EFIS control panels are on.

SUBTASK 34-46-00-710-008-002

- (11) Do this task: Ground Proximity Warning System - Operational Test,  
TASK 34-46-00-710-803-002.

SUBTASK 34-46-00-710-009-002

- (12) Do a check of the GND PROX GEAR OVRD switch-light:
- (a) Push the GND PROX GEAR OVRD switch-light on the first officer's panel, P2-2.
    - 1) Make sure the OVRD light shows.
  - (b) Push the GND PROX GEAR OVRD switch-light on the first officer's panel, P2-2.
    - 1) Make sure the OVRD light does not show.

SUBTASK 34-46-00-710-010-002

- (13) Do a check of the GND PROX FLAP OVRD switch-light:
- (a) Push the GND PROX FLAP OVRD switch-light on the first officer's panel, P2-2.
    - 1) Make sure the OVRD light shows.
  - (b) Push the GND PROX FLAP OVRD switch-light on the first officer's panel, P2-2.
    - 1) Make sure the OVRD light does not show.

SUBTASK 34-46-00-710-011-002

- (14) Use a maintenance access terminal (MAT) to do a check of the GND PROX G/S INHIBIT switch-light:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) OTHER FUNCTIONS
    - 3) INPUT MONITORING
    - 4) GENERAL INPUT

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 506  
May 05/2017





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- 5) CONTINUE
- 6) Put the cursor in a direct entry field.
- 7) Use the keyboard to type the following signal information:
  - a) X/429/052/351/00

NOTE: Where X is L or R.

- 8) Select RUN to start the input monitoring.
- (b) Push and hold the GND PROX G/S INHIBIT switch-light on the first officer's panel, P2-2.
  - 1) Make sure the status of bit 17 on the MAT Input Monitoring display is 1 for this signal, X/429/052/351/00.  
NOTE: Where X is L or R.
- (c) Release the GND PROX G/S INHIBIT switch-light on the first officer's panel, P2-2.
  - 1) Make sure the status of bit 17 on the MAT Input Monitoring display is 0 for this signal, X/429/052/351/00.  
NOTE: Where X is L or R.

**SUBTASK 34-46-00-710-012-002**

- (15) Do a check of the GPWS terrain override and switching:
  - (a) Set the TERR switches on the Captain's and First Officer's EFIS control panels to off.
  - (b) Make sure the TERR OVRD switch on the first officer's panel, P2-2 is off.
  - (c) Set the mode select switches on the Captain's and First Officer's EFIS control panels to the MAP mode.
  - (d) Set the WXR switches on the Captain's and First Officer's EFIS control panels to on.
    - 1) Make sure the terrain display information does not show on the Captain's and First Officer's navigation displays (NDs).  
NOTE: Terrain display information is a pattern of red, yellow, and green grid dots (green grid dots may not be visible on the ground) which form a low resolution contour map of the terrain surrounding the aircraft out to the range determined by the EFIS control panel.
    - 2) Make sure the status of bit 13 and bit 14 on the MAT Input Monitoring display is 0 for this signal, X/429/052/357/00.  
NOTE: Where X is L or R.
  - (e) Set the TERR switch on the Captain's EFIS control panel to the on position.
    - 1) Make sure TERR and the terrain display information shows on the Captain's ND.
    - 2) Make sure TERR and the terrain display information do not show on the First Officer's ND.
    - 3) Make sure the status of bit 13 on the MAT Input Monitoring display is 1 for this signal, X/429/052/357/00.  
NOTE: Where X is L or R.
  - (f) Set the TERR switch on the First Officer's EFIS control panel to the on position.
    - 1) Make sure TERR and the terrain display information shows on the First Officer's ND.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 507  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) Make sure the status of bit 14 on the MAT Input Monitoring display is 1 for this signal, X/429/052/357/00.

NOTE: Where X is L or R.

- (g) Push the TERR OVRD switch-light on the first officer's panel, P2-2.
  - 1) Make sure the OVRD light shows.
  - 2) Make sure TERR and the terrain display information does not show on the Captain's and First Officer's NDs.
  - 3) Make sure TERR OVRD shows on the Captain's and First Officer's NDs.
  - 4) Make sure the EICAS advisory message, TERR OVRD, shows.
- (h) Push the TERR OVRD switch-light on the first officer's panel, P2-2.
  - 1) Make sure the OVRD light does not show.
  - 2) Make sure the terrain display information shows on the Captain's and First Officer's NDs.
  - 3) Make sure TERR OVRD does not show on the Captain's and First Officer's NDs.
  - 4) Make sure the EICAS advisory message, TERR OVRD, does not show.
- (i) Open this circuit breaker and install safety tag:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| D          | 12         | C34633        | TERR DSPL   |

- (j) Make sure the terrain display information does not show on the Captain's and First Officer's NDs.
- (k) Make sure TERR FAIL shows on the Captain's and First Officer's NDs.
- (l) Make sure the EICAS advisory message, GND PROX SYS, shows.
- (m) Make sure the EICAS status message, TERR SYS, shows on the multi-function display (MFD).
- (n) Remove the safety tag and close this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| D          | 12         | C34633        | TERR DSPL   |

- (o) Make sure the terrain display information shows on the Captain's and First Officer's NDs.
- (p) Make sure TERR FAIL does not show on the Captain's and First Officer's NDs.
- (q) Make sure the EICAS advisory message, GND PROX SYS, does not show.
- (r) Make sure the EICAS status message, TERR SYS, does not show on the MFD.

SUBTASK 34-46-00-700-004

- (16) Do a check of the program pin system configuration:
  - (a) Make sure the ground proximity warning system (GPWS) is operational (Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002).

### ARO 001-008 PRE SB 777-34-0232

- (b) Make sure the COMPUTER OK light on the front panel of the GPWC is on and the other lights are off.

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-46-00

Config 2  
Page 508  
May 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**ARO 009-999; ARO 001-008 POST SB 777-34-0232**

- (c) Make sure the COMPUTER STATUS light on the front panel of the GPWC is green and the EXTERNAL FAULT light is off.

**ARO ALL**

- (d) Make sure the TERR switches on the EFIS control panels, P7, are on.
- (e) Open the door on the front panel of the GPWC.
- (f) Plug the headphone, STD-1390 into the headphone jack of the GPWC.

**ARO 001-008 PRE SB 777-34-0232**

- (g) Make sure there is no card in the card slot of the GPWC.

**ARO ALL**

- (h) Do these steps to do the level 3 self-test of the GPWC:

NOTE: The GPWC self-test has six levels that operate in sequence. The level 3 self-test will occur after the level 2 self-test.

- 1) Push the self-test switch on the GPWC for one second.
  - 2) After the level 1 self-test starts, push the self-test switch for one second to go to the level 2 self-test.
  - 3) After the level 2 self-test starts, wait until the PRESS TO CONTINUE annunciation occurs, then push the self-test switch for one second to go to the level 3 self-test.
  - 4) You will hear a sequence of the configuration annunciations for the GPWS over the headphone.
  - 5) If your airline maintains a terrain database version requirement, make sure the terrain database version is correct. The name of the terrain database software is:
    - EGPWC TERRAIN DBUsing the name, the specific software part number for an aircraft can be identified in the IPC.
- (i) Remove the headphone, STD-1390 from the headphone jack on the GPWC.
  - (j) Close the door on the front panel of the GPWC.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-46-00**

Config 2  
Page 509  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### GROUND PROXIMITY WARNING COMPUTER - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
- (1) A removal of the ground proximity warning computer (GPWC)
  - (2) An installation of the GPWC.
- B. The GPWC is installed on the E1-4 rack in the main equipment center. All electrical connections are at the rear of the unit.

#### **TASK 34-46-01-000-801**

#### 2. Ground Proximity Warning Computer Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

##### A. References

| <u>Reference</u> | <u>Title</u>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-000-801 | E/E Box Removal (P/B 401)                                 |

##### B. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

##### C. Access Panels

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

##### D. Removal Procedure

SUBTASK 34-46-01-860-001

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>                  |
|------------|------------|---------------|------------------------------|
| D          | 12         | C34633        | TERR DSPL                    |
| E          | 12         | C34442        | GROUND PROX WARNING COMPUTER |

SUBTASK 34-46-01-010-001

- (2) To get access to the main equipment center, open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

EFFECTIVITY  
ARO ALL

# 34-46-01

D633W101-ARO

Page 401  
May 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-46-01-020-003



**CAUTION**

DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE GPWC. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE GPWC.

- (3) To remove the GPWC [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

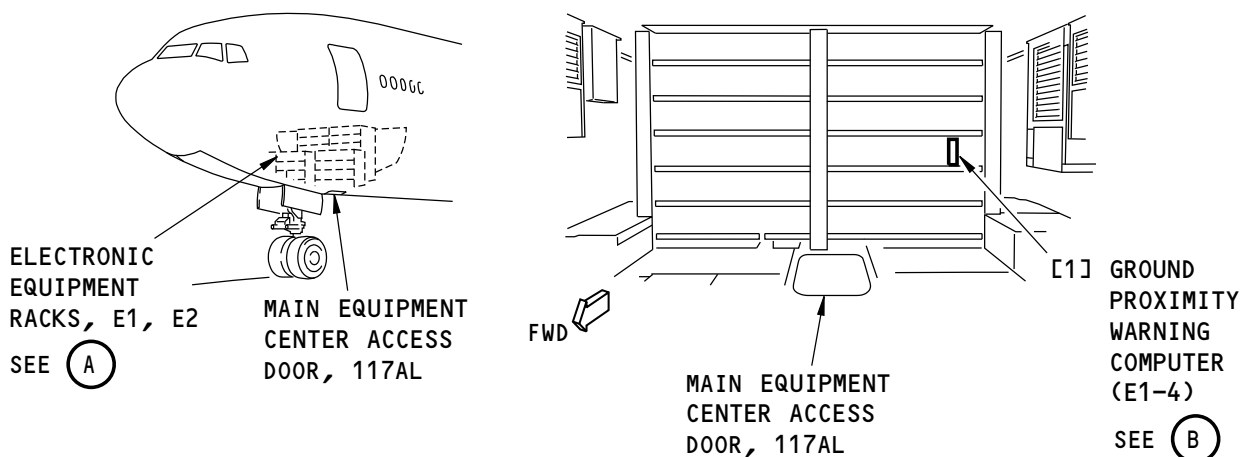
D633W101-ARO

**34-46-01**

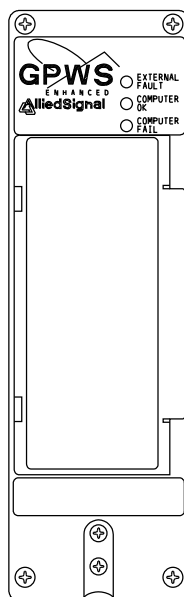
Page 402  
Sep 05/2017



777-200/300  
AIRCRAFT MAINTENANCE MANUAL



ELECTRONIC EQUIPMENT RACKS, E1, E2



GROUND PROXIMITY  
WARNING COMPUTER



H39136 S0006420866\_V1

Ground Proximity Warning Computer Installation  
Figure 401/34-46-01-990-802 (Sheet 1 of 2)

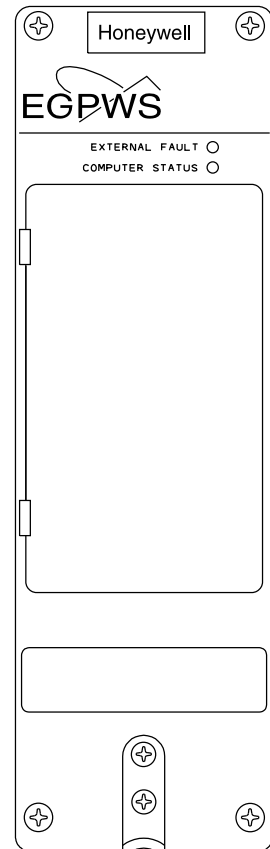
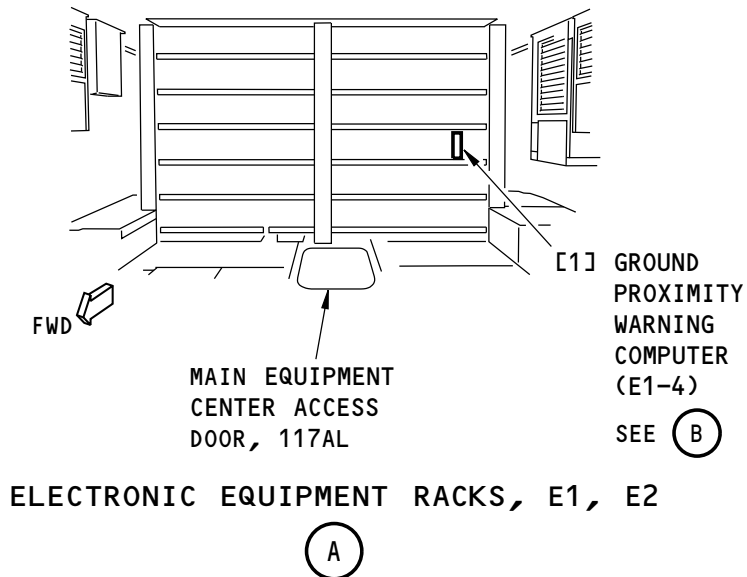
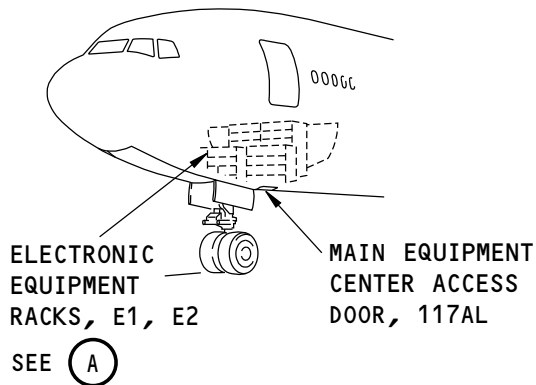
EFFECTIVITY  
ARO 001-008 PRE SB 777-34-0232

34-46-01

D633W101-ARO

Page 403  
May 05/2015

**BOEING**  
777-200/300  
AIRCRAFT MAINTENANCE MANUAL



GROUND PROXIMITY WARNING COMPUTER

(B)

2326633 S0000528526\_V1

Ground Proximity Warning Computer Installation  
Figure 401/34-46-01-990-802 (Sheet 2 of 2)

EFFECTIVITY  
ARO 009-999; ARO 001-008 POST SB 777-34-0232

D633W101-ARO

**34-46-01**

Page 404  
May 05/2015

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

## TASK 34-46-01-400-801

### 3. Ground Proximity Warning Computer Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

#### A. References

| Reference            | Title                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 06-41-00-800-801     | Finding an Access Door or Panel on the Fuselage (P/B 201)                                                                                   |
| 20-10-01-400-801     | E/E Box Installation (P/B 401)                                                                                                              |
| 34-46-00-470-803     | RAAS ACTIVATION (P/B 201)                                                                                                                   |
| 34-46-00-470-805     | Load the Terrain Database with USB Drive Load (P/B 201)                                                                                     |
| 34-46-00-470-806     | Load the Operational Program Configuration (OPC) Software with PMAT 2000/615A Portable Data Loader via the EGPWS Front Panel RJ45 (P/B 201) |
| 34-46-00-700-801     | Verify the Terrain Database Part Number for PCMCIA Flash Card Load (P/B 201)                                                                |
| 34-46-00-710-803-002 | Ground Proximity Warning System - Operational Test (P/B 501)                                                                                |

#### B. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 1        | GPWC        | 34-46-01-01-005 | ARO ALL          |

#### C. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

#### D. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

#### E. Installation Procedure

SUBTASK 34-46-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

##### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name                         |
|-----|-----|--------|------------------------------|
| D   | 12  | C34633 | TERR DSPL                    |
| E   | 12  | C34442 | GROUND PROX WARNING COMPUTER |

SUBTASK 34-46-01-910-002



**CAUTION** DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE GPWC. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE GPWC.

- (2) To install the GPWC [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

NOTE: The ground proximity warning computer is referred to as the GPWC in this task.

EFFECTIVITY  
ARO ALL

## 34-46-01

D633W101-ARO





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-46-01-410-001

- (3) Close this access panel:

| <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
|---------------|----------------------|

|       |                                   |
|-------|-----------------------------------|
| 117AL | Main Equipment Center Access Door |
|-------|-----------------------------------|

(TASK 06-41-00-800-801).

SUBTASK 34-46-01-860-010

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

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>                  |
|------------|------------|---------------|------------------------------|
| D          | 12         | C34633        | TERR DSPL                    |
| E          | 12         | C34442        | GROUND PROX WARNING COMPUTER |

**ARO 001-008 PRE SB 777-34-0232**

SUBTASK 34-46-01-860-009

- (5) Do this task: RAAS ACTIVATION, TASK 34-46-00-470-803.

**ARO ALL**

**F. GPWC Installation Test**

**ARO 001-008 PRE SB 777-34-0232**

SUBTASK 34-46-01-740-003

- (1) Make sure the green COMPUTER OK light on the front panel of the EGPWC is on.

**ARO 009-999; ARO 001-008 POST SB 777-34-0232**

SUBTASK 34-46-01-740-004

- (2) Make sure the green COMPUTER STATUS light on the front panel of the GPWC is on.

**ARO 001-008 PRE SB 777-34-0232**

SUBTASK 34-46-01-860-006

- (3) If it is your airline's policy to do a check of the terrain database version, do this task: Verify the Terrain Database Part Number for PCMCIA Flash Card Load, TASK 34-46-00-700-801.

SUBTASK 34-46-01-710-002

- (4) Do this task: Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002.

**ARO 009-999; ARO 001-008 POST SB 777-34-0232**

SUBTASK 34-46-01-710-003

- (5) Do this task: Ground Proximity Warning System - Operational Test, TASK 34-46-00-710-803-002.
- (a) Make sure the terrain test pattern shows on the navigation display (ND).  
NOTE: The terrain test pattern is shown for 12 seconds on the navigation display (ND).
- (b) Record the operational program configuration (OPC) part number and the terrain database part number.  
NOTE: The test pattern shows magenta text for the operational program configuration part number, ie OSSBCGXXXXXXXXXX.  
NOTE: The test pattern shows magenta text for the terrain database part number, ie TDBXXXX.

EFFECTIVITY  
ARO ALL

**34-46-01**

D633W101-ARO

Page 406  
May 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**ARO 009-999; ARO 001-008 POST SB 777-34-0232 (Continued)**

- (c) If the OPC part number is not correct, then do this task: Load the Operational Program Configuration (OPC) Software with PMAT 2000/615A Portable Data Loader via the EGPWS Front Panel RJ45, TASK 34-46-00-470-806. The name of the EGPWC Operational Program Configuration software is:

- EGPWC OSS

Using the name, the specific software part number for an aircraft can be identified in the IPC.

- (d) If the terrain database version is not correct, then do this task: Load the Terrain Database with USB Drive Load, TASK 34-46-00-470-805.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

**34-46-01**

D633W101-ARO

Page 407  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### VHF OMNIDIRECTIONAL RANGE (VOR) SYSTEM - MAINTENANCE PRACTICES

#### 1. General

- A. This procedure has these tasks:
- (1) VOR System Deactivation.
  - (2) VOR System Activation.

#### **TASK 34-51-00-040-801**

#### 2. VOR System - Deactivation

##### A. General

- (1) This task removes electrical from the following components of the VOR System.
- (a) VOR/MB Receiver
  - (b) VOR Antenna

##### B. Location Zones

| Zone | Area                            |
|------|---------------------------------|
| 117  | Main Equipment Center, Left     |
| 118  | Main Equipment Center, Right    |
| 211  | Flight Compartment, Left        |
| 212  | Flight Compartment, Right       |
| 327  | Vertical Stabilizer Forward Tip |

##### C. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### D. Procedure



REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-51-00-860-029

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

##### E. VOR System - Tryout

NOTE: This tryout is to make sure the VOR System is in a zero energy state.

SUBTASK 34-51-00-860-030

- (1) Make sure that these circuit breakers are open and have safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

EFFECTIVITY  
ARO ALL

# 34-51-00

D633W101-ARO

Page 201  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-51-00-010-001

- (2) Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

SUBTASK 34-51-00-700-001

- (3) Press the self test switch on the front panel of the VOR/MB receiver.

NOTE: The VOR/MB is located in the E/E bay on the E1-3 shelf.

- (a) Make sure the status lights are not illuminated.

————— **END OF TASK** —————

### TASK 34-51-00-440-801

#### 3. VOR System - Activation

##### A. General

- (1) This task adds electrical to following components of the VOR System.

- (a) VOR/MB Receiver
- (b) VOR Antenna

##### B. Location Zones

| <u>Zone</u> | <u>Area</u>                     |
|-------------|---------------------------------|
| 117         | Main Equipment Center, Left     |
| 118         | Main Equipment Center, Right    |
| 211         | Flight Compartment, Left        |
| 212         | Flight Compartment, Right       |
| 327         | Vertical Stabilizer Forward Tip |

##### C. Procedure

SUBTASK 34-51-00-860-031

- (1) Make sure that these circuit breakers are open and have safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

SUBTASK 34-51-00-700-002

- (2) Press the self test switch on the front panel of the VOR/MB receiver.

- (a) Make sure the status lights are illuminated.

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-51-00

Page 202  
Jan 05/2016



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### VHF OMNIDIRECTIONAL RANGE (VOR) SYSTEM - ADJUSTMENT/TEST

#### 1. General

A. This procedure has these tasks for the VOR system:

- (1) An operational test
- (2) A system test

#### **TASK 34-51-00-740-801**

#### 2. VOR System - Operational Test

##### A. General

- (1) The same sequence of steps can be used for the left and right VOR receiver.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. Location Zones

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

##### D. Operational Test

###### **SUBTASK 34-51-00-860-001**

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### **SUBTASK 34-51-00-740-001**

- (2) Use a maintenance access terminal (MAT) to do the operational test of the left (right) VOR receiver:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 VOR/Marker Beacon System
    - 5) OPERATIONAL TEST
    - 6) Left VOR M/B System, Right VOR System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

EFFECTIVITY  
ARO ALL

## 34-51-00

D633W101-ARO

Page 501  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### E. VOR Receiver Tuning Test

SUBTASK 34-51-00-860-002

- (1) Open this circuit breaker:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 26         | C34444        | VOR R       |

SUBTASK 34-51-00-860-003

- (2) Set the mode select switch on the EFIS control panels to the VOR position.

SUBTASK 34-51-00-860-004

- (3) Set the left ADF/VOR select switch on the EFIS control panels to the VOR L position.

SUBTASK 34-51-00-860-005

- (4) Set the right ADF/VOR select switch on the EFIS control panels to the VOR R position.

SUBTASK 34-51-00-710-001

- (5) Tune the left VOR receiver to a VOR frequency using the FMC as the tuning source:

- Push the LSK that is adjacent to FMC on the CDU.
- Push the NAV RAD key on the left CDU until you find the NAV RADIO page.
- Put a VOR frequency and a course of 000 degrees into the CDU.
- Push the LSK that is adjacent to the VOR L frequency display.
  - Make sure the tuned frequency shows on the NDs.
  - Make sure the source annunciation VOR L shows on the NDs.

SUBTASK 34-51-00-860-006

- (6) Close this circuit breaker:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 26         | C34444        | VOR R       |

SUBTASK 34-51-00-710-002

- (7) Open this circuit breaker:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |

SUBTASK 34-51-00-860-007

- (8) Put a VOR frequency and a course of 000 degrees into the CDU.

SUBTASK 34-51-00-860-008

- (9) Push the LSK that is adjacent to the VOR R frequency display.
- Make sure the tuned frequency shows on the NDs.
  - Make sure the source annunciation VOR R shows on the NDs.

SUBTASK 34-51-00-860-009

- (10) Close this circuit breaker:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |

EFFECTIVITY  
ARO ALL

# 34-51-00

D633W101-ARO

Page 502  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

— END OF TASK —

### TASK 34-51-00-730-801

#### 3. VOR System - System Test

##### A. General

- (1) The system test uses a ramp test set to supply test signals. This task makes sure the VOR system operates correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 34-21-00-820-801 | Air Data Inertial Reference Unit - Alignment (P/B 201)        |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (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-1913  | Test Set - NAV/COMM Ramp<br>Part #: 90000136 Supplier: 92606<br>Part #: IFR 4000 Supplier: 51190<br>Opt Part #: 402AP-110 Supplier: 51190<br>Opt Part #: 972Q-4 Supplier: 4V792<br>Opt Part #: NAV-402AP-2 Supplier: 51190<br>Opt Part #: T-30C Supplier: 92606<br>Opt Part #: T-30D Supplier: 92606<br>Opt Part #: T-36C Supplier: 92606 |

##### D. Location Zones

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

##### E. Prepare for the Test

###### SUBTASK 34-51-00-860-012

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-51-00-860-013

- (2) Put the NAV/COMM ramp test set, COM-1913, approximately 75 feet (unobstructed) from the side of the airplane fin and set the output:
  - (a) RF FREQ - 108.0 Mhz
  - (b) VOR BEARING - 45.00 degrees
  - (c) MODULATION - 30 percent at 1020 Hz (Ident Tone)
  - (d) ATTENUATION - -20 db

EFFECTIVITY  
ARO ALL

# 34-51-00

D633W101-ARO

Page 503  
Jan 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-51-00-860-014

- (3) To make sure the air data inertial reference system is aligned in the NAV mode, do this task:  
Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

### SUBTASK 34-51-00-860-015

- (4) Set the mode select switch on the EFIS control panels to the VOR position.

### SUBTASK 34-51-00-860-016

- (5) Set the left ADF/VOR select switch on the EFIS control panels to the VOR L position.

### SUBTASK 34-51-00-860-017

- (6) Set the right ADF/VOR select switch on the EFIS control panels to the VOR R position.

### SUBTASK 34-51-00-860-018

- (7) Set the HDG (heading) on the AFDS mode control panel to 001 degrees.

## F. Operational Test

### SUBTASK 34-51-00-710-003

- (1) Do this task: (TASK 34-51-00-740-801).

## G. Data Out Test

### SUBTASK 34-51-00-860-019

- (1) Do the data out test:
  - (a) Push the LSK that is adjacent to FMC on the CDU.
  - (b) Push the NAV RAD key on the CDU to show the NAV RADIO page on the display.
  - (c) Put the approved test frequency and a course of 000 degrees into the CDU.
  - (d) Push the LSK that is adjacent to the VOR/MKR L and VOR R frequency displays.
  - (e) Make sure these results occur:
    - 1) The NDs show the test frequency.
    - 2) VOR L shows on the captain's ND as the source receiver.
    - 3) VOR R shows on the first officer's ND as the source receiver.
    - 4) The wide and narrow bearing pointers on the NDs show 45±2 degrees.

## H. AIR/GND Inhibit Test

### SUBTASK 34-51-00-860-020

- (1) Open these circuit breakers:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

### SUBTASK 34-51-00-710-004

- (2) Use a maintenance access terminal (MAT) to do the AIR/GND inhibit test for the VOR system:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 VOR/Marker Beacon System
    - 5) OPERATIONAL TEST

EFFECTIVITY  
ARO ALL

# 34-51-00

D633W101-ARO

Page 504  
May 05/2015





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- 6) Left VOR M/B System, Right VOR System
- 7) CONTINUE
- (b) Do the instructions shown on the MAT and make this selection:
  - 1) CONTINUE
- (c) When the test is completed, make sure that INHIBIT shows adjacent to TEST CONDITION on the MAT.
- (d) To start a test of the other VOR receiver, select NEW TEST.

SUBTASK 34-51-00-860-021

- (3) Close these circuit breakers:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

**I. Audio Test**

SUBTASK 34-51-00-730-002

- (1) Do the audio test:
  - (a) Push the volume control knob for the VOR/ADF switch on the audio control panel (ACP).
  - (b) Adjust the volume control knob to a nominal sound level.
  - (c) Set the VBR switch on the ACP to R or BOTH.
  - (d) Set the VOR/ADF switch on the ACP to VOR R and then VOR L.

NOTE: Stop momentarily at each position to hear the local VOR frequency.

- 1) Make sure you hear the VOR audio tone (1020 Hz) over the flight interphone speakers and headsets for each VOR receiver.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

**34-51-00**

D633W101-ARO

Page 505  
May 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### VOR/MB RECEIVER - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
  - (1) A removal of the VOR/MB receiver.
  - (2) An installation of the VOR/MB receiver.
- B. The two VOR/MB receivers are in the main equipment center. The left VOR/MB receiver is on the E1 electronics equipment rack, shelf No. 3. The right VOR/MB receiver is on the E2 electronics equipment rack, shelf No. 3. The left and right receivers are the same. The left receiver has both the MB and VOR systems operational. The right receiver has only the VOR system operational.
- C. The removal and installation procedures are the same for each VOR/MB receiver.

#### **TASK 34-51-01-000-801**

#### 2. VOR/MB Receiver Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

##### A. **References**

| <b>Reference</b> | <b>Title</b>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-000-801 | E/E Box Removal (P/B 401)                                 |

##### B. **Location Zones**

| <b>Zone</b> | <b>Area</b>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

##### C. **Access Panels**

| <b>Number</b> | <b>Name/Location</b>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

##### D. **Removal Procedure**

SUBTASK 34-51-01-860-001

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <b>Row</b> | <b>Col</b> | <b>Number</b> | <b>Name</b> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

SUBTASK 34-51-01-010-001

- (2) To get access to the VOR/MB receiver [1], open this access panel:

| <b>Number</b> | <b>Name/Location</b>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-51-01

Page 401  
May 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-51-01-530-001

(3) To remove the VOR/MB receiver [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

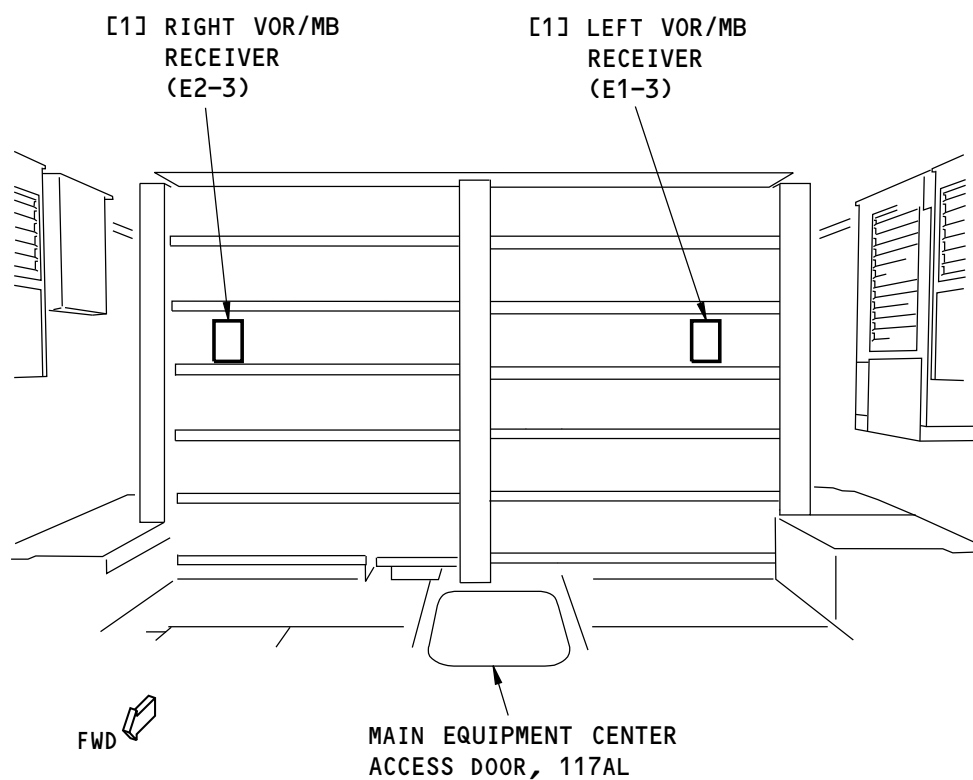
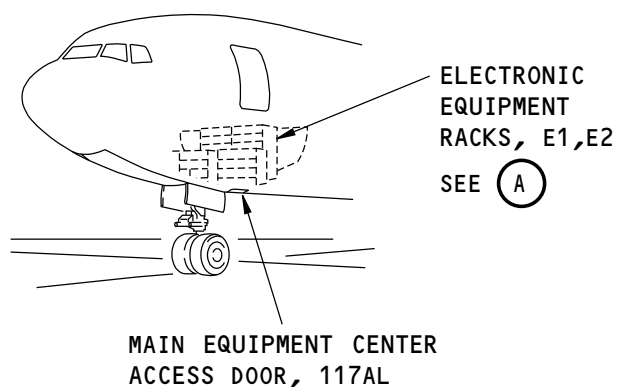
D633W101-ARO

**34-51-01**

Page 402  
May 05/2015



777-200/300  
AIRCRAFT MAINTENANCE MANUAL



ELECTRONIC EQUIPMENT RACKS, E1,E2

(A)

C80922 S0006420879\_V1

VOR/MB Receiver Installation  
Figure 401/34-51-01-990-802

EFFECTIVITY  
ARO ALL

34-51-01

D633W101-ARO

Page 403  
May 05/2015



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

TASK 34-51-01-400-801

3. **VOR/MB Receiver Installation**

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

**A. General**

- (1) The installation task has an installation test which makes sure that the VOR/MB receiver is correctly installed.
- (2) The same sequence of steps can be used for the left and right VOR/MB receiver.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

**B. References**

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 20-10-01-400-801 | E/E Box Installation (P/B 401)                                |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

**C. Expendables/Parts**

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 1        | Receiver    | 34-51-01-01-005 | ARO ALL          |

**D. Location Zones**

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

**E. Access Panels**

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

**F. Installation Procedure**

SUBTASK 34-51-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

**Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| A   | 4   | C34443 | VOR MKR L |
| E   | 26  | C34444 | VOR R     |

SUBTASK 34-51-01-420-001

- (2) To install the VOR/MB receiver [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-51-01-410-001

- (3) Close this access panel:

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

EFFECTIVITY  
ARO ALL

**34-51-01**

D633W101-ARO

Page 404  
May 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-51-01-860-003

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

### G. Installation Test

SUBTASK 34-51-01-710-001

- (1) Use a maintenance access terminal (MAT) to do the LRU replacement test of the left (or right) VOR/MB receiver:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 VOR/Marker Beacon System
    - 5) OPERATIONAL TEST
    - 6) Left VOR M/B System (Right VOR System)
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

# 34-51-01

D633W101-ARO

Page 405  
May 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**VOR ANTENNA - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the VOR antenna
  - (2) An installation of the VOR antenna.
- B. The VOR antenna (M34022) is installed at the top of the vertical stabilizer (fin).

**TASK 34-51-02-000-801**

**2. VOR Antenna Removal**

(Figure 401)

**A. References**

| <b>Reference</b> | <b>Title</b>                              |
|------------------|-------------------------------------------|
| 55-31-01-000-801 | Vertical Stabilizer Tip Removal (P/B 401) |

**B. Location Zones**

| <b>Zone</b> | <b>Area</b>                     |
|-------------|---------------------------------|
| 211         | Flight Compartment, Left        |
| 212         | Flight Compartment, Right       |
| 327         | Vertical Stabilizer Forward Tip |

**C. Removal Procedure**

**SUBTASK 34-51-02-860-001**

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <b>Row</b> | <b>Col</b> | <b>Number</b> | <b>Name</b> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

**SUBTASK 34-51-02-010-001**

- (2) Remove the vertical stabilizer tip [1]. To remove it, do this task: Vertical Stabilizer Tip Removal, TASK 55-31-01-000-801.

**SUBTASK 34-51-02-020-001**

- (3) Remove the VOR antenna [6]:
- (a) Disconnect the coaxial connectors [2].
  - (b) Put protective covers on the coaxial connectors.
  - (c) Remove the screws [5] and the washers [4] from the clamps [3].
  - (d) Remove the clamps [3].
  - (e) Remove the bolts [8] and the washers [7] that attach the VOR antenna [6] to the airplane structure.
  - (f) Remove the VOR antenna [6] from the airplane structure.

———— **END OF TASK** ————

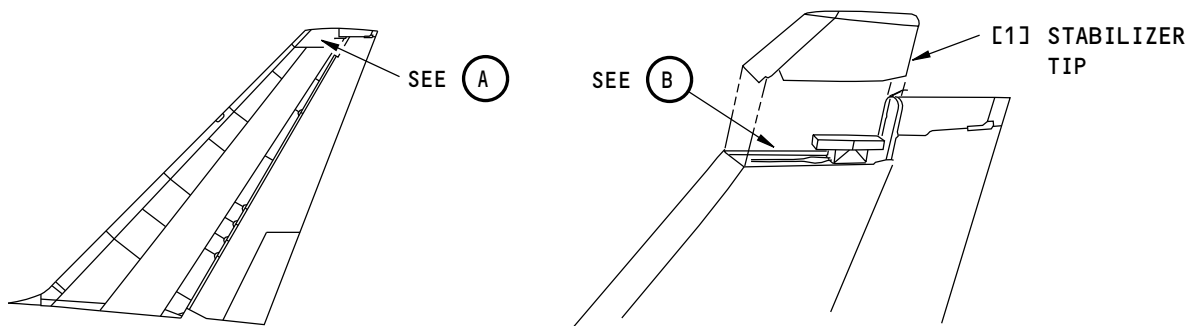
EFFECTIVITY  
ARO ALL

**34-51-02**

D633W101-ARO

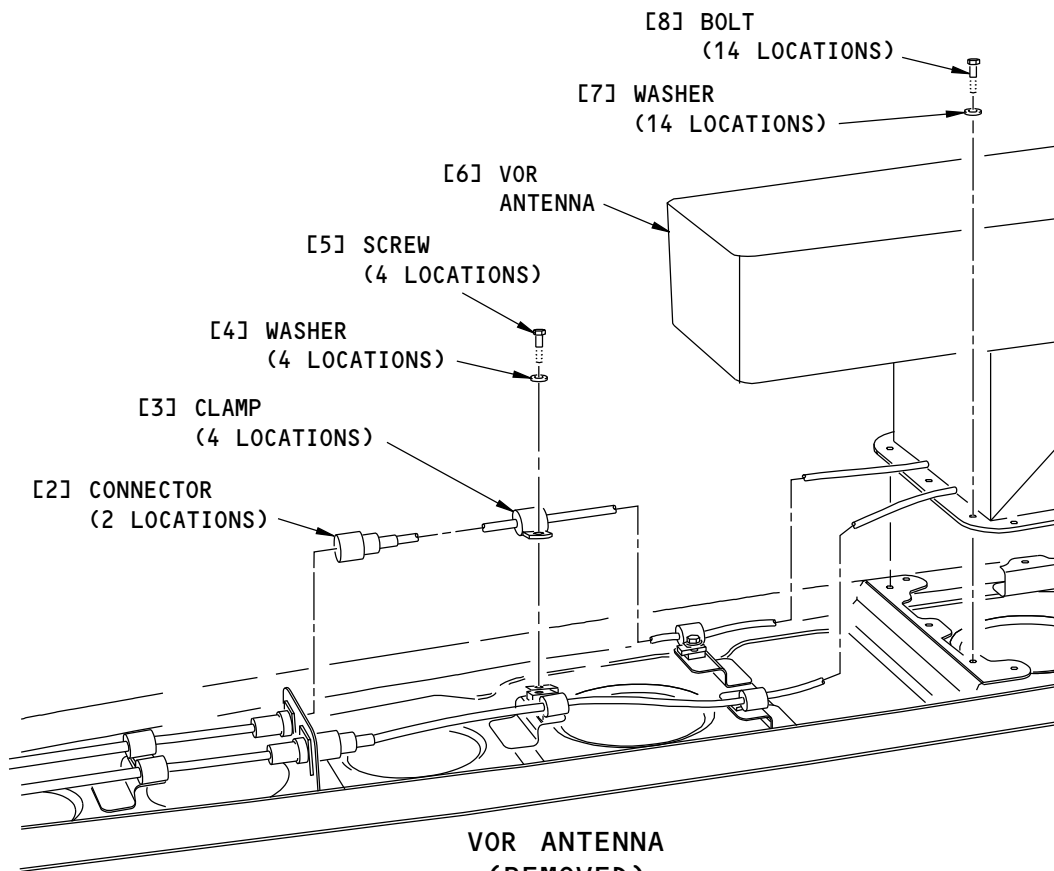
Page 401  
Jan 05/2015

**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**



**VOR ANTENNA  
(INSTALLED)**

(A)



(B)

E01380 S0006420884\_V1

**VOR Antenna Installation  
Figure 401/34-51-02-990-802**

EFFECTIVITY  
ARO ALL

**34-51-02**

D633W101-ARO

Page 402  
Jan 05/2015





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-51-02-400-801

#### 3. VOR Antenna Installation

(Figure 401)

##### A. General

- (1) The installation task has an installation test.
- (2) The installation test makes sure that the VOR antenna [6] operates correctly.

##### B. References

| Reference        | Title                                          |
|------------------|------------------------------------------------|
| 34-51-00-730-801 | VOR System - System Test (P/B 501)             |
| 51-21-03-100-801 | Corrosion Removal and Control (P/B 701)        |
| 55-31-01-400-801 | Vertical Stabilizer Tip Installation (P/B 401) |

##### C. Consumable Materials

| Reference | Description                                                 | Specification |
|-----------|-------------------------------------------------------------|---------------|
| C00308    | Compound - Corrosion Preventive, Petrolatum Hot Application | MIL-C-11796   |
| D00633    | Grease - Aircraft General Purpose                           | BMS3-33       |

##### D. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 6        | VOR antenna | 34-51-02-01-030 | ARO ALL          |

##### E. Location Zones

| Zone | Area                            |
|------|---------------------------------|
| 211  | Flight Compartment, Left        |
| 212  | Flight Compartment, Right       |
| 327  | Vertical Stabilizer Forward Tip |

##### F. Installation Procedure

###### SUBTASK 34-51-02-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

###### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| A   | 4   | C34443 | VOR MKR L |
| E   | 26  | C34444 | VOR R     |

###### SUBTASK 34-51-02-420-001

- (2) Install the VOR antenna [6]:
  - (a) Remove the protective covers from the coaxial connectors [2].
  - (b) Examine the coaxial connectors [2] for bent or broken pins, dirt, and damage.
  - (c) Put the VOR antenna [6] in alignment with the bolt holes that hold the antenna to the vertical stabilizer.
  - (d) Apply corrosion preventive compound, C00308 to the bolts [8] threads. To apply it, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
  - (e) Install the bolts [8] and the washers [7].
  - (f) Apply a layer of grease, D00633 to the coaxial connectors [2].
  - (g) Connect the coaxial connectors [2].

EFFECTIVITY  
ARO ALL

## 34-51-02

D633W101-ARO

Page 403  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (h) Put the clamps [3] in the correct locations on the cables.

NOTE: There are two bracket mounting holes for the clamps [3] near the VOR antenna [6]. You can use the bracket mounting holes that give the best cable installation.

- (i) Apply corrosion preventive compound, C00308 to the screws [5] threads. To apply it, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
- (j) Install the screws [5] and the washers [4] in the clamps [3].

### SUBTASK 34-51-02-410-001

- (3) Install the vertical stabilizer tip [1]. To install it, do this task: Vertical Stabilizer Tip Installation, TASK 55-31-01-400-801.

### SUBTASK 34-51-02-860-003

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

### G. Installation Test

#### SUBTASK 34-51-02-720-001

- (1) Do this task: VOR System - System Test, TASK 34-51-00-730-801.

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

# 34-51-02

D633W101-ARO

Page 404  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AIR TRAFFIC CONTROL/MODE S TRANSPONDER SYSTEM - ADJUSTMENT/TEST

#### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) An operational test of the air traffic control/mode S transponder (ATC) system
  - (2) A functional test of the ATC system

#### **TASK 34-53-00-710-801**

#### 2. Air Traffic Control/Mode S Transponder System - Operational Test

##### A. **General**

- (1) The ATC system operational test does a check of these items:
  - (a) The transponder for the correct operation, internal memory, and receiver circuits.
  - (b) The control panel for correct control data.
  - (c) The antenna for correct impedance.
  - (d) The altitude input for correct altitude data.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. **References**

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. **Location Zones**

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

##### D. **Procedure**

###### SUBTASK 34-53-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-53-00-710-008

- (2) Set the ATC transponder mode switch on the ATC control panel to the ALT ON position.

###### SUBTASK 34-53-00-710-001

- (3) Use a maintenance access terminal (MAT) to do the system test of the left (or right) ATC/mode S transponder system:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Air Traffic Control (ATC) Mode S System
    - 5) SYSTEM TEST
    - 6) Left ATC System (Right ATC System)

EFFECTIVITY  
ARO ALL

## 34-53-00

D633W101-ARO

Page 501  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
  - 1) CONTINUE
  - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 34-53-00-710-009

- (4) Set the ATC transponder mode switch on the ATC control panel to the STBY position.

————— END OF TASK —————

### TASK 34-53-00-730-806

#### 3. Air Traffic Control/Mode S Transponder Functional Test (With the ATC-601 Series Test Set)

NOTE: This procedure is a scheduled maintenance task.

##### A. General

- (1) This ATC system test is a more complete check of the ATC system. The system test first does the ATC - Operational Test, then it uses ground test equipment to examine the left and right ATC systems.
- (2) The ATC system can be tested with the ATC-601 Series ramp test set, COM-4113 by one of these two methods: Flat Antenna or Direct Connect.
- (3) The ATC-601 Series ramp test set, COM-4113 can test ATCRBS Mode A, Mode C and Mode S transponders. ATC-601 test sets with software version 3.0 or higher can also test Mode S Transponders with Enhanced Surveillance (ELS, EHS and ES) capabilities.

##### | ARO 001-017

- (4) The ATC-601 can test the ADS-B functions to EASA AMC 20-24 requirements for DO-260 compliant transponders. But it can not do tests of DO-260A compliant transponders to the EASA AMC 20-24 requirements.

##### | ARO ALL

- (5) The ATC-601 Series ramp test set, COM-4113 uses thirty-nine (39) different tests to check the functionality of the ATC transponder. All thirty-nine (39) tests can be run automatically in the AUTO mode, or individually in the single test mode.
- (6) In the AUTO mode, the test set will determine the correct set of tests, either Mode A/C or Mode S upon receiving the transponder RF signal, and will automatically run the tests.
- (7) A passed Auto Test complies with the FAR Part 43 Appendix F test requirements.

NOTE: The AUTO TEST sequence is the preferred method.

NOTE: A passed AUTO test on the ATC-601-series test set meets the requirements in FAR Part 43, Appendix F for all classes of ATCRBS transponders and for classes 1B, 2B, and 3B Mode S transponders. The ATC-601-series test set only verifies a reply frequency range of 1090 +/- 3 MHz.

NOTE: The ATC-601-series test set does not meet the requirements in FAR Part 43, Appendix F for classes 1B, 2B, and 3B Mode S transponders that incorporate the optional 1090 +/- 1 MHz reply frequency. And, this test set does not meet the requirements for classes 1A, 2A, 3A, and 4 Mode S transponders.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 502  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (8) The details of individual tests conducted during the AUTO TEST are stored in memory and may be reviewed by using the SELECT keys. The PASSED/FAILED indication is shown on top of the page.
- (9) If a test section fails or more data is necessary, use the Single Test Sequence. This lets the user do each test individually or see the individual test results.
- (10) To do a single test, use the select keys to get to the desired test and push the RUN/STOP key. The test will continue until the RUN/STOP key is pushed again.
- (11) Results from the last test done, Auto Test or Single Test, show on the display.

### B. References

| Reference        | Title                                                                             |
|------------------|-----------------------------------------------------------------------------------|
| 22-11-00         | AUTOPILOT FLIGHT DIRECTOR SYSTEM                                                  |
| 25-52-16-000-802 | Panel Removal (P/B 401)                                                           |
| 25-52-16-400-802 | Panel Installation (P/B 401)                                                      |
| 31-41-00         | AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS)                                     |
| 32-09-00-040-801 | Air Mode Simulation - Preparation (P/B 201)                                       |
| 32-09-00-440-801 | Air Mode Simulation - Restoration (P/B 201)                                       |
| 34-21-00         | AIR DATA INERTIAL REFERENCE SYSTEM                                                |
| 34-21-00-820-801 | Air Data Inertial Reference Unit - Alignment (P/B 201)                            |
| 34-31-00         | INSTRUMENT LANDING SYSTEM                                                         |
| 34-58-00         | GLOBAL POSITIONING SYSTEM                                                         |
| 34-58-00-710-801 | Global Positioning System - Operational Test (P/B 501)                            |
| 34-58-00-730-801 | Global Positioning System - System Test (P/B 501)                                 |
| 34-61-00         | FLIGHT MANAGEMENT COMPUTER SYSTEM                                                 |
| 52-34-00-860-801 | Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)  |
| 52-34-00-860-803 | Close the Door Electrically with the External Cargo Door Control Switch (P/B 201) |
| WDM 34-53-13     | Wiring Diagram Manual                                                             |
| WDM 34-53-14     | Wiring Diagram Manual                                                             |
| WDM 34-53-23     | Wiring Diagram Manual                                                             |

### C. Tools/Equipment

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

| Reference | Description                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------------------|
| COM-4113  | Test Set - Ramp, ATC-601 Series<br>Opt Part #: ATC-601 Supplier: 51190<br>Opt Part #: ATC-601-2 Supplier: 51190 |

### D. Location Zones

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

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 503  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### E. Access Panels

| Number | Name/Location |
|--------|---------------|
|--------|---------------|

|       |                                   |
|-------|-----------------------------------|
| 117AL | Main Equipment Center Access Door |
|-------|-----------------------------------|

### F. Prepare for the ATC system test

#### ARO 001-017

SUBTASK 34-53-00-840-007

- (1) If the ADS-B tests will be run as part of the ATC system test the airplane position must let the GPS antennas have a clear view of the GPS satellites.

#### ARO ALL

SUBTASK 34-53-00-710-015

- (2) Do this task: Air Traffic Control/Mode S Transponder System - Operational Test, TASK 34-53-00-710-801.

SUBTASK 34-53-00-860-101

- (3) For the Direct Connect method, do these steps to connect the test set antenna cable to the ATC coax relay:

- (a) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name           |
|-----|-----|--------|----------------|
| A   | 3   | C34445 | ATC L          |
| C   | 3   | C34607 | ATC ANT SWITCH |
| E   | 25  | C34446 | ATC R          |

- (b) For ATC Coax relay K34101 (ATC Top Antenna) located behind the E1-3 equipment rack shelf:

- 1) Open the forward cargo door. Do this task::Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801
- 2) Remove the main equipment center bulkhead liner to get access behind the electronic equipment rack, E1-3. Do this task Panel Removal, TASK 25-52-16-000-802
- 3) Disconnect connector DK34101B (ATC Top Antenna) (WDM 34-53-14).

- (c) For ATC Coax relay K34201 (ATC Bottom Antenna) located next to the E2-5 shelf:

- 1) Open this access panel:

| Number | Name/Location |
|--------|---------------|
|--------|---------------|

|       |                                   |
|-------|-----------------------------------|
| 117AL | Main Equipment Center Access Door |
|-------|-----------------------------------|

- 2) Disconnect connector DK34201B (WDM 34-53-14).

- (d) Connect the ATC-601 Series ramp test set, COM-4113 antenna cable to the relay K34101 (ATC Top Antenna) or K34201 (ATC Bottom Antenna).

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

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name           |
|-----|-----|--------|----------------|
| A   | 3   | C34445 | ATC L          |
| C   | 3   | C34607 | ATC ANT SWITCH |
| E   | 25  | C34446 | ATC R          |

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 504  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-53-00-860-063

- (4) Make sure these systems are operational:
- (a) AUTOPILOT FLIGHT DIRECTOR SYSTEM, SUBJECT 22-11-00
  - (b) AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS), SUBJECT 31-41-00
  - (c) AIR DATA INERTIAL REFERENCE SYSTEM, SUBJECT 34-21-00
  - (d) INSTRUMENT LANDING SYSTEM, SUBJECT 34-31-00
  - (e) GLOBAL POSITIONING SYSTEM, SUBJECT 34-58-00
  - (f) FLIGHT MANAGEMENT COMPUTER SYSTEM, SUBJECT 34-61-00

### SUBTASK 34-53-00-860-087

- (5) Do this task: Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801.

### SUBTASK 34-53-00-860-064

- (6) Set the captain's and first officer's altimeter baro correction to 29.92 in hg.

### SUBTASK 34-53-00-860-065

- (7) Set a selected altitude.
- (a) Set a desired altitude in the AFCS MCP Selected Altitude window.

### SUBTASK 34-53-00-860-066

- (8) On the Captain's and First Officer's MCDU, do the steps that follows:
- (a) Press the RTE button to display page RTE 1.
  - (b) Enter the 4 letter ICAO code of your airport in the ORIGIN and DEST fields. (ex. KDFW)
  - (c) Enter the first 8 characters of the company name in the FLT NO field. This should be the name of the company that conducts the test.
  - (d) Press the DEP/ARR key.
  - (e) Press LSK 1L <Dep to select the departure list for your airport.
  - (f) Select a runway on the right side.
  - (g) Select any departure procedure (SID) from the list on the left side of the display.
  - (h) If available, select any transition (TRANS) from the list on the left side of the display.
  - (i) Push the LEGS button to enter a waypoint.
  - (j) Press LSK 6R ROUTE > to get back to the RTE 1 page.
  - (k) Press LSK 6R ACTIVATE > to activate the flight plan.
  - (l) Press the EXEC button to confirm the route activation.

### SUBTASK 34-53-00-860-067

- (9) Do these steps at the ATC control panel:
- (a) Set the code switches to a desired ATC ID code.  
**NOTE:** Use the ATC ID code 7776 or the Mode A code specified by the local ATC authority.  
Do not use codes 7500, 7600-7677, 7700-7775 and 7777. These are emergency codes.
  - (b) Set the transponder selector on the TCAS/ATC control panel to the LEFT position.
  - (c) Set the mode selector on the TCAS/ATC control panel to the STBY position.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 505  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-860-100

- (10) Open this circuit breaker and install safety tag:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 25         | C34446        | ATC R       |

SUBTASK 34-53-00-860-069

- (11) For the Direct Connect method, do these steps to prepare the ATC-601 Series ramp test set, COM-4113 to test the ATC transponder:

NOTE: It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results.

- (a) Connect the test set antenna cable to the ATC-601 Series ramp test set, COM-4113 RF I/O connector.

- (b) Make sure the antenna connector cover is installed.

NOTE: The connector cover provides the 50 ohm load required when connecting the test set antenna cable to the RF I/O connector.

- (c) Push the POWER button on the ATC-601 Series ramp test set, COM-4113.

- 1) The Start-Up screen will show.

- 2) Make sure that the software version shown on the screen is 3.0 or higher if you are to do Enhanced Surveillance Tests.

- (d) Push the SELF TEST key on the test set.

- (e) Push the RUN/STOP key to start the self-test.

- 1) Make sure the test set display shows PASSED.

- (f) Push the SETUP key to enter the data in the SETUP #1 MENU. If the SETUP #1 MENU does not show, continue to push the SETUP key until the SETUP #1 MENU shows.

NOTE: The ATC-601 has four Setup Menus. Refer to the ATC-601 Operation Manual for detailed information on the Setup Menus.

- (g) Use the following keys to operate the test set, as necessary:

- 1) Use the SLEW keys to change the values.

- 2) Use the SELECT keys to change the items.

- 3) Use the SELECT keys to select the antenna under test.

- (h) In the RANGE field for the TOP and BOTTOM antenna, enter 0 feet.

- (i) In the HEIGHT field for the TOP antenna, enter the height of the TOP antenna in feet.

- (j) In the HEIGHT field for the BOTTOM antenna, enter the height of the BOTTOM antenna in feet.

- (k) Set the SELECTED field, enter the UUT antenna, TOP or BOTTOM.

NOTE: To meet FAR requirements both the left and the right systems must be tested on both upper and lower antennas.

- (l) Enter the cable loss in the LOSS field

NOTE: The cable loss can be found on the direct connect cable for the test set.

- (m) Press any key to exit SETUP #1 MENU

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 506  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ARO 001-017

- (n) Enter the required setup data for the ADS-B tests into the Setup #3 MENU.

NOTE: NOTE: Refer to the ATC-601 Operation Manual for detailed Setup information.

- 1) Push the SETUP key until the SETUP #3 MENU shows.
- 2) Select POS: Set to LOCAL.
- 3) Select LLAT: Set the local latitude position.

NOTE: Position data is on the FMC CDU POS REF page. Use GPS position if GPS antennas have a clear view of the GPS satellites (Global Positioning System - Operational Test, TASK 34-58-00-710-801), if not, use the IRS position.

- 4) Select LLONG: Set the local longitude position.
- 5) Select SPEC SERV: Set to DF17.

### ARO ALL

SUBTASK 34-53-00-860-093

- (12) For the Flat Antenna method, do these steps to prepare the ATC-601 Series ramp test set, COM-4113 to test the ATC transponder:

NOTE: The ramp test set operating instructions provide charts, distance limitations and required airplane antenna configurations for satisfactory ramp test set results. It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results.



**CAUTION**

DO NOT OPERATE THE ATC TEST SET WHEN ITS REMOTE TEST ANTENNA IS LESS THAN 15 INCHES (38 CM) FROM THE AIRPLANES'S ATC ANTENNA. DAMAGE TO THE TEST SET CAN OCCUR.

- (a) Put the test set antenna at a convenient bearing and distance from the ATC antennas under test.

NOTE: For the DIVERSITY test, the test set must be at a distance of less than 50 feet (15.2 meters) from the airplane antenna.

- (b) Put the ATC-601 Series ramp test set, COM-4113 antenna in position that is in the line of sight of the ATC antenna under test.
- (c) Insert the Antenna Shield over the ATC antenna not under test.

NOTE: Refer to the ATC-601 Operation Manual for the Antenna Shield mounting procedure.

NOTE: When testing the BOTTOM antenna and shielding the TOP antenna is not possible or practical, move the Test Set so that it is not in the line of sight of the TOP ATC antenna.

- (d) Connect the test set antenna cable to the ATC-601 Series ramp test set, COM-4113 ANTENNA connector.
- (e) Push the POWER button on the test set.

NOTE: This is a source of interference for radio and L-band radar equipment operating on the airplane and located near the test set. Turn the test set off as soon as the test is completed or when you must perform other radio checks on the airplane.

- 1) The Start-Up screen will show.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 507  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) Make sure that the software version shown on the screen is 3.0 or higher if you are to do Enhanced Surveillance Tests.
- (f) Push the SELF TEST key on the test set.
- (g) Push the RUN/STOP key to start the self-test.
  - 1) Make sure the test set display shows PASSED.
- (h) Push the SETUP key to enter the data in the SETUP #1 MENU. If the SETUP #1 MENU does not show, continue to push the SETUP key until the SETUP #1 MENU shows.

NOTE: The ATC-601 has four Setup Menus. Refer to the ATC-601 Operation Manual for detailed information on the Setup Menus.
- (i) Use the following keys to operate the test set, as necessary:
  - 1) Use the SLEW keys to change the values.
  - 2) Use the SELECT keys to change the items.
  - 3) Use the SELECT keys to select the antenna under test.
- (j) In the RANGE field for the TOP and BOTTOM antennas, enter the distance between the tester antenna and the ATC antennas.
- (k) In the HEIGHT field for the TOP antenna, enter 28 feet.
- (l) In the HEIGHT field for the BOTTOM antenna, enter 8 feet.
- (m) Set the SELECTED field, enter the UUT antenna, TOP or BOTTOM.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.
- (n) Enter the gain listed on the ATC-601 Series ramp test set, COM-4113, antenna into the GAIN\_1030 and GAIN\_1090 field.
- (o) Enter the cable loss listed on the cable in the LOSS field.
- (p) Enter any other required data into the Setup Menu.
- (q) Press any key to exit SETUP #1 MENU

### ARO 001-017

- (r) Enter the required setup data for the ADS-B tests into the Setup #3 MENU.

NOTE: Refer to the ATC-601 Operation Manual for detailed Setup information.

  - 1) Push the SETUP key until the SETUP #3 MENU shows.
  - 2) Select POS: Set to LOCAL.
  - 3) Select LLAT: Set the local latitude position.

NOTE: Position data is on the FMC CDU POS REF page. Use GPS position if GPS antennas have a clear view of the GPS satellites (Global Positioning System - System Test, TASK 34-58-00-730-801), if not, use the IRS position.
  - 4) Select LLONG: Set the local longitude position.

NOTE: Position data is on the FMC CDU POS REF page. Use GPS position if GPS antennas have a clear view of the GPS satellites (Global Positioning System - System Test, TASK 34-58-00-730-801), if not, use the IRS position.
  - 5) Select SPEC SERV: Set to DF17.

### ARO ALL

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 508  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-860-096

- (13) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801

SUBTASK 34-53-00-860-097

- (14) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

SUBTASK 34-53-00-860-099

- (15) Set the mode selector on the TCAS/ATC control panel to the ALT ON position.

## G. ATC System Test - Mode A/C and Mode S Transponders

SUBTASK 34-53-00-730-038

- (1) You can select to do the transponder tests in either the Auto Test or Single Test sequence.

NOTE: The AUTO TEST sequence is the preferred method.

NOTE: A passed AUTO test on the ATC-601-series test set meets the requirements in FAR Part 43, Appendix F for all classes of ATCRBS transponders and for classes 1B, 2B, and 3B Mode S transponders. The ATC-601-series test set only verifies a reply frequency range of 1090 +/- 3 MHz.

NOTE: The ATC-601-series test set does not meet the requirements in FAR Part 43, Appendix F for classes 1B, 2B, and 3B Mode S transponders that incorporate the optional 1090 +/- 1 MHz reply frequency. And, this test set does not meet the requirements for classes 1A, 2A, 3A, and 4 Mode S transponders.

- (a) The complete test list is as follows:

- Reply Delay
- Reply Jitter
- ATCRBS Reply
- SLS Level
- ATCRBS Only All-Call
- Mode S All-Call
- Invalid Address
- SPR On/Off
- Mode S UF0
- Mode S UF4
- Mode S UF5
- Mode S UF11
- Mode S UF16
- Mode S UF20
- Mode S UF21
- Squitter
- Frequency
- Flight ID BDS 2,0

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 509  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- Mode S UELM
- Mode S DELM
- Diversity
- MTL Difference
- Selected Vert Intent Report BDS 4,0 Part 1
- Selected Vert Intent Report BDS 4,0 Part 2
- Data Link Capability Report BDS 1,0 Part 1
- Data Link Capability Report BDS 1,0 Part 2
- Track & Turn Report BDS 5,0
- Heading & Speed Report BDS 6,0
- Ext Squitter Airborne Position BDS 0,5
- Ext Squitter Surface Position BDS 0,6
- Ext Squitter Ident & Category BDS 0,8
- Ext Squitter Airborne Velocity BDS 0,9 Part 1
- Ext Squitter Airborne Velocity BDS 0,9 Part 2
- Ext Squitter Airborne Velocity BDS 0,9 Part 3
- Ext Squitter Status BDS 0,7
- Common Usage GICB Cap Report BDS 1,7
- Specific Services GICB Cap Report BDS 1,8 to 1,C
- Ext Squitter Aircraft Status BDS 6,1
- ACAS Resolution Advisory BDS 3,0
- Power

SUBTASK 34-53-00-730-039

(2) Do these steps to do the Auto Test sequence:

NOTE: The ATC-601 Series ramp test set, COM-4113 will automatically determine the capabilities of the transponder and select the tests to run. The results of tests done during the AUTO TEST are stored in memory. The SELECT keys are used to show the test results.

NOTE: Refer to the ATC-601 Operation Manual for detailed information.

(a) Push the AUTO TEST key on the ATC-601 Series ramp test set, COM-4113.

(b) Use the RUN/STOP key to start the Auto Test.

NOTE: During the Auto Test, TEST RUNNING, will show at the bottom of the display.

- 1) The Auto Test will run until it is finished. The results are stored in the tester memory for review.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 510  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 2) Make sure that an AUTO TEST - PASSED indication shows at the TOP of the display after the Auto Test.

NOTE: The Frequency, Power measurements and Diversity Isolation are also shown on the Auto Test screen.

NOTE: No reply to the UF16, UF20 or UF21 test is not a failure of the ATC system.

NOTE: "NOT AVAIL" is not a failure of the ATC system. Currently, Boeing aircraft are not using Uplink Extended Length Message (UELM) or the Downlink Extended Length Message (DELM) and do not require Airborne Data Link Process (ADLP). An ADLP is necessary for the UELM or DELM function and results in a NOT AVAIL test result when not present.

- 3) Do a check of the FREQUENCY TEST.
  - a) Make sure that the reply frequency of the transponder is 1090 MHz +/- 1 MHz.

NOTE: Due to limitation of the IFR ATC-601-series test set, the auto test function may cause a false PASS indication. The ATC-601-series test set only verifies a reply frequency range of 1090 +/- 3 MHz.
- 4) Make sure the AA (aircraft address) field shows the correct Mode S Address. Refer to WDM 34-53-13 or WDM 34-53-23 for the Mode S Address code.
- 5) If a test section fails or more data is necessary, do the Single Test procedure to view or to run individual tests.

### SUBTASK 34-53-00-730-040

- (3) If necessary, do these steps to do the Single Test sequence:

- (a) Use the SELECT key to select each test on the ATC-601 Series ramp test set, COM-4113.
- (b) Use the RUN/STOP key to start or stop the individual tests.

NOTE: Each Single Test continues until stopped. Use the RUN/STOP key to stop the test.

- (c) Make sure that the display shows PASSED for each test.
- (d) Review the test results.

NOTE: Refer to the ATC-601 Operation Manual for detailed information on test screens and interpreting results of the tests

## H. ATC System Test - Tests for Enhanced Surveillance

### SUBTASK 34-53-00-730-041

- (1) For airplanes with Enhanced Surveillance capabilities, the ATC-601 Series ramp test set, COM-4113 will include the Enhanced Surveillance tests in the AUTO TEST sequence. Use the SELECT keys to see the test results after the AUTO TEST is completed.

NOTE: ATC-601 test sets with software version 3.0 or higher must be used to do the Enhanced Surveillance tests.

- (2) The SINGLE TEST sequence can also be used to do the Enhanced Surveillance tests. Use the SELECT keys to select the test to do and view the test results.

Make sure that the display shows PASSED for each test.

NOTE: Results from the last test run, Auto Test or Single Test, are shown on the display.

NOTE: Refer to the ATC-601 Operation Manual for detailed setup and test information.

- (3) The tests that follow are for Elementary Surveillance:

- Flight ID BDS 2,0

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 511  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- Data Link Capability Report BDS 1,0 Part 1
  - Data Link Capability Report BDS 1,0 Part 2
  - Common Usage GICB Cap Report BDS 1,7
  - ACAS Resolution Advisory BDS 3,0
- (4) The tests that follow are for Enhanced Surveillance:
- Selected Vert Intent Report BDS 4,0 Part 1
  - Selected Vert Intent Report BDS 4,0 Part 2
  - Track & Turn Report BDS 5,0
  - Heading & Speed Report BDS 6,0

### I ARO 001-017

#### I. ATC System Test - Tests for ADS-B

SUBTASK 34-53-00-730-033

- (1) For airplanes with ADS-B capabilities, the ATC-601 Series ramp test set, COM-4113, will include the ADS-B tests in the AUTO TEST sequence. Use the SELECT keys to see the test results after the AUTO TEST is completed.

NOTE: Refer to the ATC-601 Operation Manual for detailed setup and test information.

- (2) The SINGLE TEST sequence can also be used to do the ADS-B tests. Use the SELECT keys to select the test to do and view the test results.

NOTE: Results from the last test run, Auto Test or Single Test, are shown on the DISPLAY.

- (3) The tests that follow are for ADS-B:

- Ext Squitter Airborne Position BDS 0,5
- Ext Squitter Ident & Category BDS 0,8

- (4) Do a check of the ADS-B test results.

NOTE: The test results that follow satisfy the EASA AMC 20-24 requirements for ADS-B.

- (a) Do a check of the Airborne Position.

- 1) Use the SELECT keys to select the Ext Squitter Airborne Position BDS 0,5 test.
- 2) Make sure that the LAT and LONG fields show the present position of the airplane.

- (b) Do a check of the Pressure Altitude.

- 1) Use the SELECT keys to select the Ext Squitter Airborne Position BDS 0,5 test.
- 2) Make sure that the BARO PR ALT field shows the airplane Barometric Pressure Altitude +/- 125 ft.

- (c) Do a check of the Surveillance Status.

- 1) Notify local ATC facilities that transponder testing of the Surveillance Status will be performed.
- 2) Use the SELECT keys to select the Ext Squitter Airborne Position BDS 0,5 test.
- 3) On the ATC control panel, change the code switches to a different ATC ID code.
- 4) Make sure that the SURVL STAT field changes to TEMP ALERT.
- 5) Set code switches on the ATC control panel back to the original code.
- 6) Push the IDENT switch on the ATC Control Panel.
- 7) Make sure that the SURVL STAT field shows SPI.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 512  
Sep 05/2018



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

ARO 001-017 (Continued)

- (d) Do a check of the Position Quality Indicator.
  - 1) Use the SELECT keys to select the Ext Squitter Airborne Position BDS 0,5 test.
  - 2) Make sure that the TYPE field does not show 0 or 18.

NOTE: If TYPE shows 0 the transponder does not receive position data from the IRS or MMR. A TYPE of 18 indicates the transponder receives position data but not from the MMR.
- (e) Do a check of the Aircraft Identity.
  - 1) Use the SELECT keys to select the Ext Squitter Ident & Category BDS 0,8 test.
  - 2) Make sure that the correct data is shown in the following fields:
    - a) The AA (aircraft address) field shows the Mode S Address. Refer to (WDM 34-53-13 or WDM 34-53-23) for the Mode S Address code..
    - b) The FLIGHT ID field shows the same Flight ID entered into the FMC.

**ARO ALL**

**J. Repeat the ATC System Tests.**

SUBTASK 34-53-00-730-018

- (1) Repeat the System Test for the other antenna.
  - (a) For the Direct Connect method.
    - 1) Change the ATC-601 Series ramp test set, COM-4113 antenna cable to select the other ATC antenna relay connector.
    - 2) Change the ATC-601 Series ramp test set, COM-4113 SELECTED field in the SETUP #1 MENU to test the other antenna.
  - (b) For the Flat Antenna method.
    - 1) Move the antenna shield cover to the other antenna.
    - 2) Change the ATC-601 Series ramp test set, COM-4113 SELECTED field in the SETUP #1 MENU to test the other antenna.
- (2) Do the ATC System Tests again for the right or No. 2 system.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.

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

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 25         | C34446        | ATC R       |

- (b) Open this circuit breaker and install safety tag:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 3          | C34445        | ATC L       |

- (c) To test the right system, put the ATC select switch to the R position and select the other air data source..

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 513  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### K. Put the Airplane Back to Its Usual Condition

SUBTASK 34-53-00-860-091

- (1) Set the mode selector on the ATC control panel to the STBY position.

SUBTASK 34-53-00-080-003

- (2) For the Flat Antenna method, remove the antenna shield cover, if installed.

SUBTASK 34-53-00-840-008

- (3) For the Direct Connect method, do these steps to disconnect the antenna cable from the ATC coax relay:

- (a) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

- (b) Disconnect and remove the ATC-601 Series ramp test set, COM-4113 antenna cable.
- (c) For ATC Coax relay K34101, connect connector DK34101B (ATC Top Antenna) (WDM 34-53-14).
- (d) For ATC Coax relay K34201, connect connector DK34201B (ATC Bottom Antenna) (WDM 34-53-14).
- (e) Install the main equipment center bulkhead liner. Do this task: Panel Installation, TASK 25-52-16-400-802
- (f) Close the forward cargo door. Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803
- (g) Close this access panel:

#### Number      Name/Location

117AL      Main Equipment Center Access Door

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

SUBTASK 34-53-00-865-002

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

SUBTASK 34-53-00-840-002

- (5) Do the "Restoration After Air Mode Simulation" task (Air Mode Simulation - Restoration, TASK 32-09-00-440-801).

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 514  
Sep 05/2018





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-53-00-700-006

- (6) Do this task: Air Traffic Control/Mode S Transponder System - Operational Test,  
TASK 34-53-00-710-801

SUBTASK 34-53-00-860-088

- (7) Set the ADIRU switches to the OFF position, if ADIRU operation is not necessary.

———— **END OF TASK** ————

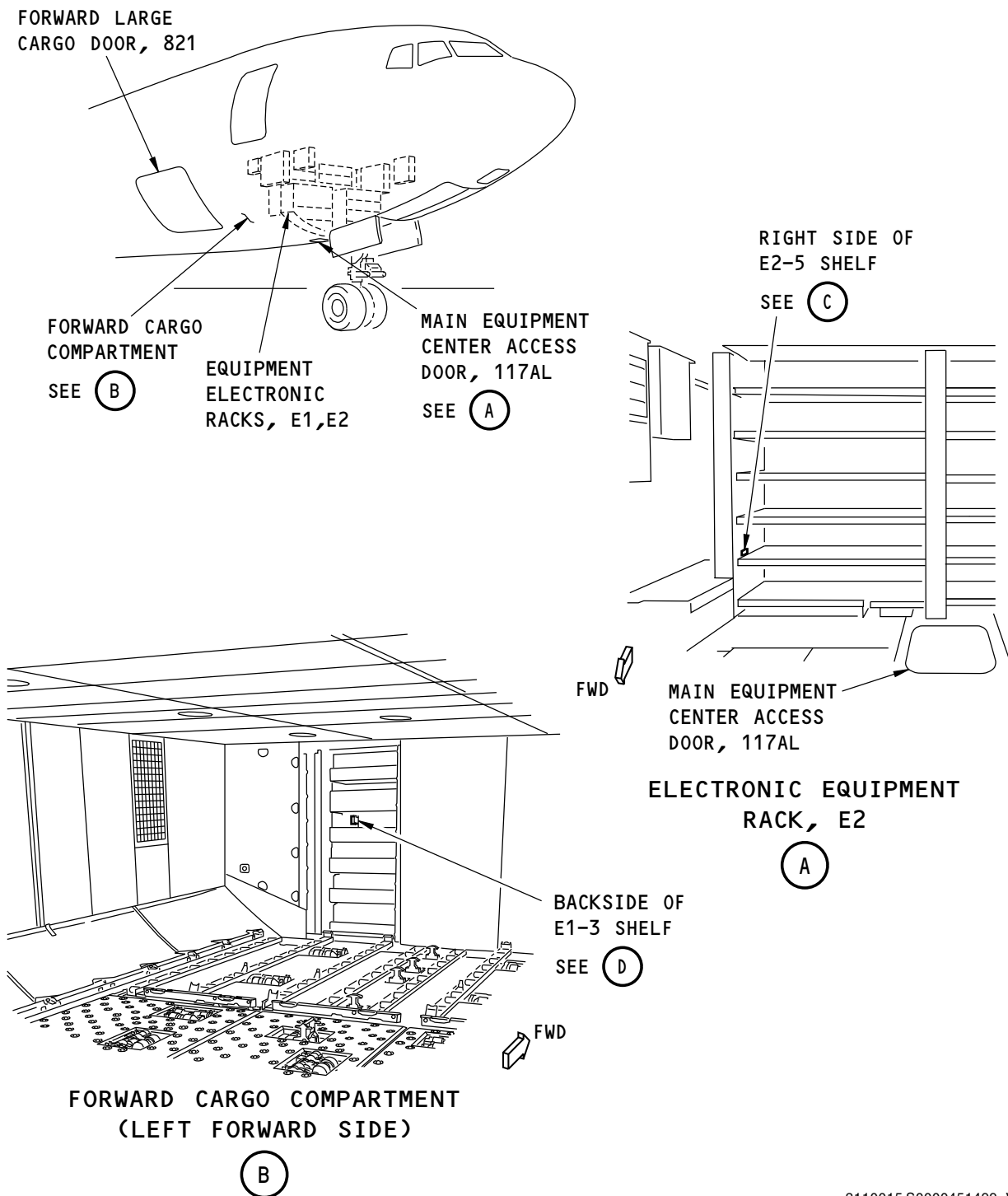
EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 515  
Sep 05/2018

**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**



2110015 S0000451499\_V1

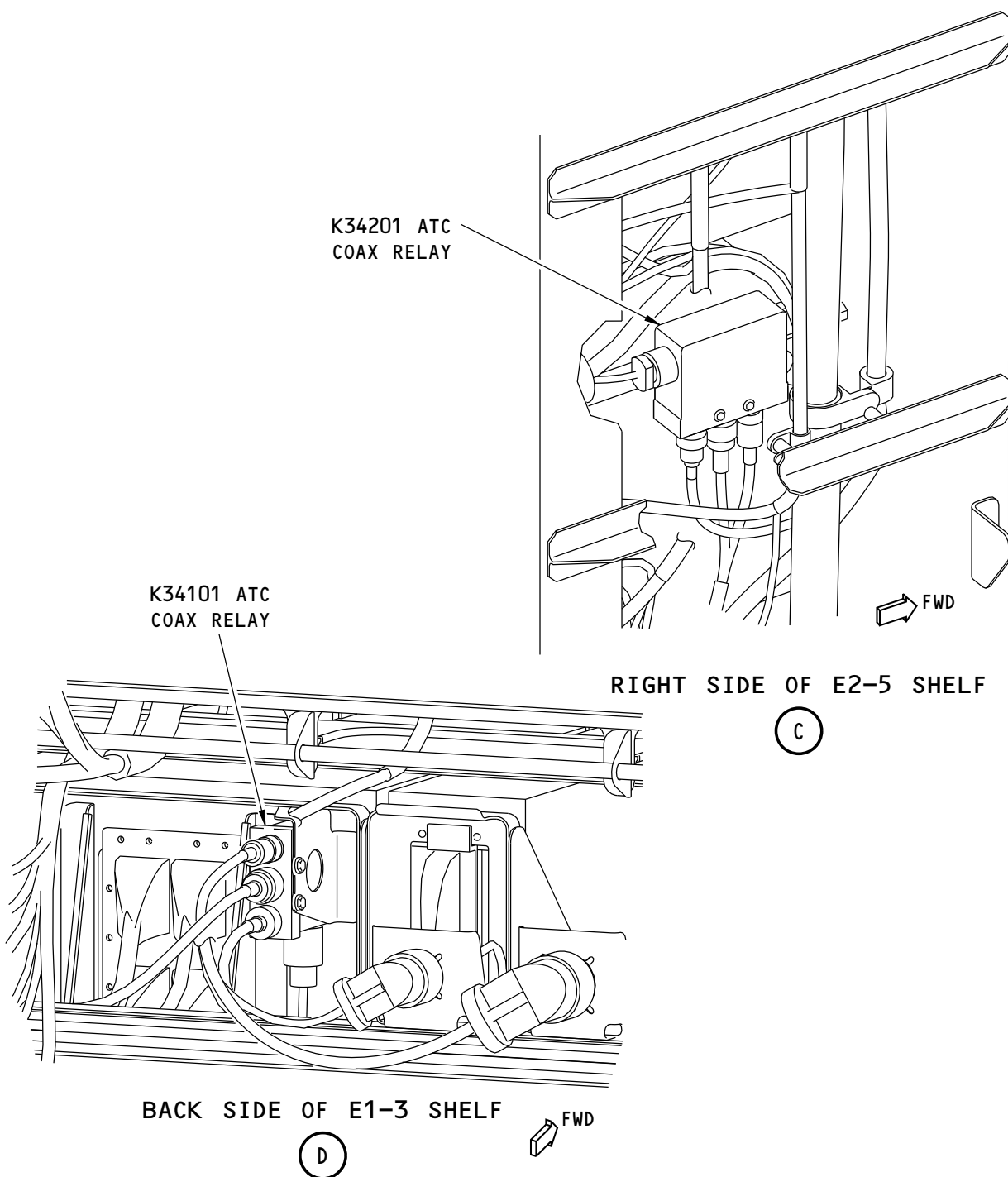
**ATC Antenna Switch Location  
Figure 501/34-53-00-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 516  
Sep 05/2018



2110109 S0000451500\_V1

**ATC Antenna Switch Location  
Figure 501/34-53-00-990-801 (Sheet 2 of 2)**

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 517  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-00-730-807

#### 4. Air Traffic Control/Mode S Transponder Functional Test (With the TIC TR-220 Test Set)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. General

- (1) This system test is a full check of the ATC system. The system test first does the ATC - Operational Test and then uses the test set to examine the left and right ATC systems.
- (2) The test results for this test can be achieved by two methods, it can either be direct connect method or ground test method. In the direct connect method you can connect TR-220 ramp test set, COM-10728 directly to the transponder relays. In this method the ATC antennas does not transmit any signal and all test results can be achieved by the test set antenna.
- (3) The TR-220 Test Set is capable of testing ATCRBS Mode A, Mode C and Mode S transponders. The operator can select between an Automatic series of tests and a Manual series of tests. The Test Set will determine the correct set of tests, either Mode A/C or Mode S upon receiving the transponder RF signal. The TR-220 can also test Mode S Transponders with Enhanced Surveillance (EHS) capabilities.

##### | ARO 001-017

- (4) The TR-220 Test Set with software version 5.20 or higher can also test the Automatic Dependent Surveillance Broadcast (ADS-B) functions. The ADS-B tests satisfy the EASA AMC 20-24 requirements.

##### | ARO ALL

- (5) When conducting tests in the MANUAL sequence, you start the sequence by toggling the AUTO/TEST/MANUAL switch to the MANUAL position. The TR-220 ramp test set, COM-10728 runs a series of tests, and displays the individual results of each test. After each test is completed, you must toggle the TEST switch to the MANUAL position to start the next test in the series.
- (6) Operation with the antenna coupler TAP-200 used with the test set, reduces Radio Frequency emissions from the transponder being tested. It is not necessary to use the coupler to perform these tests.
- (7) If it is necessary to simulate the aircraft at altitude, notify the local ATC that the transponder testing is in progress.
- (8) The test is applicable to the left and the right ATC system. Set the transponder select switch on the ATC control panel to the applicable position to do a test of that system.

##### B. References

| Reference        | Title                                         |
|------------------|-----------------------------------------------|
| 22-11-00         | AUTOPILOT FLIGHT DIRECTOR SYSTEM              |
| 24-22-00-860-806 | Remove Electrical Power (P/B 201)             |
| 25-52-16-000-802 | Panel Removal (P/B 401)                       |
| 25-52-16-400-802 | Panel Installation (P/B 401)                  |
| 31-41-00         | AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS) |
| 32-09-00-040-801 | Air Mode Simulation - Preparation (P/B 201)   |
| 32-09-00-440-801 | Air Mode Simulation - Restoration (P/B 201)   |
| 34-21-00         | AIR DATA INERTIAL REFERENCE SYSTEM            |
| 34-31-00         | INSTRUMENT LANDING SYSTEM                     |
| 34-58-00         | GLOBAL POSITIONING SYSTEM                     |
| 34-61-00         | FLIGHT MANAGEMENT COMPUTER SYSTEM             |

EFFECTIVITY  
ARO ALL

## 34-53-00

D633W101-ARO

Page 518  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| Reference        | Title                                                                             |
|------------------|-----------------------------------------------------------------------------------|
| 52-34-00-860-801 | Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)  |
| 52-34-00-860-803 | Close the Door Electrically with the External Cargo Door Control Switch (P/B 201) |
| WDM 34-53-13     | Wiring Diagram Manual                                                             |
| WDM 34-53-23     | Wiring Diagram Manual                                                             |

### C. Tools/Equipment

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

| Reference | Description                                               |
|-----------|-----------------------------------------------------------|
| COM-10728 | Test Set - Ramp, TR-220<br>Part #: TR-220 Supplier: 92606 |

### D. Location Zones

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

### E. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

### F. Prepare for the ATC system test

#### SUBTASK 34-53-00-860-095

- (1) If the ADS-B tests will be run as part of the ATC system test the airplane position must let the GPS antennas have a clear view of the GPS satellites.

#### SUBTASK 34-53-00-860-070

- (2) Make sure these systems are operational:
  - (a) AUTOPILOT FLIGHT DIRECTOR SYSTEM, SUBJECT 22-11-00
  - (b) AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS), SUBJECT 31-41-00
  - (c) AIR DATA INERTIAL REFERENCE SYSTEM, SUBJECT 34-21-00
  - (d) INSTRUMENT LANDING SYSTEM, SUBJECT 34-31-00
  - (e) GLOBAL POSITIONING SYSTEM, SUBJECT 34-58-00
  - (f) FLIGHT MANAGEMENT COMPUTER SYSTEM, SUBJECT 34-61-00

#### SUBTASK 34-53-00-710-013

- (3) Do this task: Air Traffic Control/Mode S Transponder System - Operational Test, TASK 34-53-00-710-801.

#### SUBTASK 34-53-00-860-071

- (4) Set the captain's and first officer's altimeter baro correction to 29.92 in hg.

#### SUBTASK 34-53-00-860-072

- (5) Set a selected altitude.
  - (a) Set a desired altitude in the AFCS MCP Selected Altitude window.

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-53-00

Page 519  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-53-00-860-073

- (6) On the Captain's and First Officer's MCDU, do the steps that follows:
- Press the RTE button to display page RTE 1.
  - Enter the 4 letter ICAO code of your airport in the ORIGIN and DEST fields. (ex. KDFW)
  - Enter AAL1234 in the FLT No Field.
  - Press the DEP/ARR key.
  - Press LSK 1L <Dep to select the departure list for your airport.
  - Select a runway on the right side.
  - Select any departure procedure (SID) from the list on the left side of the display.
  - If available, select any transition (TRANS) from the list on the left side of the display.
  - Push the LEGS button to enter a waypoint.
  - Press LSK 6R ROUTE > to get back to the RTE 1 page.
  - Press LSK 6R ACTIVATE > to activate the flight plan.
  - Press the EXEC button to confirm the route activation.

### SUBTASK 34-53-00-860-074

- (7) Do these steps at the ATC control panel:
- Set the code switches to a desired ATC ID code.  
**NOTE:** Use the ATC ID code 7776 or the Mode A code specified by the local ATC authority.  
Do not use codes 7500, 7600-7677, 7700-7775 and 7777. These are emergency codes.
  - Set the transponder selector on the TCAS/ATC control panel to the LEFT position.
  - Set the mode selector on the TCAS/ATC control panel to the ALT ON position.

### SUBTASK 34-53-00-860-075

- (8) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801

### SUBTASK 34-53-00-865-003

- (9) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

### SUBTASK 34-53-00-860-094

- (10) Prepare the TR-220 ramp test set, COM-10728 using direct connect method.

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

- (b) Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 520  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (c) On the BOTTOM ATC antenna coax relay, disconnect the electrical connector number DK34201B.
- (d) For the TOP ATC antenna coax relay, disconnect the electrical connector number DK34101B.
- (e) Connect the ATC transponder test set TR-220 ramp test set, COM-10728 to the Bottom ATC antenna coax relay electrical connector number DK34201B.
- (f) Remove the safety tag and close this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

- (g) Put the TEST SET switch in the ON position.
  - 1) The test set will display a start-up screen, then do a self test.
- (h) Make sure the display indicates SELF TEST PASS.
  - (i) Turn the UUT FUNCTION switch on the test set to the SETUP position.
  - (j) Go to CABLE LOSS menu by toggling the AUTO/MANUAL switch.
- (k) In the CABLE LOSS field enter the cable loss value, using UP/FWD and DOWN/REV switches.

NOTE: The cable loss value can be found on the direct connect cable.
- (l) Set the AUTO/MANUAL switch to AUTO position.
- (m) Turn the UUT FUNCTION switch on the test set to the XPDR position.
  - 1) The test set will determine the transponder type and display the correct Start Page.
    - a) Make sure the test set shows the correct transponder type.

NOTE: If the test set shows "NO REPLY", do a check on the test antenna connections.

#### SUBTASK 34-53-00-860-076

- (11) Prepare the TR-220 ramp test set, COM-10728 and the antenna coupler, if desired, using ground test method.

NOTE: The ramp test set operating instructions provides charts, distance limitations and required airplane antenna configurations for satisfactory ramp test set results. It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results.

NOTE: Refer to the TR-220 Operating Manual for detailed information on setup, test screens, and interpreting results of the tests.
- (a) Connect the test set antenna, or antenna coupler, coax connector to the test set ANTENNA connector.
- (b) Put the TEST SET switch in the ON position.
  - 1) The test set will display a start-up screen, then do a self test.
- (c) Make sure the display indicates SELF TEST PASS.
- (d) Turn the UUT FUNCTION switch on the test set to the XPDR position.
  - 1) The test set will determine the transponder type and display the correct Start Page.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 521  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- a) Make sure the test set shows the correct transponder type.

NOTE: If the test set shows "NO REPLY", do a check on the test antenna connections. Also, make sure the ATC system is serviceable.

### G. ATC System Test - Mode A/C and Mode S Transponders

#### SUBTASK 34-53-00-730-019

- (1) You can select to do the transponder tests in either the Automatic or Manual Test sequence.

NOTE: The Automatic Test sequence is the preferred method.

NOTE: For airplanes with Enhanced Surveillance functions, the TR-220 test set includes the Flight ID test in the MODE S test sequence.

#### SUBTASK 34-53-00-730-020

- (2) Do these steps to run the Automatic Test sequence.
  - (a) Toggle the AUTO/TEST/MANUAL switch to the AUTO position. The test set starts an automatic sequence of tests on the transponder.
  - (b) When the Automatic Test sequence completes with no failures, the display window shows two alternating sets of data.
  - (c) Make sure the aircraft address field shows the correct Mode S Address. Refer to WDM 34-53-13 or WDM 34-53-23 for the Mode S Address code.
  - (d) If a test fails during the Automatic Test sequence, the test set stops at that test. The display window shows FAIL along with the framing pulses, pulse width and separation in microseconds.
    - 1) You can override and skip to the next test in the sequence by toggling the AUTO/TEST/MANUAL switch to the AUTO position.

NOTE: It is recommended that the cause of the failure be determined before you do the next test.
    - 2) To repeat a failed test, toggle the AUTO/TEST/MANUAL switch to the MANUAL position.

#### SUBTASK 34-53-00-730-021

- (3) If necessary, do these steps to run the Manual Test sequence.
  - (a) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position to begin the first test of the transponder. The display window shows the name of the test and the word Testing.
  - (b) When the test is complete the display window shows the test name and the test results.
  - (c) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position to begin the next test in the sequence.

#### SUBTASK 34-53-00-730-022

- (4) Do these steps to do the IDENT TEST.

NOTE: The IDENT function can only be tested in the Manual Test sequence for either the Mode A/C or Mode S transponder.

  - (a) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position to begin the first test of the transponder. The display window shows the name of the test and the word Testing.
  - (b) Wait until the display window shows the test results.
  - (c) Push the IDENT switch on the ATC control panel.
    - 1) IDENT should show on the TR-220 ramp test set, COM-10728 display window for 20 seconds to make sure the SPI pulse is received from the transponder.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 522  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-53-00-730-023

- (5) Do these steps to do the Mode S Surveillance Altitude Test.
  - (a) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position until M S SURV ALT is shown.
  - (b) Make sure that the altitude value shown on the TR-220 ramp test set, COM-10728 display agrees with the altitude on the captain's and first officer's altimeter within  $\pm 125$  feet.

### SUBTASK 34-53-00-730-024

- (6) If required, do the ATC System Test - Additional Tests for Enhanced Surveillance

## H. ATC System Test - Additional Tests for Enhanced Surveillance

### SUBTASK 34-53-00-730-025

- (1) You can use the manual test sequence to do any additional tests required for enhanced surveillance.

NOTE: The TR-220 Operating Manual contains information about these tests.

- (a) Mode S Enhanced Surveillance Test Sequence
  - BDS5 Roll Angle
  - BDS5 True Track Angle and Track Angle Rate
  - BDS5 True Airspeed and Ground Speed
  - BDS6 Indicated Airspeed, Heading and Mach Number
  - BDS6 Barometric Altitude Rate and Inertial Vertical Velocity
  - BDS 10 Datalink
  - BDS1 Subnet Network Number
  - BDS1 Mode S Specific Services Capability
  - BDS1 Aircraft Identification Capability
  - BDS1 Uplink UELM/Downlink DELM Capability
  - BDS 1,7
  - BDS 1,8
  - BDS 1,9
  - BDS Resolution Advisory
  - BDS4 Selected Altitude
  - BDS4 Barometric Pressure and Target Altitude
  - BDS4 VNAV, ALT Hold, and Approach Modes

### SUBTASK 34-53-00-730-034

- (2) To check the Flight ID function, do the steps that follow:

NOTE: The TR-220 test set includes the Flight ID test in the MODE S test sequence.

- (a) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position until the M S Comm ID test shows.
- (b) Make sure that the Flight ID field shows the same Flight ID entered into the FMC.

NOTE: The Flight ID also shows on one of the two alternating displays at the end of the MODE S automatic test sequence.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 523  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-730-026

- (3) To do the remaining Enhanced Surveillance tests, do these steps at the test set TR-220 ramp test set, COM-10728:
  - (a) Push the TO/START - FROM/STOP switch to the TO position.
    - 1) Make sure the display window shows the Mode S Enhanced Surveillance menu.
  - (b) Push the UP/FWD - DOWN/REV switch to the UP position to select the applicable uplink/downlink format, UF5/DF21 or UF0/DF16. The recommended selection is UF0/DF16.
  - (c) Toggle the AUTO/TEST/MANUAL switch to MANUAL to start the first test.
    - 1) When the test is complete, the results are shown on the display window.
    - 2) Make sure that the data field shown is not blank.
  - (d) Toggle the AUTO/TEST/MANUAL switch to the MANUAL position to begin the next test in the sequence.
  - (e) Continue until the required tests are completed.
    - 1) Make sure that the data fields shown are not blank.

### I ARO 001-017

#### I. ATC System Test - Additional Tests for ADS-B

NOTE: The TR-220 requires Software Version 5.20 or higher to preform the following ADS-B tests.  
The test results satisfy the EASA AMC 20-24 ADS-B requirements.

SUBTASK 34-53-00-730-035

- (1) You can use the manual test sequence to do any additional tests required for ADS-B.
  - (a) These are the ADS-B required tests:
    - Airborne Position Report
    - Aircraft Identification and Type Report
    - Mode S Address
    - Airborne Surveillance Status
    - Position Hex

SUBTASK 34-53-00-730-036

- (2) Do the ADS-B test setup.

NOTE: Refer to the TR-220 Operating Manual for detailed information on the ADS-B test setup.

  - (a) Set the test set UUT FUNCTION switch to the SETUP position.
  - (b) Toggle the AUTO/TEST/MANUAL switch to MANUAL to select the LAT/LON screen.
  - (c) Set the local latitude and longitude positions.
    - 1) Use the TO/START-FROM/STOP switch to select to the field that needs to be set.
    - 2) Use the UP/FWD-DOWN/REV switch to change the values.

NOTE: Position data is on the FMC CDU POS REF page.

SUBTASK 34-53-00-730-037

- (3) Do the ADS-B tests.

NOTE: The test results that follow satisfy the EASA AMC 20-24 requirements for ADS-B.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 524  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ARO 001-017 (Continued)

- (a) Set the UUT FUNCTION switch to ADS-B TX position.  
NOTE: When the UUT FUNCTION switch is set to ADS-B TX, the display will first show the Position screen.
- (b) Do a check of the Airborne Position.
  - 1) On the Airborne Position screen, make sure that the Latitude/Longitude field shows the present position.
- (c) Do a check of the Pressure Altitude.
  - 1) On the Airborne Position screen, make sure that the Altitude field shows the airplane barometric pressure altitude +/- 125 ft.
- (d) Do a check of the Aircraft Identity.
  - 1) Set the AUTO/TEST/MANUAL switch to the MANUAL position to show the Identification screen.
  - 2) Make sure that Flight ID field shows the same Flight ID entered into the FMC.
- (e) Do a check of the Mode S Address.
  - 1) Set the AUTO/TEST/MANUAL switch to the MANUAL position until Mode S Address screen shows.
  - 2) Make sure that the Mode S Address field shows the correct Mode S Address. Refer to (WDM 34-53-13 or WDM 34-53-23) for the Mode S Address code..
- (f) Do a check of the Airborne Surveillance Status.
  - 1) Notify local ATC facilities that transponder testing of the Surveillance Status will be performed.
  - 2) Set the AUTO/TEST/MANUAL switch to the MANUAL position until the Airborne Surveillance Status screen shows.
  - 3) On the ATC control panel, change the code switches to a different ATC ID code.
  - 4) Make sure that the SURV STAT field changes to TEMP ALERT.
  - 5) Set code switches on the ATC control panel back to the original code.
  - 6) Push the IDENT switch on the ATC Control Panel.
  - 7) Make sure that the SURV STAT field shows SPI.
- (g) Do a check of the Airborne Position Quality Indicator.
  - 1) Set the AUTO/TEST/MANUAL switch to the MANUAL position until the Position Hex screen shows.
  - 2) Make sure that the TYPE field does not show 0 or 18.  
NOTE: If TYPE shows 0 the transponder does not receive position data from the IRS or MMR. A TYPE of 18 indicates the transponder receives position data but not from the MMR.

#### I ARO ALL

#### J. Repeat ATC System Tests

SUBTASK 34-53-00-730-044

- (1) Do these steps to repeat the ATC system test using direct connect method.
  - (a) Repeat the system test for other antenna.

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-53-00

Page 525  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) To get access to the TOP ATC antenna coax relay located behind the electronic equipment rack, E2-3. Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801
- (c) Remove the main equipment center bulkhead liner to get access behind the electronic equipment rack, E2-3. Do this task: Panel Removal, TASK 25-52-16-000-802
- (d) Do the system test again for the right ATC system on the upper and lower antennas.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.

### SUBTASK 34-53-00-730-027

- (2) Do these steps to repeat the ATC System Test using ground test method.

- (a) Repeat the system test for other antenna.
- (b) Do the system test again for the right ATC system on the upper and lower antennas.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.

## K. Put the Airplane Back to Its Usual Condition

### SUBTASK 34-53-00-860-089

- (1) Set the mode selector on the TCAS/ATC control panel to the STBY position.

### SUBTASK 34-53-00-860-077

- (2) Do the following steps to remove TR-220 ramp test set, COM-10728 using direct connect method.

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

- (b) Disconnect the test set and connect the TOP and BOTTOM coax relay electrical connector(s) to its original position.

Close this access panel:

#### Number      Name/Location

117AL      Main Equipment Center Access Door

- (c) To cover the back side of the electronic equipment rack. Do this task Panel Installation, TASK 25-52-16-400-802
- (d) To close the External Cargo Door. Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803
- (e) Remove the safety tag and close this circuit breaker:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

### SUBTASK 34-53-00-080-002

- (3) Do the following steps to remove TR-220 ramp test set, COM-10728 using ground test method.
  - (a) Remove the TR-220 ramp test set, COM-10728

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 526  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-865-004

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

SUBTASK 34-53-00-840-003

- (5) Do the "Restoration After Air Mode Simulation" task (Air Mode Simulation - Restoration, TASK 32-09-00-440-801).

SUBTASK 34-53-00-862-002

- (6) Remove electrical power if it is not necessary (Remove Electrical Power, TASK 24-22-00-860-806).

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-53-00

Page 527  
Sep 05/2018

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

FORWARD LARGE  
CARGO DOOR, 821

FORWARD CARGO  
COMPARTMENT

SEE (B)

EQUIPMENT  
ELECTRONIC  
RACKS, E1,E2

MAIN EQUIPMENT  
CENTER ACCESS  
DOOR, 117AL

SEE (A)

RIGHT SIDE OF  
E2-5 SHELF

SEE (C)

FWD

MAIN EQUIPMENT  
CENTER ACCESS  
DOOR, 117AL

ELECTRONIC EQUIPMENT  
RACK, E2

(A)

BACKSIDE OF  
E1-3 SHELF

SEE (D)

FWD

FORWARD CARGO COMPARTMENT  
(LEFT FORWARD SIDE)

(B)

2110015 S0000451499\_V1

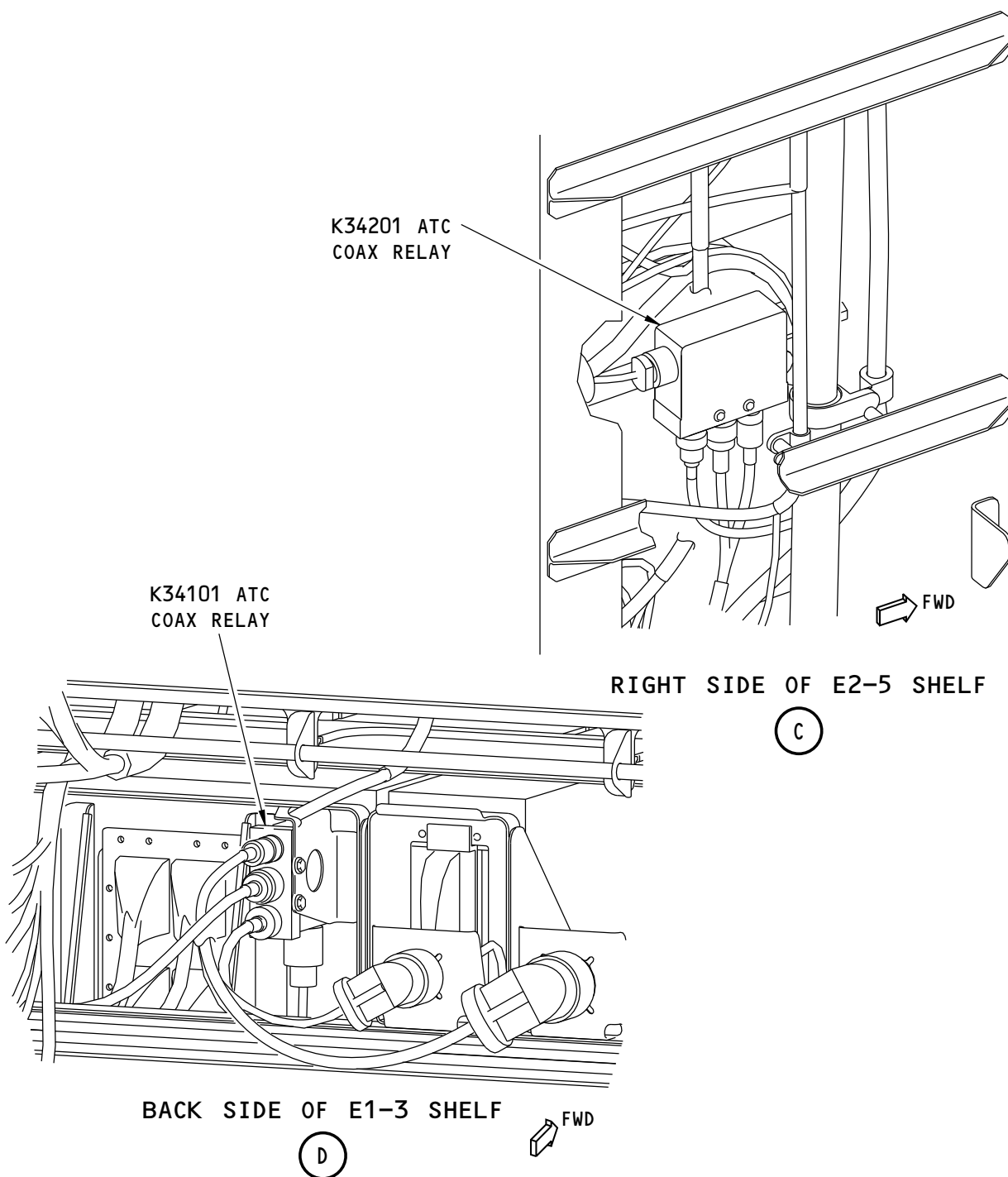
**ATC Antenna Switch Location**  
**Figure 502/34-53-00-990-802 (Sheet 1 of 2)**

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 528  
Sep 05/2018



2110109 S0000451500\_V1

**ATC Antenna Switch Location  
Figure 502/34-53-00-990-802 (Sheet 2 of 2)**

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 529  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-00-730-808

#### 5. Air Traffic Control/Mode S Transponder Functional Test (With the IFR-6000 Test Set) - (Alternate Method)

NOTE: This procedure is a scheduled maintenance task.

##### A. General

- (1) This system test is a full check of the ATC system. The system test first does the ATC - Operational Test and then uses the IFR-6000 ramp test set, COM-10727, to examine the left and right ATC systems.
- (2) The test results for this test can be achieved by two methods, it can either be direct connect method or ground test method. In the direct connect method you can connect the test set directly to the transponder relays. In this method the ATC antennas does not transmit any signal and all test results can be achieved by the test set antenna.
- (3) The XPDR Mode of the IFR-6000 ramp test set, COM-10727, provides flight line test capability for ATCRBS and Mode S transponders using an Auto Test. The XPDR Auto Test contains one main screen (the Auto Test Screen) and up to 17 additional test screens. The Auto Test can complete a full FAR Part 43, Appendix F Test, providing decode and display of Elementary and Enhanced surveillance GICB extracted DAPs (Downlinked Aircraft Parameters) .
- (4) All data normally required to verify transponder operation in accordance with FAR 91.413, Part 43, Appendix F, is shown on the Auto Test Screen. Details of individual tests conducted during the AUTO TEST are stored in memory in the Test Sets TEST LIST. Tests in the TEST LIST can be reviewed or run individually by use of DATA keys and SELECT soft keys.
- (5) A passed Auto Test complies with the FAR Part 43 Appendix F test requirements.
- (6) Different classes of transponders are tested to built-in test limits by selection of configuration files. If the class of transponder is unknown, generic configuration files are provided for ATCRBS and Mode S transponders that apply the widest system limits.
- (7) Mode S Transponder level is automatically determined when running a test.

##### | ARO 001-017

- (8) The IFR-6000 is also capable of testing ADS-B functions. The ADS-B tests are not included with the AUTO TEST and have separate setup and test screens.

##### | ARO ALL

- (9) The test is applicable to the left and the right ATC system. Set the transponder select switch on the ATC control panel to the applicable position to do a test of that system.

##### B. References

| Reference        | Title                                         |
|------------------|-----------------------------------------------|
| 22-11-00         | AUTOPILOT FLIGHT DIRECTOR SYSTEM              |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)             |
| 24-22-00-860-806 | Remove Electrical Power (P/B 201)             |
| 25-52-16-000-802 | Panel Removal (P/B 401)                       |
| 25-52-16-400-802 | Panel Installation (P/B 401)                  |
| 31-41-00         | AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS) |
| 32-09-00-040-801 | Air Mode Simulation - Preparation (P/B 201)   |
| 32-09-00-440-801 | Air Mode Simulation - Restoration (P/B 201)   |
| 34-21-00         | AIR DATA INERTIAL REFERENCE SYSTEM            |

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 530  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| Reference        | Title                                                                             |
|------------------|-----------------------------------------------------------------------------------|
| 34-21-00 P/B 201 | AIR DATA INERTIAL REFERENCE SYSTEM - MAINTENANCE PRACTICES                        |
| 34-31-00         | INSTRUMENT LANDING SYSTEM                                                         |
| 34-58-00         | GLOBAL POSITIONING SYSTEM                                                         |
| 34-58-00-730-801 | Global Positioning System - System Test (P/B 501)                                 |
| 34-61-00         | FLIGHT MANAGEMENT COMPUTER SYSTEM                                                 |
| 52-34-00-860-801 | Open the Door Electrically with the External Cargo Door Control Switch (P/B 201)  |
| 52-34-00-860-803 | Close the Door Electrically with the External Cargo Door Control Switch (P/B 201) |
| WDM 34-53-13     | Wiring Diagram Manual                                                             |
| WDM 34-53-23     | Wiring Diagram Manual                                                             |

### C. Tools/Equipment

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

| Reference | Description                                                   |
|-----------|---------------------------------------------------------------|
| COM-10727 | Test Set - Ramp, IFR-6000<br>Part #: IFR 6000 Supplier: 51190 |
| SPL-14700 | Adapter - TNC Female to N Male (P/N KA-91-07 or equivalent)   |

### D. Location Zones

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

### E. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

### F. Prepare for the ATC system test

#### ARO 001-017

SUBTASK 34-53-00-580-001

- (1) If the ADS-B tests will be run as part of the ATC system test the airplane position must let the GPS antennas have a clear view of the GPS satellites.

#### ARO ALL

SUBTASK 34-53-00-861-003

- (2) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-53-00-860-078

- (3) Make sure these systems are operational:
  - (a) AUTOPILOT FLIGHT DIRECTOR SYSTEM, SUBJECT 22-11-00
  - (b) AIRPLANE INFORMATION MANAGEMENT SYSTEM (AIMS), SUBJECT 31-41-00
  - (c) AIR DATA INERTIAL REFERENCE SYSTEM, SUBJECT 34-21-00

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 531  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (d) INSTRUMENT LANDING SYSTEM, SUBJECT 34-31-00
- (e) GLOBAL POSITIONING SYSTEM, SUBJECT 34-58-00
- (f) FLIGHT MANAGEMENT COMPUTER SYSTEM, SUBJECT 34-61-00

### SUBTASK 34-53-00-710-014

- (4) Do this task: Air Traffic Control/Mode S Transponder System - Operational Test, TASK 34-53-00-710-801.

### SUBTASK 34-53-00-860-079

- (5) Set the captain's and first officer's altimeter baro correction to 29.92 in hg.

### SUBTASK 34-53-00-860-080

- (6) Set a selected altitude.
  - (a) Set a desired altitude in the AFCS MCP Selected Altitude window.

### SUBTASK 34-53-00-860-081

- (7) On the Captain's and First Officer's MCDU, do the steps that follows:
  - (a) Press the RTE button to display page RTE 1.
  - (b) Enter the 4 letter ICAO code of your airport in the ORIGIN and DEST fields. (ex. KDFW)
  - (c) Enter AAL1234 in the FLT No Field.
  - (d) Press the DEP/ARR key.
  - (e) Press LSK 1L <Dep to select the departure list for your airport.
  - (f) Select a runway on the right side.
  - (g) Select any departure procedure (SID) from the list on the left side of the display.
  - (h) If available, select any transition (TRANS) from the list on the left side of the display.
  - (i) Push the LEGS button to enter a waypoint.
  - (j) Press LSK 6R ROUTE > to get back to the RTE 1 page.
  - (k) Press LSK 6R ACTIVATE > to activate the flight plan.
  - (l) Press the EXEC button to confirm the route activation.

### SUBTASK 34-53-00-860-082

- (8) Do these steps at the ATC control panel:
  - (a) Set the code switches to a desired ATC ID code.

**NOTE:** Use the ATC ID code 7776 or the Mode A code specified by the local ATC authority.

Do not use codes 7500, 7600-7677, 7700-7775 and 7777. These are emergency codes.
  - (b) Set the transponder selector on the TCAS/ATC control panel to the LEFT position.
  - (c) Set the mode selector on the TCAS/ATC control panel to the ALT ON position.

### SUBTASK 34-53-00-860-083

- (9) Do this task: Air Mode Simulation - Preparation, TASK 32-09-00-040-801



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-865-005

- (10) Open these circuit breakers and install safety tags:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

SUBTASK 34-53-00-860-092

- (11) Prepare the IFR-6000 ramp test set, COM-10727, using direct connect test method.

NOTE: It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results.

NOTE: The IFR-6000 ramp test set has an "auto test" function which checks more parameters of the transponder under test, than are required by FAR 43, Appendix F. Ramp test set operating instructions provides charts, distance limitations and required airplane antenna configurations for satisfactory ramp test set results. It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results and compliance with FAR 43, Appendix F.

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

- (b) On the BOTTOM ATC antenna coax relay, disconnect the electrical connector number DK34201B.

For the TOP ATC antenna coax relay, disconnect the electrical connector number DK34101B.

- (c) Use Adapter, SPL-14700, to connect the IFR-6000 ramp test set, COM-10727 to the BOTTOM or TOP ATC antenna coax relay electrical connector number DK34201B or DK34101B respectably.

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

- (e) Push the POWER key on the test set.
- (f) Push the SETUP Control Key to show the SETUP-GENERAL screen. Use the NEXT PARAM and PREV PARAM Soft Keys to set each parameter. Continue pushing the SETUP Control Key to cycle to the SETUP-XPDR screen.

NOTE: Refer to the IFR-6000 Operation Manual for detailed information on setup.

NOTE: Setup XPDR Screen contains parameters which determine operational characteristics of the XPDR Functional Mode. Unless otherwise stated, last used values are retained on Power-up.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 533  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Select ANTENNA: Set to BOTTOM or TOP depending on unit under test.
- 2) Select RF PORT: Set to DIRECT CONNECT
- 3) Select DIR CABLE LOSS: Enter the direct connect cable loss value.  
NOTE: The cable loss value can be found on the direct connect cable.
- 4) Select UUT ADDRESS: Set to AUTO  
NOTE: If aircraft is on the ground set it to MANUAL and enter in MANUAL ADDRESS. For Mode S all-calls does not work when the aircraft is on the ground.
- 5) Select DIVERSITY: Set to ON
- 6) Select CHECK CAP: Set to YES
- 7) Select PWR LIM: Set to FIR 43

SUBTASK 34-53-00-860-084

- (12) Prepare the IFR-6000 ramp test set, COM-10727, using ground test method.

NOTE: The IFR-6000 ramp test set has an "auto test" function which checks more parameters of the transponder under test, than are required by FAR 43, Appendix F. Ramp test set operating instructions provides charts, distance limitations and required airplane antenna configurations for satisfactory ramp test set results. It is recommended that the ramp test set operator have the most current operating instructions for the ramp test set and be familiar with its operation when determining the acceptability of transponder results and compliance with FAR 43, Appendix F.

- (a) Mount the Directional Antenna on the Test Sets friction hinge and connect the Directional Antenna ANT Connector to the Test Set ANT Connector via the 12 in. coaxial cable.

- (b) Push the POWER Key to energize the Test Set On.

NOTE: The IFR-6000 is equipped with a Self Test for quick performance evaluation. An abbreviated Self Test is run at Power-Up. The full Self Test is initiated manually. Refer to the IFR-6000 Operation Manual for the full Self Test procedure.

- (c) Push the SETUP Control Key to show the SETUP-GENERAL screen. Use the NEXT PARAM and PREV PARAM Soft Keys to set each parameter. Continue pushing the SETUP Control Key to cycle to the SETUP-XPDR screen.

NOTE: Refer to the IFR-6000 Operation Manual for detailed information on setup.

NOTE: Setup XPDR Screen contains parameters which determine operational characteristics of the XPDR Functional Mode. Unless otherwise stated, last used values are retained on Power-up.

- 1) Select ANTENNA: Set to TOP or BOTTOM depending on which aircraft antenna is under test.
- 2) Select RF PORT: Set to ANTENNA.
- 3) Select ANT RANGE: Set to setup range from IFR-6000 antenna to the Unit Under Test (UUT) Antenna.
- 4) Select ANT HEIGHT: Set to setup height from IFR-6000 antenna to the UUT Antenna.

NOTE: The lower antenna is 8 feet (2.4 m) minimum to 10 feet (3.0 m) maximum height above ground level. The upper antenna is 28 feet (8.5 m) minimum to 30 feet (9.1 m) maximum height above ground level.

- 5) Select ANT CABLE LOSS: Set to cable loss found on cable.

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 534  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 6) Select ANT GAIN (dBi): set 1.03 GHz and 1.09 GHz antenna gain to figures marked on supplied Directional Antenna.
- 7) Select UUT ADDRESS: Set to AUTO (defaults to AUTO on power-up). AUTO selection Mode S address is obtained via ATCRBS/Mode S All Call (FAR Part 43, Appendix F approved method).

NOTE: Refer to the IFR-6000 Operation Manual for more detailed information on UUT Address selection.

- 8) Select DIVERSITY: Set to ON.

NOTE: If Diversity Isolation Test is enabled, make sure the Antenna Shield is installed to the top or bottom UUT antenna prior to running the test. Refer to IFR-6000 Operation Manual for the Antenna Shield mounting procedure.

- 9) Select CHECK CAP: Set to YES.
- 10) Select PWR LIM: Set to FAR 43.



**CAUTION**

DO NOT OPERATE THE TEST SET WHEN ITS ANTENNA IS LESS THAN 15 IN. (381 MM) FROM THE AIRPLANE ANTENNA. DAMAGE TO THE TEST SET CAN OCCUR.

- (d) Position the Test Set  $\leq 50$  feet from and in line of sight with the UUT antenna.
- (e) Insert the Antenna Shield over the ATC antenna not under test.

NOTE: Refer to the IFR-6000 Operation Manual for the Antenna Shield mounting procedure.

NOTE: When testing the bottom antenna and shielding the top antenna is not possible or practical, move the Test Set so that it is not in the line of sight of the top ATC antenna.

### G. ATC System Test

SUBTASK 34-53-00-730-028

- (1) Do the ATC System Test:

NOTE: When first powered-up, the Test Set displays blank data fields. The last test results are displayed while Test Set remains powered on. The last test results are stored upon power-down.

- (a) Push the XPDR Mode Key on the IFR-6000 ramp test set, COM-10727, to return to XPDR Auto Test Screen.
- (b) Push the CONFIG Soft Key to show the XPDR CONFIG Screen. Use the Data Keys to select the desired configuration file. Push the RETURN Soft Key to confirm the selection.

NOTE: Eight predefined Configurations are provided to determine the PASS/FAIL limits applied to ERP, Frequency and MTL measurements. Configurations are named by class and option. Refer to the IFR-6000 Operation Manual for predefined Configuration details

If the transponder class is not known, select the GENERIC ATCRBS or GENERIC MODE S configuration file.

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 535  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (c) To do the Auto Test, push the RUN TEST Soft Key. When the Auto Test completes, a PASS or FAIL indication is shown at the top of the Auto Test screen.

NOTE: The Auto Test Screen is the primary test screen and displays most UUT parameters requiring user verification.

NOTE: Refer to the IFR-6000 Operation Manual for detailed information on test screens and interpreting results of the tests.

- (d) Make sure the AA (aircraft address) field shows the correct Mode S Address. Refer to WDM 34-53-13 or WDM 34-53-23 for the Mode S Address code.

- (e) Push the TEST LIST Soft Key to show the complete Auto Test List. Tests may be reviewed or run individually by use of the DATA and SELECT keys.

NOTE: When a Mode S configuration is selected the test list is displayed over two screens. When an ATRBS configuration is selected the test list is displayed on one screen.

- (f) To do the tests individually in the Test List, do these steps:

- 1) Use the DATA Keys to select desired test. Push the SELECT TEST Soft Key to show the selected test.

- 2) Push the RUN TEST Soft Key to the start test.

NOTE: The test runs until stopped. Each pass through the test sequence updates the PASS/FAIL indication.

- 3) Push the STOP TEST Soft Key to the stop test.

- 4) Push the NEXT TEST Soft Key to show the next test.

- 5) Push the PREV TEST Soft Key to show the previous test.

- 6) Push the RETURN Soft Key to show the test list and select desired test.

- 7) Push the RETURN Soft Key to show the XPDR Auto Test Screen.

### ARO 001-017

SUBTASK 34-53-00-730-029

- (2) To do the tests for ADS-B, do the following:

- (a) Do the ADS-B test setup

NOTE: Refer to the IFR-6000 Operation Manual for detailed information on ADS-B test setup.

- 1) Push the SETUP Key until the SETUP-XPDR Screen is shown.

- 2) Push the ADS-B SETUP Soft Key.

- 3) Set the parameters by pushing the NEXT PARAM soft key. Push the PREV PARAM to select the field. Use DATA Keys to slew the data.

- a) Select POS DECODE: Set to LOCAL

- b) Select LAT: Set the local latitude position.

NOTE: Position data is on the FMC CDU POS REF page. Use GPS position if GPS antennas have a clear view of the GPS satellites (Global Positioning System - System Test, TASK 34-58-00-730-801), if not, use the IRS position (AIR DATA INERTIAL REFERENCE SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 34-21-00/201).

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 536  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ARO 001-017 (Continued)

- c) Select LONG: Set the local longitude position.

NOTE: Position data is on the FMC CDU POS REF page. Use GPS position if GPS antennas have a clear view of the GPS satellites (Global Positioning System - System Test, TASK 34-58-00-730-801), if not, use the IRS position (AIR DATA INERTIAL REFERENCE SYSTEM - MAINTENANCE PRACTICES, PAGEBLOCK 34-21-00/201).

- d) Select ADS-B MON: Set to DF17.

- e) Select GICB: Set to DF20.

- (b) Do the ADS-B tests.

NOTE: Refer to the IFR-6000 Operation Manual for detailed information on test screens and interpreting results of the tests.

- 1) Push the XPDR mode key twice to show the ADS-B/GICB Main Menu.
- 2) Push the ADS-B MON Soft Key to show the ADS-B MON list screen.
  - a) Only these extended squitter BDSs are required to satisfy the EASA AMC 20-24 requirements for ADS-B:
    - 0,5 AIRBORNE POS
    - 0,8 IDENT & CAT

- 3) Push the RUN TEST soft key to start the test .

NOTE: The test will continue to run until the STOP TEST soft key is pushed.

NOTE: When a specific extended squitter BDS is captured, AVAIL will be shown to the right of the BDS name.

- 4) Use the Data Keys to select a specific BDS and push the BDS DATA soft key to show the selected BDS screen.

NOTE: To show the next or previous BDS screen, push the NEXT TEST or PREV TEST soft keys.

- 5) Push the RETURN soft key to return to the ADS-B MON list screen.

- (c) Do a check of the ADS-B test results.

NOTE: The test results that follow satisfy the EASA AMC 20-24 requirements for ADS-B.

- 1) Do a check of the Airborne Position.
  - a) Select the 0,5 BDS with the BDS Data soft key.
  - b) Make sure that the LAT and LONG fields show the position data entered in the ADS-B setup screen.
- 2) Do a check of the Pressure Altitude.
  - a) Select the 0,5 BDS with the BDS Data soft key.
  - b) Make sure that the BARO PRESS ALT field shows the airplane Barometric Pressure Altitude +/-125 ft.
- 3) Do a check of the Surveillance Status.
  - a) Notify local ATC facilities that transponder testing of the Surveillance Status will be performed.
  - b) Select the 0,5 BDS with the BDS Data soft key.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 537  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ARO 001-017 (Continued)

- c) On the ATC control panel, change the code switches to a different ATC ID code.
- d) Make sure that the SURVEILLANCE STATUS field changes to TEMP ALERT.
- e) Set code switches on the ATC control panel back to the original code.
- f) Push the IDENT switch on the ATC Control Panel.
- g) Make sure that the SURVEILLANCE STATUS field shows SPI.
- 4) Do a check of the Position Quality Indicator.
  - a) Select the 0,5 BDS with the BDS Data soft key.
  - b) Make sure that the TYPE field does not show 0 or 18.

NOTE: If TYPE shows 0 the transponder does not receive position data from the IRS or MMR. A TYPE of 18 indicates the transponder receives position data but not from the MMR.
- 5) Do a check of the Aircraft Identity.
  - a) Select the 0,8 BDS with the BDS Data soft key.
  - b) Make sure that the correct data is shown in the following fields:
    - <1> The AA (aircraft address) field shows the Mode S Address. Refer to (WDM 34-53-13 or WDM 34-53-23) for the Mode S Address code.
    - <2> The FLIGHT ID field shows the same Flight ID entered into the FMC.

### ARO ALL

#### H. Repeat ATC System Tests

##### SUBTASK 34-53-00-730-043

- (1) Do these steps to repeat the ATC System test using direct connect method.
  - (a) Repeat the system test for the other antenna.
  - (b) To get access to the TOP ATC antenna coax relay located behind the electronic equipment rack, E2-3. Do this task: Open the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-801
  - (c) Remove the main equipment center bulkhead liner to get access behind the electronic equipment rack, E2-3. Do this task: Panel Removal, TASK 25-52-16-000-802
- (2) Make sure that you make the necessary changes in the SETUP - XPDR screen for the test of the other antenna.
- (3) Do the System Test again for the right ATC system on the upper and lower antennas.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.

##### SUBTASK 34-53-00-730-030

- (4) Do these steps to repeat the ATC System test using ground test method.
  - (a) Repeat the system test for the other antenna.
  - (b) Make sure that you make the necessary changes in the SETUP - XPDR screen for the test of the other antenna.
- (5) Do the System Test again for the right ATC system on the upper and lower antennas.

NOTE: To meet FAR requirements both the left and right systems must be tested on both upper and lower antennas.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 538  
Sep 05/2018





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### I. Put the Airplane Back to Its Usual Condition

SUBTASK 34-53-00-860-090

- (1) Set the mode selector on the TCAS/ATC control panel to the STBY position.

SUBTASK 34-53-00-080-001

- (2) Do the following steps to remove test set using direct connect method.

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

- (b) Disconnect the test set and connect the TOP and BOTTOM coax relay electrical connector(s) to its original position.

- (c) Close this access panel:

#### Number      Name/Location

117AL      Main Equipment Center Access Door

- (d) To cover the back side of the electronic equipment rack. Do this task: Panel Installation, TASK 25-52-16-400-802

- (e) To close the External Cargo Door. Do this task: Close the Door Electrically with the External Cargo Door Control Switch, TASK 52-34-00-860-803

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |

SUBTASK 34-53-00-840-004

- (3) Do the following steps to remove test set using ground test method.

- (4) Remove the IFR-6000 ramp test set, COM-10727.

SUBTASK 34-53-00-865-006

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>  |
|------------|------------|---------------|--------------|
| G          | 13         | C32628        | AIR/GROUND 1 |
| G          | 26         | C32627        | AIR/GROUND 2 |

SUBTASK 34-53-00-840-005

- (6) Do the "Restoration After Air Mode Simulation" task (Air Mode Simulation - Restoration, TASK 32-09-00-440-801).

SUBTASK 34-53-00-862-003

- (7) Remove electrical power if it is no longer required (Remove Electrical Power, TASK 24-22-00-860-806).

————— END OF TASK —————

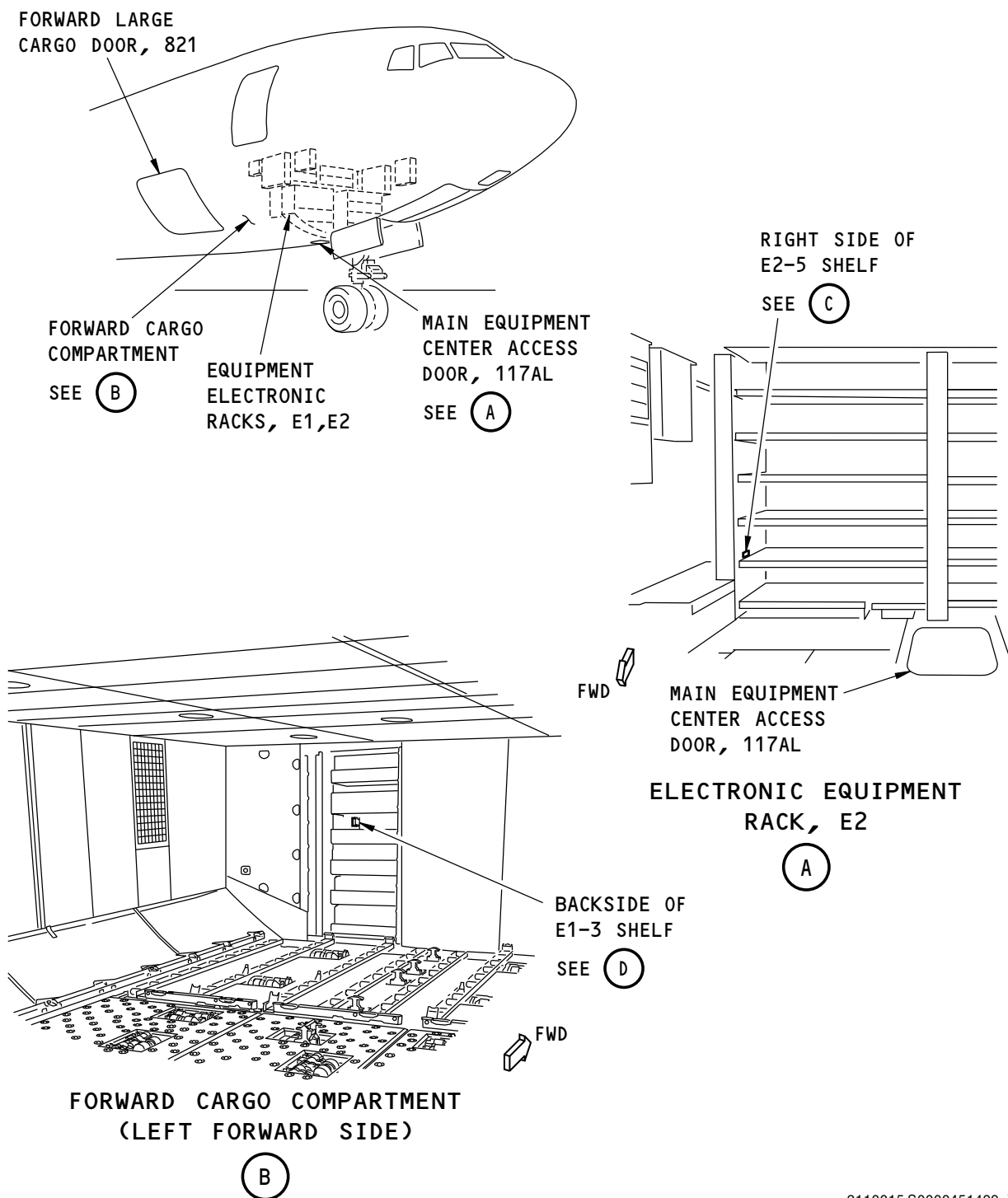
EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 539  
Sep 05/2018

**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**



2110015 S0000451499\_V1

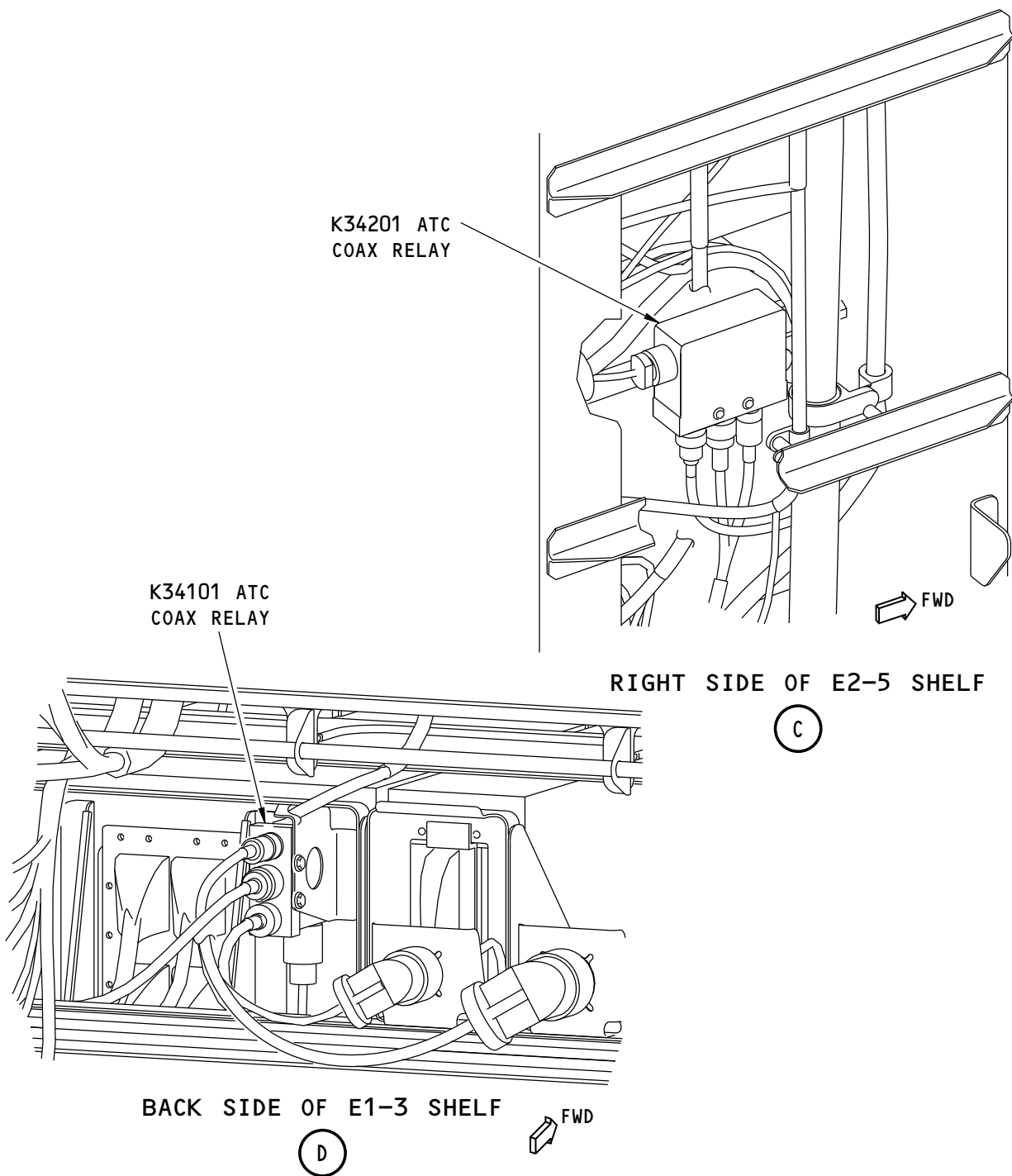
**ATC Antenna Switch Location  
Figure 503/34-53-00-990-803 (Sheet 1 of 2)**

EFFECTIVITY  
ARO ALL

**34-53-00**

D633W101-ARO

Page 540  
Sep 05/2018



2110109 S0000451500\_V1

**ATC Antenna Switch Location  
Figure 503/34-53-00-990-803 (Sheet 2 of 2)**

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 541  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-00-720-803

#### 6. Air Traffic Control / Mode S Transponder Functional Test (With ARINC 429 Test Unit)

##### A. General

- (1) This test procedure is for airplanes that have been modified to install an ATC / Mode-S transponder system with Extended Squitter (ES) Capability.
- (2) This test will verify that the Transponders are receiving the aircraft data that is required to support the ES functions.

##### B. References

| Reference        | Title                                                  |
|------------------|--------------------------------------------------------|
| 34-21-00-820-801 | Air Data Inertial Reference Unit - Alignment (P/B 201) |
| 34-53-01-000-801 | ATC/Mode S Transponder Removal (P/B 401)               |
| 34-53-01-400-801 | ATC/Mode S Transponder Installation (P/B 401)          |
| 34-58-00-710-801 | Global Positioning System - Operational 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                                                                                                                                                                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-1562  | Analyzer - Data Bus, ARINC 429<br>Part #: 01-1001-12 Supplier: 0Z3C6<br>Part #: 403557 Supplier: \$1272<br>Part #: 800-0630 Supplier: 1JSZ6<br>Opt Part #: 01-1001-10 Supplier: 0Z3C6<br>Opt Part #: 429EBP Supplier: 41364<br>Opt Part #: 702125-01 Supplier: \$1272 |

##### D. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### E. Prepare for the Test

###### SUBTASK 34-53-00-840-009

- (1) The following systems must be up and operational.
  - (a) Air Data Inertial Reference System. Air Data Inertial Reference Unit - Alignment, TASK 34-21-00-820-801
  - (b) Multi Mode Receivers (MMR). Global Positioning System - Operational Test, TASK 34-58-00-710-801

##### F. Test

###### SUBTASK 34-53-00-860-102

- (1) Verify that the IRU's are aligned and operate in navigation mode.

EFFECTIVITY  
ARO ALL

# 34-53-00

D633W101-ARO

Page 542  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-00-860-103

- (2) Open these circuit breakers:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

SUBTASK 34-53-00-020-001

- (3) Remove ATC-L and ATC-R transponders ATC/Mode S Transponder Removal, TASK 34-53-01-000-801.

SUBTASK 34-53-00-700-007

- (4) For each individual unit connect a analyzer, COM-1562 to the pins listed in the table 1.

**ARICN 429 LABEL TEST TABLE**

| ATC   | Connector | Pin | Polarity | Label | Speed | Sending Source |
|-------|-----------|-----|----------|-------|-------|----------------|
| ATC-L | DM34107AA | 2A  | Hi       | 103   | Hi    | MMR-L          |
|       |           | 2B  | Lo       | 112   |       |                |
| ATC-R | DM34207AA | 2A  | Hi       | 103   | Hi    | MMR-R          |
|       |           | 2B  | Lo       | 112   |       |                |

- (5) Set the analyzer, COM-1562 such that Source Destination Identifier (SDI) is set to "Don't Care".

SUBTASK 34-53-00-420-001

- (6) Install ATC-L and ATC-R transponders ATC/Mode S Transponder Installation, TASK 34-53-01-400-801.

SUBTASK 34-53-00-860-104

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

SUBTASK 34-53-00-710-016

- (8) Do an operational test for each transponder: Air Traffic Control/Mode S Transponder System - Operational Test, TASK 34-53-00-710-801.
- (a) Verify that the tests passes for both transponders.

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-00**

Page 543  
Sep 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ATC/MODE S TRANSPONDER - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
- (1) A removal of the ATC/mode S transponder
  - (2) An installation of the ATC/mode S transponder.
- B. The two ATC/mode S transponders are in the main equipment center. The left ATC/mode S transponder is on the E1 electronics equipment rack, shelf No. 3. The right ATC/mode S transponder is on the E2 electronics equipment rack, shelf No. 3.

#### **TASK 34-53-01-000-801**

#### 2. ATC/Mode S Transponder Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

##### A. References

| <u>Reference</u> | <u>Title</u>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-000-801 | E/E Box Removal (P/B 401)                                 |

##### B. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

##### C. Access Panels

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

##### D. Removal Procedure

SUBTASK 34-53-01-860-001

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

SUBTASK 34-53-01-010-001

- (2) To get to the main equipment center, open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

SUBTASK 34-53-01-020-001

- (3) Remove the ATC/mode S transponder [1] (E/E Box Removal, TASK 20-10-01-000-801).

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

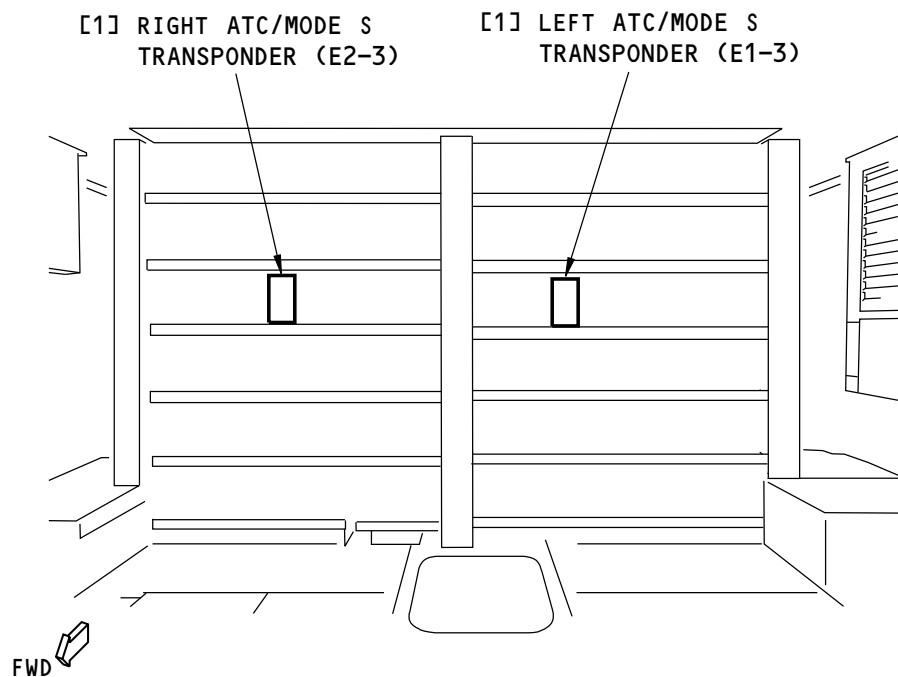
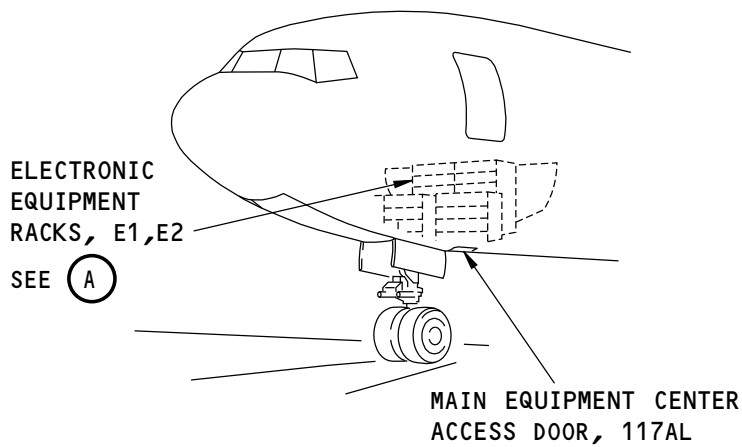
# 34-53-01

D633W101-ARO

Page 401  
May 05/2015



777-200/300  
AIRCRAFT MAINTENANCE MANUAL



ELECTRONIC EQUIPMENT RACKS, E1,E2

(A)

C59586 S0006420905\_V1

ATC/Mode S Transponder Installation  
Figure 401/34-53-01-990-802

EFFECTIVITY  
ARO ALL

34-53-01

D633W101-ARO

Page 402  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-01-400-801

#### 3. ATC/Mode S Transponder Installation

(Figure 401)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. General

- (1) The installation test makes sure the ATC/Mode S Transponder system operates correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201)     |
| 20-10-01-400-801 | E/E Box Installation (P/B 401)                                |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### D. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### E. Installation Procedure

SUBTASK 34-53-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

##### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name           |
|-----|-----|--------|----------------|
| A   | 3   | C34445 | ATC L          |
| C   | 3   | C34607 | ATC ANT SWITCH |
| E   | 25  | C34446 | ATC R          |

SUBTASK 34-53-01-420-001

- (2) Install the ATC/mode S transponder [1] (E/E Box Installation, TASK 20-10-01-400-801).

SUBTASK 34-53-01-410-001

- (3) Close this access panel:

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-53-01

Page 403  
May 05/2015





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-01-860-003

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

## F. Installation Test

SUBTASK 34-53-01-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-53-01-860-008

- (2) Set the mode selector to ALT ON on the TCAS/ATC control panel.

SUBTASK 34-53-01-860-007

- (3) Set the transponder selector to LEFT or RIGHT XPNDR (the one that you replaced) on the TCAS/ATC control panel.

SUBTASK 34-53-01-710-001

- (4) Use a maintenance access terminal (MAT) to do the system test for the left (or right) ATC/mode S transponder [1].
- (a) Make these selections on the MAT:
- 1) ONBOARD MAINTENANCE
  - 2) LINE MAINTENANCE
  - 3) GROUND TESTS
  - 4) 34 Air Traffic Control (ATC) Mode S System
  - 5) SYSTEM TEST
  - 6) Left ATC SYSTEM (Right ATC SYSTEM)
  - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
- 1) CONTINUE
  - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, make sure there is no maintenance message for the ATC/Mode S transponder [1].
- 1) If there is a maintenance message for the ATC/Mode S transponder [1], refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

# 34-53-01

D633W101-ARO

Page 404  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TCAS/ATC CONTROL PANEL - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
- (1) A removal of the TCAS/ATC control panel
  - (2) An installation of the TCAS/ATC control panel.
- B. The TCAS/ATC control panel is on the aft aisle stand panel, P8, in the flight compartment.

#### **TASK 34-53-02-000-801**

#### 2. TCAS/ATC Control Panel Removal

(Figure 401)

##### A. **References**

| Reference        | Title                                                          |
|------------------|----------------------------------------------------------------|
| 20-41-01-000-802 | Conductive Dust Cap and Connector Cover Installation (P/B 201) |

##### B. **Location Zones**

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

##### C. **Removal Procedure**

SUBTASK 34-53-02-860-001

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| A   | 3   | C34445 | ATC L |
| E   | 25  | C34446 | ATC R |

SUBTASK 34-53-02-860-002

- (2) Turn the outer knob of the AISLE STAND PNL/FLOOD control switch fully counterclockwise.

SUBTASK 34-53-02-910-001

|                                                                                                       |                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>CAUTION</b> | DO NOT TOUCH THE TCAS/ATC CONTROL PANEL BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE TCAS/ATC CONTROL PANEL. |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- (3) Before you touch the TCAS/ATC CONTROL panel [1], do this task: Conductive Dust Cap and Connector Cover Installation, TASK 20-41-01-000-802.

SUBTASK 34-53-02-020-001

- (4) Remove the TCAS/ATC control panel [1]:
- (a) Turn the four quarter-turn fasteners [2] to release the TCAS/ATC control panel [1].
  - (b) Lift the TCAS/ATC control panel [1] to get access to the electrical connectors.
  - (c) Disconnect the electrical connectors [3].
  - (d) Put protective covers on the electrical connectors [3].

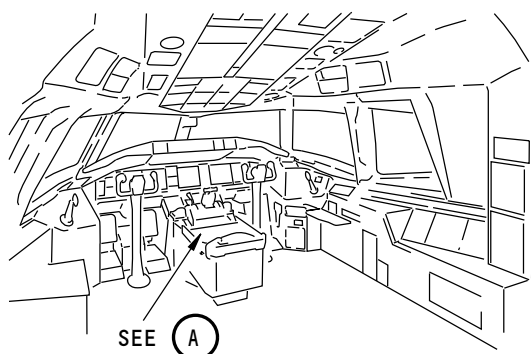
———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

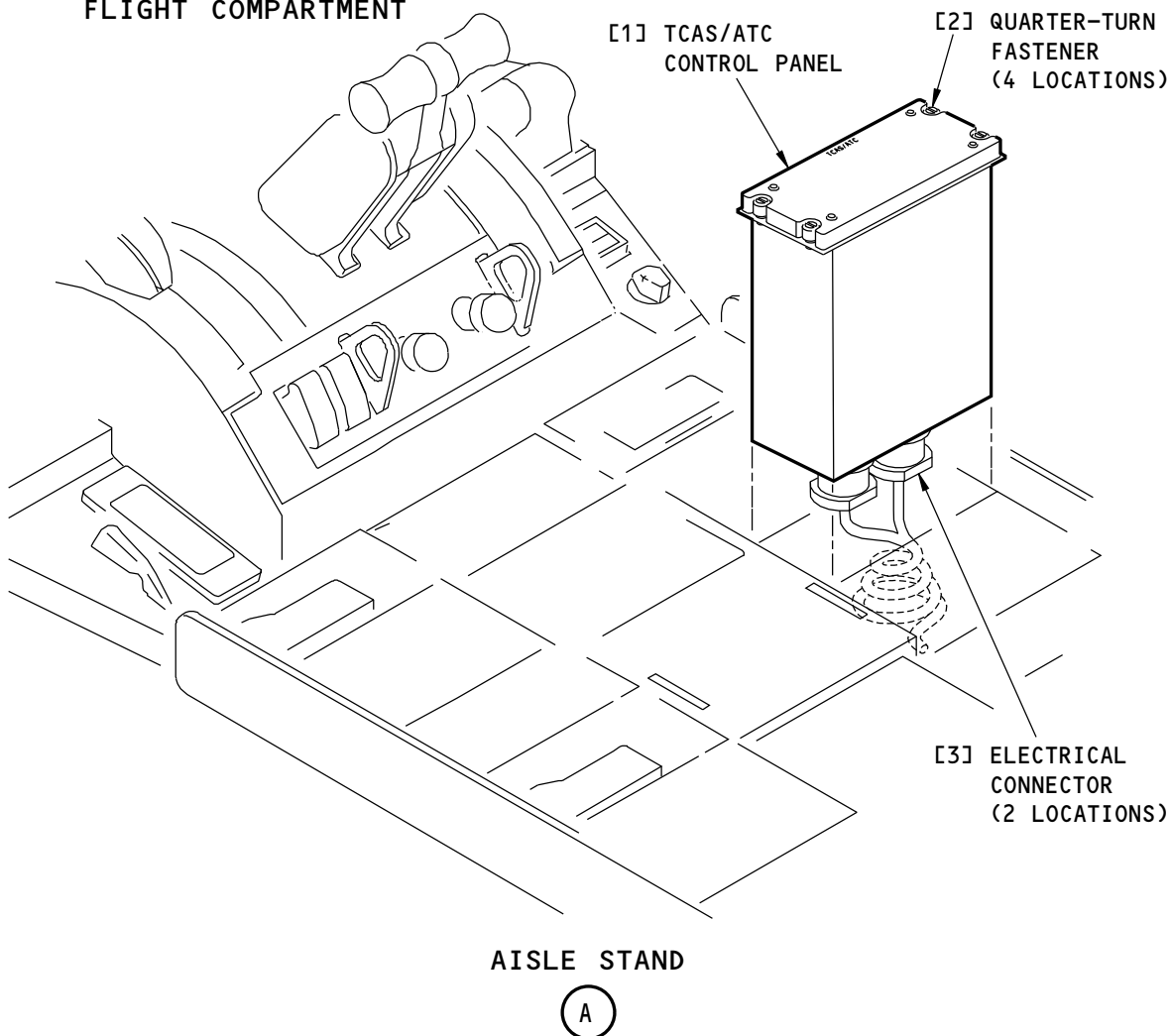
## 34-53-02

D633W101-ARO

Page 401  
Sep 05/2017



**FLIGHT COMPARTMENT**



E99867 S0006420912\_V1

**TCAS/ATC Control Panel Installation  
Figure 401/34-53-02-990-802**

EFFECTIVITY  
ARO ALL

**34-53-02**

D633W101-ARO

Page 402  
Jan 05/2015

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

## TASK 34-53-02-400-801

### 3. TCAS/ATC Control Panel Installation

(Figure 401)

#### A. General

- (1) The installation test makes sure that TCAS/ATC control panel [1] is installed correctly and the left and right ATC systems operate.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

#### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 20-41-01-400-802 | Conductive Dust Cap and Connector Cover Removal (P/B 201)     |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

#### C. Expendables/Parts

| AMM Item | Description | AIPC Reference   | AIPC Effectivity |
|----------|-------------|------------------|------------------|
| 1        | Panel       | 31-11-36-01A-205 | ARO ALL          |
|          |             | 34-53-02-01-055  | ARO ALL          |

#### D. Location Zones

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

#### E. Installation Procedure

SUBTASK 34-53-02-760-001

- (1) Make sure that these circuit breakers are open and have safety tags:

##### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| A   | 3   | C34445 | ATC L |
| E   | 25  | C34446 | ATC R |

SUBTASK 34-53-02-910-002



**CAUTION** DO NOT TOUCH THE TCAS/ATC CONTROL PANEL BEFORE YOU DO THE PROCEDURE FOR DEVICES THAT ARE SENSITIVE TO ELECTROSTATIC DISCHARGE. ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE TCAS/ATC CONTROL PANEL.

- (2) Before you touch the TCAS/ATC control panel [1], do this task: Conductive Dust Cap and Connector Cover Removal, TASK 20-41-01-400-802.

SUBTASK 34-53-02-420-001

- (3) Install the TCAS/ATC control panel [1]:
  - (a) Remove the protective covers from the electrical connectors [3].
  - (b) Examine the electrical connectors [3] for bent or broken pins, dirt, and damage.
  - (c) Connect the electrical connectors [3].
  - (d) Put the TCAS/ATC control panel [1] into its position in the P8 panel.

EFFECTIVITY  
ARO ALL

# 34-53-02

D633W101-ARO

Page 403  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (e) Turn the quarter-turn fasteners [2] to latch the TCAS/ATC control panel [1].

SUBTASK 34-53-02-760-002

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 3          | C34445        | ATC L       |
| E          | 25         | C34446        | ATC R       |

## F. Installation Test

SUBTASK 34-53-02-860-010

- (1) Turn the outer knob of the AISLE STAND PNL/FLOOD control switch to the normal position.

SUBTASK 34-53-02-860-005

- (2) Set the mode selector to ALT ON on the TCAS/ATC control panel [1].

SUBTASK 34-53-02-860-007

- (3) Set the transponder selector to LEFT on the TCAS/ATC control panel [1].

SUBTASK 34-53-02-710-001

- (4) Use a maintenance access terminal (MAT) to do the system test of the ATC System to test the TCAS/ATC control panel [1]:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TEST
    - 4) 34 Air Traffic Control (ATC) Mode S System
    - 5) SYSTEM TEST
    - 6) Left ATC System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSES shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, make sure there is no maintenance message for the TCAS/ATC control panel [1].
    - 1) If there is a maintenance message for the TCAS/ATC control panel [1], refer to the applicable maintenance message index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

SUBTASK 34-53-02-860-008

- (5) Set the transponder selector to RIGHT on the TCAS/ATC control panel [1].

SUBTASK 34-53-02-710-002

- (6) Do the system test on the MAT again for the Right ATC System.

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

# 34-53-02

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 404  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**ATC ANTENNA - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the ATC antenna
  - (2) An installation of the ATC antenna.
- B. There are two ATC antennas on the airplane. The top antenna, M34119, is installed at station 560.5. The bottom antenna, M34219, is installed at station 492.4
- C. The tasks are the same for the top and the bottom antenna.

**TASK 34-53-03-000-801**

**2. ATC Antenna Removal**

(Figure 401)

**A. References**

| <u>Reference</u> | <u>Title</u>                  |
|------------------|-------------------------------|
| 51-31-01-160-801 | Prepare For Sealing (P/B 201) |

**B. Tools/Equipment**

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

| <u>Reference</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-2481         | Tool - Sealant Removal, BAC5000, PSD 6-184 Approved<br>Part #: 1-6390-A Supplier: 63318<br>Part #: 10810 Supplier: \$0855<br>Part #: 234350 Supplier: \$0857<br>Part #: 311 Supplier: F6892<br>Part #: 411B60 Supplier: 3DN12<br>Part #: 411B90 Supplier: 3DN12<br>Part #: DAD5013 Supplier: \$0856<br>Part #: DFD5019 Supplier: \$0856<br>Part #: J5-0275-2010 Supplier: 435R8<br>Part #: SCD5019 Supplier: \$0856<br>Part #: ST982LF-9 Supplier: 62176<br>Part #: TS1275-4 Supplier: 1DWR5 |

**C. Location Zones**

| <u>Zone</u> | <u>Area</u>                                                  |
|-------------|--------------------------------------------------------------|
| 123         | Area Below Forward Cargo Compartment, Left                   |
| 211         | Flight Compartment, Left                                     |
| 212         | Flight Compartment, Right                                    |
| 224         | Area Above Passenger Compartment Ceiling, Right - Section 41 |

**D. Removal Procedure**

SUBTASK 34-53-03-860-001

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 3          | C34445        | ATC L       |

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-03**

Page 401  
May 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

#### SUBTASK 34-53-03-020-001

- (2) Remove the sealant from around the edge of the ATC antenna [3] (TASK 51-31-01-160-801).

#### SUBTASK 34-53-03-020-002

- (3) Remove the antenna [3]:
- (a) Remove the bolt [4] from the antenna [3].



#### CAUTION

BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (b) Use force around the antenna [3] with the sealant removal tool, COM-2481 until the seal is fully broken.



#### CAUTION

MOVE THE ANTENNA THE SMALLEST DISTANCE NECESSARY TO DISCONNECT THE COAXIAL CONNECTOR. DAMAGE TO THE COAXIAL CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (c) Move the antenna [3] until you can get access to the coaxial connector [1].
- (d) Disconnect the coaxial connector [1].
- (e) Secure the coaxial cables.
- NOTE: Do not let the coaxial cables fall into the airplane fuselage.
- (f) Remove the ATC antenna [3].
- (g) Put protective covers on the coaxial connector [1].

————— **END OF TASK** —————

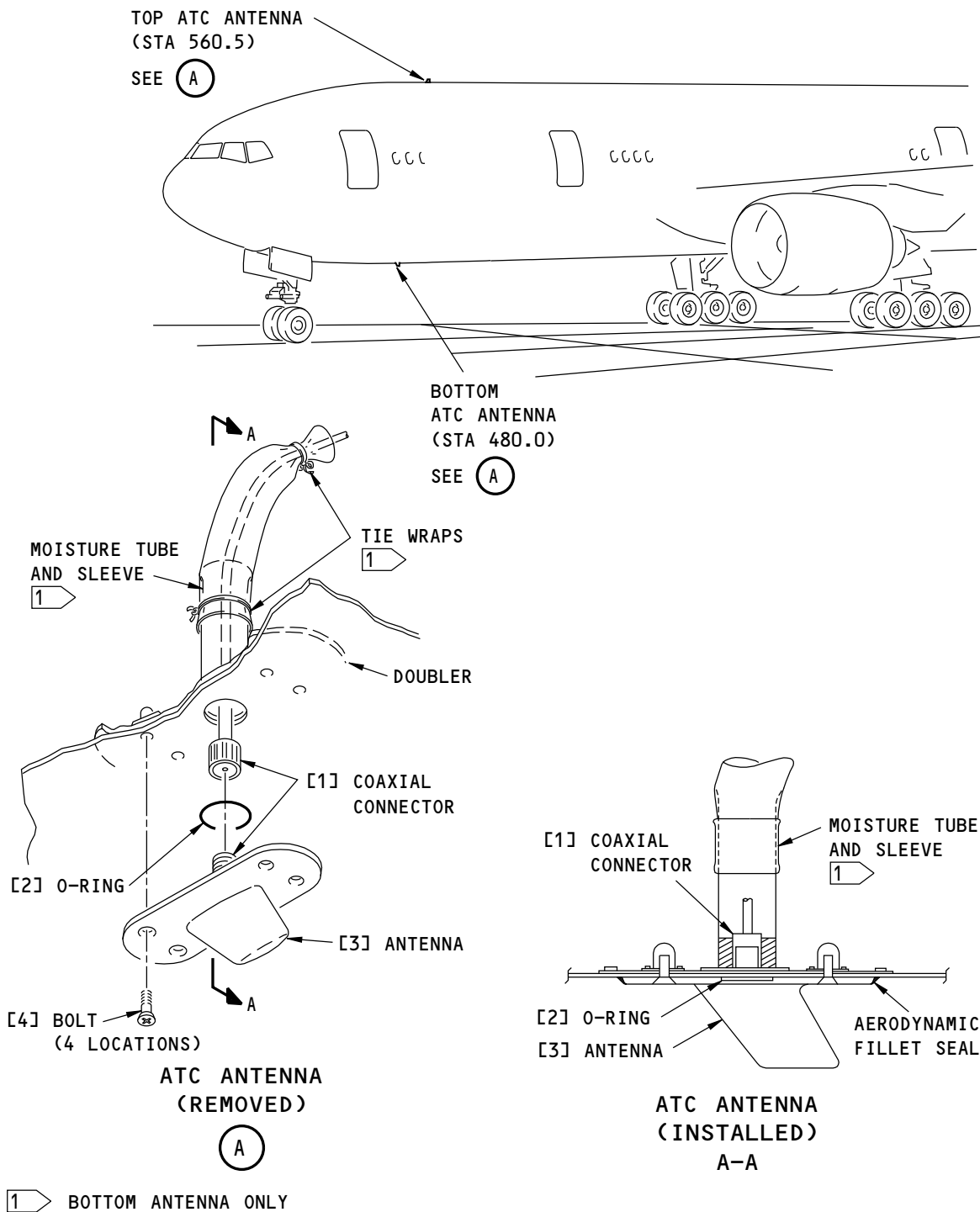
EFFECTIVITY  
ARO ALL

# 34-53-03

D633W101-ARO

Page 402  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



C86333 S0006420917\_V1

**ATC Antenna Installation**  
**Figure 401/34-53-03-990-801**

EFFECTIVITY  
ARO ALL

**34-53-03**

D633W101-ARO

Page 403  
Jan 05/2015





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-03-400-801

#### 3. ATC Antenna Installation

(Figure 401)

##### A. General

- (1) The installation test makes sure that the ATC antenna is correctly installed.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                                           |
|------------------|---------------------------------------------------------------------------------|
| 20-11-00-910-801 | Standard Torque Values (P/B 201)                                                |
| 20-30-01-910-801 | Structure Adhesives, Cements, and Sealants (P/B 201)                            |
| 20-30-95-910-801 | Final Cleaning Prior to Aerodynamic Smoothing and Fairing (Series 95) (P/B 201) |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                               |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201)                   |
| 51-21-03-100-801 | Corrosion Removal and Control (P/B 701)                                         |
| 51-21-04-620-801 | Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)                |
| 51-31-01-160-801 | Prepare For Sealing (P/B 201)                                                   |
| 51-31-01-390-804 | Fillet Seal Application (P/B 201)                                               |
| SL 20-016        | DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS                   |

##### C. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-1550  | Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550).<br>Part #: 620LK Supplier: 1CRL2<br>Part #: M1 Supplier: 3AD17<br>Part #: T477W Supplier: 01014<br>Opt Part #: M1B Supplier: 3AD17 |
| STD-810   | Spatula - Fillet Smoothing, Hardwood or Plastic                                                                                                                                                                                                                                                                                                |

##### D. Consumable Materials

| Reference | Description                                                                     | Specification    |
|-----------|---------------------------------------------------------------------------------|------------------|
| A02315    | Sealant - Low Density, Synthetic Rubber. 2 Part                                 | BMS5-142 Type II |
| B00184    | Solvent - Presealing, Cleaning Solvent                                          | BMS11-7          |
| B01015    | Solvent - Final Cleaning Prior To Aerodynamic Smoothing And Fairing - Series 95 |                  |

EFFECTIVITY  
ARO ALL

# 34-53-03

D633W101-ARO

Page 404  
May 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

(Continued)

| Reference | Description                                                                      | Specification                                   |
|-----------|----------------------------------------------------------------------------------|-------------------------------------------------|
| C00064    | Coating - Aluminum Chemical Conversion                                           | BAC5719 Type II Class A (MIL-DTL-5541 Class 1A) |
| C00175    | Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines) | BMS10-79 Type III                               |
| C00913    | Compound - Corrosion Inhibiting Material, Nondrying Resin Mix                    | BMS3-27                                         |
| C50056    | Compound - Corrosion Inhibiting Material, Nondrying Resin Mix                    | BMS3-27                                         |
| D00254    | Compound - Silicone                                                              | SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660) |
| D00633    | Grease - Aircraft General Purpose                                                | BMS3-33                                         |
| G50237    | Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L                        | BMS3-38                                         |

**E. Expendables/Parts**

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 3        | Antenna     | 34-53-03-01-010 | ARO ALL          |
|          |             | 34-53-03-01-110 | ARO ALL          |

**F. Location Zones**

| Zone | Area                                                         |
|------|--------------------------------------------------------------|
| 123  | Area Below Forward Cargo Compartment, Left                   |
| 211  | Flight Compartment, Left                                     |
| 212  | Flight Compartment, Right                                    |
| 224  | Area Above Passenger Compartment Ceiling, Right - Section 41 |

**G. Installation Procedure**

SUBTASK 34-53-03-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

**Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name           |
|-----|-----|--------|----------------|
| A   | 3   | C34445 | ATC L          |
| C   | 3   | C34607 | ATC ANT SWITCH |
| E   | 25  | C34446 | ATC R          |

SUBTASK 34-53-03-100-001

- (2) Clean the airplane skin as follows:

- (a) To remove the remaining sealant from the airplane skin in the antenna area, do this task:  
Prepare For Sealing, TASK 51-31-01-160-801.
- (b) Clean the airplane skin in the antenna area with solvent, B00184.

EFFECTIVITY  
ARO ALL

**34-53-03**

D633W101-ARO

Page 405  
Jan 05/2018

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-03-840-001



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) If the airplane mating surface has corrosion or other damage, do the steps that follow to prepare the surface (TASK 51-21-03-100-801):
  - (a) Apply a layer of coating, C00064, on the airplane skin in the area where the antenna [3] touches the skin (TASK 51-21-04-620-801).
    - 1) Extend the area of the coating, C00064 by approximately 0.25 inch around the edge of the antenna [3] area.
  - (b) On top of the coating, C00064, apply two layers of primer, C00175.
  - (c) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 in the holes in the airplane skin for the bolts and the coaxial cable.

SUBTASK 34-53-03-840-002



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Prepare the antenna [3] as follows:
  - (a) Apply a very thin layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 on the base of the antenna [3].
    - 1) Make sure you apply the Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to the side of the O-ring groove that is pressurized and to the side of the O-ring groove that is not pressurized.

**NOTE:** Do not get the compound on the O-ring [2] or O-ring groove.
  - (b) Apply a layer of grease, D00633 on the O-ring [2] and the O-ring groove.
  - (c) Install the O-ring [2] on the antenna [3].

EFFECTIVITY  
ARO ALL

## 34-53-03

D633W101-ARO

Page 406  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Make sure the O-ring [2] is not damaged and is installed correctly in the O-ring groove.
- (d) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 on the threads and shank of the bolts [4].

SUBTASK 34-53-03-420-001



**WARNING**

USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



**WARNING**

DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (5) Install the ATC antenna [3]:
  - (a) Remove the protective covers from the coaxial connector [1].
  - (b) Examine the coaxial connector [1] for dirt and damage.
  - (c) Connect the coaxial connector [1].
  - (d) Apply a large quantity of silicone compound, D00254, to the outside coaxial connector [1].
  - (e) Put the antenna [3] into its position on the airplane.



**CAUTION**

MANUALLY INSTALL THE BOLTS. DO NOT USE POWER OR PNEUMATIC TOOLS TO INSTALL THE BOLTS. POWER TOOLS CAN CAUSE DAMAGE TO THE ANTENNA SURFACE.

- (f) Install three of the bolts [4] that hold the antenna.
- (g) Manually tighten the bolts [4]. Refer to Standard Torque Values, TASK 20-11-00-910-801.



**WARNING**

DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR DANGEROUS TO THE ENVIRONMENT. REFER TO MATERIAL-SAFETY-DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR CORRECT HANDLING PROCEDURES.

- (h) Remove the unwanted Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 from around the antenna [3] with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

**NOTE:** Failure to completely remove the unwanted compound will cause a weak sealant bond.

SUBTASK 34-53-03-760-001

- (6) Do a check of the resistance between the antenna [3] and the airplane skin as follows:

EFFECTIVITY  
ARO ALL

# 34-53-03

D633W101-ARO

Page 407  
Sep 05/2017

## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Connect a intrinsically safe approved bonding meter, COM-1550 between the base of the antenna [3] and the airplane skin.

**NOTE:** You can get access to the base of the antenna through the hole for the last bolt.  
Do not make a measurement between a bolt [4] and the airplane skin.

- 1) Make sure the measured resistance is 0.025 ohms or less.

SUBTASK 34-53-03-420-002



MANUALLY INSTALL THE BOLTS. DO NOT USE POWER OR PNEUMATIC TOOLS TO INSTALL THE BOLTS. POWER TOOLS CAN CAUSE DAMAGE TO THE ANTENNA SURFACE.

- (7) Install the last bolt [4] that holds the antenna [3].

- (a) Manually tighten the bolt [4]. Refer to Standard Torque Values, TASK 20-11-00-910-801.

SUBTASK 34-53-03-420-003



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR DANGEROUS TO THE ENVIRONMENT. REFER TO MATERIAL-SAFETY-DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR CORRECT HANDLING PROCEDURES.

- (8) Remove the unwanted Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C50056 from around the head of each bolt [4] with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

### H. Aerodynamic Fillet Seal Installation

SUBTASK 34-53-03-620-001

- (1) Apply a bead of sealant, A02315 or a substitute (refer to TASK 20-30-01-910-801) around the antenna [3] where it touches the airplane skin (TASK 51-31-01-390-804).

**NOTE:** Apply the sealant completely around the antenna. Make sure that no air gets caught under the sealant. Use a sufficient amount of sealant to permit you to make the surface smooth.

**NOTE:** Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).

EFFECTIVITY  
ARO ALL

# 34-53-03

D633W101-ARO

Page 408  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-53-03-390-001

- (2) Make a smooth 45-degree bead of sealant, A02315, with the hardwood or plastic fillet smoothing spatula, STD-810.

SUBTASK 34-53-03-140-001

- (3) Remove unwanted sealant, A02315, from the area around the antenna [3].

### I. Installation Test

SUBTASK 34-53-03-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-53-03-860-004

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

SUBTASK 34-53-03-860-009

- (3) Set the mode selector to ALT ON on the TCAS/ATC control panel.

SUBTASK 34-53-03-860-008

- (4) Set the transponder selector on the TCAS/ATC control panel to the LEFT position.

SUBTASK 34-53-03-740-001

- (5) Use a maintenance access terminal (MAT) to do the system test for the ATC antenna:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Air Traffic Control (ATC) Mode S System
    - 5) SYSTEM TEST
    - 6) Left ATC System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, make sure there is no maintenance message for the ATC antenna.
    - 1) If there is a maintenance message for the ATC antenna, refer to the applicable maintenance message index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
  - (e) Set the transponder selector on the TCAS/ATC control panel to the RIGHT position.
  - (f) Select NEW TEST on the MAT.

EFFECTIVITY  
ARO ALL

# 34-53-03

D633W101-ARO

Page 409  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (g) Do the system test again for the right ATC system.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-03**

Page 410  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**ATC COAX RELAY - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the ATC coax relay
  - (2) An installation of the ATC coax relay.
- B. The two ATC coax relays are in the main equipment center. The top ATC coax relay is on the E1 electronics equipment rack, near shelf No. 3. The bottom ATC coax relay is on the E2 electronics equipment rack, near the shelf No. 5 outboard stanchion. Removal of the primary flight computer might be necessary for easy access to the ATC coax relay.

**TASK 34-53-04-000-801**

**2. ATC Coax Relay Removal**

(Figure 401)

**A. References**

| <b>Reference</b> | <b>Title</b>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 27-02-01-000-801 | Primary Flight Computer (PFC) Removal (P/B 401)           |

**B. Location Zones**

| <b>Zone</b> | <b>Area</b>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

**C. Access Panels**

| <b>Number</b> | <b>Name/Location</b>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

**D. Removal Procedure**

**SUBTASK 34-53-04-860-001**

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <b>Row</b> | <b>Col</b> | <b>Number</b> | <b>Name</b>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

**SUBTASK 34-53-04-010-001**

- (2) To get to the main equipment center, open this access panel:

| <b>Number</b> | <b>Name/Location</b>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

**SUBTASK 34-53-04-000-001**

- (3) If necessary, remove the primary flight computer (TASK 27-02-01-000-801), located below the ATC coax relay [5], to get better access to the relay [5].

EFFECTIVITY  
ARO ALL

**34-53-04**

D633W101-ARO

Page 401  
Jan 05/2015





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-53-04-000-002

- (4) Remove the ATC coax relay [5]:
- (a) Disconnect the electrical connectors [1] that connect to the relay [5].
  - (b) Put protective covers on the electrical connectors [1].
  - (c) Remove the screw [2], washer [3], and nut [4] that attach the relay [5] to the support bracket.
  - (d) Remove the relay [5].

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-04**

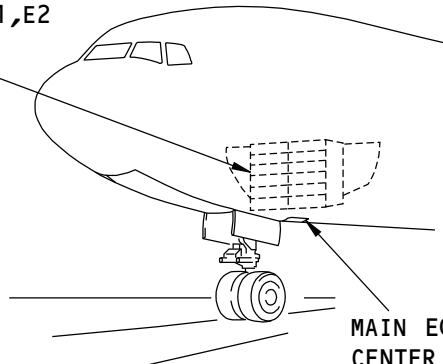
Page 402  
Jan 05/2015



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

ELECTRONIC  
EQUIPMENT  
RACKS, E1,E2

SEE (A)



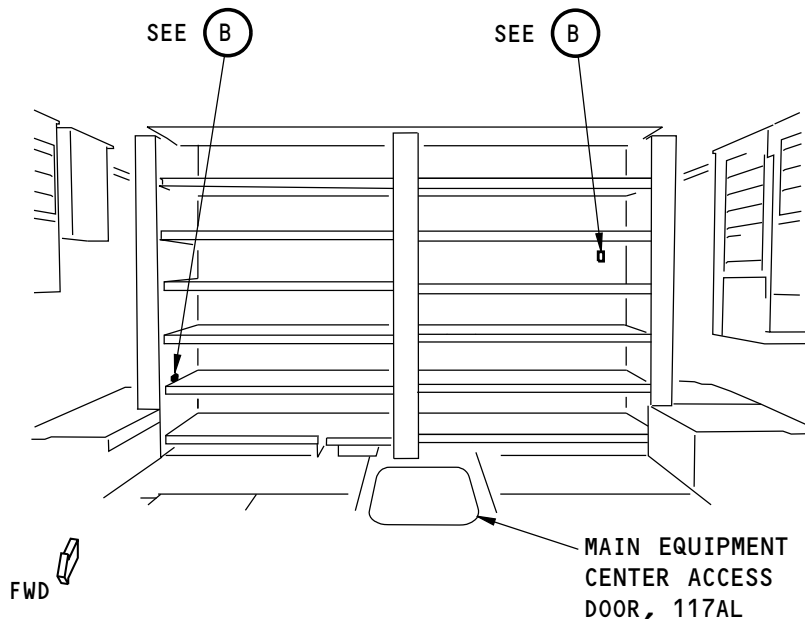
MAIN EQUIPMENT  
CENTER ACCESS  
DOOR, 117AL

BOTTOM ATC ANTENNA  
COAX RELAY (E2-5)

SEE (B)

TOP ATC ANTENNA  
COAX RELAY (E1-3)

SEE (B)



FWD

MAIN EQUIPMENT  
CENTER ACCESS  
DOOR, 117AL

ELECTRONIC EQUIPMENT RACKS, E1,E2

(A)

E05839 S0006420922\_V1

ATC Coax Relay Installation  
Figure 401/34-53-04-990-801 (Sheet 1 of 2)

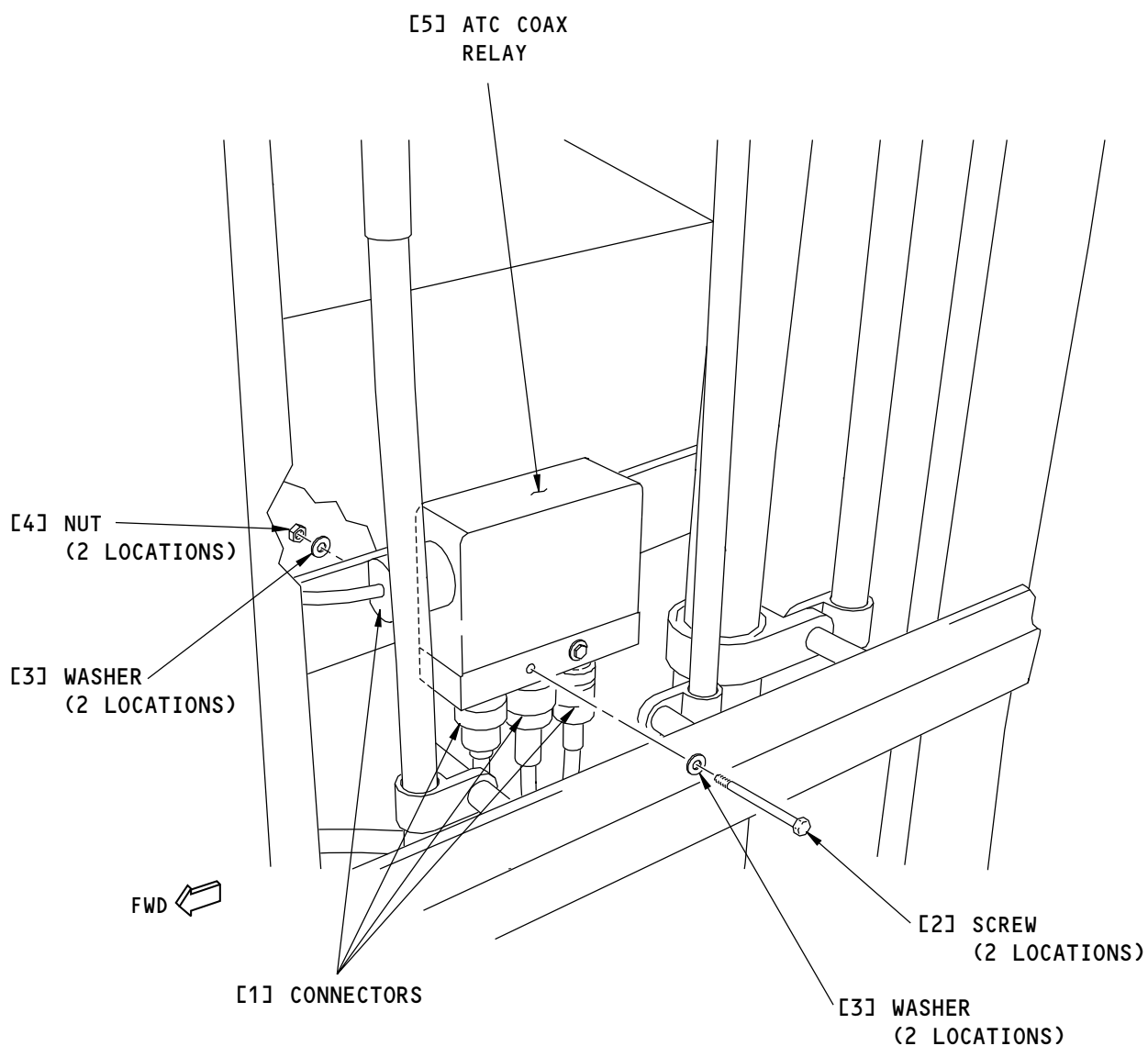
EFFECTIVITY  
ARO ALL

D633W101-ARO

34-53-04

Page 403  
Jan 05/2015

**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**



**ATC COAX RELAY  
(EXAMPLE)**

(B)

**NOTE:** SOME WIRE BUNDLES ARE NOT SHOWN.

E05866 S0006420923\_V1

**ATC Coax Relay Installation  
Figure 401/34-53-04-990-801 (Sheet 2 of 2)**

EFFECTIVITY  
ARO ALL

**34-53-04**

D633W101-ARO

Page 404  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-53-04-400-801

#### 3. ATC Coax Relay Installation

(Figure 401)

##### A. General

- (1) The installation test makes sure the ATC coax relay [5] is correctly installed and that the ATC system operates correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201)     |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 27-02-01-400-802 | Primary Flight Computer (PFC) Installation (P/B 401)          |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 5        | Relay       | 34-53-04-01-015 | ARO ALL          |

##### D. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### E. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### F. Installation Procedure

SUBTASK 34-53-04-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

###### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name           |
|-----|-----|--------|----------------|
| A   | 3   | C34445 | ATC L          |
| C   | 3   | C34607 | ATC ANT SWITCH |
| E   | 25  | C34446 | ATC R          |

SUBTASK 34-53-04-020-001

- (2) Install the ATC coax relay [5]:
  - (a) Remove the protective covers from the electrical connectors [1].
  - (b) Examine the electrical connectors [1] for bent or broken pins, dirt, and damage.
  - (c) Put the relay [5] in its position on the support bracket.
  - (d) Install the screw [2], washer [3], and nut [4] that attach the relay [5] to the support bracket.

EFFECTIVITY  
ARO ALL

# 34-53-04

D633W101-ARO

Page 405  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (e) Connect the electrical connectors [1] to the relay [5].

SUBTASK 34-53-04-400-001

- (3) If the primary flight computer was removed, do this task: Primary Flight Computer (PFC) Installation, TASK 27-02-01-400-802.

SUBTASK 34-53-04-410-001

- (4) Close this access panel:

| <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
|---------------|----------------------|

|       |                                   |
|-------|-----------------------------------|
| 117AL | Main Equipment Center Access Door |
|-------|-----------------------------------|

(TASK 06-41-00-800-801).

SUBTASK 34-53-04-860-003

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>    |
|------------|------------|---------------|----------------|
| A          | 3          | C34445        | ATC L          |
| C          | 3          | C34607        | ATC ANT SWITCH |
| E          | 25         | C34446        | ATC R          |

## G. Installation Test

SUBTASK 34-53-04-860-004

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-53-04-860-008

- (2) Set the mode selector on the TCAS/ATC control panel to ALT ON.

SUBTASK 34-53-04-860-007

- (3) Set the transponder selector on the TCAS/ATC control panel to the LEFT position.

SUBTASK 34-53-04-740-001

- (4) Use a maintenance access terminal (MAT) to do the system test for the ATC coax relay [5]:

- (a) Make these selections on the MAT:

- 1) ONBOARD MAINTENANCE
- 2) LINE MAINTENANCE
- 3) GROUND TESTS
- 4) 34 Air Traffic Control (ATC) Mode S System
- 5) SYSTEM TEST
- 6) Left ATC System
- 7) CONTINUE

- (b) Do the instructions that show on the MAT and then make these selections:

- 1) CONTINUE
- 2) START TEST

- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

- (d) If FAILED shows, make sure there is no maintenance message for the ATC coax relay [5].

EFFECTIVITY  
ARO ALL

# 34-53-04

D633W101-ARO

Page 406  
Jan 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- 1) If there is a maintenance message for the ATC coax relay [5], refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
- (e) Set the transponder selector on the TCAS/ATC control panel to the RIGHT position.
- (f) Select NEW TEST on the MAT.
- (g) Do the SYSTEM test again for the right ATC system.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-53-04**

Page 407  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### DISTANCE MEASURING EQUIPMENT SYSTEM - MAINTENANCE PRACTICES

#### 1. General

A. This procedure contains two tasks:

- (1) Distance Measuring Equipment System Deactivation.
- (2) Distance Measuring Equipment System Activation.

#### **TASK 34-55-00-040-801**

#### 2. Distance Measuring Equipment System - Deactivation

(Figure 34-55-01-990-801)

##### A. **General**

- (1) This task removes the electrical power from the following components of the Distance Measuring Equipment System (DME):
  - (a) DME Interrogator
  - (b) DME Antenna

##### B. **References**

| Reference        | Title                                           |
|------------------|-------------------------------------------------|
| 34-55-01-990-801 | Figure: DME Interrogator Installation (P/B 401) |

##### C. **Location Zones**

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### D. **Access Panels**

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### E. **Procedure**

SUBTASK 34-55-00-860-029

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 11  | C34447 | DME L |
| E   | 24  | C34448 | DME R |

##### F. **Distance Measuring Equipment System - Tryout**

NOTE: This tryout is to make sure the Distance Measuring Equipment System is in a zero energy state.

SUBTASK 34-55-00-860-027

- (1) Make sure that these circuit breakers are open and have safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 11  | C34447 | DME L |

EFFECTIVITY  
ARO ALL

# 34-55-00

D633W101-ARO

Page 201  
Jan 05/2016



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 24         | C34448        | DME R       |

SUBTASK 34-55-00-010-001

- (2) Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

### ARO 001-016

SUBTASK 34-55-00-710-006

- (3) Press the test switches on the front panel of the DME receivers.

NOTE: There are two (2) DME receivers located in the E/E bay. The right DME receiver is located on the E2-3 shelf and the left DME receiver is located on the E1-2 shelf.

- (a) Make sure that the LCD screen on the front panel of the DME receiver is blank and not illuminated.

### ARO 017-999

SUBTASK 34-55-00-710-008

- (4) Press the test switch on the front panel of the DME receivers.

NOTE: There are two (2) DME receivers located in the E/E bay. The right DME receiver is located on the E2-3 shelf and the left DME receiver is located on the E1-2 shelf.

- (a) Make sure that the 3 LEDs on the front panel of the DME receiver are not illuminated.

### ARO ALL

————— END OF TASK —————

### TASK 34-55-00-440-801

## 3. Distance Measuring Equipment System - Activation

Figure 34-55-01-990-801

### A. General

- (1) This task adds electrical power to the following components of the Distance Measuring Equipment System (DME):
- (a) DME Interrogator
  - (b) DME Antenna

### B. References

| <u>Reference</u> | <u>Title</u>                                    |
|------------------|-------------------------------------------------|
| 34-55-01-990-801 | Figure: DME Interrogator Installation (P/B 401) |

### C. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

EFFECTIVITY  
ARO ALL

# 34-55-00

D633W101-ARO

Page 202  
May 05/2018





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**D. Procedure**

SUBTASK 34-55-00-860-028

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

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-55-00**

Page 203  
May 05/2018



# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

## DISTANCE MEASURING EQUIPMENT SYSTEM - ADJUSTMENT/TEST

### 1. General

- A. This procedure has these two tasks for the Distance Measuring Equipment (DME) System:
- (1) An operational test
  - (2) A system test.

### **TASK 34-55-00-710-801**

### 2. Distance Measuring Equipment System - Operational Test

#### A. General

- (1) This task does a test of the basic operation of the left and right DME systems.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use the maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

#### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

#### C. Location Zones

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

#### D. Procedure

##### SUBTASK 34-55-00-860-001

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

##### SUBTASK 34-55-00-740-001

- (2) Use a maintenance access terminal (MAT) to do the operational test of the left (right) DME system:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Distance Measuring Equipment System
    - 5) OPERATIONAL TEST
    - 6) Left DME or Right DME System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

EFFECTIVITY  
ARO ALL

## 34-55-00

D633W101-ARO

Page 501  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

————— END OF TASK —————

### TASK 34-55-00-730-801

#### 3. Distance Measuring Equipment System - System Test

##### A. General

- (1) The system test is a full functional check of the DME system. This test uses an external test set which makes ground station interrogations and shows the interrogator reply.
- (2) Some test steps apply to a specified test set. Do only the steps that apply to the available test set.

##### B. References

| Reference        | Title                             |
|------------------|-----------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (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-909   | Test Set - DME<br>Part #: IFR 6000 Supplier: 51190<br>Part #: TR-210 Supplier: 92606<br>Part #: TR-220 Supplier: 92606<br>Opt Part #: 600A-110 Supplier: 51190<br>Opt Part #: ATC-600A-2 Supplier: 51190<br>Opt Part #: T-24B Supplier: 92606<br>Opt Part #: T-48D Supplier: 92606<br>Opt Part #: TR-211 Supplier: 92606 |

##### D. Location Zones

| Zone | Area                                       |
|------|--------------------------------------------|
| 123  | Area Below Forward Cargo Compartment, Left |
| 212  | Flight Compartment, Right                  |

##### E. Prepare for the Test

###### SUBTASK 34-55-00-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-55-00-710-001

- (2) Do this task: (Distance Measuring Equipment System - Operational Test, TASK 34-55-00-710-801).

###### SUBTASK 34-55-00-860-018

- (3) Set the mode select switch to the VOR position on the captains and first officers EFIS control panels.

###### SUBTASK 34-55-00-860-019

- (4) Set the VOR/ADF switches to the VOR L and VOR R positions on the captains and first officers EFIS control panels, respectively.

EFFECTIVITY  
ARO ALL

# 34-55-00

D633W101-ARO

Page 502  
May 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-55-00-710-002

- (5) Push the NAV RAD key on the left and right CDUs.
  - (a) Make sure the NAV RADIO page shows on the CDUs.

SUBTASK 34-55-00-860-020

- (6) Connect the test set antenna to the test set.

SUBTASK 34-55-00-860-004



DO NOT OPERATE THE DME TEST SET WHEN THE TEST ANTENNA IS LESS THAN 15 INCHES FROM THE DME ANTENNA. DAMAGE TO THE TEST SET CAN OCCUR.

- (7) Move the DME test antenna near the two DME antennas.

NOTE: You can put the test set between the two antennas and put it at a level near the bottom of the aircraft.

SUBTASK 34-55-00-860-023

- (8) Set the switches on the DME test set, COM-909 as follows:
  - (a) DC power switch to ON.
  - (b) MODE DIAL to the DME test frequency (108.00).
  - (c) RANGE/VELOCITY to 130 NM.
  - (d) IDENT - OFF.
  - (e) Push and release the Interrogate toggle switch to prompt TEST MODE and RANGE/VELOCITY on the tester display.

NOTE: LOCK may flash on the display.
  - (f) Push and release the Interrogate toggle switch to start the test.

SUBTASK 34-55-00-860-005

- (9) Set the switches on the DME test set, COM-909 as follows:
  - (a) Power to ON.
  - (b) Frequency to the DME test frequency (108.00).
  - (c) OUTPUT LEVEL - -90dBm.
  - (d) DISTANCE - 130 NM.
  - (e) VELOCITY - 0 knots.
  - (f) SQUITTER RATE - 2700 PPS.
  - (g) REPLY RATE - 70%.
  - (h) AUDIO OUTPUT - set IDENT switch to CODE.

### F. Left DME System - System Test

SUBTASK 34-55-00-860-008

- (1) Use the alphanumeric keyboard of the CDU to set the left VOR to the test frequency (108.00).

SUBTASK 34-55-00-710-003

- (2) Push the LSK next to the VOR L prompt.
  - (a) Make sure the VOR L shows the test frequency on the CDU and on the captain's and first officer's ND panel.

EFFECTIVITY  
ARO ALL

# 34-55-00

D633W101-ARO

Page 503  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (b) Make sure the DME L distance indications show 130NM  $\pm$ 1 NM on the captain's and first officer's NDs.
- (3) Change the range to 90NM on the test set.
  - (a) Make sure the DME L distance indication on the captain's and first officer's ND show 90NM  $\pm$ 0.5NM.

SUBTASK 34-55-00-860-024

- (4) Return the range to 130NM on the test set.

### G. Right DME System - System Test

SUBTASK 34-55-00-860-010

- (1) Use the alphanumeric keyboard of the CDU to set the right VOR frequency to the test frequency (108.00).

SUBTASK 34-55-00-860-011

- (2) Push the LSK adjacent to the VOR R prompt.
  - (a) Make sure the VOR R shows the test frequency on the CDU and on the captain's and first officer's ND panel.
  - (b) Make sure the DME R distance indications show 130.0 NM  $\pm$ 1 NM on the two NDs.
- (3) Change the range to 90NM on the test set.
  - (a) Make sure the DME L distance indication on the captain's and first officer's ND show 90NM  $\pm$ 0.5NM.

SUBTASK 34-55-00-860-025

- (4) Return the range to 130NM on the test set.

### H. VOR/DME Audio Test

**NOTE:** The VOR/DME audio test uses the captain, first officer, first observer, and second observer audio control panels. The captain, first officer, and first observer panels are on the aisle stand, (P8). The second observer audio control panel is on the Maintenance Access Terminal/second observer panel (P18).

SUBTASK 34-55-00-710-004

- (1) Use the alphanumeric keyboard on the CDU to set the left and right VOR to the VOR test frequency on the test set (108.00).
  - (a) Push the LSK next to the VOR L (or VOR R) prompt.
  - (b) Make sure the VOR L (or VOR R) test frequency (108.00) shows on the CDU and on the captain's and first officer's ND panel.

SUBTASK 34-55-00-860-021

- (2) Set the controls on the audio control panel under test as follows:
  - (a) Push the SPEAKER switch volume control to ON.
  - (b) Push the VOR/ADF switch volume control to ON.

**NOTE:** Adjust the VOR/ADF volume if necessary.
  - (c) Set the VOR/ADF switch to the VOR L position.
  - (d) Set the Voice/Both/Range (VBR) switch to the B position.

SUBTASK 34-55-00-710-005

- (3) Set the switches on the DME test set, COM-909 as follows:
  - (a) Hold (or set) the IDENT switch to the on position.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-55-00**

Page 504  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (b) Make sure an audio tone is heard.
- (c) Release (or set) the IDENT switch to the off position.
- (d) Make sure the audio tone stops.

**SUBTASK 34-55-00-860-022**

- (4) Set the VOR/ADF switch to R on the audio control panel under test.
  - (a) Hold (or set) the IDENT switch to the on position.
  - (b) Make sure an audio tone is heard.
  - (c) Release (or set) the IDENT switch to the off position.
  - (d) Make sure the audio tone stops.

**I. Put the Airplane Back to Its Usual Condition**

**SUBTASK 34-55-00-860-016**

- (1) Remove the DME test set, COM-909.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-55-00**

Page 505  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### DME INTERROGATOR - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
- (1) A removal of the DME interrogator
  - (2) An installation of the DME interrogator.
- B. The left and the right DME interrogators are installed in the main equipment center. The left DME interrogator, M34109, is installed on shelf No. 2 of the E1 electronics equipment rack. The right DME interrogator, M34209, is installed on shelf No. 3 of the E2 electronics equipment rack.

#### **TASK 34-55-01-000-801**

#### 2. DME Interrogator Removal

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

##### A. References

| <u>Reference</u> | <u>Title</u>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-000-801 | E/E Box Removal (P/B 401)                                 |

##### B. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

##### C. Access Panels

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

##### D. Removal Procedure

SUBTASK 34-55-01-860-001

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

SUBTASK 34-55-01-010-001

- (2) To get access to the main equipment center, open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

TASK 06-41-00-800-801.

SUBTASK 34-55-01-020-001

- (3) To remove the DME interrogator [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

———— **END OF TASK** ————

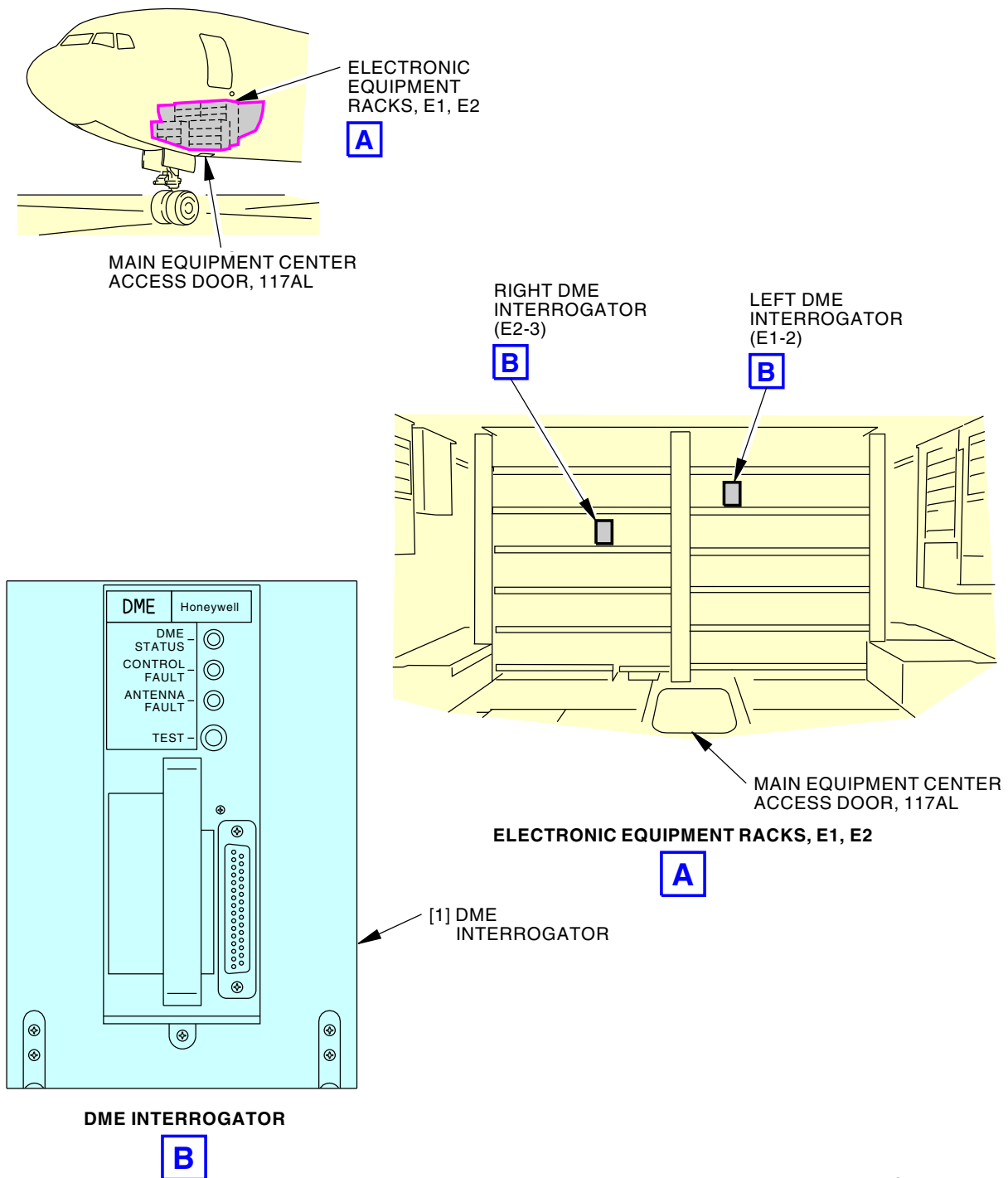
EFFECTIVITY  
ARO ALL

# 34-55-01

D633W101-ARO

Page 401  
May 05/2015

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



2551204 S0000607882\_V1

**DME Interrogator Installation**  
Figure 401/34-55-01-990-801 (Sheet 1 of 2)

EFFECTIVITY  
ARO 017-999

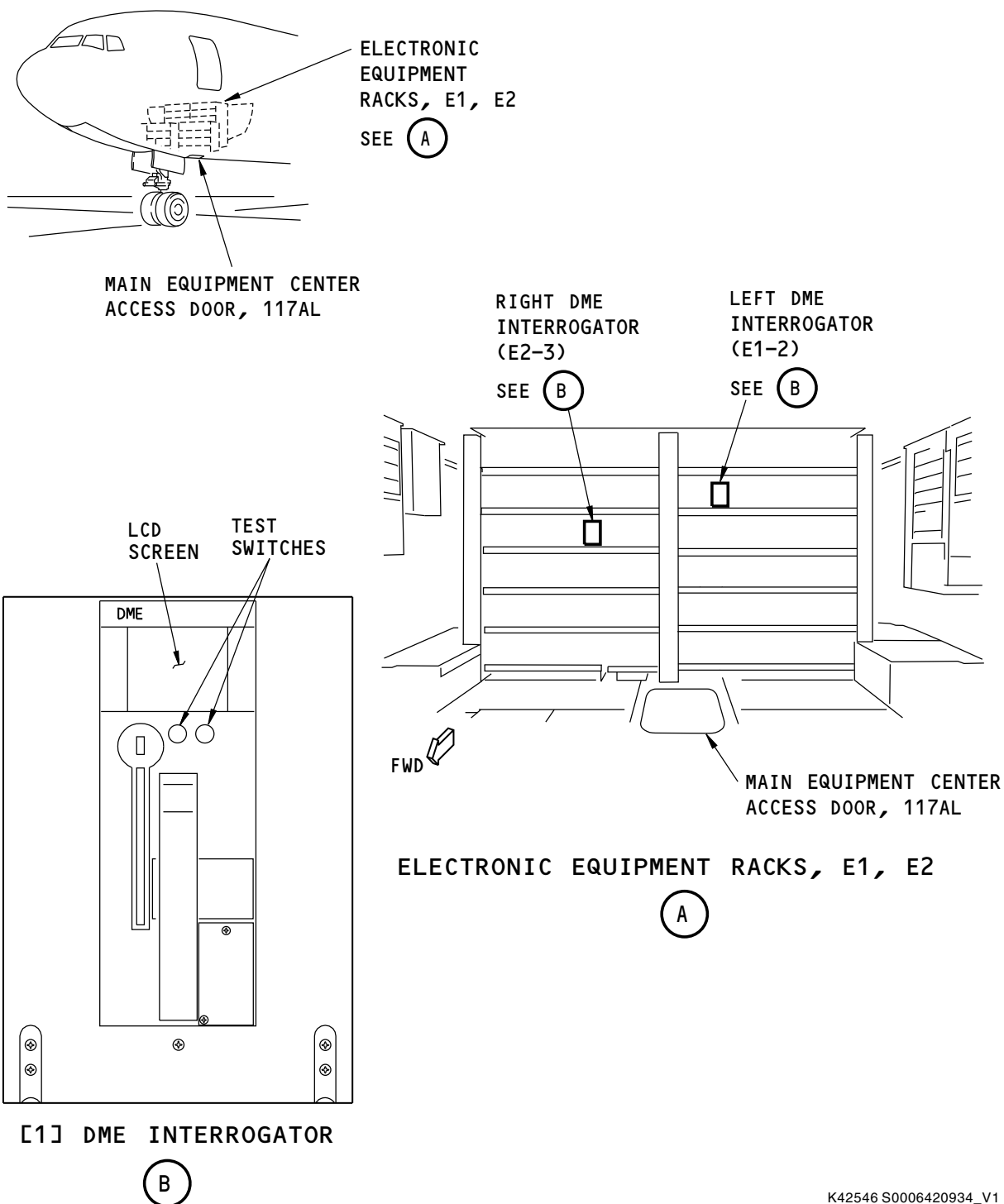
**34-55-01**

D633W101-ARO

Page 402  
May 05/2018



# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



K42546 S0006420934\_V1

**DME Interrogator Installation**  
**Figure 401/34-55-01-990-801 (Sheet 2 of 2)**

EFFECTIVITY  
ARO 001-016

D633W101-ARO

**34-55-01**

Page 403  
May 05/2018



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

TASK 34-55-01-400-801

3. DME Interrogator Installation

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

A. References

| Reference        | Title                                                     |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-400-801 | E/E Box Installation (P/B 401)                            |

B. Expendables/Parts

| AMM Item | Description  | AIPC Reference  | AIPC Effectivity |
|----------|--------------|-----------------|------------------|
| 1        | Interrogator | 34-55-01-01-005 | ARO ALL          |

C. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

D. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

E. Installation Procedure

SUBTASK 34-55-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

**Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 11  | C34447 | DME L |
| E   | 24  | C34448 | DME R |

SUBTASK 34-55-01-010-002

- (2) To get access to the main equipment center, open this access panel:

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

TASK 06-41-00-800-801.

SUBTASK 34-55-01-420-001

- (3) To install the DME interrogator [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

SUBTASK 34-55-01-410-001

- (4) Close this access panel:

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

EFFECTIVITY  
ARO ALL

34-55-01

D633W101-ARO

Page 404  
May 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-55-01-860-003

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

## F. Installation Test

SUBTASK 34-55-01-860-004

- (1) Set the mode select switch on the captain's and first officer's EFIS control panels to the VOR position.

SUBTASK 34-55-01-860-005

- (2) Set the VOR/ADF switches on the captain's and first officer's EFIS control panels to the VOR L and VOR R positions.

SUBTASK 34-55-01-860-006

- (3) Adjust the brightness of NDs and PFDs.

SUBTASK 34-55-01-740-001

- (4) Use a MAT to do an Operational Test of the applicable left or right DME interrogator:

- (a) Make these selections on the MAT:
  - 1) ONBOARD MAINTENANCE
  - 2) LINE MAINTENANCE
  - 3) GROUND TESTS
  - 4) 34 DISTANCE MEASURING EQUIPMENT SYSTEM
  - 5) OPERATIONAL TEST
  - 6) Left DME System or Right DME System
  - 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
  - 1) CONTINUE
  - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) To start a test of the other DME system, select NEW TEST.
- (e) To put the MAT back to its initial condition, make these selections:
  - 1) LINE MAINTENANCE
  - 2) EXIT MAINTENANCE

————— END OF TASK —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-55-01

Page 405  
May 05/2018



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**DME ANTENNA - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the DME antenna
  - (2) An installation of the DME antenna.
- B. The left and right DME antennas are installed on the bottom of the fuselage. The left DME antenna, M34118, is installed at station 707.5. The right DME antenna, M34218, is installed at station 814.5.

**TASK 34-55-02-000-801**

**2. DME Antenna Removal**

(Figure 401)

**A. References**

| <u>Reference</u> | <u>Title</u>                  |
|------------------|-------------------------------|
| 51-31-01-160-801 | Prepare For Sealing (P/B 201) |

**B. Tools/Equipment**

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

| <u>Reference</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-2481         | Tool - Sealant Removal, BAC5000, PSD 6-184 Approved<br>Part #: 1-6390-A Supplier: 63318<br>Part #: 10810 Supplier: \$0855<br>Part #: 234350 Supplier: \$0857<br>Part #: 311 Supplier: F6892<br>Part #: 411B60 Supplier: 3DN12<br>Part #: 411B90 Supplier: 3DN12<br>Part #: DAD5013 Supplier: \$0856<br>Part #: DFD5019 Supplier: \$0856<br>Part #: J5-0275-2010 Supplier: 435R8<br>Part #: SCD5019 Supplier: \$0856<br>Part #: ST982LF-9 Supplier: 62176<br>Part #: TS1275-4 Supplier: 1DWR5 |

**C. Location Zones**

| <u>Zone</u> | <u>Area</u>                                |
|-------------|--------------------------------------------|
| 121         | Forward Cargo Compartment, Left            |
| 123         | Area Below Forward Cargo Compartment, Left |
| 211         | Flight Compartment, Left                   |
| 212         | Flight Compartment, Right                  |

**D. Removal Procedure**

SUBTASK 34-55-02-860-001

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-55-02**

Page 401  
May 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-55-02-020-001

(2) Remove the DME antenna [3]:

- (a) To remove the aerodynamic smoother from around the edge of the DME antenna, do this task: Prepare For Sealing, TASK 51-31-01-160-801.
- (b) Remove the bolts [4] from the antenna base.



### CAUTION

BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE ANTENNA'S ELECTRICAL CABLE, OR THE ANTENNA.

- (c) Use force around the antenna with the sealant removal tool, COM-2481 until the seal is fully broken.



### CAUTION

LIFT THE ANTENNA ONLY AS FAR AS NECESSARY TO DISCONNECT THE CABLE. DAMAGE TO THE ANTENNA CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (d) Lift the antenna until you can get access to the coaxial connector [1].
- (e) Disconnect the coaxial connector[1].
- (f) Remove the DME antenna.
- (g) Put a protective cover on the coaxial connector [1].

————— END OF TASK —————

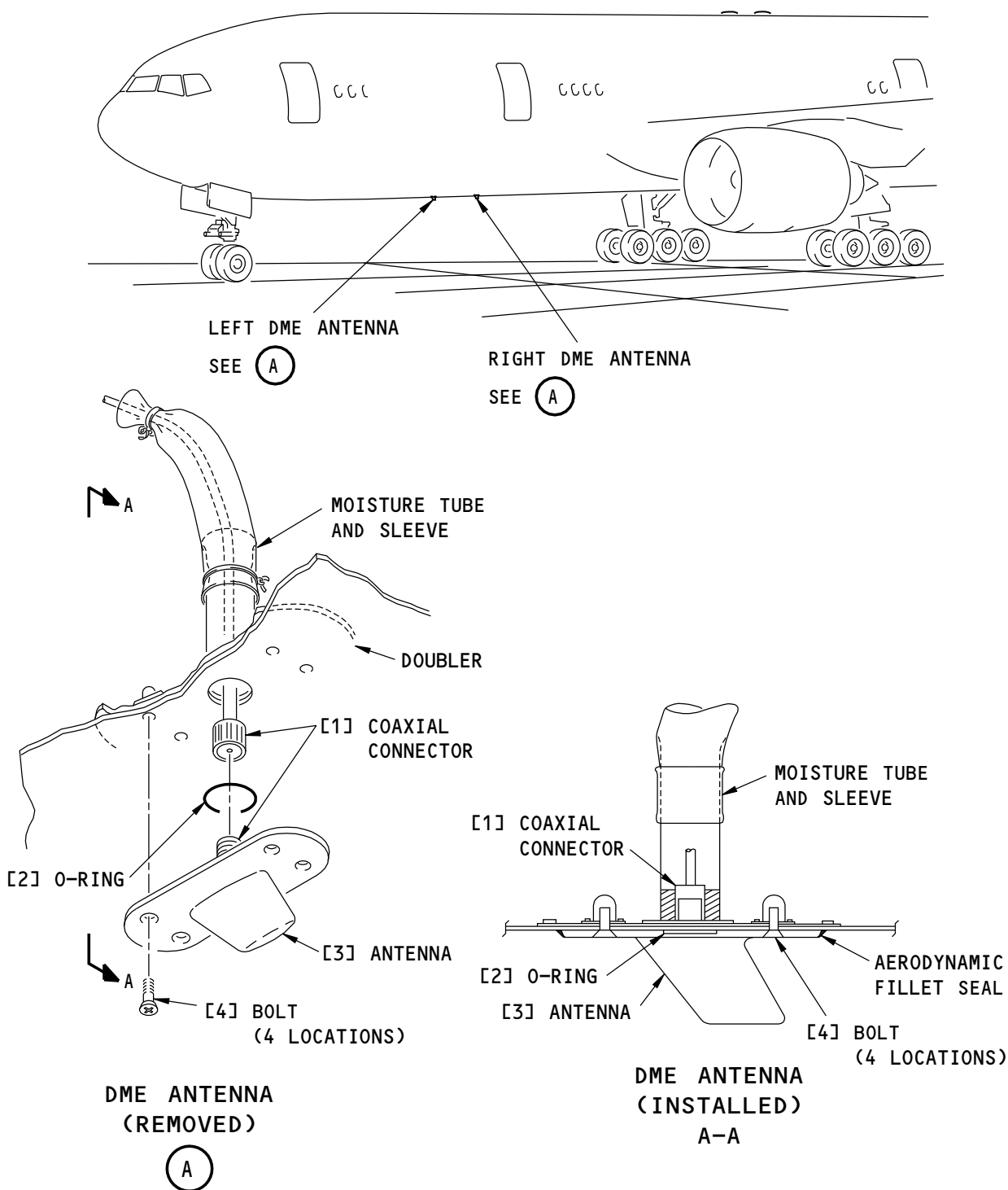
EFFECTIVITY  
ARO ALL

# 34-55-02

D633W101-ARO

Page 402  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



C86372 S0006420940\_V2

**DME Antenna Installation**  
**Figure 401/34-55-02-990-801**

EFFECTIVITY  
ARO ALL

**34-55-02**

D633W101-ARO

Page 403  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-55-02-400-801

#### 3. DME Antenna Installation

(Figure 401)

##### A. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 20-30-01-910-801 | Structure Adhesives, Cements, and Sealants (P/B 201)          |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 51-31-01-160-801 | Prepare For Sealing (P/B 201)                                 |
| 51-31-01-390-806 | Aerodynamic Smoother Application (P/B 201)                    |
| SL 20-016        | DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS |

##### B. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-909   | Test Set - DME<br>Part #: IFR 6000 Supplier: 51190<br>Part #: TR-210 Supplier: 92606<br>Part #: TR-220 Supplier: 92606<br>Opt Part #: 600A-110 Supplier: 51190<br>Opt Part #: ATC-600A-2 Supplier: 51190<br>Opt Part #: T-24B Supplier: 92606<br>Opt Part #: T-48D Supplier: 92606<br>Opt Part #: TR-211 Supplier: 92606                       |
| COM-1550  | Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550).<br>Part #: 620LK Supplier: 1CRL2<br>Part #: M1 Supplier: 3AD17<br>Part #: T477W Supplier: 01014<br>Opt Part #: M1B Supplier: 3AD17 |
| STD-810   | Spatula - Fillet Smoothing, Hardwood or Plastic                                                                                                                                                                                                                                                                                                |

##### C. Consumable Materials

| Reference | Description                                                                      | Specification                                   |
|-----------|----------------------------------------------------------------------------------|-------------------------------------------------|
| A02315    | Sealant - Low Density, Synthetic Rubber. 2 Part                                  | BMS5-142 Type II                                |
| B00184    | Solvent - Presealing, Cleaning Solvent                                           | BMS11-7                                         |
| C00064    | Coating - Aluminum Chemical Conversion                                           | BAC5719 Type II Class A (MIL-DTL-5541 Class 1A) |
| C00175    | Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines) | BMS10-79 Type III                               |
| C00913    | Compound - Corrosion Inhibiting Material, Nondrying Resin Mix                    | BMS3-27                                         |

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-55-02

Page 404  
May 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| Reference | Description                                               | Specification                                   |
|-----------|-----------------------------------------------------------|-------------------------------------------------|
| D00254    | Compound - Silicone                                       | SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660) |
| D00633    | Grease - Aircraft General Purpose                         | BMS3-33                                         |
| G50237    | Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L | BMS3-38                                         |

## D. Location Zones

| Zone | Area                                       |
|------|--------------------------------------------|
| 121  | Forward Cargo Compartment, Left            |
| 123  | Area Below Forward Cargo Compartment, Left |
| 211  | Flight Compartment, Left                   |
| 212  | Flight Compartment, Right                  |

## E. Installation Procedure

SUBTASK 34-55-02-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 11  | C34447 | DME L |
| E   | 24  | C34448 | DME R |

SUBTASK 34-55-02-110-001

- (2) To clean the airplane skin, do this task: Prepare For Sealing, TASK 51-31-01-160-801.
  - (a) Remove the old sealant from the airplane skin in the antenna area.
  - (b) Clean the mating surface with solvent, B00184.

SUBTASK 34-55-02-620-001



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) Prepare the airplane skin:
  - (a) Apply a layer of coating, C00064 on the airplane skin in the area where the antenna touches the skin.
  - (b) On top of the coating, C00064, apply two layers of primer, C00175.

EFFECTIVITY  
ARO ALL

# 34-55-02

D633W101-ARO

Page 405  
Jan 05/2018





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (c) On top of the primer, C00175, apply one layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913.
- (d) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 in the nutplate and the open area where the antenna cable connects to the antenna.

SUBTASK 34-55-02-420-001



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Install the DME antenna [3]:
  - (a) Install the o-ring [2] on the antenna.
  - (b) Put an extra bead of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 on the pressurized and unpressurized sides of the o-ring groove which surrounds the coaxial connector [1].
  - (c) Apply a layer of grease, D00633 on the o-ring and o-ring groove.
  - (d) Remove the unwanted Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 from around the edge of the antenna.
  - (e) Remove the protective cover from the coaxial connector [1].
  - (f) Examine the coaxial connector [1] for bent or broken pins, dirt, and damage.
  - (g) Connect the coaxial connector [1] to the antenna.
  - (h) Apply a large quantity of silicone compound, D00254, to the outside coaxial connector [1].
  - (i) Put the antenna into position on the airplane surface.
  - (j) In the forward cargo compartment, apply Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to these areas:
    - 1) Coaxial connector [1] base
    - 2) Brass stud on the antenna
    - 3) Lower area of the moisture guard.
  - (k) Lightly tighten the bolts [4] in a diagonal pattern to hold the antenna in the correct position.



TIGHTEN THE BOLTS MANUALLY TO THE CORRECT TORQUE VALUE. IF YOU OPERATE POWER OR AIR-TOOLS TO TIGHTEN THE SCREWS, IT CAN CAUSE DAMAGE TO THE ANTENNA SURFACE.

- (l) Manually tighten the bolts to 20-25 pound-inches of torque.

EFFECTIVITY  
ARO ALL

**34-55-02**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 406  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### F. Resistance Measurement

SUBTASK 34-55-02-760-001

- (1) Do a check of the continuity between the antenna and the airplane skin:
  - (a) Connect a intrinsically safe approved bonding meter, COM-1550 between the head of each bolt and the airplane skin:
    - 1) Make sure each measurement of continuity is less than 25 milliohms.

### G. DME Antenna Sealing

SUBTASK 34-55-02-390-002

- (1) Apply a bead of sealant, A02315 (refer to TASK 20-30-01-910-801) around the base of the antenna [3]. To apply it, do this task: Aerodynamic Smoother Application, TASK 51-31-01-390-806.

NOTE: Make sure that no air gets caught under the sealant. Fill to more than the necessary level so you can make the surface smooth and level.

NOTE: Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).

SUBTASK 34-55-02-390-003

- (2) Use the hardwood or plastic fillet smoothing spatula, STD-810 to make a smooth 45-degree bead.

SUBTASK 34-55-02-140-001

- (3) Remove unwanted sealant from the area around the antenna base.

### H. Installation Test

SUBTASK 34-55-02-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-55-02-860-004

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

SUBTASK 34-55-02-860-008

- (3) Set the mode select switch to the VOR position on the captain's and first officer's EFIS control panel.

SUBTASK 34-55-02-860-009

- (4) Set the VOR/ADF switch to VOR L on the captain's EFIS control panel.

SUBTASK 34-55-02-860-010

- (5) Set the VOR/ADF switch to VOR R on the first officer's EFIS control panel.

SUBTASK 34-55-02-750-001

- (6) Push the NAV RAD mode select key on the left and right CDUs.
  - (a) Make sure the NAV RADIO page shows on the CDUs.

SUBTASK 34-55-02-750-002

- (7) Enter an approved frequency (the VOR test frequency is 108.00) on the left (or right) CDU alphanumeric keyboards.

EFFECTIVITY  
ARO ALL

# 34-55-02

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 407  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (a) Push the Line Select Key (LSK) next to the system under test VOR L (or VOR R) on the captain's and first officer's navigational display panel.
- (b) Make sure the left (or right) CDU shows the tuned (test) frequency.

**SUBTASK 34-55-02-710-001**

- (8) Make sure the test frequency shows for the VOR L (or VOR R) on the captain's and first officer's navigational display panel.

**SUBTASK 34-55-02-860-011**

- (9) Connect the test set antenna to the test set.

**SUBTASK 34-55-02-860-012**



DO NOT OPERATE THE DME TEST SET WHEN THE TEST ANTENNA IS LESS THAN 15 INCHES FROM THE DME ANTENNA. DAMAGE TO THE TEST SET CAN OCCUR.

- (10) Place the tester near the DME antenna under test.

**SUBTASK 34-55-02-860-006**

- (11) Energize the DME test set, COM-909.

**SUBTASK 34-55-02-860-007**

- (12) Do these steps with the use of the DME test set, COM-909:
  - (a) FREQUENCY - an approved frequency
  - (b) OUTPUT LEVEL - -90dBm
  - (c) DISTANCE - 150 NM
  - (d) VELOCITY - 0 knots
  - (e) SQUITTER RATE - 2700 PPS
  - (f) REPLY RATE - 70%
  - (g) AUDIO OUTPUT - Set IDENT switch to CODE
  - (h) Make sure the DME L distance indications show 150.0  $\pm$ 1 NM on the bottom left corner of the two NDs.
  - (i) For the right DME system, push the LSK on the right CDU to tune the VOR R frequency.
    - 1) Make sure the DME R distance indications show 150.0  $\pm$ 1 NM on the bottom right corner of the two NDs.

**SUBTASK 34-55-02-710-002**

- (13) Do these steps with the use of the DME test set, COM-909:
  - (a) Set DC power switch - on.
  - (b) Set the MODE DIAL - the same frequency that is set on the CDU (the VOR test frequency is 108.00).
  - (c) SET the RANGE/VELOCITY - 130 nm.
  - (d) Set the IDENT switch - off.
  - (e) Push and release the Interrogate toggle switch to prompt TEST MODE and RANGE/VELOCITY on the tester display.

NOTE: LOCK may flash on the display.
  - (f) Push and release the Interrogate toggle switch to start the test.

EFFECTIVITY  
ARO ALL

**34-55-02**

D633W101-ARO

Page 408  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (g) Make sure DME L (or DME R) distance indication on the captain's and first officer's ND is  $130 \pm 1$  NM.
- (h) Change the distance on the DME test set to 90 NM.
- (i) Make sure the DME L (or DME R) distance indication on the captain's and first officer's ND is  $90 \pm 0.5$  NM.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-55-02**

Page 409  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AUTOMATIC DIRECTION FINDER SYSTEM - MAINTENANCE PRACTICES

#### 1. General

- A. This procedure contains two tasks.
- (1) Automatic Direction Finder System Deactivation.
  - (2) Automatic Direction Finder System Activation.

#### **TASK 34-57-00-040-801**

#### 2. Automatic Direction Finder System - Deactivation

(Figure 34-57-01-990-801)

##### A. General

- (1) This task is used to remove electrical power from the following components of the Automatic Direction Finder System:
- (a) ADF Receiver
  - (b) ADF Antenna

##### B. References

| Reference        | Title                                       |
|------------------|---------------------------------------------|
| 34-57-01-990-801 | Figure: ADF Receiver Installation (P/B 401) |

##### C. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### D. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### E. Procedure

SUBTASK 34-57-00-860-032

- (1) Open these circuit breakers and install safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 10  | C34449 | ADF L |
| E   | 23  | C34450 | ADF R |

##### F. Automatic Direction Finder System - Tryout

NOTE: This tryout is to make sure the Automatic Direction Finder System is in a zero energy state.

SUBTASK 34-57-00-860-033

- (1) Make sure that these circuit breakers are open and have safety tags:

##### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 10  | C34449 | ADF L |
| E   | 23  | C34450 | ADF R |

EFFECTIVITY  
ARO ALL

# 34-57-00

D633W101-ARO

Page 201  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-57-00-010-001

- (2) Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

SUBTASK 34-57-00-700-001

- (3) Press the test switch on the front panel of the ADF receiver.

NOTE: There are two (2) ADF receivers located in the E/E bay. The right ADF receiver is located on the E2-3 shelf and the left ADF receiver is located on the E1-2 shelf.

- (a) Make sure that the LRU status indicators on the front panel of the ADF receiver are not illuminated.

————— **END OF TASK** —————

### TASK 34-57-00-440-801

#### 3. Automatic Direction Finder System - Activation

(Figure 34-57-01-990-801)

##### A. General

- (1) This task is used to add electrical power to the following components of the Automatic Direction Finder System:
- (a) ADF Receiver
  - (b) ADF Antenna

##### B. References

| <u>Reference</u> | <u>Title</u>                                |
|------------------|---------------------------------------------|
| 34-57-01-990-801 | Figure: ADF Receiver Installation (P/B 401) |

##### C. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

##### D. Procedure

SUBTASK 34-57-00-860-031

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

##### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

# 34-57-00

D633W101-ARO

Page 202  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### AUTOMATIC DIRECTION FINDER SYSTEM - ADJUSTMENT/TEST

#### 1. General

- A. This procedure contains scheduled maintenance task data.
- B. This procedure has these tasks:
  - (1) An operational test of the automatic direction finder (ADF) system
  - (2) A system test of the ADF system.

#### **TASK 34-57-00-710-801**

#### 2. Automatic Direction Finder System - Operational Test

##### A. **General**

- (1) This task does a test of the basic operation of the left and right ADF systems.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808

##### B. **References**

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. **Location Zones**

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

##### D. **Procedure**

###### **SUBTASK 34-57-00-860-001**

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### **SUBTASK 34-57-00-740-001**

- (2) Use a maintenance access terminal (MAT) to do an operational test of the left or right ADF system:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Automatic Direction Finder (ADF) System
    - 5) OPERATIONAL TEST
    - 6) Left ADF or Right ADF System
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.

EFFECTIVITY  
ARO ALL

## 34-57-00

D633W101-ARO

Page 501  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
- (e) To start a test of the other ADF system, select NEW TEST.

————— END OF TASK —————

### TASK 34-57-00-730-801

#### 3. Automatic Direction Finder System - System Test

##### A. General

- (1) The system test is a full functional check of the ADF system and its interfaces.
- (2) Some of the tests need radio reception from local AM commercial broadcast stations or ADF beacon transmitting stations.

NOTE: ADF bearing checks on the ground, in hangers, or near other airplanes, metal buildings and equipment, etc. may show inaccurate bearings or weak signals.

- (3) On the pilots' navigational displays (NDs), the left ADF system controls the narrow bearing pointer, and the right ADF system controls the wide bearing pointer.
- (4) A CDU input to the left or right flight management computer (FMC) automatically tunes the left and right ADF receivers. If the FMCs do not operate correctly, you can use the left and right CDUs to manually tune the ADF receivers.

##### B. References

| Reference        | Title                                                                      |
|------------------|----------------------------------------------------------------------------|
| 23-51-00-730-801 | Flight Interphone System - System Test (P/B 501)                           |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                          |
| 31-41-00-710-801 | Airplane Information Management System (AIMS) - Operational Test (P/B 501) |
| 31-61-00-710-801 | Primary Display System - Operational Test (P/B 501)                        |
| 34-21-00-730-801 | Air Data Inertial Reference System - System Test (P/B 501)                 |

##### C. Location Zones

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

##### D. Prepare for the Test

###### SUBTASK 34-57-00-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-57-00-860-004

- (2) Make sure the Flight Interphone System is on (TASK 23-51-00-730-801)

###### SUBTASK 34-57-00-860-005

- (3) Make sure the Airplane Information Management System is on (TASK 31-41-00-710-801)

###### SUBTASK 34-57-00-860-006

- (4) Make sure the Primary Display System is on (TASK 31-61-00-710-801)

###### SUBTASK 34-57-00-860-026

- (5) Make sure the Air Data Inertial Reference System is on (TASK 34-21-00-730-801)

###### SUBTASK 34-57-00-860-007

- (6) Set the mode switch on the captain's EFIS control panel to the MAP position.

EFFECTIVITY  
ARO ALL

## 34-57-00

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 502  
Sep 05/2017





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-57-00-860-008

- (7) Make sure that these circuit breakers are closed:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-00-740-002

- (8) Do this task: Automatic Direction Finder System - Operational Test, TASK 34-57-00-710-801.

## E. Left ADF System - System Test

SUBTASK 34-57-00-860-009

- (1) Set the VOR L/ADF L switch on the captain's EFIS control panel to the ADF L position.

SUBTASK 34-57-00-860-010

- (2) Enter the frequency of a local ADF beacon station or a local AM broadcast station on the left or the right CDU to tune the left ADF receiver.
- (a) Make sure the ADF L annunciation and the tuned frequency or letters show on the bottom left corner of the captain's ND.
- (b) Make sure the left ADF pointer shows on the captain's ND.

SUBTASK 34-57-00-860-011

- (3) Open this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |

SUBTASK 34-57-00-750-001

- (4) Make sure the ADF L failure flag shows on the bottom left corner of the captain's ND.

## F. Right ADF System - System Test

SUBTASK 34-57-00-860-012

- (1) Set the VOR R/ADF R switch on the captain's EFIS control panel to the ADF R position.

SUBTASK 34-57-00-860-013

- (2) Enter the frequency of a local ADF beacon station or a local AM broadcast station on the left or right CDU to tune the right ADF receiver.
- (a) Make sure the ADF R annunciation and the tuned frequency or letters show on the bottom right corner of the captain's ND.
- (b) Make sure the right ADF pointer shows on the captain's ND.

SUBTASK 34-57-00-860-014

- (3) Open this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-00-750-002

- (4) Make sure the ADF R failure flag shows on the bottom right corner of the captain's ND.

EFFECTIVITY  
ARO ALL

# 34-57-00

D633W101-ARO

Page 503  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### G. ADF System Audio Test

SUBTASK 34-57-00-860-015

- (1) Close these circuit breakers:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-00-860-027

- (2) Make sure the left and right ADF receivers are tuned to a local ADF beacon or AM broadcast station.

SUBTASK 34-57-00-860-016

- (3) On the captain's audio control panel, set the controls as follows:
- (a) Set the VOR/ADF switch to the ADF L position.
  - (b) Set the Voice/Range switch to the B position
  - (c) Push the volume control switch for the VOR/ADF switch
  - (d) Adjust the ADF volume
  - (e) Push the SPKR volume control switch
  - (f) Adjust the SPKR volume.

SUBTASK 34-57-00-750-003

- (4) Make sure you hear the ADF L audio on the captain's speaker.

SUBTASK 34-57-00-860-018

- (5) Set the VOR/ADF switch on the captain's audio control panel to the ADF R position.

SUBTASK 34-57-00-750-004

- (6) Make sure you hear the ADF R audio on the captain's speaker.

### H. ADF Bearing Accuracy and Standby Tuning Test

SUBTASK 34-57-00-860-028

- (1) Set the FMC source select switch to the FMC L position.

SUBTASK 34-57-00-860-029

- (2) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |

SUBTASK 34-57-00-860-020

- (3) Push the NAV RAD mode select key on the left and right CDUs.
- (a) Make sure the left and right CDUs show the ALTN NAV RADIO page.

SUBTASK 34-57-00-860-021

- (4) Enter the frequency of a local ADF beacon station or a local AM broadcast station on the left and right CDUs.
- (a) Make sure the left and right CDUs show the tuned frequency.

EFFECTIVITY  
ARO ALL

# 34-57-00

D633W101-ARO

Page 504  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-57-00-860-022

- (5) For the left ADF system, push the LSK on the left CDU to tune the ADF L receiver.
- (a) Make sure the ADF L annunciation and the tuned frequency or letters show on the bottom left corner of the captain's ND.

### SUBTASK 34-57-00-860-023

- (6) For the right ADF system, push the LSK on the right CDU to tune the ADF R receiver.
- (a) Make sure the ADF R annunciation and the tuned frequency or letters show on the bottom right corner of the captain's ND.

### SUBTASK 34-57-00-750-005

- (7) Make sure the left CDU shows the tuned frequency for the left ADF system and the right CDU shows the tuned frequency for the right ADF system.

### SUBTASK 34-57-00-750-006

- (8) Make sure the left and right ADF bearing pointers show the same bearing on the captain's and first officer's NDs.

### SUBTASK 34-57-00-860-030

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

**34-57-00**

D633W101-ARO

Page 505  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**ADF RECEIVER - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the automatic direction finder (ADF) receiver
  - (2) An installation of the ADF receiver.
- B. The left and right ADF receivers are installed in the main equipment center. The left ADF receiver is installed on the E1-2 rack. The right ADF receiver is installed the E2-3 rack.

**TASK 34-57-01-000-801**

**2. ADF Receiver Removal**

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

| <u>Reference</u> | <u>Title</u>                                              |
|------------------|-----------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201) |
| 20-10-01-000-801 | E/E Box Removal (P/B 401)                                 |

**B. Location Zones**

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

**C. Access Panels**

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

**D. Removal Procedure**

SUBTASK 34-57-01-860-001

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-01-010-001

- (2) To get access to the main equipment center, open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

(TASK 06-41-00-800-801).

EFFECTIVITY  
ARO ALL

**34-57-01**

D633W101-ARO

Page 401  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-57-01-910-001



**CAUTION**

DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE ADF RECEIVER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADF RECEIVER.

- (3) To remove the ADF RECEIVER [1], do this task: E/E Box Removal, TASK 20-10-01-000-801.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

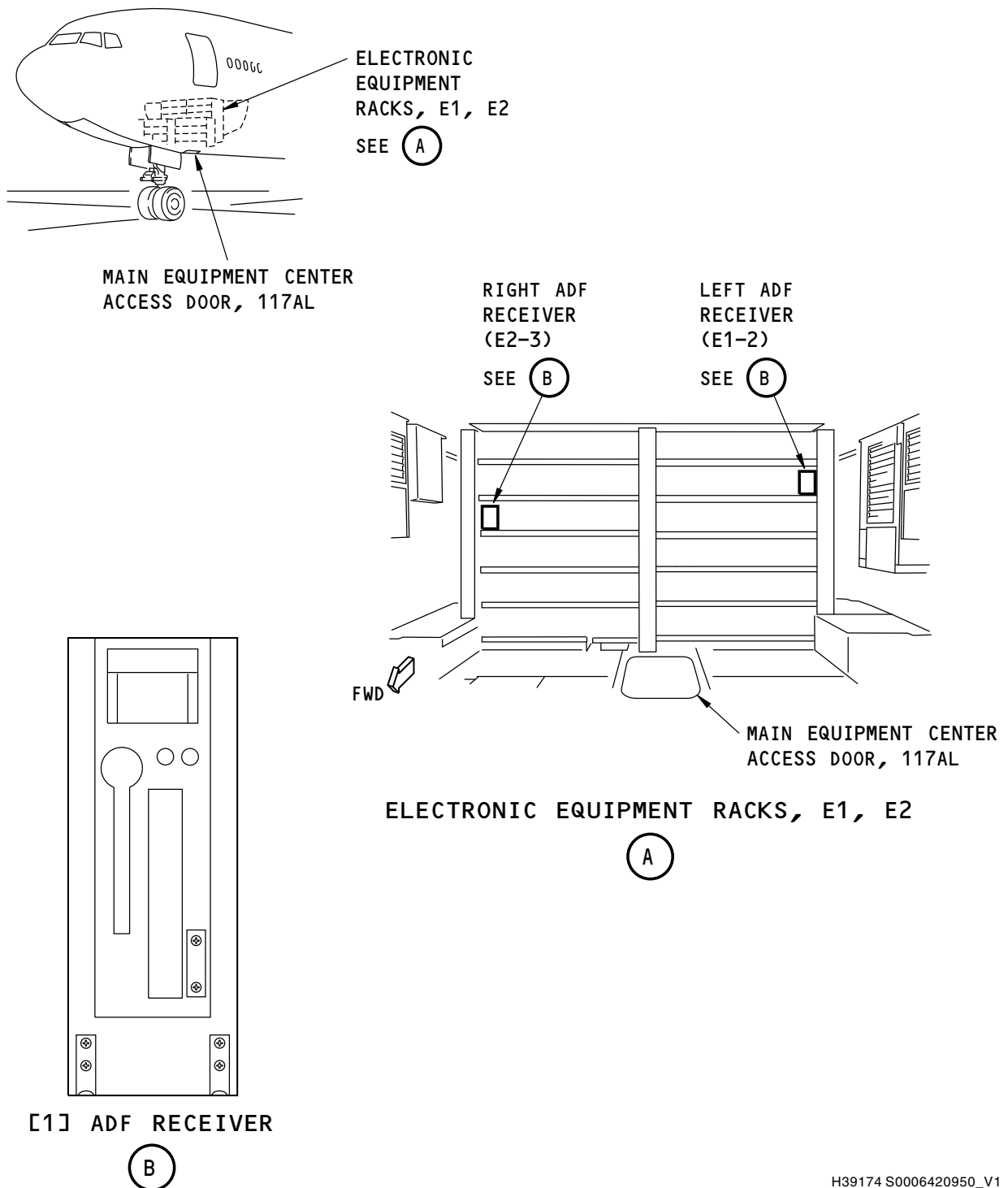
D633W101-ARO

**34-57-01**

Page 402  
Sep 05/2017



777-200/300  
AIRCRAFT MAINTENANCE MANUAL



H39174 S0006420950\_V1

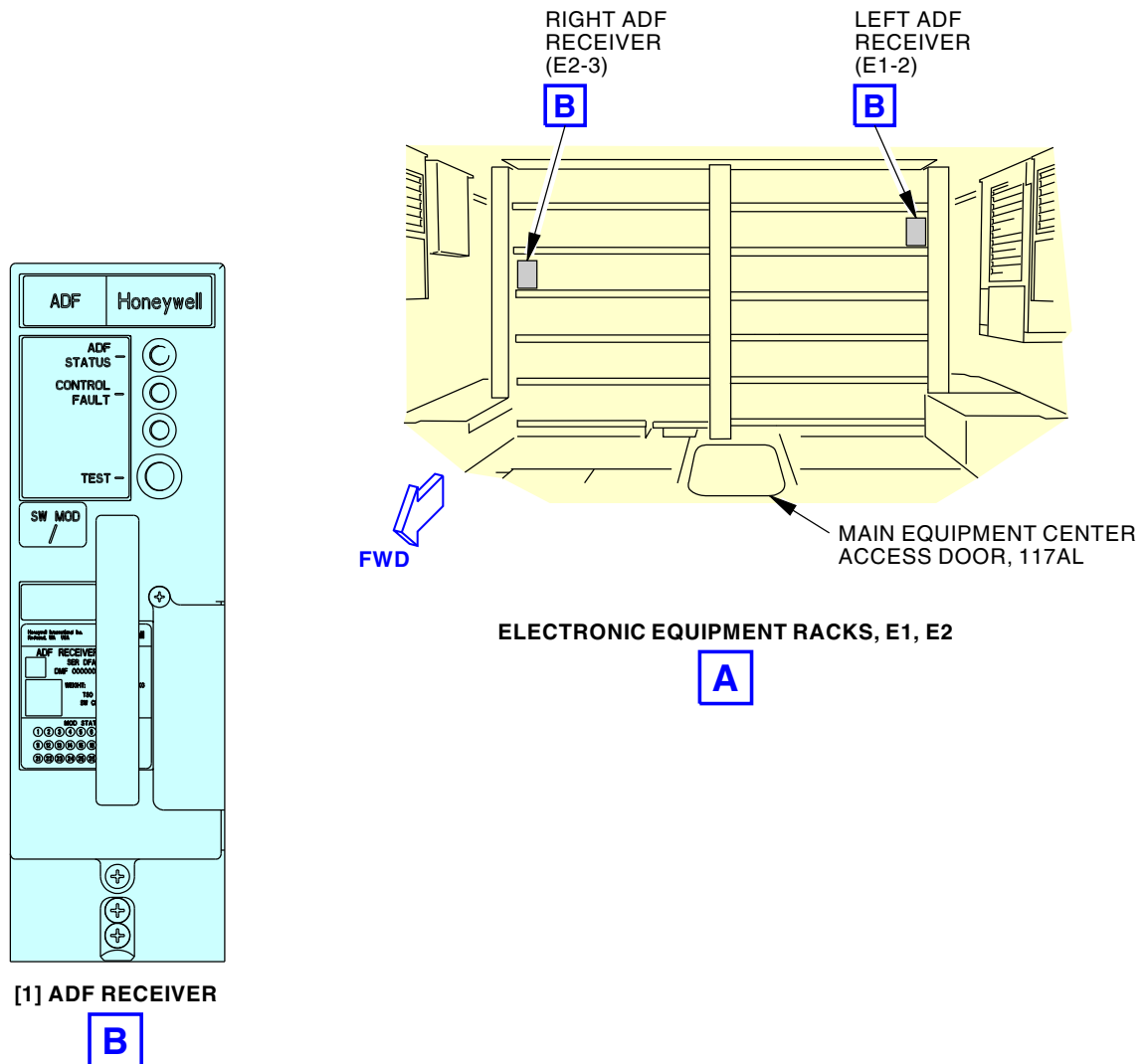
**ADF Receiver Installation**  
**Figure 401/34-57-01-990-801 (Sheet 1 of 2)**

EFFECTIVITY  
ARO 001-015

D633W101-ARO

**34-57-01**

Page 403  
Sep 05/2017



**ADF Receiver Installation**  
**Figure 401/34-57-01-990-801 (Sheet 2 of 2)**

**34-57-01**

Page 404  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-57-01-400-801

#### 3. ADF Receiver Installation

(Figure 401)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. General

- (1) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 06-41-00-800-801 | Finding an Access Door or Panel on the Fuselage (P/B 201)     |
| 20-10-01-400-801 | E/E Box Installation (P/B 401)                                |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 1        | RECEIVER    | 34-57-01-01-005 | ARO ALL          |

##### D. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### E. Access Panels

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

##### F. Installation Procedure

SUBTASK 34-57-01-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

##### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 10  | C34449 | ADF L |
| E   | 23  | C34450 | ADF R |

SUBTASK 34-57-01-910-002

|                                                                                                       |                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>CAUTION</b> | DO NOT TOUCH THE CONNECTOR PINS OR OTHER CONDUCTORS ON THE ADF RECEIVER. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE ADF RECEIVER. |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- (2) To install the ADF RECEIVER [1], do this task: E/E Box Installation, TASK 20-10-01-400-801.

EFFECTIVITY  
ARO ALL

# 34-57-01

D633W101-ARO

Page 405  
Sep 05/2017





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-57-01-410-001

- (3) Close this access panel:

| <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
|---------------|----------------------|

|       |                                   |
|-------|-----------------------------------|
| 117AL | Main Equipment Center Access Door |
|-------|-----------------------------------|

(TASK 06-41-00-800-801).

### G. ADF Receiver Installation Test

SUBTASK 34-57-01-860-004

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-01-740-002

- (2) Use a maintenance access terminal (MAT) to do an operational test of the left (right) ADF system:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Automatic Direction Finder (ADF) System
    - 5) OPERATIONAL TEST
    - 6) Left ADF System (Right ADF System)
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
  - (e) To start a test of the other ADF system, select NEW TEST.

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

# 34-57-01

D633W101-ARO

Page 406  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**ADF ANTENNA - REMOVAL/INSTALLATION**

**1. General**

A. This procedure has these tasks:

- (1) A removal of the automatic direction finder (ADF) antenna
- (2) An installation of the ADF antenna.

B. The left and right ADF antennas are installed on the top of the fuselage. The left ADF antenna is installed at station 1355. The right ADF antenna, is installed at station 1292.

NOTE: There is a Filler Plate between the ADF Antenna, and the aircraft skin.

**TASK 34-57-02-000-801**

**2. ADF Antenna Removal**

(Figure 401)

NOTE: This procedure is a scheduled maintenance task.

**A. References**

| <b>Reference</b> | <b>Title</b>                               |
|------------------|--------------------------------------------|
| 51-31-01-390-806 | Aerodynamic Smoother Application (P/B 201) |

**B. Tools/Equipment**

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

| <b>Reference</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-2481         | Tool - Sealant Removal, BAC5000, PSD 6-184 Approved<br>Part #: 1-6390-A Supplier: 63318<br>Part #: 10810 Supplier: \$0855<br>Part #: 234350 Supplier: \$0857<br>Part #: 311 Supplier: F6892<br>Part #: 411B60 Supplier: 3DN12<br>Part #: 411B90 Supplier: 3DN12<br>Part #: DAD5013 Supplier: \$0856<br>Part #: DFD5019 Supplier: \$0856<br>Part #: J5-0275-2010 Supplier: 435R8<br>Part #: SCD5019 Supplier: \$0856<br>Part #: ST982LF-9 Supplier: 62176<br>Part #: TS1275-4 Supplier: 1DWR5 |

**C. Location Zones**

| <b>Zone</b> | <b>Area</b>                                                  |
|-------------|--------------------------------------------------------------|
| 211         | Flight Compartment, Left                                     |
| 212         | Flight Compartment, Right                                    |
| 243         | Area Above Passenger Compartment Ceiling, Left - Section 44  |
| 244         | Area Above Passenger Compartment Ceiling, Right - Section 44 |

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-57-02**

Page 401  
May 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### D. Removal Procedure

SUBTASK 34-57-02-860-001

- (1) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

SUBTASK 34-57-02-020-001

- (2) Remove the ADF antenna [1]:
- (a) Remove the aerodynamic smoother from around the edge of the ADF antenna [1] (TASK 51-31-01-390-806).
- (b) Remove the mounting bolts [4] and [5] from the airplane nutplates.

NOTE: The mounting bolts [4] and [5] have different lengths.



BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE ANTENNA CABLE, OR THE ADF ANTENNA.

- (c) Use force around the ADF antenna [1] with the sealant removal tool, COM-2481 until the seal is fully broken.



LIFT THE ADF ANTENNA ONLY AS FAR AS NECESSARY TO DISCONNECT THE CABLE. DAMAGE TO THE ANTENNA CABLE CAN OCCUR IF YOU PULL THE CABLE.

- (d) Lift the ADF antenna [1] until you can get access to the coaxial connector [3].
- (e) Disconnect the antenna cable.
- NOTE: Do not let the antenna cable fall into the fuselage.
- (f) Remove the ADF antenna [1] and the o-ring [2].
- NOTE: There is a Filler Plate between the ADF Antenna, and the aircraft skin.
- (g) Put a protective cover on the coaxial connector [3].

————— **END OF TASK** —————

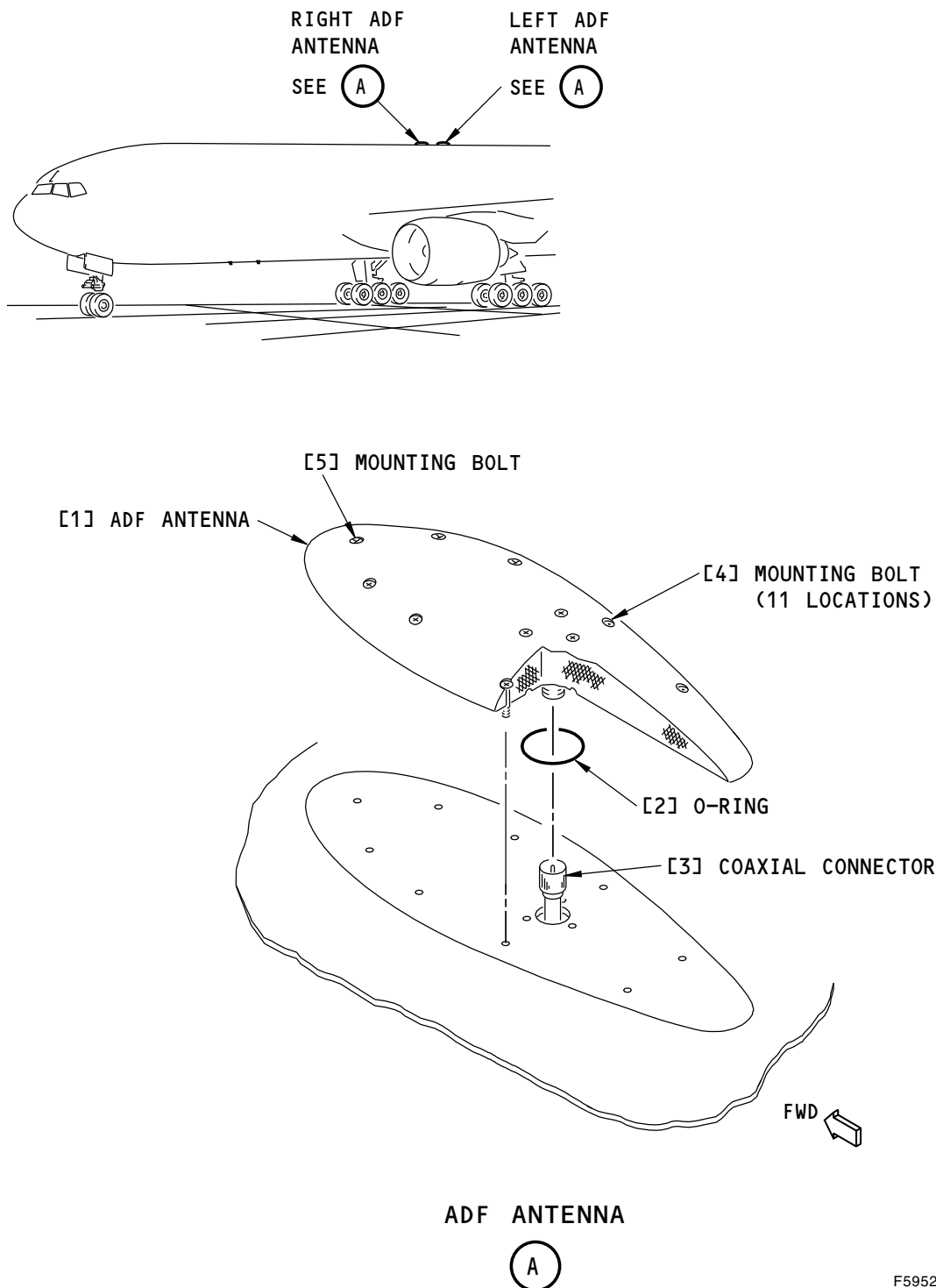
EFFECTIVITY  
ARO ALL

# 34-57-02

D633W101-ARO

Page 402  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



F59525 S0006420958\_V1

**ADF Antenna Installation**  
Figure 401/34-57-02-990-801 (Sheet 1 of 2)

EFFECTIVITY  
ARO ALL

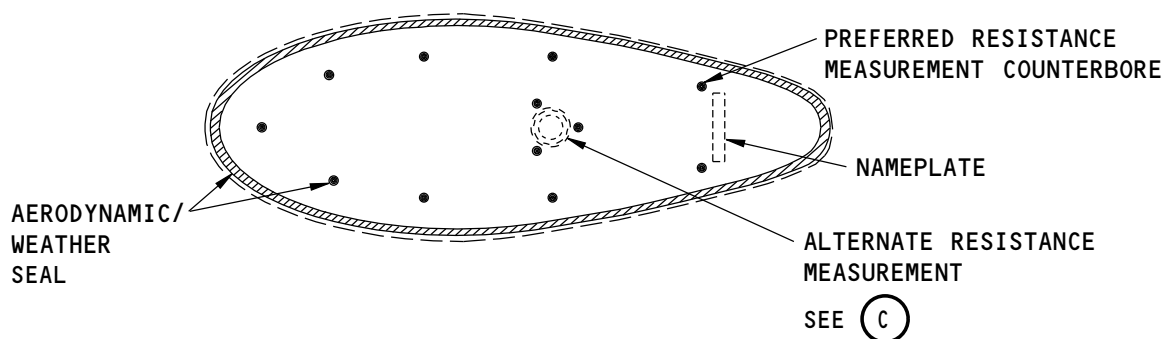
D633W101-ARO

**34-57-02**

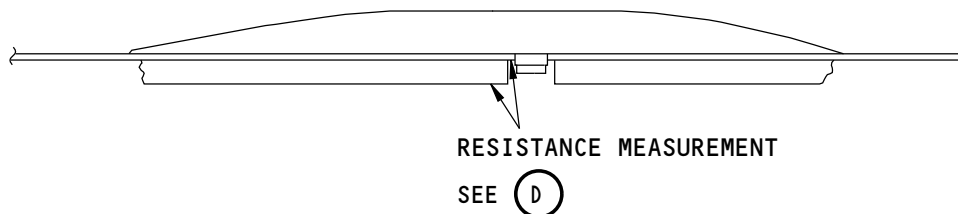
Page 403  
Sep 05/2017



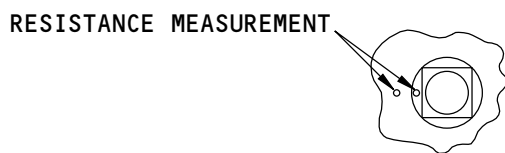
777-200/300  
AIRCRAFT MAINTENANCE MANUAL



AERODYNAMIC/WEATHERPROOFING SEALANT  
(TOP VIEW)



ALTERNATE RESISTANCE MEASUREMENT  
(SIDE VIEW)



RESISTANCE MEASUREMENT  
(BOTTOM VIEW)



C87768 S0006420960\_V1

ADF Antenna Installation  
Figure 401/34-57-02-990-801 (Sheet 2 of 2)

EFFECTIVITY  
ARO ALL

D633W101-ARO

34-57-02

Page 404  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-57-02-400-801

#### 3. ADF Antenna Installation

(Figure 401)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. References

| Reference        | Title                                                            |
|------------------|------------------------------------------------------------------|
| 20-11-00-910-801 | Standard Torque Values (P/B 201)                                 |
| 20-30-01-910-801 | Structure Adhesives, Cements, and Sealants (P/B 201)             |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                |
| 51-21-00-100-801 | Airplane Surface Preparation for Application of Finish (P/B 701) |
| 51-21-03-100-801 | Corrosion Removal and Control (P/B 701)                          |
| 51-31-01-390-805 | Fastener Seal Application (P/B 201)                              |
| SL 20-016        | DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS    |

##### B. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-1550  | Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550).<br>Part #: 620LK Supplier: 1CRL2<br>Part #: M1 Supplier: 3AD17<br>Part #: T477W Supplier: 01014<br>Opt Part #: M1B Supplier: 3AD17 |
| STD-810   | Spatula - Fillet Smoothing, Hardwood or Plastic                                                                                                                                                                                                                                                                                                |

##### C. Consumable Materials

| Reference | Description                                                                      | Specification                                   |
|-----------|----------------------------------------------------------------------------------|-------------------------------------------------|
| A02315    | Sealant - Low Density, Synthetic Rubber. 2 Part                                  | BMS5-142 Type II                                |
| B00083    | Solvent - VM&P Naphthas                                                          | TT-N-95 Type II, ASTM D-3735 Type III           |
| C00064    | Coating - Aluminum Chemical Conversion                                           | BAC5719 Type II Class A (MIL-DTL-5541 Class 1A) |
| C00175    | Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines) | BMS10-79 Type III                               |
| C00913    | Compound - Corrosion Inhibiting Material, Nondrying Resin Mix                    | BMS3-27                                         |
| D00633    | Grease - Aircraft General Purpose                                                | BMS3-33                                         |

##### D. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 1        | Antenna     | 34-57-02-01-010 | ARO ALL          |

EFFECTIVITY  
ARO ALL

# 34-57-02

D633W101-ARO

Page 405  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| AMM Item  | Description | AIPC Reference  | AIPC Effectivity |
|-----------|-------------|-----------------|------------------|
| 1 (cont.) |             | 34-57-02-01-110 | ARO ALL          |
| 2         | O-ring      | 34-57-02-01-015 | ARO ALL          |

## E. Location Zones

| Zone | Area                                                         |
|------|--------------------------------------------------------------|
| 211  | Flight Compartment, Left                                     |
| 212  | Flight Compartment, Right                                    |
| 243  | Area Above Passenger Compartment Ceiling, Left - Section 44  |
| 244  | Area Above Passenger Compartment Ceiling, Right - Section 44 |

## F. Installation Procedure

### SUBTASK 34-57-02-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 10  | C34449 | ADF L |
| E   | 23  | C34450 | ADF R |

### SUBTASK 34-57-02-110-001

- (2) Clean the airplane skin (TASK 51-21-00-100-801):
  - (a) Remove the old sealant from the airplane skin in the ADF antenna [1] area.
  - (b) Clean the mating surface with solvent, B00083.

### SUBTASK 34-57-02-620-001

- (3) If the airplane skin has corrosion or other damage, do these steps to prepare the surface:
  - (a) To remove the corrosion, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.
  - (b) Apply a layer of coating, C00064, on the airplane skin in the area where the ADF antenna [1] touches the skin.
  - (c) Apply two layers of primer, C00175, on top of the alodine.

### SUBTASK 34-57-02-420-005



**WARNING**

DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Install the ADF antenna [1]:
  - (a) Apply a thin layer of Mastinox 6856 K, C00913, to the antenna base.
  - (b) Apply a thin layer of Mastinox 6856 K, C00913, to the pressurized and unpressurized sides of the o-ring [2].

**NOTE:** Do not get the compound on the o-ring [2] or in the o-ring groove and the coaxial connector [3].

EFFECTIVITY  
ARO ALL

# 34-57-02

D633W101-ARO

Page 406  
Sep 05/2017

## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (c) Apply a layer of Mastinox 6856 K, C00913, in the nutplate and the open area where the antenna cable connects to the ADF antenna [1].
- (d) Apply a layer of grease, D00633 on the o-ring [2] and o-ring groove.
- (e) Install the o-ring [2] on the ADF antenna [1].
- (f) Remove the protective cover from the coaxial connector [3].
- (g) Connect the coaxial connector [3] to the ADF antenna [1].
- (h) Put the ADF antenna [1] into position on the airplane surface.

NOTE: There is a Filler Plate between the ADF Antenna, and the aircraft skin.

- (i) Install the mounting bolts [4] and mounting bolt [5] to hold the ADF antenna [1] in the correct position.

NOTE: The mounting bolts [4] and mounting bolt [5] have different lengths.

Refer to IPC for the bolt part number.



TIGHTEN THE BOLTS MANUALLY TO THE CORRECT TORQUE VALUE. OPERATION OF POWER OR AIR TOOLS TO TIGHTEN THE BOLTS CAN CAUSE DAMAGE TO THE ADF ANTENNA SURFACE.

- (j) Manually tighten the mounting bolts [4] and mounting bolt [5]. Refer to Standard Torque Values, TASK 20-11-00-910-801.
- (k) Remove the unwanted Mastinox 6856 K, C00913, from around the edge of the ADF antenna [1].

### G. Resistance Measurement (Preferred)

SUBTASK 34-57-02-760-001

- (1) Do a check of the electrical continuity between the ADF antenna [1] baseplate and the airplane skin:
  - (a) Loosen one mounting bolt [4] from the ADF antenna [1].
  - (b) Connect a intrinsically safe approved bonding meter, COM-1550 between the bolt counterbore and the airplane skin.
    - 1) Make sure the measurement of continuity is less than 25 milliohms.
  - (c) Apply the sealant, A02315, to the airplane skin if it is necessary.

### H. Resistance Measurement (Alternate)

SUBTASK 34-57-02-760-002

- (1) Do a check of the electrical continuity from the inside of the airplane between the ADF antenna [1] baseplate and the airplane skin:
  - (a) Connect a intrinsically safe approved bonding meter, COM-1550 between the ADF antenna [1] baseplate and the airplane skin.
    - 1) Make sure the measurement of continuity is less than 25 milliohms.
  - (b) Apply the sealant, A02315, to the airplane skin if it is necessary.

### I. ADF Antenna Sealing

SUBTASK 34-57-02-390-005

- (1) Fill the mounting bolt [4] and [5] counterbores with approximately 0.3 inches of cotton plug.





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-57-02-390-006

- (2) Seal all the mounting bolts [4] and [5] with sealant, A02315, until flush with the ADF antenna [1] surface (TASK 51-31-01-390-805).

### SUBTASK 34-57-02-390-002

- (3) Apply the sealant, A02315 or a substitute (refer to TASK 20-30-01-910-801) to seal around the ADF antenna [1].

**NOTE:** Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).

### SUBTASK 34-57-02-390-003

- (4) Use the hardwood or plastic fillet smoothing spatula, STD-810 to make a smooth 45-degree bead.

### SUBTASK 34-57-02-140-001

- (5) Remove unwanted sealant from the area around the ADF antenna [1] base.

## J. ADF Antenna Installation Test

### SUBTASK 34-57-02-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

### SUBTASK 34-57-02-860-004

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

### SUBTASK 34-57-02-740-002

- (3) Use a maintenance access terminal (MAT) to do an operational test of the left ADF System (Right ADF System):
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Automatic Direction Finder (ADF) System
    - 5) OPERATIONAL TEST
    - 6) Left ADF System (Right ADF System)
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.
  - (e) To start a test of the other ADF system, select NEW TEST.

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

# 34-57-02

D633W101-ARO

Page 408  
Sep 05/2017



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

GLOBAL POSITIONING SYSTEM - MAINTENANCE PRACTICES

1. General

- A. This task has these procedures:
- (1) Global Positioning System Deactivation
  - (2) Global Positioning System Activation

**TASK 34-58-00-040-801**

2. Global Positioning System - Deactivation

A. **General**

- (1) This task removes the electrical power from the Global Position System.

B. **Location Zones**

| Zone | Area                                                         |
|------|--------------------------------------------------------------|
| 117  | Main Equipment Center, Left                                  |
| 118  | Main Equipment Center, Right                                 |
| 211  | Flight Compartment, Left                                     |
| 212  | Flight Compartment, Right                                    |
| 223  | Area Above Passenger Compartment Ceiling, Left - Section 41  |
| 224  | Area Above Passenger Compartment Ceiling, Right - Section 41 |
| 234  | Area Above Passenger Compartment Ceiling, Right - Section 43 |

C. **Access Panels**

| Number | Name/Location                     |
|--------|-----------------------------------|
| 117AL  | Main Equipment Center Access Door |

D. **Procedure**



**WARNING**

REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-58-00-860-006

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>      |
|------------|------------|---------------|------------------|
| A          | 9          | C34427        | MMR C            |
| A          | 10         | C34630        | ILS ANT SWITCH C |
| E          | 9          | C34426        | MMR L            |
| E          | 22         | C34425        | MMR R            |
| F          | 8          | C34629        | ILS ANT SWITCH L |
| F          | 21         | C34628        | ILS ANT SWITCH R |

E. **Global Positioning System - Tryout**

NOTE: This tryout is to make sure the Global Positioning System is in a zero energy state.

EFFECTIVITY  
ARO ALL

**34-58-00**

D633W101-ARO

Page 201  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-58-00-860-007

- (1) Make sure that these circuit breakers are open and have safety tags:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>      |
|------------|------------|---------------|------------------|
| A          | 9          | C34427        | MMR C            |
| A          | 10         | C34630        | ILS ANT SWITCH C |
| E          | 9          | C34426        | MMR L            |
| E          | 22         | C34425        | MMR R            |
| F          | 8          | C34629        | ILS ANT SWITCH L |
| F          | 21         | C34628        | ILS ANT SWITCH R |

SUBTASK 34-58-00-010-002

- (2) Open this access panel:

| <u>Number</u> | <u>Name/Location</u>              |
|---------------|-----------------------------------|
| 117AL         | Main Equipment Center Access Door |

SUBTASK 34-58-00-700-001

- (3) Press the test switch on the front panel of the Multi-Mode Receivers (MMR).

NOTE: There are three (3) MMR receivers located in the E/E bay. The right MMR receiver is located on the E2-3 shelf, the center MMR is located on the E1-3 shelf and the left MMR receiver is located on the E1-2 shelf.

- (a) Make sure none of the LRU status lights illuminate.

————— **END OF TASK** —————

### TASK 34-58-00-440-801

## 3. Global Positioning System - Activation

### A. General

- (1) This task adds electrical power to the Global Positioning System.

### B. Location Zones

| <u>Zone</u> | <u>Area</u>                                                  |
|-------------|--------------------------------------------------------------|
| 117         | Main Equipment Center, Left                                  |
| 118         | Main Equipment Center, Right                                 |
| 211         | Flight Compartment, Left                                     |
| 212         | Flight Compartment, Right                                    |
| 223         | Area Above Passenger Compartment Ceiling, Left - Section 41  |
| 224         | Area Above Passenger Compartment Ceiling, Right - Section 41 |

### C. Procedure

SUBTASK 34-58-00-860-008

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>      |
|------------|------------|---------------|------------------|
| A          | 9          | C34427        | MMR C            |
| A          | 10         | C34630        | ILS ANT SWITCH C |
| E          | 9          | C34426        | MMR L            |
| E          | 22         | C34425        | MMR R            |

EFFECTIVITY  
ARO ALL

# 34-58-00

D633W101-ARO

Page 202  
Sep 05/2017



**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u>      |
|------------|------------|---------------|------------------|
| F          | 8          | C34629        | ILS ANT SWITCH L |
| F          | 21         | C34628        | ILS ANT SWITCH R |

SUBTASK 34-58-00-700-002

- (2) Press the test switch on the front panel of the Multi-Mode Receivers (MMR).
  - (a) Make sure the status LRU status lights illuminate.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-58-00**

Page 203  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### GLOBAL POSITIONING SYSTEM - ADJUSTMENT/TEST

#### 1. General

A. This procedure has these tasks:

- (1) An operational test of the global positioning system (GPS).
- (2) A system test of the global positioning system.

NOTE: The airplane must be moved to a position where the GPS antennas have a clear view of the GPS satellites. This is necessary for the system test only.

#### **TASK 34-58-00-710-801**

#### 2. Global Positioning System - Operational Test

##### A. **General**

- (1) The same sequence of steps can be used for the left and right global positioning systems.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. **References**

| <b>Reference</b> | <b>Title</b>                                                  |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. **Location Zones**

| <b>Zone</b> | <b>Area</b>               |
|-------------|---------------------------|
| 212         | Flight Compartment, Right |

##### D. **Procedure**

###### **SUBTASK 34-58-00-860-001**

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### **SUBTASK 34-58-00-860-002**

- (2) Make sure that these circuit breakers are closed:

###### **Overhead Circuit Breaker Panel, P11**

| <b>Row</b> | <b>Col</b> | <b>Number</b> | <b>Name</b> |
|------------|------------|---------------|-------------|
| E          | 9          | C34426        | MMR L       |
| E          | 22         | C34425        | MMR R       |

###### **SUBTASK 34-58-00-740-001**

- (3) Use a maintenance access terminal (MAT) to do the system test of the left (or right) global positioning system.
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Global Positioning System
    - 5) SYSTEM TEST

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-58-00

Page 501  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 6) Left Global Positioning System (using MMR), Right Global Positioning System (using MMR)
- 7) CONTINUE
- (b) Do the instructions that show on the MAT and then make these selections:
  - 1) CONTINUE
  - 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

————— END OF TASK —————

### TASK 34-58-00-730-801

#### 3. Global Positioning System - System Test

##### A. General

- (1) This procedure uses one of the CDUs to make sure that the global positioning signals are satisfactory.
- (2) The airplane must be moved to a position where the GPS antennas have a clear view of the GPS satellites.

##### B. References

| Reference        | Title                             |
|------------------|-----------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201) |

##### C. Location Zones

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

##### D. Procedure

###### SUBTASK 34-58-00-860-005

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-58-00-860-003

- (2) Make sure that these circuit breakers are closed:

##### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 9   | C34426 | MMR L |
| E   | 22  | C34425 | MMR R |

###### SUBTASK 34-58-00-710-001

- (3) Do the Global Positioning System - Operational Test for the left and right global positioning systems.

###### SUBTASK 34-58-00-580-001

- (4) Move the airplane to a position where the GPS antennas have a clear view of the GPS satellites.

###### SUBTASK 34-58-00-860-004

- (5) Put the position of the airplane into the CDU:

EFFECTIVITY  
ARO ALL

# 34-58-00

D633W101-ARO

Page 502  
Jan 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (a) Push the MENU key on the CDU.
  - 1) Make sure that you can see the MENU page.
- (b) Push the line-select key adjacent to the <FMC prompt.
  - 1) Make sure that you can see the IDENT page.
- (c) Push the line-select key adjacent to the POS INIT> prompt.
  - 1) Make sure that you can see the POS INIT 1/3 page.
- (d) Push the CLR key on the CDU to erase the scratch pad.
- (e) Put the latitude and longitude of the airplane into the scratch pad line.

NOTE: Do not put a space between the latitude and the longitude.
- (f) Push the line-select key adjacent to the SET IRS POS line.

NOTE: The VERIFY IRS POSITION annunciation could come into view in the scratch pad. If this occurs, look at the position on the SET IRS POS line to make sure that it is correct. If the position is correct, put the same position in again.

**SUBTASK 34-58-00-720-001**

- (6) Do the steps that follow to make sure that you can see the GPS position on the CDU:
  - (a) Push the NEXT PAGE key on the CDU two times.
    - 1) Make sure that you can see the POS REF 3/3 page.
    - 2) Make sure that you can see the Left GPS latitude and longitude on the CDU.
    - 3) Make sure that you can see the Right GPS latitude and longitude on the CDU.

NOTE: You could have to wait 75 seconds after you put in the airplane position before you see the GPS positions.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-58-00**

Page 503  
Jan 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**  
**GPS ANTENNA - REMOVAL/INSTALLATION**

**1. General**

- A. This procedure has these tasks:
- (1) A removal of the GPS antenna
  - (2) An installation of the GPS antenna.
- B. There are two GPS antennas on the airplane. The forward (left) antenna, M34411, is installed at station 623. The aft (right) antenna, M34421, is installed at station 665.
- C. The tasks are the same for the forward, aft, and center (if installed) antenna.

**TASK 34-58-02-000-801**

**2. GPS Antenna Removal**

(Figure 401)

**A. References**

| <u>Reference</u> | <u>Title</u>                  |
|------------------|-------------------------------|
| 51-31-01-160-801 | Prepare For Sealing (P/B 201) |

**B. Tools/Equipment**

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

| <u>Reference</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-2481         | Tool - Sealant Removal, BAC5000, PSD 6-184 Approved<br>Part #: 1-6390-A Supplier: 63318<br>Part #: 10810 Supplier: \$0855<br>Part #: 234350 Supplier: \$0857<br>Part #: 311 Supplier: F6892<br>Part #: 411B60 Supplier: 3DN12<br>Part #: 411B90 Supplier: 3DN12<br>Part #: DAD5013 Supplier: \$0856<br>Part #: DFD5019 Supplier: \$0856<br>Part #: J5-0275-2010 Supplier: 435R8<br>Part #: SCD5019 Supplier: \$0856<br>Part #: ST982LF-9 Supplier: 62176<br>Part #: TS1275-4 Supplier: 1DWR5 |

**C. Location Zones**

| <u>Zone</u> | <u>Area</u>                                                  |
|-------------|--------------------------------------------------------------|
| 223         | Area Above Passenger Compartment Ceiling, Left - Section 41  |
| 224         | Area Above Passenger Compartment Ceiling, Right - Section 41 |
| 233         | Area Above Passenger Compartment Ceiling, Left - Section 43  |
| 234         | Area Above Passenger Compartment Ceiling, Right - Section 43 |

**D. Removal Procedure**

SUBTASK 34-58-02-860-001

- (1) Open these circuit breakers and install safety tags:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 9          | C34427        | MMR C       |

EFFECTIVITY  
ARO ALL

**34-58-02**

D633W101-ARO

Page 401  
May 05/2018





777-200/300  
AIRCRAFT MAINTENANCE MANUAL

(Continued)

Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| E   | 9   | C34426 | MMR L |
| E   | 22  | C34425 | MMR R |

SUBTASK 34-58-02-020-001

- (2) To remove the sealant from around the edge of the GPS antenna [1], do this task: Prepare For Sealing, TASK 51-31-01-160-801.

SUBTASK 34-58-02-020-002

- (3) Remove the antenna [1]:
- (a) Remove the seals that are above the screw holes on the antenna.
  - (b) Remove the screw [2] from the antenna [1].



**CAUTION**

BE CAREFUL WHEN YOU USE THE SEALANT REMOVAL TOOL TO BREAK THE SEAL. TOO MUCH FORCE CAN CAUSE DAMAGE TO THE AIRPLANE SKIN, THE COAXIAL CABLE, OR THE ANTENNA.

- (c) Use the sealant removal tool, COM-2481 to break the seal all around the antenna [1].



**CAUTION**

MOVE THE ANTENNA THE LEAST DISTANCE NECESSARY TO PERMIT YOU TO DISCONNECT THE COAXIAL CONNECTOR. DAMAGE TO THE COAXIAL CABLE CAN OCCUR IF YOU PULL THE CABLE WITH TOO MUCH FORCE.

- (d) Carefully pull the antenna [1] until you can get access to the coaxial connector [3].
- (e) Disconnect the coaxial connector [3].
- NOTE: Make sure the coaxial cable and connector [3] do not fall into the airplane fuselage.
- (f) Remove the GPS antenna [1] and the O-ring [4].
- (g) Put protective covers on the coaxial connector [3].

————— **END OF TASK** —————

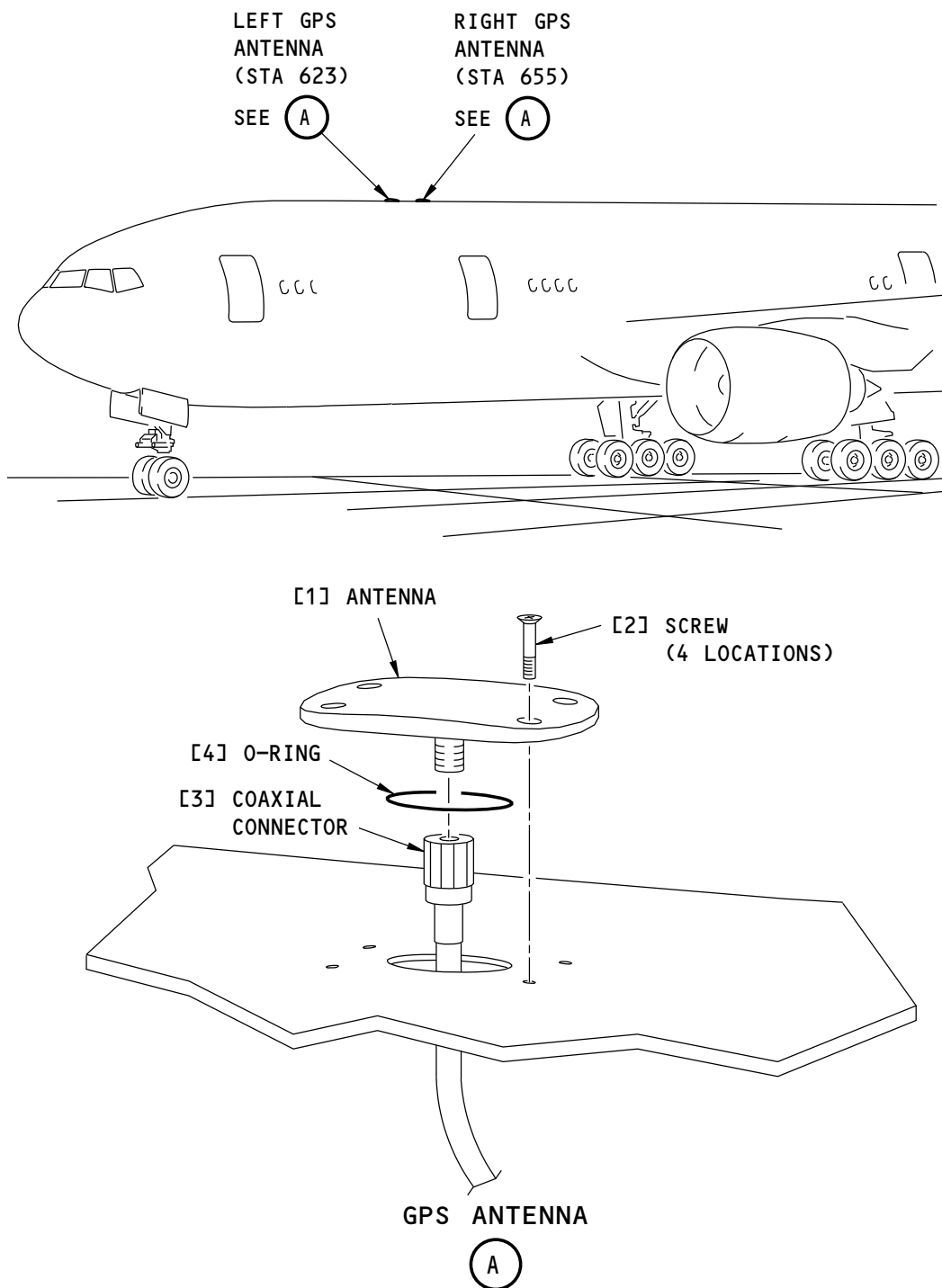
EFFECTIVITY  
ARO ALL

**34-58-02**

D633W101-ARO

Page 402  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



E03600 S0006420979\_V2

**GPS Antenna Installation**  
**Figure 401/34-58-02-990-801**

EFFECTIVITY  
ARO ALL

**34-58-02**

D633W101-ARO

Page 403  
Jan 05/2016



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

TASK 34-58-02-400-801

### 3. GPS Antenna Installation

#### A. General

- (1) The installation test makes sure that the GPS antenna is correctly installed and that the GPS operates correctly.
- (2) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

#### B. References

| Reference        | Title                                                                           |
|------------------|---------------------------------------------------------------------------------|
| 20-11-00-910-801 | Standard Torque Values (P/B 201)                                                |
| 20-30-01-910-801 | Structure Adhesives, Cements, and Sealants (P/B 201)                            |
| 20-30-88-910-801 | Final Cleaning of Metal Prior to Non-structural Bonding (Series 88) (P/B 201)   |
| 20-30-95-910-801 | Final Cleaning Prior to Aerodynamic Smoothing and Fairing (Series 95) (P/B 201) |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                               |
| 25-21-06-000-801 | Main Ceiling Panel - Removal (P/B 401)                                          |
| 25-21-06-400-801 | Main Ceiling Panel - Installation (P/B 401)                                     |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201)                   |
| 51-21-03-100-801 | Corrosion Removal and Control (P/B 701)                                         |
| 51-21-04-620-801 | Alodine 600, 1000, 1200, and 1200S Coating Application (P/B 701)                |
| 51-31-01-160-801 | Prepare For Sealing (P/B 201)                                                   |
| 51-31-01-390-804 | Fillet Seal Application (P/B 201)                                               |
| SL 20-016        | DEFERRED APPLICATION OF AERO-SEALANT IN ANTENNA INSTALLATIONS                   |

#### C. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COM-1550  | Bonding Meters - Approved, Intrinsically Safe (Approved for use in Class I, Divisions I & II hazardous (classified) locations. Outside these hazardous locations, COM-614 can be used in lieu of COM-1550).<br>Part #: 620LK Supplier: 1CRL2<br>Part #: M1 Supplier: 3AD17<br>Part #: T477W Supplier: 01014<br>Opt Part #: M1B Supplier: 3AD17 |
| STD-810   | Spatula - Fillet Smoothing, Hardwood or Plastic                                                                                                                                                                                                                                                                                                |

#### D. Consumable Materials

| Reference | Description                                     | Specification    |
|-----------|-------------------------------------------------|------------------|
| A02315    | Sealant - Low Density, Synthetic Rubber. 2 Part | BMS5-142 Type II |

EFFECTIVITY  
ARO ALL

# 34-58-02

D633W101-ARO

Page 404  
May 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| Reference | Description                                                                      | Specification                                   |
|-----------|----------------------------------------------------------------------------------|-------------------------------------------------|
| B01008    | Solvent - Final Cleaning Of Metal Prior To Non-Structural Bonding - Series 88    |                                                 |
| B01015    | Solvent - Final Cleaning Prior To Aerodynamic Smoothing And Fairing - Series 95  |                                                 |
| C00064    | Coating - Aluminum Chemical Conversion                                           | BAC5719 Type II Class A (MIL-DTL-5541 Class 1A) |
| C00175    | Primer - Urethane Compatible, Corrosion Resistant (Less Than 1% Aromatic Amines) | BMS10-79 Type III                               |
| C00913    | Compound - Corrosion Inhibiting Material, Nondrying Resin Mix                    | BMS3-27                                         |
| D00254    | Compound - Silicone                                                              | SAE AS8660 (NATO S-736) (Supersedes MIL-S-8660) |
| D00633    | Grease - Aircraft General Purpose                                                | BMS3-33                                         |
| G50237    | Compound - Corrosion Inhibiting, Non-drying - Cor-Ban 27L                        | BMS3-38                                         |

### E. Expendables/Parts

| AMM Item | Description | AIPC Reference  | AIPC Effectivity |
|----------|-------------|-----------------|------------------|
| 1        | Antenna     | 34-58-02-01-010 | ARO ALL          |
|          |             | 34-58-02-01-110 | ARO ALL          |

### F. Location Zones

| Zone | Area                                                         |
|------|--------------------------------------------------------------|
| 212  | Flight Compartment, Right                                    |
| 223  | Area Above Passenger Compartment Ceiling, Left - Section 41  |
| 224  | Area Above Passenger Compartment Ceiling, Right - Section 41 |
| 233  | Area Above Passenger Compartment Ceiling, Left - Section 43  |
| 234  | Area Above Passenger Compartment Ceiling, Right - Section 43 |

### G. Installation Procedure

SUBTASK 34-58-02-860-002

- (1) Make sure that these circuit breakers are open and have safety tags:

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name  |
|-----|-----|--------|-------|
| A   | 9   | C34427 | MMR C |
| E   | 9   | C34426 | MMR L |
| E   | 22  | C34425 | MMR R |

SUBTASK 34-58-02-110-001

- (2) Clean the airplane skin as follows:

- (a) To remove the remaining sealant from the airplane skin in the antenna area, do this task:  
Prepare For Sealing, TASK 51-31-01-160-801.

EFFECTIVITY  
ARO ALL

# 34-58-02

D633W101-ARO

Page 405  
Jan 05/2018

## 777-200/300 AIRCRAFT MAINTENANCE MANUAL



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (b) Clean the airplane skin in the antenna area with Series 88 solvent, B01008 (TASK 20-30-88-910-801).

### SUBTASK 34-58-02-840-001

- (3) If there is corrosion on the airplane skin below the antenna, prepare the airplane skin as follows:

- (a) To remove the corrosion, do this task: Corrosion Removal and Control, TASK 51-21-03-100-801.



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (b) Clean the airplane skin in the area of the corrosion with Series 88 solvent, B01008 (TASK 20-30-88-910-801).
  - (c) To apply a layer of coating, C00064, on the airplane skin in the area where the antenna [1] touches the skin, do this task: Alodine 600, 1000, 1200, and 1200S Coating Application, TASK 51-21-04-620-801.
    - 1) Extend the area of the coating, C00064, by approximately 0.25 inch around the edge of the antenna [1] area.
  - (d) On top of the coating, C00064, apply two layers of primer, C00175.

### SUBTASK 34-58-02-390-001



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) Prepare the antenna [1] as follows:
  - (a) Apply a very thin layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 on the base of the antenna [1].

EFFECTIVITY  
ARO ALL

# 34-58-02

D633W101-ARO

Page 406  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) Make sure you apply the Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 to each side of the O-ring groove.

**NOTE:** Do not get the compound on the O-ring [4] or O-ring groove.

- (b) Apply a layer of grease, D00633, on the O-ring [4] and the O-ring groove.
- (c) Install the O-ring [4] on the antenna [1].
  - 1) Make sure the O-ring [4] is not damaged and is installed correctly in the O-ring groove.
- (d) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 in the holes of the airplane skin for the screws and the coaxial cable.
- (e) Apply a layer of Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913 on the threads and shank of the screw [2].

### SUBTASK 34-58-02-420-001

- (5) Install the GPS antenna [1]:
  - (a) Remove the protective covers from the coaxial connector [3].
  - (b) Examine the coaxial connector [3] for dirt and damage.
  - (c) Connect the coaxial connector [3].
  - (d) AIRPLANES WITH HEX NUT CONNECTOR;  
Tighten the hex nuts of the connectors to 8 in-lb (0.9 N·m) - 12 in-lb (1.4 N·m).
  - (e) AIRPLANES WITH COUPLING NUT CONNECTOR;  
Hold the connector body stationary while engaging and hand tightening the coupling nut.
  - (f) Apply silicone compound, D00254, to the outside coaxial connector, and at the exterior connector/antenna interface.
  - (g) Put the antenna [1] into its position on the airplane.
  - (h) Install three of the screw [2] that hold the antenna. Refer to Standard Torque Values, TASK 20-11-00-910-801.



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

EFFECTIVITY  
ARO ALL

# 34-58-02

D633W101-ARO

Page 407  
Sep 05/2017

# 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (i) Remove the unwanted Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913, from around the antenna [1] with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

SUBTASK 34-58-02-760-001

- (6) Do a check of the resistance between the antenna [1] and the airplane skin as follows:
  - (a) Connect a intrinsically safe approved bonding meter, COM-1550 between the base of the antenna [1] and the airplane skin.

NOTE: You can get access to the base of the antenna through the hole for the last screw.

- 1) Make sure the measured resistance is 0.025 ohms or less.

SUBTASK 34-58-02-420-002

- (7) Install the last screw [2] to hold the antenna [1]. Refer to Standard Torque Values, TASK 20-11-00-910-801.

SUBTASK 34-58-02-420-003



USE NITRILE GLOVES FOR SKIN PROTECTION WHEN YOU USE COR-BAN 27L, G50237. IF IT GETS ON YOUR SKIN, IMMEDIATELY REMOVE IT WITH WATER. IF THIS MATERIAL GETS IN YOUR EYES, IMMEDIATELY FLUSH YOUR EYES WITH WATER. GET MEDICAL AID. THIS MATERIAL CONTAINS FLAMMABLE AGENTS WHICH CAN CAUSE INJURIES TO PERSONNEL.



DO NOT GET THIS MATERIAL IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM THIS MATERIAL. PUT ON A RESPIRATOR, EYE PROTECTION (GOGGLES, OR OTHER APPROVED PROTECTION), AND GLOVES BEFORE YOU USE THIS MATERIAL. MAKE SURE THAT THERE IS SUFFICIENT AIRFLOW. KEEP THIS MATERIAL AWAY FROM SPARKS, FLAME, AND HEAT. THIS MATERIAL CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.



DO NOT GET SOLVENTS IN YOUR MOUTH, OR YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE HAZARDOUS MATERIALS. SOLVENTS MAY BE FLAMMABLE OR HARMFUL TO THE ENVIRONMENT. REFER TO PRODUCT MATERIAL SAFETY DATA SHEETS (MSDS) AND LOCAL REQUIREMENTS FOR PROPER HANDLING PROCEDURES.

- (8) Remove the unwanted Cor-Ban 27L Compound, G50237 or Mastinox 6856 K, C00913, from around the head of each screw [2] with Series 95 solvent, B01015 (TASK 20-30-95-910-801).

EFFECTIVITY  
ARO ALL

**34-58-02**

D633W101-ARO

Page 408  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### H. Aerodynamic Fillet Seal Installation

SUBTASK 34-58-02-390-002

- (1) To apply a bead of sealant, A02315 or a substitute (refer to TASK 20-30-01-910-801) around the antenna [1] where it touches the airplane skin, do this task: Fillet Seal Application, TASK 51-31-01-390-804.

NOTE: Apply the sealant all around the edge of the antenna. Make sure that no air bubbles are in the sealant. Use a sufficient quantity of the sealant to permit you to make the surface smooth.

NOTE: Operators can defer the application of the aero-sealant in the antenna installation to avoid a flight delay (SL 20-016).

SUBTASK 34-58-02-390-003

- (2) To make the bead into an aerodynamic fillet seal approximately 0.70 inches wide with the hardwood or plastic fillet smoothing spatula, STD-810, do this task: Fillet Seal Application, TASK 51-31-01-390-804.

SUBTASK 34-58-02-140-001

- (3) Remove all the unwanted sealant from the area around the antenna [1].

### I. Pressure Fillet Seal Installation

SUBTASK 34-58-02-010-001

- (1) To remove the ceiling panel at station 623 for the forward antenna [1] or at station 665 for the aft antenna [1], do this task: Main Ceiling Panel - Removal, TASK 25-21-06-000-801.

SUBTASK 34-58-02-390-005

- (2) To apply a bead of sealant, A02315 around the edge of the circular hole for the antenna [1] where it touches the antenna [1], do this task: Fillet Seal Application, TASK 51-31-01-390-804.

NOTE: Apply the sealant around the inner edge of the circular hole. Make sure that no air bubbles are in the sealant. Use a sufficient quantity of the sealant to permit you to make the surface smooth.

- (a) Make a smooth 45-degree bead of sealant with the hardwood or plastic fillet smoothing spatula, STD-810.
- (b) Remove the unwanted sealant from the area around the antenna [1].

SUBTASK 34-58-02-410-001

- (3) To install the ceiling panel at station 623 for the forward antenna [1] or at station 665 for the aft antenna [1], do this task: Main Ceiling Panel - Installation, TASK 25-21-06-400-801.

### J. GPS Antenna Installation Test

SUBTASK 34-58-02-860-003

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 9          | C34427        | MMR C       |
| E          | 9          | C34426        | MMR L       |
| E          | 22         | C34425        | MMR R       |

SUBTASK 34-58-02-860-004

- (2) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

EFFECTIVITY  
ARO ALL

# 34-58-02

D633W101-ARO

Page 409  
Sep 05/2017





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 34-58-02-740-001

- (3) Use a maintenance access terminal (MAT) to do the system test for the left (right) GPS antenna:
- (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 Global Positioning System
    - 5) SYSTEM TEST
    - 6) Left Global Positioning System (using MMR) (Right Global Positioning System (using MMR))
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, make sure there is no maintenance message for the GPS antenna.
    - 1) If there is a maintenance message for the GPS antenna, refer to the applicable Maintenance Message Index in the FIM or select the maintenance message and select MAINTENANCE MESSAGE DATA.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-58-02**

Page 410  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### FLIGHT MANAGEMENT COMPUTER SYSTEM - MAINTENANCE PRACTICES

#### 1. General

A. This procedure has these tasks:

- (1) Flight Management Computer System Deactivation
- (2) Flight Management Computer System Activation
- (3) An installation of the navigation databases in the left and right AIMS cabinets
- (4) Drag factor/fuel flow factor modification procedure

#### **TASK 34-61-00-040-801**

#### 2. Flight Management Computer System - Deactivation

(Figure 34-61-02-990-801)

##### A. General

- (1) This task removes electrical power from the Flight Management Computer System.

##### B. References

| Reference        | Title                                               |
|------------------|-----------------------------------------------------|
| 34-61-02-990-801 | Figure: Control Display Unit Installation (P/B 401) |

##### C. Location Zones

| Zone | Area                         |
|------|------------------------------|
| 117  | Main Equipment Center, Left  |
| 118  | Main Equipment Center, Right |
| 211  | Flight Compartment, Left     |
| 212  | Flight Compartment, Right    |

##### D. Procedure



**WARNING**

REMOVE ALL ELECTRICAL POWER FROM THE COMPONENT. ELECTRICAL SHOCK CAN CAUSE INJURIES TO PERSONNEL.

SUBTASK 34-61-00-860-058

- (1) Open these circuit breakers and install safety tags:

#### **Overhead Circuit Breaker Panel, P11**

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| B   | 12  | C31609 | AIMS L-1  |
| B   | 13  | C31611 | AIMS L-2  |
| B   | 14  | C31617 | AIMS L-3  |
| B   | 15  | C31619 | AIMS L-4  |
| C   | 7   | C31629 | FMC CDU-L |
| C   | 20  | C31630 | FMC CDU-R |
| F   | 7   | C31631 | FMC CDU-C |
| F   | 12  | C31610 | AIMS R-1  |
| F   | 13  | C31612 | AIMS R-2  |
| F   | 14  | C31618 | AIMS R-3  |
| F   | 15  | C31620 | AIMS R-4  |

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 201  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### E. Flight Management Computer System - Tryout

NOTE: This tryout is to make sure the Flight Management Computer System is in a zero energy state.

SUBTASK 34-61-00-860-059

- (1) Make sure that these circuit breakers are open and have safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |
| C          | 7          | C31629        | FMC CDU-L   |
| C          | 20         | C31630        | FMC CDU-R   |
| F          | 7          | C31631        | FMC CDU-C   |
| F          | 12         | C31610        | AIMS R-1    |
| F          | 13         | C31612        | AIMS R-2    |
| F          | 14         | C31618        | AIMS R-3    |
| F          | 15         | C31620        | AIMS R-4    |

SUBTASK 34-61-00-700-001

- (2) At the pilot's P1 and the first officer's P3 panels, make sure the Primary Flight Display and Navigation Displays are not illuminated.

SUBTASK 34-61-00-700-002

- (3) At the P2 Center Forward Panel and P9 Lower Center Panel, make sure the display units are not illuminated and no EICAS messages are present.

————— **END OF TASK** —————

### TASK 34-61-00-440-801

### 3. Flight Management Computer System - Activation

(Figure 34-61-02-990-801)

#### A. General

- (1) This task adds electrical power to the Flight Management Computer System.

#### B. References

| <u>Reference</u> | <u>Title</u>                                        |
|------------------|-----------------------------------------------------|
| 34-61-02-990-801 | Figure: Control Display Unit Installation (P/B 401) |

#### C. Location Zones

| <u>Zone</u> | <u>Area</u>                  |
|-------------|------------------------------|
| 117         | Main Equipment Center, Left  |
| 118         | Main Equipment Center, Right |
| 211         | Flight Compartment, Left     |
| 212         | Flight Compartment, Right    |

EFFECTIVITY  
ARO ALL

**34-61-00**

D633W101-ARO

Page 202  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### D. Procedure

SUBTASK 34-61-00-860-060

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |
| C          | 7          | C31629        | FMC CDU-L   |
| C          | 20         | C31630        | FMC CDU-R   |
| F          | 7          | C31631        | FMC CDU-C   |
| F          | 12         | C31610        | AIMS R-1    |
| F          | 13         | C31612        | AIMS R-2    |
| F          | 14         | C31618        | AIMS R-3    |
| F          | 15         | C31620        | AIMS R-4    |

SUBTASK 34-61-00-700-003

- (2) At the pilot's P1 and the first officer's P3 panels, make sure the Primary Flight Display and Navigation Displays are illuminated.

SUBTASK 34-61-00-700-004

- (3) At the P2 Center Forward Panel and P9 Lower Center Panel, make sure the display units are illuminated.

NOTE: Some EICAS messages may appear at this time. Installation test will correct the EICAS messages.

————— **END OF TASK** —————

### TASK 34-61-00-470-801

#### 4. Navigation Database Software Installation

##### A. General

- (1) This procedure tells you how to install navigation database software in the left and right Airplane Information Management System (AIMS) cabinets.
- (2) For instructions on how to install other software in the Core Processor Module (CPM)/STD (Standard) for the right AIMS cabinet, do this task: Core Processor Module/Standard Software Installation, TASK 31-41-05-420-801.
- (3) For instructions on how to install other software in the CPM/STD for the left AIMS cabinet, do this task: Core Processor Module/Standard Software Installation, TASK 31-41-05-420-801.
- (4) You can use the Ground Support Equipment (GSE)-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.

NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.

EFFECTIVITY  
ARO ALL

## 34-61-00

D633W101-ARO

Page 203  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (5) You can install the software from disks, CD, the Maintenance Access Terminal (MAT) hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.

**NOTE:** When new software is installed in the CPM/STD, the load process first erases the old software and then installs the new software. If you install software directly to the CPM/STD from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the CPM/STD.

- (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.
- (6) A maintenance access terminal (MAT or PMAT) is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

### ARO 014-999

- (7) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.
- (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

### ARO ALL

- (8) The airplane must be on the ground with the engines shutdown before you can install software.
- (9) To read about the time that is necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.
- (10) You can install software in the left and right AIMS cabinets from either AIMS Central Maintenance Computing Function (CMCF) at the same time.
- (11) Navigation database disks must be built for 777 airplanes.
- (12) You cannot use a side display for this procedure.
- (13) The same navigation database software part must be installed in the two AIMS cabinets for the Flight Management Computer (FMC) function to operate normally. This procedure will load the left AIMS cabinet and then the right AIMS cabinet.
- (14) Some Engine Indication and Crew Alerting System (EICAS) status messages can show while you install software. You can ignore these messages during the software installation.

### B. References

| Reference        | Title                                                          |
|------------------|----------------------------------------------------------------|
| 20-15-11-400-801 | On-Airplane Software Installation (P/B 201)                    |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                              |
| 31-41-05-000-801 | Core Processor Module/STD Removal (P/B 401)                    |
| 31-41-05-400-801 | Core Processor Module/STD Installation (P/B 401)               |
| 31-41-05-420-801 | Core Processor Module/Standard Software Installation (P/B 201) |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201)  |

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 204  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

(Continued)

| Reference        | Title                                                    |
|------------------|----------------------------------------------------------|
| 45-10-00-860-812 | How to Add Software to the Hard Drive (P/B 201)          |
| 45-10-00-860-813 | How to Remove Software from the Hard Drive (P/B 201)     |
| 46-13-00-070-801 | Mass Storage Device Software Removal (P/B 201)           |
| 46-13-00-470-802 | Mass Storage Device Software Part Installation (P/B 201) |

### C. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPL-5704  | Device - Maintenance<br>Part #: G45004-1 Supplier: 81205<br>Part #: G45004-3 Supplier: 81205<br>Opt Part #: G45002-20 Supplier: 81205<br>Opt Part #: G45002-25 Supplier: 81205<br>Opt Part #: G45002-29 Supplier: 81205<br>Opt Part #: J45001-1 Supplier: 81205<br>Opt Part #: J45003-1 Supplier: 81205 |

### D. Location Zones

| Zone | Area                      |
|------|---------------------------|
| 212  | Flight Compartment, Right |

### E. Prepare the Airplane for the Software Installation

SUBTASK 34-61-00-860-037

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-61-00-860-038

- (2) Go to each MAT, PMAT, and side display not used for this procedure and select EXIT MAINTENANCE.

SUBTASK 34-61-00-710-003

- (3) Do these steps from a maintenance access terminal (MAT or PMAT) to make sure the airplane is ready for the software installation:
  - (a) Select ONBOARD MAINTENANCE from the initial MAT menu.
  - (b) Select LINE MAINTENANCE from the Central Maintenance Computing System (CMCS) main menu.
  - (c) Select GROUND TESTS from the line maintenance menu.  
**NOTE:** The ATA selection dialog box shows.
  - (d) Select 31 AIMS - LEFT AIMS.  
**NOTE:** The SELECT TEST TYPE shows.
  - (e) Select SYSTEM TEST.  
**NOTE:** The SELECT SYSTEM TEST shows.
  - (f) Select CPM/GG (M010) in Left AIMS Module Reset.
  - (g) Select CONTINUE.  
**NOTE:** The TEST DESCRIPTION dialog box shows.

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 205  
May 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (h) Select CONTINUE.

NOTE: The GROUND TESTS screen shows.

### SUBTASK 34-61-00-860-039

- (4) Wait for 5 seconds.

### SUBTASK 34-61-00-860-040

- (5) Do not select START TEST.

### SUBTASK 34-61-00-860-041

- (6) If START TEST shows, the airplane is ready for the software installation. Do these steps:
- Select EXTENDED MAINTENANCE.
  - Select EXIT MAINTENANCE.
  - Install the navigation database (refer to the steps for Navigation Database Installation into the AIMS Cabinets).

### SUBTASK 34-61-00-860-042

- (7) If TO TEST shows after the 5 seconds wait, do the steps that follow to prepare the airplane for software installation:
- Select TO TEST.  
NOTE: The TO TEST dialog box shows.
  - If the TO TEST dialog box shows that a fault history cross load or down load is in progress, do these steps:
    - Select GO BACK.  
NOTE: The GROUND TEST display shows.
  - Wait 3 minutes for the operation to complete.
  - If START TEST shows, the airplane is ready for the software installation. Do these steps:
    - Select EXTENDED MAINTENANCE.
    - Select EXIT MAINTENANCE.
    - Install the navigation database (refer to the steps for Navigation Database Installation into the AIMS Cabinets).
  - If TO TEST shows, cycle power to the left and right AIMS cabinets, then do the steps to Prepare the Airplane for the Software Installation again.

### SUBTASK 34-61-00-860-043

- (8) If the TO TEST dialog box says something else, do these steps to put the airplane in the on ground state.
- Select the GO BACK button on the TO TEST dialog box.
  - Make sure the fuel cutoff switches are in the cutoff position.
  - Make sure the primary external power and secondary external power or Auxiliary Power Unit (APU) power is available.
  - If START TEST shows the airplane is ready for data load, do these steps:
    - Select EXTENDED MAINTENANCE.
    - Select EXIT MAINTENANCE.
    - Install the navigation database (refer to the steps for Navigation Database Installation into the AIMS Cabinets).

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 206  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (e) If TO TEST shows, cycle power to the two AIMS cabinets, then do the steps to Prepare the Airplane for the Software Installation again.

### F. Navigation Database Installation into the AIMS Cabinets

SUBTASK 34-61-00-860-044

- (1) To start the data load function for left AIMS, do these steps:
  - (a) On a maintenance access terminal (MAT or PMAT), select ONBOARD MAINTENANCE from the initial MAT menu.
  - (b) Make sure CENTRAL MAINTENANCE COMPUTER main menu shows Left Central Maintenance Computing Function (CMCF).
    - 1) If the menu shows Right Central Maintenance Computing Function (CMCF), do this:
      - a) Select GO BACK.
      - b) Select LINE MAINTENANCE.
      - c) Select EXISTING FLIGHT DECK EFFECTS.  
NOTE: This removes the Data Load main menu and allows you to switch to the other Central Maintenance Computing Function.
      - d) Select OTHER FUNCTIONS
      - e) Select CENTRAL MAINTENANCE COMPUTER SWITCH CONTROL from the OTHER FUNCTIONS menu.
      - f) Select SWITCH TO LEFT.  
NOTE: This shows: ARE YOU SURE YOU WANT TO SWITCH TO THE LEFT CENTRAL MAINTENANCE COMPUTER???
      - g) Select YES.  
NOTE: After approximately 10-15 seconds, the other CMCF takes control and this shows: COMMUNICATION TO THE CENTRAL MAINTENANCE COMPUTING FUNCTION (CMCF) IS DISCONNECTED. THIS SESSION IS STOPPED.
      - h) Select CONTINUE.
      - i) When you use a PMAT, the ERRORS FOR ONBOARD MAINTENANCE dialog box shows. Select CONTINUE.
      - j) Select ONBOARD MAINTENANCE.
      - k) Make sure CENTRAL MAINTENANCE COMPUTER main menu shows Left Central Maintenance Computing Function (CMCF).

SUBTASK 34-61-00-860-045

- (2) Select EXTENDED MAINTENANCE from the CMCS main menu.

SUBTASK 34-61-00-860-046

- (3) Select DATA LOAD from the extended maintenance menu.

NOTE: The main data load display shows.

SUBTASK 34-61-00-860-047

- (4) Do these steps to select the destination Line Replaceable Module (LRM) of the software:
  - (a) Select SELECT DESTINATION from the main data load display.  
NOTE: The destination selection dialog box shows.
  - (b) Select 31 AIMS - LEFT AIMS.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-61-00**

Page 207  
Sep 05/2017





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (c) Select CPM/STD (M002) in Left AIMS.
- (d) Select ADD.
- (e) Select CONTINUE.

NOTE: The main data load display shows. After approximately 30 seconds the configuration shows.

### SUBTASK 34-61-00-420-004

- (5) If the software is on disks, put the correct disk (disk 1) in the disk drive.

### SUBTASK 34-61-00-860-048

- (6) Do these steps to select the source of the software you will install:
  - (a) Select SELECT SOURCE from the main data load display.

NOTE: The source selection dialog box shows.
  - (b) Select the source that contains the software you will install (Disk Drive or Hard Drive).
  - (c) Select the software part number for the navigation database you will install.
  - (d) Select ADD.
  - (e) Select CONTINUE.

NOTE: The main data load display shows.

### SUBTASK 34-61-00-720-001

- (7) Make sure the text on the data load main menu says "The data loader is prepared for operation. Select START."

### SUBTASK 34-61-00-470-002

- (8) Do these steps to start the software installation:
  - (a) Select START from the main data load display.

NOTE: The All function in the destination cabinet (Left AIMS or Right AIMS) will stop dialog box shows.
  - (b) Select CONTINUE.

NOTE: The Precondition dialog box shows.
  - (c) Make sure you do the instructions that show on the display.
  - (d) Select CONTINUE.

NOTE: The Load in Progress dialog box shows.

### SUBTASK 34-61-00-420-005

- (9) If the software is on disks and an instruction to change the disk shows or the MAT shows that the incorrect disk is in the disk drive, do this:
  - (a) Push the ejection switch to remove the disk.
  - (b) Put the requested disk in the disk drive.

NOTE: Once the % complete indication reaches 100%, the destination will make sure the new load part number is loaded correctly dialog box will show. It is normal for the AIMS CPM to take 2-3 minutes to make sure that the navigation database installs correctly.

### SUBTASK 34-61-00-710-004

- (10) When the software installation is complete, make sure that the software part numbers that show are correct and then select CONTINUE.



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-61-00-860-051

- (11) To put the LRM and the AIMS cabinet in their usual condition, select ONBOARD MAINTENANCE.

NOTE: The LRM and the AIMS cabinet will be in their usual condition in less than 2.5 minutes.

### SUBTASK 34-61-00-710-005

- (12) Make sure CENTRAL MAINTENANCE COMPUTER main menu shows Right Central Maintenance Computing Function (CMCF).

- (a) If the menu shows Left Central Maintenance Computing Function (CMCF), do this:

- 1) Select GO BACK.
- 2) Select LINE MAINTENANCE.
- 3) Select EXISTING FLIGHT DECK EFFECTS.

NOTE: This removes the Data Load main menu and allows you to switch to the other Central Maintenance Computing Function.

- 4) Select OTHER FUNCTIONS
- 5) Select CENTRAL MAINTENANCE COMPUTER SWITCH CONTROL from the OTHER FUNCTIONS menu.
- 6) Select SWITCH TO RIGHT.

NOTE: This shows: ARE YOU SURE YOU WANT TO SWITCH TO THE RIGHT CENTRAL MAINTENANCE COMPUTER???

- 7) Select YES.

NOTE: After approximately 10-15 seconds, the other CMCF takes control and this shows: COMMUNICATION TO THE CENTRAL MAINTENANCE COMPUTING FUNCTION (CMCF) IS DISCONNECTED. THIS SESSION IS STOPPED.

- 8) Select CONTINUE.
- 9) When you use a PMAT, the ERRORS FOR ONBOARD MAINTENANCE dialog box shows. Select CONTINUE.
- 10) Select ONBOARD MAINTENANCE.
- 11) Make sure CENTRAL MAINTENANCE COMPUTER main menu shows Right Central Maintenance Computing Function (CMCF).

### SUBTASK 34-61-00-860-052

- (13) To start the data load function for right AIMS, do this:

- (a) Select EXTENDED MAINTENANCE from the CMCS main menu.
- (b) Select DATA LOAD from the extended maintenance menu.

NOTE: The main data load display shows.

### SUBTASK 34-61-00-860-053

- (14) Do these steps to select the destination LRM of the software:

- (a) Select SELECT DESTINATION from the main data load display.

NOTE: The destination selection dialog box shows.

- (b) Select 31 AIMS - RIGHT AIMS.
- (c) Select CPM/STD (M002) in Right AIMS.
- (d) Select ADD.

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 209  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (e) Select CONTINUE.

NOTE: The main data load display shows. After approximately 30 seconds the configuration shows.

### SUBTASK 34-61-00-420-006

- (15) If the software is on disks, put the correct disk (disk 1) in the disk drive.

### SUBTASK 34-61-00-860-054

- (16) Do these steps to select the source of the software you will install:

- (a) Select SELECT SOURCE from the main data load display.

NOTE: The source selection dialog box shows.

- (b) Select the source that contains the software you will install (Disk Drive or Hard Drive).

- (c) Select the software part number for the navigation database you will install.

- (d) Select ADD.

- (e) Select CONTINUE.

NOTE: The main data load display shows.

### SUBTASK 34-61-00-710-006

- (17) Make sure the text on the data load main menu says "The data loader is prepared for operation. Select START."

### SUBTASK 34-61-00-470-004

- (18) Do these steps to start the software installation:

- (a) Select START from the main data load display.

NOTE: The All function in the destination cabinet (Left AIMS or Right AIMS) will stop dialog box shows.

- (b) Select CONTINUE.

NOTE: The Precondition dialog box shows.

- (c) Make sure you do the instructions that show on the display.

- (d) Select CONTINUE.

NOTE: The Load in Progress dialog box shows.

### SUBTASK 34-61-00-420-007

- (19) If the software is on disks and an instruction to change the disk shows or the MAT shows that the incorrect disk is in the disk drive, do this:

- (a) Push the ejection switch to remove the disk.

- (b) Put the requested disk in the disk drive.

NOTE: Once the % complete indication reaches 100%, the destination will make sure the new load part number is loaded correctly dialog box will show. It is normal for the AIMS CPM to take 2-3 minutes to make sure that the navigation database installs correctly.

### SUBTASK 34-61-00-710-007

- (20) When the software installation is complete, make sure that the software part numbers that show are correct and then select CONTINUE.

EFFECTIVITY  
ARO ALL

**34-61-00**

D633W101-ARO

Page 210  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### SUBTASK 34-61-00-860-057

- (21) To put the LRM and the AIMS cabinet in their usual condition, select ONBOARD MAINTENANCE.

NOTE: The LRM and the AIMS cabinet will be in their usual condition in less than 2.5 minutes.

### SUBTASK 34-61-00-470-007

- (22) Do these steps to start the data load function for Left AIMS and Right AIMS at the same time.

(a) Select EXTENDED MAINTENANCE from the CMCS main menu.

(b) Select DATA LOAD from the extended maintenance menu.

NOTE: The main data load display shows.

(c) Select SELECT DESTINATION from the main data load display.

NOTE: The destination selection dialog box shows.

(d) Select 31 AIMS - LEFT AIMS.

(e) Select CPM/STD (M002) in Left AIMS.

(f) Select ADD.

(g) Select 31 AIMS - RIGHT AIMS.

(h) Select CPM/STD (M002) in Right AIMS.

(i) Select ADD.

(j) Select CONTINUE.

NOTE: The main data load display shows. After approximately 30 seconds the configuration shows.

(k) Select SELECT SOURCE from the main data load display.

NOTE: The source selection dialog box shows.

(l) Select "CD-ROM"

NOTE: AIMS can load FMC NAV DB to the CPM directly from a CD. It will not load if copied to the MAT HDD (PCMCIA).

(m) Select the software part number for the navigation database you will install.

(n) Select ADD.

(o) Select CONTINUE.

NOTE: The main data load display shows.

(p) Select START from the main data load display to start the data load function.

(q) Select CONTINUE.

NOTE: The Precondition dialog box shows.

(r) Select CONTINUE.

NOTE: The Load in Progress dialog box shows.

### SUBTASK 34-61-00-710-008

- (23) When the software installation is complete, make sure that the software part numbers that show are correct and then select CONTINUE.

### SUBTASK 34-61-00-860-061

- (24) To put the AIMS cabinets in their usual condition, select ONBOARD MAINTENANCE.

NOTE: The AIMS cabinets will be in their usual condition in less than 2.5 minutes.



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### G. Problems During Software Installation

SUBTASK 34-61-00-470-006

- (1) If the CPM/Comm in left AIMS is failed and you cannot install the navigation database in the CPM/STD in left AIMS, do these steps:
  - (a) Remove the CPM/STD LRM from the right AIMS cabinet. To remove it, do this task: Core Processor Module/STD Removal, TASK 31-41-05-000-801.
  - (b) Move the CPM/STD LRM from the left AIMS cabinet to the right AIMS cabinet.  
These are the tasks:  
Core Processor Module/STD Removal, TASK 31-41-05-000-801,  
Core Processor Module/STD Installation, TASK 31-41-05-400-801.
  - (c) Install the navigation database in the CPM/STD:
    - 1) Put the right CMCF in control (select OTHER FUNCTIONS, CENTRAL MAINTENANCE COMPUTER SWITCH CONTROL, SWITCH TO RIGHT).
    - 2) For the software destination, select CPM/STD (M002) in Right AIMS.
  - (d) Move the CPM/STD LRM back to the left AIMS cabinet.  
These are the tasks:  
Core Processor Module/STD Removal, TASK 31-41-05-000-801,  
Core Processor Module/STD Installation, TASK 31-41-05-400-801.
  - (e) Install the CPM/STD in the right AIMS cabinet. To install it, do this task: Core Processor Module/STD Installation, TASK 31-41-05-400-801.

————— END OF TASK —————

### TASK 34-61-00-400-801

### 5. Drag Factor/Fuel Flow Factor Modification Procedure

#### A. General

- (1) This procedure provides instruction to change the drag factor and fuel flow factor. The drag factor and fuel flow factor go to the default values when new Operational Program Software (OPS) is put in. If other than the default values are used, then they must be put in again. When the two FMCs are on, the factors are changed in the two FMCs at the same time. The new values are kept in the FMC when power is removed.

NOTE: THE DRAG AND FUEL FLOW FACTORS DO NOT NEED TO BE CHANGED WHEN A NEW NAVIGATION DATABASE (NDB) IS LOADED. WHEN A NEW OPS SOFTWARE IS LOADED THE LATEST DRAG AND FUEL FLOW FACTORS NEED TO BE ENTERED AGAIN IF THEY ARE DIFFERENT FROM THE DEFAULT VALUES.

#### B. References

| Reference        | Title                             |
|------------------|-----------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201) |

#### C. Location Zones

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

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 212  
Jan 05/2018



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### D. Procedure

SUBTASK 34-61-00-865-001

- (1) Close these circuit breakers:

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| B   | 12  | C31609 | AIMS L-1  |
| B   | 13  | C31611 | AIMS L-2  |
| B   | 14  | C31617 | AIMS L-3  |
| B   | 15  | C31619 | AIMS L-4  |
| C   | 7   | C31629 | FMC CDU-L |
| C   | 20  | C31630 | FMC CDU-R |
| F   | 7   | C31631 | FMC CDU-C |
| F   | 12  | C31610 | AIMS R-1  |
| F   | 13  | C31612 | AIMS R-2  |
| F   | 14  | C31618 | AIMS R-3  |
| F   | 15  | C31620 | AIMS R-4  |

SUBTASK 34-61-00-869-001

- (2) Do these steps to change the drag factor and the fuel flow factor:
- Make sure the IDENT page shows on the CDU.
  - Push the alphanumeric keys A,R, M, and ARM will show in the scratchpad area.
  - Push the LSK for the DRAG and FUEL FLOW FACTORS line.
  - Make sure ARM shows below the DRAG/FF line on the CDU.
  - You can put the drag factor and the fuel flow factor in at the same time, or you can put them in one at a time. If you put them in at the same time, you must put them in this order: drag factor/fuel flow factor. You must put in the slash (/) between the two numbers. If you put in one at a time, you must put a slash after the drag factor. (Include the negative sign (-) if necessary, and decimal sign if a decimal number is put in.) If no value is entered, these defaults will show:

| AIRPLANE CONFIGURATION | DRAG FACTOR | FUEL FLOW |
|------------------------|-------------|-----------|
| ALL                    | 0           | 0         |

- (f) After you put in the number, push the applicable LSK on the CDU to move the number into the FMC.

SUBTASK 34-61-00-869-002

- (3) Push the LSK adjacent to the DRAG/FF prompt.

SUBTASK 34-61-00-865-002

- (4) Open these circuit breakers on the P11 panel for 15 seconds and then close them:

#### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name     |
|-----|-----|--------|----------|
| B   | 12  | C31609 | AIMS L-1 |
| B   | 13  | C31611 | AIMS L-2 |
| B   | 14  | C31617 | AIMS L-3 |
| B   | 15  | C31619 | AIMS L-4 |
| F   | 12  | C31610 | AIMS R-1 |
| F   | 13  | C31612 | AIMS R-2 |

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 213  
Jan 05/2018



**777-200/300  
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| F          | 14         | C31618        | AIMS R-3    |
| F          | 15         | C31620        | AIMS R-4    |

SUBTASK 34-61-00-869-003

(5) Make sure the CDU IDENT page shows the value that you put in.

**E. Put the Airplane Back to Its Usual Condition**

SUBTASK 34-61-00-869-004

(1) Remove electrical power if it not necessary Supply Electrical Power, TASK 24-22-00-860-805.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

**34-61-00**

D633W101-ARO

Page 214  
Jan 05/2018



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**FLIGHT MANAGEMENT COMPUTING SYSTEM - ADJUSTMENT/TEST**

**1. General**

- A. The flight management computing system has two software partitions. These partitions are the flight management computing (FMC) function and the navigation function. The FMC function also has three FMC control display units within the Airplane Information Management System.
- B. This procedure has these tasks:
  - (1) An operational test of the flight management computing system
  - (2) A system test of the flight management computing system.

**TASK 34-61-00-710-801**

**2. Flight Management Computing System - Operational Test**

**A. General**

- (1) This test makes sure each flight management computing system (FMCS) control display unit (CDU) is operational and there are no internal/external failures found by the CDU BITE.
- (2) The same sequence of steps is used for the left, center, or right FMCS CDU.
- (3) A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

**B. References**

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

**C. Location Zones**

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

**D. Operational Test**

**SUBTASK 34-61-00-860-001**

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

**SUBTASK 34-61-00-710-001**

- (2) Use a maintenance access terminal (MAT) to do the system test of the left, center, and right control display unit (CDU):
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 AIMS - Flight Management Computing System
    - 5) SYSTEM TEST
    - 6) Control Display Unit Left (Center, Right) Reset
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:

EFFECTIVITY  
ARO ALL

**34-61-00**

D633W101-ARO

Page 501  
Jan 05/2015





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- 1) CONTINUE
- 2) START TEST
- (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
- (d) If FAILED shows, refer to the applicable Maintenance Message Index in the fault isolation manual or select the maintenance message and select MAINTENANCE MESSAGE DATA.

————— END OF TASK —————

### TASK 34-61-00-730-801

#### 3. Flight Management Computing System - System Test

##### A. References

| Reference        | Title                                                                      |
|------------------|----------------------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                                          |
| 31-41-00-710-801 | Airplane Information Management System (AIMS) - Operational Test (P/B 501) |

##### B. Location Zones

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

##### C. Prepare to Test

###### SUBTASK 34-61-00-860-003

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

###### SUBTASK 34-61-00-730-010

- (2) Do this task: Airplane Information Management System (AIMS) - Operational Test, TASK 31-41-00-710-801.

##### D. Control Display Unit (CDU) Position Pin Test

###### SUBTASK 34-61-00-730-001

- (1) Do these steps to do a test of the electronic flight instruments system (EFIS) control with the left CDU:
  - (a) Push the MENU key.
  - (b) Push the line-select key (LSK) for EFIS CTL to set the EFIS to ON.
  - (c) Push the LSK adjacent to the EFIS prompt.
    - 1) Make sure the EFIS CONTROL page shows.
  - (d) On the captain's display switching panel, put the INBOARD DSPL selector to the NAV position.
  - (e) Push the LSK adjacent to the MAP prompt.
    - 1) Make sure the left Inboard Display Unit shows the MAP mode.
  - (f) Push the LSK adjacent to the CTR prompt.
    - 1) Make sure the left Inboard Display Unit changes to the center format.
  - (g) Push the LSK adjacent to the CTR prompt.
    - 1) Make sure the left Inboard Display Unit changes to the expanded format.

EFFECTIVITY  
ARO ALL

## 34-61-00

D633W101-ARO

Page 502  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (h) Push the MENU key.
- (i) Push the LSK for EFIS CTL to set the EFIS to OFF.

### SUBTASK 34-61-00-730-002

- (2) Do these steps to do a test of the EFIS control with the right CDU:
  - (a) Push the MENU key.
  - (b) Push the LSK for EFIS CTL to set the EFIS to ON.
  - (c) Push the LSK adjacent to the EFIS prompt.
    - 1) Make sure the EFIS CONTROL page shows.
  - (d) On the first officer's display switching panel, set the INBOARD DSPL selector to the NAV position.
  - (e) Push the LSK adjacent to the MAP prompt.
    - 1) Make sure the right Inboard Display Unit shows the MAP mode.
  - (f) Push the LSK adjacent to the CTR prompt.
    - 1) Make sure the right Inboard Display Unit changes to the center format.
  - (g) Push the LSK adjacent to the CTR prompt.
    - 1) Make sure the right Inboard Display Unit changes to the expanded format.
  - (h) Push the MENU key.
  - (i) Push the LSK for EFIS CTL to set the EFIS to OFF.

### SUBTASK 34-61-00-730-003

- (3) Do these steps to do a test of the display control with the center CDU:
  - (a) Push the MENU key.
  - (b) Push the LSK for DSP CTL to set the DSP CTL to ON.
  - (c) Push the LSK key adjacent to the DSP prompt.
    - 1) Make sure the DISPLAY MODES page shows.
  - (d) Push the LSK adjacent to the STAT prompt.
    - 1) Make sure the lower EICAS display shows the status page.
  - (e) Push the LSK adjacent to the ENG prompt.
    - 1) Make sure the lower EICAS display shows the Engine Secondary page.
  - (f) Push the MENU key.
  - (g) Push the LSK for DSP CTL to set the DSP CTL to OFF.

## E. CDU/FMCS Interface Test for System Bus Check

### SUBTASK 34-61-00-860-036

- (1) Do the CDU/FMCS Interface Test:
  - (a) Push the MENU key on the left, right, and center CDUs.
  - (b) Push the LSK adjacent to the <FMC prompt on the left and right CDUs.
    - 1) Make sure the IDENT page shows on the left and right CDUs.
    - 2) Make sure the INDEX prompt shows on the left and right CDUs.
  - (c) Push the MENU key on the left and right CDUs.

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-61-00**

Page 503  
Jan 05/2015



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (d) Open this circuit breaker:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 7          | C31629        | FMC CDU-L   |

- (e) Push the LSK adjacent to the <FMC prompt on the center and right CDUs.
- 1) Make sure the IDENT page shows on the center and right CDUs.
  - 2) Make sure that the INDEX prompt shows on the center and right CDUs.
- (f) Push the MENU key on the center and right CDUs.
- (g) Close this circuit breaker:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 7          | C31629        | FMC CDU-L   |

- (h) Open this circuit breaker:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 20         | C31630        | FMC CDU-R   |

- (i) Push the LSK adjacent to the <FMC prompt on the left and center CDUs.
- 1) Make sure the IDENT page shows on the left and center CDUs.
  - 2) Make sure that the INDEX prompt shows on the left and center CDUs.
- (j) Push the MENU key on the left and center CDUs.
- (k) Close this circuit breaker:

**Overhead Circuit Breaker Panel, P11**

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 20         | C31630        | FMC CDU-R   |

**F. CDU Analog Discrete Inputs and Outputs**

SUBTASK 34-61-00-730-011

- (1) Do these steps to make sure the left, center, and right CDU Analog Discretes operate:
- (a) Make sure the MASTER BRIGHT switch on the P5 overhead panel is on.
  - (b) Make sure the MENU page shows on the left, center and right CDUs.
  - (c) Set the IND LTS switch on the P5 overhead panel to the DIM position.
    - 1) Make sure the intensity of the annunciators on the left, center, and right CDUs decreases.
  - (d) Set the IND LTS switch on the P5 overhead panel to the BRT position.
    - 1) Make sure the intensity of the annunciators on the left, center, and right CDUs increases.
  - (e) Hold the IND LTS switch on the P5 overhead panel in the TEST position.
    - 1) Make sure the DSPY, MSG, and OFST annunciators and the EXEC key light come on.
  - (f) Release the IND LTS switch.
    - 1) Make sure the DSPY, MSG, and OFST annunciators and the EXEC key light go off.

EFFECTIVITY  
ARO ALL

**34-61-00**

D633W101-ARO

Page 504  
May 05/2016



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (g) Push the MENU key on the left, center and right CDUs.

### G. ILS Alternate Nav Tuning Test

SUBTASK 34-61-00-860-012

- (1) Do these steps to make sure the Alternate Nav Tuning operates:
- (a) Set the ND mode selector on the Captain's and First Officer's EFIS control panel to the APP position.
  - (b) Set the flight management computer (FMC) selector on the First Officer's Display Switching Panel to the L FMC position.
  - (c) Open these circuit breakers and install safety tags:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |

- (d) Make sure that these circuit breakers are closed:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 9          | C34427        | MMR C       |
| E          | 9          | C34426        | MMR L       |
| E          | 22         | C34425        | MMR R       |

- (e) Push the NAV RAD key on the left CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the left CDU.
- (f) Put a valid ILS frequency (108.1, 108.3, or 110.5 MHz) and a course of 000 into the PRESELECT area of the left CDU.
- (g) Push the NAV RAD key on the right CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the right CDU.
- (h) Put a different valid ILS frequency (108.1, 108.3, or 110.5 MHz) and a course of 000 into the PRESELECT area of the right CDU.
- NOTE:** Using different ILS frequencies will show isolation between the left and right CDU tuning buses.
- (i) Push the LSK on the left and right CDUs that is adjacent to the ILS frequency display.
- 1) Make sure the green ILS L, white ILS frequency and course shows in the upper right corner on the Captain's Inboard Display Unit (IDU).
- (j) Open this circuit breaker and install safety tag:

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 9          | C34426        | MMR L       |

- 1) Make sure the green ILS C, the white ILS frequency and course shows in the upper right corner on the Captain's IDU.



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (k) Open this circuit breaker and install safety tag:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 9          | C34427        | MMR C       |

- 1) Make sure the green ILS R, the white ILS frequency and course shows in the upper right corner on the First Officer's IDU.

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

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 9          | C34427        | MMR C       |
| E          | 9          | C34426        | MMR L       |

## H. DME Alternate Nav Tuning Test

SUBTASK 34-61-00-860-022

- (1) Do these steps to make sure the DME Alternate Nav Tuning operates:

- (a) Make sure that these circuit breakers are closed:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 11         | C34447        | DME L       |
| E          | 24         | C34448        | DME R       |

- (b) Set the ND mode selector on the Captain's EFIS control panel to the VOR position.
- (c) Set the VOR/ADF switch on the Captain's EFIS control panel to the VOR L and VOR R positions.
- (d) Set the ND mode selector on the First Officer's EFIS control panel to the VOR position.
- (e) Set the VOR/ADF switch on the First Officer's EFIS control panel to the VOR L and VOR R positions.
- (f) Push the NAV RAD key on the left CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the left CDU.
- (g) Put a VOR frequency and a course of 000 into the PRESELECT area of the left CDU.
- (h) Push the NAV RAD key on the right CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the right CDU.
- (i) Put a VOR frequency and a course of 000 into the PRESELECT area of the right CDU.
- 1) Make sure the green "DME", "VOR L", and VOR L frequency annunciation is displayed in the lower left corner on the Captain's and First Officer's Inboard Display Unit (IDU).
- 2) Make sure the green "DME", "VOR R", and VOR R frequency annunciation is displayed in the lower right corner on the Captain's and First Officer's Inboard Display Unit (IDU).

## I. VOR Receiver Alternate NAV Tuning Test

SUBTASK 34-61-00-860-024

- (1) Do these steps to make sure the VOR Receiver Alternate Nav Tuning operates:

EFFECTIVITY  
ARO ALL

34-61-00

D633W101-ARO

Page 506  
May 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure that these circuit breakers are closed:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| A          | 4          | C34443        | VOR MKR L   |
| E          | 26         | C34444        | VOR R       |

- (b) Set the ND mode selector on the Captain's EFIS control panel to the VOR position.
- (c) Set the VOR/ADF switch on the Captain's EFIS control panel to the VOR L and VOR R positions.
- (d) Set the ND mode selector on the First Officer's EFIS control panel to the VOR position.
- (e) Set the VOR/ADF switch on the First Officer's EFIS control panel to the VOR L and VOR R positions.
- (f) Push the NAV RAD key on the left CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the left CDU.
- (g) Put a VOR frequency of 108.00 and course of 000 into the VOR area on the left CDU.
- (h) Push the NAV RAD key on the right CDU.
- 1) Make sure the ALTN NAV RADIO page shows on the right CDU.
- (i) Put a VOR frequency of 108.00 and course of 000 into the VOR area of the right CDU.
- 1) Make sure the green VOR L and VOR L frequency annunciators show in the lower left corner on the Captain's and First Officer's Inboard Display Unit (IDU).
- 2) Make sure the green VOR R and VOR R frequency annunciators show in the lower right corner on the Captain's and First Officer's Inboard Display Unit (IDU).

## J. ADF Bearing Accuracy and Standby Alternate Nav Tuning Test

SUBTASK 34-61-00-860-027

- (1) Do the following to make sure the ADF Bearing Accuracy and Standby Alternate Nav Tuning operates:

- (a) Make sure that these circuit breakers are closed:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| E          | 10         | C34449        | ADF L       |
| E          | 23         | C34450        | ADF R       |

- (b) Set the VOR/ADF switches on the left EFIS control panel to the ADF-L and ADF-R positions.
- (c) Set the VOR/ADF switches on the right EFIS control panel to the ADF-L and ADF-R positions.
- (d) Put the frequency of a local ADF beacon station or a local AM broadcast station into the ADF area of the left and right CDUs.
- (e) Put a course of 000 degrees into the CRS area of the left and right CDUs.
- 1) Make sure the tuned frequency shows on the left and right IDU.
- 2) Make sure the blue "ADF" and ADF L annunciation are displayed in the lower left hand corner on the Captain's and First Officer's Inboard Display Unit (IDU).
- 3) Make sure the blue "ADF" and ADF R annunciation are displayed in the lower right hand corner on the Captain's and First Officer's Inboard Display Unit (IDU).

EFFECTIVITY  
ARO ALL

# 34-61-00

D633W101-ARO

Page 507  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### K. Put the Airplane Back to Its Usual Condition

SUBTASK 34-61-00-860-030

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

#### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| B          | 12         | C31609        | AIMS L-1    |
| B          | 13         | C31611        | AIMS L-2    |
| B          | 14         | C31617        | AIMS L-3    |
| B          | 15         | C31619        | AIMS L-4    |

SUBTASK 34-61-00-860-031

- (2) Make sure the tuned frequencies are the same in the PFDs and the NDs.

SUBTASK 34-61-00-860-032

- (3) Set the FMC selector to the AUTO position.

————— **END OF TASK** —————

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-61-00

Page 508  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### CONTROL DISPLAY UNIT - MAINTENANCE PRACTICES

#### 1. General

- A. This procedure has one task:
  - (1) Control display unit (CDU) software installation which installs the Personality Prom and Operational software in the CDU
- B. The three CDUs are in the flight compartment. The left CDU and the right CDU are in the forward aisle stand panel, P9. The center CDU is in the aft aisle stand panel, P8.
- C. A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.
- D. The airplane must be on the ground with the engines off before you can install software.
- E. To read about the time that is necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

#### **TASK 34-61-02-400-801**

#### 2. Control Display Unit Software Installation

##### A. General

- (1) This procedure tells you how to install software in the Control Display Unit (CDU).
  - (a) The names of the two software parts loaded into a CDU follow:  
CDU Operational Program Software (OPS)  
CDU PPROM  
Using the names, the specific software part numbers for an aircraft can be identified in the IPC. On an aircraft all CDU units use the same two software part numbers.
- (2) If you do not know if the CDU needs new software, you can first do the software configuration check. It will save time if you only install software when the software is missing or the part number is incorrect. You can find the software configuration check in this task: Control Display Unit (CDU) Installation, TASK 34-61-02-420-801.
- (3) You can use the GSE-Laptop, maintenance device, SPL-5704, as an alternative to the Portable Maintenance Access Terminal (PMAT) in this task.  
NOTE: The GSE-Laptop and the PMAT are equivalent for all of the PMAT functions that you will use in this task.
- (4) You can install the software from disks, the Maintenance Access Terminal (MAT) hard drive or the PMAT hard drive (if available). It is recommended that you install software from the MAT or PMAT hard drive. To install new software on the MAT or PMAT hard drive, do this task: How to Add Software to the Hard Drive, TASK 45-10-00-860-812.  
NOTE: When new software is installed in the CDU, the load process first erases the old software and then installs the new software. If you install software directly to the CDU from a faulty disk, the load process may erase the old software and then fail, so that no software is installed. If you install a faulty disk to the MAT or PMAT hard drive, the load may fail, but you will not erase the software from the CDU.
  - (a) It is recommended that you remove old software part numbers from the MAT or PMAT hard drive after new software is installed. To remove software from the hard drive, do this task: How to Remove Software from the Hard Drive, TASK 45-10-00-860-813.

EFFECTIVITY  
ARO ALL

## 34-61-02

D633W101-ARO

Page 201  
Sep 05/2017





## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### ARO 014-999

- (5) You can also install the software from the Onboard Network System (ONS) Mass Storage Device (MSD). To install new software on the ONS MSD, do this task: Mass Storage Device Software Part Installation, TASK 46-13-00-470-802.
  - (a) It is recommended that you remove old software part numbers from the ONS MSD after new software is installed. To remove software from the ONS MSD, do this task: Mass Storage Device Software Removal, TASK 46-13-00-070-801.

### ARO ALL

- (6) To read about the conditions and times necessary for software installation, do this task: On-Airplane Software Installation, TASK 20-15-11-400-801.

### B. References

| Reference        | Title                                                    |
|------------------|----------------------------------------------------------|
| 20-15-11-400-801 | On-Airplane Software Installation (P/B 201)              |
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                        |
| 34-61-02-420-801 | Control Display Unit (CDU) Installation (P/B 401)        |
| 45-10-00-860-812 | How to Add Software to the Hard Drive (P/B 201)          |
| 45-10-00-860-813 | How to Remove Software from the Hard Drive (P/B 201)     |
| 46-13-00-070-801 | Mass Storage Device Software Removal (P/B 201)           |
| 46-13-00-470-802 | Mass Storage Device Software Part Installation (P/B 201) |

### C. Tools/Equipment

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

| Reference | Description                                                                                                                                                                                                                                                                                             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPL-5704  | Device - Maintenance<br>Part #: G45004-1 Supplier: 81205<br>Part #: G45004-3 Supplier: 81205<br>Opt Part #: G45002-20 Supplier: 81205<br>Opt Part #: G45002-25 Supplier: 81205<br>Opt Part #: G45002-29 Supplier: 81205<br>Opt Part #: J45001-1 Supplier: 81205<br>Opt Part #: J45003-1 Supplier: 81205 |

### D. Location Zones

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

### E. Procedure

#### SUBTASK 34-61-02-860-018

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

#### SUBTASK 34-61-02-420-003

- (2) Use a MAT to install software in the CDU:

**NOTE:** If you install normally black (NB) CDU OPS, CDU OPS before P/N 3403-HNP-05V-01, into a normally white (NW) CDU, then the CDU will not operate. The replacement of the CDU will be necessary.

- (a) Put the correct disk in the disk drive.

EFFECTIVITY  
ARO ALL

# 34-61-02

D633W101-ARO

Page 202  
May 05/2018



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

- (b) Make these selections on the MAT:
  - 1) ONBOARD MAINTENANCE
  - 2) LINE MAINTENANCE
  - 3) SYSTEM CONFIGURATION
  - 4) 34 AIMS - Flight Management Computing System
  - 5) Find Control Display Unit Left (Center, Right) on the display.
  - 6) Record the ARINC 629 PPRM and Operational software part numbers.
  - 7) GO BACK
  - 8) EXTENDED MAINTENANCE
  - 9) DATA LOAD
- (c) Make these selections to select the component that will receive the software:
  - 1) SELECT DESTINATION
  - 2) 34 AIMS - Flight Management Computing System
  - 3) Control Display Unit Left (Center, Right)
  - 4) CONTINUE
- (d) Make these selections to select the source of the software:
  - 1) SELECT SOURCE
  - 2) Select the source of the software (if Disk Drive is the only selection, it is automatically selected).

NOTE: Make sure you know the correct software part number for the CDU before you select the software part number on the display. For the CDU to be an approved installation, the correct software must be installed.
  - 3) If the ARINC 629 PPRM software part number that was recorded before is different from the ARINC 629 PPRM software part number on the disk, do the steps that follow:
    - a) Select the ARINC 629 PPRM software part number from the display.
    - b) Select CONTINUE.
- (e) Select START to start the software installation.
- (f) When the software installation is completed, make sure the correct ARINC 629 PPRM software part number shows on the display.
- (g) Select CONTINUE to remove the configuration display.
- (h) Select the Operational software part number from the display.
- (i) Select CONTINUE
- (j) Select START to start the software installation.
- (k) When the software installation is completed, make sure the correct Operational software part number shows on the display.
- (l) Select CONTINUE to remove the configuration display.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

**34-61-02**

D633W101-ARO

ECCN 9E991 BOEING PROPRIETARY - Copyright © Unpublished Work - See title page for details

Page 203  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### CONTROL DISPLAY UNIT - REMOVAL/INSTALLATION

#### 1. General

- A. This procedure has these tasks:
  - (1) A removal of the control display unit (CDU).
  - (2) An installation of the CDU.
- B. The three CDU's are in the flight compartment. The left CDU and the right CDU are in the forward aisle stand panel, P9. The center CDU is in the aft aisle stand panel, P8.
- C. The CDUs are held in place by six quick-release fasteners. The removal and installation steps are the same for all the CDUs.

#### **TASK 34-61-02-020-801**

#### 2. Control Display Unit (CDU) Removal

(Figure 401)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. **Location Zones**

| <b>Zone</b> | <b>Area</b>               |
|-------------|---------------------------|
| 211         | Flight Compartment, Left  |
| 212         | Flight Compartment, Right |

##### B. **Removal Procedure**

###### **SUBTASK 34-61-02-860-013**

- (1) Make sure the MASTER BRIGHT switch on the P5 Pilot's Overhead Panel is on and in the MIN position.

###### **SUBTASK 34-61-02-860-014**

- (2) For the left CDU [1];  
Open this circuit breaker and install safety tag:

##### **Overhead Circuit Breaker Panel, P11**

| <b><u>Row</u></b> | <b><u>Col</u></b> | <b><u>Number</u></b> | <b><u>Name</u></b> |
|-------------------|-------------------|----------------------|--------------------|
| C                 | 7                 | C31629               | FMC CDU-L          |

###### **SUBTASK 34-61-02-860-015**

- (3) For the center CDU [1];  
Open this circuit breaker and install safety tag:

##### **Overhead Circuit Breaker Panel, P11**

| <b><u>Row</u></b> | <b><u>Col</u></b> | <b><u>Number</u></b> | <b><u>Name</u></b> |
|-------------------|-------------------|----------------------|--------------------|
| F                 | 7                 | C31631               | FMC CDU-C          |

###### **SUBTASK 34-61-02-860-016**

- (4) For the right CDU [1];  
Open this circuit breaker and install safety tag:

##### **Overhead Circuit Breaker Panel, P11**

| <b><u>Row</u></b> | <b><u>Col</u></b> | <b><u>Number</u></b> | <b><u>Name</u></b> |
|-------------------|-------------------|----------------------|--------------------|
| C                 | 20                | C31630               | FMC CDU-R          |

EFFECTIVITY  
ARO ALL

D633W101-ARO

# 34-61-02

Page 401  
May 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-61-02-860-017



**CAUTION**

DO NOT TOUCH THE CONDUCTOR PINS OR OTHER CONDUCTORS ON THE CDU. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CDU.



**CAUTION**

DO NOT LET THE CDU PUSH AGAINST OR FALL ON OTHER COMPONENTS ON THE AISLE STAND. THIS CAN OCCUR WHEN YOU DISCONNECT THE CONNECTOR FROM THE REAR OF THE CDU. DAMAGE TO EQUIPMENT CAN OCCUR.

- (5) Remove the CDU [1]:
- (a) Loosen the six quick-release fasteners [2] on the front of the CDU [1].
  - (b) Lift the handle [3] and pull the CDU [1] out of the panel until you can get access to the electrical connectors.
  - (c) Disconnect the electrical connectors.
  - (d) Remove the CDU [1] from the panel.
  - (e) Put protective covers on the electrical connectors.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

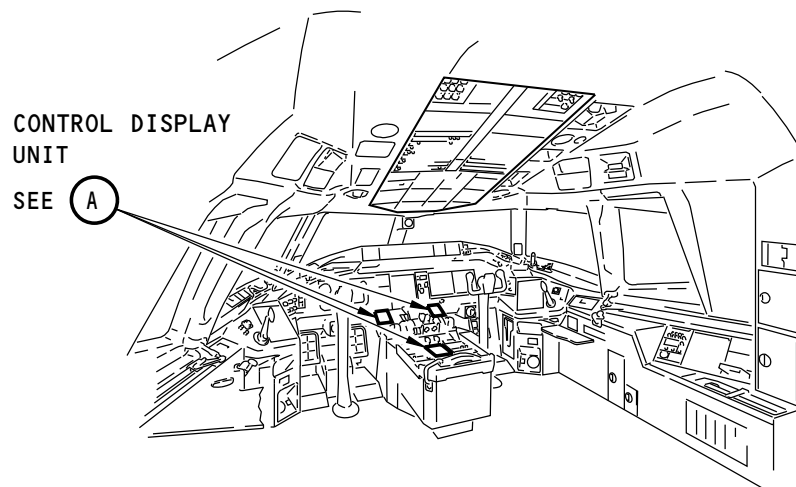
**34-61-02**

D633W101-ARO

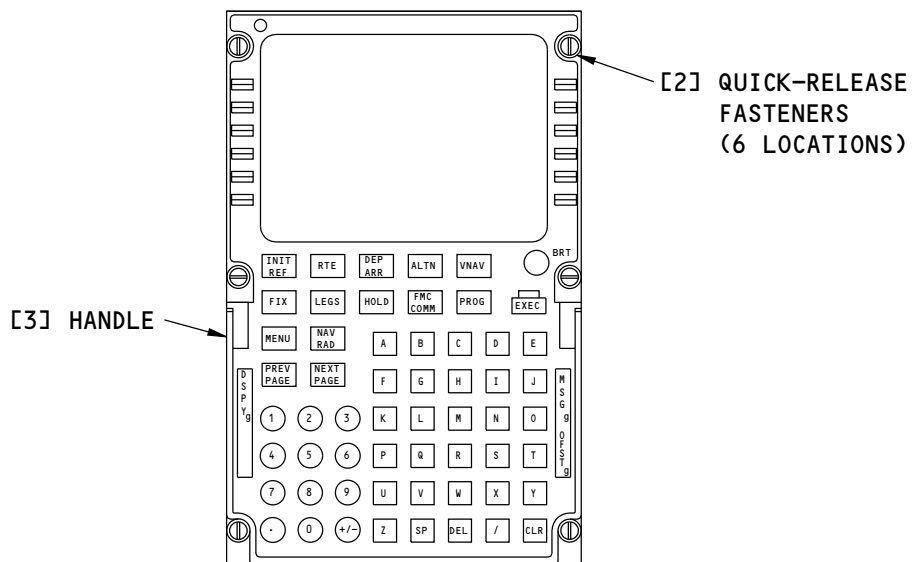
Page 402  
Sep 05/2017



# 777-200/300 AIRCRAFT MAINTENANCE MANUAL



## FLIGHT COMPARTMENT



## [1] CONTROL DISPLAY UNIT

(A)

C35506 S0006420993\_V1

### Control Display Unit Installation Figure 401/34-61-02-990-801

EFFECTIVITY  
ARO ALL

## 34-61-02

D633W101-ARO

Page 403  
Jan 05/2015



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### TASK 34-61-02-420-801

#### 3. Control Display Unit (CDU) Installation

(Figure 401)

**NOTE:** This procedure is a scheduled maintenance task.

##### A. General

- (1) The installation test makes sure that the CDU [1] is correctly installed. A maintenance access terminal is necessary for this procedure. For instructions on how to use a maintenance access terminal, do this task: How to Use the Central Maintenance Computing System, TASK 45-10-00-740-808.

##### B. References

| Reference        | Title                                                         |
|------------------|---------------------------------------------------------------|
| 24-22-00-860-805 | Supply Electrical Power (P/B 201)                             |
| 34-61-02-100-801 | Cooling Air Inlet Screen Cleaning (P/B 701)                   |
| 34-61-02-400-801 | Control Display Unit Software Installation (P/B 201)          |
| 45-10-00-740-808 | How to Use the Central Maintenance Computing System (P/B 201) |

##### C. Expendables/Parts

| AMM Item | Description | AIPC Reference   | AIPC Effectivity |
|----------|-------------|------------------|------------------|
| 1        | CDU         | 31-11-36-01A-035 | ARO 001-013      |
|          |             | 34-61-02-01-105  | ARO ALL          |
|          |             | 34-61-02-11-009  | ARO ALL          |

##### D. Location Zones

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

##### E. Installation Procedure

###### SUBTASK 34-61-02-860-005

- (1) For the left CDU [1];

Make sure that this circuit breaker is open and has safety tag:

###### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| C   | 7   | C31629 | FMC CDU-L |

###### SUBTASK 34-61-02-860-006

- (2) For the center CDU [1];

Make sure that this circuit breaker is open and has safety tag:

###### Overhead Circuit Breaker Panel, P11

| Row | Col | Number | Name      |
|-----|-----|--------|-----------|
| F   | 7   | C31631 | FMC CDU-C |

###### SUBTASK 34-61-02-860-007

- (3) For the right CDU [1];

EFFECTIVITY  
ARO ALL

# 34-61-02

D633W101-ARO

Page 404  
Jan 05/2016



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

Make sure that this circuit breaker is open and has safety tag:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 20         | C31630        | FMC CDU-R   |

#### SUBTASK 34-61-02-860-008

- (4) Make sure the cooling air inlet screen for the CDU [1] is clean.
- (a) Clean the inlet screen if it is dirty (TASK 34-61-02-100-801).

#### SUBTASK 34-61-02-860-019

- (5) If there are empty panel covers adjacent to the CDU, remove them to get access to the CDU wire bundle.

#### SUBTASK 34-61-02-420-002



DO NOT TOUCH THE CONDUCTOR PINS OR OTHER CONDUCTORS ON THE CDU. IF YOU TOUCH THESE CONDUCTORS, ELECTROSTATIC DISCHARGE CAN CAUSE DAMAGE TO THE CDU.

- (6) Install the CDU [1]:
- (a) Make sure the wire bundle on the CDU [1] is not twisted around the bungee cord.
- NOTE: If the wire bundle is twisted, the bungee cord will not put tension on the wire bundles. The tension on the wire bundles is necessary to allow clearance for the CDU [1] during installation.
- (b) Remove the protective covers from the electrical connectors.
- (c) Examine the electrical connectors for bent or broken pins, dirt, and damage.
- (d) Connect the electrical connectors.
- (e) Carefully lower the CDU [1] into the panel.
- (f) Make sure that the CDU wire bundle is not twisted and is correctly behind the CDU.
- (g) Push down the CDU handle [3].
- (h) Tighten the six quick-release fasteners [2].
- (i) Install empty panel covers that were removed.

#### SUBTASK 34-61-02-860-009

- (7) For the left CDU [1];
- Remove the safety tag and close this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 7          | C31629        | FMC CDU-L   |

#### SUBTASK 34-61-02-860-010

- (8) For the center CDU [1];
- Remove the safety tag and close this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| F          | 7          | C31631        | FMC CDU-C   |

EFFECTIVITY  
ARO ALL

# 34-61-02

D633W101-ARO

Page 405  
Sep 05/2017



## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 34-61-02-860-011

- (9) For the right CDU [1];

Remove the safety tag and close this circuit breaker:

### Overhead Circuit Breaker Panel, P11

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------|
| C          | 20         | C31630        | FMC CDU-R   |

## F. Installation Test

SUBTASK 34-61-02-860-012

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-805.

SUBTASK 34-61-02-710-001

- (2) Do these steps to make sure the CDU [1] operates:

- Make sure the MASTER BRIGHT switch on the P5 Pilot's Overhead Panel is on.
- Make sure the MENU page shows on the installed CDU [1].
- Hold the IND LTS switch on the P5 pilot's overhead panel in the TEST position.
- Make sure the DSPY, MSG, and OFST annunciators and the EXEC key light come on.
- Release the IND LTS switch.
- Make sure the DSPY, MSG, and OFST annunciators and the EXEC key light go off.

SUBTASK 34-61-02-730-002

- (3) Use a maintenance access terminal (MAT) to do the software configuration check of the left (center, right) CDU [1]:

**NOTE:** Make sure you know the correct software part number for the CDU [1] when you look at the software part number on the display. For the CDU [1] to be an approved installation, the correct software part must be installed.

- Make these selections on the MAT:
  - ONBOARD MAINTENANCE
  - LINE MAINTENANCE
  - SYSTEM CONFIGURATION
  - 34 AIMS - Flight Management Computing System
  - CONTINUE
- Find the Control Display Unit Left (Center, Right) on the display and make sure the software part number is correct.
- Select GO BACK to remove the configuration display

### ARO 014-999; ARO 001-013 WITH CDU CONFIGURATION PAGE

SUBTASK 34-61-02-730-004

- (4) You can also use the CDU [1] to do the software configuration check.

**NOTE:** Make sure you know the correct software part number for the CDU [1] when you look at the software part number on the display. For the CDU [1] to be an approved installation, the correct software part must be installed.

- Make these selections on the CDU [1]:
  - On the CDU MENU page, select 6R MEMORY.
  - On the memory page (no title in header), select 6R BITE HISTORY.

EFFECTIVITY  
ARO ALL

# 34-61-02

D633W101-ARO

Page 406  
Sep 05/2017





**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**ARO 014-999; ARO 001-013 WITH CDU CONFIGURATION PAGE (Continued)**

- 3) On the BITE HISTORY page, select 6L MAINT BITE.
- 4) On the CDU MAINT BITE INDEX page, select 5L CONFIG.
- (b) Make sure the software part number shown on the CDU CONFIGURATION page is correct.

**ARO ALL**

**SUBTASK 34-61-02-470-001**

- (5) If the part number is incorrect, do this task: Control Display Unit Software Installation, TASK 34-61-02-400-801.

**SUBTASK 34-61-02-730-003**

- (6) Use a maintenance access terminal (MAT) to do the System test of the left (center, right) CDU [1]:
  - (a) Make these selections on the MAT:
    - 1) ONBOARD MAINTENANCE
    - 2) LINE MAINTENANCE
    - 3) GROUND TESTS
    - 4) 34 AIMS - Flight Management Computing System
    - 5) SYSTEM TEST
    - 6) Control Display Unit Left (Center, Right) Reset
    - 7) CONTINUE
  - (b) Do the instructions that show on the MAT and then make these selections:
    - 1) CONTINUE
    - 2) START TEST
  - (c) When the test is completed, make sure that PASSED shows adjacent to TEST CONDITION on the MAT.
  - (d) If FAILED shows, select the maintenance message and select MAINTENANCE MESSAGE DATA or refer to the applicable Maintenance Message Index in the FIM.

———— **END OF TASK** ————

EFFECTIVITY  
**ARO ALL**

**34-61-02**

D633W101-ARO

Page 407  
Sep 05/2017



777-200/300  
AIRCRAFT MAINTENANCE MANUAL

CONTROL DISPLAY UNIT - CLEANING/PAINTING

1. General

- A. This procedure has these tasks:
- (1) The first task is to clean the inlet screen for the cooling air
  - (2) The second task is to clean the Control Display Unit (CDU) display screen.
- B. The three CDUs are in the flight compartment. The left CDU and the right CDU are in the forward aisle stand panel, P9. The center CDU is in the aft aisle stand panel, P8.

**TASK 34-61-02-100-801**

2. Cooling Air Inlet Screen Cleaning

A. **General**

- (1) The inlet screen for the cooling air is on the rear of the Control Display Unit (CDU).

B. **References**

| Reference        | Title                                             |
|------------------|---------------------------------------------------|
| 34-61-02-020-801 | Control Display Unit (CDU) Removal (P/B 401)      |
| 34-61-02-420-801 | Control Display Unit (CDU) Installation (P/B 401) |

C. **Tools/Equipment**

| Reference | Description                         |
|-----------|-------------------------------------|
| STD-1134  | Vacuum - Source, 24 Inch Hg Minimum |

D. **Location Zones**

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

E. **Procedure**

**SUBTASK 34-61-02-020-001**

- (1) Do this task: Control Display Unit (CDU) Removal, TASK 34-61-02-020-801.

**SUBTASK 34-61-02-940-001**

- (2) Put the CDU on a stable surface.

**SUBTASK 34-61-02-100-001**

- (3) Remove all the dirt from the inlet screen with a vacuum ( 24 Inch Hg Minimum), STD-1134.

**SUBTASK 34-61-02-420-001**

- (4) Do this task: Control Display Unit (CDU) Installation, TASK 34-61-02-420-801.

————— **END OF TASK** —————

**TASK 34-61-02-100-802**

3. CDU Display Screen Cleaning

A. **Tools/Equipment**

| Reference | Description          |
|-----------|----------------------|
| STD-123   | Brush - Soft Bristle |

EFFECTIVITY  
ARO ALL

D633W101-ARO

**34-61-02**

Page 701  
Sep 05/2017

## 777-200/300 AIRCRAFT MAINTENANCE MANUAL

### B. Consumable Materials

| Reference | Description                                                     | Specification |
|-----------|-----------------------------------------------------------------|---------------|
| B00130    | Alcohol - Isopropyl                                             | TT-I-735      |
| B00402    | Cleaner - Aerospace Equipment                                   | MIL-PRF-87937 |
| B50012    | Cleaner - Optical Cleaning, Calotherm Solution - Supaspray      |               |
| B50013    | Cloth - Calocoat Hi-Tech Lenscloth - Supacloth                  |               |
| G02457    | Cleaner - Wet/Dry Anti-Static Sachet - ALGLAS Visial ALG/CR 215 |               |

### C. Location Zones

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

### D. Procedure to use Supaspray and Supacloth or ALGLAS Visial Wet/Dry Anti-Static Sachet

SUBTASK 34-61-02-100-003



DO NOT USE ABRASIVE MATERIALS WHEN YOU CLEAN THE DISPLAY SURFACE. ABRASIVE MATERIALS WILL CAUSE SCRATCHES IN THE DISPLAY SURFACE.



DO NOT TOUCH THE GLASS WITH YOUR BARE SKIN. YOU CAN CAUSE DAMAGE TO THE OPTICAL COATING.

- (1) Carefully remove all particles of grit, dirt, or sand with dry, compressed air or a clean soft bristle brush, STD-123.

SUBTASK 34-61-02-100-002



DO NOT APPLY THE CLEANING SOLUTION DIRECTLY ON THE LCD GLASS SURFACE. DO NOT CLEAN THE LCD GLASS SURFACE WITH A DRY WIPER. THIS CAN CAUSE SCRATCHES ON THE LCD GLASS.



DO NOT USE TOO MUCH FORCE WHEN YOU CLEAN THE DISPLAY SURFACE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE DISPLAY SURFACE.

- (2) Clean the display surface with the Supaspray cleaner, B50012, and the Supacloth cloth, B50013, or the ALGLAS Visial cleaner, G02457:
  - (a) Apply 2 or 3 sprays of the Supaspray to the Supacloth, or open the wet sachet.
  - (b) Use the moist cloth or the wet sachet to clean the display surface in a straight line from top to bottom.
  - (c) Gradually move from one side of the display surface to the other side while you clean from top to bottom.
  - (d) When the display surface is clean, use a clean, dry area of the cloth or the dry sachet in a straight line from top to bottom to dry the display surface.

EFFECTIVITY  
ARO ALL

# 34-61-02

D633W101-ARO

Page 702  
Sep 05/2017



**777-200/300**  
**AIRCRAFT MAINTENANCE MANUAL**

**E. Procedure to use Isopropanol and Thin Film Cleaner**

SUBTASK 34-61-02-100-004



DO NOT USE ABRASIVE MATERIALS WHEN YOU CLEAN THE DISPLAY SURFACE. ABRASIVE MATERIALS WILL CAUSE SCRATCHES IN THE DISPLAY SURFACE.



DO NOT TOUCH THE GLASS WITH YOUR BARE SKIN. YOU CAN CAUSE DAMAGE TO THE OPTICAL COATING.

- (1) Carefully remove all particles of grit, dirt, or sand with dry, compressed air or a clean soft bristle brush, STD-123.

SUBTASK 34-61-02-100-005



DO NOT APPLY THE CLEANING SOLUTION DIRECTLY ON THE LCD GLASS SURFACE. DO NOT CLEAN THE LCD GLASS SURFACE WITH A DRY WIPER. THIS CAN CAUSE SCRATCHES ON THE LCD GLASS.



DO NOT USE TOO MUCH FORCE WHEN YOU CLEAN THE DISPLAY SURFACE. TOO MUCH FORCE WILL CAUSE DAMAGE TO THE DISPLAY SURFACE.

- (2) Carefully clean the glass with the moist cloth.

SUBTASK 34-61-02-100-006

- (3) Soak a clean cloth with alcohol, B00130.

SUBTASK 34-61-02-100-007

- (4) Do these steps to remove the alcohol, B00130 that stays on the glass:
- (a) Soak a clean cloth with the cleaner, B00402.
  - (b) Carefully clean the glass with the moist cloth.
  - (c) Clean the glass with a clean, dry cloth.

SUBTASK 34-61-02-100-008

- (5) Soak a clean cloth with distilled water to remove all scratches on the glass.

———— **END OF TASK** ————

EFFECTIVITY  
ARO ALL

**34-61-02**

D633W101-ARO

Page 703  
Sep 05/2017